

Bend Area General Plan

Chapter 8: Public Facilities and Services

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PREAMBLE

Consideration 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 longer planning horizon than used in the General Plan, they are still driven by the population and land use needs forecast in the Plan.

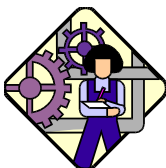
GOALS

Adequate public facilities are the key to 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 wish:

- 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 cooperate in the provision of adequate urban services in an efficient and timely matter 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 have negative 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 ten years provides a framework for decisions on when, where, and how public facilities will be provided to support the



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projected growth. The city will use the listing of projects as a basis for its annual capital improvement budget.

SANITARY SEWER SYSTEMS

Individual systems

In 1992 the Deschutes County Community Development Department estimated that there were more than 3,000 individual sewage disposal systems within the Urban Growth Boundary. It is estimated that about 10 percent of these systems use the old drill hole system or use a septic tank drain field system that was installed prior to 1974 when the county first set standards and required permits.

Generally speaking, ground in the urban area is not well suited for drain field disposal systems because the soils are relatively shallow over fractured lava rock. Between 1987 and 1992 Deschutes County issued more than 270 permits to replace or repair failing drain field systems in the urban area. The majority of these repair permits were in subdivision lots in the south half of the urban area. The county Environmental Health Division expects the number of repair permits to increase as older or inadequate drain field systems age and lose the ability to treat the effluent.

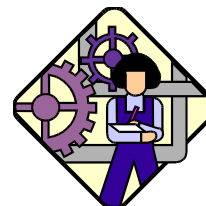
The Deschutes Basin has a complex geology of fractured lava rock. The state, county, and city are concerned about the potential for ground water and surface water contamination from effluent that works its way into the rock from drill holes and individual drain field systems. The likelihood of contamination increases as the systems get older and more systems are installed.

There are both social and financial costs associated with failing individual sewage disposal systems. The possibility of local and regional public health risks from contaminated water systems represents a social cost. Replacing or expanding a drain field — if it can physically be done on a subdivision lot — can cost a home-owner thousands of dollars. The extension of the city's sewer system into subdivisions with drain field problems provides the best long term solution to protect the health, safety, and property of residents in the urban area.

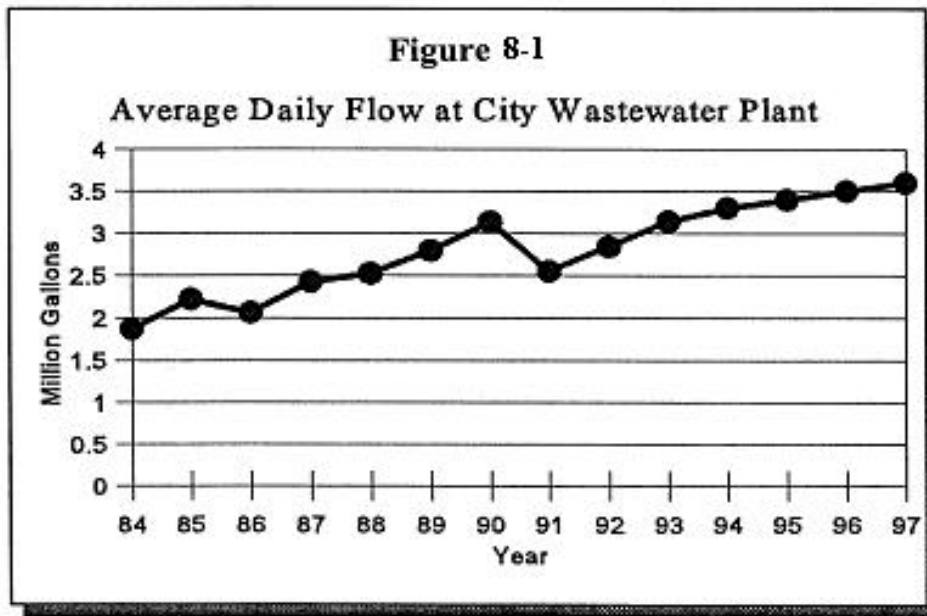
Municipal system

The city completed its sewerage collection system and treatment plant in 1983. The treatment plant has capacity for an average flow of about six million gallons a day (60,000 population equivalent) and in 1997 averaged about 3.6 million gallons a day flow. Figure 39 charts the average daily flows at the wastewater treatment plant.

The 1996 *Utilities System Master Plan* identifies future improvements to the sewerage collection and treatment facilities required to serve long range growth in Bend. The system is designed to serve lands within the Urban Growth Boundary and eventually the Urban Reserve Area.



