Final Environmental Impact Statement

BRIGHTWATER REGIONAL WASTEWATER TREATMENT SYSTEM

September 2004

Brightwater
TREATMENT SYSTEM

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

ADDENDUM 4

King County
Wastewater Treatment Division
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street
Seattle, WA 98104-3855

September 1, 2004

TO: Recipients of Brightwater Final EIS

FROM: Shirley Marroquin, Supervisor
Environmental Planning and Community Relations

RE: Addendum No. 4 to Brightwater Final EIS

The King County Wastewater Treatment Division is issuing Addendum No. 4 to the Final Environmental Impact Statement (EIS) for the Brightwater Regional Wastewater Treatment System (issued November 2003). Please note that consistent with the State Environmental Policy Act (WAC 197-11-625), King County is sending this addendum to recipients of the Final EIS. However, King County did not circulate a draft addendum, and there is no comment period for the addendum.

The addendum has been prepared in compliance with the State Environmental Policy Act (SEPA) (RCW 43.21C), the SEPA Rules (WAC 197-11), and Chapter 20.44 King County Code, implementing SEPA in King County procedures.

The impacts evaluated in Addendum 4 are within the range of significant adverse environmental impacts previously analyzed in the Brightwater EIS, and this addendum does not substantially change that analysis (see WAC 197-11-600).

Addendum No. 4 provides additional information on and/or evaluation of the impacts of constructing and operating:

- The Influent Pump Station at Portal 41
- Facilities along the conveyance corridor
- The Safety Relief Point at a location 200 feet west of the location identified in the Final EIS

As other addenda are prepared, you will receive copies. If you have questions, please contact the Brightwater Project Team at (206) 684-6799, toll-free 1-888-707-8571, or 711 TTY.

Brightwater
King County TREATMENT SYSTEM

Final Environmental Impact Statement

for the

Brightwater Regional Wastewater Treatment System

Addendum 4

September 2004

This information is available in
alternative formats upon request
by calling 206-684-1280 (voice)
or Relay Service 711 (TTY).

King County
Department of Natural Resources and Parks
Wastewater Treatment Division
King Street Center, KSC-NR-0503
201 South Jackson Street
Seattle, WA 98104

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Chapter 1
Introduction

1.1 Summary

On November 19, 2003, King County issued a Final Environmental Impact Statement (Final EIS) analyzing the probable significant adverse environmental impacts of alternative combinations and configurations of facilities that would constitute the proposed Brightwater Regional Wastewater Treatment System. The Final EIS was subsequently supplemented with the issuance of Addenda 1, 2, and 3 to the Final EIS. King County and other jurisdictions will take actions on the proposal in coming months after considering the information and analysis in the Brightwater EIS.

This document, Addendum 4 to the Brightwater Final EIS, provides additional information on the following topics:

- Location of the influent pump station at Portal 41
- Changes to facilities and their locations along the conveyance corridor
- Safety relief point

Each of these topics is covered in a separate chapter. Each chapter presents updated information about the project description that is relevant to the topic being discussed. The chapter then discusses potential impacts and mitigation related to that topic and summarizes changes to information presented in the Final EIS.

1.2 Purpose of Addendum

Under the State Environmental Policy Act (SEPA), issuance of an addendum is appropriate to provide additional information or analysis that does not substantially change the analysis of significant impacts and alternatives in an existing environmental document (WAC 197-11-600[4][c] and 706). Since issuance of the Brightwater Final EIS, additional information has become available for some topics. This information may assist regulatory agencies, and provide useful information to other agencies and the public. It does not substantially change the analysis of significant impacts and alternatives in the Final EIS.

1.3 Background

Following the November 2003 issuance of the Final EIS and the December 1, 2003, selection of locations of proposed Brightwater facilities, the planning and analysis associated with the predesign of proposed Brightwater facilities has continued as part of the ongoing project implementation and permit application processes. Such predesign and permit application work includes areas of environmental analysis that add information to the Final EIS and are appropriately included in an EIS addendum.

Addendum 1 to the Brightwater Final EIS was published on January 27, 2004. It provides an updated analysis of traffic impacts and mitigation measures, and additional information about potential use of the existing ChevronTexaco Richmond Beach Asphalt Terminal barge dock (ChevronTexaco barge dock) during construction.

Addendum 2 to the Brightwater Final EIS was published on April 2, 2004. It provides additional information for selected portal sites and an analysis of impacts of the transportation of excavated materials to and from Portal 19, impacts of a proposed temporary construction access road at the Route 9 site, and impacts of demolition and construction at the Route 9 site.

Addendum 3 to the Brightwater Final EIS was published on April 30, 2004. It provides additional information on geotechnical and seismic studies related to the evaluation of new data characterizing the South Whidbey Island Fault; geotechnical data for design of the conveyance system and outfall; and additional discussion of impacts and mitigation related to seismic and geologic issues.

Chapter 2
Influent Pump Station at Portal 41

This chapter expands on potential impacts associated with the influent pump station (IPS) at the Portal 41 site analyzed in the Final EIS. The discussion draws on additional information developed as part of ongoing preliminary design investigations. The overall significant impacts and conclusions analyzed in the Final EIS have not changed. Key issues relate to the following impacts:

- Potential construction-related earth and water impacts
- Potential construction-related noise, light and glare, and transportation impacts on area businesses, employees, and patrons
- Potential aesthetic impacts related to design and operation
- Potential impacts related to construction and operation of the electrical substation for the pump station

2.1 Project Description

2.1.1 Overview

The Final EIS included an analysis of an option to relocate the IPS from the Route 9 site to the Portal 41 site. Based on further evaluations, a decision was made to move the location of the IPS to the area identified as Candidate Site J at Portal 41, as indicated in Addendum 2 to the Brightwater Final EIS. The site is located in the City of Bothell at the southeast corner of NE 195th Street and North Creek Parkway and is within the Bothell Business Park (formerly Quadrant Business Park). Two shafts will be excavated, one for the IPS and one for the portal.

The IPS would contain the same functional components as described for the Portal 41 IPS Option in the Final EIS with some refinements to the size and configuration. The IPS would include four aboveground structures (Figure 2-1): pump station building, standby power building, odor control building, and electrical substation. Based on the current design, the pump station building, the standby power building, and the odor control building would be the same height as a two-story building, which is lower than the three-story height described in the Final EIS. The pump station building would enclose mechanical and electrical equipment and would provide access for operations and

maintenance. The structures, except for the odor control building, have slightly decreased in size from those described for the Portal 41 IPS Option in the Final EIS. The pump station and standby power buildings would be located on the north-central portion of the site (Figure 2-1). The odor control building would be located on the southwestern portion of the site. The electrical substation would be located on the south-central portion of the site. Stormwater detention and treatment facilities would be located on the eastern portion of the site.

Vehicular ingress and egress at the site would be from two driveways: one on North Creek Parkway and the other on NE 195th Street. Vehicular access would be provided around all sides of the IPS and standby power building, along the north side of the electrical substation, and along the west and north sides of the odor control building. The anticipated construction duration for both the IPS and portal at Portal 41 is approximately 4 years. This is consistent with the construction duration from 3.5 to 4 years shown in Table 3-3 of the Final EIS. The Portal 41 site would facilitate tunnel construction for the influent and effluent tunnel segments between Portal 41 and Portal 44 and between Portal 41 and the Brightwater Treatment Plant site. Construction of the IPS is expected to be phased to occur largely on a separate schedule from construction of the influent and effluent tunnel. The existing 115-kilovolt transmission line on the south side of NE 195th Street would be relocated within the site before portal construction begins.

2.2 Areas of Potential Impact and Proposed Mitigation

Only those elements of the environment where the significant impacts differ from those described in the Final EIS are discussed in the following sections.

2.2.1 Earth

2.2.1.1 Construction Impacts

Two large excavations would be used for the IPS and tunnel portal. Because of the increased area of site excavation for the portal and IPS construction, there would be an attendant higher potential for soil erosion during construction at the Portal 41 site than for either the tunnel portal or the IPS alone. However, as described in Chapter 4 of the Final EIS, relocating the IPS to the Portal 41 site eliminates deep shaft construction at the Route 9 site, resulting in reduced excavation volumes at the Route 9 site and for the overall project of approximately 130,000 cubic yards (cy).

The estimated volume of earthwork excavation for the IPS at the Portal 41 site has increased slightly from the volume estimated in the Final EIS. This increase results from changes in portal depths and sizes, changes to the portal configuration to accommodate

the IPS, additional structures deemed necessary (surge tower, pipe cleaning or pig launching facility, and effluent tunnel draining connection), and refinements to the portal structure and IPS design. The earthwork excavation volume for the IPS at the Portal 41 site described in Chapter 4 of the Final EIS was 37,000 cy for the IPS and 9,000 cy for the portal, for a total of 46,000 cy for the portal and the IPS Option at the Portal 41 site. Under the current plan, the earthwork excavation volume for the IPS and portal would increase to approximately 50,000 cy. Earthwork disposal would be similar to that described in Chapter 4 of the Final EIS.

2.2.1.2 Operation Impacts

Impacts to earth related to the operation of the IPS at the Portal 41 site would be the same as described in Chapter 4 of the Final EIS.

