



# **Northgate Pedestrian and Bicycle Bridge Project Fish, Wildlife, and Vegetation Technical Memorandum**

Prepared for  
**Seattle Department of Transportation  
Washington State Department of Transportation  
Federal Highway Administration**

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# 1 Introduction

The Seattle Department of Transportation (SDOT) proposes to construct a pedestrian and bicycle bridge that will span Interstate 5 (I-5) in the vicinity of the Northgate Mall, the future Link Light Rail station and North Seattle College (NSC), with the goal of providing an east-west, non-motorized corridor linking the Seattle neighborhoods of Licton Springs and Maple Leaf.

The purpose of this study is to assess potential project impacts to fish, wildlife, and vegetation from construction and operation of the Northgate Pedestrian and Bicycle Bridge Project. This report has been prepared *in accordance with WSDOT's Environmental Manual, Chapter 436 Fish, Wildlife, and Vegetation* (WSDOT 2017). The Federal Highway Administration (FHWA) is the federal agency responsible for reviewing and approving the proposal for compliance with the National Environmental Policy Act (NEPA). FHWA has delegated the review of environmental documents to WSDOT.

## 2 Project Description

### 2.1 Purpose and Need

The purpose of the Project is to provide a convenient and safe pedestrian and bicycle connection over I-5. Existing pedestrian and bicycle highway crossings in the area are separated by approximately 0.9 mile, located on Northgate Way to the north and N 92nd Street to the south. Improvements include a pedestrian and bicycle bridge that will span I-5, a link to the WSDOT park and ride lot, and a connection between the bridge and nearby transit facilities.

The Project is needed to support the transit development at Northgate. Northgate is home to the Northgate Transit Center and operates as the largest facility in the King County Metro system. The transit center is helping the area to move from a community dependent on automobiles to a community embracing the benefits of active transportation. In the near future, the existing transit center will be enhanced by a new light rail station currently under construction. Residents and commuters will have access to a light-rail station that currently connects to the University of Washington, downtown Seattle, and SeaTac Airport. In the future light-rail will go as far south as Tacoma, north to Lynnwood and Everett, and east to Bellevue and Redmond.

### 2.2 Project Location

The Project is located in the Northgate area of Seattle, Washington (Figures 1 and 2). The project area is generally bounded by College Way N on the west, 1st Avenue NE on the east, Northgate Way on the north and NE 92nd Street on the south. This area is bisected by the I-5 freeway. The eastern portion of the Project lies within SDOT and WSDOT right-of-way. The western portion of the Project lies within WSDOT right-of-way and lands owned by the North

Seattle College (NSC). The Project is located within the Sections 31 and 32, Township 26 North, Range 04 East.

Figure 1. Project Vicinity Map

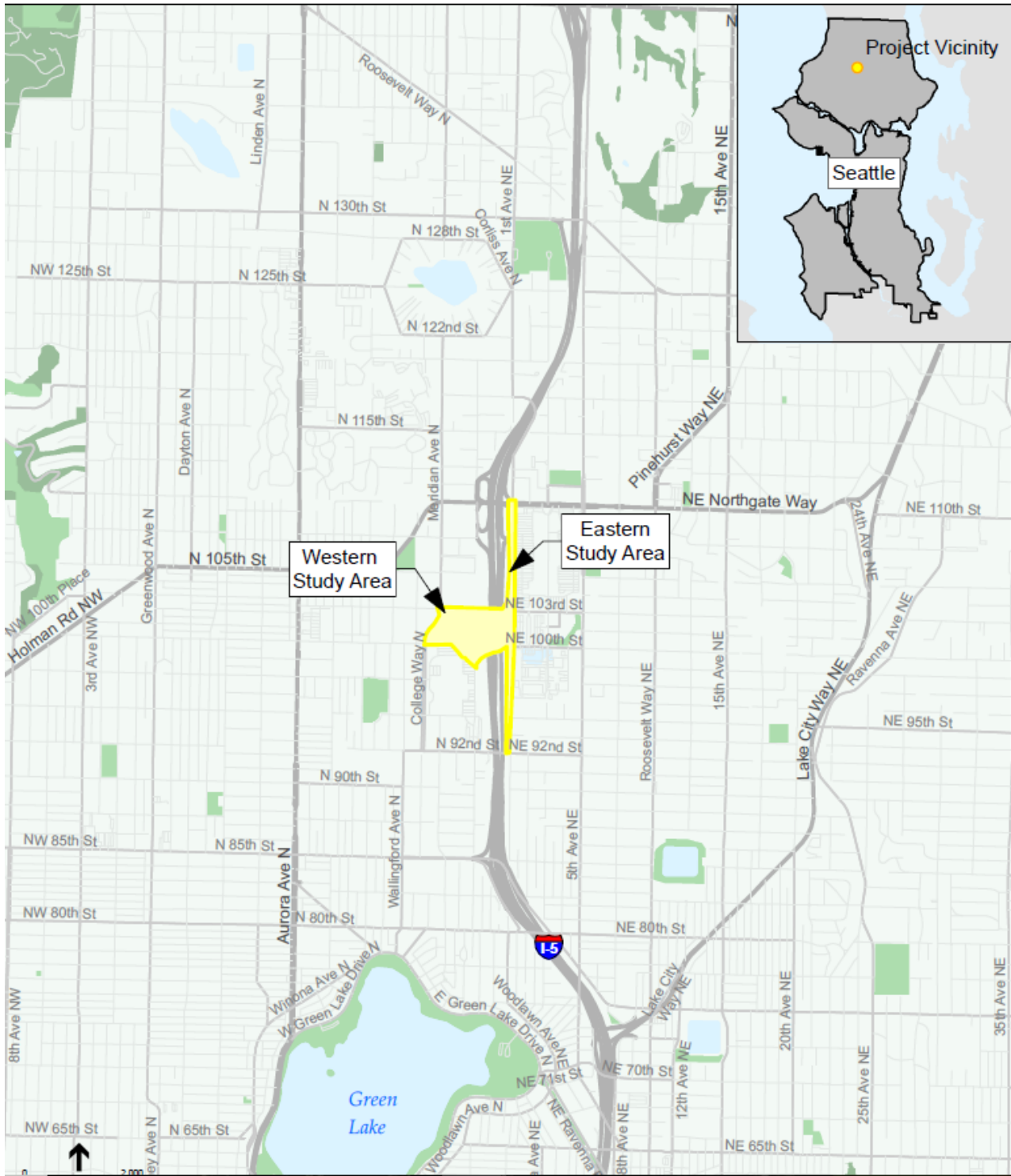
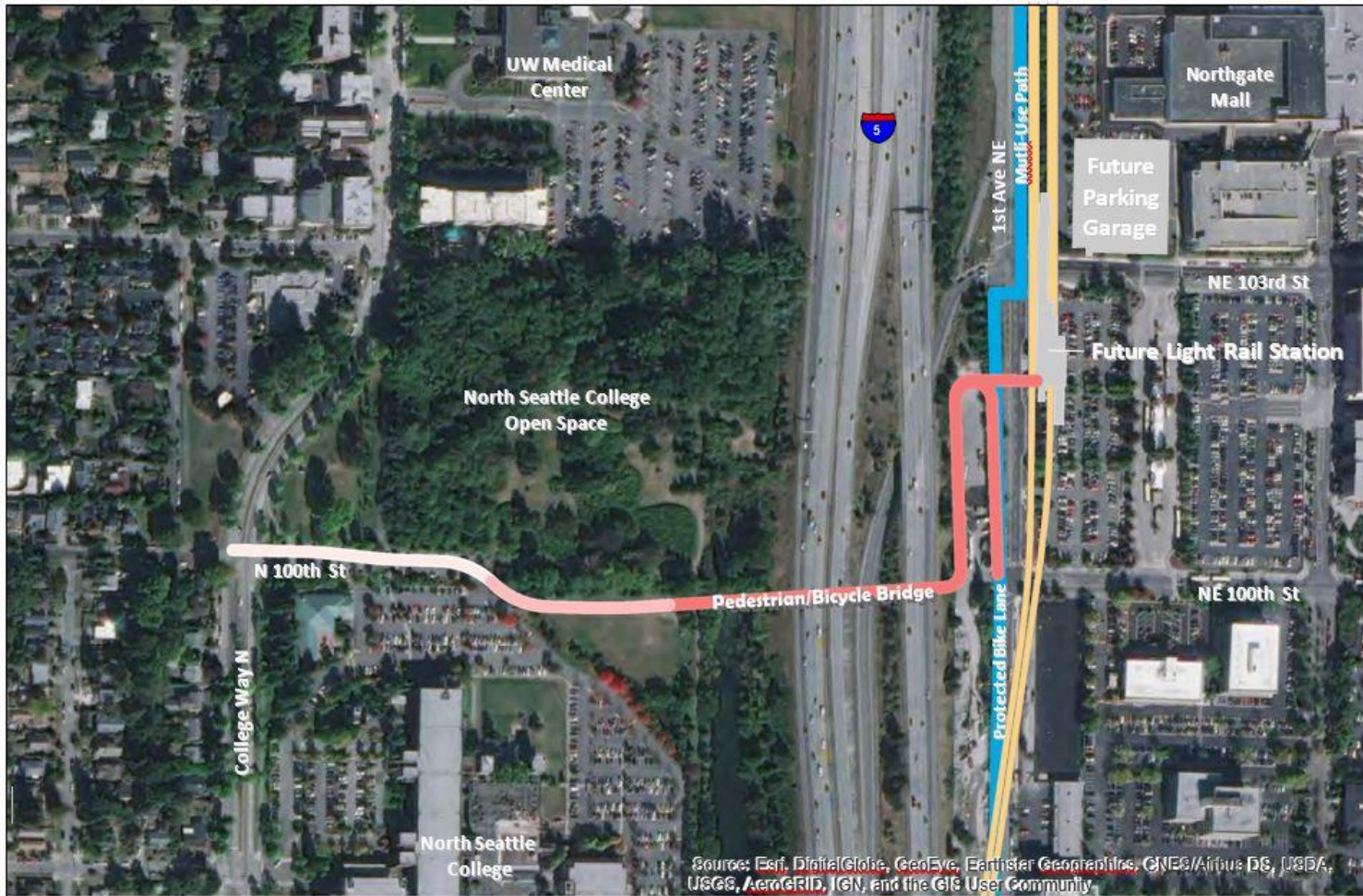


