Implementation of a Kenmore Water Taxi Route Proviso Response

September 29, 2020

King County

I. Contents

II. Proviso Text 3

III. Executive Summary 3

IV. Background 5

V. Report Requirements 7

A. An update on the assessment of facilities, ridership projections, and capital and operating cost estimates provided in the 2015 ferry expansion options report 7

B. A discussion of planning efforts underway or needed to implement the route 11

C. An environmental impact analysis 11

D. A summary of coordination with local agencies, including potential lease arrangements for facilities 13

E. A discussion of options for funding implementation of the route including identifying grant opportunities 15

F. A summary of public outreach undertaken 16

G. A description of next steps for moving forward 18

VI. Conclusion 19

VII. Appendices 19

Appendix A: Report on Implementation of a Kenmore Water Taxi Route 19

II. Proviso Text

Ordinance 18835[1], Section 107 Marine Division, P1

Of this appropriation, $200,000 shall not be expended or encumbered until the executive transmits a report on implementation of a Kenmore water taxi route and a motion that should acknowledge receipt of the report and reference the subject matter, the proviso's ordinance, ordinance section and proviso number in both the title and body of the motion and a motion acknowledging receipt of the report on implementation of a Kenmore water taxi route is passed by the council.

The report on implementation of a Kenmore water taxi route shall include, but not be limited to:

A. An update on the assessment of facilities, ridership projections, and capital and operating cost estimates provided in the 2015 ferry expansion options report;
B. A discussion of planning efforts underway or needed to implement the route;
C. An environmental impact analysis;
D. A summary of coordination with local agencies, including potential lease arrangements for facilities;
E. A discussion of options for funding implementation of the route including identifying grant opportunities;
F. A summary of public outreach undertaken; and
G. A description of next steps for moving forward.

The executive should file the report on implementation of a Kenmore water taxi route and a motion requested by the proviso by July 31, 2020, in the form of a paper original and an electronic copy with the clerk of the council, who shall retain the original and provide an electronic copy to all councilmembers, the council chief of staff and the lead staff for the mobility committee, or its successor.

III. Executive Summary

This report is a response to a proviso in the 2019-2020 adopted budget, Ordinance 18835, Section 107 Marine Division, P1 directing the Executive to transmit a report on implementation of a Kenmore water taxi route. The proviso directed the King County Metro Marine Division (Marine Division) to update details in the 2015 ferry expansion options report specifically associated with implementation of a Kenmore water taxi route. This report fulfills the proviso requirements.

As required by the proviso, the report includes:

A. An update on the assessment of facilities, ridership projections, and capital and operating cost estimates provided in the 2015 ferry expansion options report;
B. A discussion of planning efforts underway or needed to implement the route;
C. An environmental impact analysis;
D. A summary of coordination with local agencies, including potential lease arrangements for facilities;

[1] Link to Ordinance 18835

E. A discussion of options for funding implementation of the route including identifying grant opportunities;
F. A summary of public outreach undertaken; and
G. A description of next steps for moving forward.

The Metro Transit Department Marine Division has operated the King County Water Taxi since 2010, providing passenger-only ferry service to Vashon Island and West Seattle from downtown Seattle. Over the years there has been interest in expanding this service to other parts of King County. In 2015, the King County Council directed the Marine Division to study and analyze incorporating potential new long-term, passenger-only route service expansion opportunities. The Final Report on Ferry Expansion Options for Marine Division, approved by Motion 14561[2] in 2015, is the starting point for this report.

This report summarizes the analysis and evaluation completed for the implementation of a Kenmore to Seattle passenger-only ferry (POF) route. The facilities were identified and evaluated using accessibility, urban planning, regulatory framework, vessel navigational considerations, and infrastructure needs. The key implementation considerations were summarized by location with opportunities and challenges of each location documented. The five locations evaluated were:

- Kenmore: Lakepointe and Log Boom Park (Lakepointe is most viable Kenmore landing site)
- Seattle: University of Washington – Waterfront Activities Center (UW WAC), Madison Park and Leschi Park (UW WAC is most viable Seattle landing site)

The ridership demand was projected for the Kenmore to Seattle locations with the Kenmore to UW WAC having the highest projected ridership of the three different Seattle landing sites. Cost estimates for the capital infrastructure and vessels was estimated to be $40 M and the operating costs were estimated to be $3.7 M annually.

The planning efforts needed to implement the route include:

- Review of the existing transit service provided to Kenmore
- Analysis of future population and travel trends
- Evaluation of how this route would fit in with long-term planning for transit service to meet the needs for Kenmore and the region in the future
- Determination of how this route aligns with the Mobility Framework, in terms of impacts on equity and sustainability

A preliminary analysis of impacts to environmental elements was completed for the operation of POF service along the route between Kenmore and Seattle. Preliminary analysis suggest the design of the vessel is an important part of ensuring both wake and emission standards are met. Further analysis would be required once more specific route and vessel details are determined in order to provide a complete environmental assessment.

The Marine Division communicated and coordinated with representatives from the City of Kenmore, University of Washington, City of Seattle Parks and Recreation, Department of Natural Resources, and

[2] Motion 14561

property owners through meetings, on-site walk-throughs, and email correspondence to discuss opportunities and challenges of potential passenger-only ferry service.

Implementing POF service requires one-time capital investments and a sustainable funding source to support operating costs. Capital investments can be funded through a combination of grants, local revenue sources, and debt service. Operating costs could be funded through a 50 to 60 percent increase to the existing dedicated POF property tax levy, currently at $0.025 per $1,000 of assessed property value, and supplemented with passenger fare revenue.

The survey responses regarding the feasibility of POF from Kenmore to Seattle were generally positive indicating a significant majority of respondents (nearly 60 percent) would take a POF three or more times per week. Additionally, a majority of people that responded to the survey indicated they were traveling for work Monday through Friday. People also expressed interest in driving or walking/biking to get to the landing. Of the landing site options, the UW area sites (UW WAC or Portage Bay) were the preferred landing locations.

A preliminary Equity Impact Review completed by Metro Service Planning indicated the Kenmore to Seattle POF route would be serving an area that already has transit options available. POF service would provide a benefit and added amenity in Kenmore, but in general, these areas have low equity scores. A POF route to UW WAC would provide another transit option for an area designated to have a high equity score due to its more diverse and less wealthy population (University District area of Seattle).

Implementing Kenmore POF service between Lakepointe and UW WAC requires coordination with local agencies, forming partnerships with property owners, securing necessary funding for capital improvements and operating costs, tribal consultation, continuing stakeholder outreach and community engagement as well as beginning the legislative and regulatory process for approval.

This report provides analysis of the feasibility of a Kenmore to Seattle POF route.Implementation of a Kenmore to Seattle water taxi route could provide an additional transit option and supports increased mobility, a strategic goal of King County and Metro. However, adding a water taxi route is unviable for the foreseeable future, given the impacts caused by the COVID-19 pandemic are far-reaching and adversely affect existing transit service. Metro will continue to focus on providing and preserving existing service while advancing transit options where needs are greatest.

IV. Background

The Marine Division has operated year-round passenger-only ferry service from Seattle to West Seattle and Vashon Island since 2010. During that time, the governance over ferry services has changed from contracting with the King County Ferry District (KCFD), formed in 2007, to being governed by the King County Council, beginning 2015.

Historical Context: As part of the state approved business plan used to form the KCFD, provision of passenger-only ferry service was planned to grow over time. In mid-2009, the KCFD began to study demonstration routes on Puget Sound and Lake Washington, but by late 2009 the KCFD ended the study in response to the economic recession. The King County Council directed the Marine Division, through a

proviso in the 2015-2016 adopted budget, to revisit the 2009 study and expand the analysis to incorporate potential new long-term, passenger-only route service expansion opportunities. The Final Report on Ferry Expansion Options for Marine Division, approved by Motion 14561[3] in 2015, referenced in the proviso is the starting point from which this proviso report was developed.

Current Context: Much of the information in this report was gathered, researched, and drafted prior to the adoption of the Mobility Framework, Motion 15618[4] and the global pandemic and subsequent economic downturn in the economy. While the implementation of a Kenmore water taxi route would advance the goals of providing access to public transportation and help reduce greenhouse gas emissions in the region, more work is needed to review how this route would be prioritized in terms of advancing equity given Metro's plans for changes to policies, programs, services, and investment strategies to better advance equity and environmental sustainability through Metro's operations. Additionally, the economic conditions will require further analysis of how the Kenmore route would align with the department's priorities for both capital and operating programs in the context of future funding.

Report Methodology: The Marine Division developed a scope of work to meet the requirements of the proviso and retained the services of a passenger ferry consultant, KPFF Consulting Engineers – Marine Transit and their subconsultants to provide technical support, analysis and development of the updates and a report for implementing passenger ferry service for Kenmore. For this report, see Appendix A: Implementation of a Kenmore Water Taxi Route. The division, including representatives from Metro service planning section and community engagement, worked together with the consultant to complete the work in a stepped approach. This methodology allowed for an assessment of the many characteristics of POF service as well as the path toward implementation and clearly identifies opportunities and constraints of POF service.

First, potential POF landing sites were identified within Kenmore City limits, as well as, potential destination landing sites. This step included review of previous studies and assessment of current travel patterns to identify where people are travelling to and, therefore, where a potential POF landing site should be located.

During the second step, the Marine Division met with property owners and local agencies that own potential POF landing sites to discuss opportunities and challenges associated with each potential location. Included in this step was a detailed analysis of potential POF landing sites for land use consistency, connectivity and accessibility to adjacent communities, navigational considerations, and infrastructure improvements required to determine the rough order of magnitude (ROM) capital costs.

The final step, included evaluating route options and recommending a route for implementation. This included developing route profiles along with potential service levels to estimate ROM operating costs, potential ridership, and revenue. This step also involved conducting a preliminary environmental impact analysis, gauging community interest through a public survey, and completing an Equity Impact Review.

[3] Motion 14561
[4] Motion 15618

V. Report Requirements

The Marine Division worked with the consultant and subconsultants to develop the following responses to requirements A-G in the proviso.

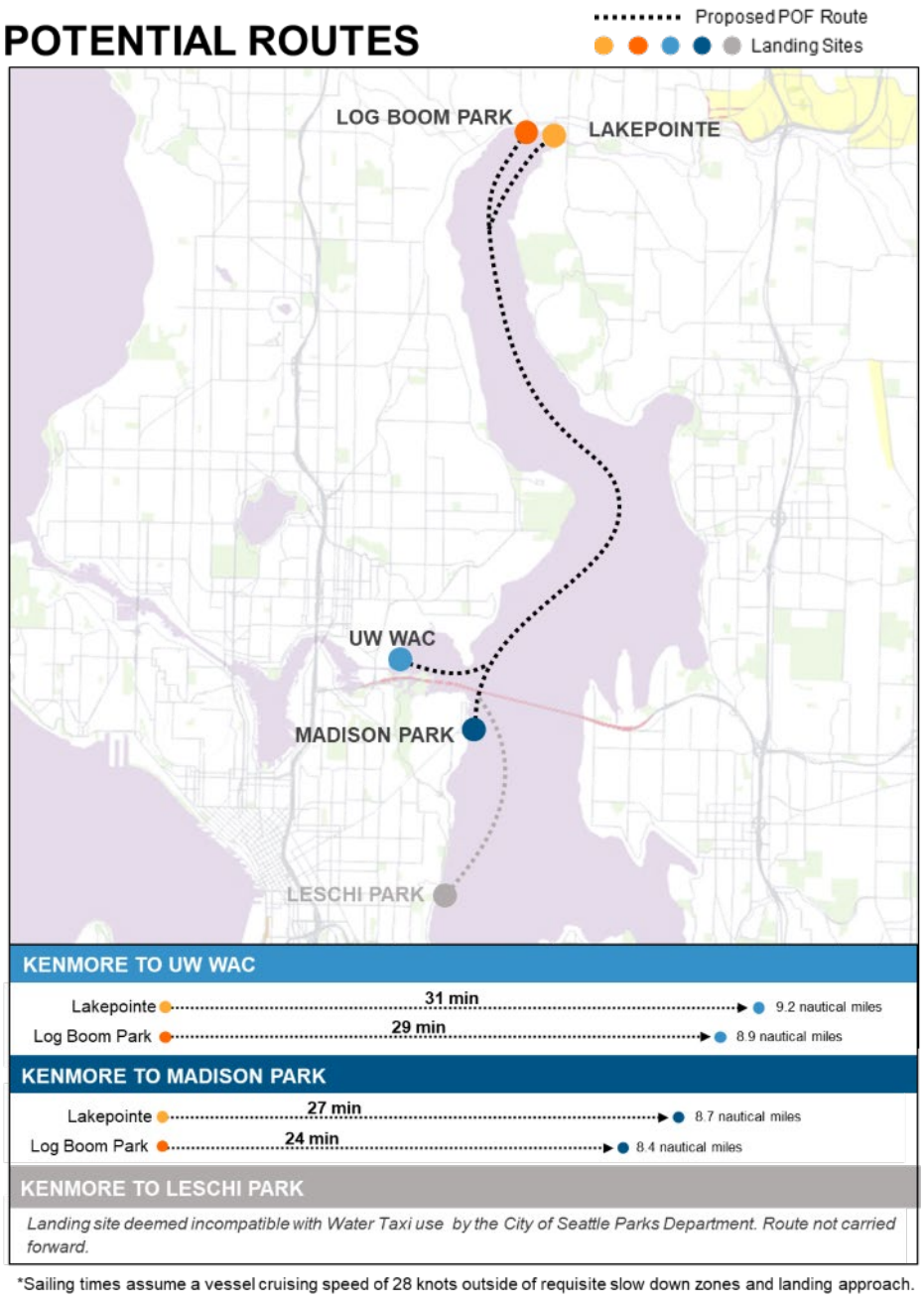
A. An update on the assessment of facilities, ridership projections, and capital and operating cost estimates provided in the 2015 ferry expansion options report

Assessment of facilities: Using the previous expansion studies completed in 2009 and 2015 as a basis, potential landing sites were identified that could support POF service to and from Kenmore. A market area analysis was conducted to illustrate key employment locations for Kenmore residents and commuters. Sites that offered potential connections to significant employment destinations were carried forward for a site assessment.

The five locations evaluated were:

- Kenmore: Lakepointe and Log Boom Park (Lakepointe is most viable Kenmore landing site)
- Seattle: University of Washington – Waterfront Activities Center (UW WAC), Madison Park and Leschi Park (UW WAC is most viable Seattle landing site)

Figure 1: Potential Landing Sites in Kenmore and Seattle



For each potential landing site, the following elements were evaluated:

- *Accessibility and connectivity* - how easy or difficult it is to access the site via a variety of mobility options and how much potential the site has for future mobility connections
- *Neighborhood context and long-range planning* - the nearby uses of properties adjacent to the site and planning efforts by local jurisdictions that impact the site and surrounding areas
- *Regulatory framework* - zoning requirements related to POF as a use and regulatory approvals that may be necessary to implement a POF landing

- *Navigational considerations* - exposure, water depth, and navigational challenges
- *Existing infrastructure* - what overwater and uplands infrastructures are present at the site
- *Proposed infrastructure* - what overwater and uplands infrastructures are proposed for developing the site into a POF landing

Table 1 summarizes the key implementation considerations for each site.

Table 1: Site Summary

	Proposed Infrastructure	Opportunities	Challenges
Lakepointe	• New float • Uplands work • Uplands work	• Proximity to Moorage/ maintenance facility • Land use compatibility • Accessibility	• Development-unknown timeframe • Soil contamination
Log Boom Park	• Pier improvements • Uplands work	• Existing infrastructure	• Low water depth (further analysis needed) • Accessibility
UW WAC	• Option 1: replacement float, uplands work • Option 2: replacement float, uplands work, longer gangway	• Connectivity to light rail and bus • UW is a destination • UW WAC to UW Bothell campus connections	• Navigational (operating awareness in congested waterways)
Madison Park	• New float • Pier improvements • Uplands work • Site work	• Future connectivity (if BRT is extended by 2040)	• Connectivity to downtown Seattle • Navigational (exposure)
Leschi Park	• Minor pier improvements • Uplands work	• Existing infrastructure	• Connectivity to downtown Seattle • Incompatible with Parks Department uses

Ridership projections: For each proposed route BERK Consulting (subconsultant) estimated unconstrained ridership demand potential for the years 2019, 2025, and 2040 (see Table 2). "Unconstrained" refers to the fact that the demand is not limited by the boat capacity, sailing schedule, or sailing frequency. To support comparison to the constrained ridership forecasts below, this summary

of annual unconstrained ridership demand focuses only on days included in the proposed sailing schedules. Depending on the season, ferry services may run on weekdays, Saturdays only, full weekends, or holidays (which was assumed to run on a Saturday ferry schedule). Due to the close proximity between both Kenmore landing sites, ridership reflects both Kenmore locations.

Table 2. KenmoreUnconstrained Ridership Demand, Scheduled Days

	2019	2025	2040
Kenmore to University of Washington	227,989	382,119	522,609
Kenmore to Madison Park	83,583	129,946	214,890
Kenmore to Leschi Park	70,254	111,400	182,147

To forecast annual ridership, the unconstrained ridership demand was allocated to individual sailings by time of day. The analysis indicates that a Kenmore to UW route would have the highest ridership. The results of this analysis are presented in Table 3.

Table 3. Annual Ridership Forecast by Proposed Sailing Schedule: Kenmore to Seattle

Route	2019	2025	2040
Kenmore to University of Washington (1 boat)	111,238	196,068	262,297
Kenmore to University of Washington (2 boats)	157,397	279,591	371,008
Kenmore to Madison Park (1 boat)	39,299	61,143	92,337
Kenmore to Madison Park (2 boats)	47,767	74,396	112,399
Kenmore to Leschi Park (1 boat)	31,874	50,661	75,259
Kenmore to Leschi Park (2 boats)	39,402	62,948	93,473

The ridership forecast for sailing schedules does include a two boat option to illustrate how ridership changes when adding twice the frequency. The cost analyses for all new routes assumes that only one boat would operate at a time.

Information on estimated travel times for various times of day for these routes is contained in Attachment A.7 in Appendix A.

Cost estimates: Given the above ridership information, Metro would recommend the one boat options from above. Each route requires two vessels, one for operating and one for backup, and an overnight moorage and maintenance facility constructed at Lakepointe. Based on the capital cost estimates, a POF route from Log Boom Park would cost less than a POF route from Lakepointe. The operating costs are anticipated to be the same for each route. The estimated capital costs and annual operating costs for the first year of service are illustrated below.

Route	Vessel Capital Cost ($2019)	Landing Site Capital Cost ($2019)	Annual Operating Costs in Year 1 ($2019)
Lakepointe to UW WAC	$15.4 M	$24.8 M	$3.7 M
Log Boom Park to UW WAC	$15.4 M	$23.8 M	$3.7 M

Route	Vessel Capital Cost ($2019)	Landing Site Capital Cost ($2019)	Annual Operating Costs in Year 1 ($2019)
Lakepointe to Madison Park	$15.4 M	$24.7 M	$3.8 M
Log Boom Park to Madison Park	$15.4 M	$23.7 M	$3.7 M

Because the Leschi site is incompatible with passenger-only ferry service, costs were not developed for this route.

Based on the ridership and cost information presented above, anticipated farebox recovery for the Kenmore to UW WAC route (the most cost effective route) is approximately 15% at startup, resulting in an overall POF system farebox recovery of approximately 32%.

Information on cost per rider for the Lakepointe to UW WAC route is contained in Appendix A, page 20.

B. A discussion of planning efforts underway or needed to implement the route

The planning efforts needed to implement the route include:

- Review of the existing transit service provided to Kenmore
- Analysis of future population and travel trends
- Evaluation of how this route would fit in with long-term planning for transit service to meet the needs for Kenmore and the region in the future
- Determination of how this route aligns with the Mobility Framework, in terms of impacts on equity and sustainability

Metro is facing the need to make significant changes as a result of the global pandemic and economic recession. All planning related to implementing a Kenmore water taxi route would be subject to the reassessment and prioritization of transit services provided by Metro for King County.

C. An environmental impact analysis

The following section summarizes a preliminary analysis of environmental elements considered with the operation of POF service along the route between Kenmore and Seattle. To deliver POF service at the given service levels, the Marine Division would operate up to two 150-passenger vessels at an operating speed of up to 28 knots in unrestricted areas.

The routes were evaluated using publicly available data and when possible visually representing this data using ArcGIS. The majority of data was created and compiled by local and state governments or research institutions; a few data sets were created through this project by digitizing information from aerial photographs.

The elements of earth, air, water and plants were reviewed in the context of operating POF service.

Earth: The potential POF route would operate on the waters of Lake Washington connecting Kenmore and Seattle. Vessel-generated waves from a new POF operation could cause erosion of shorelines through mobilization and transport of sediments. Efficient hull design and foil assistance could be used to achieve ultra-low wake performance for POF vessels. These features would also prevent wake wash induced impacts to the critical Lake Washington shoreline areas. Additionally, the Marine Division would develop operational protocols for where the POF vessel travels on the lake to prevent wake wash induced impacts on the critical shoreline areas and recreational usage of the lake.

Air: The diesel-powered propulsion systems would contribute to greenhouse gas (GHG) emissions, including carbon dioxide (CO_2) and nitrogen oxide (NO_x) emissions. The Environmental Protection Agency (EPA) requires new vessels to incorporate Tier 4 engines to significantly reduce GHG emissions. It is anticipated the new vessels would require Tier 4 engines, though hybrid-diesel propulsions systems would also be explored as an option for the route.

Water: To protect water quality and reduce the risk of any contaminants entering the lake, best management practices would be used in any construction activities needed for landing sites to support POF service. Ferry vessels themselves, like most marine vessels, may use a raw water cooling process during operations. No sewer waste would be discharged into the waters of Lake Washington.

Plants: The majority of the shoreline along Lake Washington consists of garden/lawn with some areas of natural forested and shrub-scrub vegetation, mostly in conjunction with park areas. It is not anticipated the potential route from Kenmore to Seattle would affect native submerged aquatic vegetation.

The following additional tasks are recommended to adequately define impacts and develop measures to reduce potential impacts:

- Wind-wave and vessel wake energy assessment to quantify existing wave climate which can generate sediment transport along the shorelines and to determine threshold for Lake Washington POF wake wash criterion.
- Review of fixed and floating structures that extend farther than average from the shoreline to determine tolerance for vessel wake wash.
- Review of recreation on the lake around Kenmore landing site, Magnuson Park and UW landing to define operation protocols to minimize impacts to recreation.
- Delineation of Kenmore Air take-off and landing zones.
- Potential impacts to threatened and endangered fish species at landing sites and stream mouths.
- Other elements to review include animals, energy and natural resources, environmental health, noise, land and shoreline uses, critical areas, housing, aesthetics, recreation, historic and cultural resources, transportation and public services and utilities.

D. A summary of coordination with local agencies, including potential lease arrangements for facilities

As part of this proviso, the Marine Division reached out to the local agencies and owners of each potential landing to discuss opportunities and challenges of potential passenger-only ferry (POF) service. The following table provides a summary of these discussions.

Local Agency/ Owner	***Stakeholder Interest***	***Opportunities***	***Challenges***	***Outcomes***
City of Kenmore	• Encouraging transportation options for the Kenmore community. • Owns Log Boom Park landing. • Collaborates with Lakepointe property owner.	• Kenmore is looking to improve connections to the park.	• Acccess for passengers. • Limited expansion options for POF facilities.	• Log Boom Park is a potential landing, but Lakepointe is the City of Kenmore's preferred location. • In either case, Lakepointe would need to be utilized for vessel maintenance and tie-up.
Property owner, Gary Sergent	• Owns Lakepointe site. • Interested in developing property.	• Improved access for passengers with sufficient uplands space for potential on-site parking and shuttle drop-off • Compatibility with future development. • Overnight moorage.	• Heavy truck traffic across the site with existing lessees. • Utility systems are limited.	• Gary Sergent is willing to consider moving forward with a POF landing. • Lakepointe is the City of Kenmore's preferred landing location. • Even if not selected for service, Lakepointe would need to be utilized for vessel maintenance and tie-up.

University of Washington	• Owns UW WAC landing. • Maintaining safe access and use of Lake Washington. • Keeping UPass costs down.	• Connection to light rail and numerous bus routes. • UW, UW Medical, and UW athletic facilities are all destinations.	• Used by UW Rowing Team and other recreational watercraft.	• Continued communication.
Department of Natural Resources	• Owns Madison Ave dock.	• Compatible with DNR goals of encouraging water dependent, public uses.	• Obtaining a DNR Waterway permit. • Poor transit connections. • Requires new dock and increased overwater coverage.	• DNR willing to consider moving forward with a POF landing.
City of Seattle Parks and Recreation	• Manages adjacent Madison Park.	N/A	• Nearby residences and park (including a public swimming area)	• City of Seattle does not own the Madison Dock. • Marine Division to work with DNR.
City of Seattle Parks and Recreation	• Owns Leschi Park Landing.	N/A	• The Parks Department indicated their capital improvements at this landing site was not compatible with Water Taxi use.	• This landing site is not an option to carry forward.

In addition to coordination with local agencies and potential landing site owners, the Marine Division met with the United States Coast Guard (USCG), Sector Puget Sound. The USCG has regulatory authority over all vessel operations in Lake Washington waters as well as a whole host of other responsibilities. The goal of this meeting was to inform them of this study and discuss any concerns, issues, and focus areas.

E. A discussion of options for funding implementation of the route including identifying grant opportunities

This section provides a high-level overview of the potential ways for funding the implementation of the Kenmore POF route. It is intended to be representative of what would be required to establish secure funding supporting the service over a twenty-year timeline.

Implementing POF service requires capital investment and a sustainable funding source to support operating costs. Capital costs total approximately $24-25 M in 2019 dollars and include improvements to landings and vessel purchases. Capital investments can be funded through a combination of grants, local sources and debt service. Operating costs include operations and maintenance staff, maintenance parts, and fuel and are estimated at about $4M per year in 2019 dollars. Operating costs would be funded through an increase to the existing dedicated POF property tax levy supplemented with passenger fare revenue.

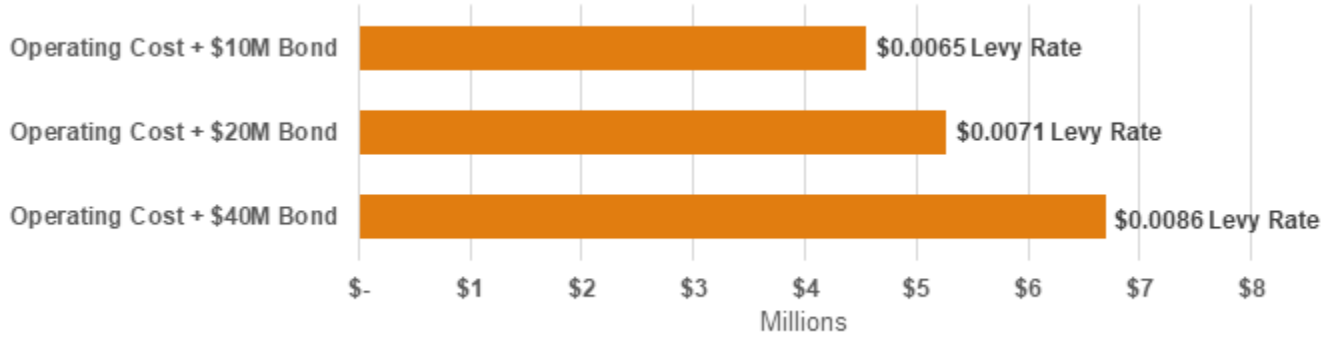
The capital investment and ongoing operating costs for a new Kenmore POF route have been calculated using high level estimates based on the timing of implementation and include an annual inflation rate. The estimates are subject to change based on further detailed planning, partnership agreements and the timing of funds being secured to support the service.

The Marine Division's current primary funding source is a dedicated property tax levy that is supported by passenger fares, federal grants and bond issuance for capital investments. The property tax levy is currently set at a rate to sustain existing operations. Adding new service would require a complete analysis of all funding sources projected into the future.

Based on current funding assumptions and initial timing of investments, Figure 10 illustrates the total investment outlay over time using three examples of funding combinations to support the implementation of Kenmore POF service.

Figure 10 provides examples that show the property tax levy rate that would need to be levied in order to fund the ongoing operating costs as well as the debt service on three levels of bond funding. The highest bond issuance assumption is $40M with no support from grants or partnerships for capital costs. The second assumption shows bonds at $20M and grants and other support of $20M. The third assumption shows bonds at $10M and grants and other support of $30M. In each of the examples, the levy rate would range between $0.0086 and $0.0065 per $1,000 of assessed property valuation, respectively. In comparison, the existing levy rate that funds the Vashon Island and West Seattle routes is $0.0125 per $1,000 of assessed property value. The maximum allowable levy rate for this dedicated property tax is $0.075 per $1,000 of assessed property value; therefore, all scenarios could be funded within the allowable limit.

Figure 2: Kenmore POF Funding Options



Current levy amount for existing routes is $0.0125 and the maximum allowable levy rate is $0.075.
The graph assumes the balance of the capital costs to total $40M would come from grants or partnerships.
The levy rate is calculated based on the valuation of property. Example: $400,000 home would be assessed $3.44 per year at levy rate $0.0086.

The Marine Division has a successful history in seeking and receiving grants for many of their past capital projects and would seek out as much grant funding as possible for any new capital projects. The following grant opportunities are available for these capital investments:

- Federal Highway Administration (FHWA) - Ferry Boat Program
- Federal Transit Administration - Passenger Ferry Grant Program - Section 5307
- Department of Transportation - Better Utilizing Investments to Leverage Development (BUILD) Grant
- Other Federal Transit Administration competitive and earned share grants

F. A summary of public outreach undertaken

King Country Metro (Metro) conducted an online survey to gather input on the feasibility of passenger-only ferry (POF) service from Kenmore to Seattle. The survey launched on December 6 and closed on December 23, 2019. During this approximately two-week surveying effort, rider bulletins were sent to three Metro routes that serve the trip between Kenmore and Seattle, emails were sent to local community-based organizations and partners, and the survey was shared via partner social media channels and through paid social media ads and boosted posts.

Survey results provide feedback on the travel patterns as of late 2019 of potential POF users along with their preferences for POF service from Kenmore if it were to be implemented. The majority of individuals responded to the survey indicated a home zip code in Kenmore or surrounding locations including Bothell/Woodinville, Kirkland, and Mill Creek. Consequently, it is possible that the predominant direction of potential POF travel would be from Kenmore, with trips within Kenmore being taken mostly by Kenmore residents.

Almost half of survey respondents traveled to downtown Seattle most days of the week. Other prominent destinations on the west side of Lake Washington included Northeast Seattle and South Lake Union. Of the east side destinations, 40 percent of respondents were travelling to or from Kenmore most days of the week. Bothell/Woodinville and Kirkland were also popular destinations.

The vast majority (84 percent) of survey responses indicated people were traveling for work. Other travel included fun/social/recreational, shopping, school, and or other option.

The majority of respondents (80 percent) travel on weekdays, with weekend travel being far less common than weekday travel.

Based on survey responses, the morning and evening peak commute periods represented the highest travel periods throughout the day. The survey results indicated that travel is more frequent in the afternoon peak of 3:00 pm and 7:00 pm than during the morning peak period. While people typically traveled during the commute periods, survey respondents also indicated they traveled in the midday period between 9:00 am and 3:00 pm.

The majority of survey respondents (64 percent) drove their personal vehicle to complete their trips to their destination while about 32 percent of survey respondents took bus/transit.

To understand people's interest in POF service, the survey asked what landing sites people would prefer, how people would prefer to get to a POF landing, how often they would use POF service, why they would use POF service and what amenities are important to them.

Of the available landing site options, the University of Washington (UW) site was the preferred site (57 percent) for a POF landing. Respondents left numerous comments stating their destination preferences and frequently mentioned the connection to the UW Link light rail station as the top reason for choosing the UW as their preferred landing site.

Most survey respondents (58 percent) indicated they would drive to the landing site. Many respondents (51 percent) also indicated a willingness to walk or bike to the ferry terminal.

Survey respondents generally supported POF service; 57 percent of survey respondents would use the POF service at least three times per week. Moreover, almost 90 percent of respondents would use the service at least three days per month from the landing site they selected. The majority of the comments were in support of the proposed Kenmore-Seattle POF route and/or expansion of POF vessels from Kenmore in general. Some comments mentioned the alleviation of traffic and improved commute experience as key positives for them.

In order to change their travel mode to a POF, the majority of survey respondents (65 percent) said that they would need easy connections to their final destination and/or that their travel time with POF would need to be the same or faster than their current travel mode.

Survey respondents were asked to rank on-board amenities in order from one to six, with one being the highest priority. On average, a guaranteed seat was ranked as the most important amenity, which averaged between the second- and third-most important amenities for survey respondents. Following a guaranteed seat, on-board restrooms and the ability to access wi-fi while traveling were also highly ranked by survey respondents.

G. A description of next steps for moving forward

Implementing POF service between Lakepointe and UW WAC requires forming partnerships with property owners, securing necessary funding for capital improvements and operating costs, consulting with tribes, continuing stakeholder outreach and community engagement as well as beginning the regulatory process for approval.

Although initial outreach has been conducted with potential partners such as the City of Kenmore, the UW and the Lakepointe property owner, final agreements would need to be reached to ensure full support of POF route implementation moving forward. This requires continued meetings to identify and address stakeholder interests.

The Marine Division's current primary funding source is a dedicated property tax levy that is supported by passenger fares, federal grant,s and bond issuance for capital investments. The property tax levy is currently set at a rate to sustain existing operations. Adding new service would require a complete analysis of all funding sources projected into the future.

Outreach is critical throughout the POF implementation phase. Engaging local agencies, property owners, tribes, and continuing public outreach throughout the development of landing sites, will be key to a successful POF route implementation.

The Marine Division has met with the owners of the prospective landing sites discussing potential POF service and to begin to understand their needs and concerns. The next steps for service implementation will include developing use and lease agreements for the specific site locations identified and to do this prior to POF landing site development.

As part of this proviso, the Marine Division reached out to the local agencies and owners to discuss opportunities and challenges of POF service. If implementation of a new route is pursued, meetings and coordination with the appropriate agencies would continue throughout the route implementation process. Regular communications with key agencies will be essential throughout the permitting process that is required for terminal construction and POF service implementation.

The Marine Division would consult with the Muckleshoot tribe that has treaty rights in this waterway during project development and future operations.

Prior to implementing the Lakepointe to UW WAC POF route and as part of the regulatory process, the Marine Division would continue community engagement. Outreach efforts would be to provide information and seek public input through community meetings, public comment periods, and publicizing key route information.

Compliance with the National Environmental Policy Act (NEPA) would be required for this project if federal funds are used for project implementation. This process requires coordinating with the lead agency as soon as possible to determine if the project is considered to be categorically excluded or have an impact. Depending on the determination, the project may need to proceed with an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). Based on the determination, the Marine Division would prepare environmental studies needed to support the review process.

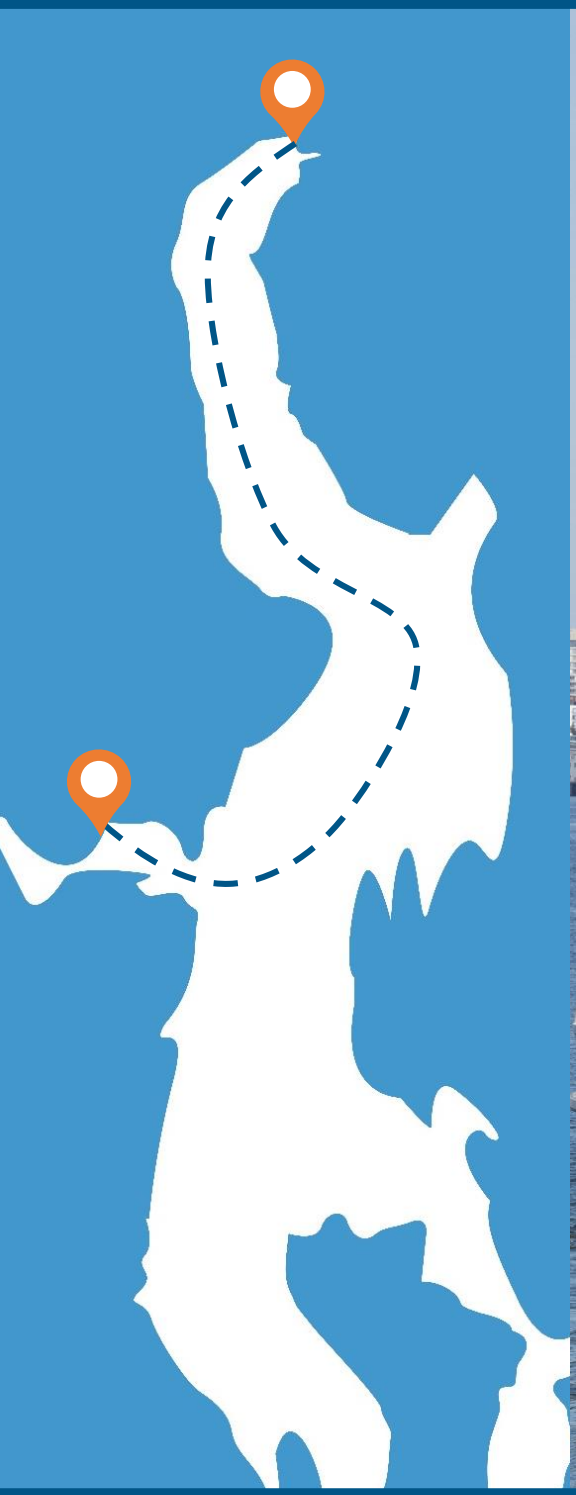
VI. Conclusion

This report provides analysis documenting many positives for the addition of a Kenmore to UW WAC POF route, however, analysis cannot be done in a vacuum. Earlier this year, the COVID-19 pandemic emerged and greatly impacted the community. This public health crisis has impacted public transit significantly through a steep reduction in demand for transit due to work from home and social distancing orders and the corresponding economic slowdown due to job losses, decline in sales tax collection, and Metro's decision to no longer collect fares on any of its services to minimize interaction with operators. A lot of uncertainty remains as recovery from this crisis is expected to be difficult and protracted. It is expected there will be potential changes in travel habits, with the adoption of more widespread teleworking, which will create challenges in how to meet future transportation needs. While Metro will continue to focus on providing as many transit options as possible, based on available service hours, to the communities with the greatest needs, implementation of a Kenmore water taxi route is not recommended at this time.

Implementation of a Kenmore to Seattle water taxi route could provide an additional transit option and supports increased mobility, a strategic goal of King County and Metro. However, adding a water taxi route is unviable for the foreseeable future, given the impacts caused by the COVID-19 pandemic are far-reaching and adversely affect existing transit service. Metro will continue to focus on providing and preserving existing service while advancing transit options where needs are greatest.
This route will remain in Metro's long-range plans for potential future expansion of passenger-only ferry service in King County.

VII. Appendices

Appendix A: Report on Implementation of a Kenmore Water Taxi Route



Report on Implementation of a Kenmore Water Taxi Route

King County Metro Transit, Marine Division

Submitted in accordance with King County Council Ordinance 18835

July 2020

King County METRO

PROJECT TEAM

King County Metro Transit

Paul Brodeur, Marine Division Director
Evelyn Wise, Finance and Administrative Manager, Marine Division
Katie Chalmers, Service Planning Supervisor, Service Planning
Kim Kinnison, Transportation Planner, Service Planning
Michelle Huynh, Community Engagement Planner

Consultant Team

KPFF Consulting Engineers

Cassandra Durkin, Consultant Project Manager
Mike Anderson, Project Oversight
Kristen Kissinger, Senior Planner
Kelly Lesoing, Planner
Martha Hart, Assistant Planner

BERK Consulting

Kevin Ramsey, Ridership Forecasting
Bryce Anderson, Ridership Forecasting

Blue Coast Engineering

Jessica Cote, Environmental Consultant

Axis Environmental

Sasha Visconty, Environmental Consultant

PHOTO CREDITS

All photos are courtesy of Ned Ahrens, Photographer for King County Metro.

EXECUTIVE SUMMARY

Executive Summary 1

SUMMARY OF FINDINGS

Introduction and Legislative Summary 5
King County Guiding Principles 7
Kenmore Transit Options 9
Approach and Findings 13
Recommended Route 24
Next Steps 28

APPENDICES

Appendix A - Capital and Operating Program Update 32
Attachment A.1: Market Area Analysis
Attachment A.2: Portage Bay Area Site Analysis
Attachment A.3: Site Profiles
Attachment A.4: Operating Assumptions
Attachment A.5: Maintenance Facility Profile
Attachment A.6: Ridership Memo
Attachment A.7: Travel Time Comparisons
Attachment A.8: Capital Cost Worksheets
Attachment A.9: Operating Cost Worksheets
Appendix B - Transportation Planning Update – Planning Efforts Related to a Potential Kenmore Passenger-Only Ferry Route 138
Appendix C - Preliminary Environmental Impact Analysis 151
Appendix D - Agency Coordination Summary 185
Attachment D.1 Compilation of Meeting Notes
Appendix E - Public Outreach Summary 204
Attachment E.1 Survey Questions
Appendix F - Equity Impact Report 228
Appendix G - Implementation Plans 236

EXECUTIVE SUMMARY

The highways and roadway networks in the Puget Sound area are becoming more congested as the region grows. People are interested in new transportation options. Passenger ferries are not a new mode of transportation in the Puget Sound, in fact, the Mosquito Fleet operating in Puget Sound and on Lake Washington experienced its peak in the 1930s and '40's with over 100 passenger vessels plying local waters. In its ten year existence, the King County Water Taxi has exceeded ridership projections, providing a reliable and enjoyable travel option across uncongested waterways. As part of the ORCA program, the Water Taxi offers an affordable trip and seamless transfers to other transportation modes. When major traffic disruptions occur on roadways like the Alaskan Way Viaduct or West Seattle Bridge closures– the Water Taxi has proven it can quickly respond with increased service moving passengers around congested corridors.

While passenger-only ferry (POF) service provides reliable service and increases resiliency in the region, access to POF landings can be challenging. This requires investment in first/last mile connections to bring people to and from vessel landing sites.

This report outlines the steps necessary for implementing POF service from Kenmore, in order to address the King County Council Proviso in the 2019-2020 Adopted Budget. With the onset of the COVID-19 pandemic, however, King County Metro has experienced a reduction in ridership across all services, including the Water Taxi. Reduced ridership is due to necessary public health orders to: stay home, only travel for essential business, and maintain six feet of space between you and others when making essential trips. This current slowdown in growth will require future analysis on the long-term effects current ridership reductions will have, as will the recovery efforts and what new commute habits will and should look like as people are able to return to work. Coupled with the current economic slowdown and expected economic recession, Metro's budget will be significantly impacted, and funding for Water Taxi expansion could require alternative sources than those outlined in this report. This report's projections for ridership of a new Water Taxi service is based on the assumption that commuters will return to work as normal once the COVID-19 pandemic is over.

LANDING LOCATIONS

People living in Kenmore typically commute to areas in and around downtown Seattle, along with other employment hubs like the University of Washington. This report evaluated potential POF terminals and route options based on previous POF studies conducted in 2009 and 2015.

After a detailed evaluation of potential landing sites, two route options moved forward for consideration:

- Lakepointe to University of Washington Waterfront Activities Center (UW WAC)
- Lakepointe to Madison Park

Of the route options evaluated, the Marine Division recommends the **Lakepointe to UW WAC** route for implementation if a Kenmore POF route was to be implemented, due to the ridership potential, significant public support, and connectivity to Link light rail and Metro buses.

Service Profile

With a sailing time of approximately 30 minutes, the Kenmore POF service proposed by this report includes commute-only service (6 round trips per day) in the non-peak season and all-day and weekend service in the peak season. This service assumes two 150-passenger vessels that would serve nearly 200,000 annual riders. Service for 10 special events a year is also assumed. This service profile is based on pre-COVID-19 pandemic conditions.

Community Interest

The Marine Division received over 2,000 survey responses regarding POF service from Kenmore to Seattle. Nearly 60 percent of survey respondents said they would take a Kenmore to Seattle POF three or more times per week.

Opportunities and Costs

Like all transportation investments, the Lakepointe to UW WAC POF service has opportunities and costs that are oultined in the following table.

Opportunities of a Lakepointe to UW WAC Route	Costs of a Lakepointe to UW WAC Route
» Positive community interest. » Potential to serve over 100,000 annual riders in the first year of service. » Time competitive travel option for Kenmore to Seattle riders. » Provides a transit connection to Link light rail. » Farebox recovery with the addition of a Kenmore route (estimated at 34%) aligns with Metro goals. » Enhancement of regional resiliency with increased marine infrastructure and vessel resources.	» Capital investment required to improve Lakepointe and UW WAC and to invest in two vessels. » Annual operating subsidy required to support service. » Added cost for transit or other mobility services to provide access to UW WAC and/or Lakepointe

Next Steps

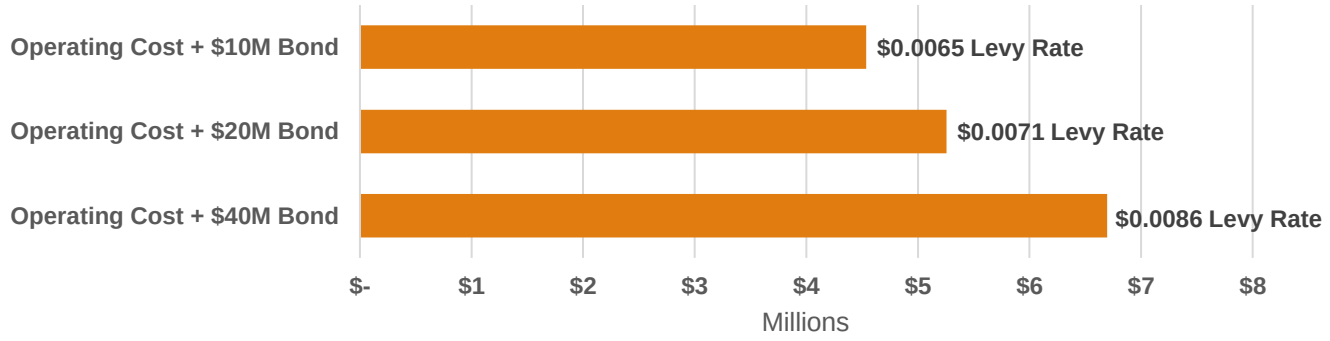
Upon Council approval for implementation, and before POF service from Kenmore can begin, the Marine Division will develop a funding strategy, initiate the environmental and regulatory process, consult with tribes, develop agreements with the University of Washington and the Lakepointe owner, and engage the community and stakeholders. The following outlines the next steps required to begin implementing a new Kenmore POF route.

Funding Options

Kenmore to Seattle POF service requires capital investment and a sustainable funding source to support operating costs. Capital investments can be funded through a combination of grants, local sources, and debt service. The Marine Division has been successful in obtaining federal and state grants for their capital investments and will continue to seek all grant funding opportunities.

Operating costs would be funded through an increase to the existing property tax levy supplemented with passenger fare revenue. All options are within the maximum allowable levy rate for ferry service in King County. The tax levy along with the annual operating costs and debt service on three different bond options is illustrated in Figure A.

Figure A: Annual Operating Cost, Debt Service and Tax Levy to Support POF Service



Current levy amount for existing routes is $0.0125 and the maximum allowable levy rate is $0.075.

Environmental and Regulatory Process

The Marine Division anticipates seeking federal funds for capital investments necessary to support service including vessels and the landing facilities at Lakepointe and the UW WAC. This will require compliance with the National Environmental Policy Act (NEPA). The Marine Division will work with the lead federal funding agency to determine the NEPA requirements.

To support environmental reviews and preliminary design, the Marine Division will conduct environmental studies. The Marine Division will consult with the Muckleshoot Indian Tribe that has treaty rights in this waterway during project development and future operations. This effort will also require continued community engagement.

Agreements with the University of Washington and Lakepointe Owner

The Marine Division met with the UW and began discussions about POF service from the UW WAC. The Marine Division will continue to discuss potential operating agreements and to work with the UW to collaborate on terminal design and operating protocols that allow UW to maintain their current activities.

The Marine Division also met with the owner of the Lakepointe property who is supportive of POF service and willing to discuss operating agreements. The Marine Division will continue discussions and form agreements with the owner to begin service from the Lakepointe location.

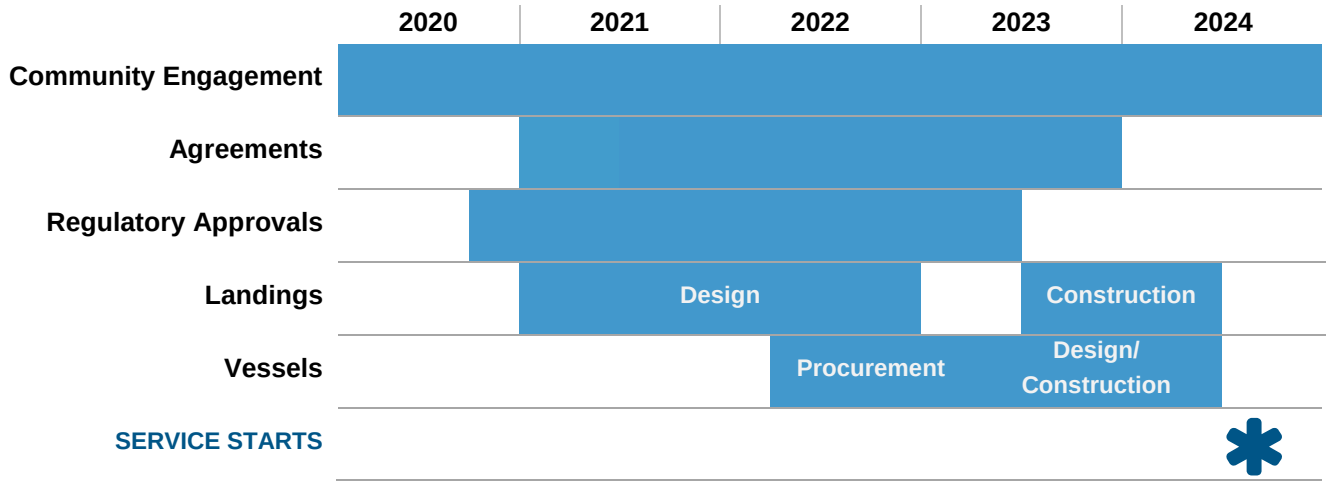
Community and Stakeholder Outreach

The Marine Division will continue community and stakeholder outreach to understand what the community's interests are when implementing POF service from Kenmore. Feedback will be incorporated in the design and implementation of this new POF service.

Schedule for Implementation

Developing agreements, regulatory compliance, along with designing and constructing the landings and vessels, is anticipated to take an additional three plus years after funding is approved. Figure B provides an example of the estimated timeframe for implementation.

Figure B: Example Implementation Timeline for a Kenmore to Seattle POF Route



INTRODUCTION AND LEGISLATIVE SUMMARY

As the Puget Sound region continues to grow, highway and roadway congestion correspondingly increase. This congestion equates to valuable time loss for area residents, by way of lengthened commute travel times, and leaves many communities eager to explore additional transportation options. Operating on the waterways, passenger-only ferry (POF) vessels are not constrained by the frequently congested road network. This separation from vehicle traffic allows POF to provide highly reliable and on time service, along with the ability to support the resiliency and emergency response capabilities of the region.

King County operates two POF routes, including the West Seattle Water Taxi and the Vashon Island to downtown Seattle Water Taxi. These routes continue to exceed performance expectations, with increasing ridership, excellent reliability and on-time performance, farebox recovery above targets, as well as over 700,000 satisfied annual customers. Riders enjoy a scenic, often more direct trip, with an available seat, restrooms, and an over 98% assurance the trip will be completed on-time. However, POF service isn't without its challenges. Located on waterfront properties, ferry terminals are often on the fringe of the existing transportation network "spine" served by fixed or high capacity transit. This challenge can be overcome through thoughtful placement of POF landing sites, and consideration and funding of improvements to infrastructure and services to help people reach terminals.

Kenmore is located on the northern edge of Lake Washington, offering a geographic opportunity for POF service to provide another transit connection to Seattle. Potential Kenmore POF service has been studied a number of times in the past decade, but, thus far has not been implemented. Even as conditions continue to shift and change, the public continues to be interested in new and innovative transportation options. This ever-changing transportation and demographic environment in King County led the King County Council to include a Proviso[1] in the 2019-2020 King County Adopted Budget for the Marine Division to develop a Kenmore POF route implementation report. The report addresses where it would land, how it fits within the current and planned transportation network, what the community is interested in, and next steps for implementation. This report is the response to that Proviso.

[1] Ordinance 18835, Section 107 Proviso 1

LEGISLATIVE SUMMARY

The Proviso specified key elements to include in the report. Table 1 provides a cross reference for each of those elements, the sections that address each proviso item, and where it is found in this document.

Table 1: Proviso Element, Section, and Location

Proviso Element	Relevant Section	Page Number(s)
A. An update on the assessment of facilities, ridership projections, and capital and operating cost estimates provided in the 2015 ferry expansion options report.	» Approach and Findings » Appendix A: Capital and Operating Program Update	» Pages 13 - 20 » Appendix A
B. A discussion of planning efforts underway or needed to implement the route.	» Kenmore Transit Options; » Appendix B: Transportation Planning Update - Planning Efforts Related to a Potential Kenmore POF Route	» Pages 9 - 12 » Appendix B
C. An environmental impact analysis.	» Approach and Findings » Appendix C: Preliminary Environmental Impact Analysis	» Page 23 » Appendix C
D. A summary of coordination with local agencies, including potential lease arrangements for facilities.	» Recommended Route and Next Steps » Appendix D: Local Agency/Owner Coordination: Kenmore POF Route	» Pages 24 - 30 » Appendix D
E. A discussion of options for funding implementation of the route, including identifying grant opportunities.	» Next Steps » Appendix G: Kenmore Implementation Plan	» Pages 28 - 29 » Appendix G
F. A summary of public outreach undertaken.	» Approach and Findings » Appendix E: Public Outreach Summary for a Potential Kenmore to Seattle POF Route	» Page 20 » Appendix E
G. A description of next steps for moving forward.	» Next Steps	» Pages 28 - 31

KING COUNTY GUIDING PRINCIPLES

King County has established a strategic plan and vision that define the government's guiding principles, and outline goals and objectives to guide its operations and plans for future growth.

Mobility is one of the County's goals that Metro Transit Department (Metro) provides and strives to continually improve. Equity and sustainability are the objectives of Metro's Mobility Framework, recently adopted by the King County Council. The Mobility Framework was developed to provide a foundation for how Metro will analyze, change, and grow its transportation services to better meet the needs of priority populations and become more sustainable. Before Metro invests in new transportation service or initiates modifications to existing service, a review of how these service changes align with the guiding principles set forth in the Mobility Framework is conducted. This section illustrates how new POF service supports Metro's Mobility Framework.

METRO'S MOBILITY FRAMEWORK

The Metro-developed Mobility Framework provides guiding principles that serve as the foundation of the department's decision-making. Table 2 outlines the principles that apply to new POF service and how POF service achieves them.

Table 2: Guiding Principles and Aligning New POF Service

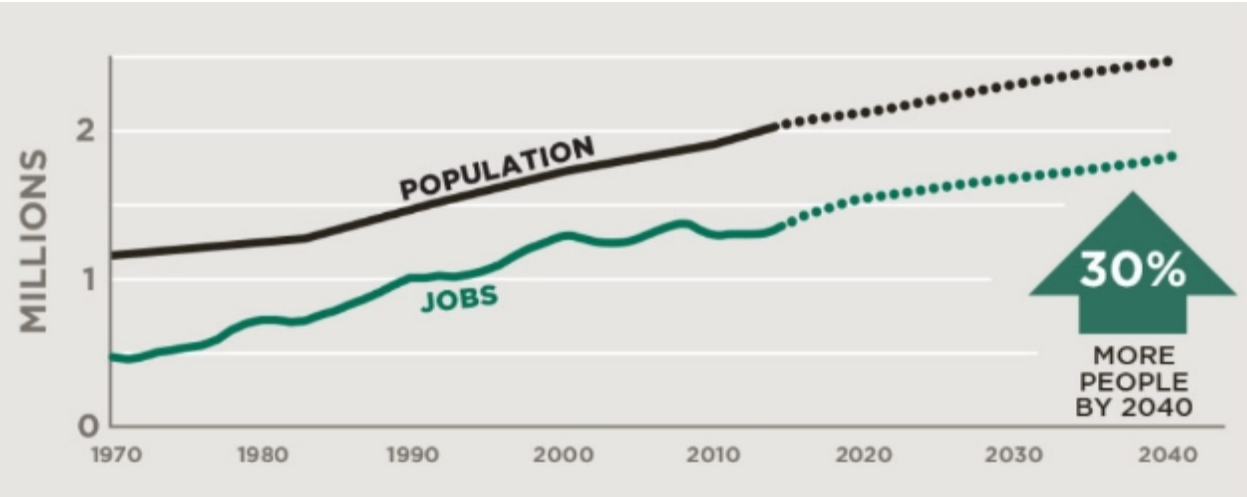
Guiding Principle	Alignment with POF Service
» Invest where needs are greatest	» Providing connections to this POF service would enable priority populations to have additional modes of service, thereby investing in accessibility for those who need it most.
» Address the climate crisis and environmental justice	» In alignment with all public transit modes, a goal of POF service is to reduce the number of single-occupant vehicle trips and reduce carbon emissions. » POF vessels would be powered using alternative fuel solutions where feasible. » POF vessels operating on regional waterways avoiding impacts of traffic congestion (noise, emissions, etc.) on communities who already experience high volumes of traffic.
» Innovate equitably and sustainably	» The Marine Division seeks innovative policies, connections, and fare structures that provide the opportunity for everyone to use POF services. » The Marine Division currently seeks innovative approaches in vessel technologies and green building standards for terminal facilities, and will continue to do so with new service. Current innovative practices include using biodiesel fuel technology and design-build practices for capital projects.

Guiding Principle	Alignment with POF Service
» Ensure safety	» Current POF services provide an exceptional safety record for both passengers and its workforce, and the Marine Division will implement high safety standards with any new service.
» Encourage dense, affordable housing in urban areas near transit	» The City of Kenmore is projected to experience a 10 percent growth in population and 30 percent growth in jobs by 2030, and POF service would connect more people to this area. » POF service would provide another mode of transit to serve transit-oriented development areas in the City of Kenmore designated for dense, urban development.
» Improve access to mobility	» The Marine Division, as part of Metro, continues to explore new, innovative ways to connect people to POF service. » POF service increases mobility alternatives for commuters.
» Provide fast, reliable, integrated mobility services	» POF service uses waterways and is not encumbered by traffic congestion, resulting in high reliability. » Current King County POF services are highly reliable, completing 99% of scheduled trips and achieving 98% on-time performance. » A key evaluation criteria when exploring new POF service is to focus on opportunities for access and connectivity to regional transit modes
» Support our workforce	» New POF service would provide more routes and work hours for Marine Division staff that could result in improved crew schedules and opportunities for advancement.
» Align our investments with equity, sustainability and financial responsibility	» Completing an analysis of potential landing sites and routes results in recommending the new POF route that would be most equitable, sustainable, and financially responsible of the options reviewed.
» Engage deliberately and transparently	» Beyond the public survey and stakeholder meetings conducted in response to this Proviso, the Marine Division will continue to engage with communities on existing and potential POF service.

KENMORE TRANSIT OPTIONS

King County has experienced significant population growth in the past decade—adding over 300,000 people between 2010 and 2018 (US Census Bureau), and this growth is anticipated to continue over the long term. Prior to the COVID-19 pandemic, the Puget Sound Regional Council (PSRC) estimated that King County would add another 122,000 people by 2030. Similarly, the City of Kenmore is projected to see a 10% increase in population and an over 30% increase in jobs by 2030 (PSRC, Land Use Vision Dataset). Figure 1 illustrates the historic and projected population and job growth trends in King County.

Figure 1: Population and Growth in King County



Source: King County Metro

This report was developed with a number of highly favorable growth assumptions to ridership and revenue, however, the emergence of the COVID-19 pandemic in early 2020 and the associated, and potentially prolonged, economic recovery has created an increased and potentially substantial, financial shortfall for transit funding. In addition, transportation demand has changed very rapidly with steep drop-offs in transit ridership in response to public health recommendations to slow the spread of the virus. Ridership is expected to rise as recovery continues, but there is much uncertainty around future changes in travel, such as more widespread adoption of teleworking. If customers do not return to transit or if transit is not ready to meet customer demand, congestion and traffic could quickly meet or exceed congestion levels experienced pre-COVID-19. There are many immediate challenges and uncertainties that King County will face in responding to and recovering from the pandemic. However, long-term expectations for growth and population in the region remain and Metro must stay ready to meet that growth.

A recovering economy and increase in regional population, combined with changes to travel patterns, will likely continue to put stress on this region's transportation network. The result will be more people traveling within the existing network—by car, bus, or train—many on the same road right-of-way. Not only does growth mean more people are spending their time in traffic congestion, it also increases greenhouse gas emissions that contribute to climate change. In response to this growth and regional climate change initiatives, regional planning organizations and local agencies have developed plans to expand and enhance mobility options. While the immediate funding crisis

will result in service and program reductions, the long-term goals of supporting sustainable communities and travel through a robust transit system remain.

People are looking for convenient, fast, and comfortable transit options that are a good value. This section explores the future transportation network in King County, upcoming transit options in Kenmore, and how POF service from Kenmore to the UW WAC compliments these options. Appendix B provides a full analysis of existing transit plans and additional plans needed to implement Kenmore POF service.

Transportation Network in King County

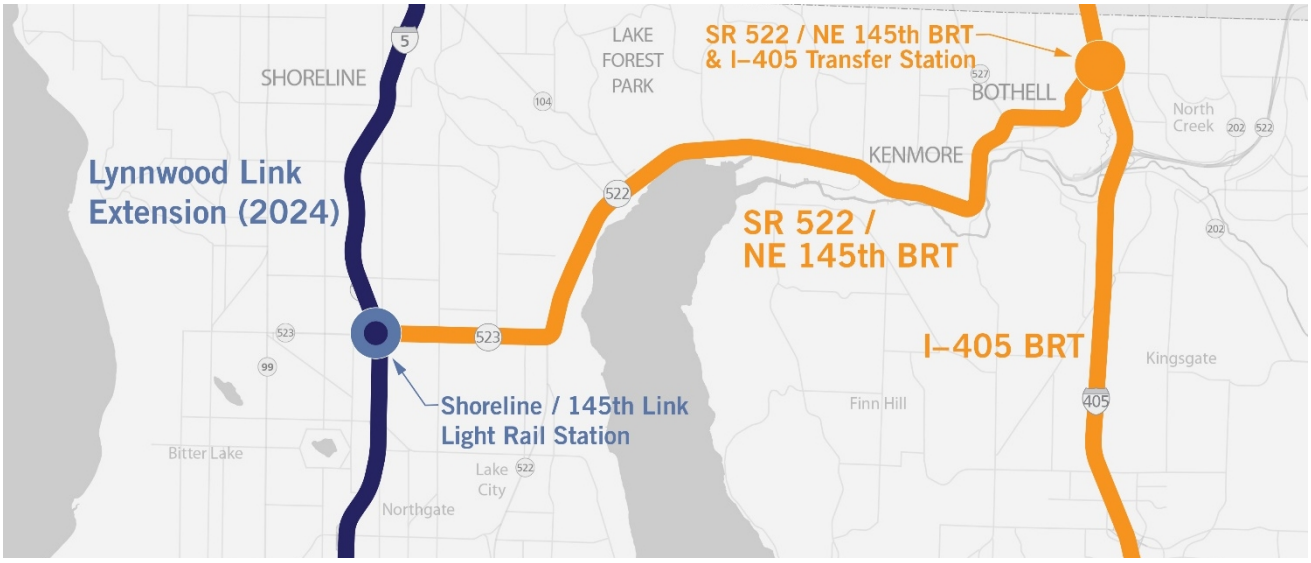
Transit agencies around the King County region are investing in a transportation network that will improve mobility options over the next 20 years, with projects including:

- Expanding Link light rail in the north, south, and east to serve other King County communities; and expanding to serve high-demand areas within the City of Seattle
- Adding RapidRide and Stride bus rapid transit (BRT)
- Adding POF service on Puget Sound to connect the Kitsap Peninsula with downtown Seattle.
- Extending commuter rail service.

Kenmore Transit Options

The Kenmore area is currently served with local and peak-only Metro services, and Sound Transit Express Bus that provides frequent service between Woodinville and Seattle. Kenmore is served by Sound Transit's planned SR522 Stride BRT line. This service will connect people to the Shoreline/145th Link light rail station, as well as the I-405 BRT service that will provide BRT service between Lynnwood and Burien. Based on these improvements, the PSRC's Vision 2050 regional planning document identifies Kenmore and Bothell areas as high-capacity transit communities that are considered hubs for employment and population growth. Figure 2 highlights these transit improvements near Kenmore.

Figure 2: Transit Improvements in Kenmore by 2024



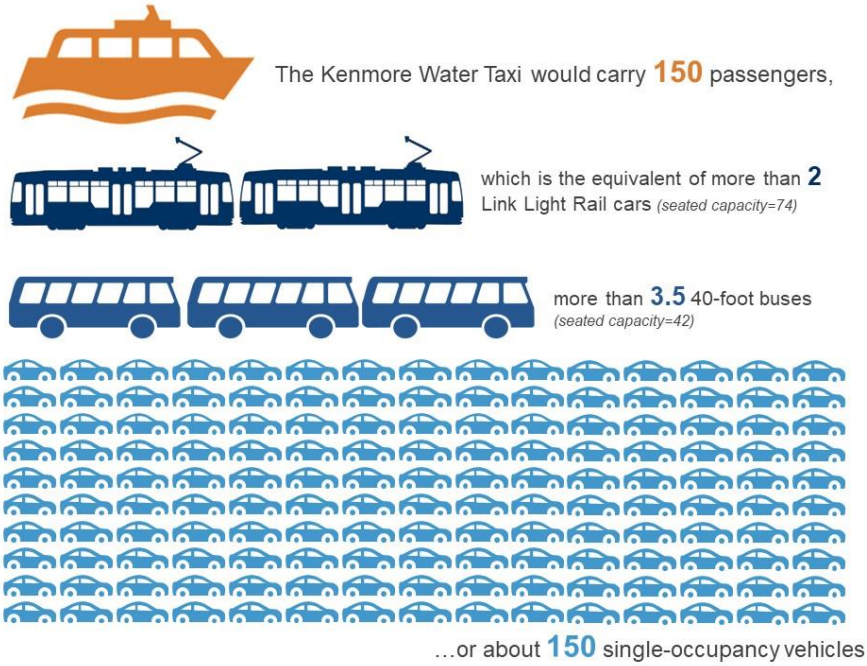
Role and Opportunities of POF Service

The addition of POF service in Kenmore will increase transit choices for riders, add more transit capacity to the area, and add transportation resiliency to the north end of Lake Washington. The City of Kenmore has long supported a new POF service, and previous ferry expansion studies in 2009 and 2015 have indicated that a POF route from Kenmore would generate the necessary ridership and revenue to align with the financial goals of the Marine Division.

Increasing Transit Capacity

POF service on Lake Washington provides another opportunity for people to choose transit for their travel related needs, in lieu of their personal vehicles. The POF vessels considered for service on Lake Washington would provide capacity and seats for up to 150 passengers. This capacity is the equivalent of more than three 40-foot buses (seated capacity). Figure 3 illustrates the seated capacity of a POF vessel compared to the seated capacity of other modes of transportation.

Figure 3: POF Passenger Capacity



To take advantage of the capacity of POF vessels, passengers need to be able to easily access the landing sites. Opportunities to improve access to and from POF landings include:

- Improving and increasing bike and pedestrian infrastructure.
- Dedicating adequate curb space for passenger pickup and drop-off via ride share or other on-demand transportation options.
- Providing connections to and easy transfers from existing transit options, or funding and providing new transit options where there is not existing service.
- Providing parking for single occupant vehicles, shuttles, and van pools.

Resiliency

Implementing POF service in Kenmore would increase regional resiliency by providing more POF capacity during emergency situations and significant traffic events. As an additional mode, POF provides overall system flexibility and adaptability along key transportation corridors.

Emergencies and Natural Disasters

The Marine Division is an integral part of the emergency preparedness network, partnering with regional response agencies and participating in numerous emergency and security training exercises. In 2015 alone, the Marine Division performed five water rescues in Puget Sound. In the case of emergencies and natural disasters, POF vessels can bypass traffic or damaged roadways, travel at relatively high speeds, maneuver in close quarters, navigate in relatively shallow water, and moor at a variety of locations. In doing so, they are able to transport first responders and key supplies to where they are most needed. Going where cars cannot, they can also play a key role in evacuating the public during emergencies.

Significant Traffic Events

More routine than emergencies, events such as roadway closures, construction, and automobile accidents are all events that can cause significant traffic delays that negatively impact the efficiency of the regional transportation system. An example of this was the recent Alaskan Way Viaduct closure, during which the Marine Division increased West Seattle Water Taxi service to continue to keep people connected during the closure. Similarly, the West Seattle Water Taxi can help mitigate the West Seattle Bridge closure by increasing service and providing another mobility option for people traveling to and from West Seattle. With its numerous construction and development projects, Seattle would benefit from the additional flexibility provided by expanded POF services.

Water Taxi with the West Seattle Bridge in the Background

APPROACH AND FINDINGS

The response to this Proviso used a stepped approach. This methodology allowed for an assessment of the many characteristics of POF service, as well as the path toward implementation, and clearly identifies opportunities and constraints of POF service.

Step 1: Identify Potential Landing Sites

Step 2: Assess Landing Sites

Step 3: Evaluate Route Options

Step 1 included identifying, potential POF landing sites within Kenmore City limits, as well as potential destination landing sites. This step included review of previous studies, and assessment of current travel patterns, to identify where people are travelling to and thereby, where a potential POF landing site should be located.

As part of step 2, the Marine Division met with local agencies that own potential POF landing sites to discuss the opportunities and challenges of each location. Included in this step was a detailed analysis of potential POF landing sites for land use consistency, connectivity and accessibility to adjacent communities, navigational considerations, and infrastructure improvements required to determine the rough order of magnitude (ROM) capital costs.

The final step, step 3, included evaluating route options and recommending a route for implementation. This included developing route profiles along with potential service levels to estimate ROM operating costs, potential ridership and revenue. This step also involved conducting a preliminary environmental impact analysis, gauging community interest through a public survey, and completing an Equity Impact Review.

The following sections summarize the findings from each step of the review process.

STEP 1. IDENTIFY POTENTIAL LANDING SITES

Metro's guiding principles laid the groundwork for POF landing site identification, along with identifying options with compatible land uses that could connect to public transportation. This led to the review of land use on the Lake Washington shoreline, focusing on publicly owned land or privately-owned land that was zoned for commercial and/or mixed-use development that would be compatible to and potentially serve as a destination for future riders. This type of property is very limited on the Lake Washington shoreline, with private, residential properties making up the majority of the shoreline properties.

What Kenmore sites were previously studied?

In Kenmore, POF landing site identification expanded upon the 2009 and 2015 POF studies that reviewed POF routes on Lake Washington. The potential POF landing sites remain the same as documented in earlier studies and include Log Boom Park and the Lakepointe development site. While the landscape and demographics surrounding these sites have continued to see change and growth, these landing locations are primarily in the same condition as observed previously.

Where are people in Kenmore traveling to?

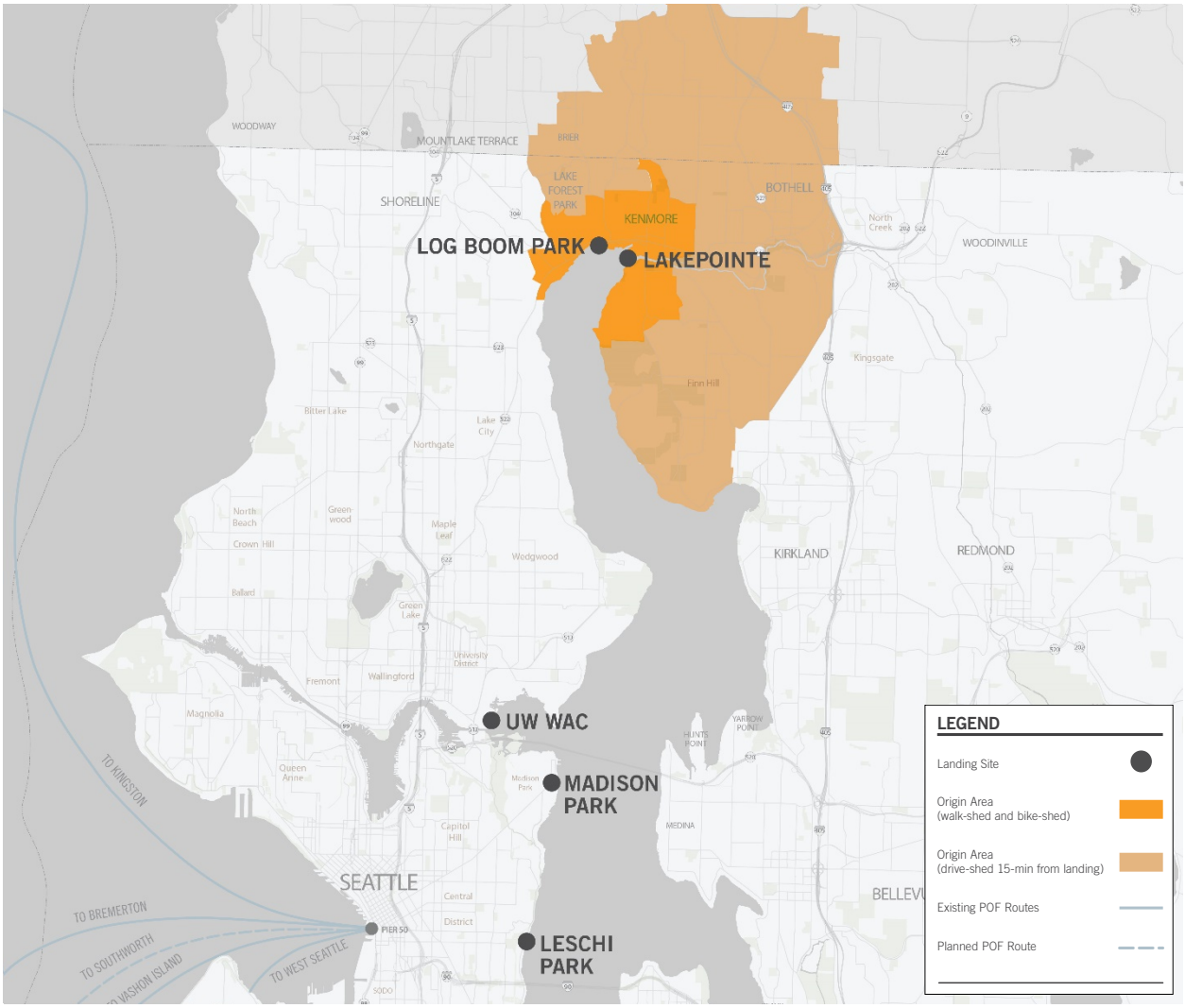
To determine destination landing sites from Kenmore, a market area analysis was completed to illustrate where people in Kenmore typically travel for work. This analysis indicated downtown Seattle, the University of Washington (UW) area, and Bellevue and Redmond as key destinations for Kenmore commuters. While Portage Bay was considered based on its proximity to UW, a specific landing site there was not identified for this report. Redmond is located inland where a POF could not provide service. The Bellevue employment center is located inland, is separated from the waterfront by a steep grade, and will be served by Link light rail in 2023. That left a Seattle connection as the destination most warranting further assessment.