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In 1986 the disposal of septic tank wastes at the county landfill was curtailed and these wastes started to be disposed of at the city's wastewater treatment plant. Due to the increased volume of septic tank waste from throughout the county the Bend treatment plant in 1992 was near capacity in its ability to process organic materials. Several

improvements under construction at the plant will increase the capacity of the plant.

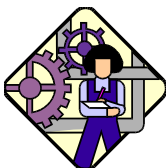
Two private sanitary districts and systems, Rimrock and Sunrise Village, were taken over by the City of Bend after the developments were annexed to the city in the early 1990s. Their common tank and drain field systems were abandoned when the systems were connected to the city sewer system.

The major need in the urban area during the planning period is to provide sewerage collection lines to developed areas surrounding the city. To meet this need, new interim pressure lines have been completed by the city to commercial areas along Highway 97 and Century Drive. It is expected that additional interim pressure lines will be constructed to serve residential areas in the southwest and southeast portions of the urban area.

Private systems

Juniper Utility Company provides pressure sewerage facilities and service to an area generally south of Chase Road. The utility provides service mainly to subdivision developments by J.L. Ward Co., which also owns the utility. The Juniper Utility Company sprays the effluent on lands within the UGB owned by J.L. Ward. The Juniper Utility Company is expected to continue servicing the current service area and other lands owned by J.L. Ward.

Sewer system financing

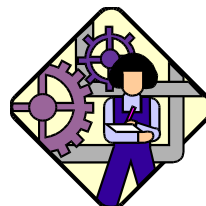


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Table 23 lists sewer facilities the city plans to construct through 2002 to support the projected growth and land uses in the Bend urban area. The description, location, timing and estimated cost of listed facilities may change as a result of subsequent 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 (SDC), as allowed under state law, to help pay for new facilities. 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 Utility Systems Master Plan such as interceptor lines and expansion of the wastewater treatment plant.

The sewer System Development Charge is 60 percent of the allowable maximum charge. The City Council determined that this percentage 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.



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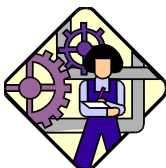
**Table 8-1
City Sewer System Projects (1997 dollars)**

Approximate Year	Description of Project	Rough Cost for all projects
1997-98	Construct centrifuge at treatment plant Install gravity belt thickener at treatment plant Sludge handling / dewatering improvements at treatment plant Construct south canal gravity main interceptor line Design North UGB interceptor line	\$2,615,000
1998-99	Construct 27" Brosterhous interceptor Start 21" Brosterhous interceptor Construct Rimrock Pump Station Construct River's Edge interceptor sewer Start Secondary clarifier #3 at treatment plant Start North UGB interceptor line	\$1,898,000
1999-2000	Continue 21" Brosterhous interceptor Continue North UGB interceptor line Finish Secondary clarifier #3 at treatment plant Start anaerobic digester at treatment plant	\$1,630,000
2000-01	Finish 21" Brosterhous interceptor Continue North UGB interceptor line Finish anaerobic digester at treatment plant Sunrise Village tie-in Start effluent polishing filter at treatment plant	\$2,454,800
2001-02	Continue North UGB interceptor line Finish effluent polishing filter at treatment plant	\$1,650,000

2003 to 2008 Long-range Sewer System Projects

- Construct new primary clarifier at treatment plant Expand headworks at treatment plant
- Construct Contact Basin at treatment plant Design / build Southeast / 27th St. interceptor
- Continue North UGB interceptor
- Expand aeration basin at treatment plant

