



# **15th Avenue NE Bridge Rehabilitation Project**

## **Seattle, Washington**

### **SEPA Checklist**

July 2009

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Greenhouse Gas Worksheet

## **A. BACKGROUND**

### **1. Name of the proposed project:**

15th Avenue NE Bridge Rehabilitation Project (15th Avenue NE Bridge Project)

### **2. Name of Applicant:**

City of Seattle, Department of Transportation (SDOT)

### **3. Address and telephone number of applicant and contact person:**

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### **4. Date checklist prepared:**

July 30, 2009

### **5. Agency requesting checklist:**

SDOT

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

Construction is scheduled to begin in early 2010 and will last approximately one year.

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

There are no plans for future additions, expansion, or further activity related to or connected with this proposal.

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

- *Geotechnical Engineering Report: 15th Ave NE Bridge Rehabilitation, Seattle, Washington* (Shannon & Wilson, Inc., April 2009) and *Amendment to Geotechnical Engineering Report for 15th Ave NE Bridge Rehabilitation, Seattle, Washington* (Shannon & Wilson, Inc., May 2009)
- *15th Ave NE Bridge Rehabilitation Project Critical Areas Report and Mitigation Plan* (ESA Adolfson, February 2009)
- *Cultural Resources Assessment of the 15th Avenue NE at 105th Street Bridge, King County, Washington* (Paragon Research Associates [PRA], May 2009)
- *15th Ave NE Bridge Rehabilitation Concept Studies Transportation Technical Report* (Heffron Transportation, Inc., June 2008)

- *Endangered Species Act – No Effect Letter: 15th Ave NE at NE 105th Street Bridge Rehabilitation Project* (ESA Adolfson, April 2009)
- *15th Ave NE Bridge Rehabilitation Project Stormwater Report* (ABKJ, March 2009)

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

There are no pending governmental approvals or other proposals directly affecting the property covered by this project.

**10. List of governmental approvals or permits that will be needed for the proposal:**

- National Environmental Policy Act (NEPA) review, Washington State Department of Transportation (WSDOT) and Federal Highways Administration (FHWA)
- Hydraulic Project Approval (HPA), Washington Department of Fish and Wildlife (WDFW)
- Section 404 Permit, U.S. Army Corps of Engineers (USACE)
- 401 Water Quality Certification and Coastal Zone Management Certification, Washington State Department of Ecology (Ecology)

**11. Brief, complete description of the proposal, including the proposed uses and the size of the project and site:**

SDOT is proposing to rehabilitate the 15th Avenue NE Bridge as part of the “Bridging the Gap” program. Rehabilitation activities would include strengthening the concrete box girders by thickening the webs and adding post tensioning, rehabilitating crossbeams, reconstructing the bridge abutments and adding wingwalls, rehabilitating the existing pedestrian handrails, and constructing a traffic barrier between the sidewalks and vehicle lanes. The project will also include improvements to the existing storm drain system to reduce erosion and restoration of the wetlands beneath the bridge (Figure 1). Details of the construction elements are included below.

**Strengthening Concrete Box Girders**

Several rehabilitation elements will contribute to the strengthening of the concrete box girders, including web thickening, post-tensioning, and rehabilitation of crossbeams and diaphragms. The webs (vertical elements that make up the box girder) will be thickened eight inches by adding new concrete. To connect the new concrete to the existing web, ¾” diameter holes will be drilled into the existing web and steel reinforcement grouted into the holes with epoxy resin. A portion of the steel rebar will protrude out and be cast into the new thickened concrete web.

Post tensioning will be applied in the thickened webs. Ducts with tendons inside will be positioned in the new web between the ends of the box girders on the bridge. After the web thickening is complete and the concrete cured, the tendons will be tensioned and anchored at the newly added end diaphragms.

A new end diaphragm and end cross beams will be constructed at each end of the bridge. A new cross beam will also be constructed at Pier 1. Corbels, or brackets, will be added to existing crossbeams at Piers 2, 3, 4 and 5.

Intermediate diaphragms are similar to cross beams — cross beams are transverse elements located at the end of spans (typically at piers), whereas diaphragms are located within the span. The existing intermediate diaphragms located within the box girders will be extended outside the box girders to make a rigid connection between the box girders. The diaphragms will be constructed in a similar method to the web thickening, but will not have post-tension tendons.

### **New Bridge Abutments and Wingwalls**

The existing two end slabs will be replaced with two new abutments at their corresponding locations. Construction will also include soil excavation at the north and south abutment locations. Cast-in-place concrete piles consisting of a steel casing up to 55-feet deep and 18-inches in diameter will be installed for the foundations of the new abutments. The abutment and wingwalls will be cast-in-place concrete construction as well. New concrete bridge approach slabs will be placed at each end of the bridge upon completion of the abutment construction.

### **Bridge Deck**

Construction will also include replacement of the expansion joints on each end of the bridge. Surface cracks located on the underside of the bridge deck will be repaired by sealing them with epoxy crack sealant and concrete spalls will be patched with cement mortar to cover the exposed rebar.

### **Pedestrian Rail and Traffic Barrier**

The bridge rehabilitation work will include cleaning (removing the existing lead-based paint) and re-painting the existing metal bridge posts, rails, and supports in areas where the existing paint has failed. The pedestrian rail height will also be increased from the existing 3-foot height to 3 feet 10 inches. On each side of the bridge, a new barrier will be added to separate the sidewalk from the traffic lane.

### **Construction Access**

A suspended falsework system is proposed at spans 3 and 4 to provide a suspended work platform directly over the creek to provide worker access to the underside of the bridge without disturbing the creek channel. Falsework for the remaining spans may be suspended from the bridge in a similar fashion as spans 3 or 4 or be supported from the ground.

Construction access from the south will be provided at the end of the bridge directly from 15th Avenue NE. Access from the north will be provided directly from 15th Avenue NE and from a temporary access road to be constructed underneath the bridge. Construction access and staging areas will require the removal of some vegetation and will be stabilized with quarry spalls and wood chips. The project includes implementation of a Temporary Erosion and Sediment Control (TESC) Plan consistent with City of Seattle design standards to minimize erosion during construction. All disturbed wetland and riparian habitat areas under the bridge with sufficient clearance will be restored and replanted following construction.

A 4.5-foot x 3.5-foot construction opening will be provided at each pier cap (Piers 1 through 5) by cutting through the existing concrete webs to access the inside of the crossbeams. The openings will be filled with concrete when the required work is complete.

### **Stormwater & Erosion Control**

A new stormwater conveyance system will be added to reduce erosion under the bridge that is caused by the discharge of surface water onto the unprotected slope. Diffusers will be installed at the outlets to prevent stormwater from causing erosion of the slopes. The project will also include planting vegetation to address erosion control issues in the project area and to mitigate for project impacts to the riparian and wetland areas beneath the bridge.

## **12. Location of the proposal, including street address, if any, and section, township, and range; legal description; site plan; vicinity map; and topographical map, if reasonably available:**

The 15th Avenue NE Bridge is located on 15th Avenue NE spanning the Thornton Creek green belt, between NE 104th Street and NE 106th Street in Seattle, Washington (Figure 2). The legal description is Township 26 North, Range 4 East, in the SE  $\frac{1}{4}$  of Section 29, the SW  $\frac{1}{4}$  of Section 28, the NE  $\frac{1}{4}$  of Section 32, and the NW  $\frac{1}{4}$  of Section 33, on the North Seattle Quadrangle 7.5' Series topographic map. The riparian corridor adjacent to the street right-of-way directly underneath the bridge is owned by the City of Seattle Parks Department and private land owners.