Three potential POF landing sites were identified in the City of Seattle for further review:

- University of Washington Waterfront Activities Center (UW WAC)
- Madison Park
- Leschi Park

Each site has been assessed in past POF studies, and each has their own unique opportunities and challenges which are outlined in the following sections. Figure 4 illustrates the potential landing sites in Kenmore, the 15-minute driveshed and walk- and bike-shed from the potential Kenmore POF landing sites, and the potential POF landing sites in Seattle that were reviewed in this report.

Figure 4: Potential Landing Sites in Kenmore and Seattle



STEP 2. ASSESS LANDING SITES

There are a number of factors to consider when determining which landing sites are best suited for potential POF routes. Similar to other transit modes, POF landings must be easily accessible and convenient for people to consider using POF service. Potential POF landing sites should also be consistent with the land use and environmental regulations. Along with landside factors, POF vessels must be able to safely maneuver to the dock and allow passengers to safely load and unload the vessel. The following sections highlight key characteristics of each potential landing site in Kenmore and Seattle, and identify which sites were carried forward as part of a POF route. Full analysis of these locations can be found in Appendix A.3.

In **Kenmore**, the Lakepointe development site provides the most potential for serving passengers and meeting the operating needs of a POF service. However, those opportunities would be met with the highest capital cost for infrastructure investment as the property is undeveloped. The Lakepointe property owner has expressed interest in a future POF landing at this site that is compatible with a future mixed-use development, but the timing of redevelopment is unknown. As a result, there are opportunities for varying levels of improvement options that remain flexible and can be phased as the property develops. The property has space to accomodate a POF landing facility and for overnight moorage and maintenance of vessels onsite. Due to neighboring industrial uses there are challenges to the accessibility to and from this site. See Appendix A: Capital and Operating Cost Update for details on the Kenmore sites.

Log Boom Park has in-water and landside infrastructure, but each of these elements would need investment to serve a new POF route. Moreover, Log Boom Park is not suitable for overnight moorage and maintenance of vessels, requiring vessels to use an off-site facility at the Lakepointe site for these activities. Additionally, accessibility at Log Boom Park is limited because of the steep and narrow roadway entering the park, limited parking, a narrow dock, and lengthy walk for passengers to access the vessel.

It is because of these challenges and the opportunities presented at the Lakepointe site, that Log Boom Park was not included in the next step of review. Table 3 provides a summary of the assessment, including proposed infrastructure, ROM capital costs, challenges and opportunities for Kenmore's two potential POF landing sites, as well as the moorage/maintenance facility.

Table 3: Potential Kenmore POF Site Summary

	Infrastructure Needs	ROM Capital Cost	Challenges	Opportunities
Lakepointe POF Service Terminal	» New float for POF service » Uplands improvements	~$10 M	» Site development timeframe unknown » Soil contamination	» Onsite moorage/ maintenance facility » Land use compatibility » Accessibility » Flexibility
Log Boom Park POF Service Terminal	» Pier improvements » Uplands improvements	~$9 M	» Accessibility » Offsite moorage/ maintenance at Lakepointe	» Existing infrastructure » Adjacent to Burke Gilman Trail
Lakepointe POF Moorage/ Maintenance Facility	» New moorage float » Maintenance facility » Uplands improvements	~$8 M	» Site development timeframe unknown » Required to support POF service at either landing site » Soil contamination	» Only location on north end of Lake Washington for overnight moorage » Accessibility » Potential for onsite POF service landing

Seattle landing site opportunities are all within public ownership including UW, Washington Department of Natural Resources (DNR), and City of Seattle Parks and Recreation. The UW WAC is the preferred site location due to it being a destination in and of itself, drawing on its own demand as a major university campus, a venue for intercollegiate sporting events, and the site of a large teaching hospital. The UW WAC also provides a direct, frequent, and reliable connection to downtown Seattle and points north of UW via the Link light rail connection.

The Madison Park location requires dock and in-water improvements to the existing infrastructure. This location could provide a connection to downtown Seattle with additional investments in connecting bus transit.

Leschi Park was removed from consideration after discussions with the City of Seattle Parks and Recreation – staff explained that they view POF service as incompatible with planned in-water improvements. Therefore, two Seattle landing sites were carried forward for route analysis. Table 4 provides a summary of the assessment including proposed infrastructure, ROM capital costs, challenges, and opportunities for potential Seattle POF landing sites.

Table 4: Potential Seattle POF Landing Sites

	Proposed Infrastructure	ROM Capital Cost	Challenges	Opportunities
UW WAC	» Replacement float » Uplands improvements » Longer gangway	~$8 M	» Navigational (small watercraft) » Partnerships	» Connectivity with light rail and bus » Proximity to UW, UW Medical Center
Madison Park	» New float » Pier improvements » Uplands improvements	~$8 M	» Connectivity to downtown Seattle » Navigational (exposure)	» Potential connectivity (If BRT is expanded beyond current 2040 plan)
Leschi Park	» Minor pier improvements » Uplands improvements	~$4 M	» Connectivity to downtown Seattle » Incompatibility with Seattle Parks and Recreation improvements	» Existing infrastructure

STEP 3. EVALUATE ROUTE OPTIONS

The final step in analyzing the feasibility of future POF routes is developing route and operational profiles within underlying service level assumptions. With these operating profiles, routes were evaluated based on potential ridership, annual operating expenses, community interests, alignment with equity goals, and the potential environmental impacts. Based on this evaluation, the Lakepointe to UW WAC route was recommended for implementation.

What would POF service look like?

Based on the landing site assessment, operating profiles for Lakepointe to the UW WAC and Lakepointe to Madison Park routes were developed. These profiles outline the anticipated service levels to determine the number of vessels and the vessel speed required to deliver the service, crew requirements, and fuel consumption estimates. Service would be provided as follows.

- **Non-peak season (October - March):** Commute service with three round-trip sailings in the morning and three round-trip sailings in the afternoon, plus nine hours of service on Saturdays.
- **Peak season (April - September):** Expanded service includes weekday commute service, plus mid-day, evening, and weekend service.

The Lakepointe to Madison Park route is about five minutes faster (about 25 minutes one-way) than the Lakepointe to UW WAC route, assuming the vessels travel at approximately 28 knots in unrestricted areas. Table 5 provides the estimated one-way and total roundtrip travel times for each POF route.

Table 5: Approximate One-way and Round-Trip Times

	One-way Travel Time	Total Round-trip Time*
Lakepointe to UW WAC	Approx. 30 minutes	Approx. 70 minutes
Lakepointe to Madison Park	Approx. 25 minutes	Approx. 60 minutes

**Includes up to 10 minutes on either end of route transit to load and unload passengers*

How many people would ride POF?

Comparing existing transportation options for people traveling between Kenmore and downtown Seattle, the potential POF route indicates the Lakepointe to UW WAC route would be similar or slightly faster than existing transit options. Refer to Appendix A Capital and Operating Cost Update, Attachment A.5 for assumptions made for travel time comparisons.

With a competitive travel time and direct connection to the UW destination point, the Lakepointe to UW WAC route is estimated to serve more passengers than a Lakepointe to Madison Park route. Table 6 provides the estimated annual ridership for a Lakepointe to UW WAC and a Lakepointe to Madison Park route from the ridership forecast. The ridership forecast, again conducted prior to the COVID-19 pandemic, is provided in Appendix A Capital and Operating Cost Update, Attachment A.6 Ridership Memo.

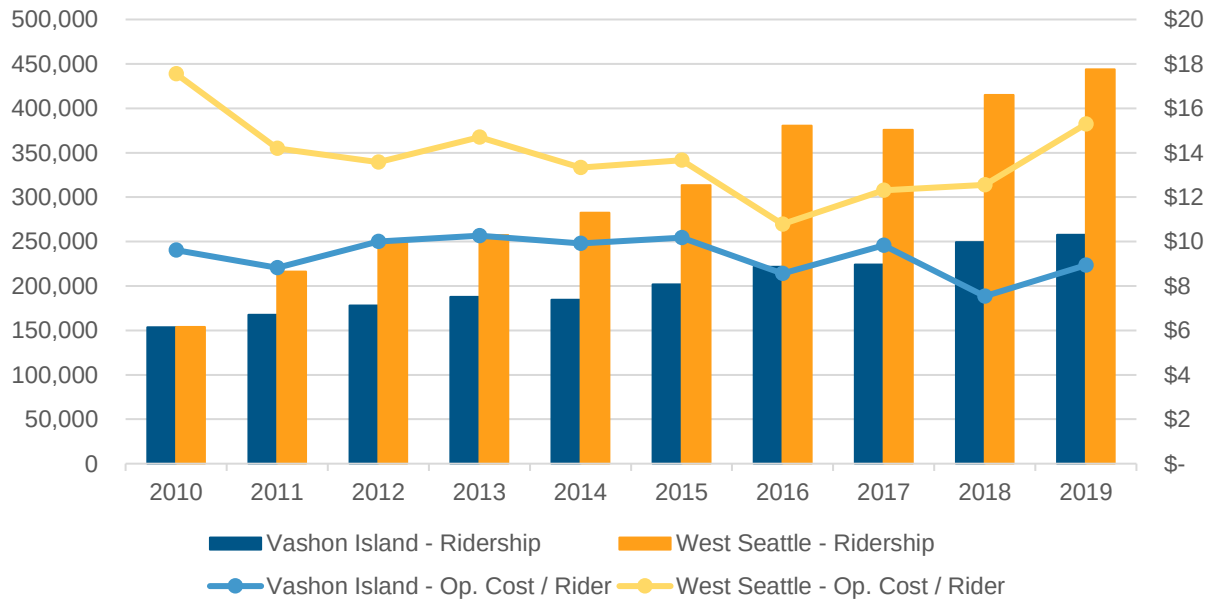
Table 6: Annual Ridership Forecasts for 2019, 2025 and 2040 (Rounded up to nearest 5,000)

	2019	2025	2040
Lakepointe to UW WAC	115,000	200,000	265,000
Lakepointe to Madison Park	40,000	65,000	95,000

How much would it cost to operate?

With ridership increasing over the past 10 years of service, the West Seattle and Vashon Island Water Taxi routes maintain an average operating cost per rider that is between $11 and $13. Figure 5 shows the operating cost per rider and ridership for the Vashon Island and West Seattle routes for the previous 10 years, demonstrating the growth in ridership as service reached maturity.

Figure 5: Historical Operating Cost per Rider vs. Ridership



Comparing the 2019 estimated performance of the Lakepointe to UW WAC route with the 2019 performance of the existing Water Taxi system, the Lakepointe to UW WAC route will cost more per rider,but will still achieve the Marine Division's system-wide farebox recovery goal of 25%. Table 7 shows the estimated 2019 for existing and new service.

Table 7: 2019 System-wide Estimated and Actual Performance Metrics

System Totals		Annual Operating Costs**	Annual Ridership	Farebox Recovery	Operating Cost per Rider
2019	Existing Water Taxi System (Vashon and West Seattle Routes)	$8.6 M	700,000	39%	$12.23
	Lakepointe to UW WAC*	$3.7 M	115,000	15%	$32.17
	Total System with Lakepointe to UW WAC	$12.3 M	815,000	32%	$15.09

**Estimated costs for Kenmore service start-up expressed in 2019 dollars.*
***Operating costs do not include debt service.*

What is the community interested in?

An online survey was conducted to gather input on the feasibility of POF service from Kenmore to Seattle, and to gain a better understanding of the public's preferences between potential route options. During this approximately two-week surveying effort, rider bulletins were sent to three Metro bus routes, emails were sent to local community-based organizations and partners, and the survey was shared via partner social media channels and through paid social media ads and boosted posts. This approach generated over 2,000 survey responses and over 800 comments.

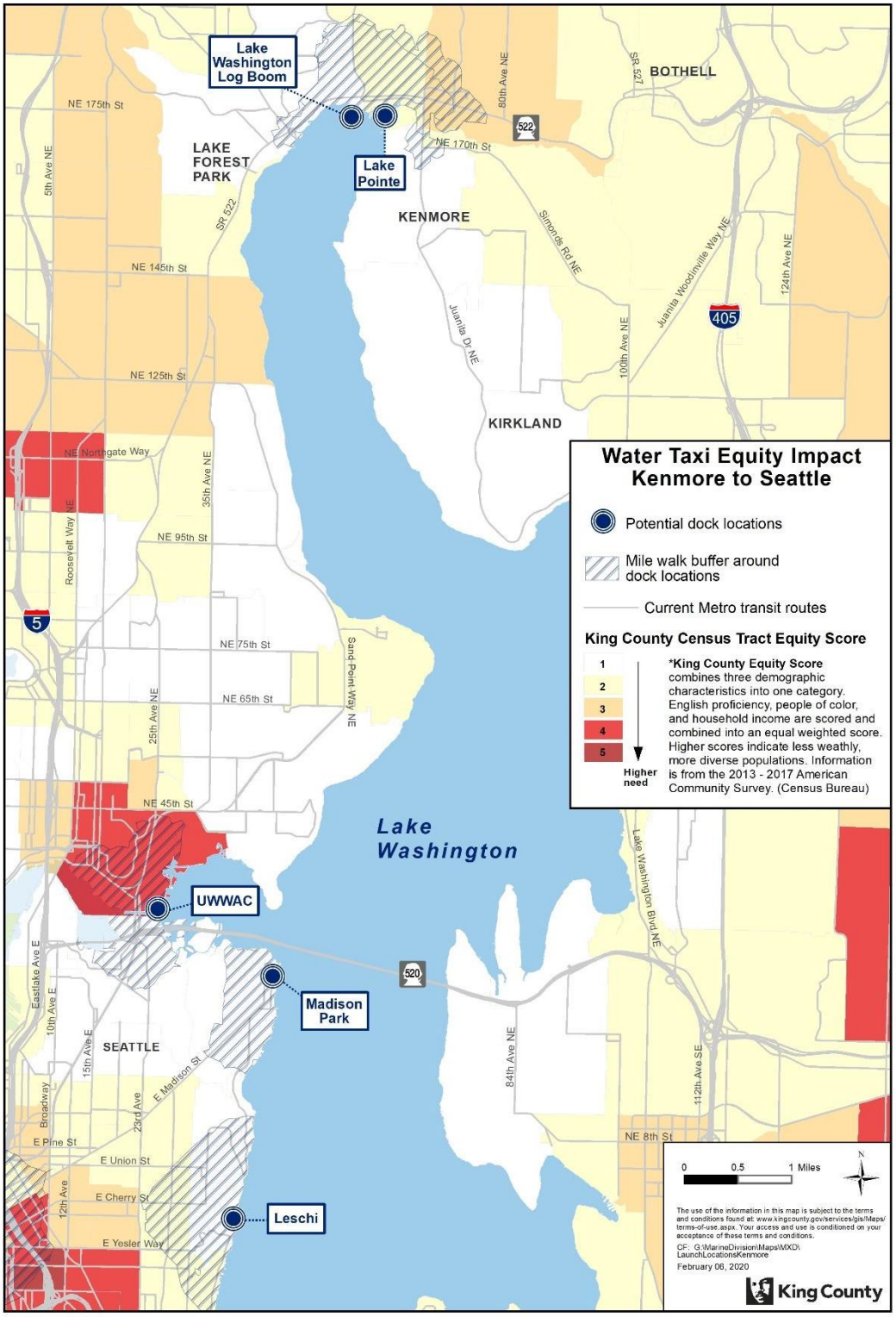
The survey responses were generally positive, indicating a significant majority of respondents (nearly 60%) would take a POF three or more times per week. Additionally, a majority of people that responded to the survey indicated they are traveling for work Monday through Friday. People also expressed interest in driving or walking/biking to get to the landing. Of the landing site options, the UW area sites (UW WAC or Portage Bay) were the preferred landing locations.

How do the POF routes align with equity goals?

To understand the equity impacts of the proposed POF route between Kenmore and UW, King County performed an Equity Impact Review (EIR) of the service. The EIR process merges quantitative and qualitative methods and is used to inform planning, decision-making, and implementation processes throughout King County. Based on the EIR, found in Appendix F, the POF routes would be serving an area that already has transit options available. POF service would provide a benefit and added amenity in Kenmore, but in general, these areas have low equity scores. A POF route to UW WAC would provide another transit option for an area designated to have a higher presence of priority populations in the UW area. Figure 6 illustrates the equity scores associated with potential landings.

To improve access to POF service, it should be coupled with connections to time- and cost-competitive land-side service for all potential users, and by offering both peak commute and off-peak service. At both terminal locations, there are challenges with access to the waterfront sites, so improving walking, biking, and transit access will need to be considered.

Figure 6: Equity Impact Review for Potential POF Service



What are the potential environmental impacts of POF service?

Each landing site associated with POF service would require in-water and upland infrastructure and would need to meet federal, state, and local environmental regulations prior to starting service. At the route level, north Lake Washington narrows near Kenmore, which could increase the risk of additional wake impacts along the shoreline. This risk could be mitigated by maintaining a vessel travel path in the middle of the lake, maximizing the distance from each shoreline. The following work would further define impacts and mitigating measures as part of the environmental review in the design phase of project implementation:

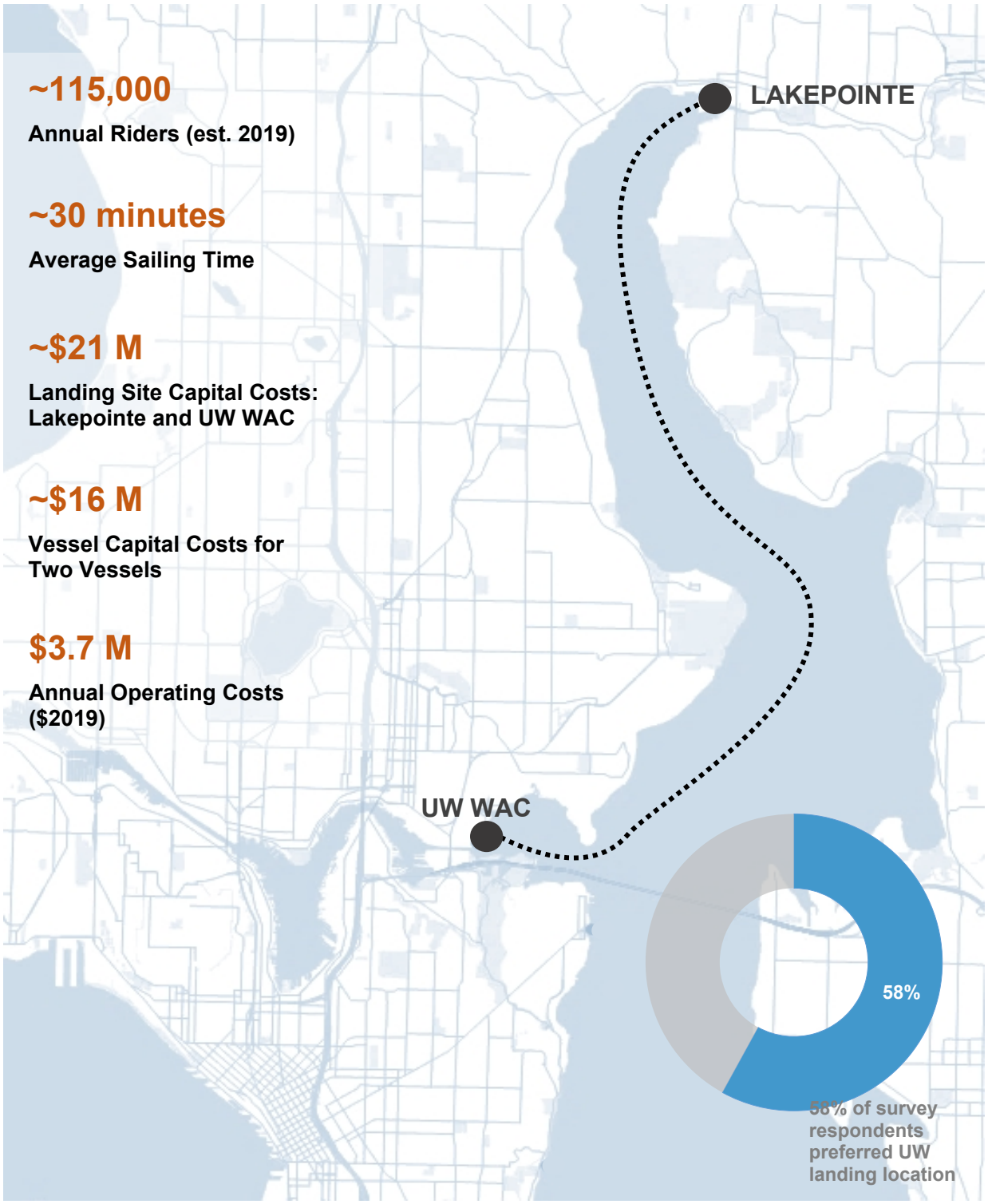
- Conduct a wind-wave and vessel wake energy assessment to quantify existing wave climate, which can generate sediment transport along the shorelines and determine threshold for Lake Washington POF wake wash criterion.
- Review fixed and floating structures, which extend well beyond the average structure from the shoreline, to determine tolerance for vessel wake wash.
- Review recreational activity on the lake around Kenmore, Magnuson Park, and the UW WAC landing sites to define operation protocols and to minimize impacts to recreation.
- Delineation of Kenmore Air take-off and landing zones.
- Evaluate potential impacts to threatened and endangered fish species at landing sites and stream mouths.

The Marine Division will consult with the Muckleshoot tribe early in the environmental review process.

Carbon emissions produced would depend on the vessel propulsion system chosen. The Marine Division currently uses biodiesel to power vessels, which lessen environmental impacts. The division would explore the latest vessel propulsion technologies as well as alternative fuel/energy systems when procuring new vessels. For more detail regarding potential environmental impacts of service, see Appendix C.

RECOMMENDED ROUTE

Based on the ridership potential, community interest and projected financial performance, the Marine Division recommends the Lakepointe to UW WAC route for implementation if a Kenmore POF route was to be implemented.



Opportunities

Connecting people from the Kenmore area at Lakepointe to the UW WAC will place riders within walking distance of the University of Washington Station transit hub where they can connect onward to the Link light rail or a variety of bus options. Although some Kenmore residents may use the POF service to connect on to downtown Seattle, the UW area is a major destination for many who would use this POF service. The service will also provide another option for students travelling between the UW Seattle campus and the UW Bothell campus if land-side mobility connections are available in Kenmore.

Challenges

The waterway near the UW WAC landing site is frequently used by the UW rowing team, recreational boaters and others. Consistent with the Marine Division's goals of zero accidents, specific operational protocols would be developed to ensure the safety of all waterway users.

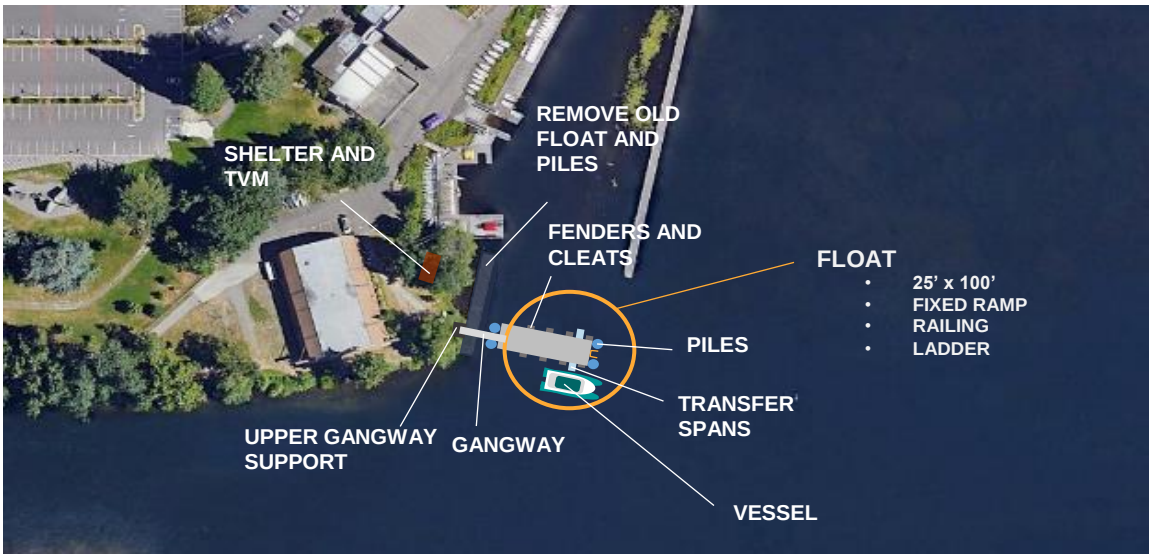
The waterway in and around the Lakepointe location is used by Kenmore Air's pilots as a taxiing, take-off and landing zone. Like on the UW end of the route, the Marine Division would develop specific operational protocols for this specific situation.

UW WAC Landing

The UW WAC landing requires upgrades to the existing facilities, to accommodate POF service while continuing to encourage the recreational boating around the site. In-water improvements would replace the current float with a new float. Walkways and ADA access to the facility would need to be improved. A passenger waiting shelter and ticket vending equipment for passengers would also need to be added.

To develop the UW WAC into a POF landing, the Marine Division would continue working with the UW to collaborate on a physical design and operating protocols that allow UW to maintain their current activities. Figure 7 provides a concept for a UW WAC POF landing.

Figure 7: Concept of Potential UW WAC POF Landing Facility

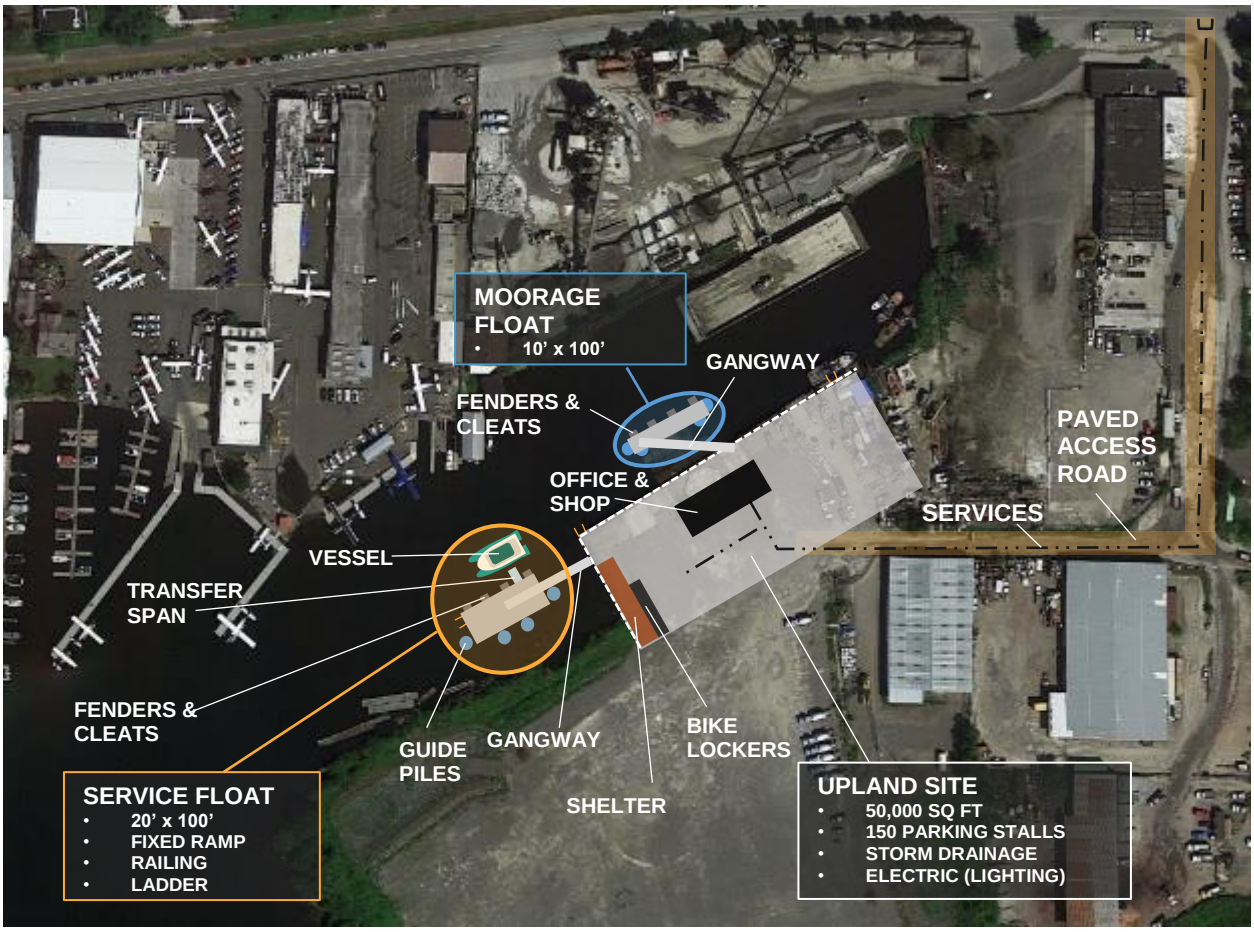


LAKEPOINTE LANDING

The Lakepointe site is undeveloped and requires significant improvements for a POF landing. In-water infrastructure improvements would include a float for POF service, as well as a moorage and maintenance float for the vessels overnight tie-up. Uplands improvements include site ingress and egress, paved or gravel lot upgrades, and a maintenance shop/office.

In order to move toward implementation of the route, the Marine Division would continue discussions with the property owner to develop a use agreement to lease the property and ensure the POF landing improvements would complement future development of the site. Figure 8 illustrates a concept for a POF landing facility at Lakepointe and the accompanying moorage and maintenance facility.

Figure 8: Concept of Potential Lakepointe POF Landing Facility and Moorage/Maintenance Facility



PERMITTING

Each landing would require review and approval from the following agencies.

UW WAC

- Federal: U.S. Army Corps of Engineers and National Marine Fisheries/U.S. Fish and Wildlife
- State: Washington Department of Fish and Wildlife, Washington State Department of Natural Resources, Washington Department of Archeology and Historic Preservation
- Local: City of Seattle

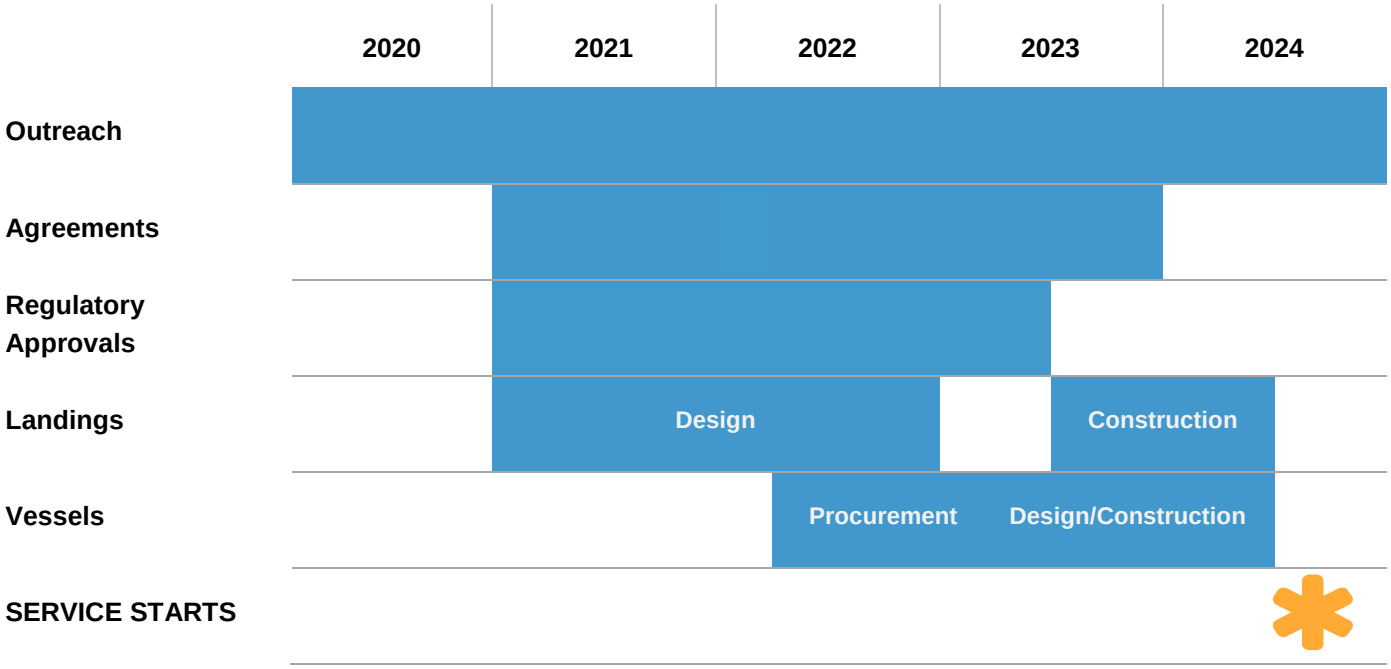
Lakepointe

- Federal: U.S. Army Corps of Engineers and National Marine Fisheries/U.S. Fish and Wildlife
- State: Washington Department of Fish and Wildlife, Washington State Department of Natural Resources, Washington Department of Archeology and Historic Preservation
- Local: City of Kenmore

IMPLEMENTATION TIMELINE

The implementation timeline includes several key milestones: reaching agreements with property owners, obtaining regulatory approvals, designing and constructing landings, and designing and constructing vessels. This timeline is based on securing the funding necessary to move forward with implementation. Assuming work begins in 2021 on the regulatory process and initial landing design, the Lakepointe to UW WAC POF route would likely be ready for service in 2024. Figure 9 provides an estimated timeline for beginning service. The impacts of the COVID-19 pandemic on the economy and funding landscape could affect this timeline.

Figure 9: Example Timeline for POF Route Implementation



NEXT STEPS

Implementing POF service between Lakepointe and UW WAC requires forming partnerships with property owners, securing necessary funding for capital improvements and operating costs, tribal consultation, continuing stakeholder outreach and community engagement, as well as beginning the regulatory process for approval.

PARTNERSHIPS

Though initial outreach has been conducted with potential partners such as the City of Kenmore, the UW and the Lakepointe property owner, final agreements would need to be reached to ensure full support of POF route implementation moving forward. This requires continued meetings to identify and address stakeholder interests.

FUNDING OVERVIEW

This section provides a high-level overview of the potential ways for funding the implementation of the Kenmore POF route. It is intended to be representative of what would be required to establish secure funding supporting the service over a twenty-year timeline.

Implementing POF service requires capital investment and a sustainable funding source to support operating costs. Capital investments can be funded through a combination of grants, local sources and debt service. Operating costs would be funded through an increase to the existing dedicated POF property tax levy, supplemented with passenger fare revenue.

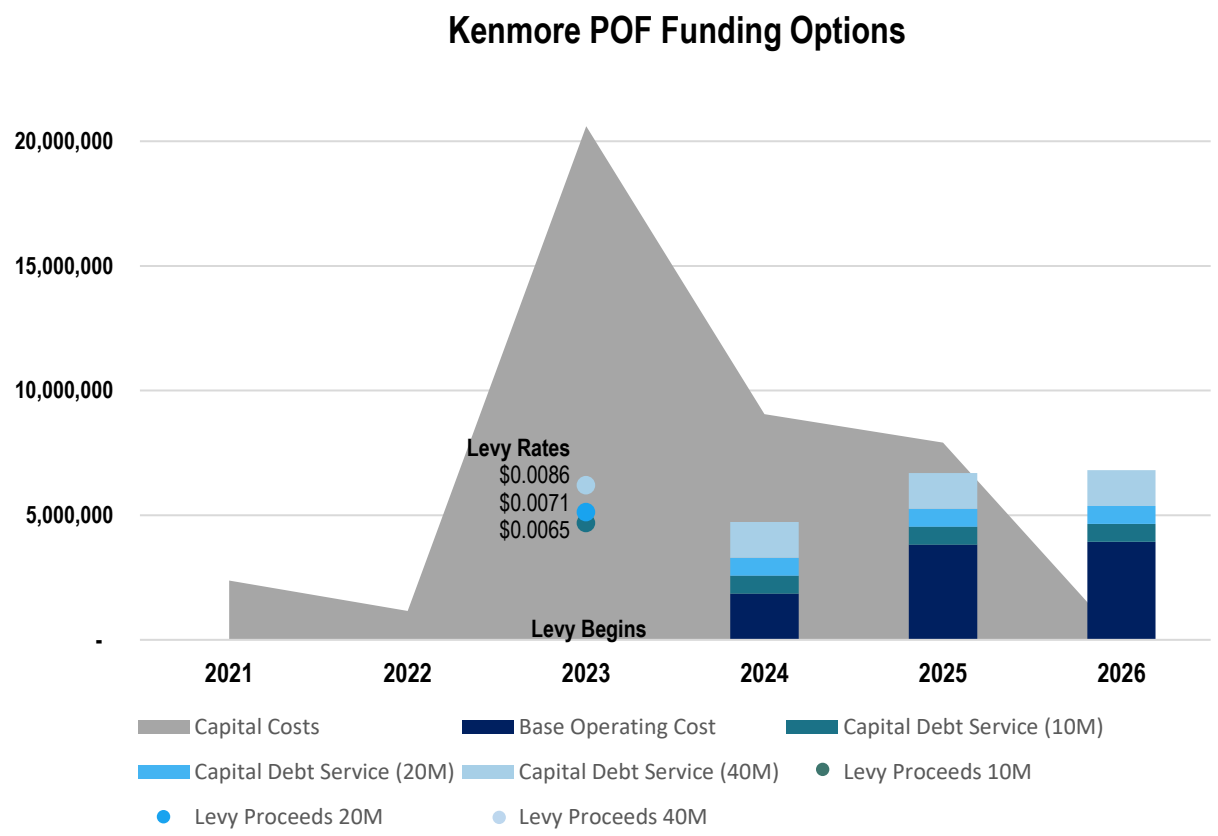
The capital investment and ongoing operating costs for a new Kenmore POF route have been calculated using high level estimates, based on the timing of implementation and including an annual inflation rate. The estimates are subject to change based on further detailed planning, partnership agreements, and the timing of funds being secured to support the service.

The Marine Division's current primary funding source is a dedicated property tax levy that is supported by passenger fares, federal grants, and bond issuance for capital investments. The property tax levy is currently set at a rate to sustain existing operations. Adding new service would require a complete analysis of all funding sources projected into the future.

Based on current funding assumptions and initial timing of investments, Figure 10 illustrates the total investment outlay over time, using three examples of funding combinations to support the implementation of Kenmore POF service.

Figure 10 provides examples that show the property tax levy rate that would need to be levied in order to fund the ongoing operating costs, as well as the debt service on three levels of bond funding. The highest bond issuance assumption is $40M, with no support from grants or partnerships. The second assumption shows bonds at $20M and grants and other support of $20M. The third assumption shows bonds at $10M and grants and other support of $30M. In each of the examples, the levy rate would range between $0.0086 and $0.0065 per $1,000 of assessed property valuation, respectively. In comparison, the existing levy rate that funds the Vashon Island and West Seattle routes is $0.0125 per $1,000 of assessed property value.

Figure 10: Kenmore POF Funding Options



*The graph assumes the balance of the capital costs to total $40M would come from grants or partnerships.
**The levy rate is calculated based on the valuation of property. Example: a $400,000 home would be assessed $3.44 per year at levy rate $0.0087.

Potential Grant Funding Options

The Marine Division has a successful history in seeking and receiving grants for many of their past capital projects and would seek out as much grant funding as possible for any new capital projects. The following grant opportunities are available for these capital investments:

- Federal Highway Administration (FHWA) - Ferry Boat Program
- Federal Transit Administration - Passenger Ferry Grant Program Section 5307, and Section 5337
- Department of Transportation - Better Utilizing Investments to Leverage Development (BUILD) Grant
- Other Federal Transit Administration competitive and earned share grants

OUTREACH

Outreach is critical throughout the POF implementation phase. Engaging local agencies, property owners, tribes, and continuing public outreach throughout the development of landing sites, will be key to a successful POF route implementation.

Agreements

The Marine Division has met with the owners of the prospective landing sites discussing potential POF service and to begin to understand their needs and concerns. The next steps for service implementation will include developing use and lease agreements for the specific site locations identified, and to do this prior to POF landing site development.

Ongoing Coordination

As part of this Proviso, the Marine Division reached out to the local agencies and owners to discuss opportunities and challenges of POF service. With a route defined, meetings and coordination with the appropriate agencies will continue throughout the route implementation process. Regular communications with key agencies will be essential throughout the permitting process that is required for terminal construction and POF service implementation.

The Marine Division will consult with the Muckleshoot tribe that has treaty rights in this waterway during project development and future operations.

Continued Public Outreach

Prior to implementing the Lakepointe to UW WAC POF route, and as part of the regulatory process, the Marine Division will continue community engagement. This engagement will be conducted to support next steps in the regulatory process. Outreach efforts will be conducted to provide information and seek public input through community meetings, public comment periods, and publicizing key route information.

Equity and Social Justice

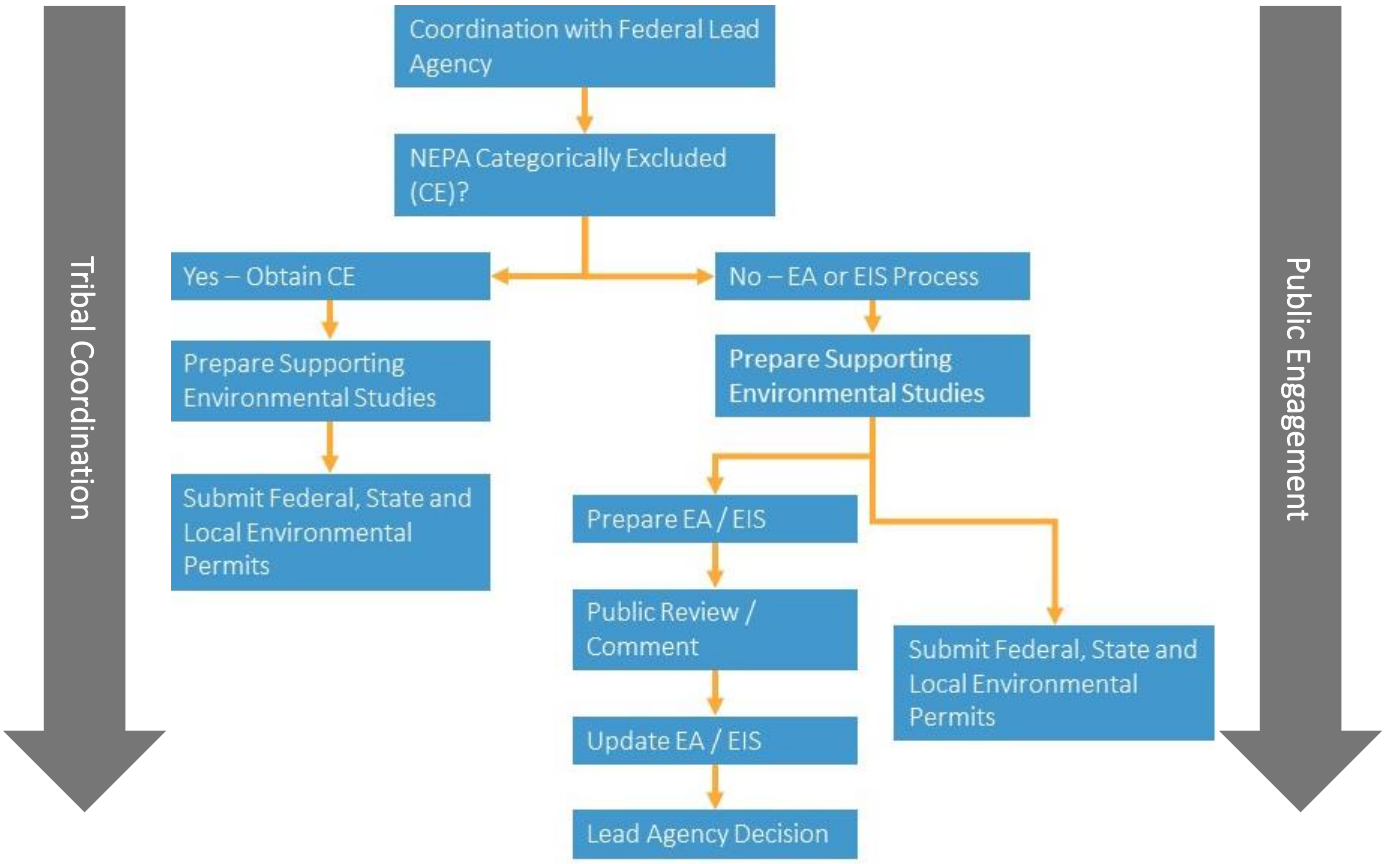
In addition to seeking public input on the route, community engagement will also focus on gathering feedback to understand how the new POF route can further Metro’s equity and social justice goals. This includes seeking input on which types of modes would increase accessibility to the Lakepointe landing site and identifying barriers to people choosing POF service.

Regulatory Approvals

Compliance with the National Environmental Policy Act (NEPA) would be required for this project if federal funds are used for project implementation. This process requires coordinating with the lead agency as soon as possible to determine if the project is considered to be categorically excluded or have an impact. Depending on the determination, the project may need to proceed with an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). Based on the determination, the Marine Division would prepare environmental studies needed to support the review process.

The development of landing sites will also require other federal and state environmental approvals, as well as local shoreline and building permits. Figure 11 illustrates the regulatory process anticipated for implementing this POF route.

Figure 11: Summary of Regulatory Processes Needed for POF Implementation



APPENDIX A: CAPITAL AND OPERATING PROGRAM UPDATE

CAPITAL AND OPERATING PROGRAM

The purpose of this appendix is to provide an update to the 2015 Service Expansion Options Report evaluating the necessary facilities, capital costs and operating costs associated with implementing a passenger-only ferry (POF) route from Kenmore.

APPROACH

To identify the capital and operating program for potential POF routes from Kenmore, this study used a phased approach: identifying potential landing sites and narrowing that list of landing sites for further study, assessing those sites for compatibility with POF service, and developing route options for sites assessed.

SITE IDENTIFICATION Using the previous expansion studies completed in 2009 and 2015 as a basis, potential landing sites were identified that could support POF service to and from Kenmore. A market area analysis was conducted to illustrate key employment locations for Kenmore residents and commuters. Sites that offered potential connections to significant employment destinations were carried forward for to a site assessment.

SITE ASSESSMENT Site visits and research were conducted to develop comprehensive site profiles that identify challenges and opportunities with each potential landing site. The site assessment included evaluating access to the landing site and from the surrounding neighborhood, the regulatory framework to consider when developing a landing site, navigational considerations, and existing infrastructure. Potential infrastructure improvement options were developed for each landing site, including rough order of magnitude (ROM) cost estimates.

ROUTE DEVELOPMENT For each site assessed, potential routes combinations were mapped and operating assumptions were developed to identify service levels, travel time and ROM operating costs. Travel time competitiveness with existing transportation modes was analyzed and compared to estimated POF travel time, and the resulting ridership estimates based on these characteristics were quantified.

POTENTIAL LANDING SITES

SITE IDENTIFICATION

Sites Previously Reviewed

The history of ferry expansion planning and analysis is not new for Kenmore. Since the 2009 and 2015 studies, Kenmore sites continue to show opportunity for Lake Washington travel. In each of these previous studies, the two potential landing sites studied included the Lakepointe redevelopment site and Log Boom Park. Both sites are also included in this planning effort.

Market Analysis

In addition to previously reviewed sites, a market area analysis was conducted to understand where people in Kenmore are traveling to for work. This analysis identified prominent employment centers for Kenmore residents such as downtown Seattle and the University of Washington (UW). Other areas including Bellevue and Redmond are also identified as key destinations for Kenmore commuters. The detailed Market Area Analysis is included as Attachment A.1.

As Seattle and the UW represented the greatest volume of jobs accessible via a potential POF service, this study focuses on a route serving Kenmore to Seattle. Three sites were identified in the City of Seattle for further assessment: the University of Washington Waterfront Activities Center (UW WAC), Madison Park, and Leschi Park. A potential landing site in the Portage Bay area was explored, but a specific site was not identified and is not carried forward in this study. See Attachment A.2 for details on the Portage Bay area.

SITE ASSESSMENT

Two sites in Kenmore and three sites in the City of Seattle were evaluated for potential POF service. The three Seattle sites were previously identified in the 2009 and 2015 studies, and were continued forward in this study because of the opportunities they present due to existing infrastructure or uplands connections. To assess the feasibility of each site for POF service, this study evaulated the neighborhood context and adjacent land use, the regulatory framework that governs the site, the potential vessel navigational considerations, as well as any existing infrastructure. Based on this information, site improvement recommendations were developed along with ROM capital costs. Site assessment findings are summarized in the following section, and detailed in the Site Profiles included in Attachment A.3.

Kenmore

The two sites in Kenmore are fairly close geographically but very different in how they are currently used. Log Boom Park is a City of Kenmore park with mature landscaping, wayfinding and a fishing/swimming pier. Lakepointe is private property with historical use as highway construction staging area and other commercial uses that are not currently developed to accommodate POF facilities. There have been numerous iterations of mixed-use development proposals for the site that would be compatible with POF service, but none have been implemented. While the redevelopment is promising, the timeframe of this development is unknown. Between the two Kenmore sites, Lakepointe provides the most opportunity with future redevelopment of the site, and the ability to improve access although infrastructure costs would

be high. Prior to redevelopment this site has the opportunity to improve accessibility for POF service—served by on-site parking or shuttles that utilize the existing vacant property.

Log Boom Park also has challenges. While an existing pier is present, the low water depths, limited development potential around the site and lack of accessibility to the site present challenges for POF service. Accessibility to the site is constrained by the lack of opportunity to expand the existing parking lot to provide additional parking or designated shuttle space along with the steep grade for the adjacent neighborhood to walk or bike to/from the site.

Seattle

The City of Seattle sites assessed include the UW WAC, Madison Park, and Leschi Park. Of these sites, the UW WAC presents the greatest connectivity and would greatly expand the opportunity of employment destinations for Kenmore residents. UW itself is a key employment destination as is downtown Seattle, which is a 7-minute light rail ride from the University of Washington Link station. Link expansion over the coming decades will continue to improve connections from the site. Less favorable of the Seattle landing site options are Madison Park and Leschi Park, due to fewer transit connections to relevant employment destinations now and far fewer planned connections by 2040.

Site Summary

For each potential landing site, the following elements were evaluated:

- Accessibility and connectivity: how easy or difficult it is to access the site via a variety of mobility options and potential for future mobility connections
- Neighborhood context and long-range planning: the nearby uses of properties adjacent to the site and planning efforts by local jurisdictions that impact the site and surrounding areas
- Regulatory framework: zoning requirements related to POF use and regulatory approvals that may be necessary to construct a POF landing
- Navigational considerations: exposure, water depth, and navigational obstacles
- Infrastructure: overwater and uplands infrastructure currently at the sites, and overwater and uplands infrastructure required to support POF service

Attachment B includes the comprehensive site profiles for each landing site reviewed. Table 1 summarizes the key implementation considerations for each site.

Table 1: Site Summary

	Proposed Infrastructure	ROM Capital Cost	Challenges	Opportunities
Lakepointe	» New float » Uplands work	» $9.5 M	» Development-unknown timeframe » Soil contamination	» Proximity to moorage/ maintenance facility » Land use compatibility » Accessibility (space for parking, bike connections, and pedestrian paths)
Log Boom Park	» Pier improvements » Uplands work	» $8.5 M	» Low water depth (further analysis needed) » Limited parking and distance from park and ride facilities	» Existing in-water infrastructure
UW WAC	» **Option 1:** replacement float, uplands work » **Option 2:** replacement float, uplands work, longer gangway	» $5.9 M » $7.6 M	» High recreational vessel traffic	» Connectivity to light rail and bus » UW is a destination
Madison Park	» New float » Pier improvements » Uplands work » Site work	» $7.5 M	» Limited connectivity to downtown Seattle » Exposure to wind and waves	» Future connectivity (if BRT is extended by 2040)
Leschi Park	» Minor pier improvements » Uplands work	» $4.0 M	» Limited connectivity to downtown Seattle » Incompatible with Parks Department uses	» Existing in-water infrastructure

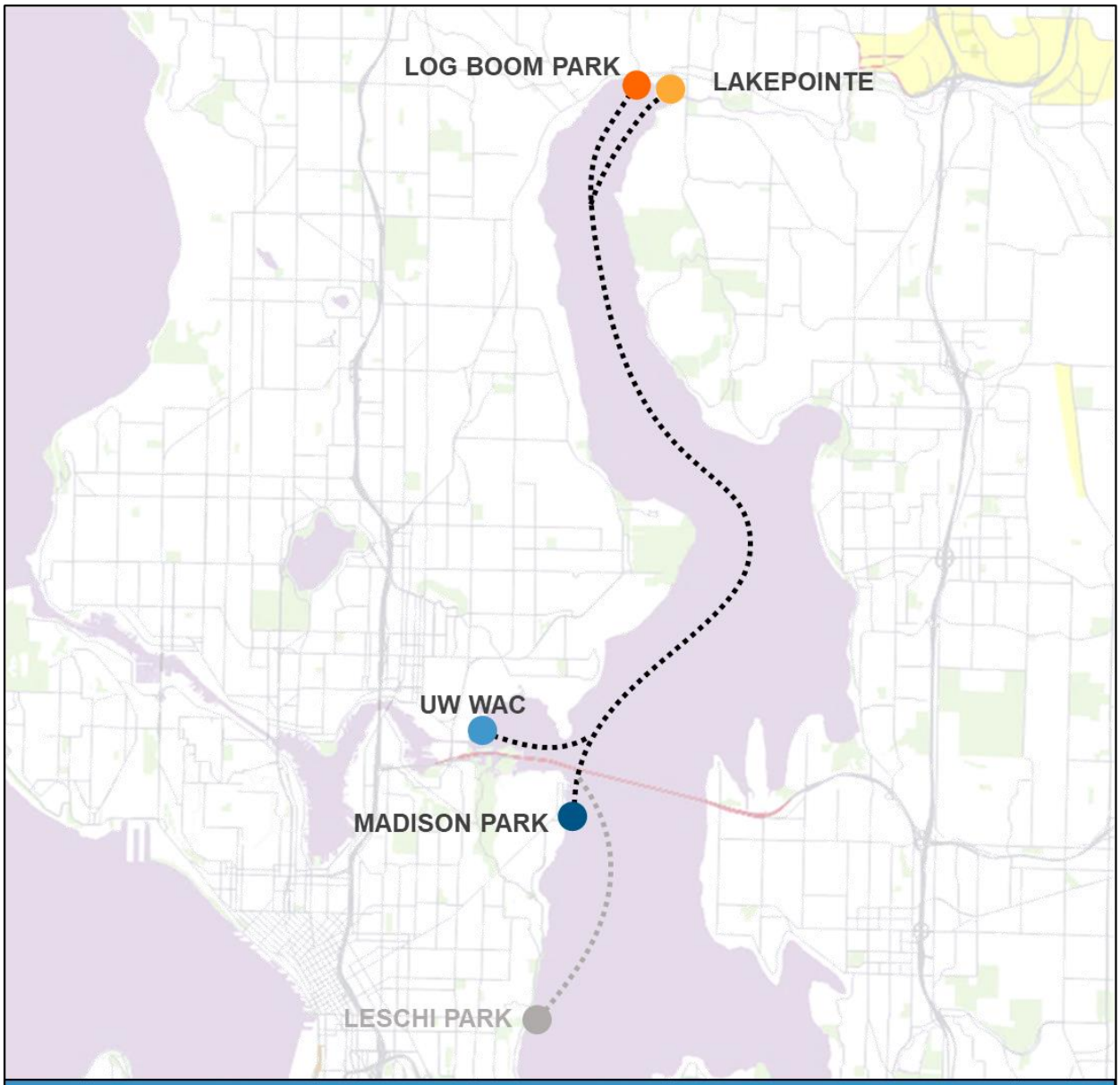
ROUTE DEVELOPMENT

Routes connecting the Kenmore sites with the three selected Seattle sites were mapped order determine sailing times based on route distances and navigational considerations (such as vessel transit speed, slowdown zones, and vessel maneuvering). These sailing times were used to identify the travel time competitiveness of each route to other travel modes including car and transit. In combination with operating assumptions such as the time required for passenger loading and unloading, vessel fueling, and vessel moorage/maintenance, sailing times were then used to develop potential service schedules. Proposed service schedules and operating assumptions provided the basis for ROM operating cost estimates.

When conducting outreach with key stakeholders, the City of Seattle Parks Department indicated that capital improvements at the Leschi Park landing site were not compatible with POF service. Consequently, a route from Kenmore to Leschi Park was not carried forward in this study.

POTENTIAL ROUTES

Proposed POF Route
Landing Sites



KENMORE TO UW WAC

Lakepointe	31 min	9.2 nautical miles
Log Boom Park	29 min	8.9 nautical miles

KENMORE TO MADISON PARK

Lakepointe	27 min	8.7 nautical miles
Log Boom Park	24 min	8.4 nautical miles

KENMORE TO LESCHI PARK

Landing site deemed incompatible with Water Taxi use by the City of Seattle Parks Department. Route not carried forward.

*Sailing times assume a vessel cruising speed of 28 knots outside of requisite slow down zones and landing approach.

SERVICE PROFILE

In order to compare the potential routes, service profiles were developed. Service profiles include defining service levels and schedule, along with operating assumptions for the fleet composition, maintenance and overnight moorage and fueling. Route, operating, schedule, and cost assumptions are detailed in Attachment A.4.

Service Levels

Service level considerations include the frequency and number of sailings that would be provided, the seasonality of schedules, as well as the number and type of vessels that would serve the route. For this study, proposed service levels are modeled on existing POF services in the region and the service needed to meet typical travel needs for commute and discretionary trips.

Schedule

Year-round service is assumed for this route, with a seasonal variation in the warmer months. Commuter needs are met with six daily round-trips provided all weekdays, year-round. These trips were developed to meet commuter needs of typical morning arrival in Seattle and evening departure times. Expanded service is provided spring through fall to meet the needs of discretionary and recreational riders with mid-day and evening service during the warmer months. Service schedules can be summarized as follows:

Commute Service

6 months – October through March

- Weekdays: 6 daily round trips, morning and evening commute periods
- Saturdays: 7 daily round trips
- Sundays: No service
- Special Events: 10 events per year (UW only)

Expanded Service

6 months – April through September

- Monday-Thursday: 11 daily round trips
- Friday: 13 daily round trips
- Saturdays: 10 daily round trips
- Sundays: 8 daily round trips
- Special Events: 10 events per year (UW only, assumed to be mainly in Commute schedule)

Fleet

Although vessel size can be adjusted based on forecast ridership demand or operating requirements of the route, the following assumptions have been made for development of estimated operating costs.

- Size: 150 passengers (roughly 80 feet long)
- Propulsion: Diesel propulsion with four main engines was assumed for this analysis. Best available hybrid vessel technologies (diesel-electric, diesel-battery, etc.,) would be explored to meet King County sustainability goals..
- Crewing: The 150-passenger vessel is assumed to operate with a crew of three, a captain and two deckhands.

» Fleet Size: The proposed service schedule can be provided with a single vessel. A backup vessel is assumed in cost development to increase reliability of the service.

Maintenance and Overnight Moorage

An assumption has been made that routine light maintenance activities and overnight moorage of the vessels would occur at the Lakepointe site for both routes. In order to perform daily maintenance and overnight moorage, improvements would be required such as: installing a moorage float, connecting utilities and constructing a small maintenance shop and office building. These improvements and associated capital costs are detailed in Attachment A.5. Typical light maintenance activities include vessel cleaning, fluid monitoring, equipment monitoring, propulsion and auxiliary systems maintenance, and minor repair and preservation activities. Costs of these activities are included in the operating costs estimates found in Attachment A.9 Operating Cost Profiles. Heavy maintenance activities, such as work requiring dry docking, are assumed to be conducted at local area shipyards.

Fueling

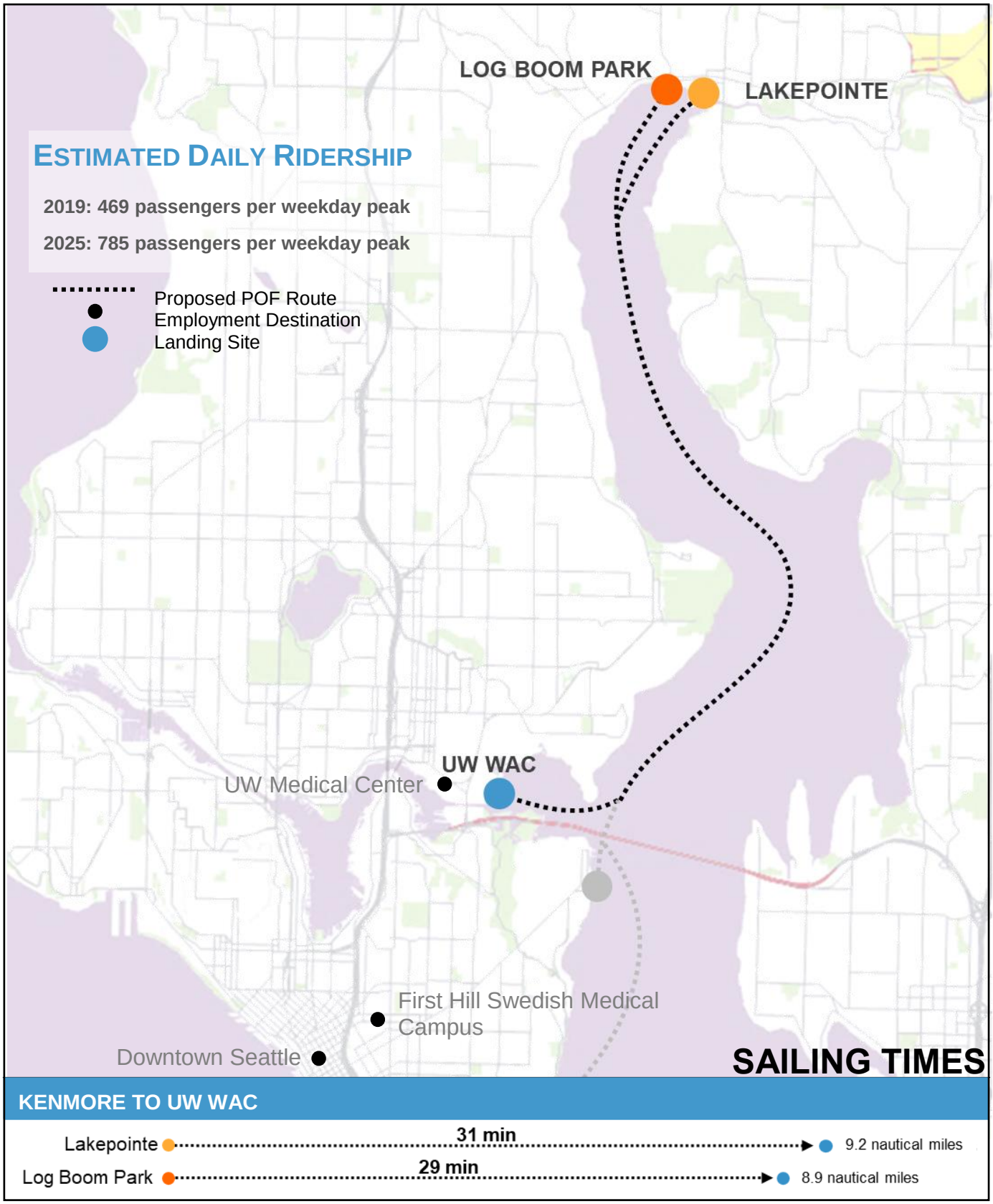
The proposed service schedule and estimated operating costs assume that all fueling would occur by truck at the Lakepointe moorage location in Kenmore. Additional assumptions regarding fueling by truck are included in Attachment A.4 Route Implementation Assumptions.

ROUTE PROFILES

Based on the service profiles, route profiles were developed connecting the two Kenmore landing sites with UW WAC and Madison Park landing sites. Based on these route profiles, the routes were analyzed for the following components:

- Route distances and sailing times
- Ridership (See Attachment A.6 Ridership for the detailed ridership analysis)
- Travel time competitiveness (See Attachment A.7 for the travel time calculations)
- ROM capital and operating costs for each route (See Attachments A.8 and A.9 for ROM cost worksheets)

KENMORE TO UW WAC



*Sailing times assume a vessel cruising speed of 28 knots outside of requisite slow down zones and landing approach.

Travel Time Comparisons

The travel times below compare evening commute ferry trip times (roughly the same for both Kenmore routes) to trip times for car and existing transit between Kenmore and major employment destinations in Seattle including the UW Medical Center and downtown Seattle. Ferry travel time includes transferring to transit to complete the trip. See Attachments A.4 and A.7 for a full list of assumptions and travel time comparisons. As illustrated in the table below, POF service would provide a faster trip for people making the evening commute back to the Kenmore or Bothell park and rides from the UW Medical Center or from downtown Seattle, compared to existing transit options.

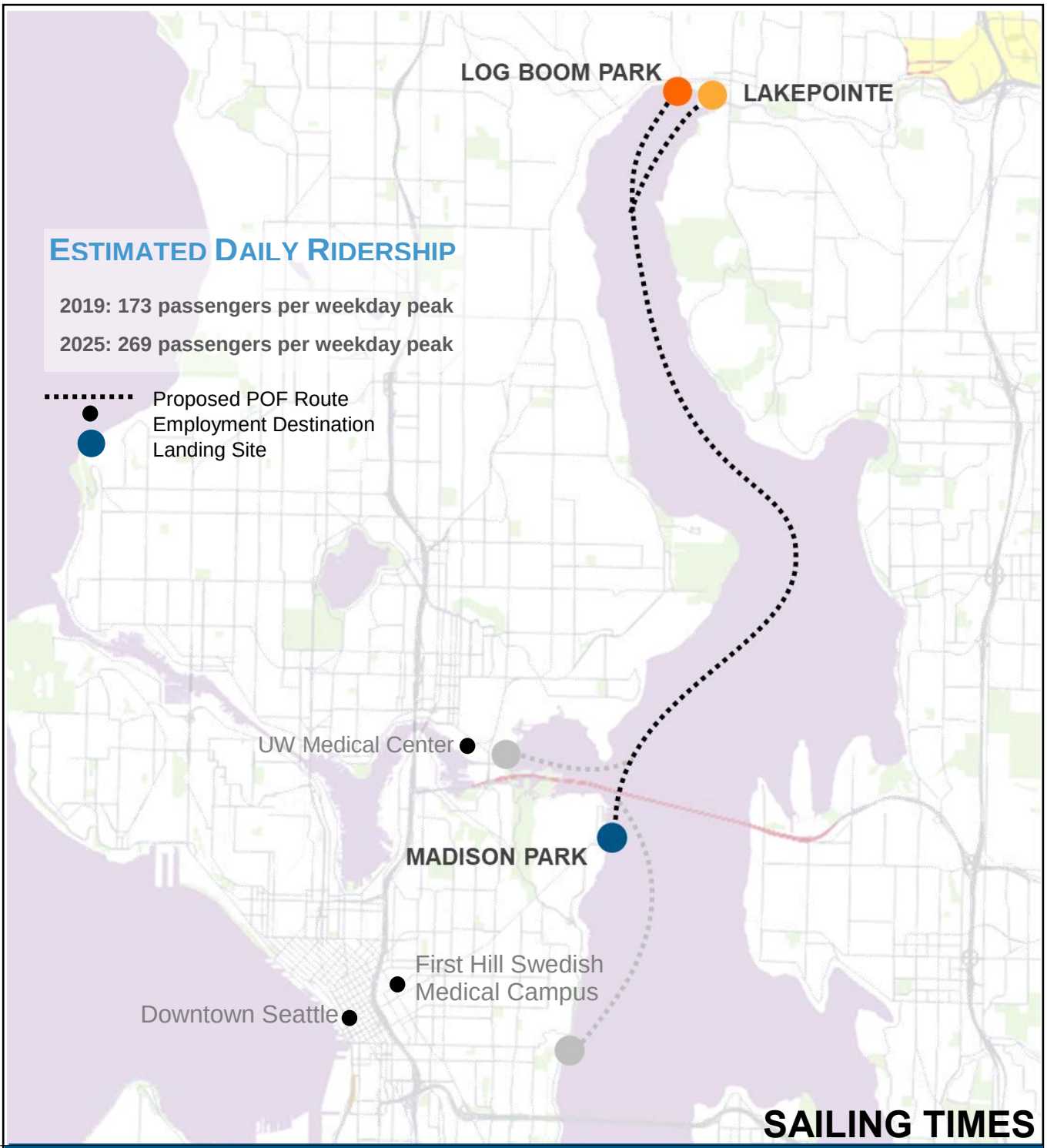
Origin/Destination	Car	Bus Transit	Ferry	Direct Ferry vs. Existing Transit
UW Med. Center / Kenmore P&R	30-70 minutes	52 minutes	46 minutes	**6 minutes faster**
Downtown Seattle / Kenmore P&R	35-75 minutes	55 minutes	47 minutes	**8 minutes faster**
UW Med. Center / Bothell P&R	35-70 minutes	58 minutes	46 minutes	**12 minutes faster**
Downtown Seattle / Bothell P&R	30-70 minutes	65 minutes	47 minutes	**18 minutes faster**

Costs

Each route would require two vessels and have UW WAC as a destination point and an overnight moorage and maintenance facility constructed at Lakepointe. Based on the capital cost estimates, a POF route from Log Boom Park would cost less than a POF route from Lakepointe. The operating costs are anticipated to be the same for each route. The estimated capital costs and annual operating costs for the first year of service are illustrated in the table below.

Route	Vessel Capital Cost ($2019)	Landing Site & Maintenance Facility Capital Costs ($2019)	Annual Operating Costs in Year 1 ($2019)
Lakepointe to UW WAC	$15.4 M	$24.8 M	$3.7 M
Log Boom Park to UW WAC	$15.4 M	$23.8 M	$4.1 M

KENMORE TO MADISON PARK



SAILING TIMES

KENMORE TO MADISON PARK

Lakepointe	27 min	8.7 nautical miles
Log Boom Park	24 min	8.4 nautical miles

*Sailing times assume a vessel cruising speed of 28 knots outside of requisite slow down zones and landing approach.

Travel Time Comparisons

The travel times below compare evening commute ferry trip times (roughly the same for both Kenmore routes) to trip times for car and existing transit between Kenmore and major employment destinations in Seattle including the First Hill Medical Campus and downtown Seattle. See Attachments A.4 and A.7 for a full list of assumptions and travel time comparisons. Based on this travel time comparison, POF service between Kenmore to Madison Park would provide a faster trip for people traveling back to the Kenmore area from the First Hill Medical Campus area compared to transit. People traveling to the Kenmore area from downtown Seattle would experience a similar trip time compared to transit.

Origin/Destination	Car	Bus Transit	Ferry	Direct Ferry vs. Existing Transit
First Hill Med. Campus / Kenmore P&R	40-80 minutes	74 minutes	57 minutes	**17 minutes faster**
Downtown Seattle / Kenmore P&R	35-75 minutes	55 minutes	60 minutes	**5 minutes slower**
First Hill Med. Campus / Bothell P&R	35-70 minutes	77 minutes	57 minutes	**20 minutes faster**
Downtown Seattle / Bothell P&R	30-70 minutes	65 minutes	60 minutes	**5 minutes faster**

Costs

Each route would require two vessels and have Madison Park as a destination point and an overnight moorage and maintenance facility constructed at Lakepointe. Based on the capital cost estimates, a POF route from Log Boom Park would cost less than a POF route from Lakepointe. The operating costs are anticipated to be the same for each route. The estimated capital costs and annual operating costs for the first year of service are illustrated in the table below.

Route	Vessel Capital Cost ($2019)	Landing Site & Maintenance Facility Capital Costs ($2019)	Annual Operating Costs in Year 1 ($2019)
Lakepointe to Madison Park	$15.4 M	$24.7 M	$3.7 M
Log Boom Park to Madison Park	$15.4 M	$23.7 M	$4.0 M

Attachment A.1

Market Area Analysis

PRELIMINARY EMPLOYMENT DESTINATION MAPPING

This attachment includes a preliminary analysis created by BERK with the goal of roughly mapping the places of employment for people who live in the Kenmore home market area. This home market area is roughly drawn and is meant to include home locations for which a new passenger-only ferry (POF) could be a potentially reasonable option for commute travel. The purpose of this analysis is to help determine which potential routes and landing sites might include significant demand for commuter travel.

Following the memo is a map of BERK's findings related to the Kenmore home market area employment destinations.

PRELIMINARY EMPLOYMENT DESTINATION MAPPING

This memo shows very preliminary work to map the places of employment (in 2015) for people who live in home market areas shown with a yellow/orange boundary in each map. These market areas are very roughly drawn and meant to include home locations for which a new passenger ferry could potentially be a reasonable option for commute travel. Additional analysis will be required to more carefully determine where passenger ferry travel could be reasonably time competitive, and what other trip purposes (e.g., school or recreation) may be served by passenger ferry service. The purpose of these maps is simply to help determine which proposed routes might include significant demand for work commute travel, and which do not.

The maps are supplemented by tables showing the sum of employment within the 15-minute walksheds around potential ferry landing sites, for those employees who live in the given market area.

Kenmore to UW/Seattle Destinations

Note: The home market area in this map is drawn for commuters with destinations at UW or downtown via a light rail connection. A separate map shows a different home market area for eastside destinations.

Downtown Seattle, South Lake Union, University of Washington, and Seattle Children's Hospital all pop out as major commute destinations relevant to this analysis.