2.2.1.3 Proposed Mitigation

Proposed mitigation for impacts to earth described in Chapter 4 of the Final EIS would reduce impacts to a level of non-significance.

2.2.2 Groundwater

2.2.2.1 Construction Impacts

Based on continuing studies conducted during preliminary design, the rate of groundwater inflow under the current plan would range from approximately 20 to 100 gallons per minute (gpm) for both the portal and the IPS structures combined. This would occur during construction of the shoring systems for these facilities and is estimated to last for a year or less. The dewatering would not be needed after the first year of construction, because it would only be needed for construction of shoring systems, estimated to take about one year. This rate of dewatering is within the range described in Chapter 6 of the Final EIS for the IPS Option at Portal 41.

As described in Chapter 6 of the Final EIS, relocating the IPS to Portal 41 would reduce dewatering rates and volumes at the Route 9 site, because the depth of shaft construction at the Route 9 site would be reduced. With the location of the IPS at Portal 41, the average monthly dewatering flows at the Route 9 site would be reduced from approximately 350 to 330 gpm during the construction period.

2.2.2.2 Operation Impacts

Groundwater impacts related to the operation of the IPS at the Portal 41 site would be the same as described in Chapter 6 of the Final EIS.

2.2.2.3 Proposed Mitigation

Proposed mitigation described in Chapter 6 of the Final EIS would reduce impacts to a level of non-significance.

2.2.3 Surface Water

2.2.3.1 Construction Impacts

Construction-related impacts to surface water, including dewatering impacts, at the Portal 41 site would be similar to those described in Chapter 6 of the Final EIS. Numerous options exist for dewatering discharge; the method of discharge would be determined by considering the volume, weather, and stream conditions at the time of construction. As described in Chapter 6 of the Final EIS, best management practices (BMPs) and policies and procedures would be implemented to ensure minimal impacts to surface water quality.

There would be increased potential for sediment-laden runoff to enter North Creek during rain events than described in Chapter 6 of the Final EIS, because the duration of construction would be several months longer and earthwork quantities would be greater than those described in the Final EIS. In addition, there would be a risk for spills or other leaks of fossil fuel-based materials from trucks and construction equipment at the site during the construction period. Chapters 6 and 9 of the Final EIS provide descriptions of the significant impacts associated with spills and leaks.

2.2.3.2 Operation Impacts

Stormwater generated by the IPS at the Portal 41 site would be collected by a combination of roof drains, slot drains, infiltration trenches, and catch basins. Any required detention would be provided onsite using a surface detention pond or a subsurface detention vault or pipe. All facilities and components would be designed for the required design storm flows and volumes.

The IPS at the Portal 41 site is considered to be a “Redevelopment Project,” which is defined by the King County Surface Water Design Manual (KCSWDM) and City of Bothell Design and Construction Standards (BDCS) as a “project that proposes to add, replace, and/or alter impervious area on a site that has 35 percent or more of existing

impervious surface coverage." The existing site has approximately 58 percent impervious surface area. The proposed IPS and associated facilities would slightly reduce the amount of impervious surface area.

Relocating the IPS to the Portal 41 site would reduce the amount of impervious surface at the Route 9 treatment plant site by up to 0.4 acre (approximately 1 percent). This reduction would have an insignificant effect on the stormwater facilities as described in Chapter 6 of the Final EIS.

2.2.3.3 Proposed Mitigation

Proposed mitigation described in Chapter 6 of the Final EIS would reduce impacts to a level of non-significance. Additional measures beyond those described in the Final EIS are not required.

2.2.4 Energy

2.2.4.1 Construction Impacts

Construction at the Portal 41 site would require modifications to the Puget Sound Energy (PSE) 115-kilovolt (kV) transmission line system. The PSE 115-kV transmission line along NE 195th Street would be temporarily relocated to be closer to the curb on the south side of NE 195th Street. The transmission line would be relocated before the portal construction begins. The transmission line would be moved back to its original location after completion of construction. The relocation of the transmission lines to accommodate construction of the IPS at Portal 41 was not discussed in the Final EIS; however, this on-site relocation does not result in a significant impact. The requirements for electrical energy and transmission line routing were discussed in Chapter 8, as part of the Route 9 treatment plant site.

The northwest corner of the portal site contains a major center for the PSE 12.47-kV underground distribution system for the business park. The portal would be adjacent to the PSE 12.47-kV underground power lines and switching equipment. Construction will be managed to avoid disrupting this 12.47-kV system.

2.2.4.2 Operation Impacts

As discussed in Chapter 8 of the Final EIS, the IPS would require a substantial amount of power. Impacts to energy supplies for IPS operation are similar to those described in Chapter 8 of the Final EIS. The average annual energy consumption of the IPS is estimated to be 15,000 megawatt-hours (MWh) per year at an average wet-weather pump

rate of 36-mgd in 2030 and 17,000 MWh per year at an average wet-weather pump rate of 54-mgd in 2050. A 115-kV/4.14-kV substation would be required at the Portal 41 site for the IPS.

2.2.4.3 Proposed Mitigation

Proposed mitigation described in Chapter 8 of the Final EIS for impacts common to all systems would be sufficient to reduce energy impacts to a level of non-significance.

2.2.5 Noise

As part of the ongoing preliminary design effort, existing noise levels were measured at the Portal 41 site for a continuous 24-hour period on February 25 and 26, 2004, to establish baseline levels for modeling. Results of the monitoring indicate that existing peak noise conditions and proposed noise sources have not changed from those described in Chapter 10 of the Final EIS.

2.2.5.1 Construction Impacts

In general, the impacts of construction noise on specific receptors could be expected to last up to 4 years for construction of the IPS and the portal at the Portal 41 site. Construction activities would occur primarily during the daytime, though nighttime construction may occur.

Land use in the vicinity of the Portal 41 site includes commercial/office space, open space, a daycare facility, and the Wyndham Garden Hotel. A field survey of the area surrounding the Portal 41 site identified the Wyndham Garden Hotel located southwest of the site as the nearest noise-sensitive receptor. In addition, residential properties on the hillsides near the site could also be sensitive to nighttime noise. The City of Bothell regulates maximum allowable noise levels according to three separate environment classes based on the zoning designation of the noise-generating property and the regulations set forth in WAC 173-60-040 and 050. The Portal 41 site and surrounding area (including the Wyndham Garden Hotel) are located in the North Creek/NE 195th Street Subarea and are within a mixed-use zone: Residential-Activity Center (RAC), Office Professional (OP), Community Business (CB), and Light Industrial (LI). This area is considered a Class B Environment (also referred to as Environmental Designation for Noise Abatement or EDNA); therefore, predicted construction noise levels are compared with maximum allowable noise levels in Class B Environments. The maximum permissible noise level for the Class B Environment is 60 dBA for the receiving property. Construction noise in the Class B Environment for both daytime and nighttime hours is exempted from this maximum level by the City of Bothell Municipal Code, Section 8.26.050 Exemptions, by reference through WAC 173-60-050(1)(e) and 050(3)(a). Construction is only allowed Monday through Friday 7 a.m. to 6 p.m. and Saturday 9 a.m. to 5 p.m. and not allowed on Sundays and holidays; therefore, nighttime

construction would require a variance from the City of Bothell noise regulations. The predicted noise level for nighttime construction activities at the nearest sensitive receptor, the Wyndham Garden Hotel, is 65 dBA without mitigation, and 55 dBA with a 20-foot-high noise barrier constructed at the property line. King County will work with the City of Bothell during its permitting process to identify and address potential construction-related impacts associated with Portal 41 construction activities.

2.2.5.2 Operation Impacts

Equipment associated with the IPS operations would be similar to that described in Chapter 10 of the Final EIS. The IPS would include sound-attenuation materials to ensure compliance with the local noise ordinances and would be designed to limit the operation noise level to 60 dBA at the property line for the IPS. Additional noise attenuation would occur with distance from the property line; noise levels at adjacent properties including the Wyndham Garden Hotel would be expected to be below maximum allowable noise levels for Class B Environments in the City of Bothell. A detailed acoustical analysis of this facility would be performed during the final design phase. By design, operation of this facility would not contribute to offsite noise impacts.

2.2.5.3 Proposed Mitigation

Although construction noise is exempt from the City of Bothell noise restrictions, King County would make every effort to minimize and mitigate construction noise impacts to neighboring properties. King County is working with property owners and actively pursuing agreements with local jurisdictions regarding the conveyance facilities and mitigation requirements. The County would apply for a noise variance from the City of Bothell for nighttime construction. King County proposes to construct a temporary noise wall to mitigate construction impacts to the hotel. A 20-foot-high solid wall is predicted to decrease the noise level at the hotel from 65 dBA to 55 dBA at night, or 5 dBA below the maximum for Class B Environments. Additional mitigation measures, including internal treatments or other measures, may be considered following coordination with the City of Bothell and the affected adjacent property owners. Mitigation for operational noise impacts is the same as that described in Chapter 10 of the Final EIS.

