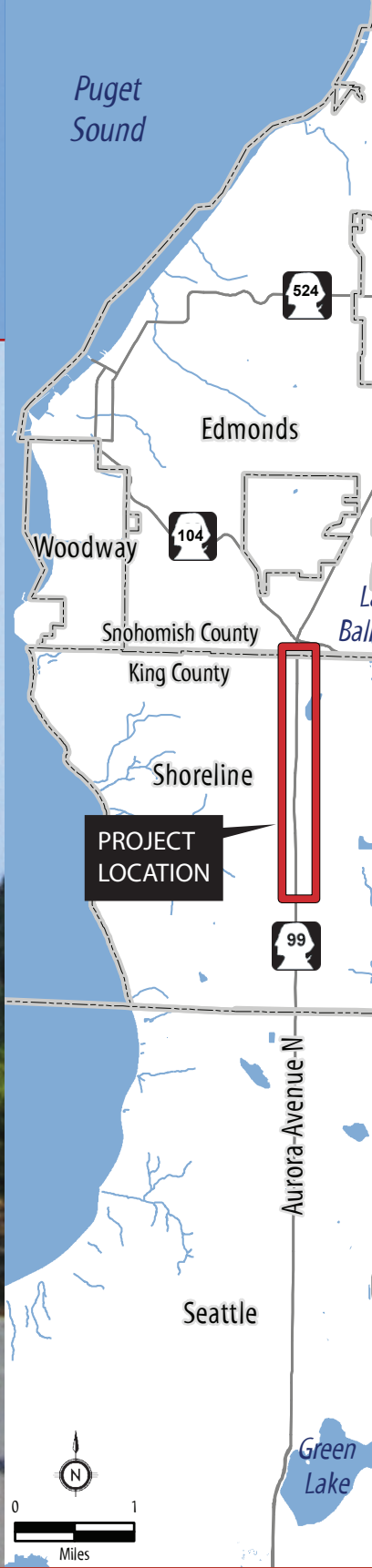


# Wetlands and Other Waters of the U.S. **Discipline Report**

Aurora Corridor Improvement Project  
N 165th Street to N 205th Street





# Wetlands and Other Waters of the U.S. Discipline Report

## Aurora Corridor Improvement Project: N 165th Street – N 205th Street

Prepared for:



City of Shoreline  
17544 Midvale Avenue N.  
Shoreline, WA 98133  
Contact: Kris Overleese, P.E.  
206/546-0791

Prepared by:



**Jones & Stokes**

11820 Northup Way, Suite E300  
Bellevue, WA 98005  
Contact: Dave Johnson  
425/822-1077

July 2007

This document should be cited as:

Jones & Stokes. 2007. Wetlands and Other Waters of the U.S. Discipline Report. Aurora Corridor Improvement Project: N 165th Street – N 205th Street. July. (61001.06.) Bellevue, WA. Prepared for City of Shoreline

# Table of Contents

---

<b>Chapter 1. Introduction .....</b>	<b>1-1</b>
What is the purpose of this report?.....	1-1
Where is the Project located?.....	1-1
What are the existing characteristics of the Aurora Avenue N corridor? .....	1-2
Why improve Aurora Avenue N? .....	1-4
What are the major characteristics of the proposed Project? .....	1-4
Why are wetlands, streams, and ditches considered for this Project? .....	1-5
What are the key points of this report? .....	1-5
<b>Chapter 2. Purpose and Need .....</b>	<b>2-1</b>
What is the purpose of the Aurora Corridor Improvement Project? .....	2-1
How were the needs of the Aurora Avenue corridor identified?.....	2-1
Regional Metropolitan Transportation Plan.....	2-2
City Comprehensive Plan .....	2-2
Multimodal Pre-Design Study .....	2-3
What are the needs addressed by the Aurora Corridor Improvement Project? .....	2-6
System Linkage .....	2-6
Capacity .....	2-7
Regional Transportation Demand.....	2-8
Modal Interrelationships .....	2-9
Safety .....	2-10
Social Demands/Economic Development.....	2-12
What is the legislative context for the Project? .....	2-12
City Resolution 156 .....	2-12
City Ordinance 326.....	2-13
Access Management RCW 47.50.....	2-13
<b>Chapter 3. Alternatives .....</b>	<b>3-1</b>
What alternatives are considered in this discipline report?.....	3-1
No Build Alternative .....	3-1
Build Alternatives.....	3-1

When will the Recommended Alternative be selected? ..... 3-3

**Chapter 4. Affected Environment..... 4-1**

What are the general features of the Project area? ..... 4-1

What information exists on wetlands in the Project vicinity? ..... 4-2

What is the study area and how was it defined? ..... 4-5

How were wetlands, ditches, and streams delineated and classified? ..... 4-7

Delineating and Classifying Wetlands ..... 4-7

Delineating and Classifying Streams ..... 4-7

Delineating and Classifying Ditches ..... 4-8

Where are the wetlands, ditches, and streams in the study area and what are their characteristics? ..... 4-8

Wetlands ..... 4-8

Streams ..... 4-9

Ditches ..... 4-9

Adjacent Uplands ..... 4-12

Are any protected wildlife habitats or species located within the study area? ..... 4-14

How were ditch functions and values assessed? ..... 4-14

What functions do study area ditches provide? ..... 4-15

**Chapter 5. Potential Effects..... 5-1**

How were ditch areas calculated and effects to ditches determined? ..... 5-1

How would Project construction affect ditches? ..... 5-1

Permanent Effects under All Build Alternatives ..... 5-1

Temporary Effects ..... 5-2

How would Project operations affect ditches? ..... 5-2

How would the No Build Alternative affect ditches? ..... 5-3

**Chapter 6. Measures Taken to Avoid or Minimize Project Effects ..... 6-1**

What mitigation measures are proposed to avoid or minimize overall effects of the Project? ..... 6-1

What mitigation measures are proposed to avoid or minimize effects to ditches? ..... 6-2

**Chapter 7. References ..... 7-1**

## Tables

---

Table 1.	Summary of Potential Effects on Ditches and Associated Mitigation.....	1-6
Table 2.	Common and Unique Features of the Aurora Corridor Improvement Project Build Alternatives.....	3-2
Table 3.	Ditches Identified within the Project Study Area .....	4-9
Table 4.	Effects to Ditches under the Three Build Alternatives.....	5-2

## Figures

---

Figure 1.	Project Vicinity.....	1-3
Figure 2.	Alternative A .....	3-4
Figure 3.	Alternative B .....	3-5
Figure 4.	Alternative C .....	3-6
Figure 5.	Proposed Plan Detail for Build Alternatives .....	3-7
Figure 6.	USGS Topographic Map.....	4-3
Figure 7.	USFWS National Wetlands Inventory.....	4-4
Figure 8.	City of Shoreline Critical Areas (Hydrological).....	4-6
Figure 9.	Location of Ditches 1 and 2 .....	4-11
Figure 10.	Location of Ditch 3.....	4-13

## Appendices

---

Appendix A. Photos

Appendix B. Corps Data Forms

## Acronyms and Abbreviation

---

<b>ADT</b>	Average Daily Traffic
<b>BAT</b>	Business Access and Transit
<b>CAA</b>	Clean Air Act
<b>CAD</b>	computer-aided drafting
<b>City</b>	City of Shoreline
<b>Corps</b>	U.S. Army Corps of Engineers
<b>CTR</b>	Commute Trip Reduction
<b>Ecology</b>	Washington Department of Ecology
<b>FGTS</b>	Freight and Goods Transportation System
<b>GIS</b>	geographical information systems
<b>GMA</b>	Growth Management Act
<b>HAC</b>	high-accident corridor
<b>HAL</b>	high accident location
<b>I</b>	Interstate
<b>LOS</b>	level of service
<b>MVM</b>	million vehicle miles
<b>N</b>	north
<b>NCHRP</b>	National Cooperative Highway Research Program
<b>NEPA</b>	National Environmental Policy Act
<b>NHS</b>	National Highway System
<b>NRCS</b>	Natural Resources Conservation Service
<b>NWI</b>	National Wetland Inventory
<b>NWP</b>	Nationwide Permit
<b>OHWM</b>	ordinary high water mark
<b>PAL</b>	pedestrian accident location
<b>Project</b>	Aurora Corridor Improvement Project, N 165th Street to N 205th Street
<b>PSRC</b>	Puget Sound Regional Council



<b>RCW</b>	Revised Code of Washington
<b>RTP</b>	Regional Transportation Plan
<b>SEPA</b>	State Environmental Policy Act
<b>SR</b>	State Route
<b>USGS</b>	U.S. Geologic Survey
<b>V/C</b>	volume to capacity
<b>WAC</b>	Washington Administrative Code
<b>WRIA</b>	Water Resource Inventory Area
<b>WSDOT</b>	Washington State Department of Transportation

## Glossary

---

<b>buffer (aquatic resource)</b>	A designated area along and adjacent to a stream or wetland that may be regulated to control the negative effects of adjacent development on the aquatic resource.
<b>fill material</b>	Any material placed in an area to increase surface elevation.
<b>hydric soil</b>	Soils formed under conditions of saturation, flooding, or ponding long enough to develop anaerobic conditions (absence of oxygen) in the upper part.
<b>hydrologically connected</b>	Linked to or associated with the water source of another system either through surface water, a stream, groundwater etc.
<b>hydrology</b>	Within the context of a wetland, permanent or periodic inundation or prolonged soil saturation sufficient to create anaerobic conditions in the soil.
<b>mitigation</b>	An effort to: (1) avoid the impact altogether by not taking a certain action or parts of an action; (2) minimize the impact by limiting the magnitude of the action and its implementation, by using technology or by taking affirmative steps; (3) rectify the impact by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate the impact over time by preservation and maintenance operations; (5) compensate for the impact by replacing, enhancing or providing substitute resources or environments; and/or (6) monitor the impact and taking appropriate corrective measures.
<b>study area</b>	The area specifically evaluated for environmental effects.
<b>wetland</b>	Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
<b>wetland hydrology</b>	The condition where water is present during a portion (between 5 and 12.5 percent) of the annual growing season.



# Chapter 1. Introduction

This chapter introduces the proposed project, explains why waters of the U.S. (which include ditches, streams, and wetlands) are analyzed in the environmental process, and summarizes key findings presented in this report.

---

This wetlands discipline report describes existing wetlands, streams, and/or ditches, the potential effects of the proposed project on these resources, and measures taken to minimize effects.

---

## What is the purpose of this report?

The City of Shoreline (City) proposes to construct the Aurora Corridor Improvement Project, N 165th Street to N 205th Street (Project), which will improve a 2-mile-long segment of State Route (SR) 99, named Aurora Avenue North (N) within the City. This project must be developed in compliance with the National Environmental Policy Act (NEPA) and the Washington State Environmental Policy Act (SEPA).

This wetlands discipline report was prepared in general accordance with Section 460 of the Washington State Department of Transportation (WSDOT) Environmental Procedures Manual (WSDOT 2006). It describes any existing wetlands, streams, and/or ditches, the potential effects of the proposed project on these resources, and measures taken to minimize effects.

## Where is the Project located?

The project is located within the city limits of the City of Shoreline on Aurora Avenue N between N 165th Street and N 205th Street (See Figure 1, *Project Vicinity*).

## What are the existing characteristics of the Aurora Avenue N corridor?

Aurora Avenue N is a major north/south urban highway that serves both local and regional traffic within the City of Shoreline (see Figure 1, *Project Vicinity*). It is a key regional vehicular, transit, and truck corridor within the greater area of Puget Sound and serves as the City's primary arterial roadway, running approximately parallel to Interstate (I)-5 with connections at N 145th Street, N 175th Street, and N 205th Street. Development along the corridor is predominantly commercial, mixed with some multi-family housing. Echo Lake is located approximately 200 feet to the east of the roadway, north of N 192nd Street. The Interurban Trail, currently under construction, runs roughly parallel to Aurora Avenue N, to the east in the Project corridor. Aurora Avenue N has two general-purpose travel lanes in each direction, with a center two-way left-turn lane. Shoulder and sidewalk of varying widths are located sporadically along the corridor, with no curb or gutter, and little landscaping.

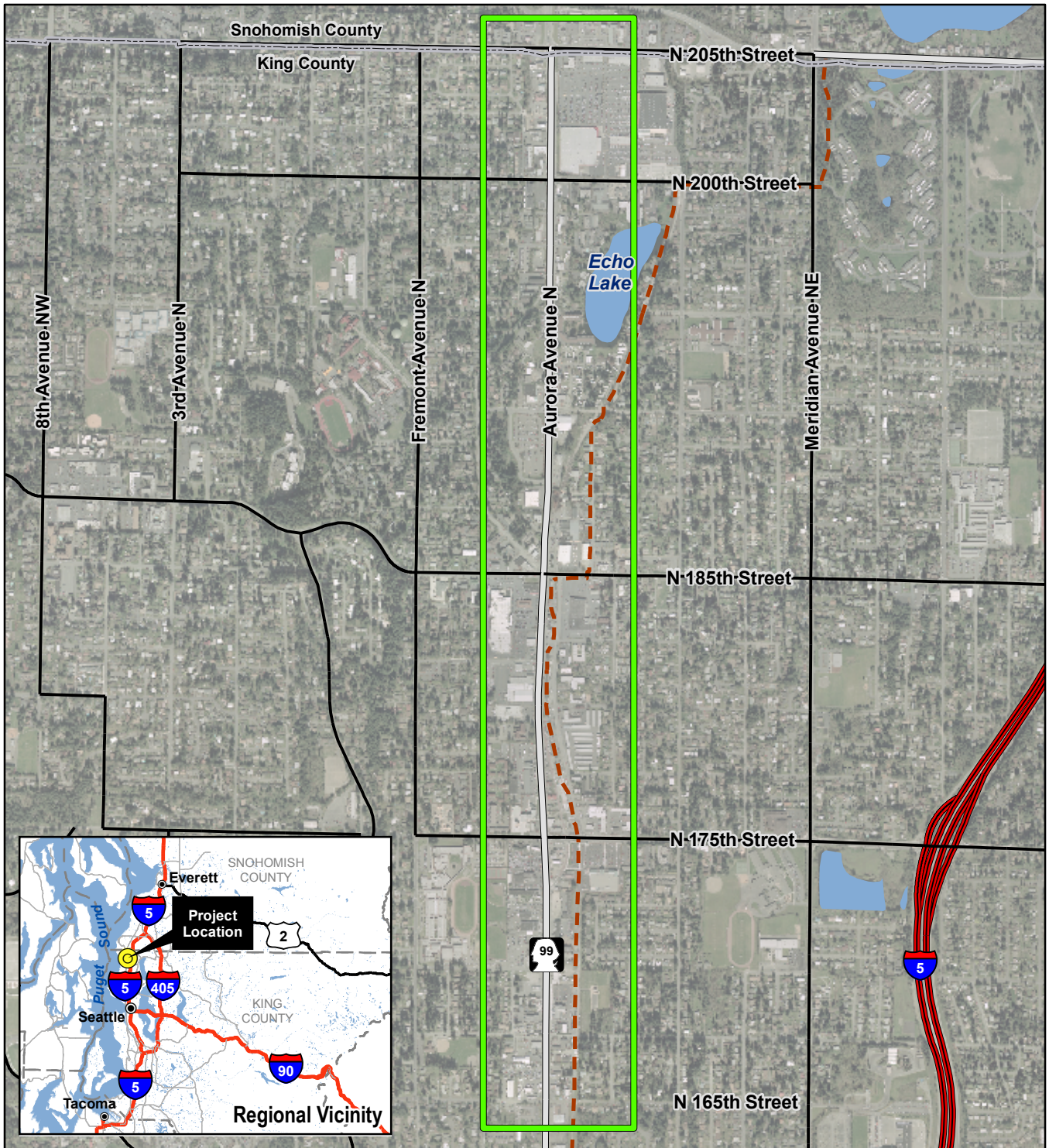
Under existing conditions, Average Daily Traffic (ADT) on the roadway is 33,000 to 39,000 vehicles per day. A steady level of pedestrian and bicycle travel occurs along and across the roadway, but the corridor is heavily oriented to vehicle travel and is generally not conducive to non-motorized travel. WSDOT has designated several areas of Aurora Avenue N between N 165th Street and 205th Street with adverse safety ratings, which are described in Chapter 2. The corridor is served heavily by public transit provided by King County Metro, with additional service at the north end of the corridor provided by Community Transit.

