



# Chapter 8: Public Facilities and Services





## Adopted Amendments

<b>EFFECTIVE DATE</b>	<b>ORD #</b>	<b>CHANGES</b>
November 1998	Resolution #2247	Comprehensive Plan Update
January 5, 2009	NS-2112	
April 3, 2013	NS-2194	Add Water PFP
December 17, 2014	NS-2230	Add Sewer PFP
December 6, 2016	NS-2771	Format update, minor text changes to remove outdated text
<u>September 19, 2018</u>	<u>NS-</u>	<u>Update to reflect changes from 2018 Collection System Public Facility Plan</u>



DRAFT



## BACKGROUND

### Context

**C**onsideration of the public and private facilities and services within the Bend Urban Growth Boundary is an important focus of the Plan. Several of these services — water, sanitary sewers, energy supplies, and communications — are the backbone needed to support and encourage urban level development. Other urban services such as refuse disposal, emergency services, and storm water disposal are also necessary parts of the mix of urban services. Although most of these facilities and services have a planning horizon greater than 20-years, they are still driven by the population and land use needs forecast in the Plan.

### Goals

Adequate public facilities are the key to efficient and stable urban development. The goals below provide general guidance for maintaining and improving the level and quality of urban services as growth occurs in Bend. The citizens and elected officials strive:

- To have public and private utility systems provide adequate levels of service to the public at reasonable cost;
- For the city, county, and special districts to coordinate the provision of adequate urban services in an efficient and timely manner to support urban development;
- For new development to pay its fair share of the cost of major facilities needed to support development;
- To ensure that public services will not negatively impacts-on the environment or the community; and
- To locate and operate public buildings and other public facilities to best serve the needs of the residents.

### Overview

The Public Facilities and Services chapter describes existing facilities and utilities in Bend and also describes what city facilities are needed to meet projected growth. The listing of city water and sewer projects planned for and expected over the next twenty years provides a framework for decisions on when, where, and how public facilities will be provided to support the projected growth. The city will use the listing of projects as a basis for its annual capital improvement budget.

## Sewer Collection Systems Facilities

The City adopted a public facility plan for sewer collection by Ordinance No. 2111 in 2009. The plan was based on the city's 2007 Collection System Master Plan and identifies future improvements to the sewerage collection facilities required to serve long range growth in Bend. However, the city's 2009 Public Facility Plan adopted by



the City Council was never acknowledged by the state. The State did acknowledge the 2008 public facility plan for the Water Reclamation Facility, also known as the wastewater treatment plant, through Order 001795 in 2010.

In response to the 2008-2010 UGB Expansion Remand, the City began a comprehensive planning process to update the previous Collection System Master Plan developed in 2007. This planning effort has built on information from the previous master plan, leveraged improvement concepts and utilized system information collected and analyzed in that report. The adopted and acknowledged 2014 Collection System Public Facility Plan replaces the 2009 Public Facility Plan and provides guidance and sound stewardship of the City's sewer collection system for the 2013 – 2033 planning period.

In October 2016, the Bend City Council approved a number of amendments to the Bend Comprehensive Plan, including an expansion of the Bend UGB to add 2,380 acres of land. The City Council also adopted amendments to the Comprehensive Plan and Development Code to allow more development and redevelopment in certain area within the existing UGB that are referred to in Chapter 11 as Opportunity Areas. The Oregon Department of Land Conservation and Development (DLCD) approved these plan and land use regulation amendments, including the UGB expansion, in December 2016.

In 2017, the City began work to update the Public Facility Plan for the sewer collection system (CSPFP) to reflect those improvements that would be needed to serve the entire UGB, development in the Opportunity Areas, and those projects that were identified to serve the Expansion Areas included in the 2016 UGB expansion. This update also included making changes to two interceptor projects. These projects included the East Interceptor, a former segment of the Southeast Interceptor now identified as its own project, and the North Interceptor. The City adopted changes to the CSPFP to reflect revised alignments and pipe sizes for these projects. The City Council adopted the amended Collection System PFP in 2018 to include these projects to support development in the Opportunity Areas and the Expansion Areas.

### **Service Area**

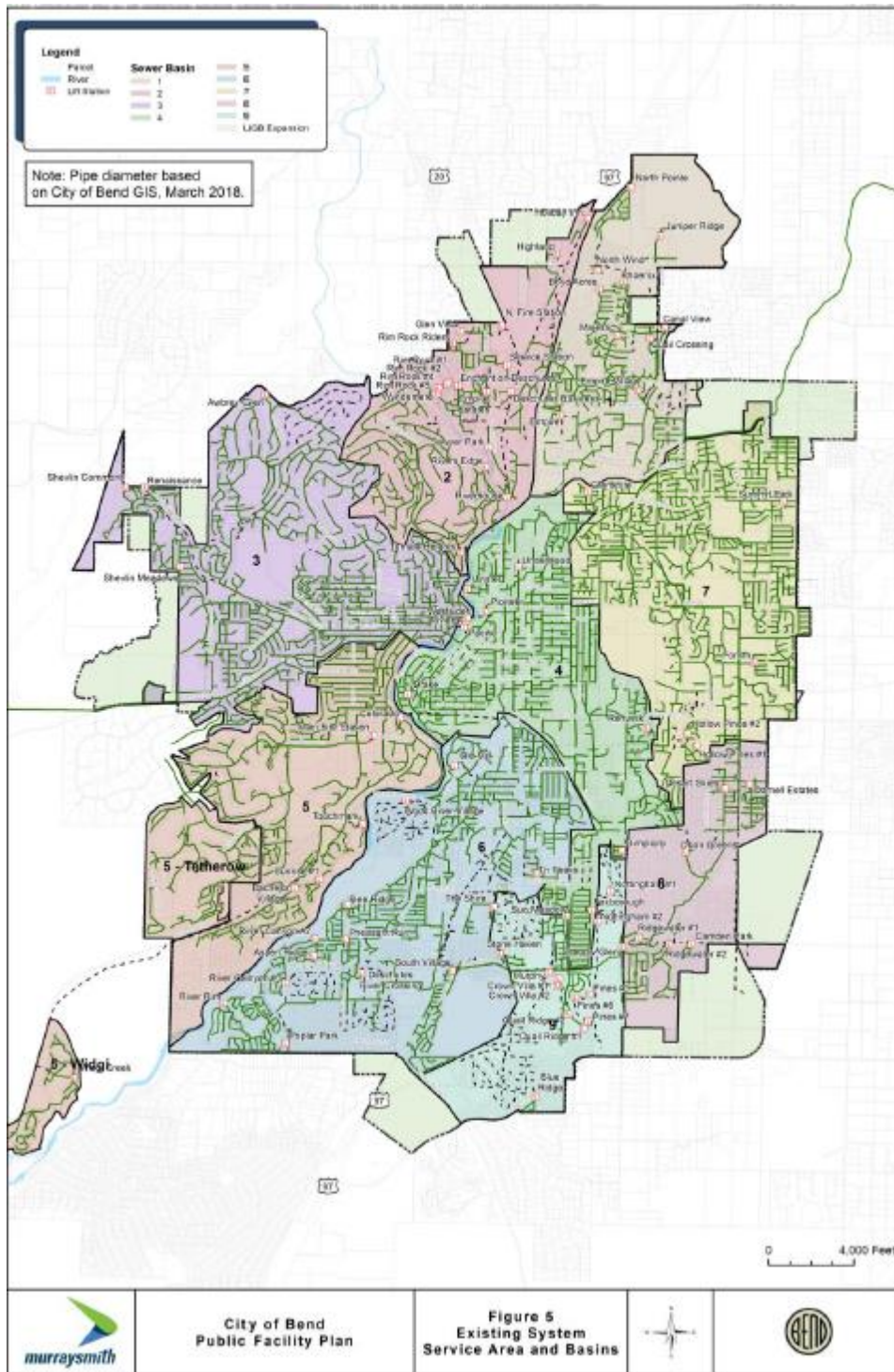
The collection system service area includes all areas within the city limits of Bend and the Urban Growth Boundary that are either currently served by the City's wastewater collection system or will be served by the system within the 20-year planning period. To determine the future development projections within the UGB, the City relied upon and applied the adopted Comprehensive Plan designations.

