

3.16 UTILITIES

This section describes the existing utility systems that serve the Tukwila South site area and evaluates potential impacts to these systems. Stormwater facilities are discussed in Section 3.2, Water Resources. Background information for this section is contained in Appendix B, Preliminary Master Drainage Plan (Goldsmith and Associates, Inc.) of this Draft EIS.

3.16.1 Affected Environment

Water

The City of Tukwila currently provides water to areas within the City north of S 180th Street. Areas of the City south of S 178th Street/S 180th Street, to approximately S 204th Street, including the Tukwila South site, are served by the Highline Water District through an Interlocal Agreement with the City of Tukwila (see Figure 2-10 in Appendix B). It is assumed for this Draft EIS that the Highline Water District would continue to provide service to the site subsequent to annexation of the site by the City.

Water Service to the Site

Water service to the Tukwila South site is provided by the Highline Water District. The Highline Water District operates a public water system that provides water service to an approximately 18 square mile service area. The majority of the Highline Water District's water supply (over 90 percent) is purchased from the Seattle Public Utilities (SPU) regional water system. Remaining water needs are met through two groundwater wells and a treatment facility operated by the District. Several emergency intertie connections with neighboring jurisdictions are also maintained. Highline Water District owns and operates six pump stations: four water supply pump stations and two booster stations. The four supply stations pump water to reservoir storage facilities within the Highline system. The two booster stations distribute water throughout the system.

The Highline Water District is divided into nine separate pressure zones in order to accommodate elevation differences throughout the District and maintain adequate pressures throughout the system. Maintenance of these pressure zones requires a multi-level storage reservoir system. The District currently owns and operates nine storage reservoirs that provide a combined capacity of approximately 21.35 million gallons of water. The reservoirs control pressures in the system and also provide storage to supplement source facilities during demand peaks and/or high demand emergencies (e.g., fire). Six of these reservoirs provide storage for the Tukwila South planning area with a combined storage volume of 12.25 million gallons.

Distribution System Serving the Site

The Highline Water District currently has an 8-inch water main extending south from S 180th Street along Southcenter Parkway and the existing Frager Road to approximately S 196th Street (flood protection barrier dike). At approximately S 196th Street, the 8-inch main extends west along the flood protection barrier dike before connecting to an existing 16-inch main that extends south to S 200th Street, where it connects to a 12-inch main. The 12-inch main in S 200th Street extends west to Orillia Road and then north on Orillia Road, for approximately 2000 feet, where it terminates. The District also has an existing 18-inch main that extends south from

the 12-inch main in S 200th Street to S 204th Street, and then west on S 204th Street to Orillia Road. The Orillia Road water main connects to the intertie with the City's reservoir system south of the site. Intertie points from the onsite distribution system to the offsite system are located on S 180th Street, S 200th Street, and south of the S 188th Street interchange. Currently, the District's fire flow for the Tukwila South planning area is 3000 gallons per minute (gpm) at a minimum of 20 pounds per square inch (psi).

Water System Comprehensive Plans

City of Tukwila 1999 Water System Comprehensive Plan

The Tukwila South site lies within both the City of Tukwila and unincorporated King County. The portion of the site within the City limits is included in the service area identified in the City of Tukwila's 1999 Water System Comprehensive Plan; however, as indicated above, actual water service to this area is provided by the Highline Water District, through an Interlocal Agreement with the City of Tukwila. The southern portion of the site (currently within unincorporated King County), is designated in the City's Water System Comprehensive Plan as a "Potential Boundary Adjustment and Annexation Area;" however, as described above, it is assumed for this Draft EIS that the Highline Water District would continue to service this area.

Highline Water District 2002 Comprehensive Water System Plan

The majority of the Tukwila South site is encompassed within the Highline Water District's 2002 Comprehensive Water System Plan service area. The area south of South 200th Street adjacent to the Green River (see Figure 2-10 in Appendix B) is not currently included in the District's service area. This area would require annexation and an amendment to the District's Comprehensive Plan in order to be formally included within its service area. As described above, however, the area is currently served by Highline Water District facilities.

Wastewater

The City of Tukwila's wastewater service area includes the north portion of the site within the City limits. The southern portion of the site is not currently included in any municipal wastewater service area. It is assumed for this Draft EIS that the City would extend the boundary of its sewer service area to include the site, and that future wastewater service to the site would be provided by the City.

