ORDINANCE NO. 2427

AN ORDINANCE ADOPTING A 2021 WATER PUBLIC FACILITY PLAN AS APPENDIX G OF THE BEND COMPREHENSIVE PLAN, REPEALING THE 2013 WATER PUBLIC FACILITY PLAN, AND ADOPTING RELATED AMENDMENTS TO THE TEXT OF CHAPTER 8 OF THE BEND COMPREHENSIVE PLAN

Findings

A. In Spring of 2019, the City began work to develop a new Integrated Water System Master Plan (iWSMP). The iWSMP includes an updated Water System Master Plan for the City's water utility, an updated Water Management and Conservation Plan (WMCP) for maintenance of the City's water rights, and a Water Public Facility Plan (PFP) to ensure the City's Comprehensive Plan complies with Statewide Planning Goal 11, Public Facilities and Services.

B. On September 13, 2021, the City submitted a Notice of Proposed Amendment pursuant to ORS 197.610 to the Oregon Department of Land Conservation and Development. The City's Notice proposed adoption of a 2021 Water PFP (Appendix G of the Comprehensive Plan), and related amendments to the text of Chapter 8, Public Facilities and Services, of the Bend Comprehensive Plan.

C. On October 25, 2021, the Bend Planning Commission conducted a public hearing on the 2021 Water PFP, and the proposed related amendments to the text of Chapter 8 of the Bend Comprehensive Plan. At the close of the hearing held on October 25, 2021 the Planning Commission unanimously voted to forward the proposed 2021 Water PFP and related amendments to the text of Chapter 8 of the Comprehensive Plan on to the City Council with a recommendation to approve.

D. On November 17, 2021, the City Council held a public hearing on the 2021 Water PFP and the related amendments to the text of Chapter 8 of the Bend Comprehensive Plan. Notice of the hearing before the City Council was published in the Bend Bulletin on October 27, 2021. The City Council has considered the evidence in the record, including the evidence and the testimony submitted at the public hearings.

Based on these findings, THE CITY OF BEND ORDAINS AS FOLLOWS:

Section 1. In addition to the findings set forth above, the City Council adopts Exhibit A as their Findings.

Section 2. The 2013 Water Public Facility Plan adopted through Ordinance 2194, and incorporated as Appendix G of the Bend Comprehensive Plan, is repealed.

Section 3. The 2021 Water Public Facility Plan, attached as Exhibit B, is adopted as Appendix G of the Bend Comprehensive Plan.

Section 4. Chapter 8 of the Bend Comprehensive Plan, Public Facilities and Services, is amended as shown in Exhibit C.

First Reading: November 17, 2021

Second Reading: December 1, 2021

Adopted by roll call vote by the City Council on December 1, 2021.

YES: Mayor Sally Russell
Mayor Pro Tem Gena Goodman-Campbell
Councilor Barb Campbell
Councilor Melanie Kebler
Councilor Anthony Broadman
Councilor Megan Perkins

NO: None

Sally Russell, Mayor

Attest:

Robyn Christie, City Recorder

Mary Winters, City Attorney

October 2021
PLTEXT20210833

Exhibit "A"

FINDINGS REPORT
To Support Adoption of a 2021 Goal 11 Water Public Facility Plan and amendments to Chapter 8, Public Facilities, of the Bend Comprehensive Plan

I. Purpose and Context

The purpose of these findings is to support the adoption of the 2021 Water Public Facility Plan (PFP) for the City of Bend (City). The 2021 Water PFP covers the areas within the Bend Urban Growth Boundary (UGB) for which the City, Avion Water Company, and Roats Water System provide potable water service. The 2021 Water PFP has been developed based on the 2018 Bend Comprehensive Plan, which includes the 2016 UGB expansion, and subsequent amendments to the text and official map of the Comprehensive Plan.

Concurrently with the adoption of the 2021 Water PFP, the City also proposes related amendments to the text of Chapter 8 of the Bend Comprehensive Plan, Public Facilities and Services, to reflect those changes identified in the 2021 Water PFP, including projects needed to serve the entire UGB. This proposed Water PFP does not propose any changes to the existing policies for Water Systems and Facilities under Chapter 8. There are also no proposed changes to either the Comprehensive Plan map or the Official Zoning Map based on the 2021 Water PFP.