---

### Average Daily Traffic (ADT)

ADT represents the average number of vehicles that travel on a roadway on typical day. Under existing conditions, ADT on Aurora Avenue N is 33,000 to 39,000 vehicles per day.

---



Sources: City of Shoreline (2006); Jones & Stokes (2007)

- City Boundary
- Project Area
- Interstate
- State Route
- Arterial
- Interurban Trail

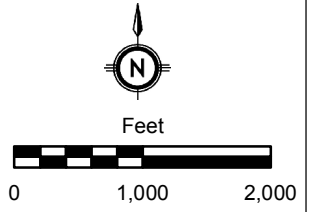


Figure 1. Project Vicinity  
 Aurora Corridor Improvement Project  
 July 2007

## Why improve Aurora Avenue N?

The purpose of the Aurora Corridor Improvement Project, N 165th Street to N 205th Street, is to improve safety, circulation, and operations for vehicular and non-motorized users of the roadway corridor, to support multi-modal transportation within the corridor, and to support economic stability along the corridor. The Purpose and Need identified for this project is described further in Chapter 2.

## What are the major characteristics of the proposed Project?

The Aurora Corridor Improvement Project, N 165th Street to N 205th Street, would include the following elements:

- Business Access and Transit (BAT) lane in each direction;
- two general purpose lanes in each direction;
- continuous sidewalk, curb, and gutter on each side of the roadway;
- landscaped center median with left-turn and u-turn pockets;
- interconnected, coordinated signal system with transit signal priority;
- improvements to intersections, including proposed new traffic signals at the intersections of Aurora Avenue N with Firlands Way N/N 196th Street and N 182nd Street;
- additional pedestrian crossings at signalized intersections;
- improvements to Midvale Avenue N, between N 175th Street and N 182nd Street;
- improvements to Echo Lake Place, north of N 195th Street;
- new street and sidewalk lighting;
- undergrounding of utilities; and
- stormwater facilities.

---

### Business Access and Transit (BAT) Lane

Right-side lane that serves exclusively for bus travel, and for right-turn access in and out of driveways located along the corridor.

---

In addition to a No Build Alternative, three Build alternatives, called Alternative A, B, and C, respectively, are under consideration. In general, they vary in centerline location, width of median, and presence or absence of an amenity zone between the curb and sidewalk. The three Build alternatives are described in detail in Chapter 3 of this report.

## Why are wetlands, streams, and ditches considered for this Project?

The regulatory definition of *Waters of the U.S.* (33 CFR 328.3) has historically included wetlands and streams. Ditches are a recent addition resulting from the *Talent* court decision in March 2001.

- Wetlands are a valuable environmental resource. They can moderate stormwater flows by slowing down and retaining floodwater during periods of rain. They can minimize flooding downstream and clean water of materials such as dirt and oil. Wetlands also can provide vital habitat for many plants and animals. Measures must be taken to protect (avoid), enhance, and restore wetland resources directly affected by the Project.
- Streams can provide valuable fish and aquatic habitat.
- Ditches, particularly when vegetated, provide water quality improvement functions by filtering stormwater runoff.

---

### Wetland

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

---



---

### Stream

A stream is a water course with a defined bed and bank.

---



---

### Ditch

A ditch is an engineered surface water feature excavated out of upland to convey surface water runoff.

---

## What are the key points of this report?

The following are key points of this report:

- The methods used to delineate and evaluate effects on wetlands, streams, and ditches are consistent with federal, state, and local regulations.
- No wetlands or streams were found within the study area.
- Three ditches with a total area of 401 square feet were found within the study area.
- All three ditches would be completely filled or removed under each of the three Build Alternatives.

- The loss of the three ditches would decrease the area of existing water quality improvement within the study area.
- The loss of 401 square feet of water quality improvement associated with these ditches would be compensated through the construction of new stormwater treatment facilities that are part of the project. The stormwater facilities designed and constructed as part of the project would provide higher quality stormwater treatment than that currently provided by the small area of the three ditches.

Table 1 summarizes the potential effects on the three ditches identified within the study area and mitigation that is identified in this report.

**Table 1. Summary of Potential Effects on Ditches and Associated Mitigation**

Potential Effects and Mitigation	Alternatives			
	No Build	A	B	C
<b>Potential Construction Effects</b>				
Loss of 401 square feet of ditches		X	X	X
<b>Mitigation</b> - Construction of stormwater treatment facilities				
<b>Potential Operational Effects</b>	None			



## Chapter 2. Purpose and Need

This chapter describes the overall purpose of the proposed project and identifies the specific needs that the project would address.

### What is the purpose of the Aurora Corridor Improvement Project?

The purpose of the Aurora Corridor Improvement Project, N 165th Street to N 205th Street, is to improve safety, circulation, and operations for vehicular and non-motorized users of the roadway corridor, to support multi-modal transportation within the corridor, and to support economic stability along the corridor.

### How were the needs of the Aurora Avenue corridor identified?

The needs of the Aurora Avenue corridor that would be addressed by this project were identified through:

- Regional Metropolitan Transportation Plan
- City Comprehensive Plan; and
- City Multimodal Pre-Design Study.

## Regional Metropolitan Transportation Plan

Improvement to Aurora Avenue N between N 165th Street and N 205th Street is identified in *Destination 2030*, which is the regional Metropolitan Transportation Plan that addresses long-range transportation needs of a growing population (PSRC 2001). The plan includes a detailed set of projects and programs that recognize the link between transportation and growth planning. It identifies more than 2,000 specific projects that will improve roads, transit and ferry service, bicycle and pedestrian systems, freight mobility, and traffic management and operations. *Destination 2030* calls for the development of new state and regional funding mechanisms to provide sustained and flexible revenues that support plan strategies, and it outlines a monitoring and review process for ensuring that plans are current and that implementation stays on course.

## City Comprehensive Plan

Improving Aurora has been a community goal since the City of Shoreline incorporated in 1995. However, regional and local governments recognized the need for improvements along Aurora Avenue N even prior to the City's incorporation. Before the City was incorporated, King County initiated a project to provide transit enhancements along Aurora Avenue N. After incorporation, the City requested that the project be postponed until the City could complete its comprehensive planning process to define improvements in the Aurora Avenue N corridor.

The City of Shoreline Comprehensive Plan was first adopted in November 1998 and most recently updated in June 2005. The Plan establishes the City's vision, and establishes Framework Goals intended to guide the City to meet that vision. The City's goals for Aurora Avenue N, as stated in its Comprehensive Plan, are to improve safety for all users on the roadway, to support economic stability along the corridor, and to improve mobility by supporting multimodal transportation services. (City of Shoreline 2005) Assessment of the City's goals and policies, as established in the Comprehensive Plan, is provided in the Land Use, Plans, and Policies report prepared as part of the environmental analysis for this project.

## Multimodal Pre-Design Study

In 1998, the City of Shoreline began the 1-year Aurora Corridor Multimodal Pre-design Study (CH2M Hill 1999). The study included an extensive Community and Agency Involvement Program involving a variety of public and private stakeholders in the plan development. Multiple opportunities for community input were provided, and emphasis was placed on clearly articulating the technical elements of the plan. The Community and Agency Involvement Program included both the community and agencies because both are necessary for consensus building. A key Community and Agency Involvement Program component was the participation of a Citizen's Advisory Task Force, made up of representatives from the business and residential communities and transit users. An Interagency Technical Advisory Committee also included public sector stakeholders. These advisory committees recommended a preferred design concept, described in the following section.

Community and Agency Involvement Program elements included:

- ongoing participation of the Citizen's Advisory Task Force, Interagency Advisory Committee, and Policy Advisory Committee;
- project briefings with City Council and Planning Commission;
- three public open houses;
- open house announcements mailed to 3,000 addresses each time an event was held;
- canvassing by the Citizen's Advisory Task Force;
- meetings with property owners within the study area;
- meetings with community interest groups;
- newsletters distributed to landowners, business owners, and other interested parties; and
- press releases distributed to neighborhood associations, community groups and local media.

---

### Multimodal Transportation

Multimodal transportation refers to multiple choices for travel, including driving alone, carpooling, walking, biking, or riding transit.

---

## Community Outreach

The City conducted a total of 23 meetings with the Citizen's Advisory Task Force, Interagency Technical Advisory Committee, and the general public. The City also conducted eight City Council briefings and two planning commission presentations. Three open houses were held during the course of the Pre-Design Study. Each meeting was designed to encourage interactive involvement through small group design workshops, informal ballots, prioritization exercises, and comment sheets.

## 32 Points

The corridor design concept and the 32 Points (see exhibit on following page) were approved unanimously by the Citizen Advisory Task Force on July 8, 1999, and were adopted unanimously by the City Council as part of Resolution 156 on August 23, 1999. The 32 Points were to be used as guides during implementation and design of Aurora Avenue improvement projects, to ensure that concerns of the community and the vision of the City Council are fully addressed.

The main features of the adopted design concept include the addition of BAT lanes in each direction on the roadway; curbs, gutters, landscaping/street furnishing strip, and sidewalks on both sides; and the creation of a landscaped center median safety lane with left and u-turn pockets. The 32 Points also included recommendation of four new signalized intersections and four new pedestrian-activated signalized crossings along the 3-mile length of Aurora Avenue N within the city limits.

---

The main features of the adopted design concept include:

- the addition of BAT lanes in each direction on the roadway;
  - curbs, gutters, landscaping/street furnishing strip, and sidewalks on both sides; and
  - the creation of a landscaped center median safety lane with left and u-turn pockets.
-

## Exhibit. The "32 Points"

1. The maximum number of lanes on an intersection leg shall not exceed eight lanes including turning lanes. Seven lanes is the desired width.
2. Provide ability at intersections for all pedestrians to safely cross (and include median refuge at intersections with pedestrian pushbuttons). New mid-block pedestrian crossings should include pedestrian activated signals. Bus stops and pedestrian crossings will complement each other.
3. Twelve foot sidewalks will be provided on both sides of Aurora the entire length. Consider reducing the initial sidewalk width to mitigate land impacts/acquisitions on existing businesses. Note: a minimum of four feet of a landscaping/street furnishing zone is included in the twelve foot width total above.
4. Utilize more landscaping or colored pavement in sidewalk areas to soften the look. The four foot landscaping/street furnishing strip behind the curb should utilize trees in tree grates/pits (consider a combination tree protector/bike rack), low growing ground cover/shrubs, and could utilize some special paving (or brick) between curb and sidewalk to strengthen the identity of an area.
5. Strive to design the project so that new sidewalks can link to existing recently constructed sidewalks (such as Seattle Restaurant Supply, Drift-on-Inn, Schucks, Hollywood Video, and Easley Cadillac).
6. Re-align the street where possible to avoid property takes.
7. As the final design is developed, work with WSDOT to obtain design approvals for lane width reductions, and look for opportunities to reduce (but not eliminate) the median width both to enable reduction of pavement widths, construction costs, and land impacts/acquisition on existing businesses.
8. Develop median breaks or intersections for business access and U-turns at least every 800-to-1000 feet (these details will be worked out during future design phases and will be based in part on the amount of traffic entering and exiting businesses).
9. Use low growing drought resistant ground-cover and space trees in the median to allow visibility across it.
10. Unify the corridor by adding art, special light fixtures, pavement patterns (and coloring at crosswalks), street furniture, banners, unique bus shelters, etc. to dramatically enhance image and uniqueness of the streetscape and develop it differently than the standard design that has been constructed for most streets.
11. Unify the entire corridor by the use of street trees, lighting, special paving, bus zone design, and other elements to visually connect the corridor along its length.
12. Provide elements in the Interurban/Aurora Junction area, between 175th and 185th that create a safe, pedestrian oriented streetscape. Elements can include special treatments of crossings, linkages to the Interurban Trail, etc.
13. Develop signature gateway designs at 145th and 205th with special interest landscaping, lighting, paving and public art to provide a visual cue to drivers that they have entered a special place.
14. Develop themes that reflect the character and uses of different sections of the street (such as the 150th to 160th area which has a concentration of international businesses, recall the historic significance of the Interurban or other historic elements, and Echo Lake).
15. Utilize the Arts Council and neighborhoods to solicit and select art along the corridor.
16. Strengthen connections to the Interurban Trail through signing and other urban design techniques.
17. Develop a design for closure of Westminster Road between 158th and 155th by developing a southbound right turn lane at 155th Street and converting the existing road section to a driveway entrance to Aurora Square. Also, develop an elevated Interurban trail crossing through "the Triangle" that is integrated with future development of the Triangle (reserve the option to build above Westminster should we not be successful in closing the roadway).
18. Pursue modifying the access to Firlands at 185th, closing Firlands north of 195th, and developing a new signal at 195th.
19. The preferred design shall include:
  - Stormwater management improvements to accompany the project that follow the city's policies;
  - Traffic signal control and coordination technology (including coordination with Seattle and Edmonds SR 99 signal systems);
  - Traffic signal technology to enable transit priority operations;
  - Continuous illumination for traffic safety and pedestrian scale lighting;
  - Undergrounding of overhead utility distribution lines.
20. Traffic signals will include audible elements for the sight-impaired, and wheelchair detection loops for wheelchair users.
21. The City should establish a right-of-way policy to retain or relocate existing businesses along the corridor, including those that do not own the land on which they are located. Consideration should be given to providing financial incentives to those businesses.
22. Work with property and business owners during the preliminary engineering phase to consolidate driveways, share driveways, and potentially to share parking and inter business access across parcel lines. Be creative and sensitive to the parking needs of businesses, including consideration for some potential clustered/shared parking lots (especially if remnant parcels are available).
23. Provide improvements that will not generate an increase in neighborhood spillover traffic.
24. Work with transit agencies to provide increased service and seek capital investments from them to support this project.
25. Develop partnerships with WSDOT and King County/Metro to jointly fund the project.
26. Provide curb bulbs where practical on side streets to reduce pedestrian crossing width and to discourage cut-through traffic.
27. Strengthen and preserve the heritage of the red brick road. If the design impacts the red brick road in its current configuration/location north of 175th, preserve its heritage by relocating it elsewhere.
28. Consider new signalized intersections at 152nd, 165th, 182nd, and 195th.
29. Consider new pedestrian only signalized crossings in the vicinity of 149th, 170th, 180th and 202nd.
30. Sign Ronald Place south of 175th as the route to I-5.
31. Pursue reducing the speed limit to 35 mph where appropriate recognizing the potential impacts of spillover traffic with a lower posted speed.
32. Seek funding to develop a program to assist and encourage businesses to improve their facades.

# What are the needs addressed by the Aurora Corridor Improvement Project?

## System Linkage

The proposed project would improve regional system linkage by providing additional lane capacity, improved intersection capacity, and improved signal coordination. It would also continue the improvements underway between N 145th Street and N 165th Street, creating a consistent continuous corridor throughout the City.

