UTILITIES ELEMENT

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UTILITIES ELEMENT

I. INTRODUCTION

1. Growth Management Act Requirements

The Growth Management Act (GMA) requires jurisdictions to prepare a utilities element that addresses "the general location, proposed location and capacity of all existing and proposed utilities, including, but not limited to, electrical lines, telecommunications lines, and natural gas lines."

2. Purpose of Utilities Element

The Utilities Element inventories the general location of existing and proposed utilities, and analyzes the capacity to serve planned land uses. The GMA defines utilities as integrated facility systems that serve the public by means of a network of wires or pipes, and ancillary structures. Included are systems for the delivery of natural gas, electricity, and telecommunications services, water systems, and sewage disposal. Utilities are distinguished from other capital facilities as essential services necessary to support basic life needs. Due to the high cost of utility infrastructure necessary to deliver the utility service, residents pay a fee for utility services while other capital facility services such as police and fire protection are funded by the whole community through taxes.

Water supply, sanitary sewers and storm sewers may also be considered as "public facilities" and the Growth Management Act requires that jurisdictions consider the capital improvement aspect of these utilities in the Capital Facilities element. Accordingly, the Capital Facilities Element provides level of service standards, projects capital facility needs and includes utility capital improvements in the 6 year Capital Facilities Plan. Utilities are either publicly or privately owned. Private utilities are regulated by a variety of entities. The natural gas and telephone utilities are regulated by the Washington Utilities and Transportation Commission, and cellular telephone communication companies are licensed by the Federal Communication Commission. Utility providers are primarily responsible for planning utility services.

However, the City will incorporate utility plans into its comprehensive planning efforts in order to coordinate the quality and delivery of services with anticipated patterns of land use. It may also assist utility providers in identifying ways of improving services provided in the City. The information included in this element will assist in ensuring the orderly and efficient provision of utility services to the City and in the City Planning or Urban Growth Area (UGA).

The following utilities are addressed in this Element:

1. Water Supply;
2. Sanitary Sewer;

3. Storm water and Drainage;
4. Electricity;
5. Natural Gas; and
6. Telecommunication System.

Figures or maps showing the locations of utilities are included in appropriate sections of this Element. The maps are simplified to show only major facilities. More detailed and updated maps of the utilities are available from the City of Brier.

II. EXISTING CONDITIONS AND CAPACITY

1. Water Supply

a. Existing conditions

The City of Brier is provided with municipal water by the Alderwood Water and Wastewater District. The District service area encompasses approximately 60 square miles. The District is responsible for constructing, repairing, maintaining and servicing water lines as well as providing potable water to the City's residents, as established by Ordinance No. 336.

Alderwood Water and Wastewater District purchases treated water from the City of Everett. The City of Everett water supply originates in Spada Lake in the Sultan Basin and is "preset" in Lake Chaplan after passing through Snohomish County PUD's water power generating system.

In August of 1983 the City of Everett completed a 100 million-gallon per day water treatment plant, which was planned to have sufficient capacity to meet the water needs of its supply area until approximately the year 2000. Since then, Everett has completed additional improvements – ensuring sufficient capacity for the District's customers:

> "Everett has recently reviewed its source of supply and concluded that it is sufficient to meet the forecast regional needs through 2050 and beyond. The City is planning transmission line improvements over the next 20 years that will maintain and/or improve supply capacity to meet their customers' needs, including the [Alderwood] District." [1]

The District has three water storage reservoirs that serve Brier. The reservoirs are located at 156th Street SW and 36th Street W in Lynnwood. The three reservoirs have 73 million gallons of available capacity for the 635 zone which includes the City of Brier. [2]

The Water mains that serve the City are mapped. The City and the District maintain more detailed and updated maps of water system facilities.

[1] 2002 Water System Plan, Alderwood Water and Wastewater District, January 2003, page ES-3.
[2] Brigitte I. McCartney, P.E., Interim District Engineer, Alderwood Water and Wastewater District, August 17, 2004.