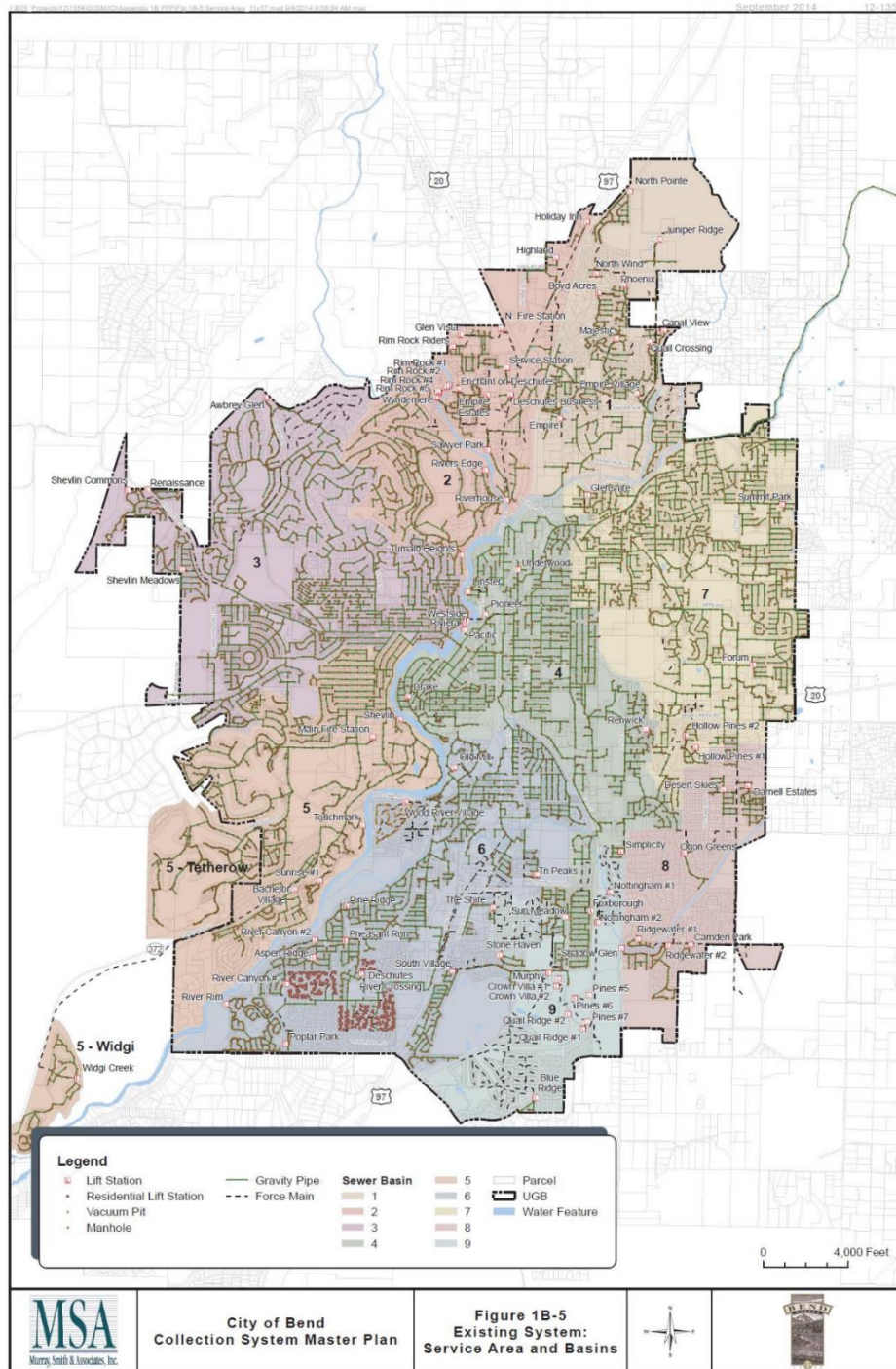
The City's Collection System Public Facility Plan separates the primary collection system into nine major sewer basins covering the approximate 35-37 square miles of the UGB. These nine major sewer basins are further sub-divided into several smaller sewer sub-basins for the purpose of determining flow capacity. The wastewater analysis and future forecasts consider existing customers, future customers and the conversion of septic to sewer connections within the UGB. There are currently 3,103 residential units and 158 non-residential acres that are served by a County permitted septic system within the UGB. Within the 20-year planning period it is assumed that these residential units and non-residential acres will redevelop and/or connect to the city's collection system.





Figure 8-1 – Municipal System, Service Area, and Basins







## Public Facilities and Services

The City’s primary wastewater collection system is generally comprised of manholes, gravity pipelines, City-owned lift stations and force mains that convey sewage to the wastewater reclamation facility through 249 miles of gravity pipe and 69 miles of force main and pressure sewer pipeline. Most of the gravity collection system was constructed in the late 1970’s, when the City received federal funding to construct a centralized wastewater treatment plant. The City completed its sewerage collection system and treatment plant in 1983. Since that time a number of upgrades have occurred in both the plant and collection system. The wastewater treatment plant has capacity for an average flow of approximately seven million gallons a day. Table 8-1 charts the average daily flows at the wastewater treatment plant and shows a gradual increase of the average daily flow. The flow data includes seasonal wet weather events.

**Table 8-1  
Annual Average Flow from Historical Records at the WRF**

Year Average Daily Flow	Year Average Daily Flow
2007	5.41
2008	7.22
2009	5.6
2010	5.5
2011	5.3
2012	5.4
2013	5.91

**Notes:**

- 1) 2007 and 2013 average calculated from flow meter data (2-month period).
- 2) Suspected error in inflow data at the WWTP. Inflow meter was recalibrated after 7/20/2009.

The master plan for the wastewater reclamation facility (WRF) was completed in 2008 by Carollo Engineering. The plan for the WRF was submitted to the Department of Land Conservation and Development in 2009. The Land Conservation and Development Commission (LCDC) acknowledged the 2008 plan for the WRF through Order 001795 in November 2010. The WRF Master Plan identifies short term and long term capacity improvements that will enable the City of Bend to minimize expansion costs by fully utilizing the existing facilities. The 2014 Collection System Public Facilities Plan proposes improvements to increase the capacity of the collection system to 11.9 MGD within the 20- year planning period. The design of the WRF was completed in 2012, with construction beginning in the summer 2013. The City expects the WRF expansion to be completed by [2019](#). [The 2018 CSPFP includes improvements necessary to serve the entire UGB, including specific improvements necessary to provide wastewater collection to the areas added to the UGB in 2016.](#)

### Optimization

The City utilized an optimization process to determine the combination of system improvements that would satisfy hydraulic performance criteria and minimize overall life- cycle costs. The optimization model enables an exhaustive and objective evaluation of feasible collection system improvement alternatives. The optimization software, Optimizer WCSTM, is a decision-support software program that integrates improvement alternatives, comprehensive life-cycle costs, design criteria and the calibrated hydraulic model of the collection system. In a single optimization analysis, the software evaluates





over 100,000 possible solution configurations and assesses life-cycle cost and hydraulic performance simultaneously while sizing system improvements. Over the course of this project, over one hundred individual optimization runs were completed, representing a total analysis of more than 10 million trial solutions.

The optimization process identified short-term and long-term capacity upgrade projects to be phased over the 20-year planning period.

### Capital Improvement Program

The Capital Improvement Program (CIP) describes proposed improvements that are required in both the short-term (1-5 year), mid-term (6 to 10 years) -and long-term (~~6 to 10 years and~~ 11 to 20 years) to provide reliable sewer collection throughout the City's current UGB.

In response to existing and future hydraulic deficiencies, condition deficiencies and other operational issues identified by O&M staff, The 2018 update to the CSPFP organized improvement projects by whether they were:

- Short Term (1 to 5 years):
- Short to Mid Term Projects (Development Driven and needed 1 to 5 or 6 to 10 years).
- Mid to Long Term (Development Driven and 6 to 10 or 11 to 20 years).
- Expansion Area Service (Development Driven)

For consistency with Goal 11 and its administrative rule, projects needed between 1 to 5 years are considered short term, and projects needed between 6 years and the remainder of the planning period are considered long term.