Aurora Avenue N is a major north/south arterial link that serves both local and regional traffic within the City of Shoreline. It is part of the National Highway System (NHS). The portion of Aurora Avenue N within the City connects SR 104 and SR 523. In addition to serving intra-city traffic, the route serves as a regional link between cities in the Puget Sound region, connecting to the City of Seattle to the south and Snohomish County to the north. It is the significant alternative to I-5 in providing north/south regional linkage. The portion of SR 99 located within the City has also been identified as a Highway of Statewide Significance (Washington State Transportation Commission 1998). Highways of Statewide Significance identified under the Revised Code of Washington (RCW) 47.06.140, are those facilities deemed to provide and support transportation functions that promote and maintain significant statewide travel and economic linkages. The legislation emphasizes that these significant facilities should be planned from a statewide perspective (WSDOT 2002).

The timely delivery of goods is extremely important to business operations and economic vitality. Aurora Avenue N is identified by WSDOT as a truck freight route in the statewide Freight and Goods Transportation System (FGTS). It carries more than 5 million tons of freight annually, so is classified as a T-2 tonnage class roadway. (WSDOT 2005) It has also been identified as part of the King County Regional Arterial Network, and the Puget Sound Regional Council (PSRC) Metropolitan Transportation and Freight and Goods Systems. Aurora Avenue N also provides a connection between other routes on the FGTS, including Westminster Way/Greenwood Avenue (class T-2), SR 523 (class T-3), N 185th Street (class T-2), and SR 104 (class T-3) (WSDOT 2005).

---

### National Highway System

Federally identified highways that are most important to interstate travel and national defense, connect other modes of transportation, and are essential for international commerce.

---

---

### Highway of Statewide Significance

Highways identified by the Washington State Transportation Commission that provide significant statewide travel and economic linkages.

---

---

### WSDOT Freight and Goods Transportation System (FGTS) Classifications

Roadways are classified according to the average volume of freight they carry each year:

- T-1 > 10 million tons per year
  - T-2 4 million – 10 million tons per year
  - T-3 300,000 – 4 million tons per year
  - T-4 100,000 – 300,000 tons per year
  - T-5 At least 20,000 tons in 60 days
-

Aurora Avenue N provides a linkage for commuters and transit to two regional Park and Ride facilities located at N 192nd Street and Aurora Avenue; and on N 200th Street, two blocks east of Aurora Avenue N.

The City is currently completing improvements to Aurora Avenue N between N 145th Street and N 165th Street, which include similar elements to those proposed for this project. Improvements include BAT lanes; curbs, gutters, landscaping/utility strip, and sidewalks on both sides; a landscaped center median with left and u-turn pockets, new signalized intersections, pedestrian-activated signalized crossings, undergrounding of utilities, and stormwater facilities.

## Capacity

The proposed project would address capacity needs through improvements to intersection geometry and capacity, channelization, signal improvements, and additional lane capacity for business access and transit. By reducing the number of access points according to WSDOT criteria, capacity in the corridor would be improved through the reduction of conflicts and traffic friction.

The capacity of the current facility is inadequate to accommodate projected traffic volumes. The corridor currently supports 33,000 to 39,000 daily vehicle trips. Traffic analysis completed for the Aurora Avenue N corridor assessed level of service (LOS) from now through the future planning year of 2030, under conditions both with and without the proposed project. Over the next 20 years, volumes along the corridor are expected to increase by 1.1% annually.

LOS is the primary measurement used to determine the operating quality of a roadway segment or intersection. LOS is generally measured by the ratio of traffic volume to capacity (V/C) or by the average delay experienced by vehicles on the facility. The quality of traffic operation is graded into one of six LOS designations: A, B, C, D, E, or F. LOS A represents the best range of operating conditions and LOS F represents the worst. LOS on transportation facilities is analyzed and measured according to procedures provided in the Highway Capacity Manual (Transportation Research Board 2000). In an urban corridor such as Aurora Avenue N, LOS at intersections controls the overall LOS of the roadway. LOS for signalized intersections is determined by the average amount of delay experienced by vehicles at the intersection. LOS standards are used

---

### Level of Service (LOS) - Characteristics of Traffic Flow

LOS A	Free flow, little or no restriction on speed or maneuverability caused by the presence of other vehicles.
LOS B	Stable flow, operating speed is beginning to be restricted by other traffic.
LOS C	Stable flow, volume and density levels are beginning to restrict drivers in their maneuverability.
LOS D	Stable flow, speeds and maneuverability closely controlled due to higher volumes.
LOS E	Unstable flow, low speeds, considerable delay, volume at or near capacity, freedom to maneuver is difficult.
LOS F	Forced traffic flow, very low speeds, traffic volumes exceed capacity, long delays with stop and go traffic.

---

to evaluate the transportation impacts of long-term growth. The Washington State Growth Management Act (RCW 36.70A, 1990) requires that jurisdictions adopt standards by which the minimum acceptable roadway operating conditions are determined and deficiencies may be identified. The City of Shoreline has adopted a standard of LOS E for intersections within the City (City of Shoreline 2005).

Detailed traffic analysis of Aurora Avenue N is presented in the Transportation Discipline Report prepared for this project. The analysis shows that without improvements, average delay at key signalized intersections along Aurora Avenue N will fall to LOS F. These conditions are considered unacceptable by most drivers and exceed the City's adopted standard of LOS E. A lack of adequate capacity along Aurora Avenue N could cause increased traffic volumes along parallel neighborhood routes.

## Regional Transportation Demand

The proposed project would provide additional automobile and transit capacity to help meet the demand that is anticipated to occur in the Aurora Corridor over the next 20 years. The City's design concept for the Aurora Corridor Improvement Project satisfies the following regional policies discussed below:

- Optimize and manage the use of transportation facilities and services.
- Manage travel demand by addressing traffic congestion and environmental objectives.
- Focus transportation investments by supporting transit-and pedestrian-oriented land use patterns.
- Expand transportation capacity by offering greater mobility options.

The PSRC has adopted a Regional Transportation Plan (RTP), the Transportation Element of Destination 2030 (PSRC 2001). The RTP provides the long-range strategy for future investments in the central Puget Sound region's transportation system. It responds to federal legislative mandates such as the federal Transportation Equity Act for the 21st Century (TEA-21) and the Clean Air Act (CAA); and state mandates such as the Commute Trip Reduction (CTR) Law

---

### Regional Transportation Plan (RTP)

The RTP provides the long-range strategy for future investments in the central Puget Sound region's transportation system.

---



RCW (70.94.521-551) and the Growth Management Act (GMA) (RCW 36.70A). It also is intended to respond to regional concerns of pressing transportation problems. The basic building blocks for the RTP are state, city, county, and transit agency plans and policies.

Improvements to Aurora Avenue N through Shoreline are included in the list of capital projects identified by the RTP as critical, and as part of the Metropolitan Transportation System required to satisfy regional needs through 2030.

## Modal Interrelationships

The proposed project would enhance mobility and safety for pedestrians by providing continuous sidewalk, curb, and gutter along both sides of the roadway. Additional crosswalks will provide more safe crossings for pedestrians. Pedestrian links would be also provided to the adjacent Interurban Trail.

Bicyclists traveling along Aurora Avenue N would be allowed to travel on the sidewalks or in the BAT lanes, and would also benefit from connections provided to the Interurban Trail.

This project would also improve transit operations and reliability through the addition of the BAT lanes, providing a lane for bus operation outside the general-purpose traffic flow.

The portion of Aurora Avenue N within the City is heavily automobile-oriented, and lacking in pedestrian or bicycle facilities. Driveway access along the corridor is largely undefined and sidewalk facilities are discontinuous and substandard. The only areas where sidewalks meet City standards are areas along developments that have been built within the last 10 years.

Buses on Aurora Avenue N travel in the general-purpose lanes. When traffic is congested, the buses are likely to be delayed. When buses stop to pick up and drop off passengers, they block traffic in one of the two general-purpose lanes that currently exist in each direction. Bus stops lack safe access, especially for persons with disabilities. The absence of safe, continuous pedestrian facilities can dissuade potential transit patrons from using the bus system. Bicyclists currently have to travel either on shoulders, where they exist, or in the general-purpose traffic lanes.

---

### The Interurban Trail

The Interurban Trail is a regional pedestrian and bicycle facility that runs roughly parallel to Aurora Avenue N. Construction is currently underway, with completion planned for July 2007. After construction is complete, the Interurban Trail will run throughout the entire City length, between N 145th Street and N 205th Street.

---

The Interurban Trail is a pedestrian and bicycle facility that runs roughly parallel to Aurora Avenue N, providing regional connection from Everett through Seattle. Construction within the City is currently underway, with completion planned for July 2007. After construction is complete, the Interurban Trail will run throughout the entire City length, between N 145th Street and N 205th Street. In the project area, the trail is located approximately one block east of Aurora Avenue N between N 165th Street and N 192nd Street; runs to the east of Echo Lake; runs east-west along N 200th Street to Meridian Avenue; and then runs north-south on the east side of Meridian Avenue through Ballinger Commons (City of Shoreline 2007). Existing sidewalks are inadequate to provide pedestrian connectivity along Aurora Avenue N and to the Interurban Trail.

## Safety

Project elements would improve channelization, separate pedestrians from vehicular traffic, and reduce potential conflicts between vehicles, pedestrians, and bicyclists. The City is working with businesses and property owners to develop appropriate solutions that address access and parking issues, while still maintaining project goals.

WSDOT collects and compiles historical collision data for state highways, including Aurora Avenue N. Several areas of Aurora Avenue N, between N 165th Street and N 205th Street, have been given poor safety designations by WSDOT. WSDOT has identified one High Accident Corridor (HAC), three High Accident Locations (HALs), and two Pedestrian Accident Locations (PALs) on Aurora Avenue N, between N 165th Street and N 205th Street, for the 2007–2009 biennium. Between 2003 and 2004, the average annual collision rate for the entire Aurora Avenue N corridor within Shoreline was calculated to be 5.5 accidents per million vehicle miles traveled. This greatly exceeds the 2003 statewide average for urban principal arterials of 2.6 accidents per million vehicle miles. There is strong public concern for general traffic safety and pedestrian safety along the corridor. Collision history and WSDOT safety designations are discussed in future detail in the Transportation report prepared as part of the environmental analysis for this project.

Aurora Avenue N currently lacks adequate access management. Land use along Aurora Avenue N is predominantly

---

### High Accident Corridor (HAC)

A highway corridor one mile or greater in length where a 5-year analysis of collision history indicates that the section has higher than average collision and severity factors.

---

---

### High Accident Location (HAL)

A highway section typically less than 0.25 mile in length where a 2-year analysis of collision history indicates that the section has a significantly higher than average collision and severity rate.

---

---

### Pedestrian Accident Location (PAL)

A highway section typically less than 0.25 mile in length where a 6-year analysis of collision history indicates that the section has had four pedestrian accidents in a 0.1 mile segment.

---

commercial/retail. Most of the businesses are freestanding, with defined and undefined individual driveways, or continuous shoulder access. Numerous driveways, limited curbs and sidewalks, and erratic parking all contribute to a general lack of safe passage for pedestrians, bicyclists, and vehicles. This type of development has resulted in a very high number of individual access points that increase conflict and impact safety along the corridor. In total, there are 154 access points along the 2-mile length within the Project corridor. National Cooperative Highway Research Program (NCHRP) Report 420 indicates that the ideal number of access points is fewer than 30 per mile (Gluck et al. 1999).

Much of the existing business parking along the corridor is directly adjacent to the roadway shoulders and is angled or perpendicular to the street. Many existing parking spaces require motorists to back onto the roadway to exit. Parking within the Aurora Avenue N roadway right-of-way occurs primarily near retail and commercial land uses within the project area. Several businesses along the roadway between N 165th Street and N 205th Street use the shoulder for parking in areas where there is no curb, effectively blocking pedestrians and people in wheelchairs.

The project elements that would improve safety conditions along Aurora Avenue N include:

- addition of curbs and gutters and consolidated driveway locations;
- application of driveway width and spacing standards;
- proposed traffic signals and pedestrian crosswalks;
- conversion of the existing two-way left-turn-lane into a median with channelized left-turn and u-turns;
- restriction of driveways to right-turn-in and right-turn-out only;
- elimination of motorists' ability to back onto the roadway to exit; and
- provision of the BAT lanes that would allow traffic to safely enter and exit the roadway with fewer conflicting movements and lower risk of crashes.

## Social Demands/Economic Development

The Project would address the need to continue to enhance the movement of people and goods within the SR 99 commercial corridor, as identified in the Comprehensive Plan, by improving person and freight mobility; pedestrian, bicycle, and transit linkages; and overall safety for vehicular and non-vehicular travelers.

The City Comprehensive Plan provides forecasts of job growth within the Aurora Avenue N corridor. This growth depends on a revitalized roadway corridor along all of Aurora Avenue N, including the area between N 165th Street and N 205th Street.

The Comprehensive Plan sets forth a vision that concentrated activity centers will develop at several locations along the corridor. These are located between N 175th Street and N 185th Street, and between N 200th Street and N 205th Street (Aurora Village). To support the economic development goals of the Comprehensive Plan, improvements are needed for pedestrian and transit access to and between these locations. The City's objective for Aurora Avenue N is to install improvements that would lead people to the community and its businesses (City of Shoreline 2005).

---

The City Comprehensive Plan provides forecasts of job growth within the Aurora Avenue N corridor. This growth depends on a revitalized roadway corridor along all of Aurora Avenue N, including the area between N 165th Street and N 205th Street.

---

## What is the legislative context for the Project?

There are three articles of legislation that provide specific direction for the project. City Resolution 156, City Ordinance 326, and RCW 47.50 are discussed below.

### City Resolution 156

Resolution 156 was adopted unanimously by the Shoreline City Council on August 23, 1999, at an open meeting that included opportunities for public testimony. This resolution accepted the recommendation of the CATF for the 3-mile Aurora Avenue N corridor within the city limits; found the recommendation to be in conformance with the City Comprehensive Plan (2005); initiated an amendment to the Capital Improvement Program; and directed staff to pursue environmental analysis for the corridor improvement. Resolution 156 included the 32 Points directive described earlier in this chapter.

## City Ordinance 326

Ordinance 326, which consists of revisions to the City's Comprehensive Plan, was passed 5 to 1 by the Shoreline City Council on July 14, 2003. This ordinance amended the text of Land Use Policy LU48 and added a new Transportation Policy 5.1 for the purpose of identifying future right-of-way needs of Aurora Avenue N, between N 172nd Street and N 192nd Street. The ordinance also added a right-of-way map for this area to the Transportation Element. In general, this ordinance identifies any widening that occurs along this segment of the roadway, and resulting right-of-way acquisition needed, as occurring to the east of the existing roadway. SEPA review was completed for Ordinance 326, prior to adoption. The ordinance was not subject to NEPA. However, for the purposes of the NEPA and SEPA evaluation of the Project, the separate Build Alternatives were defined to reflect widening to both the east and the west, so that the potential impacts under the full possible range of build options would be evaluated. If the Recommended Alternative that is ultimately selected requires right-of-way outside of the boundaries defined in the ordinance, Policy T5.1 in the Comprehensive Plan, which specifically defines the boundaries, would need to be amended.