The District estimates there are approximately 2200 water service connections in the City of Brier, as of August, 2004. [3] The per household water demand in 2002 was about 240 gallons per day. The City of Brier's average daily demand is approximately 528,000 gallons. The current (2000) peak daily demand for the District is 23.6 million gallons per day. [4]

The District's 2002 Water System Plan details some deficiencies due to low pressures in the 635 zone. The low-pressure areas vary from 23 to 29 pounds per square inch (psi) (just under the minimum service criteria of 30 psi) due to high ground elevations (compared to the hydraulic grade in the pressure zone). Although there is no history of customer complaints in these low-pressure areas, the District is exploring options to increase water pressure. Planned improvements will enhance the level of service in these areas by 2030.

Fire flow analyses were conducted throughout the District, including two locations in the City. This analysis was performed with the hydraulic analysis model using 2030 peak day demand conditions. The results showed that the distribution system is able to meet the current fire flow needs as well as those required for future growth within the City.

b. Capacity

Brier's population projection for the planning period (year 2025) is 7,790 persons, or 2,536 households. [5] According to the 2002 Water System Plan the projected daily demand for households would decrease to 230 gallons per day in 2030. This would result in an average citywide daily demand for 583,280gallons. The peak daily demand for the District is projected to be 38.85 million gallons in 2030. [6]

The number of gallons used by each single-family household per day has been decreasing since 1998 and is expected to continue to decrease to 230 gallons per day by 2030 due, in part, to conservation efforts.

The District expects a continued increase in residential growth of 26 percent every 10 years through 2030. During the 1990s, the District experienced a 30 percent growth rate.

Specific improvements will be necessary in order to maintain and increase the level of service for the District's customers and meet the needs of growth. The target level of service is a minimum pressure of 30 psi (pounds per square inch). Planned improvements over the next 20 years include:

- Completing the Clearview facilities,

[3] IBID
[4] 2002 Water System Plan, Alderwood Water and Wastewater District, January 2003, page 4-10, Table 4-7.
[5] The 2025 figures were developed by Snohomish County using Puget Sound Regional Council's (PSRC) population forecasts as well as the State Office of Financial Management (OFM) forecasts.
[6] 230 gallons per day x 2,536 households = 583,280 gallons per day. District peak daily demand excludes wholesale customers. (Base on the 2002 Water System Plan, page 4-13, Table 4-9.)

- Expanding the 724 and 520 pressure Zones and providing new 660 and 340 Zones to increase low pressures and reduce overly high pressures,
- Providing an emergency power supply for the District's source of supply (Pump Station Nos. 1 and 2),
- Recoating the interiors and exteriors of the water tanks,
- Installing a new 24-inch, east-west transmission main that will cross SR 527 and North Creek,
- Providing additional piping improvements to meet capacity needs and improve fire flows, and
- Replacing system components (older cast iron and steel water mains, substandard fire hydrants, meters, and substandard check valves).[7]

The District's Plan outlines the financing for needed facilities and the sources of public money as well as a recommended schedule.

The analysis of current conditions, future demand and ability to provide services through the year 2030 assumes that growth and development will occur in Brier consistent with its 2000 Comprehensive Plan and zoning. With the improvements discussed here, the District states that there will be sufficient capacity to serve planned growth.

[7] 2002 Water System Plan, Alderwood Water and Wastewater District, January 2003, page ES-4.

2. Sanitary Sewer

a. Existing Conditions

Sanitary sewage collection is provided by the City of Brier. — There are currently 2,150 sewer connections in the City. Collection lines feed into two trunk lines, which are indicated on Figure 2. A 15-inch trunkline follows Oak Way in the northeast Brierwood section of the City, and ties into the 36-inch Swamp Creek trunk line that is operated by the Alderwood Water and Wastewater District. Approximately one-third of the sewer connections are routed to the north and east through this trunk line. The rest of the sewer connections are routed to the 15-inch Lyons Creek trunk line, which extends southwest from 228th Street SW into Mountlake Terrace. This trunk line is owned by both the City of Brier and Mountlake Terrace. Both the Swamp Creek and Lyons Creek trunk lines connect to the Kenmore Interceptor, which is owned and operated by King County. All sewage from the Brier planning area eventually flows through the Kenmore Interceptor to the County's West Point Treatment Plant in Seattle.

There are 12 sewer basins within the Brier service area, plus an additional one called the AWD basin that is within the Alderwood Water and Wastewater District's service area. The basins are as follows: 1) Brier Road; 2) Brierwood; 3) Alder; 4) Vine Road; 5) Shasta; 6) Old Poplar Way; 7) Crestview; 8) Castle Crest; 9) AWD; 10) Golden View; 11) East; 12) Southeast; and 13) Northwest.

