Seattle Department of Transportation

Fairview Avenue North Bridge Replacement Project
Seattle, Washington

SEPA Checklist

January 22, 2016

STATE ENVIRONMENTAL POLICY ACT (SEPA) ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

Fairview Avenue North Bridge Replacement Project

2. Name of applicant:

Seattle Department of Transportation (SDOT)

3. Address and phone number of applicant and contact person:

Applicant: SDOT

Contact Person: MariLyn Yim, PE, Project Manager
P.O. Box 34996
Seattle, WA 98124-4996
(206) 684-3190
marilyn.yim@seattle.gov

4. Date checklist prepared:

January 22, 2016

5. Agency requesting checklist:

SDOT

6. Proposed timing or schedule (including phasing, if applicable):

The proposed bridge replacement is anticipated to occur over an approximately 15 month-long period beginning in 2017. The bridge will be built using sequenced construction activities, with the actual periods of activity varying in timing and intensity on a day to day and month to month basis throughout the construction period.

Before the bridge replacement work begins, Seattle City Light (SCL) will install two temporary utility transmission poles, temporary overhead transmission and distribution lines, and one distribution pole in the project site. This work must occur before bridge construction starts in order to maintain adequate clearance between live lines and tall construction equipment and to permit safe working conditions during the bridge replacement project. The installation of the temporary poles and lines is scheduled to occur in the spring/summer of 2016 and last approximately 3 months. After the bridge replacement work is complete, the temporary utility poles and lines will be removed. This removal is expected to occur in summer 2019.

Additionally, some traffic detour preparation work might be performed in late 2016 or early 2017 in advance of the main bridge replacement work. Such work could consist of paving streets along the detour route, making modifications to curbing, signage, traffic circle, and

signal operations, and installing traffic signals.

The above described project schedule is only a likely representation of what the actual schedule may be. Variations in work timing and sequence may occur due to permitting considerations, including designated in-water work windows to protect fisheries resources, funding issues, utility coordination, contractor delays, and adverse weather conditions.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

The city is evaluating options for future extension of High Capacity Transit through the project site. The replacement bridge is being designed to accommodate, without substantive redesign, future extension of the South Lake Union Streetcar if that is the technology the city selects for the corridor. The replacement bridge is also being designed to accommodate a future water line and other utilities. Neither the street car extension nor the future water line and other utilities are part of the proposed project.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The following information directly related to this proposal has been prepared. Refer to the References and Bibliography section for full citations.

- Biological Assessment
- Cultural Resources Discipline Report
- Traffic Analysis Report
- Traffic Analysis Report Supplement: Bus Detour Analysis
- Hazardous Materials Discipline Report
- Alternatives Analysis Discipline Report
- Environmental Justice Discipline Report
- Water Resources Technical Memorandum
- Geology and Soil Technical Memorandum
- Vegetation, Fish and Wildlife Technical Memorandum
- Noise and Vibration Discipline Report
- Construction Methods Technical Memorandum
- Parking Availability Study
- Navigation Evaluation Memorandum
- Vessel Allision Loads Analysis Memorandum
- Wave Load Analysis Memorandum

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Permits will be required for SCL to install two temporary utility transmission poles, one distribution pole, and overhead transmission and distribution lines prior to bridge construction. This relocation work is required to provide access and a safe work environment for bridge construction equipment.

10. List any government approvals or permits that will be needed for your proposal, if known.

The following permits and approvals are anticipated to be needed for the proposed work:

- Federal:
  - National Environmental Policy Act (NEPA)
  - National Historic Preservation Act Review - Section 106 Consultation with Washington State Department of Archaeology and Historic Preservation (DAHP) and Affected Tribes
  - Endangered Species Act Review – Section 7 Consultation with National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS)
  - United States Coast Guard Bridge Permit
  - Clean Water Act Section 404 and Rivers and Harbors Act Section10 Permit
- State:
  - Washington Department of Fish and Wildlife (WDFW) Hydraulic Permit Approval (HPA)
  - National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit
  - Clean Water Act Section 401 Water Quality Certification
  - Coastal Zone Management Act Consistency Determination (CZM)
  - Department of Natural Resources (DNR) Aquatic Land Lease/Right of Entry
- County:
  - King County Industrial Wastewater Discharge Permit
- City:
  - Shoreline Substantial Development Permit
  - Compliance with Environmentally Critical Areas Regulations
  - Grading
  - Noise Variance

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

SDOT proposes to replace the Fairview Avenue North Bridge, which is located on the southeast shoreline of Lake Union in Seattle, Washington (Figure 1).

The existing bridge consists of two immediately adjacent bridges: an eastern, concrete pile-supported bridge built in 1964 and a western, timber pile-supported bridge built in 1948. The bridge deck has two northbound vehicle lanes and one southbound vehicle lane. It also has a sidewalk on its eastern side and a shared bicycle and pedestrian path on its western side. The Cheshiahud Lake Union Loop route crosses the bridge. A floating walkway, braced to the bridge, runs parallel to and west of the bridge (Figure 2). The walkway provides north-south pedestrian access through the project corridor as well as public shoreline and water access to Lake Union. Based on a December 2012 inspection report, both the eastern and western bridges are structurally deficient. Neither bridge meets current seismic standards.

As a result of a Type, Size, and Location study, which analyzed various project construction

options (HNTB and Perteet, 2013), SDOT proposes to replace the existing bridge with a single, multi-span concrete bridge. The replacement bridge would be about 540 feet long and 67 feet wide, comprising four, approximately 135-foot long, spans constructed between new abutments that are located at either end of the new bridge. The new bridge would be supported by three bents. Each bent would consist of three, three and a half foot (3½-foot) diameter, reinforced concrete bridge columns. Each column would be constructed on a foundation consisting of an eight foot diameter drilled shaft installed to an approximate depth of 140 feet below the water surface elevation.

The deck of the new bridge would have two, slightly wider, northbound vehicle lanes and one southbound vehicle lane. It would also have pedestrian and bicycle facilities that meet current design standards and consist of sidewalks on both sides of the bridge and a two-way cycle track on the west side of the bridge. The Cheshiahud Lake Union Loop route would continue to cross the bridge. Although the viewing platform currently located at the north end of the project area would be removed to accommodate the new bridge, three water-viewing platforms (called belvederes) would be constructed on the west side of the bridge as an extension of the sidewalk. SDOT also proposes to remove and, if allowed by federal, state, and local permits, to rehabilitate, extend, and relocate the floating walkway to be approximately 10-feet west of its current location (Figure 2). The walkway would be anchored to steel pipe piles, which would be vibrated into place. The new bridge and rehabilitated walkway would be within existing City right of way.

The project would install stormwater conveyance piping, replace one outfall and install one new outfall, and provide some stormwater treatment where none currently exists. It would also relocate some utilities as necessary to construct the project. Overhead transmission lines would be temporarily relocated to facilitate construction. The roadway approaches on the north and south sides of the bridge would be reconfigured to provide improved flow of access for people bicycling and walking across the bridge.

Demolition of the existing bridge would include the removal of numerous creosote-treated wood piles and concrete piles from existing City right of way, including those supporting the existing east and west bridges. Work would also include the removal of existing concrete rubble along the Lake Union shoreline within the project area. Work might involve the removal of an abandoned coal dock and pilings west of the right of way.

Construction would be staged from the existing bridge, adjoining roadway and shoreline areas, a temporary work trestle, and barges or vessels. Drilled shaft or auger cast pile construction would be used to install supports for the temporary trestle. Containment curtains would be installed in Lake Union in accordance with permit requirements to contain turbidity from underwater construction activities and minimize fish entrapment.