Projects were further organized in the following categories:

1. Trunk Sewer and Interceptor Improvements
2. Southeast Lift Station Condition and Decommissioning Improvements
3. South Lift Station Capacity and Condition Improvements impacting the Amethyst/Mahogany/3<sup>rd</sup> Street Trunk Sewer
4. Other South and East Area Lift Station Improvements
5. Central Area Lift Station Capacity and Condition Improvements
6. West Lift Station Capacity and Condition Improvements impacting the Newport Avenue Trunk Sewer
7. North Lift Station Condition and Decommissioning Improvements
8. Other North Area Lift Station and Condition Improvements
9. Programmatic Funding
10. Expansion Area Infrastructure

The final category of improvements refers to those needed to serve development and land uses in several of the UGB expansion Areas. The following organization of projects into short-term, short to mid-term, and mid to long term reflects the presentation in the 2018 CSPFP. Figure 8-2 provides a map that identifies the locations of these key projects. The 2018 CSPFP provides a written description for each project as well.



## Public Facilities and Services

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**there are several major projects that the City should undertake in the short-term (1 to 5 years)- Short Term Projects.** The major projects recommended in the 1 to 5-year timeframe include:

1. North Interceptor Phase 1
2. Southeast Interceptor Extension and Diversion
3. Southeast Lift Station Decommissioning
4. Drake Lift Station and Force Main

**Short to Mid-Term Projects (Development Driven).** These projects are driven by development location and timing, and are identified as needed between the short-term (1 to 5 years) and mid-term (6 to 10 years).

1. Amethyst/Mahogany/3rd Street Trunk
2. River Rim Lift Station
3. 8th to 15th Street Trunk
4. Newport Trunk, Shevlin Commons Lift Station, Shevlin Meadows Lift Station and Force main, and Renaissance Lift Station
5. Deschutes Business Lift Station
6. North Interceptor Phase 2
7. North Area Lift Station Decommissioning
8. North Interceptor Phase 3
9. Old Mill Lift Station and Force main
10. East Interceptor Phase 1

**Mid to Long Term Projects (Development Driven).** The following projects are also development driven and identified as needed in the mid (6 to 10 years) to long term (11 to 20).

1. Drake Downstream Trunk
2. Central Interceptor
3. East Interceptor Phase 2

**Expansion Area Service.** The final list of projects is those intended to support development in several of the UGB Expansion Areas. The 2018 CSPFP identifies several large projects, such as the North Interceptor Phases 2 and 3, and East Interceptor Phases 1 and 2, that are needed for both UGB Expansion Areas and for accommodating wastewater flows to the WRF. This list of projects is specific to several UGB Expansion Areas and will likely be needed in the Short Term (1 to 5 years).

1. Elbow Gravity Trunk
2. Elbow Lift Station and Force main
3. DSL Gravity Trunk
4. Thumb Gravity Trunks
5. West Gravity Trunks



Table 8-2 presents the capital improvement program cost summary. Below is the list of short-term projects and estimated project cost in 2013-2017 dollars by project category.

**Table 8-2**  
**Capital Improvement Program Cost Summary**

Improvement Category	Year 1 to 5	Year 6 to 10	Year 11 to 20	Total
Trunk Sewers and Interceptors	\$33.1	\$55.1	\$29.9	\$118.1
Southeast Lift Stations Condition and Decommissioning	\$12.8	\$0.6	\$2.0	\$15.4
South Lift Stations Impacting Amethyst/Mahogany/3rd Street Trunk Sewer	\$2.0	\$2.1	\$0.8	\$4.9
Other South and East Area Lift Station Condition Improvements	\$0.4	\$1.2	\$4.0	\$5.6
Central Area Lift Station Capacity and Condition Improvements	\$7.7	\$0.8	\$2.8	\$11.3
West Area Lift Stations Impacting Newport Ave Trunk Sewer	\$2.5	\$0.0	\$0.1	\$2.6
North Area Lift Stations Condition and Decommissioning	\$0.0	\$6.4	\$2.0	\$8.4
Other North Area Lift Station Capacity and Condition Improvements	\$1.5	\$0.8	\$1.3	\$3.6
Programmatic Funding	\$20.1	\$14.1	\$47.7	\$81.9
Expansion Area Infrastructure	\$18.7	\$4.3	\$0.0	\$23.0
<b>Total</b>	<b>\$98.8</b>	<b>\$85.4</b>	<b>\$90.6</b>	<b>\$274.8</b>

**Notes:**

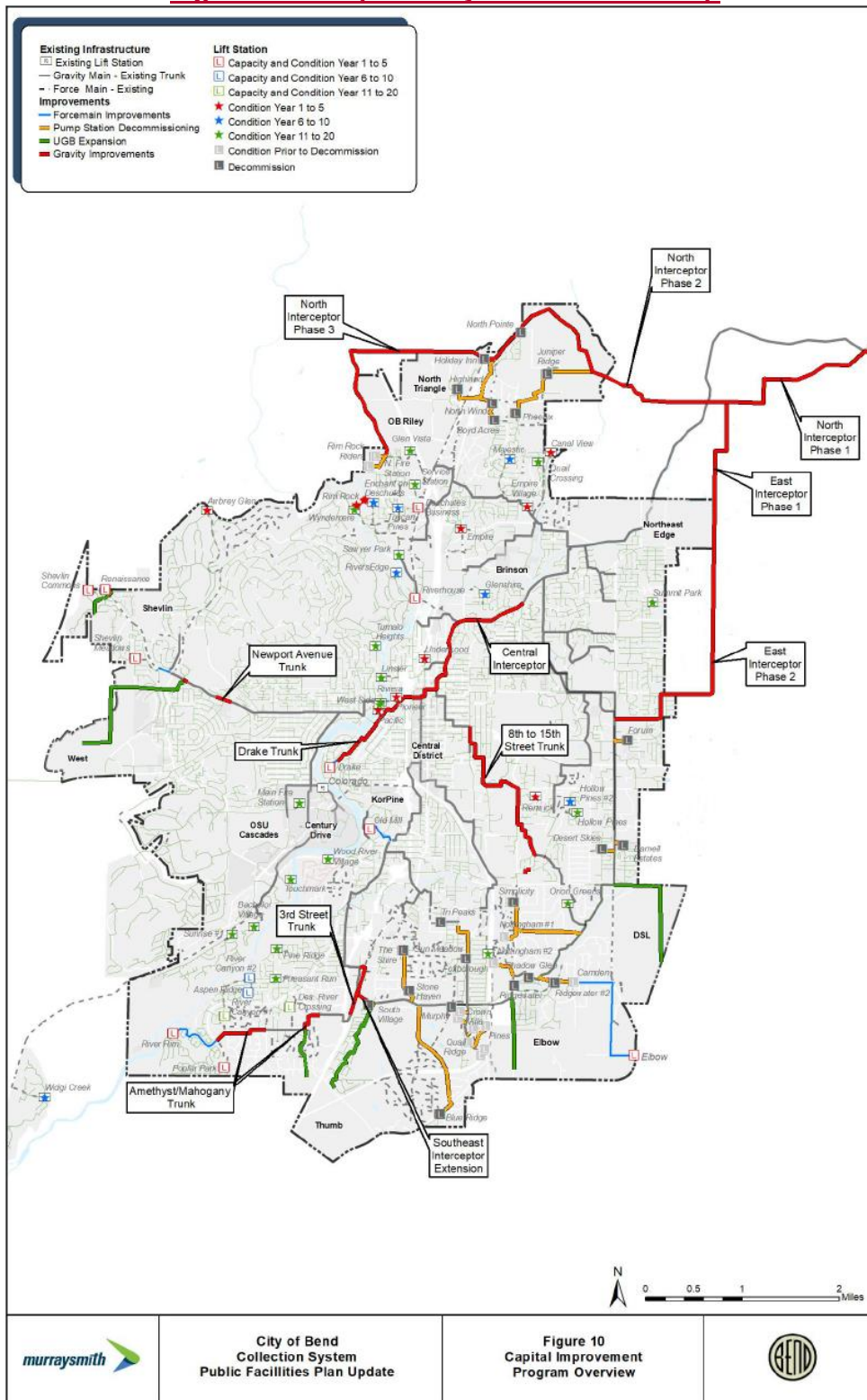
1. All costs shown in millions and are Class 5 budget estimates established by the American Association of Cost Engineers.

There are also a number of recommended long-term (year 6 through build-out) improvement projects required to support anticipated increases in collection system flow within the existing UGB, provide service to unsewered areas, and to plan for ongoing system repair and replacement. Below are the primary long-term projects and the estimated project costs in 2013 dollars.