2.2.6 Aesthetics

2.2.6.1 Construction Impacts

The aesthetic impacts of aboveground construction would be similar to those described in Chapter 12 of the Final EIS. In general, IPS construction at the Portal 41 site would result in views of an active construction site with equipment, noise, and dust, in contrast to the developed mixed use area that currently dominates the visual characteristics of the area.

The aesthetic impacts of belowground construction would be slightly higher than those described in the Final EIS due to excavation for both the IPS and the portal at the Portal 41 site. The excavation for both facilities would involve more piles of soil, lighting, and construction equipment that would be visible at the site for up to 4 years. The PSE 115-kV transmission line along NE 195th Street would be temporarily relocated from its current location closer to the street. The extensive street tree canopy along the north side of NE 195th Street would help to screen the transmission line from views. The transmission line would be moved back to its original location after project completion. IPS construction at the Portal 41 site would occur over an approximate 2-year period as described in Chapter 12 of the Final EIS, though overall construction activity at the Portal 41 site would occur over approximately 4 years.

2.2.6.2 Operation Impacts

Aesthetic impacts during operation of the IPS at the Portal 41 site would be similar to those described in Chapter 12 of the Final EIS. As previously indicated, the surrounding land use in the vicinity of the Portal 41 site includes commercial/office space, open space, a daycare facility, and the Wyndam Garden Hotel. The pump station building at the Portal 41 site would be a 35-foot-high building (same height as a two-story building) as opposed to the three-story building height described in the Final EIS. Portions of the electrical substation would be approximately 35 feet tall and three 65-foot steel power poles would be installed at the southeast corner of the substation. These changes are not anticipated to result in significant aesthetic impacts beyond those discussed in the Final EIS.

2.2.6.3 Proposed Mitigation

Compliance with Bothell Business Park design standards would reduce aesthetic impacts to a level of non-significance. Walls would be installed at a height necessary to screen equipment from view. In order to be consistent with the business park design guidelines, the discharge stack for the odor control building would be blended to hide the stack within the building's mass. Any utility located aboveground or on the exterior of the building would be screened from offsite view.

Aboveground structures would be constructed of concrete, masonry, or steel. Exposed concrete structures would be given an architectural-quality finish or covered with veneer materials comparable with nearby business park buildings. Projecting elements, textures, patterns, and other accents would be used to create visual interest in the façade.

2.2.7 Light and Glare

2.2.7.1 Construction Impacts

The Portal 41 site is close to businesses and hotels. The levels of lighting required for the construction of the IPS and tunnel portal at the Portal 41 site would be slightly higher than those described in Chapter 13 of the Final EIS for constructing the tunnel alone. During the up to 4-year construction period, light could potentially be visible at the adjacent hotel (the Wyndham Garden Hotel) during nighttime hours.

2.2.7.2 Operation Impacts

Light and glare impacts related to the operation of the IPS at the Portal 41 site would be the same as described in Chapter 13 of the Final EIS.

2.2.7.3 Proposed Mitigation

King County would work with potentially affected businesses to identify appropriate mitigation measures and would employ specific mitigation measures as described in the mitigation section of Chapter 13 in the Final EIS. Mitigation measures described in Chapter 13 of the Final EIS would be adequate to reduce light and glare impacts to levels of non-significance.

2.2.8 Transportation

2.2.8.1 Construction Impacts

The construction-related traffic impacts at Portal 41 are estimated to decrease in comparison to the Final EIS estimates because of refinements to the conveyance system that have resulted in construction schedules that stagger peak construction periods, rather than overlap them. This results in slightly reduced peak hour vehicle trips from those described at Portal 41 in Chapter 16 of the Final EIS. Impacts at the Portal 41 site for construction of the IPS and tunnel would extend over a period of up to 4 years.

Peak construction activities for the IPS would not coincide with peak construction activities for tunneling. IPS construction would begin in mid-2008 and would peak in 2010. Peak construction activities for tunneling would occur during 2007, consistent with descriptions in the Final EIS. Additionally, the overlapping construction activities for tunneling and the IPS that would occur in 2009 would result in fewer construction trips than would be generated during tunneling activities alone in 2007. During peak

construction at the portal, concrete truck trips do not coincide with earthwork or other peak construction activity.

Table 2-1 summarizes the daily and PM peak hour construction trips during the peak year of construction for the IPS. Table 2-2 summarizes Final EIS and updated daily and PM peak hour construction trips for the peak year for tunneling and for the overlap of construction activities for both the IPS and tunneling. These vehicle trips were prepared using construction vehicle estimates provided by the engineering team as part of construction scheduling and predesign.

Table 2-3 shows levels of service (LOS)—both the Final EIS and updated estimates—for intersections near Portal 41for PM peak hour traffic during peak tunneling activities (when impacts would be greatest) and for No Action. The reduction of construction-related trips at Portal 41 during the peak hour of traffic has an insignificant effect on the study intersections. The intersection LOS remains the same as the No Action alternative and the Final EIS estimates. The vehicle delays either stay the same or decrease slightly in comparison to the Final EIS scenario, by up to 3 seconds per vehicle, and are similar to the No Action scenario.

As a result of siting the IPS at the Portal 41 site, the estimated peak construction trips at the Route 9 site (year 2007) would decrease by approximately 52 daily and 5 PM peak hour trips. The reduction of trips at the Route 9 site would not affect PM peak hour traffic operations along the study roadways and at the study intersections.

Table 2-1. Estimated 2010 Daily and PM Peak Hour Trips for IPS Construction Activities at Portal 41

Type of Trip	New Estimate[a]	
	Daily Trips	PM Peak Hour Trips
Earthwork truck trips	0	0
Concrete truck trips	52	5
Construction worker trips	30	15
Misc. vehicle/materials delivery	16	2
Total Trips	**98**	**22**

[a]Source: Construction vehicle trip estimates prepared by HDR/URS, May 4, 2004, as part of predesign efforts.

Table 2-2. Estimated 2007 and 2009 Daily and PM Peak Hour Trips for Tunneling and IPS Construction Activities at Portal 41

Type of Trip	2007 Tunneling Activities (includes microtunneling)				2009 Tunneling and IPS Activities	
	Final EIS[a]		Updated Estimate[b]			
	Daily Trips	PM Peak Hour Trips	Daily Trips	PM Peak Hour Trips	Daily Trips	PM Peak Hour Trips
Earthwork truck trips	116	15	74	10	0	0
Concrete truck trips	80	8	0	0	142	14
Construction worker trips	180	90	112	56	74	37
Misc. vehicle/materials delivery	64	7	62	7	20	2
Total Trips	**440**	**120**	**248**	**73**	**236**	**53**

[a] Source: Final EIS, Appendix 16-B, Table 64.
[b] Source: Construction vehicle trip estimates prepared by HDR/URS, February 14, 2004, as part of predesign efforts.

Table 2-3. Estimated 2007 PM Peak Hour Levels of Service and Delays at Intersections Near Portal 41

Intersection	No Action		Final EIS[b]		Updated	
	LOS	Delay[a]	LOS	Delay[a]	LOS	Delay[a]
I-405 NB Ramp/NE 195th Street	D	46	D	53	D	50
I-405 SB Ramp/NE 195th Street	C	26	C	27	C	27
NE 195th Street/North Creek Parkway	E	59	E	62	E	61
NE 195th Street/120th Avenue NE	F	112	F	112	F	112
Beardslee Blvd/Ross Road	C	24	C	24	C	24

[a] Average delay, measured in seconds per vehicle, includes deceleration time, stopped time, and acceleration time due to intersection controls.
[b] Supplemented by Addendum 1 to the final EIS, *Comparison of Final EIS and Alternate Background Growth Rates in Chapter 16, Transportation, January 2004.*

2.2.8.2 Operation Impacts

Transportation impacts related to the operation of the IPS at the Portal 41 site would be the same as described in Chapter 16 of the Final EIS.

2.2.8.3 Proposed Mitigation

The mitigation measures proposed in Chapter 16 of the Final EIS are still adequate and would reduce traffic impacts to levels of non-significance.

2.2.9 Summary of Changes from Final EIS

The following table summarizes the impacts and mitigation measures at the Portal 41 site presented in this addendum in comparison to what was presented in the Final EIS.