Figure 2: Project Site and Bridge Alignment



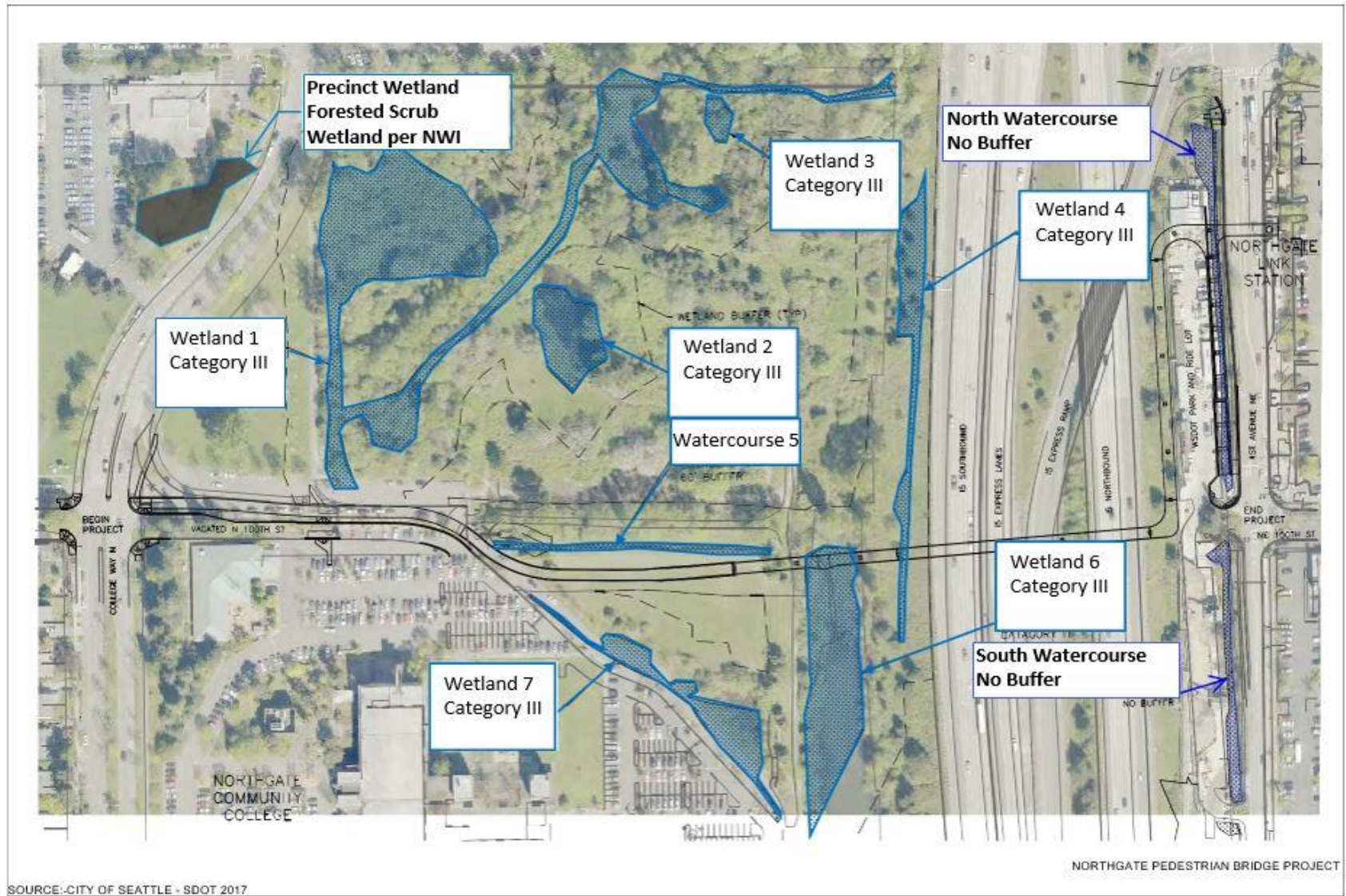
SOURCE: City of Seattle 2017; Sound Transit 2017; Esri 2016

Northgate Pedestrian Bridge Project. 130125

-  Bridge Structure
-  Earthfill Section
-  16' Wide Multi-Use Path
-  1st Avenue NE Protected Bike Lane (PBL)/Multi-Use Path



Figure 3: Wetlands and Watercourses



## 2.3 Description of Proposed Project Work

Project construction is anticipated to begin in Spring 2019 and will take approximately 18 to 20 months with a targeted completion in December 2020 before the opening of the Sound Transit Northgate Link Light Rail station.

### The key project elements include:

- A 16-foot wide, 1,900-foot long Pedestrian and Bicycle facility, including a 360-foot crossing of I-5.
- An east approach ramp located within the WSDOT park and ride on the east side of I-5, that will connect to grade level at 1st Avenue NE and NE 100th Street.
- A bridge connection over 1st Avenue NE connecting to the Northgate Link Light Rail station.
- A west approach consisting of an earthfill embankment with retaining walls that touch down on the NSC campus.
- A 16-foot wide multi-use path on the NSC campus linking the facility with College Way N.
- A 10-foot wide protected bike lane along the west side of 1st Avenue NE from NE 92nd Street to NE 103rd Street.
- A multi-use path on the east side of the 1st Avenue NE from NE 103rd Street to Northgate Way.

### Construction activities will include:

- Clearing and grading/vegetation removal
- Ground disturbing activities
- Concrete paving
- Construction and removal of temporary trussels
- In-water construction
- Temporary on-site staging
- Construction of stormwater facilities
- I-5 closures

### 2.3.1 Construction Staging and Phasing

Construction of the Project will take place on both sides of I-5 and will overlap in time. On the west side of I-5, an approximate 40-foot width area at the west approach and adjacent to Watercourse 5<sup>1</sup> will be used for temporary construction staging. East-west vehicle access to the staging area will be from College Way N to vacated N 100th Street. North-south vehicle access

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<sup>1</sup> Watercourse 5 is also classified as a wetland and is classified as Wetland 5 in Figures 7 and 8.

will be from N 92nd Street through the NSC parking lot then along the existing maintenance road in vacated Corliss Avenue N. Temporary construction staging east of I-5 will close off and utilize the existing WSDOT park and ride lot. Staging areas and access roads used for construction are shown in Figure 4 and will be restored upon completion of the Project.

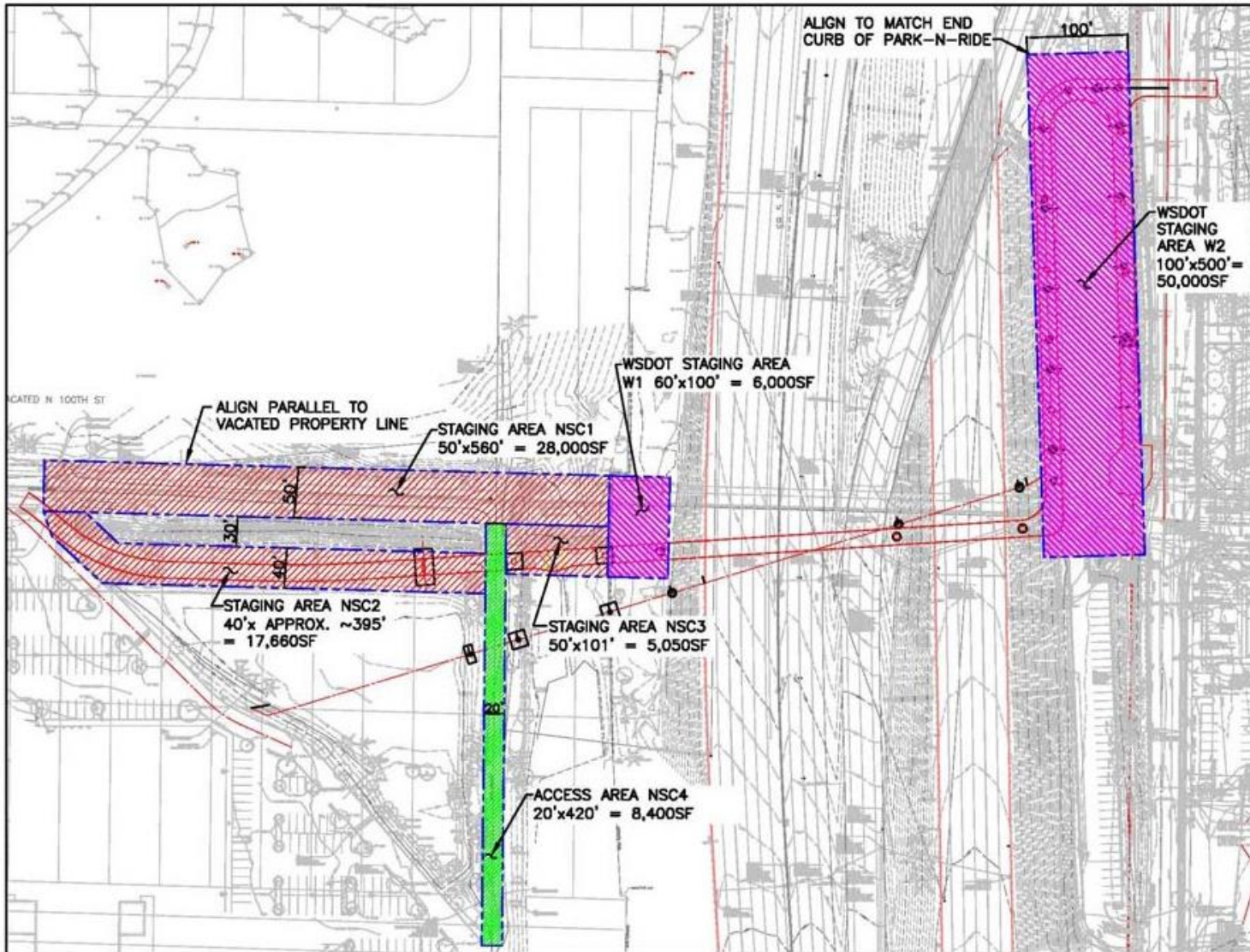
Once staging areas are set up, the Project will construct three permanent piers and three temporary bridge piers along the alignment. Meanwhile, temporary piers and a temporary working trestle (30 ft x 284 ft) will be constructed in vacated N 100th Street (Figure 4). The temporary trestle will cross the pond and marshy area identified as Wetland 6 (Figure 3). The temporary trestle will be used throughout construction to assemble and install the bridge span. Once assembled, portions of the bridge span will be moved from the temporary work trestle to the temporary and permanent piers in the project alignment. Two additional piers within I-5 (piers 5 and 6) will be constructed to allow placement of the main span. This work will be closely followed by foundation construction (spread footings at the west approach and drill shafts at the east approach). The North Watercourse will be filled in several places. A new outlet pipe will be installed at the south end of the revised North Watercourse, which will convey flows to the stormwater system under 1<sup>st</sup> Avenue NE.

The next order of work will be construction of substructure columns and crossbeams on both sides of I-5, followed by the general column/cap detailing and reinforced cast-in-place box structures at the east horizontal curves. Work on the geotextile retaining walls and project drainage system on the west side of I-5 could begin at this point or be shifted to the end of the Project per the Contractor's plan. While the fieldwork is underway, precast concrete girders, steel through-girders, and the steel trusses will be shop fabricated.

The precast concrete girders, anticipated to be the first shop-fabricated components, will be installed in the field first along the west approach to provide construction access for the main span construction, and then at the east approach. With the approach structures and added deck in place, the main span will be assembled and launched from the west staging area using the approach spans and work trestle. Temporary pier supports will be erected as necessary to allow construction and launching of the main span truss on a level surface.

Temporary closing of I-5 will be required for construction of Pier 5. These activities will be coordinated with WSDOT and FHWA.

Figure 4: Construction Staging Areas



## **2.4 Construction Equipment and Noise**

Construction of the Project will occur over a period of 18 to 20 months. Use of heavy construction equipment, such as graders, bulldozers, haul trucks, jack hammer, welding equipment, hydraulic drills, and cranes will occur. Construction will typically take place between 7 am and 7 pm. A Noise Variance permit from the City of Seattle will be required for evening and night-time work outside these hours.

## **2.5 Ground Disturbance**

Ground disturbance for the Project will involve excavation, grading, and addition of fill material. Total ground disturbance for the Project will be 240,000 square feet. Total soil disturbance will be 120,000 square feet. The following summarizes the amount of ground disturbance that will occur, and fill quantities needed for the main project construction activities:

- Bridge footings and columns – Ground disturbance for 17 bridge support piers and abutments will be about 7,000 square feet. The west embankment approach to the bridge will be fill supported by retaining structures up to a height of about 20 feet. Fill quantity is estimated at about 2,500 cubic yards.
- Staging areas – On the west side of I-5, ground disturbance for excavation and grading including staging areas will be about 72,000 square feet. On the east side of I-5 ground disturbance for excavation and grading including staging areas will be about 57,000 square feet.
- Retaining walls – A portion of the east approach will be fill supported by retaining walls up to a height of about 11 feet. Fill quantity is estimated at about 460 cubic yards.
- Wetlands – Watercourse 5 will be reconfigured to allow room for the west bridge approach. Approximately 1,182 square feet of Watercourse 5 will be filled. The North Watercourse will be filled to accommodate the east bridge landing and protected bike lane in 1st Avenue NE. North Watercourse will be filled 130 feet.