The actual project costs will likely vary from the estimates presented. In addition, the project estimates will change over time due to fluctuations in actual labor and material costs, competitive market conditions, site conditions, final project scope, implementation schedule, continuity of personnel, and other unforeseeable factors. Because of these factors, project feasibility, benefit-to-cost ratios, risks and funding must be carefully reviewed prior to making specific financial decisions or establishing project specific budgets. The projects listed above as short term, short to mid-term, and mid to long-term are reflected in the following map identified as Figure 8-2. This figure also shows the location of the Expansion Area Projects.



### Figure 8-2 – Capital Projects Reference Map







### **Sewer Collection System Financial Strategy**

The City's financial strategy for the collection system considers the current and future financial obligations of the utility, operation and maintenance needs, fiscal policy achievement and the ability to support the completion of the capital projects identified in this CSMP update.

The overall goal of the financial plan is to have the annual water reclamation utility total resources (rates and fees) set at a sufficient level to meet annual uses (operations, maintenance, debt service, capital costs and fiscal policy achievement) to ensure a self-supported utility. The primary source of funding for the utility is derived from ongoing monthly charges for service, with additional revenue coming from miscellaneous fees/charges, interest income and system development charges (SDCs). The City Council controls and approves the level of user charges as needed to meet financial objectives. The financial plan considers the total system costs of providing water reclamation services, both operating and capital. The following elements were completed as part of the financial plan:

**Capital Funding Plan.** Identifies the total Capital Improvement Plan (CIP) funding obligations of the planning period. The plan defines a strategy for funding the CIP including an analysis of available resources from rate revenues, existing reserves, system development charges, debt financing, and any special resources that may be readily available (e.g., grants, developer contributions, [public private partnerships](#), etc.). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue available for capital funding.

**Operating Forecast.** Identifies future annual non-capital costs associated with the operating, maintenance, and administration of the water reclamation system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, capital outlays, and reserve contributions, as well as any [debt service](#) coverage requirements associated with long-term debt. The plan also identifies the future adjustments required to fully fund all utility obligations in the projection period.

**Sewer Rates.** The City Council approved [the FY 2017-18 Resolution No. 3077 on June 21, 2017](#). This resolution included a change to the monthly sewer rate as follows:

- [Single family residential base charge - \\$34.55:](#)
- [Multi-family residential base charge - \\$13.65:](#)
- [Non-residential standard base charge - \\$34.55.](#)

[For each of these categories of sewer rate charge, there is also a volume charge of \\$3.62 per 100 cubic feet of winter quarter average \(WQA\) water usage. In addition, the City Council has also implemented an extra strength charge \(ESC\) that will be phased in over four years, with the 2017-2018 representing the 2<sup>nd</sup> year of this phase in.](#)



## Public Facilities and Services

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~~a nine percent rate increase effective on October 1, 2014. All monthly rates (monthly rate and volume rate) will increase uniformly by nine percent. Residential customers inside the city will pay a monthly rate of \$48.36 per dwelling unit, and residential customers outside the city will pay a monthly rate of \$49.82 per dwelling unit. The financial plan indicates that an additional 3.1 percent rate increases of approximately 6% per year increase will be needed through FY 2021 to meet the current water reclamation utility rate revenue requirements. Annual inflationary rate increases are anticipated for the remainder of within the 20-year financial planning horizon. Actual rate increases may vary depending on timing and costs of projects. This projection assumes that the customer base grows by 1.4% per year.~~

### **System Development Charges**

SDCs are one-time fees imposed on new and increased development to recover the cost of system facilities needed to serve that growth. An SDC can include two major components:

- A reimbursement fee that reflects the cost of existing infrastructure with capacity that is available to serve growth
- An improvement fee that reflects the portion of the cost of future projects that is attributable to providing capacity for growth.

~~The financial plan above assumes that the includes the City's sewer SDC, and remains at its current level rate of \$2,9864,655 per equivalent dwelling unit. The FCS Group completed the latest Sewer SDC study for the City in June 2015. This SDC study incorporated information from the 2014 CSMP and SPFP to support the calculation of the Sewer SDC of \$4,655. The City Council approved the increase in the Sewer SDC to this amount in Resolution 3077 on June 21, 2017. The City has recently initiated an SDC study, which will have a separate public process. That process is expected to begin late 2014 and be complete by June of 2015 and will incorporate all new information contained in this plan to determine the appropriate SDC and its implementation.~~

## Water Facilities and Systems

The quality of water in the Bend urban area is a matter of major importance. Not only is water necessary for the needs of residential, commercial, and industrial users, but it supports many of the recreational and scenic opportunities that make the Bend area a desirable place to live.

In 2006, the city engaged in an update to the water system master plan to serve the existing urban growth boundary, the urban reserve area identified in this plan, and potential areas for future expansion of the UGB. This 2006 master plan followed the development and approval of a water management and conservation plan (WMCP) in 2004. The City relied on these documents, water planning documents from the Avion Water Company and Roats Water Company, and reports from the City Engineer updating information from the 2007 Water Master Plan to develop an updated Goal 11 water public facility plan (PFP) for the existing Bend UGB. This 2013 Water PFP is incorporated as the Goal 11 public facility plan for water and identifies the capital improvements needed to serve the existing and future development within Bend's UGB.



### **Municipal System**

The City of Bend is one of three water suppliers within the UGB. The city's water system in 2006 included about 22,000 service connections. Since 1926, the City of Bend's main source of water has been from Bridge Creek in the Tumalo Creek watershed. Tumalo Creek originates on the eastern slopes of Ball Butte and Broken Top Mountain about 20 miles west of Bend in a protected watershed area, which lies within the Deschutes National Forest. Figure 8-2 shows the annual water use from 1998-2005 in acre feet. Figure 8-3 shows the annual water use pattern, using daily use data from 2005.

The Deschutes Watershed has excellent water quality, considering both chemical and bacteriological quality with only chlorination treatment. The water is a consistent 48°F winter and summer, and is clear with the exception of slight turbidity during period of high runoff from the watershed. These periods occur only occasionally, and last only a few days. The 1986 Safe Drinking Water Act required that all surface water systems in the nation provide filtration unless stringent watershed control, raw water quality and disinfection systems were met. In 1992 the city demonstrated sufficient evidence to meet the criteria, and obtained an exemption from the Surface Water Treatment Rules contained in the 1986 Act. The Bridge Creek source can deliver up to 13.5 million gallons per day. The City supplements the Bridge Creek source with deep groundwater wells. In 2006 the city had 21 wells on line to supplement the Bridge Creek source. These wells increase the delivery capacity of the city system to approximately 36 million gallons per day. In addition, the city has 28.0 million gallons of reservoir storage. The city's 475 miles of water distribution system is primarily composed of ductile iron pipe.

The city water system historically provided metered service for industrial, commercial, and multifamily developments. However, the city was one of the last major water systems in the state to use flat rate (non-metered) billing for residential service connections. As of December 2004, the City has become fully metered for all customers. This included conversion to automated meter reading technology, as well as installation of premise isolation cross connection protection at every service connection as part of our Safe Drinking Water Program. In 2004, the City updated its required Water Management and Conservation Plan which outlines various conservation related benchmarks, in order to meet conditions by the Oregon Water Resources Department as part of obtaining new water rights to meet the needs of growth.

The city's 2007 Water System Master Plan Update identifies water supply, transmission, and storage needs throughout the city's service territory within the UGB. Additional wells, reservoirs, main transmission lines, and smaller distribution lines will be needed to meet the projected urban area growth.