Funding for the Fairview Avenue North Bridge Replacement project is being provided in the following ways: Bridging the Gap, which is a nine-year levy for transportation maintenance and improvement; Move Seattle, a nine-year maintenance and improvement levy that follows Bridging the Gap; federal bridge replacement funding through the Bridge Replacement Advisory Committee (BRAC) and additional local funding as required.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The Fairview Avenue North Bridge is located along the southeast shoreline of Lake Union in Seattle, King County, Washington, Township 25N, Range 4E, Section 29 (Figure 1). The bridge is located in an approximately 600 foot section of Fairview Avenue North that lies southwest of East Galer Street and northeast of Yale Avenue North. The bridge spans a narrow embayment of Lake Union, designated as Waterway 8.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: *[Check the applicable boxes]*

☒ Flat ☐ Rolling ☐ Hilly ☐ Steep Slopes ☐ Mountainous
☐ Other: (identify)

The project site is located along the shore of Lake Union. At the project site, the ground surface is mostly flat, having been regraded and flattened by previous grading and filling of the area. The shoreline near the bridge is armored with rip rap. To the east of the project site the ground surface slopes up to I-5 and the Capitol Hill district. Within and west of the project site the ground surface slopes down into Waterway 8, an embayment of Lake Union, with water depths extending to 36 feet near the center of the bridge (HWA GeoSciences, 2014).

b. What is the steepest slope on the site (approximate percent slope)?

The project area consists of a regraded and flattened lakefront area. The topography of the site is flat at both end of the bridge. The bridge straddles the east edge of Waterway 8 with the water being up to 36 feet deep near the center of the bridge and becoming shallower to the east. East of the project area the ground surface slopes up to I-5 and the Capital Hill Area (HWA GeoSciences, 2014).

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The following types of soils are located within the project area (HWA GeoSciences Inc., 2014):

- Fill
- Lake Deposits
- Alluvium

- Coarse-grained Landslide deposits
- Disturbed Fine-Grained Deposits
- Recessional Lacustrine Deposits
- Coarse-Grained Glacial Deposits
- Fine-Grained Glacial Deposits

The site does not contain any agricultural soils or prime farmland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

The project site is located in a zone that is susceptible to geologic hazards, primarily seismically-induced liquefaction and liquefaction-induced flow sliding. Liquefaction could result in the movement of the ground toward Lake Union.

In addition, the Fairview Avenue Bridge has been determined to span a portion of a previously unidentified, ancient landslide (HWA GeoSciences Inc., 2014). The landslide area appears to extend from the northern section of the bridge to a southern terminus located north of the Fred Hutchison Cancer Care facility. In the east-west direction, the slide area extends beneath the ZymoGenetics building to approximately 330 feet west of the existing bridge structure (HWA GeoSciences Inc., 2014).

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate the source of fill.

Minor upland excavation and site grading will occur as a result of construction activities. The total estimated upland excavation volume for the project is approximately 1,300 cubic yards, including approximately 88 cubic yards of excavation for the temporary utility relocation work.

Fill for the temporary transmission poles will likely be controlled density fill. Depending upon the final design for the north walkway approach, ground improvements (including fill) may be required due to the liquefaction potential in this area. The existing roadway foundation areas will be stripped and prepared for construction, and an estimated 1 to 2 feet of new fill may be placed in the bridge approach areas (HWA GeoSciences Inc., 2014). A retaining wall will be constructed near the northeast corner of the bridge, between the bridge and the ZymoGenetics building. The total estimated fill, including walkway, roadway and wall, is approximately 130 cubic yards. Fill will be obtained by the contractor and will follow all applicable City of Seattle 2014 Standard Specifications.

Fill may also include the placement of angular rock above the ordinary high water mark on the shoreline under the bridge structure to minimize debris collection and reduce the potential for encampments. This area is currently littered with debris and rubble and is devoid of any vegetation.

Refer to question B.3.a.3), below, for a discussion of in-water excavation and fill volumes.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Some minor erosion could occur as a result of construction activities, particularly earthwork.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The project will result in a slight increase (about 0.14 acres) in overall impervious surface area. This increase will be associated with the addition of the sidewalk and belvederes on the west side of the bridge. The project will result in a slight decrease (about 0.05 acres) in overall pollution-generating impervious surface (PGIS) area, even though the vehicle travel lanes will be widened slightly (HNTB Corporation, 2014). This decrease will occur because the existing median area, a PGIS, will be reduced to accommodate the widened travel lanes as well as the sidewalks on both sides of the bridge (Figure 2).

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The potential for liquefaction and liquefaction-induced flow sliding due to an earthquake will be mitigated through proper structural design of the bridge foundations and abutments as outlined in the Washington State Department of Transportation (WSDOT) Geotechnical Design Manual and the WSDOT Bridge Design Manual (HWA GeoSciences Inc., 2014). These factors have been taken into consideration as part of the bridge design.

A project-specific Construction Sediment and Erosion Control Plan (CSECP) or Stormwater Pollution Prevention Plan (SWPPP), as well as a project-specific Spill Plan, will be prepared and implemented in accordance with the City of Seattle's Standard Specifications for Road, Bridge and Municipal Construction, the City's Stormwater Code, and the City's Stormwater Manual. The CSECP or SWPPP will identify established best management practices (BMPs) to be implemented during project construction to reduce and control erosion and sedimentation. The Spill Plan will identify BMPs and other measures to be taken to protect the site and surrounding area from hazardous materials used and generated during project construction. The BMPs and measures could include:

- Implementing procedures to address equipment leaks, dispose of oily wastes, clean up spills, and properly store petroleum products and chemicals
- Implementing construction sequencing that minimizes the amount of ground surface exposed to erosion.
- Controlling erosion by preserving trees with construction fences; stabilizing exposed soil through the use of seeding, mulching, polymer soil conditioners, geo-synthetics, sod, and erosion-control blankets; and controlling runoff with wattles and vegetative buffer strips.
- Controlling sedimentation through the use of silt fences, check dams, sediment traps, sedimentation basins, and flocculation methods. Sediment control BMPs could also include measures to minimize potential for impacts to adjacent shorelines and aquatic areas of Lake Union.
- Using construction entrances, exits, wheel wash stations, and parking areas that reduce trackout of soil onto public roads.

- Performing routine inspections of and maintaining erosion-control and sediment-control BMPs.
- Controlling dust by:
  - Wetting down fill material and dust on site
  - Minimizing ground disturbances
  - Covering loads and ensuring adequate freeboard to prevent soil particles from blowing away during transport
  - Revegetating disturbed soil as soon as practicable

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

During project construction, there may be localized, temporary increases in fugitive dust from the demolition of the existing bridge and from the exposure, movement, and removal of sediment and soil. Project construction will likely cause some temporary odorous emissions, such as those from hot asphalt used for paving. There may also be an increase in exhaust emissions, including emissions of carbon monoxide (CO), due to the operation of construction vehicles and equipment. The project is located in the Central Puget Sound air quality "maintenance area" for CO emissions. CO is typically the pollutant of greatest concern for vehicle emissions because it is the pollutant emitted in the greatest quantity for which short-term health standards exist (the National Ambient Air Quality Standards [NAAQS]).

Project construction will also contribute to greenhouse gases (GHGs). Pursuant to Ordinance 122574, adopted by the Seattle City Council in 2007, GHGs that will be emitted during project construction are estimated to be approximately 3,601 metric tons of CO2 equivalent (CO2e) (Appendix A). Since GHGs are composed of a variety of different gases, a carbon equivalent is used to compare the emissions of those various GHGs based on their global warming potential using a metric measure. The project's GHG estimate consists of emissions estimates for vehicle-miles-traveled and bridge surface reconstruction. While the project contractor will likely use both gasoline and diesel powered vehicles, in order to present a conservative estimate, the emission estimates for diesel were used instead of gasoline because diesel combustion has a greater carbon impact. Similarly, worst case scenarios were assumed for the number of miles per vehicle trip and the total number of vehicle trips required.