## **B. ENVIRONMENTAL ELEMENTS**

### **1. Earth**

#### **a. General description of the site (underline):**

Flat, rolling, hilly, steep slopes, mountainous,

The project is located within the Thornton Creek drainage basin. In this area, the north-facing bank is approximately 10 feet high. The south-facing creek bank is a relatively flat, depositional area.

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

The Bridge is an elevated structure above the Northgate Branch of Thornton Creek. The north and south banks of the creek have critically steep slopes of up to approximately 90 percent in places.

#### **c. What general types of soils are found on the site (for example clay, sand, gravel, peat, muck)? Specify the classification of agricultural soils and note any prime farmland.**

The surface soils are likely loams and sandy loams, which are typical of a coniferous forest growing on glacial deposits. Geologic maps show that the parent material along the top banks of the Thornton Creek drainage consist of Vashon Till (Qvt), which includes compact silt sand and subrounded gravel. Along both bank slopes the major material type changes to advance glacial outwash deposits (Qva), well sorted sand and gravels with some silt layers. The flat drainage

bottoms are noted to consist of various interbedded glacial deposits (Qpf), a mixture of bedded sand gravel and silt (Shannon & Wilson, 2009a and 2009b; PRA, 2009).

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

A relatively minor, re-vegetated, shallow, colluvial landslide scar exists along the west side of the bridge near the north abutment. Based on the current ground surface topography, the scar appears to be in modified ground related to the bridge construction.

In the Thornton Creek area, the toe of the north-facing slope beneath the bridge exhibits evidence of sloughing. The bank is approximately 10 feet high and actively eroding. A six- to eight-inch-wide tension crack also exists at the top of the creek bank. Based on the nearby location of a corrugated pipeline crossing to the exposed eroding soils in the creek bank, the unstable soil may be pipeline backfill or soils disturbed during pipeline construction.

**e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate the source of the fill.**

A total of approximately 300 cubic yards (CY) of excavation will be required to remove portions of the existing structure at both approaches, to construct the new bridge abutments and wingwalls, and to provide a work area for access under the bridge for other rehabilitation work. All excavated material will be hauled from the work area and disposed of at an approved facility.

The project will require approximately 1150 CY of imported fill material. Fill will come from approved local commercial sources and will be a combination of common borrow material and crushed mineral aggregate. Approximately 40 CY of quarry spall and bedding material will be used to provide inlet and outlet scour protection for the stormwater conveyance system.

In addition, approximately 375 CY of rock fill and 80 CY of wood chips and/or hog fuel will be temporarily placed under the bridge as part of the project's erosion control plan to provide a stabilized work area and reduce soil erosion during construction. The wood/hog fuel will be used as temporary fill in wetland area. The rock stabilization will be placed on graded upland slopes under the bridge.

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

As with most construction projects that involve earth-disturbing activities, and based on site observations, it is possible that erosion could occur as a result of earth work beneath the bridge. The project is proposed to begin in early 2010 and some grading may be done during the wet season, between October 31st and April 1st.

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

There would be a very small change in impervious surfaces with completion of the 15th Avenue NE Bridge Project. Bridge surface changes would include minor maintenance work for repairing cracks and replacing expansion joints and construction of new bridge abutments. There will be an overall increase in impervious surface from the existing 1,730 ft<sup>2</sup> to 1,970 ft<sup>2</sup> (net change of

240 ft<sup>2</sup>). Aside from new wingwalls and other foundation improvements, no new permanent structures or paving is proposed for under the bridge.

**h. Describe the proposed measures to reduce or control erosion, or other impacts to the earth, if any.**

Construction activities will follow the City of Seattle *Standard Specifications for Road, Bridge, and Municipal Construction*, the Seattle Stormwater Code, USACE and Ecology permit conditions, and construction best management practices (BMPs) to prevent or reduce erosion and pollution of water caused by construction activities. The contractor will develop a Temporary Erosion and Sediment Control (TESC) plan and a Stormwater Pollution Prevention Plan (SWPPP) to prevent sediment transport to the stream during construction.

The Seattle Environmentally Critical Areas regulations prohibit grading in environmentally critical areas between October 31st and April 1st unless it can be demonstrated that no environmental harm or safety problems would result, as specified in Director's Rule 3-2002. Therefore, additional BMPs will be required during grading between October 31 and April 1 and may include, but are not limited to:

- Submission at specific intervals of written documentation by the geotechnical engineer showing the TESC plans are in place and are being complied with;
- Continuous monitoring inspections by the geotechnical engineer while grading activities are occurring, and weekly or bi-weekly follow up monitoring reports after grading is completed and the site stabilized; and
- Written field reports from the geotechnical engineer after every rainfall in excess of one-half inch in a 24-hour period to confirm that the grading and site soils remain stable.

**2. Air**

**a. What types of emissions to the air would result from the proposal (e.g. dust, automobile, odors, industrial, wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.**

During construction, dust, odors, and emissions will be generated from heavy machinery, trucks, and other vehicles traveling to and from the construction site. Construction is scheduled to last approximately one year.

Exhaust emissions from construction activity could be a source of air pollution. The project is located in the Central Puget Sound "maintenance area" for air quality related to particulate matter (PM<sub>10</sub>) and carbon monoxide (CO) emissions. CO is typically the pollutant of greatest concern for transportation sources because it is the pollutant emitted in the greatest quantity for which short-term health standards exist (the National Ambient Air Quality Standards [NAAQS]).

Once completed, the project will not introduce a new source of traffic, increase traffic capacity, or degrade traffic operations in the vicinity. This project would 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 hot-spot analysis is required.

The City of Seattle uses a SEPA Greenhouse Gas (GHG) Emissions worksheet, originally developed by King County, to evaluate potential climate impacts from a project (City of Seattle Ordinance 122574, December 3, 2007). For transportation sources of emissions, the worksheet contains metrics for vehicle-miles traveled (VMT), fuel efficiency, and “carbon equivalent” emissions (CO<sub>2</sub>e) per gallon of gasoline or diesel. Since GHG emissions are comprised of a variety of different gases, a carbon equivalent is used to compare the emissions from those various GHGs based on their global warming potential using a metric measure. The CO<sub>2</sub> emissions estimates for gasoline and diesel include the extraction, transport, and refinement of petroleum.

Construction of the proposed project would contribute approximately 103 to 113 metric tons of carbon equivalents during the 48 week construction period. This calculation is based on estimates of truck miles traveled per trip, total number of trips, and the average gallons of fuel used per mile. It is assumed that the contractor for the project will use both gasoline and diesel powered vehicles, so the emission estimates here are reported as a range of the two. Because it is unknown at this time where the construction contractor will be traveling from, the number of miles per trip, and the total number of trips required, a worst case scenario was assumed. See the attached GHG Emissions Worksheet for more detailed information.

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

There are no off-site sources of emissions or odor that would affect the proposed project.

**c. Describe proposed measures to reduce or control emissions or other impacts to air, if any.**

Construction activities will comply with City of Seattle *Standard Specifications for Road, Bridge, and Municipal Construction* and all other applicable regulations and permit conditions to protect air quality. In addition, contractors would be required to implement BMPs, such as maintaining all construction machinery engines in good mechanical condition to minimize exhaust fumes.

The completed 15th Avenue NE Bridge Project would not change the use of the bridge, traffic patterns, or traffic volumes from the existing conditions. No long-term impacts to air quality are expected from the proposed project; therefore, no other measures are necessary.