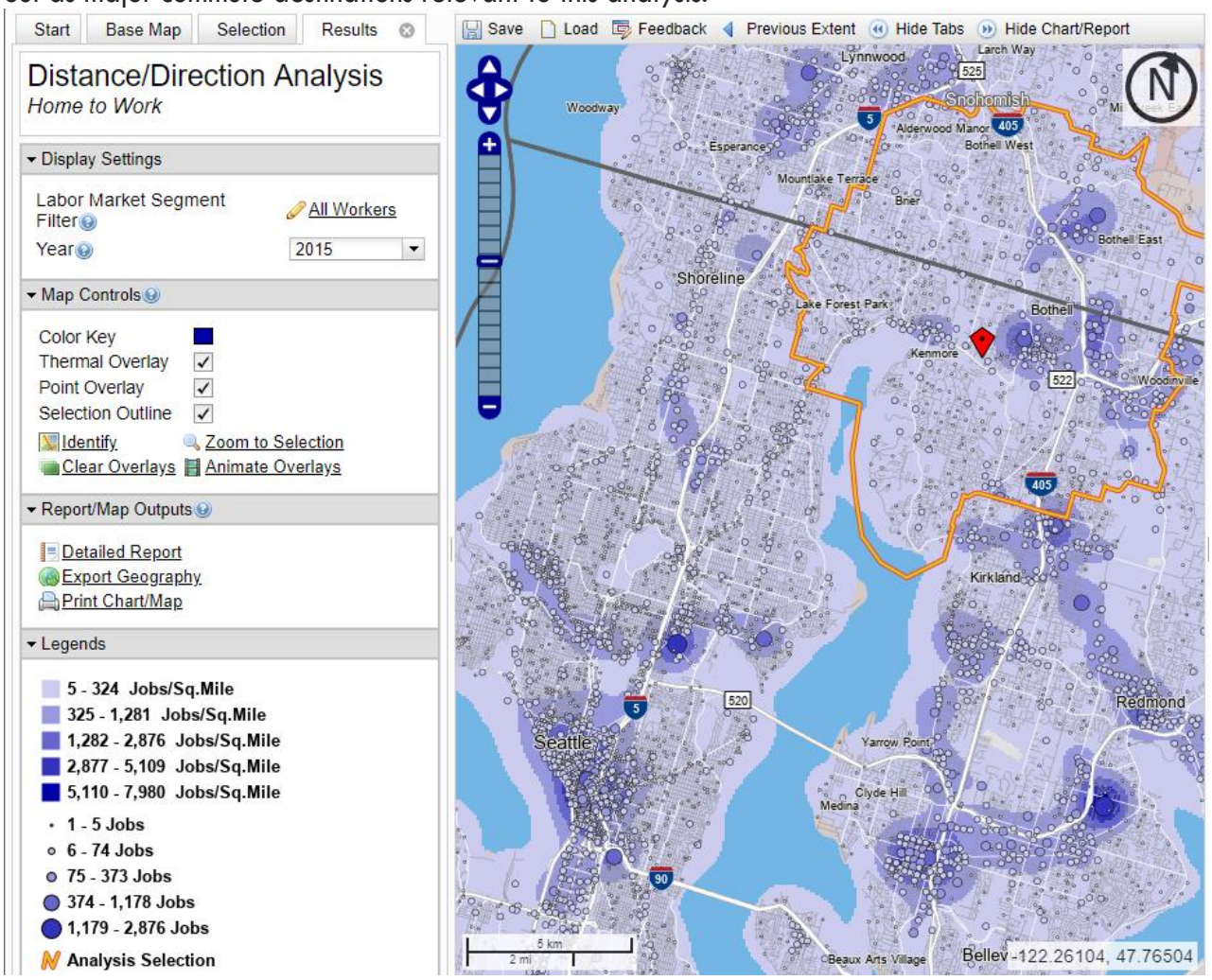


Exhibit 1. Employment Comparisons in Destination Walksheds, Kenmore to UW/Seattle

POTENTIAL FERRY LANDING SITE	MARKET AREA	JOBS IN 15-MIN WALKSHED FROM FERRY LANDING
UW WAC	Kenmore-UW	1,478
Madison Park	Kenmore-UW	54
Leschi Park	Kenmore-UW	72

Note: The number of jobs does ***not*** reflect all jobs in the 15-minute walksheds from the destinations, rather it reflects the number of jobs held by employees who live in the given ferry origin market area.

Source: US Census OnTheMap LEHD, 2015; BERK, 2019

Kenmore to Eastside Destinations

The focus in this map are employment destinations that could be accessible via terminals along eastern or southern Lake Washington. The greatest job density is in Downtown Bellevue. A single large employer (likely Boeing) pops out in Renton. Downtown Kirkland also shows moderate job density, potentially greater in aggregate than Renton.

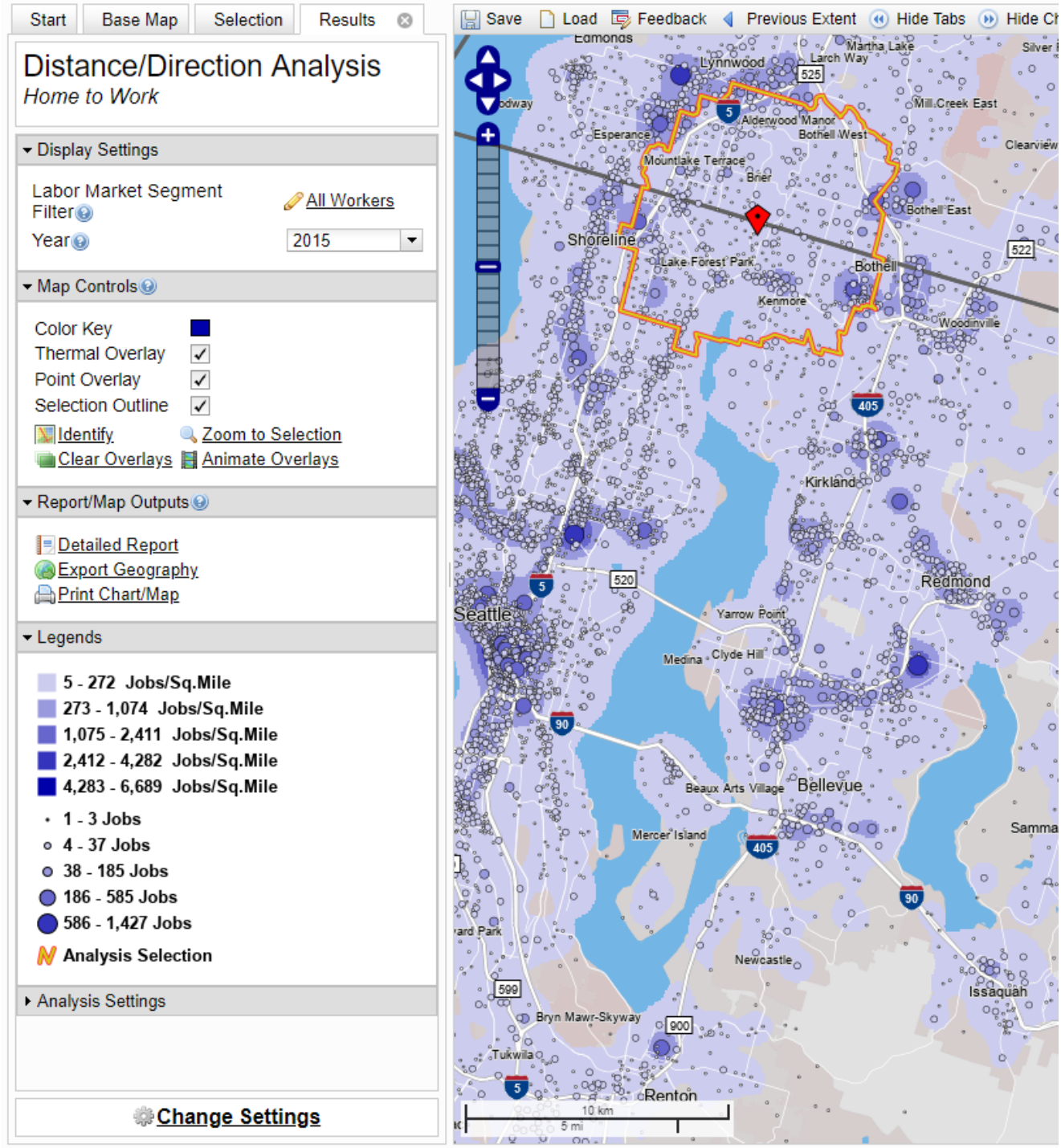


Exhibit 2. Employment Comparisons in Destination Walksheds, Kenmore to Eastside Destinations

POTENTIAL FERRY LANDING SITE	MARKET AREA	JOBS IN 15-MIN WALKSHED FROM FERRY LANDING
Renton	Kenmore-Bellevue	38*
Bellevue	Kenmore-Bellevue	746

Note: The number of jobs does ***not*** reflect all jobs in the 15-minute walksheds from the destinations, rather it reflects the number of jobs held by employees who live in the given ferry origin market area.

*An additional 282 jobs at the Renton Boeing facility are associated with a Census block centroid roughly 1/4 to 1/2 mile from the edge of the 15-minute walkshed for the approximate landing site. The actual location of these jobs is likely to be spread across many building, some of which may be inside the walkshed.

Source: US Census OnTheMap LEHD, 2015; BERK, 2019

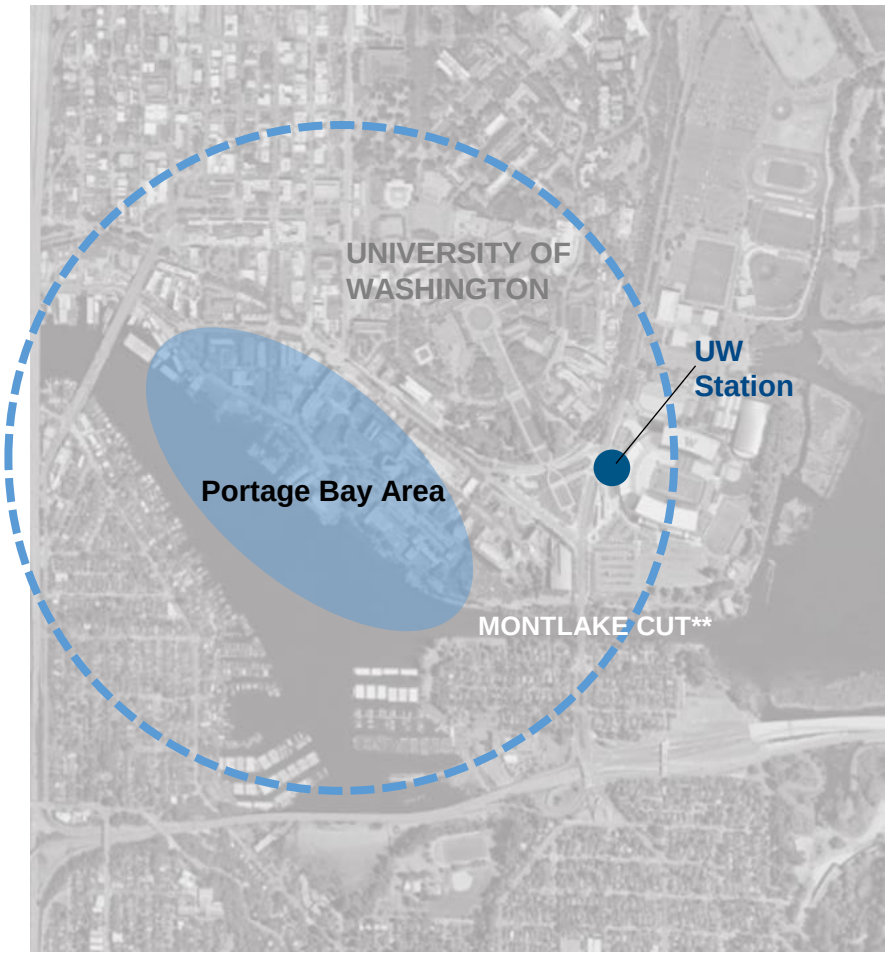
Attachment A.2

Portage Bay Area Site Analysis

PORTAGE BAY AREA

SUMMARY

In previous POF studies, the Portage Bay area was identified as a potential POF landing site. In particular, the UW Oceanography building was evaluated, though the UW WAC landing site was preferred of the UW sites. As the market area analysis identified the Portage Bay area near UW as a prominent destination for Kenmore workers, the Portage Bay area was revisited for its potential viability and feedback was sought on its desirability. The UW WAC landing site was preferred by survey respondents. No specific viable location was identified in the Portage Bay area so this site was not carried forward at this time.



**Area of High Vessel Traffic

ACCESS & CONNECTIVITY

- **Bus:** Sites along Portage Bay are within a 0.5-mile radius of the bus corridor along NE Pacific St.
- **Light Rail:** Many potential landing sites along Portage Bay are an approximately 15 minute walk from the UW Station.
- **Pedestrian:** Existing walking infrastructure is confusing in some areas and often involves traversing hills or steep stairs.
- **Bike:** The Burke-Gilman Trail is within a 0.5-mile radius of potential Portage Bay landing site options.
- **Parking, Shuttle, & TNC:** These features depend on the specific property where the terminal would be built.

Attachment A.3

Site Profiles

SITE PROFILES

Comprehensive site profiles were developed for five sites including Lakepointe and Log Boom Park in Kenmore as well as the University of Washington Waterfront Activity Center (UW WAC), Madison Park, and Leschi Park in Seattle.

METHODOLOGY

Each site profile contains a summary of key considerations for implementation, access and connectivity, site context, as well as physical and navigational considerations. The following sections provide context for what was reviewed for each element in the site profiles.

ACCESS & CONNECTIVITY: How well can one get to and from the site via different modes? Are there safe connections for pedestrians and bicyclists? Where are the current transit stops closest to the site? Does the site have the potential for future shuttles or transportation network companies (TNCs)? Is there adequate space for micromobility options to access the site?

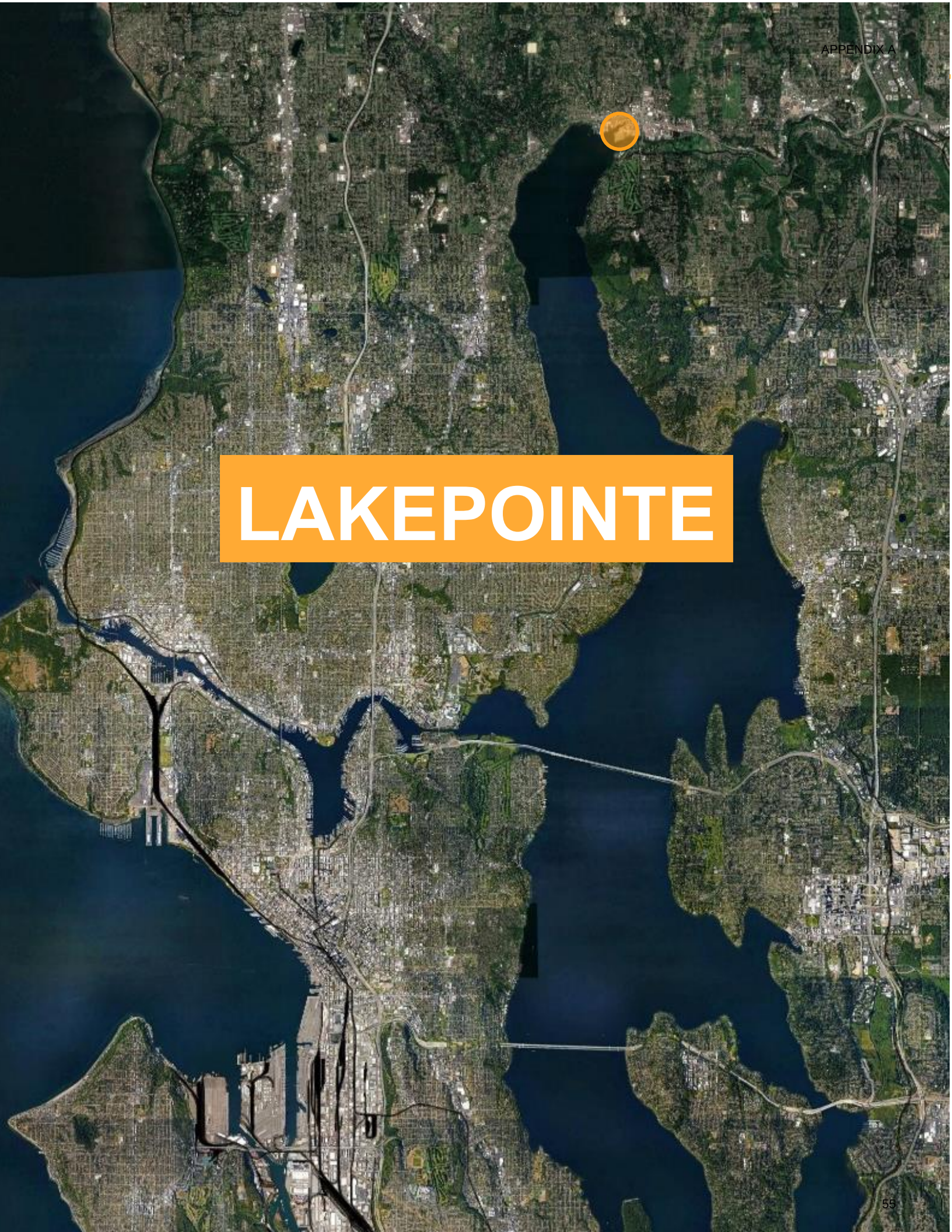
SITE CONTEXT: What is the surrounding neighborhood of the site like? What is the current zoning and comprehensive plan designation for the site? Are there major planning efforts that affect the future of this site? What are the regulatory considerations when developing the site for POF service?

NAVIGATIONAL CONSIDERATIONS: Is the site exposed to inclement weather that could be challenging for POF service? Is there adequate water depth for vessels to safely navigate around the landing? Are there obstacles or obstructions in the water that could make navigation difficult?

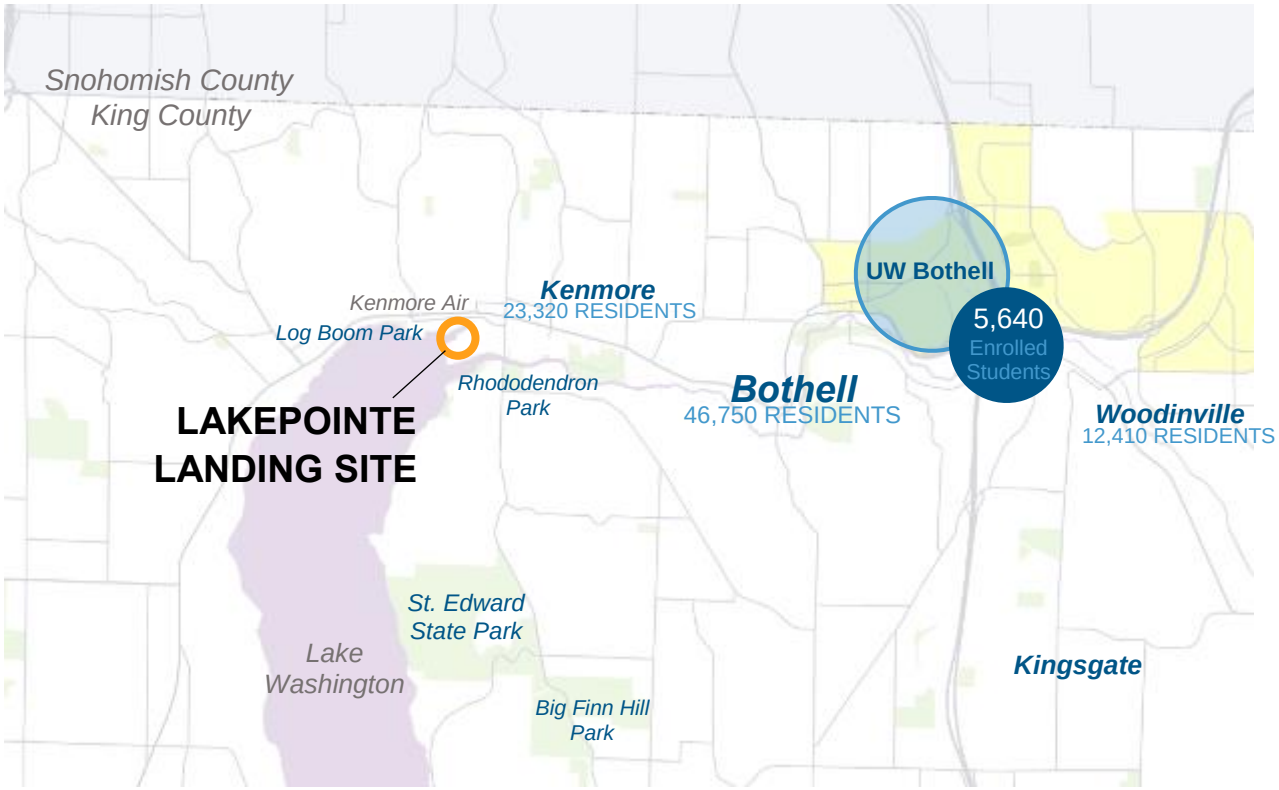
INFRASTRUCTURE: What infrastructure is currently present at the site, and what is its condition? What infrastructure improvements are needed at the site in order to support a Kenmore passenger-only ferry (POF) route? What are the rough order of magnitude (ROM) costs of improvements?

REFERENCES

- Google Earth
- Google Maps
- King County Metro Schedules and Maps
- City of Seattle website
- City of Seattle Municipal Code
- Downtwon Seattle Association website
- City of Seattle GIS- Community Reporting Areas
- City of Kenmore website
- City of Kenmore Comprehensive Plan
- City of Bellevue website
- University of Washington website
- University of Washington Campus Master Plan
- City of Bothell website
- City of Bothell Comprehensive Plan



LAKEPOINTE



SUMMARY

Located near downtown Kenmore, the Lakepointe site is privately owned and has been slated for major redevelopment, although the timeline for development is currently unknown. The Lakepointe site is roughly three miles from downtown Bothell and four miles from the UW Bothell Campus.

OPPORTUNITIES

- **Moorage/Maintenance Facility:** The site is adjacent to the Lake Washington homeport with capabilities for vessel moorage and light maintenance.
- **Land Use Compatibility:** The current Comprehensive Plan encourages ferry terminals in this area of Kenmore.
- **Accessibility:** The site can be improved for better access including curb space and on-site parking.

CHALLENGES

- **High Costs:** The site requires new infrastructure.
- **Development:** Development plans for the site have an unknown timeframe.
- **In-Water Work:** The implementation schedule would be extended by the need for in-water work.
- **Soil Contamination:** The site is a Super Fund site.

IMPLEMENTATION

Required Improvements:

New float, gangway, moorage/maintenance facility, utilities and site work, upland terminal improvements, access improvements and parking

Necessary Approvals:

Federal, state and local approvals

ROM Capital Cost Estimate:

$9.5 M

Timeline (once funding is secured): 3-5 years

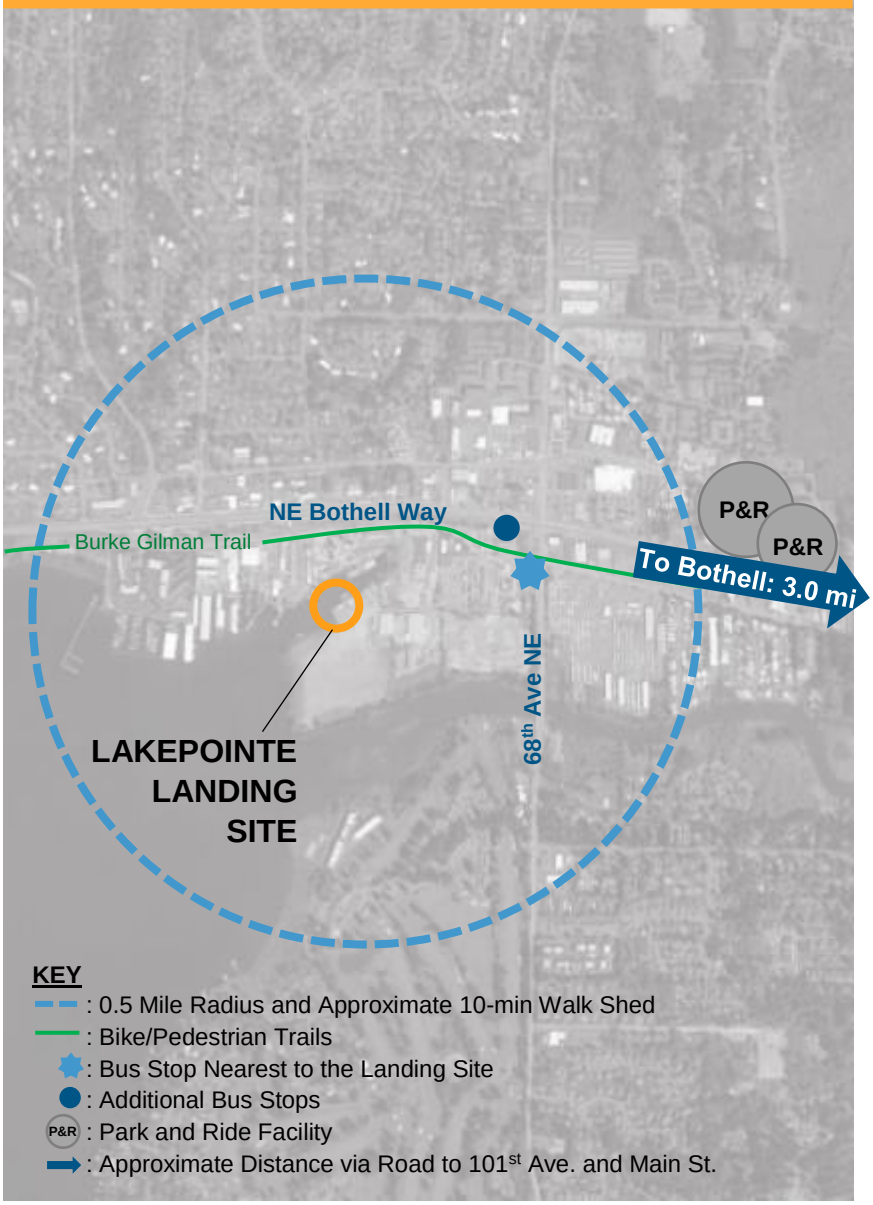
ACCESS & CONNECTIVITY

- **ADA Access:** There are no sidewalks or ADA accessible infrastructure from adjacent streets to the potential landing site. Access could be improved as part of terminal construction.
- **Parking:** The Vine Church parking lot (75 spaces) is approximately 0.5 miles away, and the Kenmore Park and Ride (603 spaces) is approximately one mile away. The site has space to create ferry passenger parking.
- **Bicycle:** The Burke Gilman Trail is nearby. There are no established streets or bike lanes connecting the site from 68th Ave NE or NE Bothell Way. Bike access could be improved as part of terminal construction.
- **Pedestrian:** The Burke-Gilman Trail is nearby, but connecting roadways do not have sidewalks.
- **Transit:** Frequent bus service is provided along NE Bothell Way. The closest bus stop is located over 0.25 miles away at 68th Ave. NE and NE 125th. An express bus to downtown Seattle is accessible from a bus stop on 68th Ave NE.
- **Shuttle/TNC:** The site has adequate space for a shuttle to maneuver and drop off passengers. However, streets would need to be developed as part of terminal construction.
- **Micromobility:**

  Facilities for micromobility options do not exist; however, there is space to construct as part of the terminal facilities.

BUS STOP DESTINATIONS

South to Bellevue and Overlake, Southwest express to Downton Seattle, East to Bothell



QUICK FACTS

- **Ownership:** Pioneer Towing Company
- **Zoning:** Regional Business
- **Shoreline:** Downtown Waterfront (DW)
- **Surrounding Land Use:** Industrial and commercial uses
- **Nearby Attractions:** Log Boom Park, Burke-Gilman Trail, Kenmore Air, UW Bothell
- **Nearby Employment Areas:** Kenmore, Bothell

LAKEPOINTE

SITE CONTEXT

NEIGHBORHOOD CHARACTERISTICS

The neighborhood around the site is comprised of predominantly industrial and commercial land uses with surface parking lots. Adjacent sites include sand and gravel distribution, seafood processing and vehicle storage. Downtown Kenmore is located within a 10-minute walk of the site and includes restaurants and retail, along with some high-density residential developments.

Kenmore Air uses the nearby waterway to the north, and a small commercial wharf is near the site. POF operations would be coordinated with other marine uses.

REGULATORY ENVIRONMENT

Since the 2015 Service Expansion Options Report, the City of Kenmore has updated its Comprehensive Plan. In this update, the plan prioritizes the creation of ferry service in the Downtown Waterfront shoreline designation, which includes the Lakepointe site. The Lakepointe site was originally planned for a major development project, but the development timeline is unknown.

The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, in-water work requires approval from federal, state and local agencies as well as coordination with tribes. To support agency review, a biological evaluation and other supporting environmental studies will be required.

Figure 1- View of the Lakepointe site, looking north

NEARBY PLANNING UPDATES

- **Kenmore Walkways and Waterways (2016):** The program focuses on improving pedestrian access; construction is scheduled for 2023.
- **Kenmore Comprehensive Plan (2015):** The new Comprehensive Plan prioritizes ferry development in DW shoreline zones.
- **Bothell's Downtown Revitalization Area (2006)**: This measure has increased the number developments and enhancements in downtown Bothell.
- **Bothell Comprehensive Plan (2015):** This update institutes a Residential - Activity Center designation to further encourage mixed-use development and population growth.

NAVIGATIONAL CONSIDERATIONS

EXPOSURE

The channel is protected.

WATER DEPTH

The water depths at Lakepointe are adequate for POF service. A bathymetric study would be required for the design of overwater improvements at this location.

NAVIGATIONAL OBSTACLES

No navigational obstacles were observed around the site.

Figure 2- View from Lakepointe site, looking west

INFRASTRUCTURE

OVERWATER

The site was previously used for construction staging of the 520 Bridge project, and remaining marine infrastructure includes an existing concrete bulkhead with cleats.

Proposed Overwater Improvements

A service float with fendering, cleats, and a gangway would be required. A structural assessment and geotechnical report would also be recommended prior to design of the landing. The moorage and maintenance facility improvements are included in Attachment A.5: Maintenance Profile.

Figure 3- Lakepointe site, looking east

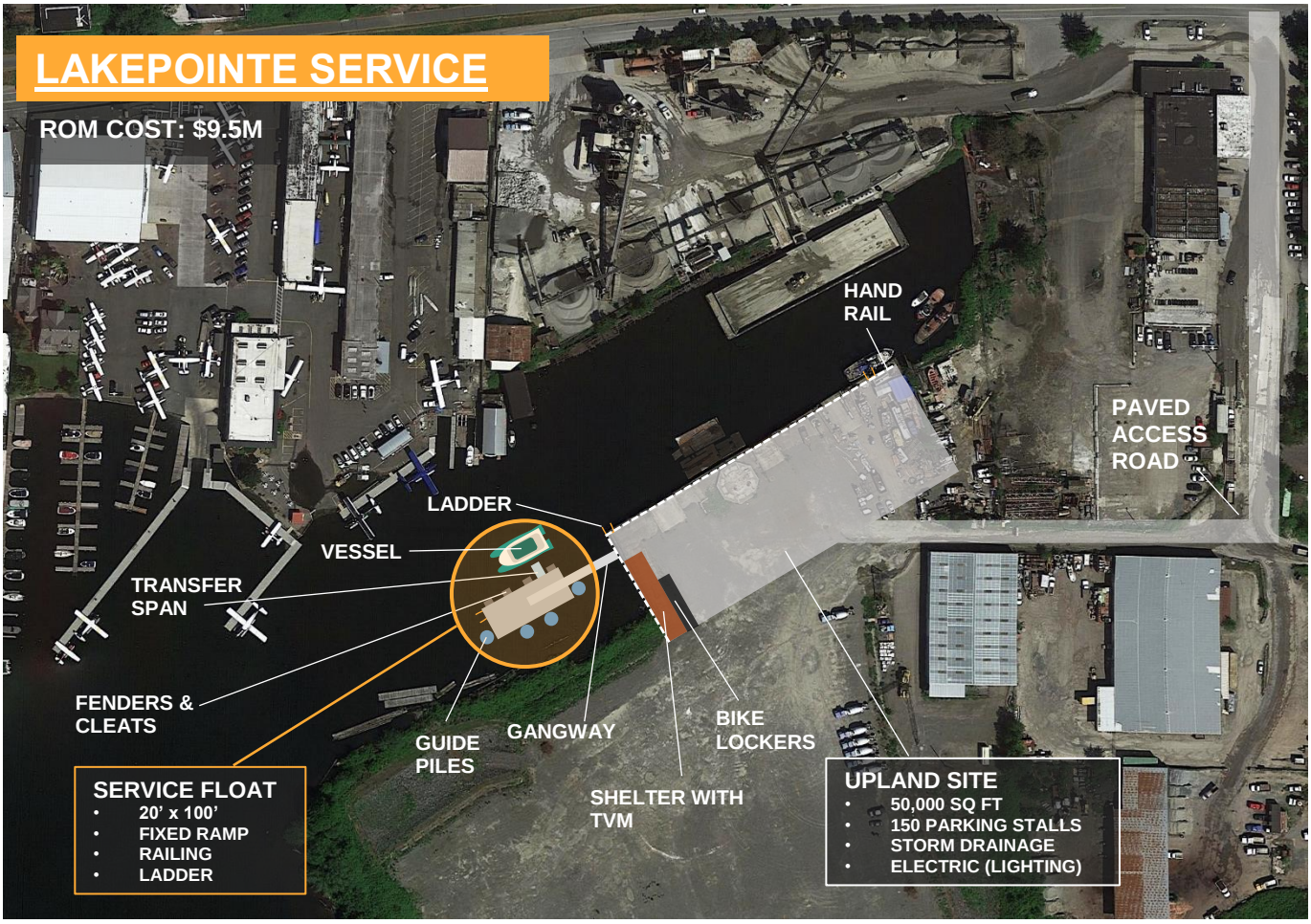
LAKEPOINTE

UPLANDS

No upland infrastructure for POF service currently exists; however, the undeveloped space offers the opportunity to build supporting facilities. The moorage and maintenance facility improvements are included in Attachment A.5: Maintenance Profile.

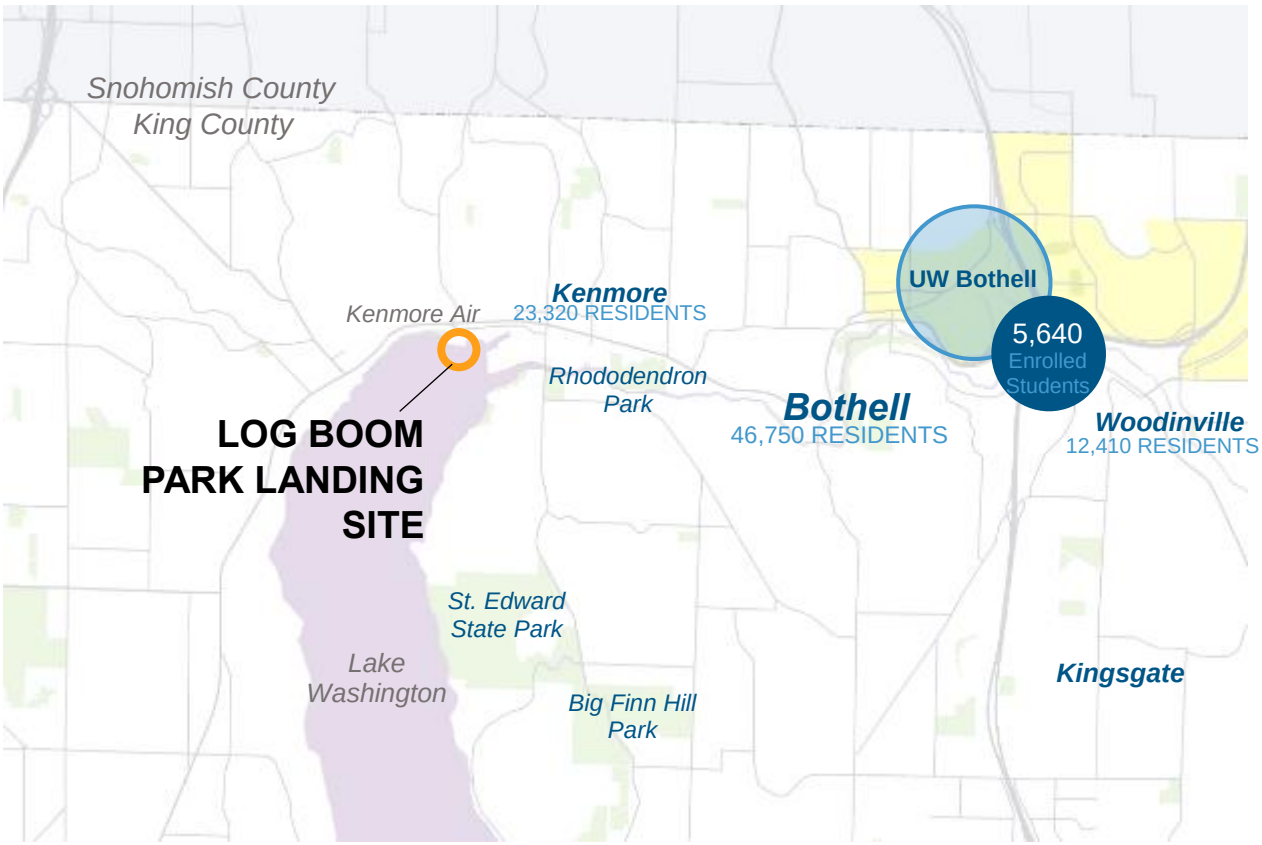
Proposed Upland Improvements

- Utilities, walkways, lighting, and security elements (fencing, cameras, gates, etc.)
- Gravel parking lot for passengers and crew/maintenance staff and an associated access road connecting the lot to NE 175th Street
- Ticketing, signage, parking, bike racks, and drop-off area.
- Potential shelter: There is adequate area on site to install a passenger shelter, but it may not be necessary if the facility is developed into a park and ride. The specified area of installation would likely be cleared of existing vegetation or materials and prepped for installation.



LOG BOOM PARK

LAKEPOINTE



SUMMARY

Located near downtown Kenmore, the Log Boom Park pier is commonly used for fishing and other recreational activities. This landing site is roughly three miles from downtown Bothell and four miles from the UW Bothell Campus.

OPPORTUNITIES

- **Existing Infrastructure:** The site has an existing pier and park facilities.

CHALLENGES

- **Water Depth:** When lake levels are low, depths around the pier may not be adequate for POF service. A bathymetric survey would be required.
- **Access:** Parking on site is limited. A shuttle would likely need to be provided from nearby Park and Rides.
- **Land Use Compatibility:** Ferry terminals are a prohibited use in this shoreline designation.

IMPLEMENTATION

Required Improvements:

Bathymetric survey, fendering, cleats, ticketing, lighting, and signage

Necessary Approvals:

Federal, state, local approvals

ROM Capital Cost Estimate:

$8.5M

Timeline (once funding is secured): 3-5 years

ACCESS & CONNECTIVITY

- **ADA Access:** The site has ADA accessible walkways and sidewalks, and the dock extends directly from the shore. The 400-foot distance from the parking lot to the dock could prove difficult for some users.
- **Parking:** The park currently has 46 general parking stalls and two ADA stalls, all limited to 4-hour parking. Street parking is available along 175th Street, but it is mostly full by 10:00am. The Vine Church parking lot (75 spaces) is approximately 0.3 miles away, and the Kenmore Park and Ride (603 spaces) is approximately one mile away. Both lots are usually filled 90% or above by 9 AM on weekdays.
- **Bicycle:** The park is located on the Burke-Gilman and is also near the Sammamish River Trail.
- **Pedestrian:** Being located in a suburban residential area may limit the number of walk-on passengers. Some pedestrians may use the Burke Gilman Trail.
- **Transit:** Multiple routes provide service along Bothell Way that riders can access by walking up a short but steep hill from the park. The closest bus stop is approximately 0.3 miles from the site.
- **Shuttle:** There is limited space for a full-sized shuttle to maneuver and drop riders off. A smaller shuttle may be necessary.
- **Micromobility:** There is limited curb space for docking stations.

BUS STOP DESTINATIONS
Southwest express to Downton Seattle, East to Bothell

QUICK FACTS

- **Ownership:** City of Kenmore
- **Zoning:** Parks
- **Shoreline:** Urban Conservancy (UC)
- **Surrounding Land Use:** Public Park
- **Nearby Attractions:** Burke-Gilman Trail, Kenmore Air, UW Bothell
- **Nearby Employment Areas:** Downton Kenmore, Bothell

LOG BOOM PARK

SITE CONTEXT

NEIGHBORHOOD CHARACTERISTICS

The area around the pier is a public park with a gated condominium community to the east of the site. Downtown Kenmore (located within a 20-minute walk) includes restaurants and retail, along with some high-density residential developments.

REGULATORY ENVIRONMENT

The City of Kenmore's code currently prohibits POF terminals as a use in Urban Conservancy (UC) shoreline designations. POF use would need to be approved by the City of Kenmore. The updated City of Kenmore Comprehensive Plan also prioritizes ferry service in the Downtown Waterfront shoreline designation, not Urban Conservancy designations.

The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, overwater work requires approval from federal, state and local agencies as well as coordination with tribes.

Figure 4- View of the finger piers and Log Boom Park, looking north

NEARBY PLANNING UPDATES

- **Kenmore Walkways and Waterways (2016):** The program focuses on improving pedestrian access; construction is scheduled for 2023.
- **Kenmore Comprehensive Plan (2015):** The new Comprehensive Plan prioritizes ferry development in DW shoreline zones.
- **Bothell's Downtown Revitalization Area (2006)**: This measure has increased the number developments and enhancements in downtown Bothell.
- **Bothell Comprehensive Plan (2015):** This update institutes a Residential - Activity Center designation to further encourage mixed-use development and population growth.

NAVIGATIONAL CONSIDERATIONS

EXPOSURE

The south end of the pier could be subject to rough weather conditions. A wind and wave analysis would be recommended.

WATER DEPTH

During the summer months when the lake level is low, the depths around the pier are approximately 7 feet at the deepest, which is likely inadequate to support a POF vessel. A bathymetric survey would be required for float design.

Figure 5- Pile field south of Log Boom Pier

NAVIGATIONAL OBSTACLES

As shown in Figure 5, a pile field located near the south end of the pier presents an obstruction and would likely need to be removed for safe POF navigation.

Operating protocols would need to be developed to ensure safety of adjacent recreational vessel traffic and fishing.

INFRASTRUCTURE

OVERWATER

There is an existing 550-foot-long pier at the site with two perpendicular 140-foot-long piers and nine 20-foot-long finger piers. The main piers provide sufficient room for passenger queuing, loading, unloading, and vessel berthing space. The concrete surface of the dock is level, in moderate condition and has limited non-skid properties.

Proposed Overwater Improvements

The pier appears to be in good condition, although a structural assessment and wind/wave analysis would be needed to confirm that the pier could support the landing of a POF vessel. The following minor improvements would need to be added to support ferry service:

Figure 6- View of the Log Boom Pier, looking southwest

- Transfer span
- Non-skid material covering the unloading and loading area
- Fendering and cleats
- Shelter on existing pier to protect passengers from inclement weather

LOG BOOM PARK

UPLANDS

Log Boom Park has existing park facilities including restrooms, benches, and an ADA accessible walkway to access the pier. There is adequate area near the pier to add signage, information, and ticketing.

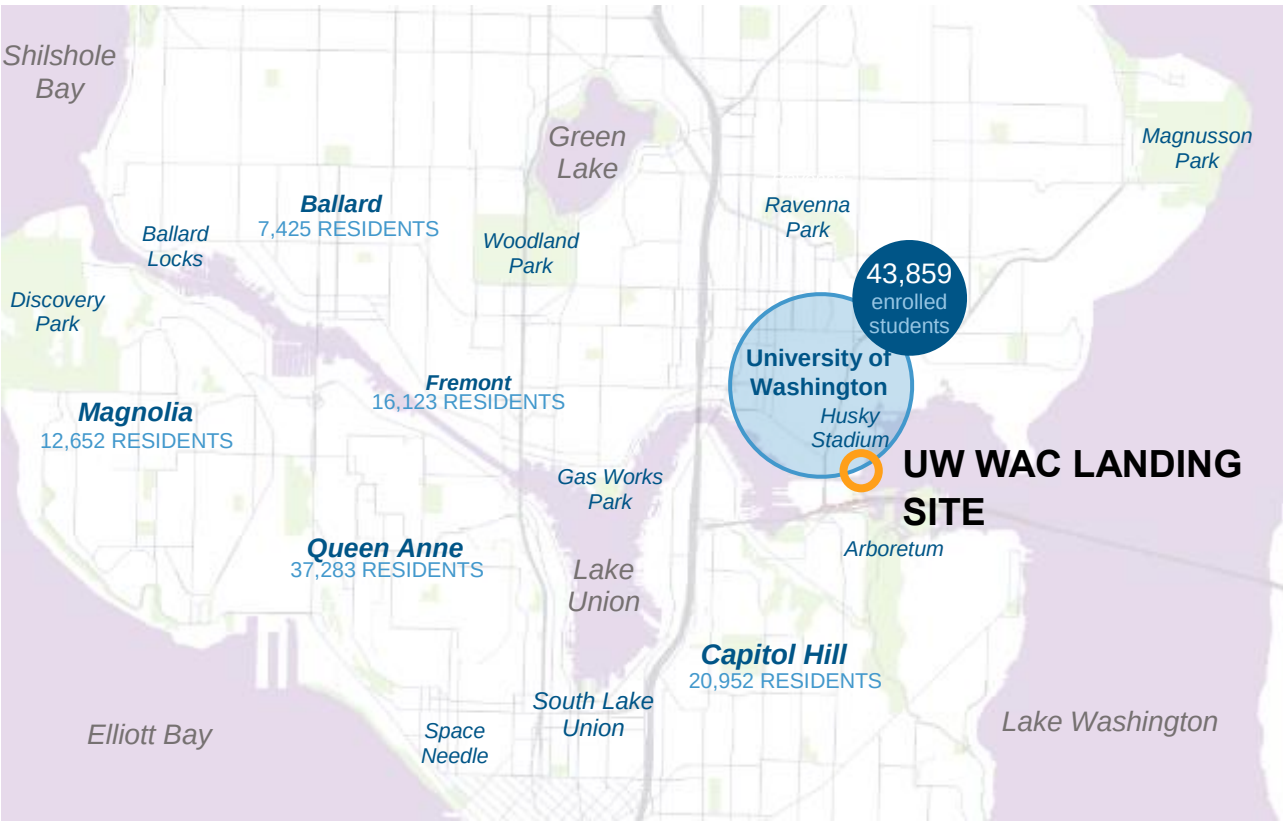
Though a shuttle would be advantageous for the site, the park's parking area is too small to accommodate a full-sized bus. It may be possible to accommodate a shuttle further east on 175th Street NE. Since parking is limited near the site, it is likely that shuttle service would be required from a local park and ride.

Proposed Upland Improvements

Minor improvements would be required at Log Boom Park to support POF service, including ticketing, lighting, and signage.

While service would be from Log Boom Park, overnight moorage and any POF maintenance activities would occur at the offsite maintenance facility. Please see A.5 for information regarding this facility.

UW WAC



SUMMARY

Located near the UW Waterfront Activities Center (WAC) on the UW campus, this potential landing site is within walking distance of the transit hub that includes University of Washington Link Light Rail Station and several bus routes.

OPPORTUNITIES

- **Connectivity:** The site is located with a 6-minute walk of a major transit hub that connects to downtown Seattle.
- **UW:** UW campus is an employment and educational destination for Kenmore commuters.

CHALLENGES

- **In-Water Work:** The implementation schedule would be extended by the need for in-water work. A bathymetric survey would be required to assess water depths.
- **Navigation:** Operating protocols would need to be developed based on the close proximity of recreational vessel traffic.

IMPLEMENTATION

Required Improvements:

Replace float, ramp, gangway, transfer span, upland ticketing and signage

Necessary Permits and Approvals:

Federal, state and local

ROM Capital Cost Estimates:

$5.9 M to $7.6 M

Timeline (once funding is secured): 3-5 years

ACCESS & CONNECTIVITY

- **ADA Access:** Traffic barriers separate the parking area in front of the Canoe House from the path to the float. The path to the float has stairs and is too steep in places.
- **Parking:** The UW operates a large, pay parking lot ($17/day) on the south side of Husky Stadium.
- **Bicycle:** The Burke Gilman Trail is an approximately 8-minute walk.
- **Pedestrian:** A trail extends west along the Montlake Cut and north along Union Bay, but it is not a direct route to most major destinations. Pedestrians must walk through a large parking lot to reach the light rail station or to reach Montlake Boulevard and other destinations. Sidewalks are available for most of the journey.
- **Shuttle/TNC:** There is an existing parking area where shuttles could queue.
- **Micromobility:** There is drop-off and pick-up space in the nearby parking lot.
- **Transit:** The University of Washington Link light-rail station opened in 2016 and is an approximately 6- minute walk from the WAC. From the Westlake Link station in downtown Seattle, it takes approximately 13 minutes to get to the WAC via the Link, including the walk. Approximately, 14 bus routes are served by the nearby stop at NE Pacific St. and Montlake Blvd NE.

BUS STOP DESTINATIONS

South to Renton and Tacoma, west to Ballard Wallingford, east to, Issaquah, Kirkland, Redmond, north to Shoreline and Northgate

QUICK FACTS

- **Ownership:** UW
- **Zoning:** Major Institution Overlay- Low-rise Residential
- **Shoreline:** Conservancy Management (CM)
- **Surrounding Land Use:** Major Institution
- **Nearby Attractions:** the UW, Husky Stadium, U-District, Washington Park Arboretum
- **Nearby Employment Areas:** UW, downtown Seattle

UW WAC

SITE CONTEXT

NEIGHBORHOOD CHARACTERISTICS

The site is located on the University of Washington campus. Students and pedestrians use the area, and many recreational boaters use the nearby Waterfront Activities Center. The site is also close to Husky Stadium and the UW Medical Center.

This float and other surrounding floats are often used by non-motorized watercraft. Operating protocols would need to be developed to ensure the safety of recreational vessels.

REGULATORY ENVIRONMENT

This site is located in the Conservancy Management (CM) shoreline environment. In the CM shoreline zone, POF terminals are allowed as a special use with mitigation of any substantial adverse impacts. Moreover, as the site lies within the UW major institution overlay, close coordination with the UW would be vital for determining any mitigation measures and other details of the project.

The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, in-water work requires approval from federal, state and local agencies as well as coordination with tribes. To support agency review, a biological evaluation and other supporting environmental studies will be required.

Figure 7- View of the UW Site from the existing path

NEARBY PLANNING UPDATES

- **LINK Light Rail and ST3 (2015-2016):** Since 2015, the UW station has been built. Moreover, with the passing of ST3, POF riders landing at the UW will be able to reach more destinations via the programmed North and East Link expansions
- **University of Washington Campus Master Plan (2019):** The UW is planning a continuous waterfront pedestrian trail that would be near the site.
- **City of Seattle HALA and MHA (2019):** Though this site is in a residential zone it was not impacted by the recently passed Housing Affordability and Livability Agenda.

NAVIGATIONAL CONSIDERATIONS

EXPOSURE

This site is well sheltered by Union Bay.

WATER DEPTH

Water depths are adequate for POF service.

NAVIGATIONAL OBSTACLES

There are many non-motorized recreational vessels using this waterway, and operating protocols would need to be established to ensure safety of all vessel traffic.

Figure 8- Dock at UW landing site, looking north

INFRASTRUCTURE

OVERWATER

There is currently a 110-by-12-foot wooden floating dock at the site with a 15-foot wooden ramp connecting it to shore. The surface of the dock is in poor condition with gaps greater than 1/2 inch in some places, along with protruding bolts and boards. The surface of the ramp is in fair condition, but it has stairs and is not ADA accessible. The ramp is wearing on the dock in places.

Figure 9- Path to UW landing site

Proposed Overwater Improvements

Two options for replacing the existing dock have been identified. Option 1 includes replacing the existing float in approximately the same size and configuration.

Option 2 includes replacing the existing float with a new float oriented perpendicular to shore to allow for two vessels to berth. The float would be positioned further east from the existing float and connected via a gangway that allows recreational boaters to pass underneath.

Piles for new dock/float would be needed for both options, though more piles would be needed in Option 2. A geotechnical report would be recommended prior to design of either option.

UPLANDS

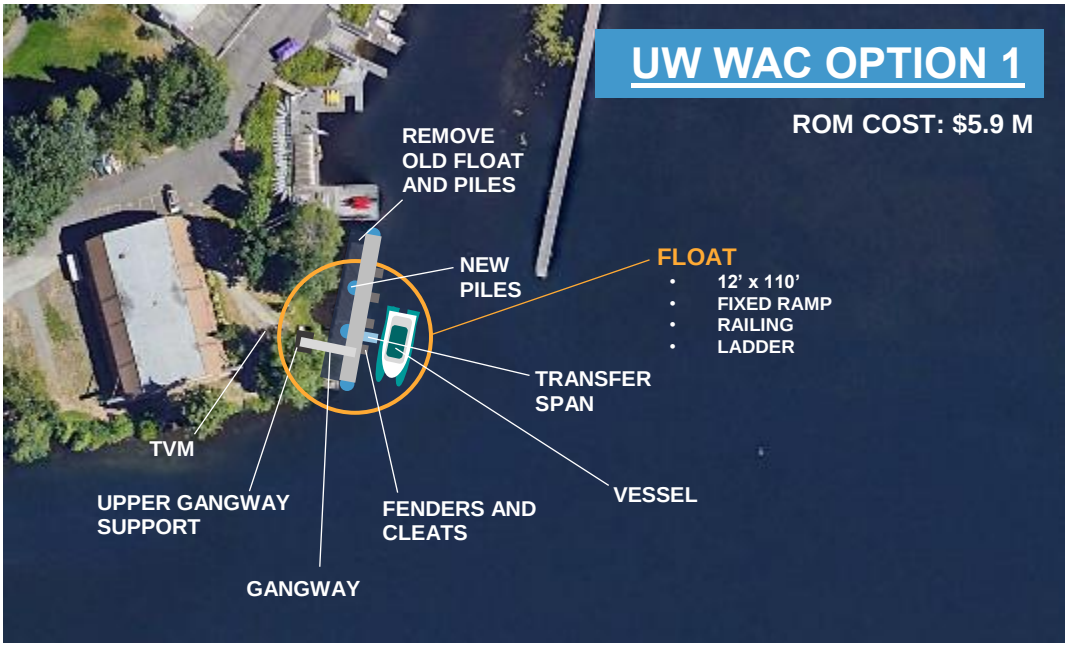
The site is connected to existing pathways that have limited lighting and are in poor condition. Restrooms are available near the site at the WAC. No ADA accessible infrastructure to get from the parking lot to the potential dock/float location. The path has some steep sections and is severely cracked in places, as shown in Figure 9.

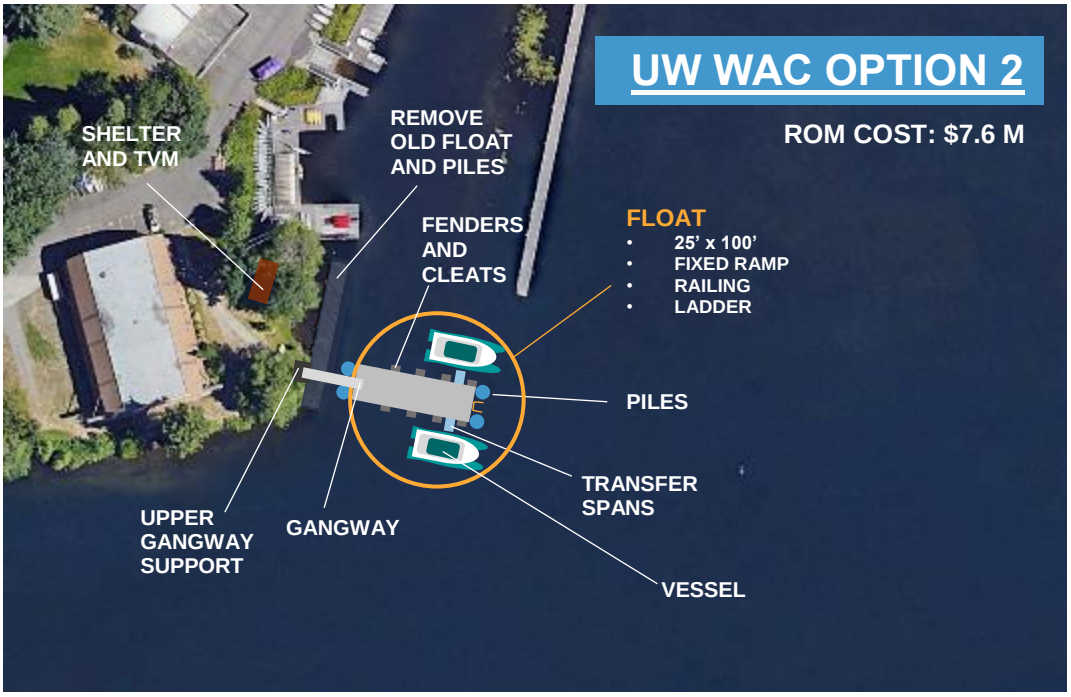
UW WAC

Proposed Upland Improvements

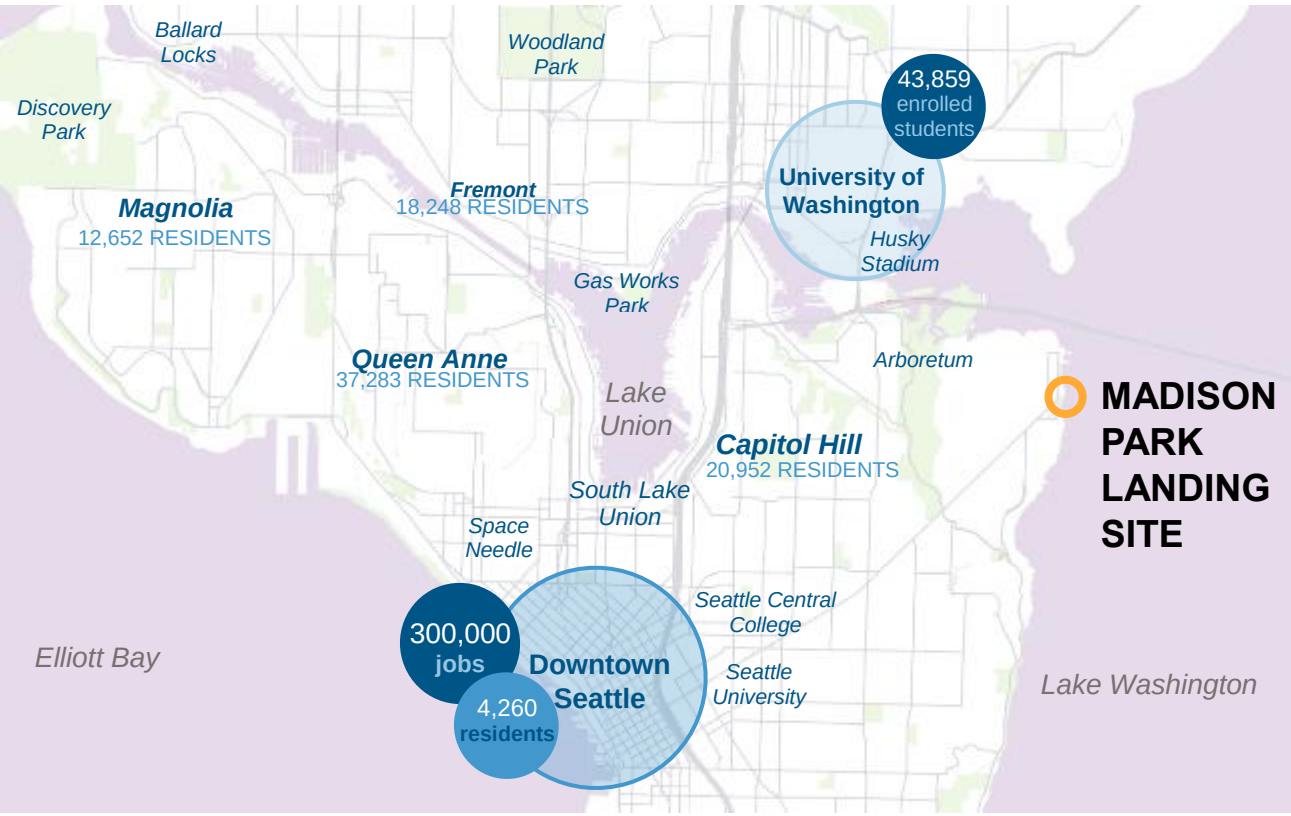
For both overwater options, some new uplands infrastructure would need to be added while other existing features would need updates.

- Ticketing, signage, lighting.
- The existing walkway needs repairs and alterations to meet ADA standards.
- It may be possible to construct a shelter near the Canoe House.
- If necessary, a shuttle holding area could be incorporated into the parking near the site.





MADISON PARK



SUMMARY

Located directly adjacent to Madison Park, the Madison Park pier extends into Lake Washington from the end of Madison Street. This is a recreational pier and is currently too small to support POF service.

OPPORTUNITIES

- **Future Connectivity:** If Madison BRT extended to Madison Park by 2040, this site would have good connections to downtown Seattle.

CHALLENGES

- **Connectivity:** Connections to downtown Seattle are poor, with travel times between 30 and 40 minutes via bus.
- **In-Water Work:** Schedule would be extended by the need for in-water work.

IMPLEMENTATION

Required Improvements:

New float, evaluate existing pier for improvements, gangway, transfer span, cleats, fendering, sidewalks, upland ticketing and signage, shelter

Necessary Permits and Approvals:

Federal, state and local approvals

ROM Capital Cost Estimate:

$7.5 M

Timeline (once funding is secured):
3-5 years

ACCESS & CONNECTIVITY

- **ADA Access:** The guardrail prevents wheelchair access. The street and grassy area to the south are sloped.
- **Parking:** There would be little demand for parking by riders since Madison would be the destination for the majority of riders on this route. There is 2-hour street parking nearby.
- **Bicycle:** There are no dedicated bike lanes along E Madison Street.
- **Pedestrian:** Surrounding streets include sidewalks, and there is a path through Madison Park. While the facility is just north of Madison Park, there are no sidewalks directly to the dock, and a guardrail obstructs access.
- **Transit:** Route #11 runs along Madison Avenue to 43rd Avenue E approximately every 15 minutes during the peak period in the peak direction. Trip time to downtown Seattle is between 30 and 40 minutes. Without additional service, ferry riders could overwhelm the existing service and/or total travel time may be too long to attract adequate ferry ridership.
- **Shuttle/TNC:** There are King County Metro bus pull-outs that could be used, but the shuttle would interfere with the existing bus service.
- **Micromobility:** There is limited upland curb space for a drop-off/pick-up area.

BUS STOP DESTINATIONS
West to Capitol Hill and Downton Seattle

QUICK FACTS

- **Ownership:** Washington DNR
- **Zoning:** Low-rise Residential (LR-3)
- **Shoreline:** Conservancy Recreation (CR)
- **Surrounding Land Use:** Residential
- **Nearby Attractions:** Washington Park Arboretum
- **Nearby Employment Areas:** Downtown Seattle

MADISON PARK

SITE CONTEXT

NEIGHBORHOOD CHARACTERISTICS

The neighborhood vicinity around the site is predominantly residential, including apartments and senior living communities. The pier is situated adjacent to a residential community and the public swimming area in Madison Park. There are some small shops and restaurants along Madison Street near the site.

REGULATORY ENVIRONMENT

The Madison Park site is located in the City of Seattle and is subject to the City of Seattle zoning code. The site is located in the Conservancy Recreation (CR) shoreline designation. Regulations for the CR shoreline designation allow POF terminals as a special use.

The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, in-water work requires approval from federal, state and local agencies as well as coordination with tribes. To support agency review, a biological evaluation and other supporting environmental studies will likely be required.

Figure 10- Madison Park as seen from the existing dock, looking south

NEARBY PLANNING UPDATES

- **King County MetroCONNECTS and BRT (2017):** A Rapid Ride is programmed for Madison Street that will go as far as Martin Luther King Way by 2021. By 2040, Madison Park itself is planned to be served by a Rapid Ride Line. Until 2040, the Martin Luther King Way stop may still be insufficient connection to downtown Seattle, as it approximately 1.5 miles from the existing dock.

- **City of Seattle HALA and MHA (2019):** Though this site is in a residential zone it was not impacted by the recently passed Housing Affordability and Livability Agenda.

NAVIGATIONAL CONSIDERATIONS

EXPOSURE

This site is exposed to the north, east and south. A wind/wave analysis would be recommended prior to design of a landing at this location.

WATER DEPTH

The area under consideration for POF berthing has a water depth of approximately 10 feet and is likely adequate for POF service. A bathymetric survey is recommended prior to design of a landing at this location.

NAVIGATIONAL OBSTACLES

The nearby swimming area could pose a potential navigational hazard, particularly during the summer when use of the area is higher. Operating protocols would need to be developed to ensure the safety of people using the swimming area.

INFRASTRUCTURE

OVERWATER

There is an existing 60-foot-by-12-foot wooden fixed pier located on site that is not long enough to accommodate a POF vessel. Additionally, the pier is not wide enough to support safe passenger loading and unloading. The dock is connected to the shore by a wooden ramp. The surfaces of the dock and the ramp consist of wooden planks, some of which are uneven and deteriorating.

Figure 11- Madison Park pier, looking east

The pier does not have cleats and is too small to accommodate both moorage and existing uses. The existing dock may not be able to handle the displacement loads of the vessel.

Proposed Overwater Improvements

A new pile-supported float with cleats and fenders would be required for POF service. Prior to design, a geotechnical report would be recommended. The decking would need to be replaced on the old pier.

MADISON PARK

UPLANDS

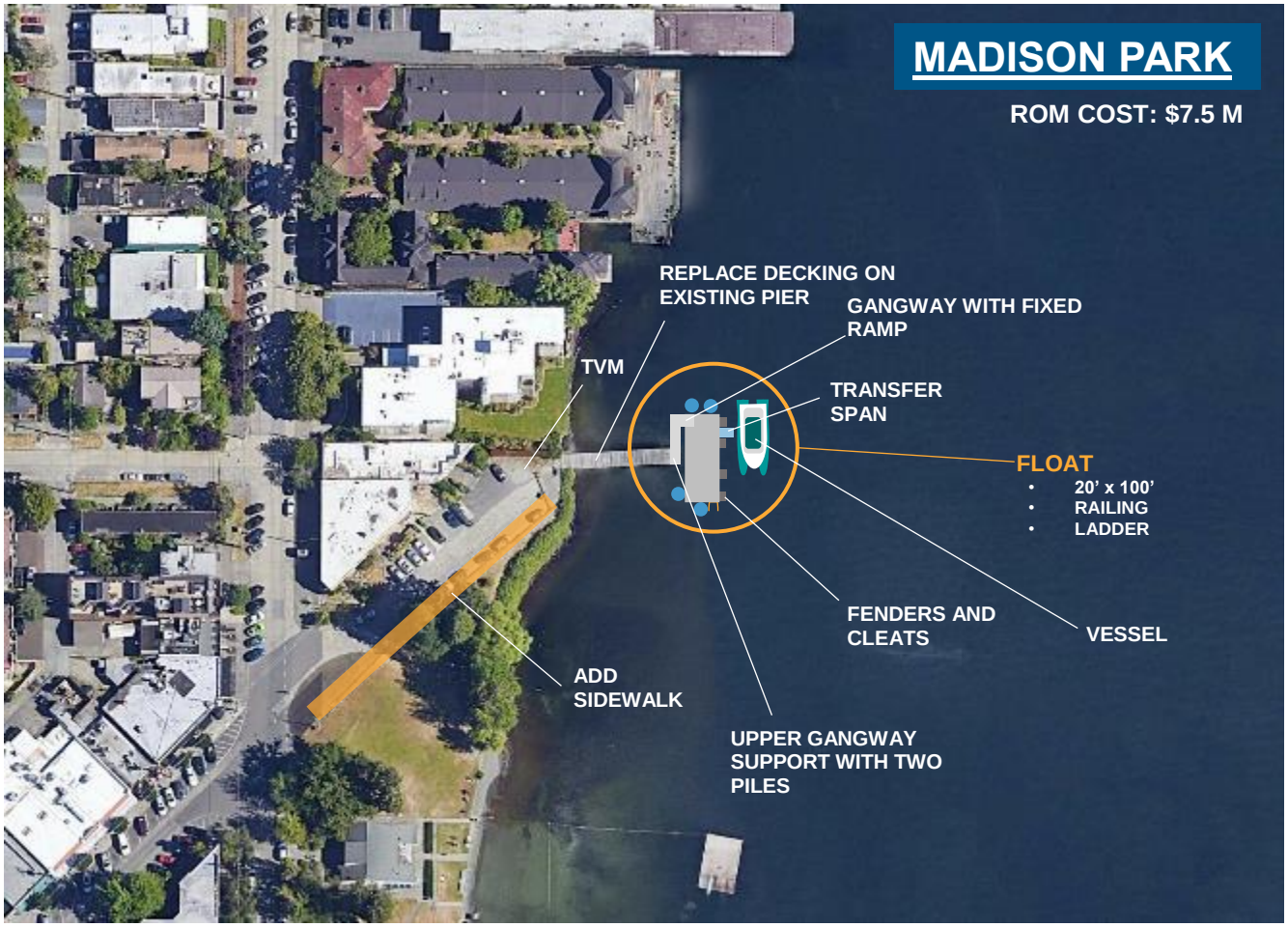
There is limited existing upland infrastructure at the site. Restrooms are available at the adjacent Madison Park. ADA access to the pier is restricted by a guardrail at the top of the ramp. Sidewalks are present at the intersection of E Madison St. and 43rd Ave E, but they do not continue all the way down to site. Adding sidewalks may be unpopular if it results in decreased on-street parking.

Proposed Upland Improvements

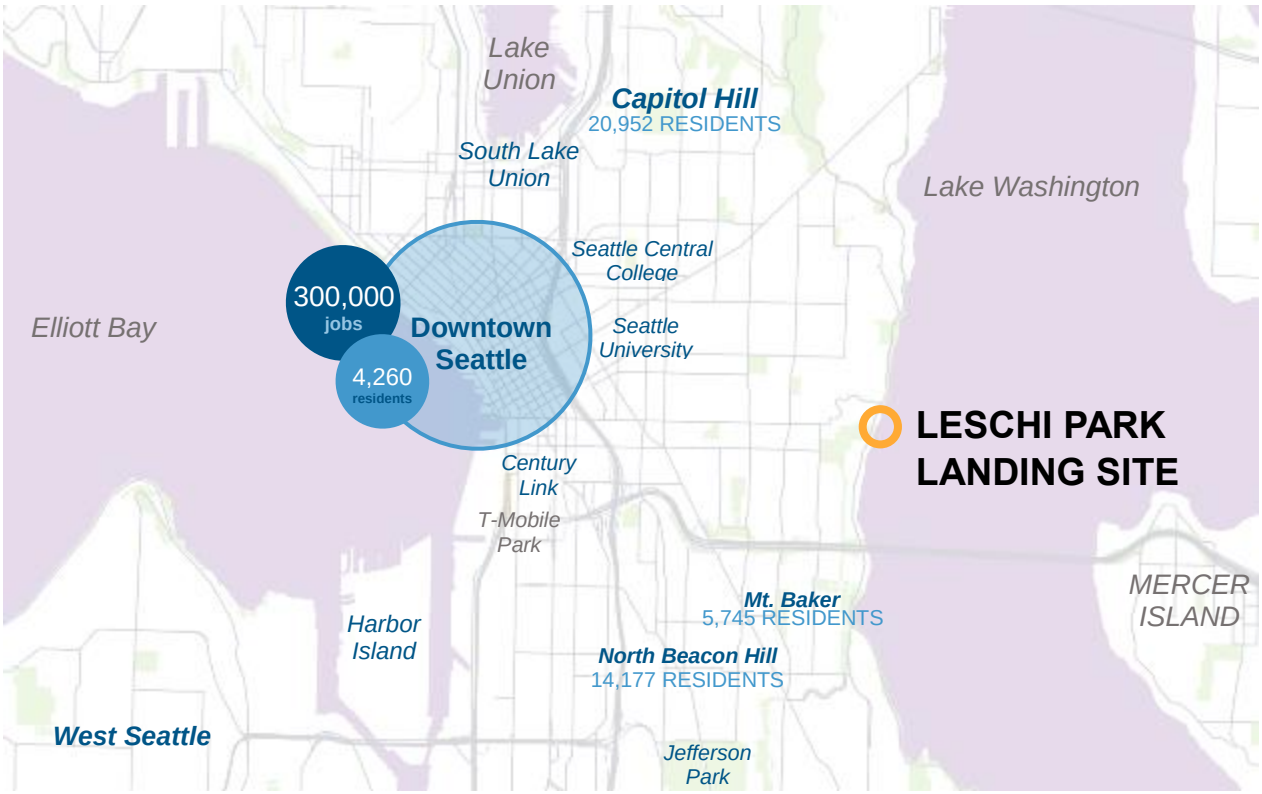
Some new upland infrastructure will need to be constructed for this site, including:

- Ticketing, lighting, and signage
- Sidewalks and ADA accessible infrastructure
- Shelter
- Shuttle turnaround

Figure 12- View directly upland from the top of the existing dock



LESCHI PARK



SUMMARY

Leschi Park currently serves as a park and marina, and is not well connected for commuter service to downtown Seattle. A structural assessment of the existing pier would be needed.

OPPORTUNITIES

- **Water Depth:** The water depth appears to be adequate for service.

CHALLENGES

- **Connectivity:** Connections to downtown Seattle are poor, with travel times between 30 and 40 minutes via bus.
- **Uncertainty:** Scope of improvements and schedule may need to be extended if the need for in-water work is necessary after the structural assessment.

IMPLEMENTATION

Required Improvements:

Replacement decking, fendering, cleats, transfer span, bike facilities, upland ticketing and signage, shelter

Necessary Approvals:

Federal, state and local approvals

ROM Capital Cost Estimate:

$4.0 M

Timeline (once funding is secured):
3-5 years

ACCESS & CONNECTIVITY

- **ADA Access:** The upland infrastructure is ADA accessible.
- **Parking:** There would be little demand for parking by riders since Leschi would be the destination for most riders. Street parking is available nearby but is frequently full during the summer.
- **Bicycle:** Lake Avenue South is a designated bicycle route with a shared roadway. The I-90 regional trail is 1/2 mile south.
- **Pedestrian:** There are sidewalks along Lakeside Avenue South and a trail through Leschi Park.
- **Transit:** Route #27 runs along Lakeside Ave South approximately every 20 minutes during the peak period in the peak direction. Trip time to downtown Seattle is approximately 25 minutes. Route 2 to downtown Seattle is also accessible via a stop about one mile from the Leschi float.
- **Shuttle/TNC:** Shuttles and TNCs could queue in the parking lot.
- **Micromobility:** There is drop-off and pick-up space in the adjacent parking lot.