Figure 8-23

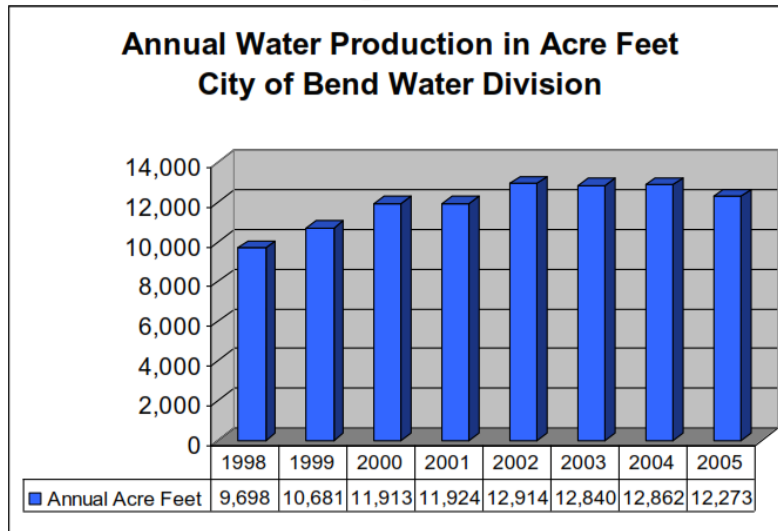
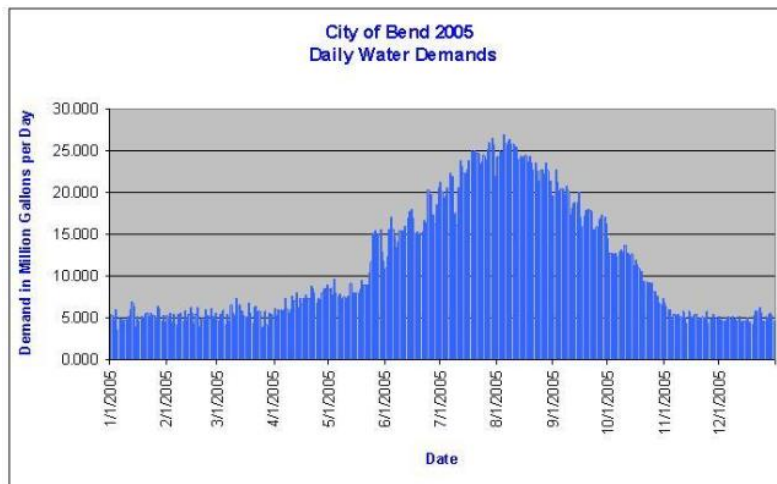