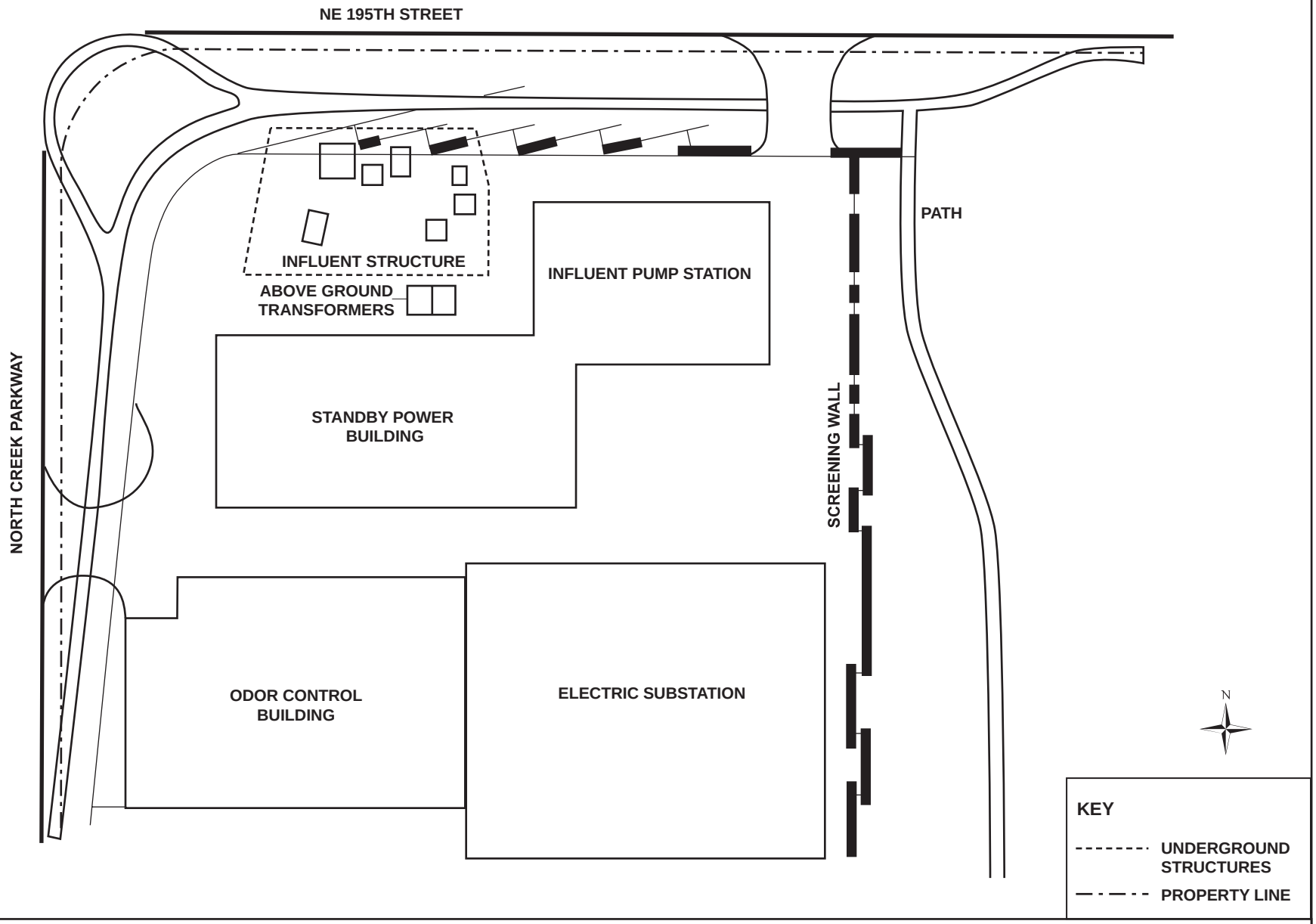
Table 2-4. Summary of Changes in Impacts and Mitigation from Final EIS for the IPS at Portal 41

Element of the Environment	Impact	Mitigation
Earth	Increase of up to 4,000 cy earth removed for IPS and portal excavation. Reduction in overall excavation due to modifications of tunnel excavation.	Same as Final EIS.
Groundwater	Rate of dewatering slightly reduced from Final EIS (now 20 to 100 gpm during first year of construction). However, because excavation would be needed for both the IPS and portal facilities, dewatering would occur for several months longer than described in the Final EIS, thus resulting in a slightly larger overall volume of dewatering than described in the Final EIS.	Same as Final EIS.
Surface Water	Somewhat increased potential for sediment-laden runoff to enter North Creek during rain events because of increased area of surface disturbance.	Same as Final EIS.
Energy	The energy use from the IPS at Portal 41 would not differ from what was analyzed for the IPS at the Route 9 site in the Final EIS. Average annual energy consumption of the IPS at Portal 41 is estimated to be 15,000 MWh per year at 36-mgd in 2030 and 17,000 MWh per year at 54-mgd in 2050. A 115-kV/4.14-kV substation would be required.	Same as Final EIS.
Noise	Construction noise is exempt from the City of Bothell noise restrictions; however, a variance would be required for nighttime construction. Without mitigation, nighttime construction noise level of 65 dBA is expected at the Wyndham Garden Hotel, above maximum allowable levels for this land use category.	Although the IPS at Portal 41 construction is exempt from the maximum noise limits, King County would implement measures to minimize and mitigate construction noise impacts to neighboring properties. A 20-foot-high solid noise wall is predicted to decrease the noise level at the Wyndham Garden Hotel from 65 dBA to 55 dBA at night, or 5 dBA below the maximum for Class B environments.

Table 2-4. Summary of Changes in Impacts and Mitigation from Final EIS for the IPS at Portal 41 (continued)

Element of the Environment	Impact	Mitigation
Aesthetics	Slight increase in structure size, though building heights are reduced to two-story.	Same as Final EIS.
Light and Glare	Levels of lighting slightly increased.	Same as Final EIS.
Traffic	Increase in construction trips related to IPS and portal construction, though level of peak construction-related traffic at Portal 41 would decrease due to the change in tunnel heading direction.	Same as Final EIS.

List of Figures



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

SOURCE: Brown and Caldwell, 2004.

Figure 2-1
IPS Site Plan
ADDENDUM 4
BRIGHTWATER FINAL EIS

Chapter 3
Permanent Conveyance Facilities and Refinements

Since the Final EIS was issued in November 2003, a number of refinements and modifications to the Brightwater conveyance system have been made as a result of the ongoing conveyance system preliminary design.

This chapter discusses the refinements and modifications to the permanent facilities along the conveyance system corridor and analyzes the potential impacts associated with these changes. The overall significant impacts and conclusions analyzed in the Final EIS have not changed. Key issues relate to the following impacts:

- Potential air and noise impacts associated with the drop structures
- Potential noise, aesthetic, and light and glare impacts associated with the odor control facility at Portal 5 and the North Creek Pump Station

3.1 Project Description

In association with ongoing refinements to the conveyance system made as part of continuing engineering efforts, permanent and ancillary facilities along the conveyance system corridor have been modified or relocated to provide more efficient design. Table 3-1 summarizes the major changes in facilities. The size and design of these facilities also may have been modified as the result of the new portal size, depth, and tunnel configuration. This chapter discusses modified or refined impacts from permanent above- and below-ground facilities associated with the conveyance system and portals. Modifications to the portal and tunnel construction will be described as refined information becomes available.

The most substantial changes are at Portal 41, with the addition of the Influent Pump Station (IPS), odor control building, standby power building, and electrical substation. These changes are discussed in Chapter 2 of this addendum.

Based on the findings from a comprehensive value engineering assessment, construction of the tunnel between Portals 11 and 44 can be delayed beyond 2020. This is because there is adequate downstream capacity to convey and treat flows that are planned to eventually be routed to Brightwater via portals 11 and 44. The need to site, design, and construct the tunnel or another form of conveyance between these two portals will be evaluated again in 2010 as additional flow and population information is obtained.

Therefore, Portal 11 has been eliminated from the current proposal and the influent system will begin at Portal 44.

Changes to the existing Kenmore Pump Station, discussed in Chapter 3 of the Final EIS, are no longer being considered because of the delayed construction between Portals 11 and 44.

As discussed in Appendix 3-B to the Final EIS, drop structures would be located belowground level within the portals. Drop structures are concrete vaults that are used to facilitate the discharge of the flow to the influent tunnel where there is a large difference in elevation between the existing sewer and the tunnel.

As discussed in Chapter 12 of the Final EIS, odor control equipment would be installed at potential odor sources in the conveyance system to minimize emissions of odorous compounds to the atmosphere. Odor control facilities would have a footprint ranging from 900 to 6,000 square feet within the portal sites, as shown in Table 3-1. The structures housing the odor control equipment are primarily for screening views of the scrubbers and/or filters and therefore can be made of a variety of materials.

Table 3-1. Changes in Conveyance Facilities from Final EIS

Portal	Final EIS Plan	Current Plan	Reason for Change
Portal 11	Belowground odor control facility Belowground drop structure Belowground junction structure	Portal 11 has been removed from the current project design.	Construction of the tunnel between Portals 11 and 44 will be delayed at least 10 years.
Kenmore Pump Station (existing facility)	Chemical injection facility Belowground diversion structure	Proposed new facilities have been removed from the current project design.	Facilities described in Final EIS were associated with construction of the tunnel between Portals 11 and 44, which will be delayed at least 10 years.
Portal 44	Aboveground odor control facility	Aboveground odor control facility, approximately 4,300 square feet with a stack at least 20 feet high.	Change in tunnel configuration from one combined tunnel to two separate tunnels.
	Belowground drop structure	Belowground drop structure.	
	Single portal shaft to support tunneling construction	Two portal shafts to support tunnel construction.	