City of Tukwila

The City of Tukwila operates and maintains a sanitary sewer collection system with approximately 33 miles of gravity and force sewer mains, and eight lift stations. The lift stations pump approximately 60 percent of all sewage in the City (City of Tukwila 2004). Areas within the site and City limits that are currently on the municipal sewer system include the northeast portion of the site (Segale Business Park). The remaining portions of the site are served primarily by onsite wastewater treatment systems (septic systems). Wastewater flows from the City of Tukwila discharge into King County's regional system and are treated at the County's South Treatment Plant, in Renton, Washington. King County is in the process of constructing a new treatment plant (Brightwater) that will accommodate flow volumes currently being treated at

the South Treatment Plant; this will create future expanded capacity at the South Treatment Plant.

City of Tukwila Wastewater Comprehensive Planning

The City of Tukwila is currently in the process of updating its 1991 Comprehensive Sewer System Plan and 1999 Addendum, consistent with the Growth Management Act and the Department of Ecology and Health requirements for updates every five years. It is anticipated that the updated Comprehensive Sewer System Plan will be adopted in 2005, and that, consistent with WAC 173-240-050, the Plan will: evaluate existing and proposed sewer service area boundaries, including provision of service to the Tukwila South planning area; identify policies for accommodating growth within the sewer service area; project future wastewater flows and capacity within the system relative to land use regulations; and include recommendations for the City's Capital Improvement Program (CIP) to meet future demands for utilities within the City resulting from growth.

The City's 2005-2010 CIP identifies improvements to the City's wastewater system that will: address provision of service to areas currently on septic systems; upgrade or replace existing facilities to increase capacity within the City's system; and control infiltration and inflow. Several of these improvement projects would be necessary to accommodate additional development within the Tukwila South planning area. These have been identified as:

- Increasing the capacity of Pump Station No. 2, located at Minkler Blvd and Andover Park West;
- Possible need for increasing the capacity of an off-site pressure main (from Minkler Blvd. to Strander Blvd., within Andover Park West);
- Replacement, upsizing and extension of a sewer main within Southcenter Parkway from Minkler Blvd. to S 180th Street; and,
- Construction of a sewer line from S 180th Street to the City limits along Southcenter Parkway (this project would be coordinated with the planned Southcenter Parkway extension).

It is anticipated that the City will review and revise the sewer system projects listed in the 2005-2010 Capital Improvement Program, as needed, to be consistent with recommendations in its updated Comprehensive Sewer System Plan. Refer to Appendix B, Preliminary Master Drainage Plan for additional discussion of potential changes in the specific design parameters of these projects that would likely be required to accommodate future development within the Tukwila South site, as evaluated under Alternatives 1 and 2.

Electricity and Natural Gas

Electricity

Electrical service is provided to the site and site vicinity by Puget Sound Energy (PSE). Under existing conditions, electrical service to the site is provided by a 115 kilovolt (kV) transmission line (Asbury O'Brien line) and a 12.5 kV transmission line (Asbury Circuit #16) passing through the site on utility poles. A 12.5kV line on Southcenter Parkway north of S 180th Street (Southcenter Circuit #26 and Circuit #24), and a 12.kV line on Segale Park Drive B and Andover Park West (Circuit #25) also provide service to the site.

The closest existing substation to the site is the Southcenter Substation to the north. This substation has a 25 Mega Volt Ampere (MVA) bank with five existing 12kV distribution circuits, two of which run south to the north side of the site. One of these circuits is fully loaded (at capacity) and the other is partially loaded. A second substation, the Asbury Substation, is located west of the site near Military Road and S 173rd Street; however, this substation is fully loaded with no spare capacity. Plans for expansion of the Boeing Aerospace Substation, also located in the vicinity of the site to the south, to include a third transformer are currently under negotiation; however, this substation expansion will serve the Pacific Gateway Park and growth in the surrounding area, mainly on the east side of the Green River.