Operation and maintenance of the completed project are not expected to result in air emissions different from those occurring on the project site today. The completed project will not introduce a new source of traffic, increase traffic capacity, or degrade traffic operations in the vicinity. This project will not cause or increase any exceedance of the NAAQS. The project is exempt from the requirement to determine conformity to state or federal transportation plans per 40 CFR 93.126 for the widening of narrow pavements or the reconstruction of bridges with no additional travel lanes. No project-level air quality hotspot analysis is required.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no known sources of off-site emissions or odors that will affect this proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

In addition to the measures described in B.1.h., above, the following measures could be incorporated during construction to minimize impacts to air quality:

- Comply with the Puget Sound Clean Air Agency (PSCAA) regulations to control odorous emissions (i.e., cover loads of hot asphalt) so as to prevent undue interference with nearby uses.
- Equip construction equipment with appropriate emission controls.
- Remove particulate matter deposited on paved, public roads and sidewalks to reduce mud and dust; sweep and wash streets frequently to reduce emissions.
- Spray exposed soil and storage areas with water during dry periods.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The proposed project will take place in the southeast shoreline of Lake Union, located in Water Resource Inventory Area (WRIA) 8 – Lake Washington/Cedar/Sammamish Watershed (Figure 1).

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The majority of the project area is located within 200 feet of the shoreline of Lake Union (Figure 1). In-water work will include installation of containment curtains and sand applications required to maintain water quality, construction of temporary work trestles, removal of the existing bridge as well as derelict structures and creosote piles and concrete debris, relocation of utilities, construction of the new bridge columns and drilled shafts, the removal and replacement of the existing floating walkway (if allowed by permitting agencies), and the construction of new stormwater outfalls. Over-water work will include construction of the bridge superstructure and decking, and temporary utility installation. The new bridge will result in an estimated 3,170 square feet of additional over-water coverage than is present with current conditions. Should the floating walkway be relocated following construction, it would be located farther from shore (to accommodate the slightly wider bridge) and would result in an additional approximately 80 square feet of surface area to connect to both shorelines. The total additional new overwater coverage area will be approximately 3,250 square feet.

3) **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

A total of 2,100 cubic yards of sand will be permanently placed on the lake bottom in the project area, covering a total area of approximately 28,200 square feet of the lake bed. This sand will be used to minimize the re-suspension of existing lake bed sediments, which may be contaminated, and to minimize or eliminate the impacts to water quality during construction of in-water project elements that will disturb the lake bottom.

An estimated 7,500 cubic yards of sediment will be removed from Lake Union as part of the construction of the shafts for the new bridge.

Refer to question B.1.e. , above, for a discussion of upland excavation and fill volumes.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

Withdrawal of surface water will occur along with the removal of material from below the water surface, such as the removal of sediment from the drilled bridge shafts. Such removed material will be placed in lined containers, such as dump trucks or barges, for surface water decanting or for transfer to an on-site decanting area or an appropriately permitted, off-site decanting or handling facility. Materials that are potentially contaminated will be kept separate, tested for contaminants, and then handled separately from or together with non-contaminated material, as appropriate. Water that is decanted on site will be held in storage containers, such as Baker tanks, where it will be managed, and possibly treated, based on turbidity, pH, and potential or established contaminant types and concentrations. Decanted water will be discharged into Lake Union, to the sanitary sewer, or an off-site disposal facility as is allowed and permitted based on federal, state, and local water quality standards. Once sufficiently decanted, the material removed from below the water surface will be disposed of at an appropriately permitted, off-site, upland disposal facility.

5) **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

The proposed project does not lie within a 100-year floodplain according to the adopted Federal Emergency Management Agency's *Flood Insurance Rate Maps for King County, Washington and Incorporated Areas* (FEMA, accessed 2016).

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

The proposal does not involve any discharge of waste materials to surface waters.

b. Ground:

1) Will ground water be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No water will be withdrawn from a well for any purpose. No water will be discharged to groundwater.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals . . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground from septic tanks or other sources.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The source of runoff from the project site will be precipitation.

The precipitation (stormwater) runoff system on the existing Fairview Avenue North bridge consists of scuppers (open drains) on the west bridge and bridge drains on the east bridge that allow stormwater to discharge directly into Lake Union. There is no surface runoff conveyance on the existing bridge and the existing runoff receives no engineered treatment. The profile of the proposed bridge will be slightly raised, allowing for stormwater from PGIS to drain along the bridge, via a system of curb and gutters, to either end of the bridge approaches where the stormwater will be collected via inlets and catch basins. There, the stormwater runoff will be given basic water quality treatment in approved water quality treatment vaults. The basic treatment will exceed current City of Seattle requirements. The treated water will then be discharged to Lake Union via two approximately 12-inch diameter outfalls, with one outfall each located on the west side of the north and south ends of the floating walkway. (HNTB Corporation, 2014).

The volume of runoff from the new bridge will increase slightly from current conditions because, as is described in B.1.g., above, the new bridge will be slightly wider than current conditions due to the additional sidewalk, which will slightly increase the overall existing impervious surface area by approximately 0.14 acres. Although the vehicle travel lanes will be widened slightly with the new bridge, because the median area is being reduced to accommodate a sidewalk on the east side of the bridge, the PGIS of

the new bridge will be reduced by approximately 0.05 acres from existing conditions.

2) Could waste materials enter ground or surface waters? If so, generally describe.

During project construction, runoff from the construction site has the potential to contain sediment and small amounts of equipment and construction-related waste materials (e.g., vehicle and equipment fuels, fluids, and lubricants; asphaltic materials; concrete grindings; and concrete slurry). Runoff could enter groundwater, if soils are exposed where existing paving has been removed, or could flow into Lake Union either directly or through the storm drain system. There is also a potential for short-term water quality exceedances to occur as a result of resuspension of lake bed sediments in the work area.

Waste materials will not enter ground or surface waters after the project is complete.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The project does not alter or affect drainage patterns in the vicinity of the project site. However, as described in B.3.c.1), above, there is currently no stormwater treatment associated with the bridge. Stormwater currently flows directly from the bridge to Lake Union via scuppers on the bridge. Following construction of the new bridge, stormwater will flow from the new bridge to stormwater treatment vaults at either end of the bridge approaches. There, the stormwater will be given basic water quality treatment and then discharged to Lake Union.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project will comply with all federal, state, and local regulations and permit conditions in order to minimize impacts on surface, ground, and runoff water.

In addition to any permit conditions for the project, BMPs like the following will be implemented to reduce and control impacts to water quality during project construction:

- Preparation and implementation of a project-specific CSECP or SWPPP, as is described in B.1.h., above. Implementation of this plan will protect water quality by reducing and controlling construction-related erosion and sedimentation.
- Preparation and implementation of a project-specific spill plan, as is described in B.1.h., above. Implementation of this plan will protect water quality by managing hazardous materials used and generated during project construction, thereby preventing and minimizing pollution of stormwater and surface water.
- Before any in-water work begins, installation of a containment curtain around the perimeter of the active construction area.
- Before beginning in-water activities that involve physical disturbance of the lake bed, such as pile removal and shaft installation,
    - Installation of secondary containment curtain(s), within the perimeter containment curtain, as close to the areas of activities as feasible.
    - Placement of up to several feet of clean sand on the lake bed in the area of the

in-water activities in order to minimize re-suspension of existing, potentially contaminated, lake bed sediments.