**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, and wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

The proposed bridge rehabilitation project is located over the riparian corridor of the Northgate Branch of Thornton Creek. The riparian watercourse enters the western project boundary and traverses the project area in an easterly direction. The stream exits the eastern

portion of the project area flowing southeast. This section of Thornton Creek is listed on the Washington Department of Ecology (Ecology) 303(d) list for impaired water bodies due to high fecal coliform levels.

The Northgate Branch is mapped as a perennial stream, Type 2 Water, which is prone to flooding in the project area (USFWS-Wetlands Online Mapper, 2008; WAC 222-16-031; City of Seattle, 2008). The stream was approximately 10-feet wide, 4-inches deep at the time of the April field investigation (ESA Adolfson, 2009a).

According to National Wetland Inventory (NWI) data (USFWS-Wetlands Online Mapper, 2008), the project area contains mapped palustrine forested wetlands on both sides of the creek in the project area. These wetlands, labeled as Wetlands A and B, were field-verified by ESA Associates scientists on April 1, 2008 (Figure 3).

Wetland A is a palustrine forested (PFO) and palustrine scrub-shrub (PSS) wetland located in the central and eastern portions of the project area, on the north side of the Northgate Branch. The wetland extends outside of the project area to the east. The western portion of the wetland is disturbed in the vicinity of the bridge span and contains more invasive species in and around the wetland than the eastern portion. The total area of Wetland A is approximately 0.27 acre (11,370 ft<sup>2</sup>).

Wetland B is a palustrine scrub-shrub (PSS) wetland located along the south side of the Northgate Branch under the bridge span. The wetland is bounded by the stream to the north and steep sloped banks to the east, west, and south. The total area of Wetland B is approximately 0.003 acre (130 ft<sup>2</sup>).

Both Wetland A and Wetland B have 60-foot buffer widths, according to the City of Seattle Environmentally Critical Areas Code (Seattle Municipal Code [SMC] 25.09.160). The wetland buffers lie entirely within the Riparian Management Area. For additional details on wetland descriptions, impacts, and mitigation, please see the *Critical Areas Report* (ESA Adolfson, 2009a).

**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 project will require work over and near Thornton Creek and within its associated wetlands and wetland buffers. The proposed work is described in section A.11 and Figure 4 of this report.

**3. Estimate the amount of fill and dredge material that could 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 materials.**

Clearing and grading activities for construction would result in temporary impacts to Wetland A and the wetland buffers/Riparian Management Area (Figure 4). Table 1 shows the amount of each area that will be temporarily impacted by construction activities. The Wetland A and B buffers lie entirely within the Riparian Management Area, which is the area within 100 feet of the top of each bank of the stream (SMC 25.09.020 D5). Approximately 80 CY of wood chips/hog fuel would be used as temporary fill to stabilize the areas to be used for construction staging and access.

**Table 1 - Wetland, Buffer, and Riparian Management Area  
 Temporary Impacts**

	<b>Amount of Temporary Impact</b>
Wetland A	0.113 acre / 4,935 ft <sup>2</sup>
Wetland A Buffer	0.110 acre / 4,792 ft <sup>2</sup>
Wetland B	-0-
Wetland B Buffer	0.079 acre / 3,441 ft <sup>2</sup>
Riparian Management Area (outside wetland and wetland buffers)	0.074 acre / 3,223 ft <sup>2</sup>
<b>TOTAL</b>	<b>0.376 acre / 16,379 ft<sup>2</sup></b>

Source: ESA Adolfson, 2009a.

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

The project will not require surface water withdrawals or diversions.

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

The project lies within the 100-year flood plain of Thornton Creek (Figure 4). The flood elevations for the area directly beneath the 15<sup>th</sup> Avenue NE Bridge are between 186 feet on the west side of the bridge and 180 feet on the east side of the bridge (FEMA, 1995).

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

The project will not involve any discharges of waste materials to surface waters.

**b. Ground**

**1. Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

Ground water will not be withdrawn as part of the proposed project and no water will be discharged to ground water.

- 2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any. 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) is expected to serve.**

The project will not discharge waste material into the ground.

**c. Water Runoff (including stormwater)**

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

The only source of runoff on the project site is stormwater runoff from the existing bridge deck and surrounding roadways. Currently, water runoff flows through inlets and catch basins located at the end of the bridge; the catch basins are connected to outfall pipes that discharge directly into Thornton Creek. The system is partially enclosed. The project will slightly increase the amount of impervious surface, and therefore runoff, within the project site. The increases fall below the City of Seattle Stormwater Code thresholds for requiring flow control or stormwater treatment. However, the project design includes improvements to the existing stormwater conveyance system.

Runoff from the south bridge approach will be collected via thickened edge, curb, and paved water bars, then conveyed to catch basins located on the east and west sides of the road. A new enclosed storm drain system will be connected to the existing drain pipe, maintaining the existing stormwater outfall. Approximately 70 feet of the pipe will be removed and replaced with a rock-lined open channel. This will allow the stormwater runoff to partially infiltrate into the bank and will help dissipate the flow energy before entering the creek.

Runoff from the bridge deck and pavement on the north approach will be collected by new catch basins located at low points on the east and west sides of the road. The new enclosed storm drain systems will be connected to the two existing corrugated drain pipes that outfall beneath the bridge. The existing outfall locations will be retained. A portion of the pipe on the northeastern side of the bridge will be removed during construction and then replaced with a new pipe in the same location after the completion of the bridge abutment work.

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

During construction, there is the possibility for waste materials to inadvertently enter surface waters (e.g., accidental spills, dust and debris from structural work, etc.) due to work taking place on and below the bridge, directly over Thornton Creek. No impacts to ground or surface waters from waste materials are expected.

- d. Describe proposed measures to reduce or control surface, ground, and runoff water impacts, if any.**

The final design for the new stormwater system will comply with all City of Seattle and Department of Ecology standards and regulations as well as any applicable permit conditions.

The proposed stormwater design will not significantly increase the erosive forces from the outfalls. Rock pads will be added to the ends of the outfall pipes for energy dissipation.

Implementation of relevant BMPs will be required to control dust related to bridge structural work and to capture potential spills from construction activities. During construction, the contractor will make provisions for debris collection prior to commencing work such that no debris shall fall into the water or onto the property below the bridge. The contractor will collect and dispose of all waste materials at an approved disposal facility.

In addition to construction BMPs, the project includes implementation of a TESC Plan, a SWPPP, and a Spill Prevention, Countermeasures and Control (SPCC) Plan, consistent with City of Seattle design standards. Other erosion control measures are described in Section B.1.h. All disturbed wetland and riparian habitat areas under the bridge with sufficient clearance will be restored and replanted following construction (see also Section B.4 below for additional information).

#### **4. Plants**

##### **a. Types of vegetation found on-site:**

Deciduous trees: alder, maple, aspen, other

Evergreen trees: fir, cedar, pine, other

Shrubs: English ivy, salmonberry, Himalayan blackberry, sword fern, others

Grass: n/a

Pasture: n/a

Wet Soil Plants: cattail, buttercup, bulrush, skunk cabbage, other

Water Plants: water lily, eelgrass, milfoil, other

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

Clearing and grading for the project would temporarily impact a total of 0.376 acres (16,379 ft<sup>2</sup>) of wetland, wetland buffers, and riparian management areas (see Section B.3.a.3 for the breakdown of impact areas). A detailed description of the vegetation to be removed can be found in the *Critical Areas Report* (ESA Adolfson, 2009a).

##### **c. List threatened or endangered species or critical habitat known to be on or near the site.**

There are no threatened or endangered plant species known to be on or near the site (ESA Adolfson, 2009b). The site does contain a Fish and Habitat Conservation Area, as defined by SMC 25.09.020 D5, associated with Thornton Creek.