Natural Gas

Natural gas service is also provided to the site and site vicinity by Puget Sound Energy. Existing service to the site is provided by a 6-inch intermediate pressure gas line in Southcenter Parkway. This line runs south along the Parkway from the corner of S 180th Street and 57th Avenue S, and terminates just north of S 192nd Street. The line has a total capacity to supply 180,000 standard cubic feet per hour (scfh). The 6-inch intermediate pressure line currently supplies approximately 30,000 scfh; therefore, it has the capacity to supply an additional 150,000 scfh to the area, beyond its current use. Service to the site is also provided by a 16-inch high pressure line that runs along S 180th Street and up S 178th Street. Background growth in the vicinity of the site would not be expected to result in the need for upgrades to existing gas lines. The 6-inch intermediate pressure line is a one way feed to the site and would only be upgraded due to growth at the site.

3.16.2 Impacts

Alternatives 1 and 2

Under Alternatives 1 and 2, the site would be developed in a mix of campus-style research and office environments that would include an array of commercial, retail, residential, hotel and recreational uses. Major site preparation and infrastructure development is proposed at the outset of the project. Alternatives 1 and 2 include establishing site grades as part of a comprehensive earthwork program and improving Southcenter Parkway in a new alignment along the base of the western hillside through the Tukwila South site; installation of major utility extensions (including water and sewer pipes within the Southcenter Parkway right-of-way) to serve the area would occur at the same time. Extension of major utility lines within Southcenter Parkway is identified as a key element of the initial infrastructure development phase (refer to Chapter 2 of this Draft EIS and Appendix B for further detail).

Infrastructure Development Phase

Utilities constructed within Southcenter Parkway would include stormwater conveyance lines, and other public utilities, including water, sewer, electricity, gas, and telecommunications. Stormwater is discussed in Section 3.2, Water Resources.

A 12-inch water transmission main and 21- to 24-inch sewer trunk line would extend within the Southcenter Parkway right-of-way from S 180th Street to S 200th Street. One of the goals of the mass earthwork program for the site is to ensure a cohesive elevation for the planned utility connections (e.g., wastewater) and to allow effective drainage conveyance from the road and

future developed areas within the site to stormwater control and conveyance facilities. The grades and elevation of the Southcenter Parkway expansion would be designed to facilitate these goals. Refer to Appendix B, Preliminary Master Drainage Plan for additional information on the proposed mass earthwork program. Extensions from these major utility lines to individual planning areas would be constructed as the site develops over the 22-year buildout period.

Water

It is not anticipated that there would be interruptions of service to water users during the infrastructure development phase. The existing water distribution system would continue to service the site until the new main is operational. The existing system would also be used to provide construction water for dust control and other construction activities. Sections of the existing Highline Water District water distribution system would require relocation, including the section of 18-inch water main between South 200th Street and South 204th Street. Installation of the 12-inch main within Southcenter Parkway would not require “upsizing” any of the offsite water distribution facilities. In the future, additional intertie points or pressure reducing station(s) could be required. It is not anticipated that any additional water source, storage or pumping facilities would be required to adequately serve the site (refer to Appendix B, Preliminary Master Drainage Plan).

Wastewater

A 21- to 24-inch sewer trunk line would be constructed within Southcenter Parkway between S 180th Street and S 200th Street. As described above under Affected Environment, the City has identified replacement of a section of sewer main north of the site along Southcenter Parkway (between Minkler Blvd and S 180th Street) in its CIP. It has been assumed for purposes of infrastructure planning and analysis in this Draft EIS that this replacement main could be sized and constructed to provide the necessary outfall elevation for the sewer trunk line extension through the site.

It is assumed for purposes of infrastructure planning and preliminary design that the trunk sewer line extension through the site could occur at a gradient of 0.001 ft/ft (minimum allowable by DOE is 0.0008 ft/ft) and a minimum cover depth of four feet. These assumptions, together with the proposed mass grading program and infrastructure system, would result in future wastewater service to the site by means of a “gravity” system, eliminating the need for any sanitary sewer “lift stations.” However, the City of Tukwila is also evaluating the possibility of a lift station in conjunction with this sewer trunk line. A determination as to the use of a gravity system or a lift station would be made by the City during the final design process for the Southcenter Parkway improvement. Factors to be considered in the City’s decision include cost, and installation and maintenance requirements. Refer to Appendix B, Preliminary Drainage Plan, for additional discussion of the construction requirements for the 21- to 24-inch sewer trunk line. Installation of the sanitary sewer trunk line would be coordinated with the City and scheduled as part of the Southcenter Parkway extension.

