

## **Water Infrastructure Panel White Paper**



The Water Infrastructure Panel included representatives from the municipalities, county government, LOTT Clean Water Alliance, and the Public Utility District. Members of the community that tracked the progress of the panel are also listed below. The Water Infrastructure Panel also received valuable assistance regarding stormwater from the Municipal Stormwater Technical Advisory Committee for Thurston County.

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## About This Project

This community conversation comes at a time when the issues of economic resilience and efficiency are foremost in our minds. Our region's households, governments, nonprofits and businesses are making the most of resources in order to maintain quality of life and build toward a more resilient economy, society, and environment.

This region and its 29 public and private sector partners successfully competed for a Sustainable Communities Regional Planning Grant from the Federal Office of Housing and Urban Development, Department of Transportation, and the Environmental Protection Agency. Their interest in making these grants possible is to encourage regions to incorporate livability principles into sustainability plan discussions since these are proving to be essential to the creation of resilient communities.

### The Sustainable Thurston Plan will build upon:

- 1) **Thurston Region Population Projections estimated to add 120,000 residents between 2010 and 2035**
- 2) **Existing state, regional, and local plans** as the base scenario for plan discussion and analysis
- 3) **State Requirements** set forth in the Growth Management Act
- 4) **Livability Principles**
  - Provide more transportation choices
  - Promote equitable affordable housing
  - Enhance economic competitiveness
  - Support existing communities
  - Coordinate policies and leverage investment
  - Value communities and neighborhoods

### About Sustainable Thurston Panels

The Sustainable Thurston process begins with information development through a series of "white papers" produced by panels and work groups and reviewed by the Sustainable Thurston Task Force. This work will inform the three phase public process about a variety of elements that support our community and work together to enhance quality of life. These include:

- Economic development
- Housing
- Water infrastructure, stormwater, sewer
- Solid waste
- Public safety
- Schools and transportation
- Health and human services
- Local food systems
- Land use, transportation, climate change
- Energy
- Public outreach and education



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## Executive Summary

### WATER INFRASTRUCTURE FOR A GROWING POPULATION

**CHALLENGE:** To maintain existing water-related infrastructure (drinking water, stormwater, wastewater, and reclaimed water infrastructure) and provide infrastructure for an additional 120,000 people between now and the year 2035.

Providing water-related infrastructure (drinking water, wastewater, reclaimed water, and stormwater infrastructure) for the current population of 252,000 people is difficult. Providing infrastructure for an additional 120,000 people over the next 25 years will be even more challenging. The Growth Management Act encourages the concentration of growth in urban areas and discourages suburban sprawl. While urban areas can accommodate the new residences with a smaller environmental footprint, other economic and regulatory forces may play a role in determining where the future residents choose to live. Where they choose to live determines in part the level of service they receive.

#### Sustainability Actions:

- Guide future growth to designated urban growth areas and review urban growth boundaries when necessary.
- Reevaluate the package of existing development regulations to insure that urban densities can be attained within unincorporated Urban Growth Areas (UGAs).
- Explore financial incentives to encourage greater in-fill development where infrastructure exists with adequate capacity.
- Embrace a 50-year planning horizon and asset management to evaluate, finance, maintain, repair, and replace existing infrastructure.
- Update the *Thurston County Sewerage General Plan and Coordinated Water System Plans*.
- Continue public education efforts to raise awareness of the on-going and capital costs associated with the maintenance and construction of infrastructure required to provide these critical services.

### The Resource - DRINKING WATER

**CHALLENGE:** To insure the availability of high quality drinking water to meet the needs of existing and future residents.

The Growth Management Act (GMA) requires communities to adopt land use and capitol facilities plans to accommodate twenty years of growth. Currently these plans can be adopted without identifying the drinking water rights to support that population. The state process for communities to acquire new water rights is long, difficult and complicated. However, current state laws allow exempt wells to tap the same drinking water aquifers with little review or oversight. Between 2000 and 2007 over 3,400 exempt wells were authorized in Thurston County (second only behind Spokane County).<sup>1</sup> Residents who live in typical suburban single family residences, which are more likely to be served by exempt wells, use more than double the amount of water used by residents in higher density urban subdivisions.<sup>2</sup> The current disconnects between state water law and the GMA make it more difficult for communities to concentrate urban growth and to discourage rural sprawl.

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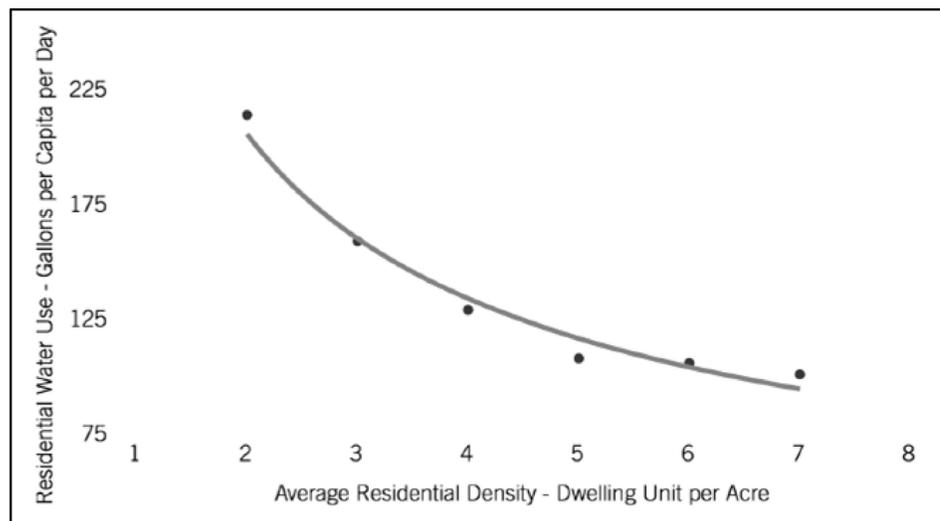
<sup>1</sup>Tim Walsh, "Groundwater Program Database Query," Washington Department of Ecology, Olympia, WA. 2010.

<sup>2</sup>Chuck Kosshain and Steve Winkelman. Growing Wealthier: Smart Growth Climate change and Prosperity. Center for Clean Air Policiae, 2011. From - Dave Eckhoff, "Per Capita Residential Water Use as a Function of Density", June 24, 2003; cited in "Growing toward More Efficient Water Use," EPA 2006.

### Sustainability Actions:

- Continue jurisdictional cooperation on joint water right applications, transfer applications, and mitigation proposals.
- Continue efforts to protect water supplies
- Identify methods to reduce new development on individual or exempt wells.
- Continue with water conservation programs that stretch existing drinking water supplies through rates, asset management, rebates, and public education.
- Explore opportunities for additional reductions in water demand toward a net zero goal.
- Adopt common local land use regulations that prohibit individual exempt wells within UGAs when municipalities or private suppliers can provide drinking water.
- Adopt consistent critical area regulations for wellhead protection areas and aquifer recharge areas across the region.
- Update the *Water Coordination System Plans*.

**Table 1 - Per Capita Water Use by Residential Density**



### The Resource – **STORMWATER**

**CHALLENGE:** To effectively manage stormwater to minimize impacts on aquatic resources.

The Growth Management Act requires that our local communities accommodate growth, but it is well-recognized that conventional development exacerbates stormwater issues. Water bodies and groundwater can be impacted by flash flows and contaminants carried by stormwater. Regulations now require new developments to manage their stormwater runoff onsite with retention ponds or infiltration facilities. Many older developments are not served by adequate stormwater facilities, and they lack the space and the resources to retrofit their systems to current standards. State regulations are shifting to a new management approach, called “Low Impact Development,” which may have limited usefulness in our area due to local soil conditions. The scope and scale of future water quality impacts caused by stormwater will be determined by the location, density, and design of future development.

### **Sustainability Actions:**

- Encourage greater coordination between cities and the county to meet stormwater goals by watershed.
- Continue to coordinate on stormwater management issues regarding updates to local stormwater regulations, design standards, and the regional water quality monitoring program. Invite small communities to be a part of these efforts.
- Continue with education programs that seek to change behaviors which can pollute surface waters, groundwater aquifers, or impact aquatic resources.
- Support environmentally friendly building practices which support Smart Growth – such as Leadership in Energy and Environmental Design (LEED) standards, and (to the extent feasible) Low Impact Development (LID) construction standards.
- Support applied research from Western Washington on cost-effective stormwater management technologies, routine maintenance, and LID practices.

### **The Resource – WASTEWATER AND RECLAIMED WATER**

**CHALLENGE: To protect public health and the environment by treating wastewater and producing and using reclaimed water.**

Demand for wastewater treatment capacity is continually growing. Used water must be collected and treated to make it suitable for reintroduction to the environment. Historically, wastewater was treated and discarded to a river or to Puget Sound. Treatment technologies and public awareness have developed to allow for the wastewater to be treated to such a high quality that it can be reused for non-potable uses. Currently Class A reclaimed water is produced locally and used for irrigation, dust suppression, decorative ponds and fountains, and toilet flushing to help stretch local water supplies. Environmental uses can include streamflow augmentation, wetland restoration, and groundwater recharge. Reclaimed water creates some utilization hurdles since it requires separate pipes, pumping, metering, and storage systems. Wastewater treatment facilities and reclaimed water production and distribution systems are incredibly expensive, with local investments currently above \$100 Million dollars. Regulatory uncertainty puts these, and future investments in jeopardy. Uncertainties must be resolved in order to meet future demands for wastewater treatment capacity. While “there is no new water”, the role of reclaimed water and its value as a resource is expected to increase in future years.

### **Sustainability Actions:**

- Recognize the changing and expanding role of reclaimed water within the region, as a means of supplementing water supplies, mitigating new water rights, meeting pollution reduction goals in TMDL implementation plans, replenishing groundwater, and more.
- Continue to be a part of the state advisory panel for updating reclaimed water regulations.
- Update local land use regulations for wellhead protection areas and aquifer recharge protection areas standards and coordinate with affected state departments and stakeholders.
- Develop opportunities to expand the use of reclaimed water.
- Participate in, and closely follow, applicable research to answer questions related to the presence of pharmaceuticals and personal care products in reclaimed water and the environment.

## **The Resource - WASTEWATER & SEPTIC SYSTEMS**

**CHALLENGE: To protect public health and the environment through an appropriate balance of urban sewer services and rural on-site septic systems.**

Within the region, a number of small and large public and private wastewater treatment systems have been constructed to serve primarily higher-density urban areas. Within the county, there are also many areas, of both urban and rural densities, that are served by onsite septic systems. The Growth Management Act requires local communities to provide urban services, such as sewer service, to the areas in their Urban Growth Boundaries. However, extension of services into these areas can be very expensive. This cost tends to encourage continued development using septic systems, rather than services more appropriate for higher densities. Continued use of septic systems in high-density, sensitive areas results in cumulative impacts that threaten water quality and public health. A single-family home with a properly functioning septic system generates eight to twenty times the nitrate pollution as a home on a sewer system. Yet the conversion of these septic systems to sewer services is extremely challenging due to cost and other factors. The large number of existing septic systems in rural areas and the lack of sewer infrastructure makes it difficult to accommodate future growth without impacting drinking water aquifers and aquatic resources.

### **General Sustainability Actions:**

- Continue the discussions from the “Septic Summit”, a gathering of local elected officials held in June 2011, to address these challenges and develop policies that facilitate the conversion of high density septic systems to sewers within urban areas.
- Adopt an interim policy regarding the conversion of high density septic system neighborhoods to sewers.
- Update the *Thurston County Sewerage General Plan*.