## **2.6 Stormwater**

The Project will add new impervious surface. No pollution generating impervious surfaces will be added. Stormwater will be managed to meet the 2016 City of Seattle Stormwater Code and Manual (SMC 22.800-22.808).

### 3 Methodology

Clearway Environmental reviewed existing information about natural resources in the project vicinity including the *Draft Fish and Wildlife Report* (ESA 2015). Other information reviewed included:

- City of Seattle sensitive areas mapping
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species mapping (WDFW 2015)
- Washington Department of Natural Resources rare plant database (WDNR 2013)
- Sound Transit North Link Project – Wetlands Update (Sound Transit 2018)
- *Northgate Pedestrian and Bicycle Bridge Project Wetland Discipline Report* (Clearway Environmental 2018)

Clearway Environmental biologists completed site visits in August through December 2017. This report does not include site-specific fish, wildlife, or tree (arborist) surveys.

The potential presence of species listed under the federal Endangered Species Act was also evaluated. Analysis methods and results are detailed in the *Northgate Pedestrian and Bicycle Bridge Project — Draft Biological Assessment Letter of “No Effect”* (Clearway 2018).

For this analysis, the overall project area was divided into two separate study areas, one located west of I-5 and the other east of the interstate (Figure 1). Each has different geological and hydrological conditions and are described separately below. The project area lies within Water Resource Inventory Area (WRIA) 8–Lake Washington/Cedar/Sammamish Watershed.

The western study area (Figure 1) lies in the Bartonwood Natural Area in the northern portion of the NSC campus. It is bounded by I-5 on the east, College Way North to the west, N 103rd Street on the north, and the NSC’s Northeast parking lot to the south (Figure 1).

The eastern study area is largely parking lots and street right-of-way, with some vegetated areas and an intersecting watercourse. It is bounded by I-5 to the west, 1st Avenue NE to the east, NE Northgate Way to the north, and NE 92nd St to the south (Figure 1).

#### 3.1 Applicable Regulations

The following regulations are applicable to the evaluation of impacts to fish, wildlife, and vegetation:

- National Environmental Policy Act (NEPA)
- Section 404 of the Clean Water Act - Nationwide Permit (U. S. Army Corps of Engineers): Triggered by work for proposed construction of the bridge landings in waters of the U. S. (wetlands).

- Section 7 Endangered Species Act (U. S. Fish and Wildlife Service and National Marine Fisheries Service): Triggered by FHWA funding. Section 7 regulates activities that may affect species listed under the federal Endangered Species Act.
- Section 401 of the Clean Water Act - Water Quality Certification (Ecology): Triggered by the Army Corps of Engineers permit and work within wetlands.
- Coastal Zone Management Act Consistency Determination: Potentially required for projects within Washington State's 15 coastal counties, including King County.
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (Ecology): Triggered by ground disturbance of greater than one acre.
- Hydraulic Project Approval (WDFW): Required for work within or directly adjacent to waters of the state. Observations of fish within Watercourse 5, Wetland 6, and the North Watercourse result in the classification of these two watercourses as Type F (fish) regulated waters.
- Industrial Waste Discharge Permit (King County): Permit will be required if the Project needs to discharge construction dewatering water to the sanitary sewer system.
- Critical Areas Ordinance Permit (City of Seattle): Required for work within Environmentally Critical Areas, which include Fish and Wildlife Habitat Conservation Areas including streams, priority habitats and species, riparian watercourses and riparian corridors (SMC 25.09.200). The City also regulates wetlands, flood prone areas, peat-settlement-prone areas, and steep slopes (SMC 25.09.012). Development standards for wetlands and wetland buffers are detailed under Seattle Municipal Code (SMC) 25.09.160.
- Master Use Permit (City of Seattle): Required for development on private property.

## 4 Affected Environment

### 4.1 Land Use

Land use in the western study area is largely natural area, containing native and invasive trees and shrubs, as well as maintained lawns. The northern and western portions of the western study area are dominated by deciduous forest cover. The central, eastern, and southern portions contain maintained lawn, shrubs (primarily Himalayan blackberry), and scattered trees. Several dirt roads and trails traverse this area (Figure 3). The proposed pedestrian and bicycle bridge alignment will be located south of and approximately parallel to vacated N 100th Street. Within the western study area, there are six wetlands and one watercourse (Figure 3). More detailed information on wetlands in the study area can be found in the Northgate Pedestrian and Bicycle Bridge Project Wetland Discipline Report.

Land use to the east of I-5 includes a transit station, a large regional shopping center and a variety of smaller scale retail facilities, apartments, hotels, medical facilities and other largely

commercial uses. Two park and ride lots are located in the central portion of this study area at the intersection of NE 100th Street and 1st Avenue NE. The NE 103rd Street/1st Avenue NE exit ramp from I-5 traverses the northern portion of this study area.

In addition to grassy areas and scattered trees and shrubs, there are extensive Himalayan blackberry brambles throughout the eastern study region. There is relatively dense native tree and shrub riparian cover associated with the North and South watercourses and Wetlands A, D, and E (Figure 12). Vegetated cover is sparse where the bridge alignment crosses I-5, and the footprint of the ramp will be located within the existing park and ride lot.

Currently, Sound Transit's proposed Northgate Link Light Rail Project is under construction within the eastern study area.

## 4.2 Aquatic Habitats

On the west side of I-5, there are six wetlands and one watercourse (Figure 3, 6-11). All wetlands and the watercourse are connected hydraulically either by pipe, surface-flow or groundwater. These water resources eventually drain into a 72-inch diameter culvert pipe that extends underneath I-5 along vacated NE 100th Street. A detailed discussion of wetland habitats in the western study area, their functional ratings, project impacts, and proposed mitigation is found in the *Northgate Pedestrian and Bicycle Bridge Project Wetland Discipline Report* (Clearway Environmental 2018).

Four wetlands, two ditches, and two watercourses are located within the eastern study area (Figure 12). The wetlands were delineated in 2012 as part of the Sound Transit North Link Project (ESA 2012, verified by Clearway Environmental 2018). These waterbodies receive water from the western study area and then discharge water via a 72-inch culvert along NE 100th Street. During low flows, all water is discharged to a water quality treatment feature at Thornton Place, a condominium development just north of NE 100th Street, and between 3rd Avenue NE and 5th Avenue NE (See Photo 7 in Appendix A). During storm events, high flows are routed to the South Branch of Thornton Creek near 5th Avenue NE.

## 4.3 Terrestrial Habitats

The Project is located in an urban setting and spans between the NSC campus (western study area) and WSDOT parking lot located between I-5 and 1st Avenue NE (eastern study area). Vegetation and wildlife habitats are impacted by urban development and human activities. The area still supports some native plant species, primarily in the western study area. In the eastern study area, there is relatively dense native tree and shrub riparian cover associated with the North and South watercourses and Wetlands A, D, and E (Figure 12). The Bartonwood Natural



Area, a 12-acre preserve on the north end of the NSC campus, provides habitat for a range of different species, including the Pacific Tree Frog (*Pseudacris regilla*). The area contains remnants of both historic and restored wetlands and feeds the south branch of Thornton Creek. Representative photos are provided in Appendix A – Photographs.

The Washington State Department of Natural Resources (WDNR) Plant Natural Heritage Database indicates that no threatened or endangered plants are known to occur within the project vicinity (WDNR 2015).

#### **4.4 Landscaped Areas**

Landscaping in the western study area includes mowed grassy areas and deciduous street trees near the intersection of N 100th Street and College Way North. This area also contains approximately 20 planted landscaping trees. The central portion of the western study area contains multiple areas with mowed grass to facilitate public access into this natural area and open space. This central area also contains numerous deciduous tree species and a significant amount of Himalayan blackberry. Mowed grass is also present south of Watercourse 5 in association with a stormwater facility. Ornamental trees in the study area include paperbark maple, cherry laurel, English holly, black locust, and unknown species of cherry (Figure 5).

**Figure 5. General Vegetation Types in the Western Study Area**



Vegetation in the eastern study area is unmaintained, except for some isolated grassy patches in the WSDOT right-of-way, which appear to be purposefully planted. Much of the area associated with the wetlands, ditch, and watercourses is overgrown with a variety of native, invasive, and ornamental species.

#### **4.5 Native Vegetation**

Native vegetation within the western study area is found primarily in association with wetlands and the natural area on the NSC property. Dominant native species include: Pacific madrone, Pacific and Scouler’s willow, Douglas-fir, western hemlock, big-leaf maple, Pacific crabapple, red alder, black cottonwood, Nootka rose, Oregon grape, Indian plum, trailing blackberry, sword fern, Douglas spirea, common rush, and cattail.

Within the eastern study area, native vegetation is also associated with wetlands and watercourses, but occurs in small patches. Native species include: red alder, Pacific willow, red-osier dogwood, small-fruited bulrush, common rush, and field horsetail.

#### **4.6 Nonnative Invasive Species**

The central portion of the western study area is dominated by Himalayan blackberry, which occupies more than 1.5 acres of land. Himalayan blackberry also occupies significant areas of the eastern study area, both in upland areas and along wetland boundaries and the edges of the watercourses. Other dominant invasive species include evergreen blackberry, bittersweet

nightshade, butterfly bush, and reed canary grass. Japanese knotweed is starting to grow along the border of the apartment buildings to the north of Wetland 3.

## **4.7 Structures**

Within the western study area, there are several old concrete building foundations and other building remnants in the Bartonwood area (Figure 2). These remnant structures may provide habitat for mammals and other wildlife species. No buildings or other structures that could provide wildlife habitat exist within the western or eastern study areas; however, roofs of several large buildings, including an apartment building, commercial buildings, a police station, and school buildings are located adjacent to the study areas and may serve as resting areas for a variety of bird species. These structures provide limited habitat for wildlife and none of these structures have been documented to provide important habitat for any wildlife species.

# **5 Fish and Wildlife Use of Study Area**

## **5.1 Fish and Wildlife Occurrences**

This section summarizes documents occurrences of fish and wildlife in the study area.

### **5.1.1 Fish**

Multiple barriers currently restrict the distribution of anadromous fish in South Branch Thornton Creek. Possible fish barriers are located at a concrete check dam series upstream of NE 105th Street culvert and at boulder dams near the intersections of NE 104th Street and 17th Avenue NE and NE 105th Street and 15th Avenue NE. A known fish barrier is located at the Lake City Way culvert (TCWMC 2000). Downstream, in the vicinity of 30th Avenue NE, another man-made fish barrier precludes anadromous fish passage and therefore, presence within the study area.

Despite numerous fish barriers in the area, fish were sighted in August 2017 downstream of the 36-inch culvert inlet at the head of Watercourse 5. The closest documented special-status species, winter steelhead and fall Chinook salmon, are located approximately 1.5 miles downstream from the study area within mainstem Thornton Creek (WDFW 2015b). Coho and sockeye salmon are also mapped as occurring downstream of 5th Avenue NE (WDFW 2015b), along with resident coastal cutthroat trout (PHS 2015).