- Before beginning over-water work, such as bridge demolition and shaft construction, installation of a debris containment system to minimize or eliminate debris falling into Lake Union.
- Removal and management of material from below the water surface, such as sediment and entrained water, in the manner described in 3.a.4), above.
- Removal and management of creosote –treated piles using, to the extent feasible, agency-preferred removal and management methods.
- Management of cement and concrete to prevent and minimize any releases of cement and concrete dust, slurries, and mixtures.
- Management and disposal of all contaminated or potentially contaminated project excavation spoils and waste material pursuant to applicable regulations

The contractor will be required to monitor water quality on a regular basis and make adjustments to work practices to ensure compliance with all permit requirements.

As is described in B.3.c.1), above, the completed project will provide improved stormwater quality treatment over existing conditions. In addition, as is described in B.1.g, above, the project will result in a slight decrease (approximately 0.05 acres) of PGIS.

4. Plants

a. Types of vegetation found on the site: *[Check the applicable boxes]*

☒ Deciduous trees: ☐ Alder ☒ Maple ☐ Aspen ☐ Other: (identify)
☒ Evergreen trees: ☒ Fir ☒ Cedar ☐ Pine ☐ Other: (identify)
☒ Shrubs
☒ Grass
☐ Pasture
☐ Crop or grain
☐ Orchards, vineyards, or other permanent crops
☐ Wet soil plants: ☐ Cattail ☐ Buttercup ☐ Bulrush ☐ Skunk cabbage
☐ Other: (identify)
☐ Water plants**:** ☐ water lily ☐ eelgrass ☐ milfoil ☐ Other: (identify)
☐ Other types of vegetation: (identify*)*

b. What kind and amount of vegetation will be removed or altered?

The project will result in changes to vegetation in the project area. The affected vegetation consists mostly of nonnative or ornamental plant species (ESA, 2014c). Numerous street trees and shrubs in planter strips near the existing bridge will be removed at both the north and south bridge approaches and utility relocation areas. Construction of new approaches for the replacement for the existing floating walkway will require the clearing and grading of shoreline areas near the south bridge approach. The majority of existing vegetation in this area is blackberry and other non-native species. It is estimated that a minimum of three existing trees on the north end may need to be removed as a result of the project.

c. List threatened or endangered species known to be on or near the site.

There are no threatened or endangered plant species known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The following measures will be taken to preserve or enhance vegetation on the project site:

- High-visibility construction fencing will be installed to define the perimeter of the work area and protect sensitive areas from construction related impacts.
- SDOT will comply with the City of Seattle Tree Protection Code and adhere to the goals outlined in the Seattle Urban Forest Management Plan.
- Replace all trees removed at a minimum 1:1 ratio in accordance with City of Seattle street tree planting guidelines. All temporarily cleared vegetation will be replanted with native species following construction.

e. List all noxious weeds and invasive species known to be on or near the site.

Vegetated areas that are not actively maintained are dominated by nonnative invasive species, primarily Himalayan blackberry and English ivy. Other scattered invasives include butterfly bush, clematis, and Scot's broom. Lake Union contains nonnative invasive aquatic vegetation, including Eurasian water milfoil and Brazilian elodea (ESA, 2014c).

5. Animals

a. Birds and animals which have been observed on or near the site or are known to be on or near the site: *[Check the applicable boxes]*

Birds: ☐ Hawk ☐ Heron ☐ Eagle ☐ Songbirds
☒ Other: American robin, Canada Goose, house sparrow, mallard duck

Mammals: ☐ Deer ☐ Bear ☐ Elk ☒ Beaver
☒ Other: Norway rat

Fish: ☒ Bass ☒ Salmon ☒ Trout ☐ Herring
☐ Shellfish ☒ Other: steelhead, threespine, stickleback, smallmouth bass, yellow perch, prickly sculpin, sunfish, largemouth bass, black crappie, brown bullhead, coastal cutthroat trout, coho, cutthroat trout, longfin smelt, river lamprey, northern pikeminnow

b. List any threatened or endangered species known to be on or near the site.

The National Marine Fisheries Services (2015) and the U.S. Fish and Wildlife Service (2015) indicate that the proposed project will occur within the range of several federally listed species:

- Coastal-Puget Sound DPS Bull Trout
- Puget Sound Chinook Salmon (ESU)

- Puget Sound Steelhead Distinct Population Segment (DPS)

One state priority species, the Pacific Pond Turtle, is indicated to occur within 0.5 mile of the project site according to the Washington Department of Fish and Wildlife online mapping tool. Additionally, representatives of Environmental Science Associates observed the great blue heron, a state monitor species, using the abandoned dock in the project area as a perching site. Note that while the Great Blue Herons have been observed to use the project area for resting and likely for foraging, no breeding habitat is present (ESA, 2014c).

c. Is the site part of a migration route? If so, explain.

This site is part of the Pacific Flyway, which is a flight corridor for migrating waterfowl and other birds. The Pacific Flyway extends south from Alaska to Mexico and South America.

d. Proposed measures to preserve or enhance wildlife, if any:

The following measures will be implemented to minimize the potential adverse impacts on fish and terrestrial species during construction:

- Temporary erosion and sedimentation control measures will be incorporated which include silt fencing, straw bales/wattles, and mulch, to minimize the potential for runoff, erosion, and turbidity.
- A containment curtain will be installed, around the project area, and removed within approved in-water work windows to minimize impacts to juvenile and adult fish.
- Smaller, secondary containment curtains will be erected around individual work areas as needed to further reduce the suspension of sediment and prevent it from disturbing spawning and rearing habitat. Secondary containment curtains will be installed and removed within approved in-water work windows.
- The application of clean sand around the work area will also minimize re-suspension of potentially contaminated sediments into the water.
- A Spill Plan will be in place prior to construction.
- All lighting will be directed toward the intended areas to minimize spillover.

The approximately 3,250 square feet of increased overwater coverage resulting from the new bridge and rehabilitated floating walkway could impact fish as a result of increased shading patterns from the structures. Measures to mitigate the increased overwater coverage include the possible removal of in-water structures such as derelict creosote-treated piles, the abandoned coal dock, and concrete rubble and debris, which create shading and degrade habitat in the project vicinity.

e. List any invasive animal species known to be on or near the site.

Norway rats have been noted in the project vicinity.

6. Energy and natural resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

During project construction, petroleum products will be used to power construction vehicles and equipment and electricity will be used for construction lighting and various other construction-related needs.

Following construction, electric energy will be used to power streetlights located on the bridge. Gasoline and diesel will be needed to operate maintenance vehicles and equipment, such as those used for street sweeping and bridge inspection and repair. Use of such energy is generally not anticipated to represent a change from current conditions.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

This project will not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The completed project will have minimal energy requirements, and existing lighting will be replaced with energy conserving LED lights.

7. Environmental health

a) Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

With any construction project, there is the risk of potential construction-related spills or leaks. This project will face similar risks, but all risks will be well within the range of typical construction projects. No toxic chemicals will be used or stored at the construction sites, other than fuels and other construction-related fluids. The chemicals associated with equipment operation (fuels, solvents, etc.) are flammable and have the potential to spill. Construction workers may also be exposed to contaminated sediments excavated from the lake bottom, as well as to contaminants from the removal of creosote piles.

Once construction is complete, there will be no new environmental health hazards associated with the operation of the bridge. Environmental health hazards exist in general as a result of vehicles travelling over the bridge.

1) **Describe any known or possible contamination at the site from present or past uses.**

   Some of the lake bed sediments within the project area (particularly the top 10 feet of sediment) have been shown to be contaminated with a variety of hazardous materials, including hydrocarbons and metals. Construction activities will result in disturbances of these sediments, including potential sediment re-suspension (HWA, 2014b).