Electricity

During construction, the extension of existing circuitry into the site would accommodate 2 to 3 MVA of new demand from the site, assuming that existing circuit loading levels from offsite uses in the vicinity do not increase. When the load from the site exceeds 3 MVA, the Asbury Circuit #16 could serve an additional 6 MVA, assuming the Boeing Aerospace substation is expanded

to relieve the load currently served by Asbury Circuit #16 on the east side of the Green River. According to Puget Sound Energy, the expansion of the Boeing Aerospace substation is being actively pursued (Dave Jenness, Puget Sound Energy, March 2005).

During the infrastructure phase, conduits and vaults to serve the anticipated need at full buildout would be installed underground within the expanded and realigned Southcenter Parkway. Conduits and vaults to relocate the existing distribution circuit within S 178th Street would be installed within the realigned S 178th Street. Existing transmission lines on the site would not be relocated (the Renton Junction Circuit #35 on Segale Park Drive B could potentially be relocated during the full buildout phase if necessary, based on future redevelopment plans).

If specific building development proposals are approved during the infrastructure development phase, certain additional electrical system improvements needed to serve the site would also be installed during infrastructure development, as Puget Sound Energy typically plans facilities to serve anticipated needs before the actual need occurs (see Full Buildout below for a description of facilities that would be needed at buildout of the site).

Natural Gas

The realignment of S 178th Street under Alternatives 1 and 2 would require a portion of the 16-inch high pressure line that runs along S 180th Street and up S 178th Street to be relocated; this line would not be taken out of service during relocation. The existing 6-inch intermediate pressure gas line within Southcenter Parkway would remain.

Based on the need for a high pressure gas main if certain uses are located within the site, improvements to the natural gas system that would be required at full buildout would not be constructed during the infrastructure development phase unless specific building development proposals are approved during the infrastructure development phase. In that case, the necessary improvements would be located within the expanded and realigned Southcenter Parkway and realigned S 178th Street would be installed within those roadways during the infrastructure construction phase. These would include an 8-inch high pressure gas main, a new district regulator located within Southcenter Parkway and intermediate pressure piping as necessary under Alternative 1; an 8-inch intermediate pressure gas main and an upgrade to the existing district regulator would be required under Alternative 2 (the need for these facilities is described under Full Buildout below).

Full Buildout

Approval of the Proposed Action(s) would create the capacity for a range of uses on the site and associated employment and housing that would lead to demands on the municipal utility systems (refer to Section 3.8, Socioeconomics for details on the number of assumed employees and residents for each alternative). Impacts would be generated incrementally over the buildout period. Potential water demand, wastewater flows, and electricity and natural gas demand are estimated for assumed land uses under Alternatives 1 and 2 at full buildout (refer to Section 2.7, Chapter 2 for a description of assumed land uses).

Water Demand

Table 3.16-1 identifies estimated water demand under Alternatives 1 and 2 at full buildout. Estimated water demand reflects total projected employment and permanent resident capacity

associated with assumed land uses onsite at full buildout (i.e., between 22,000 and 28,000 employees and between 1,500 and 4,000 residents). In general, projections are based on data from the City of Tukwila and Highline Water District for domestic water demand in the area for similar land use categories. These data, together with the City and District Comprehensive Plans and Washington State Department of Health design recommendations, were used to estimate annual domestic water demand at full buildout (refer to Appendix B, Preliminary Drainage Plan for further detail). Based on current projections, the Highline Water District would have adequate capacity to serve demand under Alternatives 1 and 2 over the long-term buildout.

Fire Flow

As described under Affected Environment, the Highline Water District's fire flow capability for this area is currently 3000 gpm at a minimum of 20 psi. Modifications and system designs for fire flow service to the site could be required, depending on the specific size, type and location of future development projects onsite (Goldsmith & Associates, 2004).

**Table 3.16-1
ESTIMATED WATER DEMAND, ALTERNATIVES 1 AND 2, FULL BUILDOUT**

Alternative	Estimated Annual Domestic Water Demand¹ (gallons/year)
1	535,497,872
2	355,531,176

Source: Goldsmith and Associates, Inc.

¹ Estimated Annual Domestic Water Demand calculated from compilation of domestic water usage within the City of Tukwila. Sources include data provided by the City and Highline Water District, the Highline Water District Water Comprehensive Plan, and the Washington State Department of Health Water System Design Manual.