Previous fish surveys provide some additional information regarding the potential distribution of fish in the project area. Washington Trout observed cutthroat and rainbow trout, and three-spine stickleback in Thornton Creek upstream of 5th Avenue NE in 1999 (TCWMC 2000). Herrera Environmental staff observed juvenile cutthroat trout within Wetland A and the North

and South watercourses while conducting wetland delineations (Herrera 2005). Clearway Environmental staff observed fish in the South Watercourse in late August 2017.

### **5.1.2 Terrestrial Wildlife**

Bald eagles, protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Act, have mapped breeding areas in several locations around the project study areas. Within several miles of the study area, one nesting territory is mapped near the mouth of Pipers Creek and two nesting territories are mapped adjacent to Green Lake. Clearway Environmental biologists did not observe eagles using the site during visits to the project area.

The large, open water wetland (Wetland 6) likely attracts a variety of water-associated bird species, such as gulls, ducks, geese, cormorants, herons, martins, and swallows. These species likely use the wetland for foraging, rather than nesting, due to the proximity of I-5. Clearway Environmental biologists did not observe any of these water-associated birds during the site visits to the project study areas.

Numerous other species of birds and small mammals likely use the project area. These include species that can tolerate or benefit from human disturbance by using landscape vegetation, structures, garbage cans, and other human features for foraging, movement, shelter, and even breeding sites. Examples include common songbirds such as house sparrows; and mammals such as Norway rats, raccoons, Western grey squirrels, and coyotes.

Pacific Tree Frogs (*Pseudacris regilla*) are monitored by students as part of the NSC Ecology curriculum (Figge 2017) and are primarily found in and adjacent to Wetland 2. The travel corridors from Wetland 1 and Wetland 2 are heavily used by tree frogs for all life stages. Tree frogs are impacted by noise pollution during the mating season (February-July) when frogs are calling for mates so efforts to minimize noise impacts during the tree frog spawn timing will be made. The NSC has expressed concerns about Pacific Tree Frog impacts. All efforts will be made to minimize the impacts to both their life history requirements and migration.

Terrestrial habitat in the eastern study area is limited because of residential and commercial development, including Northgate Mall and the residential community of the Northgate neighborhood. Commercial properties are sparsely vegetated and residential properties are moderately vegetated with urban landscaping. Wildlife use is limited to foraging and nesting by bird and mammal species typically adapted to urban environments such as American robins, European starlings, and eastern gray squirrels.

## **5.2 Federally Listed Species**

No federally listed fish, wildlife, or plant species or critical habitats have been identified or documented within the project study areas.

### **5.3 State Priority Habitats and Species**

The WDFW Priority Habitats and Species (PHS) online mapping shows state priority fish species as occurring downstream from the project site (PHS 2015). Recent fish sampling results and sightings suggests that some of these species may have access to waters within the project area (TCWMC 2000; Herrera 2005; Clearway Environmental 2018). Cutthroat trout (*Oncorhynchus clarkii*) and have been documented in both the North and South watercourses and in the surge pond (Wetland 6) (Herrera 2015).

The WDFW Priority Habitats and Species (PHS) online mapping does not show any terrestrial state priority species as potentially occurring within approximately two miles of the project site.

## **6 Environmental Consequences**

Because the Project is located in an urban setting, adjacent to I-5, and contains little native wildlife habitat, impacts to native vegetation and wildlife resulting from the Project will be minimal. Potential impacts to terrestrial species include habitat changes due to the removal of trees and other vegetation.

Impacts to aquatic species will include loss of habitat due to the filling of a portion of the North Watercourse, the re-alignment of the western end of Watercourse 5, shading of Watercourse 5 and Wetland 6 from the overhead bridge structure, removal of riparian vegetation, and temporary impacts associated with construction.

### **6.1 Construction Effects**

A discussion of impacts that could occur during construction of the Project is presented below and shown in Figures 6-14. The study areas consist of natural area and open space that provides moderate quality habitat surrounded by urban development. Construction activities will occur within an urban environment, over I-5, and within a mowed stormwater facility. Construction activities will not impact the relatively intact terrestrial habitat located north of the pedestrian and bicycle bridge alignment, west of I-5. Proposed construction activities that will occur in the western study area include permanent and temporary disturbance of wetlands, loss of trees and associated habitat for birds and other wildlife, and construction noise or vibration that may affect both aquatic and terrestrial species. Proposed construction activities in the eastern study area may slightly affect the forage base for other aquatic organisms and water quality treatment currently provided by the portions of the North Watercourse to be filled.

Construction related impacts will be minimized through the use best management practices (BMPs) and timing restrictions. The Hydraulic Project Approval permit from WDFW will specify times where construction can occur in the regulated type F waters. Timing restrictions on

certain construction activities will also minimize impacts on Pacific Tree Frog spawning and migration patterns at the site.

### **6.1.1 Aquatic Habitat**

The Project will have permanent and temporary impacts to wetlands. Permanent wetland impacts will occur at the west end of Watercourse 5 and the north end of the North Watercourse. Approximately 160 cubic yards of fill will be placed within Watercourse 5, resulting in 1,182 square feet of permanent wetland impact, but this impact will be offset by a similar area of wetland creation as the western end of Watercourse 5 is re-aligned (Figures 6-11). Fill material will facilitate the bridge transition to N 100th Street and require an extension of the existing 36-inch Corrugated Metal Pipe (CMP) that passes stormwater through the wetland.

Portions of the North Watercourse will be filled to facilitate construction of the protected bike lane from the intersection of 1st Avenue NE and NE 103rd Street to the east bridge approach (Figures 6-14). Fill will also be placed in the south end of the North Watercourse associated with the eastern bridge approach. Approximately 135 cubic yards of material will be placed below the ordinary high-water mark within the watercourse, permanently impacting approximately 3,162 square feet of habitat. Fill within the North Watercourse is minimized by using a retaining wall to construct the protected bike lane, instead of a typical sloped fill prism that would have eliminated much of the North Watercourse.

At Wetland 4, construction will result in 493 square feet of temporary impact (Figures 8-10). At Wetland 6, the bridge truss will be staged over the north end of the wetland (construction equipment will not enter the wetland), resulting in 2,309 square feet of temporary impact (Figures 9-10). Other impacts will include hand clearing of trees and brush to allow construction of the bridge.

Near the north and south ends of the North Watercourse, construction will temporarily impact a total of 2,589 square feet (Figures 11-12). Approximately 3,162 square feet of the North Watercourse will be permanently impacted with vegetation removal and fill.

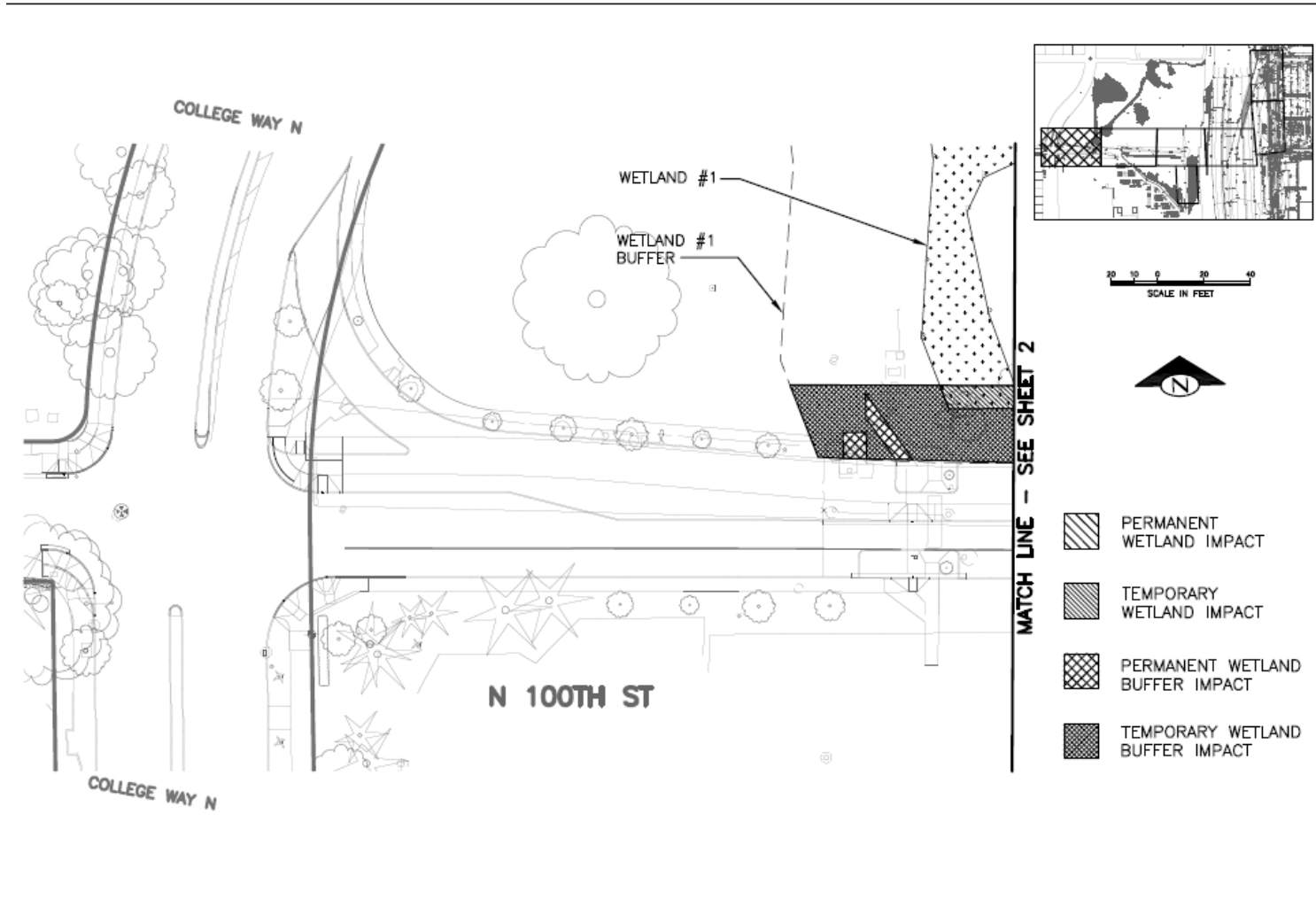
The North Watercourse will be filled in at the southern end to accommodate a turn lane into the park and ride and will reduce the length of available stream habitat. Approximately 130 feet of existing stream channel will be filled and the vegetation in the area will be removed to accommodate the turn lane. The existing outfall from the North Watercourse will be relocated but will still discharge to the same drainage system as the existing outfall culvert. The loss of approximately 130 feet of existing stream will impact the amount of potential available prey, such as aquatic macroinvertebrates, and reduce the amount of nutrients and organic matter produced in the study area that feeds downstream. The filled section of stream channel will

also reduce the amount of cover and rearing habitat available to the three-spine stickleback and resident cutthroat trout that are found in this habitat.

Proposed construction activities in the western and eastern study areas will not directly impact Thornton Creek, which contains federally-listed fish species. Thornton Creek is hydrologically connected to the study areas via approximately 0.18 mile of culvert and 0.15 mile of day-lighted channel that flows through Thornton Place, a condominium development. Federally-listed fish species and critical habitat are located approximately 1.5 miles downstream of the eastern study area and will not directly be impacted by this project.

BMPs and minimization measures, as required by permits, will be implemented during construction of the Project to minimize any adverse impacts that may potentially occur downstream within Thornton Creek.