### **Urban Sustainability Actions:**

- Build governmental capacity to address septic system conversions which may include: identifying problem areas, assessing infrastructure needs, determining priority areas for conversion, and securing funding.
- Plan for additional wastewater treatment capacity needs, likely in the form of reclaimed water production, to meet future demands due to conversion of legacy septic systems and future development in the urban areas.

### **Rural Sustainability Actions:**

- Expand the county’s operation & maintenance program to educate septic owners and insure that onsite systems are maintained and kept in proper working order.

## **Governance - RESOURCE MANAGEMENT**

**CHALLENGE: To manage water as a holistic resource instead of the current layers of state and local regulations which addresses separate pieces of the water puzzle.**

Within our communities water infrastructure has been divided into a number of management systems with each designed to handle a different piece of the water infrastructure puzzle. There is one regulatory package for drinking water, another for wastewater, and a third for stormwater. These are often administered by different state agencies, and managed by many jurisdictions, each with numerous, separate utilities. Each infrastructure system is intended to protect water quality, public health, and the environment. However, it is

difficult to account for multiple community withdrawals or inputs of pollutants without impacting other communities, other water utility systems, and the available water resources. Even though local jurisdictions generally do a good job of coordinating within these management systems, it is easy to overlook the interconnectedness of our local water resources.

#### **Sustainability Actions:**

- Explore ways to manage water resources within the region more holistically in collaboration with our current governmental entities, utility departments, and state oversight roles.
- Provide formal support and resources for greater coordination between communities to meet common water infrastructure goals, including:
  - Cooperation on joint water right and transfer applications;
  - Joint infrastructure projects, particularly near jurisdictional boundaries;
  - A formal process to share plans and coordinate proposed projects;
  - Common tools across the region that may include: development standards, management policies, asset management programs, restoration projects, and a planning horizon; and
  - Joint public education efforts addressing the value of water, wastewater treatment, reclaimed water, and water conservation.

#### **Governance - LIMITED FINANCIAL RESOURCES**

**CHALLENGE: To plan, design, and construct new facilities and major system upgrades despite reduced access to grants and loans.**

All water infrastructure utilities have to find the balance between rates, maintenance costs, and environmental quality. In recent years, state economic conditions have suffered and as a result state and federal grant and loan programs for new water infrastructure have been reduced or eliminated. If this trend continues, funding for new water infrastructure facilities will become even more difficult. This challenge is even greater for small communities which lack wastewater treatment facilities, as their future population and economic growth will be limited by restrictive septic system development standards. Local government access to financial resources will be essential for the implementation of future water infrastructure and facilities plans.

#### **Sustainability Actions:**

- Explore financial incentives to encourage in-fill and redevelopment on previously developed lands in priority areas with adequate water infrastructure capacity.
- Explore ways to increase cooperation between jurisdictions as a way to address funding limitations.
- Continue to educate local representatives and the state legislature on the critical importance of adequate funding for the Public Works Trust Fund, Clean Water Grants, and other financial tools to implement sustainable development plans.
- Continue public education efforts to build community awareness of costs associated with sustaining existing infrastructure and building infrastructure to meet increasing demands.

## **Governance – EDUCATION PROGRAMS AND COMMUNITY SUPPORT**

**CHALLENGE: To raise awareness about the importance of water infrastructure in providing and maintaining clean water sources.**

Water infrastructure plays a crucial role in maintaining clean water sources and supplies through features such as a well functioning distribution system, wastewater treatment plants and the treatment of stormwater. However, most citizens are not aware of these benefits, and only relate to water infrastructure through the cost on their utility bill. This can cause significant opposition to rate increases and other projects to enhance water infrastructure. Thurston County, the LOTT Clean Water Alliance, and communities in the region have all conducted activities to raise awareness about the importance of well functioning water infrastructure. These community efforts must continue to build the political support necessary to provide the water infrastructure required for the county's current population and its anticipated growth over the next 30 years.

### **Sustainability Actions:**

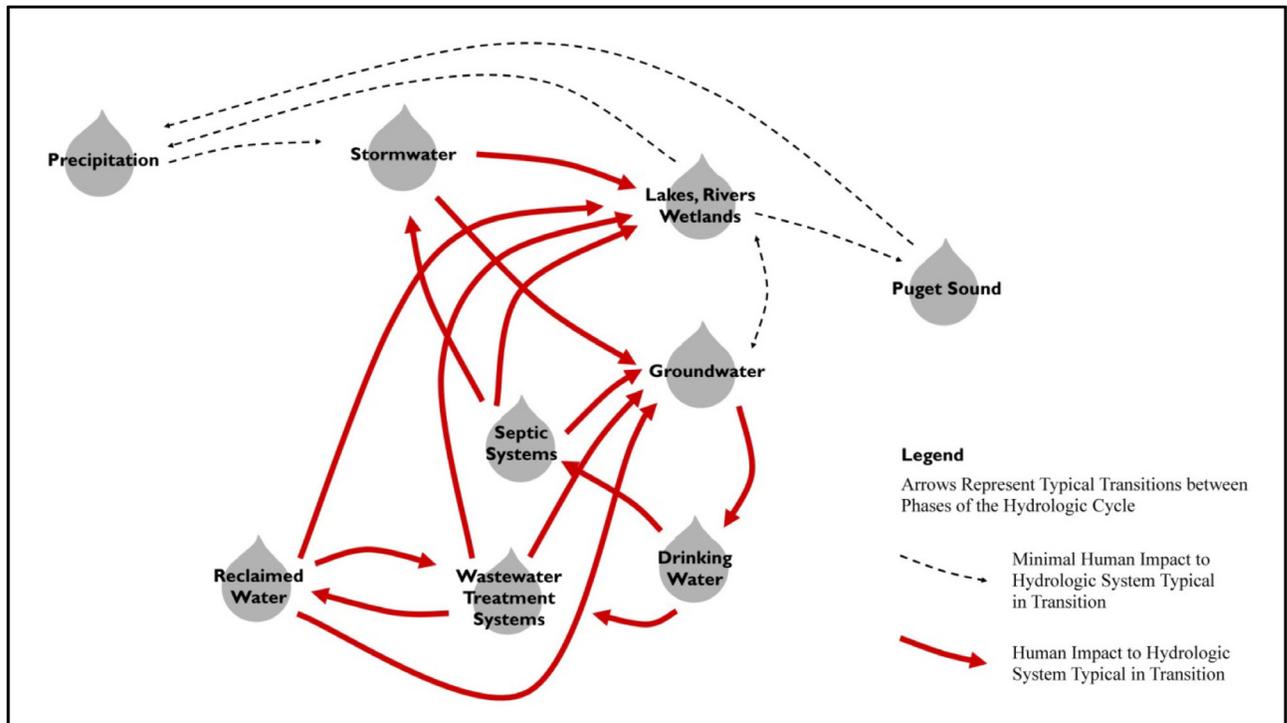
- Continue to have local educators coordinate public education efforts.
- Continue public information, education and involvement efforts, such as public outreach to community groups and celebrations of completed major improvement projects.
- Continue to use education tools like the WET Science Center, Cochrane Memorial Park in Yelm, East Bay Public Plaza, and a demonstration project at the new Hands on Children's Museum to provide basic education about the value of water, wastewater treatment, reclaimed water, and water conservation.
- Continue public education efforts to build community awareness of costs associated with sustaining existing infrastructure and building infrastructure to meet increasing demands.

# Water Infrastructure

## Project Scope

The hydrologic cycle is a sustainable system – precipitation falls and flows into the ground or surface water bodies, and heat causes the water vapor to rise again. Human activities affect this system and are not always sustainable. Ground water withdrawal for drinking water has caused reduction in stream flows; impervious surfaces associated with development have increased peak stormwater runoff associated with storms and discouraged water from infiltrating into the ground; and septic discharges have polluted ground water sources and/ or put too many nutrients into surface water bodies, contributing to algal blooms. (See Figure 1)

Figure 1: Conceptual View of The Hydrologic Cycle and Human Impacts



Water infrastructure plays a large role in reducing the effects of human impacts on the hydrologic cycle. Wastewater treatment can reduce the impact of nutrient loading associated with septic systems and can ensure that water is treated before entering surface or groundwater bodies. Reclaimed water goes even beyond this, allowing water to be reused for beneficial uses in a community, reducing the need for additional groundwater withdrawals. Stormwater treatment also plays a major part, reducing the pollution and peak stream flows associated with precipitation traveling over impervious surfaces.

This white paper discusses Water Infrastructure – how people in Thurston County access, use, discard, treat, manage, and impact water resources. Quality of life in the region is directly related to water. Groundwater provides the primary source of drinking water for county residents, and surface water bodies provide opportunities for both recreation and sustenance. Human use of water and development impact these water resources. The systems that exist to provide for human use of water resources are complex, with sometimes competing and incompatible demands on water resources. It is hoped that this paper will promote further discussion about water sustainability in Thurston County.

<sup>3</sup>Figure 2 includes both sewered and non-sewered areas, and as a result, should not be construed to represent all areas that are on a community or municipal water source and a septic system.

## Glossary

**Drinking Water** is water that is suitable for human consumption.

**Drinking Water Infrastructure** refers to the systems used to collect, store, pump, and convey water to users.

**Reclaimed Water** is water that is produced by treating wastewater to a high quality so that it can be used for non-drinking purposes, such as irrigation, dust suppression, and toilet flushing.

**Reclaimed Water Infrastructure** refers to the systems used to treat and convey reclaimed water to areas where it is put to use.

**Stormwater** is water that accumulates from precipitation, including rain or snow events, which can be amplified in quantity by impervious surfaces.

**Stormwater Infrastructure** refers to the systems used to collect and treat stormwater, including storm drains, piping networks, retention ponds, and more.

**Wastewater** is water that has been used for domestic, commercial, or industrial purposes and then discarded.

**Wastewater Infrastructure** refers to the systems used to collect and treat wastewater so that it can be released back into the environment. These systems include sewer systems and wastewater treatment plants, or septic systems that serve one or more properties.



## Thurston County Population

In 1960 the population of Thurston County was 55,000. This included all its communities and unincorporated county areas. A decade later the population had risen to nearly 77,000. Growth of the 1970 was the highest on record and pushed our population well beyond the milestone of 100,000 to 124,000 in 1980. This represented an increase of 47,000 in just ten years. State government fueled the next decade's growth to 161,000 in 1990. At the millennium Thurston County had a population of 207,000.

As of the most recent US Census (2010), there were 252,000 living in Thurston County. Our current county population is roughly four times that of 1960, and roughly twice the population of 1980. As one of the fastest growing regions in the state, the Thurston County population is expected to grow by about 120,000 by the year 2035.