## Access Management RCW 47.50

To preserve the safety and operational characteristics of state highways, RCW 47.50 was enacted in 1991, designating all highways in Washington as controlled-access facilities. Aurora Avenue N, part of SR 99, is a class 4 facility according to the WSDOT access control classification system and standards. Within this class, access management measures are identified, such as minimum driveway spacing of 250 feet and installation of medians to mitigate turning, weaving, and crossing conflicts that affect safe travel. Based on the urban environment served by Aurora Avenue N and the high traffic volumes it carries, the street's design is deficient in terms of access management for the preservation of safety and traffic operations. Any improvement to Aurora Avenue N would have to comply with access management standards defined under this law.



## Chapter 3. Alternatives

This chapter describes the alternatives that are being evaluated for the proposed project.

### What alternatives are considered in this discipline report?

This report evaluates the potential effects of a No Build Alternative and three Build Alternatives, described in the following sections.

#### No Build Alternative

Under the No Build Alternative, Aurora Avenue N would remain exactly as it is today. The roadway has two general-purpose lanes in each direction with a center two-way left-turn lane. Shoulder and sidewalk of varying widths are located sporadically along the corridor with no curb or gutter and little landscaping. The corridor is served heavily by public transit provided by King County Metro, with additional service at the north end of the corridor provided by Community Transit. Buses on Aurora Avenue N would continue to travel and stop in the general-purpose lanes.

#### Build Alternatives

The City has proposed three Build Alternatives, Alternative A, Alternative B, and Alternative C. Table 2 provides an overview of Project features unique to an individual Build Alternative and features common among them.

**Table 2. Common and Unique Features of the Aurora Corridor Improvement Project Build Alternatives**

Features Common among Build Alternatives A, B, and C	
<b>General-purposes lanes</b>	Project design includes two general-purpose lanes in each direction.
<b>BAT lane</b>	Each Build Alternative would include one Business Access and Transit (BAT) lane in each direction.
<b>Sidewalk</b>	7-foot sidewalks would be constructed along both sides of the corridor.
<b>Curb and Gutter</b>	Curb and gutter would be constructed along both sides of the corridor. Curb ramps would be constructed at all intersections in accordance with ADA requirements.
<b>Underground utilities</b>	Utilities would be placed underground for each of the three Build Alternatives.
<b>Vegetation</b>	Each of the alternatives includes vegetative plantings. Extent and location vary as described below.
<b>Center median</b>	A center median would be added, with left-turn and u-turn pockets (width of the center median varies by alternative, as described below).
<b>Traffic signals</b>	New traffic signals proposed at Aurora Avenue N/N 182nd Street and Aurora Avenue N/Firlands Way N (north of N 195th Street). Signalized intersections will be widened to improve east-west capacity and traffic flow.
<b>Road improvements</b>	Improvements would be made to: <ul style="list-style-type: none"> <li>▪ Echo Lake Place (north of N 195th Street), including realignment and a connection to Aurora Avenue N at Firlands Way N; and</li> <li>▪ Midvale Ave N (N 175th Street – N 183rd Street), including realignment, addition of a center turn lane, curb and gutter, and sidewalk on the east side of the roadway. The new Interurban Trail will serve as the walking path on the west side of the roadway.</li> </ul>
Features that vary among Alternatives A, B, and C	
	<b>Alternative A</b>
<b>Cross Section</b>	Typically 98 feet from back-of-sidewalk to back-of-sidewalk. The cross section will be wider where utility vaults, light/signal poles, and bump outs are located, as described below. This dimension is 12 feet narrower than the cross sections proposed under Alternatives B and C, due to a narrower median (12 feet instead of 16 feet) and the absence of the 4-foot amenity zone on each side of the roadway. The City would also acquire a continuous 3-foot-wide easement behind the sidewalk on each side of the roadway for placement of utilities.
<b>Median Width</b>	Center median would be 12 feet wide.
<b>Amenity Zone</b>	No amenity zone provided. Utility vaults and light/signal poles would be located behind the sidewalks in the 3-foot easement area.
<b>Bump Outs</b>	Bump outs approximately 4 feet in additional width would be needed at u-turn and left-turn locations to achieve the turning radii needed to accommodate u-turns.
<b>Placement of Alignment</b>	Required widening would be shifted to the east of the existing right-of-way in the vicinity of N 175th Street, N 185th Street, and N 200th Street.
<b>Vegetation</b>	Limited vegetation would be provided in the median.
	<b>Alternative B</b>
	110 feet from back-of-sidewalk to back-of-sidewalk.
<b>Median Width</b>	Center median would be 16 feet wide.
<b>Amenity Zone</b>	A 4-foot amenity zone would be located between the curb and sidewalk on each side of the street. Utility vaults, light/signal poles, bus stop signs, hydrants, and other pedestrian amenities would be located in this area.
<b>Bump Outs</b>	None needed. U-turns would be sufficiently accommodated within the standard roadway width.
<b>Placement of Alignment</b>	Required widening would be shifted to the east of the existing right-of-way in the vicinity of N 175th Street, N 185th Street, and N 200th Street.
<b>Vegetation</b>	More vegetation accommodated by wider median. Vegetation could also be planted in areas within the amenity zone.
	<b>Alternative C</b>



Figures 2, 3, and 4 present plan views of the three Build Alternatives, respectively. Figure 5 presents more detailed schematic drawings of the proposed roadway configurations under each of the three alternatives. Note that the drawing shows one direction of travel of the proposed roadway alternatives, which is typical of both directions.

## When will the Recommended Alternative be selected?

The Recommended Alternative will be selected after all of the environmental analysis has been completed for the No Build Alternative and three Build Alternatives. The discipline reports that summarize the environmental analysis will be available for public review after they are finalized.

The boundaries of the three Build Alternatives encompass the maximum possible footprint of the Project. The Recommended Alternative ultimately selected for the Project may combine different elements from the different Build Alternatives. However, no part of the Project will occur outside of the study area analyzed in this report.

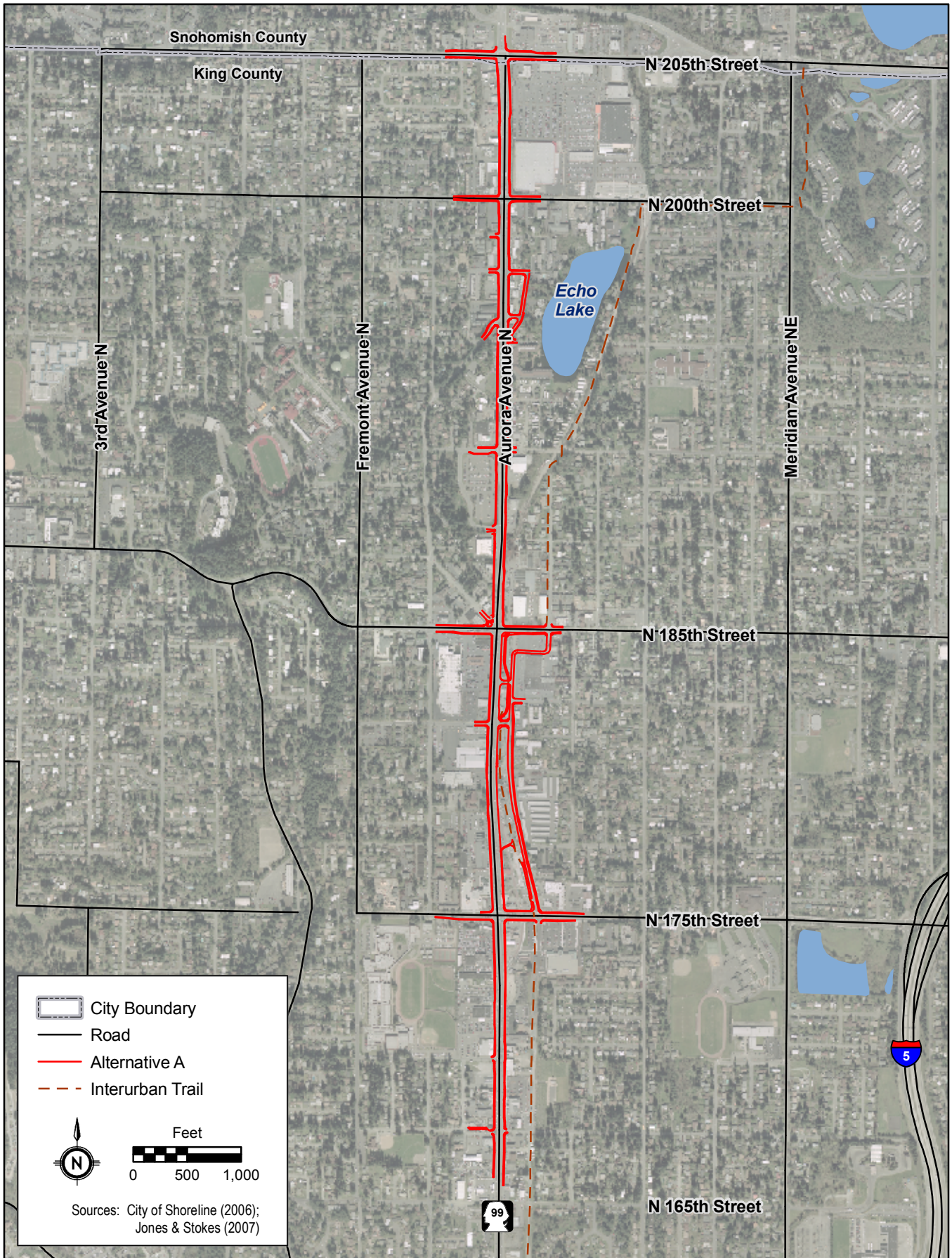
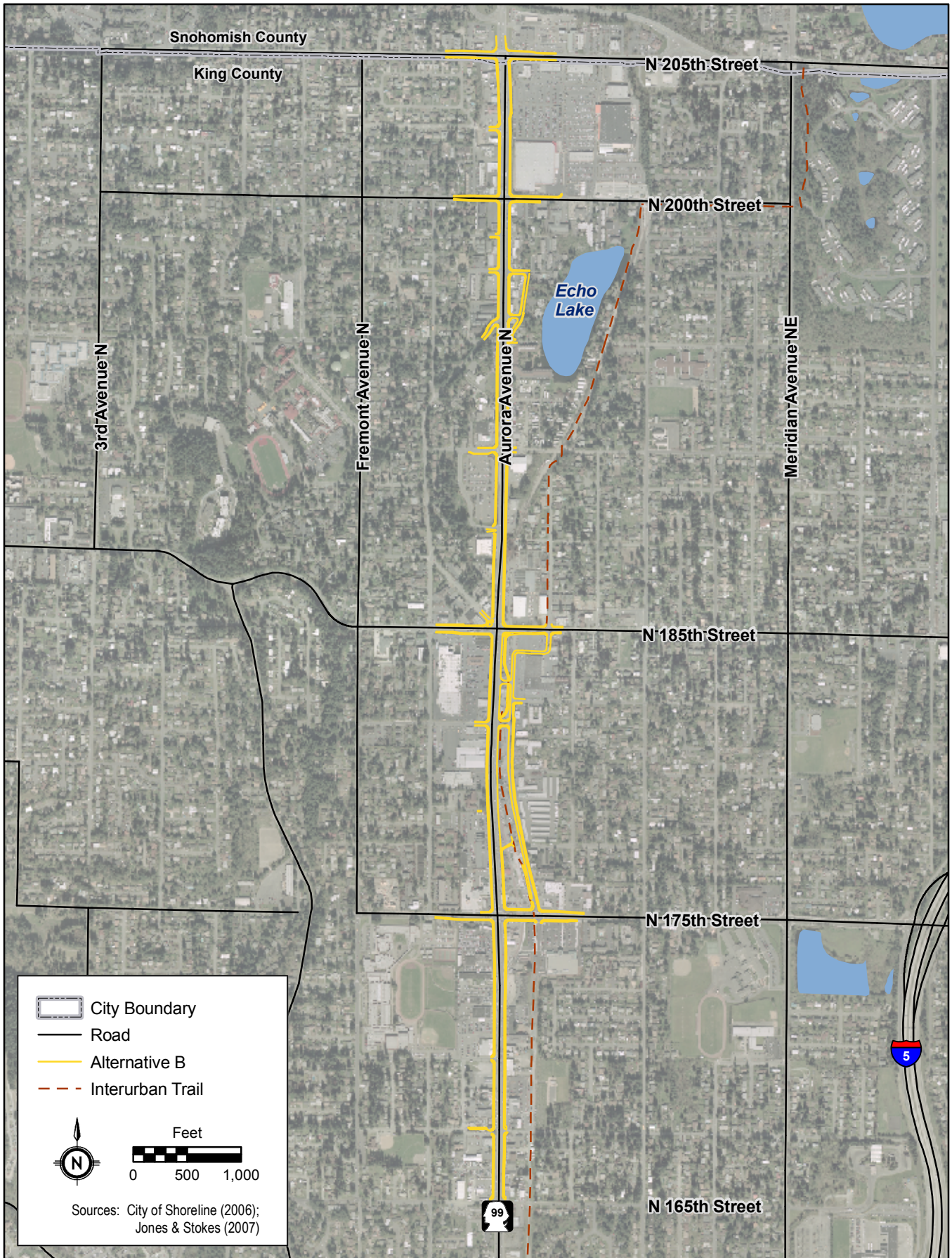





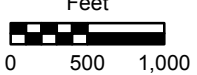


Figure 2. Alternative A  
 Aurora Corridor Improvement Project  
 July 2007



 City Boundary  
 Road  
 Alternative B  
 Interurban Trail

Sources: City of Shoreline (2006);  
 Jones & Stokes (2007)

