Appendix B
Wetland and Stream Buffer Plan

TUKWILA SOUTH PROJECT FINAL EIS

APPENDIX B
WETLAND AND STREAM BUFFER PLAN

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APPENDIX B

WETLAND AND STREAM BUFFER PLAN

INTRODUCTION

This Wetland and Stream Buffer Plan (Buffer Plan) is intended to accompany the Sensitive Area Master Plan (SAMP, Appendix A to the Final EIS). The purpose of the Buffer Plan is to explain the protective buffers proposed for retained and mitigation wetlands and streams. This includes the characteristics of the buffer and, where warranted, explains how existing or proposed landscape features affect the buffers. Examples of existing features affecting buffers include the Green River levee, areas in agricultural production, existing cleared and in some cases paved areas, and South 204th Street, a rural off-site road. Examples of proposed features affecting buffers are Southcenter Parkway and the relocated Flood Barrier Protection Dike, a utility easement along Orillia Road, and the South Stormwater Ponds. The Buffer Plan also explains off-site protective characteristics and code requirements for protection of wetland and stream functions and values where buffers (or wetlands) extend out of the project boundaries into King County or the City of Kent.

Wetlands, streams, and their buffers are proposed to be placed within Native Growth Protection Areas (NGPAs). These NGPAs are shown for the entire site in Exhibit 1, and individually in following exhibits. The NGPAs are tracts which would protect such areas from future development, except for some public infrastructure such as trails, utilities, and other connecting elements that would be defined in a Development Agreement for the Project between the City of Tukwila and the Project Applicant. The NGPAs were not defined in the Draft EIS, but the areas preserved are the same as analyzed in the Draft EIS and the effect is to define them as specific protective tracts carrying development restrictions.

The NGPAs do not include the flood barrier protection dike slopes because it is a utility, although the toe of that dike is at the boundary of Wetland 10 and some of the created wetland associated with Johnson Creek. Where that occurs, the proposed planting of the dike, its slope, height, and other characteristics are described in terms of buffer function.

The proposed wetland buffers are analyzed throughout the Buffer Plan in comparison to standard buffer requirements under the City of Tukwila's Critical Areas Ordinance based on wetland type, and to Ecology guidance for buffers based on Ecology wetland classification and functional scores for habitat, water quality, and hydrology. Exhibits 1 through 6 and Exhibit 9 show the NGPAs, the placement of the retained or mitigation wetlands and streams, and standard TMC and proposed buffers. Areas of buffer "encroachment" into standard buffers, and areas of proposed buffer are shown in the Exhibits for informational purposes; however the analysis of buffers and their ability to perform protective functions is based on lateral distances and adjoining landscape conditions, not summed buffer area. Where appropriate wetland buffers are also analyzed in comparison to City of Kent and King County wetland classifications and buffer requirements. An example is the onsite Wetland 11 mitigation area, because Wetland 11 extends beyond the mitigation area boundary into King County and the City of Kent. Stream buffers are analyzed in comparison to standard buffer requirements under the City of Tukwila's Critical Areas Ordinance based on Stream Type. Green

River buffers are analyzed in comparison to requirements of the Urban Environment Shorelines designation in the City of Tukwila's Shoreline Master Program.

A.1 WETLAND BUFFER PLAN

Wetland 1 (see Exhibit 3)

Type: Forested wetland

Tukwila Type / Ecology Category: Tukwila Type 2; Ecology Category IV (less than 30 point score for all functions).

Size: 2.11 acres.

Impact Proposed: Construction of Southcenter Parkway would result in 0.26 acres of direct wetland impact.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard Tukwila Municipal Code (TMC)[1], Wetland 1 would be afforded 80 foot-wide buffers.
- Ecology recommends 50-foot buffers for Category IV wetlands adjoining high impact land use and scoring less than 30 points for all functions.[2]

Proposed Buffer as a Tukwila Sensitive Area Master Plan District[3]:

- The eastern edge of Wetland 1 and its adjoining buffer would be affected by the proposed construction and operation of Southcenter Parkway. Based on the standard Tukwila buffer of 80 feet, encroachment of approximately 1.74 acres is proposed along the eastern boundary of the retained wetland (see Exhibit 3). In some areas, the Southcenter Parkway would immediately abut the wetland. Along the northeast boundary of the wetland, the minimum buffer would be 50 feet, where paving would be replaced by native vegetation (see below).
- Under current conditions, areas east of the eastern edge of Wetland 1 do not serve the functions wetland buffers are intended to provide. The existing buffer condition is a cleared, graded and partly paved parking and storage area. This cleared and graded area does not protect the wetland edge from human activities or intrusion, trap sediments, or provide habitat. The western edge of the Southcenter Parkway (eastern edge of the wetland) would be planted with vegetation to provide as much screening function as possible given the road proximity. Approximately 0.11 acres of existing pavement and storage areas would be replaced with native vegetation to a minimum distance of 50 feet from the wetland (see Exhibit 3). A stormwater collection facility would be incorporated into the roadway, eliminating any need for the buffer to provide this function for the wetland on its eastern edge. The Parkway would cause adjacent human activity, but would also likely prevent humans from entering the wetland along its eastern edge.
- The western buffer of Wetland 1 would be preserved in its current forested vegetation condition (Exhibit 3). Buffers along the western side of Wetland 1 would be contained within the approximately 17-acre "South Hillside NGPA" (native growth protection area) proposed along the western slope of the Tukwila South site (see Exhibit 1). The existing forest extends several hundred feet upslope from the wetland to the west, except where the NGPA abuts the western property boundary (Exhibit 3). The NGPA ranges from 50 feet to greater than

[1] Tukwila Municipal Code (TMC) 18.45.080 Wetland Designations, Ratings and Buffers

[2] Ecology. April 2005. Wetlands in Washington State, Volume 2 – Protecting and Managing Wetlands, Appendix 8-E, Rationale for Guidance on Buffers.

[3] TMC 18.45.160 Sensitive Area Master Plan Overlay.

400 feet in width along the west side of Wetland 1. The Hillside NGPA includes Wetlands 17 and 18 and Stream G in addition to Wetland 1 in a contiguous forested slope area.

- The total area of functional buffer provided for Wetland 1 within the South Hillside NGPA is greater than the area of buffer that would be provided under standard Tukwila buffers or Ecology guidance minimum buffers. Buffers that exceed the Ecology guidance minimum recommendations would be provided along the north, west, and south sides of Wetland 1.
- Proposed buffers for Wetland 1 would provide greater protection to the wetland integrity and functions than are provided under existing conditions, and would exceed minimum requirements along all but the eastern side of the wetland. The buffer intrusion by the Southcenter Parkway along the eastern side of the wetland is unavoidable as explained in Appendix A of the Final EIS.

Wetland 2

Wetland 2 would be filled under Alternatives 1 and 2.

Wetland 3

Wetland 3 would be filled under Alternatives 1 and 2.

Wetland 3A

Wetland 3A would be filled under Alternatives 1 and 2.

Wetland 4 (see Exhibit 2)

Type: Forested wetland

Tukwila Type / Ecology Category: Tukwila Type 2; Ecology Category IV (less than 30 point score for all functions).

Size: 0.04 acres.

Impact Proposed: None.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 80 foot-wide buffers.
- Ecology recommends 50-foot buffers for Category IV wetlands adjoining high impact land use and scoring less than 30 points for all functions.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- All of Wetland 4 would be preserved within the North Hillside NGPA (Exhibit 1). The current condition of the NGPA is forested slopes with dense vegetation. The NGPA extends beyond the standard Tukwila or Ecology recommended buffers for Wetland 4 (Exhibit 2).
- No development would occur within 300 feet of the retained wetland to the east, 100 feet to the west and south, and for about 700 feet to the north.
- The approximately 16-acre North Hillside NGPA surrounding Wetland 4 is much larger than a standard Tukwila buffer protection zone or that generated using Ecology guidance.
- The North Hillside NGPA includes Wetlands 15 (partially) and 14, and Streams E1 and E2 in addition to Wetland 4 in a contiguous forested slope area.
- The forested buffers preserved in the NGPA would protect the integrity and functions and values of the wetlands.

Wetlands 4A through 9

Wetlands 4A through 9 would be filled under Alternatives 1 and 2.

Wetland 10 (see Exhibit 4)

Type:

- Existing Condition: Forested, scrub-shrub, and emergent
- Proposed Condition: Forested, scrub-shrub, and emergent

Tukwila Type / Ecology Category:

- Existing Condition: Tukwila Type 1; Ecology Category II (55-point score for all functions; 23-point score for habitat, 16-point score for water quality and hydrology).
- Proposed Condition: Tukwila Type 1; Ecology Category II (62-point score for all functions; 26-point score for habitat, 20-point score for water quality, and 16-point score for hydrology).

Size:

- Existing: 16.38 acres.
- Proposed: 15.52 acres.

Impact Proposed: Construction of the flood barrier protection dike would result in 0.91 acres of direct wetland impact to Wetland 10. About 10.75 acres of Wetland 10 would be enhanced and rehabilitated as partial compensation for wetland impacts associated with the Tukwila South project. Another 0.05 acres of wetland creation would occur adjacent to Wetland 10. The remaining 4.72 acres of Wetland 10 would be preserved in its existing condition.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the mitigated wetland would be afforded 100 foot-wide buffers.
- Ecology recommends 150-foot buffers for Category II wetlands with moderate wildlife function adjoining high impact land use.

Proposed Buffer as a Tukwila STm

- King County requires buffers of at least 125 feet on Category II wetlands, beginning at the boundary of off-site Wetland 11 to the west of the mitigation area.
- Ecology recommends 150-foot buffers for Category II wetlands with moderate habitat scores adjoining high impact land use.

Proposed Buffer:

- The existing condition of the landscape adjoining Wetland 11 is the following:
  - North: The northern boundary of Wetland 11 is comprised of Johnson Creek (ditched), South 204th Street (a rural low-traffic road), and Wetland 10 to the north of South 204th Street. Wetland 10 is farmed wetland.
  - West: Farmed wetland (hayfield) extends at least 125 feet west from the Wetland 11 mitigation area in King County. The area is zoned low density residential. Johnson Creek at its closest point is about 180 feet west of the western wetland mitigation area perimeter of Wetland 11, at the toe of the western slope. The valley floor to Johnson Creek is farmed pasture.
  - South: Farmed wetland (hayfield) extends south from Wetland 11 for an undetermined distance in the City of Kent. The area is zoned single family (SR-1).
  - East: The east fork of Johnson Creek (agricultural drainage ditch) extends along the entire eastern boundary of the mitigation area of Wetland 11. Farmed wetland (hayfield) extends at least 225 feet east of the Wetland 11 mitigation area in the City of Kent. The northeastern portion of the farmed area is in King County Agricultural Preservation with an underlying zoning of agricultural 1 unit per 10 acres. The southeastern portion of the farmed area is zoned single family (SR-1)
- The future condition of the landscape adjoining Wetland 11 is outside of the project area and the applicant's ownership. Wetland 11 within the project boundary would be placed within an approximately 21-acre Wetland 11 NGPA (Exhibits 1 and 5). Protection of the Wetland 11 mitigation area outside of the project boundaries would occur through jurisdictional requirements in Kent and King County, and through the King County Agricultural Preservation protection for the northeast portion of Wetland 11.

