## Bel-Red Design & Mitigation Permit Application for East Link Light Rail Project From 124<sup>th</sup> Avenue NE to WSDOT ROW

Submitted to: The City of Bellevue Development Services Department 450 110th Avenue NE P.O. Box 90012 Bellevue, WA 98009 (425) 452-4898

#### **Applicant:**

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#### Acronyms and Abbreviations

Bellevue City Code			
Citizens Advisory Committee			
Collaborative Design Process			
Design and Value Engineering Team			
Final Environmental Impact Statement			
Federal Highway Administration			
Federal Transit Administration			
Bellevue Land Use Code			
Memorandum of Understanding			
National Environmental Policy Act			
Preliminary Engineering			
Regional Light Rail Transit			
Record of Decision			
State Environmental Policy Act			

- SSDP Shoreline Substantial Development Permit
- TPSS Traction Power Sub-Station
- TVM Ticket Vending Machine

#### 1.0 Project Planning

### 1.1 Background – East Link Light Rail Project

Sound Transit (ST) is a regional transit authority created pursuant to RCW 81.104 and 81.112 and authorized to implement high capacity transit systems within its boundaries in Pierce, King, and Snohomish counties. On November 4, 2008, Central Puget Sound area voters approved the Sound Transit 2 plan (ST2 plan), a package of transit improvements and expansions including increased bus service, increased commuter rail service, an expansion of link light rail, and improved access to transportation facilities. (See **Attachment A.**)

The expansion of link light rail approved in the ST2 plan includes the East Link Project. The East Link Project extends the light rail system approximately 14 miles between Seattle and the east side of Lake Washington as shown on the attached system plan (see **Attachment B**) and includes 10 stations serving Seattle, Mercer Island, South Bellevue, downtown Bellevue, Bel-Red and Overlake areas in Redmond. The Growth Management Act (RCW 36.70A) provides that regional transportation facilities are essential public facilities and the City has acknowledged this fact through recent revisions to the Bellevue Land Use Code (LUC). Sound Transit is implementing the East Link Project pursuant to its statutory authority and the voter approved ST2 plan.

Since the approval of the ST2 plan in 2008, the City of Bellevue (City) and Sound Transit have been committed to working together in a collaborative manner in order to achieve the shared goals of reducing costs and delivering a quality project on schedule and in compliance with applicable codes and regulations. Consistent with these shared goals, on November 15, 2011, the City and Sound Transit executed two agreements: (1) an Umbrella Memorandum of Understanding (MOU), and (2) a Transit Way Agreement. Taken together, these agreements outline the general terms and conditions for development of the East Link Project in the City. The MOU identified specific funding contributions, joint commitments to develop a collaborative design process and to work together to identify cost-saving modifications, and a commitment by the City to process land use code amendments to accommodate light rail and consolidate the permit process.

On February 28, 2013, as provided in the MOU, the City adopted regulatory changes to the LUC by creating the Light Rail Overlay District (new Chapter 20.25M LUC) that governs permit decisions for "Regional Light Rail Transit Facilities (RLRT Facility)."

On April 22, 2013, the City Council passed Resolution No. 8576 endorsing modifications for inclusion in the Project and approving the alignment location and general profile of the Project for the purposes of LUC 20.25M. As a result of this Council action, RLRT Facilities are now permitted land uses in all land use districts throughout the City. On April 25, 2013, the Sound Transit Board adopted Resolution No. R2013-09 selecting the route, profiles and station locations for the East Link Project, including those modifications identified by the City in Resolution No. 8576.

On June 21, 2013, the City and Sound Transit executed amendments to the MOU and Transit Way Agreement incorporating the modifications. (See Sound Transit Motion No. M2013-27 and City Resolution No. 8596.) In addition, the Collaborative Design Process (CDP) included more than 50 technical working group meetings. A complete copy of the CDP Management Plan is included as **Attachment C.** 

The process of designing the East Link Project has spanned several years, and extensive outreach to the community; a complete federal and state environmental analysis; and hundreds of public meetings, hearings, and open houses with the cities of Seattle, Mercer Island, Bellevue, and Redmond, neighbors and other stakeholders, as well as numerous Bellevue City Council meetings and actions. A summary of the Community Outreach efforts completed for the Project is provided in **Attachment D** and http://www.soundtransit.org/Documents/pdf/projects/eastlink/EL\_public\_meetings\_CEA\_II\_KK.pdf. This site is updated periodically throughout the Project timeline.

The East Link Project is now in the final design stage, and Sound Transit is seeking City approval of the first of several Design and Mitigation Permits (DMPs). As provided in Chapter 20.25M LUC, the DMP is the single, consolidated project permit issued by the City in response to an application to develop a RLRT facility or portion thereof. The key elements of the East Link Project that are located within the City's boundaries include approximately 6 miles of new light rail track, 6 stations, and 2 parking facilities, as well as other structures and facilities described in Exhibit C-1 to the MOU. For the purposes of this DMP Application, the term "Project" refers only to those elements of the East Link Project that are located within the City of Bellevue. As described further, the Facilities proposed in this DMP Application generally include the portions of the Project between 124<sup>th</sup> Avenue NE to the WSDOT right-of way north of the intersection of NE 20<sup>th</sup> Street and 136<sup>th</sup> Place NE. (See **Figure 1**). The significant project components considered in this DMP Application includes the following:

- a. One (1) mile of track guideway: Includes retained cut, at-grade, retained fill, and elevated track
- b. One (1) RLRT Station: 130<sup>th</sup> Station
- c. One (1) Park-and-Ride at 130<sup>th</sup> Station consisting of 300 parking stalls
- d. One (1) wetland and stream mitigation site at the West Tributary to Kelsey Creek wetlands

### **1.2** Environmental Evaluation and Procedures

Sound Transit has complied with both the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) by conducting an evaluation of the potential environmental impacts of the East Link Project. On July 15, 2011, Sound Transit issued the East Link Project Final Environmental Impact Statement (FEIS). The Federal Transit Administration (FTA) issued its Record of Decision (ROD) on the East Link Project on November 11, 2011, and the Federal Highway Administration issued its ROD on November 17, 2011. On March 26, 2013, Sound Transit completed and published the East Link Extension 2013 SEPA Addendum. Copies of these environmental documents have been shared with the City, and are publicly available. As provided in the MOU, the City has agreed to use the East Link Project Environmental Documents for its review and decisions on permit applications related to the East Link Project. Building a Better Bellevue, an association of Bellevue homeowners, residents, businesses and neighborhood groups, challenged Sound Transit's compliance with federal law in a lawsuit filed in the United States District Court for Western Washington. The Court found that Sound Transit's environmental evaluation and analysis was reasonable and that the decision-making was the result of a careful and deliberative process. The Court dismissed this legal challenge on March 7, 2013 (See Attachment E).

Sound Transit is the "lead agency" for purposes of the Project's compliance with the State Environmental Policy Act (SEPA) RCW Chapter 43.21C. As provided in the MOU, the City agreed that the Project has been subject to procedural and substantive SEPA through issuance of the following environmental documents, which comprise the "Project Environmental Documents," incorporated herein by reference:

- a. East Link Project Final Environmental Impact Statement, July 15, 2011
- b. East Link Records of Decision (FTA and FHWA, November 2011)
- c. SEPA Addendum to the FEIS, March 26, 2013
- d. The related documents referenced in the FEIS, RODS, or SEPA Addendum including but not limited to those submitted by the City.

Pursuant to the MOU and WAC 197-11-600 (adopted by reference in BCC 22.02.020) as supplemented by BCC 22.02.037, the parties agreed that the Project Environmental Documents will be used by the City unchanged for its review and decisions on permit application related to the Project, unless otherwise indicated pursuant to WAC 197-11-600 or BCC 22.02.037.

The FTA, acting as the lead agency under the National Environmental Policy Act (NEPA), issued its ROD in November 2011, which includes the environmental commitments for the Project. See **Attachment F** for a summary of applicable mitigation measures contained in the ROD. **Attachment G** provides references from the FEIS and ROD which respond to the City's land use codes.

The Project Environmental Documents provide detailed information regarding the potential environmental impacts associated with the Project and details regarding mitigation measures to which Sound Transit has committed, including potential short term construction-related impacts and proposed mitigation measures specifically related to this Project. These commitments have been incorporated into the Project as proposed in this application, and Sound Transit will implement them or provide funding for their implementation. Copies of the applicable FEIS Technical Report sections and the entire ROD can be provided upon request.

### East Link Timeline

August, 2006 - Sound Transit begins the environmental scoping process for the East Link Project.

**November 4, 2008** - Central Puget Sound area voters approved the Sound Transit 2 plan (ST2 plan), a package of transit improvements and expansions including increased bus service, increased commuter rail service, an expansion of link light rail, and improved access to transportation facilities.

July 15, 2011 - Sound Transit issued the East Link Project FEIS.

**November 11, 2011** - The FTA issued its ROD on the East Link Project.

**November 15, 2011** - The City and Sound Transit executed two agreements: (1) an Umbrella MOU, and (2) a Transit Way Agreement which, taken together, outline the general terms and conditions for development of the East Link Project in the City.

November 17, 2011 - Federal Highway Administration issued its ROD on the East Link Project.

March 2012 - The CDP and Design and Value Engineering (DAVE) meetings began.

**February 28, 2013** - As provided in the MOU, the City adopted regulatory changes to the LUC by creating the Light Rail Overlay District (new Chapter 20.25M) that governs permit decisions for "Regional Light Rail Transit Facilities (RLRT Facility)."

March 26, 2013 - Sound Transit completed and published the East Link Extension 2013 SEPA Addendum.

**April 22, 2013** - The City Council passed Resolution No. 8576 endorsing modifications for inclusion in the East Link Project and approving the alignment and general profile and station locations for the East Link Project for the purposes of LUC 20.25M.

**April 25, 2013** - The Sound Transit Board adopted Resolution No. R2013-09, selecting the route, profiles and station locations for the East Link Project, including those modifications identified by the City in Resolution No. 8576.

**June 21, 2013** - The City and Sound Transit executed amendments to the MOU and Transit Way Agreement incorporating the modifications described in Sound Transit Motion No. M2013-27 and Bellevue Resolution No. 8596.

**July 15, 2013** - After a year and half and approximately 50 CDP/DAVE meetings; design for the Bel-Red section of the East Link Project reached the 60% design level.

### **1.3** Project Description – Bel-Red Design and Mitigation Permit

The City's approval of the alignment location and profile of the Project in Resolution No. 8576 created RLRT Facilities as permitted uses in all land use districts. Therefore, LUC 20.25M.030(C) allows Sound Transit to seek approval of RLRT Facilities through the DMP review process. Under this DMP Application, Sound Transit seeks a DMP for approximately 1 mile of the Project.

The alignment for the portion of the Project covered by this DMP Application commences at the east side of 124th Avenue NE, where the guideway transitions from retained-cut to an elevated structure east of 124th Avenue NE. The elevated alignment continues east on the south side of the existing West Tributary to the Kelsey Creek ponded wetland, where it touches down on a retained fill structure west of 130th Avenue NE. The alignment continues at-grade across 130<sup>th</sup> Avenue NE to the 130th Station. This station includes a 300-space surface park and ride. Continuing at-grade, the alignment crosses 132nd Avenue NE between the redesigned eastbound and westbound lanes of NE 16th Street. In this location, the guideway is in an embedded track section, from 132nd Avenue NE through the curve at NE 16th Street and 136th Place NE. The alignment then turns northerly with the roadway at the intersection of NE 16th Street and 136th Place NE and transitions to a ballasted track section. The alignment continues at-grade through NE 20<sup>th</sup> Street before transitioning to a retained fill structure and terminating at the WSDOT right-of-way, the eastern limit of this DMP application (**Figure 1**). The design of the 130<sup>th</sup> Station

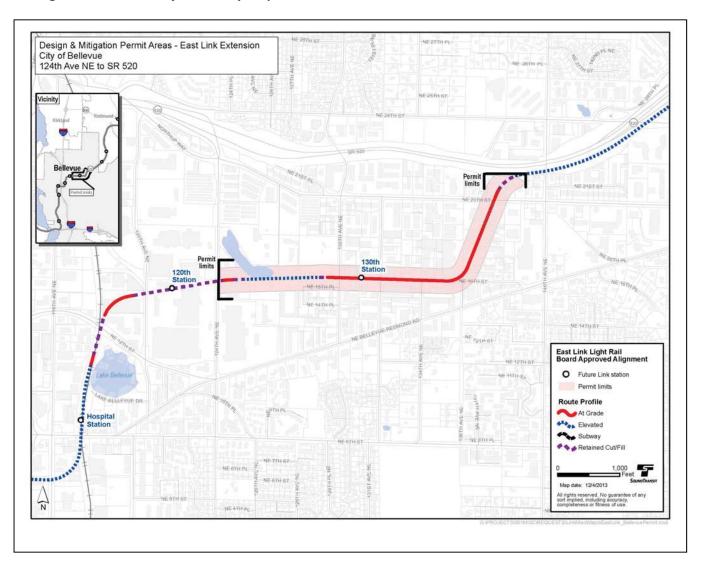
reflects the City's vision for the Bel-Red corridor in location and design. The 130<sup>th</sup> Station design accommodates future transit oriented development at the surface park-and-ride site.

The major components of Project design, such as the alignment, the location and number of stations, and the critical areas mitigation sites have been determined through the process outlined in Section 2.1. Sound Transit has preliminarily divided the 6-mile Project into five separate design packages to be prepared by the final design consultants on a staggered schedule, see **Attachment H**. The portion of the Project covered by this DMP Application includes the E340 design package from 124<sup>th</sup> Avenue NE to NE 20<sup>th</sup> Street and includes two parcels (parcel ID no.'s 2725059148 and 2725059288) north of the 136<sup>th</sup> Avenue NE/NE 20<sup>th</sup> Street intersection contained within the E360 design package south of the WSDOT ROW (**Figure 2**). These packages have been designed collaboratively with the City with an eye towards submitting a complete mitigation proposal along with each DMP application, and consistent with the City's vision for the Bel-Red corridor. The design plans addressed in this DMP Application include the design-enhancement, mitigation, and cost-saving measures identified and incorporated through the CDP.

The Bel-Red segment includes five viable construction staging areas within this portion of the Project as identified in **Attachment I**. The construction staging areas covered by this DMP Application include the following:

- a. Wetland Mitigation Staging Area at the Safeway/Mid-Mountain Site
- b. Aerial Guideway and KC Sewer Staging Area at the Evans Site
- c. Park and Ride Site between 130<sup>th</sup> Avenue NE and 132<sup>nd</sup> Avenue NE
- d. 134<sup>th</sup> Vault Staging Area at NE 16<sup>th</sup> Street and 134<sup>th</sup> Ave NE
- e. 136<sup>th</sup> Vault Staging Area on the west side of 136<sup>th</sup> Place NE, and
- f. Park Place site near NE 20<sup>th</sup> Street/136<sup>th</sup> Place NE

Temporary impacts to the wetland buffer of the West Tributary of Kelsey Creek ponded wetlands will occur to site the Safeway/Mid-Mountain construction staging area. The construction staging area at the Safeway/Mid-Mountain site is needed to construct the wetland mitigation site and to support track guideway construction activities as shown in drawing no. L87-CCP002. Performance standards specified in LUC 20.25H.055.C.1 and LUC 20.25H.100 will be adhered to in the development and operations of the Safeway/Mid-Mountain construction staging site.



## Figure 1. East Link Project Vicinity Map – 124<sup>th</sup> Avenue NE to WSDOT ROW





#### 2.0 Regulatory Framework

#### 2.1 Pre-Application Design Process and Remaining Approvals

The Facilities proposed in this DMP Application resulted from many years of collaboration and public decision-making. Prior to the preparation of this DMP Application, Sound Transit and the City engaged in continuous and regular discussion regarding the design of this portion of the Project to ensure a high-quality, appropriately mitigated, cost-effective and feasible design for this DMP Application and later applications. Various mitigation measures have been identified and will be incorporated into the Project design to maximize cost-effectiveness and efficiency. For example, a key design change from Preliminary Engineering (PE) to 60% design is the use of embedded track instead of ballasted track. The guideway from 130th Avenue NE to the intersection of NE 16th Street and 136th Place NE will be

embedded track, instead of ballasted track through this section. With the incorporation of embedded track, the grade crossings were also revised to include fully paved intersections without precast crossing panels. Another example is at the NE 20th Street intersection with 136th Place NE. This intersection has been revised to include a multi-use trail segment on the north side of the intersection with a perpendicular crossing of the RLRT guideway for bicyclists and pedestrians, which will mitigate for mobility challenges associated with the guideway. Because portions of the overall Project will be located within the City's shoreline areas, a Shoreline Substantial Development Permit (SSDP) will be required under state law and the City's Shoreline Master Program. (See LUC 20.25M.030(D)(1).) Sound Transit is submitting a separate SSDP application to the City; however, there are no shoreline impacts in the portion of the Project covered by this DMP Application.

### 2.2 Collaborative Design Process

The Collaborative Design Process (CDP) established pursuant to the MOU, provides the fundamental approach to intergovernmental cooperation for final design of the Project. Through the CDP, the City and Sound Transit committed to work together in a collaborative manner throughout the Project final design process in order to achieve the goal of delivering a quality project on schedule and in compliance with the applicable codes and regulations. The major goals of the CDP include the following:

- a. Design a project that preserves environmental quality, is sensitive to the surrounding community and integrates quality urban design;
- b. Advance long-term, multi-modal transportation system development;
- c. Develop a project that meets Sound Transit operational and performance requirements and minimizes impacts to City infrastructure and operations;
- d. Meet the objectives of the project schedule, including major milestones, while allowing adequate time for evaluation and reliable decision making; and
- e. Support regional and local land use goals and objectives.

The CDP has been one of the most significant and useful processes established for implementation of light rail within the City. The CDP provides the mechanism for the City and Sound Transit to jointly advance the design of the Project through design phases and identify cost savings. The CDP provides a venue where City Staff, Sound Transit, and its designers have been able to work together in a collaborative manner to reconcile different objectives and to ensure that the design elements proposed in this DMP Application are consistent with Chapter 20.25M LUC as well as other provisions of the LUC. The Project elements that were identified and refined through the CDP process have been incorporated in the design plans covered by this application. Through the collaborative work under the CDP, these goals have been met as evidenced by the design package included in this DMP Application. The design demonstrates compliance with City Code as part of this permit application submission. Using the CDP's iterative process, the City and Sound Transit have accommodated the future vision for the Bel-Red corridor as embodied in the City's Code, Comprehensive Plan, and other planning documents.

### 2.3 Design and Value Engineering ("DAVE") Technical Working Group

The CDP established a number of technical working groups to help design the Project. One of these is the Design and Value Engineering (DAVE) working group. The purpose of the DAVE working group is to

support the advancement of all aspects of design development, to ensure adequate resources are available, and to reach agreement between Sound Transit and City staffs on design plans that can serve as the basis for final land use approvals while providing for mitigation measures that are appropriate and feasible for a project of this character. A copy of the DAVE charter is included as **Attachment J**.

The DAVE working group has met weekly since early 2012 to discuss and resolve issues with a focus on the following four main deliverables:

- 1. Review of the Project elements for Code compliance, and suggestions for design alternatives to ensure the same;
- Site specific concurrence on Project scope (*e.g.* design of the 120th LRT crossing including cross section, profile, limits of construction, utility relocation, landscaping, requirements, etc. Meaning, that City Code and associated mitigation were fully satisfied or alternative compliance means have been found acceptable to the City;
- 3. Review of standards, design criteria, and specifications, in order to identify conflicts or suggest modifications to the Project and determine resolutions;
- 4. "Over the shoulder" review to confirm all required elements are addressed.

The collaborative effort under the CDP and work of the DAVE Technical Working Group were instrumental in reaching the level of design proposed in this DMP Application. Through the DAVE working group, the City and Sound Transit staffs have reached concurrence on various design elements relevant to this DMP Application, especially for Project elements that relate to the public right-of-way roadway widths, sidewalk widths, etc., as evidenced by the DAVE Concurrence Plan Sheets.

### 3.0 Who May Apply

LUC 20.25M.010(C) provides that Sound Transit may apply for a DMP provided that Sound Transit can satisfy one of three conditions for each of the properties affected by the subject permit:

- 1. Is the owner of a sufficient property interest affected by the permit; or
- 2. Has the written consent of the owner to apply for permits; or
- 3. The Sound Transit Board has authorized the property acquisition and has provided the required advance notice to the owner and has initiated the appraisal process for the property.

Sound Transit has satisfied this requirement for this DMP application as demonstrated in **Attachment K**, which includes ST, City, and WSDOT authorization documents and a list of properties affected by this application.

## 3.1 Application Process

The only discretionary permits required prior to issuance of construction permits (such as building permits) include DMP's and shoreline permits. See LUC 20.25M.030(A)(2), and (C)(1). DMP review is the process the City established to ensure that the Project is consistent with the requirements of the LUC, the Bellevue Comprehensive Plan, the Light Rail Best Practices, and all applicable standards and guidelines contained in City Codes and the procedures related to involvement of the Citizen Advisory Committee (CAC). See LUC 20.25M.030(C) (2)(a)-(c).

DMP applications are reviewed and decided by the Director as a "Process II" land use decision, which is appealable to the City's Hearing Examiner. See LUC 20.25M.030(C)(4)(a) and LUC 20.35.200-250. As part of this process, an application is reviewed by the CAC. LUC 20.25M.035 provides that the CAC review permit applications, receive and incorporate public comments, provide feedback regarding consistency of the Project with the policy and regulatory guidance of LUC 20.25M.035.E, 040 and 050. The Decision Criteria set forth in LUC 20.25M.030(C)(3)(a) through (j), are analyzed in detail in Section 4.0, which addresses the substantive standards applicable to DMP approvals.

### 4.0 Compliance with Substantive Standards for Design and Mitigation Permits

The design elements within the Bel-Red corridor package proposed in this DMP Application have been thoroughly vetted through numerous overlapping processes, rounds of review and comment by the public, technical working groups, the City Council, and Sound Transit. At each stage of this process, Sound Transit worked with all of these parties in revising the Project to incorporate suggestions for design improvements, mitigation, and cost savings consistent with the need to design and construct this state-of-the-art light rail transit facility. Through this process, Sound Transit has produced a design that meets all substantive standards of the LUC and the approval criteria for this DMP Application.

The following narrative enumerates and discusses the Project's compliance with each of the Decision Criteria, as well as other standards incorporated into these Criteria.

### 4.1 Chapter 20.25M LUC - Light Rail Overlay District

The design submittal in this DMP Application is consistent with the LUC requirements for RLRT Facilities and Systems, each of which is discussed in greater detail in this section. Relevant LUC sections are reproduced verbatim in bold text followed by a discussion of each item. While the Decision Criteria incorporate other Code provisions and policy documents (such as the Comprehensive Plan and the Light Rail Best Practices), the principal list of requirements, which are codified at LUC 20.25M.030(C)(3), provide as follows:

### **4.2** Decision Criteria LUC 20.25M.030(C)(3).

**Decision Criteria.** A proposal for a RLRT System or Facility may be approved or approved with conditions provided that such proposal satisfies the following criteria:

# a. The applicant has demonstrated compliance with the CAC Review requirements of LUC 20.25M.035; and

**Sound Transit Discussion:** Sound Transit anticipates that it will demonstrate compliance with the applicable requirements for the Facilities included in this DMP Application through the CAC review process.

b. The proposal is consistent with the Comprehensive Plan including without limitation the Light Rail Best Practices referenced in Comprehensive Plan Policy TR-75.2 and the policies set forth in 20.25M.010.B.7 above; and **Sound Transit Discussion:** The Project is consistent with the Comprehensive Plan and Light Rail Best Practices as described in **Attachment L**. The graphic attached as **Figure 3** identifies the land use districts affected by this DMP application.

#### c. The proposal complies with the applicable requirements of the Light Rail Overlay District;

*Sound Transit Discussion:* To the extent practical or feasible, the RLRT Facilities described in this DMP Application comply with the applicable requirements contained within Chapter 20.25M LUC.

# d. The proposal addresses all applicable design guidelines and development standards of this Light Rail Overlay District in a manner which fulfills their purpose and intent; and

**Sound Transit Discussion:** Chapter 20.25M LUC sets forth a number of requirements for RLRT Facilities, and incorporates others by reference. See, e.g., LUC 30.35M.010(D)(1)(a)-(f) (incorporating numerous land use district and overlay-related Code sections by reference). Each of these requirements, and a discussion of the Project's compliance with each one, is detailed below in this Section. Where relevant, a discussion of the policies and intent driving each of the LUC requirements is included as well. The design plans attached to this DMP Application comply with these requirements.

# e. The proposal is compatible and responds to the existing or intended character, appearance, quality of development and physical characteristics of the subject property and immediate vicinity; and

**Sound Transit Discussion**: Sound Transit incorporated a number of design measures into the Project design to make it compatible with and responsive to the property in the vicinity of the RLRT Facilities. The Project design complies in substantial part with the height, bulk, scale, landscaping and other aesthetic requirements of the LUC.

The City's approval of the alignment selected by the Sound Transit Board allowed placement of RLRT Facilities within or adjacent to existing or planned transportation corridors and right-of-way throughout the Bel-Red corridor. The areas affected are identified in City policies as the most appropriate to accommodate RLRT Facilities. The Project will provide a reliable, high performance alternative to single-occupant vehicle travel. The alignment of the overall Project was chosen to service the City's major employment centers and residential areas, while supporting future area goals. The Project will generally run within its own right-of-way. Where it is located within an existing travel way, the travel way has been expanded to maintain the existing vehicle and pedestrian travel capacity. The Project will enhance transit services and ridership for the properties in the Bel-Red corridor consistent with the City's vision for this area.

The 130<sup>th</sup> Station offer the unique challenge of designing stations that respond to the City's vision for the future respective transit oriented developments rather than strictly responding to the existing context. Sound Transit developed the design of the 130<sup>th</sup> Station proposed in this DMP Application in close coordination with the City and major stakeholders to better understand the vision for the two Bel-Red Station areas. The 130<sup>th</sup> Station will be located within a future compact and walkable predominantly residential neighborhood with a strong retail core. As described on Section 1.1 and Attachment D, the design of the station was informed by comments provided by City staff and the public

through several open houses and public comment opportunities. Sound Transit's art program, STart, will be implemented to enhance the aesthetics of each station when viewed from within the station sites or from the surrounding properties. In addition to the design elements incorporated into the current design documents, each station will be designed in accordance with the LUC and Sound Transit's Design Criteria Manual. Landscaping, buffering, and screening are provided as shown in **Attachment M (L87-LPP109 through L87-LPP135).** 

At the 130<sup>th</sup> Station, landscaping and aesthetically pleasing design elements have been incorporated into the design of the station (**Attachment M, Sheets E21-LSP100 and E21-LSP102**). The station design features a landscaped area between the station and the Park-and-Ride lot, and accommodates existing buildings to the south. The station is designed to accommodate a future extension of NE 16th St., with one eastbound traffic lane to the south of the station and one westbound lane to the north. In addition, the pedestrian plaza areas and site perimeter are designed to accommodate the future NE 16th Street and the future widening of 130th Avenue NE and 132nd Avenue NE. The Park-and-Ride lot will also accommodate future transit oriented development that would replace surface stalls with structured parking.

The architectural design of the 130<sup>th</sup> Station provides a strong identity at each end of the station platforms with station-specific entry canopies. The design of the entry canopies incorporates Cor-ten steel to reflect the neighborhoods history as a light industrial area as well as its future as an arts district that celebrates the act of making and creating art (**Attachment M, Figure 10**). The outer walls of the canopy structures are clad in Cor-ten, while the track side of the structure houses the ticket vending machines with areas of backlit translucent glass. Weather protection at the Ticket Vending Machine (TVM) walls is provided by steel-framed glass canopies with a patterned metal soffit through which light will filter. The overall effect is one of simple, clear forms highlighted by bold color and the inviting glow of the TVM walls at night.

The 130<sup>th</sup> Station complies with the City's low impact development requirements for a maximum 75% impervious area by providing landscaped areas around and throughout the park and ride lot and specifying that the plaza spaces and the connecting walkway along NE 16th are constructed of pervious concrete.

Natural drainage systems are specified in portions of the landscaped islands in the adjoining Park-and-Ride lot. Low gabion landscape screen walls, intermittently placed along the perimeter of the parking lot, provide physical separation while maintaining visibility from the street for security purposes. The gabion design is an option that has been presented to the City of Bellevue. All parking lot perimeter landscaping is designed to accommodate the future NE 16th right-of-way. (Attachment M; Sheets E23-LSP100 through E23-LSP102)

The landscaping design for the rail and station portions of the Project is focused on low-maintenance and drought-tolerant plant species to meet City requirements for all areas within the City right-of-way.

# f. The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

**Sound Transit Discussion:** Provisions for development of adequate utilities are currently in progress, are being coordinated with the City and will be addressed in the final design documents. Based on the City's request, the Project design includes a second water main along NE 16th Street and 136th Place NE. Both mains will be 12-inch diameter.

# g. The proposal complies with the applicable requirements of the Bellevue City Code, including without limitation those referenced in LUC 20.25M.010B.8 above; and

**Sound Transit Discussion:** The Facilities proposed in this Application comply with applicable City Codes. Compliance with Chapters 9.18 (Noise) and 22.02 (Environmental Procedures) are addressed in Sections 5 and 1.2 of this DMP Application.

# h. The proposal is consistent with any Development Agreement or conditional use permit approved pursuant to LUC 20.25M.030.B; and

*Sound Transit Discussion:* This criterion is not applicable.

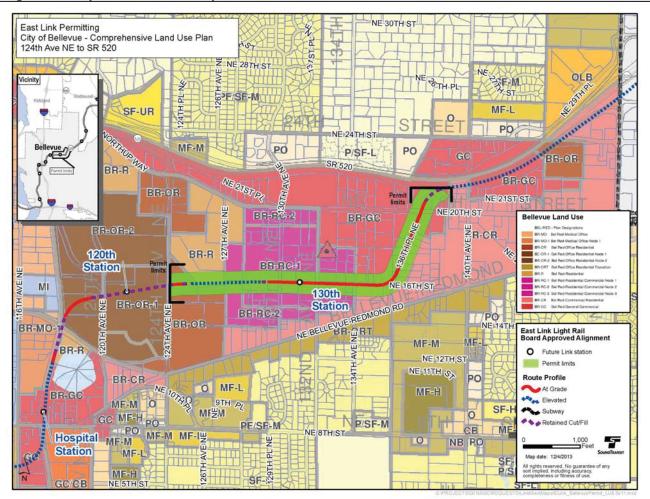
i. The proposal provides mitigation sufficient to eliminate or minimize long-term impacts to properties located near the RLRT Facility or System, and sufficient to comply with all mitigation requirements of the Bellevue City Code and other applicable State and Federal Laws;

**Sound Transit Discussion:** Sound Transit has complied with both the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) by conducting an evaluation of the environmental consequences of the East Link Project. The mitigation measures incorporated into the design of the East Link Project and ROD eliminate or minimize potential long-term environmental impacts.

j. When the proposed RLRT Facility will be located, in whole or in part, in a critical area regulated by Chapter 20.25H LUC, a separate Critical Areas Land Use Permit shall not be required, but such facility shall satisfy the criteria:

- i. The proposal utilizes to the maximum extent possible and the best available construction, design and development techniques which result in the least impact on the critical area and critical area and buffer; and
- ii. The proposal incorporates the performance standards of Chapter 20.25H LUC to the maximum extent applicable; and
- iii. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.I shall not require a mitigation or restoration plan.

*Sound Transit Discussion:* This criterion is addressed in Section 8.0



#### Figure 3. City of Bellevue Comprehensive Land Use Plan - 124<sup>th</sup> Avenue NE to WSDOT ROW

#### 5.0 Noise and Vibration; City Noise Code

[Reserved for subsequent submittal]

#### 6.0 Applicable Land Use Code Provisions

LUC 20.25M.010(D) incorporates a number of other provisions of the LUC as applicable to RLRT System or Facilities to ensure that the System or Facility design is sensitive to the context of the underlying land use district and that temporary and permanent impacts are appropriately mitigated. Those provisions of LUC 20.25M.010(D) that are applicable to this DMP Application include; Chapter 20.25B LUC (Transition Area), Chapter 20.25D LUC (Bel-Red), and Chapter 20.25H LUC (Critical Areas. Each one is addressed in this section. The applicable standards are identified in **bold text** followed by a discussion of the Project's compliance.

### 6.1 Bel-Red Development Standards

Bel-Red is a major mixed use employment and residential area characterized by a transit-oriented, nodal development pattern, over time replacing the area's original low intensity light industrial and commercial past. The City will encourage land uses in the Bel-Red area which promote employment, retail and residential opportunities. More intense uses and greater heights are concentrated in designated nodal development areas along the NE 15th/16th corridor; these areas are intended to be served by high capacity transit. New development in these designated nodal areas is expected to have a transit-supportive and pedestrian-friendly form. The entire Bel-Red area will be distinguished by environmental and community amenities that serve residents and employees in the area, as well as nearby neighborhoods and the entire city. New development is expected to make significant contributions to these amenities, and to the infrastructure needed to support redevelopment.

Redevelopment of the Bel-Red area will occur over decades, and the City encourages a graceful transition of land use over time. Therefore special provisions are appropriate for existing uses that may not be part of the area's long-term envisioned future.

### 6.2 LUC 20.25B.040 - Building Height

The Bel-Red area development standards for maximum building height are described in LUC 20.25B.040. The Overlay also provides at LUC 20.25M.040.B that when a RLRT Facility has been permitted outright in a City Council resolution, the heights approved by the Council action shall be permitted and the RTA must demonstrate:

- a. The requested increase is the minimum necessary for the effective functioning of the RLRT Facility; and
- b. Visual and aesthetic impacts associated with the RLRT Facility have been mitigated to the greatest extent feasible.

**Sound Transit Discussion:** The proposed 130<sup>th</sup> Station and system bungalows will not exceed the 30 foot maximum base height, however, the elevated guideway as it enters the 130<sup>th</sup> Station will exceed the height limit by 12 feet (LUC 25D.080.A). At the request of the City's Transportation Department, the height of the elevated guideway was set on the minimum clearance needed for the City's proposed Northeast 15<sup>th</sup>/16<sup>th</sup> Street Multi-Modal Corridor Project. The elevated guideway from station number 638 to 651.35 is approximately 1,275 feet in length. Consistent with LUC 20.25M.040(B)(c), the visual and aesthetic impacts associated with the elevated guideway have been mitigated by designing the elevated guideway in the least distance possible to provide a high level of flexibility in future design of NE 15<sup>th</sup> and 16<sup>th</sup> Street. Sound Transit measured the height for the elevated guideway from the existing grade to top of guideway.

### LUC 20.25B.040.C - Landscape, open space, and buffers

*Sound Transit Discussion:* The RLRT Facilities proposed in this DMP application meet the standards provided in LUC 20.25.040.C.

#### LUC 20.25B.040.D - Site Design Standards

*Sound Transit Discussion:* The RLRT Facilities proposed in this DMP application meet the standards provided in LUC 20.25B.040.D.

LUC 20.25B.040.E - Mechanical equipment which is located on the roof shall be incorporated into the pitched or stepped roof form, and not appear as a separate penthouse or box.

*Sound Transit Discussion:* No mechanical equipment is proposed to be placed on the roof of the 130<sup>th</sup> Station.

#### LUC 20.25B.050.B - Design Guidelines

**1.** Building surfaces facing abutting residential districts should be clad with materials which are similar to or compatible with surrounding uses, and which minimize reflected lighting.

**Sound Transit Discussion:** The 130<sup>th</sup> Station is located within a residential/commercial district. The station has minimal surface features. The 130<sup>th</sup> Station uses Cor-Ten steel panels that are compatible with the past, present, and future character of their respective neighborhoods.

2. Building facades should incorporate elements such as setbacks, offsets, angled facets, deep roof overhangs, recesses and other architectural features which serve to break down the scale. The larger the building, the greater the number and variety of such elements that may be necessary to achieve the effect of diminishing scale.

**Sound Transit Discussion:** The 130<sup>th</sup> Station has been designed as completely open; therefore, its overall size and scale appears much smaller than its actual size. Building facades at both stations are small in nature compared to the potential future footprint of surrounding structures.

**3.** Pitched roof forms are preferred in order to enhance the compatibility with nearby residential areas. However, under certain circumstances, a stepped roof form could achieve a similar effect.

**Sound Transit Discussion:** The 130<sup>th</sup> Station is an open station with small scale canopies at each entrance. See **Attachment N, Figure 12**.

4. Communication dishes greater than one meter (3.28 feet) in diameter should not be visible from adjacent residential districts.

*Sound Transit Discussion:* The 130th Station and associated facilities do not have communication dishes greater than one meter in diameter.

5. Materials and colors used on the building facades should be compatible with nearby residential buildings and the surrounding natural environment; however colors and materials used for the purpose of accent may be approved.

*Sound Transit Discussion:* Currently there are no nearby residential buildings adjacent to the 130th Station. Existing land uses surrounding the stations is comprised of commercial facilities. Materials and

colors chosen for the station were based on Sound Transit's understanding of the City's vision for the future station area. Sound Transit chose native plant species of the Pacific Northwest at the station. The 130<sup>th</sup> Station and associated Park and Ride have close proximity to the existing Goff Creek and native northwest plantings were chosen. The Park and Ride landscape design added additional plantings in the northeast corner that has the closest proximity to the existing Goff Creek and visual connection to planned creek restoration efforts envisioned by the City.

### 7.0 Chapter 20.25D LUC - Bel-Red Land Use Code

**Sound Transit Discussion:** Chapter 20.25D LUC contains requirements, standards, and guidelines that apply to development within the Bel-Red land use districts. ST and the City have used the CDP and the DAVE group to advance the design of the Facilities covered by this Application and to ensure compliance with the specific Bel-Red requirements. The RLRT Facilities proposed in this DMP Application meet all of the applicable Bel-Red standards.

### 8.0 Chapter 20.25H LUC - Critical Areas Requirements

The performance standards that apply to the Project per Chapter 20.25H LUC and LUC 20.25M.030(C)(3)(j)(i)-(iii) provides as follows:

- 1. The proposal utilizes to the maximum extent possible and the best available construction, design and development techniques which result in the least impact on the critical area and critical area and buffer; and
- 2. The proposal incorporates the performance standards of Chapter 20.25H LUC to the maximum extent applicable; and
- The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055(C)(3)(i) shall not require a mitigation or restoration plan.

**Sound Transit Discussion:** The criterion of LUC 20.25H.055(C)(3)(j) applies to the Project because the Project will be located within the critical areas, including wetlands, streams, geologic hazard areas, and potential habitat for species of local importance as shown on the Critical Areas Map (**Attachment O**).

Five streams and six wetlands exist within the area covered by this DMP Application. Standard methods accepted by the City were used to delineate these critical areas. Temporary and permanent impacts are anticipated to nine of these critical areas. Water resource impacts as a result of the Project within the area covered by this application are as follows:

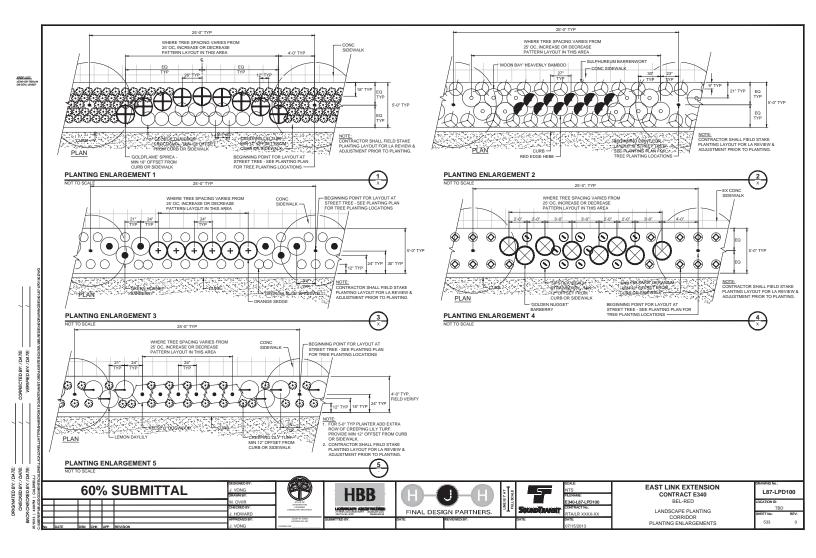
	Permanent Impact (acres)	Temporary Impact (acres)	Permanent Buffer Impact (acres)	Temporary Buffer Impact (acres)
Wetlands				
Kelsey West Tributary Pond	0.01	-	0.03	0.54
Kelsey West Tributary Stream	-	-	0.02	-
TOTAL WETLAND IMPACTS	0.01	0.0	0.05	0.54
Streams				
West Tributary to Kelsey Creek	-	0.01	0.01	-
Stream C	-	-	0.03	-
Goff Creek	-	-	0.01	-
Unnamed Tributary to Kelsey Creek	0.06	-	-	-
TOTAL STREAM IMPACTS	0.06	0.01	0.05	-

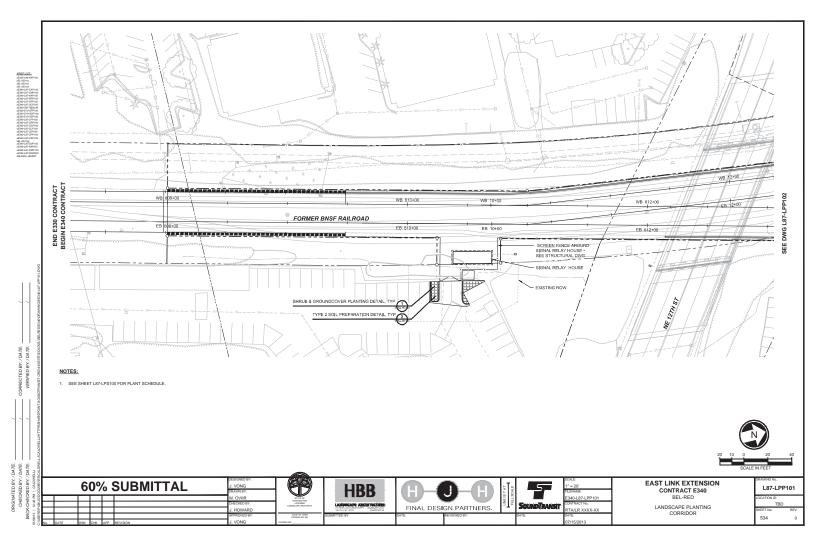
Table 1 – Wetland and Stream impacts covered by this DMP Application

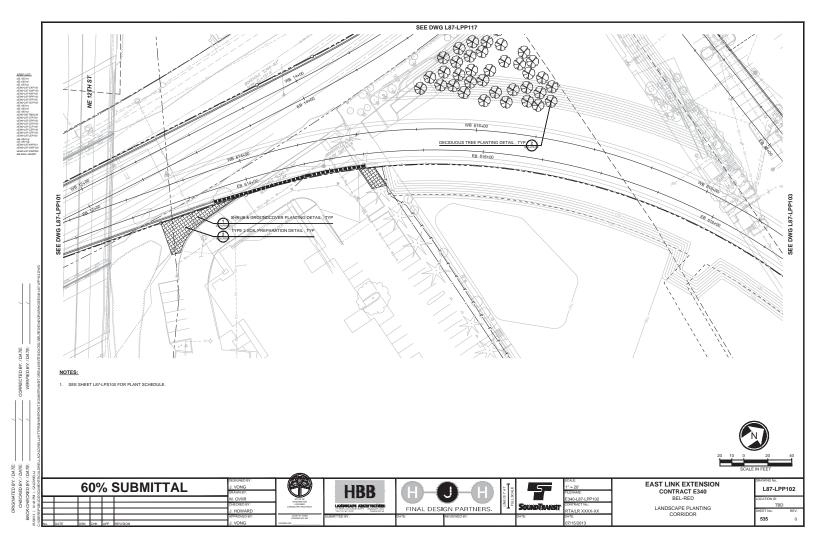
Mitigation for critical area impacts will occur within and adjacent to the Project area and within the City of Bellevue. Mitigation concepts follow Sound Transit's commitment to a "no net loss" and no loss of function for these critical areas. Water resource mitigation as a result of the Project will include approximately 1.20 acres of wetland rehabilitation, 0.64 acre of wetland creation, 5.80 acres of wetland enhancement (wetland buffer enhancement is to be determined), and 0.16 acres of stream restoration. One of the primary stream and wetland mitigation sites is located along the West Tributary of Kelsey Creek just south of the Kelsey Creek pond. Mitigation at this site will include stream daylighting and wetland creation. This site will provide mitigation not only for wetland impacts within the area covered by this DMP Application but also for impacts in other areas of the Project. Project wide impacts and mitigation are fully summarized in the attached East Link Light Rail Extension Critical Areas Report and Mitigation Plan, December 2013 (Attachment P)

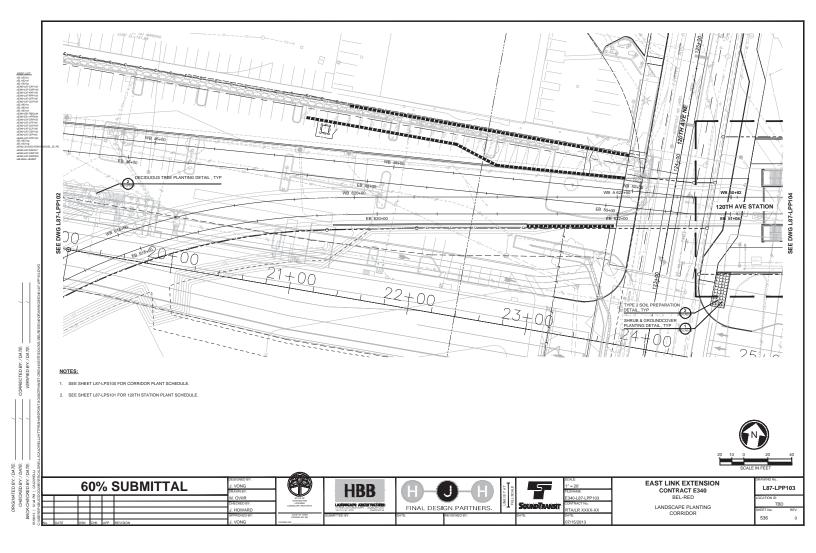
No flood plains will be impacted within the DMP Application area. There are 5 geologic hazard areas (steep slopes) within this area of the Project. Full seismic design is proposed for all geologic hazard areas to preserve infrastructure in the case of a seismic event. The Critical Areas Report describes those areas in more detail and the design work to mitigate impacts to steep slopes. See East Link Light Rail Extension Critical Areas Report and Mitigation Plan, December 2013 (Attachment P).

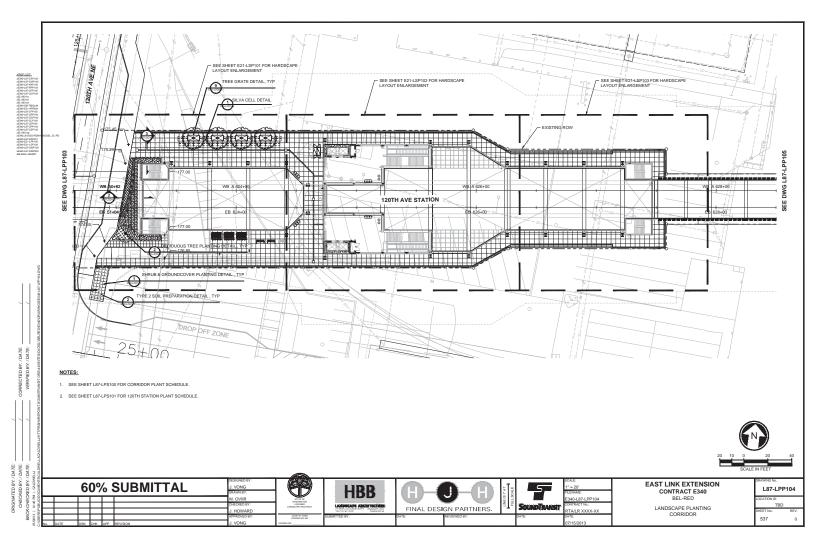
There is also potential habitat for several species of local importance within the Project area. This habitat is primarily within Mercer Slough, which is outside of the area covered by this DMP Application, but there is also some potential habitat within the West Tributary Kelsey Creek pond wetland system. Impacts to this habitat from the Project will be minor and will be fully mitigated through the stream and wetland creation planned on the West Tributary to Kelsey Creek. See Chapter 3, Compensatory Mitigation, in the attached East Link Light Rail Extension Critical Areas Report and Mitigation Plan, December 2013 (Attachment P).