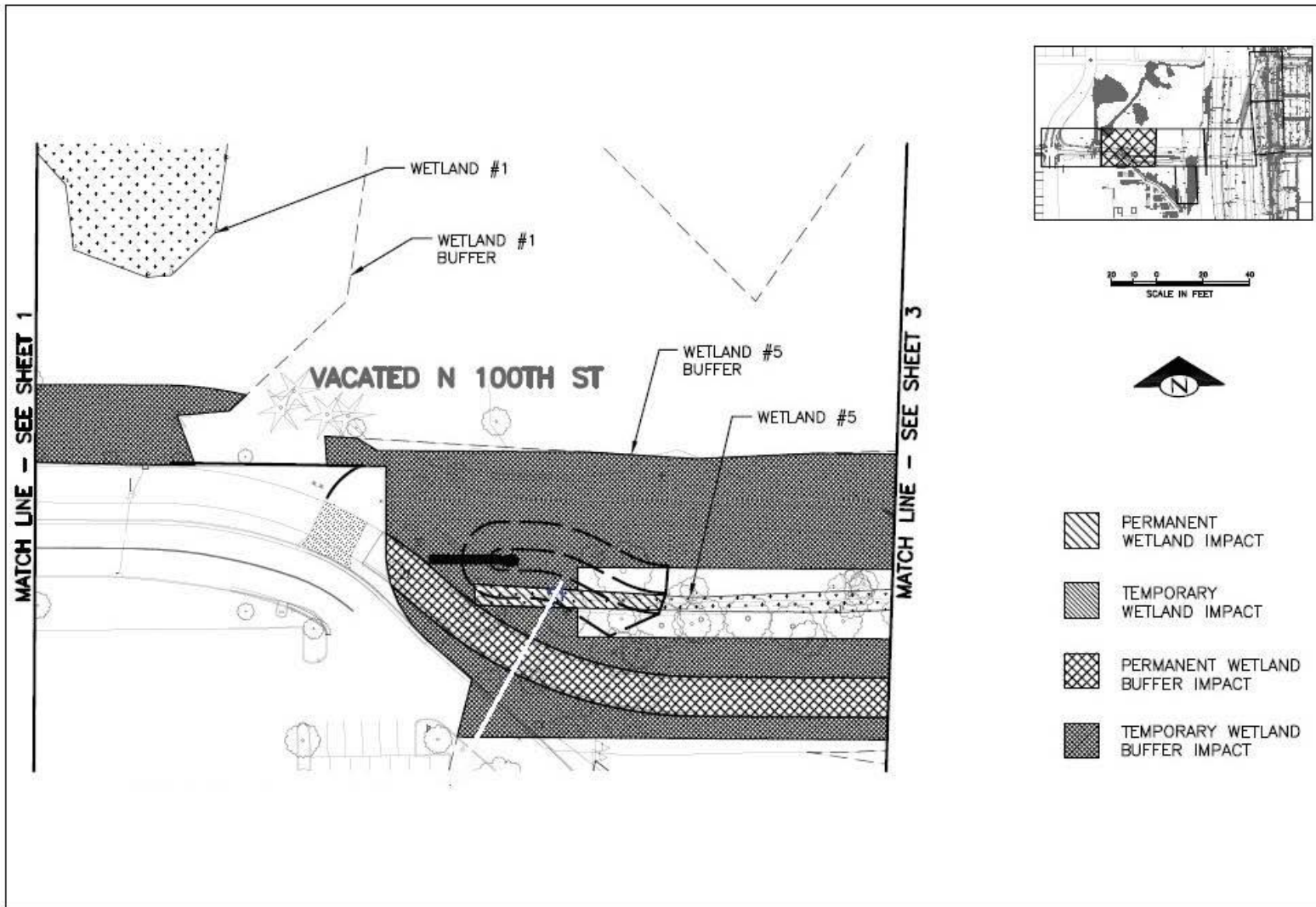
**Figure 6: Western Study Area Aquatic Resources**