Wastewater

Table 3.16-2 identifies estimated wastewater flows under Alternatives 1 and 2 at full buildout. In general, projections are based on water usage data from the City of Tukwila and Highline Water District, together with the City of Tukwila Comprehensive Plan and Washington State Department of Ecology design recommendations. Based on current projections, the City of Tukwila and the King County regional wastewater treatment system would have adequate capacity to serve wastewater flows from Alternatives 1 and 2 over the long-term buildout.

**Table 3.16-2
ESTIMATED WASTEWATER FLOW, ALTERNATIVES 1 AND 2, FULL BUILDOUT**

Alternative	Estimated Annual Wastewater Flow¹ (gallons/year)	Annual Infiltration and Inflow² (gallons/year)	Total Annual Flow (gallons/year)
1	427,071,008	89,216,400	516,287,408
2	278,464,732	89,216,400	367,681,132

Source: Goldsmith and Associates, Inc.

¹ Estimated Annual Wastewater Flow calculated from compilation of domestic water usage within the City of Tukwila. Sources include data provided by the City and the Highline Water District, the City of Tukwila Comprehensive Sewer Plan Addendum 1999, and the Washington State Department of Ecology Criteria for Sewage Works Design.

² Annual Infiltration and Inflow (I/I) calculated at 600 gallons per acre per day.

If a gravity sewer system within Southcenter Parkway is used to serve the site, such a system could result in insufficient cleansing velocities in the major sewer trunk line prior to buildout of the site. This could require additional flushing, beyond what is typically required, prior to full buildout of the site, in order to maintain the system (flushing involves periodic cleansing of the line with water). However, if a lift station is constructed (instead of a gravity system), this additional maintenance procedure would not be required, as the lift station would insure adequate flow through the major sewer trunk line.

Other Utilities

Other existing utilities, as applicable, would be extended or relocated with the construction of the Southcenter Parkway extension, relocation of S 178th St., and future site development. Installation of utilities would be coordinated with the City of Tukwila, Highline Water District and Puget Sound Energy.

Electricity

At full buildout, the estimated total electrical demand from development under Alternatives 1 and 2 would be approximately 73 MVA and 52 MVA, respectively. Table 3.16-3 summarizes the estimated electrical demand by each land use category under Alternatives 1 and 2. These totals represent the increase over existing demand from the site; therefore, as shown in Table 3.16-3 below, demand from the existing Segale Business Park, which would be assumed to be redeveloped in the future, is subtracted from the total projected demand.

**Table 3.16-3
ESTIMATED ELECTRICAL SERVICE DEMAND, ALTERNATIVES 1 AND 2, FULL BUILDOUT**

Land Use	Use Assumption (watts per square foot of development)	Estimated Electrical Demand (MVA)	
		Alternative 1	Alternative 2
Research Campus	7	33.6	24
Office Campus	5	25	19
Retail	5	6.5	5
Restaurant	12	3.4	1
Flex Tech	5	-	2.5
Residential	3kW per unit	5.7	2.1
Hotel	6	5.4	4.5
<i>Less Existing Business Park Demand</i>	4	(6.4)	(6.4)
Total Estimated Demand of New Uses		73.2	51.7

Source: Puget Sound Energy, 2004

In order to provide electrical service for the estimated demand under Alternatives 1 and 2, two new substation(s) located near the middle of the site and adjacent to the major transmission line would be required. The first new substation would be required once the load from the site exceeds 8 to 9 MVA. An additional substation located on the northerly portion of the site would be needed to accommodate full buildout of Alternative 1. Puget Sound Energy would assess the need for a second substation when the load from the site exceeds 40 MVA; however, the

anticipated load from Alternative 2 (approximately 52 MVA) could be served without the addition of a second substation.

Under Alternative 1, installation of three 25 MVA substation transformers at two new substation sites would be required. A new double-banked substation with two 25 MVA transformers would be located at or near S 196th Street and the expanded Southcenter Parkway. A second substation would be located at Southcenter Parkway and approximately S 180th Street. A new 115 kV overhead transmission line would be needed along Southcenter Parkway between S 196th and S 180th Streets (between the two new substations). Installation of an additional 115 kV overhead transmission line between the Boeing Aerospace Substation and the new substation along Southcenter Parkway would also be required. The line would likely continue from the north substation east to the PSE right-of-way at S 180th. Per Puget Sound Energy, the 115 kV line would need to be constructed overhead based on expense, reliability, and voltage.