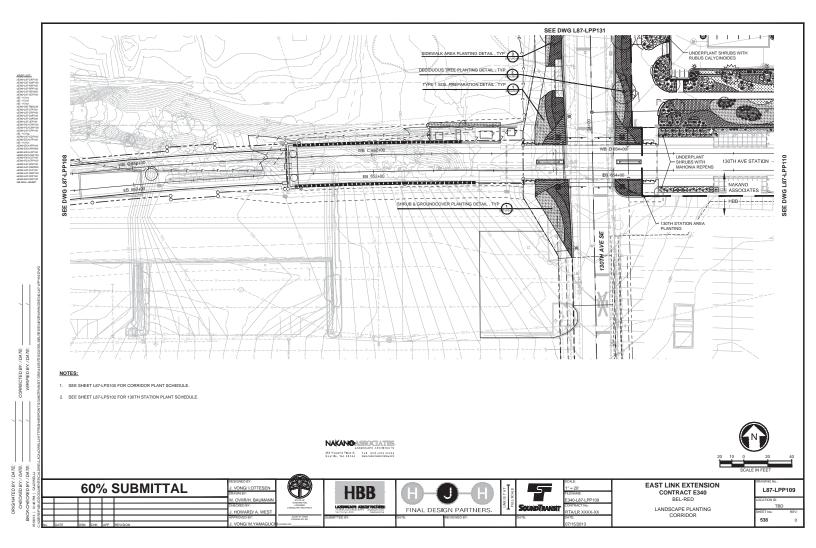


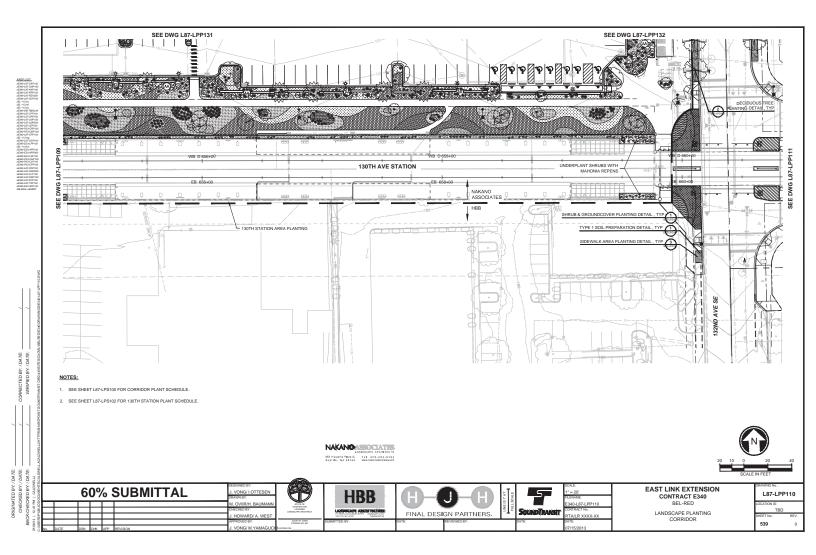


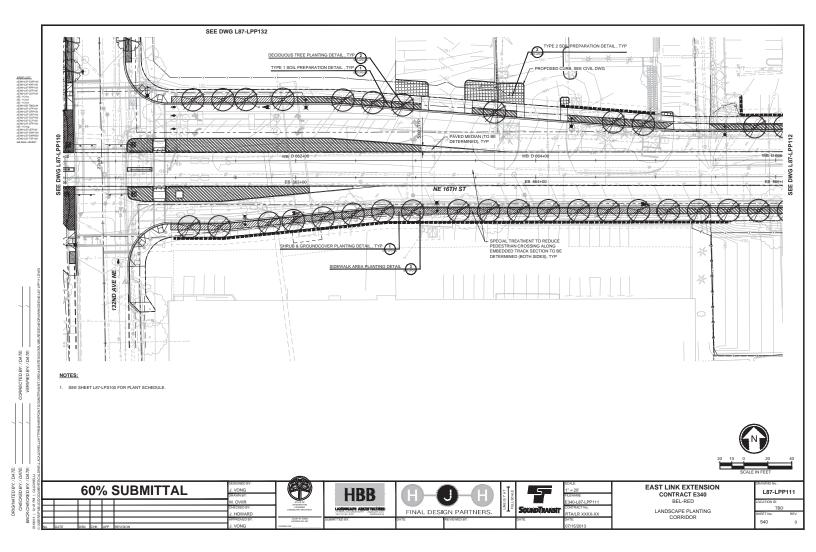


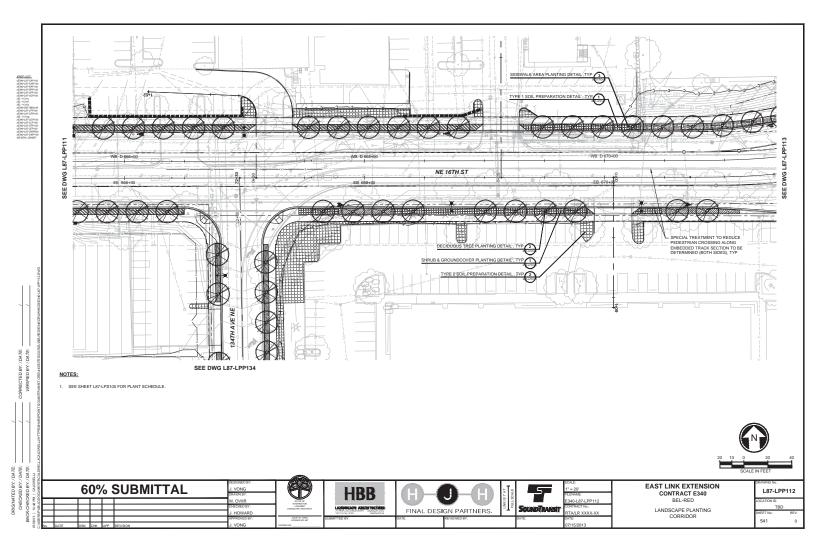


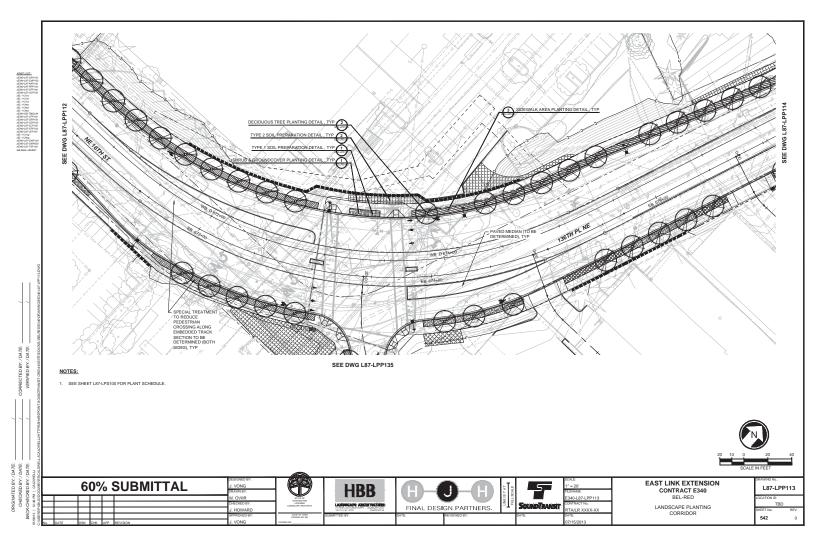


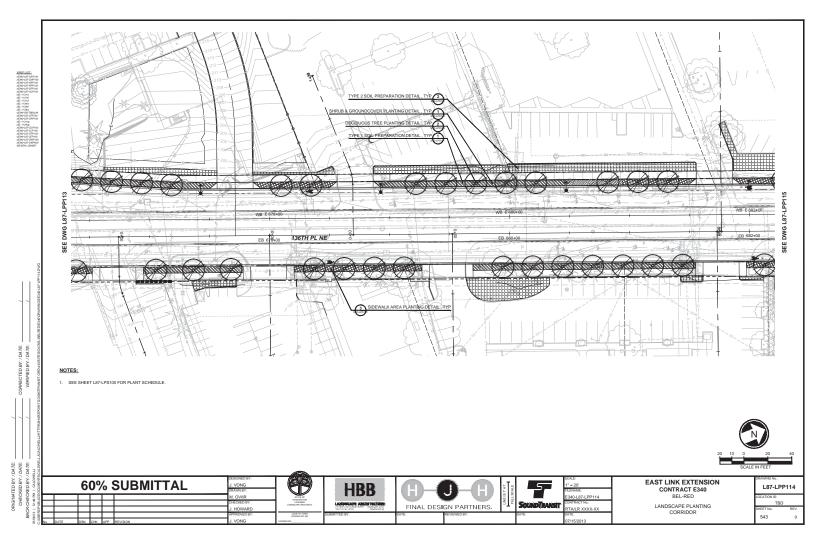


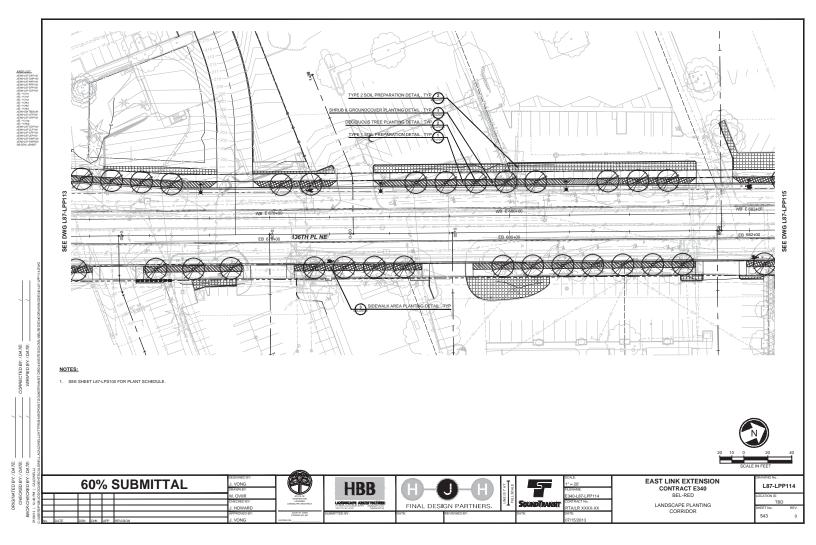


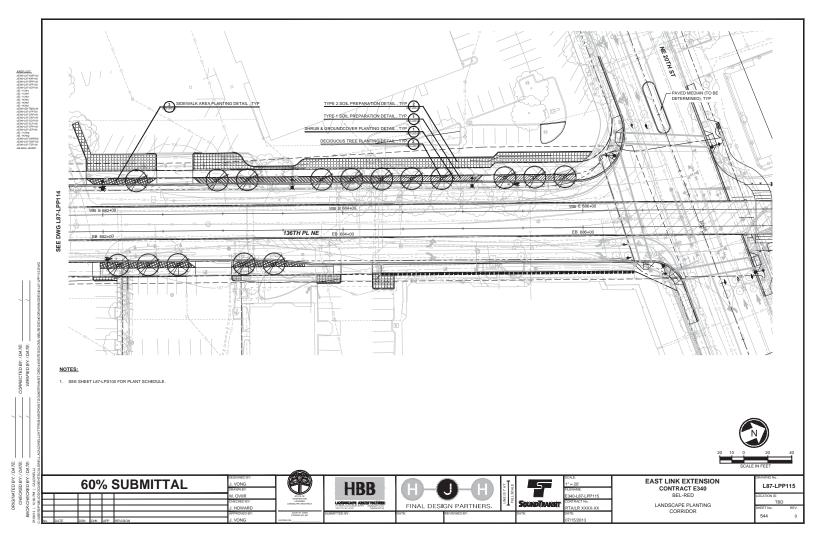


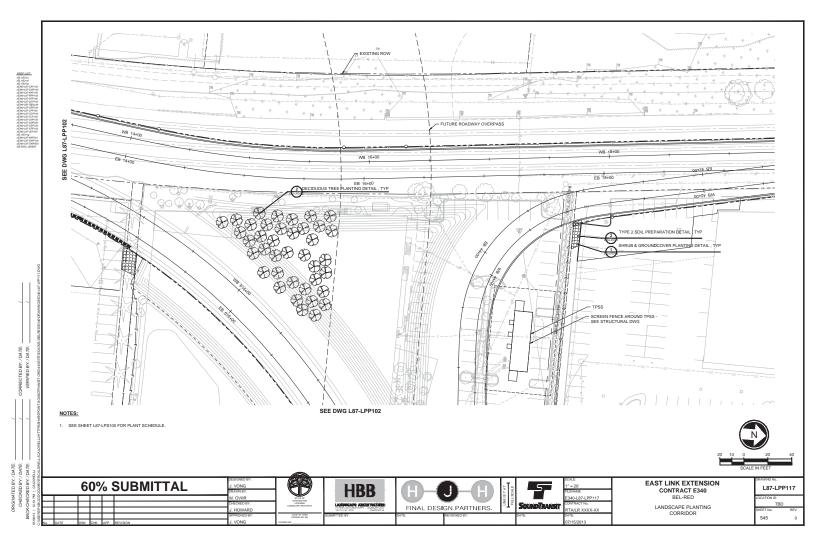


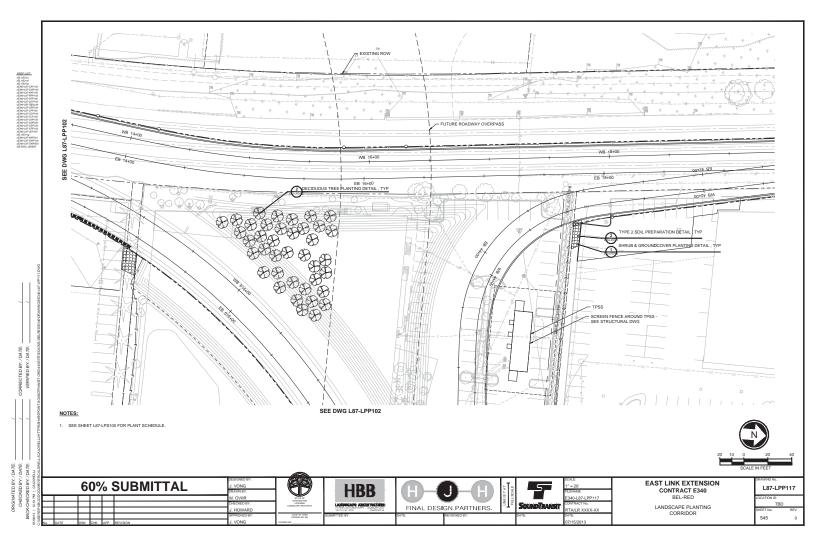


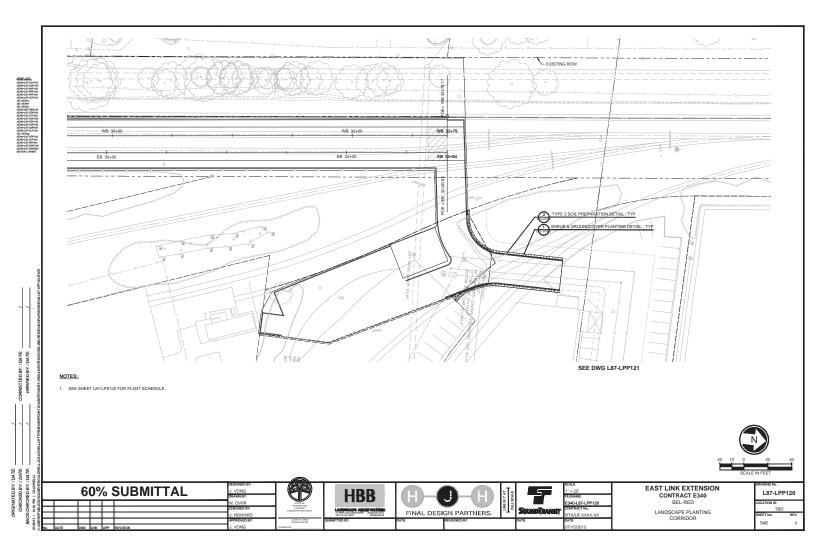


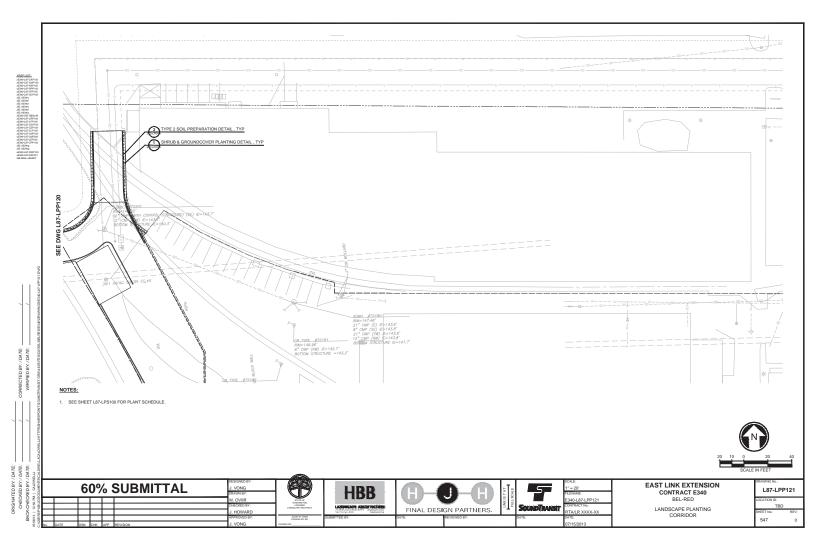


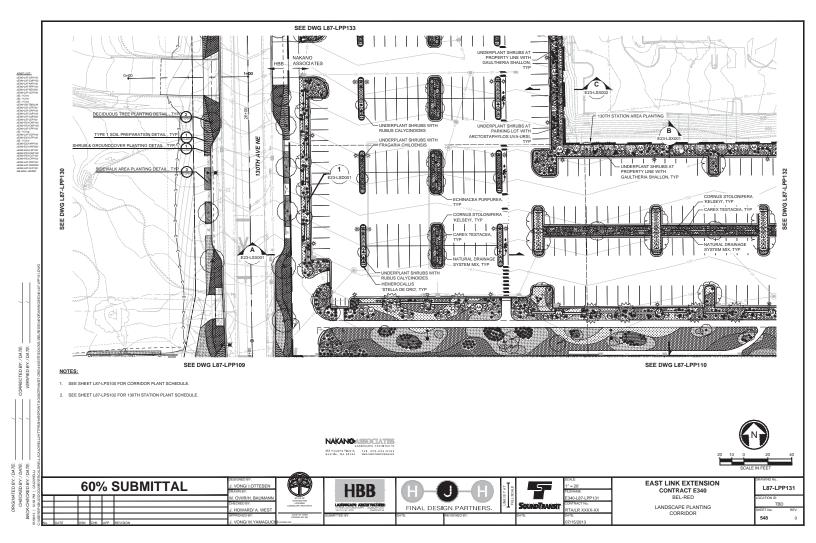


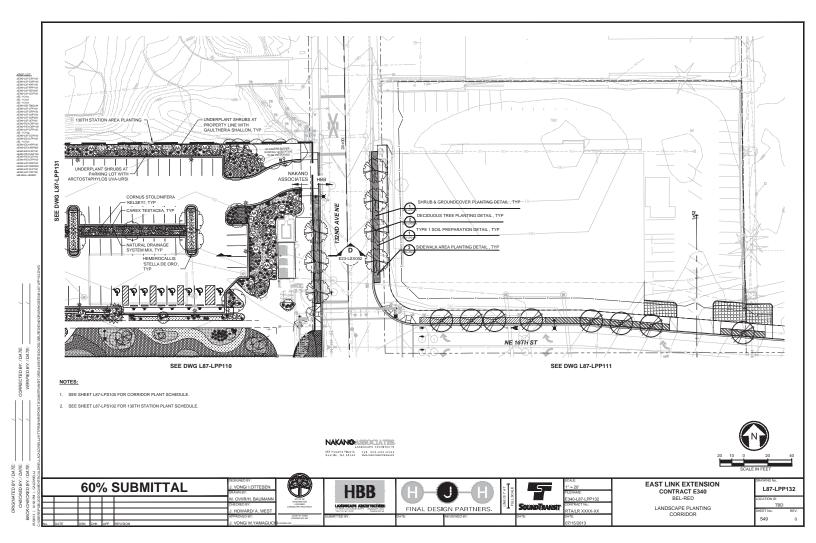


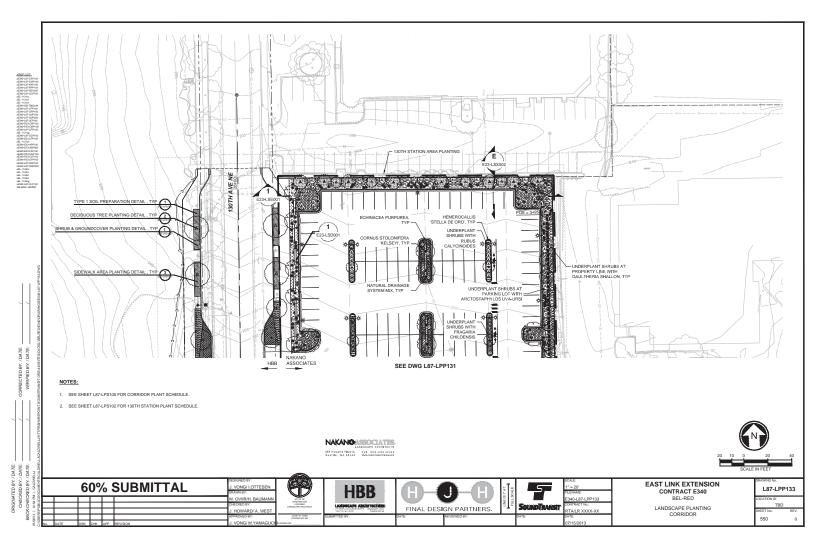


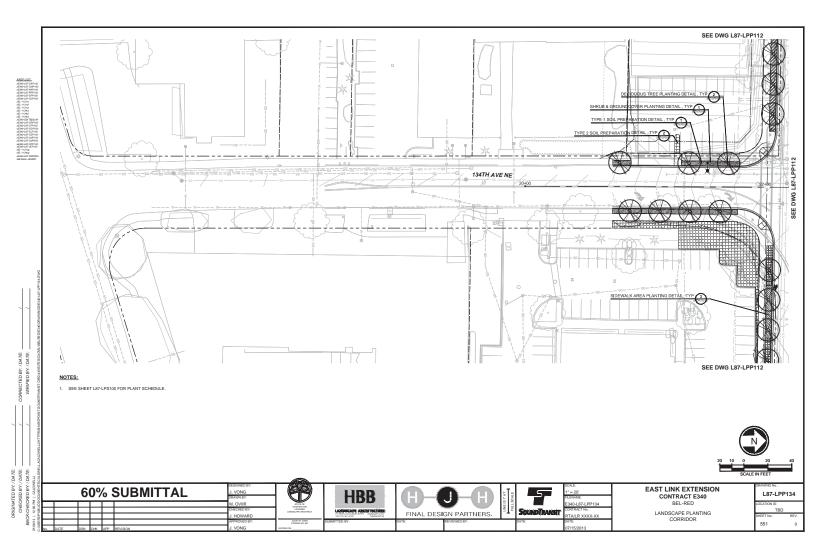


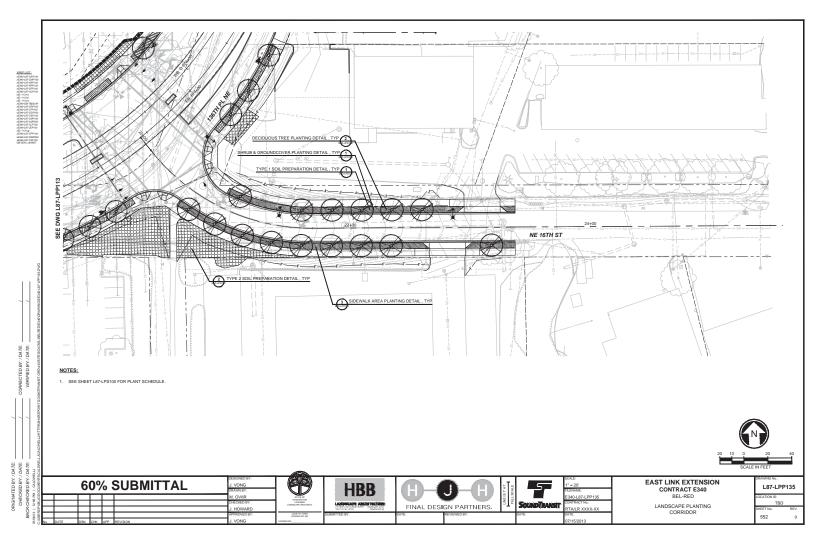


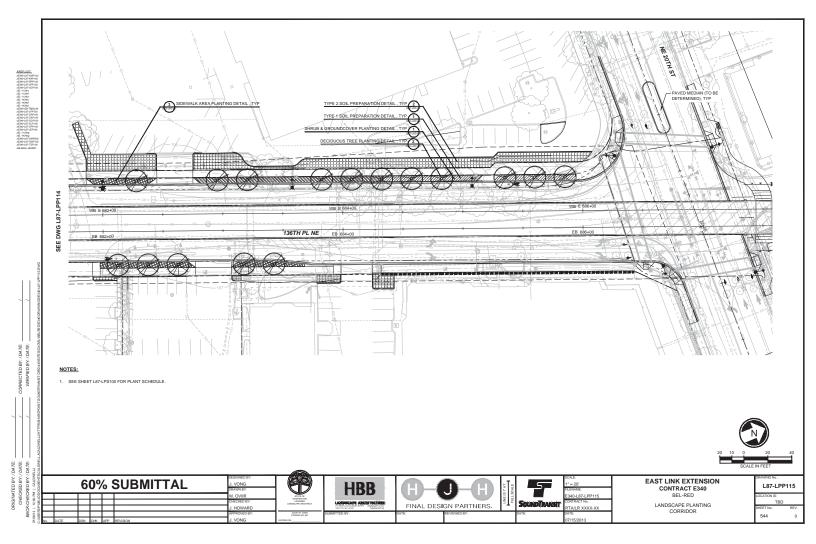


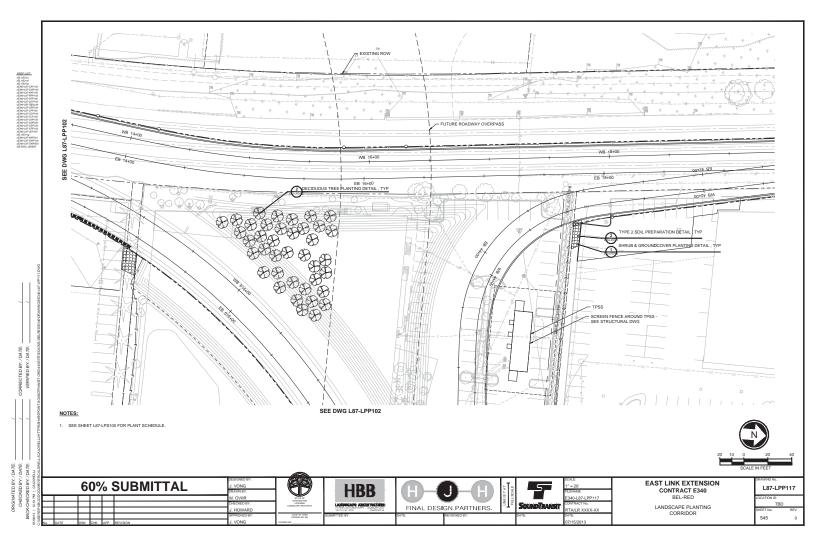


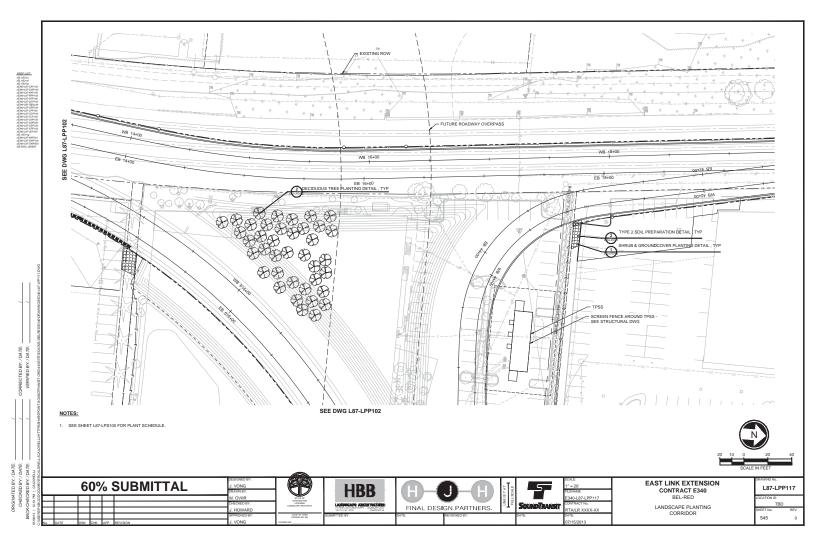


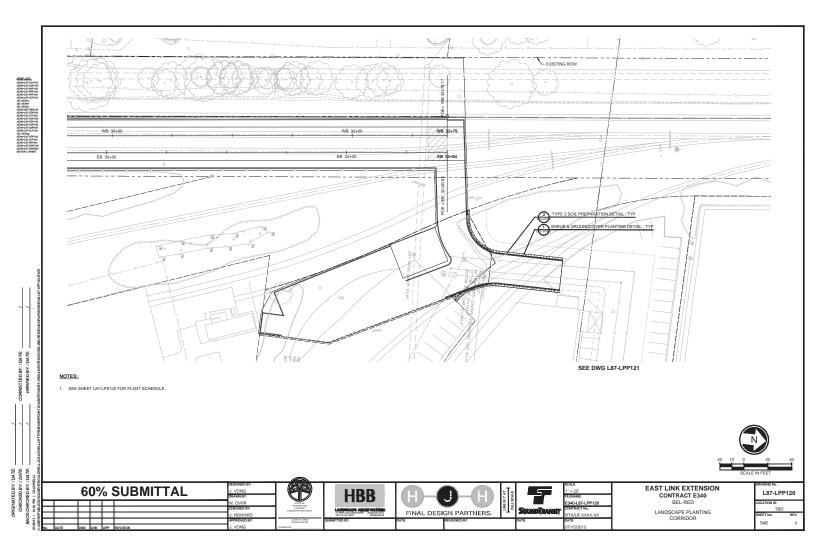


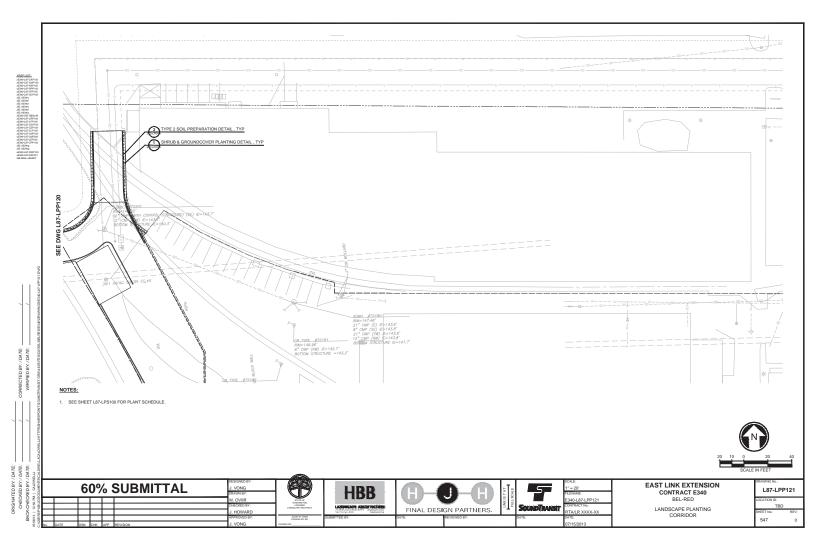


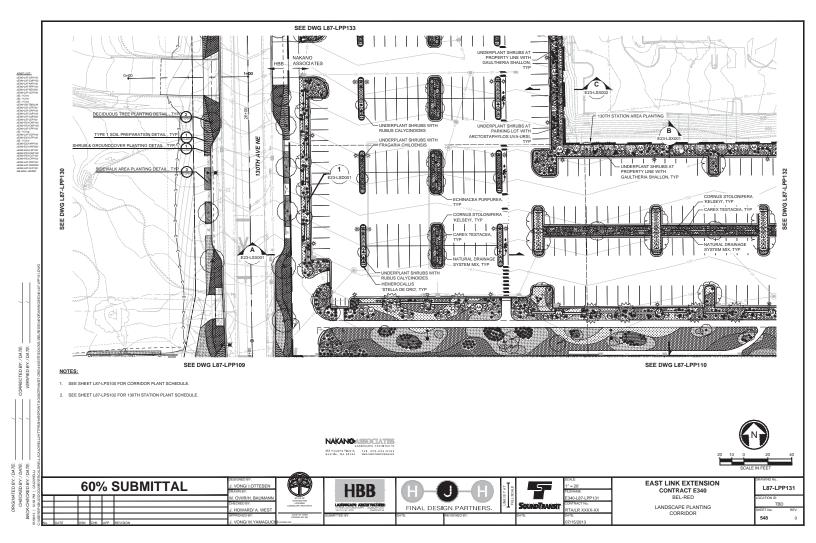


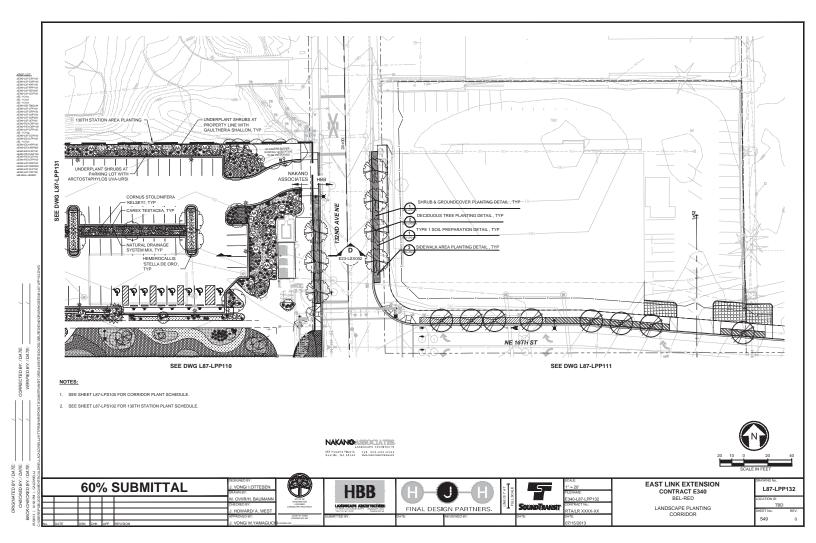


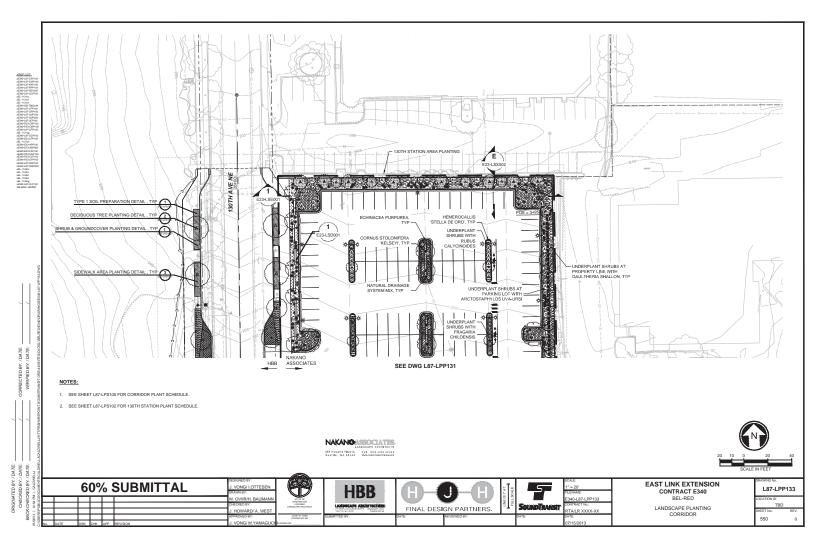


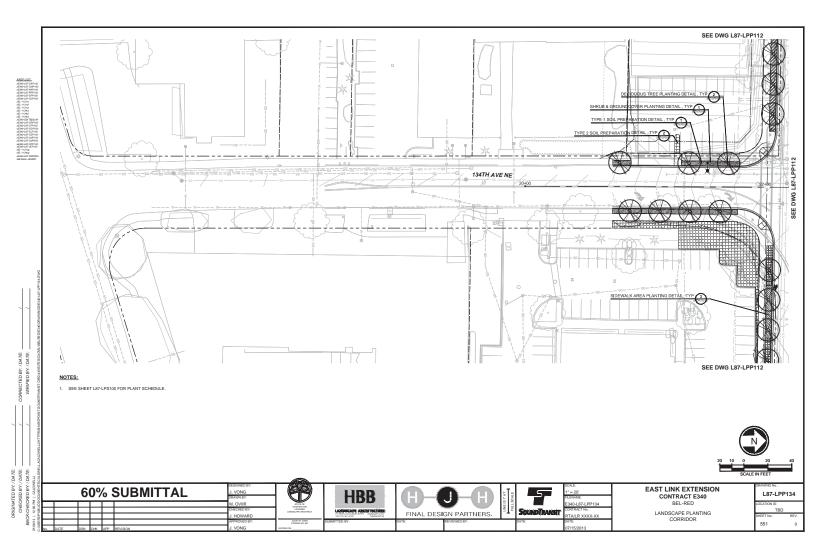


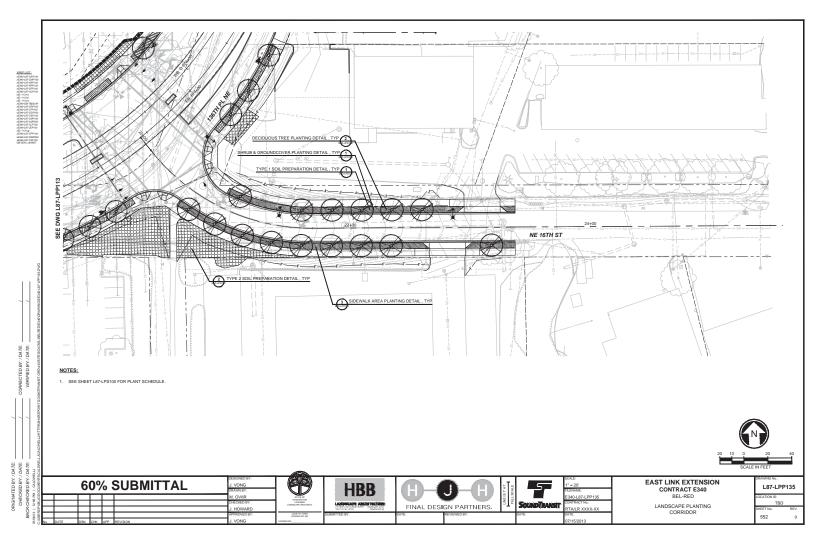


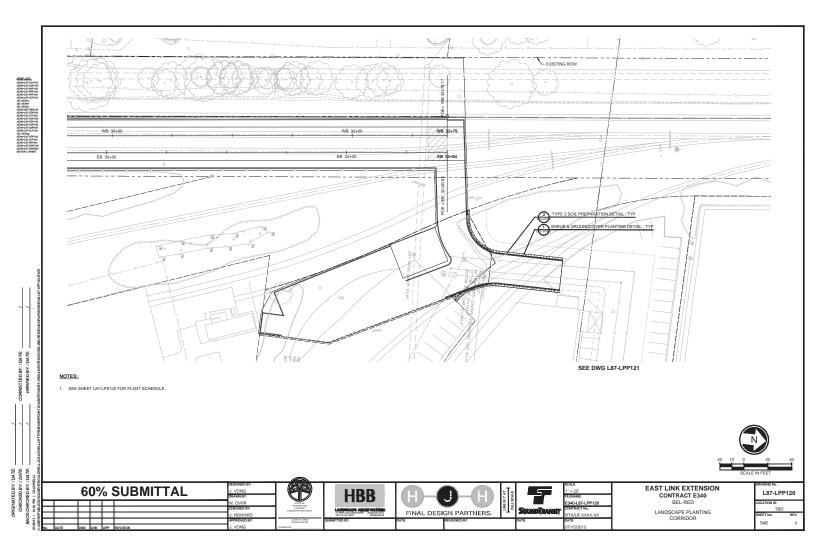


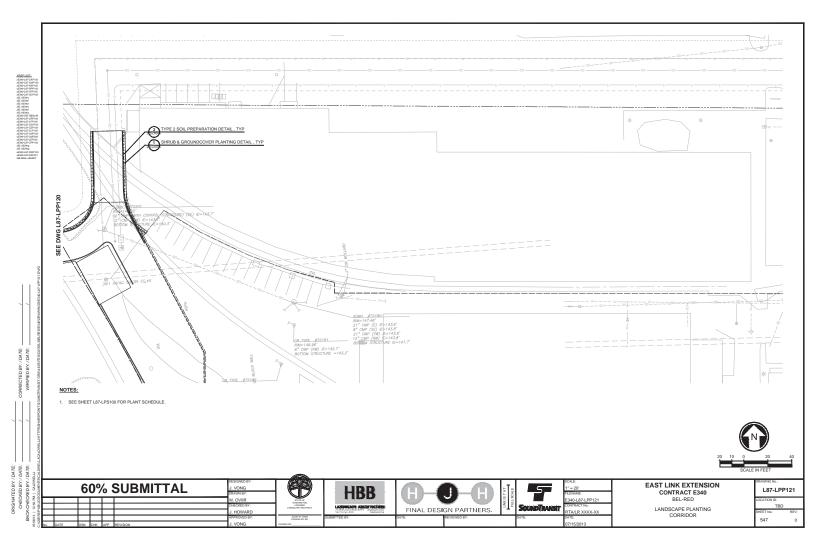


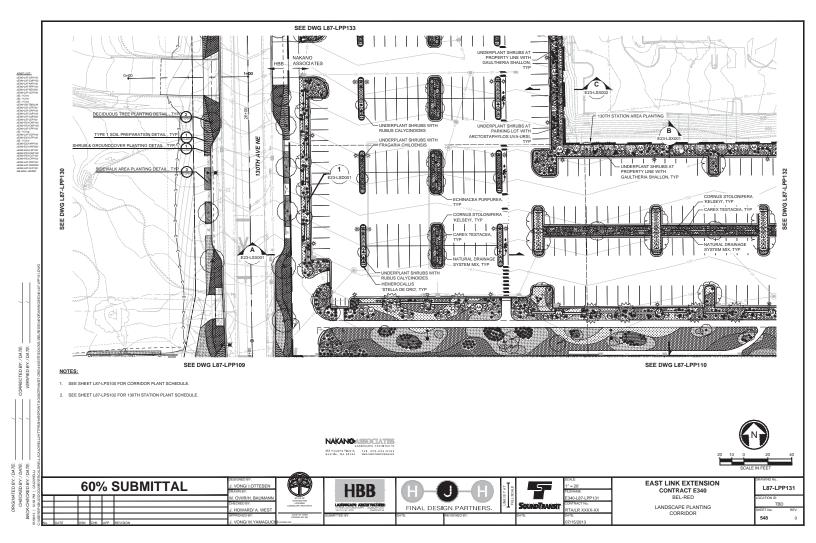


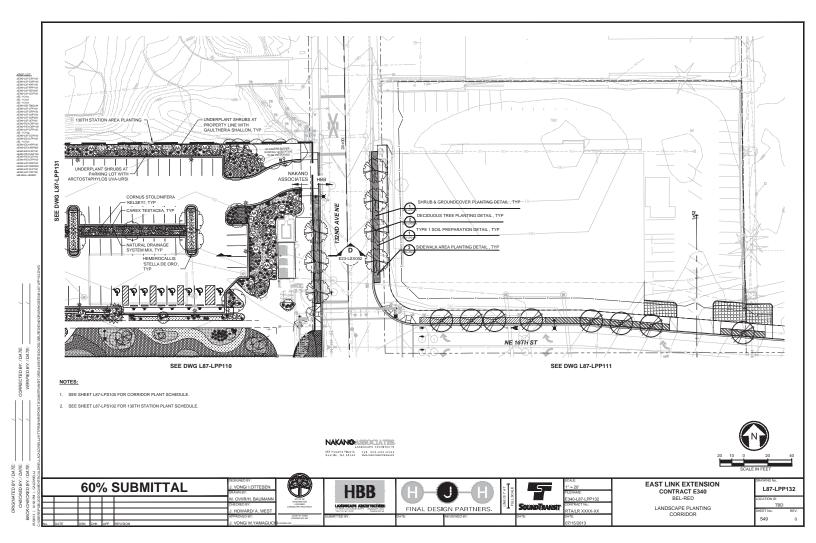


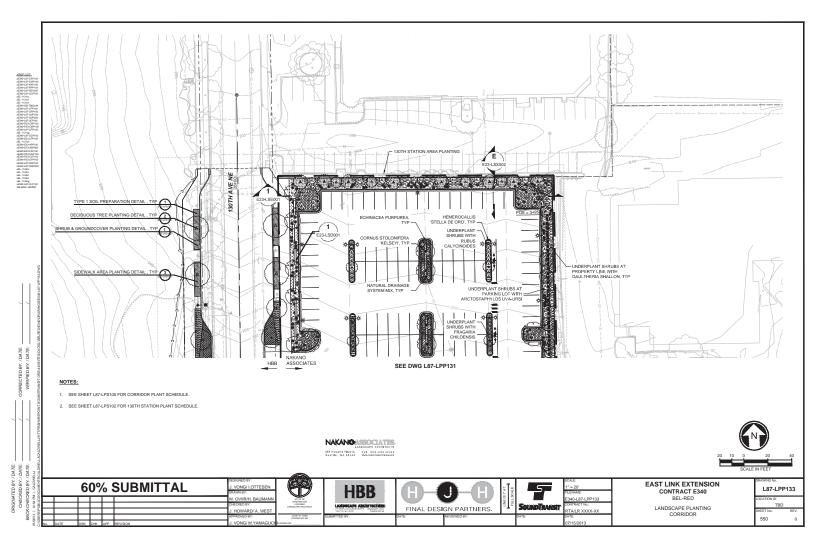


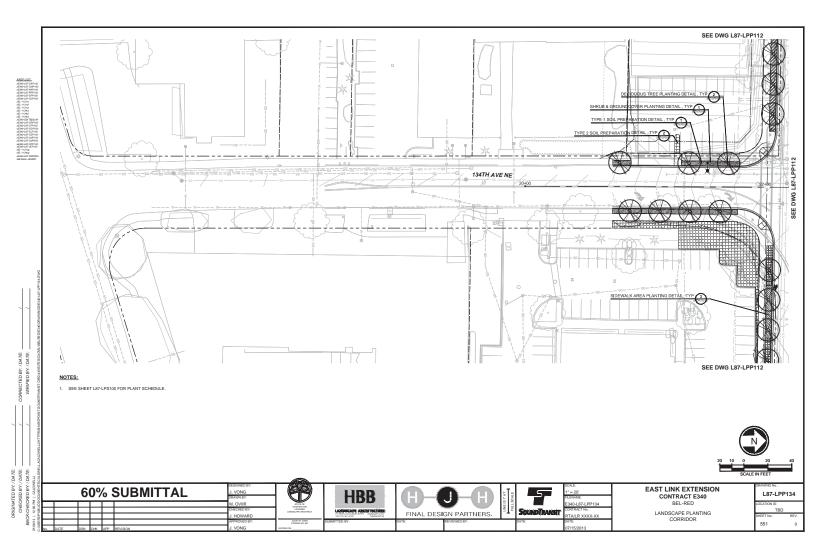


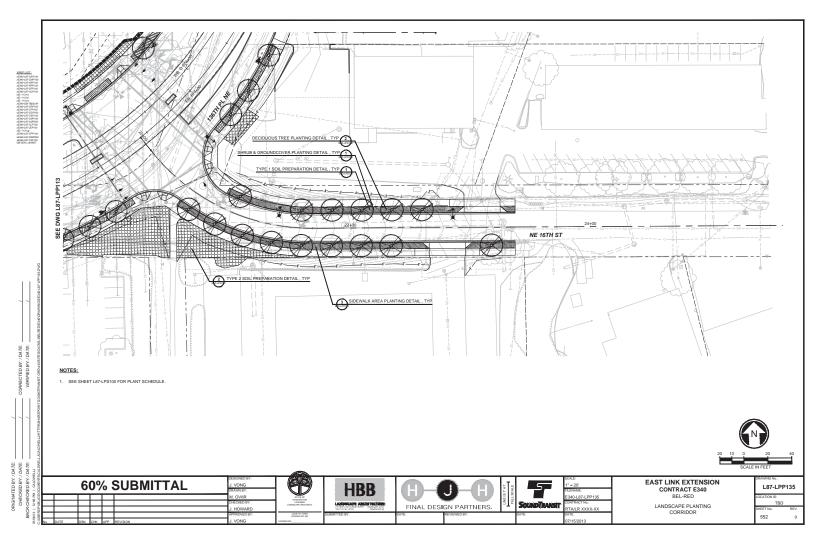


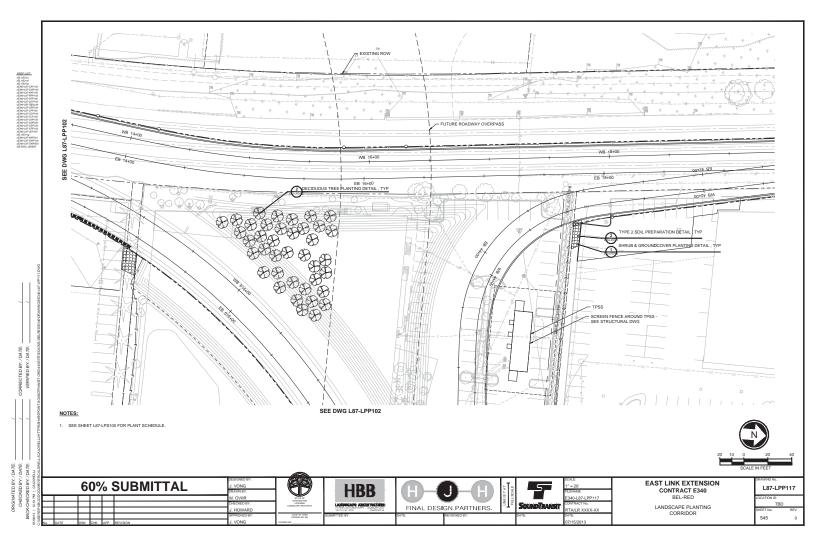


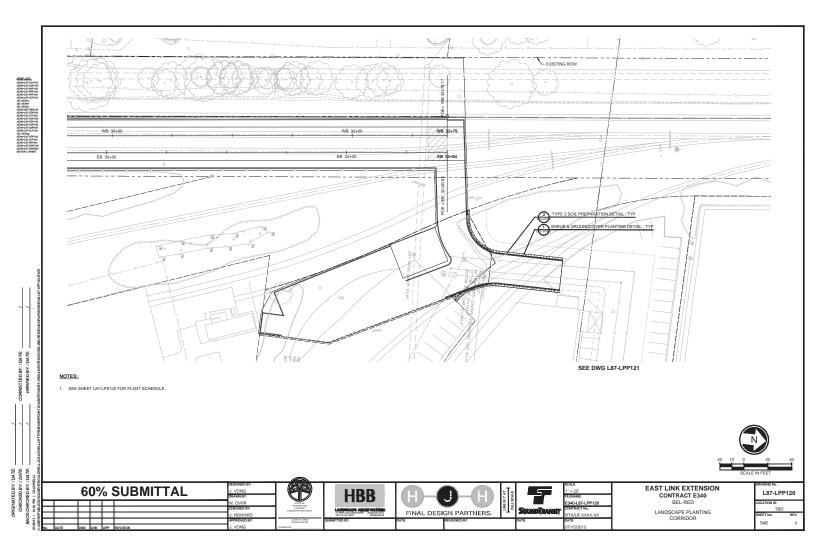


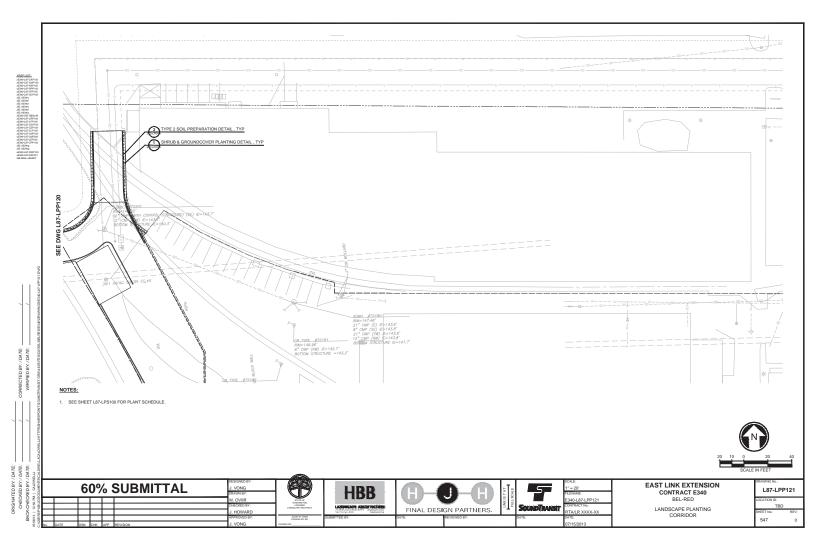


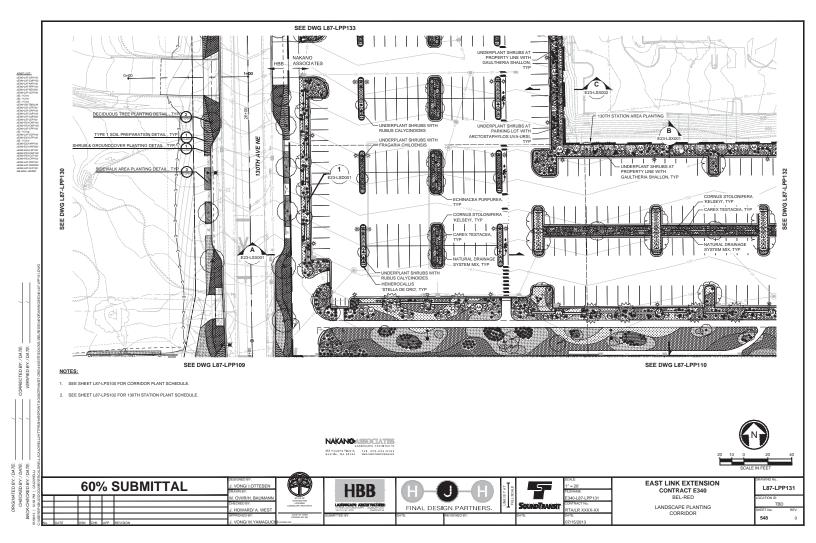


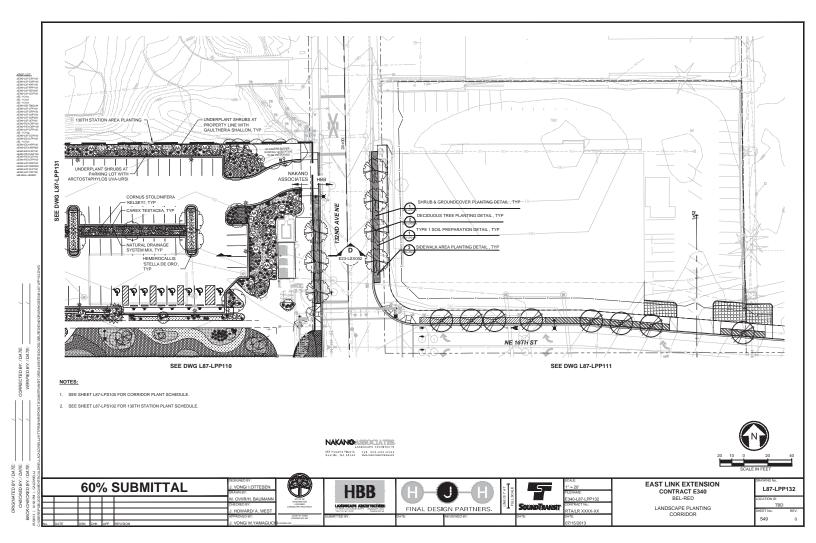


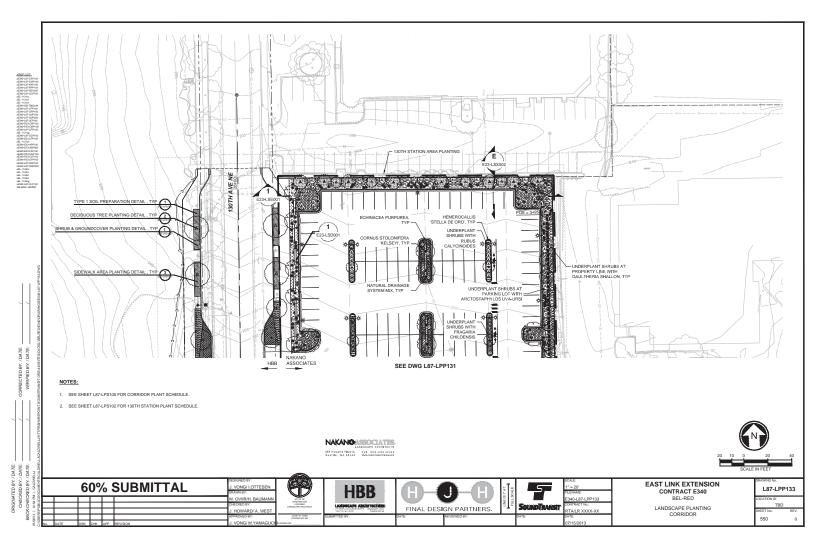


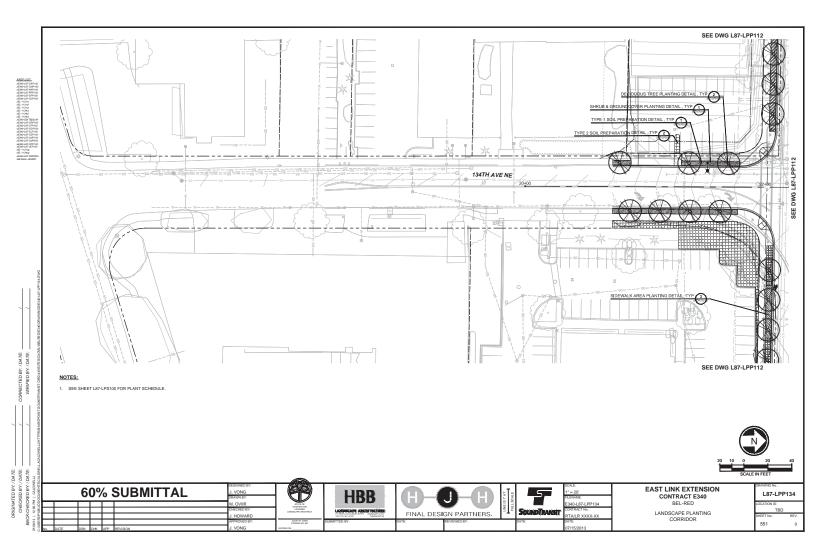


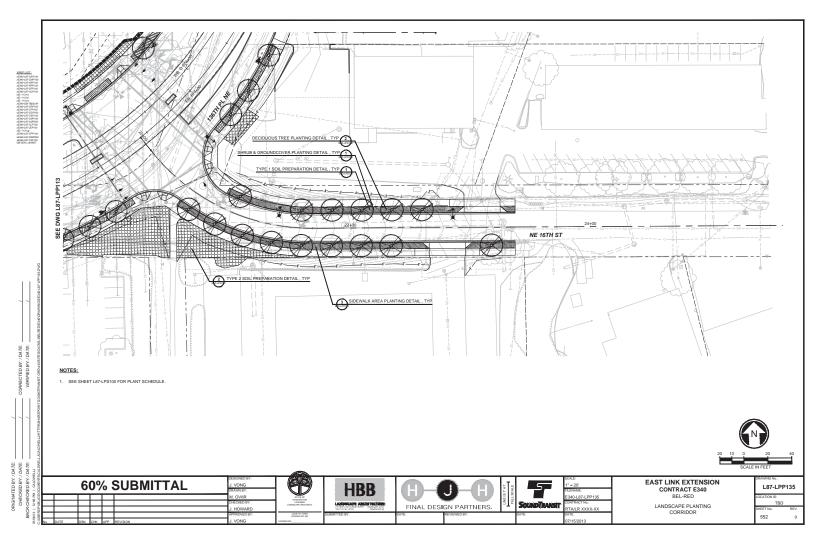


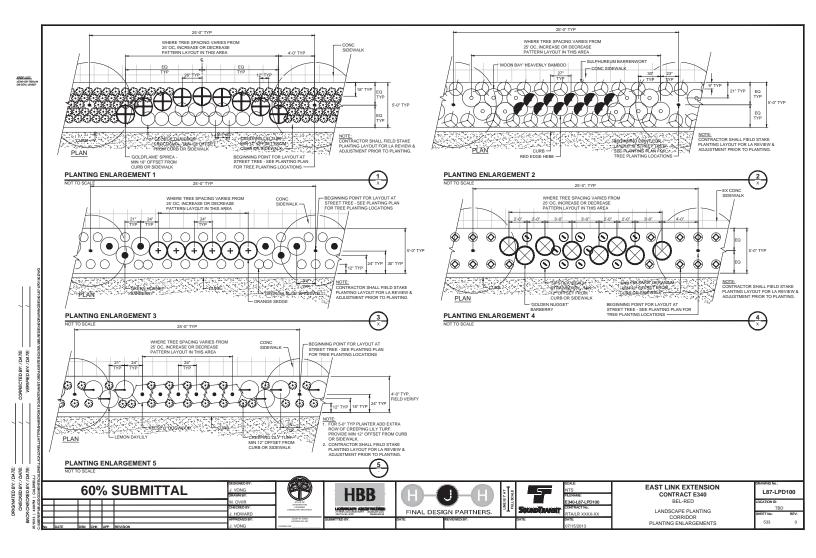


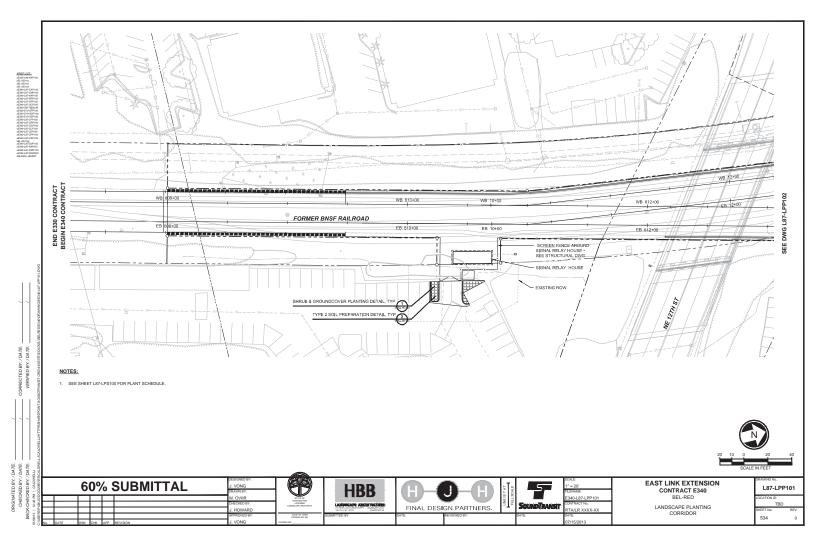


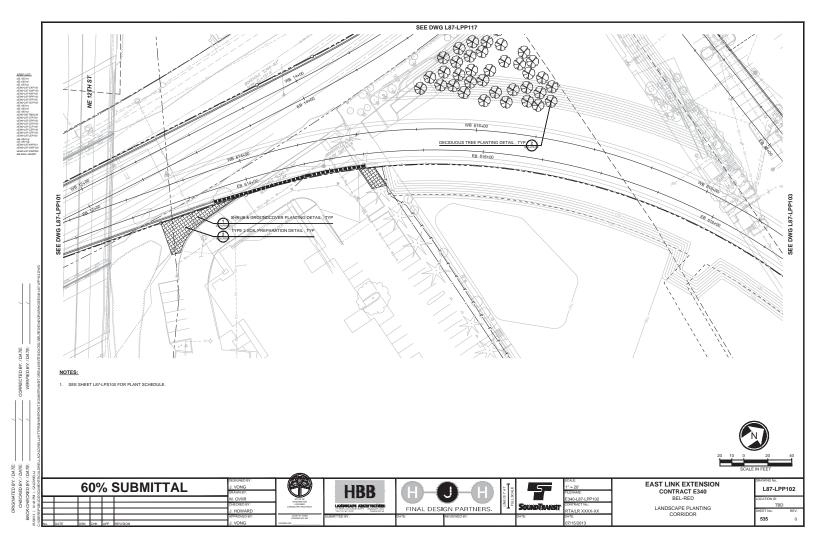


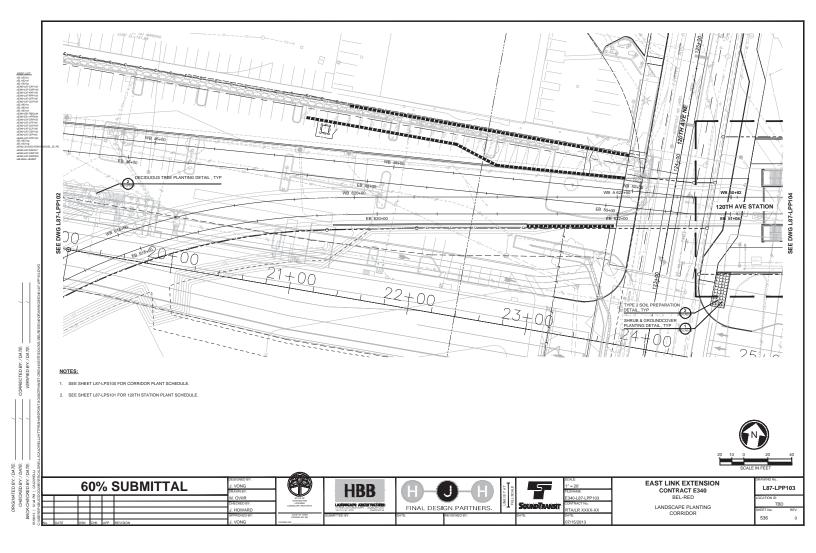


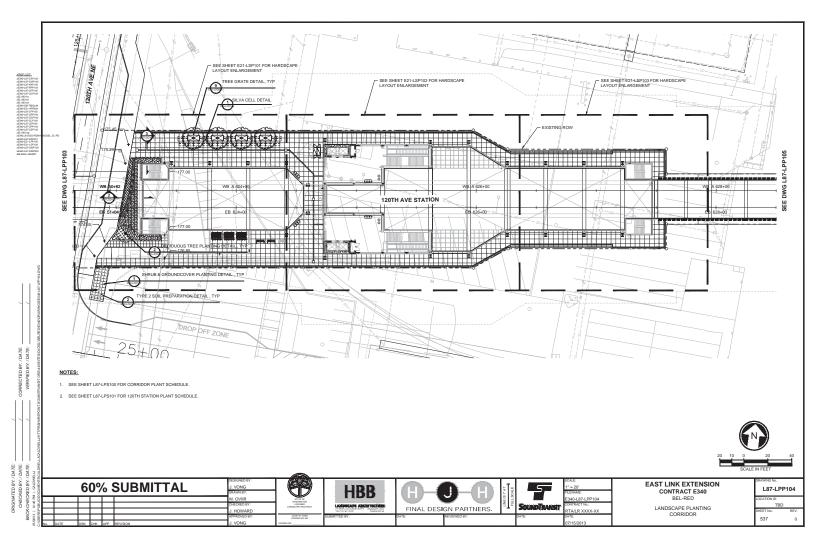


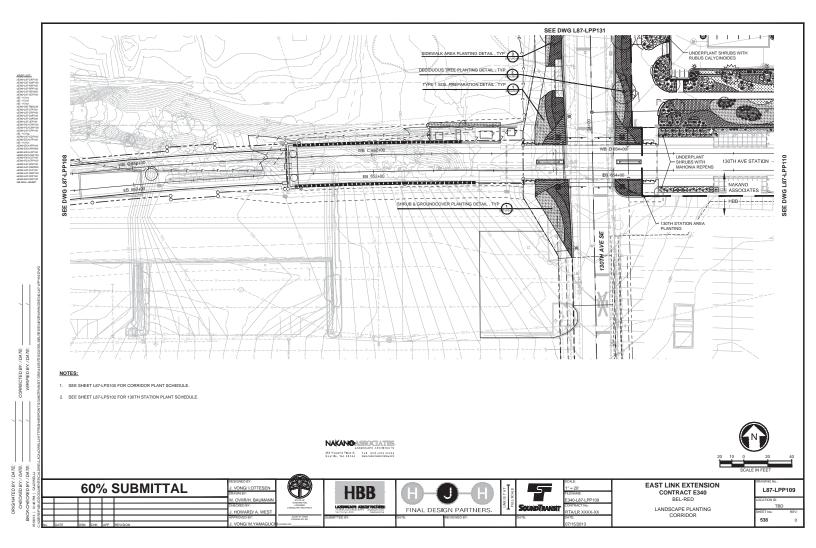


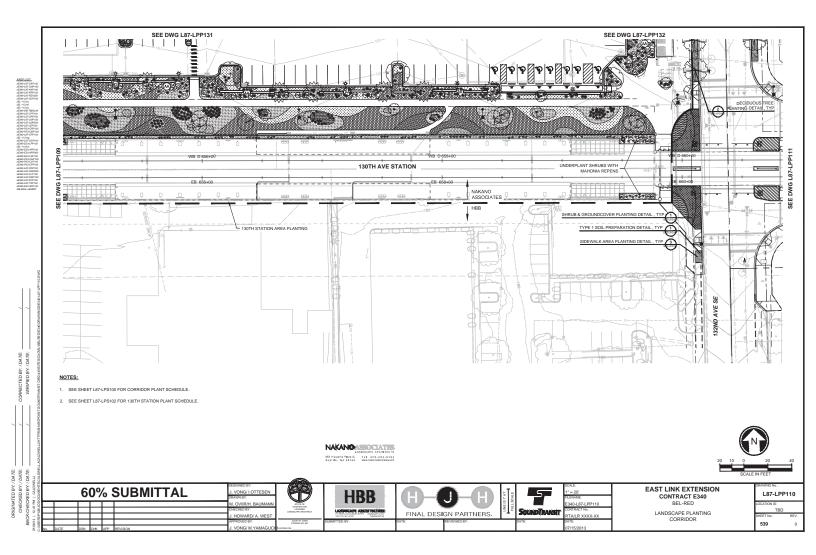


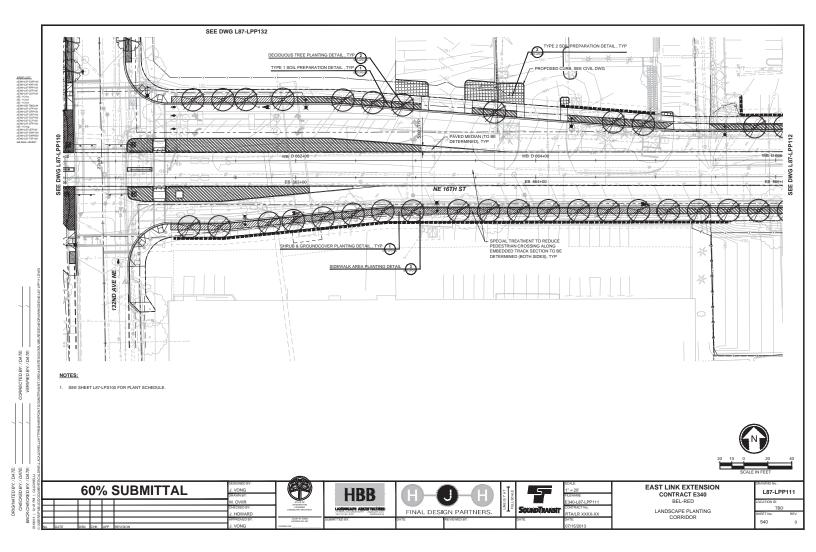


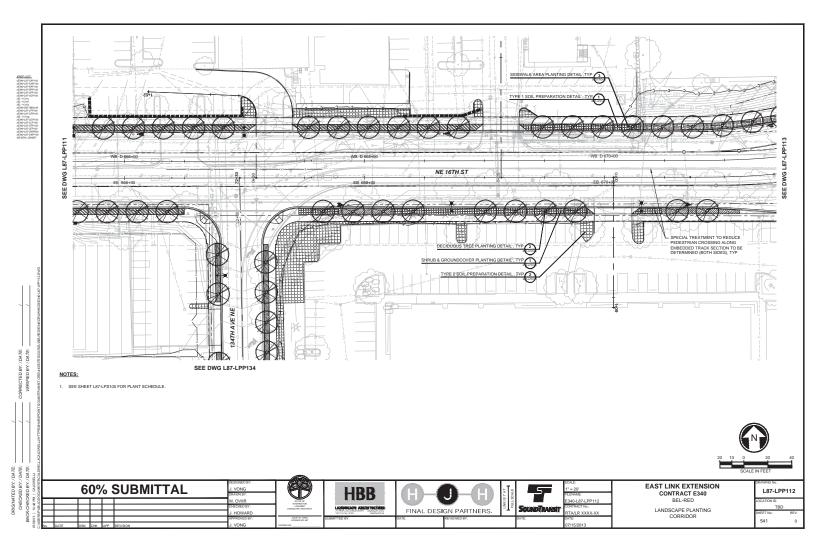


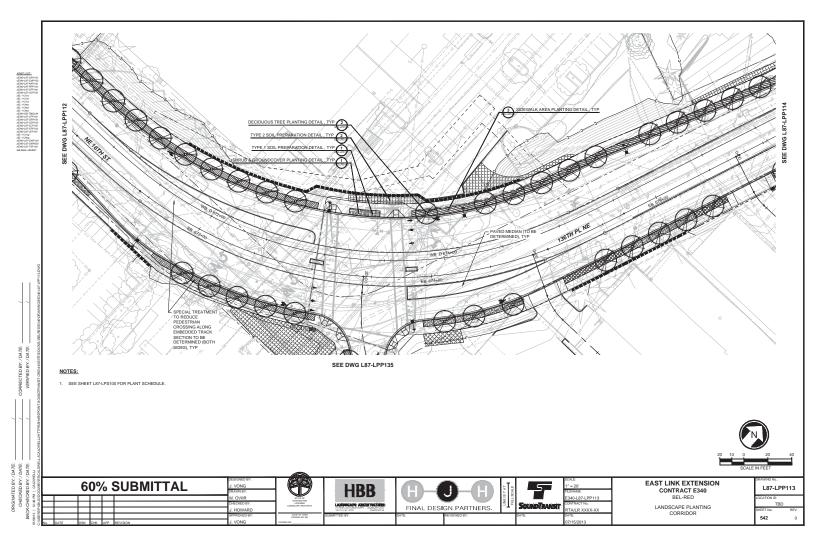


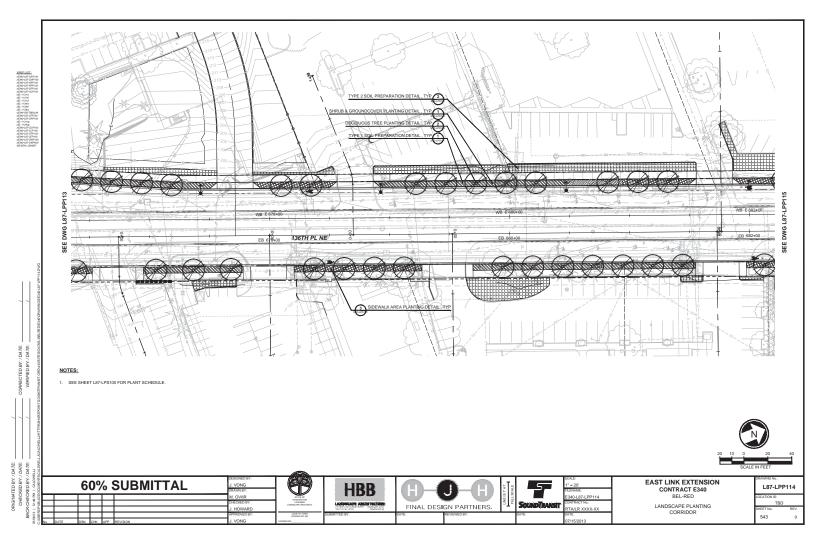


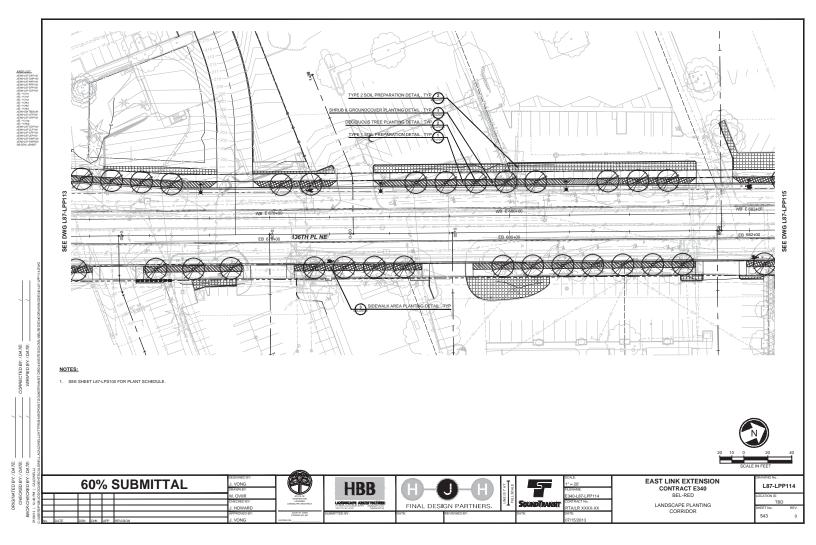


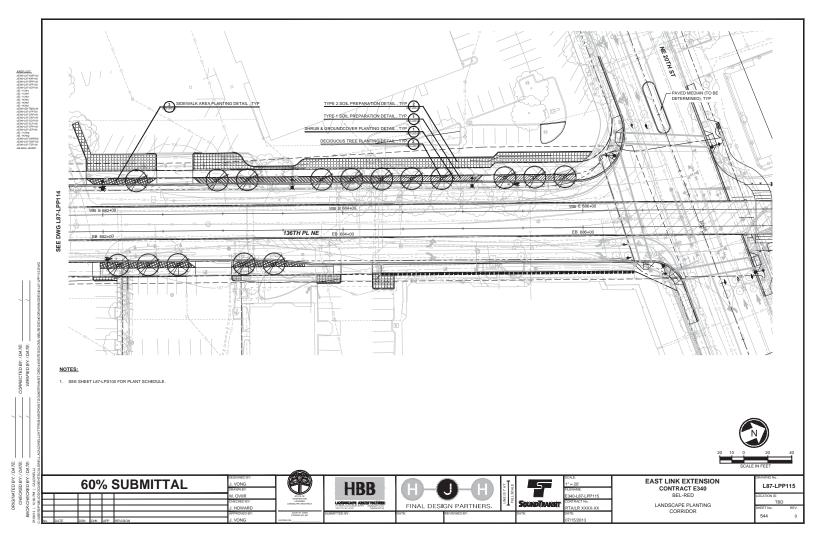


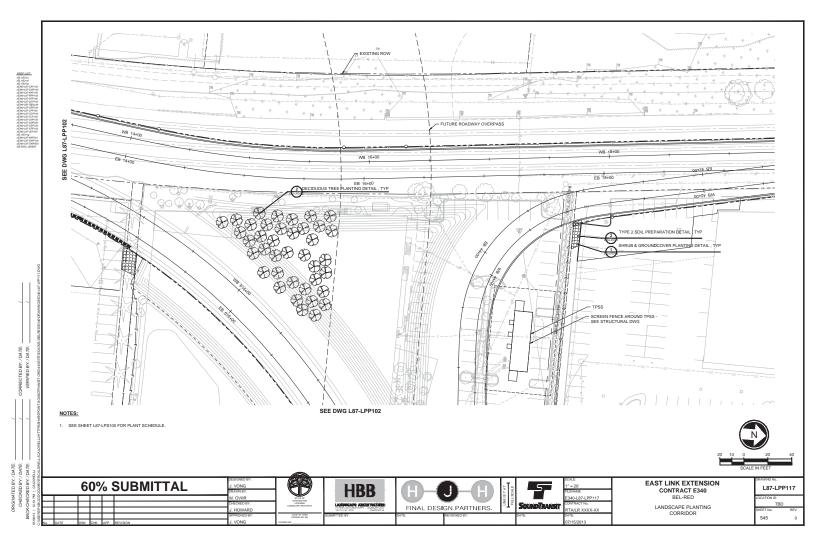


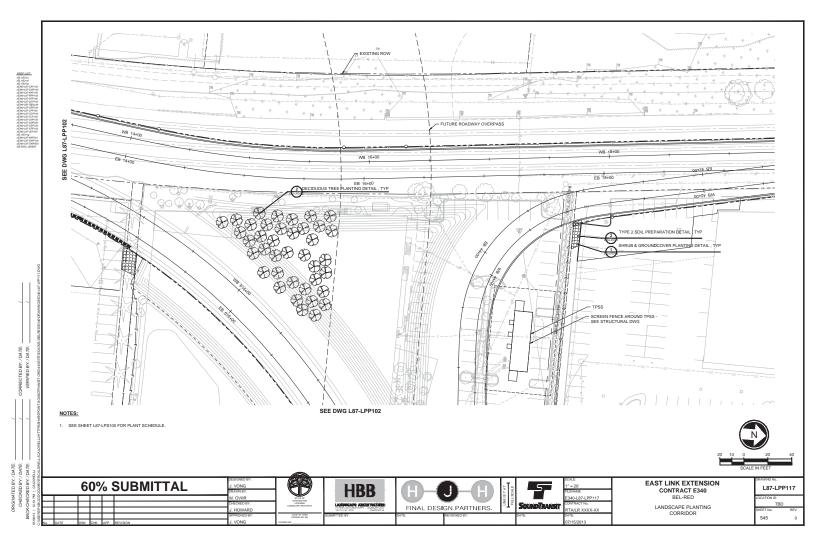


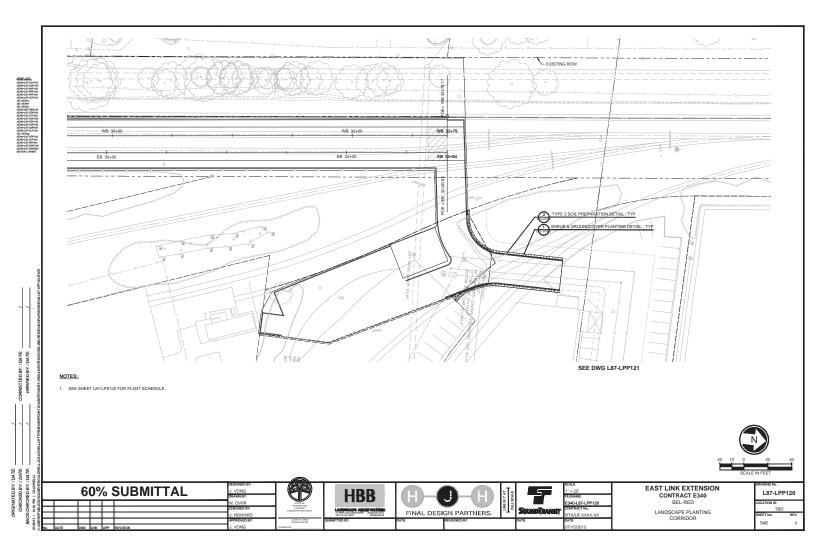


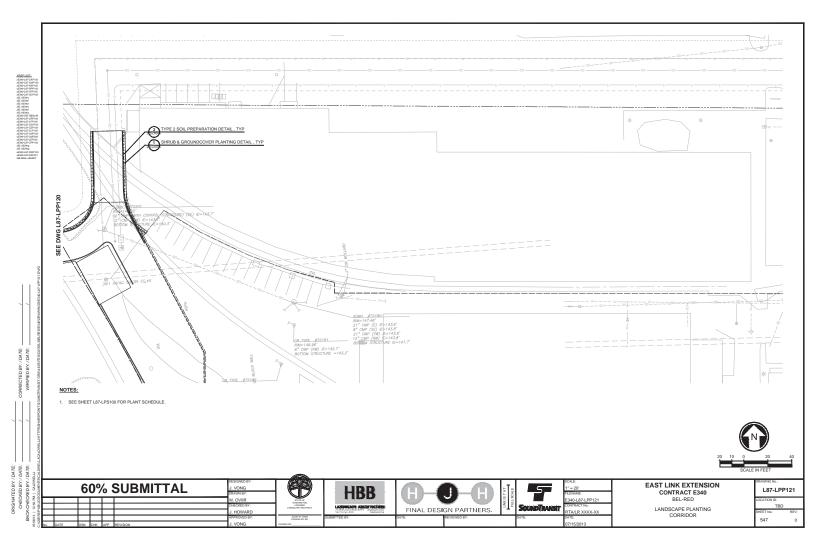


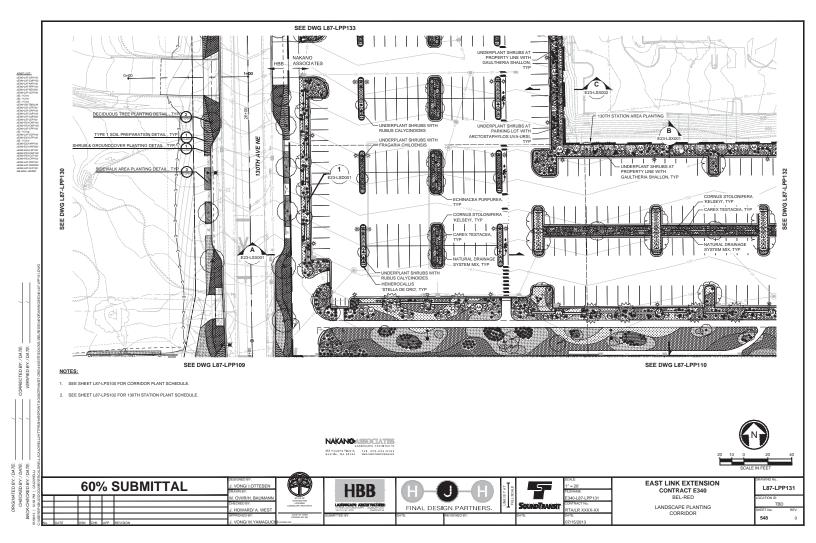


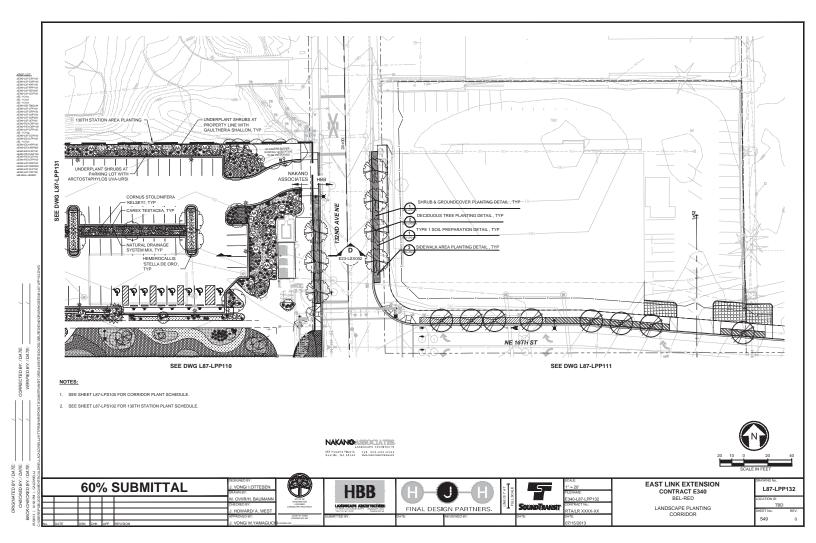


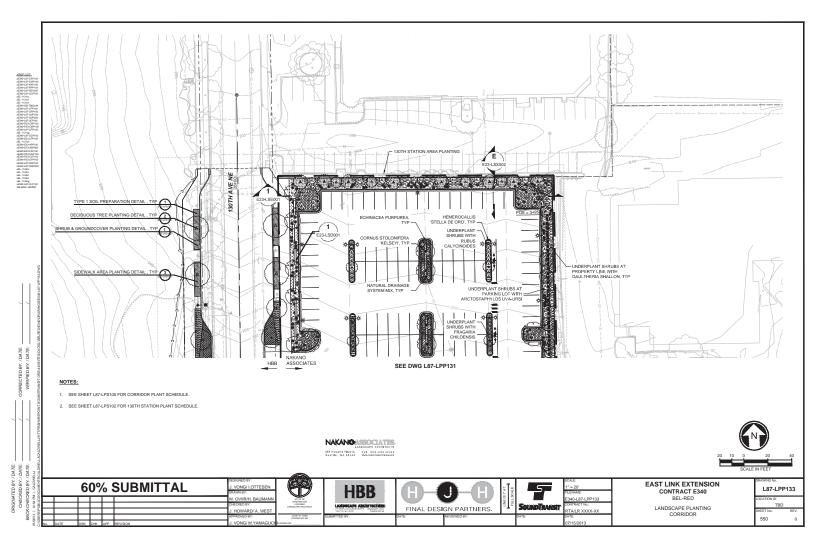


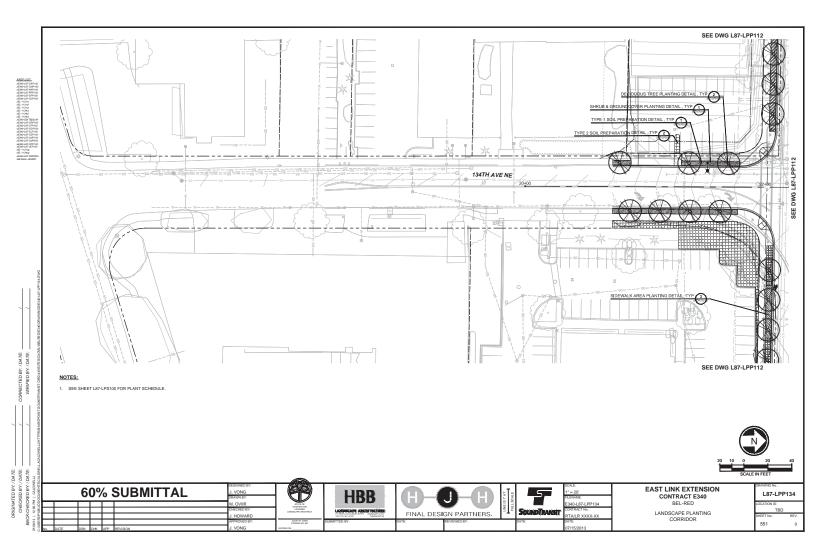


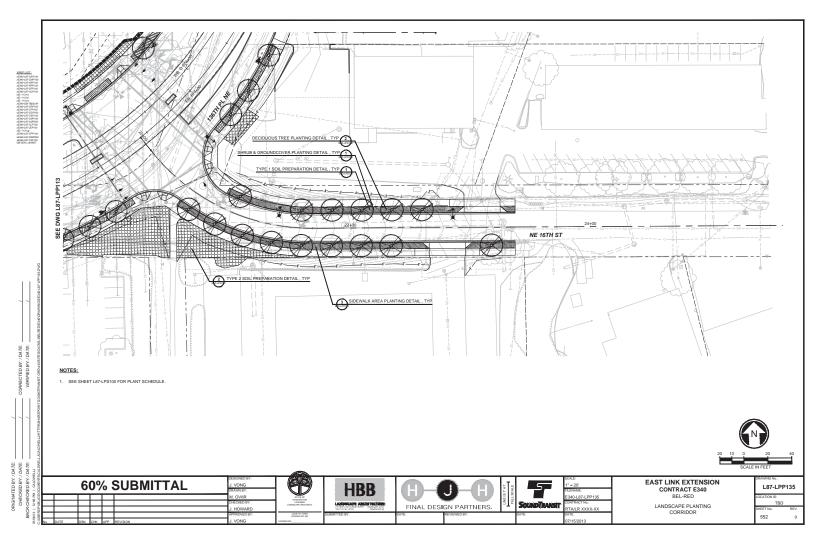


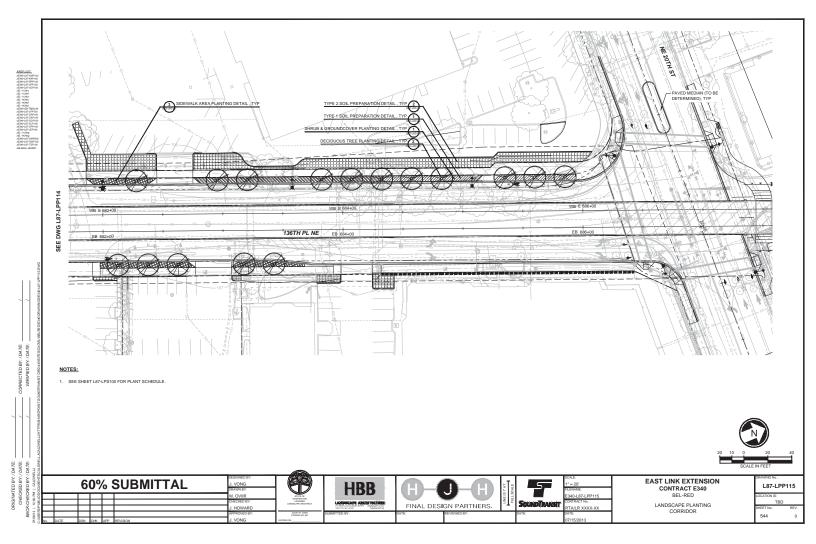


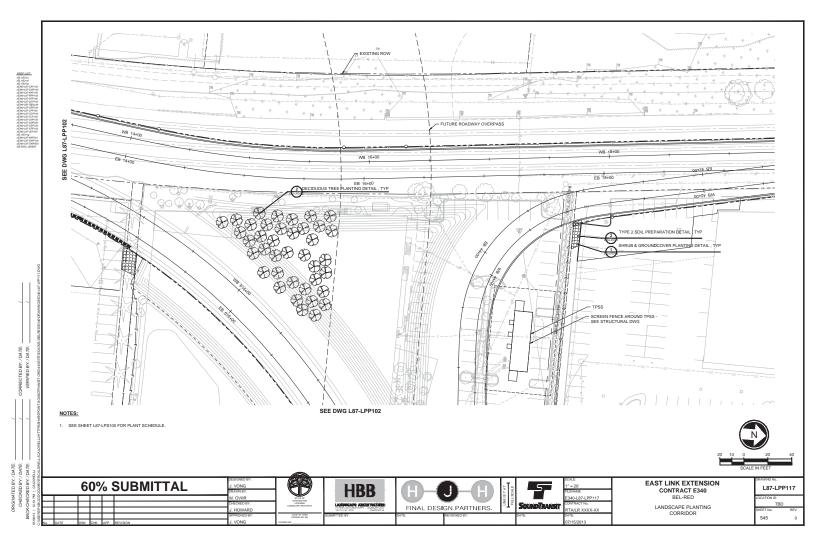


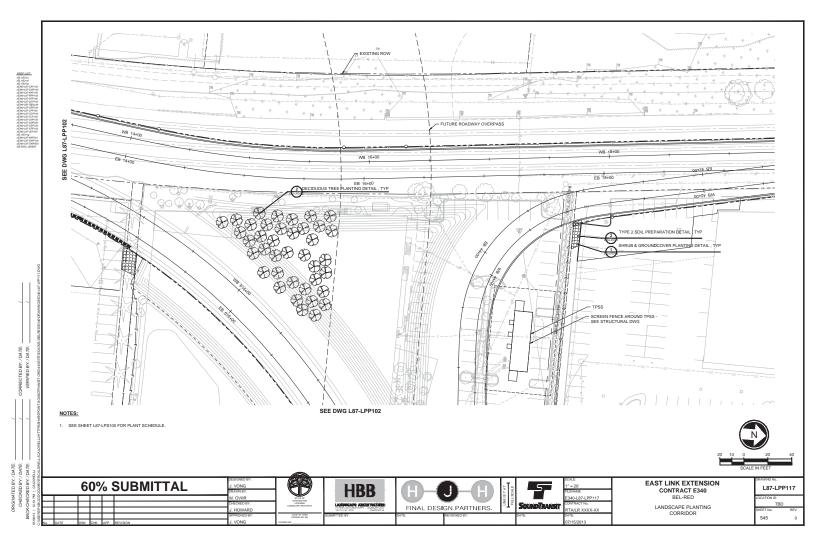


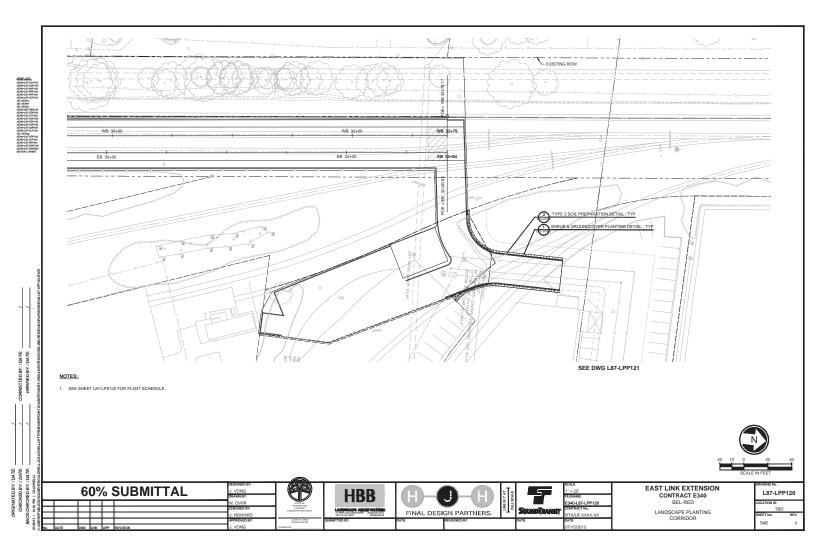


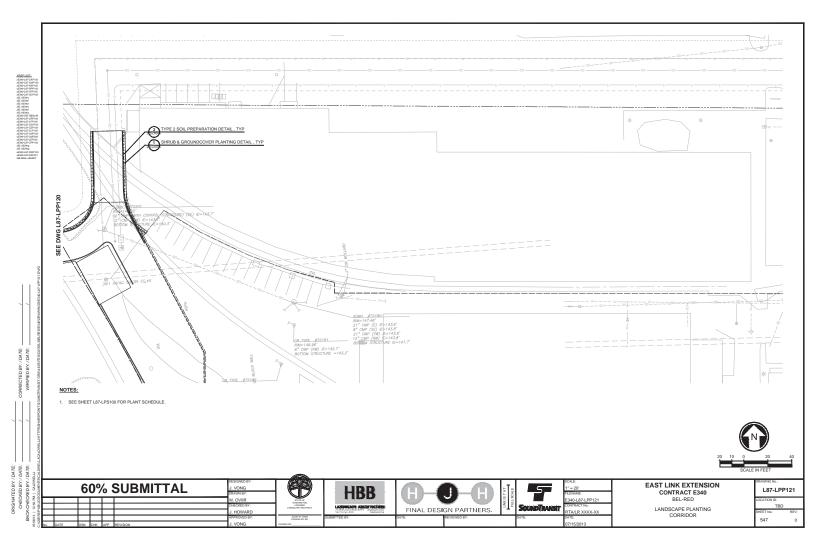


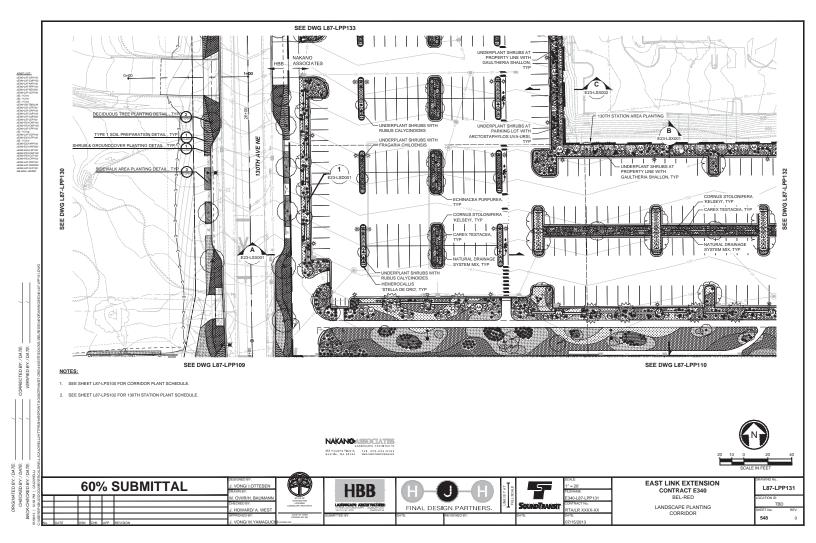


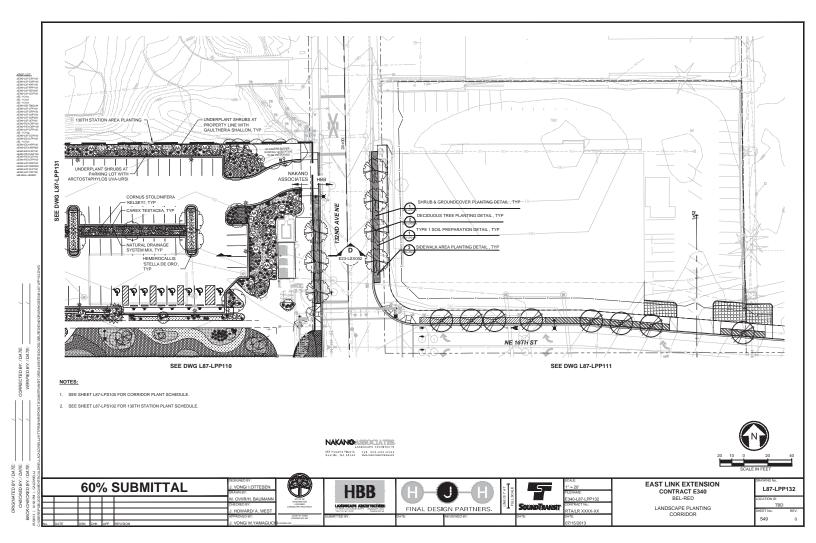


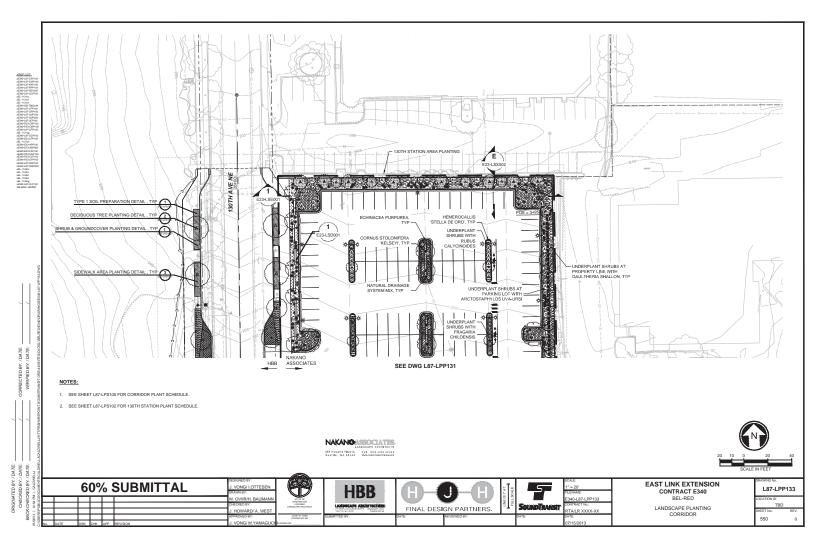


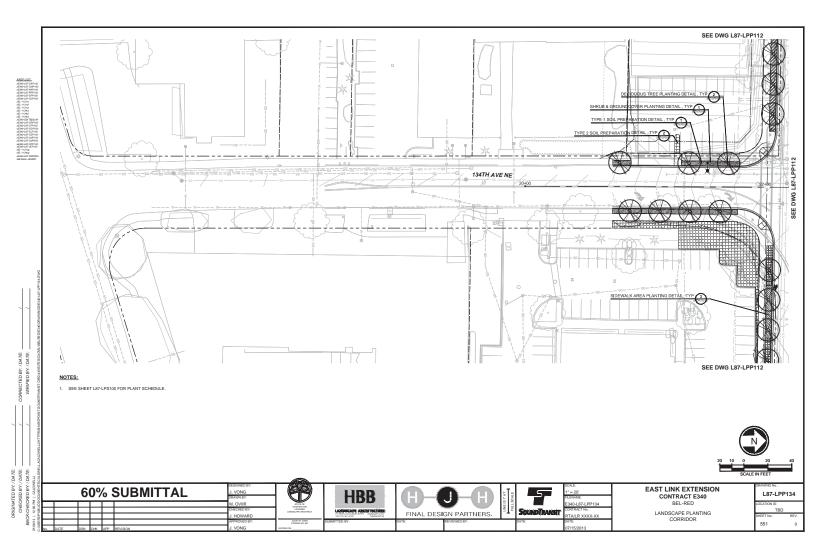