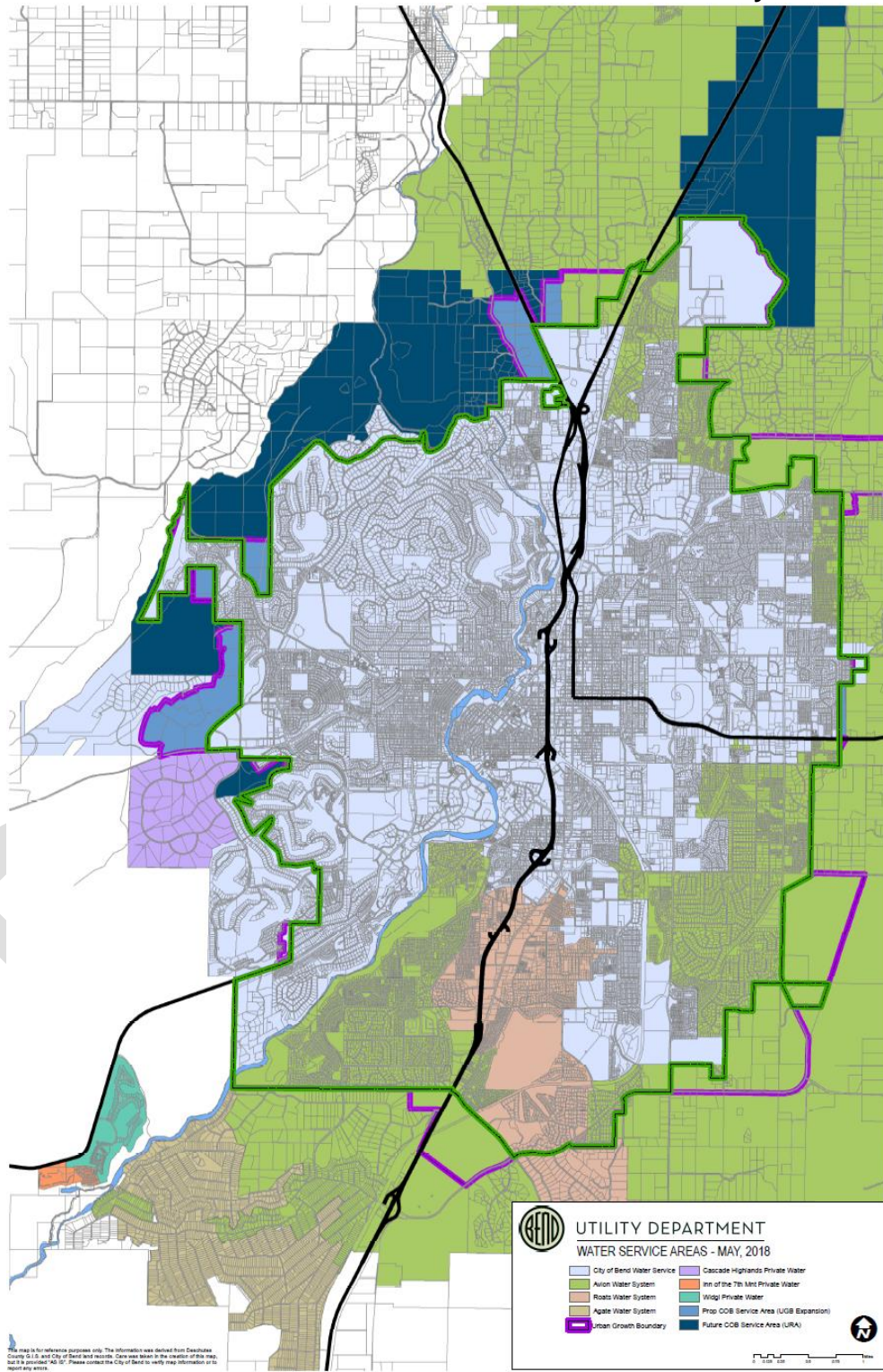
Figure 8-34

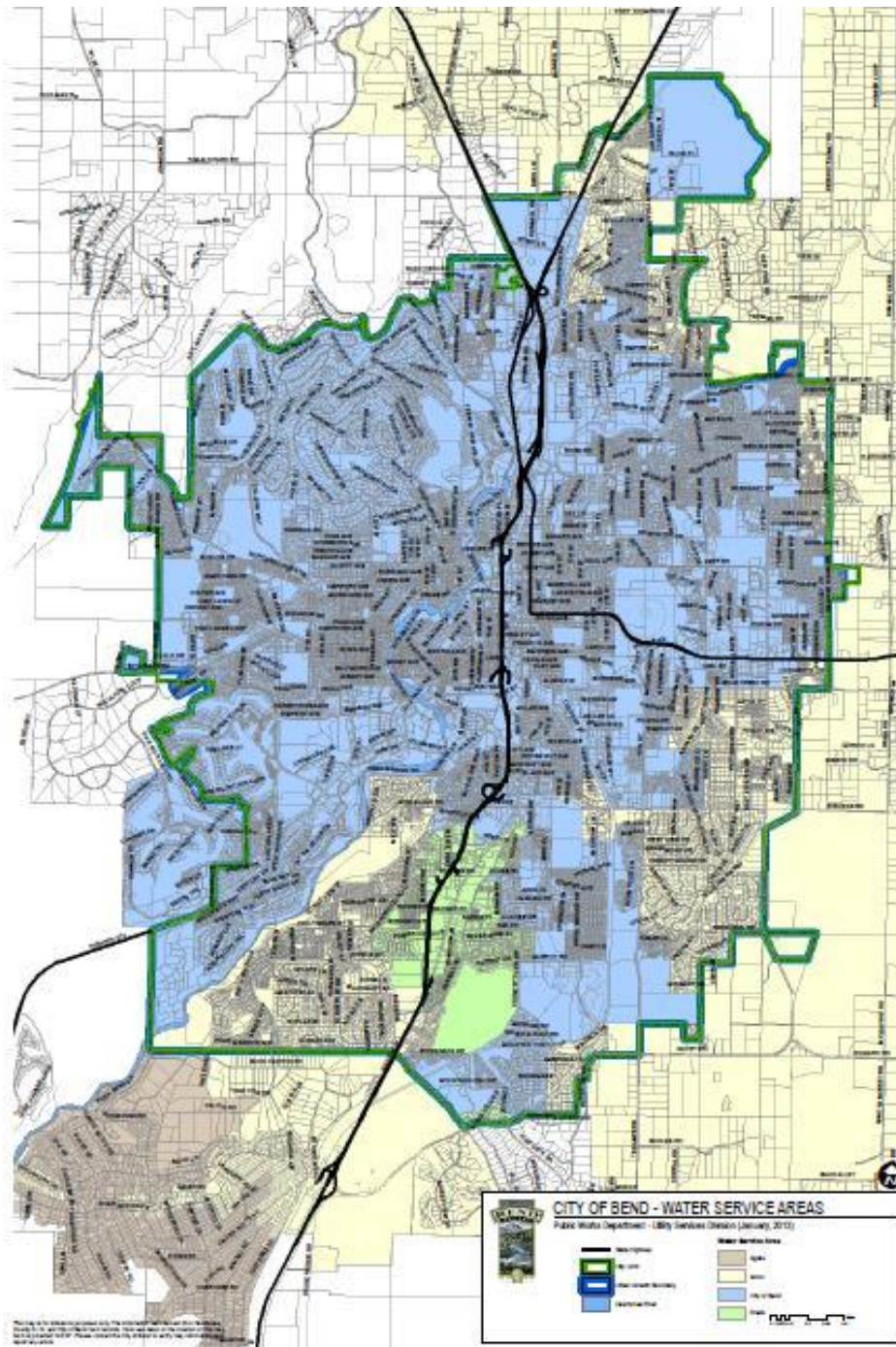






**Figure 8-54**  
**Water Utilities in the Bend Urban Growth Boundary**









### Private Providers

Currently, the City of Bend serves water to approximately 70% of the customers within the UGB. There are two private utilities supplying domestic water to the majority of the remaining customers. Approximately 9,200 service connections within the UGB are furnished domestic water through private water systems. Figure 8-4.5 shows the extent of both the city's service area (blue) and the private providers; Avion (light yellow or tan) and Roats (green). The City has entered into franchise agreements with Avian Water (See Ordinance NS-1514, as amended) and Roats Water Company (See Ordinance NS-1747) through which the City has agreed to Avion Water Company and Roats Water Company providing water to its customers in the city's boundary. Both franchise agreements have been incorporated into the City Code under Chapter 11, Franchises. In addition, the City's water system has inter-ties with both Avion and Roats, which also have inter-ties between their respective systems.

### Water System Financing

Table 8-2 The 2013 Water Public Facilities Plan lists the various water improvement projects the city plans to construct through the year 2028 to support the projected growth and land uses in the Bend urban area. The description, location, timing and estimated cost of listed facilities may change as a result of subsequent design studies, capital improvement programs, environmental studies, and changes in funding sources. City facilities may be constructed earlier than planned by an owner/developer choosing to develop an area prior to the scheduled extension or expansion of facilities by the city.

The city has adopted System Development Charges (SDCs), as allowed under state law, to help pay for new facilities. SDCs are one-time fees imposed on new and increased development to recover the cost of system facilities needed to serve that growth. Like those collected for the sewer system, water SDCs can have two major components; a reimbursement fee that reflects the cost of existing infrastructure with capacity that is available to serve growth, and; an improvement fee that reflects the portion of the cost of future projects that is attributable to providing capacity for growth. SDCs are levied against all new uses at the time of development. These fees are earmarked for major system improvements identified in the city's 2007 Water System Master Plan Update such as reservoirs, wells, transmission lines, and treatment facilities. As of fiscal year 2006-07, the water System Development Charge is 100 percent of the allowable maximum charge. The City Council determined that this rate reflects the proportionate share of system improvement costs that can be attributed to new growth. The remaining share of system improvement costs benefit the whole community and are collected as a part of the monthly user fees. For more information about short and long term projects for the City's water system please see the 2013 Water Public Facilities Plan.

## Storm Drainage Facilities and Systems

For many years, the City of Bend's drainage system has depended primarily on underground injection (dry wells and drill holes) to discharge stormwater into the fractured volcanic rock that underlies much of the City. Dry wells do not work well in areas underlain by layers of impermeable material unless those layers are penetrated. Drill holes are an alternative to dry wells, intended to penetrate impermeable layers to reach more permeable material beneath them.



Bend does not have a city-wide system of pipes collecting and transporting stormwater for treatment. The lack of defined drainage ways, the expense of digging in rock, and the difficult topography have limited the installation of piping. The existing piped system to the Deschutes River is limited to about 14 miles of pipe and 28 river outfalls. There are approximately 4,600 dry wells and 1,000 drill holes on public property in the City and an unknown number on private property. Including interconnections between inlets and UICs, there are 47 miles of pipe total throughout the City.

### **Water Quality and Stormwater Management**

A large part of Bend's drinking water comes from a deep, very high-quality and abundant aquifer beneath the City that is fed by snow melt high in the Cascade Mountains. The City and its residents are committed to protecting this valuable resource along with protecting surface water quality. Protection of all groundwater including perched water and seasonal high groundwater is required by the State of Oregon. To comply with the regulations for both stormwater and groundwater, the City prepared an Integrated Stormwater Management Plan (ISWMP). The ISWMP is a living document that is updated as necessary to meet requirements of the permits and the needs of the City.

The ISWMP outlines a comprehensive program to protect the quality of the Deschutes River and the City's groundwater. The ISWMP identifies a number of BMPs for preventing pollutants from entering stormwater or removing them before the water is discharged to the river or underground. The following BMPs are required elements of the Phase II (surface water) program:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Management Activities
- Post-Construction Stormwater Management in New Development and Redeveloped Areas
- Pollution Prevention/Good Housekeeping for Municipal Operations

Bend's ISWMP also addresses monitoring and protecting drinking water sources provisions to meet UIC requirements.

In August 2014 the City adopted its first Stormwater Master Plan (SMP). The City relied on these documents and prior planning documents to develop a Goal 11 stormwater public facility plan (PFP) for the existing Bend UGB. This 2014 Stormwater PFP is incorporated as the Goal 11 public facility plan for stormwater and provides a stormwater management strategy and identifies the capital improvements needed to serve the existing and future development within Bend's UGB.

### **Stormwater Funding Strategy**

In 2007 the City Council established a Stormwater Utility Fee for the sole purpose of funding Stormwater infrastructure projects and programs. The SMP provides a cost strategy. The proposed stormwater public improvements have a 20-year capital cost of \$25.2 Million. Utility operating revenue needs were modeled to range from \$2.5 Million/year at present to \$5.4-\$5.6 Million/year by FY2032-33 depending on the rate





assessment approach taken. Monthly stormwater utility rate increases were estimated in two ways: a gradual rate increase and an accelerated rate increase. The immediate calculated monthly stormwater utility rates were modeled to be between \$4.36 and \$5.80 per ERU and the FY 2032-33 monthly stormwater utility rates would be anticipated between \$6.53 and \$6.80 per ERU depending on the rate adjustment approach taken. Below is the City's 2013-2014 Stormwater Budget.

**Table 8-3-2**  
**Stormwater Management Budget for Fiscal Year 2013-2014**

<b>Stormwater Management Budget (Fiscal Year 2013-2014):</b>	
Operation and Maintenance	\$1,240,000
Engineering and Project Management	\$580,700
Capital Improvement Projects	\$2,750,000(1)
Water Quality Management	\$378,000
Utility Administration & Public Response	\$576,000
<b>Total</b>	<b>\$5,524,700</b>
Note: (1) Current Capital Improvement Budget is \$2,750,000, based on carryover from previous years and an annual budget currently averaging \$300,000	

## Solid Waste Disposal

Solid waste disposal for the urban area occurs at one county facility, the Knott Pit Sanitary Landfill, just outside of the Urban Growth Boundary on the east side of 27th Street. Deschutes County studies estimate that Knott Landfill will reach capacity by the year 2025. However, the recent trend of 10 to 18 percent annual increases in municipal solid waste flows may shorten that life span.

A second landfill just for construction debris and demolition material located adjacent to Simpson Avenue ~~within~~within the Urban Growth Boundary was in operation prior to 1997. This demolition landfill site is about 80 acres, and abuts residential lands on the north, and west, and commercial development along its east and south sides.

Collection of solid waste is done by private providers under city and county franchise. In 2005 it was estimated that only about 92 percent of the households in the Bend Urban Growth Boundary had signed up for a weekly collection service. The two garbage haulers in the Bend urban area, Bend Garbage and Cascade Disposal, provide weekly curbside pickup of municipal solid waste and recyclable materials. Recyclables picked up at curbside include aluminum, corrugated cardboard, paper bags, magazines and catalogs, and used motor oil.

The Department of Environmental Quality's 2005 Waste Diversion Report indicated that 160,707 tons of waste were deposited in Knott Landfill and 62,523 tons of waste were "diverted" (recycled by households and businesses either through curbside service, or dropped off at the county's yard debris mulch program, as well as recycling occurring out of the solid waste system such as bottle bill returns and the scrap metal industry). When backyard composting and efforts in waste prevention and reuse are considered,



## Public Facilities and Services

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the percentage of solid waste material being recycled increases from approximately 28 percent to approximately 34 percent.