2) **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

   As noted, some of the lake bed sediments within the project area (particularly the top 10 feet of sediment) have been shown to be contaminated with a variety of hazardous materials.

   The project area contains a number of existing underground utilities, including natural gas pipelines and sewer pipelines. The project design takes the location of these and all utilities into account.

   Temporary installation of overhead high voltage utility transmission and distribution poles and lines will occur prior to construction to provide a safe work environment for construction workers replacing the bridge.

3) **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

   Hydraulic fluids, solvents, fuels, and various other construction materials will be used in and by construction equipment during project construction. During operation of the bridge, the only toxic or hazardous materials will be those associated with vehicle and truck transport across the bridge, and those potentially needed for bridge maintenance.

4) **Describe special emergency services that might be required.**

   No special emergency services will be required.

5) **Proposed measures to reduce or control environmental health hazards, if any:**

   Design of the project has been undertaken keeping potential environmental health hazards in mind. Overhead transmission lines will be temporarily re-routed to provide a safe work environment. Measures have been incorporated into the project to reduce the possibility of suspending potentially contaminated lake bed sediments, as well as to contain suspended sediments. Extremely large pieces of debris within the project area, or those that extend greater than a few feet into the lake bed sediment, might be left in place in order to minimize re-suspension of potentially contaminated sediments (HWA, 2014a, b). As is described in B.3.a.4), above, excavated sediments will be properly handled and decanted, with the resulting solids and decanted water being

properly disposed of. Before the removal of existing pilings, including those associated with the existing bridge and the abandoned coal dock as well as the derelict piles in the vicinity, a layer of clean sand will be applied to keep the lake bed sediments in place and minimize disturbance. Excavated materials, creosote piling, and debris that are potentially hazardous will be hauled off-site and properly disposed of at an appropriately licensed, upland facility. Implementation of a CSECP or SWPPP, and a spill plan, as described in B.1.h. and B.3.d., above, as well as implementation of a Worker Health and Safety Plan, will reduce and control sediment-related and other environmental health hazards. Water quality monitoring will occur within the construction area to ensure that water quality standards are met prior to removing the containment curtains.

b) Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Vehicular traffic along area roadways, boat traffic on the lake, and seaplane and airplane traffic above the existing site are the major noise sources in the area.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction of the project can be expected to cause noise and vibration impacts in areas directly adjacent to construction activity periodically throughout the 15-month construction duration. Noise and vibration will be caused by construction vehicles, equipment and activities. There will be no impact pile driving associated with this project, although there will be periods of higher intensity noise levels particularly associated with the removal of the existing road surface and bridge deck, installation of new bridge shafts, and vibratory pile driving. Some nighttime construction activities may occur, however, this will be minimized with the full bridge closure. A noise variance will be needed from the City of Seattle to conduct nighttime work.

3) Proposed measures to reduce or control noise impacts, if any:

Measures will be implemented to minimize the impact of noise generated during construction. Such measures could include the following (Greenbusch, 2014):

- Establish a daytime exterior construction sound level limit of 85 dBA for the project at Industrial properties, measured 50 feet from the noise generating activity or the nearest receiving property boundary, whichever is farther.
- Establish a daytime interior construction sound level limit of 65 dBA for the project at Industrial properties when all doors and windows are closed.
- Monitor sound and vibration levels during construction, particularly for activities occuraZring in close proximity to the ZymoGenetics building.
- When construction takes place in front of the ZymoGenetics building (1100 Fairview Avenue North), away from the north or south ends of the site, conduct construction at night.
- Line truck beds with rubber bed liners, or keep one foot of dirt in the bottom of

the dump trucks to reduce impact noise from loading excavated materials.

- Change all backup warning devices to the least intrusive broadband type, or use backup observers as permitted by law.
- Direct lighting, generators, air compressors and other stationary equipment away from noise sensitive receivers.
- Remove any debris spilled on pavement by hand and do not use scraping type equipment or activities.
- Use equipment with rubber tires in lieu of track type equipment whenever possible and safe to do so.
- Limit engine idling to not more than five minutes when vehicle or equipment is not directly engaged in work activity, such as on-site pickup trucks and cued haul trucks.
- Fit equipment with high grade engine exhaust silencers and engine shrouds to help lower noise emissions.
- Enclose stationary equipment such as generators, pumps and compressors, or use noise curtains when barriers are infeasible.
- Use electric, rather than pneumatic or diesel, equipment when feasible.
- Install noise barriers to reduce or block line of sight to neighboring noise sensitive receivers, where feasible.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Fairview Avenue North and the floating walkway are public right of way. The adjacent properties are developed as industrial and commercial uses. The proposed project is not expected to affect current land uses on adjacent or nearby lands.

The project will acquire three permanent easements from two private property owners. The easements will allow the City to upgrade to ADA standards, as well as to maintain, several existing curb ramps. The easements will also allow the City of replace and maintain a retaining wall in the vicinity of the northeast corner of the bridge and the ZymoGentics building.

b. Has the site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or non-forest use?

The project site is currently developed as a bridge, roadway, and floating walkway. The site is not known to have been used as working farmlands or forest lands; it contains no agricultural or forest land of commercial significance.

1) **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

   The project will not affect nor be affected by farm or forest operations as none are present in the project vicinity. The bridge is located within an urbanized area of the City of Seattle.

c. Describe any structures on the site.

The main structures on the site consist of two side by side bridge structures, an east and a west bridge. The west bridge has a concrete deck and is supported on creosote treated timber piles, and the east bridge has a pre-stressed concrete girder superstructure supported on pre-stressed concrete piles. The site also contains a floating walkway braced to the existing west bridge, as well as a catwalk under the bridge for access to the ZymoGenetics building. Underneath the existing east bridge is an electrical vault. Structures on site that are immediately adjacent to the bridge structures include the abandoned coal dock in Lake Union and the viewing platform just north of the bridge.

d. Will any structures be demolished? If so, what?

The proposed project will demolish the existing east and west bridges on Fairview Avenue North and replace them with a new, single bridge structure. The electrical vault under the east bridge will be removed by SCL prior to this project. The viewing platform north of the bridge will be removed to accommodate the relocation of the floating walkway, which will be moved to the west as a result of the new, wider bridge. To compensate for the loss of this viewing platform, the bridge will have three belvedere overlooks for viewing the lake (Figure 3). Several derelict piles, and potentially the abandoned coal dock, will also be removed as a result of this project.

e. What is the current zoning classification of the site?

The project area is zoned as Industrial Commercial-45 (IC-45), Seattle Mixed-125 (SM-125), Commercial 2-40 (C2-40), and General Industrial 1 (IG1 U/45) (Seattle, 2013b).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designates the site as city-owned open space with adjacent industrial and commercial/mixed use areas (Seattle, 2013a).

g. If applicable, what is the current shoreline master program designation of the site?

According to the City of Seattle, Department of Planning and Development's Shoreline Environments Map B, the shoreline master program designation for the project site is Urban Maritime (UM) and, if the coal dock and certain derelict piles are removed, some Conservancy Waterway (CW) (Seattle, 2015).

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Yes, the site is located within a liquefaction zone, which is considered a critical area (environmentally critical area) by the City of Seattle (SMC 25.09).

i. Approximately how many people would reside or work in the completed project?

No people will reside or work in the completed project.

j. Approximately how many people would the completed project displace?