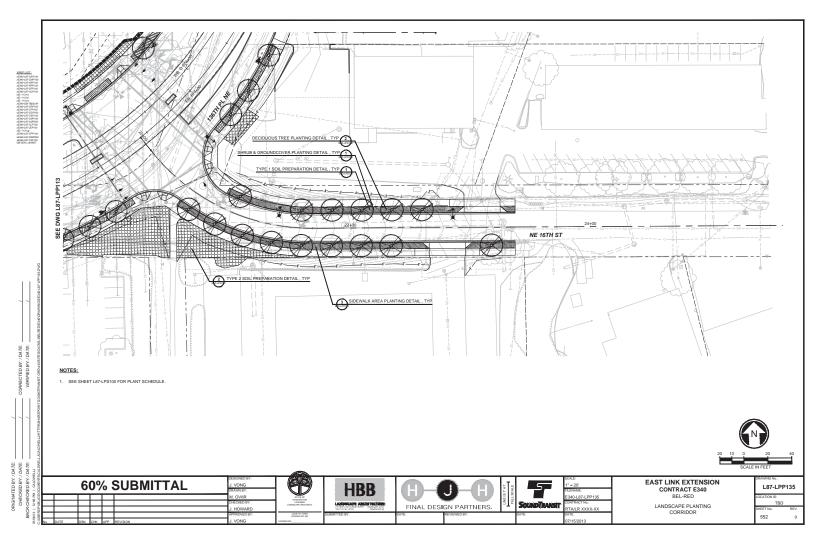


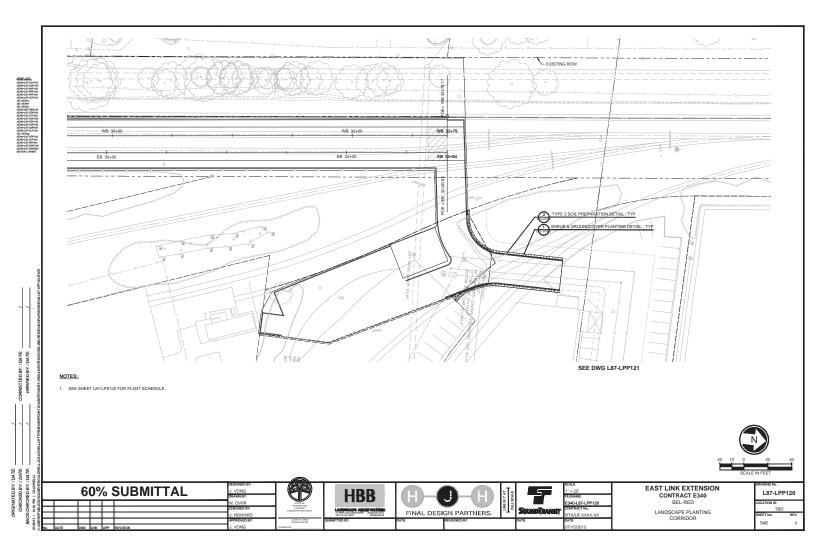


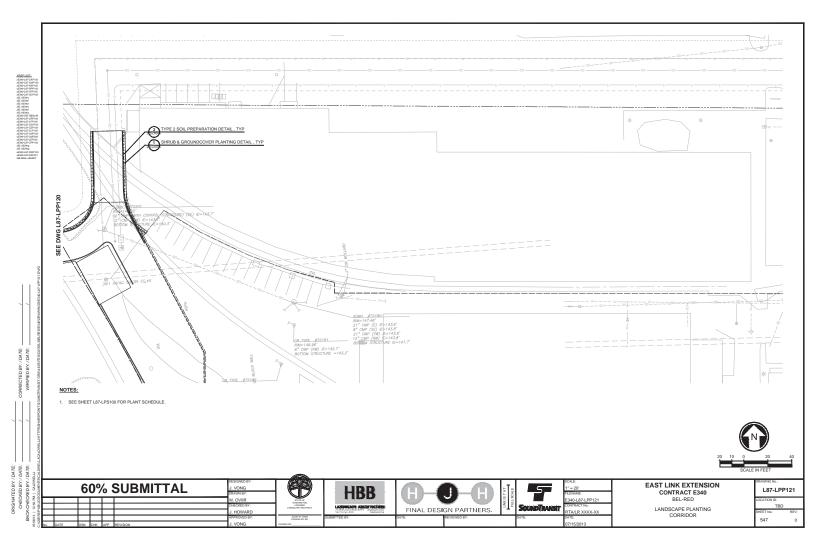


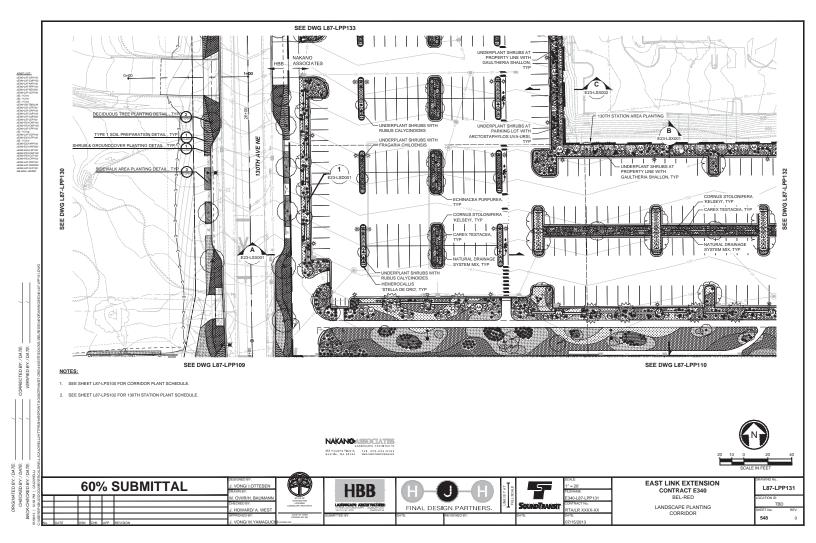


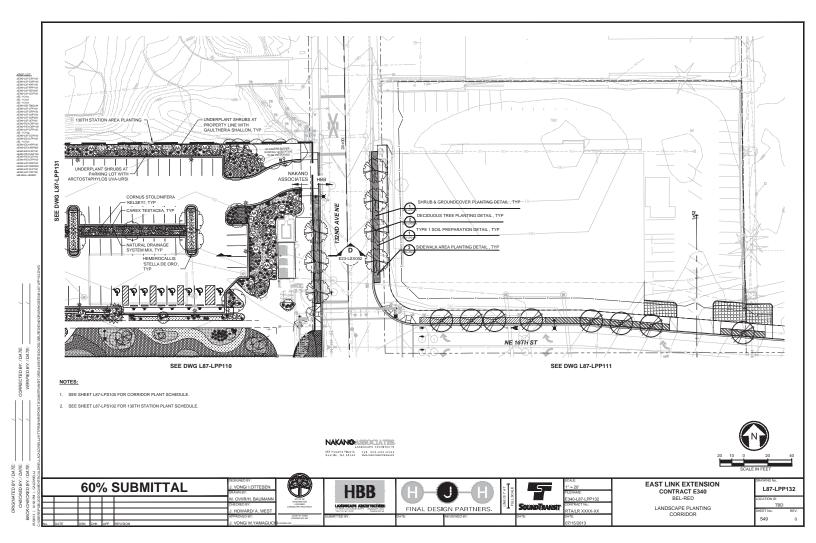


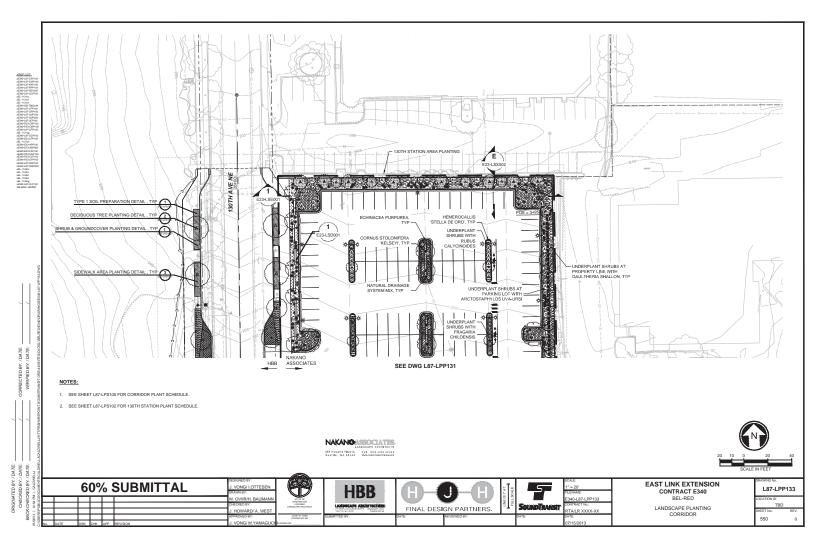


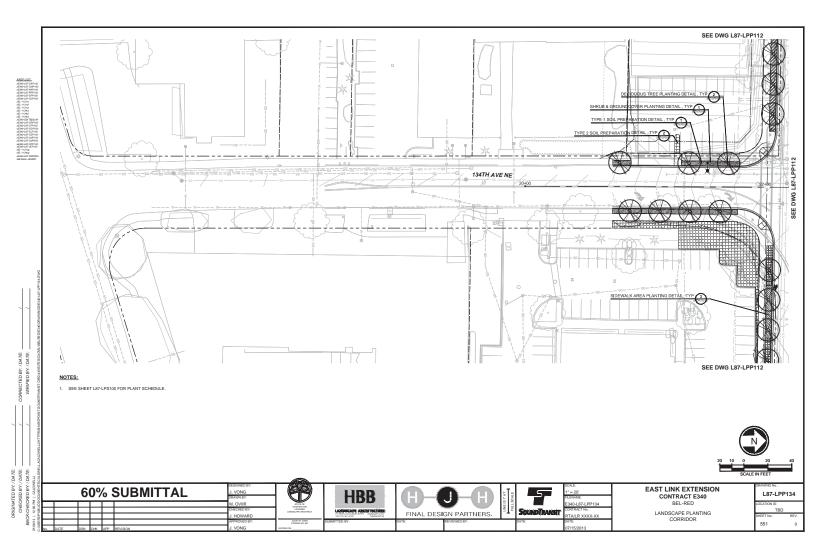


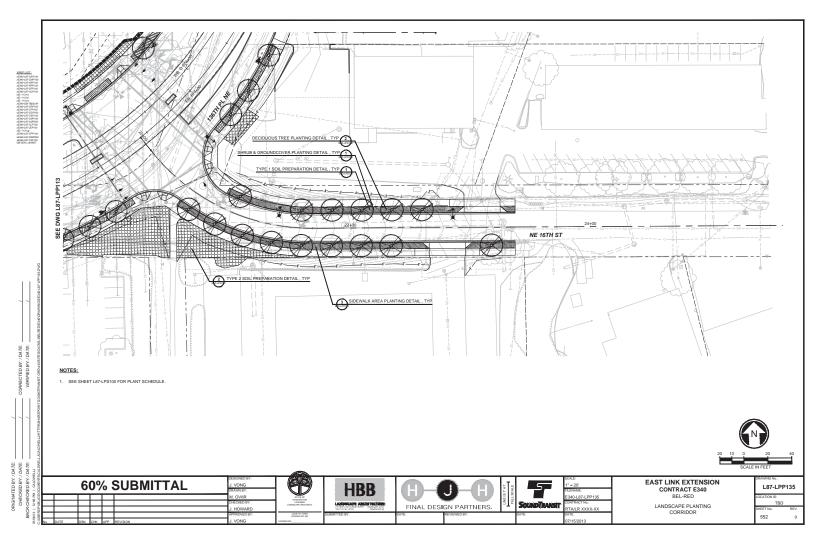


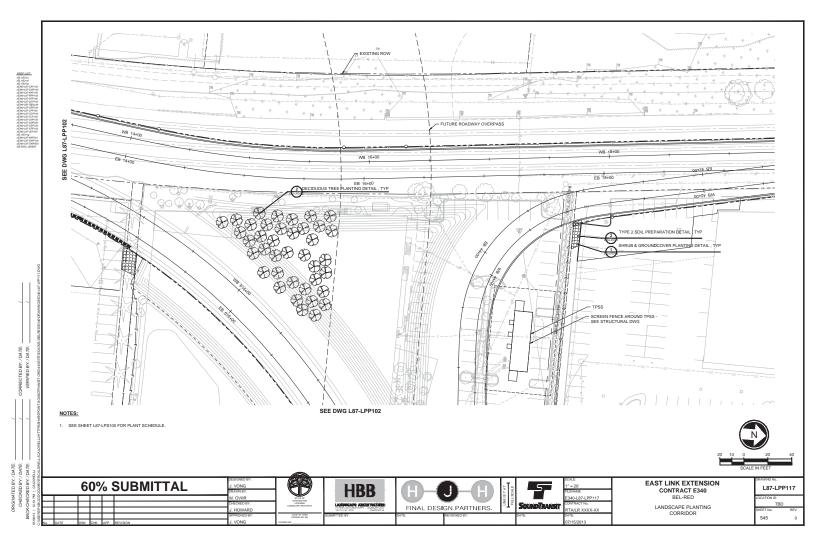


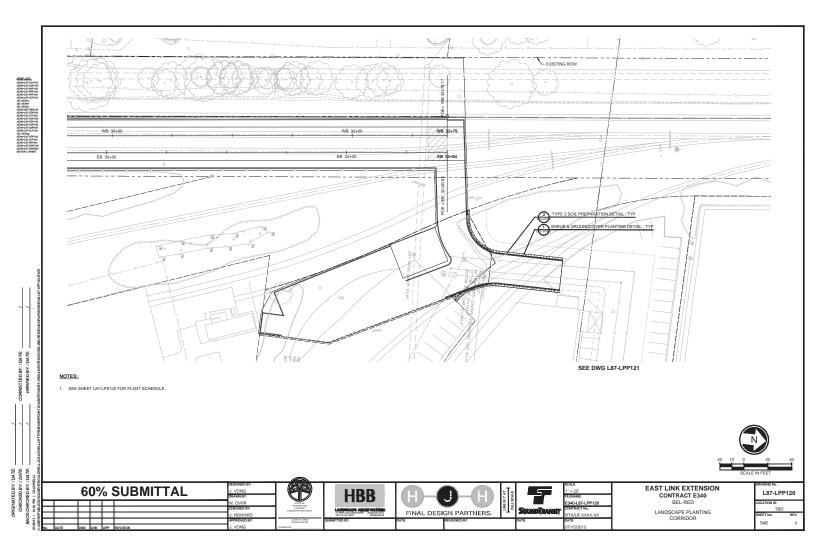


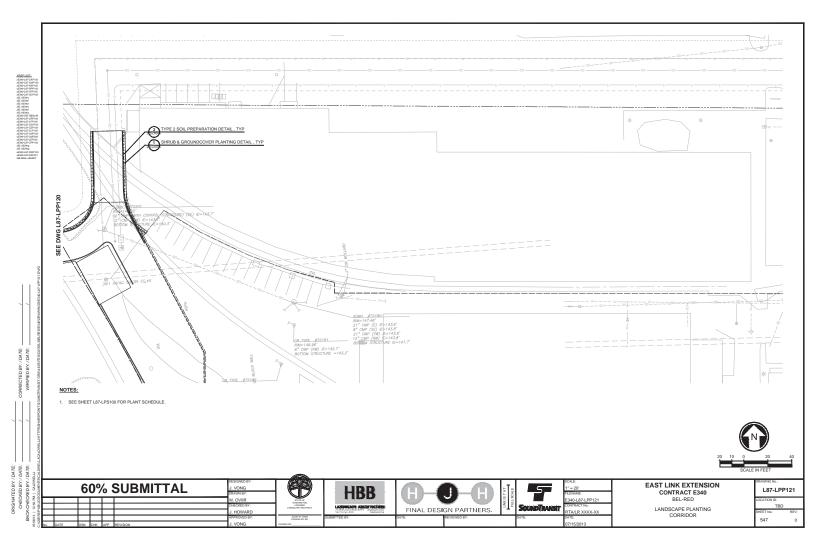


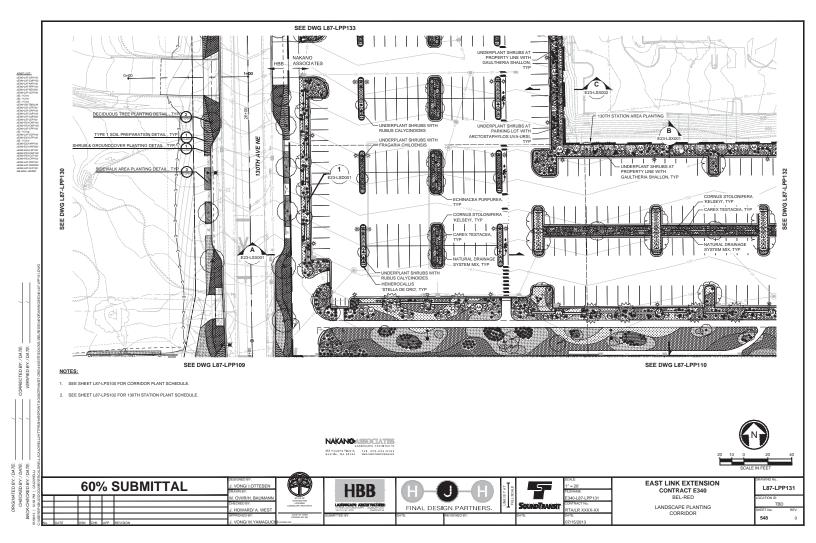


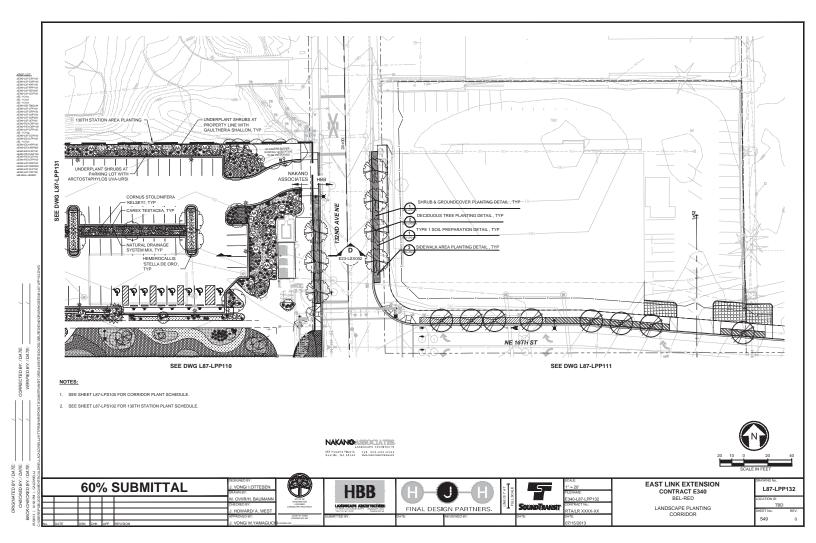


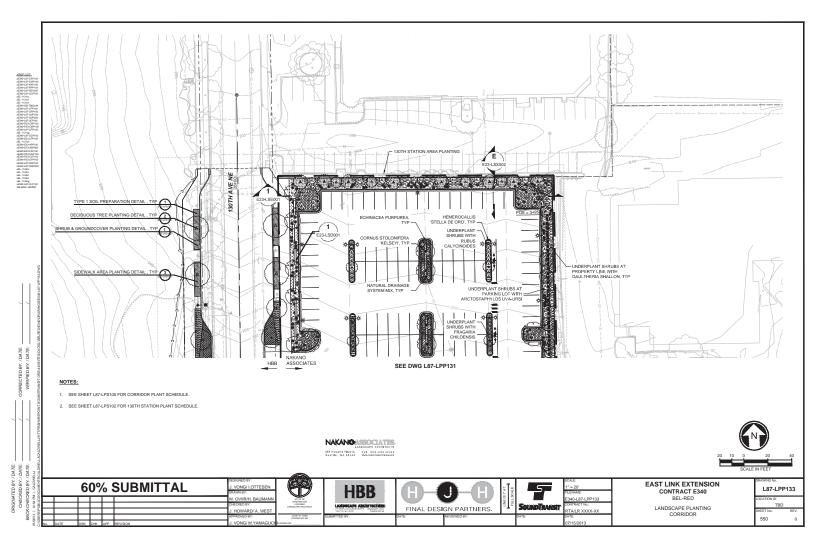


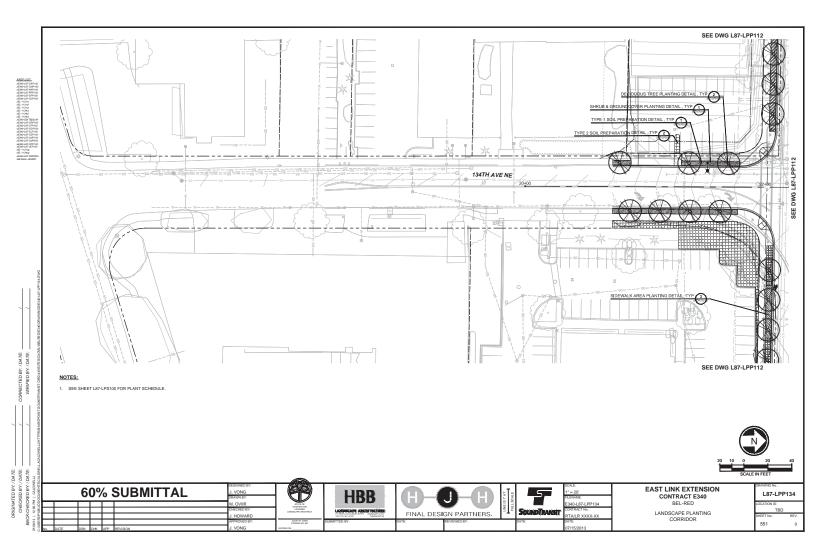


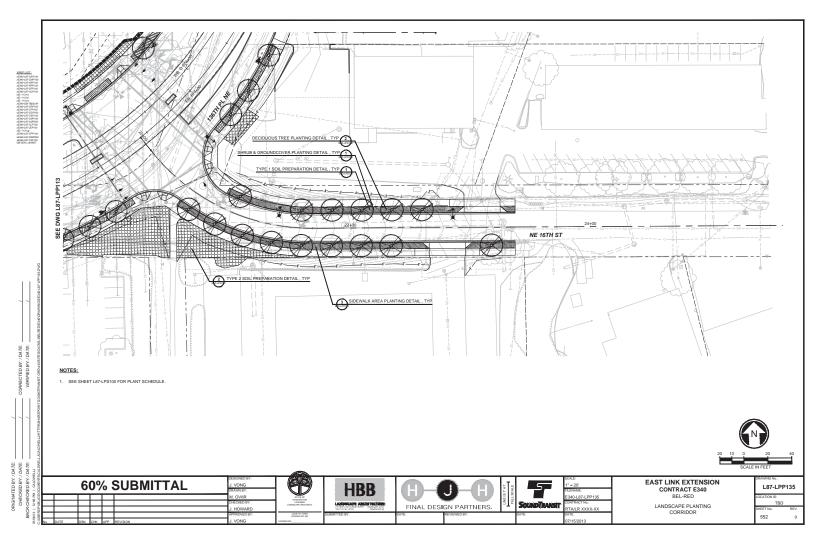


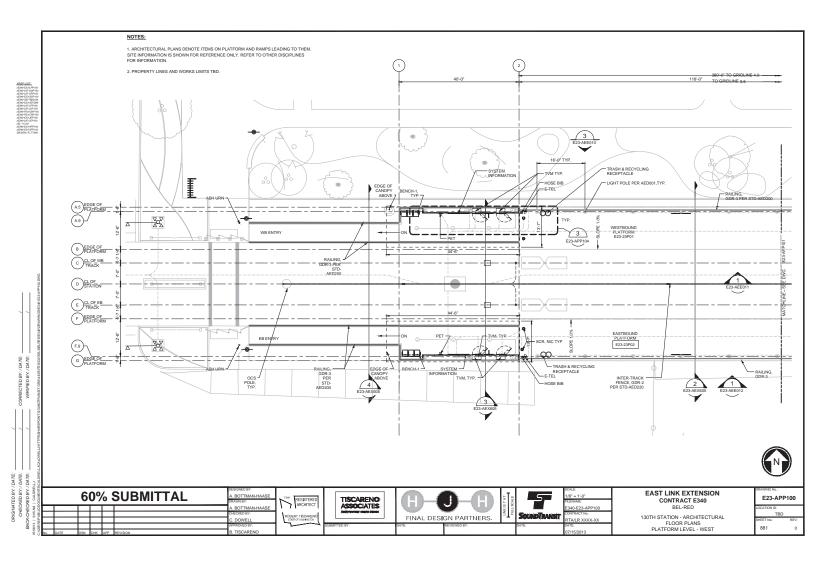


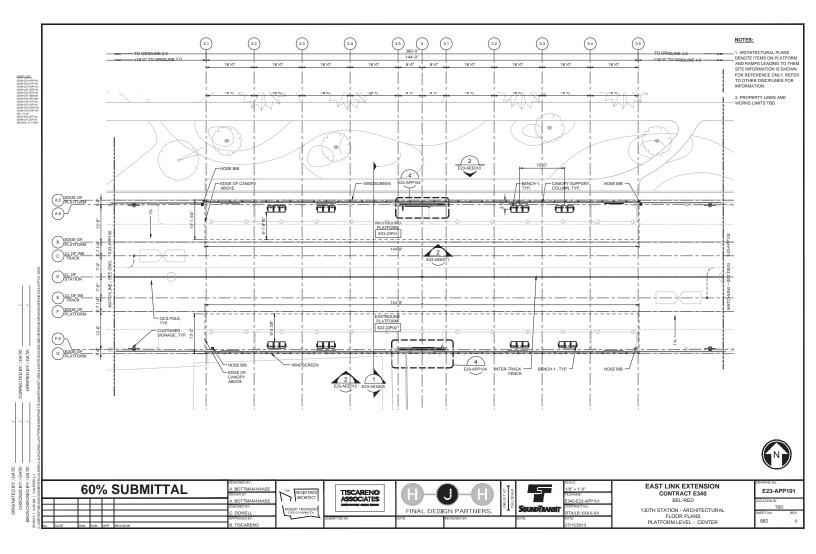


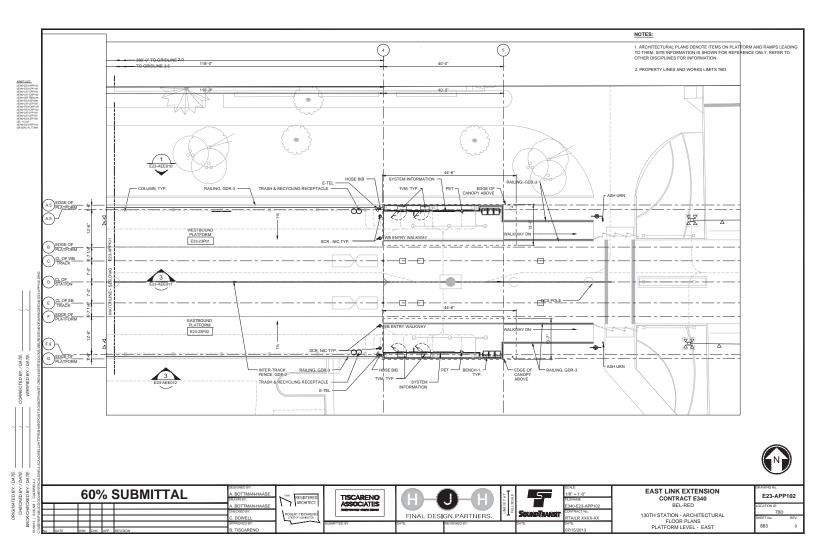


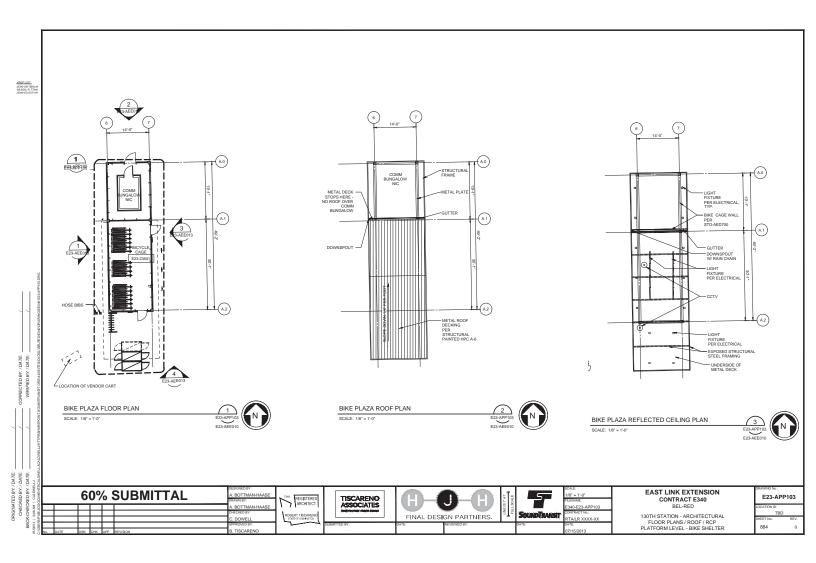




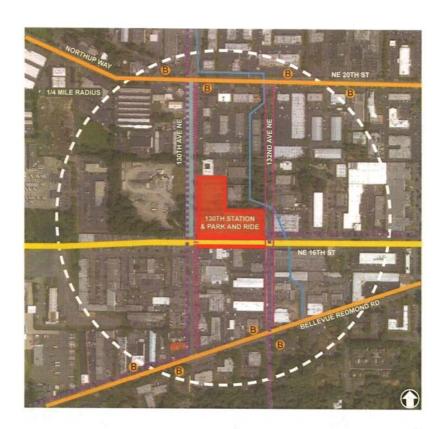








### Figure 8



LEGEND

BUS ROUTE & BICYCLE ROUTE

BICYCLE LANE

PROPOSED NEW BICYCLE LANE

OFF STREET PATH

OFF STREET PATH

SIDEWALKS

PROPOSED NEW SIDEWALKS

GOFF CREEK

LIGHT RAIL TRACKS

SHOPPING CORRIDOR - BEL-RED CORRIDOR 2030 MASTER PLAN, COB

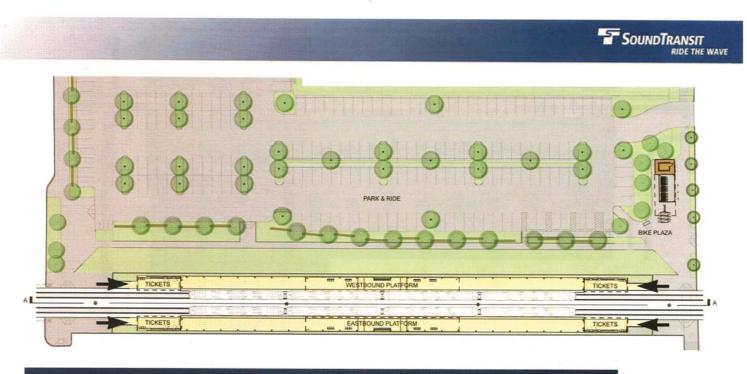
B CURRENT BUS STOP

# 130th Station: Neighborhood Context Plan

City of Bellevue and Sound Transit planned improvements



Ficher 7



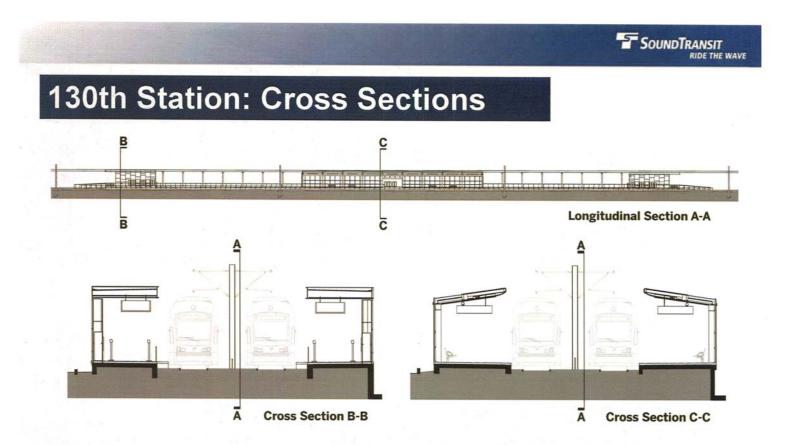
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Figure 6

# **130th Station: Platform Plan View**







### Figure 4



Fig<sup>...</sup>93



# 130th Station: Entrance from 132nd Ave NE





Figure 1

1	East Link   South Bellevue to Overlake Transit Center
2	Contract No. RTA/AE 0143-11

**East Link Light Rail Extension Critical Areas Report** and **Mitigation Plan** January 13, 2014 

Prepared for:







# 1 EXECUTIVE SUMMARY

2 **PROJECT NAME:** East Link Light Rail Extension – South Bellevue to Overlake Transit Center

- 3LOCATION:The Project alignment is 7.13 miles long, beginning at the juncture of Interstate 904(I-90) and the eastern shoreline of Lake Washington in Bellevue, Washington5(47.58 N latitude [lat]/ -122.20 W longitude [long]) and ending at the Overlake6Transit Center in Redmond, Washington (47.65 N lat/ -122.13 W long) (Figure 1-1).
- 7 APPLICANT: The Central Puget Sound Regional Transit Authority (Sound Transit)

### 8 PROPOSED PROJECT:

- 9 The goal of the East Link Light Rail Extension Project (Project) is to expand the Sound Transit East Link
- 10 light rail system from Seattle to Mercer Island, Bellevue, and Redmond to provide a reliable and efficient
- alternate mode of transportation throughout the region. The elements of the Project that are located
- 12 within the City of Bellevue include approximately 6 miles of new light rail track, six rail stations, two
- parking facilities, and other supporting facilities and infrastructure associated with the Project.
- 14 Approximately 1 additional mile of track and a rail station are located in the City of Redmond; however,
- 15 these improvements will not impact critical areas and are therefore not addressed in this report.