BUS STOP DESTINATIONS
West to Downton Seattle

QUICK FACTS

- **Ownership:** City of Seattle
- **Zoning:** Single Family
- **Shoreline:** Conservancy Management (CM)
- **Surrounding Land Use:** Residential and Neighborhood Commercial
- **Nearby Attractions:** Frink Park, Madrona Park, Seattle University
- **Nearby Employment Areas:** Downtown Seattle

LESCHI PARK

SITE CONTEXT

NEIGHBORHOOD CHARACTERISTICS

Leschi Park is located in a mainly residential neighborhood with some restaurants and retail located along the waterfront of Lake Washington Boulevard. There are a few restaurants and shops to the north of the site along Lakeside Avenue. To the south and west, the neighborhood is mostly public parks and homes.

REGULATORY ENVIRONMENT

The Leschi Park site is located in a Conservancy Management (CM) shoreline designation which allows for POF terminals as a special use as long as mitigation is provided for of any substantially adverse impacts to the adjacent neighborhood. As this site would see minimal improvements, substantial impact is not anticipated, and mitigation efforts would likely not be extensive.

The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, overwater work requires approval from federal, state and local agencies as well as coordination with tribes.

Figure 13- View of the adjacent properties from the Leschi site, looking northwest

NEARBY PLANNING UPDATES

- **King County Metro RapidRide:** Though King County Metro has large plans to expand their RapidRide program, the area near Leschi Park is not programmed or planned for any major expansions by 2040. No new RapidRide lines are targeted to reach the park directly. The nearest planned RapidRide Line would run along 23rd Ave. which is approximately 1.0 miles from the park.
- **City of Seattle HALA and MHA (2019):** Though this site is in a residential zone it was not impacted by the recently passed Housing Affordability and Livability Agenda.

NAVIGATIONAL CONSIDERATIONS

EXPOSURE

This site is adjacent to marinas and is protected from exposure.

WATER DEPTH

Water depths appear to be sufficient for a POF vessel. However, a bathymetric survey is recommend to confirm adequate water depths.

NAVIGATIONAL OBSTACLES

No navigational obstacles were observed.

INFRASTRUCTURE

OVERWATER

There is an existing 140-foot-by-45-foot wooden pier connected to the shore by a 62-foot wooden plank ramp. The surface of the dock consists of wooden planks, some of which are uneven and deteriorating. A structural assessment of the existing pier is recommended for its ability to support POF service.

The existing float includes four large cleats that are satisfactory for mooring a POF vessel.

Proposed Overwater Improvements

A structural assessment would be needed, but it is currently uncertain whether or not any in-water work will be necessary.

New decking, a railing, and non-skid surfacing would be needed. A rain shelter could potentially be added on the dock instead of in the parking lot.

Figure 14- View of the Leschi Park site, looking east

LESCHI PARK

UPLANDS

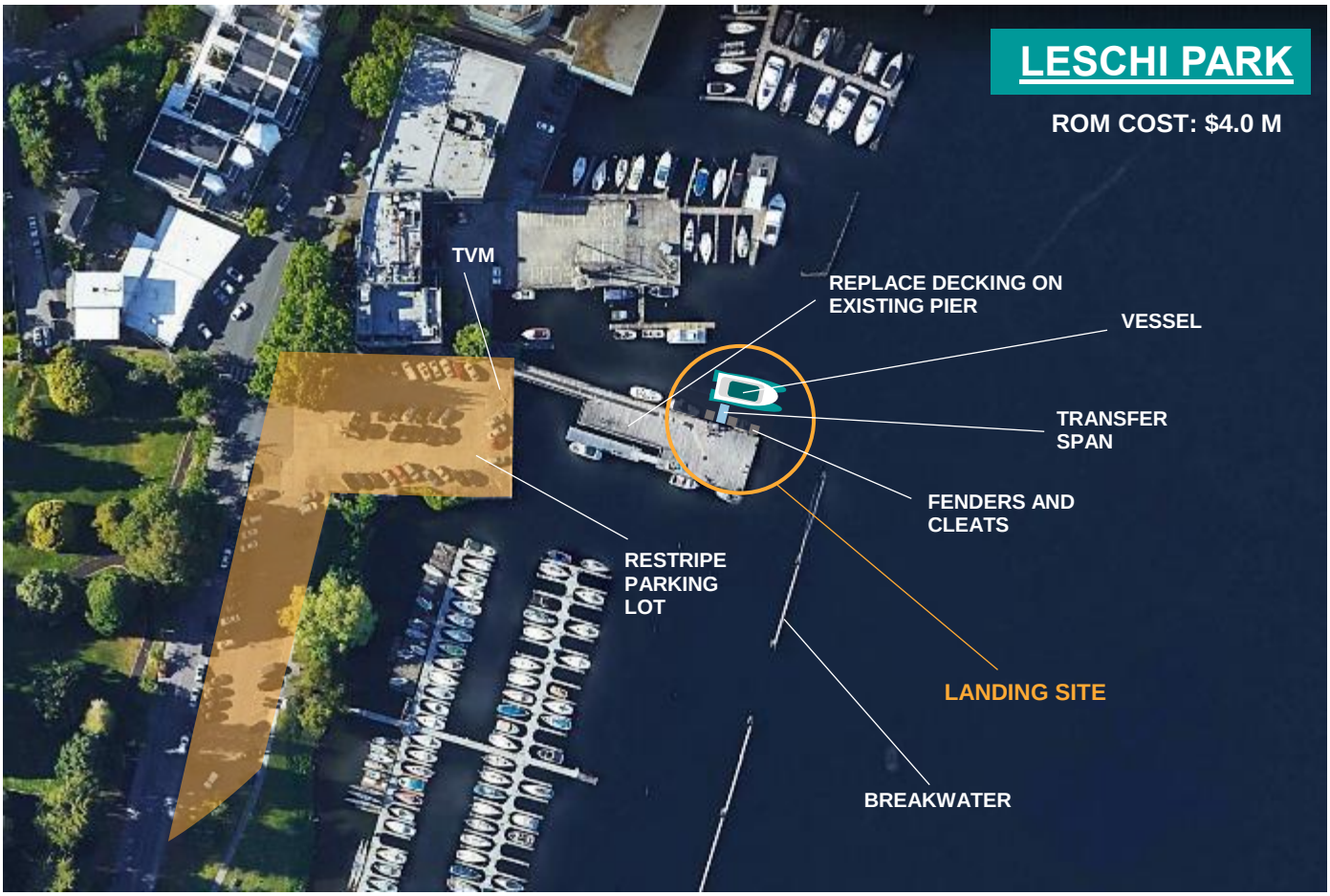
The upland infrastructure consists of sidewalks connecting to Lakeside Avenue South. Additionally, there is a small parking lot.

Proposed Upland Improvements

The following uplands elements will be necessary to support POF service:

- Ticketing and signage
- Parking lot restriping and bike storage
- Shelter could be provided

Figure 15- View of the uplands parking lot, looking west



Attachment A.4

Route Implementation Assumptions

KENMORE ROUTE IMPLEMENTATION – ASSUMPTIONS

ROUTE ASSUMPTIONS

- Maximum Speed: 28 knots
- Slowdown Speed: 7 knots
- Maneuvering Speed: 5 knots
- Min. water depths required: 8-10 feet (propeller), 6-8 feet (jets)
- Other lake considerations: POF awareness of UW crew team practice schedules

VESSEL ASSUMPTIONS

- Vessel size: 150 passengers
- Vessel propulsion: Diesel propulsion/hybrid propulsion, four main engines[1]
- Crew size: Three, a captain and two deckhands
- Fuel consumption:
  - Data from All American Marine for 150-pax vessel for vessel designed for SECO Development. Assumed a fuel tank capacity of 750 gallons per tank (one each hull for total vessel capacity of 1,500 gallons).
  - With a full tank of ~95% representing a maximum of 710 gallons each tank and retaining a minimum of ~15% in the tank, or 110 gallons/tank, this means a maximum of 600 gallons/tank (vessel total of 1,200 gallons) of usable fuel between fueling stops.
  - A fuel consumption rate during maneuvering of 40% of cruising rates was assumed (or 20% of cruising rates with assumption that two engines will be used).
  - In-dock “dwell” time fuel consumption at 20% of cruising rates was assumed (10% assuming two-engine use).

OPERATING ASSUMPTIONS

- Number of vessels: (2): Route operates with one vessel, one as backup
- Moorage/maintenance location: Lakepointe (with capital improvements)
- Fueling: Fuel truck at Lakepointe
- Fueling by truck assumptions:
  - There are US Coast Guard certified fuel contractors that could perform this service.

[1] Diesel propulsion with four main engines was assumed for vessel capital and operating costs. Best available hybrid vessel technologies (diesel-electric, diesel-battery, etc.,) would be explored to meet King County sustainability goals. Hybrid vessel options are anticipated to be approximately 20% more to construct than a standard diesel propulsion.

- Fueling at the Lakepointe facility would eliminate the need to deadhead to/from an offsite fueling facility and would reduce the impact on the sailing schedule, because fueling could be accomplished on the front or back end of the service day.
- This fueling process could be accomplished using either maintenance staff or fewer crewmembers, which would reduce the labor costs.
- The cost of fuel ($/gallon) would likely be reduced using this approach.
- There would be an added cost of either having a contract in place with an approved spill response organization (such as National Response Corporation), or the purchase of containment boom that would need to be stored on the dock that could be launched (within an hour) of any spill that might occur during fueling operations. The costs of meeting these environmental and safety requirements has been included in the estimated fuel costs.
- Associated with the practice of fueling over the water, there would likely be the need to apply for, and gain, approval from the Kenmore Fire Department to conduct these fueling operations. The cost of obtaining fire department approval has not been included in estimates and would need to be added once requirements are established.

Schedule Assumptions

• Peak Seasonal Service	April through September
• Commute Service:	October through March
• Special Event (10 days):	Assumes 10 event days at UW WAC only
• Dwell time:	Minimum required dwell time was assumed to be 5 minutes for loading and 3 minutes for unloading. Where needed, additional dwell time was incorporated into the schedule to bring departures to the nearest 5 minutes.

Cost Assumptions

• Terminal security needs:	Fence/gate, camera
• Staff:	Agent at UW terminal during events and peak times
• Crew:	Assume operating hours + 45 minutes of crew costs for startup and tie-up time before and after passenger service
• Labor costs:	Assumes Marine Division 2019 salary rates
• Fuel price:	Assumes $3.80 per gallon of diesel fuel which includes environmental compliance costs
• Water Depths:	If bathymetric survey indicates that water depths are inadequate for POF service and dredging were required, significant additional costs and time would be required for permitting.
• Vessel maintenance:	

  - Labor – Estimated as two full-time dedicated maintenance personnel/employees – one engineer and two oilers. Direct (estimated base salary) + overhead.
  - Routine (or preventative) maintenance – Taken as a function of vessel operating hours and includes routine/preventative machinery maintenance, including materials and ancillary costs, assuming a cost of $5 per hour per engine ($20 per hour per vessel).
  - Annual maintenance – Includes the annual cost for vessel drydocks and hull/out-of-water maintenance, including labor, materials, and ancillary costs, estimated as $0.30 per foot of vessel length per vessel operating hours.
  - Unplanned maintenance – Cost of unplanned or unexpected machinery failures, taken as an additional 10% of the estimated combined maintenance costs.
- Terminal operations:
  - Labor – Assumes the presence of an information agent 4 hours per day (most likely at the UW WAC site during the PM commute); or 1/2 FTE (20 hours/week) during the 6 months of winter/commute service (no coverage on Saturdays); plus
    – assumes expanded coverage at both Kenmore and UW WAC totaling 8 hours per weekday (split between Kenmore and UW WAC) and 10 hours per day on Saturdays and Sundays at both locations; or 2 FTE (80 hours/week) during 6 months of expanded service; and
    – assumes a terminal presence during special event service comprised of one information agent for the duration of the event. This assumes that the agent would start in Kenmore (helping patrons bound for the event), then transitioning from Kenmore to UW WAC mid-watch (to assist with patrons returning from the event), and returning to Kenmore on the last return sailing.
  - Routine terminal maintenance – Estimated as $1 per number of service hours.
  - Terminal lease – Estimated cost of leasing pier space, taken as $3,000 per month, based on previous lease between Kitsap Transit and Washington State Ferries for use of Pier 50, plus an increase.
  - Fare collection – Estimated cost of fare collection processing, including cash processing, transit cards, and maintenance contracts, estimated at $1,000 per month or $12,000 annually.
- Management, Administration, and Support:
  - Labor – Marine Division management and administration staff assumed one Port Captain.
  - Administration, insurance, and overhead – Expenses assumed to include ancillary operating costs such as liability insurance, administrative costs, and overhead (supplies, etc.). Assumed 15% of the direct costs for the Marine Division.

Travel Time Comparison Assumptions

- Ferry trip time:
  - Connection form origin to terminal uses drive time from Google Maps (assuming a shuttle service) plus 3 minutes of walk time from parking lot to pier plus 5 minutes dwell time.
  - Sailing time assumes a maximum speed of 28 knots.

  - Sailing trip time for Log Boom Park used for both Kenmore terminals—although sailing time from Lakepointe is roughly 3 minutes longer for all routes, connection time to the terminal is 3 minutes shorter from the Kenmore Park and Ride and 4 minutes shorter from the Bothell Park and Ride
- Transit time:
  - Commute transit times from Google Maps for weekday departure by 5:00 PM, using the shortest option. Comments indicate options with no transfers and the associated travel time. Bus travel time does not account for roadway traffic impacts.
  - Wait time is calculated using Google maps total travel time and subtracting the walk and travel time. This is the assumed wait time when connecting to another segment of the trip.
- Driving trip time:
  - Commute drive times from Google Maps for weekday departure at 5:00 PM, showing the typical travel time range due to traffic.
  - Drive time includes walk time from the nearest public parking garage to the destination, if parking is not located on site.
  - Mileage cost is calculated using the US General Services Administration (GSA) rate of $0.58 per mile
  - Parking cost is the daily (at least 9 hours) rate of the nearest public parking garage.

Attachment A.5

Maintenance Facility Profile

MOORAGE & MAINTENANCE AT LAKEPOINTE SITE

SUMMARY

To support POF service on Lake Washington, a moorage and maintenance facility will need to be established where vessels can securely moor overnight and where light maintenance activities can occur. Based on the limited marinas that can accommodate a POF vessel, the Lakepointe property has been identified as the most feasible location for the overnight moorage and maintenance facility. All Kenmore to Seattle POF route options would use this facility for maintenance and overnight moorage.

IMPLEMENTATION

Required Improvements:

New moorage float, maintenance facility, minor uplands improvements

Necessary Approvals:

Federal, state and local approvals

ROM Capital Cost Estimate:

$7.7 M

Timeline (once funding is secured): 3-5 years

REGULATORY ENVIRONMENT

The moorage and maintenance facility would require similar regulatory approvals to those identified in the Attachment 3 Site Profiles. The City of Kenmore prioritizes the creation of ferry service in Downtown Waterfront shoreline designations, which includes the Lakepointe site. The Lakepointe site was originally planned for a major development project, but the development timeline is unknown.

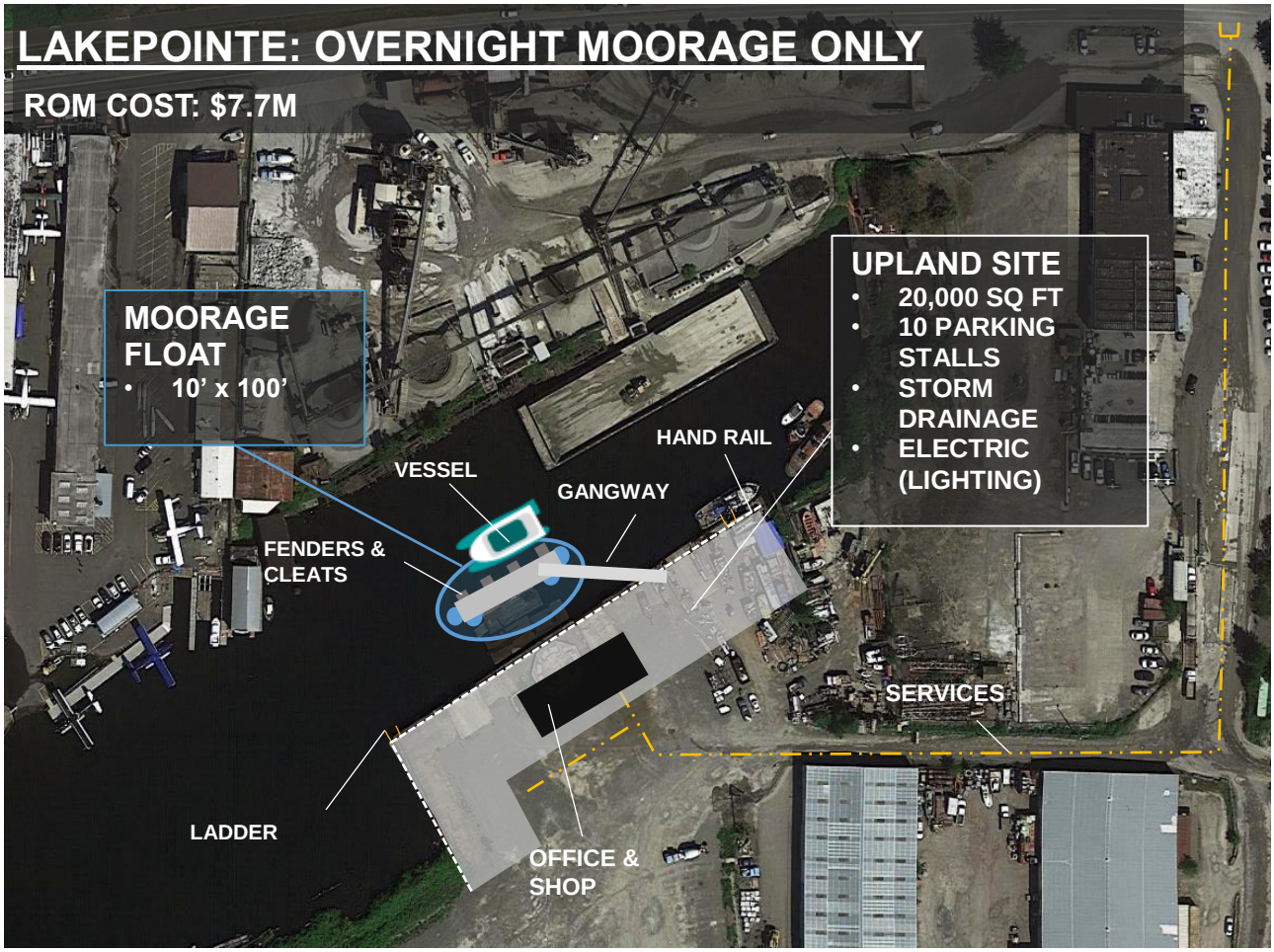
The type of funding and design of the facility affect the regulatory approvals required. Compliance with the National Environmental Policy Act (NEPA) is required when federal funds are used for a project. Additionally, in-water work requires approval from federal, state and local agencies as well as coordination with tribes. To support agency review, a biological evaluation and other supporting environmental studies will likely be required.

PROPOSED IMPROVEMENTS

Vessel moorage at the Lakepointe property would require a moorage float with fendering and cleats as well as a gangway. A structural assessment and geotechnical report would be recommended prior to design of the facility.

The following uplands improvements would also be needed.

- Utilities, walkways, lighting, and security elements (fencing, cameras, gates, etc.)
- Small parking lot for staff
- Conex box for maintenance building and mobile office trailer


LAKEPOINTE: OVERNIGHT MOORAGE ONLY
ROM COST: $7.7M
MOORAGE FLOAT
• 10' x 100'
UPLAND SITE
• 20,000 SQ FT
• 10 PARKING STALLS
• STORM DRAINAGE
• ELECTRIC (LIGHTING)
VESSEL
GANGWAY
HAND RAIL
FENDERS & CLEATS
SERVICES
LADDER
OFFICE & SHOP

Attachment A.6

Ridership Memo

King County Waterborne Transit

Potential Ridership Demand for Proposed Kenmore to Seattle Passenger-Only Service

BERK Consulting

Overview and Approach

BERK Consulting (BERK) analyzed potential ridership demand for five different proposed passenger-only ferry (POF) routes within King County. Three routes analyzed in this memo connect Kenmore with destinations in Seattle along Lake Washington. This work includes an analysis of baseline potential ridership demand in 2019 as well as forecasts for the years 2025 and 2040.

One primary source of data for this analysis is the Puget Sound Regional Council's (PSRC) SoundCast activity-based travel model. This model estimates expected travel patterns and volumes from origins to destinations across the four-county Central Puget Sound region. In addition to a baseline of 2014, SoundCast includes forecast outputs for 2025 and 2040 which reflect anticipated future changes to the transportation network as well as a land use forecast with assumptions about population and employment growth. This report documents BERK's analysis of the travel model data and development of capture rate assumptions to estimate potential POF ridership demand during weekday commute, midday, and evening periods.

One limitation of PSRC's SoundCast data is that it does not consider the potential for induced discretionary travel demand. Analysis of historic ridership on the West Seattle to Pier 50 Water Taxi indicates that demand for non-commute travel is higher than would be predicted using the SoundCast model alone. Therefore, our methodology considers the potential for additional induced discretionary travel demand based on historic analysis of existing POF service in the Puget Sound region.

Ridership Forecasting Methodology

TRAVEL TIME COMPARISON

Among the benefits of POF service for daily commuters is a predicable schedule and reliable travel time that is not affected by roadway traffic congestion. However, if travel times from home to destination are significantly longer than alternatives modes of travel, POF service will not be as competitive. To evaluate travel time competitiveness, we selected representative origin points in communities served by the proposed POF and then estimated travel times to various commute destinations in Seattle. A more detailed description of the travel time comparison methodology is in the main report.

MARKET CAPTURE AREAS FOR SEATTLE-BOUND PASSENGERS

For each proposed passenger ferry route, we identified a geographic area where residents could potentially choose ferry service as part of their daily commute to destinations in Seattle. Our methodology for determining the boundaries of these areas included three steps.

1. **Define destination areas.** We identified employment centers that could potentially be destinations

for commuters who use the new ferry service. Each proposed ferry route includes one or more potential destination area. Some destinations assume a transit leg following disembarking.

2. **Compare travel time competitiveness.** We compared the estimated travel times from representative starting and destination points for commuters choosing POF versus alternative modes of transportation. Our analysis also considered differences in reliability[1] between modes, in addition to total duration of travel. See the main report for the methodology used to estimate travel time duration.
3. **Define origin areas.** The travel time competitiveness analysis enabled us to identify the approximate boundaries for areas in which some residents may reasonably select the ferry as a commute option. For each route we defined two origin areas, a walk- and bike- shed closer to the ferry landing, and larger driveshed. For drivesheds, we selected transportation analysis zones that fall within a 15-minute drive but trimmed back to exclude areas where alternative modes of travel are far more competitive.

A series of maps showing the assumed market capture areas for each proposed ferry routes is included at the end of this appendix. As will be discussed in the following section, BERK's forecast model includes different market capture rate assumptions for each origin-destination pair.

POTENTIAL TRAVEL DEMAND ANALYSIS

Projected Capture of Current Travel Demand

As noted above, BERK obtained and analyzed outputs from PSRC's SoundCast travel model for the years 2014, 2025, and 2040. This model estimates demand for travel by mode between over 3,700 transportation analysis zones (TAZ). We identified TAZ associated with the potential origin and destination market capture areas. We then summarized total travel demand in each direction for each origin-destination pair. To estimate travel demand in 2019, BERK interpolated between the SoundCast data for 2014 and 2025 forecast, accounting for the percentage of PSRC's forecasted household growth in the origin area that had already occurred by 2019.[2]

The next step was to determine the assumed percentage of travelers from each origin-destination area pair who would select ferry service compared to other modes. The competitiveness of POF service for commute travel is expected to vary by origin-destination pair. Therefore, we developed separate market capture rate assumptions for each pair. To determine a baseline assumption, we analyzed historical ridership data for the West Seattle Water Taxi and compared to the modeled travel demand from the SoundCast for the years 2014 and BERK's interpolated demand for 2019. This work required defining origin and destination market capture areas as we did for the proposed routes. We selected origins and

[1] Reliably was estimated in two ways. First, Google Maps provides a range for "typical" car travel times. These ranges can be large during commute periods and are an indicator of reliability. Secondly, King County Metro publishes an annual System Evaluation report that includes the percentage of scheduled buses that are beyond a lateness threshold by time of day. This information was used as an indicator of reliability for non-ferry transit travel.

[2] One input for SoundCast is a land use forecast model called Land Use Vision (LUV). BERK compared our own estimates of actual households counts in each TAZ for 2019 to LUV data available for the years 2014, 2025, and 2040. In a few cases, 2019 households exceeds the 2025 forecast assumption. For these TAZ we interpolated travel demand based on the percentage of growth expected between 2025 and 2040. While there are some limitations to this approach, since SoundCast has slightly different assumptions about the transportation network in each forecast year than what existing in 2019. However, we believe it is reasonable for the purpose of estimating potential POF ridership demand from areas that have experienced more growth than is assumed in the SoundCast model.

destination areas that provide reasonable travel time competitiveness compared to transit options. We then calculated capture rates for morning commute period travel in 2014 and 2019. The capture rate for this route has increased over time from 3.6% in 2014 to 4.6% in 2019. This indicates a steady shifting of commuter mode-choice to POF and/or the arrival of new households who selected their home location based on the POF availability.

These rates served as the starting point for our assumed potential capture rates for proposed POF routes, with the lower rate assumed for the baseline potential ridership demand and higher rate assumed when the proposed service reaches maturity in 2025. We project modest growth in this capture rate for the 2040 forecast, consistent with historic trends observed in West Seattle.[3] We then varied these starting assumptions upward or downward based on how time-competitive POF service is compared to bus transit for commute travel.

Adjustments to PSRC/SoundCast Commute-Period Travel Demand

The land use inputs for the SoundCast travel demand model are based on policy-based forecasts derived in 2017 and building off a baseline in 2014.[4] Additional information is now available about actual and planned growth within areas served by the proposed ferry routes. BERK's work to account for growth that has already occurred between 2014 and 2019 was discussed above. In addition, we compared information about planned future growth to PSRC's 2025 land use forecast to make targeted adjustments to the travel model. Each instance is described here.

Census Longitudinal Employer-Household Dynamics

The Census releases data about the approximate home and work location of most workers in the Seattle region.[5] The most recent data available reflects conditions in 2017. For each origin and destination market area pair we summarized workers whose home is in the origin area and primary job is in the destination area. We then compared this count to the total peak AM commute period travel demand between the same areas estimated with SoundCast. If the 2017 LEHD primary job count exceeds the total travel demand, then we assumed the travel demand would be equal to the 2017 primary job count. This change had a minor effect on a few origin-destination pairs.

While not all primary jobs in the LEHD database have typical 9-5 weekday work schedules, it is also true that not all travel during the AM commute period is done by commuters. And our ridership demand model only assumes a small percentage of the total travel demand would select to use the POF for their trip. So, we used the LEHD data as a reasonable proxy for how total AM commute-period travel demand between the two areas may have changed in recent years.

University of Washington

In 2019 University of Washington released a campus master plan that projected employment and

[3] This assumption is consistent with PSRC's SoundCast model, which indicates that the percentage of trips taken by transit among these market area pairs in our study will collectively increase during the study period, from an estimated 23% in 2014 to 28% in 2025 and 29% in 2040. BERK's forecast for potential ridership demand in 2025 and 2040 also reflects this assumed increase in percentage of travelers that choose to select transit.
[4] The technical documentation for Land Use Vision, PSRC's land use input for the SoundCast travel model can be found here: https://www.psrc.org/sites/default/files/luv-documentation.pdf
[5] For more information see, https://lehd.ces.census.gov/

student growth on campus through the year 2028. We reviewed the plan and compared to the rate of forecasted growth in PSRC's land use forecast to confirm consistency.

Estimated Weekday Non-Commute Travel Demand

POF service is a unique transit mode with potential to attract both locals and visitors to make trips they would not have otherwise taken, just for the experience of boat travel. In these cases, POF service is not simply a replacement for travel demand which is currently being served by other modes. Rather, the mode's uniqueness induces additional travel demand which would not be considered in a typical travel demand model like SoundCast. In this section we present analysis that identifies likely induced discretionary travel demand based on historical ridership on the West Seattle Water Taxi. We also discuss how this analysis is used as a basis for estimating potential discretionary ridership demand for the proposed routes, taking into consideration differences in amenities.

Exhibit 1 shows peak season ridership statistics in each direction of travel. A significant portion of the riders are using the service for trip purposes that fall outside of the typical commute period. In 2019, an average of 354 riders took the Water Taxi from Seacrest to Pier 50 before 9am. This accounts for less than half of the daily weekday ridership heading towards Downtown. Looking at the reverse evening commute, 456 riders took the water taxi from Pier 50 to Seacrest, or almost 30% more than the presumed commuters riding into downtown in the morning.

Exhibit 1. Peak Season Average Daily Ridership on the West Seattle Water Taxi*

Seacrest to Pier 50										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AM peak (before 9am)	63	135	188	179	194	248	311	316	318	354
Midday (9am-3:30pm)	117	121	131	147	157	170	194	204	222	234
PM Peak (3:30-6:30pm)	62	64	65	70	79	83	98	98	126	125
Evening (after 6:30pm)	43	38	36	46	53	55	63	62	70	75
Weekend	468	542	580	598	647	656	707	773	798	817

Pier 50 to Seacrest										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AM peak (before 9am)	3	3	7	6	8	6	7	6	11	15
Midday (9am-3:30pm)	102	106	97	119	134	154	177	176	194	204
PM Peak (3:30-6:30pm)	137	224	278	272	289	345	410	414	403	456
Evening (after 6:30pm)	80	86	107	109	119	128	155	168	185	206
Weekend	461	533	553	564	618	635	692	798	816	833

*These statistics exclude holidays and closures of SR 99.
Source: King County Marine Division West Seattle Water Taxi Ridership Statistics, 2010-2019. BERK

Comparison to SoundCast travel model output indicates that West Seattle Water Taxi ridership accounts for a much larger share of total PM peak travel demand from Downtown to West Seattle than it does for AM peak travel demand from West Seattle to Downtown. One likely explanation is that SoundCast does not fully account for induced travel demand from visitors or locals who choose to make a discretionary trip using the Water Taxi because of the uniqueness of POF service. Based on these findings, using the SoundCast travel demand output alone with a single market capture rate assumption would likely result in understating ridership potential for proposed POF routes.

One way to forecast the potential for induced discretionary travel demand for proposed POF routes is to estimate this ridership population for the West Seattle Water Taxi. Of course, not all routes have the

same discretionary trip potential. The West Seattle Water Taxi benefits from being the most convenience and affordable option for tourists and locals who wish to take a quick boat tour across Elliott Bay. And West Seattle offers access to the recreational attractions of Alki Trail, Alki Beach, and the commercial strip along Alki Ave. Each of the proposed routes also have potential for discretionary travel demand.

To very roughly estimate total non-commute trips on the West Seattle Water Taxi by direction and time of day, we compared the ridership statistics by direction in Exhibit 1. This work assumes that 100% of the trips before 9:00 AM in either direction on weekdays are commuters heading to jobs. Most of these riders are heading from Seacrest to Pier 50, but a few head in the opposite direction. It also assumes 100% of those commuters take the ferry back in the opposite direction between 3:30 PM and 6:30 PM. The remainder of trips are assumed to be non-commute focused. The results of this analysis are shown in Exhibit 2.

Exhibit 2. Peak Season Estimated Non-Commuter Weekday Ridership on the West Seattle Water Taxi

Seacrest to Pier 50										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Midday (9am-3:30pm)	117	121	131	147	157	170	194	204	222	234
PM Peak (3:30-6:30pm)	59	61	58	64	71	77	91	92	115	110
Evening (after 6:30pm)	43	38	36	46	53	55	63	62	70	75

Pier 50 to Seacrest										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Midday (9am-3:30pm)	102	106	97	119	134	154	177	176	194	204
PM Peak (3:30-6:30pm)	75	89	90	93	96	97	100	98	85	102
Evening (after 6:30pm)	80	86	107	109	119	128	155	168	185	206

Source: BERK, 2019. Based on analysis of West Seattle Water Taxi Ridership Statistics, 2010-2019.

While these assumptions oversimplify commute patterns between the two areas, they suffice for the purpose of estimating the total potential magnitude of induced discretionary travel demand on this route. Below we compare the discretionary ridership potential of the proposed POF routes to the West Seattle Water Taxi. We also explain how we apply the findings of our analysis of West Seattle Water Taxi ridership to estimate potential non-commute travel for the proposed routes.

Lakepointe to University of Washington WAC: Non-Commute Ridership Potential

This proposed route is different in character than the West Seattle Water Taxi because it does not land in Downtown Seattle. This will likely result in less potential demand for discretionary trips by visitors to Downtown, even though the landing is easily accessible by LINK light rail. However, this route does offer its own amenities that can be a draw for discretionary ridership. The Waterfront Activities Center (WAC) provides recreational opportunities with boat rentals and is a short walk to Husky Stadium, Alaska Airlines Arena, and slightly longer walk to amenities on campus such as Meany Hall, and Burke Museum. Additionally, both ends of this route are along the Burke-Gilman Trail. This provides opportunities for the ferry to be a leg in longer cycling trips between Seattle and Kenmore.

Our analysis assumes that on average non-commuter ridership on this route will be at least one third of our estimates for the West Seattle Water Taxi, with the greatest potential on Husky game days.

Lakepointe to Madison Park: Non-Commute Ridership Potential

As with other Lake Washington routes, this route lacks the draw of a landing on the Downtown Seattle waterfront. It also lacks the easy access to Downtown via the LINK light rail. Nonetheless, the Seattle-side landing offers some notable recreational amenities, including direct access to the Madison Park Beach and several bars and restaurants within a very short walk. Additionally, Washington Park Arboretum is a 1.2 mile walk or short bus ride.

Our analysis assumes that on average non-commuter ridership on this route will be at least one quarter of our estimates for the West Seattle Water Taxi.

Lakepointe to Leschi: Non-Commute Ridership Potential

This route offers the least recreational amenities and the longest trip duration among all proposed routes. Leschi does offer a small park and a few restaurants. However, it does not include a beach or other major attractions.

Our analysis assumes that on average non-commuter ridership on this route will be at least one fifth of our estimates for the West Seattle Water Taxi.

Weekend and Holiday Travel Demand

SoundCast travel demand model output for weekends and holidays was not available from PSRC. Therefore, to derive assumptions for potential travel demand we looked at actual weekend ridership patterns on the West Seattle Water Taxi and Bremerton Fast Ferry. Specifically, we calculated the ratio of average daily weekend ridership to average weekday ridership for each route during peak season.[6] These ratios are shown in Exhibit 3. We used them as a basis for determining average daily weekend ridership for the proposed services. For the Kenmore routes we assume weekend ridership demand relative to weekday is equivalent to observed ridership patterns on the Bremerton Fast Ferry due to the fact that the lack of a landing in Downtown Seattle is expected to result in lower discretionary travel demand than occurs on the West Seattle Water Taxi.

Exhibit 3. Peak Season Average Daily Ridership, 2019

	Weekdays	Weekends	Weekend Ridership as a % of Weekday
West Seattle Water Taxi	1,670	1,649	99%
Bremerton Fast Ferry	1,165	865	74%

Source: King County, 2019; Kitsap Transit, 2019; BERK 2019.

To distribute total ridership demand by direction and time of day, we analyzed historical ridership by sailing time and direction on the West Seattle and Bremerton routes and smoothed out this demand by hourly increment. This resulted in assumptions for percentage of total daily demand allocated by hour and direction of travel.

[6] For the West Seattle Water Taxi, "peak season" is defined as the Spring/Summer schedule period of roughly April through October. For Bremerton Fast Ferry, we analyzed data from the May-September period available on their website.

Total Unconstrained Ridership Demand Potential

For each proposed route BERK estimated unconstrained ridership demand potential for the years 2019, 2025, and 2040. "Unconstrained" refers to the fact that the demand is not limited by the boat capacity, sailing schedule, or sailing frequency. To support comparison to the constrained ridership forecasts below, this summary of annual unconstrained ridership demand focuses only on days included in the proposed sailing schedules. Depending on the season, ferry services may run on weekdays, Saturdays only, full weekends, or holidays (which was assumed to run a Saturday ferry schedule).

Exhibit 4. Kenmore Unconstrained Ridership Demand, Scheduled Days

	2019	2025	2040
Kenmore to University of Washington	227,989	382,119	522,609
Kenmore to Madison Park	83,583	129,946	214,890
Kenmore to Leschi Park	70,254	111,400	182,147

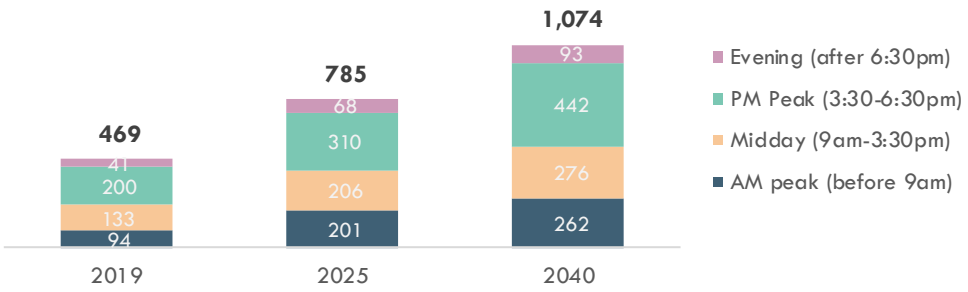
Constrained Ridership: Forecasted Annual Ridership for Proposed Sailing Schedules

To forecast annual ridership, the unconstrained ridership demand was allocated to individual sailings by time of day. Periods of demand greater than 30 minutes away from a scheduled sailing time were not allocated to a sailing and do not impact annual POF ridership estimates. The results of this analysis are presented Exhibit 5 and Exhibit 6.

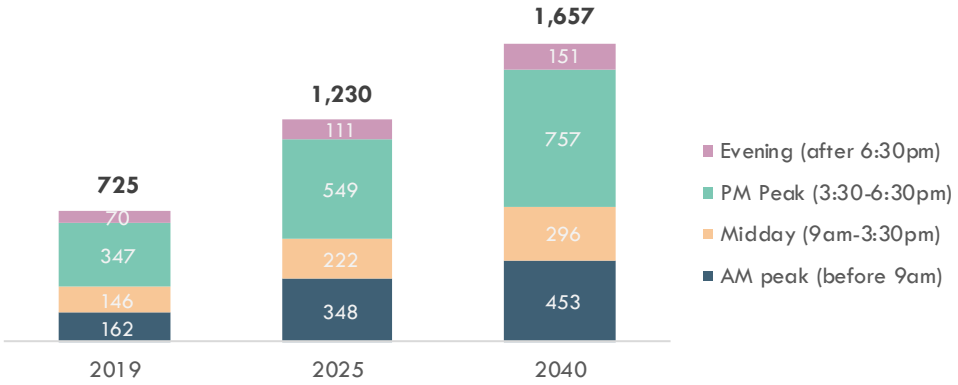
Exhibit 5. Annual Ridership Forecast by Proposed Sailing Schedule: Kenmore to Seattle

Route	2019	2025	2040
Kenmore to University of Washington (1 boat)	111,238	196,068	262,297
Kenmore to University of Washington (2 boats)	157,397	279,591	371,008
Kenmore to Madison Park (1 boat)	39,299	61,143	92,337
Kenmore to Madison Park (2 boats)	47,767	74,396	112,399
Kenmore to Leschi Park (1 boat)	31,874	50,661	75,259
Kenmore to Leschi Park (2 boats)	39,402	62,948	93,473

Exhibit 6. Daily Ridership Forecast: Kenmore to University of Washington, Extended Service M-Th

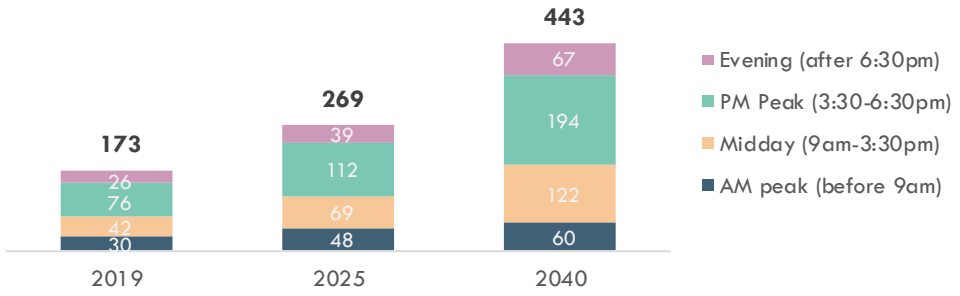


Kenmore to University of Washington (1 boat)	2019	2025	2040
AM peak (before 9am)	94	201	262
Midday (9am-3:30pm)	133	206	276
PM Peak (3:30-6:30pm)	200	310	442
Evening (after 6:30pm)	41	68	93
Daily total	**469**	**785**	**1,074**

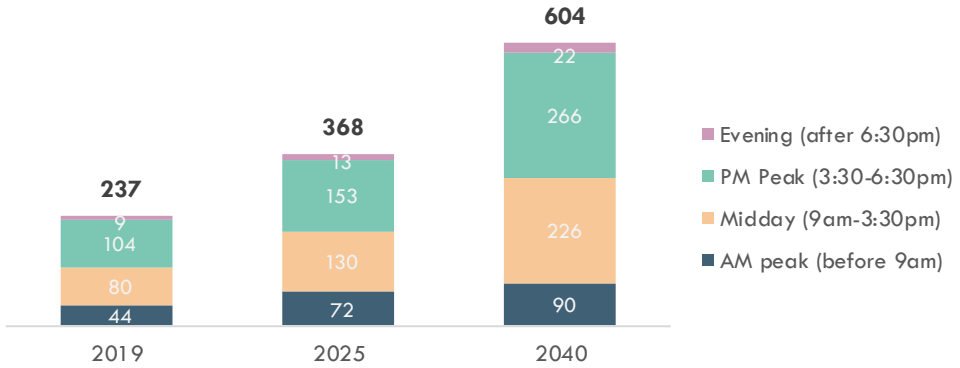


Kenmore to University of Washington (2 boats)	2019	2025	2040
AM peak (before 9am)	162	348	453
Midday (9am-3:30pm)	146	222	296
PM Peak (3:30-6:30pm)	347	549	757
Evening (after 6:30pm)	70	111	151
Dailt total	**725**	**1,230**	**1,657**

Exhibit 7. Daily Ridership Forecast: Kenmore to Madison Park, Extended Service M-Th

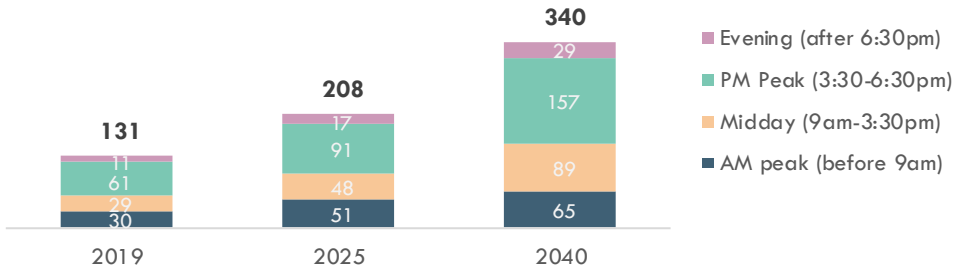


Kenmore to Madison Park (1 boat)	2019	2025	2040
AM peak (before 9am)	30	48	60
Midday (9am-3:30pm)	42	69	122
PM Peak (3:30-6:30pm)	76	112	194
Evening (after 6:30pm)	26	39	67
Daily total	**173**	**269**	**443**

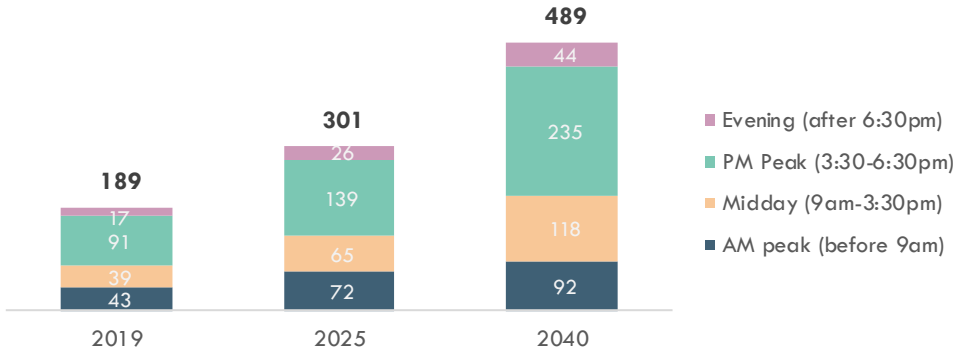


Kenmore to Madison Park (2 boats)	2019	2025	2040
AM peak (before 9am)	44	72	90
Midday (9am-3:30pm)	80	130	226
PM Peak (3:30-6:30pm)	104	153	266
Evening (after 6:30pm)	9	13	22
Daily total	**237**	**368**	**604**

Exhibit 8. Daily Ridership Forecast: Kenmore to Leschi Park, Extended Service M-Th



Kenmore to Leschi Park (1 boat)	2019	2025	2040
AM peak (before 9am)	30	51	65
Midday (9am-3:30pm)	29	48	89
PM Peak (3:30-6:30pm)	61	91	157
Evening (after 6:30pm)	11	17	29
Daily total	**131**	**208**	**340**



Kenmore to Leschi Park (2 boats)	2019	2025	2040
AM peak (before 9am)	43	72	92
Midday (9am-3:30pm)	39	65	118
PM Peak (3:30-6:30pm)	91	139	235
Evening (after 6:30pm)	17	26	44
Daily total	**189**	**301**	**489**

ASSUMED MARKET AREAS FOR RIDERSHIP DEMAND CAPTURE

Exhibit 9. Lakepointe to UW Waterfront Activity Center, Market Origin and Destination Areas

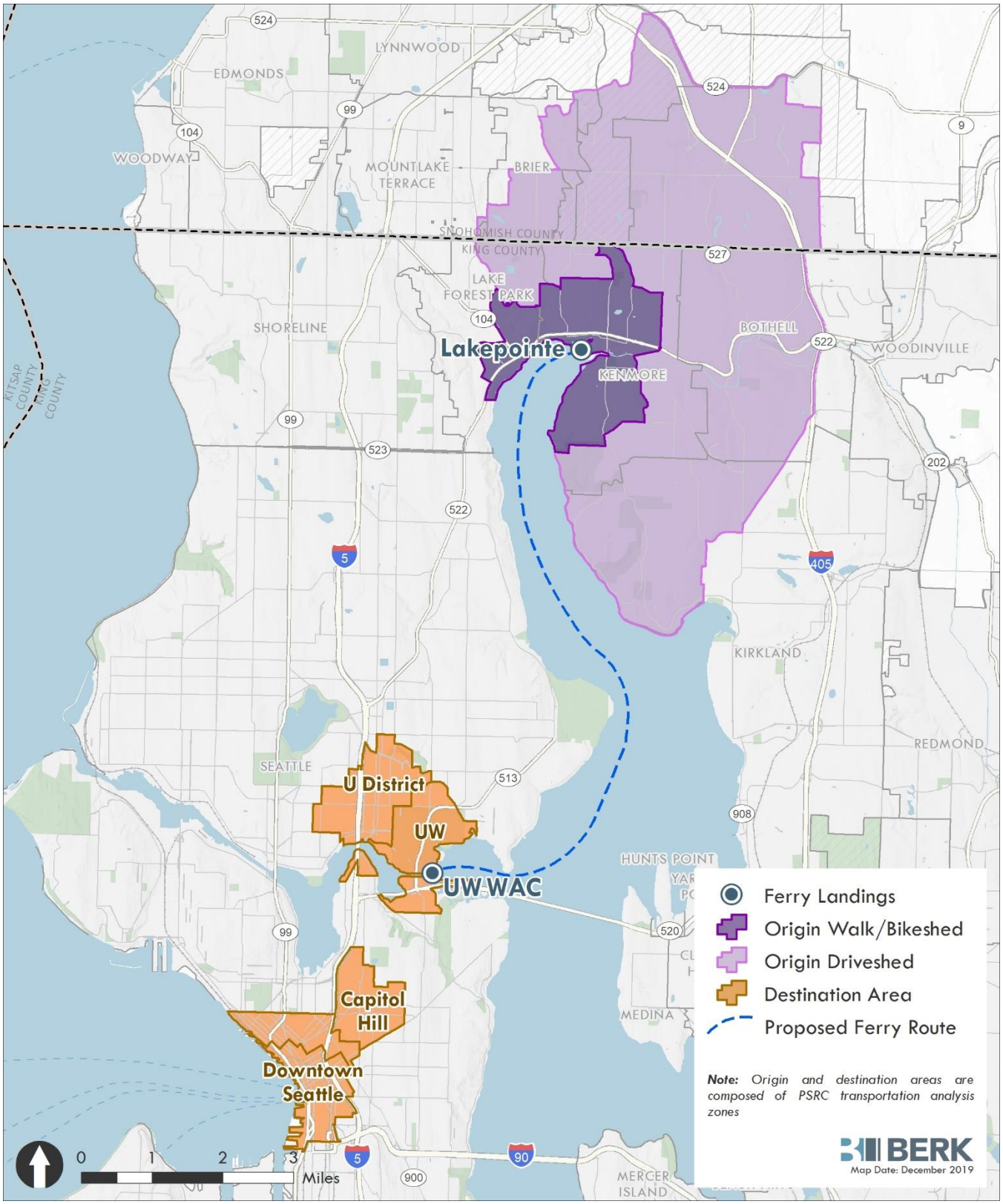


Exhibit 10. Lakepointe to Madison Park, Market Origin and Destination Areas

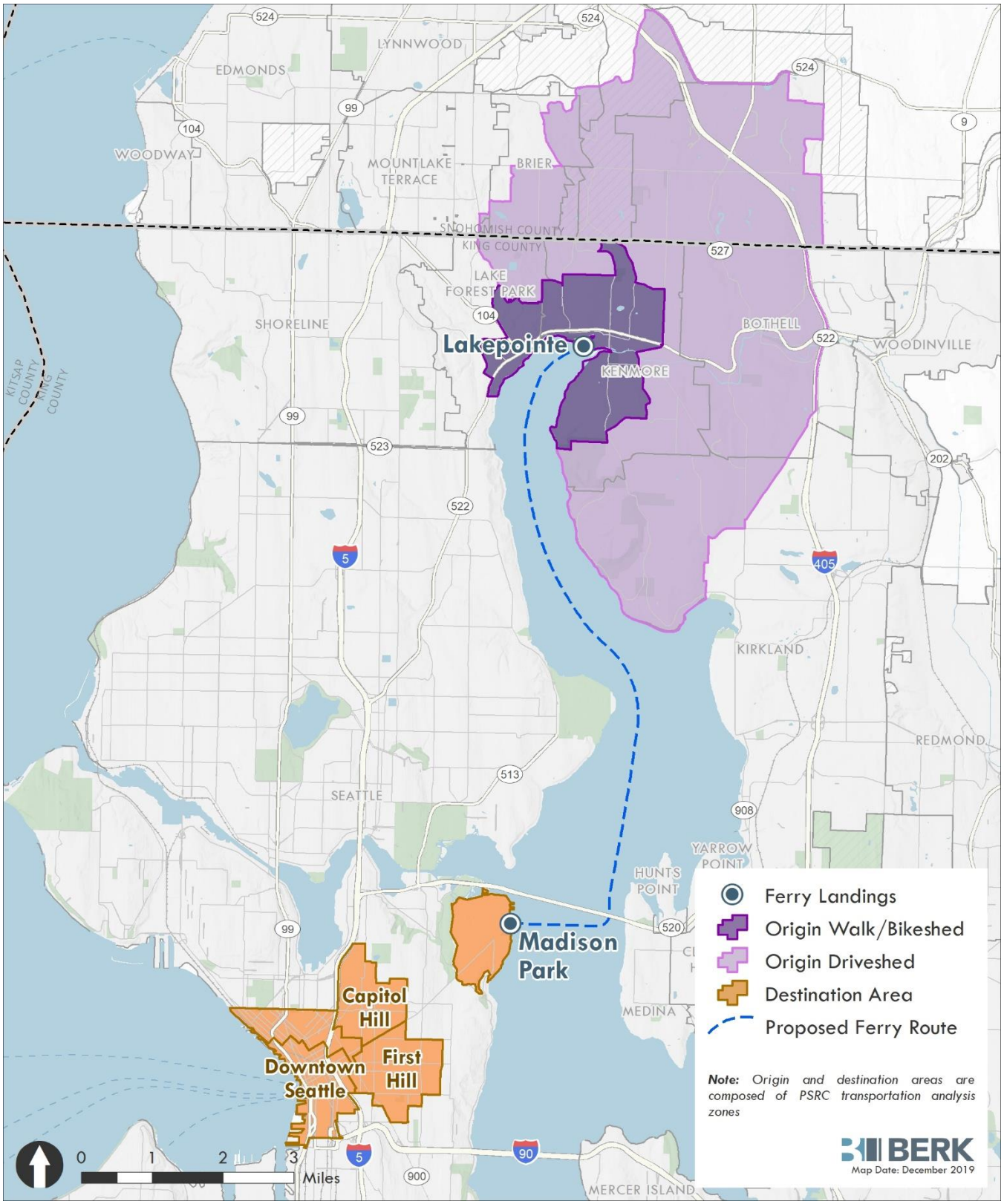
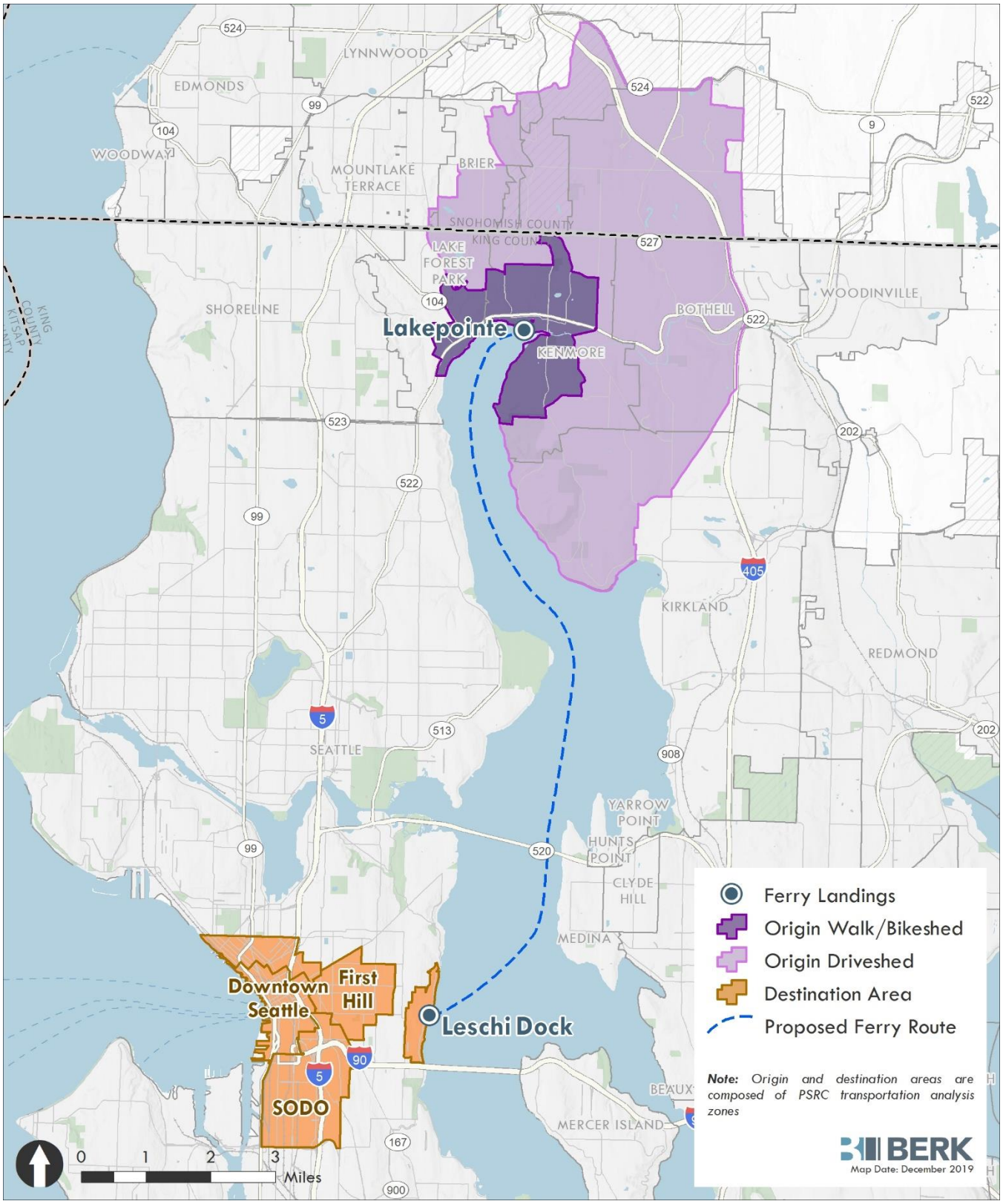


Exhibit 11. Lakepointe to Leschi Park, Market Origin and Destination Areas



Attachment A.7

Kenmore Travel Time Comparisons

Kenmore POF Route
Travel Time Comparison - AM/ Morning Commute

Route	Origin	Ferry Landing	Destination	Ferry Sailing Time (min)	Ferry Trip Time (min)	Transit Trip Time (min)	# of Transit Legs	Trip Time Difference	Driving - low estimate	Driving - high estimate	Difference (Ferry - low est.)	Trip Time Difference (Ferry - high est.)
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	UW Medical Center	31	46	40	1	6	30	65	16	-19
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	Downtown Seattle	31	47	30	1	17	37	72	10	-25
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	45	1	12	35	75	22	-18
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	Downtown Seattle	27	60	30	1	30	37	72	23	-12
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	UW Medical Center	31	46	47	2	-1	28	60	18	-14
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	Downtown Seattle	31	47	35	1	12	28	57	19	-10
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	47	2	10	28	60	29	-3
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	Downtown Seattle	27	60	35	1	25	28	57	32	3

Green indicates ferry is less than transit/driving
Red indicates ferry is 10 minutes or longer than transit/driving
White indicates ferry is between 0-10 minutes longer than transit/driving

Kenmore POF Route
Travel Time Comparison - Mid-day Travel

Route	Origin	Ferry Landing	Destination	Ferry Sailing Time (min)	Ferry Trip Time (min)	Transit Trip Time (min)	# of Transit Legs	Trip Time Difference	Driving - low estimate	Driving - high estimate	Trip Time Difference (Ferry - low est.)	Trip Time Difference (Ferry - high est.)
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	UW Medical Center	31	46	46	1	0	20	40	26	6
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	Downtown Seattle	31	47	36	1	11	24	47	23	0
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	59	1	-2	26	50	31	7
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	Downtown Seattle	27	60	36	1	24	24	47	36	13
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	UW Medical Center	31	46	52	2	-6	24	40	22	6
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	Downtown Seattle	31	47	41	1	6	22	32	25	15
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	64	2	-7	24	40	33	17
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	Downtown Seattle	27	60	41	1	19	22	32	38	28

Green indicates ferry is less than transit/driving
Red indicates ferry is 10 minutes or longer than transit/driving
White indicates ferry is between 0-10 minutes longer than transit/driving

Kenmore POF Route
Travel Time Comparison - PM/ Evening Commute

Route	Origin	Ferry Landing	Destination	Ferry Sailing Time (min)	Ferry Trip Time (min)	Transit Trip Time (min)	# of Transit Legs	Trip Time Difference	Driving - low estimate	Driving - high estimate	Trip Time Difference (Ferry - low est.)	Trip Time Difference (Ferry - high est.)
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	UW Medical Center	31	46	52	1	-6	30	70	16	-24
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW WAC	Downtown Seattle	31	47	55	1	-8	37	77	10	-30
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	74	1	-17	40	80	17	-23
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Madison Park	Downtown Seattle	27	60	55	1	5	37	77	23	-17
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	UW Medical Center	31	46	58	2	-12	35	70	11	-24
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW WAC	Downtown Seattle	31	47	65	1	-18	32	72	15	-25
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	First Hill Swedish Medical Campus	27	57	77	2	-20	35	70	22	-13
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Madison Park	Downtown Seattle	27	60	65	1	-5	32	72	28	-12

Green indicates ferry is less than transit/driving
Red indicates ferry is 10 minutes or longer than transit/driving
White indicates ferry is between 0-10 minutes longer than transit/driving

Kenmore POF Route
Ferry Trip Times

			Connection from origin to terminal		*Ferry Sailing Times (landing to landing)*	*Transit/walk time from ferry landing to destination*		*Total transit time via ferry*
Route	**Origin Address**	**Destination**	**Time (min)**	**Notes**	**Time (min)**	**Time (min)**	**Notes**	**Time (min)**
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	UW Medical Center		Assumes parking	31	15	walk	**46**
Kenmore (Lakepointe) - UW WAC	Kenmore Park and Ride	Downtown Seattle		Assumes parking	31	16	LINK + 8 min walk	**47**
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	First Hill Swedish Medical Campus		Assumes parking	27	30	Rt. 11 + 14 min walk	**57**
Kenmore (Lakepointe) - Madison Park	Kenmore Park and Ride	Downtown Seattle		Assumes parking	27	33	Rt. 11 + 5 min walk	**60**
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	UW Medical Center		Assumes parking	31	15	walk	**46**
Kenmore (Lakepointe) - UW WAC	Bothell Park and Ride	Downtown Seattle		Assumes parking	31	16	LINK + 8 min walk	**47**
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	First Hill Swedish Medical Campus		Assumes parking	27	30	Rt. 11 + 14 min walk	**57**
Kenmore (Lakepointe) - Madison Park	Bothell Park and Ride	Downtown Seattle		Assumes parking	27	33	Rt. 11 + 5 min walk	**60**

Assumptions:

Shuttle connection to Log Boom Park taken from Google maps for 8 AM arrival, plus 4 minutes walk time from parking lot to end of pier and 4 minutes dwell time

Lakepointe trips begin at terminal and assume 150 parking stalls are provided on site

Transit connection to destination taken from Google maps for 8 AM arrival

Kenmore POF Route
Ferry Sailing Time Calculations

	Speed (kts):	5	7	28	12	5	
Route	Total Distance (nm)	Maneuvering (nm)	Slowdown (nm)	Cruising (nm)	Slowdown (nm)	Maneuvering (nm)	**Total Sailing Time**
Kenmore (Log Boom) - UW WAC	8.91	0.25	0.90	7.61		0.15	28.8
Kenmore (Log Boom) - Madison Park	8.42	0.25	0.20	7.57	0.25	0.15	24.0

	Speed (kts):	5	7	28	12	5	
Route	Total Distance (nm)	Maneuvering (nm)	Slowdown (nm)	Cruising (nm)	Slowdown (nm)	Maneuvering (nm)	**Total Sailing Time**
Kenmore (Lakepointe) - UW WAC	9.21	0.25	1.20	7.61		0.15	31.4
Kenmore (Lakepointe) - Madison Park	8.72	0.25	0.50	7.57	0.25	0.15	26.6

Kenmore POF Route
Transit Trip Time Calculations

		AM Commute (8 AM Arrival)									Mid-day (1 PM Arrival)									PM Commute (5 PM Departure)								
Origin	**Destination**	Walk to transit from origin	Walk between trips	Walk from transit to dest.	Transit Time only	Wait time for Transfer	**Trip Total (min)**	Transit legs	Cost	Notes	Walk to transit from origin	Walk between trips	Walk from transit to dest.	Transit Time only	Wait time for Transfer	**Trip Total (min)**	Transit legs	Cost	Notes	Walk to transit from origin	Walk between trips	Walk from transit to dest.	Transit Time only	Wait time for Transfer	**Trip Total (min)**	Transit legs	Cost	Notes
Kenmore Park and Ride	First Hill Swedish Medical Campus			4	41		**45**	1	$ 2.75	309	3	1	4	47	4	**59**	2	$ 2.75	522/12	4		0	70		**74**	1	$ 2.75	309
Kenmore Park and Ride	Downtown Seattle			2	28		**30**	1	$ 2.75	522	3		1	32		**36**	1	$ 2.75	522	3		5	47		**55**	1	$ 2.75	522
Kenmore Park and Ride	South Lake Union			5	37		**42**	1	$ 2.75	309	3	1	0	40	10	**54**	2	$ 2.75	522/40	6		0	57		**63**	1	$ 2.75	309
Kenmore Park and Ride	UW Medical Center			4	36		**40**	1	$ 2.75	372	3		5	38		**46**	1	$ 2.75	372	5		5	42		**52**	1	$ 2.75	372
Bothell Park and Ride	First Hill Swedish Medical Campus		7	2	33	5	**47**	2	$ 2.75	522/373	1	1	4	55	3	**64**	2	$ 2.75	522/12	4	6	3	59	5	**77**	2	$ 2.75	63/522
Bothell Park and Ride	Downtown Seattle			1	34		**35**	1	$ 2.75	522	1		1	39		**41**	1	$ 2.75	522	3		3	59		**65**	1	$ 2.75	522
Bothell Park and Ride	South Lake Union			5	38	5	**48**	2	$ 2.75	312/309	1	3		46	7	**57**	2	$ 2.75	522/C	6		3	56	5	**70**	2	$ 2.75	309/522
Bothell Park and Ride	UW Medical Center		7	2	33	5	**47**	2	$ 2.75	522/373	1		5	46		**52**	1	$ 2.75	372	5		4	49		**58**	1	$ 2.75	372

Assumptions:

Commute transit times from Google Maps for weekday arrival by 8:00 AM, using the shortest time. Comments indicate options with no transfers and the associated travel time.
Mid-day transit times from Google Maps for weekday arrival by 1:00 PM, using the shortest time. Comments indicate options with no transfers and the associated travel time.
Wait time is calculated using Google maps total travel time and subtracting the walk and travel time. This is the assumed wait time when connecting to another segment of the trip.
Cost assumes use of ORCA card for free transfers. Cash fare would be $5.50 in multi-leg trips where riders transfer between agencies

2040 estimates for SR 522 BRT: 38 minutes from Lake Forest Park to Seattle and 44 minutes from Bothell to Seattle

Kenmore POF Route
Driving Trip Times

		AM Commute		Mid-day		PM Commute					
Origin	Destination	Low	High	Low	High	Low	High	Distance	Mileage Cost	Parking Cost (daily)	Total Cost
Kenmore Park and Ride	First Hill Swedish Medical Campus	35	75	26	50	40	80	14.8	$ 8.58	$ 17.00	$ 25.58
Kenmore Park and Ride	Downtown Seattle	37	72	24	47	37	77	14.3	$ 8.29	$ 20.00	$ 28.29
Kenmore Park and Ride	South Lake Union	37	72	24	42	32	72	13.4	$ 7.77	$ 21.00	$ 28.77
Kenmore Park and Ride	UW Medical Center	30	65	20	40	30	70	11.3	$ 6.55	$ 10.00	$ 16.55
Bothell Park and Ride	First Hill Swedish Medical Campus	28	60	24	40	35	70	20.1	$ 11.66	$ 17.00	$ 28.66
Bothell Park and Ride	Downtown Seattle	28	57	22	32	32	72	19.6	$ 11.37	$ 20.00	$ 31.37
Bothell Park and Ride	South Lake Union	28	57	22	32	32	67	18.7	$ 10.85	$ 21.00	$ 31.85
Bothell Park and Ride	UW Medical Center	22	50	18	28	28	65	17.0	$ 9.86	$ 10.00	$ 19.86

Assumptions

Commute drive times from Google Maps for weekday arrival by 8:00 AM and departure at 5:00 PM

Mid-day drive times from Google Maps for weekday arrival by 1:00 PM

Mileage cost is calculated using the GSA rate of $0.58 per mile

Parking Cost is the daily (at least 9 hours) rate of the nearest public parking garage

Walk time from nearest public parking garage is added to drive time if parking is not at destination.

Destination	Destination Address
First Hill Swedish Medical Campus	747 Broadway
Downtown Seattle	3rd Ave and Union
South Lake Union	Westlake and Harrison
UW Medical Center	1059 NE Pacific St

Attachment A.8

Kenmore Capital Cost Worksheets

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

#	Item						
	Landing Site	Lakepointe	Lakepointe	Log Boom	UW WAC	UW WAC	Madison Park
	#	1A	1B	2	3A	3B	4
	Option	Maintenance & Overnight Moorage	Maintenance, Moorage and Passenger Service	Passenger Service Only	Minimal Improvements	Extensive Improvements	Passenger Service Only
	Mobilization/Demobilization	$ 282,000	$ 794,000	$ 370,000	$ 188,000	$ 278,000	$ 275,000
	Overwater Improvements	$ 1,394,000	$ 3,490,000	$ 477,000	$ 1,580,000	$ 2,477,000	$ 2,425,000
	Uplands Improvements	$ 652,000	$ 2,068,000	$ 32,000	$ 272,000	$ 272,000	$ 272,000
	Site Work	$ 776,000	$ 2,382,000	$ 3,190,000	$ 30,000	$ 30,000	$ 52,000
	Subtotal Construction	**$ 3,110,000**	**$ 8,740,000**	**$ 4,070,000**	**$ 2,070,000**	**$ 3,060,000**	**$ 3,030,000**
	Environmental and Permitting Costs	$ 750,000	$ 750,000	$ 150,000	$ 750,000	$ 750,000	$ 750,000
	Const. Mangmt. & Admin (6% of const'n + enviro costs)	$ 240,000	$ 570,000	$ 260,000	$ 170,000	$ 230,000	$ 230,000
	KCMD Labor Costs	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000
	Contingency (40% of construction + environmental costs)	$ 1,550,000	$ 3,800,000	$ 1,690,000	$ 1,130,000	$ 1,530,000	$ 1,520,000
	Design Engineering (15% of construction costs)	$ 470,000	$ 1,320,000	$ 620,000	$ 320,000	$ 460,000	$ 460,000
	Tax (10.1% of construction only)	$ 320,000	$ 890,000	$ 420,000	$ 210,000	$ 310,000	$ 310,000
	Total ROM Estimate	**$ 7,700,000**	**$ 17,300,000**	**$ 8,500,000**	**$ 5,900,000**	**$ 7,600,000**	**$ 7,500,000**
	Total Construction + Escalation (5% per year)						
	Year 1 - 2021	$ 8,100,000	$ 18,200,000	$ 9,000,000	$ 6,200,000	$ 8,000,000	$ 7,900,000
	Year 2 -2022	$ 8,600,000	$ 19,200,000	$ 9,500,000	$ 6,600,000	$ 8,400,000	$ 8,300,000
	Year 3 -2023	$ 9,100,000	$ 20,200,000	$ 10,000,000	$ 7,000,000	$ 8,900,000	$ 8,800,000

 # Notes:

All amounts rounded
All Amounts in 2020 dollars
Mobilization for heavy Derrick Barges for Pile Driving and Gangway Installation
Sites with new floats require dry fire lines
If ILF program used Cost would be at 1:1 ratio at 104$/SF (2020)
Market forces in trade labor in the Seattle area has created a surge in trade labor costs. This estimate should be revised yearly to adjust for the current market.
Other mitigation to cover possible Marine Mammal monitoring, water quality issues with pile pulling and public outreach
Log Boom Park costs include the ROM costs of Lakepointe's maintenance and moorage option

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

kpff

#1A Kenmore - Lakepointe, Service & Maintenance/Tie-up
POF service, gangway and float off west wall, moorage for two vessels along maintenance float, maintenance facilities

#	Item	Quantity	Unit	Unit Cost	Cost (2020 $)
	Mobilization/Demobilization	1	LS	$ 794,000	$ 794,000
	Mobilization/Demobilization Subtotal				**$ 794,000**
	Overwater Improvements				
	Gangway (freshwater locations - 8' x 60')	480	SF	$ 360	$ 172,800
	Upper Gangway Support	2	LS	$ 30,000	$ 60,000
	Concrete Foam Filled Float for Moorage (10'x100' x 6' freeboard)	1000	SF	$ 500	$ 500,000
	Steel Pile Hoops	4	EA	$ 10,000	$ 40,000
	Float Installation and Final Ballasting	2	LS	$ 40,000	$ 80,000
	Shore Power and lights at Overnight Moorage	1	LS	$ 60,000	$ 60,000
	Fendering for Moorage	8	EA	$ 8,000	$ 64,000
	Cleats for Moorage	8	EA	$ 2,500	$ 20,000
	Transfer Span for moorage	1	EA	$ 10,000	$ 10,000
	Gangway (freshwater locations - 8' x 60')	480	SF	$ 360	$ 172,800
	Concrete Foam Filled Float for Service (20'x100'x 6' freeboard) Procurement	2000	SF	$ 500	$ 1,000,000
	Transfer Span for service	1	EA	$ 25,000	$ 25,000
	Fixed Ramp	1	EA	$ 30,000	$ 30,000
	Fendering (fixed vertical, D-Rubber on Wide Flange bolted to float, installed)	12	EA	$ 8,000	$ 96,000
	20Ton Cleats (hardware + installation)	12	EA	$ 2,500	$ 30,000
	Fiberglass Ladder	3	EA	$ 3,000	$ 9,000
	Steel Handrail	240	LF	$ 150	$ 36,000
	Furnish (8) 24"x0.75" Steel Piles (75' ea)	56	TONS	$ 2,500	$ 140,000
	Steel Pile Coating (3/4 Pile Length)	3200	SF	$ 8	$ 25,600
	Bubble Curtain/Enviro Observation	2	LS	$ 60,000	$ 120,000
	Environmental Mitigation for Over Water Coverage	4368	SF	$ 104	$ 454,272
	Pile Driving	8	EA	$ 10,000	$ 80,000
	Float Fire System	1	LS	$ 225,000	$ 225,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	EA	$ 40,000	$ 40,000
	Overwater Improvements Subtotal				**$ 3,490,000**
	Uplands Improvements				
	Catch Basin (Type 1)	18	EA	$ 2,800	$ 50,400
	Manhole (Type 2)	2	EA	$ 5,400	$ 10,800
	Storm Drain Pipe (12")	1850	LF	$ 100	$ 185,000
	Perforated Pipe	600	LF	$ 100	$ 60,000
	Pretreatment	1	EA	$ 22,500	$ 22,500
	Treatment System	1	LS	$ 110,000	$ 110,000
	Storm Lift Station	1	LS	$ 300,000	$ 300,000
	Electrical (Lighting)	50000	SF	$ 15	$ 750,000
	Railing	510	LF	$ 150	$ 76,500
	Signage and Way Finding	20	EA	$ 500	$ 10,000
	Shelter	1200	SF	$ 200	$ 240,000
	Ticketing	1	EA	$ 22,000	$ 22,000
	Security System (gates, fencing and monitoring system)	1	LS	$ 50,000	$ 50,000
	Basic Restrooms	1	LS	$ 100,000	$ 100,000
	Outfitted Conex Maintenance Shop	1	LS	$ 16,000	$ 16,000
	Equipment for fueling by truck	10	EA	$ 500	$ 5,000
	Officer's Quarters/Office	1	LS	$ 30,000	$ 30,000
	Bike Facilities	10	EA	$ 3,000	$ 30,000
	Uplands Improvements Subtotal				**$ 2,068,000**
	Site Work				
	Old Foundation Removal	4640	SF	$ 20	$ 93,000
	Regrade Roadway	3670	SY	$ 18	$ 67,000
	Excavation	3556	CY	$ 60	$ 214,000
	Gravel Backfill for Pipe zone Bedding	350	CY	$ 45	$ 16,000
	Structural Excavation (Class B) for Pipe	1720	CY	$ 45	$ 78,000
	Shoring	1886	SF	$ 45	$ 85,000
	Unforeseen Obstruction	1	LS	$ 11,200	$ 12,000
	Gravel (Upland Site, 12")	3430	TON	$ 60	$ 206,000
	Asphalt Paving (Road, 6")	1000	TON	$ 280	$ 280,000
	Gravel (Road, 10")	1375	TON	$ 60	$ 83,000
	Parking Allowance	1	LS	$ 260,000	$ 260,000
	Quarry Spalls for Structures	841	TON	$ 45	$ 38,000
	Subgrade Prep	3667	SY	$ 15	$ 55,000
	Curb and Gutter	3000	LF	$ 50	$ 150,000
	Sidewalk	900	SY	$ 100	$ 90,000
	Tie-in to Highway	1	LS	$ 200,000	$ 200,000
	Sewage Force main	700	LF	$ 100	$ 70,000
	Sewer Lift Station	1	LS	$ 200,000	$ 200,000
	Electrical Service Extension	1	LS	$ 75,000	$ 75,000
	Electrical Submeter	1	EA	$ 15,000	$ 15,000
	Shore Power (infrastructure upland)	1	LS	$ 15,000	$ 15,000
	Water Backflow Prevention System	1	EA	$ 5,000	$ 5,000
	Potable Water Submeter	1	EA	$ 15,000	$ 15,000
	Potable Water Service Extension	100	LF	$ 100	$ 10,000
	Communications & Data Allowance	1	LS	$ 50,000	$ 50,000
	Site Work Subtotal				**$ 2,382,000**
	Subtotal Construction				***$ 8,740,000***
	Other Cost Items				
	Environmental and Permitting Costs			$ 750,000	$ 750,000
	Construction Management and Administration (on const'n + enviro costs)			6.0%	$ 570,000
	KCMD Labor for Capital Project Mananegement and Implementation				$ 1,200,000
	Contingency (on construction + environmental costs)			40.0%	$ 3,800,000
	Design Engineering (on construction costs)			15.0%	$ 1,320,000
	Tax (on construction only)			10.1%	$ 890,000
	Other Cost Items Subtotal				**$ 8,530,000**
	Total ROM Estimate				**$ 17,300,000**
	Total Construction + Escalation (5% per year)				
	Year 1				$ 18,200,000
	Year 2				$ 19,200,000
	Year 3				$ 20,200,000

 # Notes:

1 Estimate assumes 1' imported gravel in upland area. Excavated gravel will be hauled offsite for disposal.
2 Estimate assumes the existing 8" water line shown in record drawings is active and immediately adjacent to the site.
3 Estimate assumes that each float will require a dry fire protection system including FDC's.
4 Estimate assumes that sewer connection can be made by means of a lift station to the existing manhole due east of the upland site.
5 Estimate assumes the road will consist of two 12' lanes, curb and gutter, sidewalk, and storm drainage collection.