Most areas of the City are presently served by a sanitary sewer system, though several areas remain served by on-site septic systems. These areas are generally located in the southeast, southwest, and northwest corners of the City and east of Brier Road, between Vine Road and 232nd Street SW. Sewer mains have recently been extended along Vine Road, making eventual sewer connection a possibility for homes there. The other areas have remained on septic systems because they are either difficult to serve due to local topography or because the existing low-density development has not warranted extension of sewer service.

Some problems with failing septic systems persist in these areas. A few homes in the Skyline Hills area have addressed these problems by installing pumps, but there still is potential for additional homes to experience septic tank failure. **Figure 2** maps the areas of the City that are served with on-site septic systems and the location of the two major trunk lines serving Brier.

In 1998, a Comprehensive Sanitary Sewer Plan was prepared for the City of Brier by Hammond, Collier & Wade – Livingstone Associates, Inc. The purpose of the study was to meet State Department of Ecology Rules and Regulations

regarding wastewater facilities, consistent with the GMA requirements. Since the 1998 Sanitary Sewer Plan was completed, approximately 50 new homes and 8-10 existing homes have connected to the sewer system.

b. Capacity

The Comprehensive Sanitary Sewer Plan indicates that the existing Brier sewer system capacity is adequate to accommodate the proposed development density buildout and peak wastewater flow conditions. Two areas in the Brier Road Basin (generally in the south central part of Brier) are close to capacity at peak flow conditions. Further study on inflow and infiltration issues and remediation program is recommended to mitigate these issues. In addition, at buildout, there may be a surcharge at manhole #485 in the Brierwood Sewer Basin (generally the northern part of Brier), which could require mitigation.

The Golden View Pump Station is also adequate to serve current and projected sanitary sewer service needs. However, the Plan recommends that a permanent generator be connected to the pump station. Installation of this generator is a condition of development currently underway in the Old Poplar Way area.

Potential projects also include providing sewer service to the unsewered areas within the service area. A total of 23 sewer extensions are proposed in the Comprehensive Sanitary Sewer Plan to accomplish that project. In Brier, sewer lines are commonly extended or improved in the developed areas by means of Utility Local Improvement Districts (ULIDs) and extensions to serve new development are the responsibility of the developer. Service rate increases may also be necessary if the potential sewer utility expenditures exceed revenue.

c. Sewage Treatment

Sewage treatment is provided by King County Department of Natural Resources and Parks (DNRP), formerly Metro, through an intergovernmental agreement.

According to the King County Wastewater Treatment Plan, the County is planning to build a new Brightwater Treatment Plant and make improvements, in addition, to its existing regional wastewater treatment plants at Renton and West Point. The Brightwater Treatment Plant is scheduled to be completed by 2010 and would provide capacity for the rapidly growing population in North King and South Snohomish County. The location of the new Brightwater Treatment Plant is planned for a site in South Snohomish County on State Route 9 at 195th Street.

King County states that there is adequate capacity to treat the City's wastewater through 2025. [8]

[8] Laura Wharton, Supervisor, Planning and Technical Resources Group, King County Wastewater Treatment Division, August 17, 2004.

3. Stormwater and Drainage

a. Existing Conditions

In 1998, a Stormwater Management Plan was prepared for the City of Brier by Hammond, Collier & Wade – Livingstone Associates, Inc. [9] The Plan focuses on stormwater management of the major undeveloped Old Poplar Way area in Brier and provides a strategy for managing the City's stormwater runoff quantity and quality, especially in the Old Poplar Way area.

The Stormwater Management Plan identifies four primary watersheds in Brier: Swamp Creek; Scriber Creek (tributary to Swamp Creek); Lyon Creek; and Creek 0056 ("Kenmore Creek"). The Swamp Creek watershed consists of approximately 222 acres and is located in the east central part of Brier. The Scriber Creek watershed is the largest watershed, containing approximately 476 acres, and is located in the north part of the City. The Lyon Creek watershed is located in west central Brier and is comprised of approximately 215 acres. Creek 0056 is located in the south part of Brier and consists of approximately 450 acres.