Finally, these findings address OAR 660-015-0000(11), Goal 11, the Goal 11 administrative rule at OAR 660-011, the applicable statewide planning goals, the applicable plan policies of the Bend Comprehensive Plan, and the requirements for a legislative amendment under Bend Development Code 4.6.200.

II. Proposal

The Proposal supported by these findings includes:

1. A 2021 Water System PFP, dated September 2021;
2. Related amendments to the 2018 version of Chapter 8 of the Bend Comprehensive Plan.

The Proposal does not propose further amendments to the Comprehensive Plan, and proposes no changes to the Bend Development Code.

III. Background

1. The City last adopted a Goal 11 Public Facility Plan for the water systems in the Bend UGB in 2013 through Ordinance No. 2194. This 2013 Water PFP was based on a 2012 version that was the subject of an appeal to the Oregon Land Use Board of Appeals (LUBA) (See LUBA 2012-043). Before adoption, the 2013 Water PFP was amended to satisfy the LUBA remand and included additional findings responding to the issues raised on remand. The 2013 Water PFP was subsequently appealed to and affirmed by LUBA in September 2013 (See LUBA 2013-037)

2. In 2016, the City adopted a set of significant amendments to the Bend Comprehensive Plan, including a UGB amendment that added 2,380 acres to the Bend UGB. Through Ordinance 2271, the City also adopted several new plan chapters and new appendices to support the adoption of the UGB amendment.

3. In 2019, the City began work to develop an Integrated Water System Master Plan. The iWSMP was developed through one project that had the following final products:

    a. A 2021 Integrated Water System Master Plan (iWSMP) for the City's water utility;

    b. A 2021 Water Management and Conservation Plan (WMCP) for the maintenance of the City's water rights with the Oregon Water Resources Department.

    c. A 2021 Goal 11 Water Public Facility Plan (PFP) for the three (3) water utilities that serve the Bend UGB.

IV. Applicable Criteria

Legislative land use decisions must comply with applicable provisions of the statewide planning goals, applicable statutes and administrative rules, and applicable unamended provisions of the Comprehensive Plan and implementing regulations. Legislative land use decisions must also be internally consistent pursuant to Statewide Planning Goal 2, Land Use Planning. The following goals, rules, plan policies, and development code text are the criteria applicable to review of the Proposal:

1. Oregon Administrative Rules (OAR) Chapter 66, Division 11, Implementation of Goal 11

2. OAR Chapter 660, Division 15, Statewide Planning Goals. The following lists the applicable Statewide Planning Goals:
    a. Goal 1, Citizen Involvement
    b. Goal 2, Land Use Planning
    c. Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces
    d. Goal 6, Air, Land, and Water Quality
    e. Goal 7, Natural Hazards
    f. Goal 8, Recreation
    g. Goal 9, Economic Development
    h. Goal 10, Housing
    i. Goal 11, Public Facilities and Services
    j. Goal 12, Transportation
    k. Goal 13, Energy
    l. Goal 14, Urbanization

3. Bend Comprehensive Plan – applicable policies:
    a. Preface
    b. Chapter 1, Plan Management and Citizen Involvement
        - Urban Planning Coordination Policies 1-4, 1-5, and 1-6
    c. Chapter 5, Housing,
        - Neighborhood Appearance Policy 5-32
        - Public utilities and services Policies 5-48
    d. Chapter 6, Economy
        - General Policies 6-3 and 6-4
    e. Chapter 8, Public Facilities and Services
        - Water Facilities and Systems Policies 8-15 through 8-21
    f. Chapter 11, Growth Management
        - General Area Planning Policy 11-39
        - Master Planning Policy 11-49
        - Annexation Policy 11-66

4. Bend Development Code Section 4.6.200, Legislative Amendments

V. Substantial Evidence.

The following documents represent the substantial evidence upon which the City relied to prepare these findings.