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

#	Item	Quantity	Unit	Unit Cost	Cost (2020 $)
	#2 Kenmore - Log Boom Park				
	POF service only at end pier				
	Mobilization/Demobilization	1	LS	$ 369,900	$ 369,900
	Mobilization/Demobilization Subtotal				**$ 370,000**
	Overwater Improvements				
	Pedestrian Transfer Span	1	EA	$ 25,000	$ 25,000
	Fendering (fixed vertical, D-Rubber on Wide Flange bolted to float, installed)	4	EA	$ 8,000	$ 32,000
	20Ton Cleats (hardware + installation)	4	EA	$ 2,500	$ 10,000
	Electrical (Lighting)	7000	SF	$ 15	$ 105,000
	Shelter	1200	SF	$ 200	$ 240,000
	Steel Handrail	30	LF	$ 150	$ 4,500
	Bubble Curtain/Enviro Observation	1	LS	$ 60,000	$ 60,000
	Overwater Improvements Subtotal				**$ 477,000**
	Uplands Improvements				
	Signage and Way Finding	20	EA	$ 500	$ 10,000
	Ticketing	1	EA	$ 22,000	$ 22,000
	Uplands Improvements Subtotal				**$ 32,000**
	Site Work				
	Electrical Service Extension	1100	LF	$ 100	$ 110,000
	Electrical Submeter	1	EA	$ 15,000	$ 15,000
	Structural Assessment	1	EA	$ 20,000	$ 20,000
	Bathymetry Assessment	1	EA	$ 15,000	$ 15,000
	Dredging	40000	BCY	$ 75	$ 3,000,000
	Existing Timber Pile Removal	1	LS	$ 30,000	$ 30,000
	Site Work Subtotal				**$ 3,190,000**
	Subtotal Construction				***$ 4,070,000***
	Other Cost Items				
	Environmental and Permitting Costs			$ 150,000	$ 150,000
	Construction Management and Administration (on const'n + enviro costs)			6.0%	$ 260,000
	KCMD Labor for Capital Project Management and Implementation				$ 1,200,000
	Contingency (on construction + environmental costs)			40.0%	$ 1,690,000
	Design Engineering (on construction costs)			15.0%	$ 620,000
	Tax (on construction only)			10.1%	$ 420,000
	Other Cost Items Subtotal				**$ 4,340,000**
	Total ROM Estimate				**$ 8,500,000**
	Total Construction + Escalation (5% per year)				
	Year 1				$ 9,000,000
	Year 2				$ 9,500,000
	Year 3				$ 10,000,000

 # Notes:

1 Unit cost for dredging assumes that disposal is upland. In-water disposal from a water based rig would decrease the total cost by about half if the permitting has been done. The estimate also assumes that contaminates are not present in the vicinity. Contaminated dredge and disposal can range from $200/CY to $250/CY depending on the contaminates in question and the disposal requirements.

2 Estimate assumes float fire system is already in place.

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

#	Item	Quantity	Unit	Unit Cost	Cost (2020 $)
	#3A Seattle - UW WAC, Minimal Improvements				
	POF service only, replace float in same location to increase freeboard, add gangway				
	Mobilization/Demobilization	1	LS	$ 188,200	$ 188,200
	Mobilization/Demobilization Subtotal				**$ 188,000**
	Overwater Improvements				
	Gangway (freshwater locations - 8' x 60')	480	SF	$ 360	$ 172,800
	Upper Gangway Support	1	LS	$ 60,000	$ 60,000
	Concrete Foam Filled Float (12' x 110' x 6' freeboard) Procurement	1320	SF	$ 500	$ 660,000
	Steel Pile Hoops	4	EA	$ 10,000	$ 40,000
	Float Installation and Final Ballasting	1	LS	$ 40,000	$ 40,000
	Pedestrian Transfer Span	1	EA	$ 25,000	$ 25,000
	Fixed Ramp	1	EA	$ 30,000	$ 30,000
	Fendering (fixed vertical, D-Rubber on Wide Flange bolted to float, installed)	4	EA	$ 8,000	$ 32,000
	20Ton Cleats (hardware + installation)	4	EA	$ 2,500	$ 10,000
	Fiberglass Ladder	1	EA	$ 3,000	$ 3,000
	Steel Handrail	240	LF	$ 150	$ 36,000
	Furnish (4) 24"x0.75" Steel Piles (75' ea)	28	TONS	$ 2,500	$ 70,000
	Steel Pile Coating (3/4 Pile Length)	1600	SF	$ 8	$ 12,800
	Bubble Curtain/Enviro Observation	1	LS	$ 60,000	$ 60,000
	Environmental Mitigation for Over Water Coverage	1284	SF	$ 104	$ 133,536
	Pile Driving	4	EA	$ 10,000	$ 40,000
	Float Fire System	1	LS	$ 115,000	$ 115,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	LS	$ 40,000	$ 40,000
	Overwater Improvements Subtotal				**$ 1,580,000**
	Uplands Improvements				
	Signage and Way Finding	20	EA	$ 500	$ 10,000
	Shelter	1200	SF	$ 200	$ 240,000
	Ticketing	1	EA	$ 22,000	$ 22,000
	Uplands Improvements Subtotal				**$ 272,000**
	Site Work				
	Bathymetry Assessment	1	EA	$ 15,000	$ 15,000
	Existing Steel Pile Removal	1	LS	$ 5,000	$ 5,000
	Existing Float Removal	1	LS	$ 10,000	$ 10,000
	Site Work Subtotal				**$ 30,000**
	Subtotal Construction				***$ 2,070,000***
	Other Cost Items				
	Environmental and Permitting Costs			$ 750,000	$ 750,000
	Construction Management and Administration (on const'n + enviro costs)			6.0%	$ 170,000
	KCMD Labor for Capital Project Management and Implementation				$ 1,200,000
	Contingency (on construction + environmental costs)			40.0%	$ 1,130,000
	Design Engineering (on construction costs)			15.0%	$ 320,000
	Tax (on construction only)			10.1%	$ 210,000
	Other Cost Items Subtotal				**$ 3,780,000**
	Total ROM Estimate				**$ 5,900,000**
	Total Construction + Escalation (5% per year)				
	Year 1				$ 6,200,000
	Year 2				$ 6,600,000
	Year 3				$ 7,000,000

#	Notes:
1	Estimate assumes that each float will require a dry fire protection system including FDC's.

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

kpff

#	Item	Quantity	Unit	Unit Cost	Cost (2020 $)
	#3B Seattle - UW WAC, Maximum Improvements				
	POF service only, remove existing float, replacement float located further east, connect to shore with fixed and hinged gangway				
	Mobilization/Demobilization	1	LS	$ 277,900	$ 277,900
	Mobilization/Demobilization Subtotal				**$ 278,000**
	Overwater Improvements				
	Gangway (freshwater locations - 8' x 60')	480	SF	$ 360	$ 172,800
	Upper Gangway Support	1	LS	$ 150,000	$ 150,000
	Concrete Foam Filled Float (25' x 100'x 6' Freeboard) Procurement	2500	SF	$ 500	$ 1,250,000
	Steel Pile Hoops	4	EA	$ 10,000	$ 40,000
	Float Installation and Final Ballasting	1	LS	$ 40,000	$ 40,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	EA	$ 40,000	$ 40,000
	Moorage Transfer Span	2	EA	$ 8,000	$ 16,000
	Fixed Ramp	1	EA	$ 30,000	$ 30,000
	Fendering (fixed vertical, D-Rubber on Wide Flange bolted to float, installed)	4	EA	$ 8,000	$ 32,000
	20Ton Cleats (hardware + installation)	4	EA	$ 2,500	$ 10,000
	Fiberglass Ladder	1	EA	$ 3,000	$ 3,000
	Steel Handrail	250	LF	$ 150	$ 37,500
	Furnish (8) 24"x0.75" Steel Piles (75' ea)	56	TONS	$ 2,500	$ 140,000
	Steel Pile Coating (3/4 Pile Length)	3200	SF	$ 8	$ 25,600
	Bubble Curtain/Enviro Observation	1	LS	$ 60,000	$ 60,000
	Environmental Mitigation for Over Water Coverage	1874	SF	$ 104	$ 194,896
	Pile Driving	8	EA	$ 10,000	$ 80,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	LS	$ 40,000	$ 40,000
	Float Fire System	1	LS	$ 115,000	$ 115,000
	Overwater Improvements Subtotal				**$ 2,477,000**
	Uplands Improvements				
	Signage and Way Finding	20	EA	$ 500	$ 10,000
	Shelter	1200	SF	$ 200	$ 240,000
	Ticketing	1	EA	$ 22,000	$ 22,000
	Uplands Improvements Subtotal				**$ 272,000**
	Site Work				
	Bathymetry Assessment	1	EA	$ 15,000	$ 15,000
	Existing Steel Pile Removal	1	LS	$ 5,000	$ 5,000
	Existing Float Removal	1	LS	$ 10,000	$ 10,000
	Site Work Subtotal				**$ 30,000**
	Subtotal Construction				***$ 3,060,000***
	Other Cost Items				
	Environmental and Permitting Costs			$ 750,000	$ 750,000
	Construction Management and Administration (on const'n + enviro costs)			6.0%	$ 230,000
	KCMD Labor for Capital Project Management and Implementation				$ 1,200,000
	Contingency (on construction + environmental costs)			40.0%	$ 1,530,000
	Design Engineering (on construction costs)			15.0%	$ 460,000
	Tax (on construction only)			10.1%	$ 310,000
	Other Cost Items Subtotal				**$ 4,480,000**
	Total ROM Estimate				**$ 7,600,000**
	Total Construction + Escalation (5% per year)				
	Year 1				$ 8,000,000
	Year 2				$ 8,400,000
	Year 3				$ 8,900,000

 # Notes:

1 Estimate assumes that each float will require a dry fire protection system including FDC's.

Kenmore Implementation Study - Landing Site Capital Improvements
Engineer's Rough Order of Magnitude Estimate

#	Item	Quantity	Unit	Unit Cost	Cost (2020 $)
	#4 Seattle - Madison Park				
	POF service only, perpendicular float added to end of pier, replace pier decking.				
	Mobilization/Demobilization	1	LS	$ 274,900	$ 274,900
	Mobilization/Demobilization Subtotal				**$ 275,000**
	Overwater Improvements				
	Replace Decking [1]	1100	SF	$ 100	$ 110,000
	Gangway (freshwater locations - 8' x 60')	480	SF	$ 360	$ 172,800
	Steel Pile Hoops	4	EA	$ 10,000	$ 40,000
	Float Installation and Final Ballasting	1	EA	$ 40,000	$ 40,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	LS	$ 40,000	$ 40,000
	Upper Gangway Support	1	LS	$ 250,000	$ 250,000
	Concrete Foam Filled Float (20' x 100' x 6' freeboard) Procurement	2000	SF	$ 500	$ 1,000,000
	Moorage Transfer Span	1	EA	$ 8,000	$ 8,000
	Fixed Ramp	1	EA	$ 30,000	$ 30,000
	Fendering (fixed vertical, D-Rubber on Wide Flange bolted to float, installed)	4	EA	$ 8,000	$ 32,000
	20Ton Cleats (hardware + installation)	4	EA	$ 2,500	$ 10,000
	Fiberglass Ladder	1	EA	$ 3,000	$ 3,000
	Steel Handrail	240	LF	$ 150	$ 36,000
	Furnish (6) 24"x0.75" Steel Piles (75' ea)	42	TONS	$ 2,500	$ 105,000
	Steel Pile Coating (3/4 Pile Length)	600	SF	$ 8	$ 4,800
	Bubble Curtain/Enviro Observation	1	LS	$ 60,000	$ 60,000
	Environmental Mitigation for Over Water Coverage	2576	SF	$ 104	$ 267,904
	Pile Driving	6	EA	$ 10,000	$ 60,000
	Electrical for Lighting and Transfer Spans on Service Floats	1	LS	$ 40,000	$ 40,000
	Float Fire System	1	LS	$ 115,000	$ 115,000
	Overwater Improvements Subtotal				**$ 2,425,000**
	Uplands Improvements				
	Signage and Way Finding	20	EA	$ 500	$ 10,000
	Shelter	1200	SF	$ 200	$ 240,000
	Ticketing	1	EA	$ 22,000	$ 22,000
	Uplands Improvements Subtotal				**$ 272,000**
	Site Work				
	Curb and Gutter	275	LF	$ 50	$ 14,000
	Sidewalk	184	SY	$ 100	$ 18,400
	Structural Assessment	1	EA	$ 20,000	$ 20,000
	Site Work Subtotal				**$ 52,000**
	Subtotal Construction				***$ 3,030,000***
	Other Cost Items				
	Environmental and Permitting Costs			$ 750,000	$ 750,000
	Construction Management and Administration (on const'n + enviro costs)			6.0%	$ 230,000
	KCMD Labor for Capital Project Management and Implementation				$ 1,200,000
	Contingency (on construction + environmental costs)			40.0%	$ 1,520,000
	Design Engineering (on construction costs)			15.0%	$ 460,000
	Tax (on construction only)			10.1%	$ 310,000
	Other Cost Items Subtotal				**$ 4,470,000**
	Total ROM Estimate				**$ 7,500,000**
	Total Construction + Escalation (5% per year)				
	Year 1				$ 7,900,000
	Year 2				$ 8,300,000
	Year 3				$ 8,800,000

 # Notes:

1 Remove and dispose of existing. Replace with Fibergrate.
2 Estimate assumes that each float will require a dry fire protection system including FDC's.

Attachment A.9

Kenmore Operating Cost Worksheets

One-way Route Plan - Kenmore (Lakepointe) to UW (WAC)

Route Segment	Distance (Statute Miles)	Distance (Nautical Miles)	Average Speed (Kts)	Average Speed (MPH)	Time Required (Minutes)	Full Load Fuel Rate (GPH)	Full Load Fuel Usage (Gals/Segment)	Light Load Fuel Rate (GPH)	Light Load Fuel Usage (Gals/Segment)	Round Trip Fuel Usage
Kenmore - Maneuver	0.29	0.25	5.0	5.8	3.0	26.6	1.3	19.4	1.0	
Kenmore - Slowdown	0.35	0.30	7.0	8.1	2.6	26.6	1.1	19.4	0.8	
Kenmore to Union Bay	8.74	7.60	28.0	32.2	16.3	132.9	36.1	97.2	26.4	
Union Bay to UW	1.04	0.90	7.0	8.1	7.7	26.6	3.4	19.4	2.5	
UW Maneuver	0.17	0.15	5.0	5.8	1.8	26.6	0.8	19.4	0.6	
Total (or average) One-Way Transit	**10.58**	**9.20**	**17.6**	**20.2**	**31.4**	**81.8**	**42.7**	**85.1**	**31.3**	**74.0**
Rounded Average (H:MM)					0:31				**60.8**	
Off/On Load PAX	0.00	0.00	0.0	0.0	9.0	13.3	2.0	9.7	1.5	
Rounded Average (H:MM)					0:09					
Trip Total (or average) One-Way	**10.58**	**9.20**	**13.7**	**15.7**	**40.4**	**64.8**	**44.7**	**81.2**	**32.7**	**77.5**
Rounded Average (H:MM)					0:40			Round Trips per Fueling Stop		**15.5**

Route Assumptions

* Assumed cruising speed at 28 knots, resulting in a one-way transit time of ~31 minutes
* Using AAM data, estimated cruising speed fuel consumption at 80% engine rating at ~133GPH
* Estimated maneuvering speeds at 5 knots, with fuel consumptions rates during maneuvering at 40% of cruising rates (20% on 2 engines)
* Assumes two slowdowns with maneuvering speeds at 7 knots, with fuel consumptions rates during maneuvering at 40% of cruising rates (20% on 2 engines)
* Estimated dwell times of at least 8 mins in both Kenmore and Seattle in peak direction, at least 5 minutes in off-peak direction. Dwell time including loading and unloading, except for in the first or last sailings of the travel period where only loading or unloading is included.
* Assumes a one-way trip time of 31 minutes, or a round trip time of 1 hours - 2 minutes, or 62 minutes
* Estimated dwell time fuel consumption (while in dock) at 10% of cruising rates
* Assumed fuel tank capacity=750 Gals/hull; with full tank ~95%=710 Gals each tank; retain minimum of ~15% in tank=110 Gals => max of 600 Gals/tank (total 1,200) usable between fueling stops
* With one-way transit fuel consumption ranging from 30 to 40 Gals/transit => an average of ~78 Gals/round trip => maximum of ~15 round-trips before fueling
* Assumes all ferry service begins and ends in Kenmore at Lakepointe
* Fueling to occur by truck at Lakepointe (assumes capability @ a rate of 50 GPM => will take ~24 minutes to fuel)

All American Marine Fuel Consumption Data

	Vessel Condition	Engine Rating	Gals/NM	Speed NM/HR	GPH
	Full Fuel & Passengers	100%	4.88	34.20	166.90
	Full Fuel & Passengers	95%	4.81	32.90	158.25
	Full Fuel & Passengers	90%	4.73	31.60	149.47
	Full Fuel & Passengers	85%	4.66	30.30	141.20
	Full Fuel & Passengers	80%	4.63	28.70	132.88
	Full Fuel & Passengers	75%	4.59	27.20	124.85
	Full Fuel & Passengers	70%	4.51	25.70	115.91
	Half Fuel & No Passengers	100%	4.08	40.90	166.87
	Half Fuel & No Passengers	95%	4.00	39.50	158.00
	Half Fuel & No Passengers	90%	3.93	38.00	149.34
57.6	Half Fuel & No Passengers	85%	3.85	36.60	140.91
57.6	Half Fuel & No Passengers	80%	3.78	35.20	133.06
	Half Fuel & No Passengers	75%	3.72	33.60	124.99
	Half Fuel & No Passengers	70%	3.64	31.90	116.12
	Half Fuel & No Passengers	65%	3.52	30.10	105.95
	Half Fuel & No Passengers	60%	3.46	28.10	97.23
	Half Fuel & No Passengers	55%	3.40	26.20	89.08

Description	Speed knots	Crossing minutes	Dwell minutes
100% Rated at full load	34.2	54.1	5.9
95% Rated at full load	32.9	54.7	5.3
90% Rated at full load	31.6	55.4	4.6
85% Rated at full load	30.3	56.1	3.9
80% Rated at full load	28.7	57.1	2.9
75% Rated at full load	27.2	58.1	1.9
90% Rated at light load	38	52.5	7.5

70% Rated at light load	31.9	55.2	4.8

Service Assumptions	
Landing Sites	* Lakepointe in Kenmore * UW WAC in Seattle
Service Levels & Seasonality	* Commute service schedule: - AM & PM commute periods Monday through Friday only - October through March (Total of 26 weeks - holidays; equivalent of 25 full weeks) - Saturday service - single vessel service for total of 5 round trips per day for 30 weeks - Assumes 5 holiday days with no service (Thanksgiving, Christmas, New Year, MLK, President's Day) * Peak service schedule: - Expanded weekdays, extended evenings, and weekend service - April through September (Total of 25 weeks - full service, with 3 weekday holidays at Sunday schedule) - Assumes Memorial Day, Independence Day & Labor Day operated on Sunday schedule * Special Event service: - Assumed a total of 10 events per year, which may be offered year round (although more likely during winter given expanded seasonal service)
Vessel	* All American Marine Design - 81' x 30' * Two vessels (one in service, one spare/backup) * Configuration - side loading * Size: 150 passengers * Cruising speed: 28 knots (will not require compliance with high speed craft standards) * Engine: 4-engine waterjet or two-engine hybrid * Low wake * Bicycle Capacity: 25-35 bicycles * Vessel/terminal interface: Two entrances on both sides, gangways stored at terminals.
Vessel Crews	* Crew of three (1 Captain & 2 Deckhands) * No mate or senior deckhand was assumed
KCMD Operator - Plus up Management, Administration, Support Staff	* Management Staff of 1
Fueling location & schedule	* Fueling assumed to occur by truck at Lakepointe
Vessel Moorage	* Tie-up available for two vessels at Lakepointe * Assume all service begins and ends at Lakepointe

Kenmore (Lakepointe) to Seattle (UW WAC) - Operating Input Data		
Description	**Values**	**Units**
Service Profile		
Commute-only	26.00	Weeks per year
	25.00	Weeks of weekday service excluding holidays/year
	5.00	Service days per week
	5.00	Holidays
Peak	25.00	Weeks per year
	7.00	Service days per week
	4.00	Days of weekday service per week
	3.00	Holidays
Special Events	10.00	Events per year
Service Hours		
Commute-only	7.70	service hours per weekday (Monday - Friday)
	962.50	weekday service hours for 6 months of year (excludes 5 holidays/year)
	9.35	service hours per weekend (Saturday)
	243.10	Saturday service hours for 6 months of year
	1205.60	total commute-only service hours
	125.00	days of service (25 weeks of commute-only @ 5 days/week - 5 holidays)
Peak	15.10	service hours per day for 6 months (Monday - Thursday)
	1464.70	service hours for 6 months of year (excludes service on 3 holidays)
	17.25	service hours per day for 6 months (Friday)
	431.25	service hours for 6 months of year
	12.65	service hours per day for 6 months (Saturday)
	316.25	service hours for 6 months of year
	10.68	service hours per day for 6 months (Sunday)
	299.13	service hours for 6 months of year (includes 3 holidays on Sunday schedule)
	175.00	days of service (26 weeks of peak @ 7 days/week)
Special	4.00	service hours per event
	40.00	service hours for 10 special events per year
Annual Totals	12.19	average service hours per day per year (excluding special events)
	3756.93	total service hours per year, including special events (excludes 5 holidays/year)
	300.00	days of service per year (excluding special events)
Transits (Round Trips)		
Commute-only	6.00	round trips per day (Monday - Friday)
	7.00	round trips per day (Saturday)
	932.00	round trips for 6 months of year (excludes 5 holidays/year)
Peak	11.00	daily round trips per day for 6 months (Monday - Thursday)
	1067.00	round trips for 6 months of year (excludes service on 3 holidays)
	13.00	round trips per day for 6 months (Friday)
	325.00	round trips for 6 months of year
	10.00	round trips per day for 6 months (Saturday)
	250.00	round trips for 6 months of year
	8.00	round trips per day for 6 months (Sunday)
	224.00	round trips for 6 months of year (includes 3 holidays on Sunday schedule)
Special	6.00	round trips per event
	60.00	round trips for 10 special events per year
Annual Totals	8.58	average round trips per day per year (excludes special events)
	2858.00	total round trips per year including special events (excludes 5 holidays/year)
Vessel Operating Hours		
Commute-only	7.70	vessel hours per day per vessel (Monday - Friday)
	962.50	weekday vessel hours per vessel for 6 months of commute-only
	9.35	vessel hours per day (Saturday)
	243.10	Saturday vessel hours for 6 months of commute-only
	1,205.60	total vessel hours per year (excludes 5 holidays/year)
Peak	15.10	hours per day per vessel (Monday - Thursday)
	1,464.70	hours per year per vessel (excludes 3 holidays/year)
	17.77	hours per day per vessel (Friday)
	444.17	hours per year per vessel
	13.68	hours per day per vessel (Saturday)
	342.08	hours per year per vessel
	10.68	average hours per day per vessel (Sunday)
	299.13	average hours per year per vessel (w/ Sunday service on 3 holidays)
	2,550.08	vessel hours per year per vessel
Special	4.00	vessel hours per day per event per vessel
	40.00	total vessel hours per year
Annual Totals	11.64	average hours per day per year per vessel (excluding special service)
	3,795.68	total vessel hours per year (excludes 5 holidays/year)
Crew Hours		
Commute-only	64.35	total crew hours per week
	1,362.20	total crew hours for 6 months (excludes 5 holidays/year)
	75.50	total fueling hours (30 min. per service day)
Peak	112.28	total crew hours per week (typical)
	2,793.83	total crew hours for 6 months (includes Sunday service on 3 holidays)
	87.50	total fueling hours (30 min. per service day)
Special	4.75	total crew hours per event per vessel
	47.50	total crew hours for special service

Annual Totals	4,203.53	total crew hours per year
	12,610.60	total labor hours for year (assuming number of crew specified below)
	163.00	total fueling hours per year
Fuel Usage		
Average Fuel Use	77.48	average gallons per round trip
Commute-only	6.00	number of round trips per weekday
	7.00	number of round trips per Saturday
	37.00	number of round trips per week
	2,866.77	typical gallons per week
	930.00	round trips for 6 months of year (excludes 5 holidays/year)
	72,056.69	total gallons for 6 months of year (excludes 5 holidays/year)
Peak	75.00	typical number of round trips per week
	5,811.02	typical gallons per week
	1,866.00	round trips for 6 months of year (includes Sunday service on 3 holidays)
	144,578.27	total gallons for 6 months of year (includes Sunday service on 3 holidays)
Special	3.00	number of round trips per special event
	30.00	number of round trips per year (assuming 10 special events)
	2,324.41	total gallons for 10 special events per year
Annual Totals	2,826.00	total round trips per year
	218,959.37	total gallons per year
	229,907.34	total gallons per year, with extra 5% to cover miscellaneous fuel use
Vessel Particulars		
Vessel Length	81.00	feet (length overall)
Vessel Breadth	30.00	feet
Vessel Crew		
Captains	1	per vessel
Senior Deckhands	1	per vessel
Purser Deckhands	1	per vessel
Vessel Maintenance Staff		
Engineer	1	per system
	2,080	hours per year
Oiler	2	per system
	2,080	hours per year

Kenmore (Lakepointe) to Seattle (UW WAC) - Cost Input Data					
Description	**Cost**	**Unit**	**Source/Justification for Values**		
Capital Costs					
Vessels					
150-pax	$ 7,700,000.00	per vessel	Based on estimate from AAM for SECO		
Mid-life Vessel Overhaul	30%	of acquisition costs	Estimate; occurring at mid-point in life of vessel, includes interior refurbishment along with engine overhaul		
Terminals					
Estimated Capital Improvements	$ 24,900,000.00	total	From KPFF rough order of magnitude costs estimates for improvements at Lakepointe and UW WAC (high estimate)		
Management and Support					
Admin/Insurance/Materials	5%	of direct costs	Includes project administration and materials		
Operating Costs					
Vessel Operations					
Labor					
KCMD					
Captain/Master	$ 55.15	per hour	Based on KCMD 2019 costs	$ 114,712.00	Captain Annual Salary
Overhead/Benefits	$ 37.22	per hour	Based on KCMD 2019 costs	$ 192,129.60	Captain Fully Weighted Annual Salary
Senior Deckhand	$ 37.74	per hour	Based on KCMD 2019 costs	$ 78,499.20	Sr. Deckhand Annual Salary
Overhead/Benefits	$ 28.39	per hour	Based on KCMD 2019 costs	$ 137,550.40	Sr. Deckhand Fully Weighted Annual Salary
Purser Deckhand	$ 36.85	per hour	Based on KCMD 2019 costs	$ 76,648.00	Purser Deckhand Annual Salary
Overhead/Benefits	$ 27.95	per hour	Based on KCMD 2019 costs	$ 134,784.00	Purser Deckhand Fully Weighted Annual Sal
Fuel					
Fuel Price	$ 3.80	dollars/gallon	Estimated price of marine diesel fuel in Lake Union (varies with time)	Morrison's Fuel, May 2019	
Fueling labor	$ 73.70	per hour	Based on KCMD 2019 costs for 1 oiler and 1 deckhand		
Overhead/Benefits	$ 59.02	per hour	Based on KCMD 2019 costs for 1 oiler and 1 deckhand		
Maintenance					
Labor					
KCMD					
Engineers	$ 51.36	per hour	Based on KCMD 2019 costs	$ 106,828.80	Engineer Annual Salary
Overhead/Benefits	$ 35.29	per hour	Based on KCMD 2019 costs	$ 180,232.00	Oiler Annual Salary
Oilers	$ 36.85	per hour	Based on KCMD 2019 costs	$ 76,648.00	Engineer Fully Weighted Annual Salary
Overhead/Benefits	$ 31.07	per hour	Based on KCMD 2019 costs	$ 141,273.60	Oiler Fully Weighted Annual Salary
Routine Maintenance	$ 5.00	per engine per hour	Estimated factor for routine maintenance costs based on number of vessel hours		
	$ 20.00	per hour	Estimated maintenance cost per hour assuming 4 engines per vessel		
	$ 75,913.67	per year	Estimate of routine maintenance cost based on total number of vessel hours each year		
Annual Maintenance	$ 0.33	per foot per vessel per hour	Estimate factor for periodic hull/out-of-water maintenance costs based on vessel length and hours of operation		
	$ 26.73	per vessel per hour	Estimate based on proposed AAM vessel characteristics		
	$ 33,819.54	per vessel	Assumes three vessels delivering similar levels of service		
	$ 101,458.62	per year	Assumes three vessels delivering similar levels of service for full year		
Unplanned Maintenance	10%	of total maintenance cost	Estimate to account for unplanned maintenance and repair work		
Vessel Insurance	$ 133,333.33	per vessel	Annual vessel insurance for two vessels assumed		
Terminal Operations					
Labor					
KCMD					
Information Agent(s)	$ 29.07	per hour	Based on KCMD 2019 costs	$ 60,465.60	Info Agent Annual Salary
Overhead/Benefits	$ 24.01	per hour	Based on KCMD 2019 costs	$ 110,406.40	Info Agent Fully Weighted Annual Salary
Info Agent Annual Cost	$ 137,063.18	per year, fully weighted	Assumes 20 hrs/wk for 6 months of commute-only; 80 hrs/wk for 6 months of peak; & 4 hrs/event for 10 special events		
Routine Terminal Maintenance	$ 1.00	per service hour	Estimate of terminal maintenance cost based on hours of operation		
	$ 3,756.93	per year	Estimate of routine maintenance cost based on annual service hours		
Terminal Lease	$ 3,000.00	per landing site	Estimate for landing site lease (based on existing KT lease agreement between KT and WSF in Seattle plus escalation)		
	$ 6,000.00	per month	Lease costs at Lakepointe and Madison		
	$ 36,000.00	per year	Annual estimate based on 12 months of operations		
Fare Collection Costs	$ 12,000.00	per year	Estimated cost of fare collection processing, including cash processing, transit cards, and maintenance contracts		
Management, Administration & Support					
KCMD					
Management/Admin/Support Labor	$ 143,000.00	per year	Assumed the cost of 1 extra FTEs to support service expansion (see assumptions tab for details)		
Overhead/Benefits	$ 51,000.00	per year	Estimate of overhead costs such as sick leave, vacation, benefits based on KCMD 2019 costs		
Admin/insurance/overhead/Misc	18%	of direct costs	Estimate includes liability insurance, miscellaneous administrative/management costs and overhead (supplies, etc.), plus other potential miscellaneous costs		
Inflation Rate					
KCMD	3.00%	per year	Assumed higher inflation rate for KCMD due to higher increases in central rates, benefit costs and labor expenses		

Kenmore (Lakepointe) to Seattle (UW WAC)
KCMD Operator Costs

Funding Type	Component		Years																					
	Description	Sub-tasks	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Capital	Vessels	Vessel Acquisition (2 Vessels)	$ 15,400,000																					
		Mid-life Overhaul											$ 4,620,000											
	Terminals	Terminal Improvements	$ 24,900,000																					
	Management	Management & Support	$ 2,015,000										$ 231,000											
		Capital Cost Subtotal	*$ 42,315,000*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ 4,851,000*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*
Operating	Vessel Ops	Labor																						
		- Direct Labor		$ 557,380	$ 574,101	$ 591,324	$ 609,064	$ 627,336	$ 646,156	$ 665,540	$ 685,506	$ 706,072	$ 727,254	$ 749,071	$ 771,544	$ 794,690	$ 818,531	$ 843,087	$ 868,379	$ 894,430	$ 921,263	$ 948,901	$ 977,368	$ 1,006,689
		- Overhead		$ 402,903	$ 414,990	$ 427,440	$ 440,263	$ 453,471	$ 467,075	$ 481,087	$ 495,520	$ 510,385	$ 525,697	$ 541,468	$ 557,712	$ 574,443	$ 591,676	$ 609,427	$ 627,709	$ 646,541	$ 665,937	$ 685,915	$ 706,493	$ 727,687
		Fuel		$ 873,648	$ 899,857	$ 926,853	$ 954,659	$ 983,298	$ 1,012,797	$ 1,043,181	$ 1,074,477	$ 1,106,711	$ 1,139,912	$ 1,174,110	$ 1,209,333	$ 1,245,613	$ 1,282,981	$ 1,321,471	$ 1,361,115	$ 1,401,948	$ 1,444,007	$ 1,487,327	$ 1,531,947	$ 1,577,905
		Maintenance																						
		- Labor		$ 260,125	$ 267,929	$ 275,966	$ 284,245	$ 292,773	$ 301,556	$ 310,603	$ 319,921	$ 329,518	$ 339,404	$ 349,586	$ 360,074	$ 370,876	$ 382,002	$ 393,462	$ 405,266	$ 417,424	$ 429,947	$ 442,845	$ 456,130	$ 469,814
		- Overhead		$ 202,654	$ 208,734	$ 214,996	$ 221,446	$ 228,089	$ 234,932	$ 241,980	$ 249,239	$ 256,717	$ 264,418	$ 272,351	$ 280,521	$ 288,937	$ 297,605	$ 306,533	$ 315,729	$ 325,201	$ 334,957	$ 345,006	$ 355,356	$ 366,016
		- Routine		$ 75,914	$ 78,191	$ 80,537	$ 82,953	$ 85,442	$ 88,005	$ 90,645	$ 93,364	$ 96,165	$ 99,050	$ 102,022	$ 105,082	$ 108,235	$ 111,482	$ 114,826	$ 118,271	$ 121,819	$ 125,474	$ 129,238	$ 133,115	$ 137,109
		- Annual		$ 101,459	$ 104,502	$ 107,637	$ 110,867	$ 114,193	$ 117,618	$ 121,147	$ 124,781	$ 128,525	$ 132,380	$ 136,352	$ 140,442	$ 144,656	$ 148,995	$ 153,465	$ 158,069	$ 162,811	$ 167,696	$ 172,727	$ 177,908	$ 183,246
		- Unplanned		$ 17,737	$ 18,269	$ 18,817	$ 19,382	$ 19,963	$ 20,562	$ 21,179	$ 21,815	$ 22,469	$ 23,143	$ 23,837	$ 24,552	$ 25,289	$ 26,048	$ 26,829	$ 27,634	$ 28,463	$ 29,317	$ 30,196	$ 31,102	$ 32,035
		Vessel Insurance		$ 266,667	$ 274,667	$ 282,907	$ 291,394	$ 300,136	$ 309,140	$ 318,414	$ 327,966	$ 337,805	$ 347,940	$ 358,378	$ 369,129	$ 380,203	$ 391,609	$ 403,357	$ 415,458	$ 427,922	$ 440,759	$ 453,982	$ 467,602	$ 481,630
	Terminal Ops	Labor		$ 137,063	$ 141,175	$ 145,410	$ 149,773	$ 154,266	$ 158,894	$ 163,661	$ 168,570	$ 173,628	$ 178,836	$ 184,201	$ 189,727	$ 195,419	$ 201,282	$ 207,320	$ 213,540	$ 219,946	$ 226,545	$ 233,341	$ 240,341	$ 247,551
		Routine Terminal Maintenance		$ 3,757	$ 3,870	$ 3,986	$ 4,105	$ 4,228	$ 4,355	$ 4,486	$ 4,621	$ 4,759	$ 4,902	$ 5,049	$ 5,200	$ 5,356	$ 5,517	$ 5,683	$ 5,853	$ 6,029	$ 6,210	$ 6,396	$ 6,588	$ 6,785
		Terminal Lease		$ 36,000	$ 37,080	$ 38,192	$ 39,338	$ 40,518	$ 41,734	$ 42,986	$ 44,275	$ 45,604	$ 46,972	$ 48,381	$ 49,832	$ 51,327	$ 52,867	$ 54,453	$ 56,087	$ 57,769	$ 59,503	$ 61,288	$ 63,126	$ 65,020
		Fare Collection		$ 12,000	$ 12,360	$ 12,731	$ 13,113	$ 13,506	$ 13,911	$ 14,329	$ 14,758	$ 15,201	$ 15,657	$ 16,127	$ 16,611	$ 17,109	$ 17,622	$ 18,151	$ 18,696	$ 19,256	$ 19,834	$ 20,429	$ 21,042	$ 21,673
	Administration / Support	Management/Support Labor		$ 194,000	$ 199,820	$ 205,815	$ 211,989	$ 218,349	$ 224,899	$ 231,646	$ 238,596	$ 245,753	$ 253,126	$ 260,720	$ 268,541	$ 276,598	$ 284,896	$ 293,442	$ 302,246	$ 311,313	$ 320,652	$ 330,272	$ 340,180	$ 350,386
		Admin/Insurance/Overhead/Misc		$ 565,435	$ 582,398	$ 599,870	$ 617,866	$ 636,402	$ 655,494	$ 675,159	$ 695,414	$ 716,276	$ 737,764	$ 759,897	$ 782,694	$ 806,175	$ 830,360	$ 855,271	$ 880,929	$ 907,357	$ 934,578	$ 962,615	$ 991,494	$ 1,021,239
		Operating Cost Subtotal	*$ -*	*$ 3,706,741*	*$ 3,817,943*	*$ 3,932,481*	*$ 4,050,456*	*$ 4,171,969*	*$ 4,297,128*	*$ 4,426,042*	*$ 4,558,824*	*$ 4,695,588*	*$ 4,836,456*	*$ 4,981,550*	*$ 5,130,996*	*$ 5,284,926*	*$ 5,443,474*	*$ 5,606,778*	*$ 5,774,981*	*$ 5,948,231*	*$ 6,126,678*	*$ 6,310,478*	*$ 6,499,792*	*$ 6,694,786*
Total Annual Cost			***$ 42,315,000***	***$ 3,706,741***	***$ 3,817,943***	***$ 3,932,481***	***$ 4,050,456***	***$ 4,171,969***	***$ 4,297,128***	***$ 4,426,042***	***$ 4,558,824***	***$ 4,695,588***	***$ 9,687,456***	***$ 4,981,550***	***$ 5,130,996***	***$ 5,284,926***	***$ 5,443,474***	***$ 5,606,778***	***$ 5,774,981***	***$ 5,948,231***	***$ 6,126,678***	***$ 6,310,478***	***$ 6,499,792***	***$ 6,694,786***

Kenmore (Lakepointe) to Seattle (UW WAC)

Kenmore (Lakepointe) to Seattle (UW WAC)				
Contract Operator	Year 0	Year 1	Year 7	Year 20
KC Marine Division	$ 42,315,000	$ 3,707,000	$ 4,426,042	$ 6,695,000
Service Summary Metrics		Year 1	Year 7	Year 20
Est. Annual Ridership		111,238	196,068	262,297
Est. Fare Revenue		$ 500,571.00	$ 1,053,519.51	$ 2,131,819.01
Est. Farebox Recover Rate		**14%**	**24%**	**32%**
Est. Operating Cost per rider		$33.32	$22.57	$25.52
Est. Systemwide Ops Cost per rider		$15.75	$13.23	$12.98

Category		KCMD
Vessel Labor		$ 960,000
Fuel		$ 874,000
Maintenance		$ 658,000
Vessel Insurance		$ 267,000
Terminal Ops		$ 189,000
Management/Support		$ 194,000
Admin/Overhead		$ 565,000
Subtotal:		$ 3,707,000

Sub-tasks	KCMD		
	Cost Estimate	Subtotals	Rounded
Labor			
- Direct Labor	$ 557,380	$ 960,282	$ 960,000
- Overhead	$ 402,903		
Fuel	$ 873,648	$ 873,648	$ 874,000
Maintenance			
- Labor	$ 260,125		
- Overhead	$ 202,654		
- Routine	$ 75,914	$ 657,889	$ 658,000
- Annual	$ 101,459		
- Unplanned	$ 17,737		
Vessel Insurance	$ 266,667	$ 266,667	$ 267,000
Terminal Labor	$ 137,063		
Routine Terminal Maintenance	$ 3,757		
Terminal Lease	$ 36,000	$ 188,820	$ 189,000
Fare Collection	$ 12,000		
Management/Admin/Support Labor	$ 194,000	$ 194,000	$ 194,000
Admin/Insurance/Overhead	$ 565,435	$ 565,435	$ 565,000
Subtotal	$ 3,706,741	$ 3,706,741	$ 3,707,000
Total:	**$ 3,706,741**		

Fully weighted Operating Cost per vessel operating hour $ 977

One-way Route Plan - Kenmore (Lakepointe) to Seattle (Madison Park)

Route Segment	Distance (Statute Miles)	Distance (Nautical Miles)	Average Speed (Kts)	Average Speed (MPH)	Time Required (Minutes)	Full Load Fuel Rate (GPH)	Full Load Fuel Usage (Gals/Segment)	Light Load Fuel Rate (GPH)	Light Load Fuel Usage (Gals/Segment)	Round Trip Fuel Usage
Kenmore - Maneuver	0.29	0.25	5.0	5.8	3.0	26.6	1.3	19.4	1.0	
Kenmore - Slowdown	0.35	0.30	7.0	8.1	2.6	26.6	1.1	19.4	0.8	
Kenmore to 520	8.71	7.57	28.0	32.2	16.2	132.9	35.9	97.2	26.3	
520 - slowdown	0.23	0.20	7.0	8.1	1.7	26.6	0.8	19.4	0.6	
520 to Madison Park	0.29	0.25	12.0	13.8	1.3	26.6	0.6	19.4	0.4	
Madison Park Maneuver	0.17	0.15	5.0	5.8	1.8	26.6	0.8	19.4	0.6	
Total (or average) One-Way Transit	**10.03**	**8.72**	**19.7**	**22.7**	**26.6**	**91.5**	**40.5**	**88.4**	**29.6**	**70.1**
Rounded Average (H:MM)					0:27				**57.5**	
Off/On Load PAX	0.00	0.00	0.0	0.0	8.0	13.3	1.8	9.7	1.3	
Rounded Average (H:MM)					0:08					
Trip Total (or average) One-Way	**10.03**	**8.72**	**15.1**	**17.4**	**34.6**	**70.0**	**42.3**	**84.2**	**30.9**	**73.2**
Rounded Average (H:MM)					0:35			Round Trips per Fueling Stop		**16.4**
					0:00					

Route Assumptions

* Assumed cruising speed at 28 knots, resulting in a one-way transit time of ~24 minutes
* Using AAM data, estimated cruising speed fuel consumption at 80% engine rating at ~133GPH
* Estimated maneuvering speeds at 7 knots, with fuel consumptions rates during maneuvering at 40% of cruising rates (20% on 2 engines)
* Estimated dwell times of at least 8 mins in both Kenmore and Seattle in peak direction, at least 6 minutes in off-peak direction
* Assumes a one-way trip time of 27 minutes, or a round trip time of 54 minutes
* Estimated dwell time fuel consumption (while in dock) at 10% of cruising rates
* Assumed fuel tank capacity=750 Gals/hull; with full tank ~95%=710 Gals each tank; retain minimum of ~15% in tank=110 Gals => max of 600 Gals/tank (total 1,200) usable between fueling stops
* With one-way transit fuel consumption ranging from 30 to 41 Gals/transit => an average of ~77 Gals/round trip => maximum of ~16 round-trips before fueling
* Assumes all ferry service begins and ends in Kenmore at Lakepointe
* Fueling to occur by truck at Lakepointe (assumes capability @ a rate of 50 GPM => will take ~24 minutes to fuel)

All American Marine Fuel Consumption Data

	Vessel Condition	Engine Rating	Gals/NM	Speed NM/HR	GPH
	Full Fuel & Passengers	100%	4.88	34.20	166.90
	Full Fuel & Passengers	95%	4.81	32.90	158.25
	Full Fuel & Passengers	90%	4.73	31.60	149.47
	Full Fuel & Passengers	85%	4.66	30.30	141.20
	Full Fuel & Passengers	80%	4.63	28.70	132.88
	Full Fuel & Passengers	75%	4.59	27.20	124.85
	Full Fuel & Passengers	70%	4.51	25.70	115.91
	Half Fuel & No Passengers	100%	4.08	40.90	166.87
	Half Fuel & No Passengers	95%	4.00	39.50	158.00
	Half Fuel & No Passengers	90%	3.93	38.00	149.34
63.6	Half Fuel & No Passengers	85%	3.85	36.60	140.91
63.6	Half Fuel & No Passengers	80%	3.78	35.20	133.06
	Half Fuel & No Passengers	75%	3.72	33.60	124.99
	Half Fuel & No Passengers	70%	3.64	31.90	116.12
	Half Fuel & No Passengers	65%	3.52	30.10	105.95
	Half Fuel & No Passengers	60%	3.46	28.10	97.23
	Half Fuel & No Passengers	55%	3.40	26.20	89.08

Description	Speed knots	Crossing minutes	Dwell minutes
100% Rated at full load	34.2	54.1	5.9
95% Rated at full load	32.9	54.7	5.3
90% Rated at full load	31.6	55.4	4.6
85% Rated at full load	30.3	56.1	3.9
80% Rated at full load	28.7	57.1	2.9
75% Rated at full load	27.2	58.1	1.9
90% Rated at light load	38	52.5	7.5
70% Rated at light load	31.9	55.2	4.8

Service Assumptions	
Landing Sites	* Lakepointe in Kenmore * Madison Park in Seattle
Service Levels & Seasonality	Commute service schedule: - AM & PM commute periods Monday through Friday only - October through March (Total of 26 weeks - holidays; equivalent of 25 full weeks) - Saturday service - single vessel service for total of 5 round trips per day for 26 weeks - Assumes 5 holiday days with no service (Thanksgiving, Christmas, New Year, MLK, President's Day) * Peak service schedule: - Expanded weekdays, extended evenings, and weekend service - April through September (Total of 25 weeks - full service, with 3 weekday holidays at Sunday schedule) - Assumes Memorial Day, Independence Day & Labor Day operated on Sunday schedule * Special Event service:
Vessel	* Two vessels (one in service, one spare/backup) * Configuration - side loading * Size: 150 passengers
Vessel Crews	* No mate or senior deckhand was assumed
KCMD Operator - Plus up Management, Administration, Support Staff	* Management Staff of 1
Fueling location & schedule	* Fueling assumed to occur by truck at Lakepointe
Vessel Moorage	* Tie-up available for two vessels at Lakepointe * Assume all service begins and ends at Lakepointe
Vessel Maintenance Plans	* Routine maintenance to be performed at Lakepointe * Engineering crew assumed to be 1 engineer and 2 oilers * Major maintenance to be performed at area shipyard

Kenmore (Lakepointe) to Seattle (Madison Park) - Operating Input Data		
Description	**Values**	**Units**
Service Profile		
Commute-only	26.00	Weeks per year
	25.00	Weeks of weekday service excluding holidays/year
	5.00	Service days per week
	5.00	Holidays
Peak	25.00	Weeks per year
	7.00	Service days per week
	4.00	Days of weekday service per week
	3.00	Holidays
Special Events	0.00	Events per year
Service Hours		
Commute-only	6.73	service hours per weekday (Monday - Friday)
	808.00	weekday service hours for 6 months of year (excludes 5 holidays/year)
	8.62	service hours per weekend (Saturday)
	224.03	Saturday service hours for 6 months of year
	1032.03	total commute-only service hours
	125.00	days of service (25 weeks of commute-only @ 5 days/week - 5 holidays)
Expanded	16.87	service hours per day for 6 months (Monday - Thursday)
	1636.07	service hours for 6 months of year (excludes service on 3 holidays)
	18.62	service hours per day for 6 months (Friday)
	465.42	service hours for 6 months of year
	13.28	service hours per day for 6 months (Saturday)
	332.08	service hours for 6 months of year
	10.95	service hours per day for 6 months (Sunday)
	306.60	service hours for 6 months of year (includes 3 holidays on Sunday schedule)
	175.00	days of service (26 weeks of peak @ 7 days/week)
Special	0.00	service hours per event
	0.00	service hours for special events per year
Annual Totals	11.67	average service hours per day per year (excluding special events)
	3772.20	total service hours per year, including special events (excludes 5 holidays/year)
	300.00	days of service per year (excluding special events)
Transits (Round Trips)		
Commute-only	6.00	round trips per day (Monday - Friday)
	7.00	round trips per day (Saturday)
	932.00	round trips for 6 months of year (excludes 5 holidays/year)
Expanded	13.00	daily round trips per day for 6 months (Monday - Thursday)
	1261.00	round trips for 6 months of year (excludes service on 3 holidays)
	15.00	round trips per day for 6 months (Friday)
	375.00	round trips for 6 months of year
	13.00	round trips per day for 6 months (Saturday)
	325.00	round trips for 6 months of year
	9.00	round trips per day for 6 months (Sunday)
	252.00	round trips for 6 months of year (includes 3 holidays on Sunday schedule)
Special	0.00	round trips per event
	0.00	round trips for 10 special events per year
Annual Totals	9.71	average round trips per day per year (excludes special events)
	3145.00	total round trips per year including special events (excludes 5 holidays/year)
Vessel Operating Hours		
Commute-only	6.73	vessel hours per day per vessel (Monday - Friday)
	841.67	weekday vessel hours per vessel for 6 months of commute-only
	8.62	vessel hours per day (Saturday)
	224.03	Saturday vessel hours for 6 months of commute-only
	1,065.70	total vessel hours per year (excludes 5 holidays/year)
Expanded	16.87	hours per day per vessel (Monday - Thursday)
	1,636.07	hours per year per vessel (excludes 3 holidays/year)
	19.20	hours per day per vessel (Friday)
	480.00	hours per year per vessel
	14.45	hours per day per vessel (Saturday)
	361.25	hours per year per vessel
	10.95	average hours per day per vessel (Sunday)
	306.60	average hours per year per vessel (w/ Sunday service on 3 holidays)
	2,783.92	vessel hours per year per vessel
Special	0.00	vessel hours per day per event per vessel
	0.00	total vessel hours per year
Annual Totals	11.89	average hours per day per year per vessel (excluding special service)
	3,849.62	total vessel hours per year (excludes 5 holidays/year)
Crew Hours		
Commute-only	58.78	total crew hours per week
	1,479.70	total crew hours for 6 months (excludes 5 holidays/year)
	87.50	total fueling hours (30 min. per service day)
Expanded	122.57	total crew hours per week (typical)
	3,046.42	total crew hours for 6 months (includes Sunday service on 3 holidays)
	87.50	total fueling hours (30 min. per service day)
Special	0.00	total crew hours per event per vessel
	0.00	total crew hours for special service

Annual Totals	4,526.12	total crew hours per year
	13,578.35	total labor hours for year (assuming number of crew specified below)
	175.00	total fueling hours per year
Fuel Usage		
Average Fuel Use	73.21	average gallons per round trip
Commute-only	6.00	number of round trips per weekday
	7.00	number of round trips per Saturday
	37.00	number of round trips per week
	2,708.66	typical gallons per week
	930.00	round trips for 6 months of year (excludes 5 holidays/year)
	68,082.42	total gallons for 6 months of year (excludes 5 holidays/year)
Peak	89.00	typical number of round trips per week
	6,515.41	typical gallons per week
	2,213.00	round trips for 6 months of year (includes Sunday service on 3 holidays)
	162,006.87	total gallons for 6 months of year (includes Sunday service on 3 holidays)
Special		number of round trips per special event
		number of round trips per year (assuming 10 special events)
	-	total gallons for 10 special events per year
Annual Totals	3,143.00	total round trips per year
	230,089.28	total gallons per year
	241,593.75	total gallons per year, with extra 5% to cover miscellaneous fuel use
Vessel Particulars		
Vessel Length	81.00	feet (length overall)
Vessel Breadth	30.00	feet
Vessel Crew		
Captains	1	per vessel
Senior Deckhands	1	per vessel
Purser Deckhands	1	per vessel
Vessel Maintenance Staff		
Engineer	1	per system
	2,080	hours per year
Oiler	2	per system
	2,080	hours per year

Kenmore (Lakepointe) to Seattle (Madison Park) - Cost Input Data					
Description	**Cost**	**Unit**	**Source/Justification for Values**		
Capital Costs					
Vessels					
150-pax	$ 7,700,000.00	per vessel	Based on estimate from AAM for SECO		
Mid-life Vessel Overhaul	30%	of acquisition costs	Estimate; occurring at mid-point in life of vessel, includes interior refurbishment along with engine overhaul		
Terminals					
Estimated Capital Improvements	$ 24,800,000.00	total	From KPFF rough order of magnitude costs estimates for improvements at Lakepointe and Madison Park		
Management and Support					
Admin/Insurance/Materials	5%	of direct costs	Includes project administration and materials		
	$ 32,500,000.00				
Operating Costs					
Vessel Operations					
Labor					
KCMD					
Captain/Master	$ 55.15	per hour	Based on KCMD 2019 costs	$ 114,712.00	Captain Annual Salary
Overhead/Benefits	$ 37.22	per hour	Based on KCMD 2019 costs	$ 192,129.60	Captain Fully Weighted Annual Salary
Senior Deckhand	$ 37.74	per hour	Based on KCMD 2019 costs	$ 78,499.20	Sr. Deckhand Annual Salary
Overhead/Benefits	$ 28.39	per hour	Based on KCMD 2019 costs	$ 137,550.40	Sr. Deckhand Fully Weighted Annual Salary
Purser Deckhand	$ 36.85	per hour	Based on KCMD 2019 costs	$ 76,648.00	Purser Deckhand Annual Salary
Overhead/Benefits	$ 27.95	per hour	Based on KCMD 2019 costs	$ 134,784.00	Purser Deckhand Fully Weighted Annual Sa
Fuel					
Fuel Price	$ 3.80	dollars/gallon	Estimated price of marine diesel fuel in Lake Union (varies with time)	Morrison's Fuel, May 2019	
Fueling labor	$ 73.70	per hour	Based on KCMD 2019 costs for 1 oiler and 1 deckhand		
Overhead/Benefits	$ 59.02	per hour	Based on KCMD 2019 costs for 1 oiler and 1 deckhand		
Maintenance					
Labor					
KCMD					
Engineers	$ 51.36	per hour	Based on KCMD 2019 costs	$ 106,828.80	Engineer Annual Salary
Overhead/Benefits	$ 35.29	per hour	Based on KCMD 2019 costs	$ 180,232.00	Oiler Annual Salary
Oilers	$ 36.85	per hour	Based on KCMD 2019 costs	$ 76,648.00	Engineer Fully Weighted Annual Salary
Overhead/Benefits	$ 31.07	per hour	Based on KCMD 2019 costs	$ 141,273.60	Oiler Fully Weighted Annual Salary
Routine Maintenance	$ 5.00	per engine per hour	Estimated factor for routine maintenance costs based on number of vessel hours		
	$ 20.00	per hour	Estimated maintenance cost per hour assuming 4 engines per vessel		
	$ 76,992.33	per year	Estimate of routine maintenance cost based on total number of vessel hours each year		
Annual Maintenance	$ 0.33	per foot per vessel per hour	Estimate factor for periodic hull/out-of-water maintenance costs based on vessel length and hours of operation		
	$ 26.73	per vessel per hour	Estimate based on proposed AAM vessel characteristics		
	$ 34,300.08	per vessel	Assumes three vessels delivering similar levels of service		
	$ 102,900.25	per year	Assumes three vessels delivering similar levels of service for full year		
Unplanned Maintenance	10%	of total maintenance cost	Estimate to account for unplanned maintenance and repair work		
Vessel Insurance	$ 133,333.33	per vessel	Annual vessel insurance for two vessels assumed		
Terminal Operations					
Labor					
KCMD					
Information Agent(s)	$ 29.07	per hour	Based on KCMD 2019 costs	$ 60,465.60	Info Agent Annual Salary
Overhead/Benefits	$ 24.01	per hour	Based on KCMD 2019 costs	$ 110,406.40	Info Agent Fully Weighted Annual Salary
Info Agent Annual Cost	$ 144,116.45	per year, fully weighted	None assumed		
Routine Terminal Maintenance	$ 1.00	per service hour	Estimate of terminal maintenance cost based on hours of operation		
	$ 3,772.20	per year	Estimate of routine maintenance cost based on annual service hours		
Terminal Lease	$ 3,000.00	per landing site	Estimate for landing site lease (based on existing KT lease agreement between KT and WSF in Seattle plus escalation)		
	$ 6,000.00	per month	Lease costs at Lakepointe and Madison		
	$ 36,000.00	per year	Annual estimate based on 12 months of operations		
Fare Collection Costs	$ 12,000.00	per year	Estimated cost of fare collection processing, including cash processing, transit cards, and maintenance contracts		
Management, Administration & Support					
KCMD					
Management/Admin/Support Labor	$ 143,000.00	per year	Assumed the cost of 1 extra FTEs to support service expansion (see assumptions tab for details)		
Overhead/Benefits	$ 51,000.00	per year	Estimate of overhead costs such as sick leave, vacation, benefits based on KCMD 2019 costs		
Admin/insurance/overhead	18%	of direct costs	efficiencies associated with existing infrastructure		
Inflation Rate					
KCMD	3.00%	per year	Assumed higher inflation rate for KCMD due to higher increases in central rates, benefit costs and labor expenses		

Kenmore (Lakepointe) to Seattle (Madison Park)
KCMD Operator Costs

Funding Type	Component		Years																						
	Description	Sub-tasks	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Capital	Vessels	Vessel Acquisition (2 Vessels)	$ 15,400,000																					
		Mid-life Overhaul											$ 4,620,000											
	Terminals	Terminal Improvements	$ 24,800,000																					
	Management	Management & Support	$ 2,010,000										$ 231,000											
		Capital Cost Subtotal	*$ 42,210,000*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ 4,851,000*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*
Operating	Vessel Ops	Labor																						
		- Direct Labor		$ 437,892	$ 451,029	$ 464,560	$ 478,497	$ 492,852	$ 507,637	$ 522,866	$ 538,552	$ 554,709	$ 571,350	$ 588,491	$ 606,146	$ 624,330	$ 643,060	$ 662,352	$ 682,222	$ 702,689	$ 723,769	$ 745,483	$ 767,847	$ 790,882
		- Overhead		$ 433,792	$ 446,806	$ 460,210	$ 474,016	$ 488,237	$ 502,884	$ 517,970	$ 533,509	$ 549,515	$ 566,000	$ 582,980	$ 600,470	$ 618,484	$ 637,038	$ 656,149	$ 675,834	$ 696,109	$ 716,992	$ 738,502	$ 760,657	$ 783,477
		Fuel		$ 918,056	$ 945,598	$ 973,966	$ 1,003,185	$ 1,033,280	$ 1,064,279	$ 1,096,207	$ 1,129,093	$ 1,162,966	$ 1,197,855	$ 1,233,791	$ 1,270,805	$ 1,308,929	$ 1,348,197	$ 1,388,642	$ 1,430,302	$ 1,473,211	$ 1,517,407	$ 1,562,929	$ 1,609,817	$ 1,658,112
		Maintenance																						
		- Labor		$ 260,125	$ 267,929	$ 275,966	$ 284,245	$ 292,773	$ 301,556	$ 310,603	$ 319,921	$ 329,518	$ 339,404	$ 349,586	$ 360,074	$ 370,876	$ 382,002	$ 393,462	$ 405,266	$ 417,424	$ 429,947	$ 442,845	$ 456,130	$ 469,814
		- Overhead		$ 202,654	$ 208,734	$ 214,996	$ 221,446	$ 228,089	$ 234,932	$ 241,980	$ 249,239	$ 256,717	$ 264,418	$ 272,351	$ 280,521	$ 288,937	$ 297,605	$ 306,533	$ 315,729	$ 325,201	$ 334,957	$ 345,006	$ 355,356	$ 366,016
		- Routine		$ 76,992	$ 79,302	$ 81,681	$ 84,132	$ 86,656	$ 89,255	$ 91,933	$ 94,691	$ 97,532	$ 100,458	$ 103,471	$ 106,575	$ 109,773	$ 113,066	$ 116,458	$ 119,952	$ 123,550	$ 127,257	$ 131,074	$ 135,007	$ 139,057
		- Annual		$ 102,900	$ 105,987	$ 109,167	$ 112,442	$ 115,815	$ 119,290	$ 122,868	$ 126,554	$ 130,351	$ 134,261	$ 138,289	$ 142,438	$ 146,711	$ 151,112	$ 155,646	$ 160,315	$ 165,125	$ 170,078	$ 175,181	$ 180,436	$ 185,849
		- Unplanned		$ 17,989	$ 18,529	$ 19,085	$ 19,657	$ 20,247	$ 20,854	$ 21,480	$ 22,125	$ 22,788	$ 23,472	$ 24,176	$ 24,901	$ 25,648	$ 26,418	$ 27,210	$ 28,027	$ 28,867	$ 29,734	$ 30,626	$ 31,544	$ 32,491
		Admin/Insurance		$ 266,667	$ 274,667	$ 282,907	$ 291,394	$ 300,136	$ 309,140	$ 318,414	$ 327,966	$ 337,805	$ 347,940	$ 358,378	$ 369,129	$ 380,203	$ 391,609	$ 403,357	$ 415,458	$ 427,922	$ 440,759	$ 453,982	$ 467,602	$ 481,630
	Terminal Ops	Labor		$ 144,116	$ 148,440	$ 152,893	$ 157,480	$ 162,204	$ 167,070	$ 172,083	$ 177,245	$ 182,562	$ 188,039	$ 193,680	$ 199,491	$ 205,476	$ 211,640	$ 217,989	$ 224,529	$ 231,265	$ 238,203	$ 245,349	$ 252,709	$ 260,290
		Routine Terminal Maintenance		$ 3,772	$ 3,885	$ 4,002	$ 4,122	$ 4,246	$ 4,373	$ 4,504	$ 4,639	$ 4,779	$ 4,922	$ 5,070	$ 5,222	$ 5,378	$ 5,540	$ 5,706	$ 5,877	$ 6,053	$ 6,235	$ 6,422	$ 6,615	$ 6,813
		Terminal Lease		$ 36,000	$ 37,080	$ 38,192	$ 39,338	$ 40,518	$ 41,734	$ 42,986	$ 44,275	$ 45,604	$ 46,972	$ 48,381	$ 49,832	$ 51,327	$ 52,867	$ 54,453	$ 56,087	$ 57,769	$ 59,503	$ 61,288	$ 63,126	$ 65,020
		Fare Collection		$ 12,000	$ 12,360	$ 12,731	$ 13,113	$ 13,506	$ 13,911	$ 14,329	$ 14,758	$ 15,201	$ 15,657	$ 16,127	$ 16,611	$ 17,109	$ 17,622	$ 18,151	$ 18,696	$ 19,256	$ 19,834	$ 20,429	$ 21,042	$ 21,673
	Administration / Support	Management/Admin/ Support Labor		$ 194,000	$ 199,820	$ 205,815	$ 211,989	$ 218,349	$ 224,899	$ 231,646	$ 238,596	$ 245,753	$ 253,126	$ 260,720	$ 268,541	$ 276,598	$ 284,896	$ 293,442	$ 302,246	$ 311,313	$ 320,652	$ 330,272	$ 340,180	$ 350,386
		Admin/Insurance/ Overhead		$ 559,252	$ 576,030	$ 593,311	$ 611,110	$ 629,443	$ 648,327	$ 667,776	$ 687,810	$ 708,444	$ 729,697	$ 751,588	$ 774,136	$ 797,360	$ 821,281	$ 845,919	$ 871,297	$ 897,436	$ 924,359	$ 952,090	$ 980,652	$ 1,010,072
		Operating Cost Subtotal	*$ -*	*$ 3,666,209*	*$ 3,776,196*	*$ 3,889,481*	*$ 4,006,166*	*$ 4,126,351*	*$ 4,250,141*	*$ 4,377,646*	*$ 4,508,975*	*$ 4,644,244*	*$ 4,783,572*	*$ 4,927,079*	*$ 5,074,891*	*$ 5,227,138*	*$ 5,383,952*	*$ 5,545,470*	*$ 5,711,835*	*$ 5,883,190*	*$ 6,059,685*	*$ 6,241,476*	*$ 6,428,720*	*$ 6,621,582*
Total Annual Cost			***$ 42,210,000***	***$ 3,666,209***	***$ 3,776,196***	***$ 3,889,481***	***$ 4,006,166***	***$ 4,126,351***	***$ 4,250,141***	***$ 4,377,646***	***$ 4,508,975***	***$ 4,644,244***	***$ 9,634,572***	***$ 4,927,079***	***$ 5,074,891***	***$ 5,227,138***	***$ 5,383,952***	***$ 5,545,470***	***$ 5,711,835***	***$ 5,883,190***	***$ 6,059,685***	***$ 6,241,476***	***$ 6,428,720***	***$ 6,621,582***

Kenmore (Lakepointe) to Seattle (Madison Park)			
Contract Operator	Year 0	Year 1	Year 20
KC Marine Division	$ 42,210,000	$ 3,666,000	$ 6,622,000
Est. Annual Ridership		39,299	92,337
Est. Fare Revenue		$ 176,845.50	$750,469.02
Est. Farebox Recover Rate		**4.82%**	**11.33%**
Est. Operating Cost Per Rider		$93.29	$71.71
Est. Systemwide Ops Cost per rider		$17.22	$14.31

Category		KCMD
Vessel Labor		$ 872,000
Fuel		$ 918,000
Maintenance		$ 661,000
Vessel Insurance		$ 267,000
Terminal Ops		$ 196,000
Management/Support		$ 194,000
Admin/Overhead		$ 559,000
Subtotal:		$ 3,667,000

* 1 Vessel Option

Sub-tasks	KCMD		
	Cost Estimate	Subtotals	Rounded
Labor			
- Direct Labor	$ 437,892	$ 871,684	$ 872,000
- Overhead	$ 433,792		
Fuel	$ 918,056	$ 918,056	$ 918,000
Maintenance			
- Labor	$ 260,125		
- Overhead	$ 202,654	$ 660,661	$ 661,000
- Routine	$ 76,992		
- Annual	$ 102,900		
- Unplanned	$ 17,989		
Vessel Insurance	$ 266,667	$ 266,667	$ 267,000
Terminal Labor	$ 144,116		
Routine Terminal Maintenance	$ 3,772	$ 195,889	$ 196,000
Terminal Lease	$ 36,000		
Fare Collection	$ 12,000		
Management/Admin/Support Labor	$ 194,000	$ 194,000	$ 194,000
Admin/Insurance/Overhead	$ 559,252	$ 559,252	$ 559,000
Subtotal	$ 3,666,209	$ 3,666,209	$ 3,667,000
Total:	**$ 3,666,209**		

Fully weighted Operating Cost per vessel operating hour	$ 952

APPENDIX B: TRANSPORTATION PLANNING UPDATE

TRANSPORTATION PLANNING UPDATE

PLANNING EFFORTS UNDERWAY

The growth of the Puget Sound region has put increasing strain on the regional transportation network. A number of recent and ongoing planning efforts propose to improve the region's transportation network and define where transportation improvements will occur within a given time period. Evaluating the current and planned transit network is an important step in understanding how a passenger-only ferry (POF) could improve mobility options in a community.

This study includes a summary of regional planning efforts that most directly impact King County, an overview of the existing and proposed high-capacity transit network, and a description of the planning efforts and transit projects that relate to potential landing sites associated with a POF route from Kenmore. Based on this analysis, this study provides recommendations of planning efforts needed to implement a POF route from Kenmore.

With the onset of the COVID-19 pandemic, however, King County Metro has experienced a reduction in ridership across all services, including the Water Taxi. Reduced ridership is due to necessary public health orders to: stay home, only travel for essential business, and maintain six feet of space between you and others when making essential trips. This current slowdown in growth will require future analysis on the long-term effects current ridership reductions will have, as will the recovery efforts and what new commute habits will and should look like as people are able to return to work. Coupled with the current economic slowdown and expected economic recession, Metro's budget will be significantly impacted, and funding for Water Taxi expansion could require alternative sources than those outlined in this report. This report's projections for ridership of a new water taxi service is based on the assumption that commuters will return to work as normal once the COVID-19 pandemic is over.

REGIONAL PLANNING EFFORTS

The Puget Sound region, including King County, has experienced significant growth in the past decade, and growth is anticipated to continue even after the current slowdown due to the COVID-19 pandemic and potentially prolonged recovery effort. The Puget Sound Regional Council (PSRC) had forecasted that by 2050 the Puget Sound region would add 1.8 million people and 1.2 million jobs. The PSRC's Vision 2050 regional planning document identified Kenmore and Bothell as areas connected to a high-capacity transit system (or high-capacity transit communities) that are considered hubs for employment and population growth.[1] The following sections provide an overview of regional transit plans and POF studies that influence potential POF service between Kenmore and Seattle.

[1] PSRC Draft VISION 2050, July 2019.

SOUND TRANSIT – ST3 SYSTEM PLAN

As a regional transit authority, Sound Transit provides transit services in Puget Sound, including the Link light-rail system, high-capacity bus rapid transit (BRT), and commuter rail. Sound Transit services operate in Pierce, King, and Snohomish Counties.

The ST3 System Plan (ST3) is a Sound Transit initiative passed by ballot measure in November 2016 that plans for numerous transit expansion projects. ST3 builds on the previous Sound Transit initiatives (ST2 and Sound Move) that funded Link light rail and express bus services. ST3 seeks to expand Link light rail, establish Sound Transit BRT, and provide other transit-oriented improvements.

ST3 includes new BRT service along SR 522 connecting Bothell, Kenmore and Lake Forest Park to the future 145th Street Link light rail station. The SR 522 BRT service will also connect new BRT service along I-405, reaching as far north as Lynnwood and as far south as Burien.

KING COUNTY METRO – METRO CONNECTS

King County Metro (Metro) operates regular fixed-route bus service, Bus Rapid Transit (RapidRide), a variety of vanpool and rideshare services, paratransit services, and many park and rides around the region. Additionally, Metro operates the Sound Transit Regional Express bus service, Link light rail, and SDOT's South Lake Union Streetcar[2]. Metro Connects is Metro's long-range plan that was adopted in January 2017 and includes projected service expansion over a 20-year planning horizon. Metro Connects will be updated in 2021 to integrate Metro's Mobility Framework guiding principles.

Metro recently developed the Mobility Framework which focuses on creating more equitable and sustainable transportation services that will be used to inform the implementation of new services. Due to these updated guiding principles, Metro is updating their service guidelines and strategic plans in addition to Metro Connects. As part of the Ballard POF Route Implementation Study, King County Metro's Marine Division (Marine Division) will align its planning efforts with the Mobility Framework.