  The City of Kent's Ordinances (KMC Chapter 11.06, Critical Areas) includes a City Council determination, through its various capital improvement plans, to implement (ongoing and in the future) "Johnson Creek Watershed Restoration and Flood Protection" (in Recitals, Section L). Among other provisions of this determination is *"…the* [Johnson Creek] *watershed contains some large wetlands in need of restoration. The goal of the project is to complete a watershed based plan to address stormwater, habitat and restoration. Benefits include: flood remediation, water quality, fish and wildlife habitat, open space, stream and wetland restoration."* Wetland 11 is a wetland hundreds of acres in size adjacent to Johnson Creek and a critical element of the City of Kent's planning for wetland restoration in this watershed. The intended future goal of the City of Kent for the Wetland 11 is continued restoration for portions within its jurisdiction, not redevelopment which could encroach on the Tukwila South mitigation area portion of Wetland 11 (east and south off-site areas). The KMC also indicates that the Johnson Creek Watershed Restoration and other projects it lists *"…will serve to protect the functions and values of critical areas in Kent, and will, either*

specifically or generally, preserve or enhance habitat for all life stages of anadromous fish. As this record shows, the city council has been and continues to be committed to improving, enhancing, and protecting critical areas of the city." KMC 11.06.020 (Purpose and Intent) says *"The primary goals of wetland regulation are to avoid wetland impacts; to achieve no net loss of wetland function and value…to provide levels of protection that reflect the sensitivity of individual wetlands and the intensity of proposed land uses; and to restore and/or enhance existing wetlands, where possible."* Existing and ongoing agricultural activities are exempt from regulation, so the existing agricultural use of off-site Wetland 11 and its buffer in the City of Kent could continue. However, any proposed development within Wetland 11 and its buffer in the City of Kent would regulated, and would be contrary to the city's Johnson Creek Watershed Restoration objectives described above. KMC 11.06.610 (Avoiding Wetland Impacts) prohibits regulated activities in Category 1 wetlands except where the impact *"…is both unavoidable and necessary as described above, or that all reasonable economic uses are denied."* KMC 11.0-6.610.A says *"Where water-dependent activities are proposed, unavoidable and necessary impacts may be permitted where no reasonable alternatives exist which would not involve wetland impacts; or which would not have less of an adverse impact on a wetland; and that would not have other significant adverse environmental consequences."* Under the variance process, KMC 11.06.100 (Variances) requires "The proposed variance would preserve the functions and values of the critical area" and that "The proposed variance would not adversely affect properties surrounding the subject site." It is clear through inclusion of Wetland 11 in the Johnson Creek Watershed Restoration objectives of the city, the prohibition against regulated activities in Category 1 wetlands in the city, and the prohibition of a variance that would adversely wetland functions and values and/or adjacent properties (i.e., the functions and values of the wetland mitigation area in the Tukwila South Project), that plans and ordinances in the City of Kent would protect the Tukwila South Wetland 11 mitigation area's buffer into the future.

King County's Ordinances (KCC 21A.24, Critical Areas Ordinance) also prohibit development within off-site Wetland 11 or its buffer. KCC 21A.24.045 (Allowed alterations) limits construction of new structures to "*farm residences in grazed or tilled wet meadows" and "non-residential farm structures"* only on sites *"predominantly used for the practice of agriculture;"* in *"compliance with an approved farm management plan in accordance with KCC 21A.24.051;"* where *"no additional impervious surface are is created waterward of any existing impervious areas;"* where *"the area was not used for crop production;"* and where the structure is *"higher in elevation and no closer to the critical area than its existing position,"* among other limitations. The underlying zoning of the area west of the Tukwila South Project Wetland 11 mitigation area (containing offsite Wetland 11) in King County in low density residential. The KCC code restrictions applied to this zoning would only allow new structures with an agricultural purpose and no added impacts or infringement on Wetland 11. KCC 21A.24.070 (Alteration Exception) prohibits "nonlinear alterations" in wetlands; in essence this is a prohibition against variances for development other than necessary public linear infrastructure. It is clear that ordinances in King County are intended to and would protect the functions and values of the Tukwila South Wetland 11 mitigation area

through preventing alteration beyond continued farming use. No encroachment of other development is allowed.

The future buffer and landscape conditions around the proposed Wetland 11 mitigation area would be the following:

- North: Conditions along the northern boundary for Johnson Creek and South 204th Street would not change. South 204th Street would be retained and would continue to separate Wetland 10 from Wetland 11. Wetland 10 on the north side of South 204th Street (a rural road), would be rehabilitated and enhanced, as described in the Wetland Mitigation Plan, Exhibit 3 to Appendix A of the Final EIS. This amount of protection for the on-site mitigated portion of Wetland 11 would exceed Tukwila standard buffer requirements and Ecology guidance, but for the unavoidable retained presence of off-site rural South 204th Street which passes through the buffer.
- West: The mitigation area of Wetland 11 would be protected by the at least 125 feet of agricultural (hayfield) wetland extending east into King County, plus the 125-foot buffer that King County requires for a King County Category II wetland, for a total protected distance of at least 250 feet. Although much or all of this area is farmed hayfields at present, it could not be developed and infringe on Wetland 11's functions and values due to Critical Areas Ordinance provisions in King County's code that are described above. Any off-site development proposals would be required to take into account any potential impacts to the compensatory mitigation area and be restricted to the limitations of KCC 21A.24.045. It is unlikely that off-site activities would be approved that had the net potential to adversely effect Wetland 11. Any off-site development proposals would be required to take into account any potential impacts to the compensatory mitigation area. This amount of protection for the on-site mitigated portion of Wetland 11 would exceed Tukwila standard buffer requirements and Ecology guidance.
- South: The mitigation area of Wetland 11 would be protected by the extension of Wetland 11 off-site to the south (to an unknown distance), plus the 100-foot buffer that Kent requires for a Class 1 wetland, for a minimum protected distance of over 100 feet. Although much or all of this area is farmed hayfields at present, it could not be developed to the underlying zoning due to Critical Areas Ordinance provisions in Kent's code and Kent's Johnson Creek Watershed Restoration objectives, as described above. Any off-site development proposals would be required to take into account any potential impacts to the compensatory mitigation area. It is unlikely that off-site activities would be approved that had the potential to adversely effect Wetland 11. It is likely this amount of protection for the on-site mitigated portion of Wetland 11 would exceed Ecology guidance (since the wetland likely extends more than 50 feet south offsite and Kent requires a 100-foot buffer), and would exceed Tukwila standard buffer requirements.
- East: The ditched east fork of Johnson Creek would remain unchanged along the eastern boundary. The mitigation area of Wetland 11 would be protected by the ditch and by the at least 225 foot extension of Wetland 11 off-site to the east, plus the 100 foot buffer that Kent requires for a Class 1 wetland, for a minimum protected distance of over 325 feet.

Although much or all of this area is farmed at present, it could not be developed (to the south) to the underlying zoning due to provisions of the Critical Areas Ordinance in Kent's code and Kent's Johnson Creek Watershed Restoration objectives, as described above. To the north, redevelopment in the City of Kent is prohibited under King County Agricultural Preservation restrictions. Any off-site development proposals would be required to take into account any potential impacts to the compensatory mitigation area. It is unlikely that off-site activities would be approved that had the potential to adversely effect Wetland 11. This amount of protection for the on-site mitigated portion of Wetland 11 would exceed Tukwila standard buffer requirements and Ecology guidance.

Wetland 13

Wetland 13 would be filled in its entirety under Alternatives 1 and 2.

Wetland 14 (see Exhibit 2)

Type: Scrub-shrub wetland

Tukwila Type / Ecology Category: Assumed Tukwila Type 2; Ecology Category IV (less than 30 point score for all functions).

Size: 0.01 acres.

Impact Proposed: None.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 80 foot-wide buffers.
- Ecology recommends 50-foot buffers for Category IV wetlands adjoining high impact land use and scoring less than 30 points for all functions.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The entirety of Wetland 14 and its buffer would be placed into the approximately 16-acre North Hillside NGPA and left in its current condition (Exhibits 1 and 2). The current condition of the NGPA is forested slopes with dense vegetation.
- The NGPA extends about 80 feet to hundreds of feet beyond Wetland 14 (Exhibit 2).
- No development would occur within 80 feet of the wetland.
- The forested buffers provided exceed Tukwila standard requirements and Ecology guidance.

Wetland 15 (see Exhibit 2)

Type: Forested wetland

Tukwila Type / Ecology Category: Tukwila Type 2; Ecology Category III (39-point score for all functions; 19-point score for habitat; 10-point scores for water quality and hydrology).

Size: 0.99 acres (on-site). The majority of Wetland 15 is off-site in the City of SeaTac.

Impact Proposed: None.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 80 foot-wide buffers.
- Ecology recommends 80-foot buffers for Category III wetlands adjoining high impact land use and scoring less than 20 points for habitat.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The onsite portion of Wetland 15 and the onsite portions of its buffer would be placed into the approximately 16-acre North Hillside NGPA and left in their current condition. The current condition of the NGPA is forested slopes with dense vegetation.

- The NGPA extends about 80 feet to over 200 feet onsite beyond Wetland 15 (Exhibit 2), and also includes Streams E1, E2, E3 and Wetlands 4 and 14, in addition to a portion of Wetland 15.
- No development is proposed within 80 feet of the wetland under Alternatives 1 and 2.
- The averaged forested buffers provided would exceed Tukwila standard requirements and Ecology guidance, and match Tukwila standard requirements and Ecology guidance at their narrowest part.

Wetland 16

Wetland 16 would be excavated in its entirety under Alternatives 1 and 2.

Wetland 17 (see Exhibit 3)

Type: Forested wetland

Tukwila Type / Ecology Category: Tukwila Type 3; Ecology Category III (48-point score for all functions; 15-point score for habitat; 12-point score for water quality; and 22-point score for hydrology).

Size: 0.05 acres.