### 16 EXISTING CONDITIONS:

- 17 The Project area within the City of Bellevue where construction will occur is located in a heavily
- 18 populated area that includes residential communities, office complexes, and the downtown city center.
- 19 Critical areas were identified within the Project area, in accordance with the City of Bellevue Land Use
- 20 Code (LUC; LUC 20.25H.030). These include 21 wetlands, 11 streams, geologic hazard areas, special
- 21 flood hazard areas, and habitats associated with species of local importance.
- 22 IMPACT ASSESSMENT AND PROPOSED MITIGATION:
- 23 Sincere efforts have been made to avoid and minimize potential impacts to critical areas within the
- 24 Project area. These avoidance and minimization efforts have successfully eliminated any long-term
- 25 impacts to geologic hazard areas, areas of special flood hazard, and species and habitats of local
- 26 importance to the City of Bellevue; however, some impacts to wetlands and streams are anticipated.
- 27 Tables ES-1 and ES-2 on the following page provide a summary of permanent and temporary impacts to
- 28 wetlands, streams, and their buffers.
- 29 Mitigation for potential impacts to these critical areas is proposed within the City of Bellevue in areas
- 30 within or adjacent to the Project area. Mitigation concepts follow Sound Transit's commitment to a "no
- net loss" of wetland area and function and provide a surplus of functions to help ensure the required
- 32 mitigation ratios are met. Tables ES-3 and ES-4 provide summary information for the proposed
- 33 mitigation for wetland and stream impacts.

Critical Areas Report Rev 0

Site	Drainage Sub- basin	Permanent Impact (acres)	Permanent Vegetation Conversion (acres)	Temporary Impact (acres)	Permanent Buffer Impact (acres)	Temporary Buffer Impact (acres)
Mercer Slough West	Mercer Slough	0.23	0.36	0.16	1.84	2.86
Alcove Creek	Mercer Slough	0.00	0.00	0.01	0.03	0.09
Bellefield South	Mercer Slough	0.07	0.00	0.04	0.22	0.03
Bellefield North	Mercer Slough	0.02	0.00	0.01	0.21	0.10
8th Street	Mercer Slough	0.09	0.07	0.00	0.22	0.11
South Lake	Sturtevant Creek	0.00	0.09	0.00	0.01	0.24
Central Lake	Sturtevant Creek	0.00	0.03	0.00	0.07	0.07
North Lake	Sturtevant Creek	0.00	0.04	0.00	0.00	0.00
BNSF East	West Tributary	0.05	0.07	0.00	0.02	0.00
BNSF Northeast	West Tributary	0.00	0.00	0.00	0.06	0.00
Kelsey West Tributary Pond	West Tributary	0.01	0.01	0.00	0.13	0.34
SR 520 West	Valley Creek	0.01	0.26	0.00	0.02	0.57
Valley Creek	Valley Creek	0.00	0.03	0.00	0.00	0.33
SR 520 East	Valley Creek	0.00	0.00	0.00	0.00	0.16
Τα	0.48	0.96	0.22	2.83	4.90	

### 1 Table ES-1 Project Wetland and Wetland Buffer Impact Summary

2 3

Notes: SR 520 = State Route 520

Stream	Local Stream Rating	Permanent Impacts (sf)	Temporary Impacts (sf)	Permanent Buffer Impacts <sup>1</sup> (acres)	Temporary Buffer Impacts (acres)
Wye Creek	Type F	218	312	0.09	0.11
Mercer Slough West Branch	Type S	236	0	1.22	1.05
Alcove Creek	Type O	0	57	0.00	0.00
Sturtevant Creek	Type F	3,443	0	0.21	0.40
West Tributary to Kelsey Creek	Type N	0	472	0.00	0.00
Stream C	Туре О	0	440	0.03	0.07
Goff Creek	Type F	0	0	0.01	0.00
Unnamed Tributary to Kelsey Creek	Type N	2,539	0	0.00	0.00
Total	Stream Impacts:	6,436	1,281	1.56	1.63

#### 1 Table ES-2 Project Stream and Stream Buffer Impact Summary

Notes:

1 Areas only include stream buffer where there is no wetland buffer overlap. Overlapping buffer areas are counted as wetland

buffers and included in Table ES-1.

2 3 4 5 sf = square feet

		Proposed Mitigation				
Mitigation Site	Drainage Sub-basin	Wetland Rehabilitation (acres)	Wetland Enhancement (acres)	Wetland Creation (acres)	Stream Restoration <sup>1</sup> (sf)	Wetland and Stream Buffer Creation / Enhancement (acres)
Sweyolocken	Mercer Slough	1.20	5.29	0.00	0	0.40
Sturtevant Creek	Sturtevant Creek	0.00	0.00	0.00	3,500	0.29
Mercer Slough Buffer Creation and Enhancement	Mercer Slough	0.00	0.00	0.00	494 <sup>2</sup>	4.98
West Tributary	West Tributary	0.00	0.05	0.64	2,600	1.76
Total Mitigation Area:		1.20	5.34	0.64	6,594	7.43

#### 1 Table ES-3 Project Wetland, Stream, and Buffer Mitigation Site Summary

#### 2 Notes:

3 1 Refer to Section 3 for complete functional lift analysis of the proposed mitigation

4 5 6 2 Includes 454 sf of buffer enhancement to mitigate for overwater shading, and 40 sf of restoration of Wye Creek by

daylighting to mitigate for other stream impacts.

sf = square feet

#### 7 Table ES-4 Proposed Project Mitigation Summary as Compared to Regulatory Requirements

Required Mitigation <sup>1</sup>	Proposed Mitigation
5.16 Acres of Wetland Enhancement	5.34 Acres of Wetland Enhancement
1.20 Acres of Wetland Rehabilitation	1.20 Acres of Wetland Rehabilitation
0.55 Acre of Wetland Creation	0.64 Acre of Wetland Creation
6,436 Square Feet of Stream Restoration	6,594 <sup>2</sup> Square Feet of Stream Restoration
4.39 Acres of Buffer Creation/Enhancement	7.43 Acres of Buffer Creation/Enhancement

8 Notes:

9 <sup>1</sup> Mitigation requirements are based on ratios established by Washington Department of Ecology, US Army Corps of Engineers

10 Seattle District, and Environmental Protection Agency, Region 10 guidance (Ecology et al. 2006). Mitigation required for

11 vegetation conversion in wetlands is included (see Table 3-1 in Section 3 of this report for further detail)

<sup>2</sup> This total includes 454 sf of buffer restoration to mitigate for impacts related to shading of streams by the guideway. See 12

13 Section 3 for further detail.

14 sf = square feet

15

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- 29 Appendix C Wetland, Stream, and Buffer Mitigation Plans
- 30 Appendix D Proposed Mitigation and Restoration Design
- 31 Appendix E Geologic Hazard Areas
- 32 Appendix F Impact and Mitigation Summary by Contract Package
- 33 Appendix G FEMA Habitat Assessment

# **1** Acronyms and Abbreviations

BA	Biological Assessment
BCC	Bellevue City Code
BFE	base flood elevation
BMP	best management practice
BNSF	Burlington Northern Santa Fe
CAO	Critical Areas Ordinance
CAR	Critical Areas Report and Mitigation Plan
cfs	cubic feet per second
City	City of Bellevue
Corps	U.S. Army Corps of Engineers
DCM	Design Criteria Manual
Delineation Report	Sound Transit East Link Extension Project Wetland, Stream, and Jurisdictional Ditch Delineation Report
DPS	distinct population segment
DTM	digital terrain model
EB	eastbound
Ecology	Department of Ecology
EFH	essential fish habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	evolutionary significant units
FAC	facultative
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GPS	global positioning system
HGM	Hydrogeomorphic
I-90	Interstate 90
I-405	Interstate 405
LUC	Land Use Code
Magnuson Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act

NAVD88	North American Vertical Datum 1988
NGPA	Native Growth Protection Area
NGPE	Native Growth Protection Area Easement
NGVD88	National Geodetic Vertical Datum 1988
NMFS	National Marine Fisheries Service
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PAB	Palustrine aquatic bed
PEM	Palustrine emergent
PFO	Palustrine forested
PHS	Priority Habitats and Species
Project	East Link Light Rail Extension Project
PSS	Palustrine Scrub-Shrub
RCW	Revised Code of Washington
RLRT	Regional Light Rail Transit
ROD	Record of Decision
ROE	right-of-entry
ROW	right-of-way
SEPA	State Environmental Policy Act
sf	square feet
Sound Transit	Central Puget Sound Regional Transit Authority
SR 520	State Route 520
TPSS	transit power substation
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA 8	Water Resource Inventory Area 8
WSDOT	Washington Department of Transportation

# 1 **1.0 Introduction**

- 2 This Critical Areas Report and Mitigation Plan (CAR) describes existing conditions in support of project
- 3 planning and permitting for the Central Puget Sound Regional Transit Authority (Sound Transit) East Link
- 4 Light Rail Extension Project (Project). This report addresses potential impacts to critical areas as defined
- 5 by the Bellevue City Code (BCC) and proposed mitigation within the City of Bellevue (City), and is
- 6 intended to support Shoreline and Design and Mitigation Review permit reviews, as defined in the Light
- 7 Rail Overlay District requirements (LUC 20.25M).
- 8 The purpose of this CAR is to describe the existing critical areas within the Project area, evaluate the
- 9 potential impacts to critical areas, and provide a mitigation plan to address these impacts. Critical areas
- are defined in the BCC Critical Areas Ordinance (CAO), contained in Chapter 20.25H LUC of its Land Use
- 11 Code (City of Bellevue 2013a). Per Chapter 20.25H.250 of the LUC, this CAR identifies and classifies
- 12 critical areas and applicable critical area buffers present in the Project area. Coordination with the City
- 13 identified the following five types of critical areas within the Project area: Streams (LUC 20.25H.075),
- 14 Wetlands (LUC 20.25H.095), Geologic Hazard Areas (LUC 20.25H.120), Habitat Associated with Species
- of Local Importance (LUC 20.25H.150) and Areas of Special Flood Hazard (LUC 20.25H.175). The Project
- area also includes shorelines classified under the CAO (LUC 20.25E.017), however, the evaluation of
- 17 potential impacts and associated mitigation related to shorelines is documented separately as part of
- 18 the Shoreline Substantial Development Permit process with the City, with the exception of shoreline
- 19 critical area buffers. Shoreline critical area buffers impacted by the Project overlap in all cases with
- 20 stream and wetland critical area buffers; therefore, shoreline critical area buffer impacts and mitigation
- 21 are covered by the critical area buffer discussion in this document.
- 22 This report is organized by first providing a description of the Project, the Project setting, and relevant
- 23 regulatory context (Section 1). Next, a description of the existing critical areas within the Project area is
- 24 presented, along with the potential impacts to critical areas from the Project (Section 2). Finally,
- 25 measures to avoid and minimize impacts, and compensatory mitigation concepts for unavoidable
- 26 impacts are presented (Section 3). The report is intended to satisfy the requirements of the Bellevue
- 27 Land Use Code (LUC 20.25H.250) as well as demonstrate how the proposed mitigation will lead to
- 28 equivalent or better protection of remaining critical area functions and values than would result from
- 29 the application of the standard requirements.

## 30 **1.1 Project Purpose and Goals**

- 31 The purpose of the Project is to expand the Sound Transit East Link light rail system from Seattle to
- 32 Mercer Island, Bellevue, and Redmond via Interstate 90 (I-90), and to provide a reliable and efficient
- 33 alternative for moving people throughout the region. The Project would provide greater capacity and
- 34 reliability, as well as improving travel time for people traveling between Seattle, Bellevue, and
- Redmond. To meet planned growth in the corridor, the cities of Bellevue, Seattle, and Redmond have
- 36 made land use and planning decisions based upon increased employment and residential density, which

would be more fully realized with the long-term promise of a high-capacity transit connection across I 90. East Link provides this connection.

## 3 1.2 Project Description

4 The Project in its entirety extends the light rail system approximately 14 miles between Seattle and the 5 east side of Lake Washington and includes ten stations serving Seattle, Mercer Island, South Bellevue, 6 Downtown Bellevue, Bel-Red, and Overlake areas. The Project corridor is located in King County, 7 Washington, the most densely populated county of the Puget Sound region. The Project has received 8 concurrence from the Federal Transit Administration, and the Federal Transportation Department 9 through completion of an Environmental Impact Statement (EIS) and subsequent Record of Decision (ROD). In addition, the State Environmental Policy Act (SEPA) review has been completed. The City has 10 11 concurred with the Project alignment and major design elements through formal City Council action 12 taken in April 2013.

### 13 **1.2.1 Project Elements and Phasing**

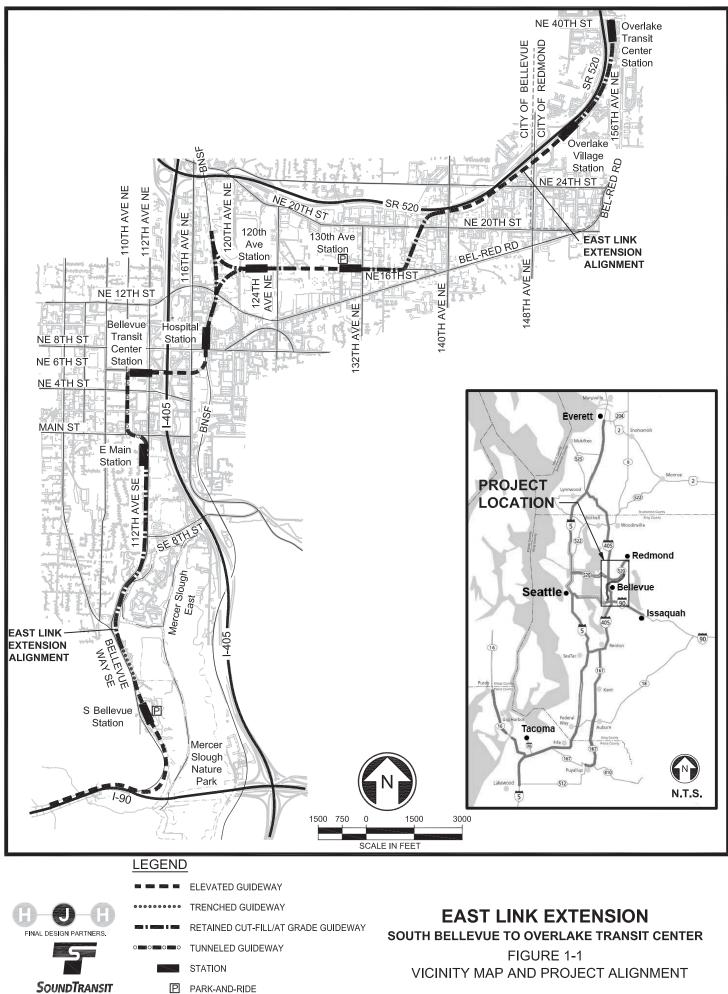
14 The Project features described in this report occur within the City between I-90 on the east side of Lake

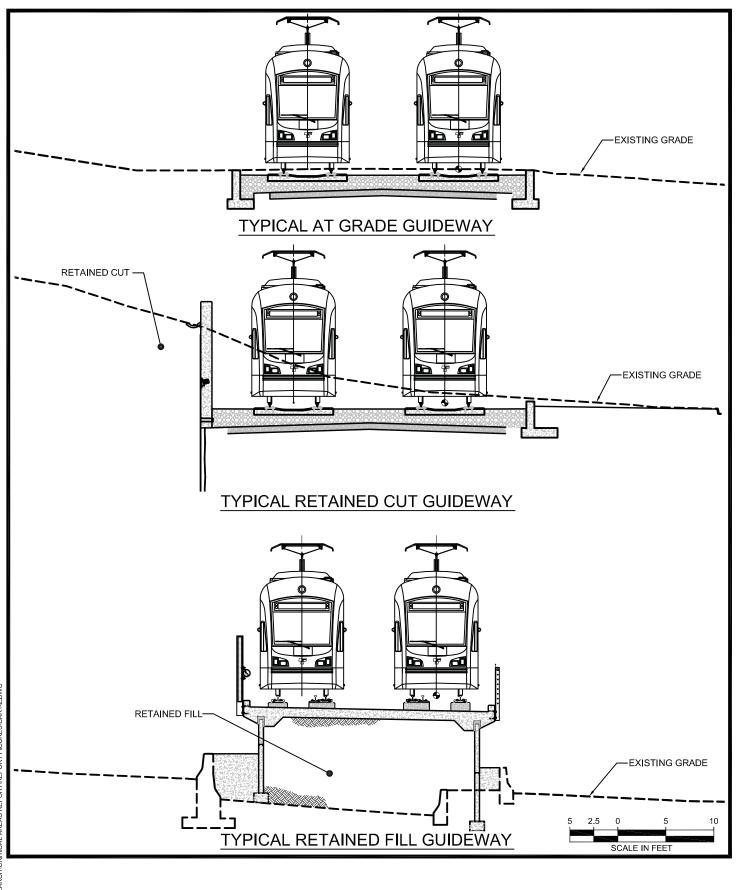
15 Washington in Bellevue and State Route 520 (SR 520) in Redmond (Figure 1-1), and represent

- 16 approximately 6 miles of the overall East Link Project.
- 17 The Project corridor extends north from I-90, runs along the east side of Bellevue Way, then runs along
- 18 the east side of 112th Avenue SE. The alignment then crosses to the west side of 112th Avenue SE at
- 19 SE 15th Street and heads into Downtown Bellevue via a tunnel under 110th Avenue NE. From
- 20 Downtown Bellevue, the Project alignment extends east along the south side of NE 6th Street, crosses
- 21 over Interstate 405 (I-405), then turns north at the existing Burlington Northern Santa Fe (BNSF) rail
- 22 corridor. The alignment follows the BNSF corridor north to NE 12th Street, then heads east following NE
- 23 16th Street right-of-way (ROW). The alignment then heads northeast within the 136th Place NE ROW,
- 24 then turns east again within the SR 520 ROW. The Project remains in the SR 520 ROW until it reaches
- 25 the Overlake Transit Center Station at NE 40th Street in Redmond.
- 26 The elements of the Project that are located within the City limits include approximately 6 miles of new
- 27 light rail track, six stations, two parking facilities, and other facilities and infrastructure associated with
- the Project.

### 29 **1.2.2 Construction Methods**

- 30 The light rail alignment and stations vary in profile through the East Link corridor—at-grade, trenched,
- retained cut/fill, elevated, and a tunnel in the downtown core of the City (Figures 1-1, 1-2, and 1-3).
- 32 Construction of the light rail line in the City would include civil construction and systems installation
- 33 involving demolition work, clearing and grading, fill and excavation, utility extensions and/or relocations,
- 34 tunneling, and retaining wall installation. Construction would occur over a 6-year period, with the
- 35 majority of physical excavation and construction occurring within the first 4 years, after which
- 36 construction would primarily involve station and tunnel finishing, and systems installation.



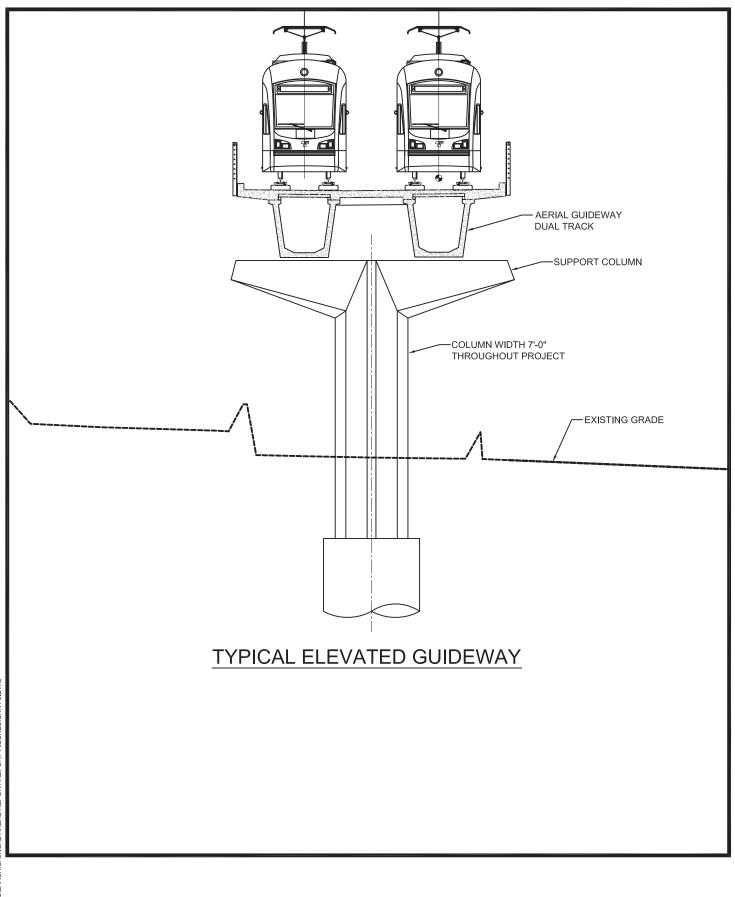


FINAL DESIGN PARTNERS.

SoundTransit

EAST LINK EXTENSION SOUTH BELLEVUE TO OVERLAKE TRANSIT CENTER

FIGURE 1-2 TYPICAL EAST LINK AT GRADE GUIDEWAY DETAIL





EAST LINK EXTENSION

SOUTH BELLEVUE TO OVERLAKE TRANSIT CENTER FIGURE 1-3 TYPICAL EAST LINK ELEVATED GUIDEWAY DETAIL

# 1 **1.3 Project Setting**

- 2 The portion of the Project area addressed in this report is located within lowland areas adjacent to Lake
- 3 Washington within the City limits (Figure 1-1). The Project area where construction will occur is largely
- 4 within a densely populated area of the City that includes residential communities, office complexes, and
- 5 the downtown city center. This area includes property under a variety of ownerships, including
- 6 Washington State Department of Transportation (WSDOT) and City roads and rights-of-way, and parcels
- 7 under City and private commercial or residential ownership. Also present in the Project area are
- 8 streams, wetlands, and other critical areas, which are the subject of this report. Appendix A provides a
- 9 series of maps of the Project area, including wetland and stream locations.

### 10 **1.3.1 Review of Existing Information**

- 11 As part of the analysis to identify natural resources and critical areas in the Project area, literature and
- 12 information sources on topography, soils, hydrology, and plant communities and habitats were
- 13 reviewed. The following sources of information were used to support field observations:
- Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA 2013a)
- 15 Hydric Soil List for Washington State (USDA 2013b)
- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory (NWI)
   Map Information (USFWS 2013)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species Maps
   (WDFW 2013a)
- WDFW SalmonScape Interactive mapper (WDFW 2013b)
- Bellevue City Code (BCC) (Bellevue 2013a)
- Bellevue Critical Areas Maps (Bellevue 2013b)
- East Link Light Rail Project Final Environmental Impact Statement and technical appendices
   (Sound Transit 2011)
- Google Earth aerial imagery (February to April 2013)

# 26 1.3.2 Topography

- 27 The topography in the Project area is typical of lowland areas east of Lake Washington. The majority of
- the Project area includes engineered slopes associated with existing roads and commercial and
- residential development. More distinct changes in elevation within the Project area are typically
- 30 associated with critical area features, such as wetlands and streams, as these features are typically
- 31 located in low lying areas and depressions compared to upland and developed areas.

# 32 **1.3.3 Soils**

- 33 The *NRCS Web Soil Survey* (USDA 2013a) identifies twelve soil series in the Project area:
- Alderwood gravelly sandy loam 0 to 6 percent slopes (AgB)

- Alderwood gravelly sandy loam 6 to 15 percent slopes (AgC)
- 2 Alderwood gravelly sandy loam 15 to 30 percent slopes (AgD)
- 3 Arents—Alderwood material 6 to 15 percent slopes (AmC)
- 4 Bellingham silt loam (Bh)
- 5 Everett-Alderwood gravelly sandy loam 6 to 15 percent slopes (EwC)
- 6 Everett gravelly sandy loam 5 to 15 percent slopes (EvC)
- 7 Norma sandy loam (No)
- 8 Seattle muck (Sk)
- 9 Snohomish silt loam (So)
- 10 Tukwila muck (Tu)
- Urban land (Ur)

12 The primary constituent soil series within the Project area include Alderwood gravelly sandy loam,

13 Arents - Alderwood material, Everett-Alderwood gravelly sandy loam, Everett gravelly sandy loam, and

14 urban land. According to the Hydric Soil List for Washington State (USDA 2013b), Bellingham silt loam,

15 Norma sandy loam, Seattle muck, Snohomish silt loam, and Tukwila muck soils series are classified as

16 hydric soils, while Alderwood gravelly sandy loam, Arents - Alderwood material, Everett gravelly sandy

17 loam, and Everett-Alderwood soil series are not classified as hydric soils. Upland soils in the Project area

18 have been extensively disturbed by roadway construction and maintenance, development, and ditching.

# 19 **1.3.4 Hydrology**

20 The Project area contains nine drainage basins within the Cedar/Sammamish Watershed (Water

21 Resource Inventory Area 8 [WRIA 8]) (Ecology 2013) (Figure 1-4). There are eight basins within the City

limits, including the following in order from west to east along the Project alignment: Beaux Arts,

23 Mercer Slough, Sturtevant Creek, West Tributary, Goff Creek, Kelsey Creek, Valley Creek, and Sears

24 Creek (City of Bellevue 2013b). The first seven basins are located entirely within the City. The eighth

25 basin, Sears Creek, is located within the city limits of both Bellevue and Redmond. A ninth basin within

the Project area, Lake Sammamish, is located within the city limits of Redmond.

27 Hydrologic characteristics in the Project area are influenced by regional groundwater, direct

28 precipitation, surface water runoff, streams and drainage features. Mercer Slough and Mercer Slough

29 West Branch are the largest water body features in the Project area and Lake Washington is located

30 near the southern end of the Project area.

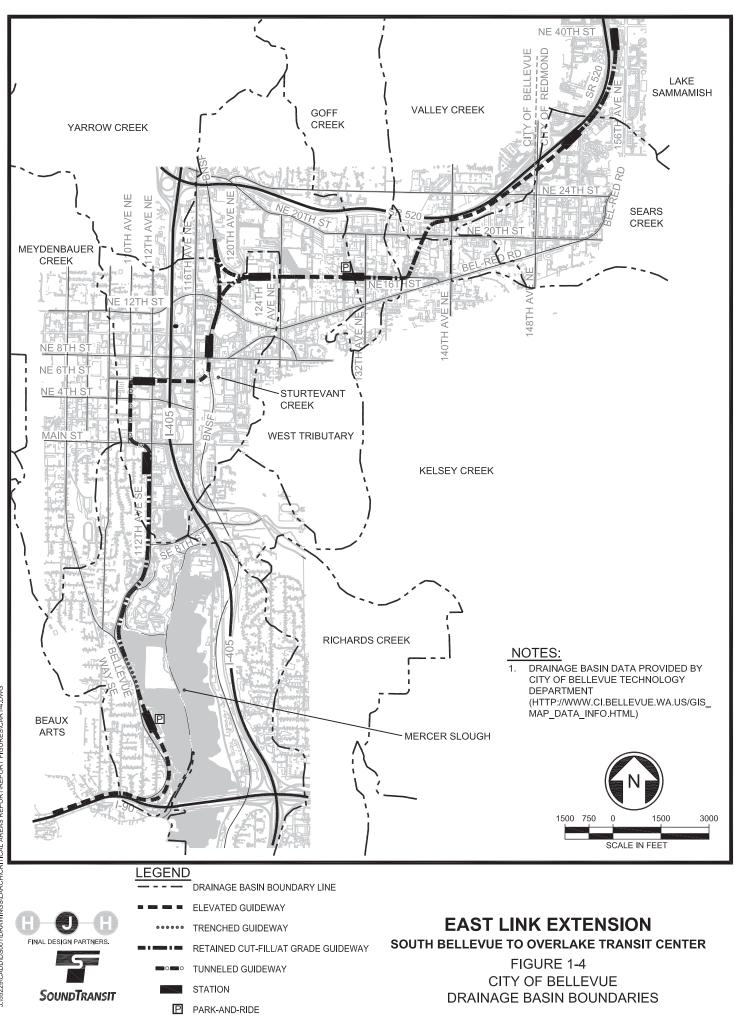
31 In total, 11 streams were identified and/or delineated within areas of proposed Project construction or

32 are in close proximity to the Project within Bellevue limits. Stream names were established specifically

for the Project and are based on common geographic identifiers within the area. A summary of stream

- channels within the Project area that will be disturbed, or have buffers that will be disturbed, under the
- 35 proposed Project are discussed in Section 2.3. A complete description of the stream survey and
- associated figures showing the locations of streams within the Project area are presented in the *Sound*

- 1 Transit East Link Extension Project Wetland, Stream, and Jurisdictional Ditch Delineation Report
- 2 (Delineation Report; Anchor QEA 2013); maps of these resources are included in Appendix A.
- 3 **1.3.5** Plant Communities and Habitat
- 4 The Project area lies within the western hemlock (*Tsuga heterophylla*) vegetation zone of western
- 5 Washington (Franklin and Dyrness 1988). Vegetation is dominated by needle-leaved, evergreen tree
- 6 species, such as Douglas fir (*Pseudotsuga menziesii*), western hemlock, and western red cedar (*Thuja*
- 7 *plicata*). Other dominant tree species include red alder (*Alnus rubra*) and big-leaf maple (*Acer*
- 8 *macrophyllum*). The western hemlock vegetation zone is a forest climax community and does not
- 9 necessarily reflect existing vegetation in the Project area, but provides a general description of forested
- 10 habitat in this region of Puget Sound.
- 11 Overall, five vegetation communities were identified within the Project area: mowed and unmowed
- 12 grassland areas; shrubland; mixed deciduous/coniferous forest; commercial and residential areas
- 13 containing a fragmented mixture of native, nonnative, and ornamental plant species; and wetlands.
- 14 Generally, tree species occur in scattered patches and upland areas, including areas adjacent to the
- 15 existing roadway, residential and commercial properties, and disturbed areas. Vegetation in the ROW
- 16 upland areas includes species typically associated with human disturbance and past land-clearing
- activities. The largest undisturbed forested habitat areas within and near the Project area are the
- 18 habitat areas associated with the Mercer Slough. A complete description of vegetation in the Project
- 19 area is presented in Section 2.1.2.



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- 1 The USFWS Wetlands Mapper for NWI Map Information identifies Palustrine aquatic bed (PAB),
- 2 Palustrine emergent (PEM), Palustrine scrub-shrub (PSS), and Palustrine forest (PFO) wetland systems
- 3 within and in the vicinity of the Project area (USFWS 2013). WDFW Priority Habitats and Species (PHS)
- 4 maps identify wetland habitat in the same area as the NWI maps (WDFW 2013a).
- 5 In total, 21 wetlands were identified and/or delineated within areas of proposed Project construction or
- 6 are in close proximity to the Project within Bellevue limits. Wetland names were specifically established
- 7 for the Project and are based on common geographic identifiers within the area. A summary of
- 8 wetlands and wetland buffers within the Project area that will be disturbed under the proposed Project
- 9 are discussed in Section 2.2. A complete description of the wetland delineation results and associated
- 10 figures are presented in the Sound Transit East Link Extension Project Wetland, Stream, and
- 11 *Jurisdictional Ditch Delineation Report* (Delineation Report; Anchor QEA 2013); maps of these resources
- 12 are included in Appendix A.

# **13 1.4 Project Compliance with City Code Performance Standards and Criteria**

14 The preparation of this CAR included an evaluation of the BCC requirements for the development of

15 light rail facilities and associated critical areas review and reporting. A summary of these code

requirements and how the analyses contained within this report meet the requirements is summarizedhere.

18

# 1.4.1 Consistency with Light Rail Overlay District (Chapter 20.25M LUC)

19 In February 2013, the City passed Ordinance 6101, which amended the LUC to "allow for the permitting

20 and review of Light Rail Facilities and Systems," and created a Light Rail Overlay District (Chapter 20.25M

- LUC). Under Ordinance 6101, the provisions of the Critical Areas Overlay District (LUC 25.25H) are
- incorporated by reference into the new Light Rail Overlay District. At the same time, the City also
- passed Ordinance 6102, to provide consistency between the new Light Rail Overlay and existing land use
- code. Ordinance 6102 includes an amendment to LUC.20.25H.055.B that specifically identifies Regional
- Light Rail Transit (RLRT) Facilities as Essential Public Facilities that are regulated by Part 20.25M. The
- 26 methodology and analyses contained within this CAR are consistent with the standards established for

27 the Light Rail Overlay District and with the corresponding critical areas allowances.

- 28 The provisions of Ordinance 6101 include LUC 20.25M.030.C.3, which defines the requirements for a
- 29 consolidated permitting process for light rail facilities—Design and Mitigation Review. These
- 30 requirements include specific measures for proposed RLRT Facility that "will be located, in whole or in

31 part, in a critical area regulated by Part 20.25H LUC." These requirements (LUC 20.25.M.030.3.j) include

- 32 the measure that such a facility shall satisfy the following additional criteria.
- i. The proposal utilizes, to the maximum extent possible, the best available construction,
   design, and development techniques, which result in the least impact on the critical area
   and critical area buffer;
- 36Demonstration of Meeting Criteria: Sound Transit completed a lengthy environmental37review process, which served to avoid and minimize impacts to critical areas throughout

15	1 4 3	Porformanco Standards
13 14		<b>Demonstration of Meeting Criteria:</b> The Project includes a mitigation plan, contained within this report.
9 10 11 12	<i>iii.</i>	The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan.
7 8		<b>Demonstration of Meeting Criteria:</b> Achievement of these performance standards to the maximum extent possible is discussed in Section 1.4.2.
5 6	ii.	The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and
1 2 3 4		the alignment. During design, further efforts were made to adjust the light rail alignment and positioning of features such as the guideway columns to avoid wetlands and streams and their buffers. The resulting impacts from the Project (less than 1 acre) represent the maximum extent of avoiding impacts to critical areas.

- 15 **1.4.2 Performance Standards**
- 16 In accordance with LUC 20.25H.055.B, projects within a critical area or its buffer must meet all

17 applicable performance standards. The performance standards applicable to the Project are identified

18 in Table 1-1 and discussed in the following sections.

# Table 1-1 City of Bellevue Performance Standards for Proposed Elements of Light Rail Project in Critical Areas

		Performance	e Standards	
Improvement	Wetlands	Streams	Geologic Hazard Areas	Areas of Special Flood Hazard
New or expanded essential public facilities	20.25H.055.C.2; 20.25H.100	20.25H.055.C.2; 20.25H.080.A; 20.25H.080.B	20.25H.055.C.2; 20.25H.125	20.25H.055.C.2; 20.25H.180.C; 20.25H.180.D.3

21

# 22 **1.4.3 LUC 20.25H.055.C.2**

23 The Project, which includes its associated mitigation, is an Essential Public Facility. The performance 24 standards of 20.25H.055C.2 ordinarily require an applicant who proposes to do work in a critical area to 25 demonstrate that there is "no technically feasible alternative with less impact on the critical area or 26 critical area buffer." However, this performance standard does not apply to this application because 27 Chapter 20.25M LUC states in LUC 20.25M.040.I.2 that, "[a] regional transit authority is not required to 28 demonstrate that no technically feasible alignment or location alternative with less impact exists for any 29 RLRT Facility, provided that the alignment location and profile of the RLRT System or Facility use has 30 been approved by the City Council pursuant to an adopted resolution..." The City Council approved the 31 alignment on April 22, 2013 in Resolution No. 8576.

1.4.4 LUC 20.25H.080.A and LUC 20.25H.080.B 1 2 The proposed Project meets the performance standard described in LUC 20.25H.080, which reads as 3 follows for development in certain streams: 4 Development on sites with a type S or F stream or associated critical area buffer shall 5 incorporate the following performance standards in design of the development, as applicable: 6 A. General. 7 1. Lights shall be directed away from the stream. 8 Performance Standard Achievement: Four streams that will be impacted by the Project meet the 9 condition of this standard: Wye Creek (Type F), Mercer Slough West Branch (Type S), Sturtevant Creek 10 (Type F), and Goff Creek (Type F). Light features will be directed away from streams, with the exception 11 of areas that require illumination to address public safety concerns. Minimization efforts, such as 12 shielding or reduced footcandles, will be implemented where possible. 13 2. Activity that generates noise such as parking lots, generators, and residential uses shall 14 be located away from the stream or any noise shall be minimized through use of design 15 and insulation techniques. 16 Performance Standard Achievement: The proposed operational improvements that would impact the 17 Type F and Type S streams are anticipated to have minimal impacts to aquatic habitat. Care has been taken during design to avoid and minimize impacts to these streams by locating facilities away from 18 19 streams and implementing mitigation measures where possible. 20 3. Toxic runoff from new impervious area shall be routed away from the stream. 21 Performance Standard Achievement: Any toxic runoff from new impervious areas will be collected and 22 routed away from the Type F and Type S streams. 23 4. Treated water may be allowed to enter the stream critical area buffer. 24 Performance Standard Achievement: Water will be treated before entering into Type F or Type S 25 stream buffers or routed away from Type F and Type S streams and their associated buffers. 26 5. The outer edge of the stream critical area buffer shall be planted with dense vegetation 27 to limit pet or human use. 28 Performance Standard Achievement: All planted buffer areas that are adjacent to areas that can be 29 accessed by the public will be densely planted with thorny species and/or fenced off with signage. 30 6. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream 31 critical area buffer shall be in accordance with the City of Bellevue's "Environmental 32 Best Management Practices," now or as hereafter amended.

2 the edge of the stream critical area buffer will be in accordance with the City of Bellevue's 3 "Environmental Best Management Practices," now or as amended in the future. 4 B. Modification of Stream Channel. 5 1. When Allowed. A stream channel shall not be modified by relocating the open channel, 6 or by closing the channel through pipes or culverts unless in connection with the 7 following uses allowed under LUC 20.25H.055: 8 a. A new or expanded utility facility or system; 9 A new or expanded essential public facility; b. Public flood control measures; 10 c. 11 d. In-stream structures; 12 New or expanded public ROW, private roads, access easements or driveways; e. 13 f. Habitat improvement project; or 14 Reasonable use exception; provided, that a modification may be allowed under this g. 15 section for a reasonable use exception only where the applicant demonstrates that 16 no other alternative exists to achieve the allowed development. 17 Performance Standard Achievement: The Project is a new essential public facility, and therefore meets 18 this performance standard under B.1.b. above. 19 A critical areas report may not be used to modify the uses set forth in this subsection B.1. 20 2. Critical Areas Report Required. Any proposal to modify a stream channel under this 21 section may be approved only through a critical areas report. 22 Performance Standard Achievement: The Project will require the relocation of Sturtevant Creek, and 23 this Critical Areas Report has been prepared to support the approval of the relocation design. The 24 relocation will provide an overall improvement in ecological function of Sturtevant Creek as 25 demonstrated in Section 3 of this report. 26 3. Relocation of Closed Stream Channel. Any proposal to relocate an existing closed stream 27 channel may be approved only through a critical areas report. (Ord. 5680, 6-26-06, § 3) 28 Performance Standard Achievement: The Project will require the relocation of Unnamed Tributary to 29 Kelsey Creek, and this CAR has been prepared to support the approval of the relocated design. The 30 relocation will maintain existing hydrologic functions, and mitigation for impacts will be addressed at 31 West Tributary to Kelsey Creek, which will be an improvement over existing conditions. Further 32 discussion of the proposed mitigation and resulting ecological improvements is provided in Section 3 of 33 this report.

Performance Standard Achievement: Use of pesticides, insecticides, and fertilizers within 150 feet of

1

#### 1.4.5 LUC 20.25H.100 1 2 The proposed Project meets the performance standard described in LUC 20.25H.100, which reads as 3 follows for Development on Sites with a wetland or wetland critical area buffer: 4 Development on sites with a wetland or wetland critical areas buffer shall incorporate the following 5 performance standards in design of the development, as applicable: 6 A. Lights shall be directed away from the wetland. 7 B. Performance Standard Achievement: Light features will be directed away from wetlands, with 8 the exception of areas that require illumination to address public safety concerns. Minimization 9 efforts, such as shielding or reduced footcandles, will be implemented where possible. 10 Performance Standard Achievement: The proposed operational improvements that would impact the 11 wetlands are anticipated to have minimal impacts. Care has been taken during design to avoid and 12 minimize impacts to wetlands by locating facilities away from wetlands and implementing mitigation 13 measures where possible. 14 C. Toxic runoff from new impervious area shall be routed away from the wetlands. Performance Standard Achievement: Any toxic runoff from new impervious surfaces will be routed 15 away from the wetlands within the Project corridor. 16 17 D. Treated water may be allowed to enter the wetland critical area buffer. Performance Standard Achievement: Water will be treated before entering into wetland buffers, or 18 19 routed away from wetlands and their associated buffers, if it is not needed to maintain hydrologic 20 functions. 21 E. The outer edge of the wetland critical area buffer shall be planted with dense vegetation to limit 22 pet or human use. 23 Performance Standard Achievement: All planted buffer areas that are adjacent to areas that can be 24 accessed by the public will be densely planted with thorny species and/or fenced off with signage. 25 F. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream (SIC) buffer be in accordance with the City of Bellevue's "Environmental Best Management Practices," 26 27 now or as hereafter amended. (Ord. 5680, 6-26-06, § 3) 28 Performance Standard Achievement: Use of pesticides, insecticides and fertilizers within 150 feet of the 29 edge of the wetland critical area buffers shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as amended in the future. 30 LUC 20.25H.125 31 1.4.6 32 The proposed Project meets the performance standard described in LUC 20.25H.125, which reads as 33 follows regarding landslide hazards and steep slopes:

In addition to generally applicable performance standards set forth in LUC 20.25H.055 and 20.25H.065, development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

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 A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

9 Performance Standard Achievement: Elevated track segments will maintain existing slope contours at
 10 columns' locations, where possible. At-grade track segments between 130th Avenue NE and NE 20th

11 Street will conform to existing street grades. Required track grade separations for maintaining access to

- 12 the historic Winters House and for street crossings of 112th Avenue SE, 120th Avenue NE, and 124th
- 13 Avenue NE will require topography modifications. Retaining walls and slopes minimize the Project
- 14 footprint and extent of topography modification.
- A. Structures and improvements shall be located to preserve the most critical portion of the
   site and its natural landforms and vegetation;

Performance Standard Achievement: Improvements in steep slopes and structure setbacks have been
 located to minimize impacts to wetland and stream critical areas. There is no ability to modify locations.
 Retaining walls and slopes are designed to match existing topography and minimize disturbance to

20 natural landforms and vegetation. The proposed development shall not result in greater risk or a need

21 for increased buffers on neighboring properties;

Performance Standard Achievement: Structure design in steep slope areas, buffers, and structures
 setbacks is based on geotechnical analyses and recommendations that avoid risk to the light rail transit
 facilities, users, and neighboring properties. Geotechnical analyses are available upon request as a
 separate report.

- B. The use of retaining walls that allow the maintenance of existing natural slope area is
  preferred over graded artificial slopes where graded slopes would result in increased
  disturbance as compared to use of retaining wall;
- Performance Standard Achievement: Retaining walls are used in proximity to critical areas to minimize
   Project footprint, slope modification, and disturbance to adjacent properties.
- C. Development shall be designed to minimize impervious surfaces within the critical area and
   critical area buffer;
- Performance Standard Achievement: Project impervious surfaces are minimized. All retained cut track
   sections on steep slopes or buffers have track and retaining wall underdrains.
- 35D. Where change in grade outside the building footprint is necessary, the site retention system36should be stepped and regrading should be designed to minimize topographic modification.

1 2	On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;
3 4 5 6 7	<b>Performance Standard Achievement:</b> This condition is not generally relevant to the elevated, at-grade, and retained cut and fill track sections. The East Main, Hospital, and 120th Avenue Stations are built to property lines and do not have these conditions. Site grading for the South Bellevue Station and parking structure and the 130th Avenue Station and surface parking is designed to minimize topographic modification.
8 9 10 11	E. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;
12 13	<b>Performance Standard Achievement:</b> Retaining walls are integral with transit guideway and station components.
14 15 16 17	F. On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;
18 19 20	<b>Performance Standard Achievement:</b> Pole-type construction is not appropriate for the transit guideway construction located on and over steep slopes. The Project has been designed to minimize topographic modification.
21 22	G. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and
23 24	<b>Performance Standard Achievement:</b> The Project does not include any parking areas or garages on slopes in excess of 40 percent.
25 26 27	H. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210. (Ord. 5680, 6-26-06, § 3)
28 29 30 31	<b>Performance Standard Achievement:</b> The mitigation and monitoring additional provisions for steep slopes required by 20.25H.135 will be met by the contract plans and specifications including, but not limited to, temporary erosion and sediment control, drainage, and landscape site restoration, and by monitoring of discharges to surface waters.
32 33 34 35 36	Measures to be taken to provide long-term stabilization of steep slopes include the installation of soil nails within areas surrounding guideway columns to prevent erosion and scouring and assist in protection against landslides triggered by seismic activity. These techniques are proposed within a wetland buffer as an alternative to fill slopes that would extend into and impact adjacent wetlands. More information can be found within the geotechnical recommendations reports.

1 2	•	within areas adjacent to existing wetlands are also proposed as a means to protect high- areas and associated habitat.
3	1.4.7	LUC 20.25H.180.C
4 5		Project meets the performance standard described in LUC 20.25H.180.C, which reads as ng Special Flood Hazard Areas:
6	C. Gen	eral Performance Standards
7 8		use or development is allowed pursuant to LUC 20.25H.055 ( <i>See Table 1-1</i> ), the following I performance standards apply:
9 10	1.	Intrusion Over the Area of Special Flood Hazard Allowed. Any structure may intrude over the area of special flood hazard if:
11 12		a. The intrusion is located above existing grade, and does not alter the configuration of the area of special flood hazard;
13 14 15 16		b. The intrusion is at an elevation and orientation which maintains the existing vegetation of the area of special flood hazard in a healthy condition. Solar access to vegetation must be maintained at least 50 percent of daylight hours during the normal growing season; and
17 18		c. The intrusion does not encroach into the regulated floodway except in compliance with subsection C.5 of this section.
19 20 21 22 23 24 25 26	flood hazard, ju southeast of the with columns to orientation to maintained whe concerns and to	tandard Achievement: The guideway crosses over the existing grades of areas of special ust north of the Hospital Station to the east of Lake Bellevue, and near Valley Creek, just he intersection of 140th Avenue NE and SR 520. In both areas, the guideway is elevated hat are not located within the floodplains, and that are at a sufficient height and maintain the existing vegetation in a healthy condition. The existing vegetation will be ere possible, but may be altered due to the need to replace vegetation for safety he need to replace invasive species with native species. In both areas, solar access to be maintained at least 50 percent of daylight hours during the normal growing season.
27 28	•	not meeting the requirements of this subsection C.1 may be allowed pursuant to LUC d only in accordance with the requirements set forth in the remainder of this section C.
29 30 31 32 33 34 35	2.	Elevation Certificate Following Construction. Following construction of a structure within the area of special flood hazard, where the base flood elevation is provided, the applicant shall obtain an elevation certificate. The elevation certificate shall be completed by a surveyor licensed in the state of Washington and shall be submitted to City of Bellevue, Utilities Department. The Director shall obtain and transmit to the Director of the Utilities Department the elevation in relation to City of Bellevue vertical datum (North American Vertical Datum 1988 [NAVD88]) of the lowest floor, including

1 2 3 4	basement, and attendant utilities of a new or substantially improved structure permitted by this part. All records shall be maintained for public inspection in accordance with 44 Code of Federal Regulations 60.3(b)(5)(iii) and the City of Bellevue record retention policy.
5 6	<b>Performance Standard Achievement:</b> No structures are planned to be located within areas of special flood hazard relating to this Project.
7	3. Construction Materials and Methods.
<pre></pre>	<ul> <li>a. Site Design. All structures, utilities, and other improvements shall be located on the buildable portion of the site out of the area of special flood hazard unless there is no buildable site out of the area of special flood hazard. For sites with no buildable area out of the area of special flood hazard, structures, utilities, and other improvements shall be placed on the highest land on the site, oriented parallel to flow rather than perpendicular, and sited as far from the stream and other critical areas as possible. Located in flood-fringe where flood flow velocities are less than three feet per second and flood depths are less than three feet. If the Director detects any evidence of active hyporheic exchange on a site, the development shall be located to minimize disruption of such exchange.</li> </ul>
18 19 20 21 22 23 24 25 26 27	<b>Performance Standard Achievement:</b> Improvements are proposed within the Sweyolocken mitigation site, which is partially located within the 100-year floodplain of Mercer Slough East. These improvements would not interfere with the function of an area of special flood hazard or require a buildable site. Currently, approximately 7 acres of wetland enhancement/rehabilitation are proposed at this site, and it is estimated that 3 acres are within the 100-year floodplain. Project demands led to using this site for mitigation because there are limited mitigation sites within the City of Bellevue. The nature of the wetland enhancement/rehabilitation work involves some minor grading activities, but presents little opportunity to place improvements on the highest land on the site, orient improvements parallel to the flow, or locate improvements away from streams or other critical areas. However, if Project mitigation needs are reduced, reductions will occur within the 100-year floodplain areas first.
28 29 30	<ul> <li>Methods That Minimize Flood Damage. All new construction and substantial improvements shall be constructed using flood-resistant materials and using methods and practices that minimize flood damage.</li> </ul>
31 32	<b>Performance Standard Achievement:</b> Flood waters entering into the Sweyolocken mitigation site are not anticipated to create any damage to the improvements.
33 34 35 36	c. Utility Protection. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

1 2			dard Achievement: No utilities or service facilities that are associated with the Project e located within at-grade areas of special flood hazard.
3 4		d.	Anchoring. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
5 6 7 8	mitigation site woody debris)	will that	dard Achievement: A majority of the habitat features within the Sweyolocken be located outside of the 100-year floodplain. Any habitat features (such as large t are located within the 100-year floodplain will be anchored with duckbill anchors ent lateral movement.
9 10	4.		e Rise in the Base Flood Elevation (BFE). Any allowed use or development shall not sult in a rise in the BFE.
11 12 13		a.	Post and Pile. Post and piling techniques are preferred and are presumed to produce no increase in the BFE. Demonstration of no net rise in the BFE through calculation is not required.
14 15 16 17 18		b.	Compensatory Storage. Proposals using compensatory storage techniques to assure no rise in the BFE shall demonstrate no net rise in the BFE through the calculation by methods established in the Utilities Storm and Surface Water Engineering Standards, January 2011, Section D4-04.5, Floodplain/Floodway Analysis, now or as hereafter amended.
19 20 21 22	that are within will be shown u	the usin	dard Achievement: Earthwork improvements within the Sweyolocken mitigation site 100-year floodplain will be balanced, meaning there will be no rise in the BFE. This g the calculation methods established in the Utilities Storm and Surface Water ards mentioned above.
23	5.	De	velopment in the Regulatory Floodway.
24 25 26 27 28 29		a.	Encroachment into Regulatory Floodway Prohibited. Encroachments, including, but not limited to, fill, new construction, substantial improvements, and other development, are prohibited, unless a registered professional engineer certifies that the proposed encroachment into the regulatory floodway shall not result in any rise in the BFE using hydrological and hydraulic analysis performed in accordance with City of Bellevue Storm and Surface Water Engineering Standards, January 2011, or as hereafter amended. All new construction and substantial improvements shall
30 31			comply with this section.
			· ·

1 2	identified as historical places. Construction or reconstruction of residential structures is prohibited within the regulatory floodway, except when:
3 4	i. Repairs, reconstruction, or improvements to a structure do not increase the footprint; and
5 6 7 8 9 10 11 12 13	ii. Repairs, reconstruction, or improvements to a structure, the cost of which does not exceed 50 percent of the market value of the structure either (1) before the repair, reconstruction, or improvement is begun, or (2) if the structure has been damaged, and is being restored, before the damage occurred. Work done to comply with state or local health, sanitary, or safety codes identified by the Building Official and which are the minimum necessary to assure safe living conditions or any alteration of a structure listed on the National Register of Historic Places shall not be included in the 50 percent market value determination.
14	erformance Standard Achievement: Residential structures are not included in this Project
15	c. Substantially Damaged Residential Structures.
<ol> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> <li>21</li> <li>22</li> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> </ol>	<ul> <li>i. The Director may request the Washington State Department of Ecology (Ecology) assess the risk of harm to life and property posed by the specific conditions of the regulatory floodway, and provide the City with a recommendation on repair or replacement of a substantially damaged residential structure consistent with WAC 173-158-076, now or as hereafter amended. Property owners shall be responsible for submitting to the City any information necessary to complete the assessment when such information is not otherwise available. No repair or replacement of a substantially damaged residential structure located in the regulatory floodway is allowed without a recommendation from the Department of Ecology.</li> <li>ii. Before the repair, replacement, or reconstruction is started, all requirements of this section must be satisfied. In addition, the following conditions shall be</li> </ul>
28 29 30 31	<ul> <li>met:</li> <li>(1) There is no potential safe building location for the replacement residential structure on the same property outside the regulatory floodway;</li> </ul>
32 33 34	<ul> <li>A replacement residential structure is a residential structure built as a substitute for a previously existing residential structure of equivalent use and size;</li> </ul>
35 36	<ul> <li>Repairs or reconstruction or replacement of a residential structure shall</li> <li>not increase the total square footage of floodway encroachment;</li> </ul>

1 2 3			(4)	The elevation of the lowest floor of the substantially damaged or replacement residential structure is a minimum of one foot higher than the base flood elevation;
4 5			(5)	New and replacement water supply systems are designed to eliminate or minimize infiltration of flood water into the system;
6 7 8			(6)	New and replacement sanitary sewerage systems are designed and located to eliminate or minimize infiltration of flood water into the system and discharge from the system into the flood waters; and
9 10			(7)	All other utilities and connections to public utilities are designed, constructed, and located to eliminate or minimize flood damage.
11 12	Performance S this Project.	tand	dard Achievo	ement: Repair or replacement of residential structures is not included in
13 14	6.			f Stream Channel. Alteration of open stream channels shall be avoided, if voidable, the following provisions shall apply to the alteration:
15 16		a.	Modification projects.	ons shall only be allowed in accordance with the habitat improvement
17		b.	Modificatio	on projects shall not result in blockage of side channels.
18 19 20		c.	Ecology an	Bellevue shall notify adjacent communities, the state departments of d Fish and Wildlife, and the Federal Insurance Administration about the modification at least 30 days prior to permit issuance.
21 22 23 24		d.	to ensure t bonded for	ant shall maintain the altered or relocated portion of the stream channel that the flood-carrying capacity is not diminished. Maintenance shall be r a period of five years, and be in accordance with an approved ce program.
25 26	Performance S hazard will hav			ement: None of the stream channels located within areas of special flood
27 28 29 30	7.	flo wo	od storage v ould reduce t	Storage. Development proposals must not reduce the effective base rolume of the area of special flood hazard. Grading or other activity that the effective storage volume must be mitigated by creating compensatory site. The compensatory storage must:
31		a.	Provide eq	uivalent elevations to that being displaced;
32		b.	Be hydraul	ically connected to the source of flooding;
33 34		c.	Be provide September	d in the same construction season and before the flood season begins on <sup>-</sup> 30th;

1 2	d.	Occur on site or off site if legal arrangements can be made to assure that the effective compensatory storage volume will be preserved over time;
3	e.	Be supported by a detailed hydraulic analysis that:
4		i. Is prepared by a licensed engineer;
5 6		ii. Demonstrates that the proposed compensatory storage does not adversely affect the BFE; and
7 8 9 10	f.	Meet all other critical areas rules subject to this part. If modification to a critical area or critical area buffer is required to complete the compensatory storage requirement, such modification shall be mitigated pursuant to an approved mitigation and restoration plan, LUC 20.25H.210.
11 12		<b>lard Achievement:</b> None of the Project areas will reduce the effective base flood hin areas of special flood hazard. Minor grading activities are proposed at the
 13 14	U U	ation site, but will result in no rise in BFE because all earthwork will be balanced

# 1 **2.0 Critical Areas Assessment**

- 2 This section provides a description of critical areas protected under the BCC (Bellevue 2013a), including
- 3 Habitat Associated with Species of Local Importance, Wetlands, Streams, Areas of Special Flood Hazard,
- 4 and Geologic Hazard. In addition, this section provides a description of Probable Cumulative Impacts
- 5 associated with the Project.
- Shoreline critical area buffers impacted by the Project overlap in all instances with stream and wetland
   critical area buffers. As such, avoidance, minimization, impacts, and mitigation to shoreline critical area
- 8 buffers are fully addressed in the discussion of stream and wetland buffers in this document.