**d. Describe proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on-site.**

Construction activities will comply with City of Seattle *Standard Specifications for Road, Bridge, and Municipal Construction* and all other applicable regulations and permit conditions to protect the wetland and riparian areas. Although some impacts are unavoidable, the majority of construction activities will occur from the bridge deck and a temporary work platform supported either by a trestle or suspended from the bridge deck. Access to the ravine is necessary for construction of the platform.

On-site restoration is proposed as mitigation for temporary impacts to wetland, wetland buffer, and riparian management areas resulting from construction access. After bridge rehabilitation activities are completed, temporary wetland fill will be removed and impacted wetland areas will be restored in place. The elements of the mitigation plan include a statement of mitigation goals, a statement of performance standards, a monitoring plan, a maintenance plan, and a contingency plan. A detailed description of the mitigation plan can be found in the *Critical Areas Report* (ESA Adolfson, 2009a).

**5. Animals**

**a. Underline any birds and animals which have been observed on or near the site or are known to be on or near the site:**

The project area provides habitat for wildlife species because it contains a riparian corridor and associated wetlands. Several species of birds, mammals, reptiles, and amphibians are expected to use habitat on the project site but may not have been present or visible during the site visit. The general types of wildlife expected to be found in this type of urban environment are listed below. Vehicle traffic on the 15th Avenue NE Bridge and human disturbance underneath the bridge may limit the presence of some species of wildlife.

Fish: coho salmon, sockeye salmon, coastal cutthroat

Amphibians: n/a

Reptiles: n/a

Birds: American crow, song sparrow, house sparrow

Mammals: Norway rat

**b. List any threatened or endangered species or critical habitat near the site.**

Puget Sound Chinook and Puget Sound steelhead have been known to use the larger Thornton Creek system for spawning habitat. However, as described in the *Endangered Species—No Effect Letter* (ESA Adolfson, 2009b), site specific survey data found that no Chinook or steelhead spawners utilize the Northgate Branch. The stream appears to be smaller than those usually preferred for spawning by either fish species. No other threatened or endangered species are known to be on or near the project site.

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

The Puget Sound area is located within the Pacific Flyway, which is a flight corridor for migrating waterfowl and other avian fauna. The Pacific Flyway extends south from Alaska to Mexico and South America. No portion of the 15th Avenue NE Bridge Project would interfere with or alter the Pacific Flyway.

The Northgate Branch is not a primary migration corridor for any known fish species; however, non-ESA listed fish may migrate through this area to spawn further upstream.

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

As described in Sections B.3.d and B.4.d above, mitigation provided for impacts to wetlands and vegetation will also serve to minimize potential impacts and to restore and enhance wildlife habitat after completion of the proposed project.

**6. Energy and Natural Resources**

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

The completed project will not require the use of energy beyond existing conditions.

**b. Would the project affect the potential use of solar energy by adjacent properties? If so, explain.**

The profile and elevation of the 15th Avenue NE Bridge will not change with the completion of the project. The project would 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.**

There are no energy conservation features included in the proposed project. No energy impacts are expected; therefore, no measures are necessary.

**7. Environmental Health**

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

Construction workers and the public could be exposed to environmental health hazards from construction activity. The removal of loose lead paint from the metal bridge posts, rails, and supports could result in worker exposure to lead paint dust and the deposition of lead paint particles into the creek environment below the bridge. Welding activities associated with the construction of the new bridge railing could pose a fire risk. Operation of construction equipment could result in spill of petroleum-based products such as fuels and hydraulic fluids.

There are no sites in the vicinity of the project that are on the U.S. Environmental Protection Agency (EPA) National Priorities List of hazardous sites (EPA, 2008). There are sites within one-half mile of the 15th Avenue NE Bridge that are on Ecology's Confirmed and Suspected Contaminated Sites List, including leaking underground storage tanks. However, these sites do not pose an environmental health hazard due to the distance from the project site and the fact that very little grading/subsurface work is required for the bridge work.

**1. Describe special emergency services that might be required.**

Typical emergency response services (fire and emergency medical) would be required in the event of a construction accident related to a hazardous material spill from construction activity. No other special services would be required.

**2. Describe proposed measures to reduce or control environmental health hazards.**

The contractor will develop a Health and Safety Plan that meets the requirements set out by the Washington State Department of Labor and Industries before work commences. The Health and Safety Plan will include requirements to minimize the risk of environmental health hazards, such as having construction workers wear personal protective equipment during the removal of lead paint and welding activities.

Spill prevention materials and careful work is crucial to preventing a release that could endanger construction workers, the public, or the environment. SDOT will require the contractor to have an SPCC plan prior to starting site work, which will include stipulations for containing all debris generated by construction activity—including the loose lead paint from the metal posts, rails, and supports—and to dispose of it at an approved facility. The contractor will maintain spill kits on site to treat any chemical or fluid leaks. Appropriate protections will be in place to minimize the risk of fire or other damage from welding activities.

The contractor will monitor excavations for potential contamination from off-site sources and/or past activities. If the contractor discovers contamination, specific mitigation measures would then be developed in coordination with the City based on the magnitude of contamination identified. Construction plans will contain provisions for contractors to follow if unanticipated contamination is discovered. Additional BMPs may also be imposed as conditions of the state and federal permits.

**b. Noise**

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

The only noise source in the project vicinity is traffic traveling on 15th Avenue NE. As the proposed project is transportation-related, the traffic noise will not affect the proposal.

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

Construction of the proposed project would create a new, temporary source of noise in the project area. In particular, the steel casings for the cast-in-place concrete piles will be driven into the ground, creating loud, short-term impact noise. Construction hours and noise levels would comply with the City of Seattle noise standards.

Once the project is completed, the project would not introduce any new sources of noise or result in noise levels higher than existing levels. Noise from traffic traveling across the 15th Avenue NE Bridge is not expected to change from the current conditions.

**3. Describe proposed measures to reduce or control noise impacts, if any.**

Construction activities will implement BMPs to reduce and minimize noise levels to the extent possible. BMPs may include such things as limiting operation of heavy equipment to non-sleeping hours, installing and maintaining effective mufflers on all construction equipment, and minimizing equipment idling. If construction activities will take place outside normal working hours the construction contractor will obtain a noise variance from the Seattle Department of Planning and Development.

**8. Land and Shoreline Use**

**a. What is the current use of the site and adjacent properties?**

The 15th Avenue NE Bridge crosses the Northgate Branch of Thornton Creek. The bridge is oriented north-south and spans several hundred feet of riparian corridor. Residential land use exists on all sides of the bridge. Thornton Creek Park is located southeast of the bridge.

**b. Has the site been used for agriculture? If so, describe.**

The site has not been used for agricultural purposes.

**c. Describe any structures on the site.**

There are no structures on the site other than the bridge and associated facilities and utilities.

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

No structures will be demolished as a result of the 15th Avenue NE Bridge Project. Portions of the existing bridge and associated facilities will be removed and replaced; however, the existing structure will remain essentially intact.

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

The City of Seattle's land use code (SMC Title 23) designates the 15th Avenue NE Bridge and the surrounding area as Single-family Residential (SF5000 and SF7200) (City of Seattle, 2008).

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

The Seattle Comprehensive Plan identifies the project area as Single-Family Residential and City-owned Open Space.

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

The project site does not lie within a shoreline jurisdiction.