This paper will address the following issues of Water Infrastructure:

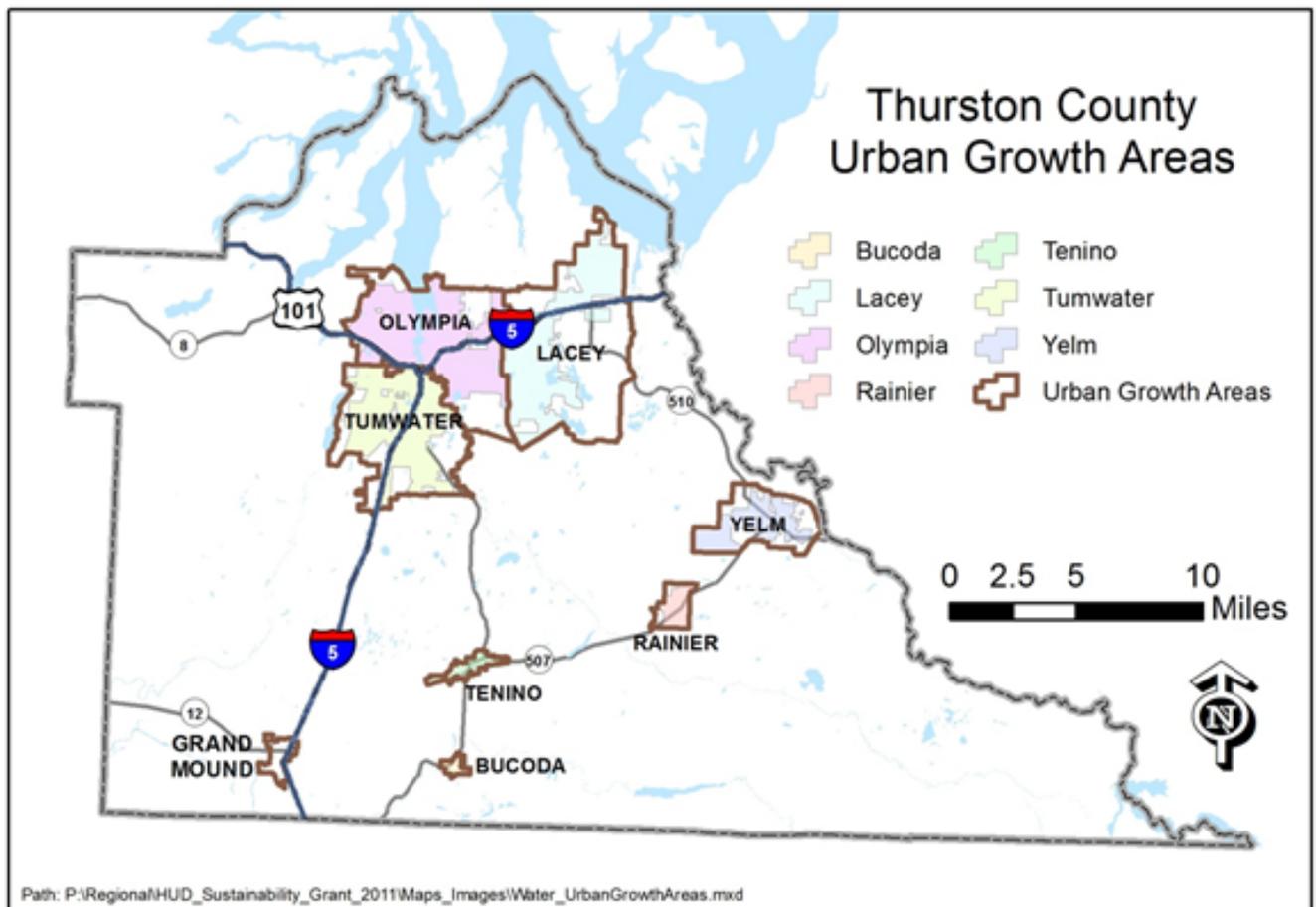
- Overview of the Existing Water Infrastructure in Thurston County
- Analysis of: What is Working Well? - What are the Barriers to Sustainable Development? – What are the Opportunities to overcome these Barriers?

## Existing Water Infrastructure in Thurston County

Access to water infrastructure is dependent on where a person lives. Designated urban growth areas receive the highest levels of water service and rural acreage is typically entirely on private and individual systems.

- In **Urban Areas** there are opportunities for individuals to have, or contribute to, all categories of water infrastructure: drinking water, reclaimed water, stormwater, and wastewater or septic systems. Local municipalities are most often the providers for all these utilities, with the exception of septic systems and some stormwater and water facilities located in unincorporated urban growth areas. (Figure 2 displays the Urban Growth Areas in Thurston County).

Figure 2: Thurston County Urban Growth Areas

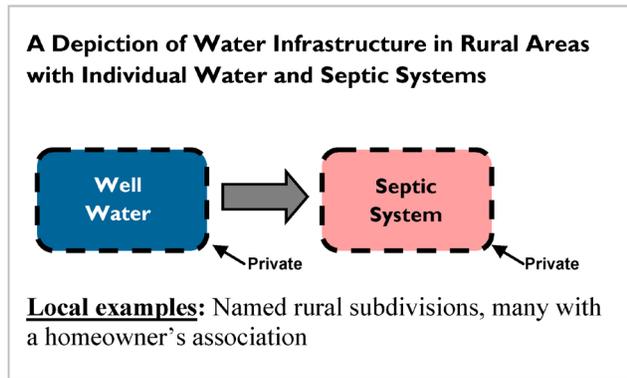


- In **Rural Areas** (outside the towns and cities) access to water infrastructure varies widely. Access to drinking water is typical, and by right each rural residence can have an "exempt well" for up to 5,000 gallon per day. Community water systems are also common in developed subdivisions. Wastewater disposal is most often accomplished by septic systems located on-site though in some cases small wastewater treatment plants have been constructed for neighborhoods that have high enough densities to cause water quality impacts or health concerns. Stormwater management often involves basic stormwater facilities (ponds, etc.) with much of the stormwater managed within road rights-of-way or through community maintained facilities.

The following sections depict various ways in which drinking water, reclaimed water, stormwater, and wastewater or septic systems are distributed throughout the rural and urban portions of the county.

### Rural Areas with Individual Systems

Rural areas with individual drinking water and septic systems comprise the largest portion of unincorporated Thurston County. Here both the water and septic service systems are private; private on-site wells are used for drinking water and private septic systems are also located on the parcel. Densities are low enough that stormwater from paved roads is typically managed within the right-of-way, or through community maintained facilities.



### Areas with Community Water and Individual Septic Systems

A number of areas in Thurston County consist of community or municipal water systems and individual septic systems. These areas typically have higher densities than areas that are solely on individual water and septic systems. Septic systems in these areas can cause significant public health impacts if the density of housing is too great or poor soil conditions (excessively permeable or shallow soils) exist in the area where the drainfield is installed. In some areas cumulative impacts of septic systems can be significant, even though none of the systems show overt signs of failure (sewage surfacing or backing up in a structure). Figure 3 shows all of the areas that are served by a community or municipal water system in Thurston County<sup>3</sup> and Figure 4 displays areas that are currently under a special septic management program to ensure water quality.

For the purpose of the paper, the areas are broken into three major types: moderate density rural neighborhoods; small communities and high-density urban neighborhoods served by septic systems; and areas that have made or would benefit from the transition to a sewer system.

<sup>3</sup>Figure 2 includes both sewer and non-sewered areas, and as a result, should not be construed to represent all areas that are on a community or municipal water source and a septic system.

Figure 3: Community Water Systems

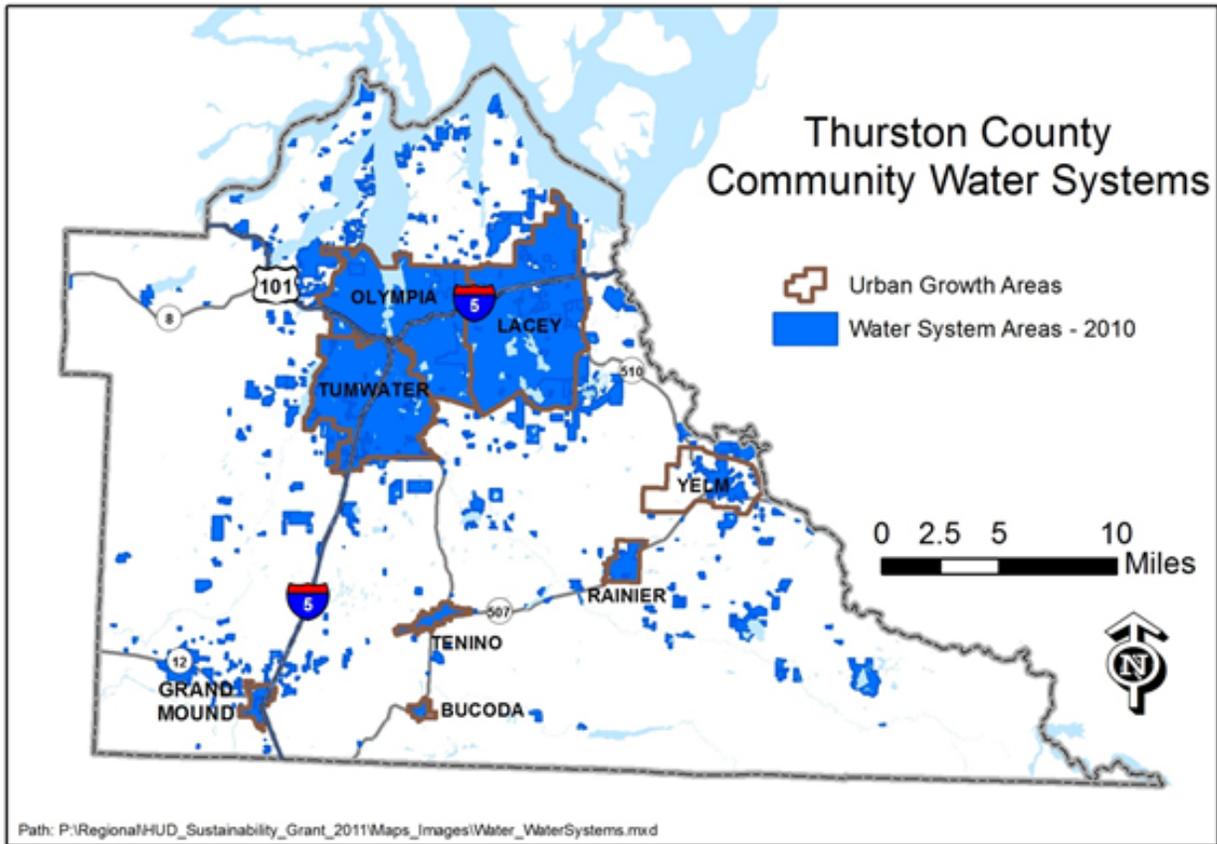
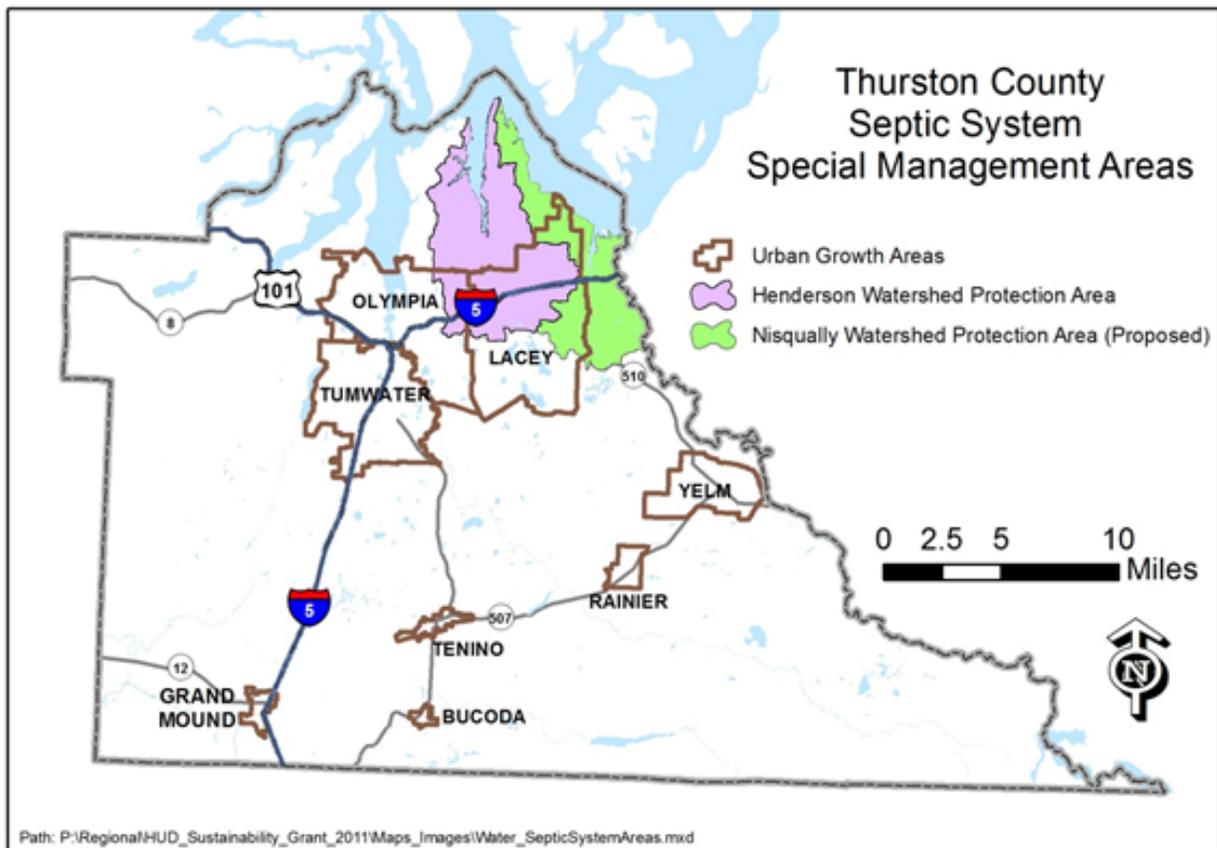