# 9 2.1 Habitat Associated with Species of Local Importance

- 10 This section was prepared based on the submittal requirements identified in LUC 20.25H.250 (City of
- 11 Bellevue 2013a). Species of local importance are recognized populations of native species that are at
- 12 risk of being lost from the City.
- 13 This section also includes a Habitat Assessment in accordance with LUC 20.25H.165. The habitat
- 14 assessment is an investigation of the site to evaluate the potential presence or absence of designated
- 15 species of local importance or habitat for species of local importance. Information in the habitat
- 16 assessment includes a description of vegetation communities and habitat conditions in the Project area,
- 17 the identification of species of local importance that occur or could potentially occur in the Project area,
- 18 and whether site conditions meet the needs of any species of local importance. Also included in the
- assessment is a summary of the analysis of federally-listed species protected under the Endangered
- 20 Species Act (ESA), as described in the Biological Assessment (BA) that was prepared for the Project (Axis
- 21 Environmental, LLC and CH2M HILL 2010).

# 22 **2.1.1 Methods**

- 23 To document and describe habitat characteristics within the Project area, existing information was
- 24 reviewed (Section 1.3.1), an aerial photograph assessment was performed, and site visits were
- conducted in in February, March, April, and May, June, July, and August 2013. During the site visits,
- 26 general information regarding habitats and dominant plant species and communities was documented
- 27 while walking through the Project area and performing wetland delineations and tree surveys for the
- 28 Project. The majority of the Project area was accessible during the investigation, although some
- 29 property parcels were not accessible due to limited right-of-entry (ROE) authorizations. Wildlife species,
- 30 tracks, and other signs observed during the site visits were documented. All observations were
- 31 qualitative; no quantitative wildlife surveys were performed.

# 32 2.1.2 Vegetation Communities

- The Project area is located within a densely populated urban area of the City that is dominated by
   commercial and residential development, with the exception of the Mercer Slough Nature Park. As a
- result, the majority of vegetation communities located within the Project area are fragmented and

- 1 associated with road ROWs and residential and commercial development. Mercer Slough Nature Park is
- 2 a large complex (greater than 350 acres) of wetland and upland habitats associated with the slough and
- 3 Lake Washington. The park contains a wide variety of emergent, shrub, and forested vegetation
- 4 communities.
- 5 Five general vegetation communities were identified within the Project area: mowed and unmowed
- 6 grassland areas; shrubland; mixed deciduous/coniferous forest; commercial and residential areas
- 7 containing a fragmented mixture of native, nonnative, and ornamental plant species; and wetlands.
- 8 Mowed and unmowed grassland areas are common throughout the Project area. Portions of the Project
- 9 area that are dominated by grassland habitat include residential and commercial properties and habitat
- adjacent to City roads and SR 520. Plant species within the grassland habitat includes a variety of native
- and nonnative grasses and herbaceous species that are common within King County, including Colonial
- 12 bentgrass (Agrostis capillaris), common velvet-grass (Holcus lanatus), Kentucky bluegrass (Poa
- 13 *pratensis*), red fescue (*Festuca rubra*), tall fescue (*Festuca arundinacea*), redtop (*Agrostis gigantea*),
- 14 common dandelion (Taraxacum officinale), English plantain (Plantago lanceolata), red clover (Trifolium
- 15 *pratense*), and white clover (*Trifolium repens*).
- 16 Shrub communities include landscaped vegetation associated with residential and commercial
- 17 development and roadside and disturbed areas. Native shrub species observed in the Project area
- 18 include western azalea (*Rhododendron occidentale*), Indian plum (*Oemleria cerasiformis*), red elderberry
- 19 (Sambucus racemosa), salal (Gaultheria shallon), snowberry (Symphoricarpos albus), beaked hazelnut
- 20 (Corylus cornuta), and salmonberry (Rubus spectabilis). Ornamental shrub species include English laurel
- 21 (Prunus laurocerasus), crabapple (Malus sp.), English ivy (Hedera helix), and a variety of ornamental
- hedge species. Several areas adjacent to the roads and development are dominated by the nonnative
- 23 species Himalayan blackberry (*Rubus armeniacus*).
- 24 Mixed deciduous/coniferous forest habitat is primarily fragmented patches associated with road ROW,
- 25 and commercial and residential development. The only vegetation community in the Project area that
- 26 includes undisturbed habitat larger than one acre and is not fragmented is the habitat near Mercer
- 27 Slough. A tree survey of all trees in the Project area was performed within areas of potential
- disturbances. Native tree species observed within the Project area include big-leaf maple, Douglas fir,
- red alder, western hemlock, western red cedar, paper birch (*Betula papyrifera*), Oregon ash (*Fraxinus*
- 30 *latifolia*), and black cottonwood (*Populus trichocarpa*). Ornamental species include Austrian black pine
- 31 (*Pinus nigra*), crabapple, and cherry (*Prunus* sp.). Many of the shrub species observed in the Project
- 32 area are present as understory species of the forested vegetation.
- 33 Twenty-one wetland communities were identified within the Project area. These wetlands are all
- 34 palustrine systems and include open water, emergent, scrub-shrub, and forested wetland systems. A
- detailed discussion of these wetlands is presented in Section 2.2. Common and scientific names of plant
- 36 species observed within the Project area are provided in Table 2-1.

1 Table 2-1 Plant Species Observed within the Project Area

2

Scientific Name	Common Name	Scientific Name	Common Name
Trees		Hedera helix	English ivy
Acer macrophylum	Big-leaf maple	Holodiscus discolor	Oceanspray
Abies grandis	Grand fir	llex aquifolium	Holly
Alnus rubra	Red alder	Kalmia spp.	Laurel
Arbutus menziesii	Pacific madrona	Lonicera involucrate	Twinberry
Betula papyrifera	Paper birch	Mahonia aquifolium	Tall Oregon grape
Crataegus douglasii	Black hawthorn	Mahonia nervosa	Low Oregon grape
Fraxinus latifolia	Oregon ash	Oemleria cerasiformis	Indian plum
Malus domestica	Domestic apple	Oplopanax horridus	Devil's club
Malus Sp.	Crabapple	Polygonum cuspidatum	Japanese knotweed
Physocarpus capitatus	Pacific ninebark	Prunus laurocerasus	English laurel
Picea sitchensis	Sitka spruce	Rhododendron occidentale	Western azalea
Pinus monticola	Western white pine	Rhododendron	
Pinus nigra	Austrian black pine	macrophyllum	Pacific rhododendron
Populus tremuloides	Quaking aspen	Ribes bracteosum	Stink currant
Populus trichocarpa	Black cottonwood	Ribes lacustre	Prickly currant
Prunus sp.	Cherry	Rosa gymnocarpa	Wood rose
Prunus emarginata	Bitter cherry	Rosa nutkana	Nootka rose
Pseudotsuga menziesii	Douglas fir	Rubus armeniacus	Himalayan blackberry
Quercus sp.	Oak	Rubus laciniatus	Evergreen blackberry
Rhamnus purshiana	Cascara	Rubus parviflorus	Western thimbleberry
Salix hookeriana	Hooker willow	Rubus spectabilis	Salmonberry
Salix lasiandra	Pacific willow	Rubus ursinus	Trailing blackberry
Salix scouleriana	Scouler willow	Sambucus racemosa	Red elderberry
Thuja plicata	Western red cedar	Spiraea douglasii	Spirea
Tsuga heterophylla	Western hemlock	Symphoricarpos albus	Snowberry
Shrubs	I	Vaccinium ovatum	Evergreen huckleberry
Acer circinatum	Vine maple	Vaccinium parvifolium	Red huckleberry
Cornus nuttallii	Pacific dogwood	Grass, Ferns, & Herbaceous	
Cornus sericea	Red-osier dogwood	Achillea millefolium	Yarrow
Corylus cornuta	Beaked hazelnut	Agropyron repens	Quackgrass
Cytisus scoparius	Scot's broom	Agrostis capillaris	Colonial bentgrass
Gaultheria shallon	Salal	Agrostis gigantean	Redtop
	l	Athyrium filix-femina	Lady fern

Scientific Name	Common Name	Scientific Name	Common Name
Blechnum spicant	Deer fern	Phalaris arundinacea	Reed canarygrass
Brassica campestris	Field mustard	Plantago lanceolata	English plantain
Carex deweyana	Dewey sedge	Plantago major	Common plantain
Carex obnupta	Slough sedge	Poa pratensis	Kentucky bluegrass
Cirsium arvense	Canadian thistle	Polypodium glycyrrhiza	Licorice fern
Convolvulvus arvensis	Orchard morning glory	Polystichum munitum	Sword fern
Dicentra formosa	Pacific bleeding heart	Pteridium aquilinum	Bracken fern
Digitalis purpurea	Foxglove	Ranunculus repens	Creeping buttercup
Epilobium angustifolium	Fireweed	Rorippa palustris	Marsh yellowcress
Epilobium watsonii	Watson's willow-herb	Rumex crispus	Curly dock
Equisetum arvense	Field horsetail	Senecio triangularis	Arrowleaf groundsel
Equisetum telmateia	Giant horsetail	Stachys cooleyae	Cooley's hedge-nettl
Festuca arundinacea	Tall fescue	Streptopus amplexifolius	Claspleaf twisted-sta
Festuca rubra	Red fescue	Tanacetum vulgare	Common tansy
Gallium trifidum	Small bedstraw	Taraxacum officinale	Common dandelion
Geranium robertianum	Stinky bob	Tolmiea menziesii	Piggyback plant
Hedera hibernica	English ivy	Trifolium pratense	Red clover
Holcus lanatus	Common velvet grass	Trifolium repens	White clover
Juncus effusus	Soft rush	Trillium ovatum	Western trillium
Lemna minor	Common duckweed	Typha latifolia	Cattail
Linnaea borealis	Twinflower	Urtica dioica	Stinging nettle
Lysichiton americanus	Skunk cabbage	Verbascum thapsus	Common mullein
Maianthemum dilatatum	False-lily-of-the-valley	Veronica americana	American speedwell
Mentha arvensis	Field mint	Eleocharis palustris	Spike rush
Oenanthe sarmentosa	Water-parsley		-

1

### 2 2.1.3 Fish and Wildlife Habitat

3 The mosaic of vegetation communities within the Project area provides habitat for a variety of

4 terrestrial and aquatic wildlife. Wildlife relies on vegetation for food, shelter, and cover from predators.

5 Wildlife diversity is generally related to the structure and composition of plant species within vegetative

- 6 communities. In general, vegetation communities that contain few species or vegetative layers
- 7 (herbaceous vegetation, shrubs, or trees) support a low diversity of wildlife, whereas vegetation
- 8 communities that are more complex and contain a wide variety of plant species and vegetative layers
- 9 can support a greater diversity of wildlife. Forested and riparian areas with well-developed shrub layers
- 10 are likely to support the greatest number of species and populations of wildlife (Brown 1985).

- 1 Wildlife habitats in the Project area range in quality from low in commercial and residential areas to high
- 2 in the wetland habitat and forested riparian habitat associated with Mercer Slough. The majority of
- 3 habitat in the Project area is developed and therefore provides habitat for disturbance-tolerant species
- 4 typical of urban areas.
- 5 Wildlife species typically observed in the Project area include American crow (*Corvus brachyrhynchos*),
- 6 American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), house sparrow (*Passer*
- 7 *domesticus*), and eastern gray squirrel (*Sciurus carolinensis*). Habitat associated with the Mercer Slough
- 8 provides foraging and nesting sites for a variety of native songbird species, small mammals, reptiles, and
- 9 amphibians. Kelsey West Tributary Pond Wetland is the other notable feature within the Project area
- 10 that provides diverse foraging and nesting habitat for a variety of wildlife species. This habitat is
- 11 surrounded by development so the wetland habitat has minimal vegetated buffer and no vegetated
- 12 corridors connecting the habitat to other undisturbed habitats.
- 13 Eleven stream channels were identified within the Project area. One of the streams was identified as a
- 14 Type S system (Mercer Slough West Branch), four were identified as Type F streams, four were identified
- as Type N streams, and two were identified as Type O streams. Similar to wildlife habitat, fish habitat in
- 16 the Project area ranges in quality from low in commercial and residential areas to high in the wetland
- 17 habitat and forested riparian habitat associated with Mercer Slough. A detailed discussion of these
- streams and potential fish use is presented in Section 2.3. Fish use of streams in the Project area is also
- 19 discussed in Section 2.1.4.

### 20 2.1.4 Species of Local Importance

- 21 The City recognizes 23 species of local importance (LUC 20.25H.150; City of Bellevue 2013a). As part of
- 22 the analysis of species of local importance, Anchor QEA reviewed information from the WDFW PHS
- 23 database on state priority species and habitats that may occur in or near the Project area
- 24 (WDFW 2013a). Species of local importance that could occur within the Project area were identified
- 25 based on observations during the site visits, the WDFW PHS data, the presence of potential suitable
- 26 habitat for priority species within the Project area, and WDFW management recommendations for
- 27 priority species (Larsen 1997, Larsen et. al. 2004, WDFW 2013a).
- 28 Table 2-2 identifies the 23 species of local importance by group (amphibians, birds, mammals, reptiles,
- and fish), the presence or absence of potential suitable habitat within the Project area, and the state
- 30 and federal status of each species (LUC 20.25H.150; City of Bellevue 2013a).

# 1 Table 2-2 Summary of City of Bellevue Designated Species of Local Importance Potential Presence

### 2 within the Project Area

Common Name (Scientific Name)	Suitable Habitat	Potential Suitable Habitat Present Within Project Area	State Status	Federal Status
Amphibians				
Oregon spotted frog (Rana pretiosa)	Ponds and lakes with dense emergent vegetation	Yes (Mercer Slough habitat)	Endangered	Candidate
Western toad ( <i>Bufo</i> <i>boreas</i> )	Still water in ponds and small lakes	Yes (Mercer Slough habitat)	Candidate	Species of concern
Birds				
Bald eagle (Haliaeetus leucocephalus)	Mature trees near water and prey sources	Yes (Mercer Slough habitat)	Sensitive	Species of concern
Common loon ( <i>Gavia</i> <i>immer</i> )	Marine and large lakes and rivers	No (Lake Washington outside Project area)	Sensitive	None
Great blue heron (Ardea herodias)	Fresh and salt-water wetlands, rivers	Yes (Mercer Slough and Kelsey West Tributary Pond Wetland habitat)	Priority	Monitor
Green heron ( <i>Butorides</i> striatus)	Fresh water wetlands with forested habitat	Yes (Mercer Slough and Kelsey West Tributary Pond Wetland habitat)	None	None
Merlin ( <i>Falco columbarius</i> )	Prairies and conifer forests	Yes (Mercer Slough, habitat and mature trees)	Candidate	None
Osprey (Pandion haliaetus)	Marine coasts, lakes, and rivers	Yes (Mercer Slough and Kelsey West Tributary Pond Wetland habitat)	None	None
Peregrine falcon (Falco peregrinus)	Cliffs and vegetated slopes	No	Sensitive	Species of concern
Pileated woodpecker ( <i>Dryocopus pileatus</i> )	Forest with snags and downed wood	Yes (Mercer Slough, Kelsey West Tributary Pond Wetland habitat, and mature trees)	Candidate	None
Purple martin ( <i>Progne subis</i> )	Large dead trees or artificial nesting structures near wetlands, ponds, or marine systems	Yes (Mercer Slough, Kelsey West Tributary Pond Wetland habitat, and mature trees)	Candidate	None

Common Name (Scientific Name)	Suitable Habitat	Potential Suitable Habitat Present Within Project Area	State Status	Federal Status
Red-tailed hawk (B <i>uteo</i> <i>jamaicensis</i> )	Open habitat near forests	Yes (Mercer Slough, Kelsey West Tributary Pond Wetland habitat, and mature trees)	None	None
Vaux's swift ( <i>Chaetura</i> <i>vauxi</i> )	Old growth forest	No	Candidate	None
Western Grebe (Aechmophorus occidentalis)	Large lakes	No (Lake Washington outside Project area)	Candidate	None
Fish/Salmon				
Bull trout (Salvelinus confluentus)	Marine, rivers, and streams	Yes (Mercer Slough)	Candidate	Threatened
Chinook salmon (Oncorhynchus tshawytscha)	Marine, rivers, and streams	Yes (Mercer Slough)	Candidate	Threatened
Coho salmon (Oncorhynchus kisutch)	Marine, rivers, and streams	Yes (Mercer Slough)	Candidate	Species of concern
River lamprey ( <i>Lampetra ayresi</i> )	Rivers and streams	Yes (Mercer Slough)	None	Species of concern
Mammals				
Keen's myotis ( <i>Myotis</i> <i>keenii</i> )	Mature coniferous forest	Yes (Mercer Slough, habitat and mature trees)	Candidate	None
Long-eared myotis ( <i>Myotis</i> evotis)	Mature coniferous forest	Yes (Mercer Slough, habitat and mature trees)	Monitored	None
Long-legged myotis ( <i>Myotis volans</i> )	Mature coniferous forest	Yes (Mercer Slough, habitat and mature trees)	Monitored	None
Western big-eared bat (Plecotus townsedii)	Mature coniferous forest	Yes (Mercer Slough, habitat and mature trees)	None	None
Reptiles				
Western pond turtle (Clemmys marmorata)	Ponds, sloughs, small lakes	Yes (Mercer Slough, habitat)	Endangered	Species of concern

1 2

Sources: City of Bellevue 2013, WDFW 2013, Larsen et al. 1995, Larsen 1997, and Larsen et al. 2004

3

Five species of local importance were observed during February, March, April, and May, June, July, and 1 2 August 2013 site visits: bald eagle, great blue heron, osprey, pileated woodpecker, and red-tailed hawk. 3 All five of these species were observed in the forested habitat associated with the Mercer Slough 4 adjacent to the Project area and not specifically within the Project area boundary. The WDFW PHS 5 database identifies the following habitats and species of local importance within the vicinity of the 6 Project area (0.2 mile): 7 Puget Sound Chinook salmon (Oncorhynchus tshawytscha), resident cutthroat trout 8 (Oncorhynchus clarki), coho salmon (Oncorhynchus kisutch), rainbow trout 9 (Oncorhynchus mykiss), and sockeye salmon (Oncorhynchus nerka) occurrence and migration 10 are documented in Mercer Slough. 11 • In addition to these five species, Puget Sound steelhead (Oncorhynchus mykiss) and Coastal 12 Puget Sound bull trout (Salvelinus confluentus) are documented in Lake Washington south of the 13 Project area. 14 Coho salmon occurrence and migration are documented in the reach of the Mercer Slough West 15 Branch within the Project area and the Mercer Slough East Branch near the Project area. 16 Bald Eagle breeding areas are located on the east shoreline of Lake Washington, more than • 17 1,000 feet outside the Project area to the west. 18 Semipalmated plover (Charadrius semipalmatus) was documented in 1993 south of downtown 19 Bellevue, near the Project area. Semipalmated plover does not have state or federal protected 20 status and is not identified by the City of Bellevue as a species of local importance. 21 • A peregrine falcon (Falco peregrinus) breeding area is documented on a building in downtown 22 Bellevue in the area of the Project that will be tunneled beneath downtown. 23 As described in Section 2.2, wetlands within the Project area identified on the WDFW PHS 24 database include Mercer Slough Wetland, Lake Bellevue Wetland, and Kelsey West Tributary 25 Pond Wetland. 26 The Project area is deliberately located through a highly urbanized area to maximize ridership. Of the 23 27 species identified on the City's species of local importance list, potential suitable habitat for 18 of the 28 species is present within the Project area primarily due to two areas, along the western edge of the 29 Mercer Slough wetland and slough habitat system and the southern edge of the Kelsey West Tributary

- 30 Pond Wetland habitat. These areas contain open water habitat, forested, shrub, and emergent wetland
- 31 and upland vegetation communities, and habitat features such as snags for perching, nesting, and
- 32 foraging. Within these areas, at certain times of the year, bird and bat species of local importance may
- 33 occupy these habitats for breeding, foraging, or passing through on a migratory route. Amphibian,
- reptile, and fish species of local importance could potentially occur within the Mercer Slough habitat.
- 35 Mature trees in the Project area outside of the Mercer Slough habitat could provide habitat for bird and
- 36 bat species of local importance, although they are limited to isolated and fragmented patches in upland
- areas on residential or commercial property or in road ROW.

#### 2.1.5 Federally Protected Species and Critical Habitats 1

- 2 A BA was prepared for the Project to evaluate the potential effects on ESA-listed species and critical
- 3 habitat in compliance with Section 7(a)(2) and Section 3(5)(A) of the ESA (Axis Environmental, LLC and
- 4 CH2M HILL 2010). Information from the BA is summarized in this report. Table 2-3 presents the
- 5 federally-listed species identified in the BA as potentially occurring in the Project area. ESA-listed
- 6 species under National Marine Fisheries Service (NMFS) and USFWS jurisdiction are identified based on
- 7 the geographic boundaries of Distinct Population Segments (DPSs) and Evolutionary Significant Units
- 8 (ESUs). The table also identifies whether critical habitat has been designated by NMFS or USFWS for
- 9 those species within the vicinity of the Project area.

#### 10 Table 2-3 Federally Listed and Proposed Species, ESA Status, Critical Habitat, and Effect

#### 11 **Determinations**

Species	Status	Agency	Effects Determination
Chinook salmon (Oncorhynchus tshawytscha)	Threatened (Puget Sound ESU)	NMFS	NLAA
Chinook salmon Critical Habitat	Designated (Puget Sound ESU)	NMFS	NLAA
Puget Sound steelhead (Oncorhynchus mykiss)	Threatened (Puget Sound DPS)	NMFS	NLAA
Puget Sound steelhead Critical Habitat	Under development (Puget Sound DPS)	NMFS	NA
Bull trout (Salvelinus confluentus)	Threatened (Puget Sound DPS)	USFWS	NLAA
Bull trout Critical Habitat	Designated (Puget Sound DPS)	USFWS	NLAA

- 12
- Notes: 13 ESU = Evolutionary Significant Units
- 14 DPS = Distinct Population Segment
- 15 NLAA=Not Likely to Adversely Affect
- 16 NA=Not Applicable
- 17 NMFS=National Marine Fisheries Service
- 18 USFWS=United States Fish and Wildlife Service
- 19 Source: Axis Environmental, LLC and CH2M HILL 2010
- 20
- 21 As shown in Table 2-3, the BA prepared for the proposed Project did not identify the potential presence
- 22 of terrestrial species in the vicinity of the Project area; fish species and associated critical habitats were
- 23 the only federally-listed species identified with documented presence in or potential to occur in the
- Project area. The ESA analysis in the BA concluded that the proposed Project will result in temporary 24
- 25 adverse impacts to fish and salmon. However, these impacts are minimized via Project timing and other
- 26 avoidance and minimization measures. As a result, the BA analysis determined that the proposed

1 Project may affect, but is not likely to adversely affect, Puget Sound Chinook salmon, Puget Sound

- 2 steelhead, or bull trout or associated critical habitats (Axis Environmental, LLC and CH2M HILL 2010).
- 3 According to the BA analysis, Chinook salmon, steelhead, and bull trout have not been documented in
- 4 the stream systems within the Project area. Chinook salmon and steelhead presence was identified as
- 5 possibly occurring with the Mercer Slough and Valley Creek systems. In addition, the area of potential
- 6 Project impacts in the BA analysis included Lake Washington, and Lake Washington is not within the
- 7 Project area addressed in this report. Critical habitat for Chinook salmon and bull trout includes Lake
- 8 Washington, but stream systems within the Project area, including Mercer Slough, Mercer Slough West
- 9 Branch, and Valley Creek, are excluded from the bull trout, Chinook salmon, and steelhead critical
- 10 habitat designation.
- 11 The BA also performed an analysis for Essential Fish Habitat (EFH) consultation with NMFS, in
- 12 compliance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens
- Act). The BA analysis concluded that the proposed Project will have no adverse effect on EFH for
- 14 salmonid species (Axis Environmental, LLC and CH2M HILL 2010).

### 15 **2.1.6** Impact Assessment for Habitat Associated with Species of Local Importance

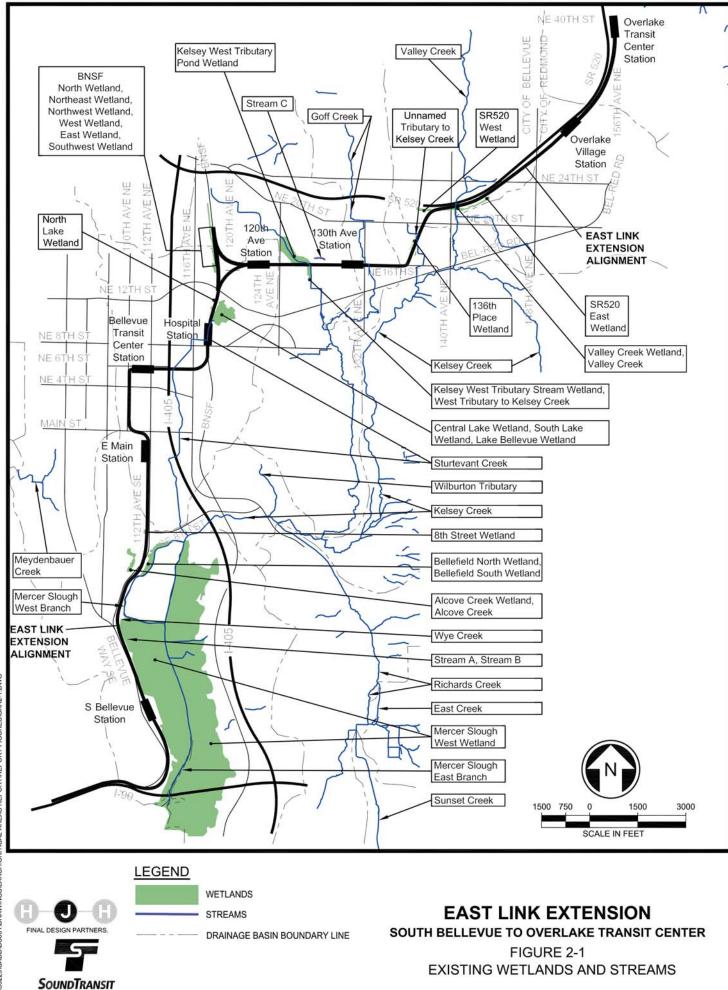
- 16 The primary potential construction impact on potential habitat for species of local importance (fish and
- 17 wildlife habitat, wetlands, streams, and upland vegetation communities) will be removal and loss of
- 18 habitat. In general, the severity of impact varies depending on the type and quantity of affected
- 19 vegetation. For example, losing plant communities that offer limited wildlife habitat, such as
- 20 fragmented ornamental vegetation in commercial and residential areas, results in less of an adverse
- 21 effect than losing more complex vegetation associations, such as forested areas and wetlands.
- 22 The majority of clearing and grading associated with the Project will include areas with existing
- 23 impervious surfaces and managed grass and fragmented and isolated tree and shrub vegetation within a
- 24 densely developed urban area. The majority of the vegetation communities in the Project area is
- 25 landscaped and does not include understory vegetation that provides habitat for amphibian, bird,
- 26 reptile, and mammal species. Wildlife species that would likely occupy habitat in these developed areas
- 27 include birds and small mammals typically associated with urban residential and commercial
- 28 development.
- 29 Potential habitat within the Project area for species of local importance includes Mercer Slough Wetland
- 30 habitat and the Kelsey West Tributary Pond Wetland habitat. With the exception of these systems,
- 31 wetlands and streams in the Project area lack potential habitat for species of local importance due to
- 32 their small size and locations adjacent to existing roads and residential and commercial development.
- 33 The Kelsey West Tributary Pond Wetland is also surrounded by existing roads and development but is a
- relatively large wetland system, about 6 acres. While mature trees on residential and commercial
- 35 property provide potential perching habitat for species of local importance, they are less likely to be
- 36 used for nesting or foraging activity than mature trees within a forested complex.

- 1 Impacts to streams and wetlands have been largely avoided as part of the design process (Section 2.6).
- 2 For the Mercer Slough Wetland, 0.23 acre of permanent wetland impacts and 1.84 acres of permanent
- 3 wetland buffer impacts have been identified. Permanent impacts to the Mercer Slough West Branch
- 4 stream system include shading of 236 square feet (sf) and 1.22 acres of permanent stream buffer
- 5 impacts due to guideway impacts, and the proposed location of the pump station at SE 15th Street. SE
- 15th Street will be realigned to accommodate new ingress and egress for the Bellfield Office park. For
  the Kelsey West Tributary Pond Wetland, 0.01 acre of permanent wetland impacts and 0.13 acre of
- the Kelsey West Tributary Pond Wetland, 0.01 acre of permanent wetland impacts and 0.13 acre of
  permanent wetland buffer impacts are anticipated due to the location of the guideway columns in the
- 9 area. A complete description of wetland and stream impacts is presented in Sections 2.2 and 2.3,
- 10 respectively.
- 11 Disturbances caused by construction may affect wildlife in adjacent habitats by disrupting feeding and
- 12 nesting activities. Increased noise levels created by heavy machinery could cause birds to abandon their
- 13 nests and may temporarily displace wildlife during construction. While noise associated with
- 14 construction activities could result in avoidance behavior by some wildlife species, including species of
- 15 local importance, wildlife would likely resume use of the site once construction is complete because
- 16 human disturbance associated with traffic and residential and commercial development has been
- 17 occurring in the Project area for several decades. As described in the Project ROD, the Federal Transit
- 18 Authority concluded that the Project complies with the Migratory Bird Treaty Act and the Bald and
- 19 Golden Eagle Protection Act for the protection of these birds, and the Project will not improperly affect
- 20 such birds (FTA 2011).
- 21 Operational impacts on wildlife and habitat communities and species of local importance associated
- with the Project would be minor and related principally to ambient noise levels associated with light rail
- use in a populated urban area. The Project area has been occupied with roads and residential and
- commercial development for several decades. Noise levels associated with operation of the light rail
- after construction are expected to be consistent with current ambient noise levels.
- Due to the overall lack of potential habitat for species of local importance within the Project area
  outside the Mercer Slough and Kelsey West Tributary Pond Wetland habitats, the relatively low impact
- areas of disturbance in critical areas, and the proposed mitigation activities for permanent and
- 29 temporary impacts (Section 3), overall habitat losses to sensitive areas resulting from the Project are
- 30 expected to be relatively small and are unlikely to result in a significant impact on native wildlife and
- 31 species of local importance. Proposed wetland and wetland buffer mitigation measures will also include
- 32 incorporating habitat features such as woody debris and tree vegetation that can support species of
- 33 local importance. Proposed stream and stream buffer mitigation measures will also incorporate
- 34 measures to improve habitat conditions compared to existing conditions in a populated urban area.

# 35 **2.2 Wetlands**

- 36 Wetlands in the Project area were identified and delineated based on the criteria identified in the BCC
- 37 LUC 20.25H.095 (City of Bellevue 2013a). Wetland locations are shown on Figure 2-1. The results of the

- 1 wetland survey are presented in the Delineation Report (Anchor QEA 2013). The wetland survey
- 2 methods and results from that report are summarized in the following sections.



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### 1 **2.2.1 Methods**

2 **2.2.1.1.** Wetland Delineation

The delineation and rating analysis of wetland habitat in the Project area was performed in February, March, April, and May 2013. As specified by the BCC (City of Bellevue 2013a), the wetland delineations were conducted based on the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps 2010). Wetland delineation guidelines identified in Ecology's *Washington State Wetland Identification and Delineation Manual* 

9 (Ecology 1997) is based on the information in the U.S. Army Corps of Engineers Wetland Delineation

- 10 Manual.
- 11 The U.S. Army Corps of Engineers (Corps) and Ecology method for delineating wetlands is based on the
- 12 presence of three parameters: hydrophytic vegetation; hydric soils; and wetland hydrology. Vegetation,
- 13 soils, and hydrology information were collected at sample plots and recorded on field data sheets.
- 14 Wetland determination data forms from the *Regional Supplement to the Corps of Engineers Wetland*

15 Delineation Manual: Western Mountains, Valleys, and Coast Region (Corps 2010) were recorded for

16 each wetland. A complete description of the wetland delineation methods, wetland ratings, and data

17 forms are presented in the Delineation Report (Anchor QEA 2013).

18 **2.2.1.2.** Wetland Classifications

19 Wetland community types were identified according to the USFWS classification developed by Cowardin

et al. (1979) for use in the NWI. This system bases the classification of wetlands on their physical

- 21 characteristics, such as the general type of vegetation in the wetland (e.g., trees, shrubs, grass) and
- 22 where and how much water is present in the wetland. All wetlands in the Project area are palustrine
- 23 systems. Palustrine wetlands are inland, nontidal wetlands characterized by the presence of trees,

24 shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface).

25 Palustrine wetlands range from permanently saturated or flooded land (as in marshes, swamps, and lake

- 26 shores) to land that is wet only seasonally. The following wetland community types were identified
- 27 during the wetland investigation:
- Palustrine forested (PFO) These wetlands have at least 30 percent cover of woody vegetation
   that is more than 20 feet high.
- Palustrine scrub-shrub (PSS) These wetlands have at least 30 percent cover of woody
   vegetation that is less than 20 feet high.
- Palustrine emergent (PEM) These wetlands have erect, rooted, herbaceous vegetation present
   for most of the growing season in most years.
- Palustrine aquatic bed (PAB) These wetlands are dominated by vegetation that grows
   principally on or below the surface of the water for most of the growing season in most years.

### 2.2.1.3. Wetland Ratings and Functions Assessment

- 2 At the state level, wetland ratings and functions were determined using the most current version of
- 3 Ecology guidance in Washington State Wetlands Rating System for Western Washington: Revised
- 4 (Hruby 2004) and Washington State Wetland Rating Form Western Washington, Version 2
- 5 (Ecology 2008a).

1

- 6 The BCC classifies wetlands into four categories (Categories I, II, III, and IV) based on the adopted
- Washington State Wetland Rating System for Western Washington, Washington State Department of
   Ecology (LUC 20.25H.095).
- 9 Using Ecology's rating system, points are awarded to three functional value categories: water quality,
- 10 hydrologic functions, and wildlife habitat. To determine an accurate assessment of a wetland's
- 11 functional values, function scores were calculated based on entire wetland systems, when applicable,
- 12 not just the delineated portion of wetlands.
- 13 Washington State Wetland Rating Forms (Ecology 2008a) were recorded for each wetland. Wetland
- 14 rating forms are included in Appendix E of the Delineation Report (Anchor QEA 2013).
- 15

### 2.2.1.4. State Hydrogeomorphic Classification System

- 16 Scientists have come to understand that wetlands can perform functions in different ways. The way a
- 17 wetland functions depends to a large degree on hydrologic and geomorphic conditions. To recognize
- 18 these differences among wetlands, a way to group or classify them has been developed. This
- 19 classification system, called the Hydrogeomorphic (HGM) Classification, groups wetlands into categories
- 20 based on the geomorphic and hydrologic characteristics that control many functions. The revision to
- 21 the Washington State Wetland Rating Form Western Washington, Version 2 (Ecology 2008a)
- 22 incorporates the new system as part of the questionnaire for characterizing a wetland's functions. The
- rating system uses only the highest grouping in the classification (i.e., wetland class). Wetland classes
- 24 are based on geomorphic settings, such as riverine, slope, or depressional. A classification key is
- 25 provided within the rating form to help identify which of the following HGM Classifications apply to the
- 26 wetland: riverine, depressional, slope, lake-fringe, tidal fringe, or flats.

# 27 2.2.2 Wetland Study Results

- Twenty-one wetlands were identified within the Project area. All 21 wetlands are located within the City and are therefore described in this report. The Project alignment has a cumulative length of 7.13 miles and crosses nine drainage basins within the Cedar/Sammamish Watershed (Water Resource Inventory Area 8 [WRIA 8]) (Ecology 2013). Wetlands were identified within five of the eight drainage basins within the City (Section 1.3.4; Figure 1-4). A drainage basin map is shown on Figure 1-4. Wetlands are described in location sequence from west to east. Each wetland was given a descriptive
- name to reflect its relative location along the alignment. This section provides a summary of the 21
- 35 wetlands within the Project area. A complete description of the 21 wetlands and figures noting their
- 36 locations are presented in the Delineation Report (Anchor QEA 2013). Table 2-4 presents a summary of
- 37 the wetlands in the Project area, including the approximate wetland size and drainage basin. Table 2-5

- 1 presents a summary of the wetlands USFWS classification, hydrogeomorphic classification, state and
- 2 local ratings, and protective buffer widths, per the BCC (Bellevue 2013a).

### 3 Table 2-4 Summary of Wetlands Located within the Project Area

Wetland Name	Size <sup>1</sup> (acres)	Drainage Basin
Mercer Slough West	350 <sup>2</sup>	Mercer Slough
Alcove Creek	0.23 <sup>3</sup> /0.64 <sup>2</sup>	Mercer Slough
Bellefield South	0.29	Mercer Slough
Bellefield North	0.11	Mercer Slough
8th Street	0.05 <sup>3</sup> /0.13 <sup>2</sup>	Mercer Slough
Lake Bellevue	0.54 <sup>3</sup> / 7.00 <sup>2</sup>	Sturtevant Creek
South Lake	0.09	Sturtevant Creek
Central Lake	0.03	Sturtevant Creek
North Lake	0.04	Sturtevant Creek
BNSF Southwest	0.12	West Tributary
BNSF East	0.06 <sup>3</sup> / 0.12 <sup>2</sup>	West Tributary
BNSF West	0.63 <sup>3</sup> / 0.83 <sup>2</sup>	West Tributary
BNSF Northeast	0.02	West Tributary
BNSF Northwest	0.06	West Tributary
BNSF North	0.02	West Tributary
Kelsey West Tributary Pond	5.98 <sup>2</sup>	West Tributary
Kelsey West Tributary Stream	0.04	West Tributary
136th Place	0.03	Kelsey Creek
SR 520 West	0.51 <sup>3</sup> / 0.64 <sup>2</sup>	Valley Creek
Valley Creek	0.37	Valley Creek
SR 520 East	0.23	Valley Creek

1 When only one number is present, total wetland area is located within the Project area. When two numbers are present, the wetland extends outside the Project area, and both the estimated total area (see footnote 2) and the delineated area (see footnote 3) are provided. Estimates for wetlands outside the Project area are based on

observations during the field investigation and aerial photograph analysis. Wetland acreages were provided by HJH.

2 Approximate total wetland area, includes delineated area plus estimated wetland area extending outside Project

Notes:

area

14

3 Delineated wetland area within Project area

#### Table 2-5 Summary of Wetland USFWS Classification, Hydrogeomorphic Classification, State and Local 1 **Ratings, and Local Buffer Widths** 2

Wetland Name	USFWS Classification	Hydrogeomorphic Classification Used for Rating	State (Ecology) and Local (Bellevue) Rating	Bellevue Buffer Widths (feet)
Mercer Slough West	PFO, PSS, PEM, PAB	Depressional, Lake-Fringe, Riverine, Slope	II	110
Alcove Creek	PFO, PSS, PEM	Depressional, Riverine	II	75
Bellefield South	PFO, PSS, PEM	Riverine, Slope	II	75
Bellefield North	PFO, PSS	Riverine, Slope	II	75
8th Street	PFO, PSS, PEM	Depressional		60
Lake Bellevue	PAB	Depressional	111	60
South Lake	PFO, PSS, PEM	Depressional		60
Central Lake	PSS, PEM	Depressional	III	60
North Lake	PFO, PEM	Slope	IV	0
BNSF Southwest	PFO, PEM	Depressional, Slope		60
BNSF East	PEM	Depressional	111	60
BNSF West	PFO, PSS, PEM	Depressional, Slope	111	60
BNSF Northeast	PFO, PSS	Depressional	111	60
BNSF Northwest	PFO, PEM	Depressional, Slope	IV	40
BNSF North	PFO, PSS	Depressional, Slope	III	60
Kelsey West Tributary Pond	PFO, PEM	Depressional, Riverine	Ш	75
Kelsey West Tributary Stream	PFO, PSS, PEM	Riverine	111	60
136th Place	PFO, PSS, PEM	Depressional	111	60
SR 520 West	PFO, PSS, PEM	Depressional, Slope		60
Valley Creek	PFO, PSS, PEM	Riverine, Slope	II	75
SR 520 East	PFO, PSS, PEM	Slope	III	60

3 Notes:

Ecology = U.S. Department of Ecology

PFO = palustrine forested

4 5 6 7 8 9 PSS = palustrine scrub-shrub

PEM = palustrine emergent

- PAB = palustrine aquatic bed
- USFWS = U.S. Fish and Wildlife Service
- 10

#### 2.2.2.1. Mercer Slough West Wetland

2 Mercer Slough West Wetland is a large, heavily modified wetland system associated with Mercer Slough 3 and Lake Washington. Prior to the Ballard Locks controlling the level of Lake Washington, Mercer 4 Slough contained much more open water. The locks dropped the level of Lake Washington about 9 feet 5 in 1916, exposing the saturated soils. Further dredging, ditching, and filling of the area through the first 6 half of the 20th century for agricultural reasons further reduced the area of wetlands. By the last half of 7 the 20th century, the slough experienced additional filling to accommodate I-405, and I-90 roadways. 8 Approximately 130 acres of Mercer Slough was filled to create the Bellefield Office Park and the South 9 Bellevue Park and ride in the 1960s and 1970s. The west channel around Bellefield Office Park is 10 manmade and was created to float barges in for pile driving and construction of Bellefield Office Park. 11 By the 1980s, continued urban development, including Newport Shores and the Newport Yacht Basin, 12 added additional fill, peat removal, and draining. Today, Mercer Slough Park is approximately 350 acres. 13 Portions of Mercer Slough West Wetland were delineated within the Project area. Mercer Slough West 14 Wetland is also associated with several small streams (described in Section 2.3). For this investigation, 15 only the western boundary of the wetland associated with the proposed Project alignment was delineated. The delineated boundary of the wetland is located adjacent to Bellevue Way SE and 112th 16 17 Avenue SE. Based on aerial photograph analysis and City of Bellevue critical areas maps (Bellevue 18 2013b), the Mercer Slough West Wetland is part of a very large wetland complex, approximately 350 19 acres or greater in size. The delineated boundary of the wetland is located adjacent to Bellevue Way SE 20 and 112th Avenue SE (Appendix A, Frames 2, 3, and 4). The wetland is also identified on City critical

- 21 areas maps (City of Bellevue 2013b).
- 22 Mercer Slough West Wetland is a large wetland with PFO, PSS, PEM, and PAB vegetation classes and
- 23 depressional, lake-fringe, riverine, and slope HGM classes. Dominant vegetation includes red alder,
- 24 black cottonwood, western red cedar, Pacific willow (Salix lasiandra), red-osier dogwood (Cornus
- 25 sericea), twinberry, spirea (Spirea douglasii), creeping buttercup, reed canarygrass, lady fern, and
- 26 salmonberry. The wetland soils are saturated, seasonally inundated, and riverine and lake-fringe
- 27 associated. Mercer Slough West Wetland is a Category II wetland under Ecology's rating system and the
- City's critical areas regulations (110-foot buffer). 28

# 29

1

#### 2.2.2.2. **Alcove Creek Wetland**

30 Alcove Creek Wetland is located in an area between residential development at SE 15th Street and 31 112th Avenue SE (Appendix A, Frame 5). The wetland extends outside the Project area to the west, and 32 ROE was not provided to identify the entire wetland boundary. A 0.23-acre portion of the Alcove Creek 33 Wetland was delineated within the Project area. Based on visual observations from within the Project 34 area, aerial photograph analysis, and the location of development features that would limit the extent of 35 the wetland system, the total size of the Alcove Creek Wetland is estimated to be approximately 0.64 acre if the two associated residential pond features meet the criteria of wetland habitat. The Alcove 36 37 Creek Wetland is associated with Alcove Creek (Section 2.3). A portion of the wetland is identified on 38 City critical areas maps (City of Bellevue 2013b).

East Link | South Bellevue to Overlake Transit Center January 13, 2014

- 1 Alcove Creek Wetland is a small wetland with PFO, PSS, and PEM vegetation classes and depressional
- 2 and riverine HGM classes. Dominant vegetation includes red alder, Oregon ash, black cottonwood,
- 3 Pacific willow, red-osier dogwood, lady fern, and skunk cabbage. It is a Category II wetland under
- 4 Ecology's rating system and the City's critical areas regulations (75-foot buffer).

### 5 **2.2.2.3**.

### 2.3. Bellefield South Wetland

- 6 Bellefield South Wetland is located between Mercer Slough West Branch and 112th Avenue, and north
- 7 of SE 15th Street. This wetland is associated with Mercer Slough (Section 2.3). Bellefield North Wetland
- 8 is located north of the wetland (Appendix A, Frame 5). The entire wetland boundary was delineated,
- 9 approximately 0.29 acre within the Project area.
- 10 Bellefield South Wetland is a small wetland with PFO, PSS, and PEM vegetation classes and riverine and
- 11 slope HGM classes. Dominant vegetation includes Oregon ash, red alder, Pacific willow, Himalayan
- 12 blackberry, and stinging nettle. It is a Category II wetland under Ecology's rating system and the City's
- 13 critical areas regulations (75-foot buffer).

# 14 **2.2.2.4.** Bellefield North Wetland

- 15 Bellefield North Wetland is located in an area between 112th Avenue SE and Mercer Slough West
- 16 Branch and is associated with Mercer Slough (Section 2.3). Bellefield South Wetland is located
- approximately 50 feet south of Bellefield North Wetland (Appendix A, Frame 5). The entire wetland
- 18 boundary, approximately 0.11 acre, was delineated within the Project area.
- 19 Bellefield North Wetland is a small wetland with PFO and PSS vegetation classes and riverine and slope
- HGM classes. Dominant vegetation includes Oregon ash, black cottonwood, red alder, Pacific willow,
- 21 prickly currant, Himalayan blackberry, lady fern, and stinging nettle. Bellefield North Wetland is a
- 22 Category II wetland under Ecology's rating system and the City's critical areas regulations (75-foot
- 23 buffer).

24

# 2.2.2.5. 8th Street Wetland

- 25 The 8th Street Wetland is located in a narrow area between 112th Avenue NE and residential
- 26 development (Appendix A, Frame 5). The 8th Street Wetland is approximately 0.13 acre. Due to lack of
- 27 ROE, only the portion of the wetland located within the City ROW of 112th Avenue NE was delineated.
- 28 The wetland area located on private property was evaluated using visual observations from the ROW on
- 29 the east side of the wetland. A 0.05-acre portion of the 8th Street Wetland was delineated within the
- 30 Project area. Based on visual observations from within the Project area, aerial photograph analysis, and
- 31 the location of development features the wetland does not extend more than 30 feet west of the ROW.
- 32 The 8th Street Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and a
- 33 depressional HGM class. Dominant vegetation includes stinging nettle and reed canarygrass. The 8th
- 34 Street Wetland is a Category III wetland under Ecology's rating system and the City's critical areas
- 35 regulations (60-foot buffer).

## 2.2.2.6. Lake Bellevue Wetland

- 2 Lake Bellevue is regulated by the City of Bellevue as a wetland and not a lake because the system was
- 3 historically a wetland that was dredged to create open water habitat. It is located east of the old BNSF
- 4 railroad tracks south of NE 12th St. and north of NE 8th St. (Appendix A, Frame 9). Note that Sound
- 5 Transit now owns a portion of the former BNSF ROW, but it is still referred to as BNSF ROW throughout
- 6 the document. The wetland has commercial and residential structures built on piles that line the
- 7 shoreline and are over much of the open water portion of the wetland. The western wetland boundary
- of the wetland, 0.54 acre, was delineated within the Project area. Based on visual observations from
  within the Project area, aerial photograph analysis, and the location of development features the total
- 9 within the Project area, aerial photograph analysis, and the location of development features the total
   10 size of the wetland is estimated to be 7 acres. A narrow upland area is located between the wetland
- and an adjacent wetland and the old BNSF railroad tracks.
- 12 Lake Bellevue Wetland is a large depressional feature with mostly PAB vegetation classes and a
- 13 depressional HGM class. Tree, shrub, and emergent vegetation was located in the delineated portion of
- 14 the wetland; however, this is only a small percentage of the overall wetland system, and therefore, the
- 15 wetland is described as having a PAB vegetation class. Dominant vegetation within the delineated area
- 16 was black cottonwood, red alder, spirea, reed canarygrass, English ivy, and horsetail. Lake Bellevue
- 17 Wetland is a Category III wetland under Ecology's rating system and the City's critical areas regulations
- 18 (60-foot buffer).
- 19

1

## 2.2.2.7. South Lake Wetland

- 20 South Lake Wetland is located in a narrow area between railroad tracks and development on the
- 21 shoreline of Lake Bellevue (Appendix A, Frame 9). The entire wetland boundary, approximately
- 22 0.09 acre, was delineated within the Project area. Upland area is located between the wetland and Lake
- 23 Bellevue.
- 24 South Lake Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and a
- depressional HGM class. Dominant vegetation includes Hooker's willow, salmonberry, spirea, and reed
- 26 canarygrass, with giant horsetail, Himalayan blackberry, and English ivy also occurring. South Lake
- 27 Wetland is a Category III wetland under Ecology's rating system and the City's critical areas regulations
- 28 (60-foot buffer).
- 29 2.2.2.8. Central Lake Wetland
- 30 Central Lake Wetland is located in a narrow area between railroad tracks and development on the
- 31 shoreline of Lake Bellevue. The entire wetland boundary, approximately 0.03 acre, was delineated
- 32 within the Project area (Appendix A, Frame 9). Upland area is located between the wetland and Lake
- 33 Bellevue.
- 34 Central Lake Wetland is a small, narrow wetland with PSS and PEM vegetation classes and a
- depressional HGM class. Dominant vegetation includes spirea, reed canarygrass, water purslane, and
- 36 Watson's willow herb, with red-osier dogwood and Himalayan blackberry also occurring. Central Lake

1 Wetland is a Category III wetland under Ecology's rating system and the City's critical areas regulations

- 2 (60-foot buffer).
- 3 2.2.2.9. North Lake Wetland

4 North Lake Wetland is located in a narrow area between railroad tracks located to the east and

5 development located to the west. The entire wetland boundary, approximately 0.04 acre, was

6 delineated within the Project area (Appendix A, Frame 9).

7 North Lake Wetland is a small, narrow wetland with PFO and PEM vegetation classes and a slope HGM

8 class. Dominant vegetation includes red alder, Scouler's willow, soft rush (Juncus effusus), and reed

9 canarygrass, with Himalayan blackberry and Watson's willow-herb also occurring. North Lake Wetland

10 is a Category IV wetland under Ecology's rating system and the City's critical areas regulations (no buffer

11 due to wetland size of less than 2,500 sf).

## 12 2.2.2.10. BNSF Southwest Wetland

13 BNSF Southwest Wetland is located adjacent to railroad tracks located to the east and with commercial

14 development located to the west. The entire wetland boundary, approximately 0.12 acre, was

15 delineated within the Project area (Appendix A, Frame 10).

16 BNSF Southwest Wetland is a small, narrow wetland with PFO and PEM vegetation classes and

17 depressional and slope HGM classes. Dominant vegetation includes black cottonwood, Pacific willow,

18 red alder, reed canarygrass, and Colonial bentgrass. BNSF Southwest Wetland is a Category III wetland

19 under Ecology's rating system and the City's critical areas regulations (60-foot buffer).

20 2.2.2.11. BNSF East Wetland

BNSF East Wetland is located between railroad tracks to the west and commercial development located to the east. This wetland has a long, linear ditch shape. A chain link fence runs along the south side of the wetland that provides the Project area boundary. A riprap embankment is located about 5 feet east

of the fence. The wetland appears to extend a few feet east of the fence. The wetland boundary within

25 the Project area (0.06 acre, up to the fence) was delineated. Based on visual observations from within

the Project area and the location of the embankment south of the chain link fence, the total size of the

27 wetland is estimated to be 0.12 acre (Appendix A, Frame 10).

28 BNSF East Wetland is a small, narrow wetland with a PEM vegetation class and a depressional HGM

29 class. Dominant vegetation includes cattail (Typha latifolia), common duckweed, reed canarygrass, and

30 soft rush. BNSF East Wetland is a Category III wetland under Ecology's rating system and the City's

31 critical areas regulations (60-foot buffer).

32 2.2.2.12. BNSF West Wetland

33 BNSF West Wetland is located adjacent to railroad tracks located to the east and has commercial

34 development located to the west. A portion of BNSF West Wetland, approximately 0.63 acre, was

delineated within the Project area. The wetland extends outside the Project area to the west (Appendix

- 1 A, Frame 10). Based on visual observations from within the Project area, aerial photograph analysis, and
- 2 the location of development features that would limit the extent of the wetland system, the total
- 3 wetland size is estimated to be 0.83 acre.
- 4 BNSF West Wetland has PFO, PSS, and PEM vegetation classes and depressional and slope HGM classes.
- 5 Dominant vegetation includes Scouler's willow, red alder, spirea, lady fern, Colonial bentgrass, reed
- 6 canarygrass, and piggyback plant. BNSF West Wetland is a Category III wetland under Ecology's rating
- 7 system and the City's critical areas regulations (60-foot buffer).

## 8 2.2.2.13. BNSF Northeast Wetland

- 9 BNSF Northeast Wetland is located between railroad tracks, with commercial development located
- 10 outside the railroad tracks. The entire wetland boundary, approximately 0.02 acre, was delineated
- 11 within the Project area (Appendix A, Frame 10).
- 12 BNSF Northeast Wetland is a small, narrow wetland with PFO and PSS vegetation classes and a
- 13 depressional HGM class. Dominant vegetation includes red alder, black cottonwood, spirea, and water
- 14 purslane. BNSF Northeast Wetland is a Category III wetland under Ecology's rating system and the City's
- 15 critical areas regulations (60-foot buffer).
- 16

## 2.2.2.14. BNSF Northwest Wetland

- 17 BNSF Northwest Wetland is located adjacent to railroad tracks located to the east with commercial
- 18 development located to the west. The entire wetland boundary, approximately 0.06 acre, was
- 19 delineated within the Project area (Appendix A, Frame 10).
- 20 BNSF Northwest Wetland is a small, narrow wetland with PFO and PEM vegetation classes and
- 21 depressional and slope HGM classes. Dominant vegetation includes Pacific willow, lady fern, soft rush,
- 22 and English ivy. BNSF Northwest Wetland is a Category IV wetland under Ecology's rating system and
- 23 the City's critical areas regulations (40-foot buffer).

## 24 2.2.2.15. BNSF North Wetland

- 25 BNSF North Wetland is located between the fill prism of two railroad tracks located to the west with
- commercial development located to the east. The entire wetland boundary, approximately 0.02 acre,
- 27 was delineated within the Project area (Appendix A, Frame 10).
- 28 BNSF North Wetland is a small, narrow wetland with PFO and PSS vegetation classes and depressional
- and slope HGM classes. Dominant vegetation includes black cottonwood, Pacific willow, spirea, and
- 30 bittersweet nightshade. BNSF North Wetland is a Category III wetland under Ecology's rating system
- 31 and the City's critical areas regulations (60-foot buffer).

## 32 **2.2.2.16.** Kelsey West Tributary Pond Wetland

- 33 Kelsey West Tributary Pond Wetland is located east of 124th Avenue NE and is entirely surrounded by
- 34 commercial development (Appendix A, Frame 11). The pond itself is used for stormwater control, and
- 35 its level is maintained by the City. An approximately 40-foot-wide weir is located at the southeast end

- 1 of the wetland to control flow out of the system. Approximately 5.98 acres of this wetland were
- 2 delineated by Parametrix in 2011 as part of a City Project, and the data from that delineation were
- 3 incorporated as part of the wetland delineation report (Parametrix 2012). The 2011 delineation was
- 4 verified in 2013.
- 5 Kelsey West Tributary Pond Wetland is a large wetland with PFO and PEM vegetation classes and
- 6 depressional and riverine HGM classes. This wetland is dominated by red alder, reed canarygrass,
- 7 Pacific willow, spirea, and cattail. Kelsey West Tributary Pond Wetland is a Category II wetland under
- 8 Ecology's rating system and the City's critical areas regulations (75-foot buffer).
- 9

## 2.2.2.17. Kelsey West Tributary Stream Wetland

- 10 Kelsey West Tributary Stream Wetland is associated with the West Tributary of Kelsey Creek, identified
- as West Tributary to Kelsey Creek Stream (Section 2.3). Kelsey West Tributary Stream Wetland is

12 located in a narrow area between a paved parking lot and commercial developments . The entire

13 wetland boundary, approximately 0.04 acre, was delineated within the Project area. The wetland is

- 14 located on the left and right banks of the stream (Appendix A, Frame 11).
- 15 Kelsey West Tributary Stream Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation
- 16 classes and a riverine HGM class. Dominant vegetation includes Pacific willow, red-osier dogwood,
- bittersweet nightshade, and reed canarygrass, with soft rush and Himalayan blackberry also occurring.
- 18 Kelsey West Tributary Stream Wetland is a Category III wetland under Ecology's rating system and the
- 19 City's critical areas regulations (60-foot buffer).
- 20 **2.2.2**

## 2.2.2.18. 136th Place Wetland

21 The 136th Place Wetland is located in a narrow area between commercial developments (Appendix A,

22 Frame 13). A footbridge that connects the two commercial buildings located on the east and west sides

- of the wetland crosses the middle portion of the wetland. The entire wetland boundary, approximately
- 24 0.03 acre, was delineated within the Project area.
- 25 The 136th Place Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and a
- 26 depressional HGM class. Dominant vegetation includes red alder, Pacific willow, bittersweet
- 27 nightshade, and reed canarygrass, with horsetail and English ivy also occurring. The 136th Place
- 28 Wetland is a Category III wetland under Ecology's rating system and the City's critical areas regulations
- 29 (60-foot buffer).