WATER FACILITIES AND SYSTEMS

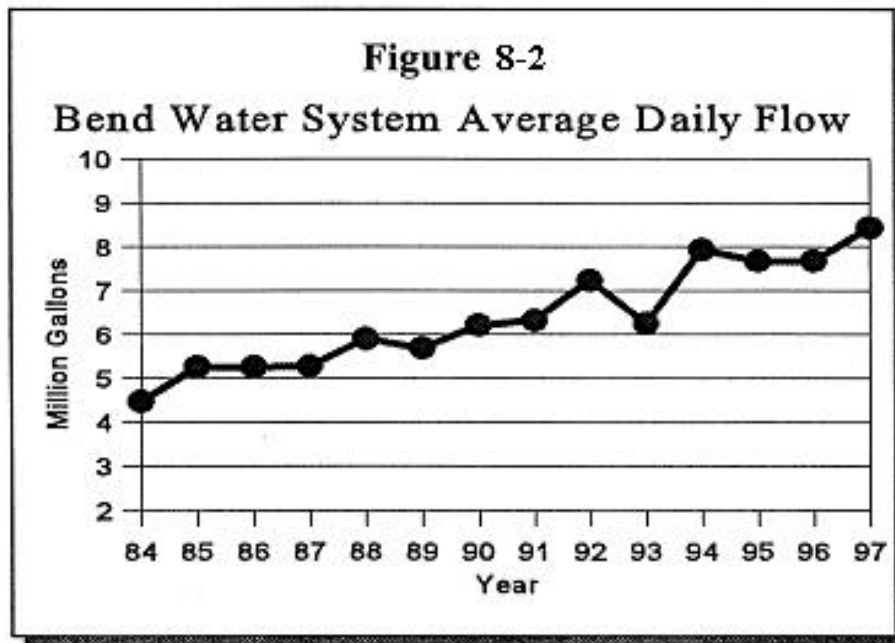


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The quality of water in the Bend urban area is a matter of major importance. Not only does water supply the needs of residential, commercial, and industrial users, but it provides many of the recreational and scenic opportunities that make the Bend area an especially attractive place to live.

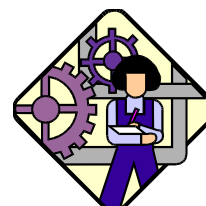
Municipal system

The City of Bend is the only municipal public water supplier in the Bend area. The city's water system includes about 11,000 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 rises 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 40 compares average daily flow over a 14 year period.



The water is of excellent chemical quality, and the bacteriological quality is good with only chlorination treatment. The water is a consistent 48°F. winter and summer, and is clear except that it is slightly turbid during periods of high runoff from the watershed. These periods occur only occasionally, and are of only a few days duration. 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 11.4 million gallons per day. The city supplements the Bridge Creek source with deep groundwater wells. In 1996 the city had nine wells on line to supplement the Bridge Creek source. These wells increase the delivery capacity of the city system to 24.7 million gallons per day. The city has 17.0 million gallons of reservoir storage, and another 5 million gallon reservoir scheduled to come on line in 1999. The city's 175 miles of water distribution system is primarily composed of ductile iron pipe.



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The city water system has 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 single family service connections. The city has instituted a variety of programs to go to a fully metered system and to conserve water. These programs include:

- since July 1995, requiring each new single family home to be on a meter;
- beginning in 1996, requiring meters to be installed when ownership changes;
- financial incentives for voluntary installation of a water meter;
- limited yard watering hours during April through October;
- employing a water conservation officer during the summer to explain the water conservation program to residents;
- providing free water conservation kits to residential users; and
- a variety of educational efforts with the local Central Oregon Environmental Center.

The city's 1996 *Utilities System Master Plan* identifies water supply, transmission, and storage needs throughout the urban area. Additional wells, reservoirs, main transmission lines, and smaller distribution lines will be needed to meet the projected urban area growth. Water system projects planned for in the next ten-year period are listed in Table 24.

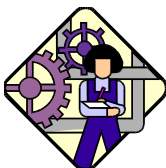
The regional water table at Bend lies within the Deschutes Formation, some 800 feet or more below land surface. The city's water and sewer master plan indicates that the regional ground water aquifer is substantial. Additional United States Geological Survey information and studies are being completed that are expected to confirm the capacity of the aquifer.

Private providers

The primary source of water for those residents outside the city limits is ground water. For the area outside the city limits within the Urban Growth Boundary (UGB), there were approximately 270 wells logged on file with the Deschutes County Watermaster's office as of January 1980. The depth of wells ranges from 72 feet to 1,100 feet, yielding various gallons per minute flows. The shallowest wells are found in the northern areas of the UGB.

Many of the wells located north of Bend obtain ground water from a sand and cinder zone that is perched above the volcanic rock Deschutes Formation. The wells in these perched water tables generally range from 100 to 200 feet in depth, rather than the 600 to 900 foot deep wells that tap the regional water table. Most of the perched ground water in the Bend area is believed to be recharged from local precipitation, canal losses, and irrigation, although some of the perched zones may be locally recharged from the Deschutes River.

There are several private water companies supplying domestic water within the Urban Growth Boundary. Approximately 5,000 service connections within the UGB are furnished domestic water through private water systems. The largest are Avion, Juniper Utility, and Roats. The city has granted Avion Water Company a franchise for operation inside the city limits. This agreement requires that new line construction and other system improvements meets city fire flow



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requirements and other standards.