Figure 4: Septic System Special Management Areas



## Moderate Density Neighborhoods in Rural Areas

A number of moderate density rural neighborhoods within the rural portion of Thurston County have community water systems and individual septic systems. Many of these subdivisions pre-date local zoning, subdivision, and shoreline regulations. Drinking water in the communities is provided by a community water system, which can be either private or publicly owned. Septic systems are private and located on-site, and managed individually or by a community association. Most stormwater in these areas is managed within the right-of-way or through community maintained facilities.

### Small Communities and High-Density Neighborhoods served by Septics

A number of small communities and moderate to high-density neighborhoods that are served by septic systems also exist within the county. These include both residential and commercial areas. Community or municipal water systems provide water to these areas.

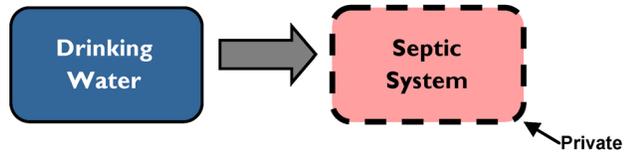
Septic systems in these neighborhoods are often located on lots that are smaller than would be allowed today. While individually these septic systems may not show signs of failure, the system, when sited with other systems may cumulatively cause elevated nitrate levels in the groundwater, or affect surrounding streams, particularly if a number of the septic systems are failing.

The small lot sizes and high degree of site coverage found in many commercial areas make it difficult to expand or replace septic systems, which in turn can limit growth potential within communities.

Stormwater is managed primarily within the right-of-way in these areas, although some residential and commercial developments may manage stormwater onsite through community maintained facilities.

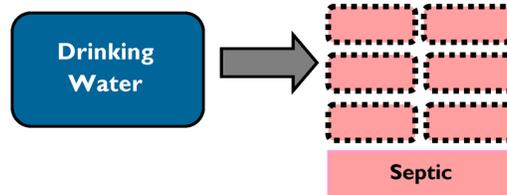
In these high density neighborhoods, failing septic systems and polluted stormwater can cause significant impacts to nearby water bodies or groundwater, particularly when they are located over outwash soil, which provides little treatment to the water as it percolates through the soil.

### A Depiction of Water Infrastructure in Moderate Density Rural Areas with Community Water and Individual Septic



**Local examples:** Named rural subdivisions, many with a homeowner's association

### A Depiction of Water Infrastructure in Small Communities and High-Density Neighborhoods Served by Septic Systems



#### **Local examples:**

Small Communities – Rainier and Bucoda

Rural High-Density Neighborhoods – Beachcrest, Clearwood, Nisqually Pines, Scott Lake

Urban High-Density Neighborhoods – Tanglewilde, Thompson Place

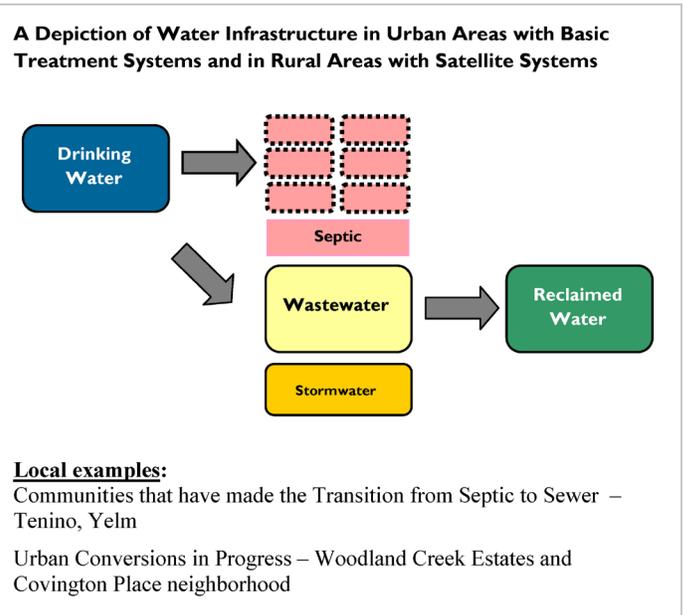
Commercial – Maytown, Littlerock

\*Also known as - Limited Areas of More Intensive Rural Development (LAMIRD).

## Urban Areas that Have Made or Are Making the Transition to Wastewater Treatment

The cumulative public health impact of septic systems in some communities can be significant, and when these impacts occur, the conversion from septic systems to a sewer system is necessary but a challenge. Costs to provide the utilities are considerable, and in some instances jurisdictions and property-owners are unwilling or unable to shoulder the costs, even though the public health impacts are clear.

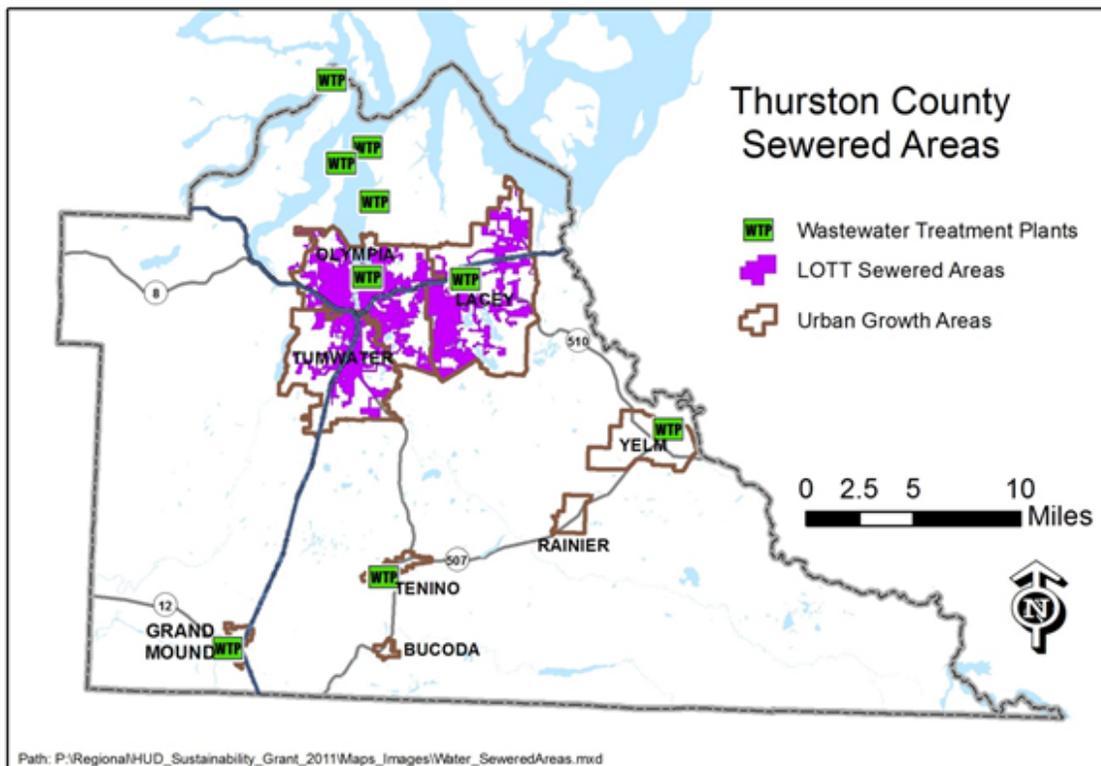
Some communities or neighborhoods however have made or are making this transition. Among these are the communities of Yelm and Tenino, who transitioned from septic systems to a wastewater treatment system that included the production of reclaimed water. Another example is the Woodland Creek Estates and the Covington Place neighborhoods (in the Henderson Inlet watershed) that are transitioning from high-density septic systems to connect to the regional LOTT wastewater system. A portion of the flow in the LOTT system is treated to meet Class A Reclaimed Water standards.



## Areas with Community or Municipal Water and Sewer Treatment

Some sewer treatment facilities exist for neighborhoods and communities in Thurston County. For the purposes of this paper, these areas, and their types of facilities, are broken into two main types: urban and rural areas with basic treatment systems; and urban areas with enhanced wastewater treatment.

Figure 5: Wastewater treatment Plants and Sewered Areas<sup>5</sup>



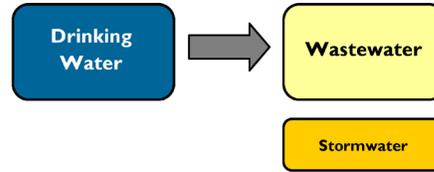
<sup>5</sup>The shading shows areas sewered by the LOTT Clean Water Alliance. The service area of other wastewater treatment plants is not currently available.

## Urban Areas with Basic Wastewater Treatment System and Rural Satellite Systems

Densities in cities are high and as such demand an urban level of services. This includes drinking water, which is often provided by the municipality; wastewater treatment facilities to handle higher densities and small lot sizes that limit the long-term effectiveness of individual on-site systems, along with commercial and industrial wastes; and stormwater treatment facilities. Generations ago sewage and stormwater systems were comingled creating the potential for discharges of untreated sewage into receiving waters during high-volume rain events. However, today wastewater and stormwater are managed in separate systems to date, except in the oldest portions of downtown Olympia.