Table 3-1. Changes in Conveyance Facilities from Final EIS (continued)

Portal	Final EIS Plan	Current Plan	Reason for Change
Portal 41	Aboveground odor control facility	Aboveground odor control facility, approximately 6,000 square feet with a stack approximately 38 feet high.	IPS has been relocated from the Route 9 site to Portal 41. Drop structure has been relocated to North Creek Pump Station to facilitate more efficient design.
	Belowground drop structure	Influent pump station (IPS).	
	Option to locate IPS at Portal 41	IPS support facilities, including a standby power generation facility, an odor control building, electrical substation, and additional structures deemed necessary (surge tower, pipe cleaning or pig launching facility, and effluent tunnel draining connection).	
North Creek Pump Station (existing facility)	Belowground diversion structure Chemical injection facility	Belowground diversion structure. Belowground drop structure Aboveground odor control facility, approximately 3,200 square feet, with no stack.	To facilitate a more efficient design, the drop structure and associated odor control has been relocated from Portal 41 to the North Creek Pump Station. Chemical injection is required upstream of the odor control facility; therefore, the chemical injection was relocated upstream of the North Creek Pump Station.
Portal 5	Belowground odor control facility Dechlorination facility	Aboveground odor control facility, approximately 900 square feet with a stack at least 20 feet high	Aboveground odor control facility is a more cost-effective design. Dechlorination, if needed, would be more effectively designed and operated at Portal 19, because the depth at Portal 5 would make operations and maintenance more difficult.
Portal 19	Belowground sampling station	Belowground sampling station. Provisions to support dechlorination facility if needed in the future.	Provisions for dechlorination facility relocated to Portal 19 for cost and for operations and maintenance advantages. The depth of Portal 5 would make operation and maintenance difficult. Dechlorination facility will likely not be required, as chlorination of the effluent will be optimized at the treatment plant to result in chlorine residual meeting permit requirements at Portal 19.

3.2 Areas of Potential Impact and Proposed Mitigation

Mitigation proposed to offset the potential impacts associated with the modifications to conveyance facilities relates to potential air and noise impacts associated with the drop structures, and potential noise, aesthetic, and light and glare impacts associated with the aboveground odor control facilities at Portal 5 and the North Creek Pump Station.

Potential impacts associated with the construction of the tunnel between Portals 11 and 44 and proposed facilities at Portal 11 and the Kenmore Pump Station, as analyzed in the Final EIS, would be delayed at least 10 years. Impacts associated with the construction of an aboveground odor control facility at Portal 5 were discussed in the Final EIS for the 195th Street corridor. As indicated in the discussion that follows, no significant impacts beyond those analyzed in the Final EIS would result from the relocation or modification of facilities.

3.2.1 Earth

3.2.1.1 Construction Impacts

Impacts from construction of permanent aboveground and belowground facilities are generally within the range of impacts described in Chapter 4 of the Final EIS. Refinements of estimated earthwork volumes associated with portal and tunnel construction will be described as information becomes available through ongoing evaluations.

3.2.1.2 Proposed Mitigation

Mitigation measures identified in Chapter 4 of the Final EIS would be adequate to reduce impacts to a level of non-significance.

3.2.2 Air

3.2.2.1 Construction Impacts

Impacts on air quality that are associated with the construction of drop structures would be similar to those impacts described in Chapter 5 of the Final EIS for portal construction, but on a smaller scale because drop structures would be located below ground within the portals. No additional air impacts beyond those discussed in the Final

EIS would result from construction activities associated with the proposed facility modifications.

3.2.2.2 Operation Impacts

As described in Chapter 5 of the Final EIS, odorous compounds in wastewater could be released into the atmosphere. This release can occur at various locations in the conveyance system, especially at locations with hydraulic structures that create turbulence. As discussed in Chapter 5 of the Final EIS, drop structures are normally highly turbulent and may result in the release of odorous gases. Vortex-type drop structures are often used to minimize the amount of turbulence associated with the drop structure, but they still can result in releases of entrained odorous gas. In addition, drop structures can entrain a significant volume of air and pressurize downstream pipes. Potential impacts from odor releases at drop structures could occur at the North Creek Pump Station, which was not described in the Final EIS, and at Portal 44. Because drop structures are no longer planned for Portal 11 and Portal 41, potential impacts associated with drop structures would not occur at these facilities.

3.2.2.3 Proposed Mitigation

Mitigation for potential air quality impacts associated with the construction of facilities would be the same as described in Chapter 5 of the Final EIS for the mitigation common to construction of the treatment plants.

As indicated in the conveyance operation mitigation section in Chapter 5 of the Final EIS, odor control equipment (consisting of chemical scrubbers and/or biofilters, carbon bed filters, chemical injection, or a combination of the above) would be installed at potential odor sources in the conveyance system to minimize emissions of odorous compounds to the atmosphere. King County has committed to operational criteria, including the use of odor removal equipment, for odor prevention at the conveyance facilities. The location where these criteria apply is referred to as the odor emission point. For the Brightwater conveyance facilities, the odor emission point would be located at the top of the stack. Portals 5, 44, and 41 will have stacks at least 20 feet tall; no stacks will be used at the North Creek Pump Station. Measuring odors at the stack requires a higher level of treatment because dispersion is not used to help achieve the odor threshold level. For smaller sites where the stack is near a property boundary or nearby receptors, achieving the odor threshold at the stack is desirable because available space for dispersion may be inadequate. Meeting odor criteria at the stack would help ensure that there are no odors at the property line. A stack is not needed at the North Creek Pump Station, because odor control at this location is a two-step process. After the air goes through the new facility it will then be routed into the existing odor control facility. The air will then be discharged through the existing stacks.

These measures would be adequate to reduce potential impacts to a level of non-significance.

3.2.3 Noise

3.2.3.1 Construction Impacts

Potential noise impacts associated with the construction of facilities would be the same as discussed in Chapter 10 of the Final EIS under impacts and mitigation common to all systems. Facilities associated with construction of the tunnel between Portals 11 and 44 will be delayed at least 10 years; therefore, potential construction noise impacts would be delayed. Construction noise impacts associated with the relocation of the IPS and support facilities (including a standby power generation facility, an odor control building, and electrical substation) to Portal 41 are discussed in Chapter 2 of this addendum.

3.2.3.2 Operation Impacts

Aboveground odor control facilities at Portal 5 and the North Creek Pump Station and relocation of the chemical injection facility upstream of the North Creek Pump Station would add new noise sources at these locations. Potential noise impacts associated with operation of conveyance facilities would be the same as those discussed in Chapter 10 of the Final EIS.

Where passive odor control systems (without ventilation fans) are applied, no noise control would be required. Otherwise, odor control facilities would be provided with noise reduction measures similar to those used at treatment plants, as required to conform to the permissible noise levels of the applicable jurisdiction. Noise impacts are expected to be minimal because all equipment and operations would be housed in structures, designed with sound-attenuating materials and equipment would be secured with vibration isolation features.

3.2.3.3 Proposed Mitigation

Mitigation measures identified in Chapter 10 of the Final EIS would be adequate to reduce potential noise impacts to a level of non-significance.

3.2.4 Aesthetics

3.2.4.1 Construction Impacts

No additional aesthetic impacts beyond those discussed in the Final EIS would result from construction activities associated with the proposed conveyance facility modifications.

3.2.4.2 Operation Impacts

Aboveground odor control facilities would be located at Portal 5 and the North Creek Pump Station, and the chemical injection facility would be relocated from the North Creek Pump Station to a location upstream of the pump station. Potential aesthetic impacts for typical aboveground conveyance facilities (including at Portal 5) are discussed in Chapter 12 of the Final EIS. As presented in Table 3-1 of this addendum, odor control facilities within the portal sites would have a footprint ranging from 900 to 6,000 square feet with stacks from approximately 20 to 38 feet tall. The structures associated with odor control facilities are primarily for screening views of the scrubbers and/or filters and therefore can be made of a variety of materials. The largest such facility would be at the influent pump station at Portal 41, as described in Chapter 2 of this addendum.

3.2.4.3 Proposed Mitigation

Mitigation measures identified in Chapter 12 of the Final EIS would be adequate to reduce aesthetic impacts from aboveground facilities to a level of nonsignificance.

3.2.5 Light and Glare

Light and glare impacts associated with the construction and operation of facilities at portal and pump station sites would be similar to those described for the conveyance facilities in Chapter 13 of the Final EIS. No significant light and glare impacts beyond those identified in the Final EIS would occur as a result of the proposed changes or relocation of facilities. Mitigation measures identified in Chapter 13 of the Final EIS would be adequate to reduce light and glare impacts from aboveground facilities to a level of nonsignificance.

3.3 Summary of Changes in Impacts and Mitigation from Final EIS for Conveyance Facilities

Table 3-2 below summarizes impacts and mitigation measures presented in this addendum in comparison to what was presented in the Final EIS.

Table 3-2. Summary of Changes in Impacts and Mitigation from Final EIS for Conveyance Facilities

Element of the Environment	Impact	Mitigation
Air	Potential impacts from odor releases at drop structures could occur at the North Creek Pump Station, which was not described in the Final EIS, and at Portal 44. Because drop structures are no longer planned for Portal 11 and Portal 41, potential impacts associated with drop structures would not occur.	Same as Final EIS.
Noise	Aboveground odor control facilities at Portal 5 and the North Creek Pump Station and relocation of the chemical injection upstream of the North Creek Pump Station would add new noise sources at these locations. Potential noise impacts associated with the construction and operation of these facilities would be the same as discussed in Final EIS.	Same as Final EIS.
Aesthetics	Aboveground facilities would be located at Portal 5 and the North Creek Pump Station. Impacts same as Final EIS.	Same as Final EIS.
Light and Glare	Same as Final EIS.	Same as Final EIS.