Figure 3. Alternative B  
 Aurora Corridor Improvement Project  
 July 2007

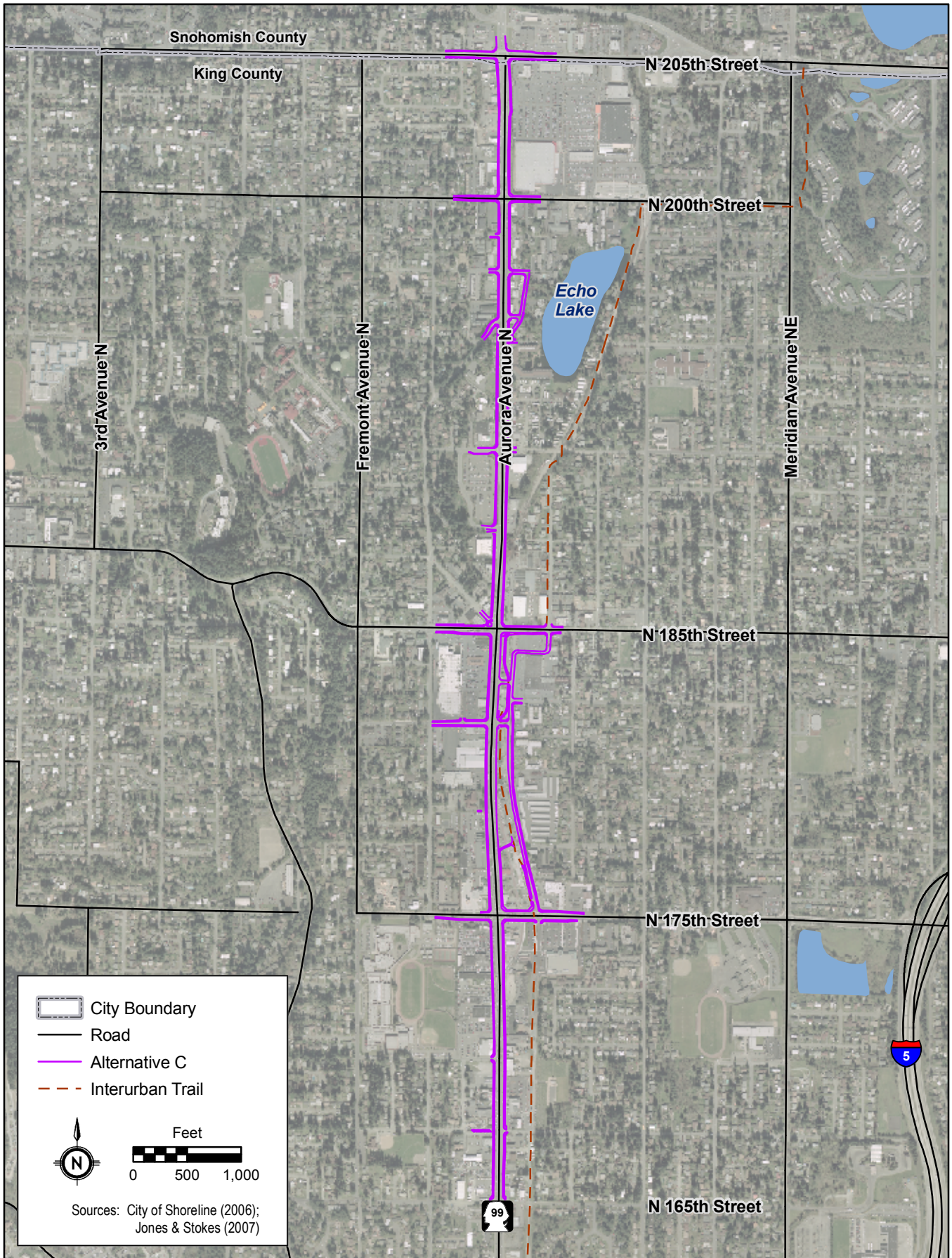
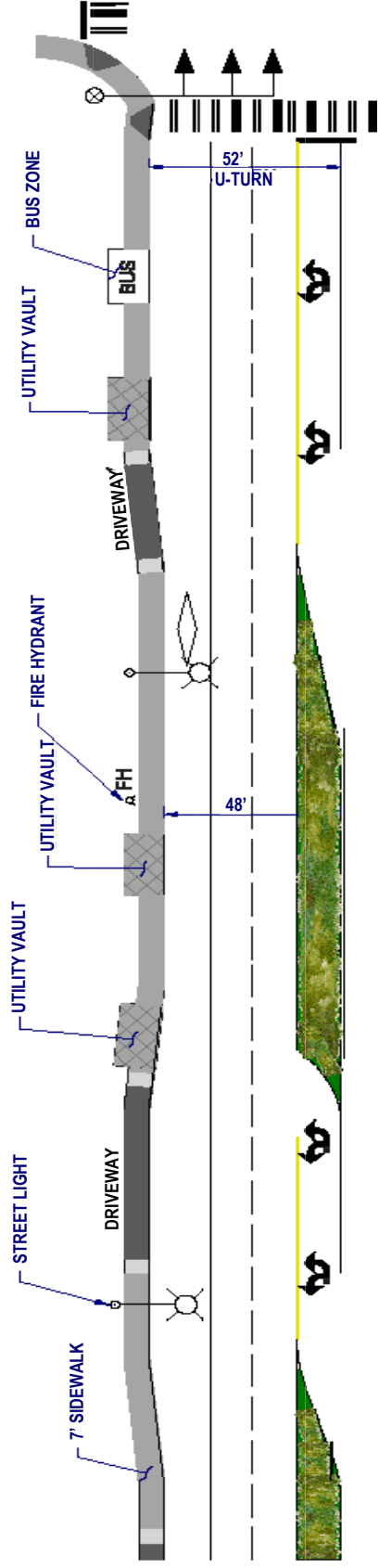
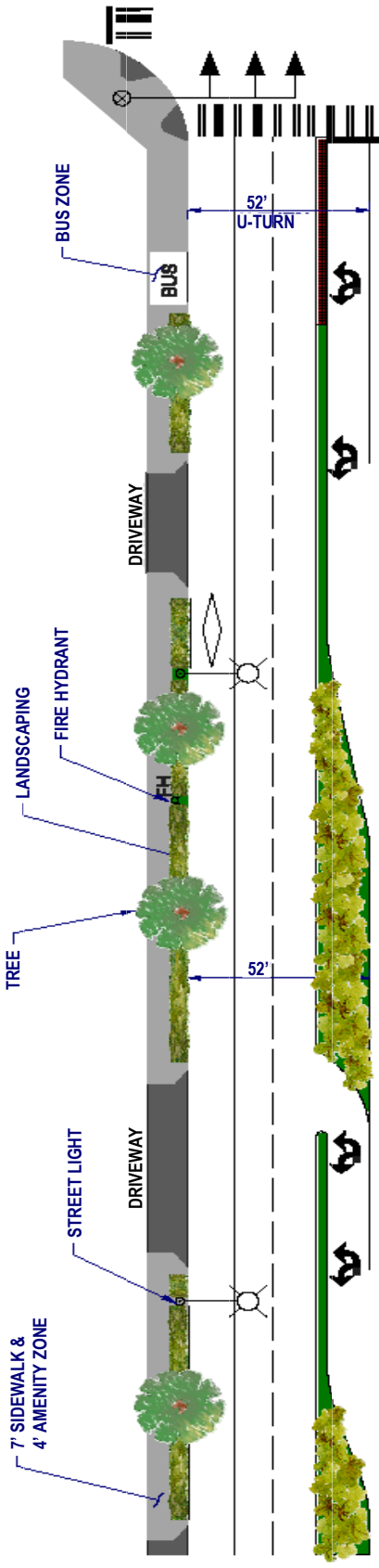


Figure 4. Alternative C  
Aurora Corridor Improvement Project  
July 2007

### Alternative A



### Alternatives B and C



Note: Drawing shows one direction of travel of the proposed roadway alternatives, which is typical of both directions

Figure 5. Proposed Plan Detail for Build Alternatives  
Aurora Corridor Improvement Project  
July 2007



## Chapter 4. Affected Environment

This chapter describes existing regulations and conditions of the environment, as they relate to wetlands and other waters of the U.S.

### What are the general features of the Project area?

The Project is located within the McAleer Creek and Boeing Creek basins, which are within Water Resource Inventory Area (WRIA) 8, the Cedar-Sammamish Basin. The McAleer Creek basin drains east to Lake Washington, while the Boeing Creek basin drains west to Puget Sound. Surface waters flow through a concentration of residential and business development that occur along Aurora Avenue N and throughout the rest of the basins.

The Project is located within the heavily developed Aurora Avenue N corridor, which consists of small businesses surrounded by residential development. Most of the land surface consists of impervious surfaces in the form of buildings and paved roads. The small amount of vegetation that does exist typically consists of maintained lawn and shrubs with a few scattered trees. The limited vegetated areas that are not maintained typically consist of non-native shrub and herbaceous species dominated by invasive Himalayan blackberry (*Rubus armeniacus*), Scot's broom (*Cytisus scoparius*), and various upland grasses. Small clusters of coniferous and deciduous trees exist along the project, generally associated with landscaped or small, undeveloped areas.

---

Most of the land surface in the study area consists of impervious surfaces in the form of buildings and paved roads. The small amount of vegetation that does exist typically consists of maintained lawn and shrubs with a few scattered trees.

---

The entire project is located outside of any designated flood zone (King County 2007).

## What information exists on wetlands in the Project vicinity?

Several publicly available resources aid in determining if wetlands have a high potential to occur in a particular geographic area.

Biologists reviewed the following data sources for information on vegetation patterns, topography, drainage, and potential or known wetlands or priority wildlife habitats in the project vicinity:

- U.S. Geologic Survey (USGS) 7.5-minute topographic maps for East Edmonds quadrangle (1981) and Seattle North (1983). See Figure 6, *USGS Topographic Map*
- National Wetland Inventory (NWI) On-line Digital Data (accessed March 1, 2007) See Figure 7, *USFWS National Wetlands Inventory* (USFWS 2007)
- Natural Resources Conservation Service (NRCS) soils surveys and King County hydric soils lists (NRCS 2007)
- City of Shoreline Critical Areas maps of surface waters and wetlands (City of Shoreline Undated)
- King County Sensitive Area Ordinance, GIS layer for Wetlands (King County 2007)
- Washington State Department of Natural Resources Natural Heritage Inventory (January 2005 dataset; accessed February 20, 2007)
- WDFW Priority Habitats and Species Maps and Database Reports (received November 1, 2006)

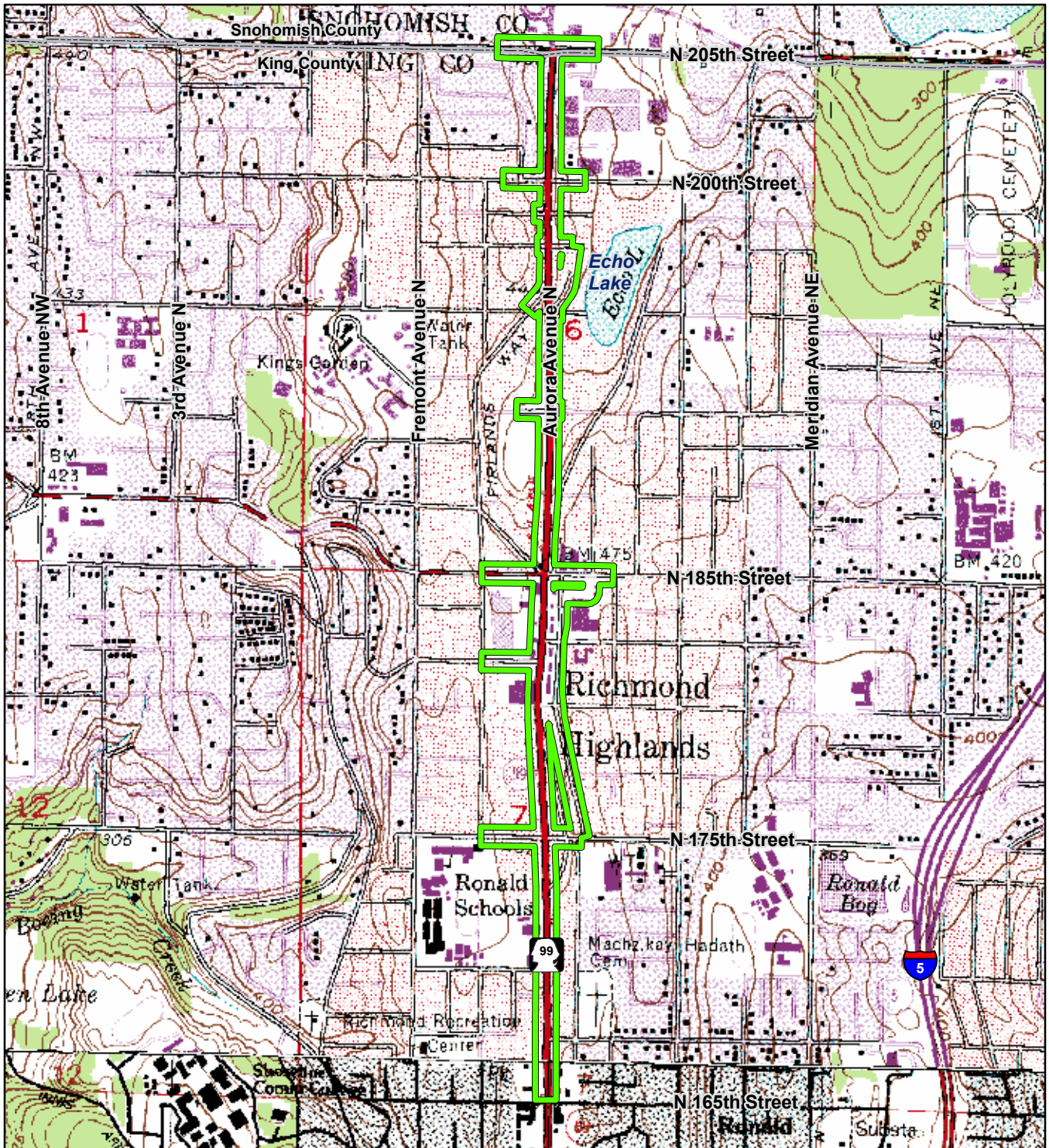
These background resources identify Echo Lake as the only wetland or other waters of the U.S. mapped within the project vicinity. Water from Echo Lake drains north and east to McAleer Creek, which is a tributary to Lake Washington.

---

Background resources identify Echo Lake as the only wetland or other waters of the U.S. mapped within the project vicinity. The near absence of mapped wetlands and other waters is not uncommon in highly urbanized settings such as the study area.

---

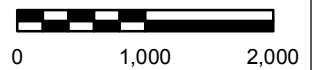




Sources: City of Shoreline (2006); Jones & Stokes (2007);  
 USGS 7.5' Quadrangles (Edmonds East, Seattle North)



Feet





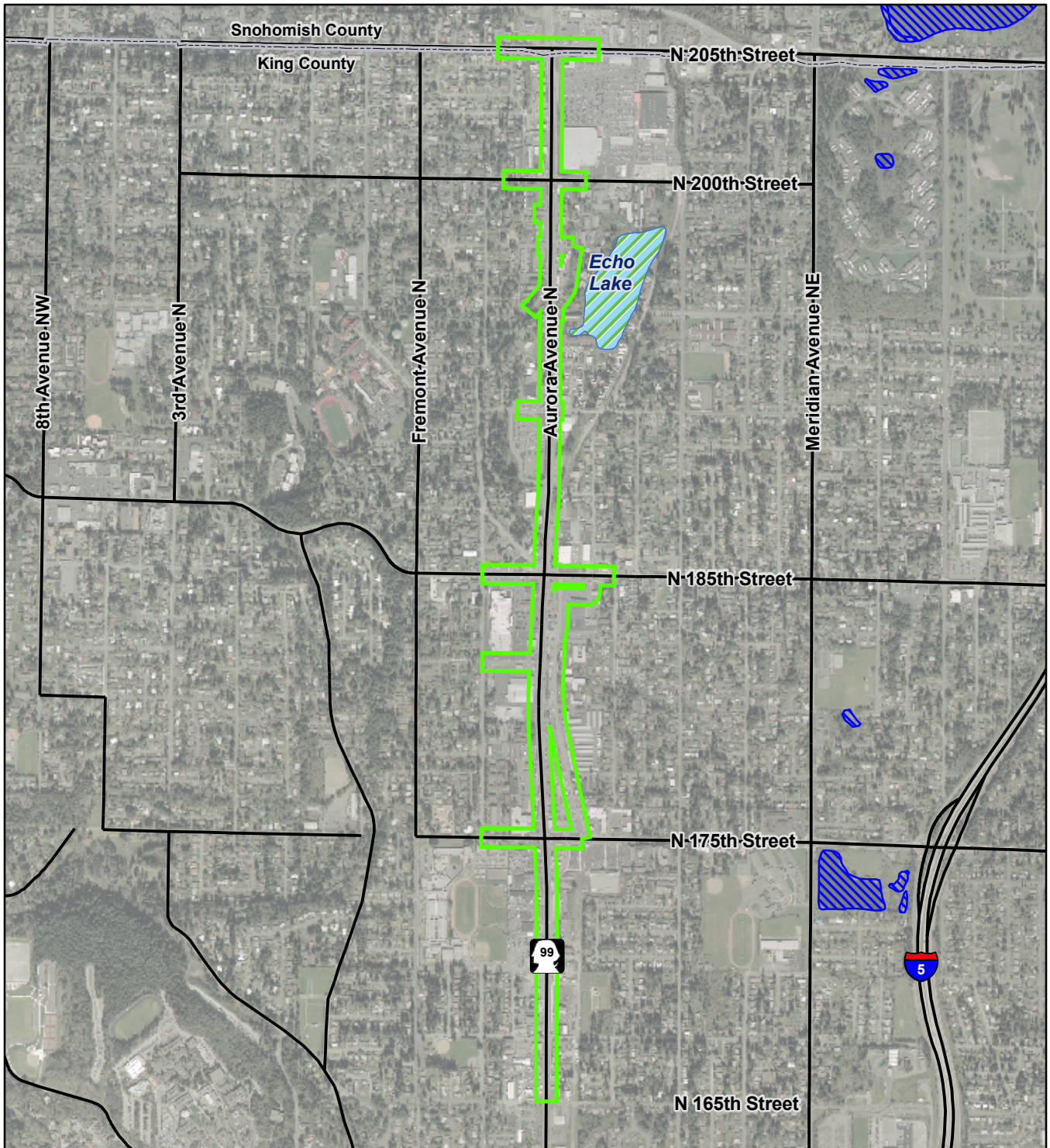





-  City Boundary
-  Study Area



Figure 6. USGS Topographic Map  
 Aurora Corridor Project  
 July 2007



Sources: City of Shoreline (2006); Jones & Stokes (2007);  
National Wetlands Inventory

-  City Boundary
-  Study Area
-  Road
-  Palustrine Unconsolidated Bottom  
(Permanently Flooded)
-  Other NWI Wetland  
within Project Vicinity

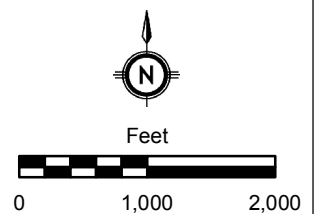


Figure 7. USFWS National Wetlands Inventory  
Aurora Corridor Improvement Project  
July 2007

The near absence of mapped wetlands and other waters is not uncommon in highly urbanized settings such as the study area because these background resources were created to document the location of larger, less disturbed wetland systems and thus frequently do not illustrate small, disturbed roadside features such as wetlands, small streams, or ditches.