Brier is served primarily by a system of open grass-lined ditches and 12 inch diameter storm drains/culverts with catch basins in the older, developed areas of the City. In the newer developments in the City, stormwater detention vaults and detention pipes are used for stormwater drainage. **Figure 3** shows the areas of the City that are served by the two types of stormwater drainage systems.

The Stormwater Management Plan identifies general drainage problems in Brier that include local ponding, erosion, basement or crawl space flooding, and potential water quality problems. The Plan concludes that these problems are due to the increase of impervious surface and the presence of glacial till soils in the area.

Since the Plan was published, several areas of concern have been addressed, including:

1. An area detention facility has been completed on Old Poplar Way east of the street at Hickory Way.
2. Old Poplar Way cracking and settlement problems have been addressed through improvements made by new development in the area.
3. The City has installed culverts and catch basins to reduce ponding and pavement scouring in the Vine Road area between approximately 219th Street SW and the Seattle City Light easement.
4. The accelerated erosion in the ravine at Brier Road and Old Poplar Way caused by storm drain discharge from an 18-inch storm drain will be addressed as part of conditions on development in that area.

[9] Stormwater Management Plan, City of Brier, December 1998.

5. In the ravine on the east side of Old Poplar Way at approximately 222nd Street SW the City addressed the erosion problems from stormwater piped under Old Poplar Way by capping off the pipe.
6. Open ditch installation and piping under driveways on Hickory Way is budgeted for 2004 operations.

There are two remaining areas of concern of the seven that were originally identified in the Stormwater Management Plan:

1. Abbey View Pond Outlet on the east part of the lake, in the vicinity of 35th Avenue W has flooding problems.
2. Abbey View Pond/Brier Road, located downstream from #1, near the south end of 31st Avenue W has flooding problems.

The Old Poplar Way area was the primary focus of the Stormwater Plan in order to address the stormwater management of the area prior to development. State law requires the implementation of stormwater best management practice (BMPs) for developing areas. The Plan recommends controlling runoff from as much of the area as possible by intercepting and conveying it with regional bioswales routed to regional detention ponds.

b. Capacity

New development in the City is required to provide stormwater detention facilities to mitigate downstream drainage impacts. Stormwater detention facilities are designed to insure that peak discharge rates from a site do not exceed predevelopment existing conditions. The City has adopted the 2001 Washington Department of Ecology (DOE) standards with a local requirement of three times larger (300%) than the current DOE standards.

c. Drainage Courses

The Scriber Creek Watershed Management Plan (December 1989) was developed under an interlocal agreement between the cities of Brier, Lynnwood, and Snohomish County. The Plan evaluates stream conditions, habitats, and water quality in the entire watershed, and recommends a combination of regulations, education, and capital projects to prevent future flooding and to maintain water quality in Scriber Creek. In addition, the Plan recommends specific local and regional capital projects to protect surface water resources. Implementation of the Plan has been ongoing over the past decade.

4. Electricity

a. Existing Conditions

The Snohomish County Public Utility District No. 1 supplies electricity to the City of Brier. Electricity is supplied to the area by an 115,000-volt transmission line, located along 228th Street SW. This transmission line serves a system of

distribution substations, which reduce the current to 12,000 volts. From the substations, 12,000-volt distribution lines run along local streets, and transformers further reduce the voltage to 240 for distribution to residences and commercial/industrial users.

The substation which serves most of Brier is located on 228th Street SW and 40th Avenue W, in Mountlake Terrace. The substation has a capacity of 28 MVA. There is also a Snohomish County PUD substation located just north of the City Limits, near the intersection of Cypress Way and Larch Way. This substation also has a 28 MVA capacity. The PUD designs its substations to accommodate a second bank of transformers for an additional 28 MVA capacity.

Seattle City Light has an 115,000 volt transmission line that runs diagonally through the City along its own right-of-way.

The existing substation and transmission line facilities that are located in the Brier area are mapped on **Figure 4**.

b. Capacity

According to officials with the Snohomish County PUD No. 1, there are no existing plans to expand electrical facilities within the Brier planning area. The Utility projects future needs based on "small area forecasts," which anticipate utility needs for reliability during peak load demand. Officials indicated that with respect to current load forecasts, the existing system facilities are adequate to serve projected growth for the next 5-10 years.