The city is acquiring some of the smaller private systems that were originally established to serve specific subdivisions. These systems mainly supply domestic water and have limited fire flow capacities. The systems are generally located on the east and south sides of the Urban Growth Boundary in areas of lower residential densities.

Water system financing

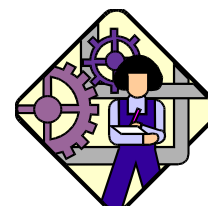
The following table lists the various water facilities the city plans to construct through the year 2002 to support the projected growth and land uses in the Bend urban area. The description, location, timing and estimated cost of listed facilities may change as a result of subsequent design studies, 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 (SDC), as allowed under state law, to help pay for new facilities. 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 *Utility Systems Master Plan* such as reservoirs, wells, transmission lines, and treatment facilities.

The water System Development Charge is 75 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.

**Table 8-2
City Water System Projects (1997 dollars)**

Approximate Year	Project Description	Rough Cost for all projects
1997-98	Finish Powers Road line extension Finish Boyd Acres Rd. #1 extension Continue Pilot Butte #3 reservoir Construct Boyd Acres Rd. #2 loop Construct Bear Creek Well #1 Continue Awbrey Butte #2 reservoir Replace old water lines	\$3,830,000
1998- 99	Finish Pilot Butte #3 reservoir Continue Awbrey Butte #2 reservoir Start Hwy 97 North transmission line Replace old water lines	\$2,225,000
	Finish Awbrey Butte #2 reservoir	



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**Table 8-2
City Water System Projects (1997 dollars)**

Approximate Year	Project Description	Rough Cost for all projects
1999-00	Construct 27th Street transmission Finish Hwy. 97 North transmission Start Mt. Washington north transmission Construct Awbrey Butte Well #1 Start Wyndemere transmission line Start Outback Reservoir #2 Replace old water lines	\$2,547,500
2000-01	Finish Mt. Washington north transmission Continue Wyndemere transmission line Continue Outback Reservoir #2 Start Pilot Butte Well #4 Replace old water lines	\$2,304,500
2001-02	Finish Wyndemere transmission line Complete Outback Reservoir #2 Complete Pilot Butte Well #4 Replace old water lines	\$2,845,500

2003 To 2008 Long-range Water System Projects

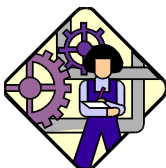
- Complete Rock Bluff #2 reservoir
- Complete Outback West well field
- Construct Awbrey #3 reservoir
- Construct Awbrey west transmission line
- Construct Yeoman Road 16" transmission line

STORM DRAINAGE FACILITIES

Within the urban area, drill holes and dry wells are used for disposal of the majority of surface drainage. The city has a limited storm drainage system that serves part of the west side of the river and downtown. This system drains to the river.

As noted above, some domestic wells are in an area of a shallow water table that may be recharged by surface water such as irrigation canals and the river, or ground water. Disposing of storm water using dry wells or drill holes in this area presents a potential for ground water contamination.

Due to the complex lava terrain without a defined drainage pattern on the east side of the Deschutes River, the use of dry wells for storm water disposal is expected to be the chief means of drainage



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control. The city, county, and state Department of Environmental Quality and Department of Water Resources have developed a program for storm drainage in the urban area that will protect the ground water resource. This program includes dry wells, the use of landscaping and natural swales to contain runoff, and requirements that surface drainage from developments must be retained on-site.

SOLID WASTE DISPOSAL

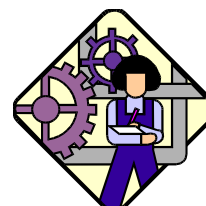
Solid waste disposal for the urban area occurs at one county facility, the Knott Pit Sanitary Landfill, just outside of the Urban Growth Boundary on the east side of 27th Street. Deschutes County studies indicate that a new sanitary landfill to replace Knott Pit will be needed soon after the turn of the century. The county has begun the siting process for a new facility.

A second landfill just for construction debris and demolition material was in operation for several years adjacent to Simpson Avenue within the Urban Growth Boundary. 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. The county closed this landfill at the beginning of 1997 and started reclamation work on the site in 1998.

Collection of solid waste is done by private providers under city and county franchise. In 1991 it was estimated that only about 40 percent of the households in the UGB had signed up for a weekly collection service. Many people haul garbage directly to the Knot Pit Sanitary Landfill. However, there are many instances of unlawful garbage dumping on public and private land. The two garbage haulers in the urban area provide weekly curb-side pickup of recyclable materials. In 1996 the urban area haulers picked up more than 5,840 tons of recycled materials. Items picked up at curb-side include aluminum, corrugated cardboard, paper bags, magazines and catalogs, newspaper, glass, plastic bottles, tin cans, and used motor oil.