Source: City of Seattle—SDOT 2017

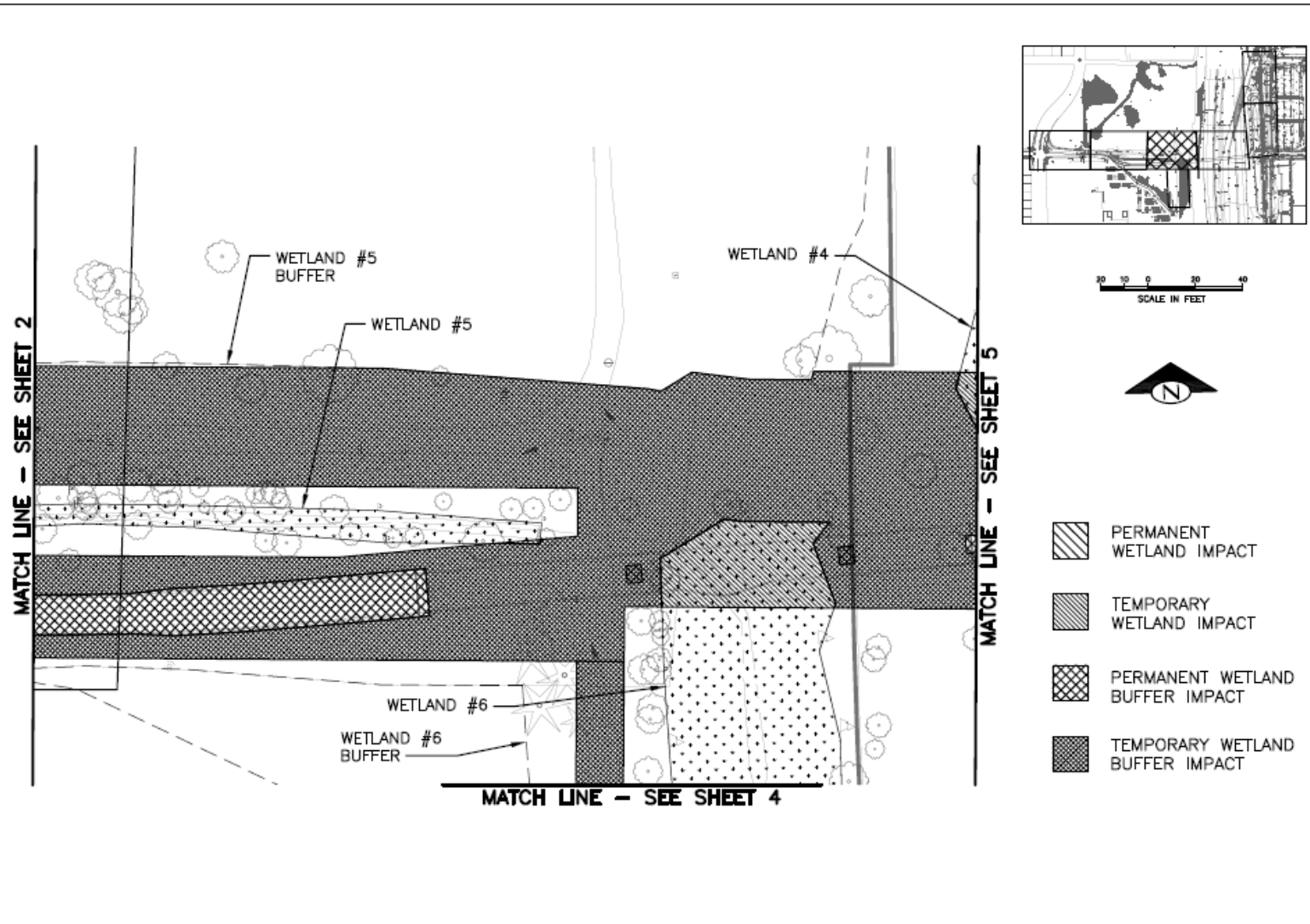


Figure 7: Western Study Area Aquatic Resources



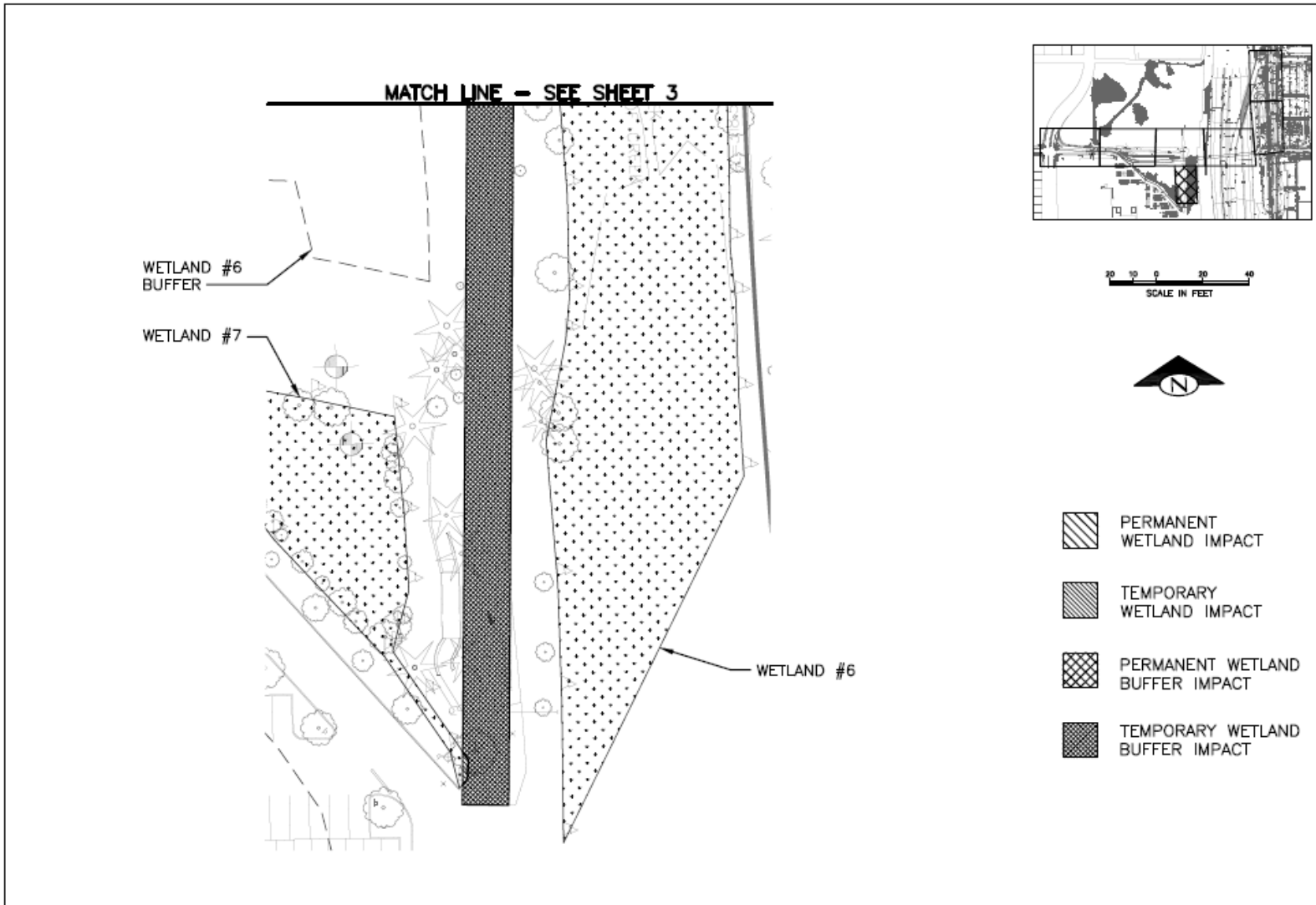
Source: City of Seattle—SDOT 2017

**Figure 8: Western Study Area Aquatic Resources**



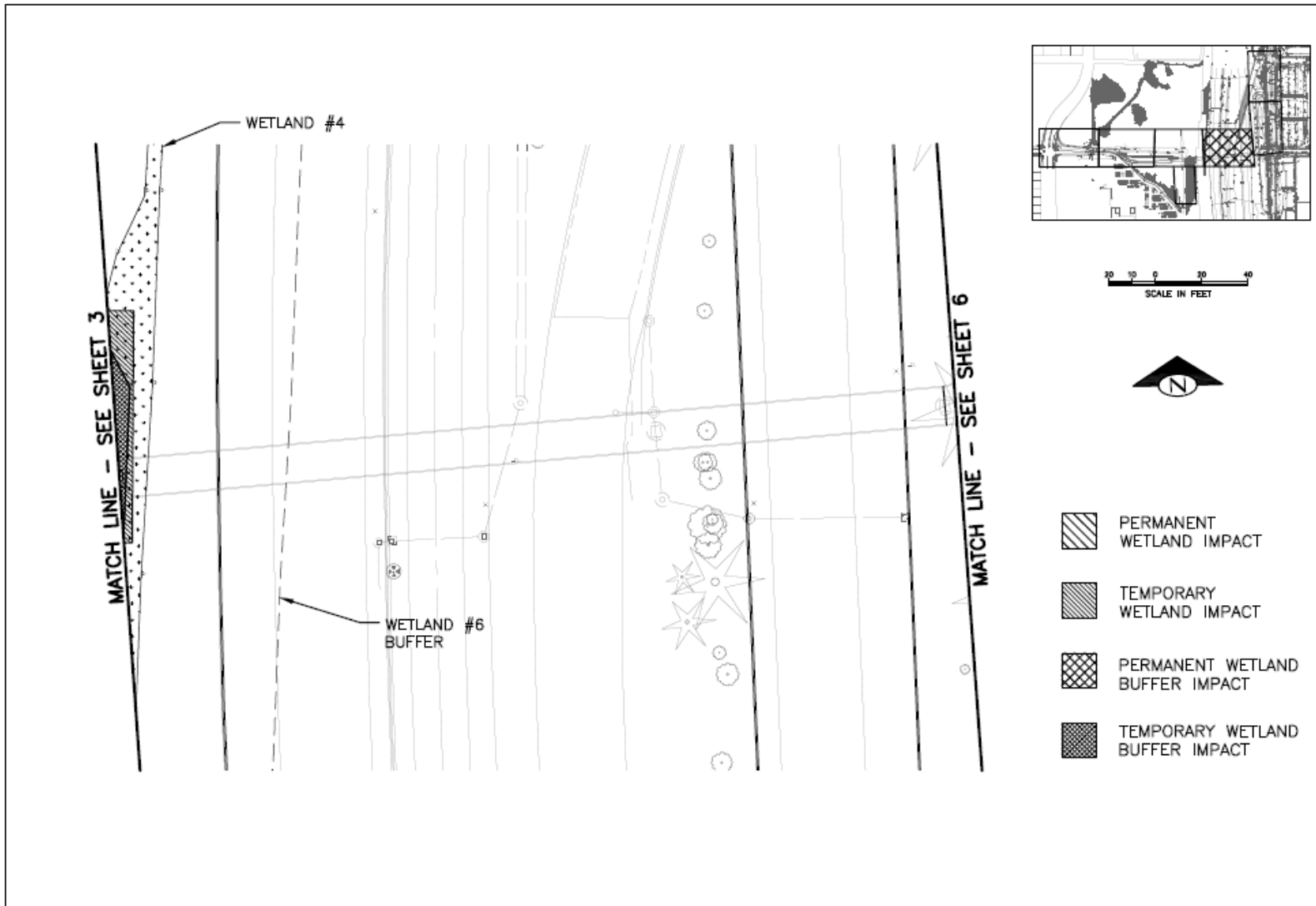
Source: City of Seattle—SDOT 2017

Figure 9: Western Study Area Aquatic Resources



Source: City of Seattle—SDOT 2017

Figure 10: Western Study Area Aquatic Resources



Source: City of Seattle—SDOT 2017

Figure 11: Western Study Area Aquatic Resources

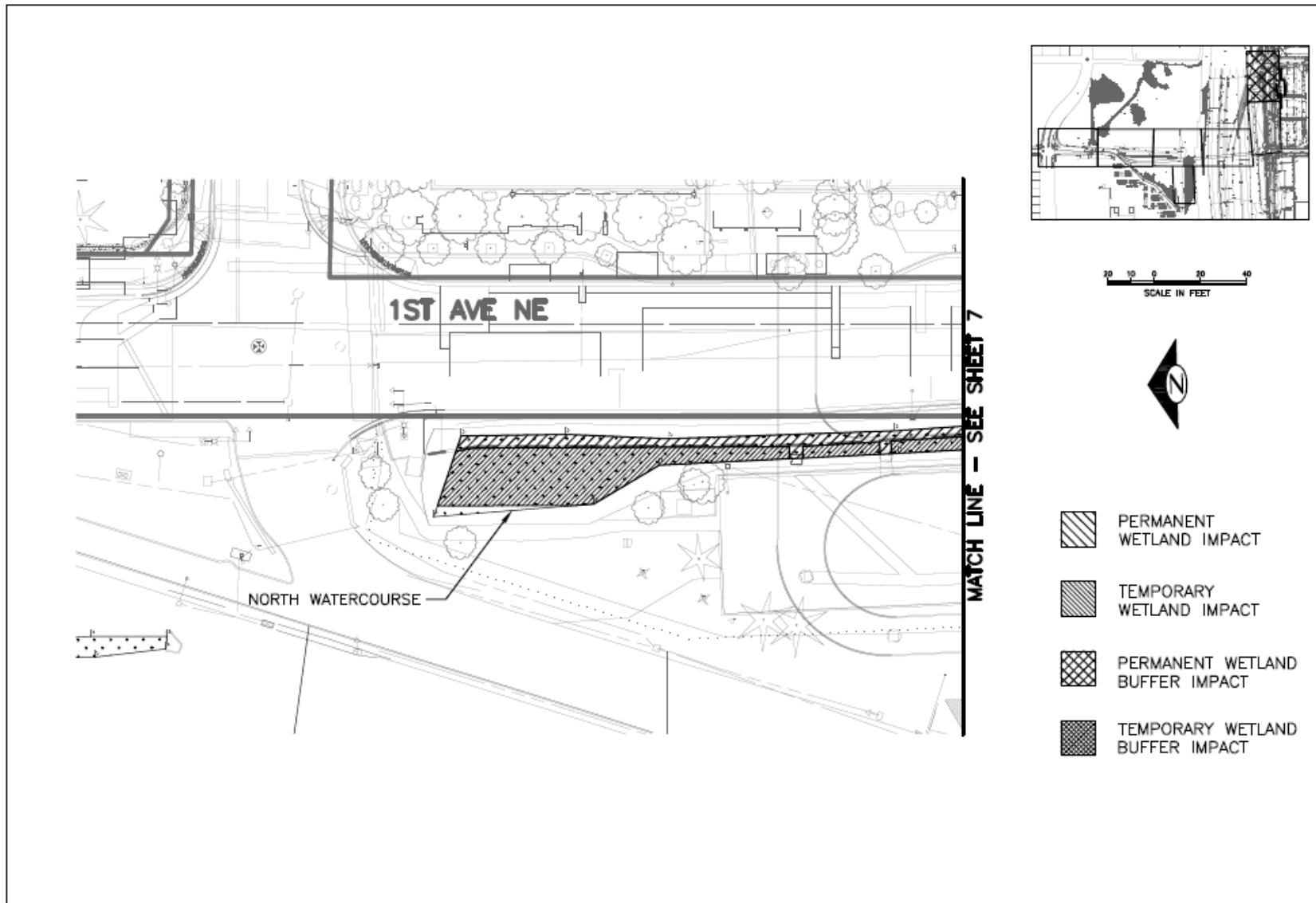
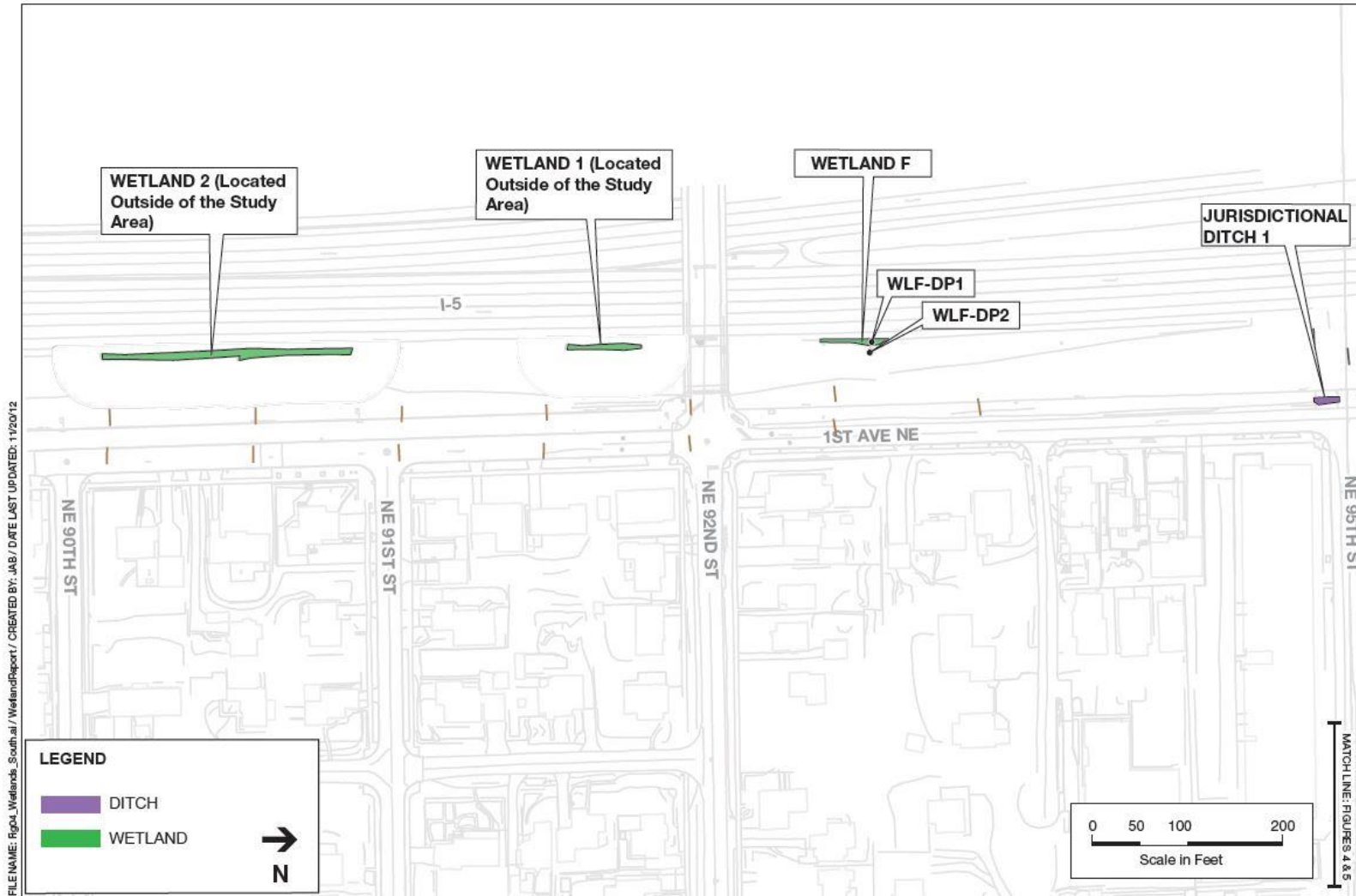
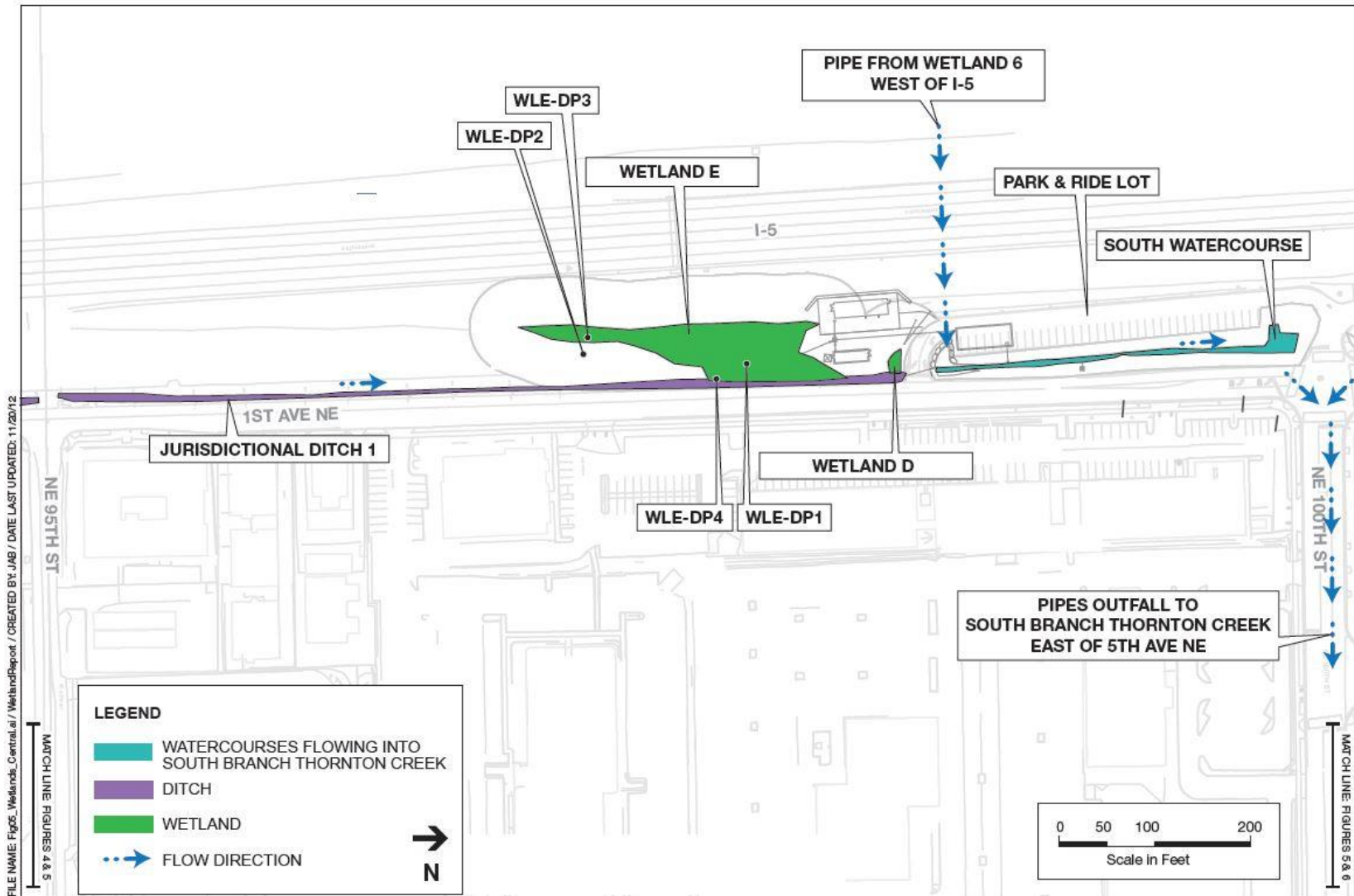