1. Integrated Water System Master Plan, adopted by Resolution No. 3275 on October 6, 2021, is incorporated by reference and attached as Exhibit "A" to the Water PFP for the City of Bend
2. Avion Water Company (Avion):

a. 2006 Water Master Plan
b. 2011 and 2016 Water Management and Conservation Plans

3. Roats Water System (Roats):
   a. 2019 Water Management and Conservation Plan and data provided by Roats Water System.

VI. Findings Addressing OAR 660-011, Public Facilities and Planning

660-011-0000 - Purpose

The purpose of this division is to aid in achieving the requirements of Goal 11, Public Facilities and Services, OAR 660-015-0000(11), interpret Goal 11 requirements regarding public facilities and services on rural lands, and implement ORS 197.712(2)(e), which requires that a city or county shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons. The purpose of the plan is to help assure that urban development in such urban growth boundaries is guided and supported by types and levels of urban facilities and services appropriate for the needs and requirements of the urban areas to be serviced, and that those facilities and services are provided in a timely, orderly and efficient arrangement, as required by Goal 11. The division contains definitions relating to a public facility plan, procedures and standards for developing, adopting, and amending such a plan, the date for submittal of the plan to the Commission and standards for Department review of the plan.

FINDING: The requirements of OAR 660-011 are applicable to the development and review of the 2021 Water PFP because the City has a population of greater than 2,500 persons within its UGB. The following findings show the city has developed the 2021 Water PFP to ensure that future urban development is guided and supported by types and levels of urban water systems and facilities within the Bend UGB.

660-011-0010 - The Public Facility Plan

(1) The public facility plan shall contain the following items:

(a) An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the acknowledged comprehensive plan;

FINDING: The 2021 Water PFP satisfies this criterion because it includes an updated inventory and general assessment of the condition of the City's water facilities and systems. The PFP also includes the available data for the Avion and Roats Water Companies for their respective inventories of water infrastructure. Both Avion and

Roats Water Companies do not have any data on the condition of their water facilities and systems.

The 2021 Water PFP includes the inventory and general assessment required by (a) in Chapter 4, Inventory of the Existing Systems and Conditions. Figure 2 of the PFP presents the existing pipe system for both the City's and Avion's water utilities within the UGB.

City Water Utility Inventory:

The Water PFP includes the following inventory data for the City of Bend Water Utility:

- Table 1 is an inventory of the existing groundwater facilities
- Table 2 is an inventory of the existing storage reservoirs
- Table 3 is an inventory of the existing booster pump stations
- Table 4 is an inventory of the existing distribution pipe (shown in miles of pipe by installation timeframe)

For the Avion Water Company's Utility:

The Water PFP includes the following inventory data:

- Table 5 is an inventory of Avion's existing groundwater facilities
- Table 6 is an inventory of Avion's existing storage reservoirs
- Table 7 is an inventory of Avon's distribution pipe within the Bend UGB

For Roats Water System's Utility:

The Water PFP includes the following inventory data:

- Table 8 is an inventory of Roats' existing groundwater facilities
- Table 9 is an inventory of Roats' existing storage reservoirs

With respect to the general assessment of condition required by (a), the Water PPF includes the following data. For the City of Bend Water Utility, Figure 3 provides an assessment of general condition, using a rating scale of Very Poor to Excellent. The Water PFP provides additional explanations of these ratings in Section 4.1.2.

The Water PFP includes additional information on the private water utilities, Avion and Roats, in Sections 4.2 and 4.3. The private utilities do not have any condition information on their respective systems.

(b) A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. Public facility project descriptions or specifications of these projects as necessary;

FINDING: The 2021 Water PFP meets this criterion because it includes lists of long-term projects needed to support land uses in the acknowledged Bend Comprehensive Plan. For the City's water utility in particular, once City Council has adopted the 2021 Integrated Water System Master Plan and 2021 Water Public Facility Plan, projects that are determined to be needed in the short term will be included in the City's 2022-2026 Capital Improvement Program (CIP).