In a limited number of rural areas, sewer and stormwater systems have been separately constructed to serve high-density neighborhoods to address health concerns or water quality impacts.

### A Depiction of Water Infrastructure in Urban Areas with Basic Treatment Systems and in Rural Areas with Satellite Systems



#### Local examples:

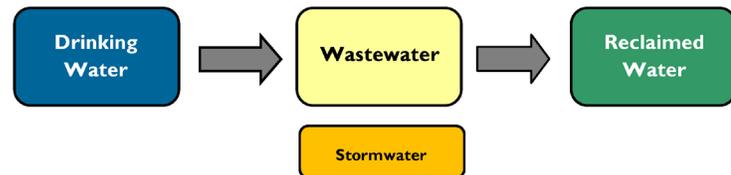
Urban Area – Grand Mound

Rural Areas – Tamoshan, Boston Harbor (*STEP system*), Carlyon Beach & Seashore Villa (*private*)

## Urban Areas with Enhanced Treatment

Some cities have moved beyond the basic wastewater treatment system by adding enhanced treatment to create reclaimed water (for a depiction of these communities, please see Figure 6). There are four grades of reclaimed water, but the highest grade – Class A – can be used for most domestic, commercial and industrial uses, except drinking water. Only Class A reclaimed water is produced by Thurston County reclaimed water communities.

### A Depiction of Water Infrastructure in Urban Areas with Basic Treatment Systems and in Rural Areas with Satellite Systems



#### Local examples:

Yelm, Lacey-Olympia-Tumwater (LOTT), and Tenino

Figure 6: Reclaimed water Communities

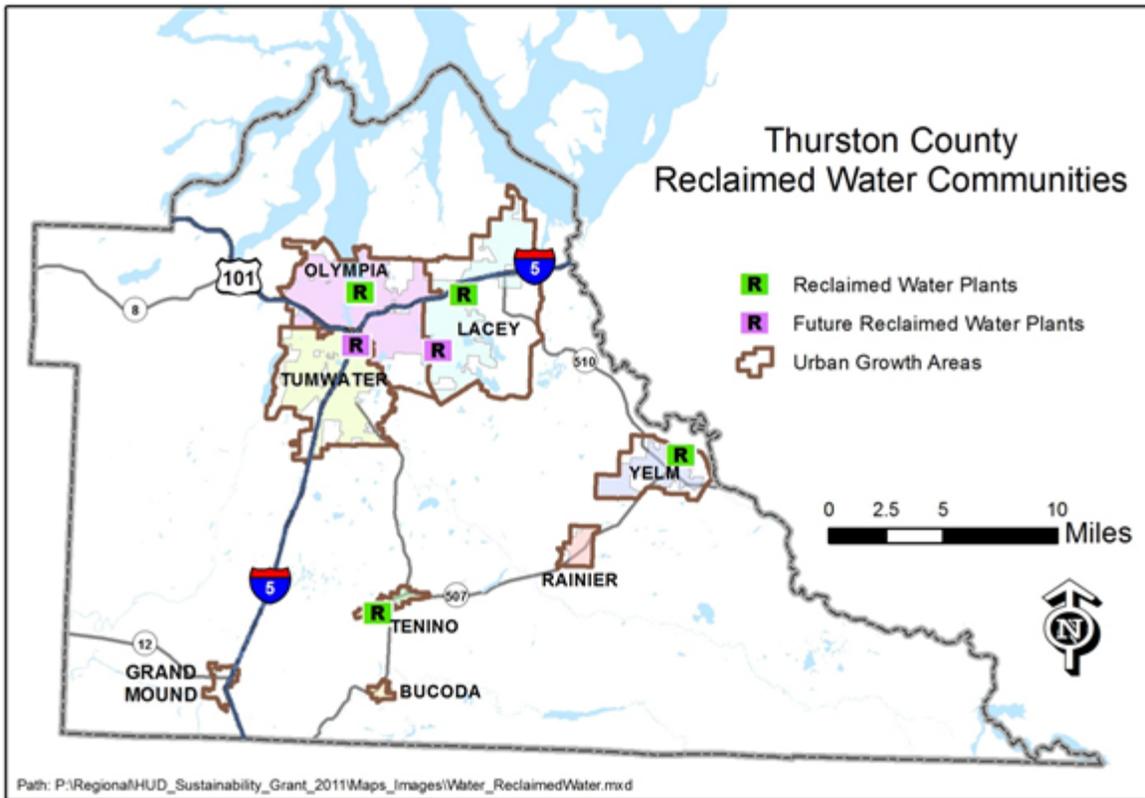


Figure 7: Thurston County Wellhead Protection Areas

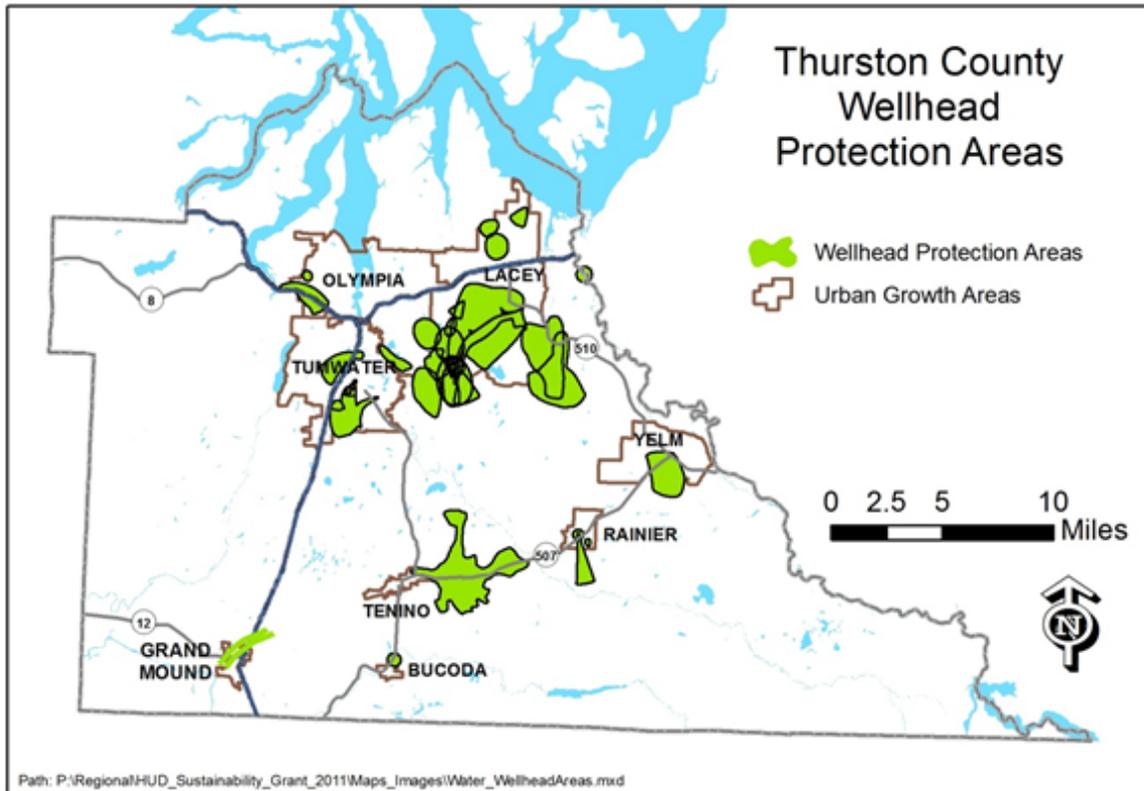
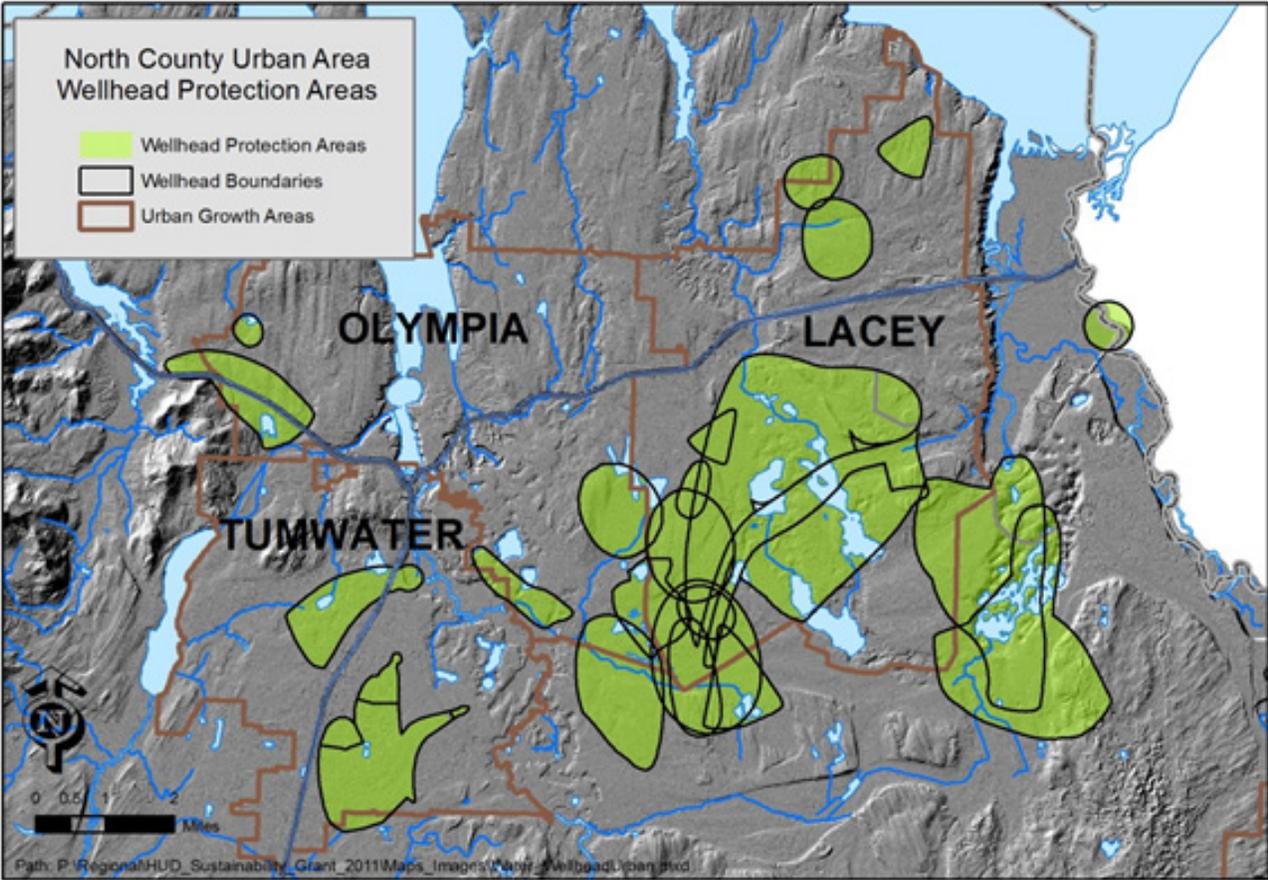


Figure 8: North County – Overlapping Wellhead Protection Areas



## **Key Themes of Water Infrastructure**

The Water Infrastructure Panel was asked to explore their topic through the lens of three direct, but ultimately complex and interlocking questions:

1. What is working well? What made it work?
2. What are the challenges or barriers to sustainable development?
3. What are some opportunities to overcome these challenges?