**h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.**

The project site contains several environmentally critical areas, including Flood-prone Areas, Wetlands, Riparian Management Areas, and Steep Slopes as defined in SMC 25.09 (Figure 3; City of Seattle, 2009a, 2009b). For additional information on environmentally critical areas, see the *Critical Areas Report* (ESA Adolfson, 2009a).

**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 project will not displace any people.

**k. Describe proposed measures to avoid or reduce displacement impacts, if any.**

No displacement impacts are expected; therefore, no measures are necessary.

**l. Describe proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.**

No land use impacts are expected; therefore, no measures are necessary.

**9. Housing**

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

The project will not include any housing.

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

No housing units will be eliminated with the proposed project.

**c. Describe proposed measures to reduce or control housing impacts, if any.**

No housing impacts are expected; therefore, no measures are necessary.

## 10. Aesthetics

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

The 15th Avenue NE Bridge and its associated components are the only structures on the project site. The final elevation of the bridge deck will not change from the existing conditions. The final height of the pedestrian railing will be slightly higher than existing conditions to meet current safety standards.

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

No views in the immediate vicinity would be altered or obstructed with completion of the proposed project.

**c. Describe proposed measures to reduce aesthetic impacts, if any.**

No aesthetic impacts are expected; therefore, no measures are necessary.

## 11. Light and Glare

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

The 15th Avenue NE Bridge Project would temporarily create a new source of light during construction of the project. Construction activities would occur between the hours of 7:00 a.m. and 10:00 p.m. on weekdays and 9:00 a.m. and 10:00 p.m. on weekends (see also section B.7.b.2, above). No night work is anticipated. The project is not expected to have light or glare impacts on the land uses in the area.

There are no existing lights on the 15th Avenue NE Bridge, and none are proposed. The project would not create any new permanent source of light or glare.

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

The proposed project would not create any new permanent source of light or glare; it would not be a safety hazard or interfere with views in the area.

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

There are no off-site sources of light or glare that would affect the proposed project.

**d. Describe the proposed measures to reduce or control light and glare impacts, if any.**

No light or glare impacts are expected; therefore, no measures are necessary.

## 12. Recreation

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

Thornton Creek Park lies immediately southeast of the 15th Avenue NE Bridge. This city recreation area is a natural open space with no formal development. Construction of the project could potentially generate nuisance dust and noise. Although project construction may be seen and/or heard from portions of the park, the work would not impede access to or the use of Thornton Creek Park. The temporary construction activities are not expected to impact the park.

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

The proposed project would not displace any existing recreational uses.

**c. Describe proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or applicant.**

No impacts to recreation are expected from the proposed project; therefore, no measures are necessary.

## 13. Historic and Cultural Preservation

**a. Are there any places or objects listed on or eligible for national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

There are no previously recorded historic properties within or next to the project area. However, the 15th Avenue NE Bridge itself has been determined to be eligible for listing on the National Register of Historic Places (NRHP) under Criteria C, as described in the *Cultural Resources Assessment* (PRA, 2009) due to its association with Homer M. Hadley, who designed the bridge. The Washington State Department of Archaeology and Historic Preservation (DAHP) has determined that the project would have an adverse effect on the historic integrity of the bridge.

**b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.**

There are two ethnographic places recorded within one mile of the project area, and one report of artifacts found by a private land owner (PRA, 2009). They are summarized below in Table 2.

**Table 2 - Ethnographic Places and Private Finds**

Name	Approx. Distance from Project Area	Description	Citations
<i>Slo'q<sup>3</sup>qed</i> (bald head)	1.0 mile west	A cranberry marsh drained by one branch of Thornton Creek.	Hilbert et al. 2001:81; KING #07282
<i>Tu<sup>u</sup>xu':bld</i> (no translation)	1.0 mile east	A creek north of Sand Point (Thornton Creek).	Hilbert et al. 2001:81; KING #07281
n/a	1.0 mile southeast	Artifacts reported by private land owner.	KING #01072

Source: PRA, 2009

The cranberry marsh, *Slo'q<sup>3</sup>qed*, was located approximately where the Northgate Shopping Mall now stands. In 1952, a private land owner reported finding one modified (chipped) stone tool and one adze blade. The two artifacts were donated to the Burke Museum of Natural History and Culture.

The low number of ethnographic places recorded within one mile of the project area suggests a low utilization of the area. Further, due to its small size, it is likely that this branch of *Tu<sup>u</sup>xu':bld* (Thornton Creek) was non-navigable, which may explain the lack of recorded place names in association with the creek channel.

PRA was on-site during geotechnical boring. No significant cultural materials were identified during monitoring of drilling locations for the 15th Avenue NE Bridge Project.

**c. Describe proposed measures to reduce or control impacts, if any.**

In anticipation of a NRHP eligibility listing, and to mitigate the adverse impacts on the bridge's integrity, PRA contracted large format photography and documented the historic aspects of the bridge, including its engineering significance and association with Homer M. Hadley, in the *Cultural Resources Assessment*. These measures are currently being formalized in a Memorandum of Agreement between FHWA and DAHP, with concurrence by WSDOT and SDOT. SDOT will also consult with DAHP to ensure the design of the new railing matches that of the existing railing to the extent feasible.

The project does not propose significant excavation beyond areas previously disturbed by construction of the current bridge, thus the likelihood of uncovering intact cultural deposits during construction is generally considered low. However, in the event that cultural resources are observed during implementation of the project, then work will be temporarily suspended at that location and a professional archaeologist will be consulted.

## 14. Transportation

**a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on-site plans, if any.**

The project site is accessed by 15th Ave NE between NE 104th Street and NE 106th Street. Major arterials in the area include Roosevelt Way NE, 24th Ave NE, and NE Northgate Way (Figure 2). Additional information on the transportation network in the project area is described by Heffron Transportation, Inc. in the *Transportation Technical Report*.

Proposed construction access to the site is described in Section A.11. All other access to and from the site will not change with implementation of the proposed project.

Construction of the proposed project will require full closure of the bridge for approximately 8 to 10 months. Pedestrian, bicycle, and vehicular traffic, including bus routes, will be detoured. Signage will be provided to detour traffic.

**b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

Yes, King County Metro operates three bus routes on 15th Avenue NE and over the 15th Avenue NE Bridge: Routes 73, 77, and 373.

**c. How many parking spaces would the completed project have? How many would the project eliminate?**

There is currently no parking at the project site and the project will not add any new parking.

**d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe.**

The 15th Avenue NE Bridge Project is a road improvement project (see project description in section A.11). No other road or street improvements would be required as a result of the proposed project.

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

The project will not use, nor is it located in the vicinity of any water, rail, or air transportation.

**f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

When the project is complete, the bridge will have the same lane configuration and capacity as it does today. Therefore, there are no long-term traffic impacts expected from completion of the project.

Project construction is scheduled to be completed in approximately 260 working days, not including weekends, and will generate an estimated 1,500 traffic trips. This equates to about 5 to 6 construction traffic trips per day, between the hours of 7:00 a.m. and 10:00 p.m. (see also

section B.7.b.2 for a description of working hours). This additional traffic would not constitute a significant increase in the total number of vehicles on the roadways in this area.

**g. Describe proposed measures to reduce or control transportation impacts, if any.**

The following mitigation measures would minimize the impact from closure of the bridge:

- Coordination of haul routes and full closures with the City of Seattle, King County Metro Transit Division, police, fire, and emergency services;
- Coordination of relocation of bus stops and transit routes near the construction zone with the King County Metro construction coordination division;
- Providing information on construction activities, including bridge closure, to the neighborhood and encouraging use of alternative routes for vehicles, bicycles, and pedestrians;
- Development of clear and efficient mechanisms for receiving and resolving complaints from the neighborhood and businesses;
- Designation of specific areas away from neighborhood streets for construction worker parking.