KING COUNTY PASSENGER-ONLY FERRY STUDIES

A potential POF route from Kenmore has been studied in previous planning efforts by the former King County Ferry District as well as the Marine Division:

- 2009 King County Ferry District Demonstration Project
- 2015 Final Report on Ferry Expansion Options for the Marine Division

In 2009, assessment of potential demonstration routes concluded that a Kenmore route from Lakepointe to Leschi Park was considered one of seven candidates for implementation.[3]

---

[2] King County 2013-2014 Transportation Budget, King County F-136.

[3] King County Ferry District, 2009 King County Ferry District Demonstration Project Technical Studies and Implementation.

In the 2015 study, a route between Kenmore and the University of Washington (UW) was assessed as one of three routes that met the study's evaluation criteria, including time competitiveness and farebox recovery projections, and was recommended for further analysis. Within Kenmore, Log Boom Park and Lakepointe were considered as potential POF landing sites. Within Seattle, UW Waterfront Activities Center (UW WAC), Madison Park and Leschi were considered as potential POF landings for a Kenmore to Seattle route.[4]

Previous planning efforts for potential POF routes have placed increasing focus on exploration of first and last mile connections to the terminal—how users connect to and from the POF terminal. This reflects the importance of understanding how passengers will use POF service as part of their whole trip, rather than just focusing on the route between terminals. Typical first and last mile connections include various modes such as walking, biking, and riding transit. Existing and emerging mobility options can be leveraged to support POF service, including dedicated shuttle service, transportation network companies, autonomous vehicles (AV), and bike share programs.

PSRC – Puget Sound Regional Council Passenger-only Ferry Study

The PSRC is embarking upon a regional study to identify and analyze existing and potential new POF routes throughout the 12-county Puget Sound region. The study will examine potential routes and terminal locations, ridership demand/costs, use of alternative fuels, and the environmental impacts of potential passenger ferry routes. The study is scheduled to be delivered to the Washington State Legislature on January 31, 2021.

Findings of this study are anticipated to inform discussion of POF routes on Lake Washington in the PSRC POF Study.

KING COUNTY TRANSIT NETWORK

This study identifies planned changes to the transit network across King County, evaluates how a POF route connecting Kenmore and Seattle aligns with these changes, and outlines any additional planning efforts needed to implement POF service.

Planned changes to the following transit services were examined in this study:

- Light Rail (Link light rail)
- Rail (Sounder)
- BRT (Metro RapidRide and Sound Transit BRT)[5]
- Streetcar (Seattle Streetcar)
- POF (King County Water Taxi and Kitsap Fast Ferries)

---

[4] King County Marine Division, 2015 Final Report on Ferry Expansion Options for Marine Division.

[5] Other forms of bus-based transportation are available throughout the Puget Sound Region, including local, frequent, and express bus services. These services are acknowledged but, for the sake of brevity, have not been extensively analyzed in this study.

EXISTING KING COUNTY TRANSIT NETWORK

The King County region has invested in a transit network that includes two Link light rail lines, one commuter rail line, two streetcar lines, six RapidRide BRT lines, and four POF routes. Along with these services, express, frequent, and local bus service connect people to main transit corridors and provide additional transit options. The existing regional transit network identified in Metro Connects is depicted in Figure 1.

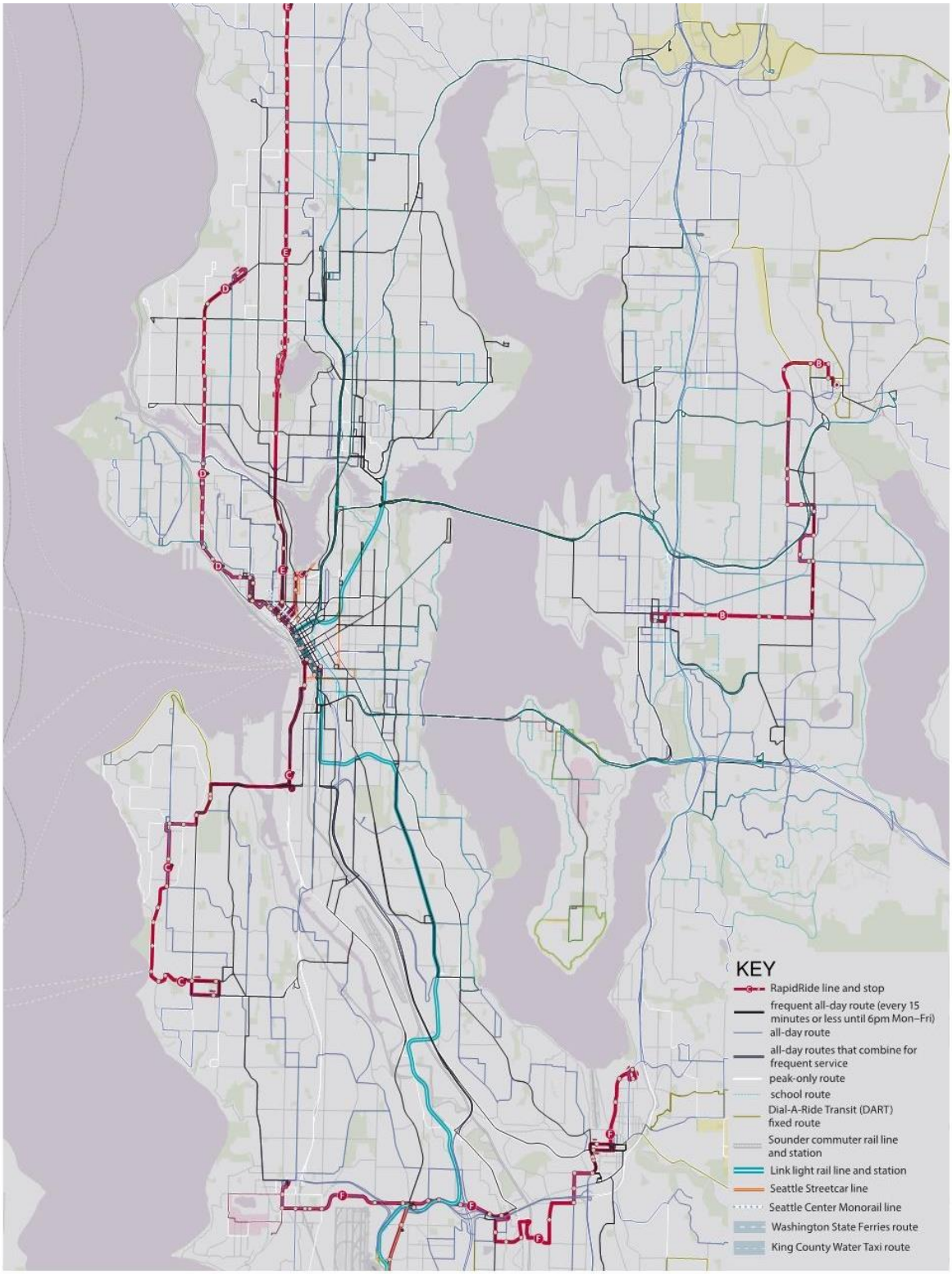
The Kenmore area is currently served by local and commuter-oriented Metro bus routes and Sound Transit bus route 522. These routes include frequent and all-day service options. Table 1 summarizes the current transit modes that serve King County.

Table 1: Summary of Existing Modes serving King County

Mode	*Service Name*	*Managing Agency*	*Separated Right of Way*	*Commute Only or Expanded Service*	*Scheduled Service Frequency*	*Connectivity*
LIGHT RAIL	Link Light Rail	Sound Transit	Most of the line	Expanded service	Every 6, 10 or 15 min.	– University of Washington (UW) to Angle Lake – No eastside connections
HEAVY RAIL	Sounder	Sound Transit	Yes	Commute only	Every 30 min.	– Everett to Lakewood
STREET CAR	Seattle Streetcar	Seattle Department of Transportation (SDOT)	No	Expanded service	Between every 10-25 min.	– Downtown Seattle to South Lake Union – Pioneer Square to First Hill
BRT	RapidRide	King County	Partial; bus-only or BAT lanes for part of some lines	Expanded service	Every 10-15 min. or better	– SeaTac to Federal Way – Bellevue to Redmond – West Seattle to downtown Seattle – Ballard to downtown Seattle – Shoreline to downtown Seattle – Renton to Burien
POF	King County Water Taxi	King County	Yes	*Fall/ Winter:* commute only *Spring/ Summer:* expanded service	– Every 35 min. – Every 65 min.	– West Seattle to downtown Seattle – Vashon Island to downtown Seattle
	Fast Ferry	Kitsap Transit	Yes	*Fall/ Winter:* commute only *Spring/ Summer:* expanded service	– Every 80 min. – Every 70-100 min	– Bremerton to downtown Seattle – Kingston to downtown Seattle

Figure 1: Metro Existing Transportation Network

DISCLAIMER*: The information in this map was compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of information in the maps. Any sale of the maps or information on the maps is prohibited except by written permission of King County.*



KING COUNTY TRANSIT NETWORK EXPANSION

Over the next few years, the King County transit network will change significantly. Link light rail will expand to provide improved connections to the Eastside, north to Lynnwood, and south to Federal Way. Metro will also add new RapidRide lines serving Seattle, Burien, Auburn, Kent, and Renton. By 2040, additional Link and RapidRide expansion combined with expansion of other modes will dramatically expand the reach of frequent, high-capacity transit across King County. The following table summarizes the changes, in planning and development, to the regional transit network. The cities of Kenmore and Kirkland are anticipated to be served by future BRT lines.

Table 2: Transit Projects Proposed by 2040 serving King County

Mode	*Service Name*	*Managing Agency*	*Connectivity Changes*
LIGHT RAIL	Link Light Rail	Sound Transit	– Extends north to Lynnwood and south to Federal Way by 2024/5 – Expands east to connect downtown Seattle to the eastside (Bellevue & Redmond)Expansion to Ballard, West Seattle, Everett, Issaquah, and Tacoma
HEAVY RAIL	Sounder	Sound Transit	– Extends further south to Tillicum and Du Pont
STREETCAR	Seattle Streetcar	SDOT	– Connects the two existing streetcar lines in downtown Seattle from Westlake to Pioneer Square via 1st Avenue
BRT	RapidRide	King County	– Increase in number of lines serving critical high-ridership connections not served by Link light rail
	BRT	Sound Transit	– Stride lines serving I-405 and SR 522 corridors
POF	King County Water Taxi	King County	– Potential Lake Washington routes including Kenmore to Seattle and/or Renton to Seattle – Potential Ballard to downtown Seattle route
	Fast Ferry	Kitsap Transit	– Southworth to downtown Seattle
	Tacoma Fast Ferry	Pierce Transit/ City of Tacoma/ Port of Tacoma	– Tacoma to downtown Seattle

Figure 2: Metro Connects Long Range Plan: 2040 Transportation Network

Standard King County map disclaimers apply to all maps.

DISCLAIMER*: The information in this map was compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of information in the maps. Any sale of the maps or information on the maps is prohibited except by written permission of King County.*

TRANSIT PLANS AND IMPROVEMENTS BY LANDING

The Marine Division is assessing what would be needed to implement a POF route from Kenmore to Seattle. This includes review of two potential landing sites in Kenmore and three potential sites in Seattle. Figure 3 provides a map of two potential Kenmore landing sites and three potential Seattle landing sites. The following sections evaluate the transit options by landing site and how a POF would align with existing and future transit options.

Figure 3: Potential Landing Sites for a Kenmore POF Route

KENMORE LANDING SITES

There are two potential locations for a landing in the City of Kenmore, Log Boom Park and the Lakepointe development site.

Alignment with POF Service

The future Stride SR 522 BRT project aligns with potential POF service from Kenmore by providing ferry riders a connection to the Kenmore waterfront. BRT stops are planned within 0.25 miles of the Log Boom Park pier and within 0.5 miles of the Lakepointe landing site. Stride will replace existing ST Express service in this area including upgrading passenger facilities and continuing frequent service.

The SR 522 BRT will provide a key option to the Kenmore/Bothell area. BRT is subject to traffic congestion, and POF could provide an additional valuable transit option.

OVERALL CONNECTIVITY:

- Limited convenient connections to potential landing sites
- Seat change needed to reach downtown Seattle

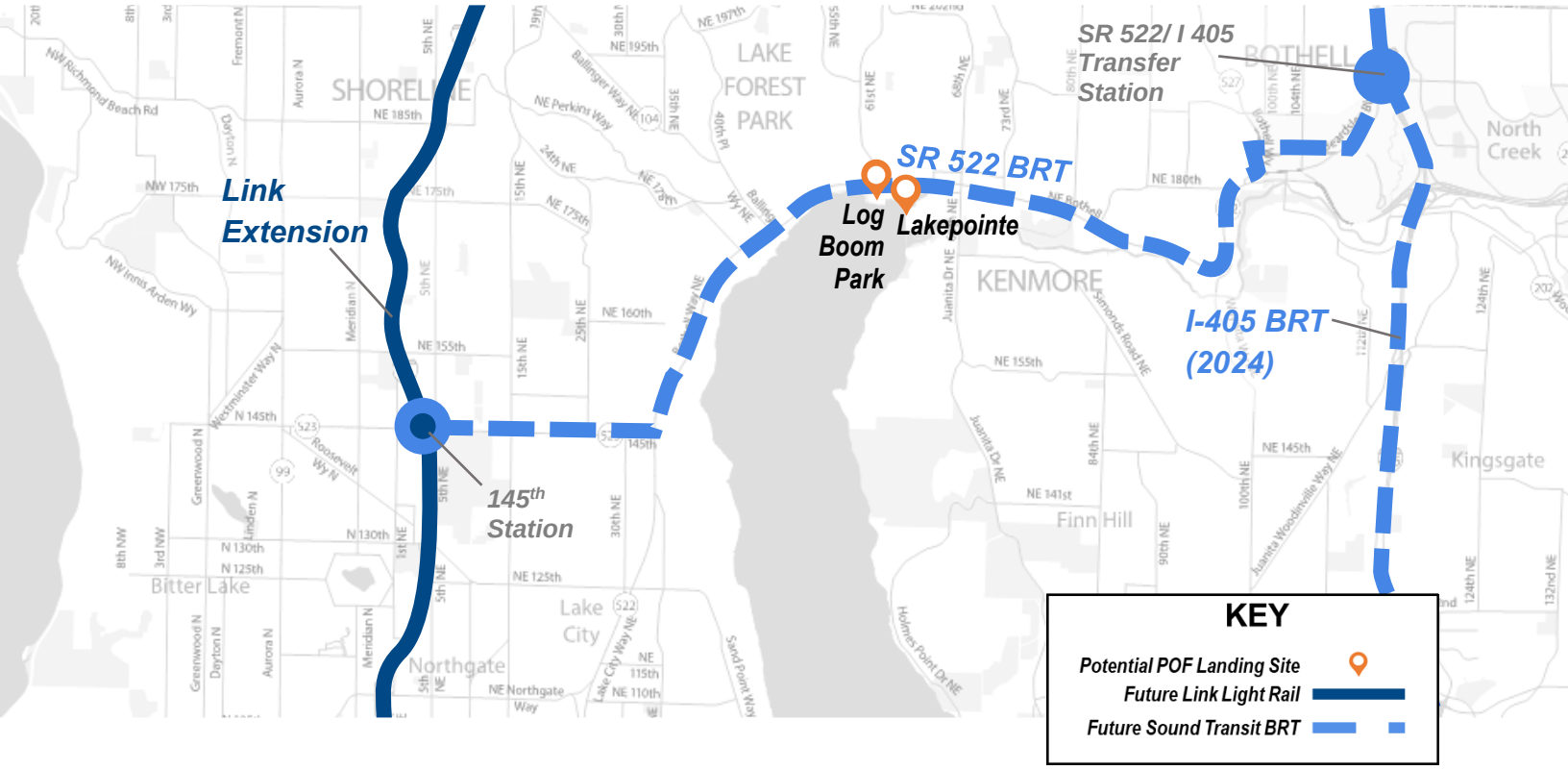
FIRST/LAST MILE CONNECTIONS:

- Bus connections meet much of this need

ADDITIONAL PLANNING EFFORTS FOR IMPLEMENTATION:

- Accessibility study
- Public outreach

Figure 4: Key Transit Expansions by Prospective Kenmore Landing Sites



UW WAC Landing Site

The UW WAC is located on the southeast portion of the UW campus in Seattle. This landing site is about a 6-minute walk from the UW Link light rail station, allowing people to connect to downtown Seattle as far south as Angle Lake.

Alignment with POF Service

Existing and planned transit expansion will connect commuters to key locations both north and south of the site. Notably, this location is particularly compatible with a POF service as multiple modes of connecting transit are provided, making service more desirable for a wider range of potential riders that need to ransfer. A POF connection from the Kenmore waterfront to UW will provide users a reliable travel time as a ferry route will not be subject to impacts from roadway traffic.

OVERALL CONNECTIVITY:

- Existing transit hub
- Connections to Kenmore, downtown Seattle, and other locations
- UW Station is a transfer point between modes and lines (light rail, frequent bus, local bus, express bus)

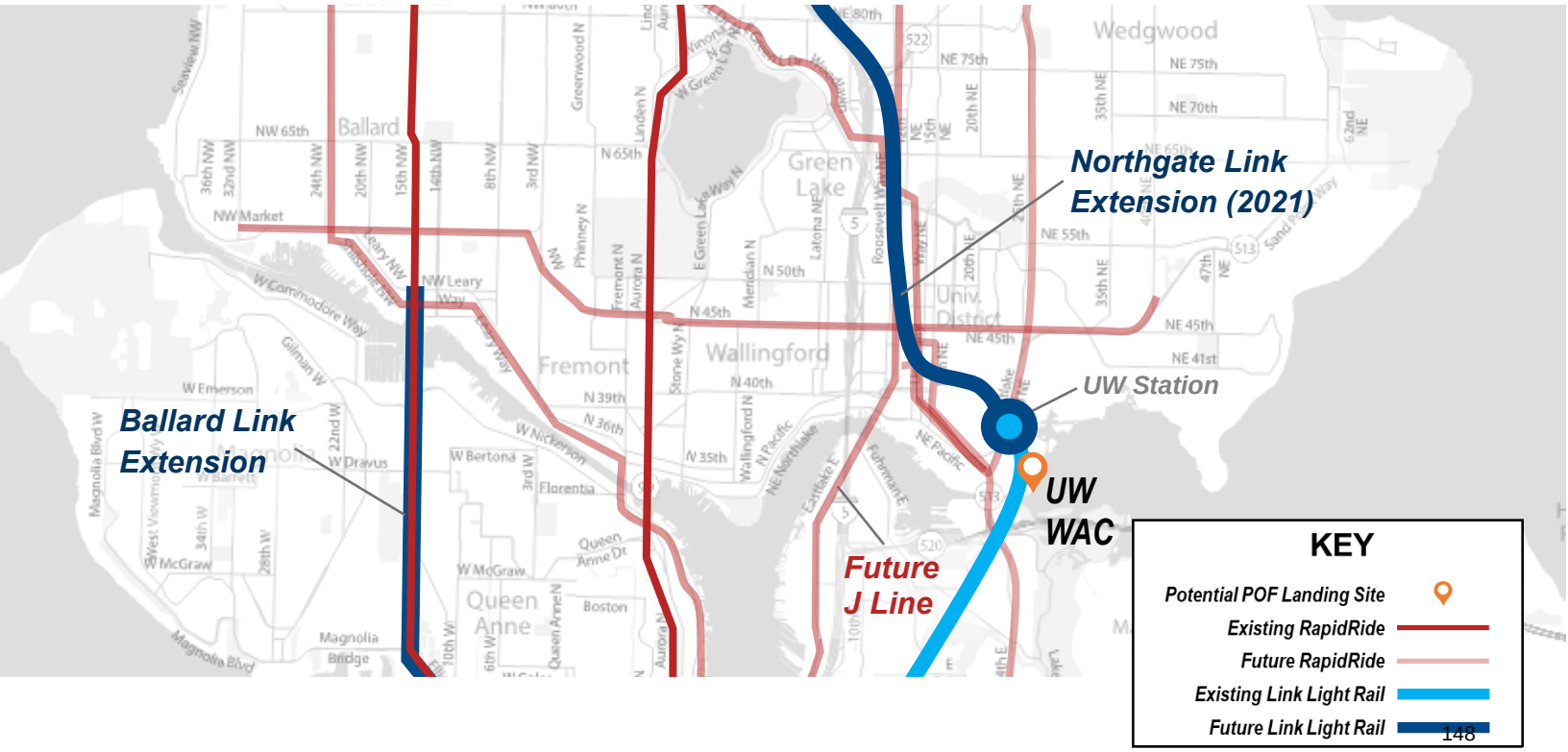
FIRST/LAST MILE CONNECTIONS:

- Bus and light rail connections meet much of this need
- Additional pedestrian and bike infrastructure may be needed to support travel between the WAC and other transit facilities

ADDITIONAL PLANNING EFFORTS FOR IMPLEMENTATION:

- Public outreach

Figure 5: Key Transit Expansions by the Prospective UW WAC Landing Site



MADISON PARK LANDING SITE

Madison Park is approximately three miles northeast of downtown Seattle along the shore of Lake Washington. While BRT will connect to 23rd Avenue East by 2022, the landing site is over 1.5 miles from BRT and only local bus service serves Madison Park.

Alignment with POF Service

Though the RapidRide G line could help support POF service from Madison Park, the line does not extend to the park directly. King County Metro Route 11 is expected to serve the area. The nearest proposed stop for the line is over a mile away which is not feasible for many ferry riders. With low service frequency and multiple intermediate stops, local bus service would be inefficient for POF riders connecting on to downtown Seattle due to long dwell and travel times. To improve connections from a POF landing at Madison Park to the job centers, first/last mile connection improvements should be considered.

OVERALL CONNECTIVITY:

- Seat change needed to reach downtown Seattle

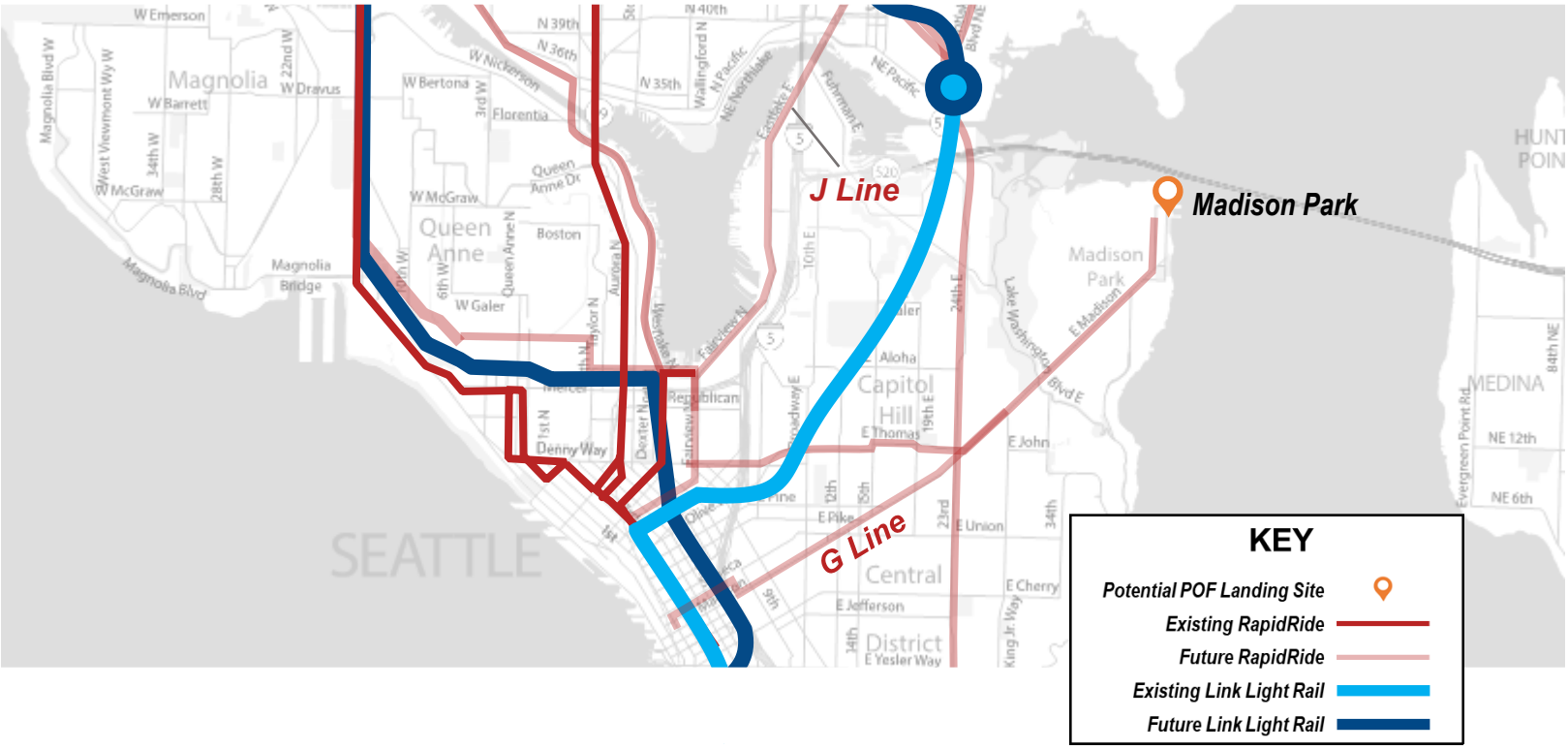
FIRST/LAST MILE CONNECTIONS:

- First/last mile connections are available including Metro Route 11.

ADDITIONAL PLANNING EFFORTS FOR IMPLEMENTATION:

- Accessibility study Public outreach

Figure 6: Key Transit Expansions by the Prospective Madison Park Landing Site



LESCHI PARK LANDING SITE

Leschi Park is over two miles east of downtown Seattle. This location has existing local bus service, and additional transit, such as BRT, is not expected to be programmed in the future. The City of Seattle indicated that Leschi Park is not compatible with a POF landing at this time

Alignment with POF Service

The lack of planned transit expansion to the Leschi Park area is not compatible with a POF service from Kenmore, as dwell times for existing local service would be inefficient for POF riders connecting on to downtown Seattle. Ridership analyses currently indicate that most Kenmore residents would be using the POF to reach employment destinations in downtown Seattle. Though it would be possible for existing infrequent service to be timed to connect with infrequent POF, Leschi Park to downtown Seattle would likely still need improved connections which could be achieved through more frequent bus service, shuttle, or other mobility options.

OVERALL CONNECTIVITY:

- No planned high frequency transit connections within a 1/2-mile radius
- Very limited connectivity

FIRST/LAST MILE CONNECTIONS:

- Limited first/last mile connections are available including Metro bus service

ADDITIONAL PLANNING EFFORTS FOR IMPLEMENTATION:

- Access infrastructure study
- Public outreach

Figure 7: Key Transit Expansions by the Prospective Leschi Park Landing Site

APPENDIX C: PRELIMINARY ENVIRONMENTAL IMPACT ANALYSIS

PRELIMINARY ENVIRONMENTAL IMPACT ANALYSIS FOR A POF ROUTE FROM KENMORE TO SEATTLE

The purpose of this memo is to assess potential environmental impacts resulting from passenger-only ferry (POF) service to and from the City of Kenmore and Seattle. The potential environmental impacts presented in this memo are intended to provide a guide for future environmental work required for the implementation of POF service. The methodology for this assessment was based closely on the environmental review framework outlined in the State Environmental Policy Act (SEPA).

INTRODUCTION

Passenger ferries have been part of the Puget Sound transportation network for over 150 years. The King County Council is proposing to revive POF service on Lake Washington and has requested King County Marine Division (the Marine Division) study this potential POF service as another transportation option for the Puget Sound region. The proposed POF route expands upon the two existing POF routes currently operated by the Marine Division, including the West Seattle route and the Vashon Island route. The West Seattle provides year-round commute service and peak all-day service in the peak months between the landing at West Seattle at Seacrest Park and the POF terminal in downtown Seattle at Pier 50. The Vashon Island route provides year-round commute service between Vashon Island and Pier 50.

The expanded POF service would provide commute and all-day service in the peak travel months between a landing in the City of Kenmore and a landing in Seattle. There are two potential locations for a landing in the City of Kenmore including the Lakepointe development site and Log Boom Park. There are three potential locations for a landing in Seattle including the University of Washington Waterfront Activities Center (UW WAC), Madison Park and Leschi Park.

The proposed route expansion would likely require the following processes and approvals prior to implementation:

- King County Council budget approval
- Grant funding for capital improvements
- Environmental review process

This technical memorandum provides a preliminary analysis of potential environmental impacts from POF service along the expansion route between Kenmore and Seattle. To deliver POF service at the given service levels, the Marine Division would operate up to two 150-passenger vessels at an operating speed of up to 28 knots in unrestricted areas. For the purpose of this evaluation, it has been assumed this vessel would be a foil assisted catamaran similar to the Rich Passage class vessels build by All American Marine and owned and operated by Kitsap Transit. This vessel would be in the range of 24 to 30 meters in length.

The routes were evaluated using publicly available data and when possible visually representing this data using ArcGIS. The majority of data was created and compiled by local and state governments or research institutions, a few data sets were created through this project by digitizing information from aerial photographs. For example, the locations and overwater structures at private beach clubs on Lake Washington were identified through aerial images. Gaps in this data are identified throughout the report and further site-specific data gathering is recommended to fill some of these gaps at the end of this report. The City of Seattle publicly provides much of its shoreline data for Lake Washington, but smaller city jurisdictions, which would also be in proximity to POF service do not.

The following sections provide a more detailed project description and preliminary analysis of environmental elements when considering POF service.

PROJECT DESCRIPTION

The proposed project would provide POF service along a new route on Lake Washington. The route would be from the City of Kenmore in King County to a ferry landing along the west shore of Lake Washington in Seattle. Two alternative ferry landing sites are being considered for the City of Kenmore and three alternative landing sites are being considered in Seattle. The potential City of Kenmore landing sites include the Lakepointe development site and Log Boom Park. The potential landing sites in Seattle include the University of Washington Waterfront Activities Center (UW WAC), Madison Park and Leschi Park. The potential routes and ferry landing sites considered are depicted in Figure 1: Potential Kenmore Route Map and Landing Sites.

Figure 1: Potential Kenmore Route Map and Landing Sites

Potential Ferry Landing Sites

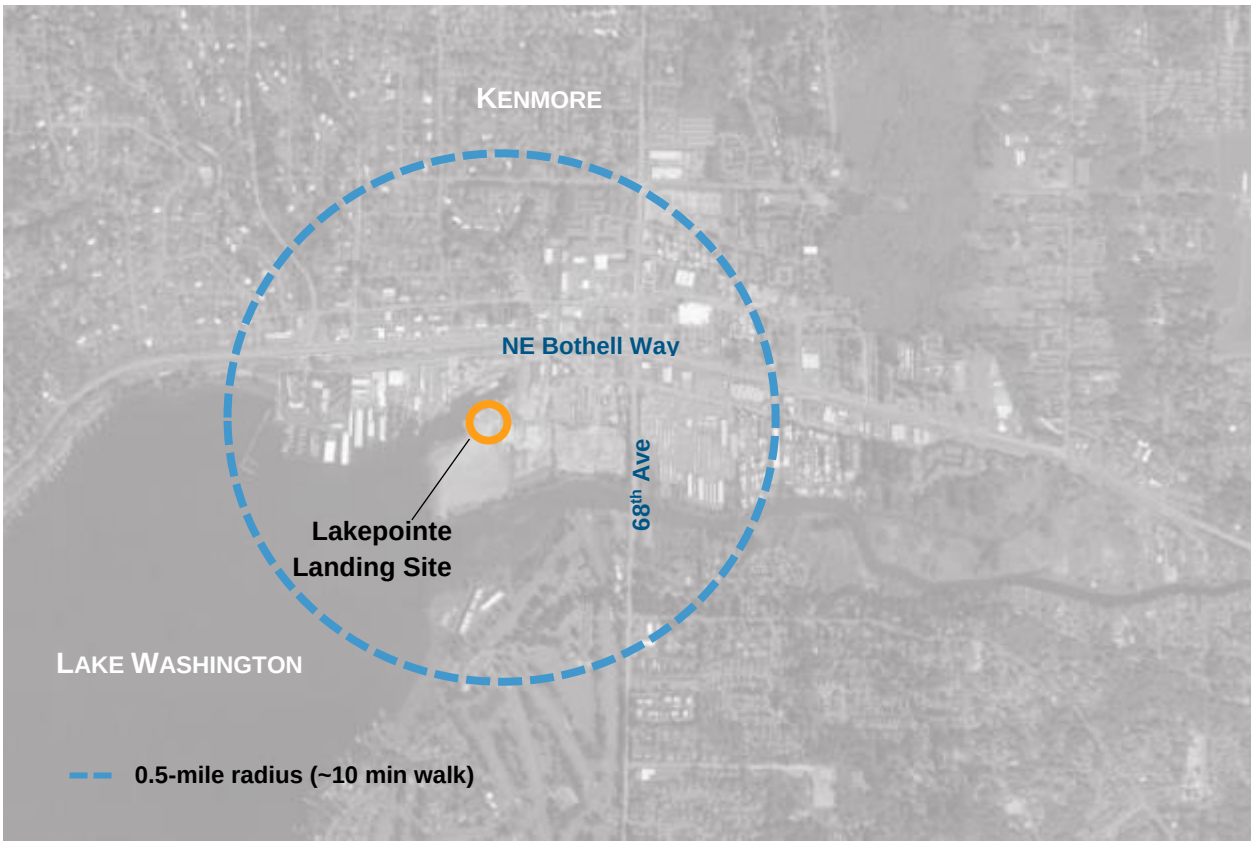
Five landing sites are being considered for potential POF service between the City of Kenmore and Seattle. The following sections provide a brief overview of the potential landing sites.

City of Kenmore Sites

Lakepointe

The Lakepointe development site is an approximately 45-acre privately owned parcel along Lake Washington within the City of Kenmore. The landing site would be located on the north portion of the parcel where a concrete bulkhead currently exists. For POF service, a new float, utilities and site work as well as upland terminal improvements including a parking area would be constructed. This location would also include overnight moorage and maintenance of vessels for all potential POF service options. Figure 2 provides a vicinity map of the Lakepointe landing site.

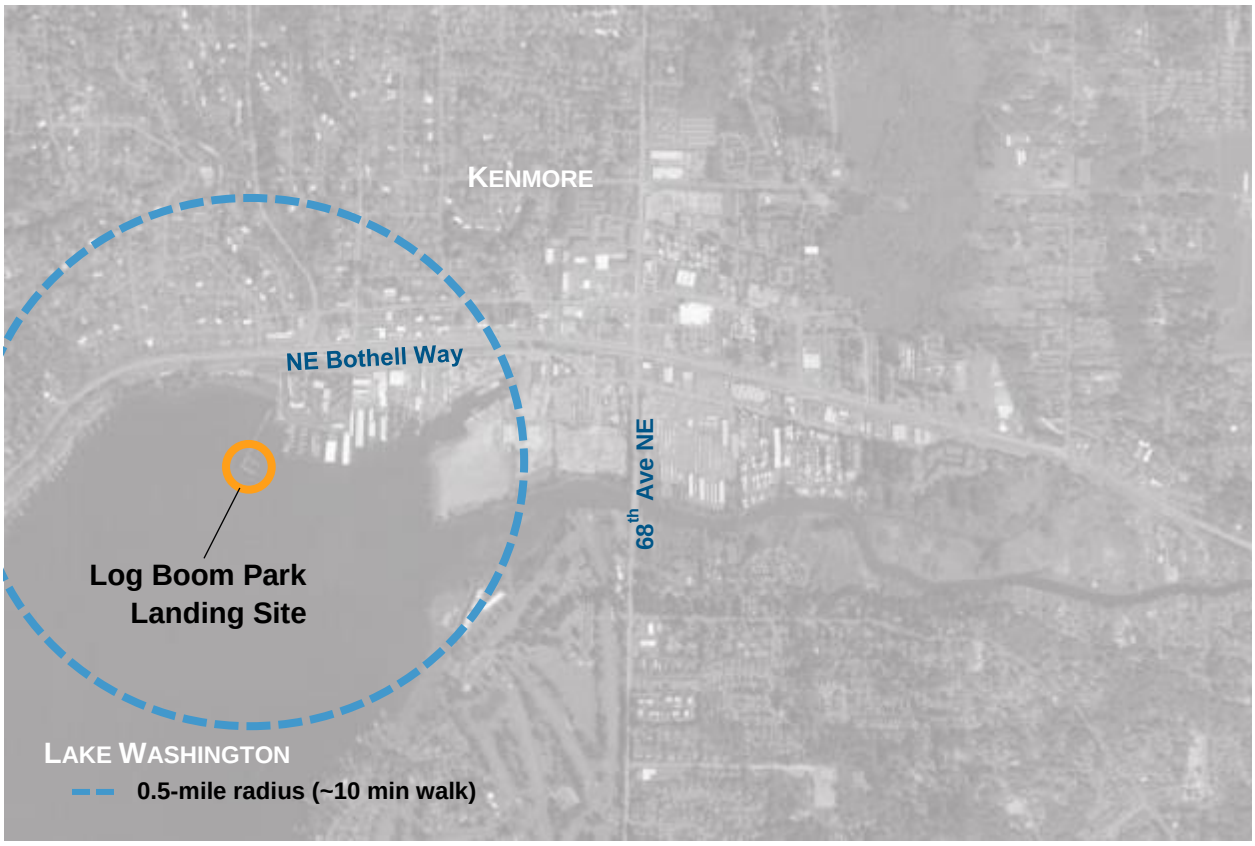
Figure 2: Potential Lakepointe Landing Site



Log Boom Park

Log Boom Park is approximately five and a half acres of land along the Lake Washington and is owned by the City of Kenmore. The park includes trails, benches and a recreational pier. The proposed landing site would be on the southern end of the existing pier and would require minor improvements to allow for safe passenger embarking and disembarking of the vessel. Service from this location would still require use of the moorage and maintenance facility to be built at Lakepointe. Figure 3 provides a vicinity map of the Log Boom Park landing site.

Figure 3: Potential Log Boom Park Landing Site

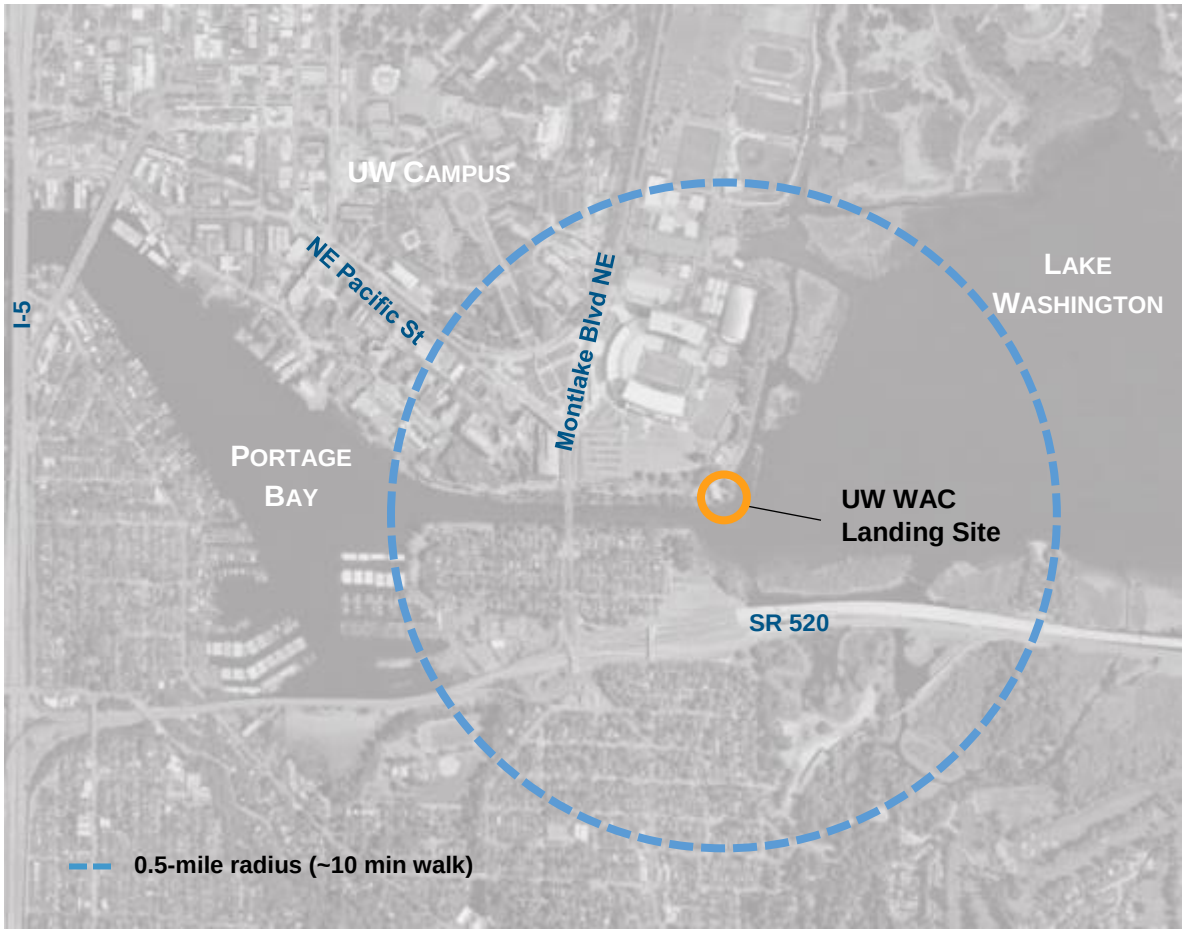


City of Seattle Sites

UW WAC

The UW WAC is located on the southeast portion of the University of Washington campus in Seattle. The site has an existing timber float for recreational use along with pathways to connect to campus. The site would require replacing the existing float with a new float and gangway and upland improvements for POF service. Figure 4 provides a vicinity map of the UW WAC landing site.

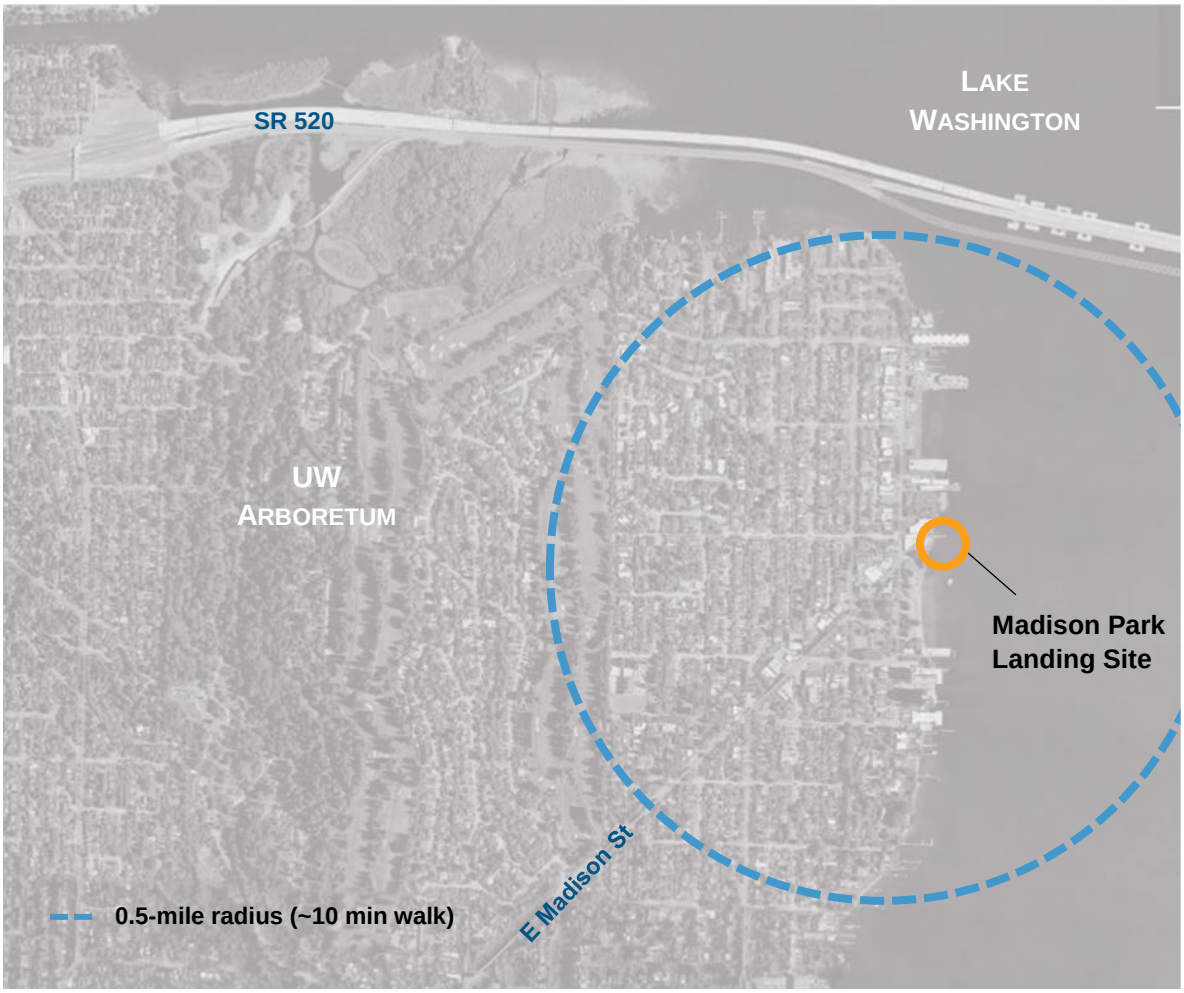
Figure 4: Potential UW WAC Landing Site



Madison Park

Madison Park is northeast of downtown Seattle along the shore of Lake Washington. The park is owned by the Department of Natural Resources and managed by the City of Seattle and includes a pier and a public swimming area. The site would require replacing the existing pier with a new pier and float along with a new gangway and uplands improvements. Figure 5 provides a vicinity map of the Madison Park landing site.

Figure 5: Potential Madison Park Landing Site



Leschi Park

Leschi Park is east of the Pioneer Square neighborhood in downtown Seattle. Located along the western shore of Lake Washington, the park is owned and operated by the City of Seattle.[1] Boat launch and temporary boat parking is currently available at the park's pier. The site would require some dock repair and uplands improvements to support POF service. Figure 6 provides a vicinity map of the Leschi Park landing site.

Figure 6: Potential Leschi Park Landing Site

[1] Upon discussions with the City of Seattle, development of Leschi Park for POF service was deemed incompatible with existing City of Seattle development plans.

Initial Service Levels

The Kenmore POF route would provide year-round commute service with all-day service in the peak travel months. The total number of round-trip sailings per week would be up to:

- Peak service (April - September): up to 80 sailings per week
- Commute service (October - March): up to 36 sailings per week

Operating Parameters

Vessels

To deliver POF service at the given service levels, up to three 150-passenger vessels would be acquired. The vessels would be equipped with ether diesel or hybrid propulsion engines and would operate with a three-person crew.

Speed

Vessels would travel up to 28 knots in unrestricted areas. Within the slowdown areas near the Kenmore landing sites and the UW WAC, vessels would travel up to 7 knots.

Moorage, Mainentance and Fueling

The Lakepointe landing site would also serve as the site for overnight moorage and maintenance. Fueling of vessels would be accomplished during non-service hours using a fuel truck.

Implementation Schedule

To implement a POF route between Kenmore and Seattle, funding would need to be secured, and the capital investments, including terminal facilities and vessels, would need to be designed and reviewed by the appropriate regulatory agencies. These reviews, including relevant shoreline and environmental reviews, are anticipated to take up to two to three years. Consequently, it is anticipated that the implementation of POF service would take approximately three to five years, following the securing of funding.

ENVIRONMENTAL ELEMENTS

The following sections provide preliminary analysis of environmental elements considered with the operation of POF service. Additional data will be required to fully assess the environmental impacts of selected landing sites, which would be evaluated in later phases of the project.

For this analysis, the routes were evaluated using publicly available data and when possible visually representing this data using ArcGIS. The majority of data was created and compiled by local and state governments or research institutions, a few data sets were created through this project by digitizing information gathered from other sources. Much of the data used for this analysis was gathered from a study completed by the University of Washington, but provides information on City of Seattle shorelines (Toft 2001). The maps for this analysis are all broken into two vessel route segments (Kenmore to UW and UW to Leschi) for presentation purposes.

EARTH

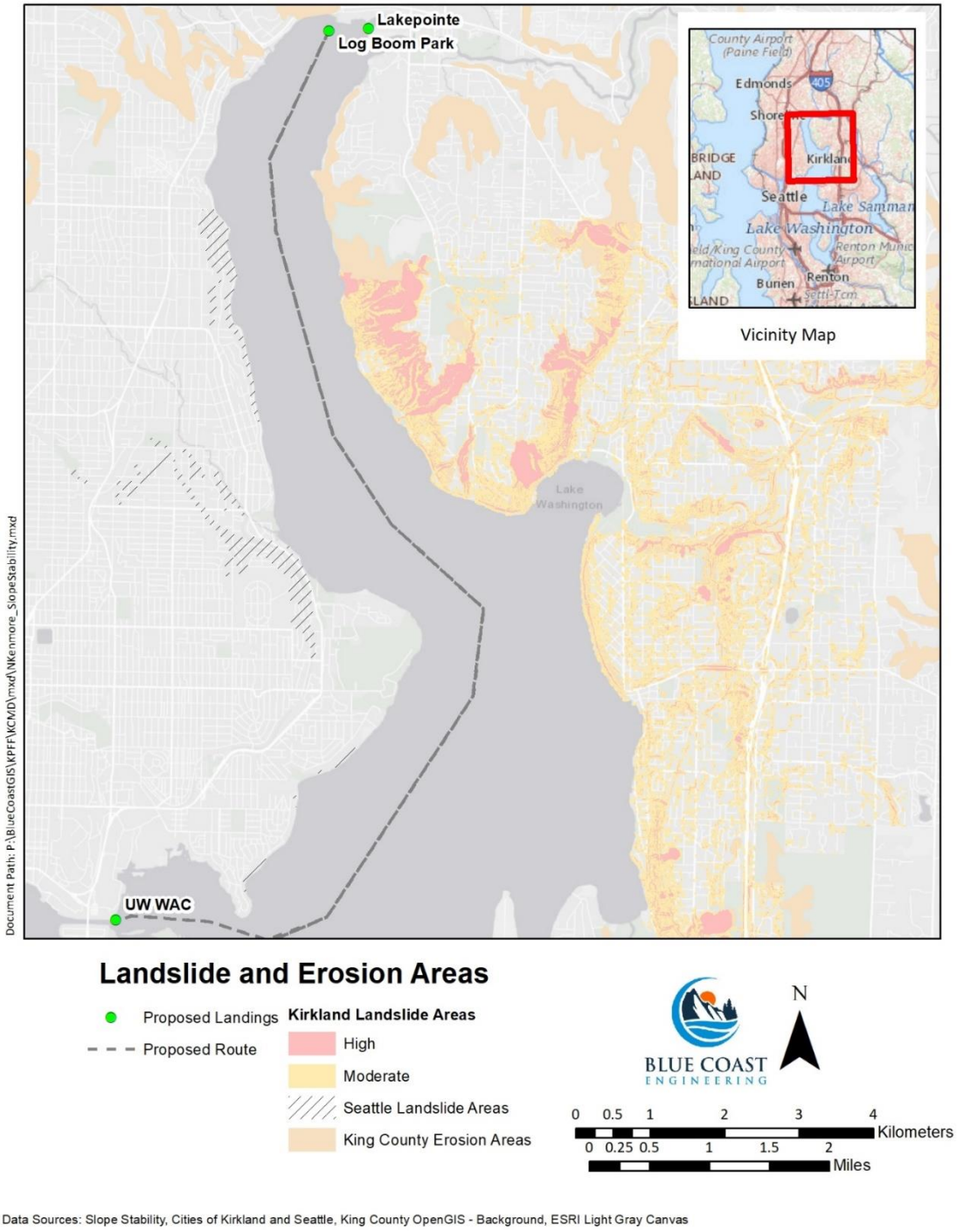
The potential POF route would operate on the waters of Lake Washington connecting Kenmore and Seattle. Vessel-generated waves from a new POF operation could cause erosion of shorelines through mobilization and transport of sediments. Particularly along the Kenmore route where there are no other regularly operated commercial vessels generating wakes, some sediment transport is anticipated and mitigating measure are included in the following sections.

Steep Slopes and Unstable Soils

Shorelines backed by steep slopes or unstable soils are particularly vulnerable to erosion and destabilization by the transport of sediment by vessel-generated waves. In this section, shorelines which will be more sensitive to erosion have been identified so operations can be planned to minimize the potential changes in these areas.

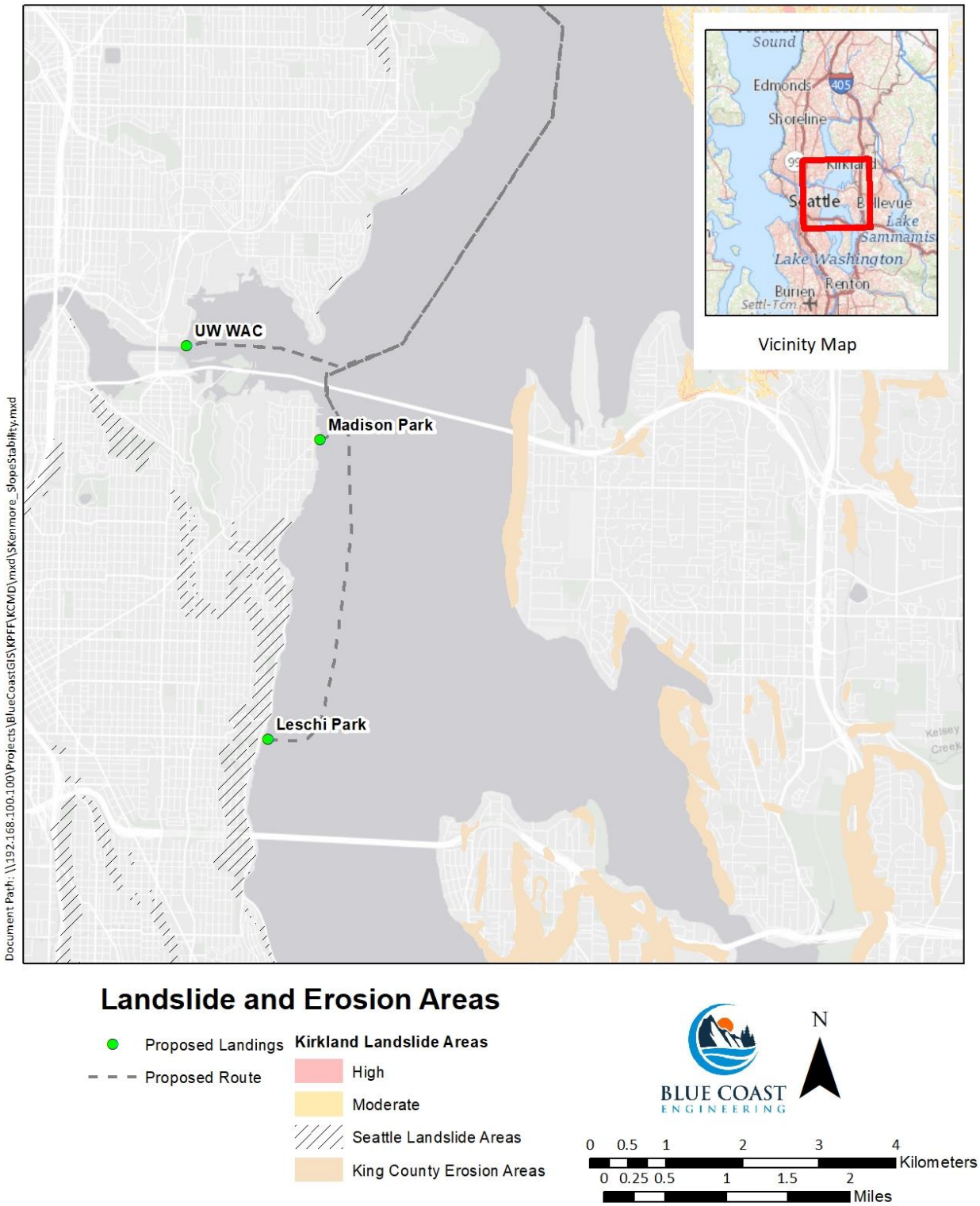
The shoreline along the potential Kenmore to Seattle route vary along the route. There are two stretches of shoreline along the west shore of northern Lake Washington that are documented as landslide areas and depicted in Figure 7. On the east side of the lake there are several moderate landslide areas intermixed with high landslide areas. In addition, much of the east side of the lake is considered an erosional area by King County. Erosion of the shorelines in front of landslide areas can result in increased landslide rates.

Figure 7: Slope Stability along Northern Portion of a Kenmore to Seattle Route



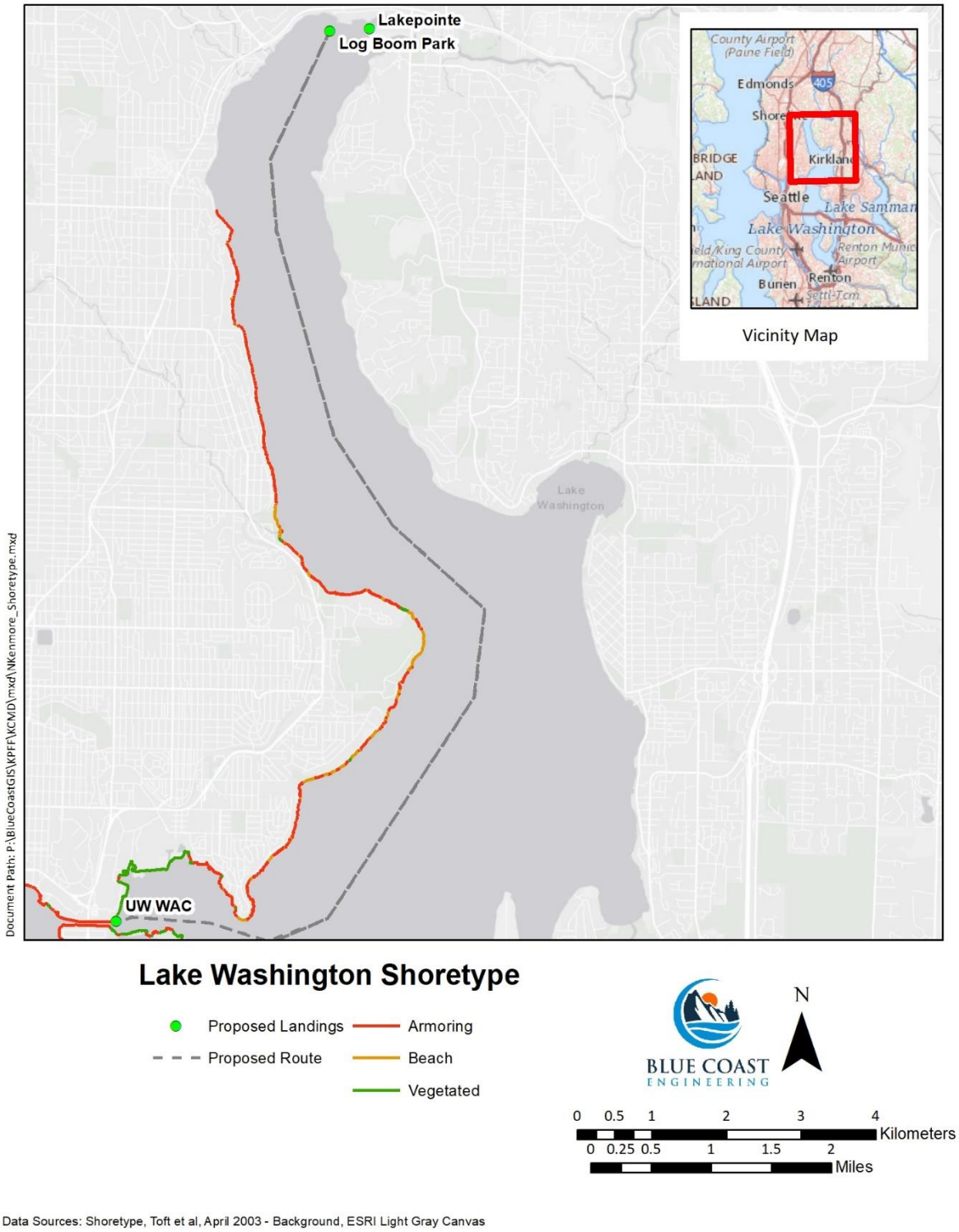
Most of the shoreline between Madison Park and Leschi Park are also documented as landslide areas. Figure 8 provides landslide and erosion areas near Madison Park and Leschi Park.

Figure 8: Slope Stability along Southern Portion of a Kenmore to Seattle Route



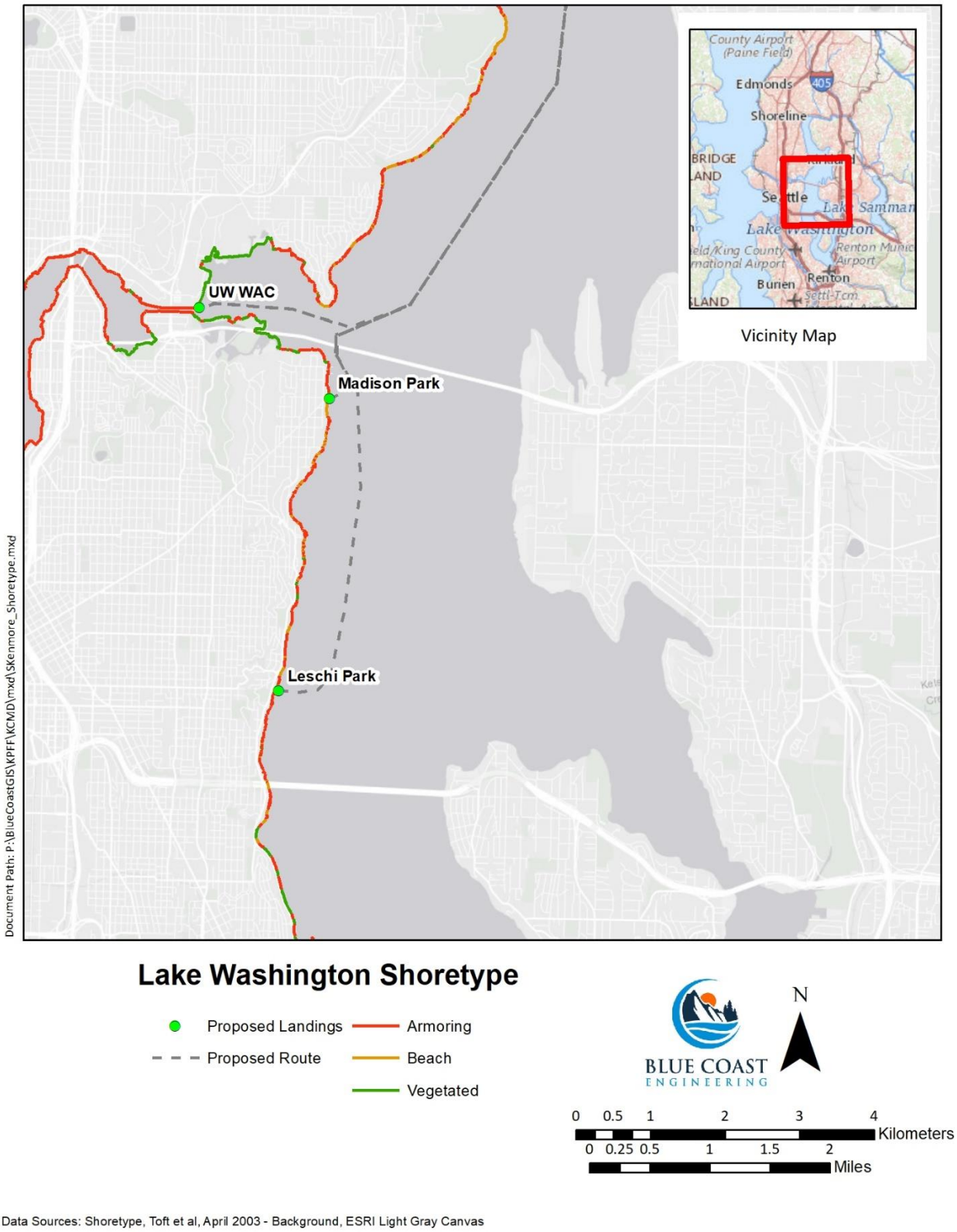
More than 70% of the shorelines of Lake Washington in the City of Seattle are armored where there is very little exposed soil along the shoreline. Much of the northwest shoreline of Lake Washington is armored with the exception of the area around UW WAC that is primarily vegetated as shown in Figure 9.

Figure 9: Shoretype along North Portion of a Kenmore to Seattle Route



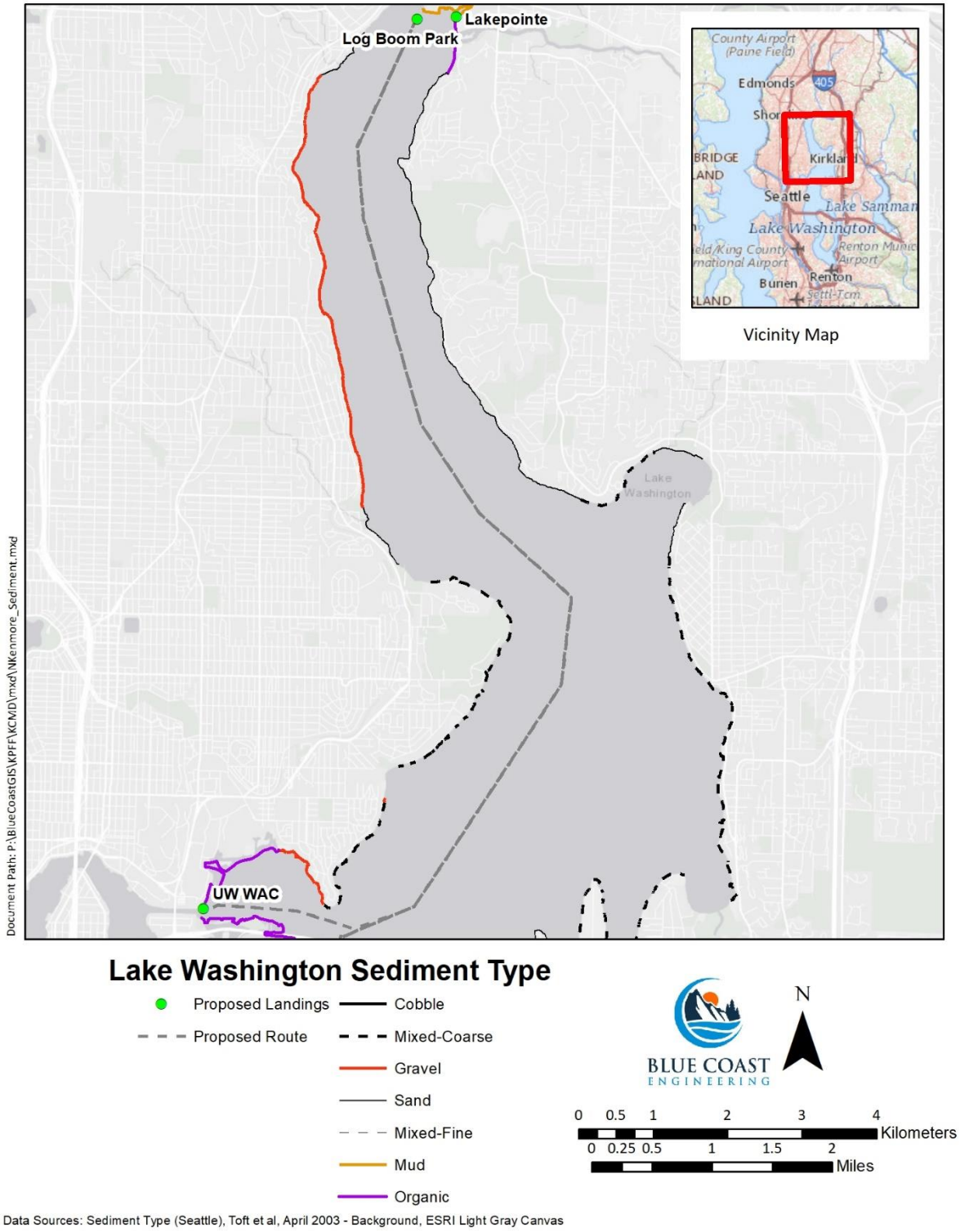
Similarly, the shoreline along the southern portion of a potential Kenmore to Seattle route is largely armored with few areas of vegetated shoreline as shown in Figure 10.

Figure 10: Shoretype along Southern Portion of a Kenmore to Seattle Route



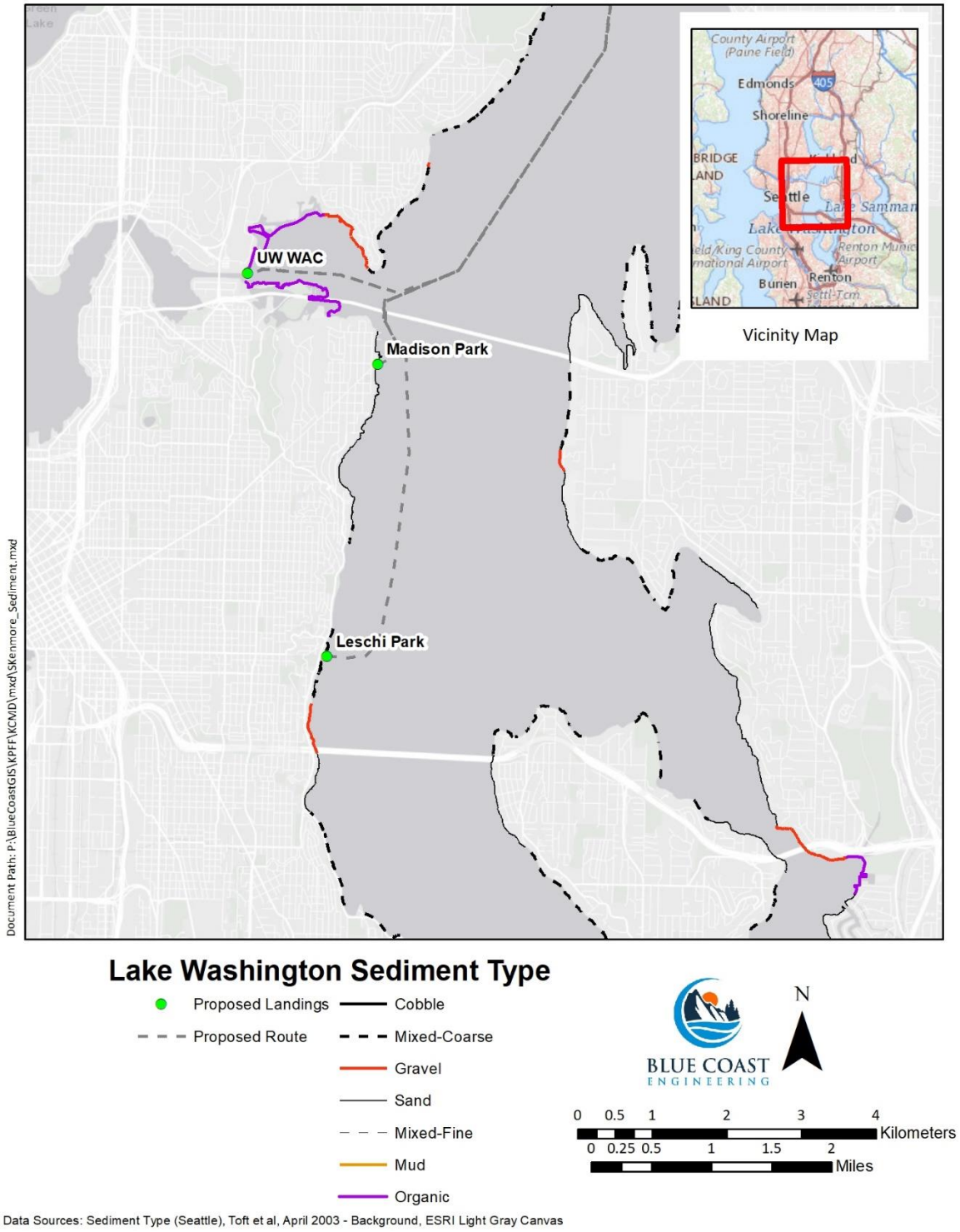
The soils in front of these armored areas tend to be mixed coarse sand and gravel or cobble and are less erodible than finer grained soils. The sediment type along the shoreline is shown in Figure 11.

Figure 11: Sediment type along Northern Portion of a Kenmore to Seattle Route



In areas of beach, the sediments are sand. Sand will be the most easily erodible substrate along the route in the open water areas of the lake. The proposed UW landing site is in Union Bay which has much finer grained soils comprised of mud and organic sediments which are highly erodible. The sediment type for the southern portion of a Kenmore to Seattle route are shown in Figure 12.