For the City of Bend Water Utility:

- Section 5.1 describes the projects developed for the City's water utility
- Section 5.1.2 defines the projects by category, including: pipe replacement; facility capacity; pipe capacity, and; planning/conservation projects.
- Table 10 presents the projects for the City's Water System by project identification number, estimated time frame, and rough cost estimate.
- Table 11 summarizes the project by category, timeframe, and total cost.
- Figure 4 presents the identified projects by category in the City's Water Utility area.

For Avion Water Company:

- Table 12 lists their projects, description, estimated time-frame, rough cost estimate

For Roats Water System:

- Table 13 identifies one project with a description, and estimated time frame. No rough cost estimates have yet been developed.

(c) Rough cost estimates of each public facility project;

FINDING: The 2021 Water PFP meets this criterion because it includes rough cost estimates for those projects that have a rough cost estimated. Figure 4 of the PFP presents the list of public water facility projects prepared by the City. All cost estimates are Class 5 budget estimates, as established by the American Association of Cost Engineers. This preliminary estimate class is used for conceptual screening and assumes project definition maturity level below two percent. The expected accuracy range is -20 to -50 percent on the low end, and +30 to +100 percent on the high end. For Avion Water Company, their projects are presented in Table 12, which includes rough cost estimates as that term is defined under OAR 660-011-0005(2). For the Roats Water System, this utility has identified one future project but has not developed a rough estimate. For the purpose of addressing this criterion, the City finds that the cost estimates provided in the 2021 Water PFP satisfy the definition of *"rough cost estimate"* under OAR 660-011-0005(2).

(d) A map or written description of each public facility project's general location or service area;

FINDING: The 2021 Water PFP meets this criterion because it includes a figure, three tables, and written descriptions of each public facility project's general location. As stated above, Tables 10 and 11 and Figure 4 describe the public facility projects for the City's Water Utility. Tables 12 and 13 describe those projects identified by Avion Water Company and Roats Water System for their respective water utilities.

(e) Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated;

FINDING: The City has already addressed this criterion with the adoption of the prior Water PFP. With the adoption of Ordinance 2194, the City adopted amendments to Chapter 8 of the Comprehensive Plan. These amendments included the adoption of Policies 8-15, 8-16, and 8-17, through which the City identified the water service provided of each public facility system. These policies are recognized and unchanged in the 2021 Water Public Facility Plan. The City finds that the PFP satisfies criterion (e).

(f) An estimate of when each facility project will be needed; and

FINDING: The 2021 Water PFP meets this criterion because it includes, where available, estimates of when each facility project will be needed. For the City's Water Utility, estimates of when projects will be needed are presented in Table 10. For the Avion Water Company, estimates of when their utility's projects will be needed are presented in Table 12. For the Roats Water System, Table 13 provides an estimate of when their one project will be needed.

(g) A discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.

FINDING: The 2021 Water PFP meets this criterion because it includes a discussion of each water utility's existing funding mechanisms and the ability of these to fund the development of the needed projects (See pages 23 to 25). Section 6.1 of the Water PFP discusses the City's existing funding strategy and ability to fund improvements to the City's water system. The City primarily relies on monthly user fees and System Development Charges (SDCs) collected with new or increased development. Sections 6.2 and 6.3 discuss the existing funding mechanisms of the Avion Water Company and Roats Water System, respectively. Each utility funds their water systems through monthly charges.

(2) Those public facilities to be addressed in the plan shall include, but need not be limited to those specified in OAR 660-011-0005(5). Facilities included in the public facility plan other than those included in OAR 660-011-0005(5) will not be reviewed for compliance with this rule.

(3) It is not the purpose of this division to cause duplication of or to supplant existing applicable facility plans and programs. Where all or part of an acknowledged comprehensive plan, facility master plan either of the local jurisdiction or appropriate special district, capital improvement program, regional functional plan, similar plan or any combination of such plans meets all or some of the requirements of this division, those plans, or programs may be incorporated by reference into the public facility plan required by this division. Only those referenced portions of such documents shall be considered to be a part of the public facility plan and shall be subject to the administrative procedures of this division and ORS Chapter 197.