**15. Public Services**

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

Construction activities could potentially affect fire, police, and other emergency access to the area while the bridge is closed. This would be a temporary and short-term impact.

The completed project would not change the existing capacity of the bridge. The completed project would not result in a change in or an increased need for public services.

**b. Describe proposed measures to reduce or control direct impacts on public services.**

Access to surrounding areas would be provided via detour routes while the 15th Avenue NE Bridge is closed during construction. Advance notice of the bridge closure would be given to the fire, police, and emergency service providers in the area so that emergency routes may be altered if necessary. For additional mitigation for impacts to access, see Section 14.d above.

**16. Utilities**

**a. Underline utilities currently available at the site:**

Electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic systems, other

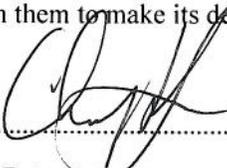
**b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

There are existing natural gas, electrical, water, and communication lines on the bridge. Some of these lines will likely need to be re-routed during construction, resulting in short disruptions in service. SDOT is currently working with Puget Sound Energy and Qwest Communications to plan for the movement of these utility lines in order to minimize the impact to the surrounding service area. Potential disruptions in utility service would be intermittent and temporary, and are not expected to have a significant impact on the surrounding area.

No new utilities are proposed as part of the 15th Avenue NE Bridge Project. The project would not have a long-term impact on utility service in the region.

**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:  .....

Date Submitted: 7/20/09 .....

## REFERENCES

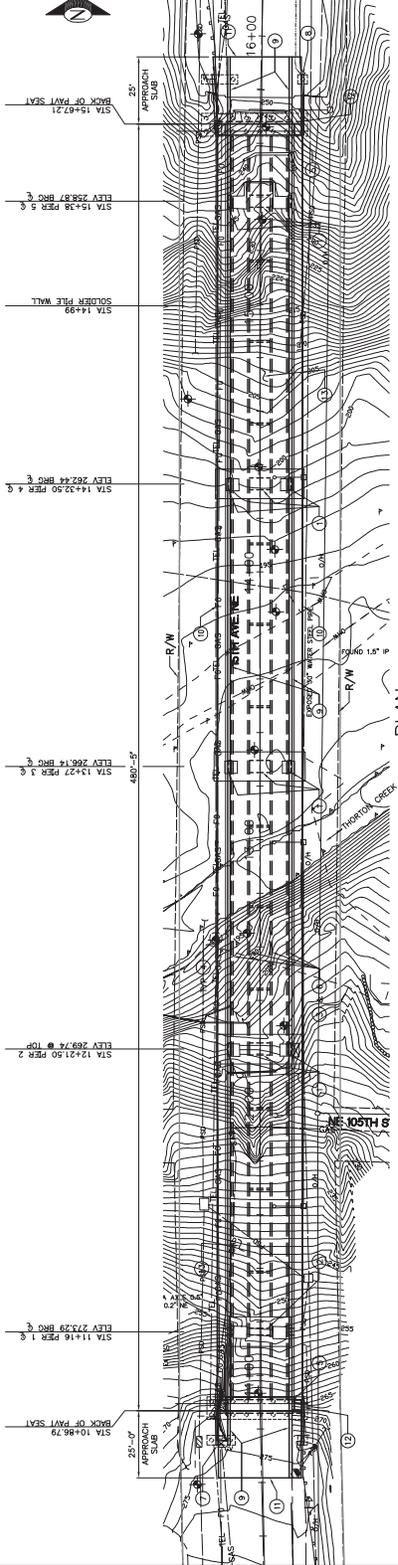
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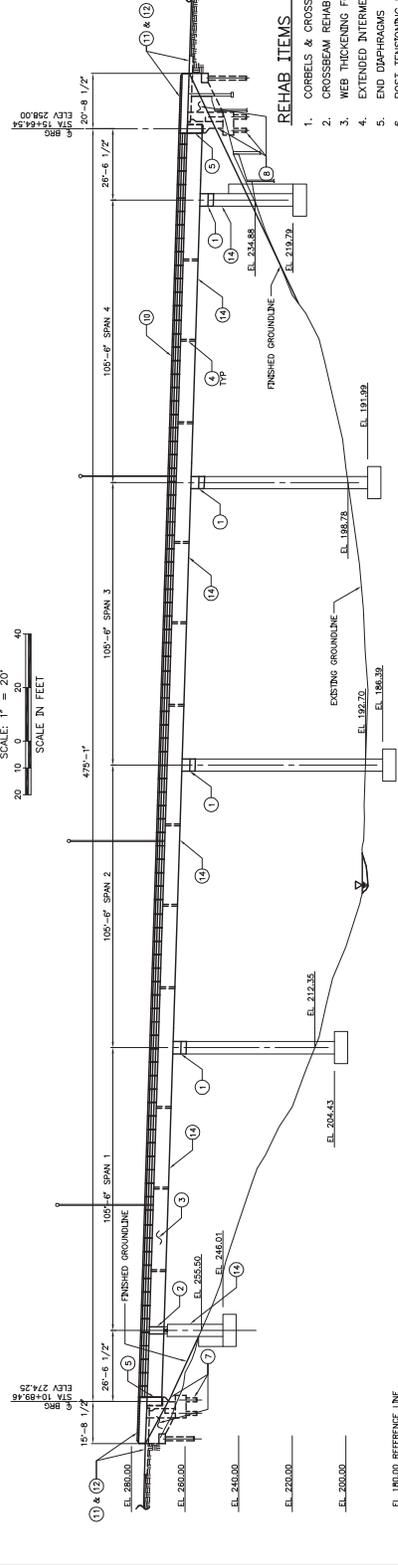
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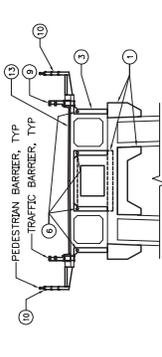
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PLAN  
 SCALE: 1" = 20'  
 SCALE IN FEET



ELEVATION  
 SCALE: 1" = 20'  
 SCALE IN FEET



TYPICAL SOUTH ELEVATION AT PIERS  
 NAD 88 VERTICAL DATUM

REHAB ITEMS

1. CORBELS & CROSSBEAM REHAB AT PIERS 2 TO 5
2. CROSSBEAM REHAB AT PIER 1
3. WEB THICKENING FOR EXISTING BOX GIRDERS
4. EXTENDED INTERMEDIATE DIAPHRAGMS
5. END DIAPHRAGMS
6. POST TENSIONING FOR THICKENED BOX GIRDERS
7. SOUTH ABUTMENT
8. NORTH ABUTMENT
9. TRAFFIC RAILS
10. PEDESTRIAN RAILING REHAB
11. APPROACH SLABS
12. CONCRETE PEDESTRIAN BARRIER AT ABUTMENT
13. PATCH & REPAIR OVERLAY W/ HMA (1 1/2") OVERLAY
14. BRIDGE MAINTENANCE TASKS

NOTES:

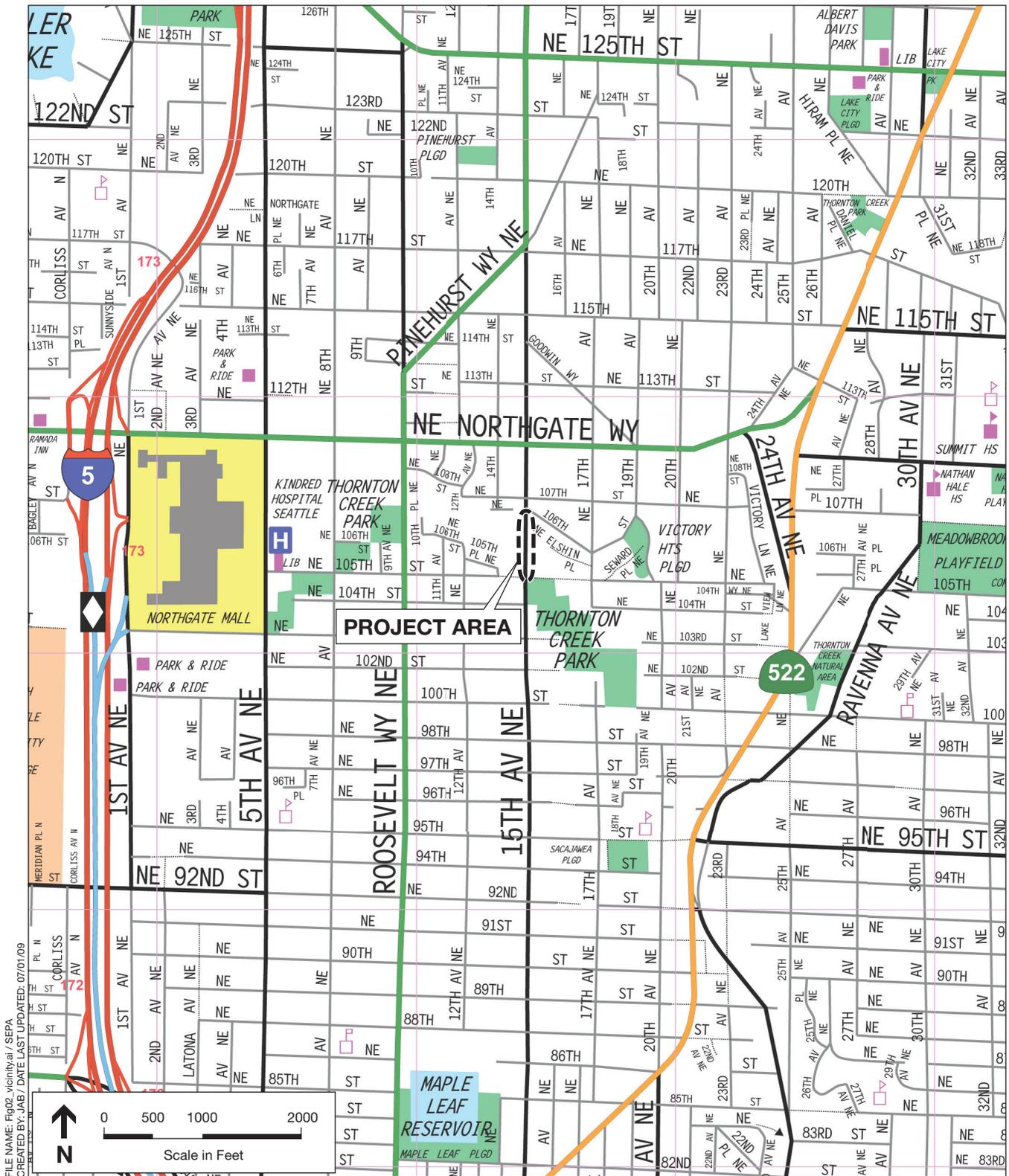
1. THE EXISTING GROUND ELEVATIONS AT THE CENTER OF THE PIER WERE BASED ON THE TOPOGRAPHIC SURVEY MAP PREPARED BY DAVID EVANS AND ASSOCIATES, INC., DATED JUNE 03 & 10, 2008.
2. THE ELEVATIONS OF THE PIERS SHOWN WERE BASED ON THE GEOTECHNICAL REPORT PREPARED BY SHANNON & WILSON, INC., DATED JANUARY, 2009.
3. THE BRIDGE DECK ELEVATIONS SHOWN WERE AT THE TOP OF THE EXISTING ASPHALT CONCRETE OVERLAY; SEE NOTE 13 FOR SURVEY DATA SOURCES.
4. SEE SHOWN IN THE PLAN AND GENERAL NOTES A.4 FOR VARYING FIELD CONDITIONS

90% SUBMITTAL  
 NOT FOR CONSTRUCTION

GENERAL LAYOUT & ELEVATION  
 S2

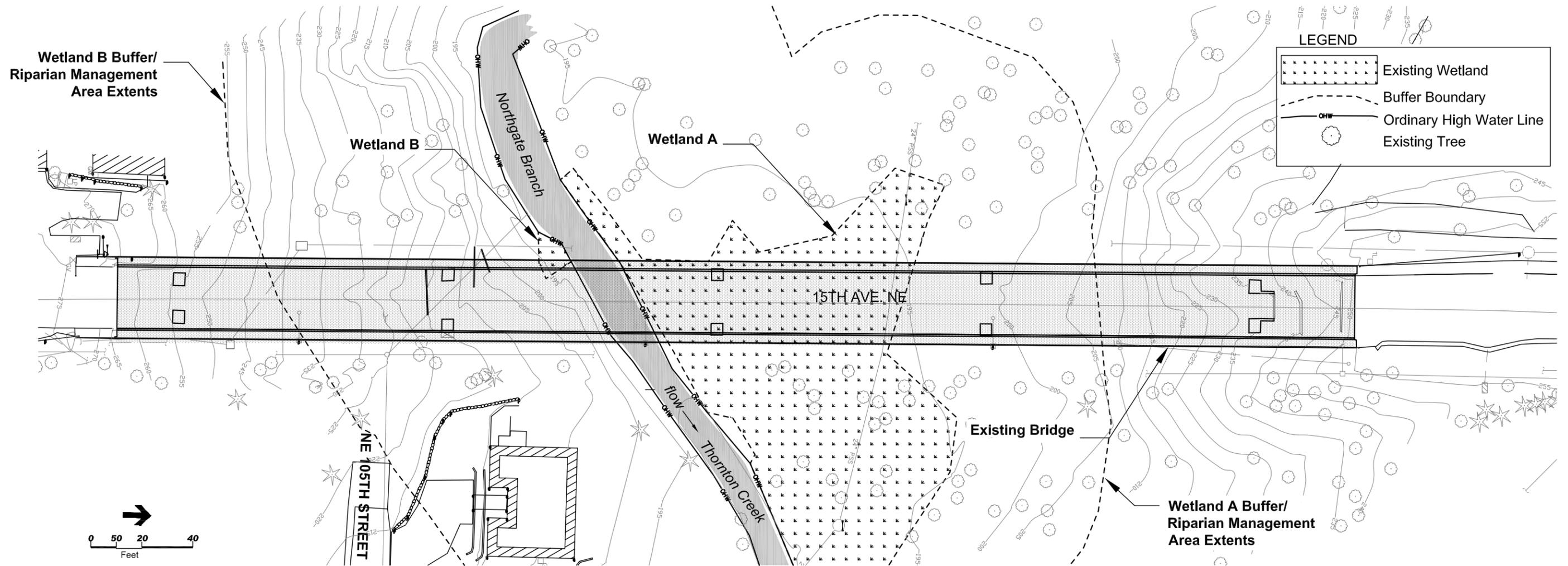


SOURCE: ABKJ, 2009.