### Other Urban Utilities

Electricity within the urban area is provided by Pacific Power and Central Electric Cooperative. Cascade Natural Gas Company provides natural gas service to most parts of the urban area. Adequate electric natural gas resources exist to serve the Bend urban area through the planning period.

Local (land-line) telecommunication services are provided by Qwest. Many private companies compete to provide long distance and cellular phone service. Cable television service within the urban area is provided by Bendbroadband, which also provides phone and high-speed internet service. Private utility providers within the city limits operate under non-exclusive franchise agreements with the city.

### Public Buildings and Facilities

#### Downtown Facilities

The Bend City Hall at the south end of downtown was built in 1989 and expanded in 1992. City Hall comprises an area of approximately 26,000 square feet. Also located at the south end of downtown are the Bend-La Pine School District Administrative offices, the Deschutes County historical museum, the Bend Public library, and other public buildings.

The County courthouse and various County offices are located in several buildings at the north end of the downtown area. A new 80,000 square foot administration building was constructed in 2004. Half of this facility is leased to the State Department of Human Services and Department of Justice.

The Bend ~~Metro~~ Parks and Recreation District offices are located between the Old Mill District and the Deschutes River.

#### Fire Department Facilities

The Bend Fire Department serves the city, the urban area, and some areas beyond the Urban Growth Boundary through the Rural Fire District service contract. The Bend Fire Department covers approximately 164 square miles for fire protection and 1,450 square miles for ambulance operations. The “Main Station” (Old Station 301) was built in 1920 and was located downtown at 5 NW Minnesota Avenue. After serving the Bend Fire Department as the main station and the administrative office for 80 years, the department moved out of the station in 2000 to its new location at 1212 SW Simpson Avenue in order to provide better, faster coverage for the community. Old Station 301 was remodeled and became a mixed-use facility including dining, retail, office and residential spaces. The Fire Administration Building at 1212 SW Simpson Avenue was constructed in 2000. It houses the department administrative, prevention and support staff. The “West Station” (Station 301) is also located at 1212 SW Simpson Avenue, on the west side of Bend near Century\_

Drive. The station is 12,000 square feet in size and was built for a cost of \$1.6 million in,



2000. The “Tumalo Station” (Station 302) is located at 19850 4th Street in the unincorporated community of Tumalo, between Bend and Sisters. The station was built in the early 1970s. The “South Station” (Station 303) at 61080 County Club Drive was also built in 2000. The “East Station” (Station 304) at 62420 Hamby Road was built in 2003 and is the newest station. The “North Station” (Station 305) at 63377 Jamison Street was built in 2000 and is located on a seven-acre parcel next to the Deschutes County Sheriff’s Office. Located behind Station 305, the department Training Center includes a five-story tower with attached garage, numerous training props, and a driver training area. The Training Center also features a classroom and training office building located near the tower. The Fire Department is planning on building a “Central Station” on the Pilot Butte City Campus within the next ten years in order to better serve the rapidly growing central- east section of Bend.

### **Law Enforcement Facilities**

Law Enforcement services in the urban area are provided by the City of Bend Police Department and the Deschutes County Sheriff’s Department. The Oregon State Police regional headquarters is also located in Bend. The City of Bend Police Department was located in City Hall until 2002, when a new 27,000 square foot building was constructed at the intersection of 15th Street and US Highway 20 to better accommodate and headquarter all police business. As with all other departments at the City, faster than anticipated growth has created a need for additional staff to serve the community and this has, in turn, created the need for additional space. As a result, the Police Building was expanded to include another 19,000 square feet, and ~~now~~ also houses the Bend Municipal Court.

In 1997, Deschutes County constructed a new public safety complex off of Highway 20. Within this complex there is a 228-bed adult jail, the Sheriff’s Office, the Adult Parole and Probation offices and transitional housing. The County also constructed the Health and Human Services building off 27th Street on the east side of Bend. This building provides space for the County’s Mental Health and Health Departments.

### **Public Works Facilities**

The City’s Public Works Facilities are located in three primary areas: The Pilot Butte Campus Site, which is located west of 15th Street between Highway 20 and Bear Creek Road, the Boyd Acres offices, and the Water Reclamation site, which is located northwest of the Bend Airport on McGrath Road. Numerous additional satellite facilities that house vehicles, utility equipment or materials are located throughout the service area.

The Pilot Butte City Campus site houses Public Works administration and all departmental divisions except Water Reclamation. City Council authorized a substantial master planning effort for this site in 2006 in order to determine space needs for the next twenty years for the Public Works, Police, Community Development and Fire Departments, all of whom will have facilities on the site.

The existing main Public Works building houses Public Works administration and provides crew spaces for the Street and Water Divisions. This 41,000 square foot building will likely undergo significant, phased-in changes in the next seven years in order to bring the building into Code and ADA compliance as well as provide for the anticipated 20 year needs of the department.



## Public Facilities and Services

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A new facility to house Public Transportation operations was recently constructed, at the southwest corner of the Pilot Butte Campus site. The construction was largely funded through a \$4 million *ConnectOregon* grant, and includes a 5,500 square foot transit operations office, five vehicle maintenance bays and space for transit vehicle parking. The City’s public transit program is operated by Cascade East Transit through Central Oregon Intergovernmental Council. The transfer of this program to COIC began in 2010 and was completed in 2011.

The Water Reclamation facility is located outside of the UGB on 1,600 acres northeast of Bend and includes eight main structures. A new Headworks building was constructed in 2008. This facility will be heated by hot water that is heated by methane gas captured from the waste products entering the facility. New facilities completed within the last five years include a new training building, a Level IV filtration facility and a new digester. The new facilities plan for the plant was completed in 2008, and acknowledged by the Land Conservation and Development in 2010. This plan provides for an expansion and upgrade plan for water reclamation to serve the City up to the year 2030.

### **The Bend Airport**

The Bend Municipal Airport is located on 415 acres situated five miles east of the city limits of Bend. Owned by the City of Bend, the airport is located in Deschutes County and is currently outside the Bend Urban Growth Boundary. Airport facilities consist of a single instrument capable runway, 5005 feet in length, a full parallel taxiway, more than 60 hangar and industrial buildings, and parking facilities for aircraft and vehicles. The Bend Municipal Airport is identified by the Oregon Department of Aviation as a Category 2, High Activity Business/General Aviation airport, with approximately 200 based aircraft and an estimated 42,000 operations in 2005.

Over the past few years, demand at the Bend Airport has increased significantly. Continued business expansion by the existing tenants, the addition of Epic Aircraft in 2005, and continued growth and demand has wrought a dramatic increase in activity at the Airport. The corresponding demand for new services and facilities provides challenges to current funding levels.

Current improvements to the Airport infrastructure include the relocation of the single runway at the Airport to meet federal design standards and provide an adequate surface for the existing aircraft fleet mix. This project, beginning in 2007, is scheduled for completion in 2008. Following the runway relocation project, development of an eastside parallel taxiway will be planned for construction in 2009, with completion scheduled for the same year. At this time, it is anticipated that a new Airport Master Plan to clarify the future direction of the Airport and to meet future user needs will be initiated.

## **Policies**

### *Sewer Collection Facilities*

- 8-1** All new development within the City Limits should be connected to City sewer.





- 8-2** The city is the primary provider of sewage collection and treatment services for the City's service area under Statewide Planning Goal 11.
- 8-3** To reduce the reliance on individual sewage disposal systems within the Urban Growth Boundary the city will work with unsewered neighborhoods to find solutions for sewer service.
- 8-4** The city should collect a sufficient amount of revenue to allow the creation of capital project reserves and to replace aging infrastructure in addition to operational needs of the utility.
- 8-5** Staff should report to Council on an annual basis regarding the status of the Collection System Master Plan, Capital Improvement Projects and capacity issues within the collection system.
- 8-6** The City will annually update its financial model as part of the review of sewer rates and report to Council on any changes in the 20-year financial outlook and subsequent rate impacts.
- 8-7** The master plan shall be updated at least every 5 years with official review and adoption by Council.
- 8-8** The preference of the City is to serve development through gravity conveyance and use of the Water Reclamation Facility.
- 8-9** If lift stations are required to serve new development, regional pump stations shall be relied upon to the extent practicable versus individual or smaller lift stations.
- 8-10** These policies will be implemented through the City of Bend Public Improvement Construction Procedure Standards & Specifications.
- 8-11** The City should look for reasonable opportunities to decommission energy- and maintenance-intensive lift stations as part of new development or other City infrastructure projects.
- 8-12** The City will consider the conservation and water reuse measures in the Water Management and Conservation Plan in infrastructure planning to reduce overall impacts to the sewer collection and treatment system.
- 8-13** The City may establish wastewater collection facilities such as sewer interceptor lines, outside of the Bend UGB, to better serve the land inside the UGB.
- 8-14** The City may allow lands outside the UGB to connect to sewer collection facilities located outside of the UGB in order to mitigate a public health hazard, and in a manner consistent with state administrative rules that implement a statewide planning goal concerning public facilities and services.