Impact Proposed: None.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard Tukwila Municipal Code (TMC), the wetland would be afforded 50 foot-wide buffers.
- Ecology recommends 80-foot buffers for Category III wetlands adjoining high impact land use and scoring less than 20 points for habitat.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The entirety of Wetland 17 and all onsite portions of its buffer would be placed into the approximately 17-acre South Hillside NGPA and left in its current condition (Exhibits 1 and 3). The current condition of the NGPA is forested slopes with dense vegetation.
- The NGPA extends from about 40 feet (where the NGPA is at the limits of the Project boundary) to hundreds of feet beyond Wetland 17 (Exhibit 3).
- No development is proposed within about 220 feet of the wetland under Alternatives 1 and 2.
- The forested buffers provided would exceed Tukwila standard requirements and Ecology guidance.

Wetland 18 (see Exhibit 3)

Type: Emergent wetland

Tukwila Type / Ecology Category: Tukwila Type 3; Ecology Category IV (23-point score for all functions; 18-point score for habitat; 3-point score for water quality; and 2-point score for hydrology).

Size: 0.1 acres

Impact Proposed: None.

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 50 foot-wide buffers.
- Ecology recommends 50-foot buffers for Category IV wetlands adjoining high impact land use and scoring less than 20 points for habitat.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The entirety of Wetland 18 and its buffer would be placed into the approximately 17-acre South Hillside NGPA and left in its current condition (Exhibits 1 and 3). The current condition of the NGPA is forested slopes with dense vegetation.
- The NGPA extends about 60 feet to hundreds of feet beyond Wetland 18 (Exhibit 3).
- No development could occur within 60 feet of the retained wetland under Alternatives 1 and 2.
- The forested buffers provided would exceed Tukwila standard requirements and Ecology guidance.

Created Wetlands: Johnson Creek Mitigation Area (see Exhibit 4)

Type Proposed: Created forested, scrub-shrub, emergent wetland

Tukwila Type / Ecology Category: Tukwila Type 2; Ecology Category II (69-point score for all functions; 19-point score for habitat; 24-point score for water quality; and 26-point score for hydrology).

Size: 1.56 acres

Impact Proposed: N/A

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 80-foot wide buffers.
- Ecology recommends 100-foot buffers for Category II wetlands adjoining high impact land use and scoring less than 20 points for habitat.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The entirety of the Johnson Creek created wetlands and its buffer would be placed into the approximately 21-acre Wetland 10 NGPA that includes Wetland 10, the created wetland, and restored Johnson Creek (Exhibits 1 and 4). The flood protection dike along the north boundary of this area is a utility excluded from the NGPA. The future landscape condition of the levee, and the limited role it would play in protecting wetland functions, is described below.
- North:
    - Vegetated buffer would be provided along the margins of the created wetland where it abuts the new flood barrier protection dike to the north, (see Figure 5 in the Wetland Mitigation Plan, Exhibit 3 to Appendix A of the Final EIS).
    - The slopes of the new flood barrier protection dike (north of Johnson Creek) would be 2:1 east of the south stormwater pond, and 3:1 along the south stormwater pond. The crest of the dike would be approximately 19 feet above the created wetlands.
    - The flood barrier protection dike slope would be planted with low native shrubs and small native trees. Planting restrictions to 4-inch stems are required on the flood barrier protection dike. The plantings would be about 40 feet (east of the ponds) to 50 feet (along the ponds), measured from the toe of the dike slope to the crest of the southern facing slope.
    - To the east of the south ponds, another approximately 30 feet of separation from development beyond the planted dike slope would occur from the southern crest of the dike, across an approximately 15-foot maintenance access at the top of the dike, down to the northern toe of the dike. Development north of the flood protection dike would be set back from the dike, further separating Wetland 10 from development activities. The northern slope, facing the proposed development, would also be planted with native vegetation limited to 4-inch or smaller stems.

- The total development setback along the northeast portion of the wetland would be approximately 70 feet.
- Although the habitat value of the northeast buffer is limited because it is bounded by the flood barrier protection dike, the entire planted dike would serve several protective functions. These include protecting the wetlands from adverse impacts during site development; preserving the wetland edge; screening the wetland from human disturbance; and preventing human intrusion. The dike would create no adverse water quality conditions or impacts influencing the created wetlands associated with restored Johnson Creek, and would be constructed and planted to prevent erosion into the wetland. The dike would separate the created wetland from developed area stormwater runoff.
- The 3:1 slopes of the new flood protection dike where it adjoins the south stormwater pond would be planted with low shrubs and small trees. Planting of the dike is restricted to 4 inch or smaller stems. These plantings and the dike would protect the integrity of the compensatory mitigation areas and, with the exception of some habitat functions, the water quality and hydrologic functions provided by the wetlands.
- The storm ponds would be over 850-feet-wide (from the southern crest of the dike at the created wetland to the northern toe of the pond slope), providing approximately 900 feet of separation between the wetland and developed areas.
- Separation of the created wetlands from development to the north would range from about 70 feet to 900 feet, although the separation includes the flood barrier dike and stormwater ponds to the west. The separation is less than both Tukwila standard buffer widths and Ecology guidance recommendations. The dike in this area imposes a barrier to human intrusion and impacts, which adds protective value, but also inherently limits support of habitat functions in the wetland. This limitation is reflected in the moderate habitat score forecast for the created wetland in this area.

- South:
  - The southern border of the Johnson Creek mitigation area would abut the 2:1 slope up to South 204th Street, a rural low use road.
  - The slope would rise above the created wetland approximately 3 feet at the west end to approximately 12 feet at the east end.
  - The slope would be planted with deciduous and coniferous trees in an area approximately 25 feet wide to the southern boundary of the project at South 204th Street.
  - The planted boundary would shield the area from human intrusion, preserve the wetland edge, prevent erosion from any sheet runoff from offsite South 204th Street to Johnson Creek, and protect water quality.
  - The entire off-site area south of South 204th Street in the City of Kent is zoned Agricultural 1 unit per 10 acres, and is under King County Farmland Preservation, which would prevent impacts to the created wetland from future offsite redevelopment.

Created Wetlands: Green River Off-channel Habitat Area (see Exhibits 6 and 7)

Type Proposed: Created scrub-shrub, emergent wetland (see Figure 7 in the Wetland Mitigation Plan, Exhibit 3 in Appendix A of the Final EIS).

Tukwila Type / Ecology Category: Tukwila Type 2; Ecology Category II (56-point score for all functions; 22-point score for habitat; 12-point score for water quality; and 22-point score for hydrology).

Size: 1.45 acres

Impact Proposed: N/A

Tukwila Standard Buffer / Ecology Guidance Buffer:

- Under standard TMC, the wetland would be afforded 80-foot wide buffers.
- Ecology recommends 150-foot buffers for Category II wetlands adjoining high impact land use and scoring 20 to 28 points for habitat.

Proposed Buffer as a Tukwila Sensitive Area Master Plan District:

- The entirety of the Green River created wetlands and its buffer would be placed into the approximately 4-acre Green River NGPA that includes the created wetlands and Green River fisheries habitat mitigation area. The wetlands would extend from approximately elevation 9 feet to 16 feet (see Figure 7 in the Wetland Mitigation Plan, Exhibit 3 in Appendix A in the Final EIS).
- Upland scrub-shrub (shrubs and small trees) vegetation would be planted on the 3:1 slope above the created wetland to a minimum width of 50 feet (measured to the crest of the Green River levee to the west or the South 200th Street bridge approach to the south). The levee would rise approximately 20 feet above the created wetland.
- Additional separation of the created Green River wetland from development would be afforded by the additional approximately 15 feet of levee crest (also serving maintenance access) and the western-facing levee slope, for a total separation of about 90 feet between the created wetland and proposed development. Additional building setbacks from the toe of the levee would be provided.
- Although the habitat value of the buffer is limited because it is bounded by the 3:1 (or lesser) Green River levee slope, the entire planted levee would serve several protective functions. These include protecting the wetlands from adverse impacts during site development; preserving the wetland edge; screening the wetland from human disturbance; and preventing human intrusion. The levee would create no adverse water quality conditions or impacts influencing the created wetlands associated with restored Johnson Creek, and would be constructed and planted to prevent erosion into the wetland. The levee would separate the created wetland from developed area stormwater runoff.
- The separation of the created wetland from development is approximately equal to Tukwila standard buffers for a Type 2 wetland, but less than the 150-foot recommended Ecology buffer. The Green River levee in this area imposes a barrier to human intrusion and impacts, which adds protective value, but also inherently limits support of habitat functions in the wetland. This limitation is reflected in the habitat score forecast for the created wetland in this area.

A.2 STREAM BUFFER PLAN

Northern Basin

Stream E

Stream E is a ditched stream located in the northern drainage basin (Exhibit 2). While no fish have ever been reported in the stream, and it is permanently isolated from known fish-bearing waters by the City's pumped stormwater system, the stream is considered fish bearing for purposes of this analysis and was classified as a Type 2 watercourse under the City of Tukwila's rating system (TMC 18.45.100.A). Type 2 watercourses require a 100-foot wide buffer under standard TMC provisions (TMC 18.45.100.D). Existing riparian vegetation along the 3,589-foot long on-site stream channel consists primarily of a mixture of managed turf, pasture, and agricultural field. A native shrub layer with a mixed deciduous and coniferous forest tree canopy layer is found along the west side of the channel where it follows the toe of the east-facing slope.

Following construction of Southcenter Parkway and other infrastructure, a 782-foot section of channel would remain on-site along the toe of the east-facing slope. The entire section of channel that would remain is currently forested along the west side and contains unmanaged turf and field grasses on the east side. The forest along the west side would be protected within the approximately 16-acre North Hillside NGPA extending out between 250 to 500 feet from the creek (Exhibits 1 and 2). The buffer along the east side of Stream E would be planted to create a more functional riparian buffer under a planting plan to be developed once the alignment of Southcenter parkway has been finalized. The crescent shaped area between the remaining portion of the channel and the Parkway alignment is expected to range between 0 and 80 feet in width (Exhibit 2).