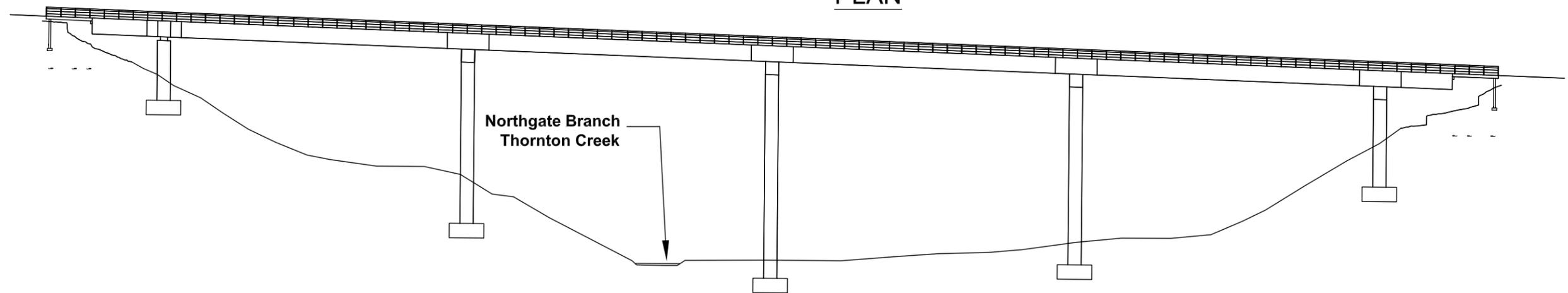


SOURCE: Rand McNally & Company, 2006.

15th Avenue NE at 105th Street — Bridge Rehabilitation Project . 207199.01  
**Figure 2**  
 Vicinity Map  
 15th Avenue NE at 105th Street — Bridge Rehabilitation Project  
 Seattle, Washington



**PLAN**



**ELEVATION**

reference #207199.1  
Created by: bcb Apr 30, 2009

SOURCE: abkj, 2008

15th Avenue NE at 105th Street - Bridge Rehabilitation Project - 207199.1

**Figure 3**

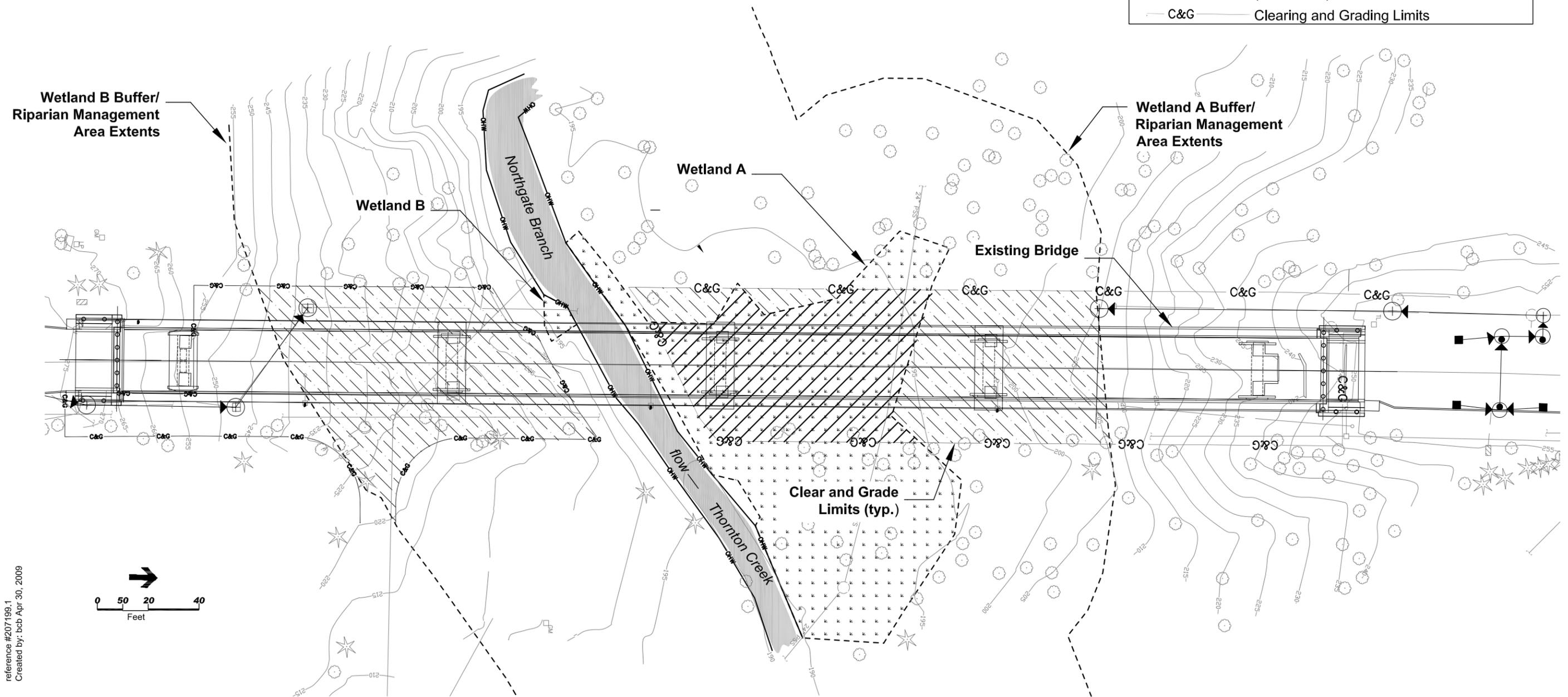
Existing Conditions  
15th Avenue NE at 105th Street - Bridge Rehabilitation Project  
Seattle, Washington

reference #207199.1  
Created by: bcb Apr 30, 2009

SOURCE: abkj, 2008

LEGEND

	Temporary Riparian Management/Wetland Buffer Impacts (0.263 acre)
	Temporary Wetland Impacts (0.113 acre)
	C&G Clearing and Grading Limits



15th Avenue NE at 105th Street - Bridge Rehabilitation Project - 207199.1

Figure 4

Summary of Temporary Impacts  
15th Avenue NE at 105th Street - Bridge Rehabilitation Project  
Seattle, Washington

## GHG Emissions Worksheet

Based on City of Seattle GHG Emissions Worksheet V1-7

	VMT for project	gallons fuel/mile	lbs CO <sub>2</sub> e/gallons gas	lbs CO <sub>2</sub> e/gallons diesel	MTCO <sub>2</sub> e for Gas	MTCO <sub>2</sub> e for Diesel
<b>Heavy Trucks</b>	75,000	0.1250	24.30	26.55	103.3	112.9

### Data Sources

**1500 estimated construction traffic trips for entire project (ABKJ, 2008)**

A very conservative estimate of 50 miles per trip was used to calculate the total vehicle miles traveled (VMT) for the project.

**0.1250 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. [http://cta.ornl.gov/data/tedb27/Edition27\\_Chapter05.pdf](http://cta.ornl.gov/data/tedb27/Edition27_Chapter05.pdf)

Note: This report states that in 2002, construction was the most common use for the above described trucks (Table 5.7). In addition, average miles per trip for these trucks was under 50 miles (Table 5.6).

**24.3 lbs CO<sub>2</sub>e/gallons gasoline**

**26.55 lbs CO<sub>2</sub>e/gallons diesel**

The CO<sub>2</sub> emissions estimates for gasoline and diesel include the extraction, transport, and refinement of petroleum as well as their combustion.

Life-Cycle CO<sub>2</sub> Emissions for Various New Vehicles. RENew Northfield.

Available: <http://renewnorthfield.org/wpcontent/uploads/2006/04/CO2%20emissions.pdf>

Note: This estimate of emissions by fuel consumption is given as a range because it is assumed the project will use a combination of both gasoline and diesel powered trucks.