### *Water Facilities and Systems*

- 8-13-15** The City of Bend is the provider of water service for the City's service area under Statewide Planning Goal 11
- 8-14-16** Avion Water Company is the provider of water service for its franchise area under Statewide Planning Goal 11 and pursuant to the franchise agreement between the City and Avion adopted under Ordinance NS 1514, as amended.
- 8-15-17** Roats Water Company is the provider of water service for its franchise area under Statewide Planning Goal 11 and pursuant to the franchise agreement between the City and Roats adopted under Ordinance NS 1747.
- 8-16-18** Within the urban planning area, public and private water systems shall be consistent with City Standards and Specifications for construction and service capabilities.
- 8-17-19** The City shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary.
- 8-18-20** The City shall continue to implement a water conservation program that emphasizes education, enforcement, metering, and other methods to use water efficiently.
- 8-19-21** The City may allow water service outside the UGB at rural levels consistent with Goal 11.

### *Storm Drainage Facilities and Systems*

- 8-20-22** The City of Bend is the stormwater utility for the city limits and urban growth boundary. As the utility, the City shall review its Stormwater Master Plan and Integrated Stormwater Management Plan as needed for compliance with changes in state or federal requirements and at least every five years.
- 8-21-23** The City will initiate funding options (e.g., SDCs, grants, low-income loans) for stormwater capital projects in accordance with applicable laws.
- 8-22-24** Due to the lack of a defined drainage pattern for most of the urban area, development shall, to the extent practicable, contain and treat storm drainage on-site. In instances where containing storm



drainage on-site would not be safe or practicable, the developer shall enter into a formal and recorded arrangement with the City or a private party to adequately address the storm drainage off site such as a regional control.

- 8-23-25** The use of stormwater disposal systems shall be coordinated with the Oregon Department of Environmental Quality and Water Resources Department to protect ground water and surface water.
- 8-24-26** The City shall work to minimize the discharge of untreated stormwater run-off from streets directly into the Deschutes River and Tumalo Creek.
- 8-25-27** All public and private stormwater facilities shall be designed and operated in accordance with the City's Stormwater Master Plan and shall meet appropriate drainage quantity and quality requirements, including, but not limited to, the requirements of the City's National Pollutant Discharge Elimination System (NPDES) MS4 Stormwater Permit, Integrated Stormwater Management Plan, WPCF UIC Permit and any applicable Total Maximum Daily Load requirements (TDML) requirements. Underground injection and surface discharges to the Deschutes River or Tumalo Creek shall only be approved when other alternatives, such as retention basins or bioinfiltration swales, are not reasonably available. Low impact site designs shall be a required part of all new development and redevelopment projects.
- 8-26-28** The ability to provide stormwater facilities for developments proposed for annexation into the City shall be a consideration for annexation approval.
- 8-27-29** The City shall reduce the quantity of runoff and discharge of pollutants to the maximum extent practicable by integrating stormwater runoff controls into new development and redevelopment land use decisions. Controls may be required to minimize illicit discharges or pollutants of concern.
- 8-28-30** The City shall implement and enforce requirements for an erosion and sediment control program for public and private construction and post-construction activities.
- 8-29-31** All developments shall evaluate the potential of a land parcel to detain excess stormwater runoff and require incorporation of appropriate controls, for example through the use of detention facilities to address quantity, flow, and quality concerns.
- 8-30-32** The City shall seek efficiencies and consistency by working with other municipalities and stakeholders within Central Oregon on land use issues to address flood control, watershed health and



## Public Facilities and Services

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stormwater pollution prevention.

- 8-31-33** Hazard and resource areas with the following characteristics shall be considered unsuitable for urban development:
- flood zones;
  - water supply watersheds; and
  - riparian corridors and natural drainageways.
- 8-32-34** Development on slopes in excess of 10 percent shall require special consideration to prevent construction-related and post-construction erosion.
- 8-33-35** The City shall regulate development near water courses to reduce erosion and pollution and to provide open, natural areas.
- 8-34-36** Land uses that pose a major threat to water quality, including commercial and industrial uses such as automobile dismantlers, waste transfer disposal facilities, light industries, and other uses that have a significant potential for pollution, shall not be located within the vicinity of stream, percolation facilities, reservoirs, drill holes or where pollutants could easily come in contact with flood waters, high groundwater, flowing rivers, or reservoirs. Such uses shall be required to reduce any threat of pollution to an insignificant level as a condition of approval.
- 8-35-37** As part of site approval, or as a condition on tentative maps, as necessary, the City shall require permanent stormwater pollution control site design or treatment measures or systems and an ongoing method of maintenance over the life of the project.
- 8-36-38** The City shall minimize particulate matter pollution through controls over new and redevelopment (including erosion and sediment controls on grading, quarrying, vegetation removal, construction, and demolition), industrial processes, parking lots and other activities that pose a threat to water quality.
- 8-37-39** The City shall require the following stormwater protection measures for all new development and redevelopment proposals during the planning, project review, and permitting processes:
- Submit geotechnical site assessments when dry wells or other infiltration or injection systems are proposed.
  - Avoid conversion of areas particularly susceptible to erosion and sediment loss (e.g., steep slopes) or establish development guidance that identifies these areas and protects them from erosion and sediment loss.
  - Retain natural drainage channels in their natural state to prevent undue erosion of banks or beds, and preserve or





restore areas that provide water

- quality or quantity benefits and/or are necessary to maintain riparian and aquatic biota.
- Promote site development that limits impacts on, and protects the natural integrity of topography, drainage systems, and water bodies.
- Promote integration of stormwater quality protection into construction and post-construction activities at all development and redevelopment sites.

**8-38-40** The City shall work to reduce transportation-related sources of water pollution, particularly in stormwater pollution. Any means and actions that result in a reduction in vehicle-miles-traveled would benefit congestion and reduce both air and water pollution.

**8-39-41** The City shall recognize and publicize the relationship between air pollution and water pollution in the deposition of airborne contaminants, including metals and fine particulate matter onto streets and other surfaces.

**8-40-42** To minimize illicit discharge to stormwater and groundwater from septic systems, the City shall require lots with onsite sewage disposal to connect to the city sanitary sewer whenever state rules governing connection are met.

### *Solid Waste Disposal*

**8-41-43** The city and county shall encourage recycling beyond the level required by state law as an alternative to landfill disposal.

**8-42-44** The county shall reduce dust and blowing refuse at the landfills in order to ensure as few adverse impacts as possible from these facilities.

**8-43-45** The city shall explore methods, including mandatory garbage service, to gain 100 percent disposal of waste at designated landfill sites and discourage the dumping of wastes on public and private lands.

**8-44-46** The City shall coordinate with Deschutes County on the creation of a new solid waste management plan.

### *Public Buildings and Facilities*

**8-45-47** Public buildings and facilities shall be located so as to provide convenient public use and to provide maximum service for the greatest economy. Governmental offices should locate downtown when practicable. Other governmental facilities, reservoirs, landfills and correctional facilities should be located in areas with good



## Public Facilities and Services

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public access to principal streets.

- 8-4648** The County Public Works facility shall be planned and zoned with a Public Facilities designation. The uses allowed at the site from among those uses listed in a Public Facility zone shall be limited to public works and transportation facilities and yards and public service uses in existing facilities as such facilities may be expanded and accessory uses thereto. Commercial or manufacturing uses shall not be allowed at this site.

### *General Policies*

- 8-4749** The City may consider funding mechanisms and agreements to address on-site and off-site improvements, modernization of existing infrastructure to City's standards and specifications, and impacts to infrastructure inside the current City limits.