The completed project will not displace any people. No one resides or works on the existing bridge and project completion will not displace anyone living or working within adjacent buildings or structures.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Displacement will not occur as a result of this project; therefore, mitigation measures are not needed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The use of the Fairview Avenue North Bridge will not change from the existing conditions as a result of the project. The project is consistent with the City's existing and projected land use requirements and plans for the site.

m. Proposed measures to ensure that the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

The project is located within an urbanized area of the City of Seattle. No agricultural or forest lands are present in the project vicinity; therefore, mitigation measures have not been developed.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units will be provided as part of this proposal.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units will be eliminated as part of this proposal.

c. Proposed measures to reduce or control housing impacts, if any:

No measures to reduce or control housing impacts will be needed.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The proposed project is an in-kind replacement of the existing Fairview Avenue North Bridge structure. The new bridge will have a minor increase in elevation to address existing issues with drainage, and will reconfigure and widen the bridge spans to safely accommodate pedestrian and bicycle traffic, as well as make design accommodations for the potential future extension of the South Lake Union Line of the Seattle Streetcar. The bridge will have metal railings, and illumination will be provided by an estimated 11 light poles that will be about 35-feet tall. Figure 3 provides a schematic rendering of the proposed bridge.

b. What views in the immediate vicinity would be altered or obstructed?

The existing views within the immediate vicinity will be slightly altered from current conditions. During the active construction period there will be heavy duty construction equipment within the project site, which will temporarily alter existing views. The new bridge will be slightly higher and crowned, and will extend further west into Lake Union. This will slightly change views to and from the Lake Union Steam Plant (the ZymoGenetics building), which is a designated Seattle landmark. Also, during construction, the floating walkway will be temporarily relocated. Post-construction, however, the floating walkway will be reinstalled approximately ten feet further into the water body, pending permit approvals. Figure 3 provides a schematic rendering of the proposed bridge.

c. Proposed measures to reduce or control aesthetic impacts, if any:

This project is an in-kind replacement of the existing Fairview Avenue North Bridge structure. The views to and from Lake Union will be largely maintained; however, a large portion of the existing bridge substructure will be removed which currently obscures views of the Lake Union Steam Plant from the lake. Open metal bridge railings are being used to improve the aesthetics of the bridge, as well as to provide better visibility through the railings. The bridge is being designed with raised integrated crossbeams to provide a thinner look to the bridge.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

During construction, temporary lighting will be used to facilitate nighttime construction activities.

After construction, lighting will be comparable to the lighting that currently exists in the

project site. Existing bridge lighting consists of 7 poles, 35 feet high, that are High Pressure Sodium (HPS) lighting. These poles will generally be replaced by an estimated 11 light poles, about 35 feet tall, with new, energy conserving LED lights. Lighting beneath the bridge that currently illuminates, for safety purposes, the small walkway leading from the ZymoGenetics building to the floating walkway will generally be replaced in kind after project completion. All lighting will be directed toward the areas it is intended to illuminate, i.e., the bridge deck including the sidewalks and the small walkway. All lighting will meet applicable SCL and SDOT Standards.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Light or glare from the finished project will be similar to existing conditions. Light from the bridge street lamps will be directed downward toward the bridge deck and will not be a safety hazard nor interfere with views. As with current conditions, some light will spill into the lake from the existing lighting. Existing safety lighting for the small walkway beneath the bridge connecting the ZymoGenetics building to the floating walkway will be removed during construction and replaced in-kind.

c. What existing off-site sources of light or glare may affect your proposal?

No off-site sources of light or glare will affect this proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

This project will not cause any light or glare impacts because light and glare from the finished project will be similar to existing conditions, with lighting being directed toward the traveled areas on the new bridge and the small walkway. Accordingly, no measures to reduce or control light and glare impacts are proposed.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The City of Seattle's *My Neighborhood Map* shows the following designated recreational areas in the vicinity of the proposed project:

- Fairview Park, 2900 Fairview Ave E
- Lake Union Walkway, Fairview Ave N & E Galer St
- Eastlake Triangle, 10th Ave E and E Prospect St
- I-5 Colonnade, Beneath I-5, South of E Howe St
- Terry Pettus Park, Fairview Ave E & E Newton St
- Lakeview Place, 1042 Lakeview Blvd E
- Bellevue Place, Bellevue Ave E & Bellevue Place E
- Summit Place, Belmont Ave E & Bellevue Place E
- St. Marks Greenbelt, 1500 Lakeview Blvd E
- Lake Union Park, 860 Terry Ave N
- Volunteer Park, 1247 15th Ave E

The project site contains a small portion of the Cheshiahud Lake Union Loop, an approximately 6 mile trail which connects the neighborhoods and parks surrounding Lake Union (Seattle, 2014). As outlined in the Cheshiahud Lake Union Loop Master Plan, the Fairview Avenue North Bridge Project will improve the pedestrian connectivity in Waterway 8 and provide a sidewalk at street level as well as continuous bicycle infrastructure on the bridge once construction is complete (Seattle, 2009).

A floating walkway and kayak launch are also present within the project site, as well as a viewing platform, which is currently located at the north of the existing Fairview Avenue North bridge.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The floating walkway will be temporarily removed during construction of the proposed project. Also during this time, pedestrian and bicycle use along the Cheshiahud Lake Union Loop will be detoured around the construction area, away from Lake Union and Waterway 8.

The City intends to replace the floating walkway in roughly the same location, unless its reinstallation is precluded by federal, state, or local permitting requirements. If precluded by permit requirements, the walkway will not be replaced across the lake. The connectivity of the Cheshiahud Lake Union Loop will not be affected because pedestrian and bicycle access will be provided on the new bridge structure. Public access to Lake Union and Waterway 8 will be provided from the existing shoreline and from viewing areas (belvederes) provided on the west side of the bridge.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

During the construction of the project, lane closures and detours will have an impact on pedestrian and bicycle access to the area, as well as access to Waterway 8, Lake Union, and nearby recreational facilities. During construction, the floating walkway will be moved and unavailable for use, and bicycle and pedestrian users of the Cheshiahud Lake Union Loop will be detoured around the work area using the surrounding local street network.

Following construction, the City intends to return the floating walkway to its location adjacent to the bridge, unless its reinstallation is precluded by federal, state, or local permit conditions. If permit conditions do not allow reinstallation of the walkway, it will not be replaced across the lake. Public access to Lake Union and Waterway 8 would be provided from the existing shoreline access points at the south end of the bridge. Public access in the form of viewing areas would be provided by the belvederes that will be built on the west side of the new bridge. Pedestrian access through the project area will be maintained by the new sidewalks on both sides of the new bridge, and bicycle access will be maintained by the new two-way cycle track on the west side of the bridge.

13. Historic and cultural preservation

a. Are there any buildings, structures, or sites located on or near the project site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

A historic property survey (ESA, 2014b) identified the following resources on or near the project area:

- Six properties listed, or determined to be eligible for listing, on the National Register of Historic Places. Three of these properties are historic vessels moored nearby and to which no project-related impact is expected. One of the six properties, the Lake Union Power House and Steam Plant (currently the ZymoGenetics building), is also designated as a City of Seattle Landmark. This property, located immediately next to the Fairview Avenue North Bridge, comprises four buildings constructed between 1912 and 1921. It was designated as a Seattle Landmark in 1988.
- Five historic-age buildings of which one is potentially eligible for listing to the National Register of Historic Places.
- One archaeological site consisting of the ruins of at least two wooden historic piers associated with, but not considered to be contributing elements of, the Lake Union Power House and Steam Plant. This site is not considered eligible for listing on the NRHP.

The location of the City of Seattle Landmark Lake Union Power House and Steam Plant adjacent to the project area will trigger an adjacency referral to the Seattle Landmarks Preservation Board, per City SEPA policies pertaining to historic preservation (SMC 25.05.675H).

b. Are there any landmarks, features, or other evidence of Indian or historic use of occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

A cultural resources discipline report was prepared for this project and includes research on the project area and environs (ESA, 2014b). In brief, and as noted in B.13.a., above, there are multiple historic-age buildings and structures on or near the project area. One of the properties is a City of Seattle Landmark. Other properties are listed, or determined to be eligible for listing to the National Register of Historic Places.