Responses to these questions were first collected by the categories of water infrastructure (e.g. *Drinking Water*, *Reclaimed Water*, etc.). These were then divided into sub-categories. While this structure worked well for an individual category, another format was needed when common or similar responses were blended together. For this paper the responses were collected into key 'Themes' (see below) which provided the major responses for all three questions:

### **WATER INFRASTRUCTURE FOR A GROWING POPULATION**

#### **The Resource – DRINKING WATER**

Regional Water Supply  
Conservation Programs

#### **The Resource – STORMWATER**

#### **The Resource – WASTEWATER AND RECLAIMED WATER**

#### **The Resource – WASTEWATER AND SEPTIC SYSTEMS**

High Density Septic System Neighborhoods – Urban Areas  
Septic System Neighborhoods – Rural Areas

#### **Governance – RESOURCE MANAGEMENT**

Existing Local Plans – Require Updates  
New State Plan – Requires Action

#### **Governance – LIMITED FINANCIAL RESOURCES**

Major Infrastructure and New Facilities  
Utility Rate Structure

#### **Governance – EDUCATION PROGRAMS AND COMMUNITY SUPPORT**

# WATER INFRASTRUCTURE FOR A GROWING POPULATION

## What is working well? What made it work?

- **Existing Plans** – The *Regional Plan for Sustainable Development* (RPSD) is to be based upon the EPA livability principles, the adopted growth forecasts, and adopted plans and development codes.

## What are the challenges or barriers to sustainable development?

- **Development Regulations** – There is a perception that current county development standards create an incentive for suburban sprawl rather than infill development within urban centers. For example within the unincorporated UGA, developments could be approved on exempt wells, with all the residences being on septic systems. Avoiding extensions of public water and sewers make such developments difficult and costly to incorporate into the urban area at a later date.
- **Infill and Redevelopment Areas** – There are a number of challenging issues for infill and redevelopment neighborhoods, which may include:
  - **Barriers to Annexation** – Some jurisdictions see the lack of water, stormwater, or wastewater infrastructure as barrier to annexation due to the cost of upgrading these systems, and
  - **Individual Wells** – It is difficult to integrate neighborhoods on individual wells into a city's water system.
- **Barrier to Infill and Development** – There are few financial mechanisms or fiscal resources to upgrade inadequate systems to current standards or convert septic systems to sewer. One of the only available financing options is the Local Improvement District (LID) or Utility Local Improvement District (ULID) process.

## What are some opportunities to overcome these challenges?

- **Identify Target Areas** – The jurisdictions could utilize a process to identify and prioritize infill and redevelopment areas within the region, beyond being within an urban area.
- **Encourage Infill and Redevelopment** – The region could explore ways to encourage and finance infill and redevelopment within priority areas. This may include lowering fees (impact, general facilities charges, etc), upfronting more of the costs of system expansion, reducing late-comer fees, or public & private partnerships.
- **Evaluate Current Development Regulations** – Thurston County could undertake a review of its current development codes to evaluate if when combined, they encourage suburban sprawl in some Urban Growth Areas. This review could include requirements for public water systems, sewers, street widths, sidewalks, parking, and stormwater infrastructure and facilities.
- **Challenging Service Areas** – Jurisdictions could explore alternative ways to provide service within infill and redevelopment areas. This may include local water service agreements, which allow an interim service provider when the primary provider in the area is not able to provide service at that time. As the primary service provider builds its capacity extending to the site, the development could transfer the entire system and any water rights to the jurisdiction.

# The Resource – DRINKING WATER

## Regional Water Supply

### What is working well? What made it work?

- **Collaborative Approach** – There is good regional coordination between the municipalities. This includes a wide range of actions, such as:
  - Collaborative water rights mitigation.
- **Condemnation/Purchase of Water Rights** – Some jurisdictions have been successful in purchasing water rights and transferring them to municipal use. An example is the condemnation/purchase of rights from the former Olympia Brewery by the Cities of Lacey, Olympia and Tumwater
- **User Shift from Drinking to Reclaimed Water** – Some reclaimed water jurisdictions have successfully used their Class A reclaimed water as a means to extend the capacity of their existing water rights.
- **Well Head Protection Areas** – Local jurisdictions have adopted Critical Areas regulations to protect major sources of drinking water with wellhead protection areas.

### What are the challenges or barriers to sustainable development?

- **Political Boundaries v Natural Systems** – Water resources do not conform to jurisdictional boundaries, but the systems established by people to manage water resources are subject to jurisdictional boundaries which complicates water resource management. For example, groundwater travels across jurisdictional boundaries and is connected to surface waters that may cover boundaries, yet protections for groundwater are determined by local regulations that are not always consistent. Conversely, individual jurisdictions attain water rights for their communities through a review process that must consider the cumulative impact of consumptive water uses across an entire watershed.
- **Water Right Conflicts** – There are several difficulties with the current state water right system, which include the following:
  - **Exempt Wells** – Exempt wells are allowed throughout the rural areas and within UGAs where service from the municipal water system is not available.
  - **Comprehensive Plans** – Jurisdictions are required to adopt comprehensive plans to accommodate 20 years of forecasted growth. These plans can be adopted without having the water rights to meet those growth projections.
  - **Individual Exempt Wells** – Exempt wells located within the same basin as cities and towns can divert water that these jurisdictions need to meet growth projections.
- **Well Head Protection Areas** – Local jurisdictions collaborate on wellhead protection standards, but there is variability between the local regulations.
- **Nonconforming Land Uses** – Sometimes inconsistent and nonconforming land uses are located within designated well head capture areas that pose a significant risk to the drinking water.

## What are some opportunities to overcome these challenges?

- **Coordinated Management** – Jurisdictions do not perceive the need for a regional drinking water entity, but there is strong agreement regarding the benefits of coordination between the communities, and cooperation on a project by project basis. There is also great benefit in recognizing the connectivity between water resources and working across jurisdictional and utility boundaries to coordinate plans and projects for drinking water, wastewater, reclaimed water, and stormwater.
- **Individual Wells within UGAs** – Thurston County could adopt a land use regulation to prohibit individual exempt wells within unincorporated urban growth areas, when municipalities or private suppliers can provide water service.
- **Common Well Head Regulations** – There is some interest in having jurisdictions adopt consistent critical area regulations for aquifer recharge and wellhead protection areas across the region. Given the importance on groundwater as our drinking water source, common regulations would provide consistency on what is required and how it is enforced
- **Regionalize Infrastructure Management** – There is the suggestion that the drinking water utilities could benefit by greater regional coordination, however this is not shared by all and greater analysis would be necessary to understand what and where these benefits would exist. The differences between large and small systems and potential rate implications for utility customers have been noted as key issues.

For example, if regional coordination of drinking water utilities were to occur, it may include one or more of the following components:

- **Common Development Standards** – Jurisdictions could synchronize their utility infrastructure standards across the region,
- **Common Management Policies** – Jurisdictions could collaborate and be consistent in their application of policies,
- **Common Asset Management Program** – Jurisdictions could move toward creating an asset management program (rating, risks, and repairs),
- **Regional Restoration Projects** –Jurisdictions could work together to mitigate impacts on natural aquatic systems, and
- **Utility Planning Horizon** – Jurisdictions could shift their long- range utility planning to a 50-year planning horizon.

## The Resource – DRINKING WATER (cont.)

### Conservation Programs

#### What is working well? What made it work?

- **Summer Water Conservation Programs** - Olympia, Lacey, Tumwater and Yelm also have outdoor water conservation programs in place to help reduce the peak day demand during dry summer months.
- **Reduction of Flows** – Jurisdictions actively encourage water conservation as a way to stretch their water supplies and extend the capacity in their wastewater treatment facilities.
- **Repair Management** – Some jurisdictions focus on repair management as a way to gain additional capacity. In Lacey, this includes prioritizing leak reduction projects like new construction, focus actions within an entire neighborhood, and reducing water theft from hydrants through the installation of hydrant locks.

#### What are the challenges or barriers to sustainable development?

- **Rate Structure Balance** – Jurisdictions find it difficult to adopt a rate structure that encourages conservation, but also generates enough revenue to cover its operating costs while appearing fair to the public.

#### What are some opportunities to overcome these challenges?

- **Rebate Programs** – Jurisdictions could continue with conservation and rebate programs, both independent and partnered (e.g. LOTT-funded), which save water and extend the capacity of existing facilities.
- **Old Leaky Pipe Program** - Jurisdictions could evaluate if instituting a priority repair management program (for neighborhoods with old leaky pipes) would benefit their community.
- **Continue Summer Conservation Programs** – Communities which have successful outdoor water conservation programs will likely continue these.

## The Resource - **STORMWATER**

### What is working well? What made it work?

- **Collaborative Approach** – There is good regional coordination between the municipalities. This includes a wide range of actions, such as:
  - Coordinated regional guidance on new stormwater regulations.
- **Regional Water Quality Monitoring** - Thurston County and the Cities of Lacey, Olympia, and Tumwater have jointly funded a regional water quality and groundwater monitoring program that goes back to the early 1980s.

### What are the challenges or barriers to sustainable development?

- **Stormwater is Different** – Stormwater can convey non-point pollution to surface and groundwaters, yet the source of the pollution is often not easily identified. Also, unlike other utilities, stormwater infrastructure is not always physically connected to each parcel or property.
- **Impacted Aquatic Habitats** – Many surface water bodies and shallow groundwater systems already show the effects of development and fail to meet state water quality standards. Stormwater can further degrade these water resources.
- **Limitations of Developed Areas** – Many existing older developed areas do not have the space necessary to retrofit the stormwater system and improve water quality. Traditional stormwater treatment generally requires large areas with permeable, unsaturated soils to accommodate stormwater retention ponds.
- **Some Maintenance Required** – There is an increased maintenance burden on property owners, such as homeowners associations and commercial/industrial lot owners, to be responsible of their on-site drainage facilities. This causes new education challenges similar to those for on-site septic systems, which can be installed and forgotten until they fail.
- **Low Impact Development Standards** – The Washington State Department of Ecology is proposing to adopt new Low Impact Development (LID) standards. Such regulations may be impractical in many areas of the northern Thurston County because of soils with low permeability and reliance on using relatively new and untested Best Management Practices (BMPs).
- **Lack of Funds** – Current stormwater capital and operation budgets do not have enough money to:
  - Replace deteriorating pipes and conveyance systems,
  - Upgrade and replace stormwater infrastructure,
  - Retrofit old neighborhoods with treatment, and
  - Provide adequate maintenance.

## The Resource - **STORMWATER** (cont.)

### What are some opportunities to overcome these challenges?

- **Coordinated Management** – Jurisdictions do not perceive the need for a regional stormwater entity, but there is strong agreement regarding the benefits of coordination between the communities, and cooperation on a project by project basis. There is also great benefit in recognizing the connectivity between water resources and working across jurisdictional and utility boundaries to coordinate plans and projects for drinking water, wastewater, reclaimed water and stormwater.
- **Stormwater Manual** – During the next Ecology stormwater manual update, there may be opportunity for regional coordination between the larger stormwater utilities and the other communities within the county.
- **Research Needed** – Increase applied research is needed on cost-effective stormwater management technologies, routine maintenance needs, and Low Impact Development (LID) practices. This would be the most valuable if the data was collected from Western Washington.
- **New Technologies** – The region could support the regional trend toward more environmentally friendly building practices, such as Smart Growth principals, Low Impact Development (LID) standards, and Leadership in Energy and Environmental Design (LEED) construction standards.
- **Changing Public Behavior** – General education is an important factor in changing the public's attitudes, hence behavior on issues that can pollute surface water and eventually an aquifer such as; pet waste disposal, fertilizer use, and car maintenance.