Figure 12: Eastern Study Area Aquatic Resources—South



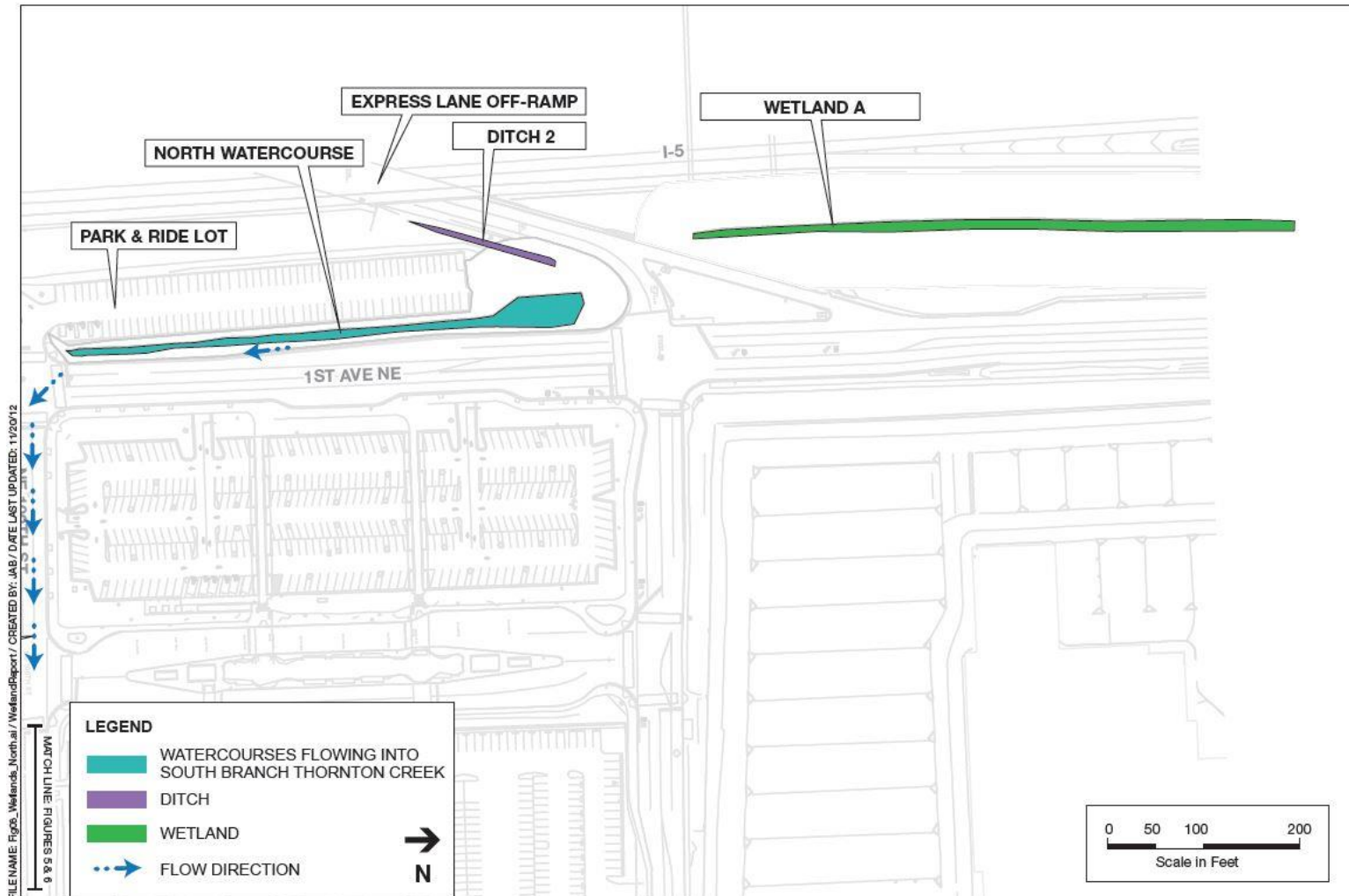
Source: ESA Fish Wildlife and Vegetation Technical Memorandum 2016

Figure 13: Eastern Study Area Aquatic Resources—Middle



Source: ESA Fish Wildlife and Vegetation Technical Memorandum 2016

**Figure 14: Eastern Study Area Aquatic Resources—North**



Source: ESA Fish Wildlife and Vegetation Technical Memorandum 2016



### **6.1.2 Terrestrial Habitat**

Wetland buffers are areas that surround a wetland and reduce adverse impacts to the wetland functions and values from adjacent development. City of Seattle Environmentally Critical Area (ECA) regulations require buffers for certain size and types of wetlands. The regulations require that buffers be retained to protect wetlands, or if they must be impacted, require that impacts be restored and/or mitigated (SMC 25.09). Sixty-foot buffers have been designated for Wetlands 1,2,3, 4, and 6 (Figure 6-11). A fifty-foot buffer has been designated for Watercourse 5.

The southwestern buffer of Wetland 1 will be impacted both permanently and temporarily. A new section of sidewalk that connects an existing north-south oriented trail with N 100th Street will permanently impact 284 square feet of buffer (Figure 6 and 7). In addition, improvements associated with the path in this area will result in approximately 1,630 square feet of buffer impact.

Bridge construction and installation of Piers 5 and 6 will impact the buffer of Wetland 6. Nesting territory will not be adversely affected by the proposed bridge construction because of the distance from the project study areas.

### **6.1.3 Impacts to Water-Associated Species**

Water-associated birds, such as geese, ducks, cormorants, herons, martins, and swallows, might avoid the open water portions of the study areas (particularly portions of Wetland 6) during construction, due to noise and visual disturbance. While such disturbances will be short-term and temporary, they will occur periodically over the 18-20-month duration of construction. Timing restrictions for noise impacts to tree frogs will help reduce impacts to tree frog spawning and mating life stages when noise impacts are the greatest impact on tree frogs.

### **6.1.4 Construction Noise**

Construction of the Project will occur over a period of 18-20 months. Use of heavy construction equipment will increase the level of noise in the area over this timeframe. No blasting or impact pile driving will occur. If nighttime construction is necessary, use of nighttime lighting will increase disturbance to wildlife.

Due to the proximity of I-5, traffic is the predominant source of background noise in the project area. Based on the Average Daily Traffic (ADT) volume (184,000 vehicles), and the posted speed limit (60 miles per hour), the background noise level in the project area is estimated to be about 80 A-weighted decibels (dBA) at a distance of 50 feet from the highway (WSDOT 2015). Using the rules for decibel addition (WSDOT 2015), the combined noise level generated by the construction equipment is estimated to be about 87 dBA at 50 feet from the source. Based on

standard noise attenuation rates, the noise generated from construction activities will be indistinguishable from traffic noise at about 100-feet from the source. Within 100 feet from the source, construction noise and activities could potentially disturb wildlife species. However, wildlife species that use the study areas are already exposed to noise and human activity (e. g., NSC, I-5), and they are likely to use the area during construction and after the Project is complete.

## **6.2 Operational Impacts**

The Project will result in minor permanent changes to vegetation and habitat in the study areas. Clearing of vegetation can indirectly affect aquatic and terrestrial species as a result of decreased habitat suitability and complexity. However, the amount and types of vegetation and/or habitat impacted will be limited. The Project will result in re-alignment of the west end of Watercourse 5, and the associated impacts to vegetation and habitat (Figure 6 and 7). Native riparian plants will be planted along the re-aligned wetland. This section discusses the following types of impacts that could occur as a result of operation of the Project.