The final condition of Stream E would provide superior water quality protection compared to existing conditions due to elimination of agricultural herbicides, pesticides, and fertilizers currently used in the headwater area, removal of farm animal use of the channel, elimination of almost 2,000 feet of manmade agricultural channel that currently contains no riparian buffer and leads to summer water temperatures lethal to salmonids (28.5 ^{o}C or 87 ^{o}F), elimination of direct Frager Road surface discharge, and new plantings along 750 feet of the channel where nothing but field grasses currently exist. The retained 250 to 500 foot buffer west of Stream E would provide greater than 100 percent of all natural functions and values. While the newly planted buffer east of Stream E would provide better conditions than those found currently, it would be limited to a maximum of about 80-feet in width. Traffic on Southcenter Parkway would be located within approximately 15 to 90 feet from the stream channel. However, while Stream E has been designated fish-bearing, no fish have been reported in the channel despite a number of surveys. Thus traffic related noise and visual disturbances would have little if any affect on fisheries resources. Although much of Stream E has no functional buffer along its east side under current conditions, it does provide some limited habitat for other species such as amphibians. The increased noise and disturbance from the Southcenter Parkway proximity would inhibit some wildlife use which would be partially offset by an increase in native vegetation and protection of water quality in the eastern riparian area. The limited but enhanced benefits from the narrow buffer proposed for the east side of the channel, together with enhanced surface water collection and treatment facilities for the area, and the 300 to 500 foot buffers on the west side of the channel would all protect water quality in the stream. Ultimately the quality of this water is most important when it is delivered to high use fish habitat in the Green River.

While protection of water quality in Stream E is important, fish habitat mitigation for the project would be concentrated along Johnson Creek and the Green River where regional studies conducted by the WRIA 9 committee have identified the highest potential for benefit to salmonids. New and enhanced buffers are proposed along both watercourses. Watercourse impacts are mitigated at a ratio in excess of 4:1 at locations which maximize salmonid off-channel rearing habitat benefits and meet Lower Green River Watershed conservation goals as identified in the various WRIA 9 commissioned studies.

Stream E1

Stream E1 flows down a steep (35%) east-facing slope between I-5 and the driving range (Exhibit 2). The stream begins as groundwater seeping from an exposed aquifer about 300 feet up the slope from the floodplain and drains to Stream E. This natural stream is not considered fish bearing due to the very steep gradient of the channel and was classified as a Type 3 watercourse under the City of Tukwila's rating system. Type 3 watercourses require a 80-foot wide buffer under standard TMC provisions. Riparian vegetation consists of a native shrub layer with a moderate-aged, dense, mixed deciduous and coniferous forest tree canopy layer.

Stream E1 and its buffer would not be affected by the proposed development. Stream E1 would be encompassed in the approximately 16-acre fully forested North Hillside NGPA with buffers ranging from a minimum of 85 feet (to the Parkway) to over 1,000 feet laterally (Exhibits 1 and 2). With buffer averaging, the overall proposed buffer width of Stream E1 would greatly exceed City of Tukwila standard buffer requirements.

Stream E2

Stream E2 flows down the steep (25%) east-facing slope between I-5 and the driving range and drains to Stream E (Exhibit 2). The stream is larger and begins from groundwater seeps higher on the slope than Stream E1. At the confluence with Stream E, the gradient is less than 10 percent in some areas and could potentially harbor fish. The rest of the stream is not considered fish bearing due to the steep channel gradient and general lack of habitat. With the exception of the area near the mouth, this natural stream was classified as a Type 3 watercourse under the City of Tukwila's rating system. Type 3 watercourses require an 80-foot wide buffer under standard TMC provisions. Riparian vegetation consists of a native shrub layer with a moderate-aged, dense, mixed deciduous and coniferous forest tree canopy layer.

Stream E2 and its buffer would not be affected by the proposed development. Stream E2 would be preserved in the approximately 16-acre fully forested North Hillside NGPA with buffers ranging from a minimum of 80 feet (to the Parkway) to over 1,000 feet laterally (Exhibits 1 and 2). With buffer averaging, the overall proposed buffer width of Stream E2 would greatly exceed City of Tukwila standard buffer requirements.

Stream E3

Stream E3 emanates from Wetland 15 which in turn is fed by groundwater seeps on the east-facing slope east of I-5 (Exhibit 2). The drainage was historically collected high on the hill and used for drinking water by early settlers. Virtually the entire stream channel downstream of Wetland 15 has been eliminated as the water was piped to homes and irrigation ponds. An isolated 120-foot portion of the channel exists immediately downstream of the wetland. Flow travels via long culverts and drainage pipes to Stream

E. The remaining channel is very shallow (typically less than 1 inch deep) and 1 to 3 feet wide. The stream is not considered fish bearing due to long-term isolation from fish-bearing waters and general lack of habitat. The channel was classified as a Type 3 watercourse under the City of Tukwila's rating system. Type 3 watercourses require an 80-foot wide buffer under standard TMC provisions. Existing riparian vegetation consists of a Himalayan blackberry shrub layer with a sparse deciduous hardwood forest tree canopy layer. The adjacent land use is a mixture of disturbed native forest and pasture.

Stream E3 would not be affected by the proposed development but a small corner (0.02 acres) of the buffer would be truncated by the relocated S. 178th Street alignment. The truncated portion of the buffer currently consists of a dirt road and blackberry bushes. Only about 30 feet of Stream E3 is on-site and it would be preserved in the approximately 16-acre fully forested North Hillside NGPA with buffers ranging from a minimum of 65 feet (to the relocated S. 178th Street) to over 1,000 feet laterally (Exhibits 1 and 2). With buffer averaging, the overall proposed buffer width of Stream E3 would greatly exceed City of Tukwila standard buffer requirements.

Stream H

Stream H consists of a natural but isolated approximately 600-foot-long channel running down the steep northeast-facing slope behind the Levitz building on Southcenter Parkway (Exhibit 9). The channel is fed by groundwater seeps, road runoff, and parking lot drainage. Drainage flows northeast to the toe of the slope where it is picked up in a regional storm drain system off-site. The channel ranges from about 2 to 3 feet wide at the OHWM and has an average slope of about 35 percent. The stream is not considered fish bearing due to long term isolation from fish-bearing waters, steepness, and general lack of habitat. It was classified as a Type 3 watercourse under the City of Tukwila's rating system. Type 3 watercourses require an 80-foot wide buffer under standard TMC provisions. Existing riparian vegetation consists of a Himalayan blackberry shrub layer with a dense, moderate-aged, deciduous hardwood forest tree canopy layer. The adjacent land use is native forest.

Stream H and its buffer would not be affected by the proposed development. Stream H would be preserved in the 7-acre fully forested Stream H NGPA with buffers ranging from a minimum of around 5 feet (to the Levitz parking lot) to about 500 feet laterally (Exhibits 1 and 9). The proposed buffer width of Stream H (on site) would greatly exceed City of Tukwila standard buffer requirements.

Central Basin

Stream G

Stream G, located in the central basin, is a natural but isolated 400-foot-long channel running down the steep east-facing slope east of where Orillia Road passes under I-5 (Exhibit 3). The channel is fed by groundwater seeps at several locations along the slope. Drainage flows east to a storm drain system which is piped approximately 1,100 feet south and east to an outfall on the Green River near RM 16.6. The channel ranges from 2 to 5 feet wide at the OHWM, is highly confined, and has an average slope of about 25 percent. Water depth at the OHWM ranges from about 0.5 to 2 inches. Substrates consist of gravels and cobbles. The stream is not considered fish bearing due to long term isolation from fish-bearing waters, steepness, and general lack of habitat. It was classified as a Type 3 watercourse under the City of Tukwila's rating system. Type 3 watercourses require a 80-foot wide buffer under standard TMC

provisions. Riparian vegetation consists of a native shrub layer with a dense, moderate-aged, mixed deciduous and coniferous forest tree canopy layer. The adjacent land use is native forest.

Stream G would not be affected by the proposed development but a small corner (0.03 acres) of the buffer would be truncated. This area is currently paved asphalt. Stream G would be preserved in the approximately 17-acre fully forested South Hillside NGPA with buffers ranging from a minimum of around 60 feet (to a future development area) to over 1,000 feet laterally (Exhibits 1 and 3). With buffer averaging, the overall proposed buffer width of Stream G would greatly exceed City of Tukwila standard buffer requirements.

Southern Basin

Ditch A

Ditch A would be filled in its entirety under Alternatives 1 and 2.

Ditch B

Ditch B would be filled in its entirety under Alternatives 1 and 2.

Stream C

Stream C would be filled in its entirety under Alternatives 1 and 2.

Stream D

Stream D would be filled in its entirety under Alternatives 1 and 2.

Johnson Ditch (Johnson Creek)

Johnson Ditch (WRIA 09-0038), in the southern basin of the project site, is currently maintained by King County Drainage District #2 as an agricultural drainage ditch. The ditch was constructed sometime before 1917, as meeting records from the Board of Drainage Commissioners show maintenance expenditures beginning in the fall of 1917[4]. General Land Office (GLO) survey maps from 1863 show pre-settlement floodplain in this area was primarily wetland with numerous natural springs and no defined tributary to the Green River[5]. The area was described as "an extensive cranberry marsh" in 1863 by GLO surveyors.

Under existing conditions, perennial drainage is collected along S. 204th Street from adjacent agricultural fields and pastures off-site, as well as from hillside seeps northward past S. 200th Street and southward off-site beyond S. 212th Street[6]. The ditch currently diverges to the north away from S. 204th Street on its path to the Green River where it enters via a piped outfall near RM 17.4. The channel has been classified as a Type 2 watercourse under the City of Tukwila's rating system and is know to have contained

[4] Resolutions passed at the November 1, 1917 special meeting of the Board of Drainage Commissioners of Drainage District Number Two included $960 for construction funding and $1,000 for a maintenance fund. Claims allowed at the December 7, 1917 board meeting include four amounts to three different people for "cleaning ditch."

[5] Collins B. and A. Sheikh. 2004. Historical aquatic habitats in the Green and Duwamish River Valleys (May 17, 2004 Draft). Report to King County Dept. of Nat. Res. and Parks, Seattle, WA. 77p.

[6] Daley Design. 2001. Amended report and habitat assessment of Johnson Creek drainage system. Consultant's report prepared for Mario Segale. February 14, 2001. 3pp plus appendix.

salmonids in the past. Type 2 watercourses require a 100-foot wide buffer under standard TMC provisions.

The presence of riparian vegetation depends on the last time the ditch was cleaned and dredged. The most recent dredging took place in August 2001, thus several years' growth of willow, Himalayan blackberry, and dense reed canarygrass cover most of the banks in a narrow corridor between two crop fields. South 204th Street immediately abuts the right bank of the creek for about 1,100 feet along the western end.

Under the proposed action, approximately 1,346 feet of the existing ditched channel would be eliminated and replaced with a new channel a short distance to the south (See Figure 4 in the Fisheries Mitigation Plan, Exhibit 2 in Appendix A of the Final EIS). The new Johnson Creek channel would have a meandering stream designed to provide summer rearing and winter refuge habitats.

The northern buffer along Johnson Creek would be increased from an average of about 20 feet under existing conditions to an average of about 90 feet (range 70 to 110 feet) under the proposed conditions. The southern buffer would be increased from about 20 feet to an average of about 45 feet (range 25 to 65 feet). The buffer would be planted with native species though portions of the dike would be subject to Army Corps levee planting restrictions (See Figure 5 in the Fisheries Mitigation Plan, Exhibit 2 in Appendix A of the Final EIS).