In order to serve Alternative 2, the new double-banked substation at approximately S 196th Street and Southcenter Parkway would be required, as well as the new 115 kV overhead transmission line described for Alternative 1 between the new substation and Boeing Aerospace substation. A new 115 kV overhead transmission line would also be needed from the O'Brien Transmission Substation in Kent north to S 196th Street and then west to tie into the existing line at the West Valley Highway. Under Alternative 2, the 115 kV transmission line along Southcenter Parkway between S 196th and S 180th Streets would not likely be needed since the northerly substation would not likely be required.

With the exception of conduits and vaults installed underground during infrastructure development, new electrical facilities needed under Alternatives 1 and 2, would be added on an incremental basis as the anticipated need develops (in advance of actual development, as permits for individual developments on the site are issued and/or future tenants for the site are known). These would include the substations and overhead transmission lines.

Natural Gas

The estimated total natural gas demand (at full buildout) would be 490,000 standard cubic feet per hour (scfh) under Alternative 1 and 360,500 scfh under Alternative 2. These estimates were calculated by Puget Sound Energy and are based on average BTUs per square foot (a factor of 35 BTUs per square foot, which is consistent with average retail and general office space heating demands, was multiplied by the total square footage then divided by 1,000 to determine scfh). It should be noted that the specific demand from development under Alternatives 1 and 2, including equipment that would be installed, cannot be determined at this stage; therefore, review of these assumptions and more accurate estimates should be made when specific development proposals and/or tenants are known.

Under Alternative 1, an 8-inch high pressure gas main and a new district regulator would be required, as well as additional intermediate piping as necessary to serve individual buildings. Under Alternative 2, an 8-inch intermediate pressure gas main and an upgrade to the existing district regulator would be required. If specific building development proposals are approved during the infrastructure development phase, these facilities would be constructed within the expanded Southcenter Parkway right-of-way during infrastructure construction. Otherwise, these facilities would be constructed during the full buildout phase. If the gas piping cannot be located within the completed Southcenter Parkway, an alternate route through the site would be used. Puget Sound Energy does not expect additional gas facilities beyond the above described

upgrades and improvements to be needed; however, this estimate is preliminary and it is possible that a future specific development would require additional facility needs. As stated previously, the existing 6-inch gas line in Southcenter Parkway would remain under Alternatives 1 and 2.

Indirect/Cumulative

Approval of the Proposed Action(s) would result in incremental increases in employment and permanent resident population within the Tukwila South site as development occurred over the 22-year buildout period. The City of Tukwila and Highline Water District would plan for future growth and associated demands on municipal water and sewer utility systems as part of ongoing updates to their Comprehensive Water and Sewer Plans, and as part of ongoing capital improvement plans. No significant indirect or cumulative impacts would be anticipated.

No Action Alternative

Under the No Action Alternative, the site would be developed in a mix of industrial/warehouse and big-box retail land uses, reflecting a lower density pattern of development (refer to Chapter 2). No major development would occur in the southern portion of the site. Southcenter Parkway would be extended in a different alignment through the site.

Construction

Under the No Action Alternative, the infrastructure development phase would not occur. Major utility extensions for water and sewer service would be coordinated with the improvement of Southcenter Parkway in the future; however, design considerations could be different than under Alternatives 1 and 2, based on the reduced employment and residential capacity onsite, and on the reduced amount of developable area south of the existing flood protection barrier dike. In particular, with no proposed fill and major development proposed south of the existing dike, the specific sanitary sewer infrastructure design concept featuring gravity service would likely be limited to the area north of the dike.

Electrical conduits and vaults needed to serve the site at buildout of the No Action Alternative could be installed within Southcenter Parkway during construction of the roadway. No major electrical system upgrades would be required.

The 6-inch intermediate pressure natural gas main within Southcenter Parkway would be relocated and extended to serve the site along with the construction of the roadway.

Full Buildout

Water and Wastewater

Tables 3.16-4 and 3.16-5 show estimated water demand and wastewater flows under the No Action Alternative at full buildout. Estimated water demand and wastewater flow reflects buildout of the site under this lower density scenario and the comparatively lower total employment capacity that would be generated onsite (approximately 4,600 employees total, 2,200 of these associated with new development).