The NRCS does not have soil data for this urban area and thus no map of local soils is available.

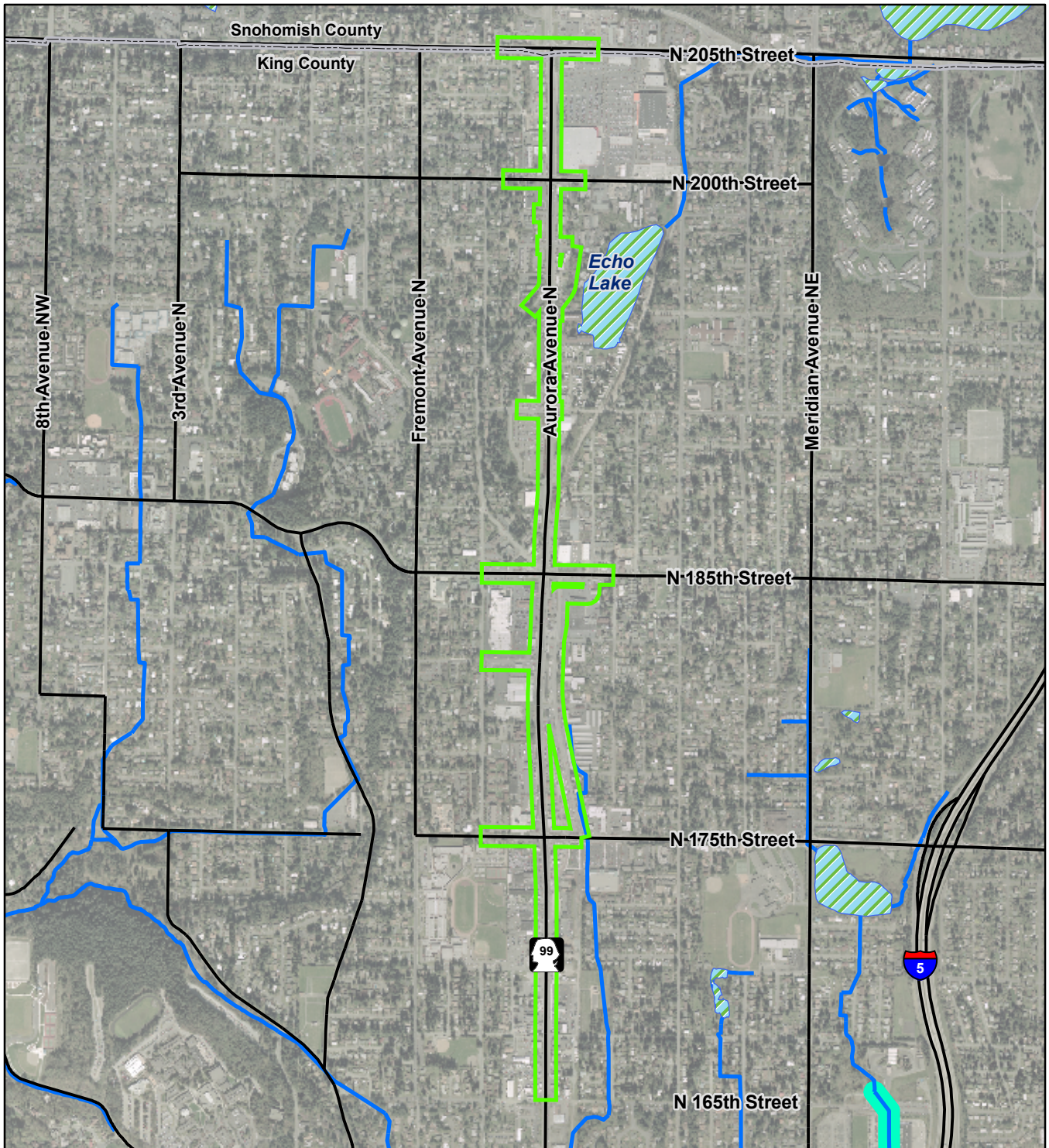
This is also not unusual for highly developed areas such as the Seattle metropolitan area where the original soil profile was typically removed or greatly disturbed during urbanization.

Echo Lake and its outlet stream appear on the City's critical areas inventory, (see Figure 8, *City of Shoreline Critical Areas[Hydrological]*), as well as a stream extending from approximately N 180th Street south past the Project to the east of the eastern side of Midvale Avenue N, outside of the study area.

## What is the study area and how was it defined?

The current analysis addresses waters of the U.S., which include wetlands, ditches, and streams. For wetlands and other waters of the U.S., the study area was specifically defined as extending 75 feet from the existing edge pavement along all roadways that would be improved as part of the Project. This includes Aurora Avenue N and associated cross streets between N 165th Street and N 205th Street; Midvale Avenue N between N 175th Street and N 183rd Street; and Echo Lake Place N between N 195th Street and N 198th Street. This study area was chosen to encompass any wetlands or other waters of the U.S. that could potentially be disturbed by the project construction, as well as any buffer associated with such resources.

Jones & Stokes biologists conducted a reconnaissance of the study area on December 18 and 19, 2006, and more detailed investigations of the limited number of unpaved areas within the study area on February 16, 2007. These field investigations were conducted during an unusually wet winter, following periods of record precipitation and localized urban flooding within the greater Seattle metropolitan area, including Shoreline and the project vicinity.



Sources: City of Shoreline (2006); Jones & Stokes (2007)

-  City Boundary
-  Study Area
-  Road
-  Stream
-  Stream Buffer
-  Wetland

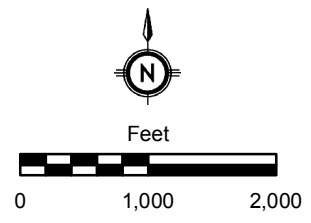


Figure 8. City of Shoreline Critical Areas (Hydrological)  
 Aurora Corridor Improvement Project  
 July 2007

## How were wetlands, ditches, and streams delineated and classified?

### Delineating and Classifying Wetlands

After completing a review of the background information, biologists walked the study area to identify any wetland boundaries per guidelines stipulated in the U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual (Environmental Laboratory 1987) and per the Washington State Department of Ecology's (Ecology's) companion document (which includes Corps methods with guidance on implementation), the Washington State Wetlands Identification and Delineation Manual (Ecology 1997). The procedures for wetland studies described in the 1997 document are consistent with the 1987 Corps method.

### Delineating and Classifying Streams

After completing a review of background information, biologists walked the study area to identify any streams based on Subchapter 7, Section 20.80.460 of the City's Critical Areas Ordinance (2005) and on the Washington State Administrative (WAC) codes definition of ordinary high water mark (OHWM), which is used as the standard for determination for streams. WAC 173.22.30(11) defines the OHWM on all lakes, streams, and tidal water as "that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland." The City of Shoreline defines a stream as, "those areas where surface waters produce a defined channel or bed, not including irrigation ditches, canals, storm or surface water runoff devices or other entirely artificial watercourses, unless they are used by salmonids or are used to convey streams naturally occurring prior to construction. A channel or bed need not contain water year-round, provided that there is evidence of at least intermittent flow during years of normal rain fall."

---

#### Ordinary High Water Mark (OHWM)

The elevation marking the highest water level that is maintained for a sufficient time to leave evidence upon the landscape, such as a clear, natural line impressed on the bank, changes in soil character, or the presence of litter and debris. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species.

---

## Delineating and Classifying Ditches

After completing a review of background information, biologists walked the study area to identify any ditches. The search was conducted using the commonly used definition of a ditch as an engineered surface water feature excavated out of upland to convey surface water runoff. Ditches are not rated, categorized, or buffered. Ditches can have an OWHM, but are intentionally excavated out of uplands, which differentiates them from streams. Maintained ditches are typically clear of vegetation, while un-maintained ditches may become vegetated over time.

## Where are the wetlands, ditches, and streams in the study area and what are their characteristics?

### Wetlands

No wetlands were found in the study area. The study area is characterized almost completely by paved roadway, paved or graveled road shoulder, fill slopes adjacent to the road, or paved driveways into adjacent commercial businesses (Appendix A, Photos 1 through 6).

Investigation was conducted at an unpaved area to the east of the northbound lanes of Aurora Avenue N, just south of N 192nd Street and the SleepAire mattress store. The area was chosen because of its low-lying landscape position and undeveloped character.

The depression at the toe of the road slope is dominated almost exclusively by Himalayan blackberry with scattered patches of Scot's broom (Appendix B, data plots 1 and 2; Appendix A, Photos 7 and 8). Both the blackberry and the Scot's broom are exotic species typically found in upland areas. Soils in this area appeared to be fill material without characteristics of wetland soil.

There was no evidence of wetland hydrology within this area. Thus, this area did not meet any of the three parameters necessary to be considered a wetland.

---

#### wetland hydrology

The condition where water is present during a portion (between 5 and 12.5%) of the annual growing season.

---

## Streams

No streams were found in the study area and are therefore not discussed further in this report.

## Ditches

Three ditches totaling 401 square feet were found in the study area. Table 3 summarizes the area of each ditch mapped within the study area.

**Table 3. Ditches Identified within the Project Study Area**

	Area (square feet)
Ditch 1	227
Ditch 2	108
Ditch 3	66
<b>Total</b>	<b>401</b>

### Ditch 1

Ditch 1 is approximately 227 square feet in size and is located along the west side of Aurora Avenue N just north of N 192nd Street (see Figure 9). It is a shallow depression/slope that drains south into a culvert that carries water southward to Ditch 2. The channel is approximately 4 feet wide and 5 inches deep. Recent ditch maintenance had obviously occurred prior to the reconnaissance visit in January 2007. Fresh excavation at the ditch inlet and outlet culverts (Appendix A, Photos 9 and 10) had been conducted to improve drainage and water movement. Record rainfall in November and December 2006 created surface ponding and urban flooding in this area prior to ditch maintenance.

Ditch 1 receives water from a catch basin that routes surface runoff to the ditch, and from direct surface water runoff from the surface of Aurora Avenue N. During the February 2007 field investigation, the ditch was saturated and evidence of standing water and recent water flow was observed. Ditch 1 is mostly vegetated with invasive reed canarygrass (*Phalaris arundinacea*) and bluegrass (*Poa* spp.) growing on sandy silt that has accumulated in the ditch over time from road runoff.

The edge of the ditch was determined at the point where evidence of water flow disappeared. This location coincides with the toes of the slope of Aurora Avenue N to the east and the upland slope/fill area to the west. Ditch 1 was determined to be subject to regulation under the Clean Water Act since water flowing through the ditch eventually discharges to Echo Lake via a series of underground stormwater pipes.

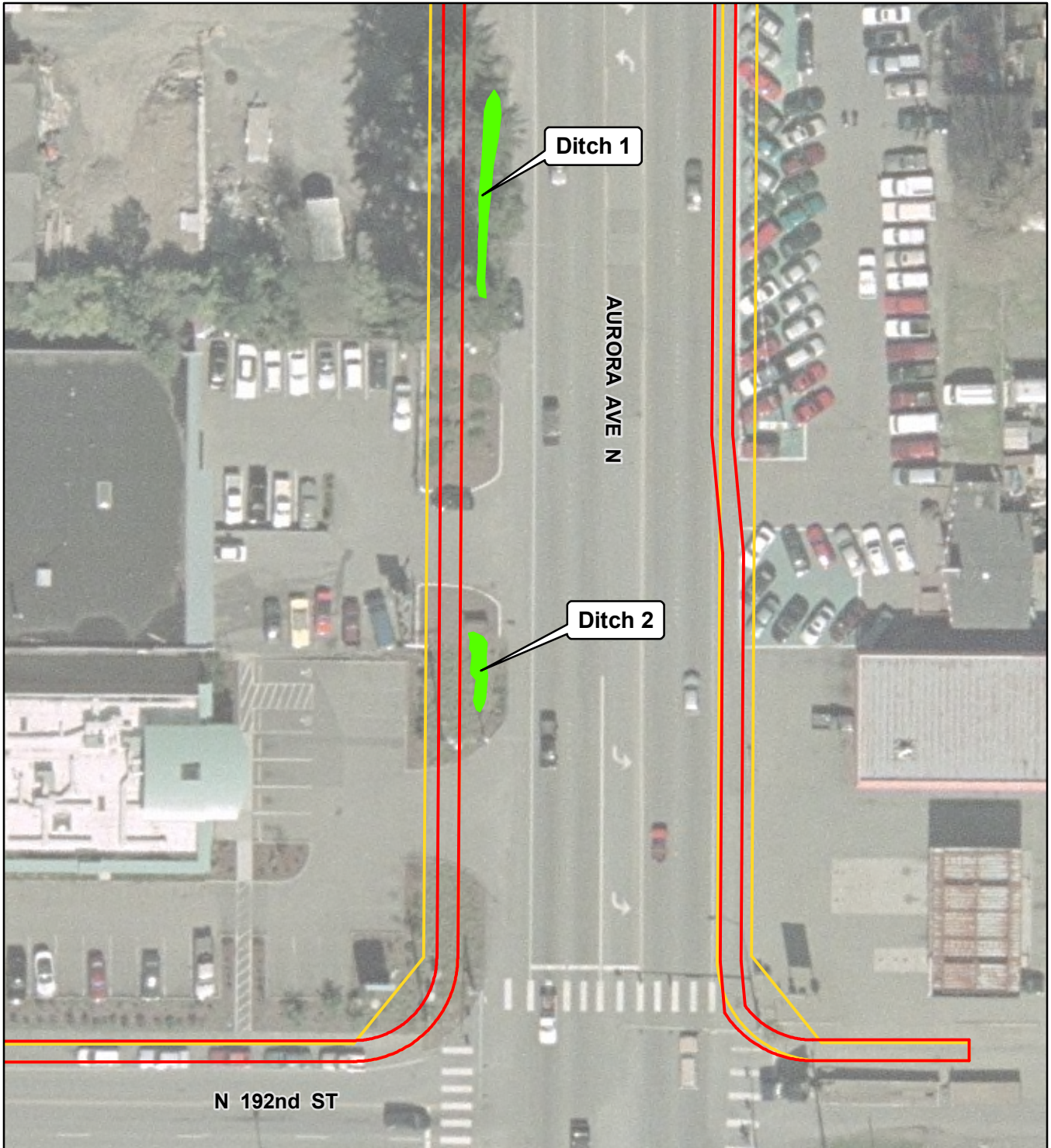
## Ditch 2

Ditch 2 is approximately 108 square feet in size and is located along the west side of Aurora Avenue N just north of N 192nd Street and south of Ditch 1 (see Figure 9). It is a shallow depression/slope that drains south into a culvert that carries water to a piped underground stormwater system. The channel is approximately 4.5 feet wide and 5 inches deep. During the field investigation, it was clear that recent ditch maintenance had occurred prior to the January 2007 reconnaissance visit to allow for better drainage and water movement, as evidenced by recent signs of fresh excavation at the ditch inlet and outlet culverts (Appendix A, Photo 11).