Figure 12: Sediment type along Southern Portion of a Kenmore to Seattle Route

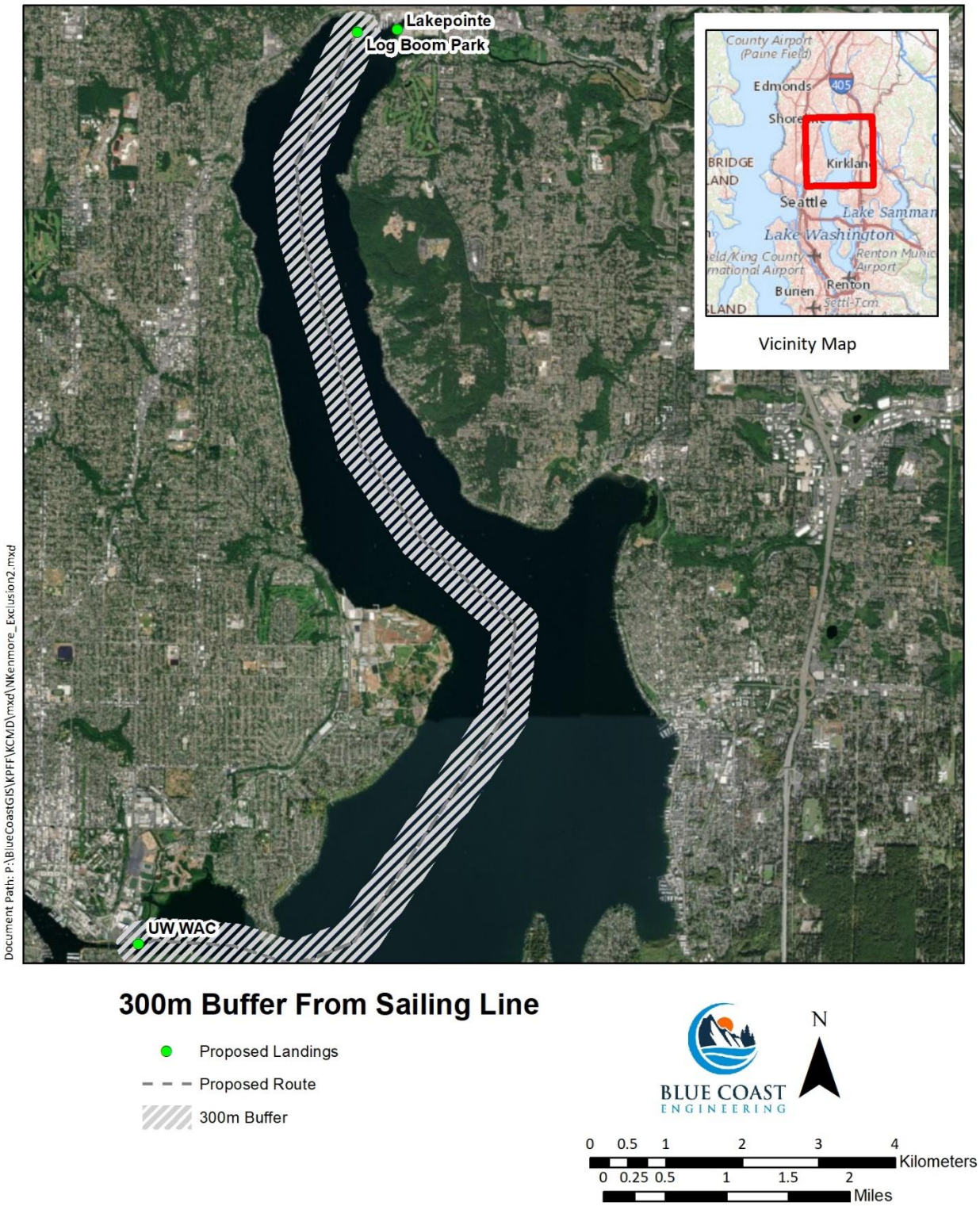


Measures to Reduce Potential Impacts

Efficient hull design and foil assistance could be used to achieve ultra-low wake performance for POF vessels. These features would also prevent wake wash induced impacts to the critical Lake Washington shoreline areas. Additionally, the Marine Division would develop operational protocols for where the POF vessel travels on the lake to prevent wake wash induced impacts on the critical shoreline areas and recreational usage of the lake. These operating protocols might include the following: optimal vessel sailing line within the navigation channel to minimize wake wash hitting more sensitive shorelines; a range of optimal vessel speeds which minimizes wake wash dependent on the size of the vessel and water depth in which it travels; requirements to maintain speed or not conducting maneuvering unless a navigation hazard is present in the most sensitive areas.

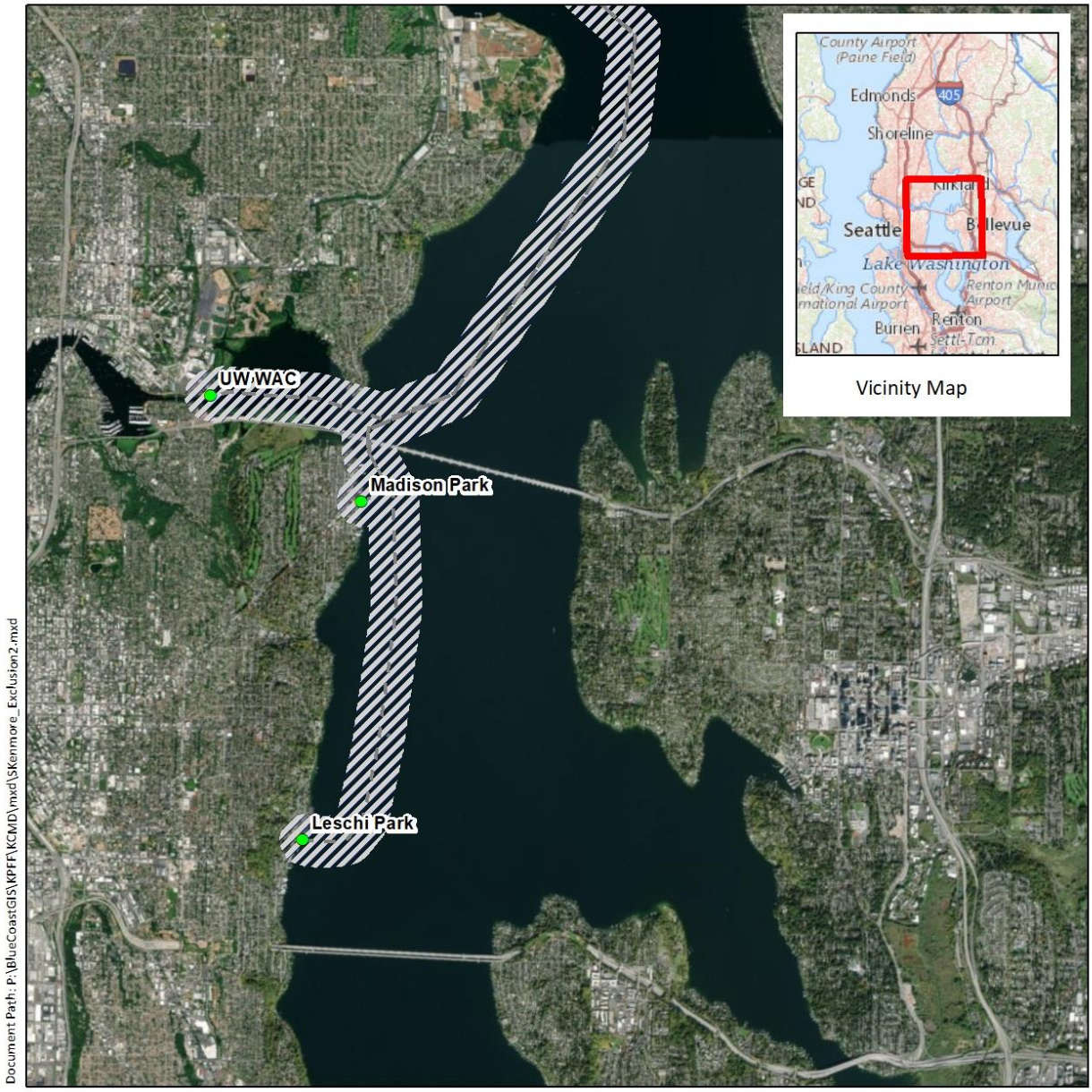
Vessel wake wash performance criteria would be established to provide guidance for the selection of a vessel with the optimal characteristics for operations on Lake Washington. These criteria are comprised of a maximum wave height and maximum wave period (which together determine the wave energy) measured at a distance of 300 meters from the vessel sailing line. The wave height and wave period in the criteria would be set at a threshold which minimizes potential for sediment transport and wave forces which exceed current design standards for fixed and floating structures on Lake Washington. Figure 13 illustrates a 300-meter buffer from the sailing line for the north portion of a Kenmore to Seattle route and Figure 14 provides the 300-meter buffer for the southern portion of a Kenmore to Seattle route.

Figure 13: 300-meter Buffer from Sailing Line of Northern Portion of a Kenmore to Seattle Route



Data Sources: 300m Buffer, Blue Coast Engineering, 2019 - Imagery, DigitalGlobe, July 2017

Figure 14: 300-meter Buffer from Sailing Line of Southern Portion of a Kenmore to Seattle Route



Document Path: P:\BlueCoastGIS\KPFF\KCMD\mxd\SKenmore_Exclusion2.mxd

300m Buffer From Sailing Line

- Proposed Landings
- Proposed Route
- 300m Buffer

BLUE COAST ENGINEERING

N

0 0.5 1 2 3 4 Kilometers

0 0.25 0.5 1 1.5 2 Miles

Data Sources: 300m Buffer, Blue Coast Engineering, 2019 - Imagery, DigitalGlobe, July 2017

The following additional studies are recommended to adequately define impacts to soil and develop measures to reduce potential impacts:

- Quantify existing wind-wave energy and vessel wake energy, which can generate sediment transport along the shorelines.
- Identify fixed and floating structures along shorelines, which extend farther waterward than average from the shoreline and evaluate potential for impacts from vessel wake wash. This includes filling the data gap of mapping docks and piers along City of Kenmore and Kirkland shorelines.

AIR

The diesel powered propulsion systems would contribute to greenhouse gas (GHG) emissions, including carbon dioxide (CO_2) and nitrogen oxide (NO_x) emissions. The Environmental Protection Agency (EPA) requires new vessels to incorporate Tier 4 engines to significantly reduce GHG emissions. It is anticipated the new vessels would require Tier 4 engines, though hybrid-diesel propulsions systems would also be explored as an option for the route.

Based on the estimated POF service levels using approximately 300,000 gallons of diesel annually, POF service would generate approximately 3 million kg of CO_2 annually. However, it is anticipated POF service would reduce the number of passenger vehicle miles traveled, therefore offsetting the greenhouse gases generated from the vessels.

WATER

To protect water quality and reduce the risk of any contaminants entering the lake, best management practices would be used in any construction activities needed for landing sites to support POF service.

Ferry vessels themselves, like most marine vessels, may use a raw water cooling process during operations. Raw water cooling involves withdrawing water through the hull and using it to cool engines. Shortly after use, the water is returned to the source waterbody. Withdrawal water is screened to prevent the intake of any aquatic life.

No sewer waste would be discharged into the waters of Lake Washington. Ferry vessels would store any sanitary sewer waste generated during trips using holding tanks and would discharge tanks to upland sanitary sewer treatment systems.

Plants

The majority of the shoreline along Lake Washington consists of garden/lawn with some areas of natural forested and shrub-scrub vegetation, mostly in conjunction with park areas. Data along the City of Seattle shoreline were mapped to evaluate the potential impacts to submerged aquatic vegetation along the potential route, but vegetation is not distinguished by species and likely consists of invasive species. It is not anticipated the potential route from Kenmore to Seattle would affect native submerged aquatic vegetation. See Figure 15 and Figure 16 for mapped submerged aquatic vegetation.

Figure 15: Submerged Aquatic Vegetation along Northwestern City of Seattle Shoreline

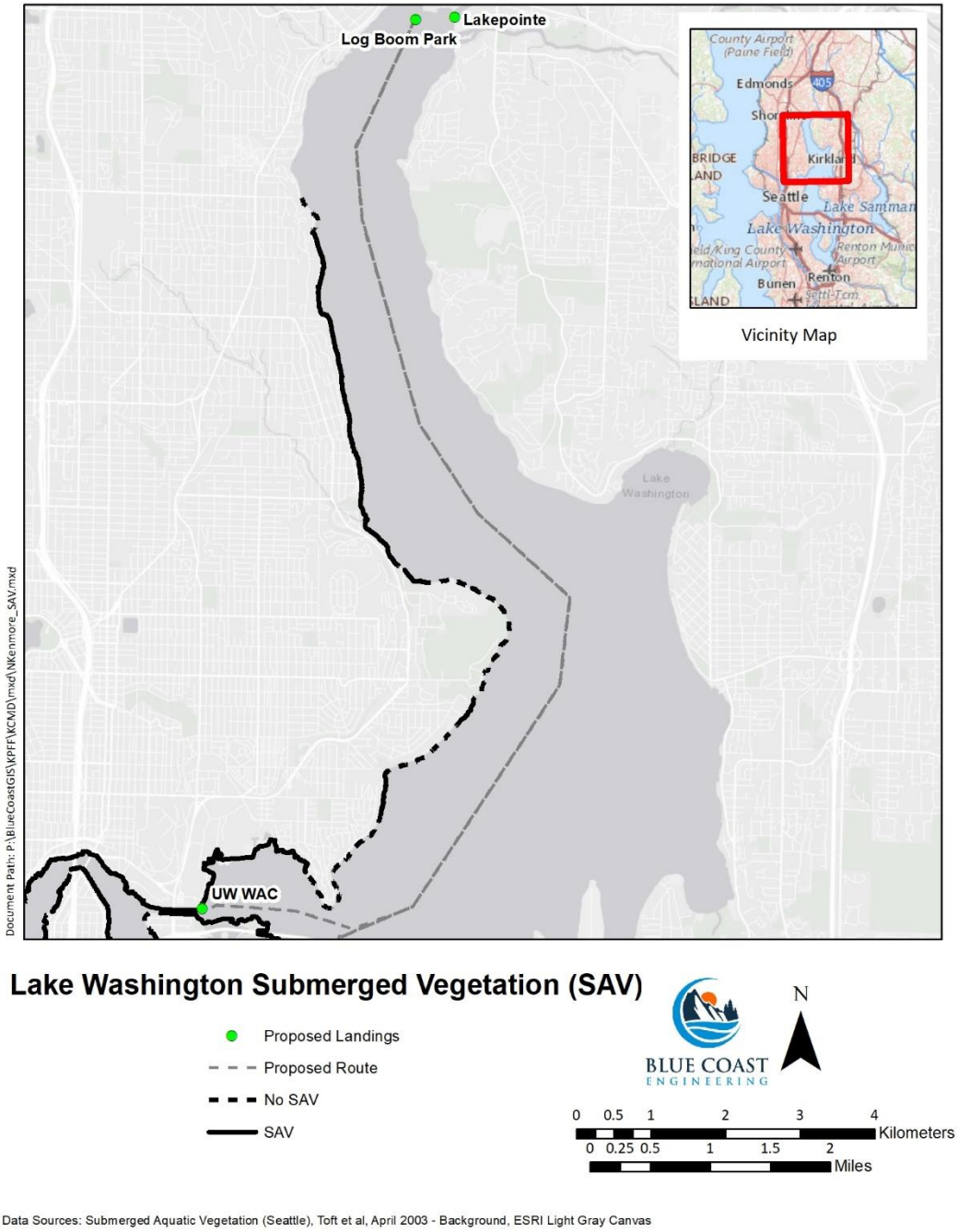
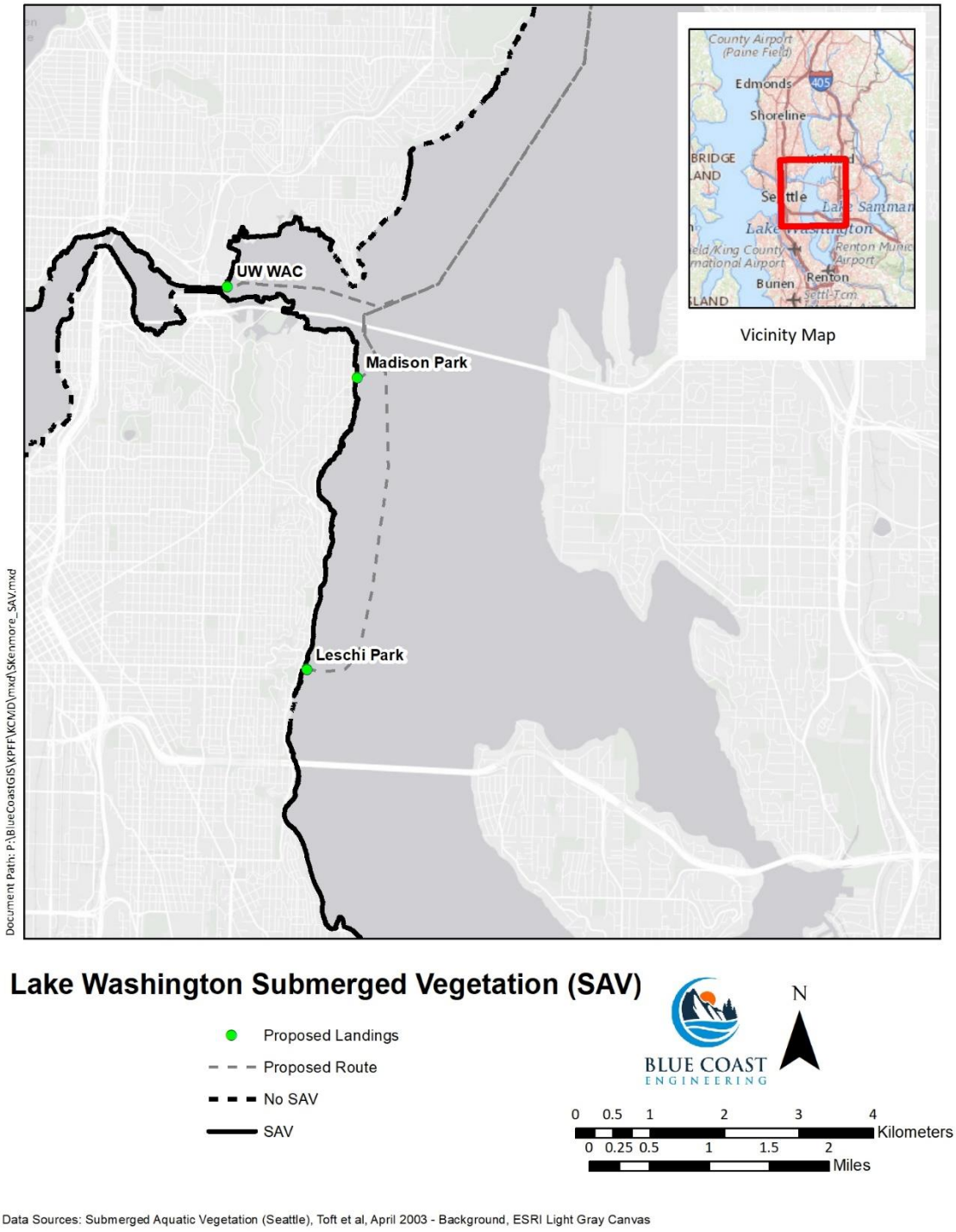


Figure 16: Submerged Aquatic Vegetation along Southwestern City of Seattle Shoreline



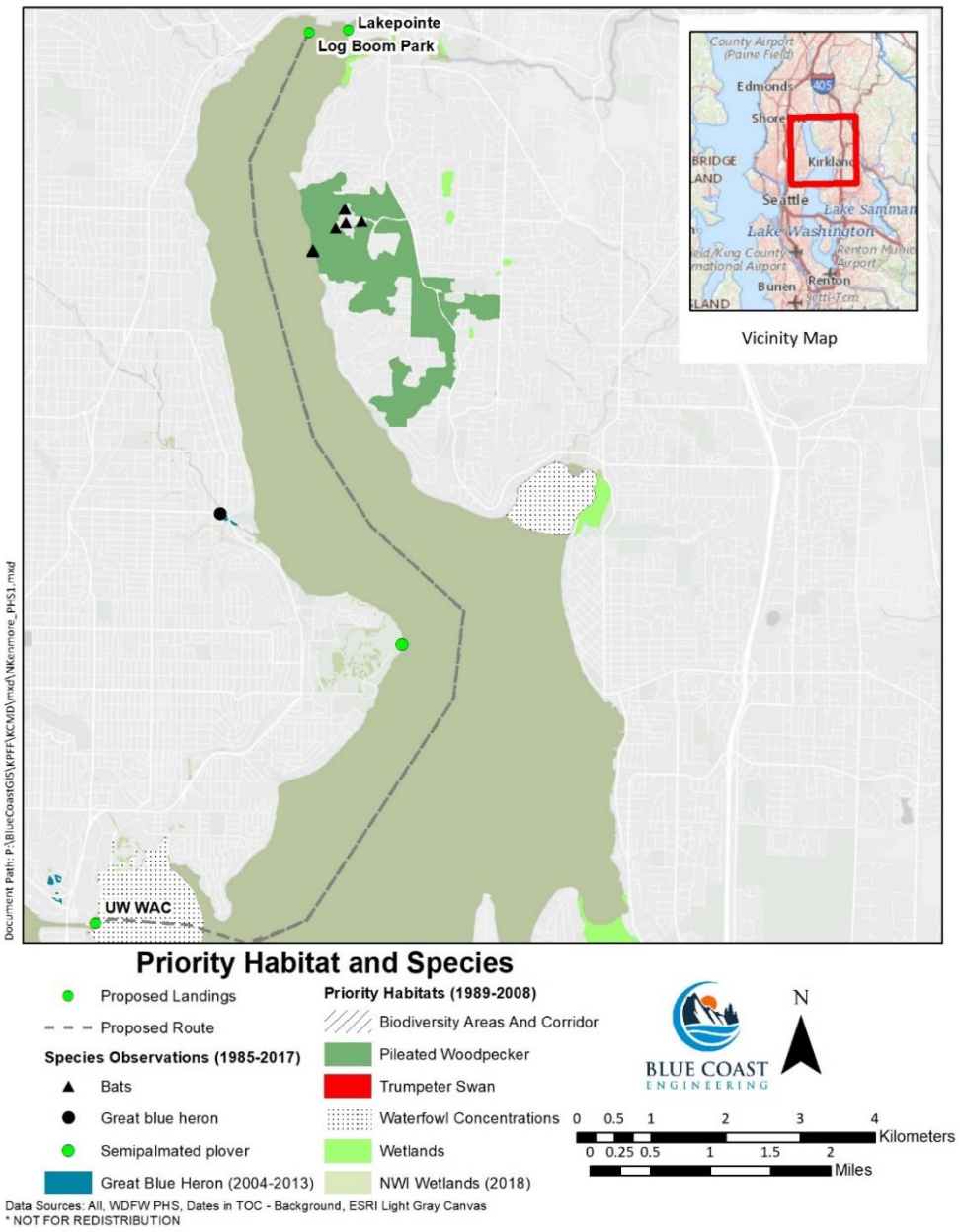
Animals

Data were acquired from the Priority Habitat Species (PHS) program through the Washington Department of Fish and Wildlife (WDFW) for any habitats and species that are not listed on the public facing website for the program (WDFW 2019).

A priority habitat is unique or significant to many species and any site-specific work in these areas would be regulated by local jurisdictions. Priority species may be state listed Endangered, Threatened, or Sensitive (WAC 232-12). Species and habitats may also be listed as a priority if the species aggregates; for example, herons group together in large rookeries, which may make them more susceptible to impacts. Species of recreational, commercial, or tribal importance may also be listed as a priority species. Regulations around priority habitat and species are generally defined by local jurisdictional codes.

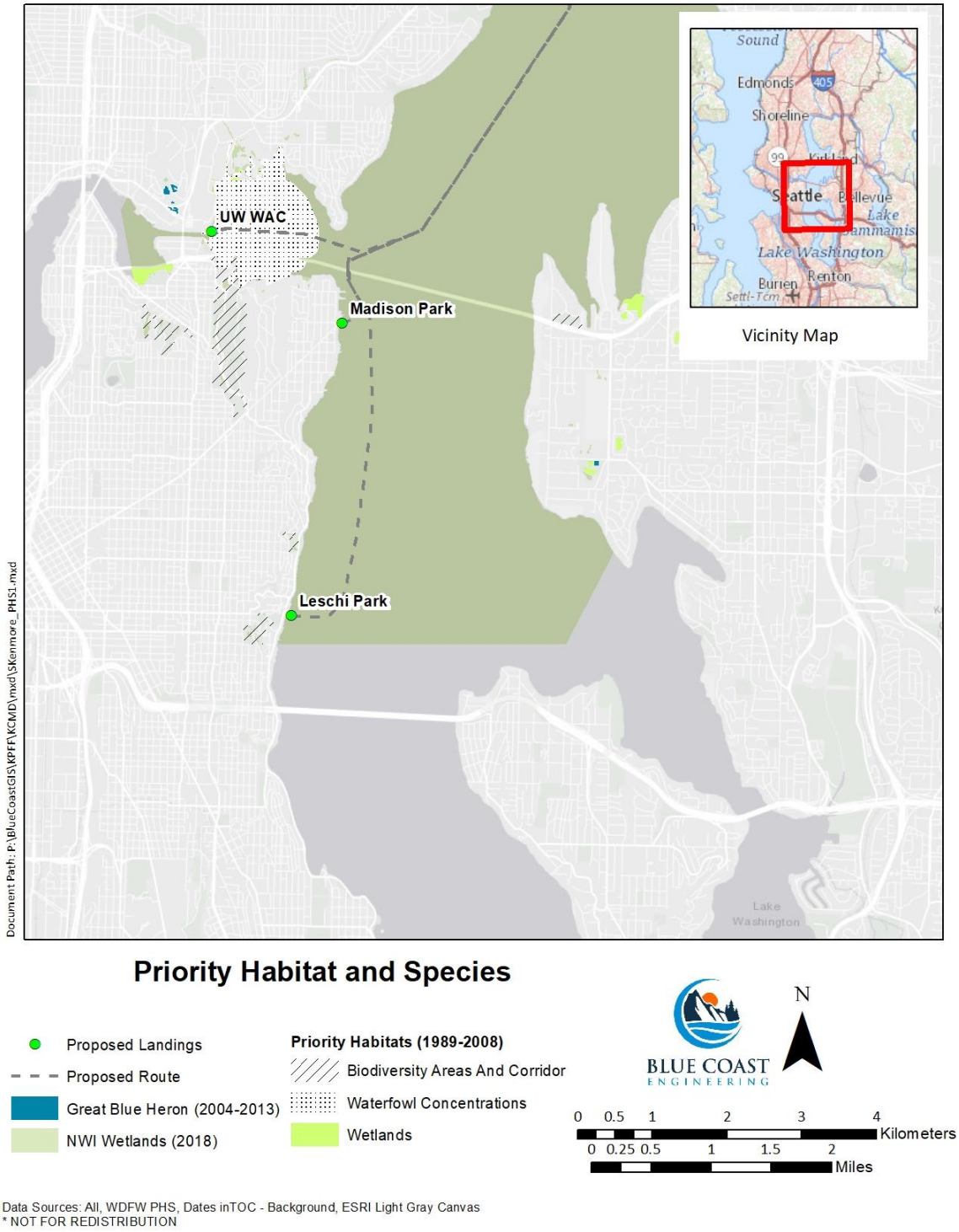
Birds and bats are documented through PHS along the Kenmore route corridor. The area near St. Edwards State Park is mapped as bat habitat, which is in the narrow constriction at the north end of the route. Figure 17 illustrates these PHS species.

Figure 17: Priority Habitat Species along Northern Portion of a Kenmore to Seattle Route



The area near the University of Washington is mapped as an area for waterfowl concentrations. This area is illustrated in Figure 18 that provides PHS species for the southern portion of the potential Kenmore to Seattle route. These are two areas where the proposed route would come near documented priority species and would require further detailed analysis.

Figure 18: Priority Habitat Species along Southern Portion of a Kenmore to Seattle Route



Many species of fish use Lake Washington and adjoining rivers and streams, including some of which that are state and federally listed species shown in the Table below.[2] These species are also recreationally, commercially, or culturally significant. Tribal fishing rights of these and other relevant species will be maintained.

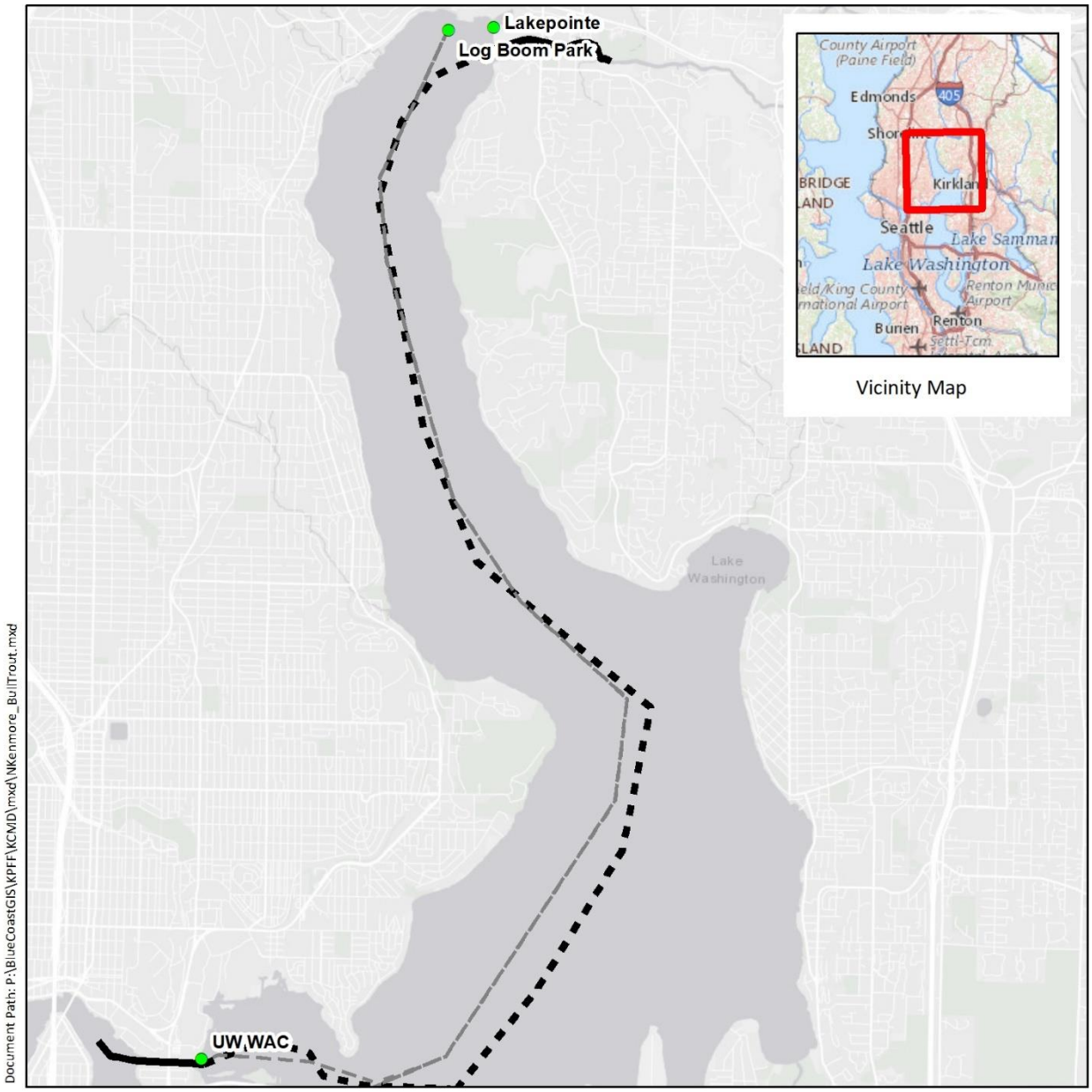
Common Name	**Scientific Name**	**State Status**	**Federal Status**
Bull Trout	*Salvelinus confluentus*	Candidate	Threatened
Chinook Salmon	*Oncorhynchus tshawytscha*	Candidate	Threatened
Coho Salmon	*Oncorhynchus kisutch*	None	Species of Concern
Steelhead Trout	*Oncorhynchus mykiss*	None	Threatened

The distribution of usage by Bull Trout, Chinook salmon, and Coho salmon is prevalent along the entire Kenmore route. A number of species are only documented by WDFW as present in the project area, but Coho salmon and Chinook salmon are listed as spawning and rearing in a number of tributaries to the lake. Though not an endangered species, Sockeye salmon are also present and have a key run in Lake Washington. Given these factors, additional analysis of the potential impacts to salmon and salmon habitat would be required to move the project forward. This analysis would be focused on stream mouths along the route and landing sites where the largest impacts to salmon would be expected to occur.

[2] https://wdfw.wa.gov/species-habitats/at-risk/listed

The distribution of Bull Trout in Lake Washington is shown in Figure 19.

Figure 19: Bull Trout Distribution in Lake Washington



Document Path: P:\BlueCoastGIS\KPFF\KCMD\mxd\NKenmore_BullTrout.mxd

Bull Trout Distribution

- Proposed Landings
- Proposed Route
- Bull Trout, Presence
- Bull Trout, Rearing

BLUE COAST ENGINEERING

N

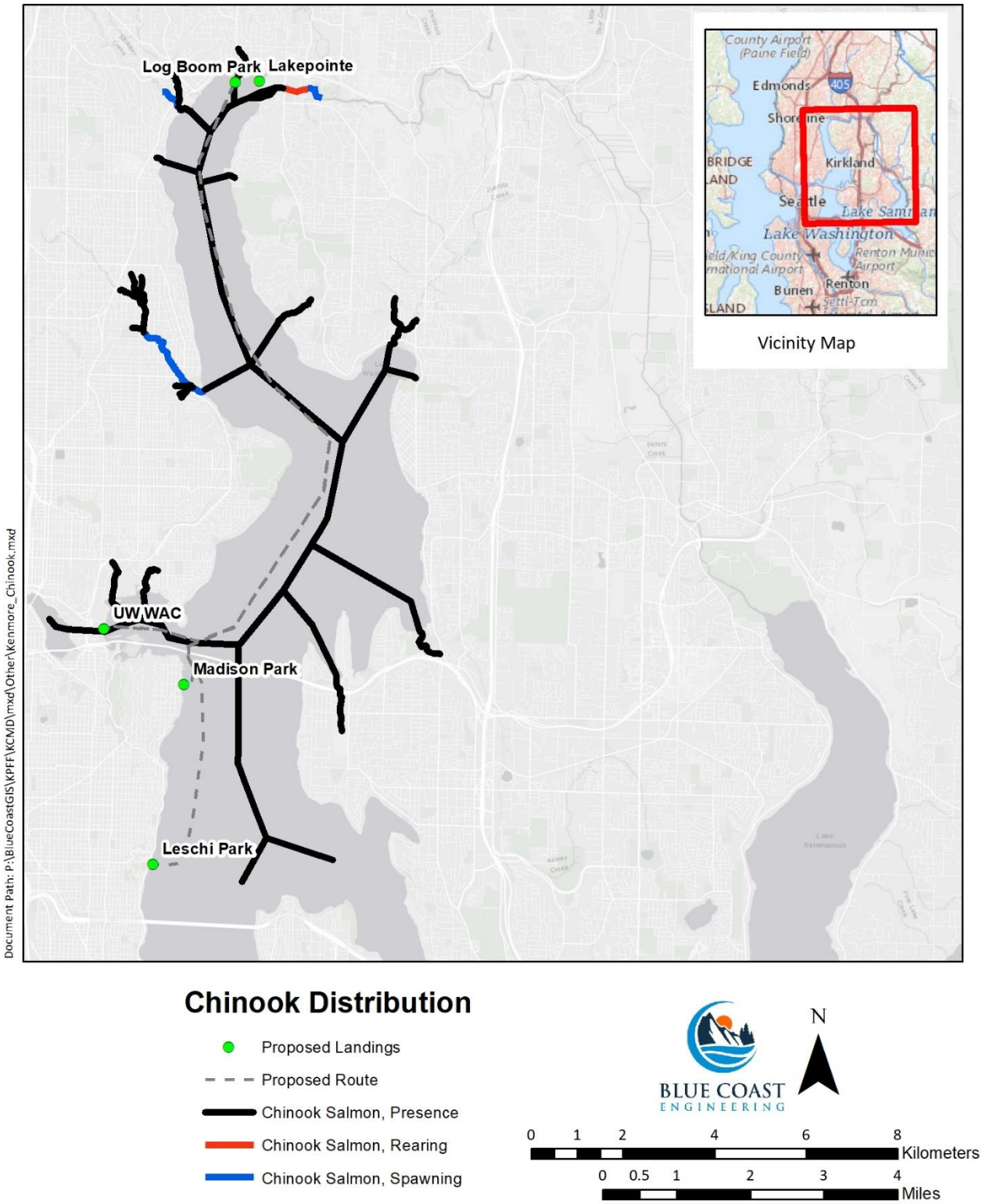
0 0.5 1 2 3 4 Kilometers

0 0.25 0.5 1 1.5 2 Miles

Data Sources: Fish Distribution, WDFW, May 2018 - Background, ESRI Light Gray Canvas
**If fish are indicated in Lake Washington, the use may be throughout the waterbody, the line is not geographicially precise with location.

The distribution of Chinook salmon in Lake Washington is shown in Figure 20.

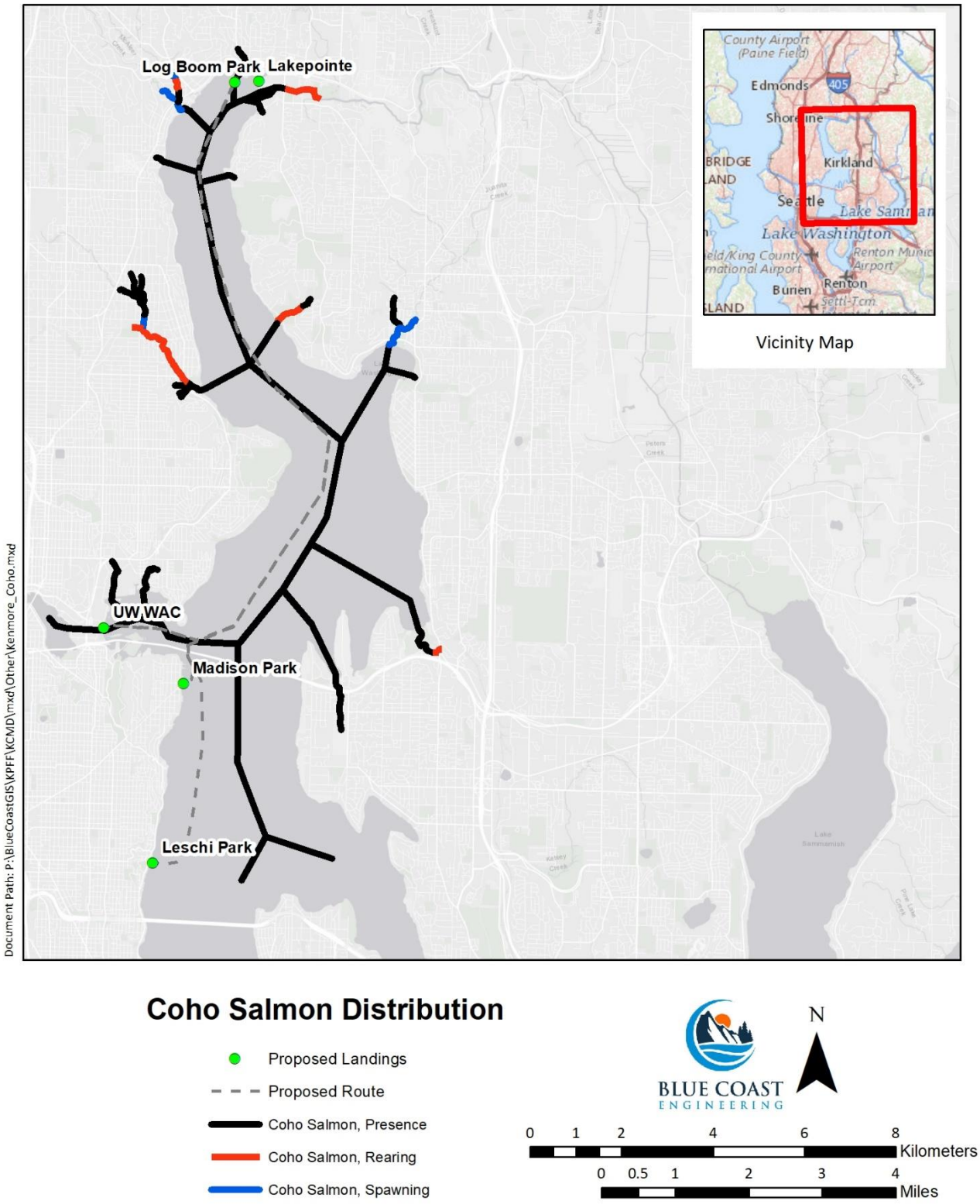
Figure 20: Chinook Distribution in Lake Washington



Data Sources: Fish Distribution, WDFW, May 2018 - Background, ESRI Light Gray Canvas
**If fish are indicated in Lake Washington, the use may be throughout the waterbody, the line is not geographicially precise with location.

The distribution of Coho salmon in Lake Washington is shown in Figure 21.

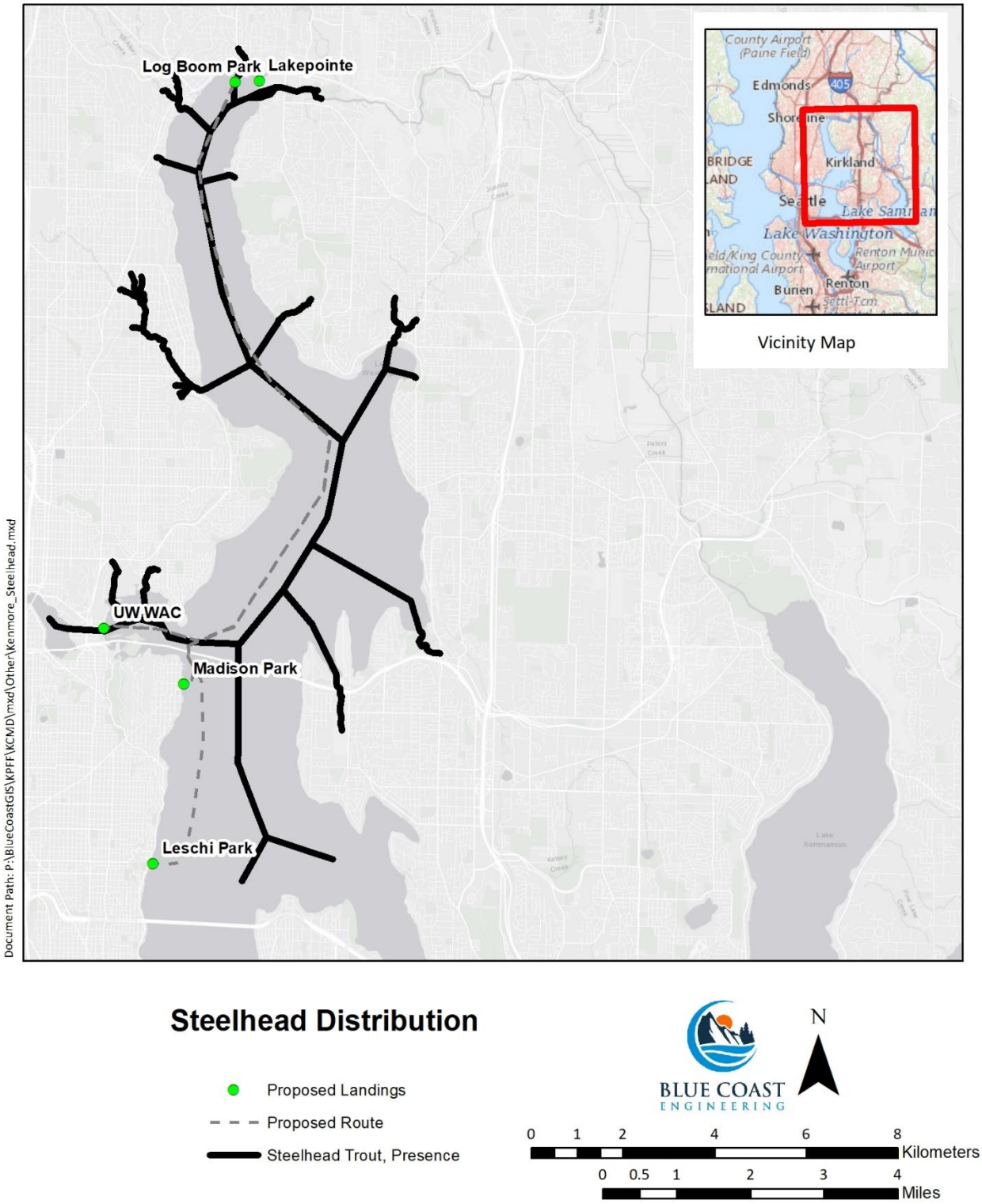
Figure 21: Coho Salmon Distribution in Lake Washington



Data Sources: Fish Distribution, WDFW, May 2018 - Background, ESRI Light Gray Canvas
**If fish are indicated in Lake Washington, the use may be throughout the waterbody, the line is not geographicially precise with location.

The distribution of Steelhead trout in Lake Washington is shown in Figure 22.

Figure 22: Steelhead Trout Distribution in Lake Washington



Data Sources: Fish Distribution, WDFW, May 2018 - Background, ESRI Light Gray Canvas
**If fish are indicated in Lake Washington, the use may be throughout the waterbody, the line is not geographicially precise with location.

Energy & Natural Resources

Fuel-based vessel engines would be used for vessel propulsion and to power vessel generators. Annual diesel use would be approximately 300,000 gallons per year based on current estimated service levels. Vessel engines would be capable of using both conventional diesel and biodiesel fuels. Where appropriate, the less emissions-generating option of biodiesel would be used.

Environmental Health

Using a truck to fuel the vessels could present a small risk of a fuel spill occurring during the refueling process at the Lakepointe landing site. The Marine Division would develop a spill response plan and receive approval from the Department of Ecology to fuel the vessels using a truck.

Noise

Vessels operating on Lake Washington would produce noise when traveling across the water which could temporarily increase noise across the lake. Additionally, POF vessels temporarily generate noise when they sound their horn upon departure from terminal landing sites. Sounding the horn is required in accordance with United States Coast Guard protocols. However, the noise levels are not anticipated to exceed the allowable thresholds.

Land and Shoreline Uses

POF service does not currently exist on Lake Washington and POF landings would need to be constructed prior to route implementation. Potential POF landing sites considered are located at public dock facilities; however, each dock would need to be substantially improved to support POF service. POF landings would be designed to meet regulatory requirements.

Existing uses along the shoreline consist primarily of residential uses. Many residences have existing docks. The north section of Lake Washington has the highest dock frequency (43 per mile) on the lake (Toft 2011). In addition to private docks, there are also several longer piers with floating platforms at private community swim clubs on the lake such as Lake Forest Park Civic Club and Sheridan Beach Club.

Vessels would transit between landings through a navigation channel which currently has light commercial usage and no existing ferry usage. Vessel wake wash generated by a POF vessels could result in forces on docks and floats which exceed the current forces on these structures. A more detailed study on the potential effects of wake wash on residential docks is recommended.

Critical Areas

Shorelines are classified as “environmentally sensitive” areas; categorized as Fish and Wildlife Habitat Conservation Areas, including, Shorelines (King County Title 21A.25), City of Kirkland (Kirkland Zoning Code Chapter 83), City of Kenmore (Kenmore Municipal Code Title 16, Division I) and designated as Environmentally Critical Areas (ECAs) by City of Seattle under the categories Floodprone, Liquefaction Zone, and Wildlife Preservation Area (Seattle Municipal

Code (SMC) chapter 25.09). The proposed project will comply with all relevant ECA regulations and requirements.

HOUSING

This proposed project would not add or eliminate housing. Therefore, it is not anticipated there would be any impacts to housing as a result of the proposed project.

AESTHETICS

POF service would increase the number of scheduled vessel passages on Lake Washington. Existing and proposed vessels have a height, above the waterline, of approximately 25 to 30 feet. Views of the maritime waterfront would include additional vessel passages.

RECREATION

Lake Washington has a high volume of recreational vessel traffic in the summer months and less frequent vessel traffic in the winter months. Each landing site (except for Lakepointe) has existing recreational uses. POF vessels would operate under strict operating protocols to ensure the safe passage of recreational vessel traffic.

Informal recreational opportunities within the area include boating, sailing, kayaking, paddle boarding, swimming, fishing, and wildlife viewing. Many of these activities occur or originate from the public boat ramps, community or public piers, and water sports rental facilities. There is a concentration of these activities around the northern end of the lake and in the area of the UW landing (inside and outside of Union Bay). In the vicinity of Magnuson Park, there are dense areas of recreational usage by sail boats, kayaks, and paddle boards in the summer.

Vessel transits could affect the timing of recreational activities within the vessel route or dock vicinities temporarily. In particular, in the summer months the recreational usage is heavier in these areas and slow speeds are recommended to mitigate potential impacts to recreation.

Since these areas do not have existing commercial vessel traffic, outreach and communication with the community groups which own and/or use these facilities to communicate and coordinate operating schedules is recommended.

In addition, many of these piers have floating platforms attached or unattached to the end of the piers. A more detailed mapping of these facilities and analysis of the potential effects of wake wash on these structures is recommended.

Additional measures and protocols may be necessary to minimize the potential impacts to recreation. These measures could include slow zones, channel markers, boater education, and signage at boating facilities.

HISTORIC & CULTURAL RESOURCES

Each potential landing site was reviewed through a desktop search of the Washington Information System for Architectural & Archeological Records Database (WISAARD). No landing sites had structures older than 45 years old, and there were no landmarks, features or other evidence of historic use or occupation.

Areas along the shoreline of Lake Washington are listed as high risk for being culturally significant. As a result, if ground disturbing activities are required in the future for POF facility development, an archeological survey would be recommended.

TRANSPORTATION

The project occurs in the waters of Lake Washington. The project includes acquisition, operation and maintenance of ferry vessels in the water. Currently, cruises/tours and construction vessels are the primary commercial uses of the Lake Washington navigation channel. Glacier Sand and Gravel operates a gravel mine in Kenmore that uses barges to ship materials seven times a week (WSDOT 2009).

POF service would provide another transit option for people traveling across Lake Washington. Kenmore Air operates a small airport in close proximity to Lakepointe and uses the waterway for take-offs and landings. As a result, schedules would need to be coordinated to avoid conflict.

Kenmore Air operates a sea plane base at the northern end of Lake Washington, near the Kenmore landing sites. The sea planes land on the lake to the south of the sea plane base and taxi to the dock. Similarly, sea planes taxi from the dock south and take off from the lake along the shoreline of the City of Shoreline. More information needs to be acquired to document the water usage by Kenmore Air.

The proposed route from Kenmore to Seattle would increase the regular use of the navigation in Lake Washington. Coordination with Kenmore Air and the commercial tour vessels of Argosy cruises would be necessary.

PUBLIC SERVICES AND UTILITIES

To get passengers to and from ferry landings, investments would need to be made in first and last mile connections. These connections could include other land-based public transit services or other public transit programs.

Each landing would require electricity for lighting. The Lakepointe site would require water and sewer to pump out the vessels as part of routine vessel maintenance.

ADDITIONAL RECOMMENDED ANALYSES

The following additional tasks are recommended to adequately define impacts and develop measures to reduce potential impacts:

- Wind-wave and vessel wake energy assessment to quantify existing wave climate which can generate sediment transport along the shorelines and determine threshold for Lake Washington POF wake wash criterion.
- Review of fixed and floating structures which extend farther than average from the shoreline to determine tolerance for vessel wake wash.
- Review of recreation on the lake around Kenmore landing site, Magnuson Park and UW landing to define operation protocols to minimize impacts to recreation.
- Delineation of Kenmore Air take-off and landing zones.
- Potential impacts to threatened and endangered fish species at landing sites and stream mouths.

REFERENCES

Toft JD. 2001. Shoreline and Dock Modifications in Lake Washington. Report prepared for King County Department of Natural Resources.

Washington State Department of Natural Resources (DNR). 2019. Puget Sound Seagrass Monitoring, Submerged Vegetation Monitoring Program Data Viewer. Accessed December 4, 2019 https://wadnr.maps.arcgis.com/apps/webappviewer/index.html?id=83b8389234454abc8725827b49272a31

Washington State Department of Transportation (WSDOT) 2019.Navigable Waterways Discipline Report for SR 520: I-5 to Medina Bridge Replacement and HOV Project Supplemental EIS.

WDFW 2019 https://apps.wdfw.wa.gov/salmonscape/map.html

WRIA 8 https://www.govlink.org/watersheds/8/action/lakeside-living/aquatic-weeds.aspx

APPENDIX D:
LOCAL AGENCY/OWNER COORDINATION

LOCAL AGENCY/OWNER COORDINATION

As part of this Proviso, King County Marine Division (Marine Division) reached out to the local agencies and owners of each potential landing to discuss opportunities and challenges of potential passenger-only ferry (POF) service. The following table provides a summary of these discussions.

Local Agency/ Owner	*Outreach Information*	*Stakeholder Interest*	*Opportunities*	*Challenges*	*Outcomes*
City of Kenmore	Meeting *See notes in Attachment D.1.*	» Encouraging transportation options for the Kenmore community. » Owns Log Boom Park landing. » Collaborates with Lakepointe property owner.	» Kenmore is looking to improve connections to the park.	» Acccess for passengers. » Limited expansion options for POF facilities.	» Log Boom Park is a potential landing, but Lakepointe is the City of Kenmore's preferred location. » In either case, Lakepointe would need to be utilized for vessel maintenance and tie-up.
Property owner, Gary Sergent	Meeting *See notes in Attachment D.2.*	» Owns Lakepointe site. » Interested in developing property.	» Improved access for passengers with sufficient uplands space for potential on-site parking and shuttle drop-off » Compatibility with future development. » Overnight moorage.	» Heavy truck traffic across the site with existing leasees. » Utility systems are limited.	» Gary Sergent is willing to consider moving forward with a POF landing. » Lakepointe is the City of Kenmore's preferred landing location. » Even if not selected for service, Lakepointe would need to be utilized for vessel maintenance and tie-up.

Local Agency/ Owner	Outreach Information	Stakeholder Interest	Opportunities	Challenges	Outcomes
University of Washington	Meeting *See notes in Attachment D.3.*	» Owns UW WAC landing. » Maintaining safe access and use of Lake Washington. » Keeping UPass costs down.	» Connection to light rail and numerous bus routes. » UW, UW Medical, and UW athletic facilities are all destinations.	» Used by UW Rowing Team and other recreational watercraft.	» Continued communication.
Department of Natural Resources	Meeting and Email Correspondence	» Owns Madison Ave dock.	» Compatible with DNR goals of engouraging water dependendent, public uses.	» Obtaining a DNR Waterway permit. » Poor transit connections. » Requires new dock and increased overwater coverage.	» DNR willing to consider moving forward with a POF landing.
City of Seattle Parks and Recreation	Email Correspondence	» Manages adjacent Madison Park.	N/A	» Nearby residences and park (including a public swimming area)	» City of Seattle does not own the Madison Dock. » Marine Division to work with DNR.
City of Seattle Parks and Recreation	Email Correspondence	» Owns Leschi Park Landing.	N/A	» The Parks Department indicated their capital improvements at this landing site was not compatible with Water Taxi use.	» This landing site is not an option to carry forward.

In addition to coordination with local agencies and potential landing site owners, the Marine Division met with the United States Coast Guard (USCG), Sector Puget Sound. The USCG has regulatory authority over all vessel operations in Lake Washington waters as well as a whole host of other responsibilities. The goal of this meeting was to inform them of this study and discuss any concerns, issues, and focus areas. Please see a summary of the meeting in Attachment D.4.

Attachment D.1

Summary of October 25, 2019 Meeting with the City of Kenmore

King County Water Taxi

MEETING SUMMARY

Date: October 25, 2019

Time: 10 a.m. - 2 p.m.

Location: City of Kenmore

Subject: Potential Passenger-only Ferry Service from Kenmore

Attendees:

Rob Karlinsey	*City Manager, City of Kenmore*
Nancy Ousley	*Assistant City Manager, City of Kenmore*
Bryan Hampson	*Development Services Director, City of Kenmore*
Debbie Bent	*Community Development Director, City of Kenmore*
Paul Brodeur	*Director, Marine Division, Metro Transit Department, King County*
Ron Panzero	*Marine Operations and Maintenance Manager, Marine Division, MTD, KC*
Evelyn Wise	*Finance and Administration Manager, Marine Division, MTD, KC*
Kim Kinnison	*Transportation Planner, Service Development, Mobility Division, MTD, KC*
Mike Anderson	*Director, KPFF Marine Transit Consulting Group*
Cassandra Durkin	*Project Manager, KPFF Marine Transit Consulting Group*

Project Overview

King County Marine Division (KCMD) is working on a King County Council budget proviso response studying implementation of passenger-only ferry service from the City of Kenmore. This includes refreshing the 2015 Service Expansion Options Report for Kenmore as well as stakeholder and community outreach, environmental analysis and financial evaluation.

The goal of this meeting was to discuss what has changed in Kenmore since 2015, the potential landing sites, other transportation improvements, and any opportunities or challenges to consider in this study.

Discussion Topics

What's changed in Kenmore since 2015?

- City invested in development around a city center near the municipal building.
  - Located along 68th Avenue
  - Final development project wrapping up now
  - Added 500 residential units
- Transit Oriented Development District created
  - Planned around the 73rd Street future Bus Rapid Transit (BRT) station
  - Current 475-stall park and ride is typically at capacity by 8:00 a.m. weekdays

    - First development project in the district submitted applications for development this year
- Investment in street improvements
    - Constructed new sidewalks resulting in pedestrian improvements
    - Grounded power lines through agreement with Puget Sound Energy
- Passed bond measure in 2016 for park improvements
    - Includes pedestrian/access improvements to Rhododendron Park and Squires Landing Park
- Current commute options
    - There are three park and rides with frequent bus service along SR 522
- 61st Street bus stop is very popular, people walk or drive and park nearby the stop

Potential Landing Sites

- Lakepointe
    - 45 acre parcel in single ownership (Owner: Gary Sergeant)
    - Owner is interested in selling but willing to lease in the interim
    - Current use includes gravel storage and distribution as well as vehicle storage
    - Permits for the earlier development proposal have expired
    - Numerous developers are interested in property, many include a water taxi as a vital transportation component
    - Most recent developer completed feasibility studies and identified a substantial financial gap in their return on investment
    - The site has poor soils which increases the cost of development
    - The site is also located on an old landfill
    - The City is conducting an analysis on site programming that incorporates open space and reduced development footprint
    - The US Army Corps budgeted $6 million for dredging the navigational channel along the north side of the Lakepointe property
    - The City prefers this location for a water taxi landing
    - The City meets with owner regularly and can arrange a meeting with KCMD and the owner
- Log Boom Park
    - More challenging to bring people to the site than Lakepointe
    - No parking and limited expansion options
    - The City is looking into improving connections to the park
    - Bryan will review shoreline program to determine permit path for ferry use at the site
- Other Kenmore Sites
    - St. Edward State Park could be potential for connecting Bastyr University as well as the new hotel development within the park planned for 2020
        - Bastyr currently operates shuttles between their Kenmore and Seattle campuses

    - Harbor Village Marina
        - Includes a public access pier
        - Public access is located through Log Boom Park
- Seattle Landing Sites
    - University of Washington
        - Quick connection (~6 min walk) to the UW light rail station
        - Connection between UW Bothell campus as well as Cascadia College could be a benefit (Nancy to reach out to UW Bothell and Cascadia College)
        - Requires new float and ADA improvements that could also be a benefit to UW as this is next to the historic shell building being planned for renovation.
        - KCMD planning to meet with UW in the stakeholder outreach process of this study
    - South Lake Union Park option
        - The slow down through the Montlake Cut and Lake Union would double the one-way trip time which would result in less frequent trips per day from Kenmore
        - Advantage of no seat change for Kenmore residents working in South Lake Union
        - Other operators are also seeking to land at South Lake Union Park and facing challenges in reaching agreements with the City of Seattle
    - Portage Bay
        - Would likely be private partnership
        - Requires improvements to accommodate a water taxi
        - Fewer easy connections to transit compared to UW Waterfront Activities Center location
    - Madison Park
        - Location would require new facilities for a water taxi
        - Transit connections are limited with BRT extending to 23rd Avenue
    - Leschi Park
        - City of Seattle Parks recently improved this float
        - Would still require improvements to accommodate a water taxi
        - Transit access is challenging to get passengers from the park into downtown Seattle

Future Mobility Improvements

- With ST3, BRT will be implemented along SR 522 by 2024
    - Includes Business Access Transit (BAT) lanes along SR 522
    - Kenmore already has BAT lanes but they are not continuous along SR 522
    - Route will terminate at future light rail station at the I-5 145th station
    - Construction of 300-car parking garage adjacent to 73rd Street station that will include a mixed use development
- Working on pedestrian and bicycle improvements along Juanita Drive

  - 68th Avenue bridge is being widened, anticipated completion in spring 2020
- Received state money to study SR 522 undercrossing
  - Looking at options for 67th Street
  - Goal of connecting the Lakepointe development area to the city center

Equity and Community Engagement

- King County Metro is planning for equitable and sustainable transportation
  - This potential service will be evaluated based on these guiding principles
- Community engagement
  - KCMD developed a draft survey that will be shared with the City of Kenmore for input
  - The City agreed to help promote the survey when it has launched
  - The City will also notify KCMD of community engagement opportunities that KCMD could attend to discuss potential service

Action Items / Next Steps

- City of Kenmore
  - Work with Lakepointe owner on a meeting with KCMD
  - Contact UW Bothell and Cascadia College for input in potential service
  - Let King County know if there are community engagement opportunities like workshops or events to attend
- KCMD
  - Share the draft online survey with the City
  - Follow-up with progress of stakeholder outreach

Site Visits

The team visited the Lakepointe and Log Boom Park sites.

Attachment D.2

Summary of December 4, 2019 Meeting with Gary Sergeant

MEETING SUMMARY

Date: December 4, 2019

Time: 1 p.m. to 2 p.m.

Location: City of Kenmore

Subject: Potential Passenger-only Ferry Service at Lakepointe

Attendees:

Gary Sergeant	*Owner, Lakepointe Property*
Nancy Ousley	*Assistant City Manager, City of Kenmore*
Bryan Hampson	*Development Services Director, City of Kenmore*
Paul Brodeur	*Director, Marine Division, Metro Transit Department, King County*
Kristen Kissinger	*Associate, KPFF Marine Transit Consulting Group*
Cassandra Durkin	*Project Manager, KPFF Marine Transit Consulting Group*

Project Overview

King County Marine Division (KCMD) is working on a King County Council budget proviso response studying implementation of passenger-only ferry (POF) service from the City of Kenmore. This includes refreshing the 2015 Service Expansion Options Report for Kenmore as well as stakeholder and community outreach, environmental analysis and financial evaluation.

The goal of this meeting was to discuss a potential POF landing site at Lakepointe and any opportunities or challenges to consider in this study.

Discussion

- Lakepointe property
  - Property is approximately 45 acres.
  - Most valuable portion of the property for a future development is along the bulkhead where the views of the lake are less encumbered by industrial uses.
  - Property is leased to a number of tenants including a waterfront repair, watersports storage and an active fish processing plant, as well as a 5-6 year lease of space for the stockpiling of materials for the CalPortand operation. The stockpile relocation is temporary to support the City's construction project and allow space for a laydown area for the 68th Ave NE bridge project.
    - Heavy truck traffic between the CalPortland sites could challenge landside pedestrian and vehicle accessibility to a POF terminal.

  - There is an existing drainage system on the peninsula, however other utility systems are limited.
  - Gary agreed he is willing to work together to move a POF landing forward.
- POF at Lakepointe
  - It was discussed that a future POF landing would be an interim improvement and could be integrated into any future development proposal. In-water improvement can be moved and upland improvements could be supported by minimal infrastructure.
  - POF could be an amenity for potential developers due to its suitability with mixed use development.
  - Developing a POF landing at this site would require KCMD to install a float (or floats) to moor the vessels along the existing bulkhead, and a gangway and ramp system to move pedestrians and bicycles from upland to the vessel.
  - Additional landing site upland amenities would include a passenger shelter, ticketing kiosks, parking and a small storage container for maintenance equipment adjacent to the bulkhead.
  - Fueling of vessels would be completed via truck.
  - Potential POF service is not contingent upon the future dredging of the channel.
- City of Kenmore efforts
  - Working with the US Army Corps on dredging the north channel that borders the property. This channel has not been dredged for more than 20 years.
  - Working with Sound Transit on relocating the westbound bus stop to Northwest 68th Ave NE to have curb space for two coaches.
  - Interested in reviewing underpass options to cross SR 522 (preference is around 67th Ave NE).
- Other sites explored in Kenmore
  - Ridership would support one POF landing in Kenmore.
  - KCMD is also looking at Log Boom Park for potential POF service.
  - Challenges at Log Boom Park include passenger accessibility and shallow water depths.
  - Lakepointe is KCMD and the City of Kenmore's preferred location for a ferry terminal.

Action Items / Next Steps

- City of Kenmore
  - Bryan to send Gary's contact information to Paul
- KCMD
  - Share the online survey with the City
  - Follow-up with progress of stakeholder outreach
- KPFF
  - Program potential parking area with spaces and turnarounds at Lakepointe
  - Research utility information.

Attachment D.3

Summary of December 2, 2019 Meeting with the University of Washington

MEETING SUMMARY

Date: December 2, 2019

Time: 11 a.m. - 12 p.m.

Location: University of Washington

Subject: Introduction of Proviso Study

Attendees:

Sally Clarke	*Director, Regional and Community Relations, University of Washington*
Aaron Hoard	*Deputy Director, Regional and Community Relations, UW*
Mike Callahan	*Men's Rowing Coach, University of Washington*
Katie Chalmers	*Service Planning Supervisor, Metro Transit Department, King County*
Chris Arkills	*Transportation Policy Advisor, Metro Transit Department, King County*
Paul Brodeur	*Director, Marine Division, Metro Transit Department, King County*
Ron Panzero	*Marine Operations and Maintenance Manager, Marine Division, MTD, KC*
Kim Kinnison	*Transportation Planner, Service Development, Mobility Division, MTD, KC*
Mike Anderson	*Director, KPFF Marine Transit Consulting Group*

Project Overview

King County Marine Division (KCMD) is working on a King County Council budget proviso response studying implementation of passenger-only ferry (POF) service from Kenmore to downtown Seattle. This includes refreshing the 2015 Service Expansion Options Report for Kenmore, as well as, stakeholder and community outreach, environmental analysis and financial evaluation.

The goal of this meeting was to discuss what has changed at the University of Washington Waterfront since 2015, potential landing sites at this property and any opportunities or challenges to consider in this study.

Discussion Topics

What's changed for the University since 2015?

- General use of Lake Washington has increased.
  - Nine rowing clubs, single rowers, kayakers, SUPs, and sailboats
  - Float plane operations

Considerations for Implementation

- Typical crew practice
  - Fall: between 7 am and 9 am
  - Winter: between 7 am and 9 am; some between 3 pm and 6 pm

  - Spring: from 3 pm to 6 pm
  - Schedules are typically flexible and adapted so team members can meet their school and class requirements
  - Calm, uncongested water can be found on most days
  - Practice sessions are typically 4 hours
  - Traversing Mercer Island is a 2.5 hour journey
- Potential ferry schedules
  - Ferry service is extremely regular & predictable with high on-time performance
  - Customers expect on time departures and arrivals
  - Flexing schedules on a seasonal basis is doable as service transitions from peak to non-peak service
  - Flexing schedules is not feasible on a daily or weekly basis
  - Any conflicts that could arise are best dealt with in real time
  - The predictability and regularity of service should be able to help limit conflicts
- Vessels
  - One vessel of 150 passengers for the 10-year plan
  - Current estimates do not show demand increasing enough to warrant additional vessels even beyond the 10-year plan
  - If additional demand was generated, there are options for vessels:
    - Add a second smaller vessel to the route
    - Substitute the existing 150-passenger vessel with a higher capacity vessel
    - There are distinct advantages and disadvantages to both options
  - Vessels can be designed to minimize wake
    - Both Kitsap Fast Ferries and Washington DC / Potomac River Ferries operate ultra-low wake vessels
- Permitting and regulatory processes
  - SEPA would be a required environmental process
  - NEPA would be required if federal funds were used for the project
  - Tribal coordination would be required once the route is determined
- Future ferry expansions
  - UW expressed concern that other jurisdictions may want service in the future
  - Bellevue, Kirkland, and Renton/SECO are all potential markets
  - This study focuses on a Kenmore route
  - Options for a two-boat float are available
- Alternative landing sites
  - Other landing sites on the west side of the lake reviewed as part of this study include Madison Park, Leschi and the Portage Bay area
- Market for service
  - Discussion of who would use the service

- First/last mile connections to UW
  - Considered any time a new route is being planned
  - Community Connections, shuttles, and other custom programs are all options that could be used and have previously been used throughout the Metro system
  - Connections to the UW Link station could be used by POF riders
- Ferry landing at UW
  - Two float concepts were developed
  - One option has a raised gangway
  - UW was interested to understand how ferries would maneuver around the landing
- UPass & Student Fares
  - Ferry rides cost more than bus rides
  - Keeping UPass costs down is a concern for the UW
  - ORCA passport rates for any POF service would need to be negotiated
  - KCMD will provide the UW with cost per rider information
- Partnerships
  - KCMD would improve dock infrastructure as well as upland and shoreside connections.
  - Other partnership opportunities should be discussed further.

Outreach Activities

- Online Survey
  - KCMD is launching an online survey on December 9th to get public input on potential service
  - The survey identifies two possible terminal locations in Kenmore and four potential landing options on the west side of the lake
  - KCMD will share the survey link with the UW later this week, before the survey launch

Action Items / Next Steps

- KCMD
  - Send cost per rider information to the UW
  - Send a copy of the survey to the UW
  - Schedule a follow-up meeting with the UW
- UW
  - Schedule internal meeting to discuss options

Attachment D.4

Summary of January 8, 2020 Meeting with USCG, Sector Puget Sound

MEETING SUMMARY

Date: January 8, 2020

Time: 1 p.m. - 2 p.m.

Location: US Coast Guard, Sector Puget Sound, Pier 15

Subject: Potential Passenger-only Ferry Service in Puget Sound and Lake Washington

Attendees:

John Dwyer	*Chief of Domestic Vessels*
Lee Bacon	*Chief, Domestic Vessel Branch*
LCDR Ryan Mowbray	*Marine Inspector*
LT Alex Kwolek	*Facilities and Containers Branch*
Jeff Zappen	*Waterways Management Specialist/Tribal Liaison*
Paul Brodeur	*Director, Marine Division, Metro Transit Department, King County*
Ron Panzero	*Marine Operations and Maintenance Manager, Marine Division, MTD, KC*
Scott Davis	*Project Manager, KPFF Marine Transit Consulting Group*

Project Overview

King County Marine Division (KCMD) is working on a King County Council budget proviso response studying implementation of passenger-only ferry services both in Puget Sound and Lake Washington. This includes refreshing the 2015 Service Expansion Options Report for Kenmore as well as stakeholder and community outreach, environmental analysis and financial evaluation.

The waters of Puget Sound and Lake Washington are federally navigable waters of the US and as such, the United States Coast Guard has regulatory authority over all vessel operations in those waters as well as a whole host of other responsibilities. The goal of this meeting was to inform our regulators of this study, to have a robust dialogue about any concerns, issues, areas of focus, and to learn from them of other potential stakeholders.

Discussion Topics

Route overview for Puget Sound route; Ballard

Route overview for Lake Washington route; Kenmore

- Ballard Discussion
  - Potential landing sites
  - Stakeholder engagements conducted or planned
  - Designation of facility as per Facility Security Plan
- Kenmore Discussion

  - Potential landing sites
  - Stakeholder engagements conducted or planned
  - Designation of facility as per Facility Security Plan

Potential Landing Sites – Ballard Route

- Shilshole Bay Marina
  - A preferred location can be provided after Port's internal discussion with marina's ops staff
  - The most southerly dock would provide the easiest access in/out of the marina for ferry operation
  - Float and ramp would be needed on the outside of the dock
- Fishing Pier at Centennial Park
  - Potential capital project funded by the Port, State, and private business in negotiation. The State owns the pier and the Port owns the uplands parkland
  - Moorage at the reconstructed facility is a possibility with the addition of a float and gangway
  - Site is located adjacent to new Expedia campus, providing opportunities for commuters with opportunities for connecting to downtown Seattle and Kitsap County
  - Should check with Army Corp. to see if that area has been swept for unexploded ordinances
- Pier 50 Downtown Seattle
  - New King County owner facility
  - King County Marine Division controls vessels docking schedules
  - Currently serving four routes
  - Kitsap Fast Ferries will be adding a second Bremerton vessel in spring 2020 and a new Southworth run beginning in late 2020
  - Pier 50 will be maxing out on waterside vessel landing capacity

Potential Landing Sites – Kenmore Route

- Kenmore – Log Boom Park
  - City owned park with existing in water piers suitable for ferry operations
  - Improvements needed – Float, fendering, ramp, passenger amenities
  - Shallow water, piling stub obstructions
- Lakepointe
  - Privately held
  - Side of 520 pontoon construction
  - Bulkhead improvements completed at that time
  - Upland improvement opportunities
  - Dredging the channel is being planned
  - Kenmore Air landing / takeoff patters, stakeholder
  - Private plane use of the Kenmore Air – stakeholder

- Madison Park
  - Dock in under DNR control, discussion underway
  - Location would require new facilities for a water taxi
  - Transit connections are limited with BRT extending to 23rd Avenue
- Leschi Park
  - City Park. Capital improvements are underway with no accommodation for ferry landing
  - Would still require improvements to accommodate a water taxi
  - Transit access is challenging to get passengers from the park into downtown Seattle
  -
- University of Washington
  - Quick connection (~6 min walk) to the UW light rail station
  - Requires new float and ADA improvements that could also be a benefit to UW as this is next to the historic shell building being planned for renovation.
  - KCMD met with UW in the stakeholder outreach process of this study

Regional Passenger Only Ferry discussions

- Puget Sound Regional Council – Regional Passenger Only Ferry Study
- POF service from Tacoma
- SECO Developments plans for Renton to South Lake Union route
- Pier 48 as a future home for a Central Puget Sound POF hub
- Pier 46 cruise ship terminal project with POF on north face possibility

Action Items / Next Steps

None identified at this point. Keep USCG updated as this project progresses.

APPENDIX E:
PUBLIC OUTREACH SUMMARY

PUBLIC OUTREACH APPROACH

King Country Metro (Metro) conducted an online survey to gather input on the feasibility of passenger-only ferry (POF) service from Kenmore to Seattle. The survey launched on December 6 and closed on December 23, 2019. During this approximately two-week surveying effort, rider bulletins were sent to three Metro routes that serve the trip between Kenmore and Seattle, emails were sent to local community-based organizations and partners, and the survey was shared via partner social media channels and through paid social media ads and boosted posts. These efforts also resulted in additional media coverage of the survey, which helped to amplify awareness and increase participation. The following sections include a summary of outreach goals, how the survey was developed, and the approach to survey promotion.

PUBLIC OUTREACH GOALS

The POF survey was conducted to achieve the following goals:

- To determine whether general public and key stakeholders would find the service valuable, how they would get there, and what landing site locations would be best.
- General public understands the next steps from their feedback and how this would inform future water taxi expansion efforts.

The key tool used to achieve these goals was a public survey conducted online via PublicInput.com. All promotions of the survey, however, were branded King County (kingcounty.gov/metro/watertaxi/survey) and redirected to the PublicInput.com proprietary tool. An online survey was decided upon as the best method to reach the largest number of people, primarily because the survey could be taken on one's own time and at their own pace.