Chapter 4
Safety Relief Point

Since the Final EIS was issued in November 2003, a number of refinements and modifications to the Brightwater conveyance system have been made as a result of the ongoing conveyance system preliminary design and permit application efforts.

This chapter discusses the refinements and modifications to the safety relief point (SRP) and analyzes the potential impacts associated with these changes. The selected SRP site is shown on Figure 4-1. Key refinements from the Final EIS relate to:

- Modifications to the construction duration and site location
- Potential impacts to wetland, riparian, and aquatic resources
- Potential impacts to surface water
- Potential impacts to recreational and industrial land uses and aesthetics adjacent to the site

These project refinements and modifications do not, after taking into account the proposed mitigation, create any significant new environmental impacts that were not addressed in the Final EIS. The shoreline permit applied for with the City of Kenmore takes into account these project refinements and proposed additional mitigation measures.

4.1 Project Description

The Final EIS evaluated the potential for construction of an SRP for discharging uncontrolled overflows of stormwater-diluted wastewater into the lower Sammamish River, just above the point where the river flows into Lake Washington in the Kenmore area. As described in Chapters 3, 6, 7, and 9 of the Final EIS, discharge from the SRP would be extremely rare, once every 100 years, and would occur only as the result of catastrophic events when all five components of King County's emergency flow management system have been implemented and flows still exceed the capacity of the conveyance system.

The capacity of the SRP has been reduced from that described in the Final EIS because design refinements have resulted in hydraulic limitations. Therefore, the peak flows from the previous design could not be conveyed to the SRP. Construction of the influent tunnel from Portal 11 to Portal 44 will be delayed for at least 10 years resulting in reduced capacity conveying flows to the SRP. The SRP would be designed to discharge up to 90 million gallons per day (mgd), rather than 170 mgd, during emergency flow conditions. This reduction is caused by modifications to the proposed conveyance system design.

The design capacity for the SRP was originally equal to the 20-year peak hydraulic flow which is 170 mgd for the 2050 decade. Such a high design capacity assumed that (1) the influent pump station (IPS) experienced a complete system failure; (2) all available storage had been filled; and (3) the wastewater entering the King County conveyance system was still at the peak hydraulic flow rate. Additional analysis based on updated design information indicates that the reliability of the IPS would be higher than initially expected and that the probability of an entire IPS shutdown is extremely small. A more likely (but still rare) condition is that the IPS would operate at a reduced capacity. While operating at reduced capacity, the IPS would be able to send a portion of the wastewater in the tunnel to the treatment plant, and thereby reduce the peak flow that could be discharged from the SRP to 90 mgd.

The location of the SRP discharge point as described in the Final EIS has been changed. The relocated SRP would discharge directly to an excavated inlet rather than directly into the Sammamish River as described in the Final EIS. The new location for the SRP is approximately 200 feet west of the site identified in the Final EIS. This modification eliminates the need to permanently place the outfall structure in the main channel of the river and reduces the amount of bank armoring that would be necessary to protect the outfall from scour.

The size of the control structure has been modified from that described in the Final EIS, from 28 by 32 feet to approximately 30 feet by 40 feet. The control structure would be a two chambered concrete vault. If the capacity of the influent tunnel and existing storage facilities were exceeded, stormwater-diluted wastewater would enter the first of the two chambers. As the water surface level rises, flows would begin flowing over a weir and discharge into an inlet to the Sammamish River. Figure 4-1 illustrates the SRP.

4.2 Areas of Potential Impact and Proposed Mitigation

4.2.1 Earth

4.2.1.1 Construction Impacts

Anticipated earth impacts are generally similar to those described in Chapter 4 of the Final EIS and are not significant. The size of the SRP control structure has been modified from that described in the Final EIS from 28 feet by 32 feet to 30 feet by 40 feet. The overall depth of the structure has not changed. Construction would require installation of watertight sheet piling using vibratory or hammer pile drivers to form a cofferdam around the area to be excavated. The area inside the cofferdam would be dewatered to allow for excavation of the soils down to the required elevation. Soils and sediments removed from the excavation that are suitable as backfill material would be stockpiled by the contractor

onsite or nearby for reuse, potentially reducing the amount of imported fill material required. Soil excavation would be about 1,500 cubic yards (cy) for the SRP structure.

Construction of the SRP would require installation of watertight sheet piling around the area within the inlet to be excavated. Excavation within the inlet would be necessary to remove existing sediment below the ordinary high water mark (OHWM) to allow construction of a 2-foot-deep riprap layer. The riprap layer would protect the bottom of the inlet and an existing adjacent buried sewer line from scour in the unlikely event of an overflow. The riprap layer, consisting of approximately 1-foot-diameter angular rock, would extend approximately 50 feet south from the SRP structure. A 1-foot-deep layer of clean dredged materials, removed from the inlet during construction, would be stockpiled and replaced over the top of the riprap layer to restore the upper layer of native substrate following construction. Approximately 0.11 acre of river bottom sediments would be impacted by construction of scour protection south of the SRP structure.

4.2.1.2 Operation Impacts

Anticipated operational impacts are similar to those described in Chapter 6 (6.3.1.2) and Appendix 3-E of the Final EIS. Sediment would be disrupted in the inlet during an emergency overflow event, and would be washed into the main channel of the Sammamish River. This sediment disruption would cause substantially increased turbidity, likely resulting in a sediment "plume" that would encompass the entire inlet and extend into the Sammamish River and Lake Washington. The extent of the sediment plume would depend upon the duration and volume of the overflow event. Disrupted sediments, along with solids suspended in the emergency overflow, would be deposited in the Sammamish River channel and along the lake bottom. It is likely that sediments would include contaminants such as bacteria and other pathogens, metals, and other constituents associated with untreated wastewater. As noted above, the likelihood of an overflow event is extremely low and would occur only under catastrophic conditions. Additional discussion of water quality impacts is included below, under Water Resources.

4.2.1.3 Proposed Mitigation

Measures described in Chapters 4 and 6 of the Final EIS under construction mitigation common to all systems would adequately reduce construction-related earth impacts to a level of non-significance.

The proposed installation of riprap within the inlet would help to reduce sediment scouring during a rare overflow event.

Should an overflow occur, King County would monitor sediments deposited in the Sammamish River and/or Lake Washington to determine the appropriate approach to mitigate potential impacts. These measures could include sediment removal, capping, or other approaches as identified by King County and appropriate resource agencies.

4.2.2 Water Resources

4.2.2.1 Construction Impacts

The SRP structure would be constructed at the north end of an excavated inlet off the Sammamish River. This location is anticipated to have generally similar water quality impacts during construction as those discussed in Chapter 6 of the Final EIS; however, there are some refinements as described below.

Construction would require installation of watertight sheet piling in the inlet to form a cofferdam around the area to be excavated. The area inside the cofferdam would be dewatered to allow for excavation. Dewatering water would be treated in settling tanks onsite to remove suspended solids and tested for turbidity before being discharged to the Sammamish River or King County's interceptor sewer. Construction work would then occur under dry conditions within the cofferdam for the expected nine months of construction. This estimated construction duration is longer than the two-month period described in the Final EIS. This longer construction duration is not expected to have a substantially different impact to receiving water quality because the proposed construction methods will limit the potential for sediment releases during construction and will comply with all applicable permit requirements. As part of SRP construction, environmental measures to protect groundwater and surface water would be installed as required by permit conditions from the Washington State Department of Ecology (Ecology).

The eastern shore of the inlet would be modified hydraulically by leaving a portion of the sheet piling in place after construction. This sheet piling would be tied into the existing sheet piling wall and used as a bulkhead for a retaining wall system as part of the final site grading plan. All other sheet piling would be removed after the SRP is built.

4.2.2.2 Operation Impacts

Operation impacts to water resources are generally similar to those described in Chapter 6 of the Final EIS, except that the maximum potential discharge volume has been reduced from 170 to 90 mgd during emergency flow conditions and the location of the discharge has changed. Moving the location of the SRP out of the main channel of the Sammamish River and into an excavated inlet to the river will concentrate water quality impacts within the inlet. Water quality standards for bacteria, ammonia, lead, copper, zinc, mercury and turbidity would likely be exceeded for hours to days as described in Sections 6.3.1.2 and 7.3.1.2 of the Final EIS. In the rare and unpredictable event of an overflow into the inlet, water quality impacts would be substantial. The flow velocity would disrupt sediments along the bed of the inlet, as described above. The emergency overflow volumes would largely replace flows in the inlet, resulting in reduced levels of dissolved oxygen and higher levels of bacteria, solids, and other contaminants contained in untreated wastewater. The untreated wastewater plume would spread into the Sammamish River and ultimately up to 3,800 feet into Lake Washington, creating water

quality impacts in these receiving water bodies. The extent of the untreated wastewater plume would depend upon the duration of the overflow, but reducing the capacity of the SRP from 170 to 90 mgd would reduce the potential extent of the discharge from that described in the Final EIS.