## 30 2.2.2.19. SR 520 West Wetland

- 31 SR 520 West Wetland is located in a narrow area between commercial development and the fill prism
- associated with SR 520, with 140th Avenue NE located to the east of the wetland (Appendix A, Frame
- 13). This wetland is located within the WSDOT ROW. Approximately 0.51 acre of SR 520 West Wetland
- 34 was delineated within the Project area. The wetland extends outside the Project area to the west.
- 35 Based on visual observations from within the Project area, aerial photograph analysis, and the location

of development features that would limit the extent of the wetland system, the total wetland size is
 estimated to be 0.64 acre.

- 3 SR 520 West Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and
- 4 depressional and slope HGM classes. Dominant vegetation includes red alder, black cottonwood, Pacific
- 5 willow, red-osier dogwood, spirea, water parsley, and skunk cabbage, with horsetail and Himalayan
- 6 blackberry also occurring. SR 520 West Wetland is a Category III wetland under Ecology's rating system
- 7 and the City's critical areas regulations (60-foot buffer).

### 8 2.2.2.20. Valley Creek Wetland

- 9 Valley Creek Wetland is located between commercial development and SR 520, with 140th Avenue NE
- 10 located to the west of the wetland. The wetland is located within WSDOT ROW (Appendix A, Frame 13).
- 11 Only a portion of Valley Creek Wetland was investigated due to lack of ROE. For this investigation, a
- 12 confirmation of the wetland boundary was completed based on information from a previous delineation
- 13 as identified in the *East Link Light Rail Project Final EIS* (Sound Transit 2011), where the wetland is
- 14 identified as Wetland WR-10W. The wetland was not flagged or surveyed as part of this investigation.
- 15 The wetland appears to extend outside the Project area to the south for a short distance along Valley
- 16 Creek between commercial development to the east and west; however, the available area between
- development is only about 15 feet wide, including the stream channel. Based on visual observations
- 18 from within the Project area, aerial photograph analysis, and the location of development features that
- 19 would limit the extent of the wetland system, the approximate size of Valley Creek Wetland is 0.37 acre.
- 20 Valley Creek Wetland is associated with Valley Creek.
- 21 Valley Creek Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and riverine
- 22 and slope HGM classes. Dominant vegetation includes red alder, black cottonwood, Pacific willow,
- 23 bittersweet nightshade, spirea, and water parsley, with horsetail, reed canarygrass, red-osier dogwood,
- and Himalayan blackberry also occurring. Valley Creek Wetland is a Category II wetland under Ecology's
- 25 rating system and the City's critical areas regulations (75-foot buffer).
- 26 **2.2.2.21.** SR 520 East Wetland
- 27 SR 520 East Wetland is located between commercial development and the fill prism associated with
- 28 SR 520 (Appendix A, Frames 13 and 14). Only the west portion of this wetland was investigated due to
- 29 lack of ROE. For this investigation, Anchor QEA performed a confirmation of the eastern portion of the
- 30 wetland based on information from a previous delineation as identified in the *East Link Light Rail Project*
- 31 *Final EIS* (Sound Transit 2011). The entire wetland boundary, including the delineated portion and the
- verified portion, is approximately 0.23 acre. The majority of the wetland is located within WSDOT ROW
- and the Project area.
- 34 SR 520 East Wetland is a small, narrow wetland with PFO, PSS, and PEM vegetation classes and a slope
- 35 HGM class. Dominant vegetation includes red alder, black cottonwood, Scouler's willow, lady fern, and
- 36 skunk cabbage, with horsetail and Himalayan blackberry also occurring. SR 520 East Wetland is a

Category III wetland under Ecology's rating system and the City's critical areas regulations (60-foot 1 2 buffer).

3 2.2.3 Wetland Functional Analysis

Wetlands in the Project area provide many functions, including water quality improvements, floodwater 4 5 storage, groundwater recharge, and wildlife habitat. However, wetlands in the Project area are typically 6 located in low-lying areas adjacent to roads or other development features, and have been disturbed by 7 human influence to some extent. Consequently, these wetlands are compromised in their ability to 8 provide the full suite of these functions.

- 9 Based on the Ecology rating scores, the overall functions of each of the three wetland rating categories
- 10 of water quality, hydrologic, and wildlife habitat are rated as low (less than 34 percent of the possible
- maximum score), moderate (34 percent to 67 percent of the possible maximum score), or high (greater 11
- 12 than 68 percent of the possible maximum score). This method was used to identify the functions of
- 13 wetlands within the Project area and is in accordance with Ecology methods for comparing functions
- 14 between impacted wetlands and wetland mitigation sites (Ecology 2008b), which is discussed in Section
- 15 3.2.
- Wetland function rating categories are summarized in Table 2-6. Water quality, hydrologic, and habitat 16
- 17 functional value scores for wetlands in the Project area are shown in Table 2-7. The narrative that
- 18 follows the tables provides a summary of the functions of only those wetlands within the Project area
- 19 that will be disturbed, or have buffers that will be disturbed, under the proposed Project. A complete
- 20 description of the functions all 21 wetlands is presented in the Delineation Report (Anchor QEA 2013).

#### 21 **Table 2-6 Summary of Wetland Function Rating Categories**

Qualitative Rating of Function	Improving Water Quality Potential (Point Range)	Improving Hydrologic Potential (Point Range)	Habitat Functions Potential (Point Range)	Habitat Functions Opportunity (Point Range)
High	12 to 16	12 to 16	15 to 18	15 to 18
Moderate	6 to 11	6 to 11	7 to 14	6 to 13
Low	0 to 5	0 to 5	0 to 6	0 to 5

22

Note: 23 Source: Ecology 2008b

24

#### 1 Table 2-7 Summary of Functions and Values Wetland Rating Scores

Wetland	Water Quality Functions Potential Score	Water Quality Functions Opportunity (Yes/No)	Hydrologic Functions Potential Score	Hydrologic Functions Opportunity (Yes/No)	Habitat Functions Potential Score	Habitat Functions Opportunity Score	Total Function Score <sup>1</sup>
Depressional and Riverine Maximum Scores	16	No = 1 Yes = 2	16	No = 1 Yes = 2	18	18	100
Mercer Slough West	10	Yes	10	No	17	10	57
Alcove Creek	7	Yes	10	Yes	11	8	53
Bellefield South	10	Yes	8	Yes	10	8	54
Bellefield North	10	Yes	8	Yes	9	8	53
8th Street	3	Yes	12	Yes	6	5	41
Lake Bellevue	2	Yes	16	Yes	5	7	30
South Lake	7	Yes	8	Yes	8	5	43
Central Lake	5	Yes	10	Yes	7	4	41
BNSF Southwest	7	Yes	8	Yes	8	4	42
BNSF East	7	Yes	8	Yes	3	4	37
BNSF West	7	Yes	8	Yes	8	4	42
BNSF Northeast	7	Yes	8	Yes	6	4	40
BNSF Northwest	4	Yes	3	Yes	6	4	24
BNSF North	7	Yes	8	Yes	6	4	40
Kelsey West Tributary Pond	11	Yes	12	Yes		17 <sup>2</sup>	63
Kelsey West Tributary Stream	8	Yes	9	Yes	9	7	50
136th Place	5	Yes	10	Yes	6	4	40
SR 520 West	9	Yes	8	Yes	9	5	48
Valley Creek	8	Yes	9	Yes	10	7	51
Slope Maximum Scores	12	No = 1 Yes = 2	8	No = 1 Yes = 2	18	18	76
North Lake	4	Yes	2	Yes	6	4	22
SR 520 East	5	Yes	5	Yes	9	4	33

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## 2.2.3.1. Water Quality Functions

- 2 All of the wetlands in the Project area provide opportunities to improve water quality to varying
- 3 degrees, primarily because their location in an urban environment allows for the possibility of water
- 4 quality improvement. Wetlands in the Project area with a moderate to high potential to improve water
- 5 quality typically have a high proportion of wetland area with seasonal ponding or dense vegetation to
- 6 restrict flow through the wetland.

1

## 7 **2.2.3.2.** Hydrologic Functions

8 With exception to Mercer Slough West Wetland, all of the wetlands in the Project area provide

- 9 opportunities to reduce flooding and erosion. Mercer Slough West Wetland lacks the opportunity to
- 10 reduce flooding or erosion because the wetland is associated with Lake Washington, which has water
- 11 level controlled by the Ballard Locks. Wetlands with moderate or high scores typically have
- 12 characteristics such as a highly constricted outlets or significant water storage depths during wet
- 13 periods. Wetlands with a low potential to reduce flooding and erosion is due to a lack of natural surface
- 14 water outlets, ponding features, and the types of vegetation to reduce surface flows; a high presence of
- 15 ditch-like characteristics; and small contribution of the wetland to the larger watershed.
- 16 **2.2.3.3.** Habitat Functions
- 17 Wetlands with a low score for habitat functions general lack of vegetative structure, hydroperiods, plant
- 18 richness, habitat diversity, and special habitat features. Wetlands with moderate or high scores typically
- 19 have characteristics such as a several Cowardin vegetation classes, several hydroperiods, high habitat
- 20 interspersion, or the presence of special habitat features. Fourteen of the 21 wetlands have a low
- 21 opportunity to provide habitat for many species. Wetlands with a low score for habitat opportunity are
- 22 due to the characteristics of the wetland buffers and the overall lack of quality habitat conditions near
- or adjacent to the wetlands, including their proximity to roads. In addition to the wetlands being
- located near roads, the wetlands are often located near residential or commercial development.
- 25 Wetlands with moderate scores have relatively undisturbed buffer areas.
- 26 **2.2.3.4.** N

# 2.2.3.4. Mercer Slough West Wetland

- 27 Mercer Slough West Wetland scores a moderate potential to improve water quality and provide
- 28 opportunities to improve water quality (20 out of 32 possible maximum score). The wetland scores a
- 29 moderate potential to reduce flooding and erosion and does not provide the opportunity to reduce
- flooding and erosion (10 out of 32 possible maximum score). The wetland scores a high potential and
- 31 moderate opportunity (27 out of 36 possible maximum score) to provide habitat functions. Overall, the
- total Ecology wetland functions score for Mercer Slough West Wetland is 57 out of a possible 100.
- 33 **2.2.3.5.** Alcove Creek Wetland
- 34 Alcove Creek Wetland scores a moderate potential to improve water quality and provide opportunities
- to improve water quality (14 out of 32 possible maximum score). The wetland scores a moderate
- 36 potential to reduce flooding and erosion and provides the opportunity to reduce flooding and erosion

- 1 (20 out of 32 possible maximum score). The wetland scores a moderate potential and moderate
- 2 opportunity (19 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 3 Ecology wetland functions score for Alcove Creek Wetland is 53 out of a possible 100.

## 4 2.2.3.6. Bellefield South Wetland

- 5 Bellefield South Wetland scores a moderate potential to improve water quality and provide
- 6 opportunities to improve water quality (20 out of 32 possible maximum score). The wetland scores a
- 7 moderate potential to reduce flooding and erosion and provides the opportunity to reduce flooding and
- 8 erosion (16 out of 32 possible maximum score). The wetland scores a moderate potential and moderate
- 9 opportunity (18 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 10 Ecology wetland functions score for Bellefield South Wetland is 54 out of a possible 100.
- 11

## 2.2.3.7. Bellefield North Wetland

12 Bellefield North Wetland scores a moderate potential to improve water quality and provide

- 13 opportunities to improve water quality (20 out of 32 possible maximum score). The wetland scores a
- 14 moderate potential to reduce flooding and erosion and provides the opportunity to reduce flooding and
- erosion (16 out of 32 possible maximum score). The wetland scores a moderate potential and moderate
- 16 opportunity (17 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 17 Ecology wetland functions score for Bellefield North Wetland is 53 out of a possible 100.
- 18

## 2.2.3.8. 8th Street Wetland

19 The 8th Street Wetland scores a low potential to improve water quality and provide opportunities to

- 20 improve water quality (6 out of 32 possible maximum score). The wetland scores a high potential to
- reduce flooding and erosion and provides the opportunity to reduce flooding and erosion (24 out of 32
- 22 possible maximum score). The wetland scores a low potential and low opportunity (11 out of 36
- possible maximum score) to provide habitat functions. Overall, the total Ecology wetland functions
- 24 score for 8th Street Wetland is 41 out of a possible 100.
- 25 2.2.3.9. South Lake Wetland
- 25 **2.2.3.9.** South Lake Wetland
- 26 South Lake Wetland scores a moderate potential to improve water quality and provide opportunities to
- 27 improve water quality (14 out of 32 possible maximum score). The wetland scores a moderate potential
- to reduce flooding and erosion and provides the opportunity to reduce flooding and erosion (16 out of
- 29 32 possible maximum score). The wetland scores a moderate potential and low opportunity (13 out of
- 30 36 possible maximum score) to provide habitat functions. Overall, the total Ecology wetland functions
- 31 score for South Lake Wetland is 43 out of a possible 100.
- 32 **2.2.3.10.** Central Lake Wetland
- 33 Central Lake Wetland scores a low potential to improve water quality and provide opportunities to
- 34 improve water quality (10 out of 32 possible maximum score). The wetland scores a moderate potential
- to reduce flooding and erosion and provides the opportunity to reduce flooding and erosion (20 out of
- 36 32 possible maximum score). The wetland scores a moderate potential and low opportunity (11 out of

36 possible maximum score) to provide habitat functions. Overall, the total Ecology wetland functions
 score for Central Lake Wetland is 41 out of a possible 100.

3 **2.2.3.11**.

## 3.11. North Lake Wetland

4 North Lake Wetland scores a low potential to improve water quality and provide opportunities to

- 5 improve water quality (8 out of 24 possible maximum score). The wetland scores a low potential to
- 6 reduce flooding and erosion and provides the opportunity to reduce flooding and erosion (4 out of 16
- 7 possible maximum score). The wetland scores a low potential and low opportunity (10 out of 36
- 8 possible maximum score) to provide habitat functions. Overall, the total Ecology wetland functions
- 9 score for North Lake Wetland is 22 out of a possible 76.
- 10 **2.2.3.12.** BNSF East Wetland

11 BNSF East Wetland scores a moderate potential to improve water quality and provide opportunities to

12 improve water quality (14 out of 32 possible maximum score). The wetland scores a moderate potential

- 13 to reduce flooding and erosion and provides the opportunity to reduce flooding and erosion (16 out of
- 14 32 possible maximum score). The wetland scores a low potential and low opportunity to provide habitat
- 15 functions (7 out of 36 possible maximum score). Overall, the total Ecology wetland functions score for
- 16 BNSF East Wetland is 37 out of a possible 100.
- 17

## 2.2.3.13. BNSF Northeast Wetland

- 18 BNSF Northeast Wetland scores a moderate potential to improve water quality and provide
- 19 opportunities to improve water quality (14 out of 32 possible maximum score). The wetland scores a
- 20 moderate potential to reduce flooding and erosion and provides the opportunity to reduce flooding and
- 21 erosion (16 out of 32 possible maximum score). The wetland scores a low potential and low opportunity
- to provide habitat functions (10 out of 36 possible maximum score). Overall, the total Ecology wetland
- 23 functions score for BNSF Northeast Wetland is 40 out of a possible 100.

## 24 2.2.3.14. Kelsey West Tributary Pond Wetland

25 Kelsey West Tributary Pond Wetland was delineated and rated by Parametrix in 2011 as part of a City

- 26 Project, and the data from that delineation was incorporated as part of the wetland delineation report.
- 27 Kelsey West Tributary Pond Wetland scores a moderate potential to improve water quality and provide
- 28 opportunities to improve water quality (22 out of 32 possible maximum score). The wetland scores a
- 29 high potential to reduce flooding and erosion and provides the opportunity to reduce flooding and
- 30 erosion (24 out of 32 possible maximum score). The wetland scores a moderate potential and
- 31 opportunity (17 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 32 Ecology wetland functions score for Kelsey West Tributary Pond Wetland is 63 out of a possible 100.
- 33 2.2.3.15. SR 520 West Wetland
- 34 SR 520 West Wetland scores a moderate potential to improve water quality and provide opportunities
- to improve water quality (18 out of 32 possible maximum score). SR 520 West Wetland scores a
- 36 moderate potential to reduce flooding and erosion and provides the opportunity to reduce flooding and

erosion (16 out of 32 possible maximum score). The wetland scores a moderate potential and low 1

- 2 opportunity (14 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 3 Ecology wetland functions score for SR 520 West Wetland is 48 out of a possible 100.
- 4

#### 2.2.3.16. Valley Creek Wetland

- 5 Valley Creek Wetland scores a moderate potential to improve water quality and provide opportunities
- 6 to improve water quality (16 out of 32 possible maximum score). Valley Creek Wetland scores a
- 7 moderate potential to reduce flooding and erosion and provides the opportunity to reduce flooding and
- 8 erosion (18 out of 32 possible maximum score). The wetland scores a moderate potential and moderate
- 9 opportunity (17 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 10 Ecology wetland functions score for Valley Creek Wetland is 51 out of a possible 100.
- 11

#### 2.2.3.17. SR 520 East Wetland

12 SR 520 East Wetland scores a low potential to improve water quality and provide opportunities to

- 13 improve water guality (10 out of 24 possible maximum score). SR 520 East Wetland scores a low
- 14 potential to reduce flooding and erosion and provide the opportunity to reduce flooding and erosion (10
- 15 out of 16 possible maximum score). The wetland scores a moderate potential and low opportunity (13
- 16 out of 36 possible maximum score) to provide habitat functions. Overall, the total Ecology wetland
- 17 functions score for SR 520 East Wetland is 33 out of a possible 76.
- 18

#### 2.2.4 Wetland Impact Assessment

- 19 During the course of the Project, portions or all of 12 of the 21 wetlands in the Project area will be filled
- 20 or temporarily disturbed. Approximately 0.48 acre of wetland will be permanently filled or graded to
- 21 construct the Project and 0.22 acre will be temporarily disturbed. Project activities will also require tree
- 22 removal or replacement within wetland areas due to criteria outlined in Sound Transit's Design Criteria
- 23 Manual (DCM; Sound Transit 2013) for light rail operations, which specifies that a "vegetation clear
- 24 zone" be established. The tree removal or replacement results in a change in vegetation class and is
- 25 defined as a wetland vegetation conversion impact. The Project is expected to have 0.96 acre of
- 26 wetland vegetation conversion impacts. These conversion activities are described in Section 2.2.4.5.
- 27 The wetland buffers of 13 of the 21 wetlands in the Project area will be permanently filled or
- 28 temporarily disturbed. Approximately 2.83 acres of wetland buffer will be permanently filled or graded
- 29 to construct the Project, and 4.90 acres of wetland buffer will be temporarily disturbed.
- 30 Specific characteristics contributing to generally low to moderate values related to wetland functions
- 31 include their association with roadside drainage ditches with culverts or catch basins that provide
- 32 unconstricted or slightly constricted surface outlets; lack of ponding features and the types of
- 33 vegetation to reduce surface flows; the overall lack of quality habitat conditions near or adjacent to the
- 34 wetlands; and the general lack of vegetative structure, plant richness, habitat diversity, and special
- 35 habitat features.

- 1 The temporary and permanent impacts to wetlands in the Project area will primarily result in a loss of
- 2 stormwater management functions provided by these wetlands. Stormwater best management
- 3 practices (BMPs) will be implemented as part of the Project; therefore, stormwater quality will be
- 4 significantly improved as a whole, but wetland loss will reduce the flood water desynchronization,
- 5 sediment removal, nutrient and toxicant removal, and erosion control functions provided by the
- 6 affected wetlands.

## 7 2.2.4.1. Permanent Wetland Impacts

- 8 Permanent direct impacts from the proposed Project include filling and grading within the wetlands to
- 9 construct the Project. Seven of the 21 wetlands in the Project area will be permanently disturbed
- 10 because of partial filling or grading for Project construction for a total of 0.48 acres of permanent
- 11 wetland impact. Four of the wetlands that will be permanently disturbed are Category II wetlands, and
- 12 three are Category III wetlands according to the Ecology rating system. A summary of wetlands with
- permanent impacts under the Project is provided in Table 2-8. A summary of the classifications of
- 14 wetlands with permanent impacts is provided in Table 2-9. Permanent wetland impact areas are shown
- 15 in Appendix B.

1 **Table 2-8 Summary of Permanent Wetland Impacts** 

Wetland Name	Size <sup>1</sup> (acres)	State (Ecology) and Local (Bellevue) Rating	Permanent Impacts (acres)	Source of Impact
Mercer Slough West	350 <sup>2</sup>	H	0.23	Geotechnical ground improvements (soil replacement, stone columns), access road between Winter's House & Blueberry Farm, retaining wall at proposed Winter's House parking lot, proposed storm drain easements/outfalls east and north of Winter's House, and guideway location,
Bellefield South	0.29	Π	0.07	Proposed realignment of SE 15 <sup>th</sup> St. and its associated retaining wall/footings
Bellefield North	0.11	Ш	0.02	Proposed realignment of SE 15 <sup>th</sup> St. and its associated retaining wall/footings
8th Street	0.05 <sup>3</sup> /0.13 <sup>2</sup>	III	0.09	Guideway location
BNSF East	0.06 <sup>3</sup> / 0.12 <sup>2</sup>	111	0.05	Guideway location and associated ballast wall
Kelsey West Tributary Pond	5.98	II	0.01	Guideway column locations (drilled shafts)
SR 520 West	0.51 <sup>3</sup> / 0.64 <sup>2</sup>	111	0.01	Location of guideway abutment and column (#D52—drilled shaft)
		Total	0.48	

Notes:

1 When only one number is present, total wetland area is located within the Project area. When two numbers are present, the

2 3 4 5 wetland extends outside the Project area, and both the estimated total area (see footnote 2) and the delineated area (see footnote 3) are provided. Estimates for wetlands outside the Project area are based on observations during the field

6 investigation and aerial photograph analysis. Wetland acreages were provided by HJH.

7 2 Approximate total wetland area, includes delineated area plus estimated wetland area extending outside project area

8 3 Delineated wetland area within project area

Classification Type	Class	Permanent Impact Area (acres)
	PEM	0.05
	PFO, PEM	0.01
Cowardin (USFWS)	PSS, PEM	0.02
	PFO, PSS, PEM	0.17
	PFO, PSS, PEM, PAB	0.23
	Total	0.48
Foology Dating	II	0.33
Ecology Rating	Ш	0.15
	Total	0.48
	Depressional	0.14
	Depressional, Lake-Fringe, Riverine, Slope	0.23
Hydrogeomorphic Class	Depressional, Riverine	0.01
	Depressional, Slope	0.01
	Riverine, Slope	0.09
	Total	0.48

1 Table 2-9 Summary of Permanent Wetland Impacts by Classification

2

3

## 2.2.4.2. Temporary Wetland Impacts

4 Temporary impacts to four wetlands will occur from vegetation clearing, alterations to existing grades,

5 and shading from temporary structures. Project elements expected to cause temporary construction

6 impacts to wetlands include construction access routes, grading, wall construction, temporary public

7 traffic routes, staging areas, and utility installations and relocations.

8 Temporary wetland impacts would produce short-term loss of wetland functions during construction

9 and for several years following construction. They would not, however, result in a permanent loss of

10 wetlands after the Project is completed and once disturbed vegetation or wetland hydrology is

11 reestablished. The extent of short-term degradation would vary depending on the intensity of the

12 temporary impacts but is anticipated to be from 1 to 3 years. Wetlands where the vegetation is cleared

- 13 or trimmed would still retain some water quality and quantity function, although at a diminished level.
- 14 Temporarily filled wetlands would provide no beneficial functions until they are restored. Wetlands
- 15 temporarily impacted during construction would be restored to pre-existing grades and replanted
- 16 following the completion of work, and it is anticipated that they would return to a functioning state
- 17 within 5 years. Four of the 21 wetlands in the Project area would result in approximately 0.22 acres of
- 18 short-term loss of wetland functions. This estimate is based on offsets from planned cut and fill and
- 19 further avoidance and minimization activities during construction may reduce this impact. A summary

- 1 of wetlands with temporary impacts under the Project is provided in Table 2-10. Temporary wetland
- 2 impact areas are shown in Appendix B.

Wetland Name	Size <sup>1</sup> (acres)	State (Ecology) and Local (Bellevue) Rating	Temporary Impacts (acres)	Source of Impact
Mercer Slough West	350 <sup>2</sup>	II	0.16	Future installation of proposed boardwalk, construction of retaining wall at Winter's House (scaffolding, vehicles), construction access (vehicular) between Winter's House and Wye Creek (along east side of proposed guideway)
Alcove Creek	0.23 <sup>3</sup> / 0.64 <sup>2</sup>	II	0.01	Construction of retaining wall along west side of 112 <sup>th</sup> Ave. SE (scaffolding, vehicles)
Bellefield South	0.29	11	0.04	Construction of retaining wall at SE 15 <sup>th</sup> St. (scaffolding, vehicles), geotechnical ground improvements (soil replacement)
Bellefield North	0.11	II	0.01	Construction of retaining wall at SE 15 <sup>th</sup> St. (scaffolding, vehicles), geotechnical ground improvements (soil replacement)
		Total	0.22	

### 3 Table 2-10 Summary of Temporary Wetland Impacts

#### 4 <u>Notes:</u>

5 1 When only one number is present, total wetland area is located within Project area. When two numbers are present, the

wetland extends outside the Project area and both the estimated total area (superscript 2) and the delineated area
 (superscript 3) are provided. Estimates for wetlands outside the Project area are based on observations during the field

8 investigation and aerial photograph analysis. Wetland acreages were provided by HJH.

9 2 Approximate total wetland area, includes delineated area plus estimated wetland area extending outside project area

10 3 Delineated wetland area within project area

11

12

### 2.2.4.3. Permanent Wetland Buffer Impacts

13 Permanent wetland buffer impacts would result in a decrease in area adjacent to wetland areas, which

14 could consequently result in decreased wetland function for the remaining wetlands within the Project

area after construction. Eleven of the 21 wetlands in the Project area would have permanent wetland

16 buffer impacts because of partial filling or grading for Project construction for a total of 2.83 acres of

17 permanent wetland buffer impact. A summary of wetlands with permanent buffer impacts under the

18 Project is provided in Table 2-11. Permanent wetland buffer impact areas are shown in Appendix B.

1	Table 2-11 Summary	y of Permanent Wetland Buffer Impacts
_		

Wetland Name	State (Ecology) and Local (Bellevue) Rating	Permanent Buffer Impacts (acres)	Source of Impact
Mercer Slough West	II	1.84	Guideway location, guideway column locations (drilled shafts), perimeter ornamental landscape south of the South Bellevue Station parking structure, access road between Winter's House and Blueberry Farm, sidewalk improvements along Bellevue Way SE, improvements to the Winter's House parking lot, location of proposed building pad for future retail building, proposed storm drain easements/outfalls,
Alcove Creek	II	0.03	Location of retaining wall along west side of 112 <sup>th</sup> Ave. SE, sidewalk improvements, location of realigned Bellefield Park Lane
Bellefield South	П	0.22	Location of realigned SE 15 <sup>th</sup> St. and adjacent sidewalk
Bellefield North	П	0.21	Location of realigned SE 15 <sup>th</sup> St. and adjacent sidewalk
8th Street	111	0.22	Location of guideway and adjacent sidewalk improvements
South Lake	Ш	0.01	Location of guideway columns (drilled shafts), location of guideway trestle
Central Lake	111	0.07	Location of guideway trestle
BNSF East	III	0.02	Location of guideway and associated ballast wall
BNSF Northeast	III	0.06	Location of guideway and associated ballast wall
Kelsey West Tributary Pond	II	0.13	Location of storm drain easements/outfalls, location of guideway columns (drilled shafts)
SR 520 West	III	0.02	Location of guideway columns (drilled shafts)
	Total	2.83	

## 2

## 2 3

## 2.2.4.4. Temporary Wetland Buffer Impacts

4 Project elements expected to cause temporary construction impacts to wetland buffers include

5 construction access routes, temporary public traffic detour routes, staging areas, and utility installations

6 and relocations. Eleven of the 21 wetlands in the Project area will have temporary wetland buffer

7 impacts for a total of 4.90 acres. This estimate is based on offsets from planned cut and fill and further

8 avoidance and minimization during construction may reduce this impact. A summary of wetlands with

9 temporary buffer impacts under the Project is provided in Table 2-12. Temporary wetland buffer impact

10 areas are shown in Appendix B.

1	Table 2-12 Summary	of Temporary	y Wetland Buffer Impacts
-		,	

Wetland Name	State (Ecology) and Local (Bellevue) Rating	Temporary Impacts (acres)	Source of Impact
Mercer Slough West	11	2.86	Construction access (vehicular) and staging, geotechnical ground improvements (soil replacement, stone columns), grading activities associated with guideway and retaining wall locations
Alcove Creek	II	0.09	Construction access for retaining wall (scaffolding, vehicles)
Bellefield South	II	0.03	Construction access for retaining wall (scaffolding, vehicles)
Bellefield North	II	0.10	Construction access for retaining wall (scaffolding, vehicles)
8th Street	111	0.11	Access for guideway construction (vehicles)
South Lake	Ш	0.24	Construction access for guideway and columns (scaffolding, vehicles)
Central Lake	Ш	0.07	Construction access for guideway and trestle (scaffolding, vehicles)
Kelsey West Tributary Pond	II	0.34	Construction access for guideway and columns (scaffolding, vehicles)
SR 520 West	111	0.57	Construction access for guideway and columns (scaffolding, vehicles)
Valley Creek	II	0.33	Construction access for guideway and columns (scaffolding, vehicles)
SR 520 East	111	0.16	Construction access for guideway and columns (scaffolding, vehicles)
	Total	4.90	

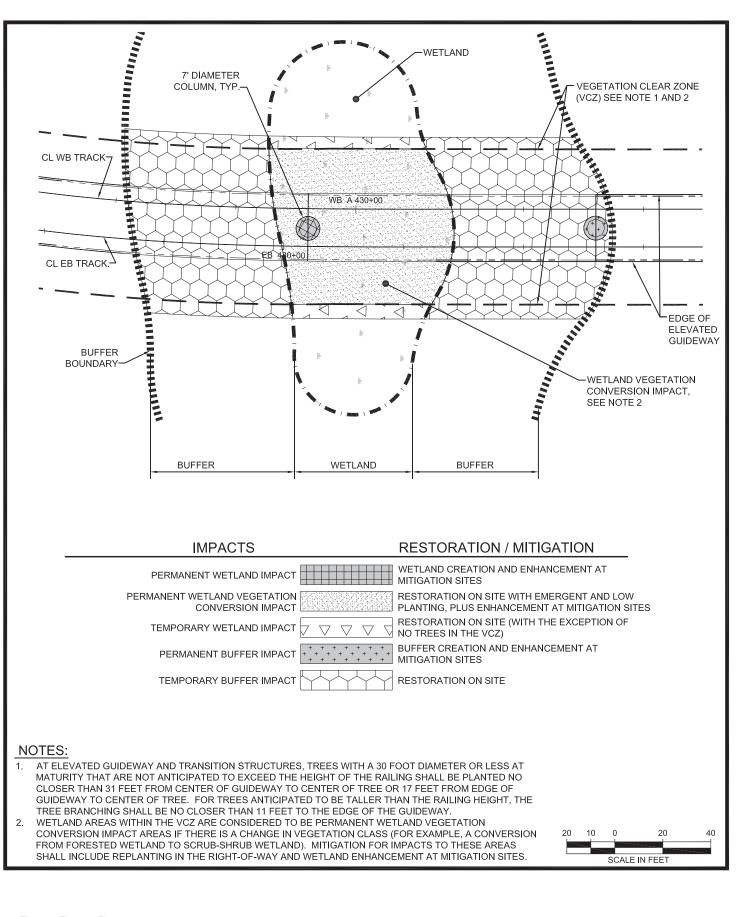
2

3

### 2.2.4.5. Wetland Vegetation Conversion Impacts

4 Project activities will require tree removal or replacement within wetland areas from criteria outlined in 5 Sound Transit's DCM for light rail operations (Sound Transit 2013), which specifies that a "vegetation 6 clear zone" be established. The tree removal or replacement results in a change in vegetation class and is defined as a wetland vegetation conversion impact. Light rail safety guidelines dictate that trees not 7 8 be located beneath or within 20 feet of each side of the light rail guideway to provide safe operating 9 conditions. Therefore, all trees located within these areas of the Project will be removed or replaced 10 with tree or shrub species that are anticipated to not interfere with operations in both upland and 11 wetland areas, but only wetland areas are considered a wetland impact. Tree removal and pruning in 12 these areas will be an ongoing maintenance activity associated with operation of the Project.

- 1 Removing trees and implementing ongoing maintenance activities to prevent trees from encroaching
- 2 into the areas under and adjacent to the light rail guideway will result in a decrease in wetland functions
- 3 in these areas. In general, existing PFO wetland habitat will be converted to PSS and or PEM habitat.
- 4 Losing tree cover within a wetland system can decrease specific wetland functions such as plant species
- 5 diversity, evapotranspiration rates, and habitat wildlife features. If tree removal resulted in the loss of
- all tree vegetation cover within a wetland, losing PFO habitat would result in a decrease in Ecology's
- wetland rating score for the given wetland. If tree removal resulted in the loss of a portion of trees
  within the wetland, the Ecology wetland rating score could remain unchanged. Mitigation for tree
- 8 within the wetland, the Ecology wetland rating score could remain unchanged. Mitigation for tree
  9 removal in wetland areas will include re-planting wetland shrub and herbaceous vegetation and
- 10 enhancing wetlands at a mitigation area adjacent to the Project alignment. Dense shrub growth in these
- areas will reduce the functional loss of removing trees and will also reduce the establishment of
- 12 colonizing tree species.
- 13 In order to mitigate impacts to existing Mercer Slough Park trails, a new boardwalk is proposed within
- 14 Mercer Slough Nature Park. The boardwalk will be permitted under this Project; however, the final
- 15 design and construction will be handled by the City of Bellevue. Most of this boardwalk will be installed
- 16 within wetland areas and will result in a permanent wetland vegetation conversion impact due to the
- 17 anticipated conversion from a PSS to a PEM. The pin piles needed for structural support will have a
- 18 permanent impact to the wetland and will total approximately 0.01 acre.
- 19 Nine of the 21 wetlands in the Project area will have vegetation conversion impacts for a total of 0.96
- 20 acre. While these are considered to be permanent impacts, the mitigation approach does not have the
- 21 same ratio requirements, which is why it is listed separately from other permanent wetland impacts. A
- 22 schematic representation of tree removal and associated mitigation in wetland areas is shown in Figure
- 23 2-2. A summary of wetlands with vegetation conversion impacts under the Project is provided in Table
- 24 2-13.



EAST LINK EXTENSION SOUTH BELLEVUE TO OVERLAKE TRANSIT CENTER FIGURE 2-2 SCHEMATIC REPRESENTATION OF IMPACTS AND MITIGATION FOR ELEVATED GUIDEWAY

1/13

12/1



SoundTransit

1	Table 2-13 Summary of Wetland Vegetation Conversion Impacts	
	Table 2-13 Summary of Wetland Vegetation Conversion Impacts	
_		

Wetland Name	State (Ecology) and Local (Bellevue) Rating	Vegetation Conversion Impacts (acres)	Source of Impact
Mercer Slough West	П	0.36	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway), vegetation conversion under future boardwalk
8th Street	Ш	0.07	Conversion of vegetation types under within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
South Lake	Ш	0.09	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
Central Lake	Ш	0.03	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
North Lake	IV	0.04	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
BNSF East	111	0.07	Conversion of vegetation types under within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
Kelsey West Tributary Pond	II	0.01	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
SR 520 West		0.26	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
Valley Creek	II	0.03	Conversion of vegetation types under guideway and within Vegetation Conversion Zones (approx. 20-24' from edge of guideway)
	Total	0.96	

2

3

## 2.2.5 Wetland Regulatory Compliance

4 Guidance from USFWS, Ecology, and the City was used to determine the wetland classifications and

5 appropriate buffer widths. Information and excerpts from the specific guidance language are provided

6 in section 2.2.5.1. Table 2-5 lists the USFWS classifications for the wetlands and the Ecology and City

- 7 wetland ratings and classifications. Ecology wetland rating forms for the 21 delineated wetlands are
- 8 included in the Delineation Report (Anchor QEA 2013).

## 1 **2.2.5.1.** Wetland Buffer Requirements

- 2 Appropriate minimum wetland buffers were identified according to the current BCC (City of Bellevue
- 3 2013a). The BCC identifies minimum protective buffer widths based on the wetland category, per the
- 4 Ecology rating system, the existing land use within the prescribed buffer, and the Ecology function
- 5 scores for habitat. According to the BCC, wetland buffers shall be established from the wetland edge, as
- 6 summarized in Table 2-14. Bellevue will determine the final wetland ratings and minimum buffers.
- 7 Wetland buffer widths based on the local rating are identified in Table 2-15.

### 8 Table 2-14 City of Bellevue Wetland and Wetland Buffer Regulations

Wetland Category	Wetland Characteristics <sup>1</sup>	Buffer Width (feet)
	Natural heritage wetlands	190
	Bogs	190
	Forested	Based on score for habitat or water quality functions
Category I	Habitat score of 29 to 36	225
	Habitat score of 20 to 28	110
	Water quality score of 24 to 32 and habitat score of less than 20	75
	Not meeting any of the above	75
Catagonell	Habitat score of 29 to 36	225
Category II	Habitat score of 20 to 28	110
Category III	Water quality score of 24 to 32 and habitat score of less than 20	75
	Not meeting any of the above	75
Cotogon III	Habitat score of 20 to 28 points	110
Category III	Not meeting any of the above	60
Category IV (more than 2,500 square feet)	Score for functions less than 30 points	40

9 <u>Notes:</u>

10 Source: City of Bellevue 2013a, Chapter 20.25H.095.C.1.a

11 1 Habitat and water quality scores per Hruby 2004 and Ecology 2008a.

Wetland	State and Local Wetland Rating <sup>1</sup>	Wetland Characteristics Buffer Criteria	Buffer Width (feet)
Mercer Slough West	II	Habitat Score 20 to 28	110
Alcove Creek	II	Habitat Score < 20	75
Bellefield South	II	Habitat Score < 20	75
Bellefield North	II	Habitat Score < 20	75
8th Street	III	Habitat Score < 20	60
Lake Bellevue	III	Habitat Score < 20	60
South Lake	III	Habitat Score < 20	60
Central Lake	III	Habitat Score < 20	60
North Lake	IV	< 2,500 sf	0
BNSF Southwest	III	Habitat Score < 20	60
BNSF East	III	Habitat Score < 20	60
BNSF West	III	Habitat Score < 20	60
BNSF Northeast	III	Habitat Score < 20	60
BNSF Northwest	IV	> 2,500 sf	40
BNSF North	III	Habitat Score < 20	60
Kelsey West Tributary Pond	II	Habitat Score < 20	75
Kelsey West Tributary Stream	III	Habitat Score < 20	60
136th Place	III	Habitat Score < 20	60
SR 520 West	III	Habitat Score < 20	60
Valley Creek	II	Habitat Score < 20	75
SR 520 East	III	Habitat Score < 20	60

		<b>6</b> - 11	- • •			
1	Table 2-15 City	v ot Bellevue	Regulations	Wetland Rat	ting and Butte	er Distance

2 <u>Notes:</u> 3 1 All w

1 All wetlands identified during the investigation were located within the City jurisdiction.

4 sf = square feet

5

## 6 **2.3 Streams**

- Streams in the Project area were identified and the stream ordinary high water marks (OHWMs) were
  delineated based on the criteria identified in the BCC LUC 20.25H.095 (City of Bellevue 2013a). Stream
- 9 locations are shown on Figure 2-1. The results of the stream OHWM survey are presented in the
- 10 Delineation Report (Anchor QEA 2013). The stream OHWM survey methods and results from that
- 11 report are summarized in the following sections.

## 12 **2.3.1 Methods**

- 13 To document the OHWM of the streams within the Project area, existing information was reviewed
- 14 (described in Section 1.3.1), an aerial photograph analysis was performed, and site visits were

1 conducted in February, March, April, and May 2013. The OHWM delineation was completed by walking

2 the stream shorelines and identifying the OHWM with flagging for survey or collected OHWM data with

a global positioning system (GPS) unit. Delineated stream reaches within the Project area were limited

4 in some areas due to lack of ROE.

- 5 The stream OHWM boundaries were identified consistent with Chapter 90.58 of the Revised Code of
- 6 Washington (RCW) and Chapter 173-22 of the Washington Administrative Code (WAC). The WAC
- 7 provides the following definition:

## 8 "Ordinary high water line" means the mark on the shores of all waters that will be found

9 by examining the bed and banks and ascertaining where the presence and action of

- 10 waters are so common and usual and so long continued in ordinary years, as to mark
- 11 upon the soil or vegetation a character distinct from that of the abutting upland:
- 12 Provided, that in any area where the ordinary high water line cannot be found the
- 13 ordinary high water line adjoining saltwater shall be the line of mean higher high water
- 14 and the ordinary high water line adjoining freshwater shall be the elevation of the mean
- 15 annual flood.

Guidance and policy documents from WDFW and Ecology use OHWM and "ordinary high water line"interchangeably; this report uses OHWM.

18 **2.3.1.1.** Stream Classifications

A stream is defined by the City (BCC LUC 20.25H.075) as an aquatic area where surface water produces a
 channel, not including a wholly artificial channel, unless the artificial channel is:

- 21 1. Used by salmonids; or
- 22 2. Used to convey a stream that occurred naturally before construction of the artificial channel.

Streams are classified under the BCC LUC 20.25H.075.A into four categories (Types S, F, N, and O) that
 are defined as follows:

- Type S water means all waters, other than shoreline critical areas designated under Land Use
   Code 20.25E.017, within their bankfull width, as inventoried as "shorelines of the state" under
   Chapter 90.58 RCW and the rules promulgated pursuant to Chapter 90.58 RCW, including
   periodically inundated areas of their associated wetlands.
- Type F water means all segments of waters that are not Type S waters, and that contain fish or
   fish habitat, including waters diverted for use by a federal, state, or tribal fish hatchery from the
   point of diversion, for 1,500 feet or the entire tributary, if the tributary is highly significant for
   protection of downstream water quality.
- Type N water means all segments of waters that are not Type S or F waters and that are
   physically connected to Type S or F waters by an aboveground channel system, stream, or
   wetland.

Type O water means all segments of waters that are not Type S, F, or N waters and that are not
 physically connected to Type S, F, or N waters by an aboveground channel system, stream, or
 wetland.

## 4 2.3.2 Stream Study Results

5 Eleven streams were identified within the Project area. The Project area spans a cumulative length of 6 7.13 miles (Figure 1-1) and contains nine drainage basins within the Cedar/Sammamish Watershed 7 (WRIA 8) (Ecology 2013). The eight basins within the City are shown on Figure 1-4. Streams are 8 described in location sequence from west to east. Each stream was given a descriptive name to reflect 9 its relative location along the alignment. This section provides a summary of the 11 streams within the 10 Project area. A complete description of the 11 streams, including the OHWM results, are presented in the Delineation Report (Anchor QEA 2013). Table 2-16 presents a summary of the streams in the Project 11 area, approximate stream OHWM length, and the stream's drainage basin. Stream local ratings and 12 buffer widths per the BCC are identified in Table 2-17. 13

## 14 Table 2-16 Summary of Streams Located within the Project Area

Stream	OHWM Length <sup>1</sup> (feet)	Drainage Basin <sup>2</sup>
Stream A	260	Mercer Slough
Stream B	83	Mercer Slough
Wye Creek	150	Mercer Slough
Mercer Slough West Branch	2,700	Mercer Slough
Alcove Creek	64	Mercer Slough
Sturtevant Creek	689	Sturtevant Creek
West Tributary to Kelsey Creek	321	West Tributary
Stream C	291	West Tributary
Goff Creek	61	Goff Creek
Unnamed Tributary to Kelsey Creek	250	Kelsey Creek
Valley Creek	205	Valley Creek

15 16 17

Stream delineations were limited within some areas of the Project area due to lack of ROE.

1 Calculations provided by HJH for open channel areas that were delineated.

18 2 City of Bellevue 2013b

Notes:

19 OHWM = ordinary high water mark

Stream	Local Stream Rating <sup>1</sup>	Buffer Width (feet)
Stream A	Type N	50
Stream B	Type N	50
Wye Creek	Type F	100
Mercer Slough West Branch	Type S	100
Alcove Creek	Type O	25
Sturtevant Creek	Type F	50 <sup>2</sup>
West Tributary to Kelsey Creek	Type N	50
Stream C	Type O	25
Goff Creek	Type F	50 <sup>2</sup>
Unnamed Tributary to Kelsey Creek	Type N	50
Valley Creek	Type F	50 <sup>2</sup>

### 1 Table 2-17 Local Critical Areas Regulations Stream Rating and Buffer Distance

2 <u>Notes:</u>

3 1 BCC (City of Bellevue 2013a).

4 2 These streams' buffers were applied based on guidance from City of Bellevue 2013a, Chapter 20.25H.075.C.1.a.

5 6

### 2.3.2.1. Stream A

7 Stream A is an unnamed stream that flows from wetland seeps near 112th Avenue SE and the western 8 edge of the Mercer Slough West Wetland (Section 2.2.2.1). The stream flows outside the Project area to 9 the east. Based on observations during the field investigation and an analysis of aerial photographs, 10 Stream A appears to drain into the Mercer Slough West Branch. An approximately 260-foot reach of 11 Stream A was delineated within the Project area (Appendix A, Frame 4). Stream A appears to meet the 12 criteria of a Type N water under the City's critical areas regulations (50-foot buffer), physically 13 connected to Type S or F waters (Mercer Slough) by an aboveground channel system, stream, or 14 wetland. Stream A is not identified on City critical area maps (City of Bellevue 2013b) or WDFW PHS 15 maps (WDFW 2013a).

16 **2.3** 

## 2.3.2.2. Stream B

17 Stream B is an unnamed stream that flows east from wetland seeps near 112th Avenue SE and the

18 western edge of the Mercer Slough West Wetland (Section 2.2.2.1). Stream B flows into Stream A

19 within the Project area (Appendix A, Frame 4). An approximately 83-foot reach of Stream B was

20 delineated within the Project area. Stream B appears to meet the criteria of a Type N water under the

- 21 City's critical areas regulations (25- or 50-foot buffer, depending on site conditions), physically
- 22 connected to Type S or F waters (Mercer Slough) by an aboveground channel system, stream, or
- 23 wetland. Site conditions indicate the stream warrants a 50-foot buffer. Stream B is not identified on

24 City critical area maps (City of Bellevue 2013b) or WDFW PHS maps (WDFW 2013a).

## 2.3.2.3. Wye Creek

2 Wye Creek is an unnamed stream that flows east from a pair of culverts located under the split at 3 Bellevue Way and 112th Avenue SE. The stream was originally characterized as a wetland, but it was 4 delineated as a stream during field investigations. Wye Creek flows east into the Mercer Slough West 5 Wetland and appears to drain into the Mercer Slough West Branch. An approximately 150-foot reach of 6 Wye Creek flows within the Project area (Appendix A, Frame 4). Wye Creek appears to meet the criteria 7 of a Type F rating under the City's critical areas regulations (100-foot buffer), physically connected to 8 Type S waters (Mercer Slough) by an aboveground channel system, stream, or wetland. Wye Creek is 9 not identified on City critical area maps (City of Bellevue 2013b) or WDFW PHS maps (WDFW 2013a).

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## 2.3.2.4. Mercer Slough West Branch

11 The OHWM of the right bank of the Mercer Slough West Branch was delineated within the Project area

12 (Appendix A, Frames 2, 4, and 5) where the slough primarily flows south to Lake Washington. The West

13 Branch meets the definition of in BCC LUC 20.25H.075 of a wholly artificial channel; however, as it may

14 have salmonids present, it is considered a stream under the BCC. This section of open water was

15 created by dredging a channel to float in pile drivers when the 130 acres of the slough was filled in to

create the Bellefield Office Park. Three of the wetlands delineated as part of the investigation, Mercer
 Slough West (Section 2.2.2.1), Bellefield South (Section 2.2.2.3), and Bellefield North (Section 2.2.2.4)

Slough West (Section 2.2.2.1), Bellefield South (Section 2.2.2.3), and Bellefield North (Section 2.2.2.4)
wetlands, are associated with the right bank of Mercer Slough West Branch (Section 2.2.2.1).

19 Within the Project area, the right bank of Mercer Slough West Branch shoreline is dominated by

Himalayan blackberry and mowed grass adjacent to 112th Avenue SE. An approximately 2,700-foot

reach of the Stream OHWM was delineated within the Project area. The Mercer Slough West Branch is

identified as Type S waters on City critical area maps (City of Bellevue 2013b). Under the City's critical

areas regulations, Type S waters have a 100-foot protective buffer. This stream is also identified on

24 WDFW PHS maps (WDFW 2013a).

## 25 **2.3.2.5.** Alcove Creek

26 Alcove Creek is a stream that originates from two man-made ponds within the Alcove Creek Wetland

27 (Section 2.2.2.2), located within a residential development. The creek flows east through a culvert

28 under 112th Avenue SE (Appendix A, Frame 5). There is no open channel of Alcove Creek east of 112th

29 Avenue SE; however, the stream flows directly into the West Branch of Mercer Slough from a hanging

30 culvert. A second pond is located upstream of the first pond that is located outside the Project area.

- 31 The upstream location of the stream is located outside the Project area boundary and was not identified
- 32 during the investigation. The Project drainage team identified an artificial hydrology source, which
- pumps water from the Mercer Slough West Branch to the upper pond. Alcove Creek flows in a an open
- 34 channel for about 240 lineal feet within the Project area. Alcove Creek meets the criteria of Type O
- 35 waters under the City's critical areas regulations (25-foot buffer), not physically connected to Type S, F,
- 36 or N waters by an above ground channel system, stream, or wetland. Alcove Creek is not identified on
- 37 City critical areas maps (City of Bellevue 2013b) or WDFW PHS maps (WDFW 2013a).

### 2.3.2.6. Sturtevant Creek

2 Within the Project area, Sturtevant Creek flows from Lake Bellevue south along the former BNSF railway 3 for approximately 600 feet before flowing through another approximately 35-foot-long culvert located 4 beneath railroad tracks (Appendix A, Frame 9; Appendix B, Figures 12 and 16-21). The stream then 5 flows west for approximately 20 feet before flowing into a culvert of unknown length to the west near 6 I-405. Sturtevant Creek passes under I-405 through an approximately 250-foot culvert located 700 feet 7 south of Main Street. An approximately 689-foot reach of Sturtevant Creek was delineated within the 8 Project area. Sturtevant Creek is identified as a Type F water on City critical area maps (City of Bellevue 9 2013b). Under the City's critical areas regulations, Type F waters have a 50- or 100-foot protective 10 buffer, depending on site conditions. Site conditions indicate that this stream warrants a 50-foot buffer. This reach of Sturtevant Creek is not identified on WDFW PHS maps (WDFW 2013a). 11

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### 2.3.2.7. West Tributary to Kelsey Creek

Within the Project area, the West Tributary to Kelsey Creek flows from the Kelsey West Tributary Pond 13 Wetland southeast and then south from an approximately 60-foot long culvert located beneath a large 14 15 reinforced weir (Appendix A, Frame 11). An approximately 321-foot reach of the stream was delineated 16 within the Project area. The stream flows into a culvert at the downstream end of the OHWM 17 delineation. The West Tributary to Kelsey Creek is identified as a Type N water on City critical area maps 18 (City of Bellevue 2013b). Under the City's critical areas regulations, Type N waters have a 25- or 50-foot 19 protective buffer, depending on site conditions. Site conditions indicate that the stream warrants a 20 50-foot buffer. This reach is not identified on WDFW PHS maps (WDFW 2013a).

### 21 **2.3.2.8.** Stream C

22 Stream C is an unnamed stream that flows west and into a culvert at the upstream and downstream 23 reaches (Appendix A, Frames 11 and 12). Based on aerial photograph analysis, this system appears to be 24 an unnamed tributary to the West Tributary to Kelsey Creek. The culverts are located beneath 25 commercial development near the Project area. An approximately 291-foot reach of Stream C was 26 delineated within the Project area. Stream C discharges into West Tributary to Kelsey Creek via a 27 culvert. The upstream source of the stream could not be identified based on observations during the 28 site visits and a review of City of Bellevue stream and culvert information. Surface runoff from 29 surrounding development appears to contribute to the system; however, during two site visits that 30 occurred when no precipitation was present for at least 2 days prior to the site visits, flow was present in the stream indicating that surface runoff could not be the sole source of the system. Stream C 31 32 appears to meet the criteria of a Type O water under the City's critical areas regulations (25-foot buffer), 33 not physically connected to Type S, F, or N waters by an aboveground channel system, stream, or 34 wetland. Stream C is not identified on City critical areas maps (City of Bellevue 2013b) or WDFW PHS 35 maps (WDFW 2013a).

## 2.3.2.9. Goff Creek

2 Anchor QEA staff delineated the OHWM of Goff Creek within the Project area. Goff Creek flows south 3 and southeast through an open channel between commercial development upstream of the Project 4 area. At the downstream end of the delineated reach, Goff Creek flows east through a culvert located 5 beneath 132nd Avenue NE that extends for several hundred feet before becoming an open channel 6 again south of NE Bellevue Redmond Road (Appendix A, Frame 12). An approximately 61-foot reach of 7 Goff Creek was delineated within the Project area. Goff Creek is identified as a Type F water on City 8 critical areas maps (City of Bellevue 2013b). Under the City's critical areas regulations, Type F waters 9 have a 50- or 100-foot protective buffer, depending on site conditions. Because the reach of Goff Creek 10 within the Project area is located within commercial development, site conditions indicate a 50-foot 11 protective buffer is applicable for Goff Creek (Bellevue 2013b). This reach of Goff Creek is not identified 12 on WDFW PHS maps (WDFW 2013a).

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## 2.3.2.10. Unnamed Tributary to Kelsey Creek

14 Within the Project area the Unnamed Tributary to Kelsey Creek flows south from a culvert located 15 beneath a commercial development parking lot in the ROW on the west side of 136th Place (Appendix A, 16 Frame 13). The first reach of the stream is part of a heavily planted mitigation site adjacent to a city side 17 walk and a parking lot. The stream channel has no defined bed and bank due to dense vegetation, but 18 flow within the vegetation was observed. The second reach is in a channelized ditch that flows south 19 into a double culvert. The stream then flows into a 24-inch pipe within the City storm drain system located within 136<sup>th</sup> Pl. No downstream reaches of the stream were delineated within the Project area. 20 21 An approximately 250-foot reach of the stream was delineated within the Project area. The Unnamed 22 Tributary to Kelsey Creek is identified as a Type N water on City critical areas maps (City of Bellevue 23 2013b). Under the City's critical areas regulations, Type N waters have a 25- or 50-foot protective 24 buffer, depending on site conditions. Site conditions indicate the stream warrants a 50-foot buffer. The 25 reach of the Unnamed Tributary to Kelsey Creek is not identified on WDFW PHS maps (WDFW 2013a).

26 **2.3.2.11. Valley Creek** 

Valley Creek flows south from two 36-inch culverts located under SR 520, and then flows south to a weir
structure at NE 21st Street. Valley Creek flows through the Valley Creek Wetland and is a tributary to
Kelsey Creek (Appendix A, Frame 13). Valley Creek appears to meet the criteria of a Type F water under
the City's critical areas regulations (50- or 100-foot buffer, depending on site conditions), physically
connected to the Mercer Slough (Type S water) by an aboveground channel system, stream, or wetland.
Site conditions indicate the stream warrants a 50-foot buffer. Valley Creek is identified on City critical
area maps (City of Bellevue 2013b).

## 34 **2.3.3 Stream Characteristics**

This section provides a summary of the characteristics of stream reaches within the Project area that will be disturbed, or have buffers that will be disturbed, under the proposed Project. Stream characteristics 1 described in this section include hydrologic conditions, channel bed and bank conditions, substrate

- 2 composition, and riparian vegetation.
- 3 2.3.3.1.

# Wye Creek

4 Within the Project area, Wye Creek averaged about 3 to 6 feet wide and ranged from about 6 to 24 5 inches deep at the time of the investigation. The banks are deeply incised and the top of bank was more 6 than 3 feet above the water line in some areas. The banks showed evidence of scouring, indicating high 7 flow conditions during storm events. Dominant substrate in the channel consisted of a mixture of fine-8 textured sediment of silt, sand, and small gravels. Large gravels and cobbles were present in patches 9 within the channel. Riparian vegetation was dominated by a dense canopy of native trees and shrubs, 10 with nonnative Himalayan blackberry occasionally present. Small and large branches of woody debris were present within the channel and crossing at the top of the banks a few feet above the water line. 11

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#### 2.3.3.2. **Mercer Slough West Branch**

13 Within the Project area, Mercer Slough West Branch is a 50 to 80 foot wide shallow slough with slow 14 flowing conditions and aquatic vegetation is present in several areas. Due to the urbanized character of 15 the area, turbidity is very high in the system with poor visibility within the water column. Substrate in 16 the channel is likely dominated by a mixture of fine-textured sediment of silt, sand, and small gravels. 17 Within the area of proposed disturbances, the riparian vegetation is a dominated by forested wetland 18 habitat with a variety of native trees and shrubs. Himalayan blackberry is also present along the 19 shoreline. Potential woody debris recruitment in this area of the stream is high.

20 2.3.3.3. **Alcove Creek** 

Within the Project area, Alcove Creek is located on the west side of 112th Avenue SE. The channel

22 averaged about 2 to 6 feet wide and ranged from about 2 to 10 inches deep at the time of the

23 investigation. Bank conditions are not clearly defined in some areas, indicating frequent overbank

24 flooding and variations in flow during storm events. Dominant substrate in the channel consisted of a

25 mixture of fine-textured sediment of silt, sand, and small gravels. Large gravels and cobbles are rare.

26 Riparian vegetation included a mixture of native trees such as black cottonwood, and willow, nonnative

27 vegetation such as Himalayan blackberry and mowed grass associated with residential development.

28 Small and large branches of woody debris were very dense within the channel, accumulating at the

29 culvert at the downstream end of the channel.

#### 30 2.3.3.4. Sturtevant Creek

31 Within the Project area, Sturtevant Creek is a linear trapezoidal channel with almost no sinuosity. The 32 channel averaged about 3 to 6 feet wide and ranged from about 6 to 18 inches deep at the time of the 33 investigation. The banks are almost vertical and deeply incised and the top of bank was more than 2 34 feet above the water line through most of the reach. The banks showed evidence of scouring, indicating 35 high flow conditions during storm events. Dominant substrate in the channel consisted of a mixture of 36 fine-textured sediment of silt, sand, and small gravels. Large gravels and cobbles were infrequent within 37 the channel. Angular rock was observed within the channel associated with fill material present on both 1 banks. Riparian vegetation at the south end of the channel was dominated by nonnative shrubs such as

- 2 Himalayan blackberry and Scot's broom, the nonnative grass species reed canarygrass, and weedy
- 3 herbaceous species. Red alder and black cottonwood trees are present at the north end of the channel
- 4 near Lake Bellevue. The riparian zone is very narrow, with development located to the east and railroad
- 5 tracks located to the west side of the channel. Woody debris within the channel was rare. Significant
- 6 litter accumulation was present within the channel at the time of the investigation.
- 7

## 2.3.3.5. West Tributary to Kelsey Creek

8 Within the Project area, the West Tributary to Kelsey Creek channel is linear with very little sinuosity and 9 a narrow floodplain between development. The channel averaged about 4 to 8 feet wide and ranged 10 from about 2 to 18 inches deep at the time of the investigation. The banks are vertical and the top of bank was more than 3 feet above the water line through most of the reach. The banks showed evidence 11 12 of scouring, indicating high flow conditions during storm events. Dominant substrate in the channel 13 consisted of a mixture of fine-textured sediment of silt, sand, and small gravels. Large gravels and 14 cobbles were present in patches within the channel. Both banks are comprised of fill material, and 15 angular rock was observed within the channel. Riparian vegetation at the south end of the channel was 16 dominated by the nonnative shrub Himalayan blackberry, with red alder, willow, grass, and weedy 17 herbaceous species also present. The riparian zone is very narrow (less than 60 feet), with a parking lot 18 development located near the top of the right bank and parking lots and a building located near the top 19 of the left bank. Small and large woody debris associated with alder and willow was present within the 20 channel. Litter accumulation was present within the channel at the time of the investigation.