FINDING: This finding addresses (2) and (3) above. The 2021 Water PFP focuses on the water facilities and systems intended to serve the Bend UGB. OAR 660-011-0005(1) defines a public facility plan as a support document or documents to a comprehensive plan. The 2021 Water PFP addressed here describes the water facilities that will support the land uses designated under the Bend Comprehensive Plan. OAR 660-011-0005(5) requires that the water systems be included within a public facility plan. The plan refers to water planning documents prepared for the City and those water planning documents and data provided by Avion Water Company and Roats Water Systems that provide the information required for a public facility plan under OAR 660-011-0010(1) above. The 2021 Water PFP references those facilities intended to serve the Bend UGB.

660-011-0015 - Responsibility for Public Facility Plan Preparation

(1) Responsibility for the preparation, adoption and amendment of the public facility plan shall be specified within the urban growth management agreement. If the urban growth management agreement does not make provision for this responsibility, the agreement shall be amended to do so prior to the preparation of the public facility plan. In the case where an unincorporated area exists within the Portland Metropolitan Urban Growth Boundary which is not contained within the boundary of an approved urban planning area agreement with the County, the County shall be the responsible agency for preparation of the facility plan for that unincorporated area. The urban growth management agreement shall be submitted with the public facility plan as specified in OAR 660-011-0040.

FINDING: Pursuant to Section 3.3(d) of the Revised Joint Management Agreement Regarding the Area within the Bend Urban Growth Boundary, the City retains the authority to prepare and adopt public facility plans and amendments for utilities within the UGB and the Urbanizable Area (UA)[1]. Further, the 2021 Water PFP specifies the City, Avion Water Company, and Roats Water System as the providers of water service in the Bend UGB. In addition, the City has also coordinated the amendment of the PFP with Deschutes County and special districts as required by OAR 660-011-015(2).

(2) The jurisdiction responsible for the preparation of the public facility plan shall provide for the coordination of such preparation with the city, county, special districts and, as necessary, state and federal agencies and private providers of public facilities. The Metropolitan Service District is responsible for public facility plans coordination within the District consistent with ORS 197.190 and 268.390.

FINDING: The proposed PFP meets this criterion because the City has coordinated with affected governmental units. The City identified the following as the affected governmental units, and requested their comments and input through direct email communication. The following describes the affected government units with which the City has coordinated, and where applicable, the agency's response to the request for comments.

Bend LaPine School District. Project staff interviewed the District's Operations Manager in March 2021. District staff had no further comments or questions after this meeting.

[1] The UA or Urbanizable Area, was identified and zoned as such through Ordinance NS-2293 on June 21, 2017.

Bend Parks and Recreation District. Project staff interviewed the District's Park Services Manager during a meeting in March 2021. The Parks District had no further comments after this meeting.

Deschutes County. Project team staff interviewed the County's Facilities Director in March 2001. The Facilities Director had no further comments after this meeting. City staff contacted the County Planning Manager by email on September 13, 2021 inquiring if there was interest in reviewing the 2021 Water PFP. The Planning Manager reviewed the 2021 Water PFP and had no further comments in an email message dated September 14, 2021.

Irrigation Districts. The project team reached out to the Central Oregon Irrigation District (COID) in March 2021 to see if there were district staff interested in being interviewed for the Integrated Water System Master Plan. There was no indication of interest in participating. Through an email dated September 23, 2021, City staff contacted the staff at Arnold, Central Oregon, Swalley, and Tumalo Irrigation Districts and provided a copy of the 2021 Water PFP for their review. Through this same email, City staff also notified the districts of the October 11, 2021 work session and October 25, 2021 public hearing before the Bend Planning Commission. The Arnold Irrigation Director emailed city staff on October 13, 2021 and indicated the District had not comments on the Water PFP. No other irrigation districts comments have been provided as of the date of this staff report to the Planning Commission.

(3) Special districts, including port districts, shall assist in the development of the public facility plan for those facilities they provide. Special districts may object to that portion of the facilities plan adopted as part of the comprehensive plan during review by the Commission only if they have completed a special district agreement as specified under ORS 197.185 and 197.254(3) and (4) and participated in the development of such portion of the public facility plan.