## The Resource – WASTEWATER AND RECLAIMED WATER

### What is working well? What made it work?

- **Statewide Leaders** – Communities in Thurston County have been leaders in the state by promoting and constructing reclaimed water facilities.
- **Reclaimed Water Facilities** – Some of the wastewater treatment facilities in the county are creating reclaimed water that can be put to beneficial reuse in their communities for non-drinking purposes.
- **Local Planning, Agreements, and Standards** – Since 2001 reclaimed water jurisdictions have worked closely through a Reclaimed Water Policies Task Force, to develop inter-local agreements, local ordinances, and customer agreements that meet state permit requirements and pave the way for distribution and use of reclaimed water.

### What are the challenges or barriers to sustainable development?

- **Changing Regulatory Environment** – The Governor has deferred the state reclaimed water rulemaking process. This action adds uncertainty to current regulatory and fiscal decisions about planned reclaimed water infrastructure and facilities. Concern exists that proposed regulations could make some projects unfeasible.
- **Financial Risk** – Continually changing technology and regulations create uncertainty and risk in investing in reclaimed water infrastructure. Since utilities generally charge lower rates for reclaimed water than for drinking water (as an incentive for developing the resource) revenues are not likely to recoup the high infrastructure costs.
- **Uncertainty of Public Health, Environmental Impacts and Public Perception** – Public perception is critical to the acceptance and use of reclaimed water. Questions are often raised about the quality and safety of reclaimed water for some beneficial uses. Questions also exist about the potential risks associated with the presence of low levels of pharmaceuticals, personal care products, and other chemical compounds. Science to support definitive answers related to potential health risks is lacking. This leaves some with questions regarding current best management practices for the use of reclaimed water.

### What are some opportunities to overcome these challenges?

- **Local Staff Representation** – It's beneficial to have experienced local staff on state advisory boards, such as the State Reclaimed Water Rule Advisory Committee. Local staff help insure that local concerns and challenges are addressed in the updated rule and guidance documents.
- **Future Reclaimed Water Facilities** – The creation of reclaimed water is at the core of some long-range wastewater management plans. This is true of the LOTT plan. In addition to its two existing facilities, LOTT plans to build two additional reclaimed water plants in the future:
  - Lacey @ Mullen Road Reclaimed Water Plant, and
  - Tumwater (*Location not yet confirmed*).

## The Resource – WASTEWATER AND RECLAIMED WATER (cont.)

### What are some opportunities to overcome these challenges?

- **Potential Reclaimed Water Facility** – As a condition to the purchase of a water right, the Grand Mound wastewater treatment plant is to have “Class A” water treatment facility in operation by June 2025.
- **Pollutant Credit Trading** – In Ecology’s pollution reduction plans (TMDL) seek opportunities to reduce overall pollutant loading in one area, hence gaining “credits”, for pollutants elsewhere in the watershed.
- **Groundwater Scientific Study** – LOTT is initiating a large-scale study of regional groundwater conditions to answer key questions related to LOTT’s reclaimed water program. The study scope includes characterizing ambient groundwater conditions, identifying sources of groundwater contamination and nutrient loading, and exploring the fate and transport of infiltrated reclaimed water. Local jurisdictions and other stakeholders have expressed interest in collaborating on the study and the effort will include extensive public involvement and education.

## The Resource – WASTEWATER AND SEPTIC SYSTEMS

### High Density Septic System Neighborhoods – Urban Areas

#### What is working well? What made it work?

- **Collaborative Approach** – There is good regional coordination between the municipalities. This includes a strong cooperative working relationship between jurisdictions and with the Environment Health Department.
- **Informed and Interested Policy Makers** - In June 2011 elected officials from Lacey, Olympia, Tumwater, and Thurston County began discussing the impacts of septic systems on local water resources. It was called a “Septic Summit”.
- **Neighborhood Sewer Conversions** – The Woodland Creek Estates and Covington Place neighborhoods are converting from high-density septic systems to sewer. The county has provided funds to design and construct the project through multiple grants. Once complete, the local jurisdiction sewer system will serve the neighborhood. This complex project holds many lessons for completing similar projects in the future.
- **Local Financial Incentive** – Olympia provides a variety of incentives to convert from a septic system to sewer with its “Septic to Sewer” conversion program. The voluntary program provides incentives for residential connections of septic to sanitary sewer as well as cost recovery for the City to make sewer extension projects possible. Properties enrolled in the program can have the sewer general facility charge (GFC - which is currently about \$2,500) waived by the City within 2 years of notification of sewer availability.

#### What are the challenges or barriers to sustainable development?

- **Legacy Septic Issues**– Development that occurred prior to current regulations often is supported by outdated systems that degrade water quality and the environment. Regulatory authority to require retrofits is often lacking or unclear. For example, prior to the 1980’s, septic systems were intended to be temporary wastewater solution. Within the city limits of Lacey, Olympia, and Tumwater, there are nearly 5,000 septic systems, with an additional 9,000 septic systems located within their Urban Growth Areas (UGAs). Many of these septic systems in high-density neighborhood create cumulative negative impacts on the environment and groundwater resources. Similarly, many older neighborhoods do not have stormwater collection and treatment systems that meet current regulatory requirements.
- **Funding Septic Conversions** – Converting communities from septic systems to sewers can be difficult. This is because the conversions are extremely expensive, we are unable to collect and reserve fees from septic system owners to help fund conversions.

#### What are the challenges or barriers to sustainable development?

- **Maintenance and Failure Tracking** – Relatively few septic systems in Thurston County (about 15%) are required to have renewable operational certificates that require routine system monitoring and maintenance. Operational certificates are required in special areas and for large and complex (alternative) systems. There is no direct oversight for the majority of septic systems. As a result tracking of septic system failures on a neighborhood scale is not being done. Multiple failures within a neighborhood could be a trigger for conversion to sewer, rather than addressing the failures individually with septic system repairs.
- **Limits to Growth for Small Communities and Existing High Density Development** – Due to septic system development standards, small communities and neighborhoods with high density septic systems have limited capacity for new development. These standards discourage the placement of future growth within these existing higher density areas. For small communities, this hinders the creation of vital local commercial centers, and the ability to finance basic government.

## What are some opportunities to overcome these challenges?

- **Regional Framework** – Local jurisdictions could work together on a regional framework for solving the problem of converting neighborhoods with high density septic systems to sewers. This could utility programs to:
  - **Identify Problem Areas** – Track septic system failures and areas where cumulative impacts of septic systems are degrading water quality or causing public health concerns within the cities and the UGAs. This could be accomplished with a county wide program that helps assure all septic systems are properly monitored and maintained.
  - **Assess Infrastructure Needs** – Identify areas where sewer mains need to be extended to serve problem/priority areas.
  - **Priority Neighborhoods** – Target priority neighborhoods with a systematic method for converting to sewer service.
- **Evaluate Local Financial Incentive** - Encourage other jurisdictions to evaluate means of reducing the cost of converting to sewers by waving connection fees of other local charges.
- **Interim Conversion Policy** – Thurston County and the cities and towns could adopt an interim policy regarding the conversion of high density septic system neighborhoods to sewers. This would be in effect until the *General Sewerage Plan* is updated.
- **Puget Sound Concerns** – The Puget Sound Partnership helps to focus attention on cleaning up all pollution sources that affect Puget Sound. They may develop new tools to help us to better manage septic systems and funding opportunities for fixing problem areas.
- **Sewers for Small Communities** – The region could aid small communities to plan, design, and construct new sewer facilities. This would allow them to grow their population and economic base, and allow a greater proportion of the anticipated future growth to locate closer to within the region’s small communities.

## The Resource – WASTEWATER AND SEPTIC SYSTEMS

### Septic System Neighborhoods – Rural Areas

#### What is working well? What made it work?

- **Operational Permits Program** - Thurston County has adopted a special operational permit program for septic systems within the Henderson Inlet watershed. This has been an effective technique to minimize the cumulative effects of septic systems. A similar program is proposed for Nisqually Reach.
- **Operation and Maintenance Workshops** - The Environmental Health Division has provided free “Septic Sense” workshops to provide basic monitoring and maintenance information to septic system owners.
- **Time of Transfer Program** – In 2010 Thurston County implemented a program that requires septic systems to be evaluated when the properties they serve are sold or transferred. This program has identified many failures and system deficiencies, improved county records, and provided valuable information to the parties involved in the property sale.

#### What are the challenges or barriers to sustainable development?

- **Expense of Operational Permit Programs** – The County Health Department lacks sufficient resources to create Henderson type programs in other vulnerable watersheds or to implement a county- wide renewable operational certification (mandatory monitoring, maintenance and reporting) system.
- **Septic Failure Tracking** – Because there is no routine inspection reporting requirements for older conventional septic systems, tracking of septic system failures on a neighborhood scale is not being done. Multiple failures within a neighborhood could be a trigger for conversion to sewer, rather than addressing the failures individually with septic system repairs.

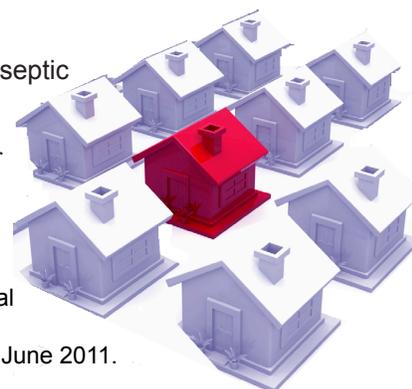
#### What are some opportunities to overcome these challenges?

- **Countywide Operational Permit Program** – Thurston County could institute a countywide septic system monitoring program. Like an operational permit, it would require routine septic system inspections, corrections to failing systems, and identification of systems that could be converted to sewer. Such a program could be funded through fees or rates that are billed and collected via the property tax statements, similar to the collection of stormwater fees.
- **Continue with Operation and Maintenance Workshops** - The Environmental Health Division could continue with free “Septic Sense” workshops to provide basic monitoring and maintenance information to septic system owners.

#### DID YOU KNOW?

A house with a properly functioning septic system generates the same level of nitrogen as would eight houses with a sewer connection to a wastewater treatment plant.\*

\*Source: Thurston County Environmental Health Department, Olympia, WA.  
Septic Presentation #1, Septic Summit, June 2011.



## Governance – RESOURCE MANAGEMENT

### Existing Local Plans – Require Updates

#### What is working well? What made it work?

- **Existing Plans** – The *Regional Plan for Sustainable Development* (RPSD) is to be based upon the EPA livability principles, the adopted growth forecasts, and adopted plans and development codes.
- **Collaborative Approach** – There is good regional coordination between the municipalities. This includes a wide range of actions, such as:
  - Cooperative working relationship between jurisdictions and with the Environment Health Department.

#### What are the challenges or barriers to sustainable development?

- **Lack of Countywide Water System Plan** – The Thurston Region lacks a single, Coordinated Water System Plan (CWSP) and its existing plans are over a decade old.
- **Outdated Sewerage General Plan** - The 1990 *Thurston County Sewerage General Plan* has not been revised since all the local jurisdictions adopted their GMA comprehensive plans and development regulations. There is some disagreement about its application within city and town boundaries. It also does not address creating reclaimed water at waste water treatment facilities.
- **Difficult Service Areas** – Within Urban Growth Areas (UGAs), the state Growth Management Act requires that communities provide urban level services. Communities may find that some portions of the UGA are extremely expensive and/or environmentally costly to provide wastewater service.