In the mid-1990s about 18 percent of the solid waste material in the county was being recycled by households and businesses either through curb-side service or dropped off at the county landfill and transfer stations. When bottle and can recycling at grocery stores and other recycling programs such as the county's yard debris mulch program are included, about 25 percent of the solid waste material is being recycled.

OTHER URBAN UTILITIES



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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 natural gas resources exist to serve the Bend urban area through the planning period.

Telecommunication services are provided by U.S. West Communications and several cellular phone companies. Cable television service within the urban area is provided by Bend Cable Communications. Private utility providers within the city limits operate under non-exclusive franchise agreements with the city.

PUBLIC BUILDINGS AND FACILITIES

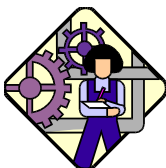
The city has public works shop facilities on Forbes Road that will be adequate for many years. Deschutes County constructed a new public works complex on SE 27th Street to serve rural parts of the county. This area was annexed to the UGB in 1996 to allow the county to expand its facility.

The Bend City Hall at the south end of downtown was built in 1989 and expanded in 1992. The City Hall Annex is located next to City Hall. Also located at the south end of downtown are the Bend-La Pine School District Administrative offices, the county historical museum, the new main branch of the county library, and other public buildings. These various public agencies have cooperated on a re-design plan for an eight-block area at the south end of downtown known as Heritage Square.

The county courthouse and various county administrative offices are located in several buildings at the north end of the downtown area. The county owns land in this area to expand its facilities. The Bend Metro Parks and Recreation District offices are also located at the north end of downtown adjacent to the river. Maintaining the city, county, and special district administrative functions downtown will help the community focus on the enhancement of downtown.

In 1991 and 1996 Deschutes County received approval from the voters to construct a new adult correctional facility for minimum and medium security inmates and a new juvenile correction facility. These facilities will be part of a county public safety complex located near Highway 20E in the north part of the urban area.

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 main fire station was built in 1918 and is located downtown on Minnesota Avenue. Three fire department substations serve both the urban area and adjacent rural district. The fire department has developed a plan to build two new substations and close the downtown station in order to provide better, faster coverage for



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the community.

Police services in the urban area are provided by the City of Bend Police Department and the Deschutes County Sheriffs Department. The Oregon State Police regional headquarters is also located in Bend.

POLICIES

Urban sewer

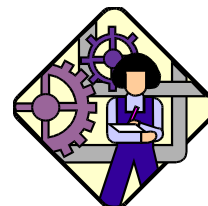
1. The city shall encourage development of serviced land prior to unserviced land or require the extension of sewer lines as part of any development within the UGB.
2. The city shall coordinate the provision of sewer service with other providers within the Urban Growth Boundary.
3. All development within the Urban Growth Boundary shall be sewered or provide for sewers through a binding sewer service agreement with the city.
4. No further special districts shall be formed to provide sewer service within the Urban Growth Boundary, nor shall any annexation be allowed to an existing district.
5. The city shall be the primary provider of sewage collection and treatment services for the Bend urban area.
6. To reduce the reliance on individual sewage disposal systems within the Urban Growth Boundary the city will assist established neighborhoods that commit to a sewage collection system by extending pressure or gravity lines to the subdivision.

Urban water

7. Within the urban planning area, public and private water systems should be consistent with city standards for construction and service capabilities.
8. The city shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary.
9. The city shall continue to implement a water conservation program that emphasizes enforcement, metering, and other methods to reduce the mis-use of water.

Storm sewer

10. Dry wells, landscaping, retention ponds or storm drains shall be used for surface drainage control.
11. The preservation and use of natural drainage ways for storm drainage shall be required in new



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developments as much as possible.

12. Due to the lack of a defined drainage pattern for most of the urban area, development shall contain storm drainage on-site.
13. The use of disposal systems will be coordinated with the Oregon Department of Environmental Quality and Water Resources Department to protect known shallow ground water areas.
14. The city shall work to minimize the discharge of street run-off water directly into the Deschutes River.

Solid waste

15. The city and county shall encourage recycling beyond the level required by state law as an alternative to landfill disposal.
16. The county shall reduce dust and blowing refuse at the landfills in order to ensure as few adverse impacts as possible from these facilities.
17. 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.
18. The county shall develop a new solid waste management plan.

Public buildings

19. Public buildings and facilities should 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 access to principal streets.
20. 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.