Ditch 2 receives water from Ditch 1 (via culvert), and from direct surface water runoff from Aurora Avenue N. At the time of the February 2007 field investigation, the ditch was saturated and evidence of standing water and recent water flow was observed. Ditch 2 was sparsely vegetated during the field investigation due to recent rains and sediment deposits in the ditch. Ditch 2 is partially vegetated with invasive reed canarygrass and bluegrass growing on sandy silt that has accumulated in the ditch over time from road runoff.

The edge of the ditch was determined to be the point where evidence of water flow disappeared. This coincides with the toe of the slope of Aurora Avenue N road to the east and the upland slope/fill area to the west. Ditch 2 was determined to be subject to regulation under the Clean Water Act since water flowing through the ditch eventually discharges to Echo Lake via a series of underground stormwater pipes.





Sources: City of Shoreline (2006); Jones & Stokes (2007)

-  Delineated Ditch
-  Alternative A
-  Alternative B/C

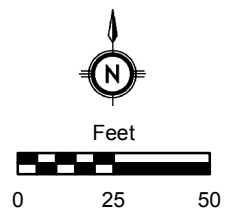


Figure 9. Location of Ditches 1 and 2  
Aurora Corridor Improvement Project  
July 2007

## Ditch 3

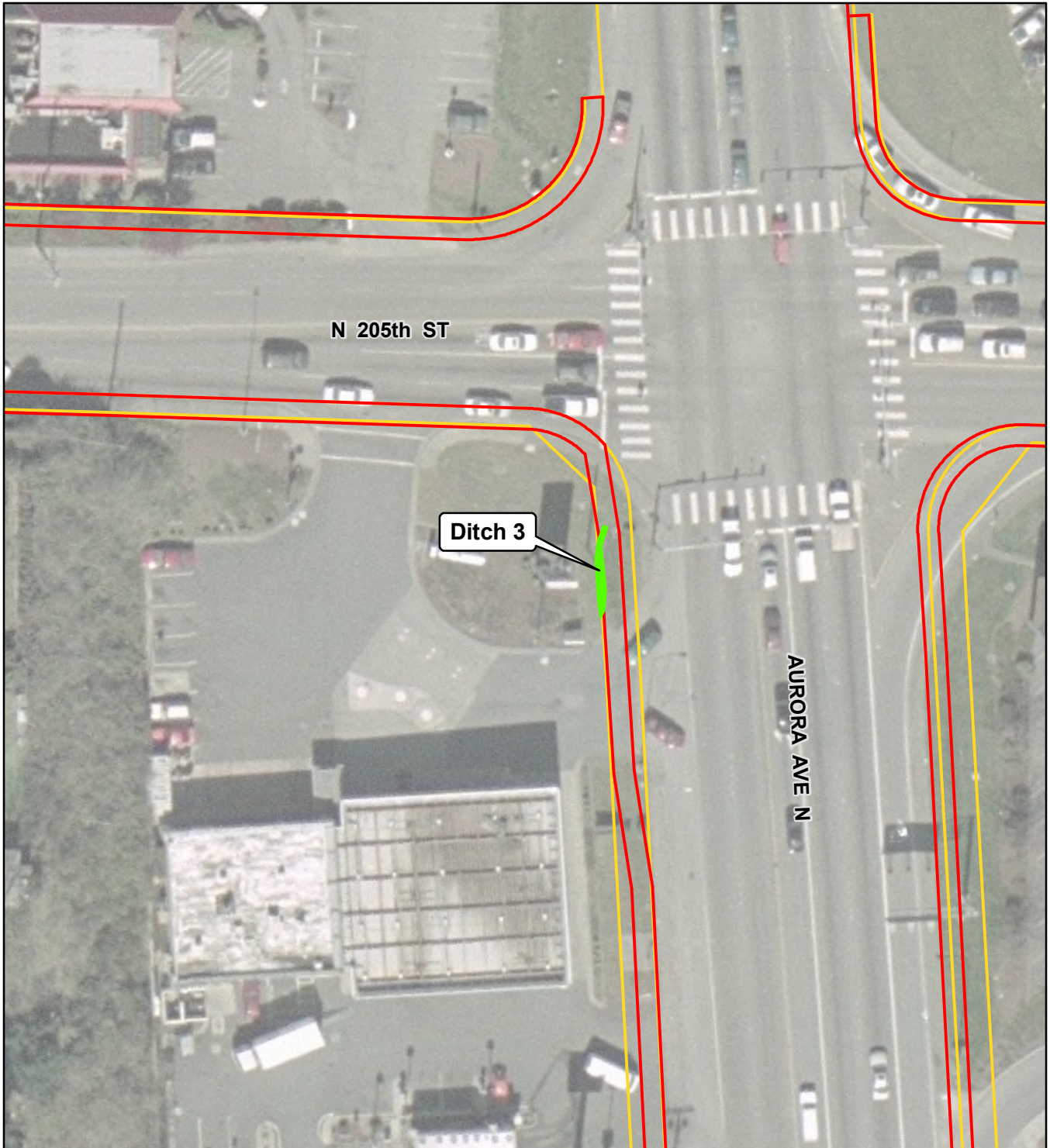
Ditch 3 is approximately 66 square feet in size and is located on the southwest corner of Aurora Avenue N and N 205th Street (see Figure 10). It is a slope that drains to the north into a catch basin that carries water to an underground piped stormwater system. The channel is approximately 19 inches wide and 9 inches deep. During the field investigation, it was clear that recent ditch maintenance had occurred prior to the January 2007 reconnaissance visit to allow for better drainage and water movement. Clumps of soil and grass had been cast aside along the entire length of the excavated channel (Appendix A, Photos 12 and 13). Record rainfall in November and December 2006 created surface ponding and urban flooding in this area.

Ditch 3 receives water from the impervious surfaces of the adjacent gas station. At the time of the February 2007 field investigation, the ditch showed evidence of recent water flow with drainage pattern features. Vegetation is absent from the ditch and the substrate is gravel.




Because the ditch is so narrow, the centerline of the ditch was marked with pin flags. The top of ditch bank coincides with upland that consists of maintained lawn/grass. Ditch 3 was determined to be subject to regulation under the Clean Water Act since water flowing through the ditch eventually discharges to Lake Ballinger via a series of underground stormwater pipes.

## Adjacent Uplands

The upland areas adjacent to the ditches, as well as the typical surroundings within the study area, are developed and characterized by concrete and asphalt roadways, driveways, curbs, and sidewalks. Vegetation is limited to small patches of weeds along the edges of the road shoulders, grass-covered slopes (particularly to the west of the roadway near Firlands Avenue N), and scattered landscaping fronting commercial businesses.



Sources: City of Shoreline (2006); Jones & Stokes (2007)

-  Delineated Ditch
-  Alternative A
-  Alternative B/C

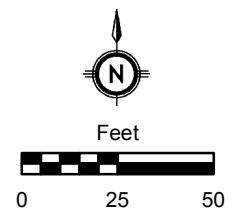


Figure 10. Location of Ditch 3  
Aurora Corridor Improvement Project  
July 2007

## Are any protected wildlife habitats or species located within the study area?

A review of the Priority Habitat Species map did not indicate any protected wildlife habitats or species within the wetland study area. Echo Lake, located outside the wetland study area to the east, is identified as a wetland with wintering waterfowl use (WDFW 2006) and receives planted trout by WDFW. Fall Chinook, coho, and resident cutthroat trout are documented in McAleer Creek, Lake Ballinger (approximately 0.5 mile north of the project area), and Hall Creek (tributary to Lake Ballinger from the north). A limited variety of urban-adapted wildlife, including songbirds, raccoons, opossums, and rats inhabit the residential areas surrounding the study area. Bald eagles are known to fly over the area.

---

A limited variety of urban-adapted wildlife, including songbirds, raccoons, opossums, and rats inhabit the residential areas surrounding the study area. Bald eagles are known to fly over the area.

---

A review of the WDNR Natural Heritage Inventory database indicated there are no mapped occurrences of federal or state-listed or sensitive plant species or mapped native plant assemblages of infrequent occurrence within the wetland study area.

An area including about 1,000 feet within the southern portion of the project vicinity is within the historical range of Canadian St. John's wort (*Hypericum majus*), a state sensitive plant species (WDNR 2005). This species is a wetland plant that now occurs only in a few, widely scattered locations in Washington along ponds, lakeshores, and other low, wet places (WNHP 2000). It is extremely unlikely that this plant still occurs anywhere within the nearly completely paved project area that lacks wetland habitats.

## How were ditch functions and values assessed?

There is currently no method to evaluate functions and values of ditches. However, ditches can provide some water quality improvement if vegetation and small depressions are present. These characteristics can slow stormwater runoff and allow for sediment retention and chemical uptake if vegetation and/or clay soils are present.

## What functions do study area ditches provide?

Ditches 1 and 2 provide some water quality improvement since vegetation is present in both, and a small depression is present within Ditch 1. During the field investigation, sediment deposits in both ditches and water marks in a small depression of Ditch 1 indicated that the ditches are capable of slowing water and detaining sediment delivered via stormwater runoff. Ditch 3 does not have vegetation or depressions and likely provides very little water quality improvement but rather functions only to drain ponded water rapidly to the stormwater system



## Chapter 5. Potential Effects

This chapter describes potential effects to wetlands and other waters of the U.S. identified under the No Build and three Build Alternatives.

### How were ditch areas calculated and effects to ditches determined?

Ditches 1, 2, and 3 were surveyed and mapped based on the boundaries identified by the field biologists. Ditch mapping was reviewed and compared to the project footprint. Effects to ditches were calculated using computer-aided drafting (CAD) and geographical information systems (GIS) software.

### How would Project construction affect ditches?

#### Permanent Effects under All Build Alternatives

Unavoidable, permanent effects to Ditches 1, 2, and 3 would occur under all three Build Alternatives. These effects cannot be avoided due to the close proximity of these ditches to the edge of pavement along the roadway.

## Direct Effects

Table 4 summarizes the effect of construction of the Project on the three Build Alternatives. The table shows that construction of all three Build Alternatives would fill Ditches 1, 2, and 3 in their entirety, which would result in a loss of 401 square feet of ditch area. As mentioned in Chapter 4, there is no method to evaluate ditch functions. However, ditches are acknowledged to provide some water quality improvement. The loss of Ditches 1, 2, and 3 would eliminate the small area of water quality improvement that they currently provide.

**Table 4. Effects to Ditches under the Three Build Alternatives**

	Total Area (square feet)	Impacted Area for Alternatives A, B, and C (square feet)
Ditch 1	227	227
Ditch 2	108	108
Ditch 3	66	66
<b>Total</b>	<b>401</b>	<b>401</b>

## Indirect Effects

No indirect effects would result from any of the three Build Alternatives as Ditches 1, 2, and 3 will be lost in their entirety.

## Temporary Effects

No temporary effects would result from any of the three Build Alternatives as Ditches 1, 2, and 3 will be lost in their entirety.

## How would Project operations affect ditches?

No additional effects on ditches will occur during the operation of the roadway.



## How would the No Build Alternative affect ditches?

The No Build Alternative would not have permanent, temporary, or indirect effects on ditches in the study area. There would be no change to current stormwater flows, which would continue to be routed into the stormwater system by the ditches.



## Chapter 6. Measures Taken to Avoid or Minimize Project Effects

This chapter identifies mitigation measures intended to avoid or minimize the potential effects described in Chapter 5.

### What mitigation measures are proposed to avoid or minimize overall effects of the Project?

Current guidance on ditch mitigation is found in the most recent Corps of Engineers Nationwide Permit (NWP) program published in the *Federal Register* on March 12, 2007. Nationwide permit 46, *Discharges in Ditches*, states:

It would be inappropriate or impractical to establish a national standard requiring mitigation for all activities authorized by the NWP. The need for compensatory mitigation to ensure minimal individual and cumulative adverse effects will be made by district engineers on a case-by-case basis, in response to pre-construction notifications.

Each Corps district engineer will determine whether mitigation is needed for ditch impacts within their jurisdiction. When this report was prepared, the Seattle District had not yet issued guidance regarding the need for mitigation to compensate for effects to ditches within its jurisdiction.

## What mitigation measures are proposed to avoid or minimize effects to ditches?

Mitigation for effects to ditches is not currently clearly outlined by the Seattle District Corps, but rather may be determined on a case-by-case basis. For the Aurora Corridor Improvement Project, proposed mitigation consists of improved stormwater facilities to compensate for the minor loss of water quality functions provided by Ditches 1, 2, and 3. The loss of the 401 square feet of water quality functions provided by the three ditches would be completely compensated through construction of new stormwater treatment facilities that are part of the Project. The stormwater facilities that would be designed and constructed as part of the Project would provide higher quality stormwater treatment than that currently provided by the small area of the three ditches.

## Chapter 7. References

- CH2M Hill. 1999. Aurora Corridor Multimodal Pre-Design Study Report. Prepared for the City of Shoreline.
- City of Shoreline. 2005. Critical areas ordinance. ArcGIS data provided on digital video disc, November 2006.
- . 2005. Comprehensive Plan. Adopted by Ordinance 388. June 13. Shoreline, WA.
- . 2007. Interurban Trail Map. Available:  
<[http://cosweb.ci.shoreline.wa.us/uploads/attachments/pwk/2006\\_GEN.pdf](http://cosweb.ci.shoreline.wa.us/uploads/attachments/pwk/2006_GEN.pdf)>. Accessed: March 30, 2007.
- Ecology (Washington Department of Ecology). 1997. Washington State Wetlands Identification and Delineation Manual. Washington Department of Ecology Publication 96-94. Olympia, WA.
- Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-97-1. U.S. Waterways Experiment Station. Vicksburg, MS.
- Gluck, Jerome, Herbert S. Levinson, and Vergil Stover. 1999. Impacts of Access Management Techniques. National Cooperative Highway Research Program (NCHRP) Report 420. Prepared for the Transportation Research Board. National Research Council. Washington, DC.

King County. 2007. King County iMAP database. Accessed March 1, 2007.

NRCS (Natural Resources Conservation Service). 2007. National Cooperative Soil Survey (NCSS) Web Soil Survey (WSS). Available: <http://websoilsurvey.nrcs.usda.gov/app/>

Puget Sound Regional Council. 2001. Destination 2030: Metropolitan Transportation Plan for the Central Puget Sound Region.