Snohomish County PUD's electrical power supply is provided from the following sources:

- The Henry M. Jackson Hydroelectric Project on the Sultan River– 10 percent.
- The Centralia Coal Powered Plan – 10 percent..
- The Bonneville Power Administration – 80 percent..

FIGURE 2: SANITARY SEWER SYSTEM.

FIGURE 3: STORMWATER/DRAINAGE FACILITIES.

FIGURE 4: ELECTRICITY FACILITIES.

FIGURE 5: NATURAL GAS SYSTEM.

5. Natural Gas

a. Existing Conditions

Puget Sound Energy (PSE) is certified by the State Utilities and Trade Commission to provide natural gas to the Puget Sound area, which lies along the route of the Northwest Pipeline. The Brier planning area is included within the PSE service area.

The Northwest Pipeline originates in Canada and consists of two pipes: a 26 inch diameter pipe designed to carry natural gas at a pressure of 600 pounds per square inch; and a 30 inch pipe designed for 1,000 pounds of pressure. The main Pipeline route is east of Woodinville and Redmond, with lateral lines that branch off in south Snohomish County to facilitate service to areas. The Brier planning area is served primarily from PSE lines which branch off the Northwest Pipeline lateral in the Mountlake Terrace Distribution lines (six to eight inches in diameter), which in turn branch off the main PSE supply lines. The existing and proposed distribution lines that serve the City of Brier are mapped on **Figure 5**. As of February 1999, there were 1,341 natural gas connections in Brier.

Puget Sound Energy has established as its optimum service standard a pressure of 45 pounds per square inch (psi), and as the minimum service threshold a pressure of 15 psi. Generally, residences in Brier are served by gas lines that provide 35 (psi). During high demand periods, gas pressure is increased from the district regulator to provide adequate pressure. According to PSE officials, the local capacity in Brier may be increased by "looping" existing systems to provide alternate directions of supply.

b. Capacity

PSE officials have indicated that the natural gas supply system will be able to meet the demand for natural gas within the planning area over the next 20 years. PSE does not anticipate the need for additional pipeline corridors within the Brier planning area.

6. Telecommunication System

a. Telephone

Verizon provides telephone service throughout the City of Brier planning area. Telephone system facilities include central office exchange switching stations, trunk lines which connect switching stations, and distribution lines which run along streets to serve homes and businesses. The distribution lines are either pole-mounted or underground.

The central office exchanges that house the switching stations serving the Brier planning area are located at:

Hall's Lake 6706 212 th Street SW, Lynnwood 63,000 line capacity

Bothell 2326 228 th Street SE, Bothell 48,000 line capacity.

b. Cellular Telephone Systems

The Federal Communications Commission (FCC) licenses two operators to provide telephone service in an area. Western Washington is served by Western Wireless and Qwest (formerly Cellular One and US West Vector). A cellular telephone system is a series of transmission facilities or "cell sites," which use FM radio signals to transmit conversations and data to mobile/portable phone users. Cell sites consist of transmitting and receiving equipment and microwave relays, usually mounted on a pole or lattice tower, and ground-mounted switching equipment. In Brier, all of the existing cell sites are co-located on Seattle City Light transmission towers. Cell sites range in size from 1,000 to 2,000 square feet, and are enclosed by chain link fences.

There currently are three cell sites within the City of Brier. They are located in the following locations: Brier Park, operated by Western Wireless; at 231st Street SW and 32nd Avenue W, operated by U.S.West; and at 236th Street SW and 38th Avenue W, operated by GTE. In addition, U.S. West operates two cell sites that serve Brier: one is located in Lynnwood at the intersection of 196th Street SW and I-5; and the other is located at 24330 23rd Avenue SE in Bothell. Cellular One operates three cellular antenna sites which provide coverage to the Brier area, located at the following addresses: 1) 4030 - 200th Street SW, Lynnwood; 2)18010 – 15th Avenue NE, Seattle; and 3) 6141 NE Bothell Way, Bothell.

c. Fiber Optics

As part of the development of a fiber optics "ring" around Puget Sound, two fiber optics systems are currently being installed in Brier. U.S. Crossing is installing a north-south fiber optics system from the north city limits, along the west side of Poplar Way/Brier Road, to 236th Street SW. It intercepts another system operated by Pacific Fiberlink. This run's east-west, along 236th Street SW.