A review of geotechnical borings and geological maps conducted for the discipline report indicates that project construction will occur primarily within imported fill material originating from previous construction and demolition within the project area. Native sediments that may be impacted by project construction have been mapped as Pleistocene-aged glacial recessional lacustrine deposits, which were deposited prior to arrival of people in Western Washington.

Based on the above information, the cultural resources discipline report does not identify the probable presence of archaeologically significant sites or resources. Therefore, the project is unlikely to encounter intact prehistoric or historic archaeological resources.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the Department of Archaeology and Historic Preservation, archaeological surveys, historic maps, GIS data, etc.

A cultural resources discipline report was prepared for this project to assess the project's potential impacts to cultural and historic resources (ESA, 2014b). The report included reviewing previous archaeological survey reports, ethnographic studies, historic maps, government landowner records, aerial photographs, and regional histories. A review of DAHP's WISAARD database was also part of this assessment.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance of resources. Please include plans for the above and any permits that may be required.

Several trolley wires that are currently attached to the Lake Union Power House and Steam Plant (currently the ZymoGenetics building) will be removed as part of this project. Repair at the attachment locations will be conducted by a masonry contractor that specializes in historic masonry repair techniques, in accordance with Secretary of Interior Standards, and as approved by the Seattle Landmarks Board.

Pursuant to the City of Seattle Department of Planning and Development (DPD) Director's Rule 2-98, contract documents for project contractors will include reference to, and require compliance with regulations regarding archaeological resources, such as RCW Chapters 27.34, 26.53, 27.44, 79.01, and 79.90 and WAC Chapter 25.48. In additional, a project-specific Inadvertent Discovery Plan will be prepared to outline the procedures to be followed if cultural materials are identified during construction

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area, and describe proposed access to the existing street system. Show on site plans, if any.

Fairview Avenue North is designated public right-of-way and is under jurisdiction of SDOT. Access to the project site will not be changed. Other major streets in the area include Eastlake Avenue East, Interstate-5, Mercer Street, and Republican (Figures 1 and 4). During the project construction period, the bridge will be fully closed in both directions. Detour routes will be provided on adjacent streets as indicated in Figure 4 (HNTB Corporation, February, 2015).

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Fairview Avenue North is currently serviced by public transit, King County Metro bus routes 70, 71, 72, 73, and 83. Additionally, the South Lake Union Line of the Seattle Streetcar runs along Fairview Avenue North with its terminus at Fairview Avenue North and Campus Drive.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or non-project proposal eliminate?

A field visit was conducted during a peak parking demand time (10:00AM, weekday) to observe the public parking capacity and availability within an approximately 0.25 mile radius of the project site. Within that radius, there are about 900 public parking spaces, including on-street and paid lot parking spaces and excluding spaces in private parking lots. Of the approximately 900 spaces, approximately 20 percent were vacant at the time of the field visit.

During project construction, up to approximately 33 parking spaces or areas will be temporarily inaccessible or removed. Of these 33 spaces, up to 12 spaces might be removed or made inaccessible due to utility relocations. Of these 12 spaces, up to 2 might be removed from the parking lot at the southwestern end of the bridge and the equivalent of up to about 10 spaces might be removed from the graveled area at the northwestern end of the bridge. The remaining approximately 21 spaces of the 33 spaces that will be temporarily removed will be temporarily removed to accommodate detour routes.

Upon completion, the project will have permanently eliminated up to a total of about 20 public parking spaces, all within existing City right of way adjacent to the bridge. Three spaces are expected to be gained by closing a driveway currently located southwest of the bridge. Approximately 22 spaces are expected to be lost by the addition of a driveway southwest of the bridge and by construction of other project elements. The permanent reduction of about 20 parking spaces associated with this project will result in a decrease of less than 2 percent of public parking availability within the project vicinity.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The proposal requires no new roads or streets. The project will replace the two bridges that compose the Fairview Avenue North bridge with a single bridge in the same general location. The project will not add traffic lanes or capacity, and will match existing lane directions by providing two northbound lanes and one southbound lane on the new bridge. The project will provide improved facilities for bicyclists and pedestrians. Sidewalks will be provided on both sides of the bridge, and a cycle track will be installed for improved bicycle movement across the bridge.

Some roadway surface, curbing, signage, traffic circle, and signal improvements and modifications might be made to facilitate movement of detoured traffic during project

construction. Traffic signals might also be installed to facilitate the use of detours.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Barges will likely be used during construction for construction access and material transport. The use of barges will be conducted in a manner that will maintain access for float planes in the project vicinity. The project will not use rail or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

This project will not generate additional vehicular trips. The bridge is being replaced in-kind and will not provide additional travel lanes.

g. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The project will not interfere with, affect, or be affected by the movement of agricultural or forest projects, as none are present in the project vicinity.

h. Proposed measures to reduce or control transportation impacts, if any:

A qualitative analysis has been done on detour options and the following options have been outlined in order to reduce or control transportation impacts during construction (Figure 4) (HNTB Corporation, February, 2015). A detailed detour plan will be developed and approved by SDOT prior to project implementation.

- Southbound traffic will likely detour to Eastlake Avenue East, and use either Aloha Street, Republican Street, or Harrison Street to return to Fairview Avenue North.
- Northbound traffic will use the same route in reverse, although Mercer Street is an additional route that is available to reach Eastlake Avenue East for northbound travel.
- Trucks could use Eastlake Avenue East southbound to Stewart Street/Denny Way to reach Fairview Avenue North.
- Trucks can use Howell Street and Eastlake Avenue East to travel northbound around the detour.
- Northbound general traffic and trucks would access Fairview Avenue East via a left turn at East Garfield Street.
- Buses may be rerouted via Eastlake Avenue East and Aloha Street or Republican Street.
- Detour signing will be provided.
- Additional measures to reduce construction impacts may include roadway repaving, lane restriping, curb modifications, signage modification, signal timing revisions, four-way stop controlled intersections, temporary or permanent new signals, additional pedestrian crosswalks and protected pedestrian crossings,

and temporary removal of traffic circles and parking.

15. Public services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

This project will not result in an increased need for public services, as it will not cause a population or transportation increase in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any.

During project construction, close coordination will be conducted with emergency service providers (police, fire, medical, etc.) regarding lane closures and detours to ensure emergency service access at all times.

16. Utilities

a. Utilities currently available at the site, if any: *[Check the applicable boxes]*

☐ None
☒ Electricity ☒ Natural gas ☒ Water ☐ Refuse service
☒ Telephone ☒ Sanitary sewer ☐ Septic system
☐ Other: (identify)

Numerous utilities exist in the project area, on the bridge itself and under the floating walkway. Electrical conduits in the vicinity serve street illumination and bus and trolley service. Fiber optic lines are bored under the lake and are also attached to the existing east bridge. High-voltage power lines exist overhead near the west bridge.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

- Any utilities that will be impacted by project construction will either be relocated or removed prior to construction. Some disruptions in service may occur during construction activities and relocation. Close coordination with the service providers will be conducted prior to commencing construction.
- Notification of any necessary utility outages will be provided to utility customers in advance of the scheduled outage.
- No new utilities are currently proposed on the bridge. The bridge will be constructed to accommodate future utilities should attaching them to the bridge be desirable.
- Stormwater runoff north and south of the bridge will be collected off the bridge structure, treated and discharged to Lake Union.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: .....