The variability in buffer width would be caused by stream meanders constructed within the Johnson Creek restoration area. The creek meander zone would be approximately 50 feet wide and the creek would be approximately 10 feet wide. To the south and north, the buffers would be the following:

- To the south, the outer edge of the meander zone would abut the 25-foot wide, 2:1 slope leading up to South 204th Street (Exhibit 4). The riparian area on the terrace between the OHWM of the channel and the toe of the 2:1 slope (0 to 40 feet wide) would be created wetland planted with palustrine emergent, scrub-shrub, and forested native trees and shrubs designed to enhance riparian productivity and improve shading. The 2:1 slope up to South 204th Street would be planted with deciduous and coniferous trees to provide shading and screening functions to the creek and riparian wetland habitat (See Johnson Creek Restoration Planting Plan, Sheet 5 in the Wetland Mitigation Plan, Exhibit 3 to Appendix A of the Final EIS). The total buffer to the south would range from about 25 feet to about 65 feet. South 204th Street is a two-lane rural road with low level traffic. Land use adjacent to South 204th Street is zoned Agricultural 1 unit per 10 acres by the City of Kent. The off-site area south of South 204th Street has King County Farmland Preservation protection from future redevelopment. An approximately 900 foot long row of conifers are planted adjacent to the south side of S. 204th Street and would be within 60 feet of the new stream channel at its closest location.
- To the north, the terraced meander zone (0 to 40 feet) would be planted the same as described above. The meander zone would end at the toe of the flood protection barrier dike. The barrier dike extends north at a 2:1 slope for approximately 40 feet from the terrace. The top of the flood protection barrier dike would be approximately 15 feet wide and flat, with a 2:1 slope down the north side of the dike extending another approximately 15 feet. Planting on the

dike side slopes and top is limited under ACOE regulations. On the sideslopes, the dike would be planted with low shrubs and small trees having a maximum stem size of 4 inches. Willow, red-osier dogwood and small brush or forbs are proposed (DEIS, Appendix E). The top of the dike would be planted with whatever the ACOE may allow for maintenance access to the levee, which may restrict it to low shrubs or even mowed grass. The most functional portions of the 70 to 110 foot area between Johnson Creek and the development would be the 40 to 80 foot riparian zone between the creek and the top of the dike (See Figure 5 in the Fisheries Mitigation Plan, Exhibit 2 in Appendix A of the Final EIS). The top of the dike and its northern slope would provide another 30 feet of planted separation between the development and the creek. Along part of Johnson Creek, the northern buffer and creek would be separated from development by another approximately 800 feet due to the south basin stormwater ponds along the northern boundary of Johnson Creek (for a total of 870+ to 910+ feet of separation). The dike in this area would be sloped at 3:1. Urban development is planned on the north side of the flood protection barrier dike and stormwater pond.

The entire restored Johnson Creek reach would be preserved within the approximately 21-acre Wetland 10 NGPA, which also includes Wetland 10 and wetlands created in association with Johnson Creek (Exhibits 1 and 4).

Ditch J1

Ditch J1 would be filled in its entirety under Alternatives 1 and 2.

Stream J2

Stream J2 consists of a highly disturbed natural watercourse (Exhibit 4). Drainage from springs on the hillside to the west feeds the small watercourse, which currently meanders across the southwestern portion of the site east of Orillia Road and north of S. 204th Street. Historical photos show the watercourse has moved or has been moved into various locations as land use has changed. The area is currently used as pasture for cattle, and the watercourse runs almost due south to Johnson Creek. Channel banks are trampled as cattle frequently access the creek for water. The channel is 2 to 4 feet wide and about 1 foot deep at the OHWM. Flow is believed to be perennial, and it is possible that fish may access the creek on occasion during the winter when water depths provide suitable conditions. It has been classified as a Type 2 watercourse under the City of Tukwila's rating system. Type 2 watercourses require a 100-foot wide buffer under standard TMC provisions. While very little riparian vegetation is found on the lower portion of the site, the east-facing hillside surrounding the spring source and upper few hundred feet of channel is densely covered with mature native shrubs and moderate-aged deciduous trees. Adjacent land use is pasture.

Stream J2 would not be affected by the proposed development (Exhibit 4). The portion of the existing buffer that consists of native trees and shrubs would also remain untouched. The buffer along the portion of channel where it meanders through the existing pasture (Wetland 10) would be regraded and planted per the Wetland Mitigation Plan (Exhibit 3 in Appendix A of the Final EIS). The plan would create the approximately 21 acre Wetland 10 NGPA around Stream J2 with buffers ranging from about 200 feet to over 700 feet to the nearest developed area. The Wetland 10 NGPA also includes Wetland 10, wetlands created in association with Johnson Creek, and Johnson Creek

(Exhibits 1 and 4). In combination with removal of the cattle from this area, the proposed wetland enhancement project would increase the overall functional benefit of the riparian area adjacent to Stream J2.

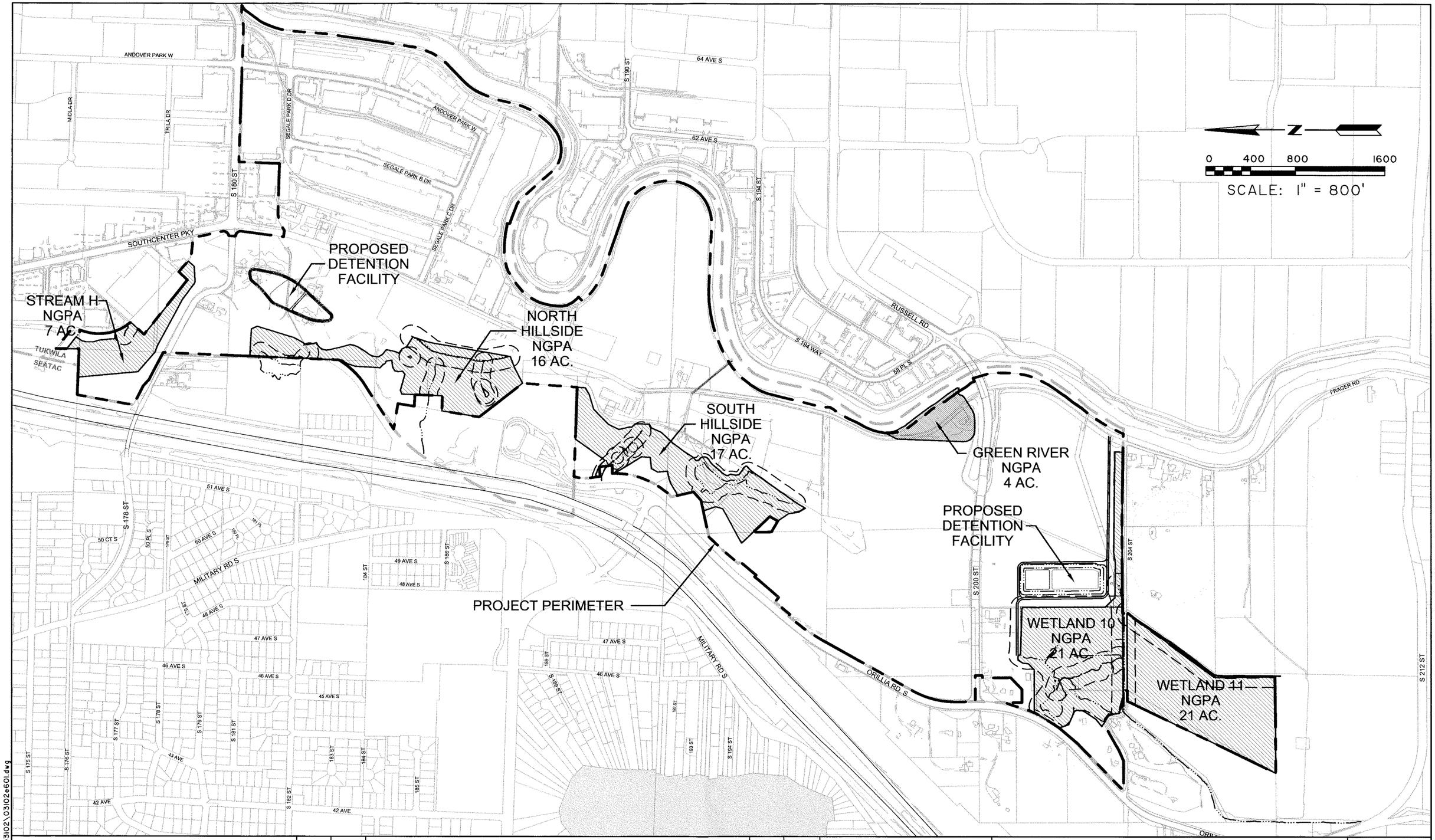
Green River

Within the 200-foot Green River shoreline district, the City of Tukwila has designated three management zones with uses prescribed in the Tukwila Master Code (TMC) TMC 18.44.120. The City of Tukwila Shoreline Master Program (SMP) requires a 40 foot "River Environment" zone measured from the mean high water mark of the river where activities are limited to features such as footpaths, picnic conveniences, pollution control support facilities, signs, dikes, bridges, fire and maintenance roads, and plaza connectors (TMC 18.44.130). On the project site, this 40-foot zone consists almost entirely of the Green River Levee and access/maintenance road (Exhibit 8). Existing vegetation consists primarily of low environmental value exotic species such as Himalayan blackberry and Scotch broom. With the exception of the Green River Off-Channel Habitat Restoration Area described below, where the buffer would be widened and improved, this area would remain essentially unchanged by the development.

The area from the River Environment (40-feet) out to 100-feet is designated the "Low Impact Environment" and would be developed consistent with the low impact regulations provided in the Code. Landscaping of this area would include large trees. Due to the intervening levee and road, functional riparian benefits of this area are minimal. The proposed development within this zone would be consistent with the uses allowed in this zone as specified in TMC 18.44.140 which include: structures not to exceed 35 feet in height; parking, loading and storage facilities adequately screened and landscaped; railroad lead and spur trackage or public or private roads; utilities including towers; and signs.

All uses allowed in the underlying zoning district are allowed in the High Impact Zone from 100-feet to 200-feet from the mean high water mark (TMC 18.44.150).