FINDING: This rule is not applicable because there are no domestic water supply districts organized under ORS Chapter 264 that provide domestic water to areas within the Bend UGB. As indicated above, the City has coordinated with both Avion Water Company and Roats Water System to obtain what data they have available on their respective water systems and incorporated it into the Water PFP.

(4) Those state agencies providing funding for or making expenditures on public facility systems shall participate in the development of the public facility plan in accordance with their state agency coordination agreement under ORS 197.180 and 197.712(2)(f).

FINDING: This rule is not applicable because no state agencies are providing funding for or making expenditures on the water facilities and systems that are the subject of this plan.

660-011-0020 - Public Facility Inventory and Determination of Future Facility Projects

(1) The public facility plan shall include an inventory of significant public facility systems. Where the acknowledged comprehensive plan, background document or one or more of the plans or programs listed in OAR 660-011-0010(3) contains such an inventory, that inventory may be incorporated by reference. The inventory shall include:

(a) Mapped location of the facility or service area;

(b) Facility capacity or size; and

(c) General assessment of condition of the facility (e.g., very good, good, fair, poor, very poor).

FINDING: The 2021 Water PFP meets this criterion because it includes several tables that present an inventory of the significant public facility systems that constitute the water infrastructure systems in the Bend UGB. These tables include an inventory of facilities, their capacity, size or length, and for several, a general assessment of condition of the facility. The inventory data for all three utilities is included in Section 4 of the Water PFP, Inventory of the Existing Systems and Condition. This section includes Table 1 through 9, which present the inventory of storage, pipes, and reservoirs for all three utilities. Figure 2 displays the existing pipe system data for both the City's water utility and the service area of the Avion Water Company in the Bend UGB. For additional reference, Figure 1 identifies each utility's water service area within the Bend UGB. As indicated under forgoing findings, through the development of the 2021 Integrated Water System Master Plan, the City has current data on the condition of the infrastructure that make up the City's water utility. Figure 3 displays the inventory of pump stations, wells, reservoirs, and pipes in the Bend water service area, along with an assessment of condition that varies from Excellent to Very Poor. Section 4 of the Water PFP further documents that neither Avion Water Company nor Roats Water System have current data on the condition of their respective facilities and systems.

(2) The public facility plan shall identify significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. The public facility plan shall list the title of the project and describe each public facility project in terms of the type of facility, service area, and facility capacity.

FINDING: The 2021 Water PFP meets this criterion because it includes several tables and a section that discusses the significant public facility projects that are planned to support the land uses designated in the acknowledged Comprehensive Plan. Chapter 5

of the Water PFP presents the public facility projects, rough cost estimates, and timeframe for projects of each water utility. Table 10 identifies the City's projects for its water utility, including project identification numbers, category, description, needed timeframe, and rough cost estimate. Table 11 summarizes the projects into the project categories of capacity, condition, and planning/conservation along with total estimated costs by project timeframe and project category. Figure 4 identifies the location and type of the projects by category. Tables 12 and 13 provide written descriptions of projects for the Avion Water Company and the Roats Water System, including a time frame estimate (e.g. near-term or long-term) and cost estimate, if available.

(3) Project descriptions within the facility plan may require modifications based on subsequent environmental impact studies, design studies, facility master plans, capital improvement programs, or site availability. The public facility plan should anticipate these changes as specified in OAR 660-011-0045.

FINDING: This rule is not a criterion for approval for the 2021 Water PFP. This report addresses OAR 660-011-045 in a subsequent finding.

660-011-0025 - Timing of Required Public Facilities

(1) The public facilities plan shall include a general estimate of the timing for the planned public facility projects. This timing component of the public facilities plan can be met in several ways depending on whether the project is anticipated in the short term or long term. The timing of projects may be related directly to population growth, e.g., the expansion or new construction of water treatment facilities. Other facility projects can be related to a measure of the facility's service level being met or exceeded, e.g., a major arterial or intersection reaching a maximum vehicle-per-day standard. Development of other projects may be more long term and tied neither to specific population levels nor measures of service levels, e.g., sewer projects to correct infiltration and inflow problems. These projects can take place over a long period of time and may be tied to the availability of long-term funding. The timing of projects may also be tied to specific years.