## 21 2.3.3.6. Stream C

Within the Project area, Stream C averaged about 2 to 3 feet wide and ranged from about 2 to 18 inches
deep at the time of the investigation. Bank conditions are not clearly visible throughout most of the
reach due to dense growth of grass and herbaceous vegetation covering the channel. Dominant
substrate in the channel consisted of a mixture of fine-textured sediment of silt, sand, and small gravels.
Large gravels and cobbles were rare. Riparian vegetation is dominated by grass and herbaceous species.
Tree and shrub vegetation is present on the hillside north of the channel but does not extend to the
channel bank for most of the reach. Woody debris was rare within the channel.

## 29 **2.3.3.7. Goff Creek**

30 Within the Project area, Goff Creek averaged about 3 to 5 feet wide and ranged from about 4 to 14

- inches deep at the time of the investigation. Banks are clearly defined and the top of bank ranged from2 to 3 feet above the water line. Riprap for erosion control is a component of the bank structure.
- 33 Dominant substrate in the channel consisted of a mixture of silt, sand, small and large gravels, and
- cobbles. Riparian vegetation is dominated by narrow patches of native and ornamental tree and shrub
- 35 landscape vegetation associated with the adjacent commercial development and public sidewalk.
- 36 Woody debris was rare within the channel.

## 2.3.3.8. Unnamed Tributary to Kelsey Creek

2 Within the Project area the Unnamed Tributary to Kelsey Creek stream averaged about 2 to 6 feet wide 3 and ranged from about 4 to 18 inches deep at the time of the investigation. The first reach of the 4 stream is part of a heavily planted mitigation site adjacent to fill prisms associated with a city sidewalk 5 on the east side and a parking lot on the west side. The stream channel has no defined bed and bank 6 due to dense vegetation, but flow within the vegetation was observed. The second reach is in a 7 channelized ditch with angular rock banks. Riparian vegetation in this reach is mowed grass. Dominant 8 substrate in the channel consisted of a mixture of fine-textured sediment of silt, sand, and small gravels. 9 Large gravels and cobbles were rare. Angular rock is present within the channel. Woody debris was 10 absent within the channel.

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## 2.3.4 Stream Impact Assessment

12 During the course of the Project, portions of seven of the 11 stream reaches will be permanently or 13 temporarily filled, relocated, piped, or bridged over (shaded) Approximately 6,436 sf of stream channel will be permanently disturbed due to guideway and station locations, bridge structures (shading), and 14 15 streetscape improvements. Approximately 1,281 sf of stream channel will be temporarily disturbed due 16 to construction access and staging needs. The stream buffers of five of the 11 stream reaches within the 17 Project area will be permanently or temporarily removed or altered. Approximately 1.56 acres of 18 stream buffer will be permanently disturbed to construct the Project because of the proposed location 19 of the guideway and stations, utility improvements, streetscape improvements, and areas that prohibit 20 planting because of future improvements. Approximately 1.63 acres of stream buffer will be 21 temporarily disturbed because of the construction access and staging needs, and ground improvements 22 needed for structural stability. Impacts to stream buffers will overlap with the impacts to wetland 23 buffers. Overlapping stream and wetland buffer areas are counted as wetland buffer; therefore, the 24 analysis of stream buffers only includes the stream buffer where there is no overlap with wetland 25 buffers. Wetland buffer impacts are addressed in the Section 2.2.4.

26

### 2.3.4.1. Permanent Stream Impacts

27 Permanent direct impacts from the proposed Project include relocating stream channels, extending

- 28 culverts, and bridging over streams to construct the Project. Four of the 11 stream reaches in the
- 29 Project area will permanently disturbed, totaling approximately 6,436 sf, because of grading for Project
- 30 construction. One of the stream reaches that will be permanently disturbed is a Type S stream, two are
- 31 Type F streams, and one is a Type N stream according to the BCC stream typing system. A summary of
- 32 stream reaches and classifications with permanent impacts under the Project is provided in Table 2-18.
- 33 Permanent stream impact areas are shown in Appendix B.

Stream	Local Stream Rating <sup>1</sup>	Permanent Impacts (sf)	Source of Impact
Wye Creek	Type F	218	Shading due to bridge crossing
Mercer Slough West Branch	Type S	236	Shading due to bridge crossing
Sturtevant Creek	Type F	3,443	Relocated to the west to avoid Hospital Station and guideway columns
Unnamed Tributary to Kelsey Creek	Type N	2,539	Roadway corridor widened to accommodate proposed guideway, roadway, and sidewalks
	Total	6,436	

### 1 Table 2-18 Summary of Permanent Stream Impacts

2 Notes:

3 1 BCC (City of Bellevue 2013a).

4 sf = square feet

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## 2.3.4.2. Temporary Stream Impacts

7 Temporary impacts to stream reaches are anticipated to occur due to vegetation clearing, alterations to

8 existing grades, and shading from temporary structures. Project elements expected to cause temporary

9 construction impacts to streams include construction access routes, temporary public traffic detour

10 routes, staging areas, and utility installations and relocations.

11 Temporary stream impacts produce short-term loss of stream functions during construction. The extent

12 of short-term degradation would vary depending on the intensity of the temporary impact. Stream

13 reaches temporarily impacted during construction will be restored to their pre-existing conditions or

14 better as described in Section 3.0. Four of the 11 stream reaches in the Project area will incur

15 temporary impacts because of construction activities. This includes 1,281 sf of temporary impacts

16 resulting in a short-term loss of stream functions. A summary of stream reaches with temporary

17 impacts under the Project is provided in Table 2-19. Temporary stream impact areas are shown in

18 Appendix B.

Stream	Local Stream Rating <sup>1</sup>	Temporary Impacts (sf)	Source of Impact
Wye Creek	Type F	312	Fill and temporary bypass within OHWM due to construction access and circulation parallel to guideway
Alcove Creek	Type O	57	Construction access to build retaining wall
West Tributary to Kelsey Creek	Type N	472	Construction access bridge over creek (south of future guideway)
Stream C	Type O	440	Construction access to build TPSS station
Total		1,281	

### 1 Table 2-19 Summary of Temporary Stream Impacts

2 Notes:

3 1 BCC (City of Bellevue 2013a).

4 OHWM = ordinary high water mark

5 sf = square feet

6 TPSS = transit power substation

7

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## 2.3.4.3. Permanent Stream Buffer Impacts

9 Permanent Stream buffer impacts will result in a decrease in area adjacent to stream channels, which

10 could consequently result in decreased stream and stream buffer functions within the Project area after

11 construction. Five of the 11 stream channels in the Project area will have permanent stream buffer

12 impacts because of partial filling or grading for Project construction, for a total of 1.56 acres.

13 Overlapping stream and wetland buffer areas are counted as wetland buffer; therefore, the analysis of

14 stream buffers only includes the stream buffer where there is no overlap with wetland buffers. A

15 summary of streams with permanent buffer impacts under the Project is provided in Table 2-20.

16 Permanent stream buffer impact areas are shown in Appendix B.

Stream	Local Stream Rating <sup>1</sup>	Permanent Buffer Impacts (acres) <sup>2</sup>	Source of Impact
Wye Creek	Type F	0.09	Shading due to bridge crossing; guideway impacts (retained cut/fill)
Mercer Slough West Branch	Type S	1.22	Guideway (at-grade), SE 15th Street realignment, (4) proposed storm drain easements/outfalls
Sturtevant Creek	Type F	0.21	Hospital Station, guideway columns, rail/trail envelope
Stream C	Type O	0.03	TPSS enclosure, guideway column
Goff Creek	Type F	0.01	Ingress/egress driveway and streetscape improvements for park-and-ride
	Total	1.56	

#### **Table 2-20 Summary of Permanent Stream Buffer Impacts** 1

2

Notes: 3 1 BCC (City of Bellevue 2013a).

4 2 Areas only include stream buffer where there is no wetland buffer overlap. Overlapping buffer areas are counted as wetland

5 6 buffers and are described in the Section 2.2.4.

TPSS = transit power substation

7

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#### 2.3.4.4. **Temporary Stream Buffer Impacts**

9 Project elements expected to cause temporary construction impacts to stream buffers include

10 construction access routes, temporary public traffic detour routes, staging areas, and utility installations

11 and relocations. Four of the nine stream reaches in the Project area will have temporary stream buffer

impacts, for a total of 1.63 acres. This estimate is based on offsets from planned cut and fill and further 12

13 avoidance and minimization during construction may reduce this impact. A summary of streams with

14 temporary buffer impacts under the Project is provided in Table 2-21. Temporary stream buffer impact

15 areas are shown in Appendix B on Figure 2-1.

Stream	Local Stream Rating <sup>1</sup>	Temporary Buffer Impacts (acres) <sup>2</sup>	Source of Impact
Wye Creek	Type F	0.11	Construction access / circulation for bridge, construction access (vehicular) along east side of guideway
Mercer Slough West Branch	Type S	1.05	Construction access / circulation, bridge construction
Sturtevant Creek	Type F	0.40	Construction access / circulation, stream construction
Stream C	Туре О	0.07	Construction access, construction of TPSS enclosure and detention vault
Tot	al	1.63	

#### 1 Table 2-21 Summary of Temporary Stream Buffer Impacts

### 2

Notes: 3 1 BCC (City of Bellevue 2013a).

4 2 Areas only include stream buffer where there is no wetland buffer overlap. Overlapping buffer areas are counted as wetland 5 buffers and are described in the Wetland Impact Section 2.2.4.

6 TPSS = transit power substation

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#### 2.3.5 Stream Regulatory Compliance

9 Guidance from Ecology and the City was used to determine the stream classifications and appropriate

10 buffer widths. Information and excerpts from the specific guidance language are provided in the

following sections. 11

#### 2.3.5.1. Stream Classifications and OHWM

Streams are classified under the BCC LUC 20.25H.075.A into four categories (Types S, F, N, and O). The 13

14 definition of the four categories is presented in Section 2.3.1.1. The stream OHWM boundaries were

15 identified consistent with Chapter 90.58 of the RCW and Chapter 173-22 of the WAC. The WAC

- 16 definition is provided in Section 2.3.1.
- 17 2.3.5.2. **Stream Buffer Requirements**

Appropriate minimum stream buffers were identified according to the current BCC (City of Bellevue 18

19 2013a). The BCC identify minimum protective buffer widths based on the stream rating, as described in

20 Section 2.3.1.1. According to the BCC, stream buffers shall be established from the stream OHWM. The

City will determine the final stream ratings and minimum buffers. Stream buffer widths based on the 21

22 local rating are identified in Table 2-17.

#### **Areas of Special Flood Hazard** 2.4 23

#### 24 2.4.1 Methods

25 LUC 20.25H.175 describes areas of special flood hazard to include land subject to a 100-year flood, areas 26 identified on the Flood Insurance Rate Map(s) (FIRM), or federal, state, or other sources of information

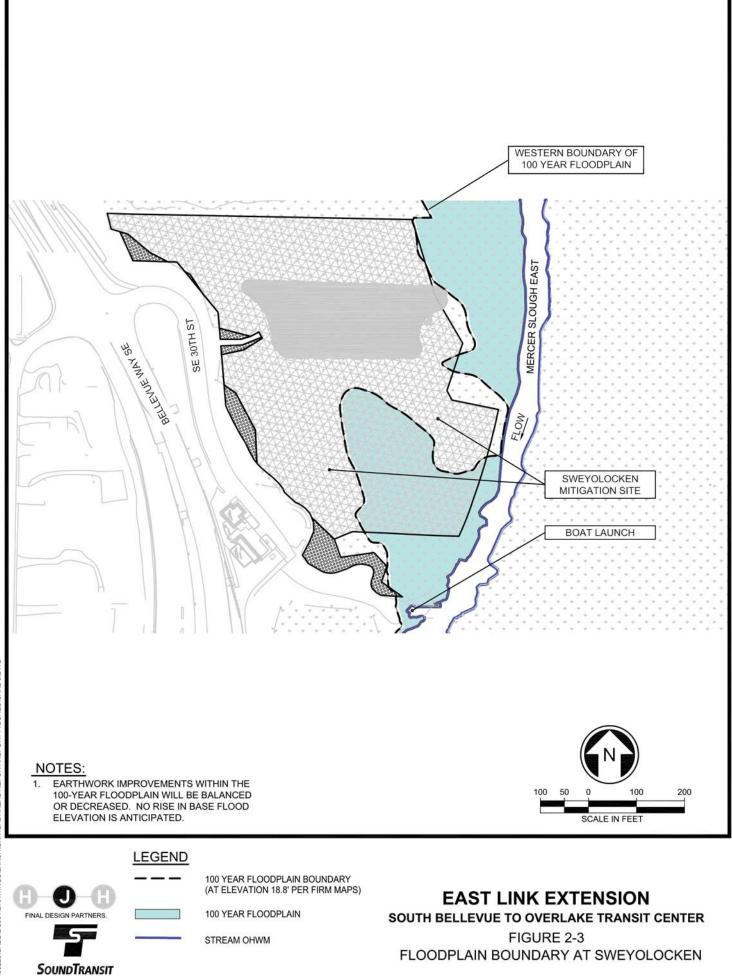
- 1 that identify any base flood elevation and floodway data. The City of Bellevue designates all Areas of
- 2 Special Flood Hazard as critical areas.
- 3 A floodplain is defined as the area adjacent to a stream or river that is inundated during the 100-year
- 4 flood event. The floodway is the channel of a river or stream and overbank areas adjacent to the
- 5 channel. The floodway carries the bulk of floodwater downstream and is usually the area where water
- 6 velocities and forces are the greatest and most destructive. The floodway and the adjacent land areas
- 7 must be reserved in order to discharge the base flood without cumulatively increasing the water surface
- 8 elevation more than one foot (BCC 20.25H [City of Bellevue 2013a]).
- 9 Per LUC 20.25H.180, no use, development or activity may occur in an area of special flood hazard except
- 10 as specifically allowed under this section of the land use code. Allowable use, development or activity is
- subject to the performance standards of this section and shall not result in the rise of the BFE, also
- referred to as the 100-year flood. The City of Bellevue prohibits construction that results in any rise of
- 13 the base flood; an exception is construction using post and-piling techniques, which is presumed
- 14 without modeling to cause no rise in the base flood (Ordinance 5680). Fill within the 100-year floodplain
- 15 must be mitigated by excavating an equal volume of material from within a proximate portion of the
- 16 Federal Emergency Management Agency (FEMA) floodplain and at a comparable elevation to create
- 17 "compensatory storage." Allowable use, development or activity is subject to the performance
- 18 standards of this section and shall not result in the rise of the BFE, also referred to as the 100-year flood.
- 19 The objectives of the special flood hazard assessment were to: (1) identify areas of special flood hazard
- in the Project area; (2) discuss the effect of the Project on special flood hazard areas; and (3) discuss
- 21 how both general and specific City of Bellevue performance standards are achieved.

## 22 **2.4.2 Study Results**

- The 100-year floodplains, as mapped by FEMA, are shown in Exhibits 4.9-2 through 4.9-4 within Section 4.9 (Water Resources) of the Final EIS. In general, 100-year floodplains that are crossed by the Project are less than 200 feet wide. Some of the smaller creeks and tributaries, including Goff Creek, Sears Creek, and Sturtevant Creek, do not have formally delineated floodplains. Occasional flooding has been
- 27 reported on Sturtevant Creek south of Lake Bellevue and on Valley Creek north of the intersection of NE
- 28 20th Street and 140th Avenue NE (Watson 2007).

## 29 **2.4.3** Project Impact on Special Flood Hazards and Mitigation

- 30 The East Link Project would generally employ elevated guideways to cross water bodies at a number of
- 31 locations. Columns to support the elevated guideway will be located outside of stream channel
- 32 floodways or floodplains.
- 33 Using the elevation listed on the associated FEMA FIRM maps, only the Sweyolocken mitigation site is
- 34 within the 100-year floodplain (Figure 2-3). Minor grading activities (e.g., filling in agricultural ditches,
- 35 removing culverts) are proposed in this area, but earthwork improvements within the 100-year
- 36 floodplain will be balanced or decreased, meaning there will be no rise in the BFE.



# 1 2.5 Geologic Hazard

- 2 The City of Bellevue LUC 20.25H.025 designates three types of geologic hazard areas: landslide hazards,
- 3 steep slopes, and coal mine hazards. There are no coal mine hazards in the vicinity of the East Link Light
  4 Rail Extension within Bellevue.
- 5 Steep slopes are defined as a slope of 40 percent or more, with a rise of at least 10 feet, and that is
- 6 more than 1,000 sf in area (LUC 20.25H.120.A.2). The steep slopes have a critical area buffer width of 50
- 7 feet at the top of the slope and a structure setback of 75 feet at the toe of the slope (LUC 20.25H.035).
- Landslide Hazards have slopes of 15 percent or more, with 10 feet or more of rise, and display any of the
  following characteristics (LUC 20.25H.120.A.1):
- Areas of historic failures, including those areas designated as quaternary slumps, earthflows,
   mudflows, or landslides
- Areas that have shown movement during the Holocene Epoch (past 13,500 years) or that are
   underlain by landslide deposits
- Slopes that are parallel or subparallel to planes of weakness in subsurface materials
- Slopes exhibiting geomorphological features indicative of past failures, such as hummocky
   ground and back-rotated benches on slopes
- Areas with seeps indicating a shallow groundwater table on or adjacent to the slope face
- Areas of potential instability because of rapid stream incision, stream bank erosion, and
   undercutting by wave action

#### 20 **2.5.1 Methods**

#### 21 **2.5.1.1.** Steep Slopes

- 22 Digital terrain models (DTMs) of surface features provided cross-sections of existing ground slopes for 23 the Project track alignments. These were reviewed for all track alignments except for the Downtown 24 Land Use District, where the Critical Areas Overlay District does not apply (LUC 20.25H.005). The DTMs 25 were developed from DTMs prepared for the Preliminary Engineering phase and supplements in the 26 Final Design by additional ground survey. Table 2-22 lists the alignment cross sections use to identify 27 steep slope areas. All sections are centered on the eastbound track centerline and are either 100 or 150 28 feet to the left and the right of the track centerline. In addition to the cross-sections, 1-foot-interval 29 contour topographic maps provided slope information for the guideway, station areas, transit power
- 30 substations, utilities, and other Project structures.

East Link Section	Contract Package(s) <sup>1, 2</sup>	Distance Left and Right from EB Track (feet)	Cross Section Frequency (feet)
Lake Washington to 300 block 112th Avenue SE	E320	150	25
300 block 112th Avenue SE to Downtown <sup>3</sup>	E330/E335	100	25
Downtown <sup>4</sup> to 124th Avenue NE	E335	100	25
124th Avenue NE to NE 20th Street	E340	100	25
NE 20th Street to 148th Avenue NE	E360	100	10

#### 1 Table 2-22 East Link Alignment Cross Sections for Steep Slope Screening

2 <u>Notes:</u> 3 1. The 4 are

 The East Link Project is broken down into individual contract packages. These contract packages will be bid separately and are based upon discrete Project elements and geography. The packages are called E320 (Mercer Slough area), E330 (downtown tunnel), E335 (surface elements from E. Main street station to 124<sup>th</sup> Ave NE), E340 (Bel-Red section), and E360 (State Route 520 section to Overlake Village Station). The E360 package extends into the City of Redmond. Only the section within the City of Bellevue is described in this table.

8
 2. Contract packages E320, E330/E335, and E340 were 60 percent final design completion when reviewed for steep slope hazards. Package E360 was reviewed for steep slope hazards with the aerial guideway option design at approximately 10 percent completion. This package will be advertised for design-build delivery.

1. 3. The East Link alignment crosses the south boundary of the Downtown Land Use District at the center of Main Street.

4. The East Link alignment crosses the east boundary of the Downtown Land Use District at the I-405 west right-of-way line.
 EB = eastbound

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#### 2.5.1.2. Landslide Hazards

16 Landslide hazards meeting the Critical Areas Overlay District Criteria have not been identified in the

17 Project area.

#### 18 2.5.2 Study Results

19 Steep slope criteria were met at 36 locations where Project structures will be located on or below the

20 surface of the steep slope, the steep slope critical area buffer, or the structure setback area. There are

other areas of 40 percent or greater slope in the Project vicinity, but these have less than 10 feet of rise

22 or 1,000 square feet or less area, and do not meet the steep slope geologic hazard criteria.

- Table 2-23 identifies the location of the 36 steep slope areas in relation to the eastbound track
- 24 centerline stationing. Guideway columns are listed and noted for slope, buffer, and setback location.
- 25 Most, but not all, Project underground construction elements within the slopes, buffers, and setbacks
- are listed. All areas of the alignment that are on grade or within trenches also include the installation of
- 27 underground conduit. See Appendix E for figures, including stationing references.

#### Table 2-23 Geologic Hazard Steep Slopes Project Element and Location EB Track Stationing App. E Figure ID etback Length (feet) Slope, Buffer and Setback Location Buffer Slope Start End Project Element 1 421+75 423+75 200 WSDOT I-90 ROW Column B06 foundation х x x guardrail storm drain х 2 425+00 428+00 300 WSDOT I-90 ROW Column B08 foundation Column B09L foundation х х Column B09R foundation x x Column B10 foundation guardrail х х storm drain WSDOT ROW City of Bellevue ROW 433+25 435+25 200 Column B15R foundation 3 x x х Column B16 foundation EL-101 700010-0210 guardrail x storm drain х х • x EL-110 068540-0035 EL-111 700010-0360 EL-112 068540-0025 EL-112 068540-0025 EL-114 068540-0025 EL-114 068540-0025 EL-114 068420-0030 EL-114 064420-0030 EL-114 064420-0030 EL-115 064420-0030 EL-116 064420-0030 EL-117 064420-0030 EL-118 064420-0030 EL-118 064420-0030 EL-118 064420-0030 EL-112 082405-9278 traffic signal foundation 4 447+75 450+00 225 х х ewer roadway pavement/sidewalk х catch basin Х 450+75 454+25 350 water line 5 x x roadway pavement/sidewalk catch basin х 456+75 Column B35L foundation 6 453+75 300 Х Column B35R foundation х Column B36 foundation Column B37 foundation х х х sidewalk x x light poles utilities soil nails 064421-0010 064421-0100 064421-0110 064421-0110 064421-0120 064421-0130 666400-0090 082405-9278 082405-9278 EL-121 EL-122 EL-124 EL-125 EL-126 EL-127 EL-129 EL-123 EL-128 roadway pavement/ sidewalk track trench retaining wall 455+00 460+00 500 7 х aerial guideway abutment light poles x x water line storm drain х Х х other utilities

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		rack				Pro	oject Element and Location		
App. E Figure ID	igure Length	Slope, Buffer and Setback Location	Project Element	Buffer	Slope	Setback			
8	457+75	458+50	75	EL-123	082405-9278	roadway pavement/ sidewalk	x		х
						light poles	х		х
						water line	х	х	х
						storm drain	х	х	х
						sewer	х	х	х
						other utilities	х	х	х
9	460+50	463+50	300	EL-129	666400-0090	roadway pavement/sidewalk			х
				EL-130	666400-0100	light poles			х
				EL-131	666400-0110	water line			х
				EL-132	666400-0120	storm drain			х
				EL-128	052405-9254	sewer			х
				EL-136	052405-9084	track trench retaining wall			х
						track underdrain			х
10	466+00	466+50	50	EL-134	666400-0140	roadway pavement/sidewalk			х
				EL-135	666400-0150	light poles			х
						water line			х
						storm drain			х
						other utilities			х
11	467+75	469+50	175	EL-137	666400-0140	roadway pavement/curb and gutter			х
					666400-0150	light poles			x
					052405-9084	water line			x
						storm drain			x
						other utilities			х
						track trench wall and lid			х
						track underdrain			х
12	470+25	471+00	75	EL-136	052405-9084	curb, gutter and sidewalk	x		
						light poles		х	х
						storm drain		х	х
						other utilities	x		
						track west retaining wall		х	• x
13	473+50	475+00	150	EL-143	732490-0085	roadway pavement/curb and gutter			x
10		-75.00	150		052405-9208	light poles			x
					052405-9084	water line			×
				-150	052-05 500-	storm drain			x
						other utilities			x
						track west wall 8.1B-W			x
						track underdrain			x
14	473+75	474+25	50	EL-136	052405-9084	curb, gutter and sidewalk	x		
7.4		-/23	50		066287-0090	light poles	x		
					000207 0050	storm drain	^	x	х
						other utilities	x	^	~
						track west wall 8.1B-W	^	x	• X
				l		LI dLK WESL WAII 0.1D-W		~	• ^

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	FR 1	Frack				Project Elen	nent and Location		
App. E Figure ID		oning End	Length (feet)		Slope, Buffer and Setback Location	Project Element	uffer	Slope	etback
					SetSack Location		8		Š
15	476+00	480+00	400	EL-141 052405-9084		curb, gutter, multi-purpose path	x	х	
						light poles	х		
						storm drain			х
						other utilities	х		
						track west wall 8.1B-W		x	x
						track west wall 8.4A-W		х	x
						Wye Creek crossing structure			x
						track underdrain			х
16	509+50	510+25	75	EL-166 321060-0220		multi-purpose path		х	
				EL-167 321060-0210		light pole			• X
						retaining wall 8.8B-W	х		
						eastbound track and underdrain		х	
						westbound track and underdrain	х		
17	517+25	519+75	250	EL-173 322505-9140		curb and gutter			х
				322505-9134		multi-purpose path		х	х
				322505-9046		light poles			х
						retaining wall 8.8B-W	х	х	
						traffic signal pole foundation			х
						OCS foundations		х	
						track and underdrain		x	х
18	524+75	525+50	75	EL-181 814630-0050		wall 9.3A-W and underdrain		x	
10	324773	525750	75	EL-181 814630-0050 EL-182 814630-0045		westbound track and underdrain		^	х
				EL-182 814030-0045 EL-185 140240-0000					^
						sound wall 9.4A-W			
19	534+00	534+75	75	EL-190 814630-0015		platform foundations		х	x
				EL-191 814630-0010		light pole foundations			x
				EL-193 140100-0000		rockery wall 9.4BW			х
						storm drain			x
						track and underdrains			х
20	611+25	613+25	200	398690-0000		track ballast walls			х
				EL-265 109910-0003		track and underdrains			х
				EL-266 109910-0025		OCS foundations			х
				EL-1000 282505-9038					
21	612+25	613+75	150	NE 12th Street ROW		track ballast walls			х
				282505-9076		track and underdrains			х
				282505-9207		OCS foundations			х
				282505-9017					
				EL-265 109910-0003					
				EL-1000 282505-9038					
22	638+50	639+00	50	EL-285 282505-9003		retained fill track	х		
				EL-286 282505-9296		wall 11.5B-W	x		
						abutment D01 foundation	x		
						water utility	x		
						track and wall underdrains	x		
	1		1				А		

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	EB 1	rack			Project	Element and Location		
App. E Figure ID	Stati Start	oning End	Length (feet)	Slope, Buffer and Setback Location	Project Element	Buffer	Slope	Setback
23	641+50	642+25	75	EL-286 282505-9296	Column D04 foundation	x		
				EL-287 282505-9240	storm drain	х		
24	643+75	644+25	50	EL-286 282505-9296	Column D06 foundation	х		
				EL-287 282505-9240	storm drain		х	• X
				EL-289 282505-9193				
25	647+75	652+75	500	EL-290 282505-9041	track and underdrains		х	х
				EL-291 282505-9178	Column D09 foundation			х
				EL-293 282505-91955	Column D10 foundation			х
					Column D11 foundation			Х
					Abutment D12 foundation			х
					storm drain	х	х	х
					electric power	х		
					wall 11.7A-E and underdrains			Х
					wall 11.7B-W and underdrains		х	
					stormwater vault			х
					signal house foundation			х
					OCS pole foundation			х
					stair tower foundation			х
26	651+25	651+75	50	EL-290 282505-9041	Abutment D12 foundation	х	х	х
				EL-291 282505-9178	track and underdrains	х	х	х
					wall 11.7A-E and underdrains			х
					wall 11.7B-W and underdrains	х		
					storm drain	х	х	• X
27	656+50	657+00	50	EL-295 282505-9058	eastbound platform foundation		х	х
				EL-296 282505-9159	westbound track and platform	х		
				ELEL-299 282505-9191	track and platform drains	х	х	
					light pole foundations	х		• X
28	656+50	658+25	175	EL-297.1 282505-9243	130th Station park and ride			х
				EL-299 282505-9191	Storm drain			х
					light pole foundations			х
29	695+20	700+40	520	WSDOT SR 520 ROW	Abutment E01 foundation		х	х
				EL-331 272505-9288	Column E02 foundation		х	
				272505-9222	Column E03 foundation		x	
				272505-9066	Column E04 foundation		х	
					retaining walls			х
					storm drain			х
					water utility			х
					track and underdrains			х

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		rack			Project E	ement and Location		
App. E Figure	Stati	Length Slope, Buffer and				uffer	e	Setback
ID	Start	End	(feet)	Setback Location	Project Element	Buf	Slope	Set
30	701+60	715+60	1,400	WSDOT SR 520 ROW	Column E06 foundation			х
				140th Ave NE ROW	Column E07 foundation		х	х
				EL-335 272505-9270	Column E08 foundation		х	х
				272505-9271	Column E09 foundation		х	х
				272505-9272	Column E10 foundation		х	
				272505-9071	Column E11 foundation		х	
					Column E12 foundation		х	
					Column E13 foundation		х	
					Column E14 foundation		х	
					Column E15 foundation		х	
					Column E16 foundation		х	
					Column E17 foundation		х	х
					electric power			х
31	714+40	715+60	120	WSDOT SR 520 ROW EL-337 272505-9103	Column E17 foundation	x		
32	717+30	719+00	170	WSDOT SR 520 ROW	Column E19 foundation	х		
				NE 24th Street ROW	Column E20 foundation		х	
				EL-338 272505-9025	TPSS enclosure	х		
					signal house foundation	х		
					water utility	х	х	
					electric power	х	х	
					sanitary sewer	х	х	
33	720+00	722+00	200	NE 24th Street ROW EL-338 272505-9025	[no Project construction]			
34	720+70	723+40	270	WSDOT SR 520 ROW	Column E22 foundation		х	
		-		EL-338 272505-9025	Column E23 foundation		х	
					Column E24 foundation	х	х	
					drainage swale	х	х	
35	727+80	728+80	100	WSDOT SR 520 ROW	Column E28L foundation	х		
36	730+60	732+00	140	WSDOT SR 520 ROW	[no Project construction]			

### 1 2.5.3 Project Impact on Geologic Hazards

- 2 The Project is self-mitigating with respect to steep slopes. Retaining walls and slopes minimize the
- 3 Project footprint and extent of topography modification. Structure design in steep slope areas, buffers,
- 4 and structures setbacks is based on geotechnical analyses and recommendations that avoid risk to the
- 5 light rail transit facilities, users, and neighboring properties.

# 6 **2.6 Probable Cumulative Impacts**

7 Construction and operation of the East Link Project may coincide with other development Projects that

- 8 also affect the critical areas identified in this report. However, adverse cumulative impacts are not
- 9 anticipated due to regulatory considerations, habitat enhancement efforts for natural resources in the
- 10 Project area, and Sound Transit's commitment to no net loss of wetland function and area.
- 11

### 2.6.1 Wetlands, Streams, and Habitat Associated with Species of Local Importance

12 The East Link Project Final EIS noted that other planned regional transportation projects, and the City's

- 13 Downtown Implementation Plan could contribute to cumulative impacts on upland habitat, streams,
- 14 and wetlands in the Project area in conjunction with the Project. These impacts may include vegetation
- and tree removal, filling or altering wetlands, disturbance to stream channels, removal of riparian
- 16 habitat, and increases in pollution-generating impervious surfaces. These changes, along with additional
- 17 urban development, continue to reduce remaining available high-quality nesting and foraging areas for
- 18 wildlife species present in the area, which provide habitat for species of local importance.
- 19 Positive impacts may result from efforts to enhance the Bear Creek and Kelsey Creek watersheds that
- cross through and extend beyond the Project vicinity. The City has adopted the Bel-Red Plan, which has
- 21 an element devoted to "The Great Streams Strategy." This strategy involves stream enhancements that
- include removing culverts where possible, removing impassable fish barriers, planting riparian
- vegetation along stream banks, and generally improving stream quality. These efforts are focused on
- 24 Goff Creek and the West Tributary of Kelsey Creek, both of which cross Mercer Slough Nature Park.
- 25 The Project and other state-permitted and locally permitted projects incrementally provide net benefit
- to stream suitability for fish. These projects are required to mitigate impacts on streams, wetlands, and
- high-value habitats in accordance with federal, state, and local regulations. Mitigation measures
- implemented as a result of the East Link and other projects will benefit fish and wildlife habitat for
- 29 species of local importance when compared to existing conditions and improve conditions for federally
- 30 listed threatened or endangered species. Also, with regard to wetland and stream impacts, Sound
- 31 Transit has committed to achieving no net loss of function and area on a Project-wide basis, and
- 32 therefore, would not have a lasting cumulative impact on wetlands and streams.

### 33 2.6.2 Geology and Soils

- 34 The Project will not adversely impact geologic conditions in the Project area. Additional development in
- 35 the area would increase the amount of infrastructure placed in localized geologically sensitive areas
- 36 such as steep slopes or seismic hazard areas. However, all of these projects must be constructed in

- 1 accordance with state and local laws that require design and construction to meet seismic standards;
- 2 therefore, a cumulative impact is not expected.

#### 3 2.6.3 Floodplains

- 4 Construction within areas of special flood hazard, as well as new impervious surfaces added by the
- 5 Project and other reasonably foreseeable future actions would include appropriate stormwater control
- 6 and quality treatment in accordance with Ecology regulations. This mitigation would improve the
- 7 treatment of some existing stormwater drainages and thus provide an overall cumulative benefit for
- 8 water quality over existing conditions.

# 1 3.0 Mitigation

- 2 This section describes the compensatory mitigation measures for those impacts that cannot be
- 3 addressed through avoidance and minimization or through the restoration of temporarily disturbed
- 4 areas. Mitigation is proposed to address potential impacts to wetlands, streams, and their buffers. The
- 5 Project has been designed to mitigate for potential impacts to areas of geologic hazard. No further
- 6 mitigation is provided for these areas.
- 7 This mitigation will occur at four sites, all of which are adjacent to the rail alignment where impacts
- 8 occur (see Figure 3-1). These sites (Sweyolocken, Mercer Slough Buffer Creation/Enhancement,
- 9 Sturtevant and West Tributary) are publically owned. With the exception of Mercer Slough Buffer
- 10 Creation/Enhancement, all four sites will be protected in perpetuity through existing or new
- 11 covenants/Native Growth Protection Easements or Tracts. Areas within these covenants are shown in
- 12 Appendix D. These areas will be maintained by Sound Transit for a minimum of 5 years to insure that
- 13 the vegetation communities are established and that the mitigation goals, objectives, and performance
- standards are met. The protective covenants will ensure that, once established, the ecological functions
- 15 of the sites are protected from future land use actions.
- 16 The mitigation sites were selected based on their ability to replace the ecological functions that will be
- 17 impacted by the Project. The wetland impacts and proposed mitigation are shown in Table 3-1 below.
- 18

19

#### 1 Table 3-1 Project Wetland Impacts and Proposed Mitigation Summary

	F	Permanent Co	nversion of Wetla	and Vegetation	type by Basin and Wetland Ra	ating
Wetland Category	Drainage Sub- basin	Permanent Vegetation Conversion	Mitigation Type	Mitigation Ratio <sup>1</sup>	Mitigation Requirement <sup>1</sup> (Acres)	Proposed Mitigation by Type and Site
Category II	Mercer Slough/ West Tributary / Valley Creek	0.40	Enhancement	6:1	2.40	Enhancement at Sweyolocken
Category III	Mercer Slough/ Sturtevant Creek / West Tributary / Valley Creek	0.52	Enhancement	4:1	2.08	Enhancement at Sweyolocken
Category IV	Sturtevant Creek	0.04	Enhancement	3:1	0.12	Enhancement at Sweyolocken
	Subtotal	0.96		Subtotal	4.60 Acres of Enhancem	ent
		Perm	anent Impacts to	Wetlands by B	asin and Wetland Rating <sup>1</sup>	
Wetland Category	Drainage Sub- basin	Permanent Impacts (Acres)	Mitigation Type	Mitigation Ratio <sup>1</sup>	Mitigation Requirement <sup>1</sup> (Acres)	Proposed Mitigation by Type and Site
Category II	Mercer Slough	0.20	Rehabilitation	6:1	1.20	Rehabilitation at Sweyolocken
Category III	Mercer Slough	0.07	Enhancement	8:1	0.56	Enhancement at Sweyolocken
	Subtotal	0.27		Subtotal	1.20 Acres of Rehabilitat 0.56 Acres of Enhancem	
Category II	Mercer Slough	0.12	Creation	3:1	0.36	Creation at West Tributary
Category III	Mercer Slough	0.02	Creation	2:1	0.04	Creation at West Tributary
Category II	West Tributary	0.01	Creation	3:1	0.03	Creation at West Tributary
Category III	West Tributary	0.05	Creation	2:1	0.10	Creation at West Tributary
Category III	Valley Creek	0.01	Creation	2:1	0.02	Creation at West Tributary
	Subtotal	0.21		Subtotal	0.55 of Creation	

<sup>2</sup> 3 4

1 Mitigation ratios and requirements provided here are based on Washington Department of Ecology, US Army Corps of Engineers Seattle District, and Environmental Protection Agency, Region 10 guidance (Ecology et al. 2006) except for permanent vegetation.

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- 1 The overall wetland mitigation approach is further summarized in Table 3-2 below, which demonstrates
- 2 that required mitigation ratios are being addressed. The specific functional lift of wetland areas being
- 3 enhanced and rehabilitated is described in Section 3.3.

Required Mitigation <sup>1</sup>	Proposed Mitigation
5.16 Acres of Enhancement	5.29 Acres of Enhancement at Sweyolocken; 0.05 Acre of Enhancement at West Tributary
1.20 Acres of Rehabilitation	1.20 Acres of Rehabilitation at Sweyolocken
0.55 of Creation	0.64 Acres of Creation at West Tributary

#### 4 Table 3-2 Project Wetland Mitigation Summary

5 Note:

Mitigation requirements provided here are based on Washington Department of Ecology, US Army Corps of Engineers Seattle
 District, and Environmental Protection Agency, Region 10 guidance (Ecology et al. 2006)

8

9 Stream impacts will be mitigated on site to the extent possible. Permanent impacts to Wye Creek and

10 West Mercer Slough are relatively minor and related to shading of the water by the guideway. These

11 impacts will be mitigated through riparian buffer enhancements. Sturtevant Creek will be realigned with

12 a new channel that provides improved ecological function over the existing channel. Finally, impacts to

13 the Unnamed Tributary to Kelsey Creek will be mitigated by daylighting a portion of the West Tributary

14 to Kelsey Creek channel which is currently in a culvert. These impacts and the proposed mitigation are

15 summarized in Table 3-3 below.

#### 16 **Table 3-3 Project Stream Impacts and Proposed Mitigation**

Stream	Local Stream Rating	Permanent Impacts (sf)	Proposed Mitigation
Sturtevant Creek	Type F	3,443	3,500 sf of restoration at Sturtevant Creek
Wye Creek	Type F	218 (shading)	454 sf of Stream Buffer
Mercer Slough West Branch	Type S	236 (shading)	Enhancement to Mercer Slough West Branch; 40 sf of stream daylighting at Wye Creek
Unnamed Tributary to Kelsey Creek	Type N	2,539	2,600 sf of Creek Daylighting at West Tributary

17 <u>Note:</u>

18 sf = square feet

19

- 20 In addition to the permanent impacts above, permanent, unavoidable impacts to stream and wetland
- 21 buffers will occur. Restoration of these buffer areas is impractable due to interference with new
- 22 infrastructure, such as the guideway or other Project appurtenances. These will be mitigated through
- 23 the enhancement of existing buffers that currently have very low function. In most cases, function will
- 24 be restored by replacing existing invasive species with high functioning native vegetation communities.

- 1 Tables 3-2 and 3-3 describe the permanent impacts to wetland and stream buffers that will be mitigated
- 2 at other locations along the Project corridor.

Wetland Name	State (Ecology) and Local (Bellevue) Rating	Permanent Buffer Impacts (acres)	Proposed Restoration
Mercer Slough West	II	1.84	Revegetation
Alcove Creek	II	0.03	Revegetation
Bellefield South	II	0.22	Revegetation
Bellefield North	Ш	0.21	Revegetation
8th Street	III	0.22	Revegetation
South Lake	III	0.01	Revegetation
Central Lake	III	0.07	Revegetation
BNSF East	III	0.02	Revegetation
BNSF Northeast	III	0.06	Revegetation
Kelsey West Tributary Pond	11	0.13	Revegetation
SR 520 West		0.02	Revegetation
Total Permanent Wetland Buffer Impacts		2.83	

#### 3 Table 3-2 Summary of Permanent Wetland Buffer Impacts

#### 4 Table 3-3 Summary of Permanent Stream Buffer Impacts

Stream	Local Stream Rating <sup>1</sup>	Permanent Buffer Impacts (acres) <sup>2</sup>	Proposed Restoration
Wye Creek	Type F	0.09	Revegetation
Mercer Slough West Branch	Type S	1.22	Revegetation
Sturtevant Creek	Type F	0.21	Revegetation
Stream C	Type O	0.03	Revegetation
Goff Creek	Type F	0.01	Revegetation
Total		1.56	

5

7

# 6 3.1 Mitigation Sequence

### 3.1.1 Measures to Avoidance and Minimization Impacts

8 The ROD and subsequent adoption of the alignment by the Bellevue City Council makes all avoidance of 9 critical areas impossible. Therefore, the Sound Transit engineering team has worked collaboratively 10 within this defined alignment to avoid and minimize proposed impacts. During the preliminary design 11 process, Sound Transit made adjustments to avoid or minimize impacts to natural resources, including 12 wetlands and streams and their associated buffers. When a wetland or stream appeared to be located

- 1 within the Project footprint, engineers changed the footprint to avoid the wetland or stream, or, if the
- 2 wetland or stream could not be avoided, it was determined how much direct wetland, stream, and
- 3 buffer area would be affected due to Project construction.
- 4 The following avoidance and minimization measures have been incorporated into the Project design to
- allow Sound Transit to meet the transportation Project needs, without directly affecting importantnatural resources:
- Wetlands and streams are avoided where practicable.
- Associated Project facilities, such as stormwater treatment systems, staging areas, and access
   roads, are located outside of the identified critical areas, where practicable.
- The Project footprint has been minimized (e.g., using retaining walls instead of fill slopes and using existing roads and thereby limiting the amount of new impervious surfaces required).
- 12 During 90% design, Sound Transit will identify specific BMPs and other measures that will be
- 13 incorporated into the construction specifications for the Project, to be developed during the final design
- 14 process. BMPs will be implemented during construction and operation of the Project to minimize
- 15 sedimentation to wetlands and streams and contamination associated pollutants in stormwater runoff.
- Sound Transit has met with, and will continue to coordinate with federal, state, and local
   agencies to identify mitigation priorities and options for avoiding or minimizing wetland and
   stream impacts, and to compensate for any impacts.
- 19 Specific avoidance and minimization measures include the following:
- Installing a retaining wall at 15th Street to avoid additional impacts to Bellefield South and
   Bellefield North wetlands
- Shifting the alignment to south and elevating the guideway to have a minimum 15-foot
   clearance, to minimize impacts to Kelsey West Tributary Pond wetland
- The avoidance and minimization measures above resulted in the avoidance of impacts as describedbelow:
- There are no proposed permanent wetland impacts to ten of the 21 wetlands in the Project area.
- There are no permanent wetland buffer impacts to ten of the 21 wetlands in the Project area.
- There are no temporary wetland impacts to 17 of the 21 wetlands in the Project area.
- There are no temporary wetland buffer impacts to ten of the 21 wetlands in the Project area.
- There are no proposed permanent stream impacts to seven of the 11 streams in the Project
   area.
- There are no permanent stream buffer impacts to six of the 11 streams in the Project area.
- There are no temporary stream impacts to seven of the 11 streams in the Project area.

- There are no temporary stream buffer impacts to seven of the 11 streams in the Project area.
- 2 **3.1.2** Measures to Rectify and Restore Impacts
- 3 After avoiding and minimizing impacts, the next mitigation sequencing activity requires restoring the
- 4 impacted resource(s). Therefore, all wetland, stream, and buffer areas temporarily affected from
- 5 construction activities will be restored within the Project area. The goal is to restore them to previous
- 6 or better conditions. Tables 3-4 and 3-5 describe the wetlands and wetland buffers that will be
- 7 temporarily impacted and restored.

#### 8 Table 3-4 Summary of Temporary Wetland Impacts

Wetland Name	Size <sup>1</sup> (acres)	State (Ecology) and Local (Bellevue) Rating	Temporary Impacts (acres)	Proposed Restoration
Mercer Slough West	350 <sup>2</sup>	II	0.16	Revegetation
Alcove Creek	0.23 <sup>3</sup> / 0.64 <sup>2</sup>	II	0.01	Revegetation
Bellefield South	0.29	II	0.04	Revegetation
Bellefield North	0.11	II	0.01	Revegetation
Total Temporary Wetland Impacts			0.22	

9 <u>Notes:</u>

10 1 When only one number is present, the total wetland area is located within Project area. When two numbers are present, the

11 wetland extends outside the Project area, and both the estimated total area (footnote 2) and the delineated area (footnote 3)

12 are provided. Estimates for wetlands outside the Project area are based on observations during the field investigation and aerial 13 photograph analysis. Wetland acreages were provided by HJH.

14 2 Approximate total wetland area, includes delineated area plus estimated wetland area extending outside the Project area

15 3 Delineated wetland area within the Project area

Site	Drainage Sub- basin	State (Ecology) and Local (Bellevue) Rating	Temporary Buffer Impact (acres)	Proposed Restoration
Mercer Slough West	Mercer Slough	II	2.86	Revegetation/Enhancement
Alcove Creek	Mercer Slough	II	0.09	Revegetation/Enhancement
Bellefield South	Mercer Slough	П	0.03	Revegetation/Enhancement
Bellefield North	Mercer Slough	П	0.10	Revegetation/Enhancement
8th Street	Mercer Slough	III	0.11	Revegetation/Enhancement
South Lake	Sturtevant Creek		0.24	Revegetation/Enhancement
Central Lake	Sturtevant Creek	111	0.07	Revegetation/Enhancement
Kelsey West Tributary Pond	West Tributary	П	0.34	Revegetation/Enhancement
SR 520 West	Valley Creek	III	0.57	Revegetation/Enhancement
Valley Creek	Valley Creek	11	0.33	Revegetation/Enhancement
SR 520 East	Valley Creek	111	0.16	Revegetation/Enhancement
Tota	al Temporary Wetland	Buffer Impacts:	4.90	

#### 1 Table 3-5 Summary of Temporary Wetland Buffer Impacts

2

- 3 Tables 3-6 and 3-7 describe the streams and stream buffers that will be temporarily impacted and
- 4 restored on site.

#### 5 Table 3-6 Summary of Temporary Stream Impacts

Stream	Local Stream Rating <sup>1</sup>	Temporary Impacts (sf)	Proposed Restoration
			Remove Fill and bypass,
Wye Creek	Type F	312	restore channel
			Remove Fill and bypass,
Alcove Creek	Туре О	57	restore channel
			Remove Construction access
West Tributary to			bridge,
Kelsey Creek	Type N	472	restore Channel
			Remove Fill and bypass,
Stream C	Туре О	440	restore channel
Total		1,281	

Notes:

1 BCC (City of Bellevue 2013a).

sf = square feet

Stream	Local Stream Rating	Temporary Buffer Impacts (acres)		
Wye Creek	Туре F	0.11		
Mercer Slough West Branch	Type S	1.05		
Sturtevant Creek	Type F	0.40		
Stream C	0.07			
Total Tempo	1.63			

#### 1 Table 3-7 Summary of Temporary Stream Buffer Impacts

2 3

#### 3.1.2.1. Wetland and Buffer Restoration

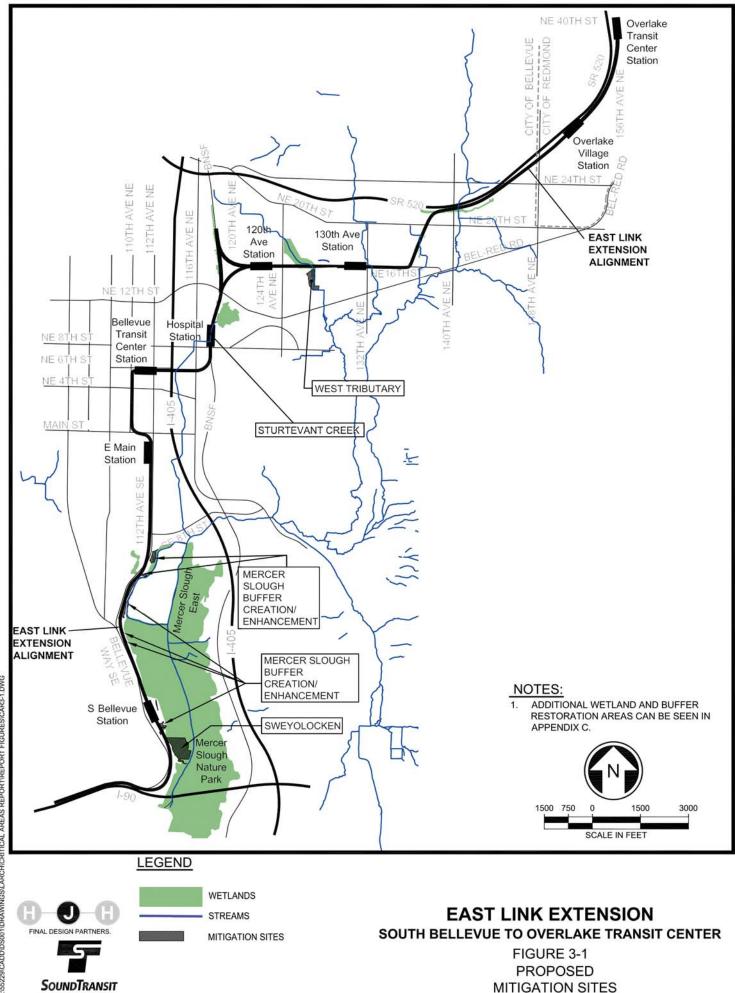
- 4 Temporary impacts to critical areas located along the Project corridor—within the Sturtevant, West
- 5 Tributary Kelsey Creek, and Valley Creek subbasins—will be restored to previous conditions or better
- 6 after construction. Wetland enhancement in these areas will cover 5.34 acres, and stream and wetland
- 7 buffer enhancement will cover 7.43 acres.
- 8 Specific restoration activities include removing all geotextile fabric and temporary fill material used for
- 9 construction staging or access roads from all wetland and buffer areas. Grades will be restored to pre-
- 10 Project conditions, and the soils will be lofted or loosened to restore soil condition and wetland
- 11 hydrology. Soil amendments or topsoil will be added where necessary to restore soil fertility, porosity,
- 12 and texture. Wetland areas will match the existing hydrologic conditions in adjacent wetlands and will
- 13 be restored to within 0.50 feet of preconstruction elevations. The contractor will be required to meet
- soil decompaction levels that will be suitable for plant establishment.
- 15 Native plant communities will be selected for each site to meet site conditions (i.e., sunny, shady, wet,
- 16 or dry) and growth preferences (i.e., tall or short tree, shrub, or groundcovers). Many adjacent buffer
- 17 areas along the corridor are currently dominated or infested with invasive species, such as Himalayan
- 18 blackberry. Robust communities of non-native invasive species located immediately adjacent to
- 19 temporarily affected areas will be cleared so as not to interfere with long-term maintenance and
- 20 monitoring. It is expected that there will be an increase in functions and values in many areas by
- 21 replacing these monocultures of non-native vegetation with native vegetation communities.

# 22 **3.2 Compensatory Mitigation**

### 23 3.2.1 Sweyolocken Site

- 24 The Sweyolocken site is on City-owned property in Section 08, Township 24 North, Range 5 East (Figure
- 25 3-1). The site is within the 350+-acre Mercer Slough wetland complex. The land is currently zoned as R-1
- 26 (Single-Family Residential Estate), and the current land use is agricultural for blueberry farming. Field
- 27 investigations revealed that most or all of this area is within the existing jurisdictional wetland
- 28 boundary. Efforts to alter the hydrology by draining the agricultural area are evident from two large
- ditches running perpendicular to Mercer Slough. Until recently, water has been pumped from the
- 30 ditches to the slough, affecting the wetland hydrology. The existing ditches are still having a negative

- 1 impact on the ability of the area to detain and filter flows of stormwater. Filling in these ditches will
- 2 improve the hydrologic function immediately adjacent to the ditches providing rehabilitation of that
- 3 wetland area. Field studies are underway to determine the "zone of influence" of this rehabilitation
- 4 effort, but it is currently estimated that hydrology associated with 1.20 acres of wetland would
- 5 rehabilitated by these actions. The site was selected for several reasons, including;
- It is within a large, protected wetland complex dominated by native wetland vegetation
- 7 It is within the same wetland, sub-basin, and basin as some of the wetland impacts
- 8 It has existing wetland soils
- 9 The elevation, topography, and hydrology lend themselves to successful wetland rehabilitation
  and enhancement.
- It is in an area that is heavily used by many species, including species that prefer wetland
   habitats



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#### **3.2.1.1.** Existing Conditions of the Site

- 2 The Sweyolocken site is part of the Mercer Slough Wetland complex, which is at the mouth of the
- 3 Mercer Slough sub-basin of WRIA 8. Historically, the site was submerged, but when Lake Washington
- 4 was lowered in 1916, the area began to form into a several-hundred-acre freshwater wetland complex.
- 5 Portions of the wetland have been used to produce berries (primarily blueberries), although most of the
- complex is now in restoration or in relatively natural condition. The hydrology of the site is primarily
   controlled by Lake Washington, but is also influenced by occasional high flows in Mercer Slough. The
- controlled by Lake Washington, but is also influenced by occasional high flows in Mercer Slough. The
   elevation of Lake Washington is controlled at the Chittenden Locks in Ballard. Typical water surface
- 9 elevations are about 2 feet higher at the maximum in late spring or early summer than at their
- 10 minimum in late fall or early winter. Surface water flows from Mercer Slough, direct precipitation, and
- 11 run off also affect the site hydrology. Hydrology within the mitigation site is also affected by drainage
- 12 ditches that run from the west to the east and drain to Mercer Slough. Evidence (e.g., air photos, site
- 13 infrastructure) suggests that these ditches were pumped to Mercer Slough during the summer months
- 14 (when lake levels are high), at least.

1

- 15 The site soils are mapped as Seattle muck in the north and Snohomish silt loam to the south. Field
- 16 investigation of soils indicates that the entire site is underlain by peat or stratified peat and muck below
- a depth of about 12 to 14 inches. Above the peat the soils are very dark and very poorly drained, and
- range in texture from silt loam to muck. Soils ranged from black (10YR 2/1), to very dark brown (10YR
- 19 2/2), to very dark gray (10YR 3/1), to dark gray (10YR 4/1). Wetland soil textures in the upper horizons
- 20 ranged from silt, to silt loam, to clay loam, to sandy loam.
- 21 Soils were typically saturated to the surface in the soil data pits, except near the ditches. Hydrology was
- also affected by microtopography, but saturation was always encountered at depth of 16 inches or less.
- The water table was typically encountered at a depth of less than 12 inches, but ranged from the surface
- to a depth greater than 18 inches, where the effect of the drainage ditches was most pronounced.
- 25 Vegetation communities on the site indicate the effects of both agricultural management and limited
- 26 ecological restoration efforts. The majority of the mitigation area is planted in rows of mature
- 27 domesticated blueberry (*Vaccinium* sp.) Between the rows a variety of wetland grasses are present, but
- reed canarygrass (*Phalaris arundinacea*) dominates. Near the ditches, the Himalayan blackberry is
- 29 becoming established. The north portion of the site is dominated by spirea and red-osier dogwood. A
- dense, approximately ¼-acre patch of Pacific willow that may be the result of a restoration effort is
- 31 located between the two ditches. A grove of paper birch planted in rows is just southeast of the Pacific
- 32 willow on the opposite side of the ditch. The southern border of the site and much of eastern edge near
- 33 the slough is dominated by large black cottonwood, in some cases with an understory of Himalayan
- blackberry. Additional plant species common at the site include red alder, salmonberry, cattail, soft
- rush, small bedstraw, and spike rush (*Eleocharis palustris*).
- 36 The Mercer Slough Wetland complex supports a wide variety of fauna. One hundred and four bird
- 37 species and 24 mammals have been observed in the Mercer Slough area (Carrsaco et al. 2013). Seventy

1 species have been observed in the shrub and forested swamp areas and the riparian edge, due to the

- 2 structural complexity of the vegetation. By comparison, only 37 species were observed in the
- agricultural lands. Passerine birds enjoy habitats like shrub swamps adjacent to open water. The
- 4 highest diversity of birds occurs in the late spring. Common year round birds are sparrows, robins,
- 5 chickadees, bushtits, kinglets, crows, jays, woodpeckers, and wrens. American bitterns and green
- 6 backed herons forage and breed in the Mercer Slough. Great blue herons have been known to nest in
- 7 the Mercer Slough (Carrsaco et al. 2013).

### 3.2.1.2. Description of Mitigation Design

9 The proposed wetland mitigation will compensate for wetland impacts in the southern areas of the
10 Project. The rehabilitation of wetland hydrology and vegetation enhancement will create diverse,
11 complex habitat structure to support a much greater diversity of species than are supported by the site's
12 current agricultural use. Topographic adjustments will be made to rehabilitate hydrology, and create

- 13 niches for forested, shrub-scrub, and emergent wetland types. Small depressions will be created that
- 14 not only support obligate emergent vegetation, but that will also increase the hydrologic and water
- 15 quality function of the wetland. The primary site constraint is access, and beyond a few existing roads,
- 16 care will be taken to avoid soil compaction during construction using wetland soil mats or plates.
- 17 Existing roads, and all associated culverts and other drainage infrastructure encountered will be
- 18 decommissioned, and associated soils will be decompacted and amended as needed. Specific functions
- 19 provided by the mitigation are described below.
- 20

8

# 3.2.1.3. Proposed Mitigation Site Hydrology

21 Site hydrology will continue to be controlled by Lake Washington and Mercer Slough water surface 22 elevations. Ditches across the site will be filled to remove the influence of these structures on the 23 adjoining areas. It is anticipated that this will effectively raise water surface (or groundwater) elevation 24 in the winter and spring when the ditches are most effective (due to low lake levels). In addition, small, 25 shallow depressions will be created by excavating soil to create a mound and pool feature. These 26 "microtopographic features" increase habitat diversity and detain surface water flows during major rain 27 events and rain on snow events. Microtopography mimics tip up mounds from forested systems and 28 allows facultative plant species to establish on the hummock and obligate species to establish in the 29 depressions. The increase in woody vegetation and dense vegetation in general will increase sediment 30 trapping and other water quality functions of the wetland. The overall grading affect will work with the 31 existing microtopography to create areas of standing water that will create an opportunity to trap 32 sediment and nutrients before it reaches the slough and lake. These features will dry in the summer 33 months, but wetland hydrology will be maintained by the high lake levels. The lake is typically at or near 34 the high elevation of 18.67 feet (National Geodetic Vertical Datum 1988 [NGVD88]) from May to July.

35 **3.2.1.4.** Mitigation Site Soils and Grading

Existing site soils are described above. Minor grading will be required on site to fill ditches and any
 associated drain tiles, and create microtopographic features; therefore, a minimal amount of soil will be

East Link | South Bellevue to Overlake Transit Center January 13, 2014 1 imported. Soil amendments and woody mulch will be used in some areas to suppress invasive species

2 and provide decompaction of existing soils over time. Site grading will have three major components:

3 lowering grades within the reed canarygrass field in the north, filling existing ditches to match existing

4 grades, and creating microhabitats throughout the site to establish forested and emergent vegetation.