SURVEY DEVELOPMENT

The survey underwent an extensive process to help refine which questions were asked of the Kenmore community (see Attachment E.1 for the survey). The Metro project team approached development of questions using two key lenses; meaningful feedback and equity. The lenses are reflected through self-checks using the following questions and adjusting to achieve an affirmative answer to, at minimum, one of the questions.

- Does this question allow the community to provide feedback that will affect our decision-making process?
- Does this question help Metro center equity in our decision-making process?

The survey development process was guided by clearly stated goals and required the survey team to collaboratively discern which questions needed to be asked and why. The resulting survey then became an effective tool to gauge feasibility of a POF as a commute option, allowed for the ability to take a deeper look at priority populations to evaluate any potential differences in needs, and better helped the project team clarify determining factors that need to be achieved to make POF service viable.

PROMOTIONAL APPROACH

The survey was promoted through multiple channels. The project team did focus on commuters who currently travel between Kenmore and Seattle via Metro Transit or Sound Transit buses and stakeholder groups within Kenmore that could reach populations within the vicinity of the proposed Kenmore docking site. In total, 9,135 rider bulletins were sent to subscribers of Metro routes 372X and 312X and Sound Transit route 522. A detailed chart of the bus routes that received Water Taxi survey alerts is provided in Table 1.

Table 1: Bus Routes Receiving Water Taxi Survey Alerts

Route Number	Number of Subscribers
372X	2,958
312X	2,829
522	3,378

The project team also contacted 19 community-based organizations, mobility boards, and partners to help promote the survey. Each organization was sent an email asking to share the survey link to their lists and on social media. The email to stakeholders is provided below:

Dear Stakeholder,

The King County Council has asked King County Metro Marine Division to prepare a plan for potential future water taxi service to the Ballard and Kenmore communities and we need your help! As part of the plan, we're looking at collecting feedback on how people currently travel so we can better understand whether a passenger-only ferry could be a commute option. **Would you be able to share our survey?**

Water Taxi Expansion Survey

kingcounty.gov/metro/watertaxi/survey

Metro currently provides passenger-only water taxi service from downtown Seattle to West Seattle and Vashon Island. The survey is exploring whether to expand to one, or both, of these potential route options:

- Ballard to downtown Seattle and/or the Expedia campus (Interbay)
- Kenmore to Seattle (University of Washington, Madison Park, Leschi Park, or the Portage Bay area)

Water taxis are a comfortable way to travel, usually providing a seat for all passengers and allowing them the ability to use travel time to work or relax and enjoy the views. These passenger-only boats are also ADA accessible and have options to store your bike during your trip. Because ferries are not impacted by roadway traffic, they offer a consistent and reliable travel time.

We look forward to hearing from you and your partners on whether water taxi service could be a future commute option for you. The survey will be open through Monday, December 23, 2019.

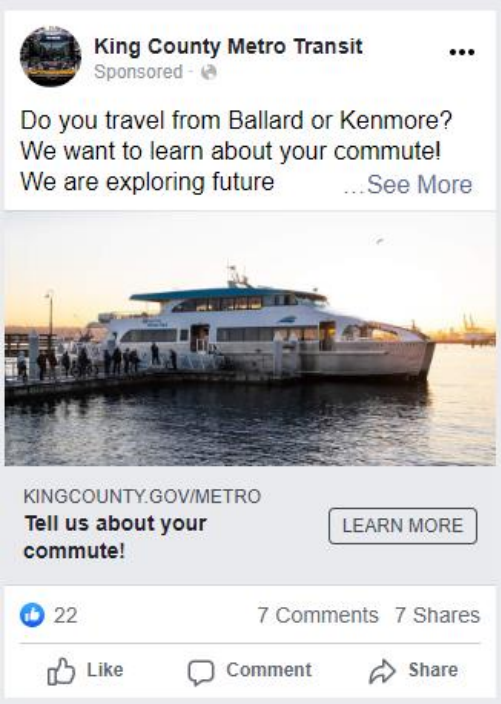
Metro engaged with the following community-based organizations and mobility boards:

- Kenmore Community Club
- Kenmore Senior Center
- St. Vincent de Paul Society
- Kenmore Air
- Lake Forest Park Civic Club
- Kenmore-Bothell Chamber of Commerce
- Kenmore Waterfront Activities Center
- University of Washington – Bothell
- City of Bothell
- Transportation Choices Coalition
- Commute Seattle
- King County Mobility Coalition
- Eastside Easy Riders
- North King County Mobility Coalition

And, with the following partners:

- City of Kenmore
- Lakepointe Developer
- University of Washington – Seattle
- Seattle Parks and Recreation
- Washington State Department of Natural Resources

In addition, Metro ran Facebook ads targeting users who lived within the Kenmore ZIP code of 98028 and Seattle ZIP codes 98105, 98121, 98101, and 98104. Metro also posted organically on Facebook and Twitter, alerting all followers to take the survey if they commute from Kenmore. A sample Facebook ad can be found to the right:



The paid Facebook ads resulted in 25,079 impressions and 159 clicks. The Metro Twitter post resulted in 18,065 impressions and 167 clicks. The Metro Twitter post was also shared by County Executive Dow Constantine

This promotional push was then amplified by local news outlets:

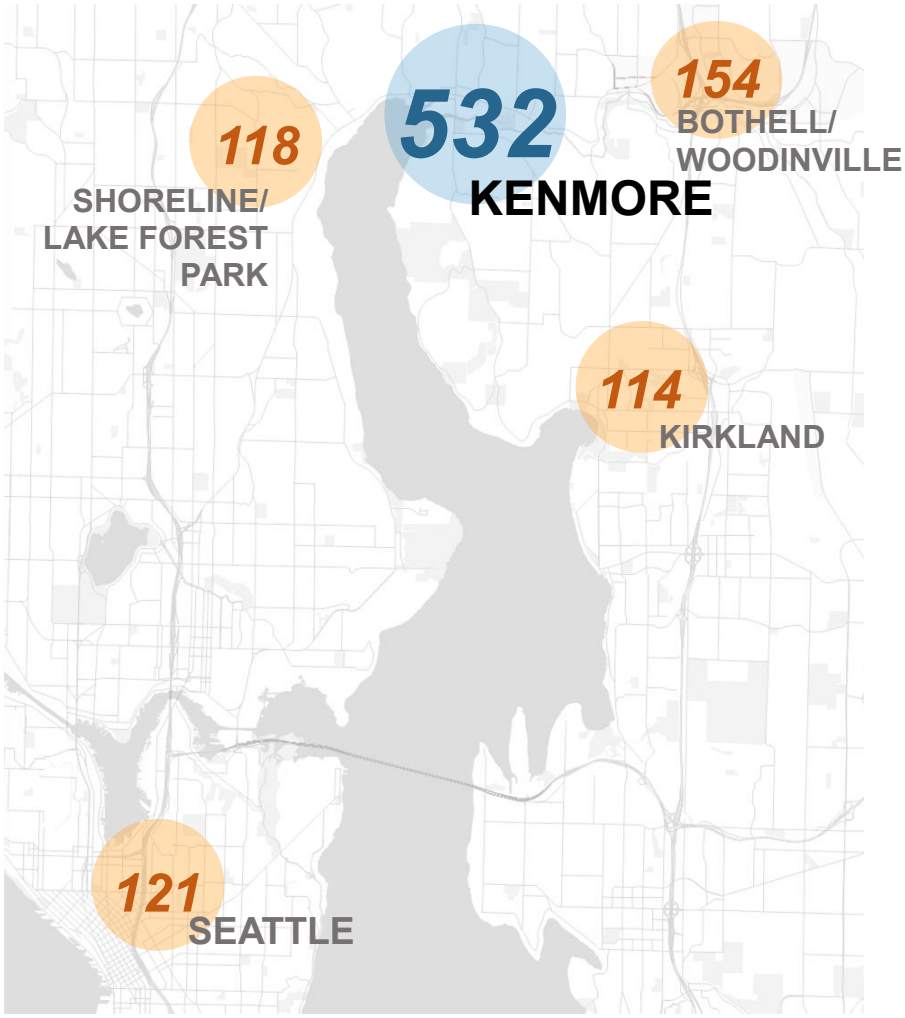
- King 5
- Shoreline Area News
- Nextdoor

In all, the promotional approach led to over 12,000 page views, 2,069 completed surveys, and 837 open-ended comments.

SURVEY RESULTS & FINDINGS

Survey results provide feedback on the current travel patterns of potential POF users along with their preferences for POF service from Kenmore if it were to be implemented. The majority of individuals that responded to the survey indicated a home zip code in Kenmore or surrounding locations including Bothell/Woodinville, Kirkland, and Mill Creek. Consequently, it is possible that the predominant direction of potential POF travel would be from Kenmore, with trips within Kenmore being taken mostly by Kenmore residents. Figure 1 below provides a map of the key clusters of the home zip codes identified by survey respondents.

Figure 1: Common Home Zip Codes of Survey Respondents



The following sections of this summary document provide the results and findings from the survey.

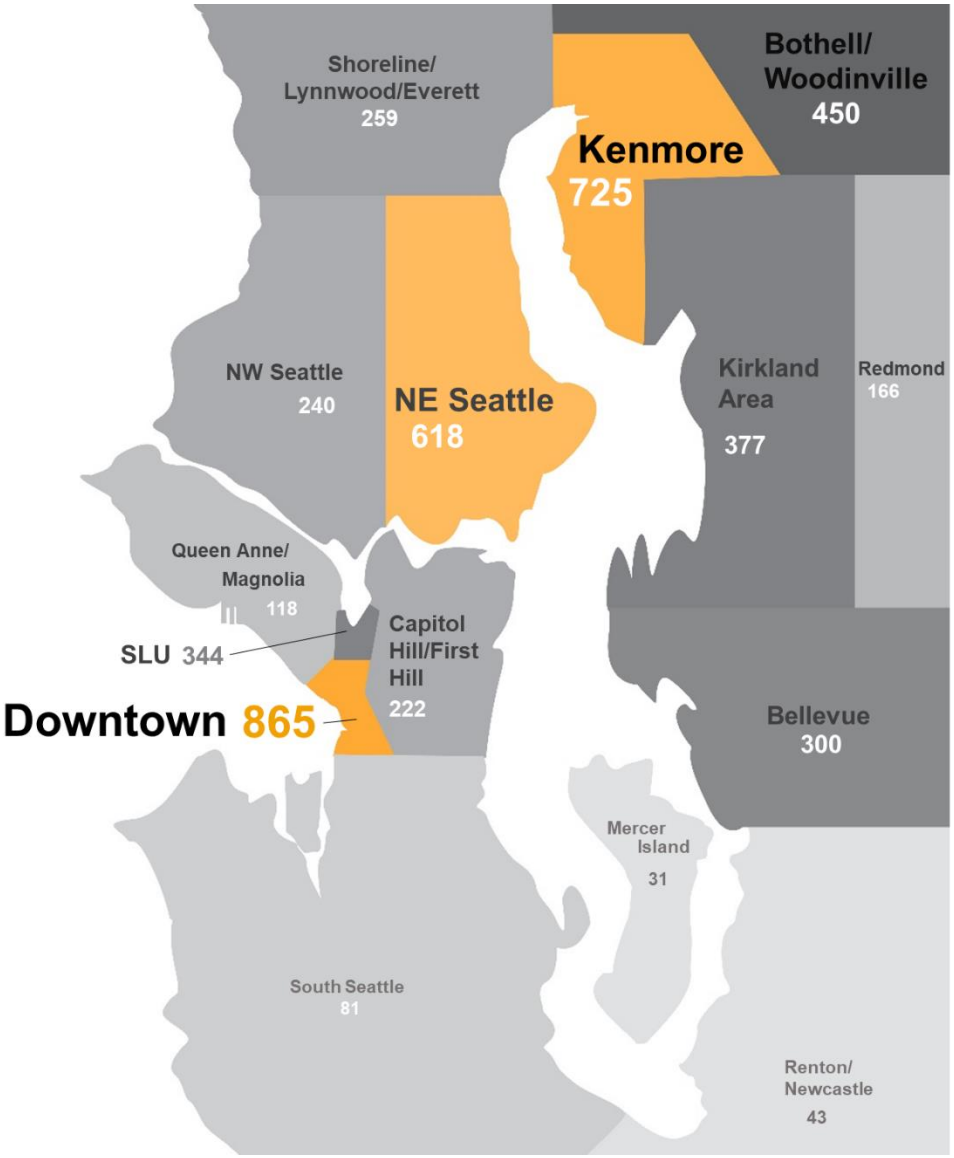
CURRENT TRAVEL PATTERNS

To understand if respondents consider POF service to be another viable transportation option when traveling to and from Kenmore, this survey asked people where they are going, why they are traveling, when they travel and how they typically travel. The following sections summarize these findings.

Where are most people travelling to and from?

Almost half of survey respondents travel to downtown Seattle most days of the week. Other prominent destinations on the west side of Lake Washington include Northeast Seattle and South Lake Union. Of the east side destinations, 40% of respondents were travelling to or from Kenmore most days of the week. Bothell/Woodinville and Kirkland were also popular destinations. Figure 2 illustrates where survey respondents are traveling.

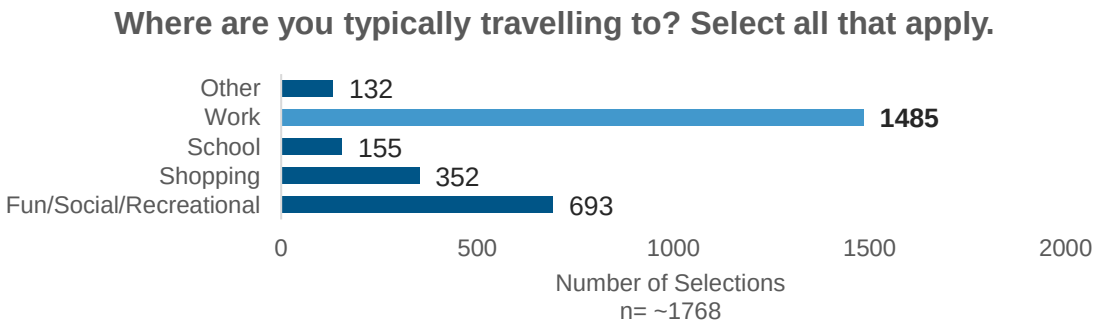
Figure 2: Travel Destinations with Number of Selections



Why are people travelling?

The vast majority (84%) of survey responses indicate people are traveling for work. Other travel includes fun/social/recreational, shopping, school, and or other options. Chart 1 provides the survey results of why people typically travel.

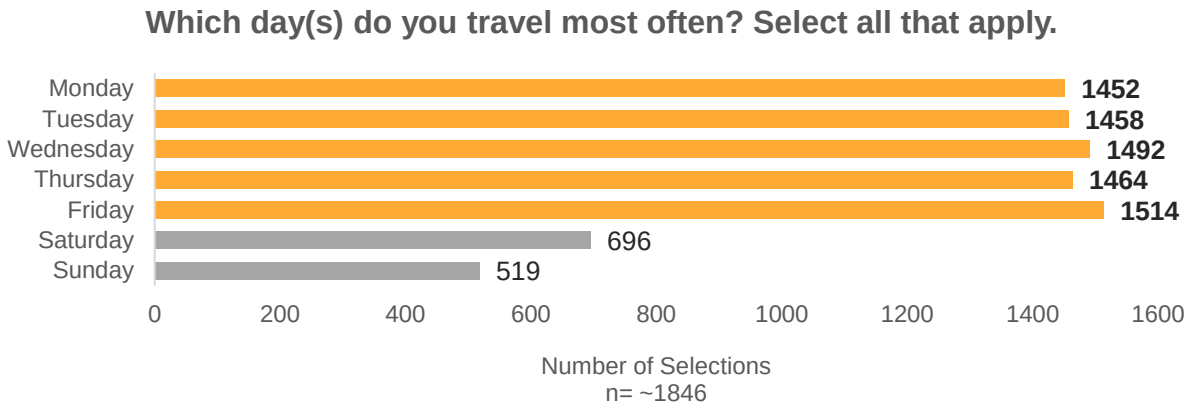
Chart 1: Reasons for Travel



When are people travelling?

The majority of respondents (80%) travel on weekdays, with weekend travel being far less common than weekday travel. Chart 2 illustrates when people suggested they typically travel.

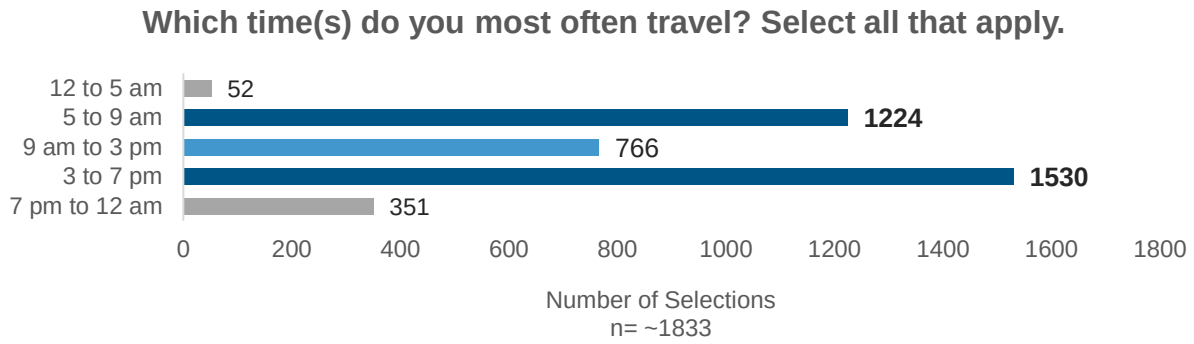
Chart 2: Common Travel Days



What times are people travelling?

Based on survey responses, the morning and evening peak commute periods represented the highest travel periods throughout the day. The survey results indicate that travel is more frequent in the afternoon peak of 3:00 pm and 7:00 pm than during the morning peak period. While people typically travel during the commute periods, survey respondents also indicated they travel in the midday period between 9:00 am and 3:00 pm. Chart 3 provides the times of day survey respondents selected.

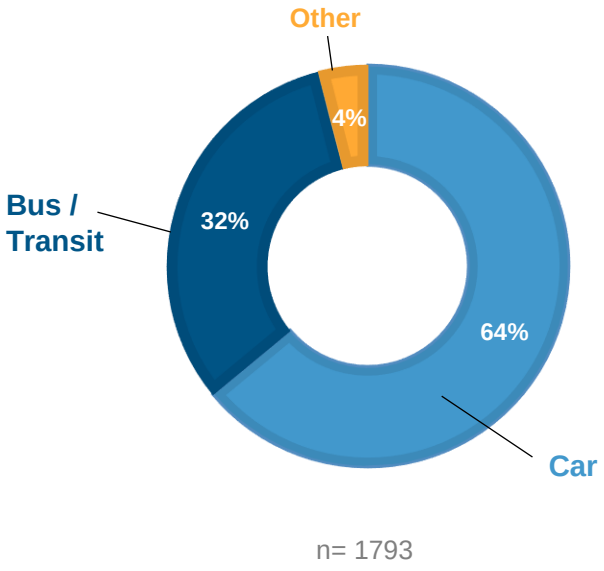
Chart 3: Times of Day for Travel



What mode of transportation do people currently use to travel?

The majority of survey respondents (64%) currently drive their personal vehicle to complete their trips to their destination while about 32% of survey respondents take bus/transit. Chart 4 provides the distribution of the mode of transportation they currently use.

Chart 4: Current Travel Modes



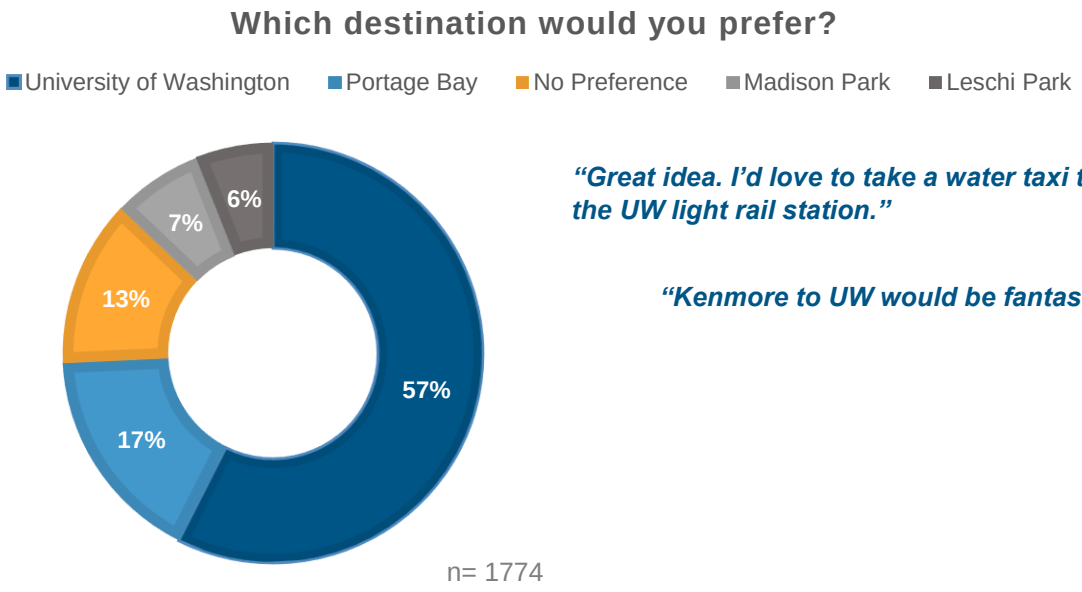
POF Use / Preferences

To understand people's interest in POF service, the survey asked what landing sites people would prefer, how people would prefer to get to a POF landing, how often they would use POF service, why they would use POF service and what amenities are important to them.

Which landing site do respondents prefer?

Of the available landing site options, the University of Washington (UW) site was the preferred site (57%) for a POF landing. Respondents left numerous comments stating their destination preferences and frequently mentioned the connection to the UW Link light rail station as the top reason for choosing the UW as their preferred landing site. Chart 5 provides the preferred locations of a POF landing.

Chart 5: Preferred POF Landing Site



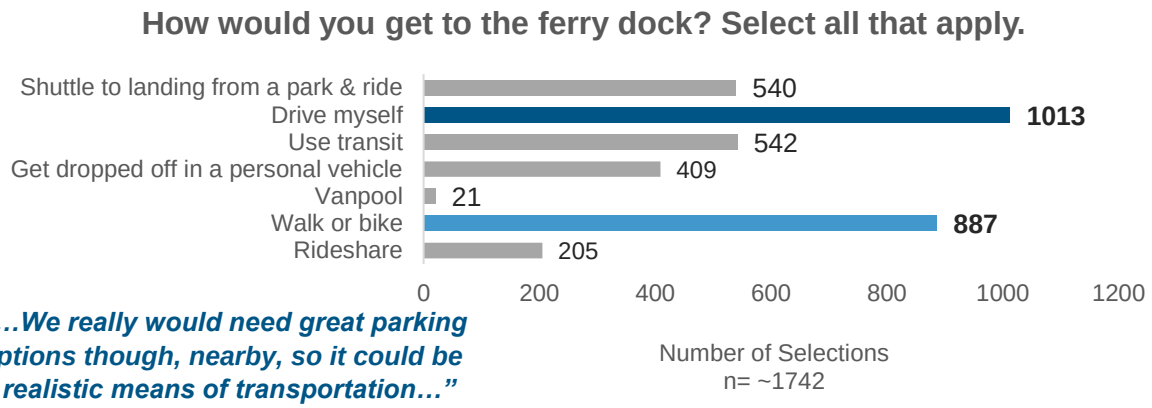
"Great idea. I'd love to take a water taxi to the UW light rail station."

"Kenmore to UW would be fantastic!"

How would respondents prefer to get to that landing site?

Most survey respondents (58%) indicated they would drive to the landing site. Many respondents (51%) also indicated a willingness to walk or bike to the ferry terminal. Chart 6 provides results for how people would get to the ferry dock.

Chart 6: Travel to the Ferry Dock

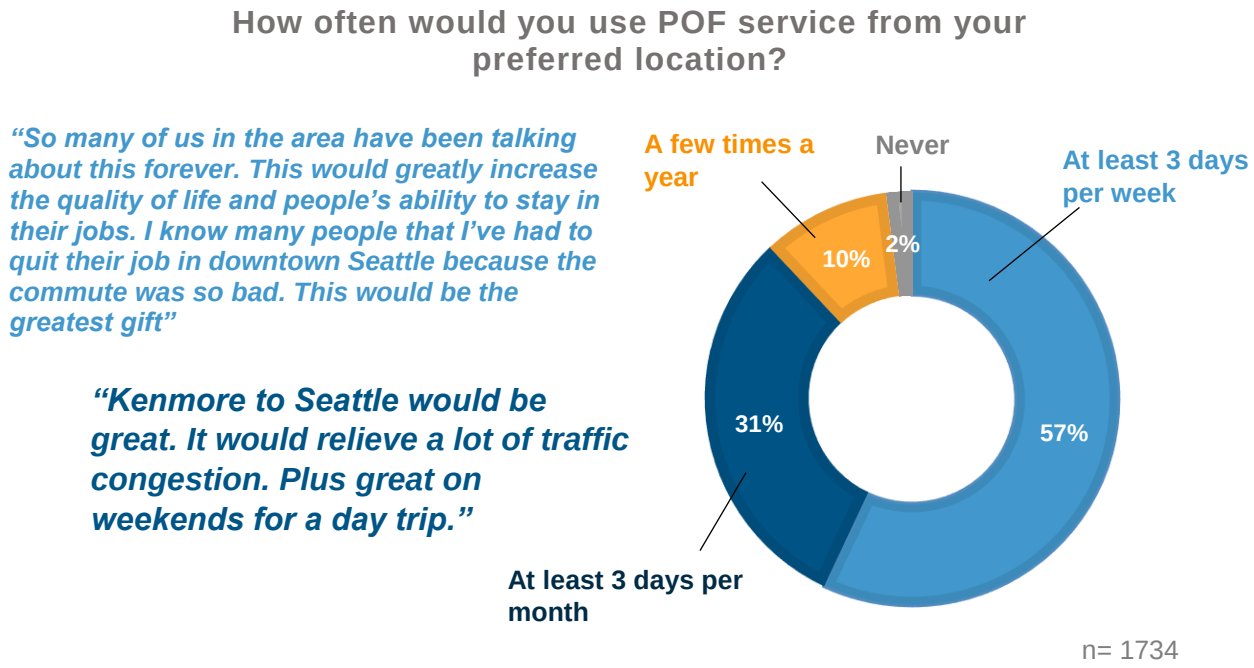


"…We really would need great parking options though, nearby, so it could be a realistic means of transportation…"

How often would respondents take POF? Do they support the service?

Survey respondents generally support POF service; 57% of survey respondents would use the POF service at least three times per week. Moreover, almost 90% of respondents would use the service at least three days per month from the landing site they selected. The majority of the comments were in support of the proposed Kenmore-Seattle POF route and/or expansion of POF vessels from Kenmore in general. Some comments mentioned the alleviation of traffic and improved commute experience as key positives for them. Chart 7 illustrates how often survey respondents would use POF service at their preferred location.

Chart 7: Frequency of POF Use



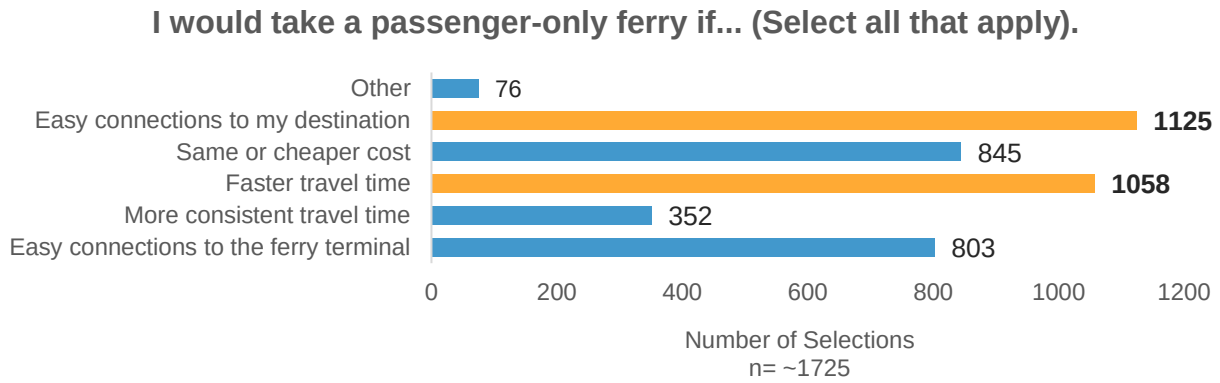
"So many of us in the area have been talking about this forever. This would greatly increase the quality of life and people's ability to stay in their jobs. I know many people that I've had to quit their job in downtown Seattle because the commute was so bad. This would be the greatest gift"

"Kenmore to Seattle would be great. It would relieve a lot of traffic congestion. Plus great on weekends for a day trip."

What features influence people's decision in taking a POF?

In order to change their travel mode to a POF, the majority of survey respondents (65%) said that they would need easy connections to their final destination and/or that their travel time with POF would need to be the same or faster than their current travel mode. Chart 8 indicates why people would take POF service.

Chart 8: Reasons for Taking POF

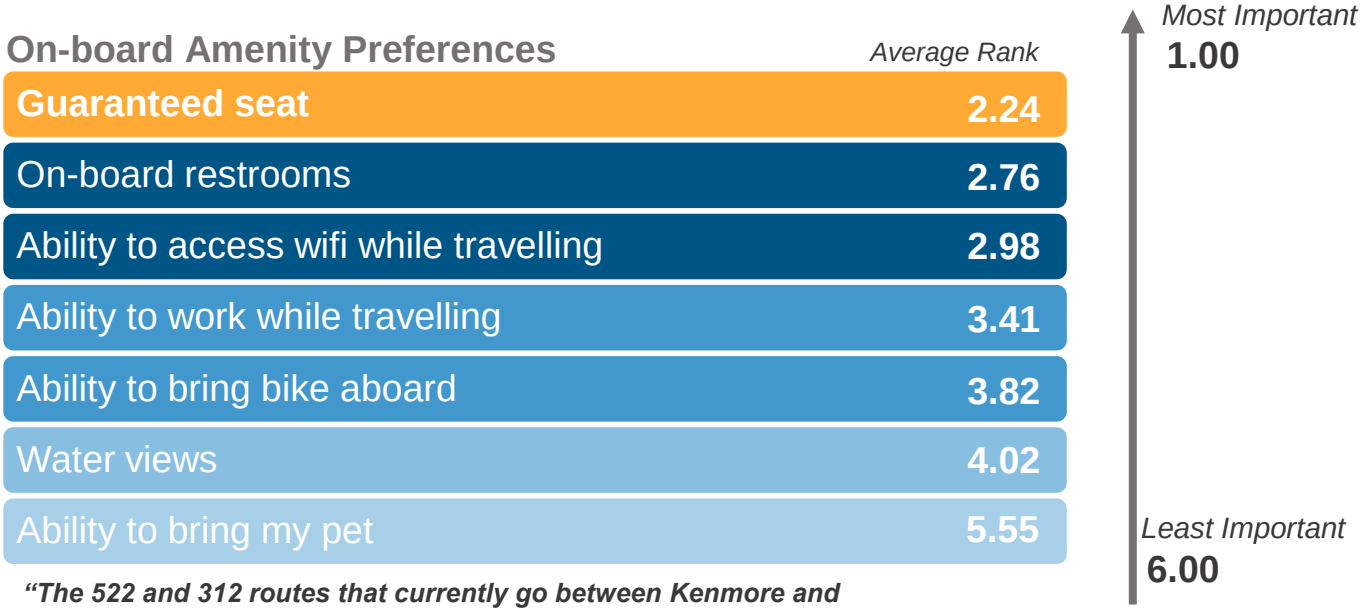


"Connections to light rail at the landings/terminal on the Seattle side would be crucial to this service's success."

What on-board amenities do respondents care about?

Survey respondents were asked to rank on-board amenities in order from one to six, with one being the highest priority. On average, a guaranteed seat was ranked as the most important amenity, which averaged between the second- and third-most important amenities for survey respondents. Following a guaranteed seat, on-board restrooms and the ability to access Wi-Fi while traveling were also highly ranked by survey respondents. Chart 9 illustrates which on-board amenities survey respondents prioritize.

Chart 9: On-Board Amenity Preferences



"The 522 and 312 routes that currently go between Kenmore and downtown are extremely crowded and uncomfortable. Every single day, the buses are standing capacity only..."

WHAT ELSE DID WE HEAR FROM SURVEY RESPONDENTS?

Survey respondents were also given the opportunity to provide additional comments or suggestions that were not addressed in the survey. Common themes arose in the comment responses around support for POF, concern about public funding and environmental impact as well as other desired landings.

General Support of POF & Kenmore Service

"LOVE the idea of Kenmore-UW route, would be a game changer since 522 is so rough every morning."

"I think it is a fantastic idea to have service to the UW to connect with light rail. I would definitely consider ditching my vehicle if this option was a reality. Excited at the possibility."

"Please do this- traffic is a killer."

"I've been waiting for this Kenmore-Seattle ferry for 15 years and I think it's such a brilliant and desperately needed missing choice for increasing and diversifying our transit options. Please do it asap!"

Public Funding

"…Our money would be better spent on additional bus routes or light rail. Passenger only ferry will not be able to carry enough passengers to make a difference in the existing traffic volume along SR 522 between Kenmore and Seattle to be worth the investment. "

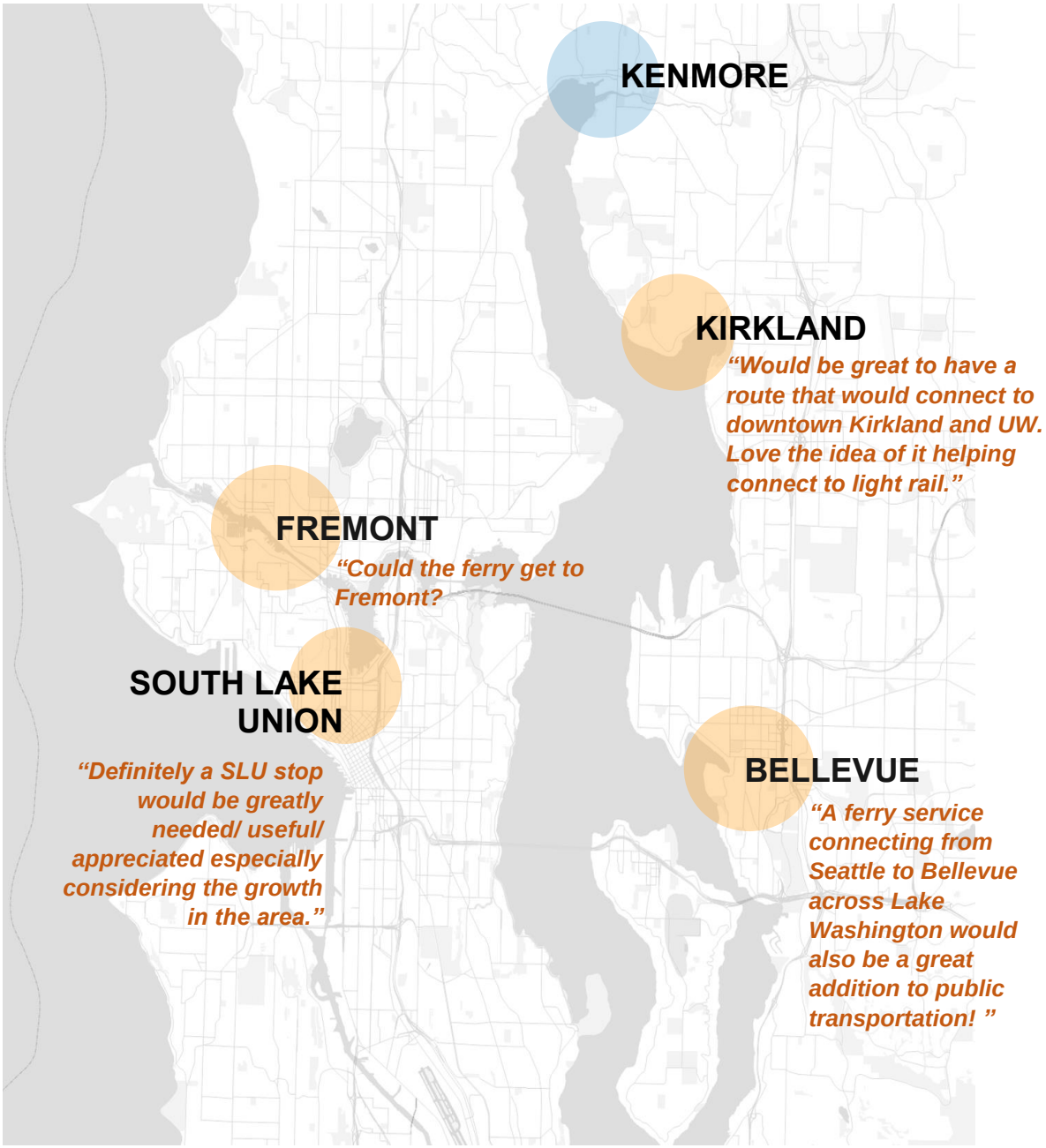
Environmental Impact

"…Minimal environmental impact is a big concern for me. "

Other Suggested Landing Sites and POF Services

Numerous additional landing locations and POF routes were suggested, with a Kenmore to South Lake Union route being a popular route idea. POF routes between Kenmore and other eastside destinations, particularly Kirkland, were also suggested. Some commenters also suggested a Kirkland to Seattle route instead of one originating from Kenmore, though this is out of the scope of this proviso. The summary report addresses potential POF service from the suggested locations. Figure 3 shows some of the many other POF landing sites suggested by survey respondents.

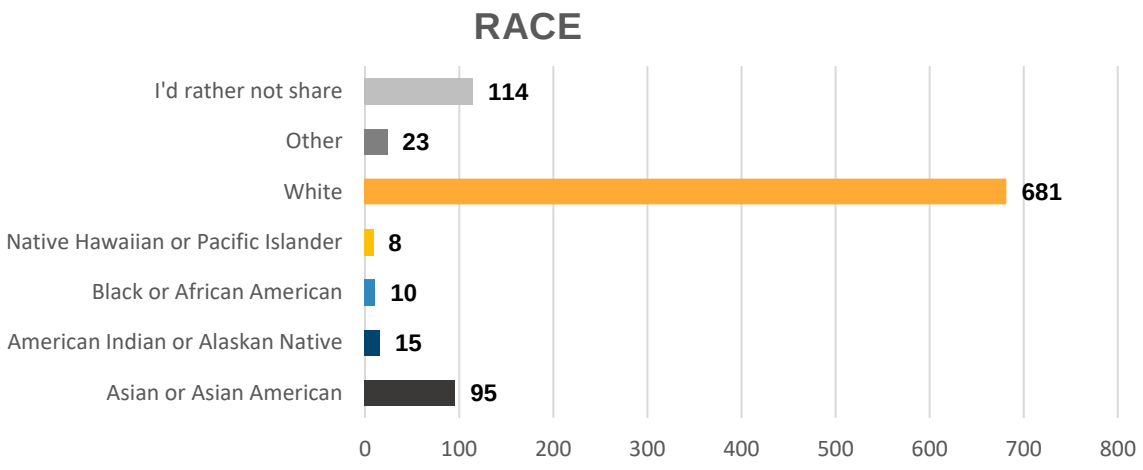
Figure 3: Some Other Suggested POF Landing Sites

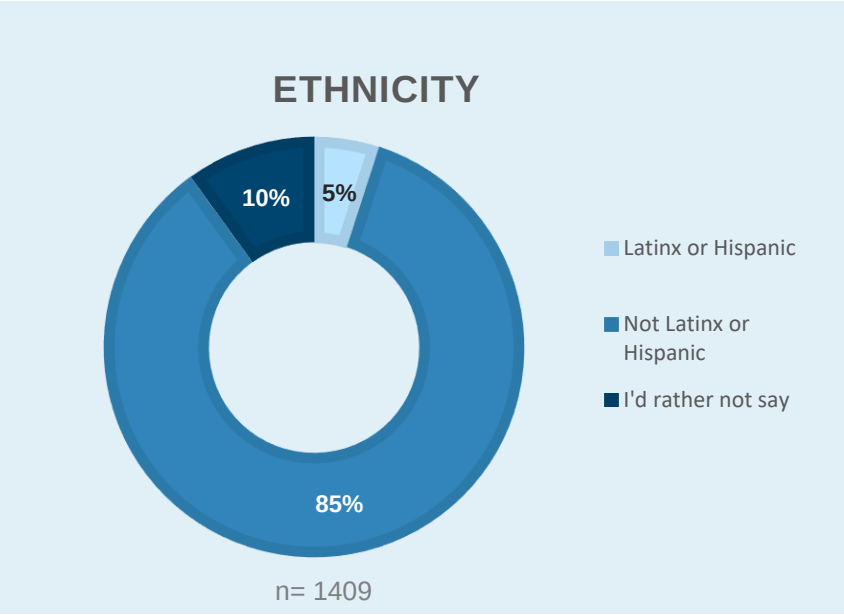


WHO RESPONDED?

Seventy-six percent of survey respondents identified as white, and 85% of respondents identified as not Latinx. Chart 10 illustrates the races and ethnicities that survey respondents selected.

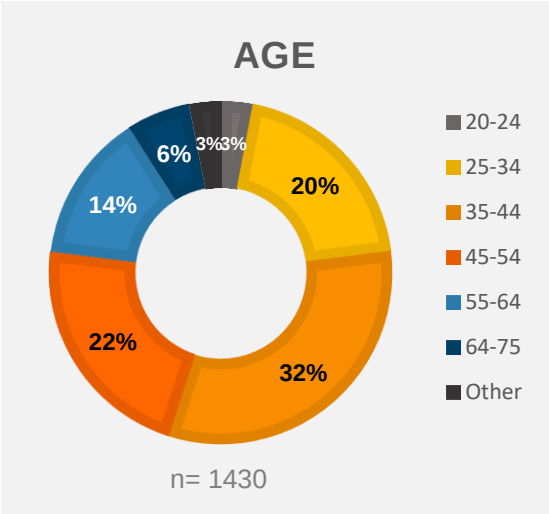
Chart 10: Demographics

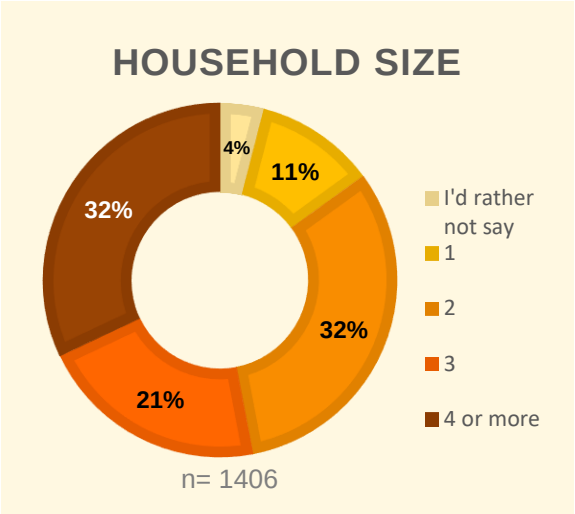




The majority (54%) of survey respondents were between the ages of 35 and 54. Most respondents (53%) lived in households with three or more people, and the average household income for respondents was higher than average Metro surveys with 19% of respondents indicating a household income of $100,000 to $149,000 and an additional 16% in the $150,000 to $199,999 range. Chart 11 provides the age distribution and household size of survey respondents.

Chart 11: Age and Household Size





Attachment E.1

Survey Questionnaire

Water Taxi Expansion Survey

King County Metro currently operates the King County Water Taxi which provides passenger-only ferry service from downtown Seattle to West Seattle and Vashon Island. Passenger-only ferries are a comfortable way to travel, usually providing a seat for all passengers and allowing them the ability to use travel time to work or relax and enjoy the views. Because ferries are not impacted by roadway traffic, they offer a consistent and reliable travel time.

The King County Council, through a budget proviso, has asked Metro to prepare and transmit a report that outlines a plan for potential future service to the Ballard and Kenmore communities. As part of that report, Metro is looking for feedback on how you currently travel to better understand whether a passenger-only ferry could be an option.

Potential routes being considered:

- Ballard to downtown Seattle and/or the Expedia campus (Interbay)
- Kenmore to Seattle (University of Washington, Madison Park, Leschi Park, or the Portage Bay area)

We are also interested to know if you have any comments or suggestions about potential passenger-only ferry service.

What is your ZIP code?

_____

Which route would you like to provide input on?

- ○ Ballard
- ○ Kenmore

Which day(s) do you travel most often? Select all that apply.

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

What time(s) do you most often travel? Select all that apply.

- ☐ 5 - 9 a.m.
- ☐ 9 a.m. - 3 p.m.
- ☐ 3 - 7 p.m.
- ☐ 7 p.m. - 12 a.m.
- ☐ 12 - 5 a.m.

Where do you travel to most often (3-5 days per week)?

- ☐ Shoreline/Lynnwood
- ☐ Bitter Lake/Broadview
- ☐ Northgate/Lake City
- ☐ Ballard
- ☐ Fremont/Wallingford/Greenlake
- ☐ U District
- ☐ NE Seattle
- ☐ Magnolia
- ☐ Interbay
- ☐ Queen Anne
- ☐ South Lake Union (SLU)
- ☐ Capitol Hill
- ☐ Montlake/Madison Park
- ☐ Downtown
- ☐ First Hill
- ☐ Central District
- ☐ SODO
- ☐ Beacon Hill
- ☐ Mount Baker/Columbia City/Rainier Valley
- ☐ West Seattle/Harbor Island
- ☐ Georgetown

I get to that destination by (if you use more than one, select the one type used for the longest distance):

- ○ Bus/transit
- ○ Car
- ○ Rideshare (Uber/Lyft)
- ○ Bike
- ○ Walk
- ○ Other

Where are you typically traveling to? Select all that apply.

- ☐ Work
- ☐ School
- ☐ Fun/social/recreation
- ☐ Shopping
- ☐ Other

If there was a passenger-only ferry that provided regular sailings from Ballard's Shilshole Bay Marina to one of the locations below, which destination would you prefer?

- ○ Downtown Seattle Waterfront (an approximately 25-min ferry trip)
- ○ Expedia Campus (an approximately 20-min ferry trip)
- ○ No preference

If a passenger-only ferry that traveled between Ballard's Shilshole Bay Marina and the destination you chose above was available for use, how often would you use it? Select one.

- ○ Regularly (at least 3 days per week)
- ○ Occasionally (at least 3 days per month)
- ○ Once in a while (a few times per year)
- ○ Never

If a passenger-only ferry that traveled between Ballard's Shilshole Bay Marina to the destination you chose above was available for use, how would you get to the ferry dock? Select all that apply.

- ☐ Walk or bike
- ☐ Use transit
- ☐ Rideshare (Uber/Lyft)
- ☐ Get dropped off in a personal car
- ☐ Vanpool
- ☐ Drive myself (if parking is available at the landing site)
- ☐ Drive to a nearby park and ride and take a shuttle to the landing site (if parking is not available at ...

I would take a passenger-only ferry if (select all that apply):

- ☐ My travel time was as fast or faster than my current options
- ☐ My travel time was more consistent than my current options
- ☐ My trip cost the same as or less than my current options
- ☐ I had easy connections to the Ballard ferry terminal
- ☐ I had easy connections to get to my destination
- ☐ Other

Which day(s) do you travel most often? Select all that apply.

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

What time(s) do you most often travel? Select all that apply.

- ☐ 5 - 9 a.m.
- ☐ 9 a.m. - 3 p.m.
- ☐ 3 - 7 p.m.
- ☐ 7 p.m. - 12 a.m.
- ☐ 12 - 5 a.m.

Where do you travel to most often (3-5 days per week)?

- ☐ Shoreline/Lynnwood/Everett
- ☐ Bothell/Woodinville
- ☐ Kenmore
- ☐ NW Seattle (Ballard/Greenwood)
- ☐ NE Seattle (University District/Northgate)
- ☐ Kirkland Area
- ☐ Redmond
- ☐ Queen Anne/Magnolia
- ☐ South Lake Union
- ☐ Capitol Hill/First Hill
- ☐ Bellevue
- ☐ Downtown Seattle
- ☐ South Seattle
- ☐ Mercer Island
- ☐ Renton/Newcastle

I get to that destination by: (If you use more than one, select the one type used for the longest distance)

- ○ Bus/transit
- ○ Car
- ○ Rideshare (Uber/Lyft)
- ○ Bike
- ○ Walk
- ○ Other

Where are you typically traveling to? Select all that apply.

- ☐ Work
- ☐ School
- ☐ Fun/social/recreation
- ☐ Shopping
- ☐ Other

If there was a passenger-only ferry that provided regular sailings from the Kenmore waterfront to one of the locations below, which destination would you prefer? Select one.

- ○ University of Washington (an approximately 30-min ferry trip)
- ○ Madison Park (an approximately 25-minute ferry trip)
- ○ Leschi Park (an approximately 30-minute ferry trip)
- ○ Portage Bay (an approximately 40-minute ferry trip)
- ○ No preference

If a passenger-only ferry that traveled between the Kenmore waterfront to the destination you chose above was available for use, how would you get to the ferry dock? Select all that apply.

- ☐ Walk or bike
- ☐ Use transit
- ☐ Rideshare (Uber/Lyft)
- ☐ Get dropped off in a personal car
- ☐ Vanpool
- ☐ Drive myself (if parking is available at the landing site)
- ☐ Drive to a nearby park and ride and take a shuttle to the landing site (if parking is not available at ...

If a passenger-only ferry that traveled between the Kenmore waterfront to the destination you chose above was available for use, how often would you use it? Select one.

- ○ Regularly (at least 3 days per week)
- ○ Occasionally (at least 3 days per month)
- ○ Once in a while (a few times per year)
- ○ Never

I would take a passenger-only ferry if (select all that apply):

- ☐ My travel time was as fast or faster than my current options
- ☐ My travel time was more consistent than my current options
- ☐ My trip cost the same as or less than my current options
- ☐ I had easy connections to the Kenmore ferry terminal
- ☐ I had easy connections to get to my destination
- ☐ Other

Please rank the following factors from most to least important when considering on-board amenities:

- A guaranteed seat
- Water views
- On-board restrooms
- Ability to work while travelling
- Ability to access wifi while travelling
- Ability to bring bike aboard
- Ability to bring my pet

Do you have any comments or suggestions related to passenger-only ferry service that were not addressed in this survey?

_____

_____

_____

Demographics

These questions are optional. Information from these questions will be used for analytical purposes. Results will be reported together, and no individual information will be reported.

What is your age?

- 15 or younger
- 16-17
- 18-19
- 20-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75 or older
- I'd rather not share

Do you identify as Latinx or of Hispanic or Latino origin?

- Yes
- No
- I'd rather not say

How do you identify? Select all that apply.

- ☐ American Indian or Alaska Native
- ☐ Asian or Asian American
- ☐ Black or African American
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Another not listed here (please specify):
- ☐ I'd rather not share

What is your annual household income?

- ○ Less than $7,500
- ○ $7,500 to $34,999
- ○ $35,000 to $49,999
- ○ $50,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000 to $149,999
- ○ $150,000 to $199,999
- ○ $200,000 to $250,000
- ○ More than $250,000
- ○ I don't know
- ○ I'd rather not share

What is the primary language you speak at home?

- ○ English
- ○ American Sign Language
- ○ Amharic
- ○ Arabic
- ○ Korean
- ○ Russian
- ○ Somali
- ○ Spanish
- ○ Chinese (Mandarin, Cantonese, etc.)
- ○ Oromo
- ○ Tagalog
- ○ Tigrinya
- ○ Ukrainian
- ○ Vietnamese
- ○ French
- ○ Punjabi
- ○ Other language or language(s) not listed here.
- ○ I'd rather not say

If you have a disability, please indicate what kind (check all that apply):

- ☐ A condition that substantially limits one or more basic physical activities such as walking, climbing ...
- ☐ Blindness or have serious difficulty seeing when wearing glasses
- ☐ Deafness or have a serious hearing difficulty
- ☐ Limited ability to care for yourself
- ☐ Physical, mental, or emotional condition that limits learning, remembering, or concentrating
- ☐ None of these
- ☐ I'd rather not say

How many people, including yourself, live in your household?

- ○ 1
- ○ 2
- ○ 3
- ○ 4 or more
- ○ I'd rather not say

Thank you for participating in this public outreach survey. The results will be compiled and summarized into the report that is expected to be transmitted to the King County Council mid-2020.

Learn more about King County Water Taxi (https://www.kingcounty.gov/depts/transportation/water-taxi.aspx).

Name

_____

Email

_____

Address

_____

APPENDIX F: EQUITY IMPACT REVIEW FOR POTENTIAL KENMORE PASSENGER-ONLY FERRY ROUTE

KENMORE PROVISO EQUITY IMPACT REVIEW

King County adopted a Strategic Plan for Equity and Social Justice to advance equity and social justice in our community. As new programs or projects are planned, it is expected that an Equity Impact Review (EIR) is conducted as part of the planning, development and implementation processes. This EIR process merges quantitative data and community engagement qualitative findings to inform planning, decision-making and implementation of actions which affect equity in King County.

The EIR process has five phases. Phase 1 is defining the scope or identifying who will be affected by the program. Phase 2 is assessing equity and community context. Phase 3 is analyzing and decision process development. Phase 4 is implementation with a focus on staying connected with communities and employees. Phase 5 is ongoing learning, with listening, adjusting and co-learning with communities and employees.

This section of the Kenmore Proviso report will focus on the first three phases of the EIR as it relates to a Kenmore to Seattle passenger-only ferry (POF) route.

PHASE 1

WHO IS IMPACTED?

King County is striving to invest in areas of greatest need. Areas of need have been identified through the King County Equity score (1-5) assigned to each Census Tract that measures populations of color and low-income populations, and populations with limited English proficiency. Higher scores represent a more diverse, less wealthy population. These are considered priority populations for King County and are consistent with work done as part of Metro's Mobility Framework. A map of the Kenmore route and the Equity scores is located on page 3. All landing sites considered for this proviso response have equity scores of 2.2 or less.

The proposed Kenmore to Seattle route options include landing sites at the University of Washington Waterfront Activities Center (WAC), Madison Park, and Leschi in Seattle; as well as Lakepointe and Log Boom Park in Kenmore. Metro conducted analysis to consider factors such as Community Assets, Family Wage Jobs, Housing Units, total equity scores, as well as percentages of low-income, people of color, and people with limited English proficiency within a one-mile walk shed of the proposed landing sites.

This is a snapshot of the existing conditions for the area surrounding the proposed landing sites and is used to capture information about jobs, assets, and people that have potential to be served by new service. For comparison, King County is 21.7% low-income, 39% minority, and 10.6% limited English proficiency residents. The community asset database shows the spatial locations of critical community resources including medical facilities, libraries, churches, schools and community centers.

Both Log Boom Park and Lakepointe are close enough to each other that either site contains similar populations, households, and numbers of jobs. There are significant differences in population for the Seattle landing sites, with the University of Washington having the largest populations served, as well as community assets and jobs. Tables 1 and 2 describe the full analysis of the proposed landing sites.

Table 1: Landing Site Assets and Opportunities

Name	Community Assets	Family Wage Jobs	Housing Units
Lake Wash Log Boom	9	608	1,805
Lakepointe	14	601	3,129
UW WAC*	9	18,336	929*
Madison Park	4	471	2,365
Leschi	13	1,482	3,916

Community Assets: number of community assets within a 1 mile walk buffer of each dock location (SPKC)

Family Wage Jobs: number of family wage jobs within a 1 mile walk buffer of each dock location (LEHD)

Housing Units: number of housing units within a 1 mile walk buffer of each dock location (KC Assessor)

*This does not include UW housing

Table 2: Landing Site Demographics and Equity Scores

Name	KC Equity Score	Total Population	Percent Low-Income	Percent POC	Percent LEP	Number of Tracts	Number of LI Tracts	Number of Minority Tracts	Number of LEP Tracts
Log Boom	2	33,280	14.00%	24.00%	6.00%	6	1	0	0
Lakepointe	2	33,280	14.00%	24.00%	6.00%	6	1	0	0
UW WAC	2.2	14,449	31.00%	31.00%	3.00%	3	1	1	0
Madison Park	1.2	15,801	9.00%	19.00%	2.00%	3	0	0	0
Leschi	2.1	21,148	18.00%	37.00%	3.00%	4	1	2	0

KC Equity Score: average of scores for all census tracts that intersect the one-mile walk buffer around each option. (KC)

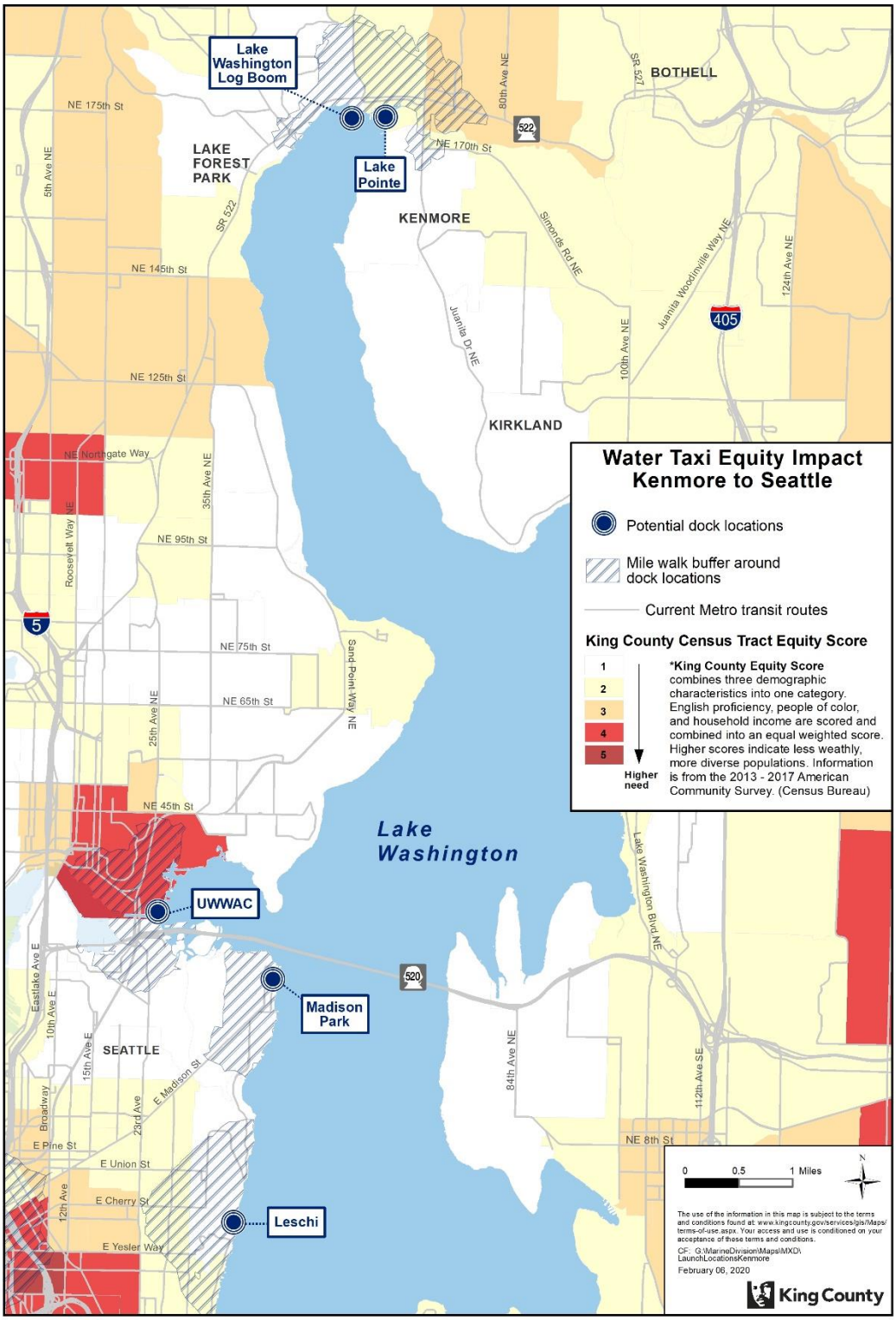
Total Population: total population of all census tracts that intersect the one-mile walk buffer around each option. (KC)

Percent Low-Income: combined percent of low-income populations for all census tracts that intersect the one-mile walk buffer around each option. (KC)

Percent POC) combined percent of persons of color for all census tracts that intersect the one-mile walk buffer around each option. (KC)

Percent LEP: combined percent of limited English proficiency speakers (5 and older) for all census tracts that intersect the one-mile walk buffer around each option. (KC)

Figure 1: Equity Impact Review for Potential Kenmore Passenger-Only Ferry Route



WHAT WOULD THE IMPACT BE (INCLUDING EFFECTS, IMPACTS, OUTCOMES ON PEOPLE AND PLACES)?

This section summarizes the social equity impacts of new passenger-only ferry service between Kenmore and Seattle for the people and places affected. For this evaluation, social equity impacts are considered changes from the proposed route that make priority populations better or worse off relative to current conditions. The main impacts considered in this section include:

- Impacts to ferry riders, such as trip travel time and reliability, trip cost, and amenity value.
- Impacts on communities near the landing sites through changes in access and/or capacity to a location or the desirability of a location.

The impacts for Kenmore would be similar for either landing site (Log Boom Park or Lakepointe) since they are relatively close to each other. The impacts for the Seattle landing site would depend on which of the three landing sites is selected; they are quite different from each other in location and character. The impacts summarized below are based on KPFF's Task 1.1. Capital and Operating Program memorandum and BERK Consulting's January 2020 memorandum on Potential Ridership Demand for Proposed Kenmore to Seattle Passenger-only Service.

Impacts to Riders

Based on the proposed service profile, additional POF service between Kenmore and Seattle would primarily be used for commute trips year-round (primarily from Kenmore to downtown Seattle based on the ridership demand memorandum) and leisure/recreational trips in the warmer months and for special events. The ridership demand study projected average weekday ridership (Monday through Thursday) of 785-1,230 by 20251 for the Kenmore to UW WAC landing site, which was the route pairing with the highest projected ridership. Annual ridership would be approximately 196,000-280,000.

Impacts for commute and recreational riders that choose to use POF service over other options will be generally positive. The impact on riders from priority populations would most likely be positive as well. Fares are higher compared to other transit options. Fare for riders with an ORCA LIFT or Regional Reduced Fare Permit is reduced but still higher than for buses. The higher cost may make POF service cost-prohibitive for some. However, these riders would still have the same existing transit option and would not be any worse off as a result of adding a new POF service. A summary of the four types of impacts that may affect riders includes:

- **Trip Travel-time.** Travel times from downtown Seattle or the University of Washington to the Kenmore or Bothell Park and Rides via the UW WAC landing site would be similar or slightly faster than other transit options during the PM commute period (5:00 pm). Compared to driving, travel times would be similar at peak times and 10 to 20 minutes slower at other times. For the other two landing sites (Madison Park and Leschi), travel times during the PM commute period are longer from downtown Seattle and shorter from First Hill via the POF service compared to other transit options.

- **Trip Reliability.** POF service would provide reliable travel times because it is not affected by local traffic conditions. A landing site at the UW WAC and connections to Link light-rail would provide a reliable trip between Kenmore and downtown Seattle completely unaffected by traffic congestion. Reliability would be particularly valuable during times of high traffic congestion where POF service would be faster than driving as well as other transit options.
- **Trip Cost.** Fare for a POF trip ($5.50) would be higher than for a comparable bus trip ($2.75). Trip costs would likely be substantially lower than driving based on parking costs alone. The additional costs for gasoline and mileage would make car trips even more costly.
- **Trip Amenity Value.** POF service offers more amenities, such as restrooms, a seat for every passenger, and space to get up and take in the views, than other modes traveling between Kenmore and Seattle. Similar to the West Seattle route, the amenity value alone may induce new ridership, particularly for discretionary and recreational trips, on weekends and for special events, such as football games.

Impacts on Community

Impacts (positive or negative) to the broader community near any of the landing site options in Kenmore and Seattle would likely be minimal. All the landing sites would have some uplands work to accommodate POF service, but there would be no direct impacts on housing or businesses at any of the potential landing sites. As a result, the impacts on priority populations in those areas would also be minimal. Impacts on the nearby community include:

- **Access.** The addition of POF service between Kenmore and Seattle does not improve access for those traveling between the two locations. There are existing transit options on weekdays and weekends between Kenmore and Seattle. Metro bus route 372 provides direct service from Kenmore to the University of Washington, and Sound Transit Express route 522 provides direct service from Kenmore to downtown Seattle. In addition, a new Sound Transit bus rapid transit route will connect Kenmore to the 145th Street light rail station in Shoreline starting in 2024. All of the Seattle POF landing site options would provide transfers to downtown Seattle and First Hill.
- **Capacity.** The addition of POF trips between Kenmore and Seattle would increase overall transit capacity. Projected average weekday ridership between Kenmore and the UWWAC landing site could be greater than 1,200 passengers. The maximum capacity on weekdays with two boats in service providing 12 daily roundtrips would be 1,800 passengers. Neither route 372 nor route 522 have overcrowding issues. Thus, additional transit capacity is not an existing need.
- **Desirability.** There is interest in redeveloping the Lakepointe site with a mixture of uses. The Lakepointe site is currently under private ownership and is used for storage, so there is no potential for the displacement of housing or businesses. There is opportunity for development of affordable housing at this site which could, if built, increase access to this service for disadvantaged populations.

PHASE 2

EQUITY & COMMUNITY CONTEXT

This engagement effort included an online survey taken by approximately 2,000 respondents. The survey included questions regarding existing travel patterns, dock location preferences, as well as factors that might increase their willingness to shift modes. The demographic patterns of the respondents are below:

- 32% percent of respondents were between the ages of 35 and 44 and 22% responded that they were between the ages of 45 and 54.
- 76% responded that they identified as white. The second highest selection was “I’d rather not share” at 13%
- Annual household income was higher than average surveys done by Metro. 19% selected $100,000 to $149,000 and an additional 16% selected $150,000 to $199,999.
- Almost all households spoke English as their primary language (92%)
- 85% indicated they did not have a disability

Survey results found that that most people who responded were in favor of Water Taxi service in their community.

The Water Taxi accepts ORCA card use for payment and as such can help facilitate mobility for ORCA LIFT users as well as seniors, students, and holders of Regional Reduced Fare Permits (RRFP). ORCA users can also transfer between different transit providers including the Water Taxi, buses, and Link light rail.

As part of King County’s focus on equity and social justice and the Mobility Framework, Metro is focused on expanding service where needs are greatest while continuing to meet mobility needs throughout the County. The communities that would be served by a Kenmore-Seattle POF service already have transit options available. POF service would provide benefit and added amenity, but in general these areas have low equity scores. Therefore, the Kenmore-Seattle service would provide benefit in areas where the population is less diverse and wealthier than county averages.

PHASE 3

DECISION PROCESS

Determining resource allocation and actual impacts are subject to funding constraints and budget decisions made by King County Council. King County Metro has identified Equity as a top priority in current and future budget developments. Future Water Taxi routes will need to find an opportunity to serve populations above and beyond those who traditionally have easy access to waterfront amenities. One way to do this is to ensure that Water Taxi service coupled with, land-side service connection is time and cost competitive for all potential users and by offering both traditional peak commuting service as well as off-peak service.

This proviso response is intended to provide updated planning and implementation information to King County Council. The EIR is an integral part of the proviso response. Water Taxi service growth will need to be reviewed and planned as part of Metro's overall long-term transportation planning. A further Equity Impact Review would need to be completed in the event funding for new Water Taxi service is identified. As part of the Mobility Framework adoption, King County Metro has identified a need to invest in service that will positively impact priority populations in order to address deep and persistent inequities–especially by race and place–that in many cases are getting worse and threaten our collective prosperity.

APPENDIX G:
KENMORE IMPLEMENTATION PLAN

Kenmore Route Implementation Plan

	2020												2021				2022				2023				2024				2025				Total $
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
PARTNERHIPS																																	
Key Stakeholders																																	
DNR Meetings																																	
US Coast Guard																																	
City of Kenmore Meetings																																	
Kenmore Air																																	
Rowing Clubs																																	
Lake Forest Park Civic Club																																	
Sheridan Beach Club																																	
Sail Sand Point																																	
Lease Agreements																																	
UW Outreach Meetings																																	
Lakepointe Owner Outreach Meetings																																	
UW or DNR Lease Negotiations																																	
Gary Sergeant (Lakepointe Owner) Negotiations																																	
Public Outreach Process																																	
Develop Public Outreach Strategy																																	
Develop Outreach Information																																	
Community Outreach including workshops																																	
FUNDING																																	
King County Budget Process																																	
2021/2022 Budget				KCMD Budget Due						Approval																							
2023/2024 Budget																				Approval													
2025/2026 Budget																												Approval				Approval	
Earned Share Grant Allocation Due																																	
Discretionary Grant Funding Process																																	
Federal Ferry Boat Funds (Yearly)																																	
Surface Transportation Block Grants																																	
PSRC Grants - FHWA & FTA																																	
CAPITAL PROJECT DEVELOPMENT																																	
REGULATORY PROCESSES AND APPROVALS																																	
Supporting Environmental Studies														$ 300,000																			$ 300,000
NEPA/SEPA Compliance													$ 1,050,000																				$ 1,050,000
Federal/State/Local Permits																$ 150,000																	$ 150,000
US Army Corps of Engineers (NMFS/USFW)																																	$ -
DNR																																	$ -
WDFW																																	$ -
Shoreline Permits																																	$ -
Construction Permits																																	$ -
Subtotal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,050,000	$ 300,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 1,500,000**
DESIGN AND CONSTRUCTION																																	
KCMD Staff Time													$ 600,000				$ 600,000				$ 600,000				$ 600,000				$ 600,000				**$ 3,000,000**
Terminals																																	**$ 21,000,000**
Preliminary Design													$ 534,000																				$ 534,000
Design																	$ 1,068,000																$ 1,068,000
Procurement																							$ 178,000										$ 178,000
Terminal Construction																								$ 19,220,000									$ 19,220,000
Vessels																																	**$ 15,400,000**
Vessel Procurement																							$ 770,000										$ 770,000
Vessel Construction																										$ 7,315,000							$ 7,315,000
Vessel Delivery																														$ 7,315,000			$ 7,315,000
Subtotal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,000	$ -	$ -	$ -	$ 1,668,000	$ -	$ -	$ -	$ 600,000	$ -	$ 948,000	$ 19,220,000	$ 600,000	$ 7,315,000	$ -	$ -	$ 600,000	$ 7,315,000	$ -	$ -	**$ 39,550,000**
OPERATIONS																																	
SERVICE STARTS																																	$ -
Vessel Leasing																											$ 1,133,600						$ 1,133,600
Subtotal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,133,600	$ -	$ -	$ -	$ -	$ -	$ 1,133,600
Total Expenditures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,184,000	$ 300,000	$ -	$ 150,000	$ 1,668,000	$ -	$ -	$ -	$ 600,000	$ -	$ 948,000	$ 19,220,000	$ 600,000	$ 7,315,000	$ 1,133,600	$ -	$ 600,000	$ 7,315,000	$ -	$ -	**$ 42,033,600**
															2021 Total	***$ 2,634,000***			***2022 Total***	***$ 1,668,000***			***2023 Total***	***$ 20,768,000***			***2024 Total***	***$ 9,048,600***			***2024 Total***	***$ 7,915,000***	
In-Water Work Allowed (Fish Window)										10/1 to 4/15						10/1 to 4/15				10/1 to 4/15				10/1 to 4/15				10/1 to 4/15					

**All costs in 2019 dollars

Kenmore Route Implementation Plan

	2024				2025				2026				2027			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PARTNERHIPS																
Key Stakeholder Check-ins																
UW Meetings																
Lakepointe owner meetings																
Passenger Feedback Process																
Surveys																
Public Outreach Process																
Community Outreach Check-ins																
FUNDING																
King County Budget Process																
2025/2026 Budget				Approval												
2027/2028 Budget												Approval				
Earned Share Grant Allocation Due																
Bond Issuance																
Discretionary Grant Funding Process																
Federal Ferry Boat Funds (Yearly)																
Surface Transportation Block Grants																
PSRC Grants - FHWA & FTA																
Funding Received	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
OPERATING COSTS																
SERVICE BEGINS																
VESSEL OPS																
Labor			**$ 480,100**		**$ 989,091**				**$ 1,018,764**				**$ 1,049,326**			
Direct Labor			$ 278,690		$ 574,101				$ 591,324				$ 609,064			
Overhead			$ 201,451		$ 414,990				$ 427,440				$ 440,263			
Fuel			**$ 436,824**		**$ 899,857**				**$ 926,853**				**$ 954,659**			
Maintenance			**$ 328,944**		**$ 677,625**				**$ 697,954**				**$ 718,893**			
Labor			$ 130,062		$ 267,929				$ 275,966				$ 284,245			
Overhead			$ 101,327		$ 208,734				$ 214,996				$ 221,446			
Routine			$ 37,957		$ 78,191				$ 80,537				$ 82,953			
Annual			$ 50,729		$ 104,502				$ 107,637				$ 110,867			
Unplanned			$ 8,869		$ 18,269				$ 18,817				$ 19,382			
Admin/Insurance			**$ 133,333**		**$ 274,667**				**$ 282,907**				**$ 291,394**			
TERMINAL OPS																
Labor			$ 68,532		$ 141,175				$ 145,410				$ 149,773			
Routine Terminal Maintenance			$ 1,878		$ 3,870				$ 3,986				$ 4,105			
Terminal Lease			$ 18,000		$ 37,080				$ 38,192				$ 39,338			
Fare Collection			$ 6,000		$ 12,360				$ 12,731				$ 13,113			
ADMINISTRATION / SUPPORT																
Management/Admin/Support Labor/Misc			$ 97,000		$ 199,820				$ 205,815				$ 211,989			
Admin/Insurance/Overhead			$ 282,718		$ 582,398				$ 599,870				$ 617,866			
Subtotal	$ -	$ -	$ 1,853,370	$ -	$ 3,817,943	$ -	$ -	$ -	$ 3,932,481	$ -	$ -	$ -	$ 4,050,456	$ -	$ -	$ -
Debt Service	$ 1,439,242				$ 1,439,242				$ 1,439,242				$ 1,439,242			
			2024 Total	***$ 3,292,612***			***2025 Total***	***$ 5,257,185***			***2026 Total***	***$ 5,371,723***			***2027 Total***	***$ 5,489,698***

Debt Service Assumes $20M bond 20 years @ 3.75%