Construction of the Off-channel Habitat Restoration Area along approximately 800 feet of the Green River would include creation and planting of a buffer immediately adjacent to the river. The planted area would extend from the low flow water line to the crest of the levee a distance of between 80 and 230 feet. Native plant species would be selected for the various zones ranging from semi-permanently flooded to upland scrub-shrub (Exhibit 6). This buffer would be larger than the 40-foot zone required by the City of Tukwila under its Urban Environment Shoreline Designation. The banks of the Green River Off-channel Habitat Restoration Area would be graded at slopes ranging from 3:1 to about 8:1 (Exhibit 7). The reduced slopes would provide significantly better planting conditions and instream aquatic habitat value than the existing 2:1 slopes. Plants have been selected and located to provide a dense vegetated thicket of native species that fringe and overhang the water's edge during normal flows (see Figures 7 and 8 in the Wetland Mitigation Plan, Exhibit 3 in Appendix A of the Final EIS). Planting on the levee is limited by landscaping constraints imposed by the Army Corps.



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PROJECT-WIDE NATIVE GROWTH PROTECTION AREAS (NGPAs) TUKWILA SOUTH PROJECT

CITY OF TUKWILA WASHINGTON

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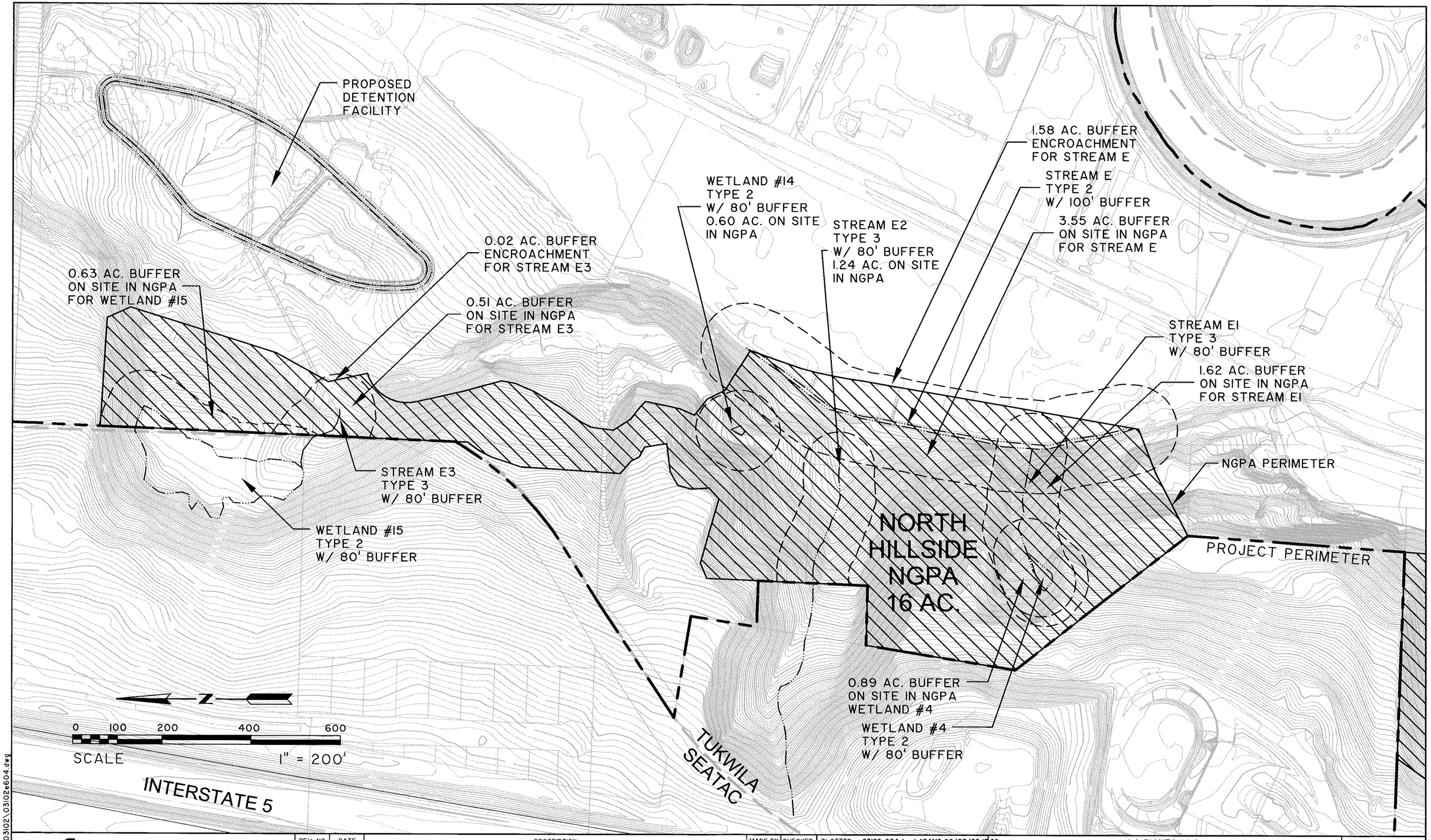

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NATIVE GROWTH PROTECTION AREA
NORTH HILLSIDE NGPA
TUKWILA SOUTH PROJECT

CITY OF TUKWILA WASHINGTON

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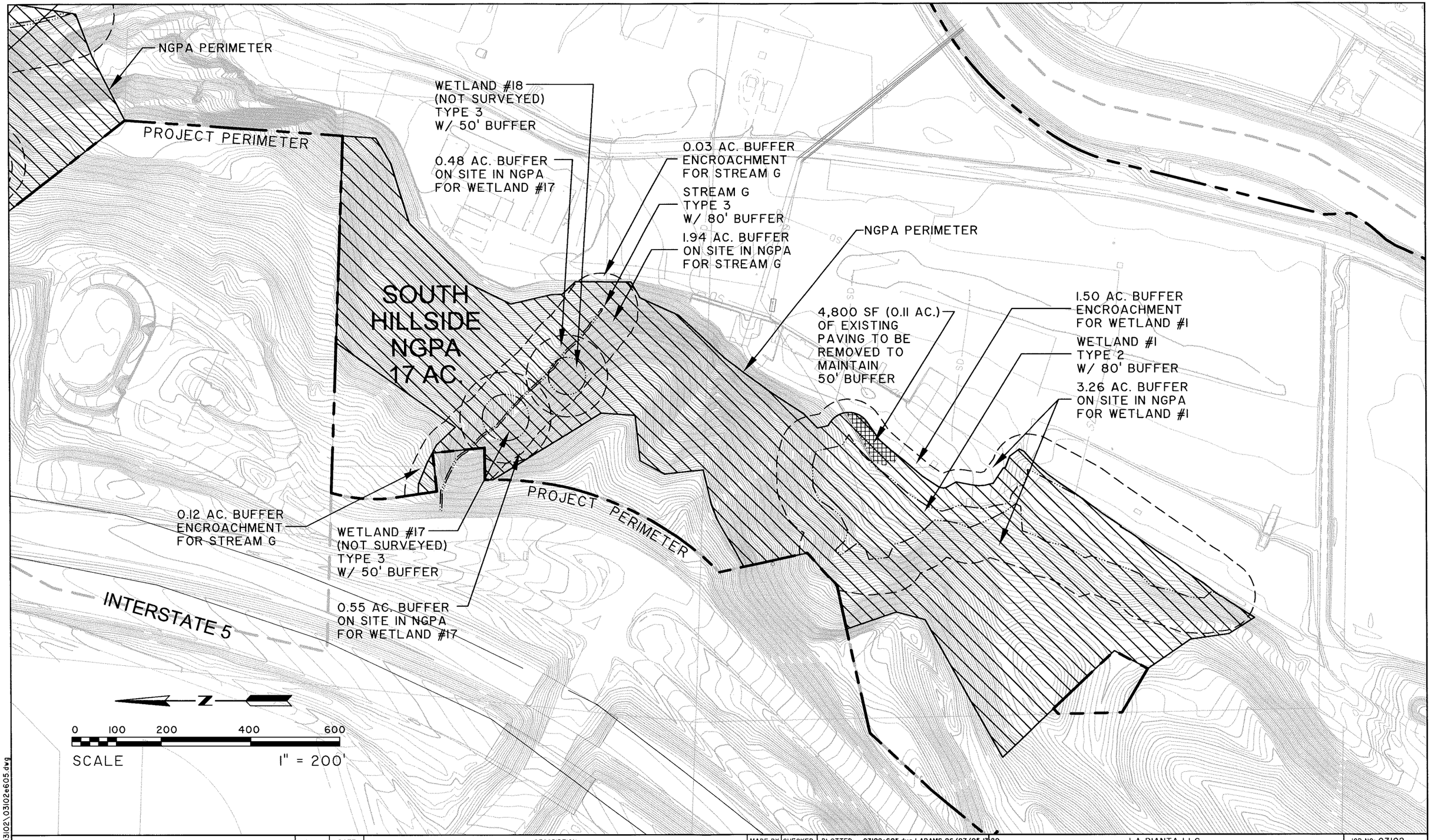

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NATIVE GROWTH PROTECTION AREA
SOUTH HILLSIDE NGPA
TUKWILA SOUTH PROJECT