5 Areas north of the agricultural ditches that have a robust reed canarygrass community will be lowered in

- 6 elevation to maintain inundation past the germination period for reed canarygrass (April to May) and to
- 7 sustain obligate wetland species. The site is currently relatively flat, with an extremely low slope in the
- 8 direction of Mercer Slough. The ditches (and associated pumps) are the only known drainage
- 9 infrastructure on the site, and any drain tile or other subgrade drainage encountered during the
- 10 construction will be removed or effectively decommissioned in place. All the ditches will be filled with
- 11 imported material and any culvert under internal access roads will be removed. Habitat and species
- 12 diversity will be increased by excavating tip up mounds and creating small ponded areas surrounded by
- 13 slightly higher areas. This will create ponded depressions for obligate species where inundation well
- 14 into the growing season will help to limit facultative invasive species such as reed canarygrass. On the
- 15 mounds and other raised areas, woody vegetation will be planted to create a dense overstory that will
- 16 help to shade out invasive species. This variety of species will provide diversity to increase the
- 17 opportunity to meet specific habitat requirements of a variety of fauna..
- 18

#### 3.2.1.5. Mitigation Site Planting

- 19 Prior to planting, the contractor will canvas the site for invasive species. Species-specific approaches
- 20 will be developed to control invasive species. These will include mechanical removal, mowing, mulching
- 21 (with cardboard), and other methods developed in coordination with King County Noxious Weed Control
- 22 Program staff. Between 25 and 50 percent of the existing blueberry plants located in the southern
- 23 portion of the site will be cut off at the ground level. Native species will be planted in between the
- 24 blueberry rows to increase shade and limit the establishment of invasive species. This approach will
- 25 benefit establishing wetland tree species, such as western red cedar and Sitka spruce. Additionally, the
- shade will benefit the existing robust small-fruited bulrush emergent community thriving under the
- 27 blueberry shrubs south of the existing ditches. Dead wood from the blueberry shrubs will be placed
- throughout the site in piles for songbird and mammal habitat.
- 29 Plant species selection will be based on developing a number of habitat types with high degree of
- 30 interspersion and edge length. This arrangement will help to increase habitat diversity and complexity
- 31 within the larger wetland. Buffer area will also be treated by removing invasive species, including
- 32 blackberry and ivy, and under planting existing trees with native shrubs.
- 33 3.2.2 Sturtevant Creek
- 34 Conflicts with the Project alignment require that 3,443 sf of the OHWM of Sturtevant Creek be
- permanently filled and realigned to a new channel. This work will occur in Section 28, Township 25
- 36 North, Range 5 East, just north of NE 8th Street, east of a Whole Foods grocery store, and southwest of
- 37 Lake Bellevue (Appendix C, Figures 16 to 21; Appendix D, Figures 8 and 9). The stream will be relocated

- 1 to the west, directly adjacent to its current location. The new stream channel will match current flow
- 2 and volume capacity, while providing improved habitat. The new channel will be slightly longer because
- 3 it will be shifted approximately 13 feet to the west of its current location. The existing overflow
- 4 structure at the south end of the stream will also be relocated to the west, which will reduce the existing
- 5 piped stream length by approximately 13 feet. The substrate of the channel will be cobble that is sized
- 6 for the flow regime and the slopes will be vegetated to prevent erosion.
- 7 **3.2.2.1.** Existing Conditions of the Site
- 8 Sturtevant Creek flows out of Lake Bellevue wetland. The area of impact is downstream of the lake
- 9 outlet. The stream in this area is confined to a straightened trapezoidal channel that runs parallel and
- 10 east of the BNSF tracks. The channel bed is fairly uniform and consists of fine grain sediment with some
- 11 vegetation. At the downstream end the vegetation is thicker and is dominated by reed canarygrass. The
- 12 stream enters a manhole with a drop where it is combined with stormwater from the south. The flow is
- directed west, under the tracks in a short culvert. A very short (about 15 foot) daylighted section of
- stream exists to the west of the tracks before another culvert directs the flow south under NE 8th
- Street. The new channel alignment will remain on the BNSF ROW, which is now controlled by Sound
   Transit. A zone to accommodate future heavy rail or trail use is located to the west of the new channel
- 17 and guideway alignments. This zone, or development envelope, is 18 feet wide and 22.5 feet tall and
- 18 can be seen in Figure 19 of Appendix B. No additional space is available in this heavily developed area to
- 19 increase the meander zone of the creek or decrease the slope of the banks.
- 20 The site was selected to minimize the disturbance to the hydrology and conveyance of the system and
- to allow for the continued use of existing downstream conveyances. Historically, the site was used as a
- 22 rail corridor and is zoned as Commercial (BR-CG).
- 23 There are two existing wetlands on the site (South Lake and Central Lake) that will be impacted during
- 24 construction of the elevated guideway, and restoration efforts are anticipated to provide a vegetative
- 25 community with smaller plant species. The mitigation for this vegetation conversion impact will occur at
- another site. South Lake Wetland and Central Lake Wetland are both considered Category III wetlands
- 27 using City criteria.
- Flows in the reach are controlled at the outlet of Lake Bellevue. No actions related to this Project will
- 29 occur at the outlet, and flows and lake levels will not be affected. Currently the outlet of the lake is
- 30 managed by property owners to prevent vegetation and debris from reducing the flow out of the lake
- and creating flood hazards to the private development on and adjacent to the lake. The discharge
- 32 downstream to the realigned reach is not changed, but the stream slope, bank roughness and capacity
- 33 will be engineered to minimize velocity and scour while maintaining the same or greater conveyance
- 34 capacity of the existing channel.
- 35 Site soils are mapped as Alderwood, gravelly, sandy loam; however, there is a great deal of railway
- 36 ballast and fill prisms on the site associated with the railroad tracks and adjacent development. As a

result, angular rock, gravel, and cobble fill material frequently overlays or is mixed within the native 1 2 soils.

- 3 Vegetation is extremely limited, and most of the site is bare gravel or pavement. Riparian vegetation is
- 4 limited to herbaceous weeds on the channel banks, with red alder, Himalayan blackberry, Scot's broom
- 5 and other perennial weeds and grasses in the adjacent jurisdictional buffer. Other areas of the buffer
- 6 are paved or part of the railway bed and track. There is no known fish use in the reach and little habitat
- 7 suitable for wildlife.

#### 8 3.2.2.2. **Description of Mitigation Design**

- 9 The mitigation design will essentially mimic the current conditions with the following exceptions;
- 10 The new channel will be slightly longer and aligned farther to the west •
- 11 The new channel will have a rounded cobble substrate (existing channel is sand and silt) •
- 12 The new channel and the nearby South Lake and Central Lake wetlands will have a native scrub-
- 13 shrub buffer that will be increased by 0.29 acre from its current conditions
- 14 3.2.2.3. Mitigation Site Hydrology
- 15 The hydrology of the new channel will be essentially consistent with the existing channel. The hydrology
- is controlled at the outlet of Lake Bellevue and will not be impacted by the Project or the mitigation. 16
- 17 The new channel has a similar capacity and slope as the existing channel.

#### **Mitigation Site Soils** 18 3.2.2.4.

- 19 All soils, including topsoil, amendments, and stream bed materials will be imported. Railway ballast and 20 other unsuitable material will be removed from the mitigation area. These areas will be converted into 21 new buffer for the stream and nearby wetlands to the north.
- 22 3.2.2.5.

### **Mitigation Site Planting**

23 The site will be planted with a native scrub-shrub community. The use of larger species (trees) would 24 create a long-term hazard and conflict with the rail alignment. Native species will be selected based on 25 hydrologic conditions where planting is to occur. One community will be used in wetter locations and 26 will include willows, red-osier dogwood, and spirea. Vegetation installed along the banks of the stream 27 channel will be chosen to not interfere with stream flow volumes. A second community for upland 28 buffer areas may include thimbleberry, snowberry, and Oregon grape.

#### 29 3.2.3 West Tributary

- 30 This site is made up of three parcels along the West Tributary to Kelsey Creek west of 124th Avenue NE
- 31 and just south of the ponded wetland (Kelsey West Tributary Pond wetland). The site is located in
- 32 Section 28, Township 25 North, Range 5 East, just north of Bel-Red Road (Appendix C, Figures 23 and 24;
- 33 Appendix D, Figures 10 and 11). Mitigation of permanent impacts to streams and wetlands will occur on
- 34 this site, and will be accomplished by removing pavement and compacted fill on 2.46 acres of the site,

1 constructing a new, meandering open-channel and a riparian wetland complex, and the establishing a

- 2 native vegetation buffer. The stream reach is currently considered a non-fish-bearing perennial stream
- 3 due to impassable culverts downstream of this reach. The site will provide 0.64 acre of wetland creation
- 4 and 2,600 sf of stream restoration.
- 5

#### 3.2.3.1. Existing Conditions of the Site

6 The site is located in the upper reaches of the Kelsey Creek sub-basin of the Mercer Slough watershed.

7 The drainage into the site comes largely from stormwater run-off, but is also fed by groundwater seeps

8 along the toe of the SR 520 embankments. The existing site consists of compacted gravel and asphalt

9 parking lot to the west and south. The lot was previously used for parking trucks in conjunction with a
10 warehouse currently located on the site. A commercial building is located on a portion of the eastern

11 property line. The site is zoned commercial (BR-CR) and is owned by the City of Bellevue Parks and

12 Community Services. Future plans for the site include park amenities to the west of the mitigation area.

13 To the north of the site is a large open water wetland complex (Kelsey Creek West Tributary Pond

14 Wetland) that is controlled at the outlet by a weir structure. This weir structure is managed to control

downstream flooding and is not currently fish passable. This wetland is dominated by red alder, reed

16 canarygrass, Pacific willow, spirea, and cattail. Beaver are active in the system, and localized flooding is

17 an issue that requires maintenance by the City. Other species using the site are primarily birds (both

- 18 migratory and resident species), especially waterfowl.
- 19 The West Tributary to Kelsey Creek flows from the ponded wetland to the south through the proposed
- 20 mitigation site. The stream runs in a rock-lined channel for about 200 feet along the northeast corner of
- 21 the site. This stream reach has a vegetated buffer width of about 60 feet. There is a small (0.04 acre)
- riparian wetland associated with both banks of the creek. Immediately to the east of the channel is a
- 23 large commercial building. A small berm separates the creek and riparian wetland from the building.
- 24 Soils on site are mapped as Alderwood gravelly sandy loam, but are likely overlain by imported fill in
- 25 paved and gravel areas. Field investigations conducted for the Project found that soils in the wetland
- are consistent in color and character from the surface to below 18 inches deep. The soils are a very dark
- 27 grayish brown (10YR 3/1) silt loam with no redox features. The hydrology of the wetland is linked with
- the West Tributary to Kelsey Creek, and soils are commonly saturated or inundated to the surface. Site
- 29 hydrology is currently being investigated by monitoring shallow groundwater wells placed within the
- 30 proposed mitigation and excavation area.
- 31 The dominant vegetation species within this wetland are Pacific willow, red-osier dogwood, bittersweet
- nightshade, reed canarygrass, soft rush, and Himalayan blackberry. Vegetation on the margins of the
- 33 site and around the stream is dominated by Himalayan blackberry and other invasive vegetation.
- A Phase 2 subsurface site assessment has been developed for the site (G-Logics 2009) and utilities have
- 35 been located and surveyed.
- 36 Kelsey West Tributary Stream Wetland scores a moderate potential to improve water quality and
- 37 provide opportunities to improve water quality (16 out of 32 possible maximum score). The wetland

1 scores a moderate potential to reduce flooding and erosion and provide the opportunity to reduce

2 flooding and erosion (18 out of 32 possible maximum score). The wetland scores a moderate potential

- and opportunity (16 out of 36 possible maximum score) to provide habitat functions. Overall, the total
- 4 Ecology wetland functions score for Kelsey West Tributary Stream Wetland is 50 out of a possible 100.
- 5

#### 3.2.3.2. Description of Mitigation Design

6 The goal of the mitigation design will be to remove about 10 feet of soil, to remove/abandon a 406-

7 linear-foot section of piped West Tributary to Kelsey Creek, and to create a 441-linear-foot section of

restored stream and significantly expand the associated wetland. Adjacent areas will be planted with
native species to provide a dense vegetated buffer. Slopes to the east will range from 4H:1V to 8H:1V to

10 meet the grades at the existing property line. The design preserves the existing riparian wetland and

provides 0.64 acre of created wetland on the west (right) bank of the stream. The design includes a

- 12 depressional terrace adjacent to the channel to provide flood storage of high flows and off channel
- 13 refuge to aquatic species.

14 The mitigation design concepts in Appendix C (Figures 23 and 24) include a newly created 60-foot-wide

average wetland buffer, which matches the buffer for a Category III wetland. The narrowest buffer

areas are not less than 45 feet, which follows the BCC requirements to provide a buffer that is at least 75

17 percent of the required buffer for the newly created wetland. In the southern portion of the mitigation

18 site where there is no proposed wetland creation, a 50-foot average stream buffer is proposed. The site

19 provides an excellent opportunity to improve the connection between the Kelsey West Tributary Pond

20 Wetland with other stream and wetland habitats downstream, many of which are in restoration

- 21 (Glendale Country Club, Kelsey Creek Farm, SE 8th Culvert, etc.).
- 22

# 3.2.3.3. Mitigation Site Hydrology

23 Once excavated, the proposed mitigation site is anticipated to remain saturated at the surface by

24 groundwater and stormwater outfall at the northwestern portion of the mitigation site. The proposed

stormwater outfall will be collecting water from various sources west of the mitigation site and the

26 groundwater sources are anticipated to derive from the same hydrology source as the Kelsey West

27 Tributary Stream Wetland. In addition, peak flows from the West Tributary to Kelsey Creek will

28 potentially enter the created wetland during large storm events at a regular recurrence. While base

29 flows are relatively low (<2 cubic feet per second [cfs]) peak flows are much higher. The estimated two-

30 year recurrence flow (annual probability 50%) is 25 cfs (FEMA 2005).

### 31 **3.2.3.4**.

# . Mitigation Site Soils and Grading

Mitigation site soils, amendments, and stream bed materials will be imported from an approved off site location to ensure adequate fertility and composition. Boulders, snags, and large woody debris will also be imported (or obtained from the Project area as practicable) to create stream and wetland habitat complexity. Large woody debris placed in the streambanks will provide habitat and potentially protect the channel against erosion of the banks during high flows. The created wetland will be configured to allow access to fish at high flows and provide a quiescent area for turbid water to settle and sediment

- 1 and waterborne contaminants to be entrained by wetland vegetation. The site is designed to
- 2 concentrate the habitat areas in a migratory corridor suitable for multiple species along the eastern
- 3 boundary of the site. This will minimize the habitat impacts of future park development. Site grading
- 4 will also create areas of ponded water from rainfall, site runoff, and after inundation by high flows.
- 5 These areas are expected to stay inundated well into the growing season (May or June), and this
- 6 inundation will help promote the establishment of dense, obligate vegetation and help control
- 7 facultative invasive species—notably reed canarygrass. Some of the banks above the ponded areas are
- 8 expected to be fed by groundwater seeps that will remain moist based on well data now being collected.
- 9 This will allow the establishment of woody facultative species that provide shade and cover to aquatic
- 10 areas.

11

#### 3.2.3.5. Mitigation Site Planting

12 The mitigation design and site planting is shown in Appendix C (Figures 1 through 29) and D (Figures 1

13 through 13). The site was configured to improve the connectivity of existing high quality aquatic,

14 wetland, and riparian habitats while maintaining the potential for future park and trail improvements

15 outside the jurisdictional wetland buffer. Any future use of the site will be required to comply with the

16 CAO (BCC Chapter 20.25H), including buffer protection.

17 Plant species selection will only include native species and will focus on those that provide water quality

- 18 and or specific habitat function. Emergent and scrub-shrub wetland species that are able to trap
- 19 sediment and other pollutants include, but are not limited to bulrush, willow, hardhack and slough
- sedge. Buffer species that provide forage and nesting habitat include, but are not limited to willow, red

21 twig dogwood, hardhack, snowberry, thimbleberry, Douglas fir, and Sitka spruce.

### 22 3.2.4 Mercer Slough Buffer Creation and Enhancement

These areas are located along the east side of Bellevue Way SE and 112th Avenue SE, within the buffer of Mercer Slough West wetland and Mercer Slough West Branch. The area is primarily dominated by mowed lawn and non-native blackberry thickets, which makes it a good candidate for buffer creation and enhancement. Native buffer vegetation will be planted to enhance the remaining area between the future guideway and the west bank of West Mercer Slough, and in areas between the existing Mercer Slough West wetland and Bellevue Way SE. This buffer enhancement and creation work will improve water quality, habitat cover, organic input, shade, and other stream and wetland buffer functions.

- These buffer creation and enhancement actions are in addition to other areas where restoration of temporary impacts will occur. Restoration of temporary impact areas are described in Section 2.8.
- 32 **3.2.4.1.** Existing Conditions of the Site
- 33 The site is currently comprised of City owned ROW, areas within Mercer Slough Nature Park, and a
- 34 privately held tract lot associated with the Bellefield Office Park (a tract lot is an undivided interest
- within a plat and is not considered a lot or building site for purposes of development or construction).

- 1 The areas are topographically perched several feet above Mercer Slough and lack wetland
- 2 characteristics and wetland vegetation. The soils include a mix of imported soils, fill associated with the
- 3 adjacent road, and excavated materials from the slough and landfill debris. Vegetation is dominated by
- 4 mowed lawn and dense thickets of the invasive species Himalayan blackberry, with a few isolated
- 5 patches of ornamental and native trees.
- 6 The Bellefield Office Park site was created by filling 130 acres of wetlands. This area contains two
- 7 Category II riverine-slope wetlands that will be impacted from unavoidable impacts related to Project
- 8 construction. Dominant vegetation in the two wetlands includes Oregon ash, black cottonwood, red
- 9 alder, Pacific willow, prickly currant (*Ribes lacustre*), Himalayan blackberry, lady fern (*Athyrium felix*-
- 10 *femina*), and stinging nettle (*Urtica dioica*) This includes construction of the 112th Avenue SE and SE
- 11 15th Street intersection that accommodates the guideway undercrossing.
- 12 Site soils are mapped as Seattle muck in the slough and relic channels, Alderwood gravelly sandy loam,
- and Everett-Alderwood gravelly sandy loam in upland areas. However, this area has a history of
- 14 development and excavation and other ground disturbance activities, and evidence of fill material and
- 15 other imported soil material is present in most of the upland areas.
- 16 The hydrology of the two wetlands is associated with Mercer Slough. However, the wetland is located
- 17 upslope of the slough, and the source of hydrology within the wetland is dominated by seeps and
- 18 groundwater sources, as opposed to water from the slough extending above the OHWM into the
- 19 wetland. Additional hydrology from seeps along the slopes above the slough will also help support a
- 20 diversity of riparian vegetation.
- 21 Soils in the two wetlands were identified as typically black (10YR 2/1) loam to below 18 inches deep.
- 22 Charcoal and brick were observed in the soil profile, these may be an indication of past land use
- activities on the site. Upland soils observed were significantly lighter in color (10YR 3/4 to 5/4, 10YR
- 24 2/2) and loamy, but often containing coarse organic material, charcoal or debris at depth. The charcoal
- and debris is consistent with known use of the site as a construction material dump in the 1960s.
- 26 Dominant vegetation species in the wetlands include Oregon ash and black cottonwood canopy, with
- 27 stinging nettle, red twig dogwood, and Himalayan blackberry understory. The buffer is dominated by
- 28 Himalayan blackberry, with some stinging nettle and red elderberry. Areas along the entrance to the
- 29 Bellefield Office Park (SE 15th Street) are landscaped with turf and ornamental trees. There are some
- 30 functions provided by the existing vegetation. Specifically, shade and organic input from trees and
- 31 ground cover to prevent soil erosion. Himalayan blackberry provides food and nesting sites for some
- 32 birds.

33

### 3.2.4.2. Description of Mitigation Design

- 34 The Project requires that the roadway at the 112th Avenue SE and SE 15th Street intersection be
- elevated to allow the light rail guideway to go under 112th Ave. SE. This will result in permanently filling
- 36 0.07 acres of the Bellefield South Wetland, 0.02 acres of the Bellevue North Wetland, and a total of
- 37 0.43 acre of buffer impact (0.22 to Bellefield South and 0.21 to Bellefield North). The buffers of these

1 wetlands will also be permanently impacted by roadway construction. To the south guideway and other

- 2 Project-related construction will impact some areas of non-native vegetation in buffers. The mitigation
- 3 design will rely on controlling the existing Himalayan blackberry and establishing a native riparian
- 4 community. Willow and other flood tolerant species will be used near the water while more drought
- 5 tolerant pioneer and seral species will be planted in the remainder of the upland buffer.
- 6 Other buffer enhancement and creation areas are located to the south and east of the proposed South
- 7 Bellevue Station/Park and Ride. The concept for the area to the south includes a conversion of open
- 8 lawn areas into wetland buffer. Many of these areas are not considered buffers, so this would provide
- 9 more buffer for the Mercer Slough West wetland. The east side of the proposed parking structure has a
- 10 major infestation of English ivy that is growing on many of the native deciduous trees. The concept here
- 11 is to remove all invasive species and plant native species where appropriate.
- 12 **3.2.4.3.** Mitigation Site Hydrology
- 13 This buffer enhancement/creation site will remain upland. The connection of the wetlands to Mercer
- 14 Slough will not be affected by the Project, so no impact to wetland hydrology of wetland areas to remain 15 is anticipated.

16 **3.2.4.4.** Mitigation Site Soils

- 17 Site soils will be grubbed to remove the roots and other organic material associated with invasive
- 18 species. Soil amendments will be added, as necessary, and woody mulch will be used to control future
- 19 colonization by invasive species and to retain moisture in the soil. Wetland areas to remain will not be
- 20 impacted, and their soils will not be disturbed unless it is necessary for invasive species removal. Care
- 21 will be taken not to compact soils in wetland areas with temporary impacts to vegetation.
- 22 **3.2.4.5.** Mitigation Site Planting
- The mitigation site will be planted in zones based on relative elevation above Mercer Slough and
  distance from the guideway. Within four vertical feet of the OHWM, willow and dogwood will be
  planted. Above that a forested community comprised of Douglas fir, big leaf Maple, red alder and grand
  fir will be planted, with an understory of native shrubs such as Tall Oregon grape, thimbleberry and red
- elderberry. Adjacent to the guideway, only shrubs will be planted to limit future conflicts with light rail
- 28 operations. Temporary irrigation will be used as needed during plant establishment (typically 1 to 3
- 29 years).

# **30 3.3 Wetland Mitigation Site Functional Lift Analysis**

- Two of the four proposed wetland mitigation Project sites (Sweyolocken and West Tributary) were rated according to the most current Ecology guidance documents (Hruby 2004; Ecology 2008a), based on the
- 33 proposed design for these wetland systems (Appendix D). As described in Section 3.0, the Sweyolocken
- 34 site is an existing wetland proposed for wetland enhancement and rehabilitation, while the West
- 35 Tributary site is proposed for wetland and stream creation.

- 1 The expected classifications and ratings of the proposed Sweyolocken and West Tributary wetland
- 2 mitigation sites based on the design approach are provided in Table 3-8. Expected water quality,
- 3 hydrologic, and habitat functional values for the proposed mitigation sites are shown on Table 3-9 and
- 4 described below in Table 3-8.

Wetland Mitigation Site	USFWS (Cowardin) Classification	Hydrogeomorphic Classification	State (Ecology) and Local (Bellevue) Rating
Sweyolocken	Forested, Scrub-shrub, and Emergent	Riverine	II
West Tributary	Forested, Scrub-shrub, and Emergent	Riverine	II

#### 5 Table 3-8 Wetland Mitigation Sites Classifications and Ratings Based on the Design Approach

Wetland Mitigation Sites	Water Quality Functions Potential Score	Water Quality Functions Opportunity (Yes/No)	Hydrologic Functions Potential Score	Hydrologic Functions Opportunity (Yes/No)	Habitat Functions Potential Score	Habitat Functions Opportunity Score	Total Functions Score
Riverine Maximum Scores	16	No = 1 Yes = 2	16	No = 1 Yes = 2	18	18	100
Sweyolocken	10	Yes	13	No	13	10	56
West Tributary	10	Yes	13	Yes	13	10	69

#### 1 Table 3-9 Summary of Functions and Values for Proposed Wetland Mitigation Site Rating Scores

2

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#### 1 **3.3.1** Water Quality Functions

- 2 Both wetland mitigation sites are designed to score a moderate potential to improve water quality due
- 3 to surface depressions within the riverine wetland that can trap sediments during a flooding event and
- 4 the characteristic of vegetation within the wetlands to trap sediments and pollutants. The amount of
- 5 expected area within the wetland mitigation sites for seasonal ponding or inundation also contributes to6 a moderate score.
- Both wetland mitigation sites are expected to provide opportunities to improve water quality due to
  their location near roads and/or other developed areas.
- 9 3.3.1.1. Hydrologic Functions
- 10 Both wetland mitigation sites are designed to have high scores for the potential to reduce flooding and
- 11 erosion. The expected high scores for potential hydrologic functions are due to characteristics such as
- 12 overbank storage capability and characteristics of the vegetation to slow down water velocities.
- 13 The West Tributary Wetland mitigation site provides the opportunity to reduce flooding and erosion
- 14 because it drains to streams that flow downstream to areas that can be damaged by flooding. The
- 15 Sweyolocken mitigation site does not provide this opportunity due to its association with Lake
- 16 Washington, which has controlled water levels. The Mercer Slough West Wetland, which is located near
- 17 the Sweyolocken mitigation site, was also scored as not providing the opportunity to reduce
- 18 downstream flooding and erosion for this reason.

#### 19 3.3.1.2. Habitat Functions

- 20 Both wetland mitigation sites are designed to have a high potential score to provide habitat. The high
- 21 scores for potential habitat functions are due to the vegetative structure having several Cowardin
- vegetation classes, the presence of several water regimes or hydroperiods, plant richness (more than 19
- 23 native species), and the presence of special habitat features, such as downed woody debris and not
- 24 allowing invasive plants to become established. The wetland mitigation sites will not contain forested
- vegetation classes during the first few years, as planted trees become established. Both wetland
- 26 mitigation sites are designed to be planted with vegetation to develop forested, scrub-shrub, and
- 27 emergent Cowardin vegetation classes once the vegetation matures.
- 28 Both wetland mitigation sites are expected to score a moderate potential opportunity to provide habitat
- 29 for many species. The moderate score for habitat opportunity is due to the characteristics of the
- 30 wetland buffers (developed verses undisturbed conditions), the overall quality of habitat conditions
- near or adjacent to the wetlands, and the connections to other wetland habitats. Several of these
- 32 features depend on the condition outside of the mitigation sites and cannot be controlled as part of the
- 33 mitigation design.

# 13.3.2Comparison between Functions and Values of Disturbed Wetlands and2Wetland Mitigation Sites

3 Ecology has produced the focus sheet Using the Wetland Rating System in Compensatory Mitigation 4 (Ecology 2008b) as a guide to estimate changes in functions that can occur from impacts and 5 compensatory mitigation. The methodology includes a qualitative comparison between individual 6 groups of functions, based on the rating of function scores as low, moderate, or high (Tables 3-3 and 7 3-4), and calculating statistical variability in the function scores between the disturbed wetlands and the 8 compensatory mitigation. The overall functions score has to increase by more than one-third to be 9 considered a lift in functions. A difference of less than one-third is not considered statistically 10 significant. The following assessment comparing functions of the ten disturbed wetlands and the two wetland mitigation sites was prepared per this Ecology methodology (Ecology 2008b). For this analysis, 11 12 of the ten wetlands that will be permanently disturbed, four have been allocated to the Sweyolocken 13 wetland mitigation site, and six have been allocated to the West Tributary wetland mitigation site, based 14 on the geographic locations of the wetlands and wetland mitigation sites within the Project area. The 15 qualitative comparison of functions and the statistical variability in the functions scores between the wetlands permanently disturbed and the Sweyolocken wetland mitigation site is provided in Table 3-10 16 17 and for the West Tributary Wetland mitigation site is provided in Table 3-11.

	Improving Water Quality		Hydrologic F	unctions	Habitat I	Total	
	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Score)	Rating Score
Mercer Slough West We	etland		1				
Disturbed Wetland Rating	Moderate (10)	Yes	Moderate (10)	No	High (17)	Moderate (10)	57
Sweyolocken Mitigation Site Rating	Moderate (10)	Yes	High (13)	No	High (13)	Moderate (10)	56
Change	No Change	No Change	Moderate to High	No Change	No Change	No Change	-1 (-2%) Not Significant <sup>1</sup>
Bellefield South Wetlan	d						
Disturbed Wetland Rating	Moderate (10)	Yes	Moderate (8)	Yes	Moderate (9)	Moderate (8)	54
Sweyolocken Mitigation Site Rating	Moderate (10)	Yes	High (13)	No	High (13)	Moderate (10)	56
Change	No Change	No Change	Moderate to High	Change from Yes to No	Moderate to High	No Change	2 (4%) Not Significant <sup>1</sup>
Bellefield North Wetlan	d						-
Disturbed Wetland Rating	Moderate (10)	Yes	Moderate (8)	Yes	Moderate (9)	Moderate (7)	53
Sweyolocken Mitigation Site Rating	Moderate (10)	Yes	High (13)	No	High (13)	Moderate (10)	56
Change	No Change	No Change	Moderate to High	Change from Yes to No	Moderate to High	No Change	3 (6%) Not Significant <sup>1</sup>
8th Street Wetland					,		
Disturbed Wetland Rating	Low (2)	Yes	High (12)	Yes	Low (6)	Low (5)	41
Sweyolocken Mitigation Site Rating	Moderate (10)	Yes	High (13)	No	High (13)	Moderate (10)	56

#### 1 Table 3-10 Summary of Wetland Rating Scores and Sweyolocken Mitigation Site Functional Lift

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	Improving Wat	er Quality	Hydrologic F	unctions Habitat Functions		Total	
	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Score)	Rating Score
Change	Low to Moderate	No Change	No Change	Change from Yes to No	Low to High	Low to Moderate	15 (37%) Significant <sup>1</sup>

1 2 3

Source: Ecology 2008b 1 Significant is defined as an increase of the total score by more than one third

4	Table 3-11 Summary of Wetland Rating Scores and West Tributary Mitigation Site Functional Lift

	Improving Wa	ter Quality	Hydrologic	Functions	Habitat Functions		
	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Score)	Total Rating Score
South Lake Wetland							
Disturbed Wetland Rating	Moderate (7)	Yes	Moderate (8)	Yes	Moderate (8)	Low (5)	43
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69
Change	No Change	No Change	Moderate to High	No Change	Moderate to High	Low to Moderate	26 (60%) Significant <sup>1</sup>
Central Lake Wetland						•	
Disturbed Wetland Rating	Low (4)	Yes	Moderate (10)	Yes	Moderate (7)	Low (4)	41
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69
Change	Low to Moderate	No Change	Moderate to High	No Change	Moderate to High	Low to Moderate	26 (68%) Significant <sup>1</sup>
North Lake Wetland							
Disturbed Wetland Rating	Low (4)	Yes	Low (4)	Yes	Low (6)	Low (4)	22
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69
Change	Low to Moderate	No Change	Low to High	No Change	Low to High	Low to Moderate	47 (214%) Significant <sup>1</sup>

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	Improving Water Quality		Hydrologic Functions		Habitat Functions			
	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Yes/No)	Potential (Score)	Opportunity (Score)	Total Rating Score	
BNSF East Wetland								
Disturbed Wetland Rating	Moderate (7)	Yes	Moderate (8)	Yes	Low (3)	Low (4)	37	
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69	
Change	No Change	No Change	Moderate to High	No Change	Low to High	Low to Moderate	32 (86%) Significant <sup>1</sup>	
West Tributary Pond Wetland		l				•		
Disturbed Wetland Rating	High (11)	Yes	High (12)	Yes	Moderate (9)	Moderate (8)	63	
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69	
Change	High to Moderate	No Change	No Change	No Change	Moderate to High	No Change	6 (10%) Not Significant <sup>1</sup>	
SR 520 West Wetland								
Disturbed Wetland Rating	Moderate (9)	Yes	Moderate (8)	Yes	Moderate (9)	Low (5)	48	
West Tributary Mitigation Site Rating	Moderate (10)	Yes	High (13)	Yes	High (13)	Moderate (10)	69	
Change	No Change	No Change	Moderate to High	No Change	Moderate to High	Low to Moderate	21 (44%) Significant <sup>1</sup>	

1 2 3

Notes: Source: Ecology 2008b 1 Significant is defined as an increase of the total score by more than one third

- 1 The results of the qualitative comparison of functions between the wetlands and the wetland mitigation
- 2 sites show some variation in the function ratings. As shown on Tables 3-3 and 3-4, the Sweyolocken and
- 3 West Tributary wetland mitigation sites have one difference in their expected functional rating score
- 4 based on the mitigation design. As described previously, the Sweyolocken mitigation site does not
- 5 provide the opportunity to reduce flooding and erosion to downstream areas that can be damaged by
- 6 flooding.
- 7 Because all ten wetlands and both wetland mitigation sites provide the opportunity to improve water
- 8 quality, there is no change in the water quality opportunity between the wetlands and the mitigation
- 9 sites. In addition to wetland mitigation, the Project will include several upgrades to on-site stormwater
- 10 management facilities as a key component of the Project that will provide significant additional on-site
- 11 mitigation of water quality.
- 12 The results of the qualitative comparison of functions between six of the ten wetlands and the
- 13 associated wetland mitigation sites show no change in function rating for potential to improve water
- 14 quality. Three of the wetlands show a change in function rating from low to moderate for potential to
- 15 improve water quality. One wetland, Kelsey Creek West Tributary Pond, shows a change in function
- 16 rating from high to moderate for the potential to improve water quality because the high quality water
- 17 quality functions of the presence of organic soils cannot be replicated at a created wetland mitigation
- 18 site during the initial wetland mitigation creation. However, the wetland impact area for the wetland is
- 19 very small, 0.01 acre, and on the border of the wetland system, so the overall high quality water quality
- 20 functions of the existing wetland will not decrease as a result of the proposed disturbance.
- 21 Two wetlands, Kelsey Creek West Tributary Pond and 8th Street Wetlands, show no change in function
- rating for potential to reduce flooding and erosion. Seven of the ten wetlands show a change in
- function from moderate to high and one wetland shows a change in function rating from low to high.
- 24 The Sweyolocken wetland mitigation site does not provide the opportunity to reduce flooding and
- erosion, while the West Tributary site does provide the opportunity. As a result, of the four wetlands
- allocated to the Sweyolocken mitigation site, one wetland, the Mercer Slough West Wetland, has no
- change in this function, while the other three wetlands show a change from providing the opportunity
- to provide this function to not providing the opportunity. For the West Tributary mitigation site, there is
- 29 no change in the hydrologic opportunity between the remaining six wetlands and the West Tributary
- 30 mitigation site. In addition to wetland mitigation, the Project will include several upgrades to on-site
- 31 stormwater management facilities as a key component of the Project that will provide significant
- 32 additional on-site mitigation of flow control functions.
- 33 One wetland (Mercer Slough West) shows no change for potential to provide habitat. Three of the ten
- 34 wetlands show a change in function rating from low to high and six of the wetlands show a change in
- function rating from moderate to high for the potential to provide habitat. Finally, four of the ten
- 36 wetlands show no change for opportunity to provide habitat and six wetlands show a change in function
- 37 rating from low to moderate.

1 Six of the ten wetlands meet the statistically significant criteria of a lift in functions (an increase by more

- 2 than one-third of the total score) between the disturbed wetland and the associated wetland mitigation
- 3 sites (Ecology 2008a). The 8th Street Wetland has a 15 point difference in total function score, with at
- 4 least 14 points necessary. The South Lake and Central Lake Wetlands have 26 point and 28 point
- 5 differences in total function score, respectively, with at least 14 points necessary. The North Lake
- 6 Wetland has a 47 point difference in total function score, with at least 7 points necessary, and the BNSF
- 7 East Wetland has a 32 point difference in total function score, with at least 12 points necessary.

8 The four wetlands that do not meet the statistically significant criteria of a lift in functions are the four

9 Category II wetlands with existing moderate to high functional score values. The Mercer Slough West

10 Wetland has a -1 point difference in total function score, with at least 19 points necessary. The

- 11 Bellefield South and Bellefield North Wetlands have a 2 point and 3 point difference in total function
- 12 scores, respectively, with at least 18 points necessary. The Kelsey Creek West Tributary Pond Wetland
- 13 has a 6 point difference in total function score, with at least 21 points necessary.
- 14 **3.4** Goals, Objectives, and Performance Standards

# 15**3.4.1**Goal 1: Restore Wetland Hydrology at the Sweyolocken and West Tributary16Mitigation Sites

Objective 1-1: Wetland hydrology will be restored at the Sweyolocken Mitigation Site by filling two
 agricultural ditches and removing culverts and other associated drainage infrastructure that is related to
 historical agricultural use within the site.

20 <u>Performance Standard 1:</u> Post construction monitoring and survey indicates that grading was
 21 completed according to the approved mitigation plans or approved modification of those plans.

22 <u>Performance Standard 2</u>: Soils will be saturated to the surface, or standing water will be present

within 12 inches of the surface for at least 12 percent of the growing season in years when rainfall
meets or exceeds the 30-year-average.

- 25 <u>Performance Standard 3</u>: Hydroperiod of areas between the two restored ditches at the site will
- 26 mimic the surrounding wetland areas determined from digging soil pits and measuring water
  27 levels.

28 <u>Objective 1-2</u>: Wetland hydrology will be restored at the West Tributary Mitigation Site by removing fill
 29 material and creating a hydrologic connection between the wetland and stream system.

- 30 <u>Performance Standard 1:</u> Post construction monitoring and survey indicates that grading was
- 31 completed according to the approved mitigation plans or approved modification of those plans.
- 32 <u>Performance Standard 2</u>: Soils will be saturated to the surface, or standing water will be present
- 33 within 12 inches of the surface for at least 12 percent of the growing season in years when rainfall
- 34 *meets or exceeds the 30-year-average.*

1 2	<u>Performance Standard 3:</u> The created wetland will be delineated in the spring of Year 2 (using current accepted methodologies) to ensure the size of the actual wetland is the same size or
3	greater, than the designed wetland.
4 5	<b>Objective 1-3:</b> Increase surface roughness of the site at the <b>Sweyolocken and West Tributary Mitigation</b> <b>Sites</b> .
6	<u>Performance Standard 1:</u> A total of 5 to 10 microtopographic features (tip-up mounds) ranging
7	from approximately 12 to 24 inches below existing grades to an approximate maximum of 24-
8	inches above existing grades will be created and documented in the as-built plans. Mounds of
9	each feature will be a minimum of 10 inches high, and troughs will be a minimum of 8 inches deep
10	(in comparison to the average surrounding ground surface elevation).
11 12	3.4.2 Goal 2: Establish Native Plant Communities at the Sweyolocken, Mercer Slough Buffer Creation/Enhancement, Sturtevant Creek, and West Tributary
13	Mitigation Sites
14	Objective 2-1: Plant communities will be restored by installing native trees, shrubs, and emergent
15	species.
16	
10	<u>Performance Standard 1</u> : Average survival of all planted stock will be at least 90% at the end of Year 1.
18 19	<u>Performance Standard 2</u> : Native wetland woody vegetation species cover shall be at least 25
20	percent by Year 3, at least 50 percent by Year 5. Sites requiring 10 years of monitoring shall reach 70 percent cover.
21	<u>Performance Standard 3</u> : Native upland woody vegetation species cover shall be at least 20
22	percent by Year 3 and at least 40 percent by Year 5. Cover at sites to be monitored for 10 years
23	will reach 70 percent cover.
24	<u>Performance Standard 4</u> : Native herbaceous coverage within designated emergent wetland areas
25	shall be at least 50 percent by Year 2, 70 percent by Year 3, and 100 percent by Year 5.
26	<u>Performance Standard 5</u> : A minimum of 19 desirable native plant species are present in the
27	mitigation sites by the end of Year 5.
28	<u>Performance Standard 6:</u> Invasive, non-native and plant species are maintained at levels below 20
29	percent total cover. Species such as creeping buttercup may not necessarily be included in invasive
30	cover standards as long as those species do not interfere with long-term goals.
31	3.4.3 Goal 3: Create Stable Channels at the Sturtevant Creek and West Tributary
32	Mitigation Sites that Reduces Sediment Transport Downstream
33	Objective 3-1: Recreate 567 linear feet of stream channel at the Sturtevant Creek Mitigation Site west
34	of the existing stream channel and replace 406 linear feet of culvert with 441 linear feet of stream

35 channel at the West Tributary Mitigation Site.

1 2	<u>Performance Standard 1:</u> Post-construction monitoring and survey indicates that grading was completed according to the approved mitigation plans.
3 4	<u>Objective 3-2:</u> Channel conditions and in-stream features at the West Tributary Mitigation Site_are stable at a range of flows from the summer low flow to the 2-year peak flow.
5	<u>Performance Standard 1: Soils above the OHWM will be stable with established vegetation.</u>
6 7 8	<u>Performance Standard 2:</u> After construction and for the duration of the 10 year monitoring period, channel banks material will consist of specified gradations of cobble. (Erosion shall be limited to prevent channel migration into native soils.)
9	Objective 3-3: Improve aquatic habitat at the West Tributary and Sturtevant Creek Mitigation Sites.
10 11	<u>Performance Standard 1:</u> The site is resilient to overbank flooding up to the 10% recurrence flow (10-year flood)
12 13	<u>Performance Standard 3:</u> Evidence (rack marks, leaf staining, sediment deposition, etc.) of a surface water connection between the stream and wetland is visible
14 15	<u>Performance Standard 2:</u> After construction, and for the duration of the 10-year monitoring period, pool and riffle features are stable and located as shown on the as-built plans.
16 17	Objective 3-4: Improve geomorphologic function at the West Tributary and Sturtevant Creek Mitigation Sites.
18 19	<u>Performance Standard 1:</u> After construction, there are three large woody debris structures present, below the OHWM in the West Tributary Mitigation Site.
20 21 22	<u>Performance Standard 2:</u> After construction and for the duration of the 10-year monitoring period, channel banks material will consist of specified gradations of cobble. Erosion shall be limited to prevent channel migration into native soils.
23 24	<u>Performance Standard 3:</u> After construction, and for the duration of the 10-year monitoring period, riparian vegetation is established as described in Goal 2.
25 26	<u>Performance Standard 4:</u> After construction, and for the duration of the 10-year monitoring period, pool and riffle features are stable and located as shown on the as-built plans.
27 28	3.4.4 Goal 4: Improve Wildlife and Aquatic Habitat Structures at the Sweyolocken, Mercer Slough Buffer Creation/Enhancement , Sturtevant Creek, and West
29	Tributary Mitigation Sites
30 31	<b><u>Objective 4-1</u></b> : Provide habitat structure to benefit a variety of fauna, including but not limited to, song birds, cavity-nesting birds, insects, and mammals by incorporating habitat features.
32 33	<u>Performance Standard 1:</u> There will be at least 17 habitat features per acre (1 piece/2,500 square feet) including down woody material (logs, rootwads, etc.), stumps, snags, brush piles, boulder

1 2	piles, and constructed cavities in stumps and down logs. There will also be one bird nest box installed on each snag. These features will be documented in the as-built plan.
3 4	<u>Performance Standard 2:</u> Install one bat box per 25,000 square feet on existing trees in mitigation sites and buffers where existing appropriate trees are present.
5 6	<u>Performance Standard 3:</u> Evidence of wildlife use of the sites will be documented. This may include scat, nests, visual observations, tracks, or other evidence.
7	3.4.5 Goal 5: Restore Wetland, Stream, and Buffer Areas Temporarily Impacted
8	during Construction to Pre-existing or Better Conditions
9 10	<b><u>Objective 5-1</u></b> : Wetland hydrology will be restored at all temporarily impacted wetland sites by adding or removing fill material and restoring pre-construction elevations.
11 12 13	<u>Performance Standard 1:</u> Post-construction monitoring and survey indicates that grading was completed according to the approved mitigation plans or approved modification of those plans. Soils are decompacted to be no more than 80 percent of maximum compaction.
14 15 16	<u>Performance Standard 2</u> : Soils are saturated to the surface, or standing water is present within 12 inches of the surface for at least 12 percent of the growing season in years when rainfall meets or exceeds the 30-inch average.
17 18	<b>Objective 5-2:</b> Plant communities will be restored by installing native trees, shrubs, and emergent species.
19 20	<u>Performance Standard 1</u> : Average survival of all planted stock will be at least 90% at the end of Year 1.
21 22	<u>Performance Standard 2</u> : Native wetland woody vegetation species cover shall be at least 25 percent by Year 3, at least 50 percent by Year 5.
23 24	<u>Performance Standard 3</u> : Native upland woody vegetation species cover shall be at least 20 percent by Year 3, at least 40 percent by Year 5.
25 26	<u>Performance Standard 4</u> : Native herbaceous coverage within designated emergent wetland areas shall be at least 50 percent by Year 2, 70 percent by Year 3, and 100 percent by Year 5.
27 28	<u>Performance Standard 5</u> : A minimum of 19 native plant species shall be in the mitigation sites by the end Year 5.
29 30 31	<u>Performance Standard 6:</u> Invasive, non-native and plant species are maintained at levels below 20 percent total cover. Species such as creeping buttercup may not necessarily be included in invasive cover standards as long as those species do not interfere with long-term goals.
32	

### 1 **3.5** Monitoring, Maintenance, and Contingency Plan

#### 2 3.5.1 Baseline Monitoring

Baseline monitoring at Sturtevant Creek and West Tributary Kelsey Creek will occur. The biologists will
 collect data regarding stream conditions, such as bank full width, substrate composition, and vegetation
 structure and cover. This information will document how the stream systems functioned prior to

6 relocation and daylighting and evaluate success of the mitigation projects.

#### 7 3.5.2 Post-Construction Monitoring

8 An as-built monitoring report will be prepared and submitted to the City, WDFW, and the Corps in the

9 same calendar year that the restoration and mitigation elements occur. Mitigation Performance

10 monitoring will be conducted annually for a period of 5 years for shrub or emergent communities

11 restored along the Project corridor. These areas will have annual monitoring reports submitted to the

12 City, WDFW, and the Corps in Years 1 through 5.

13 The Sweyolocken and West Tributary site will be monitored for 10 years. Annual reports will be

submitted to the City, the Corps, and WDFW in Years 1 through 5, 7, and 10. All other restoration and

15 compensatory mitigation areas will be monitored for 5 years.

16 Monitoring reports will follow the format outlined in Corps regulatory guidance letter 08-03 and will

17 document how the Project is meeting the performance standards outlined above. If one or more of the

18 performance standards are not met the report will identify actions to be taken in order to meet the

19 standard.

#### 20 3.5.3 As-built or Year 0 Monitoring

21 A post-construction assessment will be conducted upon completing the mitigation plan construction,

and a report including record drawings will be submitted to agencies with jurisdiction. The purpose of

this assessment will be to determine whether the site conditions are consistent with the approved plan,

24 document any changes that occurred during construction, and establish baseline conditions for future

25 monitoring.

#### 26 **3.5.4 Methods to Monitor Progress in Attaining the Performance Standards**

27 Each monitoring report will include an evaluation of the mitigation project to ensure that the goals,

28 objectives, and performance standards are being met. The performance standards above will be

29 monitored using the following methods.

#### 30 3.5.5 Wetland Hydrology

31 Indicators of wetland hydrology will be recorded, including ponding, water marks, water-stained leaves,

32 and soil saturation. Water elevations in test pits or wells (if installed) will be recorded.

#### 1 3.5.6 Stream Hydrology and Condition

- 2 Regular monitoring of the, bank stability, large woody debris structures, pool and riffle structures, and
- 3 vegetation will occur at both the Sturtevant and West Tributary sites. At the West Tributary Site,
- 4 additional monitoring of the stability of large woody debris structures and pool and riffle structures and

5 wetland connectivity at high flow, will occur.

#### 6 3.5.7 Vegetation Monitoring

7 Monitoring quadrats or transects will be established for each site during the as-built monitoring.

8 Monitoring protocols could include 10 meter square Quadrats or transects. Transects will include both

9 wetland and buffer, and will be located to cross as many plant communities as possible in the mitigation

10 areas.

#### 11 **3.5.7.1.** Species Diversity

12 During fall monitoring events, the percent areal cover of shrubs and trees could be evaluated through

13 the use of point-intercept sampling methodology. Using this methodology, a tape will be extended

14 between two permanent markers. Shrubs and trees intercepted by the tape will be identified, and the

15 intercept distance recorded. Species diversity will then be calculated to determine the number of

16 species intercepted as a total proportion of the tape length.

#### 17 **3.5.7.2.** Plant Survival

18 During the first fall monitoring event, plant survival will be evaluated within each of the sampling

19 transect locations. Percent survival of shrubs and trees will be evaluated in a 10-foot belt along the

- 20 established transect. The species and location of shrubs and trees within this belt will be recorded. The
- established vegetation sampling transects will aid in determining the success of plant establishment.
- 22 Monitoring and calculations to determine percent survival will only occur in Year 1.

#### 23 **3.5.7.3.** Invasive Species

24 During monitoring events, undesirable plant species will also be measured within each sampling

25 location. Invasive plants will be maintained at levels below 20 percent total cover. Removal of these

- 26 species will occur regularly to prevent infestations. Removal will occur by hand whenever possible.
- 27 Undesirable species include, but are not limited to, Scot's broom, Himalayan and evergreen blackberry,
- 28 reed canarygrass, purple loosestrife, hedge bindweed (morning glory), Japanese knotweed, and creeping
- 29 nightshade. Naturally colonizing and aggressive native species, including reed canarygrass, red alder,
- 30 Douglas' spirea, and Cattails, may also be removed if they threaten to crowd out planted species to the
- 31 extent that performance standards for species diversity cannot be met.

#### 32 **3.5.8 Habitat Use**

- 33 During each monitoring event, evidence that mitigation sites are being used by birds, mammals,
- 34 amphibians, or fish will be recorded. This includes the presence of scat or other physical evidence of
- 35 species presence, as well as sightings, vocalizations etc. Formalized wildlife monitoring will not occur.

#### 1 **3.5.9 Monitoring Schedule**

2 Monitoring events will be conducted according to the schedule presented in Table 3-12.

Year	Date	Maintenance Review	Performance Monitoring	<b>Report Due to Agencies</b>
0 (BA)	Fall	х	x	Х
1	Spring	Х	Х	
	Fall	X	Х	Х
2	Spring	X		
	Fall	X	Х	Х
3	Spring	Х		
	Fall	Х	Х	Х
4	Spring	Х		
	Fall	Х	Х	Х
5	Spring	X		
	Fall	X	Х	Х
6	Spring	X		
	Fall			
7	Spring	X		
	Fall	X	Х	Х
8	Spring	X		
	Fall			
9	Spring	X	X	
	Fall	Х		
10	Spring	X		
	Fall	Х	Х	X*

#### 3 Table 3-12 Projected Calendar for Performance Monitoring and Maintenance Events

#### 4 5 6

Notes: BA = Baseline Assessment following construction completion.

\* Obtain final approval from Corps (presumes performance criteria are met).

7 8

#### 3.5.10 Maintenance Actions

9 Maintenance will be performed regularly to address conditions that could jeopardize the success of the

10 mitigation sites. During regular monitoring visits (schedule shown in Table 3-12), any necessary

11 maintenance actions will be identified and reported to the landscape maintenance contractor.

- 12 Established performance standards for the Project will be compared to the monitoring results to judge
- 13 the success of the mitigation project. If there is a significant problem with achieving the performance

standards, Sound Transit shall develop a corrective action plan. Corrective actions may include, but are 1 2 not limited to, additional plant installation, erosion control, adjustment to hydrology, and plant 3 substitutions of type, size, quantity and location. Maintenance and remedial action on site will be 4 implemented immediately upon completion of the monitoring event (unless otherwise specifically 5 indicated below). Typical maintenance activities will include, but are not limited to: 6 During Year 1, replace all dead plant material to achieve 100% survival. 7 Mitigation plantings will be watered at a minimum rate of 1 inch of water between June 15 and 8 October 15 (or as needed) during the first year after installation. If replacement plantings are 9 installed following Year 1, then the newly installed plants shall also be watered at a rate of 1 10 inches of water every week between June 15 and October 15 for the first year after planting. 11 Replace dead plants with the same species or a substitute species that meets the goals and • 12 objectives of the mitigation plan, subject to the approval of Sound Transit. 13 • Re-plant area after reason for failure has been identified and corrected (e.g., moisture regime, 14 poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). 15 Remove and control weedy or exotic invasive plants (e.g., Scot's broom, reed canarygrass, 16 Himalayan blackberry, bindweed, purple loosestrife, etc.). Use of herbicides or pesticides within 17 the mitigation area would only be implemented if other measures failed or were considered 18 unlikely to be successful. Mulch rings should be maintained on trees and shrubs, until they 19 become established. 20 Remove trash and other debris. • 21 Prune woody plants as necessary to meet the mitigation plan's goals and objectives (e.g., •

- 22 thinning and removing dead or diseased portions of trees and shrubs).
- Make minor excavations by hand, as needed and after consulting with Sound Transit, to correct
   surface drainage or soils moisture conditions.
- 25 3.5.11 Contingency Plan

Contingency plans describe what actions can be taken to correct site deficiencies. Mitigation goals,
 objectives, and performance standards create a baseline by which to measure if the site is performing as
 proposed and whether or not a contingency plan is necessary. All contingencies cannot be anticipated.
 The contingency plan will be flexible so that modifications can be made if portions of the final design do
 not produce the desired results. Problems or potential problems will be evaluated by a qualified
 wetland ecologist, Sound Transit, the City of Bellevue, WDFW, the Corps, and Ecology. Specific
 contingency actions will be developed, agreed to by consensus, and implemented based on all

- 33 scientifically and economically feasible recommendations.
- 34 Contingency actions may include the following:
- Re-grading or modifying hydrologic sources to address problems with wetland or stream
   hydrology, which may include:

- Changing existing, ditches, watercourses, and/or flow patterns
   Revising grades to direct sheetflow and affect areas of inundation
- Adding in stream features (Large woody debris, weirs, or boulders) to modify/improve
   flow or bank stability
- 5 Additional soil amendments
- 6 Modifying grades to correct too low or too high elevations
- 7 Providing fencing to prevent vandalism or other damage caused by humans
- 8 Establishing a stable wetland and stream hydrology across the site is one of the most critical factors in
- 9 controlling the success of the mitigation site. Sound Transit will closely monitor the effect of the
- 10 planned alterations to surface water flows and determine if the resultant changes in the hydrologic
- 11 regime of the site meet modeled expectations. If not, the alterations to the surface water flows, to the
- 12 planting plan, or to both should be changed prior to plant installation. If desirable wetland hydrology is
- 13 achieved initially but is not found to be stable throughout the monitoring period, additional contingency
- 14 measures may be required once the cause(s) of the instability is determined.
- 15 Sound Transit will implement contingency plans on an as-needed basis. Contingency plans will be
- 16 developed for review and approval by regulatory agencies, as appropriate. In addition, implemented
- 17 contingency plans will be described in the next monitoring report. Contingency plans shall be submitted
- 18 by December 31 of the year in which deficiencies are discovered. A contingency plan, if required, will be
- 19 submitted before construction activities.
- 20 If, during the monitoring program, other maintenance needs are identified as necessary to ensure the
- 21 success of the mitigation Project, they will be implemented, unless generated by third parties or acts of
- 22 nature. These include soil testing and additional soil amendments or the use of broadcast fertilizer if
- approved in advance by the City, the Corps, and Ecology. Specific contingency actions relative to interim
- 24 performance standards are identified in Tables 3-13 and 3-14. These interim standards will be used
- 25 internally by Sound Transit to determine if the sites are on track to meet the main performance
- 26 standards. Reports will only indicate whether the sites are meeting, are not meeting, or are on track to
- 27 meet the main performance standards.
- 28

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action <sup>1</sup>
Forest/ Shrub Wetland Plantings	1	Greater than 80 percent survival of planted stock	None
	1	Total cover 20 percent and at least 10 percent cover by the emergent wetland species planted	None
Emergent Wetland Plantings		Total cover less than 20 percent and less than 10 percent cover by the emergent wetland species planted	Re-evaluate the suitability of the plant species for site conditions and re- establish, if necessary. Consider make- up of cover species and, if functioning, do nothing. Consider use of alternate species. Undertake additional monitoring.
	2	Total cover 40 percent and at least 20 percent cover by the emergent wetland species planted	None
		Total cover less than 25 percent and less than 10 percent cover by the emergent wetland species planted	Re-evaluate the suitability of the plant species for site conditions and re- establish, if necessary. Consider make- up of cover species and, if functioning, do nothing. Consider use of alternate species. Undertake additional monitoring.
Emergent Wetland	5	Total cover by emergent wetland species at least 70 percent	None
Plantings		Total cover by emergent wetland species less than 70 percent	Re-evaluate the suitability of the plant species for site conditions and re- establish, if necessary. Consider make- up of cover species and, if functioning, do nothing. Consider use of alternate species. When invasive species (reed canarygrass) represent greater than 20 percent cover, control of this species in accordance with City of Bellevue "Environmental Best Management Practices" (Ordinance 5680, 6-26-06, §3)

1 Table 3-13 Potential Contingency Actions for the Wetland Mitigat
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Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action <sup>1</sup>
Hydrologic Regime	1 to 5	In forested/shrub wetland areas, saturation within 6 to 16 inches of surface from December through April (normal rainfall years)	Evaluate reasons for failure. Possible solutions include modification of off- site drainage to wetland, revision of planting plan to correlate to the hydrologic regime, or addition of water level control structures to regulate water levels.

1 2 3 Notes:

1 Contingency actions listed in Table 3-9 are only a sub-set. All contingency actions discussed above should be considered and the appropriate actions taken based on an understanding of the actual causes of poor performance.

4

#### 5 Table 3-14 Potential Contingency Actions for the Stream Mitigation Site

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action <sup>1</sup>
Riparian Buffer Plantings	1	Total cover 20 percent and at least 10 percent cover by the emergent wetland species planted	None
		Total cover less than 20 percent and less than 10 percent cover by the emergent wetland species planted	Re-evaluate the suitability of the plant species for site conditions and re-establish, if necessary. Consider makeup of cover species and, if functioning, do nothing. Consider use of alternate species. Undertake additional monitoring.
	2	Total cover 40 percent and at least 20 percent cover by the emergent wetland species planted	None
		Total cover less than 25 percent and less than 10 percent cover by the emergent wetland species planted	Re-evaluate the suitability of the plant species for site conditions and re-establish, if necessary. Consider makeup of cover species and, if functioning, do nothing. Consider use of alternate species. Undertake additional monitoring.
	5	Total cover by emergent wetland species at least 70 percent	None
		Total cover by emergent wetland species less than 70 percent	Re-evaluate the suitability of the plant species for site conditions and re-establish, if necessary. Consider makeup of cover species and, if functioning, do nothing. Consider use of alternate species. When invasive species (reed canarygrass) represent greater than 20 percent cover, control of this species in accordance with City of Bellevue "Environmental Best Management Practices" (Ordinance 5680, 6-26-06, §3)

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action <sup>1</sup>
	1,2,5,10	Area and depth of pools are within 10% of as-built dimensions	None
Pools		Area and depth of pools are less 90% of as-built condition	Determine the cause(s) of sedimentation and address with adjustments to large woody debris structures, installation of additional large woody debris or other measures
		Pool scour is causing bank erosion	Determine the cause(s) of scour and address with adjustments to large woody debris structures or other measures
	1,2,5, 10	Riffle length and substrate size (D <sub>50</sub> ) <sup>2</sup> are within 20 percent of as-built condition	None
Riffles		Riffle length is less than 80 percent of as- built condition	Determine the cause(s) of grade change and address with grading or substrate adjustments
		Riffle substrate size is 20 percent greater or smaller than as-built condition	Determine if the change is impacting stream functions such as benthic production, if so address
Bank Stability	1,2,5, 10	Banks are stable	None
		Erosion on banks is revealing native soils	Determine the cause(s) of erosion and address with greater channel roughness, greater capacity, or decreased slope between structures
	1,2,5, 10	Evidence of surface water connections under high flow exist	None
Wetland Connecti vity		Wetland connection is silted in	Determine the cause(s) of sedimentation and address with adjustments to large woody debris structures , installation of additional large woody debris or other measures
		Wetland connection is eroding	Determine the cause(s) of erosion and address with greater channel roughness, greater capacity, or decreased slope between wetland and stream.

Notes:

1 Contingency actions listed in Table 3-10 are only a sub-set. All contingency actions discussed above should be considered

1 2 3 4 5 and the appropriate actions taken based on an understanding of the actual causes of poor performance. 2 D<sub>50</sub> refers to the average diameter of the average sized or 50<sup>th</sup> percentile piece of gravel or cobble across the wetted channel width.

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