The frequency of emergency discharge is expected to be about the same as discussed in the Final EIS—one or fewer times in every 100 years. As noted in the Final EIS, overflows would only occur under extremely rare conditions when all five components of King County's emergency flow management system have been implemented and flows still exceed the capacity of the conveyance system. The SRP would allow such emergency overflows to occur at a controlled location, as opposed to an uncontrolled location such as a manhole or other low point in the system.

4.2.2.3 Proposed Mitigation

Construction mitigation described in Chapter 6 of the Final EIS would minimize the potential for water quality impacts during construction. The proposed construction methods, including watertight sheet piling would help to reduce construction impacts.

Mitigation described in Chapter 6 of the Final EIS for emergency overflows, including monitoring, public notification, and appropriate cleanup, would be adequate to address potential water resource impacts.

4.2.3 Plants, Animals, and Wetlands

Impacts to terrestrial and aquatic species for both construction and operation are generally similar to those described in Chapter 7 of the Final EIS.

4.2.3.1 Construction Impacts

Construction of the SRP would temporarily impact the existing excavated inlet for up to nine months. Construction would be coordinated with U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, NOAA Fisheries, Washington State Departments of Ecology and Fish and Wildlife, and the City of Kenmore in accordance with permitting requirements to avoid adversely impacting salmon runs in the Sammamish River. In the Final EIS, impacts to the waterway were scheduled to last only two months during construction of the outfall structure.

Impacts to riparian and wetland plants during construction are likely to be less than those for the location described in Chapter 7 of the Final EIS because the new location of the SRP is in an area with less vegetation on the bank than the previous location.

As discussed in Chapter 7 of the Final EIS, construction activities for the SRP would have impacts on wetlands. A palustrine emergent and scrub/shrub wetland is located on

the east and west sides of the excavated inlet. The onsite portion of this wetland is approximately 0.57 acre and extends offsite along the north bank of the Sammamish River under the existing bridge at Juanita Drive NE. Approximately 0.14 acre of temporary wetland impacts (classified as Category 1 wetlands by Ecology and the City of Kenmore) along the west side of the excavated inlet would occur during installation of the sheet piles necessary to dewater the inlet. Approximately 0.024 acre of a Category 1 palustrine emergent and scrub/shrub wetland would be permanently impacted from constructing the SRP.

4.2.3.2 Operation Impacts

Under rare circumstances—one or fewer times in every 100 years—wastewater would be discharged from the SRP. If such an event were to occur, the discharge plume from the SRP would most likely extend the entire width and depth of the inlet, the Sammamish River, and up to approximately 3,800 feet into Lake Washington. Impacts to aquatic species within the inlet channel and the Sammamish River at the time of a discharge would be potentially significant, as described in Section 7.3.1.2 of the Final EIS. Any fish present in the inlet and/or the Sammamish River would not likely survive unless they were able to leave the area.

However, the reduction in the designed discharge flow from 170 to 90 mgd is likely to reduce the extent of the discharge plume and the potential for resulting environmental impacts from that described in the Final EIS. Water quality standards would be exceeded at the edge of the dilution zone for hours or possibly days after the emergency overflow occurred, with accompanying potential impacts to aquatic species.

4.2.3.3 Proposed Mitigation

The wetland area adjacent to the construction limits on the west would be improved by removing non-native plants and by planting native wetland plants. Permanent wetland impacts would be mitigated by creating 0.036 acre of forested wetland adjacent to the existing wetland to the west of the SRP location. Additional mitigation would include enhancement of the remaining portion of the wetlands onsite and restoring adjacent upland riparian areas. Any in-water work associated with the SRP construction would be conducted in compliance with the conditions in the Hydraulic Project Approval (HPA) permit, including periods of time when construction is allowed to minimize impacts to aquatic resources (construction “windows”).

If a discharge from the SRP is necessary, King County would post and clean up the area as appropriate. King County would also monitor water quality in the vicinity of the overflow to determine when pollutant concentrations have returned to levels consistent with state Water Quality Standards. King County would work with the resource agencies to determine appropriate mitigation for impacts to aquatic species, in accordance with all permit requirements.

4.2.4 Environmental Health

4.2.4.1 Construction and Operation Impacts

Impacts to environmental health resulting from the new location for the SRP would be similar to those described in Chapter 9 of the Final EIS. Because the discharge capacity has been reduced from that described in the Final EIS, there may be some reduced potential for plume migration in Lake Washington, and less risk of impacts to environmental health overall. However, impacts would likely be generally similar to those described in the Final EIS, with the potential plume migration up to approximately 3,800 feet into Lake Washington.

4.2.4.2 Proposed Mitigation

Mitigation measures as described in Chapter 9 of the Final EIS would reduce impacts associated with the SRP. King County has developed a five-part emergency flow management system for avoiding overflow events. Emergency overflows would occur at the SRP in the Sammamish River in Kenmore only if the five strategies do not reduce flows through the conveyance system to manageable levels.

As described in Chapter 9 of the Final EIS, following an overflow event, the King County Wastewater Treatment Division would coordinate with the Seattle/King County Health Department to install temporary warning signs or provide other methods of notification in affected areas. These departments would coordinate appropriate cleanup measures, including debris removal if necessary. King County would monitor water quality until conditions returned to background levels. In addition, Ecology would be notified within 24 hours of the emergency overflow.

4.2.5 Land and Shoreline Use

4.2.5.1 Construction Impacts

The new SRP location is within the same City of Kenmore zoning designation and has similar land use as the location described in the Final EIS. The area is characterized by industrial development and is zoned RB-Regional Business. The site is designated Urban Shoreline by the City of Kenmore.

Construction of the SRP would require a shoreline substantial development permit (shoreline permit) from the City of Kenmore for construction activities proposed within 200 feet of the shoreline. King County has applied to the City of Kenmore for a shoreline permit for construction of a safety relief point.

Construction of the SRP in the new location could potentially disrupt operations of the Lakeside High School Crew (Lakeside Crew). Lakeside Crew's boat storage facilities and dock are adjacent to the excavated inlet off of the Sammamish River. The potential impacts of SRP construction on Lakeside Crew operations are discussed in the Recreation section of this chapter. Construction of the SRP is not anticipated to result in permanent displacements of existing land uses.

4.2.5.2 Operation Impacts

Operation of the SRP would not permanently change or influence the character of the surrounding land use. Regular maintenance and inspection of the facilities would result in occasional vehicle trips to the site; these trips would not significantly impact adjacent land uses.

In the rare likelihood of an emergency overflow (approximately once every 100 years), temporary disruption to Lakeside Crew and other recreation activities may occur, but no land use impacts are anticipated. The impacts of this temporary disruption are discussed in the Recreation section.

4.2.5.3 Proposed Mitigation

Compliance with applicable City of Kenmore code and permit requirements, including shoreline substantial development permit requirements, would minimize potential land use impacts. King County will coordinate with the City of Kenmore and adjacent property owners to minimize land use disruption.

4.2.6 Aesthetics

4.2.6.1 Construction and Operation Impacts

Aesthetic impacts related to the construction and operation of permanent aboveground facilities associated with the Brightwater conveyance system were generally addressed in Chapter 12 of the Final EIS. The analysis focused on impacts within identified portal siting areas, including Portal Siting Area 11 where the SRP is located.

Aesthetic impacts of SRP construction include views of excavated banks, piles of soil, site lighting, construction equipment, and removal of existing vegetation on the construction site. The top of the permanent structure would be 4 feet above the summer water elevation and 6 feet above the winter water elevation. Thus, the south face of the SRP would have 4 to 6 vertical feet of concrete wall showing above the waterline and would be approximately 30 feet wide. The wall would have louvers and fish screens. Both the east and west sides of the SRP could also have a visible wall 4 to 6 feet high showing at the water side with the ground level graded.

4.2.6.2 Proposed Mitigation

Mitigation of short-term impacts at the SRP site would include leaving a buffer of existing vegetation, where possible, or providing fencing, vegetation, or other visual barriers around the construction site. Construction of the SRP could be visually screened with fencing and/or vegetation during the construction period, particularly on the west side where the construction area is visually prominent. Where possible, existing vegetation would be left in place to provide a buffer. Landscaping mitigation would be provided in accordance with applicable City of Kenmore Municipal Code requirements, including special district code requirements.

Following construction, the area would be revegetated and restored to eliminate any long-term visual impacts. Native riparian vegetation could be planted on the bank to provide screening of the SRP outfall.

4.2.7 Recreation

4.2.7.1 Construction Impacts

Construction of the SRP in the new location could potentially disrupt operations of the Lakeside Crew during the nine months of construction. Lakeside Crew has boat storage facilities adjacent to the excavated inlet off of the Sammamish River and adjacent to the SRP construction site. Lakeside Crew uses the facility primarily during the spring season; however, faculty, alumni, students, and others use the facility year-round. With careful scheduling of the construction of the SRP and coordination with Lakeside Crew, disruptions or impacts are not expected to occur to Lakeside Crew's recreational activities.