MariLyn Yim, Project Manager

Date Submitted: 1/22/2016

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APPENDIX A

City of Seattle Greenhouse Gas Emissions Worksheet

Fairview Avenue North Bridge Replacement Project

Greenhouse Gas Emissions Worksheet
Fairview Avenue North Bridge Replacement Project

	VMT for Project	*Gallons of Fuel/Mile*	*Pounds of CO_2e/gallons Diesel**	*MT CO_2e for Diesel***
Heavy Trucks	157,900[1]	0.1250[2]	26.55[3]	236
	Square Feet of Pavement		*MT CO_2e/1000 sq ft of asphalt or concrete paving*[4]	*MT CO_2e for bridge*
Bridge Paving and Approaches	30,400		50	1,520
Bridge Structure	36,900		50	1,845
Total				**3,601 MT CO_2e**

**Conversion from pounds to metric tons, 1 pound = 0.00045 MT*
***Calculated using City of Seattle Department of Planning and Development SEPA GHG Emissions Worksheet Version 1.7*

Data sources and Calculations:

1. Vehicle miles travelled for construction: An estimate of 3,158 truck trips travelling 50 miles roundtrip was used.

2. Gallons of fuel per mile: This is the weighted national average fuel efficiency for all heavy single-unit trucks in 2006. This includes single-unit trucks which have more than two axles or more than four tires. The 0.125 gallons/mile used here is the inverse of the more commonly known term "miles/per gallon," which is 8.0 for medium weight (10,000 - 26,000 lbs) trucks most commonly used for construction. (*Transportation Energy Data Book*. 27th Edition. 2008. Chapter 5: Heavy Vehicles and Characteristics.)

3. Pounds of CO_2 equivalent per gallon of diesel: The CO_2 emissions estimates for diesel include the extraction, transport, and refinement of petroleum as well as their combustion. The emissions estimates for diesel were used instead of gasoline diesel combustion has a greater carbon impact. (*Life-Cycle CO_2 Emissions for Various New Vehicles*. 2006. RENew Northfield.)

4. Metric tons of CO_2 equivalent per 1,000 sq ft of asphalt or concrete production: Based on King County's conservative estimate for the embodied emissions over a development's life cycle. (Meil, J. *A Life Cycle Perspective on Concrete and Asphalt Roadways: Embodied Primary Energy and Global Warming Potential*. 2006; Park, K, Hwang, Y., Seo, S., M.ASCE, and Seo, H. , "Quantitative Assessment of Environmental Impacts on Life Cycle of Highways," *Journal of Construction Engineering and Management* , Vol 129, January/February 2003; Stripple, H. *Life Cycle Assessment of Road. A Pilot Study for Inventory Analysis*. Second Revised Edition. IVL Swedish Environmental Research Institute Ltd. 2001; Treloar, G., Love, P.E.D., and Crawford, R.H. "Hybrid Life-Cycle Inventory for Road Construction and Use." *Journal of Construction Engineering and Management*. January/February 2004.)

FIGURES 1 through 4

Fairview Avenue North Bridge Replacement Project

SOURCE: City of Seattle, 2009, 2010; WA Dept Ecology, 2009; WDFW, 2007; Microsoft Bing, 2010 (Aerial Photo).

Potential construction-related detour routes are shown on Figure 4.

Fairview Bridge. 210715

Figure 1

Fairview Avenue North
Bridge Replacement Project
Seattle, Washington
Vicinity Map

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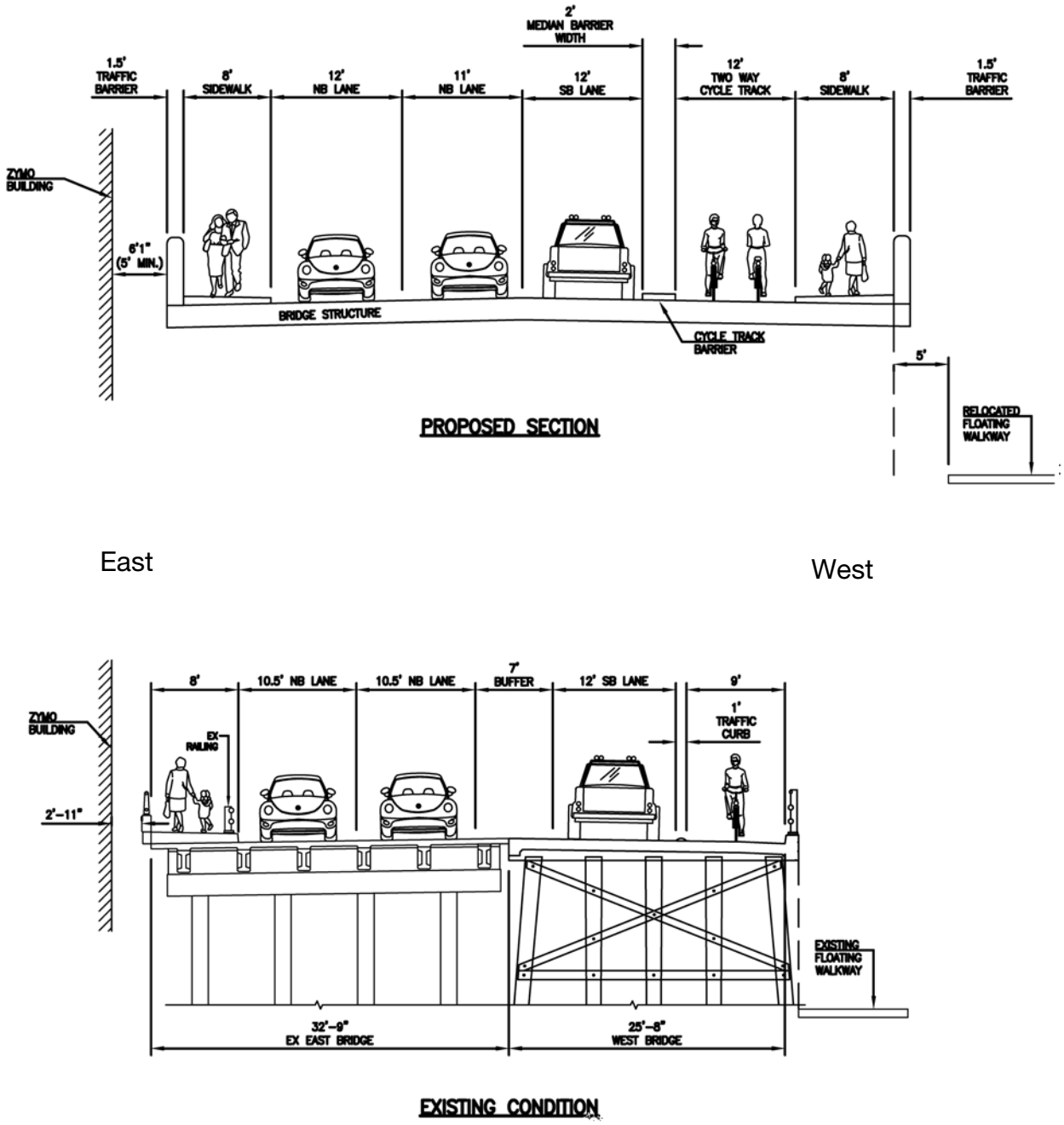
Feet



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SOURCE: Perteet

Fairview Bridge . 210715

Figure 2

Fairview Avenue North
Bridge Replacement Project
Seattle, Washington

Existing and Proposed Lane Configurations

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SOURCE: Open House Materials 11/12/2015.

Fairview Bridge . 210715

Figure 3

Fairview Avenue North
Bridge Replacement Project
Seattle, Washington

Proposed Design: Bridge Rendering

General traffic/bikes/pedestrian detour

SOURCE: HNTB, Inc. 2015

210715 Fairview Bridge . 210715

Figure 4

Fairview Avenue North
Bridge Replacement Project
Seattle, Washington

Possible Project Construction
Detour Routes