7. Cable Television

Comcast Cable, formerly known as Viacom Cablevision, provides cable television service in the Brier planning area. Brier is served from a satellite receiving and processing station located at 185th Street SW and 40th Avenue W in Lynnwood. From the receiving station, trunk lines extend through the service area. The trunk lines branch off into distribution cables that carry the signals down residential streets. Cables then extend from the distribution lines to serve individual homes. Cables may be mounted on poles or placed underground. Comcast rents pole space or shares trenches with Snohomish County or Verizon.

Presently, cable service is available to all residences in the City — there are currently approximately 1,600 customers. Comcast Cable officials project no need for additional relay stations or trunk lines to serve the Brier planning area.

III. UTILITY ELEMENT GOALS AND POLICIES

GOAL UT 1.0: Ensure that utilities including water supply, sewage disposal, stormwater facilities, electricity, natural gas, and telecommunications are available or can be provided to support current and future development.

1. General

Policy UT 1.1: Design and install utilities with sufficient capacity to meet anticipated land use intensity.

Policy UT 1.2: Allow new development only when and where such development can be adequately served by essential public utilities without reducing levels of service.

Policy UT 1.3: Coordinate with utility providers at early stages in planning for needed facilities:

1) The City shall require that utility providers use the Land Use Element of this Plan in planning future facilities;

2) The City shall adopt procedures to review and comment on proposed actions and policies of public and private utility providers; and

3) City coordination may include involvement in consideration of alternatives to new facilities and alternate locations for new facilities.

Policy UT 1.4: Minimize adverse environmental, aesthetic, and fiscal impacts associated with the siting, development, and operation of utility services and facilities.

Policy UT 1.5: Require all annexations and new development to connect with City of Brier utilities.

Policy UT 1.6: Require the location of utility facilities in conduits, shared corridors and trenches to reduce costs, minimize the amount of land allocated for this purpose, and to minimize construction disturbances.

Policy UT 1.7: Coordinate future utility expansions with the County to ensure consistency with the Countywide Policy Plan.

2. Water

Policy UT 2.1: Coordinate with the Alderwood Water District to provide an efficient and adequate water supply to the residents and businesses of the City.

Policy UT 2.2: Design the size of new water utility systems to the anticipated future requirements of the area's land use.

Policy UT 2.3: Design new water systems to allow for their extension into potential future service areas.

3. Sewer

Policy UT 3.1: Provide an efficient and adequate sanitary sewerage service to the residents and businesses of the City in order to maintain adequate water quality.

Policy UT 3.2: Encourage the extension of sewers to serve current development where there are limitations to on-site treatment due to soils, topography, or water resources.

Policy UT 3.3: Require all new development to have sanitary sewer service.

Policy UT 3.4: Design the size of new sanitary sewerage systems to the anticipated future requirements of the area's planned land use.

Policy UT 3.5: Design new sanitary sewerage systems to allow for their extension into potential future service areas.

Policy UT 3.6: Inspect on site wastewater treatment systems frequently, and establish proof of pump out systems in areas with a high risk of system failure.

Policy UT 3.7: Preserve and enhance water quality by providing adequate sewerage systems adjacent to waterways.

Policy UT 3.8: Prohibit the development of new pump stations.

Policy UT 3.9: The latest version of the Brier Comprehensive Sewer Plan is the instrument that should be followed.

4. Storm Drainage

Policy UT 4.1: Adopt the most current Washington DOE standards for stormwater runoff.

Policy UT 4.2: Provide an adequate and cost effective method of preventing property damage from local storm water.

Policy UT 4.3: Encourage non-structural as well as structural solutions to storm water control.

Policy UT 4.4: New construction should be designed so that peak storm water discharge is no greater than the discharge was prior to any previous or supposed development..

Policy UT 4.5: Design street systems to provide that storm water within the right-of way will be maintained within the street area.

5. Electrical and Telephone

Policy UT 5.1: Require the undergrounding of all existing distribution points, service drops, and new electrical and communication systems.

Policy UT 5.2: Require undergrounding to occur in existing easements or right-of-way, whenever feasible.

Policy UT 5.3: Require the use of one trench in a corridor to accommodate all electrical and communication utilities.

Policy UT 5.4: Encourage a minimum of disruption to areas affected by the installation of underground utilities.