CITY OF TUKWILA WASHINGTON

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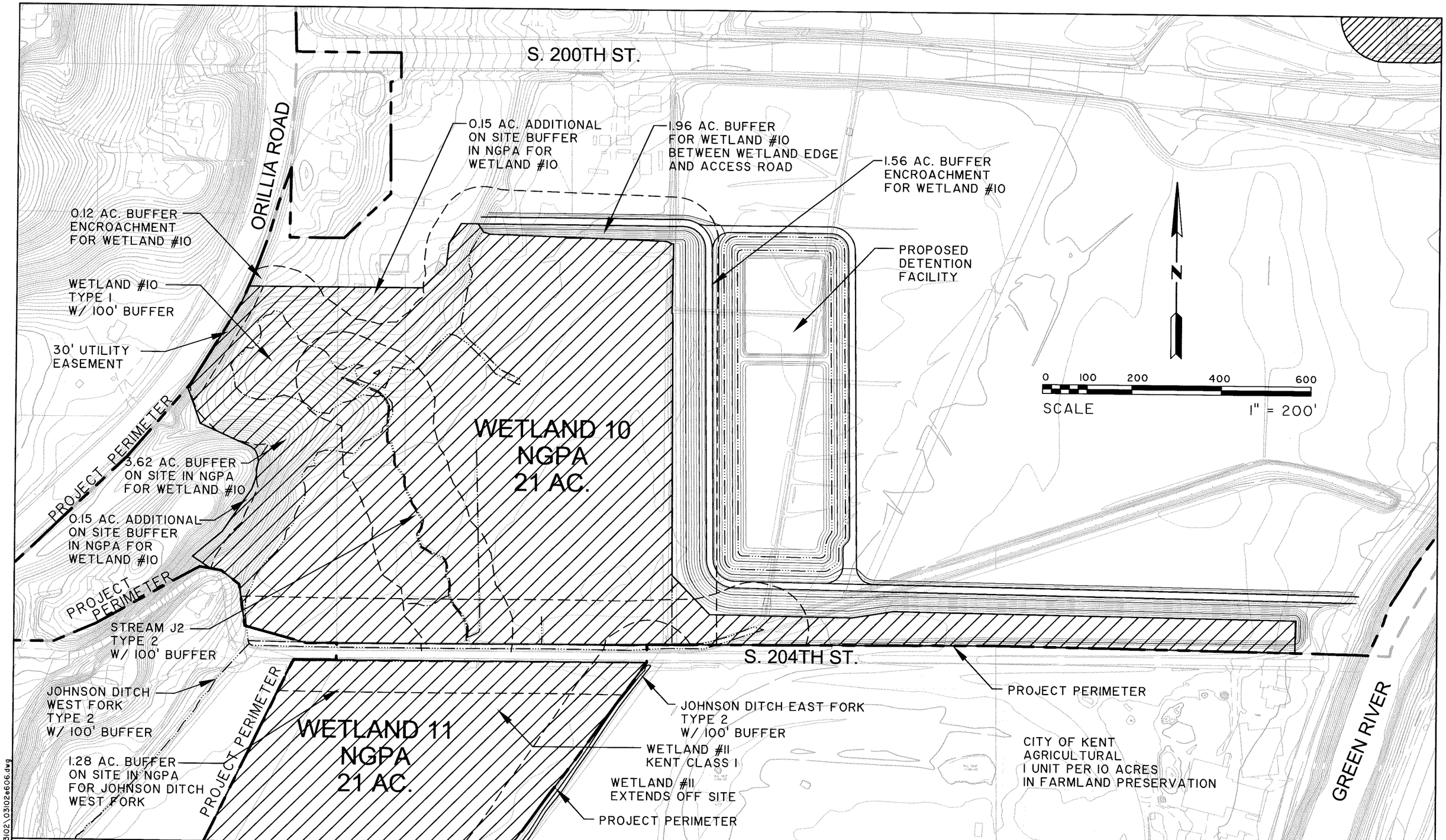

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NATIVE GROWTH PROTECTION AREA WETLAND 10 NGPA TUKWILA SOUTH PROJECT

CITY OF TUKWILA WASHINGTON

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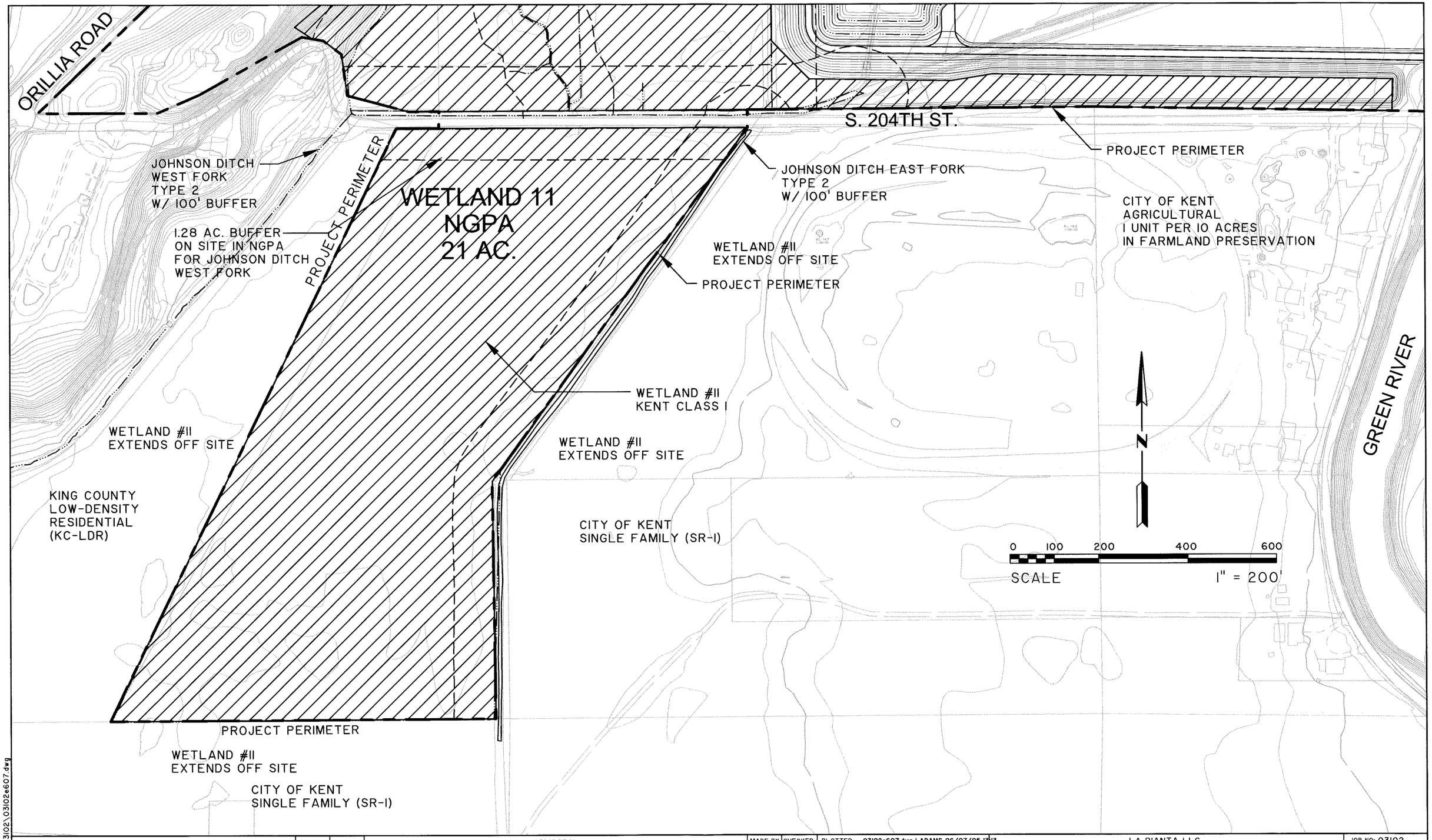

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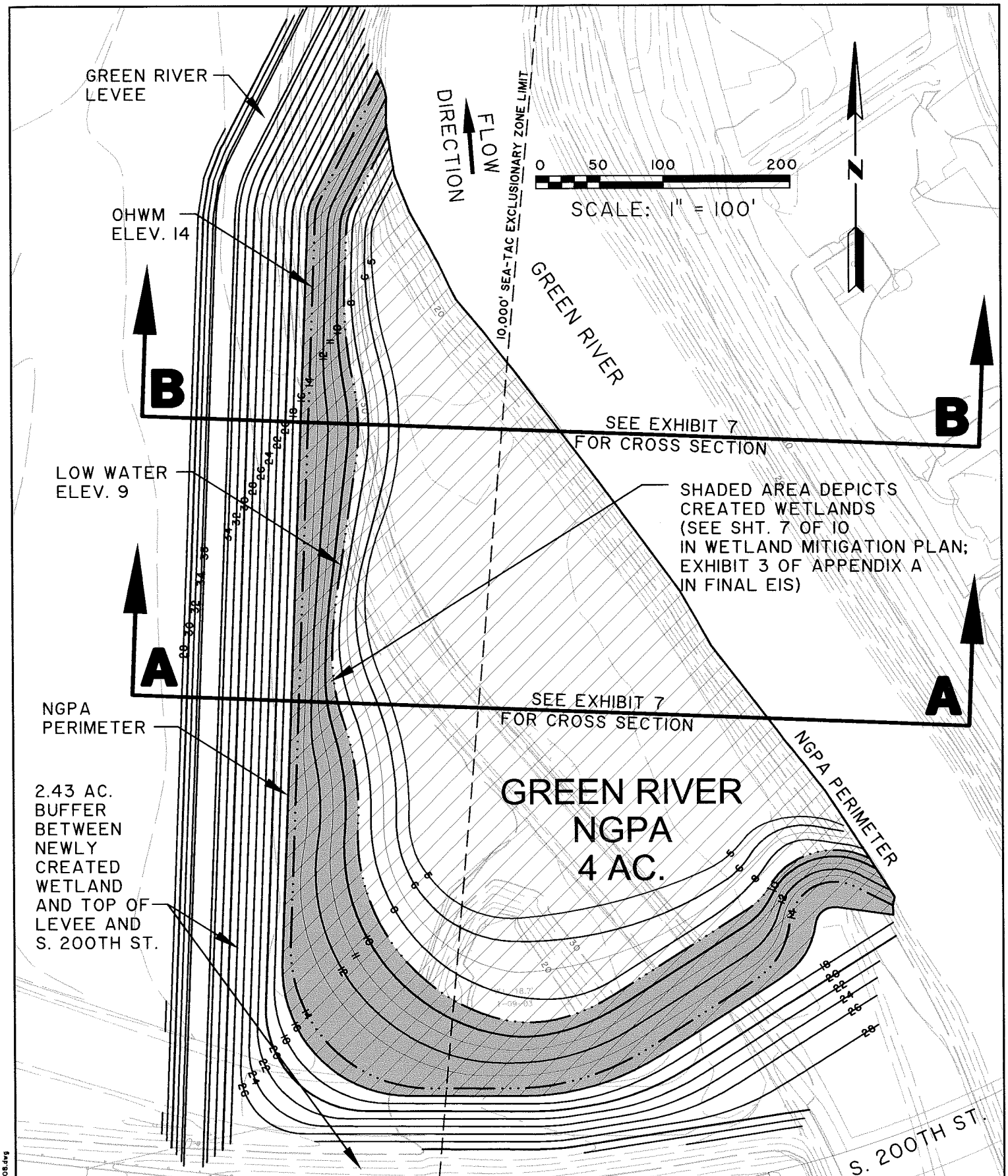

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PLOTTED: 03102e608.dwg LADAMS 06/08/05 07:01		LA PIANTA LLC	JOB NO: 03102
SCALE:	VIEW: DJ	NATIVE GROWTH PROTECTION AREA GREEN RIVER NGPA TUKWILA SOUTH PROJECT	SHEET EXHIBIT 6
DATE:	XREF:		
DRAWN: LADAMS	LSF:		
DESIGNED: LADAMS	FLD BK:		
APPROVED: GOLDSMITH	PG #:		
ACAD DWG.:	PSSF:	CITY OF TUKWILA WASHINGTON	