Transportation Research Board. Highway Capacity Manual. 2000. Special Report 209. National Research Council. Washington, DC.

USFWS (U.S. Fish and Wildlife Service). 2007. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, St. Petersburg, FL. Available: <http://www.fws.gov/nwi/>.

USGS (U.S. Geological Survey). 1981. 7.5' Series (Topographic)—East Edmonds, Washington Quadrangle. U.S. Geological Survey.

Washington State Department of Natural Resources. 2005. Natural Heritage Inventory. GIS dataset. January 2005. Accessed February 20, 2007.

Washington State Transportation Commission. 1998. Transportation Commission List of Highways of Statewide Significance. Passed by Resolution #584. December. Available: <http://www.wsdot.wa.gov/ppsc/hsp/HSSLIST.pdf>.

WDFW (Washington State Department of Fish and Wildlife). 2006. Priority habitats and species map and report for the vicinity of T25NR06E Sections 7. November 1. Olympia, WA.

WSDOT (Washington State Department of Transportation). 2002. Washington State Highway System Plan: 2003 – 2022. Prepared by the WSDOT Planning Office. February.

———. 2005. Freight and Goods Transportation System 2005 Update. Prepared by the Office of Freight Strategy and Policy. December.

———. 2006. Environmental Procedures Manual. Publication M31-11. Prepared by the Environmental Services Office. March.

Available:

<<http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/EPM/EPM.htm>>.





## Appendix A

---

Photos





Photo 1. Aurora Facing South



Photo 2. Aurora Facing South



Photo 3. Aurora Facing North



Photo 4. Aurora Facing South



Photo 5. Aurora Facing North



Photo 6. Aurora Facing South



Photo 7. Blackberry/Scot's Broom Area



Photo 8. Blackberry/Scot's Broom Area



Photo 9. Ditch 1 Facing South



Photo 10. Ditch 1 Facing North



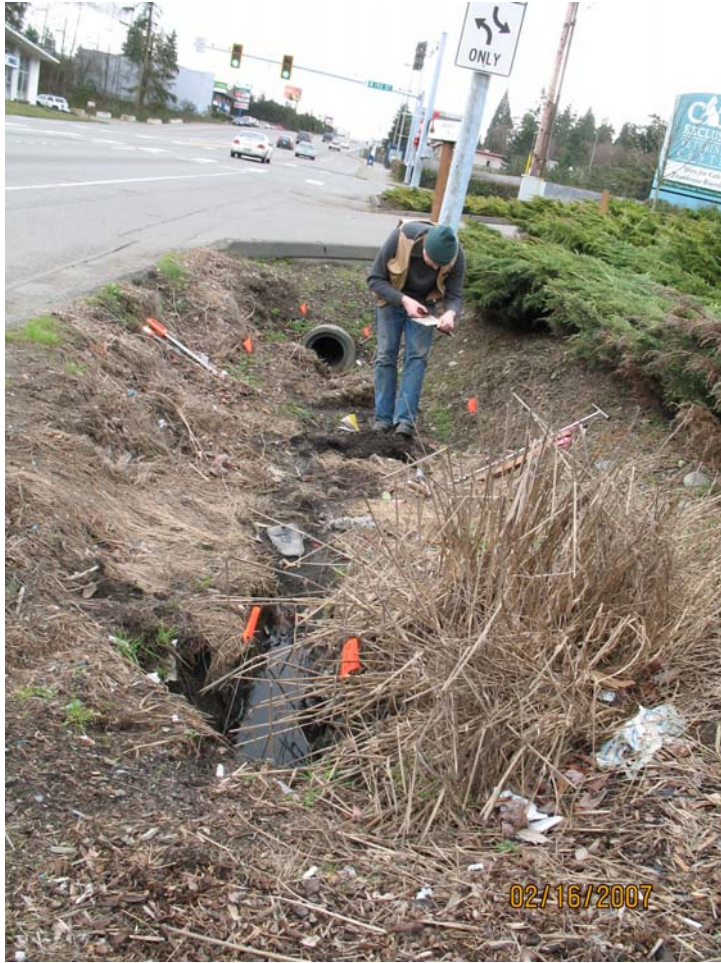


Photo 11. Ditch 2 Facing South

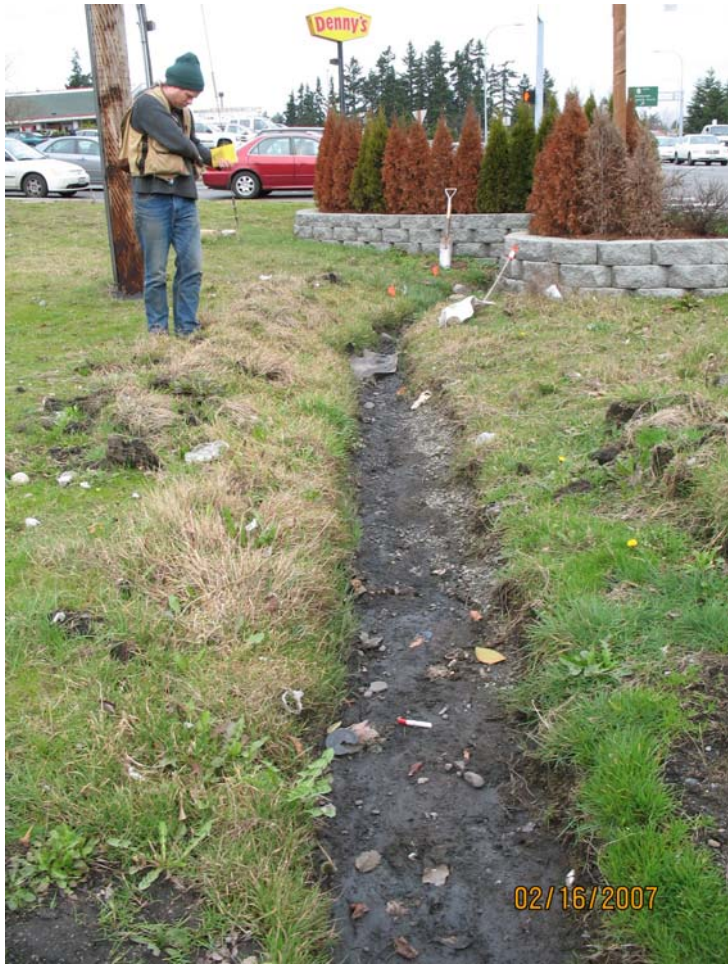


Photo 12. Ditch 3 Facing North

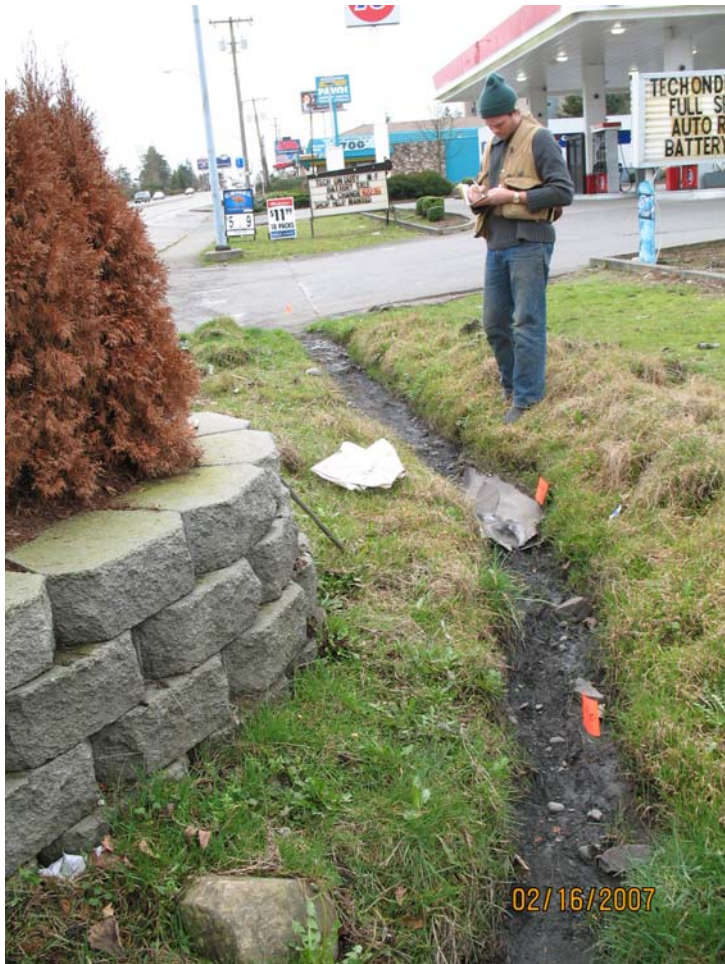


Photo 13. Ditch 3 Facing South



## Appendix B

---

Corps Data Forms





# Jones & Stokes

## Routine Onsite Wetland Determination Form

<b>Project #:</b> Aurora Corridor Imp. Proj.	<b>Date:</b> 2/7/2007
<b>Client/Owner:</b> City of Shoreline	<b>State:</b> WA
<b>Investigators:</b> DJ, TL	<b>County:</b> King
<b>Do normal circumstances exist on the site?</b> Yes	<b>Township, Range, Section:</b> T26N, R4E, S6
<b>Is it an atypical situation?</b> No	<b>Plant Community:</b> UPL
<b>Is the area a potential problem area?</b> No	<b>Sample Plot:</b> Plot 1

Plot location:

### VEGETATION

Species	Stratum	Raw %	Rel % Cover	Dom.	Indicator status	Species	Stratum	Raw %	Rel % Cover	Dom.	Indicator status
<i>Rubus aremiacus</i>	S/S	75		X	FACU						
<i>Cytisus scoparius</i>	S/S	25		X	NL						

% of dominant species that are OBL, FACW, or FAC (excluding FAC: 0 of 2 = 0%

<b>Rationale:</b>	<b>Criterion met?</b> No
<b>Comments:</b>	

### SOILS

<b>Mapped Unit Name:</b> No Data	<b>Mapped Hydric?</b>
<b>Taxonomy:</b>	<b>Drainage Class:</b>

Depth (inches)	Matrix Color	Redoximorphic features		Soil Texture
		Color	Abundance/size/contrast	
0-6	7.5YR 2/2			Gravel loam
6-10	10YR 4/3			Gravel loam
10-16	10YR 5/3			Gravel loam

<input type="checkbox"/> Histosol	<input type="checkbox"/> Reducing conditions (test)	<input type="checkbox"/> Gleyed
<input type="checkbox"/> Histic epipedon	<input type="checkbox"/> High organic content surface layer	<input type="checkbox"/> Organic streaking (in sandy soils)
<input type="checkbox"/> Sulfidic odor	<input type="checkbox"/> Redoximorphic features in upper 10"	<input type="checkbox"/> Organic pan (in sandy soils)
<input type="checkbox"/> Low matrix chroma	<input type="checkbox"/> Concretions (w/in 3", >2mm)	<input type="checkbox"/> On hydric soils list

<b>Rationale:</b> No hydric soil indicators present.	<b>Criterion met?</b> No
<b>Comments:</b>	

### HYDROLOGY

Depth of surface water: _____ Depth to free water in pit: _____ Depth to saturated soil: _____ Within growing season? _____ <input checked="" type="checkbox"/> Recorded Data _____ Stream, Lake or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs _____ Other _____ _____ No recorded data available	<b>Primary Indicators:</b>	<b>Secondary Indicators:</b>
	<input type="checkbox"/> Inundated	<input type="checkbox"/> Oxidized rhizospheres upper 12"
	<input type="checkbox"/> Saturated in upper 12 in.	<input type="checkbox"/> Water-stained leaves
	<input type="checkbox"/> Water marks	<input type="checkbox"/> Local soil survey data
	<input type="checkbox"/> Drift lines	<input type="checkbox"/> FAC neutral test
	<input type="checkbox"/> Sediment deposits	<input type="checkbox"/> Other
<input type="checkbox"/> Wetland drainage pattern		

<b>Rationale:</b> No indicators of hydrology present.	<b>Criterion met?</b> No
<b>Comments:</b>	

### WETLAND DETERMINATION

<b>Rationale:</b>	<b>Determination:</b> Upland
-------------------	------------------------------







# Jones & Stokes

## Routine Onsite Wetland Determination Form

<b>Project #:</b> Aurora Corridor Imp. Proj.	<b>Date:</b> 2/7/2007
<b>Client/Owner:</b> City of Shoreline	<b>State:</b> WA
<b>Investigators:</b> DJ, TL	<b>County:</b> King
<b>Do normal circumstances exist on the site?</b> Yes	<b>Township, Range, Section:</b> T26N, R4E, S6
<b>Is it an atypical situation?</b> No	<b>Plant Community:</b> UPL
<b>Is the area a potential problem area?</b> No	<b>Sample Plot:</b> Plot 2

**Plot location:**

### VEGETATION

Species	Stratum	Raw %	Rel % Cover	Dom.	Indicator status	Species	Stratum	Raw %	Rel % Cover	Dom.	Indicator status
<i>Rubus aremiacus</i>	S/S	25		X	FACU						
<i>Cytisus scoparius</i>	S/S	75		X	NL						

% of dominant species that are OBL, FACW, or FAC (excluding FAC: 0 of 2 = 0%

<b>Rationale:</b>	<b>Criterion met?</b> No
<b>Comments:</b>	

### SOILS

**Mapped Unit Name:** No Data **Mapped Hydric?**

**Taxonomy:** **Drainage Class:**

Depth (inches)	Matrix Color	Redoximorphic features		Soil Texture
		Color	Abundance/size/contrast	
0-10	10YR 4/3			Gravel loam

<input type="checkbox"/> Histosol	<input type="checkbox"/> Reducing conditions (test)	<input type="checkbox"/> Gleyed
<input type="checkbox"/> Histic epipedon	<input type="checkbox"/> High organic content surface layer	<input type="checkbox"/> Organic streaking (in sandy soils)
<input type="checkbox"/> Sulfidic odor	<input type="checkbox"/> Redoximorphic features in upper 10"	<input type="checkbox"/> Organic pan (in sandy soils)
<input type="checkbox"/> Low matrix chroma	<input type="checkbox"/> Concretions (w/in 3", >2mm)	<input type="checkbox"/> On hydric soils list

<b>Rationale:</b> No hydric soil indicators present.	<b>Criterion met?</b> No
<b>Comments:</b> Refusal at 10 inches due to road fill.	

### HYDROLOGY

Depth of surface water: _____ Depth to free water in pit: _____ Depth to saturated soil: _____ Within growing season? _____ <input checked="" type="checkbox"/> Recorded Data _____ Stream, Lake or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs _____ Other _____ _____ No recorded data available	<b>Primary Indicators:</b>	<b>Secondary Indicators:</b>
	<input type="checkbox"/> Inundated	<input type="checkbox"/> Oxidized rhizospheres upper 12"
	<input type="checkbox"/> Saturated in upper 12 in.	<input type="checkbox"/> Water-stained leaves
	<input type="checkbox"/> Water marks	<input type="checkbox"/> Local soil survey data
	<input type="checkbox"/> Drift lines	<input type="checkbox"/> FAC neutral test
	<input type="checkbox"/> Sediment deposits	<input type="checkbox"/> Other
<input type="checkbox"/> Wetland drainage pattern		

<b>Rationale:</b> No indicators of hydrology present.	<b>Criterion met?</b> No
<b>Comments:</b>	

### WETLAND DETERMINATION

<b>Rationale:</b>	<b>Determination:</b> Upland
-------------------	------------------------------