4.2.7.2 Operation Impacts

Operation of the SRP would not permanently change or influence recreational use of the excavated inlet or the Sammamish River. Regular maintenance and inspection of the facilities would result in occasional vehicle trips to the site; these trips would not significantly impact recreation use.

In the rare event of an emergency overflow into the excavated inlet and main channel of the Sammamish River as the result of catastrophic events, temporary disruption may occur to Lakeside Crew activities, the Washington Department of Fish and Wildlife (WDFW) river access point and boat ramp on the south side of the Sammamish River, and other recreation activities at the mouth of the Sammamish River and north end of Lake Washington. However, given the type of storm event that would be anticipated to occur in order to cause an emergency overflow, recreation activities in the area would probably already be suspended or limited because of the inclement weather. Lakeside Crew and other recreation activities could resume after King County cleanup measures

had been implemented and water testing confirmed successful mitigation consistent with state Water Quality Standards. No significant impacts to Lakeside Crew or other recreational uses in the area are anticipated.

4.2.7.3 Proposed Mitigation

Mitigation measures are the same as those described in Chapter 14 of the Final EIS for construction impacts common to all systems. The scheduling of the construction of the SRP would be coordinated with Lakeside Crew recreational activities to avoid disruption during construction. Parking and access to the shell house will be maintained throughout the construction period.

If a discharge from the SRP is necessary, King County would install temporary warning signs or provide other methods of notification in affected areas and would clean up the area as appropriate. King County would also monitor water quality in the vicinity of the overflow to determine when pollutant concentrations had returned to levels consistent with state Water Quality Standards.

4.2.8 Cultural Resources

4.2.8.1 Construction and Operation Impacts

The proposed SRP is in the vicinity of the historic mouth of the Sammamish River and has a high probability for hunter-fisher-gatherer archaeological resources. As described in Chapter 15 of the Final EIS, construction of the SRP may affect unrecorded archaeological sites at the location at the end of the excavated inlet. Direct impacts to archaeological deposits could include changes to the condition or location of archaeological materials, such as removal or disturbance of archaeological materials during excavation, or changes in the condition of archaeological deposits due to compaction from placement of the SRP structure.

However, no impacts to archaeological resources are anticipated to result from the construction or operation of the SRP. This is because the SRP is located at the junction of two existing interceptors and it is unlikely that anything of archaeological significance remains intact.

4.2.8.2 Proposed Mitigation

Mitigation measures described in Chapter 15 of the Final EIS would reduce potential cultural resource impacts to a level of insignificance. Pursuant to archaeological treatment and monitoring plans being developed during project design, if previously unknown and potentially significant archaeological materials are identified during

construction excavation, an investigation would be carried out before excavation continues.

4.3 Summary of Impacts and Mitigation

The following table summarizes impacts and mitigation measures presented in this chapter.

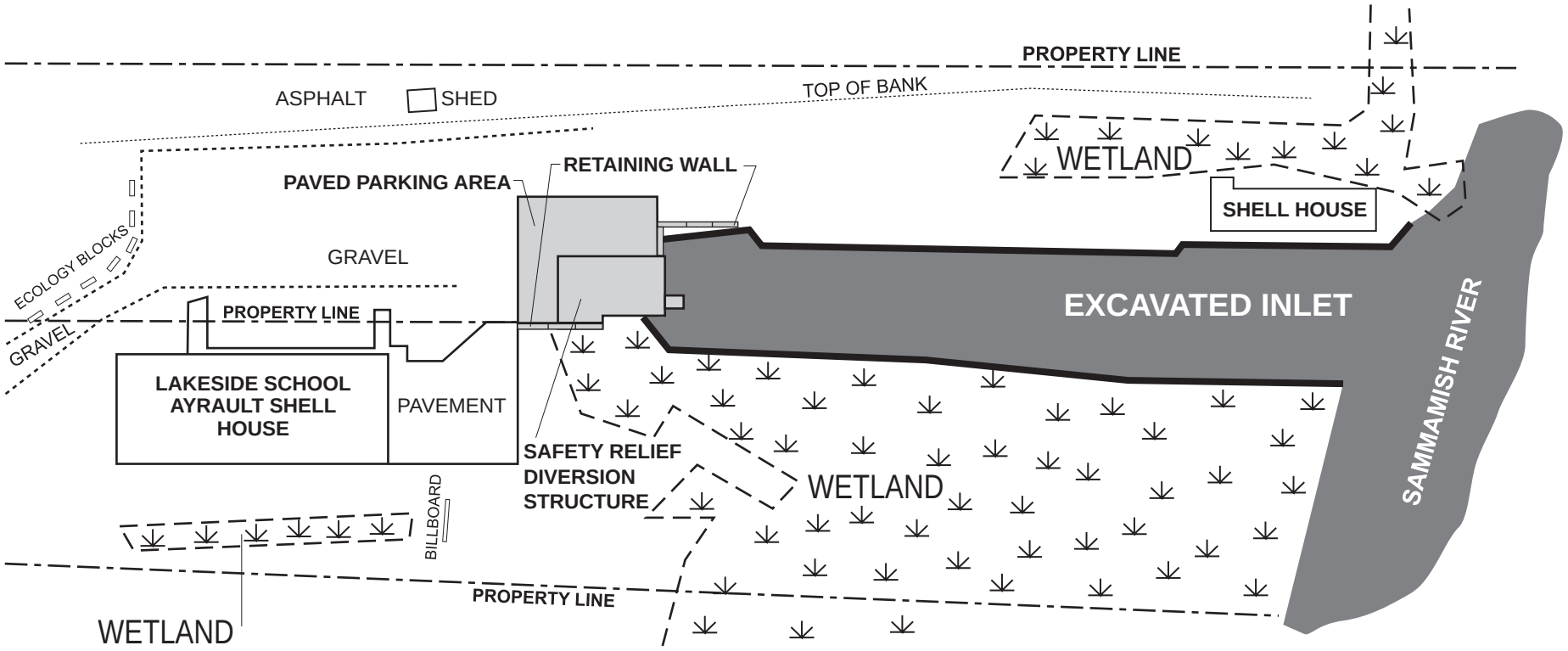
Table 4-1. Summary of Impacts and Mitigation Measures for the Safety Relief Point

Element of the Environment	Impact	Mitigation
Earth	The size of the SRP structure has been modified from 28 feet by 32 feet to 30 feet by 40 feet. Soil excavation would be about 1,500 cy.	Same as Final EIS.
Water Resources	SRP structure would be constructed at the north end of an excavated inlet off the Sammamish River. The maximum potential discharge volume has been reduced from 170 mgd to 90 mgd. Emergency discharge flows would result in exceedances of water quality standards in the inlet, Sammamish River, and Lake Washington for up to days.	Same as Final EIS.
Plants, Animals, and Wetlands	Temporary impact to existing excavated inlet for up to nine months. Construction would be coordinated with permitting agencies to avoid impacting salmon runs in the Sammamish River. Previously, impacts to the waterway were scheduled to last only two months. Reduction in the designed discharge flow from 170 mgd to 90 mgd is likely to reduce the extent of the discharge plume from that predicted in Final EIS. Aquatic species within the excavated inlet at the time of an overflow would be unlikely to survive the event.	Same as Final EIS. Wetland areas adjacent to the construction limits on the west would be improved by removing non-native plants and planting native wetland plants. Additional wetlands would be created.
Environmental Health	Impacts to environmental health resulting from the new location for the SRP would be similar to those described in Chapter 9 of the Final EIS.	Same as Final EIS.
Land and Shoreline Use	Construction of the SRP is not anticipated to result in permanent displacements of existing land uses. Construction of the SRP would require a shoreline substantial development permit from the City of Kenmore.	Same as Final EIS.

Table 4-1. Summary of Impacts and Mitigation Measures for the Safety Relief Point (continued)

Element of the Environment	Impact	Mitigation
Aesthetics	Aesthetic impacts of SRP construction include views of excavated banks, piles of soil, site lighting, construction equipment, and removal of existing vegetation on the construction site. When in operation, the south end of the SRP would have a 4- to 6-foot vertical concrete wall showing above the water surface and would be approximately 30 feet wide. The exposure of the wall would be visible on the south, and partially visible on the east and west sides as the wall tapers off to the north.	Leave a buffer of existing vegetation where possible or provide fencing or other visual barriers to the construction site. Following construction, the area would be revegetated and restored to eliminate any long-term visual impacts. Native riparian vegetation could be planted on the bank to provide screening of the SRP. Landscaping mitigation would be provided in accordance with applicable City of Kenmore code requirements, including special district code requirements.
Recreation	Construction of the SRP in the new location is not expected to result in recreational impacts. No impacts to Lakeside Crew are anticipated.	Same as Final EIS. Parking and access to the shell house will be maintained throughout the construction period. King County will coordinate with Lakeside School to avoid disruption of Crew activities.
Cultural Resources	No impacts are expected to occur, because the SRP is located in a previously disturbed area.	Same as Final EIS.

List of Figures



King County
Department of
Natural Resources and Parks
Wastewater Treatment
Division

SOURCE: HDR, 2004.

Figure 4-1
Safety Relief Point Site Plan
ADDENDUM 4
BRIGHTWATER FINAL EIS