### **6.2.1 Aquatic Habitat**

#### **Stormwater Runoff and Water Quality**

Stormwater generated by the Project will be managed to meet the City of Seattle Stormwater Manual. Conveyance pipes for the bridge structure will be designed to convey runoff from the bridge deck. Surface improvements will direct runoff to appropriate catch basins that will convey runoff to the proposed discharge locations.

Filling and re-channelization of aquatic resources and associated dewatering could result in fish and aquatic species mortality. To minimize this, exclusion of fish and other wildlife prior to dewatering of watercourse and wetlands will be required. Fish and other aquatic animals will be captured and relocated either up or downstream of construction activities to allow for the North Watercourse and Watercourse 5 instream channel work.

Additional impacts will occur to the North Berm Trail and the maintained lawns associated with a stormwater facility located between the NSC parking lot and Wetland 6 (a surge pond). The North Berm Trail will be replaced at a similar elevation and in a new parallel alignment, south of the existing trail.

#### **Terrestrial Habitat**

East of Wetland 6, the bridge will likely remove several black cottonwood or locust trees. Northwest of the Wetland 6, several red alder and big-leaf maple trees will likely be impacted as the bridge traverses over Wetland 6 to the gravel road at N 100th Street (vacated Corliss Ave

N). Several black cottonwood, red alder, maple, and pacific madrone trees may be impacted as part of wetland and wetland buffer mitigation adjacent to Watercourse 5. These vegetative changes could have a minor effect on wildlife in the western study area that may use this as part of larger foraging areas and will result in a net reduction in the aerial coverage of terrestrial vegetation.

Wetlands 1 and 2 are of special concern to the NSC. They are heavily used by Pacific Tree Frogs for spawning and rearing (Figge 2017). Fencing will be installed so that construction equipment will not have access to the areas surrounding Wetland 1 and 2. Pacific Tree Frogs may use Watercourse 5 and Wetland 6 as travel corridors. These corridors will remain after the Project. The western bridge abutment ends west of the eastern end of Watercourse 5, maintaining the existing connectivity between Watercourse 5 and Wetland 6.

### **Increased Human Disturbance**

The Project could increase use of the natural areas and open space in the western study area. It is likely that the Project will result in increased use of the informal trail system because it will bring more people to the NSC campus. This increased human disturbance may have a limited impact on wildlife species because virtually all species present within the study areas are well adapted to urban conditions, given the proximity of the study areas to the NSC main campus and I-5. Tree frog migration patterns may be impacted by the approach ramp to the pedestrian bridge along the south side of Watercourse 5, but they will still have access to the grassy field and other areas of the NSC property from the lower end of Watercourse 5 where the pedestrian bridge is elevated (Figure 2). Tree frog impacts due to more pedestrian traffic and use in the area are not anticipated to be significant.

## **7 Mitigation**

Several permitting agencies (WDFW, SDCI, Ecology) have mitigation sequencing requirements to consider and implement to protect habitat. These requirements include evaluating potential avoidance and/or minimization measures, as well as the net ecological functions provided before and after the Project to ensure that the design and implementation protect habitat to the extent feasible. Seattle Municipal Code requirements for avoidance and minimization are included in SMC 25.09.065.

In addition to mitigation measures, numerous BMPs and minimization measures will be incorporated into the project design. These will be implemented to avoid short-term and long-term impacts to habitats in the project area and to protect downstream water quality during construction. With these measures in place, the Project will minimize potential impacts to fish, wildlife, and vegetation during construction and over the long-term. No alignments were

identified that will completely avoid impacts to fish, wildlife, and vegetation. As the various alignment options were evaluated, impacts to these habitats were a major element in the selection of the chosen alignment. Several additional design changes were made specifically to minimize impacts. The Project will result in minor temporary and permanent impacts to wetlands, wetland buffers, watercourses, and terrestrial habitat. Compensatory mitigation measures will be implemented where impacts are unavoidable, and mitigation is required. Mitigation in these wetlands and their buffers will maintain the ecological function currently provided. Pacific Tree Frog impacts have been considered and all efforts to minimize impacts to tree frogs will be made. Tree frog migration patterns will be reduced by approximately 300 linear feet where the fill for the bridge approach will be placed. To decrease human disturbance, all existing signs encouraging the public to stay on the paths and out of the wetland will be retained. Fish and other aquatic animals will be captured and relocated either up or downstream of construction activities to allow for the North Watercourse and Watercourse 5 instream channel work.

## **Mitigation Measures**

The following mitigation measures and BMPs will be followed:

### **Erosion and Sediment Control**

- Implement construction phasing that minimizes the amount of earthwork that exposes the ground surface to erosion.
- Implement a Temporary Erosion and Sediment Control (TESC) plan per 2017 Seattle Standard Specifications for Road, Bridge and Municipal Construction Section 1-07.15(1) Temporary Construction Stormwater Pollution Prevention and Section 8-01 Construction Stormwater Pollution Prevention including sediment-control BMPs such as silt fences, check dams, sediment traps, sedimentation basins, and flocculation methods.
- Use erosion-control practices (seeding, mulching, soil conditioning with polymers, use of geo-synthetics, sod stabilization, erosion-control blankets, vegetative buffer strips).
- Use construction entrances, exits, parking areas, and wheel wash stations as appropriate to reduce tracking sediment onto public roads.
- Perform routine inspections of erosion-control and sediment-control BMPs and implement subsequent BMP maintenance.
- Implement construction BMPs to control dust and limit impacts to air quality [2017 Seattle Standard Specifications for Road, Bridge and Municipal Construction Section 1-07.5(3)].

## **Clearing/Vegetation Removal**

- Install high-visibility construction fencing to define the perimeter of the work area and protect sensitive areas and trees from construction related impacts.
- Replace all trees removed at a minimum of 1:1 ratio. Within Watercourse 5 due to steep slopes, the ratio for replanting will be a 3:1 ratio. All temporarily cleared vegetation will be replanted with native species following construction.
- Clearly mark the limits of construction and protect vegetation remaining outside of these limits. Protect street trees as required by City code and as required by all environmental permits.
- Comply with the regulations listed under SMC 25.09.200A.2 (Riparian Watercourse) and SMC 25.09.200A.3 (Riparian Management Area).

## **Stormwater Pollution/Spill Prevention**

- A Spill Prevention Control and Countermeasure (SPCC) plan will be implemented. Elements of this plan will satisfy all pertinent requirements set forth by federal, state, and local laws and regulations (Seattle Standard Specifications for Road, Bridge and Municipal Construction Section 2017, section 1-07.15(1)).
- All vehicles operated within the study area will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation. When not in use, all vehicles will be stored in the staging areas or stored with spill containment pans or pads.
- Spill response equipment will be on-site, at all times during construction, to control and cleanup potential fluid leaks or spills.
- All mechanical equipment will be fueled -off-site.
- The contractor will assign a Spill Prevention and Response Lead and provide their contact information (Seattle Standard Specifications for Road, Bridge and Municipal Construction Section 1-05.13(3)(C)).

## **Staging Areas**

- Staging and stockpile areas will be limited to paved or gravel areas on the NSC campus, WSDOT or SDOT rights-of-way. Some staging and stockpile areas may temporarily impact wetlands, watercourses or their buffers. These impacts will be mitigated through a combination of on-site and off-site actions as determined through permitting.
- Staging areas will be located to minimize the potential for impacts or contamination of wetlands and watercourses. Servicing and refueling of vehicles will occur off-site.
- Any use of wet concrete will include provisions for allowing adequate time and protection of material for curing before concrete comes into contact with water. No wet or curing

concrete will be allowed to come in contact with the waters that flow to South Branch Thornton Creek [Seattle Standard Specifications for Road, Bridge and Municipal Construction Section, 2017, section 1-07.5(2)B] and (Seattle Stormwater Code 2016, Chapter 5, BMP 1.56: Concrete Handling and Disposal). Baker tanks or an Industrial Discharge permit from King County will be used to discard any turbid groundwater and all water used for concrete work will be recycled and used in other construction applications and not allowed to be discharged to the ground, following all project manual guidance and permit requirements.

- If nighttime work occurs, lighting will be directed toward active work areas only during construction, to minimize disturbance of wildlife in the study area.
- All construction activities associated with pier installation and bridge deck construction will comply with the regulations listed under SMC 25.09.200A. 2 (Riparian Watercourse) and SMC 25.09.200A. 3 (Riparian Management Area).

## **7.1 Wetland, Watercourse and Buffer Impact Mitigation Concepts**

The US Army Corps of Engineers, Washington State Department of Ecology, and City of Seattle implement a policy of no-net-loss of ecological functions, requiring the proposed Project to provide compensatory mitigation for wetland impacts per Washington Administrative Code (WAC) 365-196-830(8)(a), and City of Seattle SMC 25.09.065. Wetland impacts may be mitigated on-site, potentially by means of wetland and wetland buffer enhancement within and adjacent to Watercourse 5 and Wetland 6, and within the Thornton Creek watershed as part of a Thornton Creek restoration plan. Off-site mitigation will occur in other basin specific mitigation actions. These mitigation actions will address the specific functions and values lost to disturbance of the wetlands, watercourses, and associated buffers. They will be required to result in no net loss of ecological function. The Project is also designed to meet Section 404 of the Clean Water Act, which requires the US Army Corps of Engineers to determine that the Project is the “least environmentally damaging practicable alternative” before issuance of the 404 permit.

Wetland mitigation on NSC property will not only benefit wetland functions but could also serve as an educational tool for NSC, allowing students enrolled in environmental studies classes to observe and possibly participate in mitigation site implementation, monitoring, and maintenance.

Temporary wetland, wetland buffer, and watercourse impacts will be restored on-site to replace wetland functions temporarily lost during construction and to protect wetland functions into the future by re-establishing buffer vegetation. Compensation will occur at various mitigation ratios depending upon the specific nature of the impact and proposed

mitigation. All temporary impact areas will be restored to pre-construction conditions following completion of project work.

The 284 square feet of permanent buffer impact at the southwestern portion of Wetland 1 and 648 square feet of permanent buffer impact at Wetland 6 will be mitigated for at a 1:1 ratio in proximity to the impact locations.

Impacts totaling 3,162 square feet to the North Watercourse will be mitigated off-site through stream restoration or habitat enhancement consistent with goals in the Thornton Creek Basin Plan. SDOT's mitigation for impacts to the watercourse will comply with regulations detailed in SMC 25.09.200 and 25.09.320.

## **8 No Significant Unavoidable Adverse Impacts**

With implementation of the avoidance, minimization and compensation measures described in the previous section, the Project will not have significant unavoidable adverse impacts on vegetation, fish, and wildlife. The Project is expected to result in short-term temporary impacts to fish and wildlife habitats and vegetation. The Project will not result in a net reduction of ecological function, although there will be specific areas, such as at the North Watercourse, where there may be a localized reduction in aquatic habitat and terrestrial vegetation.

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# Appendix A: Photographs

**Photo 1: Culvert Outfall to Western End of Watercourse 5 – Looking Northeast**



**Photo 2: Watercourse 5 – Looking East from Western End of Watercourse 5**



**Photo 3: Inlet to Wetland 6 (Surge Pond) – Looking East at Northeast Corner of Wetland 6**



**Photo 4: Wetland 6 – Potential Mitigation Area**



**Photo 5: Wetland 6 (Surge Pond) Outlet Culvert under I-5 – Looking East-Northeast**



**Photo 6: North Watercourse along 1<sup>st</sup> Avenue**



**Photo 7: Water Quality Facility at Thornton Place**