(2) Given the different methods used to estimate the timing of public facilities, the public facility plan shall identify projects as occurring in either the short term or long term, based on those factors which are related to project development. For those projects designated for development in the short term, the public facility plan shall identify an approximate year for development. For those projects designated for development over the long term, the public facility plan shall provide a general estimate as to when the need for project development would exist, e.g., population level, service level standards, etc. Timing provisions for public facility projects shall be consistent with the acknowledged comprehensive plan's projected growth

estimates. The public facility plan shall consider the relationships between facilities in providing for development.

(3) Anticipated timing provisions for public facilities are not considered land use decisions as specified in ORS 197.712(2)(e), and, therefore, cannot be the basis of appeal under ORS 197.610(1) and (2) or 197.835(4).

FINDING: This finding addresses OAR 660-011-0025(1) through (3). The 2021 Water PFP meets (1) through (3) above because it includes a general estimate of timing for all capital improvement projects presented in Tables 10, 11, 12, and 13. Table 10 identifies the City's projects over the planning period, and the time periods in which they will be needed. For the purpose of addressing criteria (1) through (3), these projects are all considered long term projects. Projects from this list will be prioritized and incorporated in the City's 2022-2026 Capital Improvement Program (CIP) after the adoption of the iWSMP and the 2021 Water PFP. Once this occurs, those projects added to the CIP will be considered short term projects. The projects listed in Tables 12 and 13 for the Avion Water Company and Roats Water System, respectively, identify projects as being either near-term (short-term) or long-term projects.

660-011-0030 - Location of Public Facility Projects

(1) The public facility plan shall identify the general location of the public facility project in specificity appropriate for the facility. Locations of projects anticipated to be carried out in the short term can be specified more precisely than the locations of projects anticipated for development in the long term.

FINDING: The 2021 Water PFP meets this criterion because it includes sufficient information to identify the general location of projects for all three water utilities. For the City's water utility projects, the Water PFP includes projection description information in Table 10, and identifies projects by category on Figure 4. For both the Avion Water Company and Roats Water System, the Water PFP includes project information in Tables 12 and 13.

(2) Anticipated locations for public facilities may require modifications based on subsequent environmental impact studies, design studies, facility master plans, capital improvement programs, or land availability. The public facility plan should anticipate those changes as specified in OAR 660-011-0045.

FINDING: The 2021 Water PFP relies on water planning documents, including, but not limited to, the 2021 Integrated Water System Master Plan, that acknowledges that additional design work and studies will be required before either the City or one of the private utilities develops a final design and location for specific facilities.

660-011-0035 - Determination of Rough Cost Estimates for Public Facility Projects and Local Review of Funding Mechanisms for Public Facility Systems

(1) The public facility plan shall include rough cost estimates for those sewer, water, and transportation public facility projects identified in the facility plan. The intent of these rough cost estimates is to:

(a) Provide an estimate of the fiscal requirements to support the land use designations in the acknowledged comprehensive plan; and
(b) For use by the facility provider in reviewing the provider's existing funding mechanisms (e.g., general funds, general obligation and revenue bonds, local improvement district, system development charges, etc.) and possible alternative funding mechanisms. In addition to including rough cost estimates for each project, the facility plan shall include a discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system. These funding mechanisms may also be described in terms of general guidelines or local policies.

FINDING: The proposal meets this criterion because the 2021 Water PFP includes rough cost estimates for the water projects identified in the plan. For the City's water utility projects presented in Tables 10 and 11, the Water PFP relies on Class V costs estimates as rough cost estimates for the projects in the CIP. For the Avion Water Company's projects presented in Table 12, the project cost estimates are presented in either 2006 or 2020 dollars. Table 13 describes the one long-term project identified by Roats Water System, for which a cost estimate will be prepared at the time of installation. This project shown in Table 13 is expected to be completed in the near/short-term. 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.