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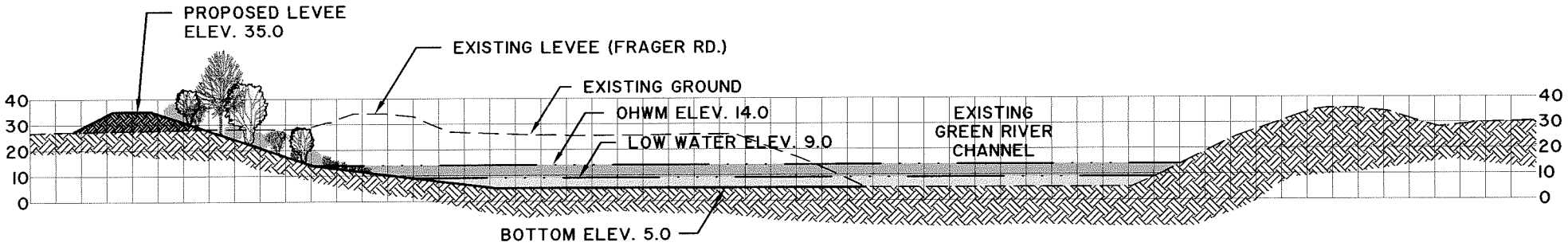
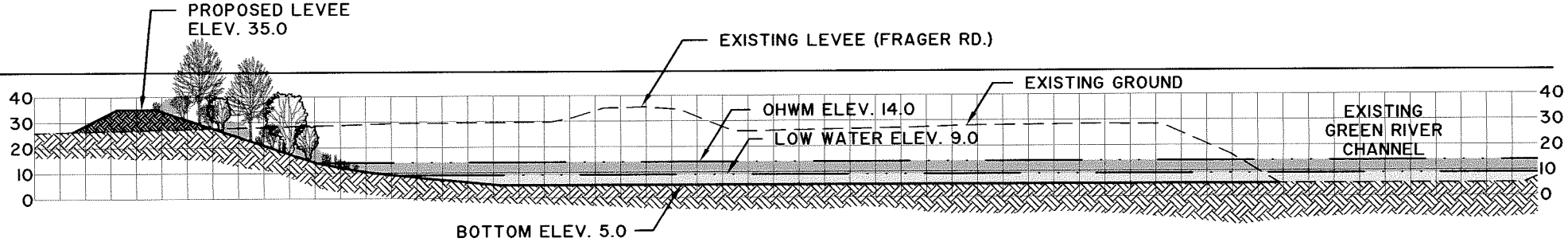


SECTION B - B



SECTION A - A

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SCALE 1" = 60'

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DESIGNED: LADAMS	FLD BK:
APPROVED:KGOLDSMITH	PG #:
ACAD DWG.:	PSSF:

LA PIANTA LLC

GREEN RIVER OFF-CHANNEL HABITAT AREA CROSS SECTION TUKWILA SOUTH PROJECT

CITY OF TUKWILA WASHINGTON

JOB NO: 03102-1

SHEET

EXHIBIT 7

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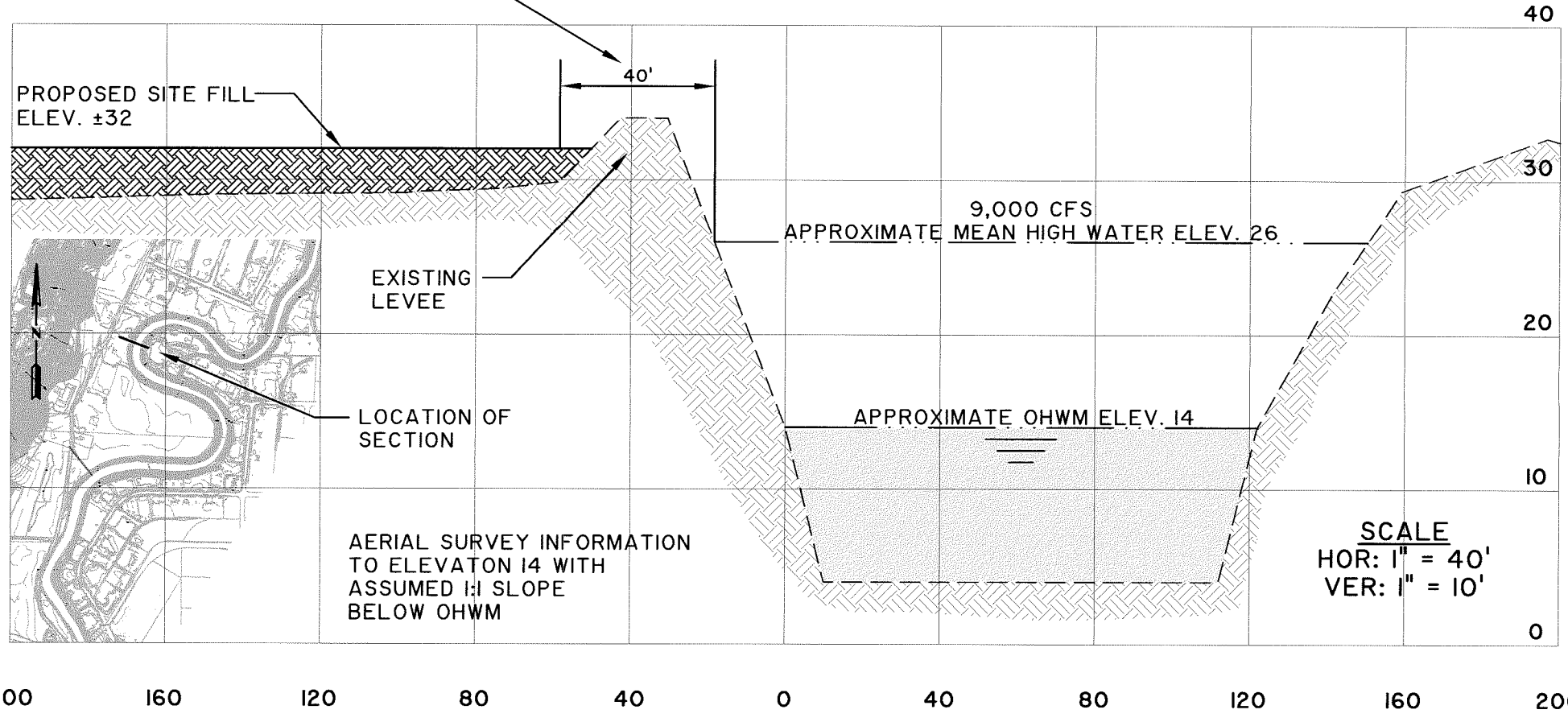

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TYPICAL CROSS SECTION
LOOKING NORTH ALONG
GREEN RIVER

EXHIBIT 8

GREEN RIVER
EXISTING LEVEE
CROSS SECTION
TUKWILA SOUTH PROJECT

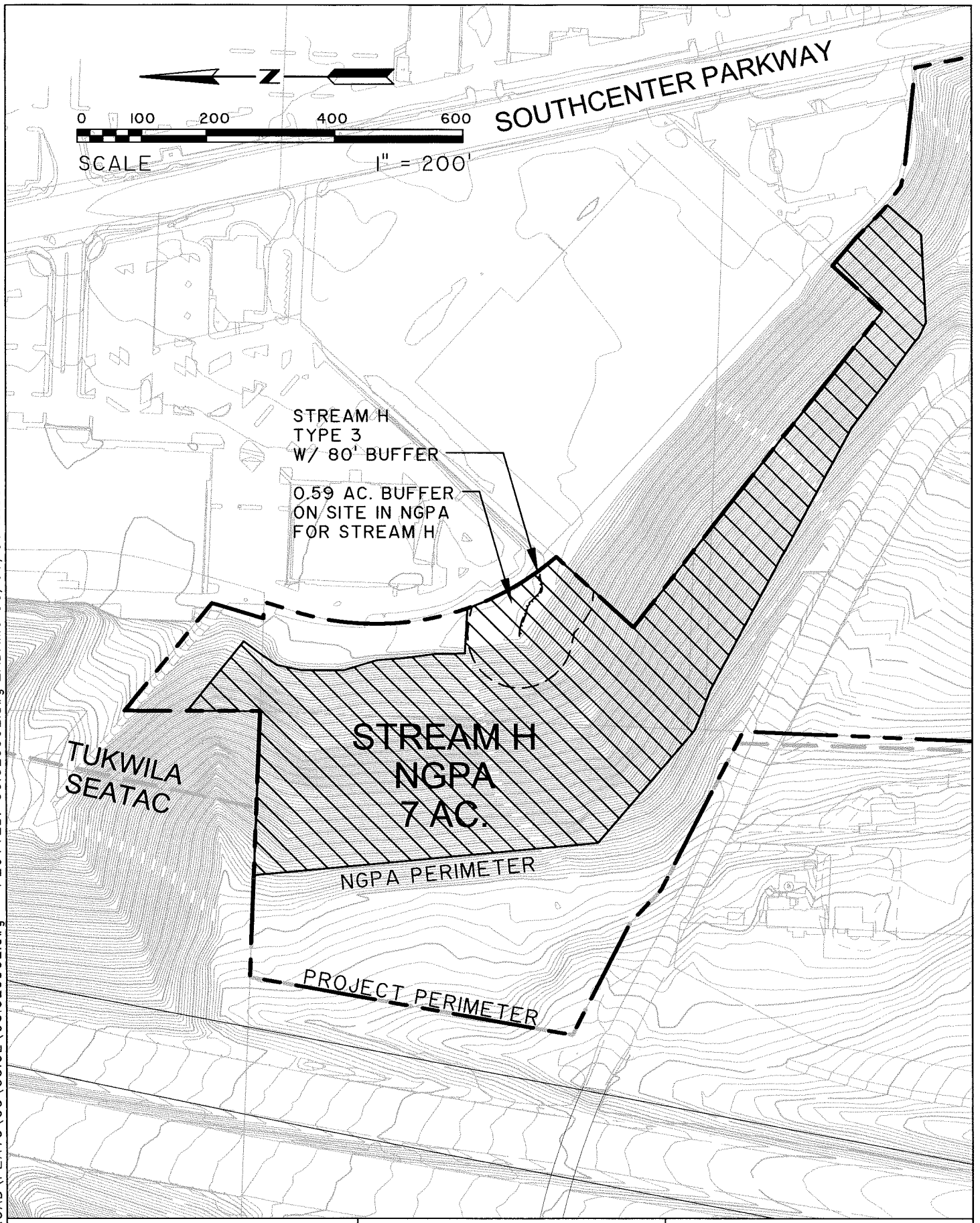

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EXHIBIT 9

NATIVE GROWTH PROTECTION AREA STREAM H NGPA TUKWILA SOUTH PROJECT