**Table 3.16-4
ESTIMATED WATER DEMAND, NO ACTION ALTERNATIVE, BUILDOUT**

Alternative	Estimated Annual Domestic Water Demand¹ (gallons/year)
3	26,836,992

Source: Goldsmith and Associates, Inc.

¹ Estimated Annual Domestic Water Demand calculated from compilation of domestic water usage within the City of Tukwila. Sources include data provided by the City and Highline Water District, the Highline Water District Water Comprehensive Plan, and the Washington State Department of Health Water System Design Manual.

**Table 3.16-5
ESTIMATED WASTEWATER FLOW, NO ACTION ALTERNATIVE, BUILDOUT**

Alternative	Estimated Annual Wastewater Flow¹ (gallons/Year)	Annual Infiltration and Inflow² (gallons/year)	Total Annual Flow (gallons/year)
3	20,385,456	89,216,400	109,601,856

Source: Goldsmith and Associates, Inc.

¹ Estimated Annual Wastewater Flow calculated from compilation of domestic water usage within the City of Tukwila. Sources include data provided by the City and the Highline Water District, the City of Tukwila Comprehensive Sewer Plan Addendum 1999, the Washington State Department of Ecology Criteria for Sewage Works Design.

² Annual Infiltration and Inflow (I/I) calculated at 600 gallons per acre per day.

Based on current projections, the Highline Water District and City of Tukwila would have adequate water and sewer system capacity to serve the site under the No Action Alternative.

Electricity

Under the No Action Alternative, up to 2 million square feet of new warehouse and retail uses would generate electrical demand at an assumed 4 watts per square foot; total new demand at buildout is estimated at 8 MVA. It is assumed that the existing Segale Business Park would remain but would not generate any added demand.

Of the 8 MVA of new service capacity that would need to be provided to the site under the No Action Alternative, 2 MVA would come from the existing Asbury Circuit #16 within the site. Expansion of the Boeing Aerospace Substation could free up an additional 6 MVA of load from the Asbury Circuit #16, thereby allowing Asbury Circuit #16 to provide all of the new load needed for the No Action Alternative.

Natural Gas

Under the No Action Alternative, demand for natural gas service at full buildout would be approximately 70,500 standard cubic feet per hour (scfh). The 6-inch intermediate pressure natural gas main that would be relocated and extended within Southcenter Parkway would serve the site. Puget Sound Energy would not expect other improvements to natural gas facilities to be required, beyond extensions to individual parcels within the site; however, this

analysis is preliminary and it is possible that future specific developments could require additional facility needs.

Indirect/Cumulative

Under the No Action Alternative, no significant indirect or cumulative impacts to utility systems would be anticipated. As described under Alternatives 1 and 2, The City of Tukwila and Highline Water District would plan for future growth and associated demands on water and sewer utility systems as part of ongoing updates to their Comprehensive Plans and capital improvement plans.

3.16.3 Mitigation Measures

- Mitigation measures associated with potential construction-related impacts to utility systems would be incorporated into the construction permits that would be required for the infrastructure development phase. Such measures would include: coordination with the City of Tukwila, Highline Water District, Puget Sound Energy and other relevant utility services regarding the design and installation of major utilities as part of the Southcenter Parkway extension. In addition, the applicant would coordinate with Puget Sound Energy regarding the location of new substation(s) to serve future development at Tukwila South.
- Improvements to the City's wastewater system that would be necessary to accommodate additional development within the Tukwila South planning area would include:
 - Increasing the capacity of Pump Station No. 2, located at Minkler Blvd and Andover Park West;
 - Possible need for increasing the capacity of an off-site pressure main (from Minkler Blvd. to Strander Blvd., within Andover Park West);
 - Replacement, upsizing and extension of a sewer main within Southcenter Parkway from Minkler Blvd. to S 180th Street; and,
 - Construction of a sewer line from S 180th Street to the City limits along Southcenter Parkway (this project would be coordinated with the planned Southcenter Parkway extension).
- In order to preclude the need for additional maintenance flushing of the sewer system that could result from the use of a gravity sewer system (prior to buildout of the site), a lift station could be constructed to insure adequate flow through the major sewer trunk line in Southcenter Parkway.

No significant impacts to the major utility systems from development under any of the EIS alternatives have been identified. Utility systems would be designed to accommodate increases in demand over the long-term. As such, no additional mitigation would be required.

3.16.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to utility systems would occur under the Proposed Actions and Alternatives, as analyzed.