#### What are some opportunities to overcome these challenges?

- **Coordinated Water System Plan Update** – A regional planning process could be commenced to update the Coordinated Water System Plan to provide for a consistent approach countywide.
- **Sewerage General Plan Update** – The *Thurston County Sewerage General Plan* could be updated to ensure it is relevant to current GMA regulatory and development standards. The Update could identify approaches, roles, and responsibilities for each major step in sewer planning and septic system siting, including conversions. After completion the local sewer plans may also need to be updated.
- **Growth Boundary Review** – Communities may need to review boundaries, existing densities, and growth projections to identify portions of their growth areas where it is not feasible to provide urban levels of utility infrastructure, and undertake a process to revise their growth area boundary.

## Governance – RESOURCE MANAGEMENT

### New State Plan – Requires Action

#### What is working well? What made it work?

- **Existing Plans** – The *Regional Plan for Sustainable Development* (RPSD) is to be based upon the EPA livability principles, the adopted growth forecasts, and adopted plans and development codes.

#### What are the challenges or barriers to sustainable development?

- **TMDL Plan** - In 2012 the Washington Department of Ecology will release a draft pollution reduction plan (TMDL) for the Budd Inlet-Deschutes Watershed. It will likely include a range of pollution reduction actions for wastewater and stormwater utilities, and may involve new land use or septic systems relations.

#### What are some opportunities to overcome these challenges?

- **Pollutant Credit Trading** – In Ecology’s pollution reduction plans (TMDL) seek opportunities to reduce overall pollutant loading in one area, hence gaining “credits”, for pollutants elsewhere in the watershed.
- **TMDL Implementation Planning** – Local representation on the TMDL advisory committee can help to identify opportunities for pollutant reduction.

## Governance – LIMITED FINANCIAL RESOURCES

### Major Infrastructure and New Facilities

#### What is working well? What made it work?

- **Treatment Facilities** – Communities within the Thurston Region are served by a range of water, stormwater, wastewater, and reclaimed water treatment facilities. Some are regional facilities which serve more than one community, while other jurisdictions have a single facility which serves an entire jurisdiction.
- **State and Federal Grants** – Local jurisdictions have obtained state and Federal grants to help fund program development and implementation. Both non-competitive and competitive grants have been available.
- **Constructing New Facilities** – New facilities tend to be more efficient, have lower leakage rates, are more energy efficient, and less costly to maintain than an older treatment facility. Cost can depend upon variables such as, the level of treatment, certified operators, 24 hour - 7 day per week facility staffing, and chemical usage.
- **Embracing New Technology** – Some jurisdictions are embracing new technology as a means of lowering system maintenance costs. For example, the City of Tenino is in the process of replacing its water meters with radio read meters.
- **Asset Management System** – Some jurisdictions have found it useful to managing drinking water facilities by using life-cycle costs for key infrastructure assets.
- **Favorable Bond Ratings** – A utility system’s operation, planning, and fiscal management are all considered necessary for a favorable bond rating.
- **Emergency Response** – Local jurisdictions work together to respond to sewer system spills, water line breaks, flooding from stormwater, and other emergencies.

#### What are the challenges or barriers to sustainable development?

- **Limited Financing** – The construction of new treatment facilities, major infrastructure, and upgrades is often not possible without state grants or loans.
  - For the past few years, the funding levels for the Public Works Trust Fund and the Clean Water Grants have been reduced or not available.
  - For low interest loans funds that are available, competition for that financing is high, limiting the potential for financial support from the sources.
  - Limited financing options forces communities to seek revenue bonds which can result in higher monthly rates.
  - Recent Federal competitive grant programs have sought “ready to go” projects which can be challenging within short timelines.

## Governance – LIMITED FINANCIAL RESOURCES

### Major Infrastructure and New Facilities (cont.)

#### What are the challenges or barriers to sustainable development?

- **Joint Projects** – Pumping and pipeline projects to convey wastewater are not always coordinated between jurisdictions and some opportunities to share costs by designing and building infrastructure that serves more than one jurisdiction are missed.
- **Secondary Development Standards** – Sometime repairs to a water line that affects a curb may trigger ADA standards, which in turn may require the pedestrian system to be upgraded. This secondary retrofit may double the price of the water project.
- **Lack of Funds** - Current stormwater capital and operation budgets do not have enough money to:
  - Replace deteriorating pipes and conveyance systems,
  - Upgrade and replace stormwater infrastructure,
  - Retrofit old neighborhoods with treatment, and
  - Provide adequate maintenance.
- **State and Federal Grants Programs** – The demands of state and federal grants programs are challenging. They often require matching funds and the diversion of scarce staff resources to prepare grant applications. Furthermore, the availability of grant opportunities may decrease due to funding challenges at the state and federal levels. Recent federal competitive grant programs have sought “ready to go” projects which can also be challenging within short timelines.

#### What are some opportunities to overcome these challenges?

- **Local Access to Grants and Loans** - Jurisdictions will continue to rely upon grants and loans to construct new infrastructure and undertake major upgrades. Local representative and the state legislature could be informed of the critical importance of providing adequate funding for the Public Works Trust Fund, Clean Water Grants, and other financial tools.
- **Technical Assistance & Implementation Grants** – The State should provide financial and technical assistance to jurisdictions to retrofit older neighborhoods to reduce the amount of untreated discharges to ground or surface water and provide an appropriate level of stormwater management to eliminate flooding and attenuate flows to streams.
- **Joint Projects** – Local jurisdictions could coordinate infrastructure projects near their common boundaries so that the projects serve multiple jurisdictions. Determine if a formal process is needed to share plans and projects with each other.
- **Infrastructure Integration** – Jurisdictions need to have major transportation projects incorporate utility upgrades or extensions.
- **Watershed Based Stormwater Management** – Encourage the WA Department of Ecology to provide financial incentives for permittees to manage stormwater across jurisdictional boundaries on a watershed basis. This optional approach would include allowing municipal NPDES stormwater permits to be managed on a watershed basis.

## ALTERNATIVE SYSTEMS

*“Alternative systems” are often suggested as a possible means of overcoming the high cost of conventional treatment and conveyance systems. However, one problem that occurs is the installation of proprietary systems. Companies that develop new treatment processes do not always provide good support, or worse yet they don’t always remain in business.*

*This is where the city/county must be careful about what they let developers install. Once it’s built the developer is off to the next project but the homeowners and the municipality are stuck operating and maintaining a system that may not live up to the “as advertised” performance.*

Jon Hinton, P.E. - City Engineer for the City of Rainier

## Governance – LIMITED FINANCIAL RESOURCES

### Utility Rate Structure

#### What is working well? What made it work?

- **Tiered Rate Structure** – Some jurisdictions had adopted a tiered or volume based rate structure (called marginal cost pricing). This rate structure encourages water conservation by charging higher rates for those customers who use larger volumes of water during summer months. These higher volume users pay the higher costs of infrastructure designed to meet the peak day demands.

#### What are the challenges or barriers to sustainable development?

- **Current Rate Structure** – Water is traditionally undervalued. Some jurisdictions find it difficult to adopt rate structures that generate enough revenue to cover the cost of replacing older infrastructure and install needed system upgrades.
- **Confusion About Multiple Utility Rates** – Local ratepayers can see multiple utility costs on their bills which are often confusing and may seem similar. This is complicated by the fact that it is not possible to explain the differences between drinking water, city wastewater, LOTT wastewater, and stormwater rate on a small utility bill.
- **Public Acceptance, Understanding, and Support** – In hard economic times, it is difficult for the public to accept that rate increases are needed, even though they support essential capital infrastructure projects. In the face of rising costs for virtually all utilities, this challenge is compounded as all utility bills increase.

#### What are some opportunities to overcome these challenges?

- **Embracing New Technology** – Some jurisdictions are embracing new technology as a means of lowering system maintenance costs. For example, the City of Tenino is in the process of replacing its water meters with radio read meters.
- **Stormwater Impact Fees** – Some jurisdictions may wish to reevaluate stormwater impact fees to:
  - Reduce stormwater fees to provide incentives for low-impact development sites, retrofitting sites with no or substandard treatment, and reducing effective impervious areas; and
  - Consider imposing an impact fee on development for the purpose of directing revenue collected to fund programs to the preservation of water quality (e.g., protect or enhance riparian areas).

## Governance – Education Programs and Community Support

### What is working well? What made it work?

- **Education is a BIG DEAL** – Educators from Lacey, Olympia, Tumwater and Thurston County routinely coordinate outreach messages for the utilities. Annual reports about water quality build confidence in a clean, safe water supply.
- **New Education Facility** – Facilities like LOTT's WET Science Center are key tools in educating students on the water cycle and environmental stewardship. This task would be made more difficult without these facilities.
- **Surveying Public Values** – Public opinions matter to local jurisdictions. They identify core public values and help local utilities find a balance between rates and future capital projects.
- **Citizen Advisory Committee** – Some jurisdictions have found it useful to have a group of citizens advise the elected decision makers on utility rates and programs, promote long-range infrastructure plans, and serve as a community listening post.
- **Drinking Water Quality Reports** – Annual reports required by WDOH to citizens share info about water quality and build confidence in a clean, safe water supply.
- **Henderson Inlet Septic System Training** – Advanced training is offered to residents in the Henderson Watershed Protection Area that allows them to perform the monitoring and maintenance activities needed to comply with the mandatory operational certificate program for that area. The classes are very popular, are 5-6 hours in length, and approximately 2000 people have attended these classes since 2007. This training is funded by the operation and maintenance certificate fees collected from the area.

### What are the challenges or barriers to sustainable development?

- **Cost of Education** – Some jurisdictions find it difficult to balance the need with the cost of public education to their customers. The value of education is not always recognized, which creates challenges to spending ratepayer dollars on those activities and materials.
- **Training Costs** – Advanced septic system training programs like the one for Henderson Inlet are expensive and time intensive. These courses cannot be offered in other areas without additional funding.
- **Evaluation of Program Effectiveness** – It can be difficult and expensive to evaluate the effectiveness of education and outreach programs. However, without some type of effectiveness review, it is difficult to evaluate the benefits of the program.

### What are some opportunities to overcome these challenges?

- **Public Information, Education, and Involvement** – Continued public outreach to community groups and celebrations of completed major improvement projects. Such events help the public to understand the expense associated with needed capital facilities projects.

## **Governance – EDUCATION PROGRAMS AND COMMUNITY SUPPORT (cont.)**

### **What are some opportunities to overcome these challenges?**

- **WET Science Center** – Continue to use education tools like the WET Science Center, Cochrane Memorial Park in Yelm, East Bay Public Plaza, and a demonstration project at the new Hands on Children’s Museum to provide basic education about the value of water, wastewater treatment, reclaimed water, and water conservation. These real life examples are powerful tools for educating the public about possible future uses of this valuable resource.
- **Local Educators Coordination** – Continue to have local educators coordinate their public education efforts. This could include opportunities to include a ‘theme’ message through bulk purchasing arrangements through regional partnerships, such as the Partnership for Water Conservation and other local, state, federal and professional membership organizations education outreach programs.