(2) Anticipated financing provisions are not considered land use decisions as specified in ORS 197.712(2)(e) and, therefore, cannot be the basis of appeal under ORS 197.610(1) and (2) or 197.835(4).

FINDING: This rule is not an approval criterion for the proposal.

660-011-0040 - Date of Submittal of Public Facility Plans

The public facility plan shall be completed, adopted, and submitted by the time of the responsible jurisdiction's periodic review. The public facility plan shall be reviewed under OAR Chapter 660, Division 25, "Periodic Review" with the jurisdiction's comprehensive plan and land use regulations. Portions of public facility plans adopted as part of comprehensive plans prior to the responsible jurisdiction's periodic review will be reviewed pursuant to OAR Chapter 660, Division 18, "Post Acknowledgment Procedures".

FINDING: The proposed 2021 Water PFP will be reviewed and adopted as a post-acknowledgement plan amendment. This amendment will include adoption of the 2021 Water PFP, and related amendments to Chapter 8 of the Bend Comprehensive Plan, Public Facilities and Services, to recognize and incorporate the plan as the PFP for water public facilities and infrastructure in the Bend UGB.

660-011-0045 - Adoption and Amendment Procedures for Public Facility Plans

(1) The governing body of the city or county responsible for development of the public facility plan shall adopt the plan as a supporting document to the jurisdiction's comprehensive plan and shall also adopt as part of the comprehensive plan:

(a) The list of public facility project titles, excluding (if the jurisdiction so chooses) the descriptions or specifications of those projects;

(b) A map or written description of the public facility projects' locations or service areas as specified in sections (2) and (3) of this rule; and

(c) The policy(ies) or urban growth management agreement designating the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated.

FINDING: This finding addresses (1)(a) through (1)(c) above. The proposal before the City Council is to adopt the 2021 Water PFP as a supporting document to the Bend Comprehensive Plan. This proposal also includes adoption of related amendments to Chapter 8 of the Bend Comprehensive Plan, Public Facilities and Services, to include the 2021 Water PFP. The Water PFP includes the lists of projects identified for each water utility in Tables 10, 11, 12, and 14. With respect to the City's water utility, the Water PFP includes Figure 4 which identifies the City's water service area and the City's water CIP projects by category. Finally, the Water PFP refers to existing policy statements in Chapter 8 of the Bend Comprehensive Plan that identify the City, Avion Water Company, and Roats Water System as the water providers for the Bend UGB. These criteria have been satisfied.

(2) Certain public facility project descriptions, location or service area designations will necessarily change as a result of subsequent design studies, capital improvement programs, environmental impact studies, and changes in potential sources of funding. It is not the intent of this division to:

(a) Either prohibit projects not included in the public facility plans for which unanticipated funding has been obtained;
(b) Preclude project specification and location decisions made according to the National Environmental Policy Act; or
(c) Subject administrative and technical changes to the facility plan to ORS 197.610(1) and (2) or 197.835(4).

FINDING: This rule is not an approval criterion. The City understands that certain elements of projects listed in the 2021 Water PFP plans may change, and that such changes are not subject to ORS 197.610(1) or (2) or 197.835(4).

(3) The public facility plan may allow for the following modifications to projects without amendment to the public facility plan:

(a) Administrative changes are those modifications to a public facility project which are minor in nature and do not significantly impact the project's general description, location, sizing, capacity, or other general characteristic of the project;
(b) Technical and environmental changes are those modifications to a public facility project which are made pursuant to "final engineering" on a project or those that result from the findings of an Environmental Assessment or Environmental Impact Statement conducted under regulations implementing the procedural provisions of the National Environmental Policy Act of 1969 (40 CFR Parts 1500-1508)or any federal or State of Oregon agency project development regulations consistent with that Act and its regulations.
(c) Public facility project changes made pursuant to subsection (3)(b) of this rule are subject to the administrative procedures and review and appeal provisions of the regulations controlling the study (40 CFR Parts 1500-1508 or similar regulations) and are not subject to the administrative procedures or review or appeal provisions of ORS Chapter 197, or OAR Chapter 660 Division 18.

FINDING: This rule is not an approval criterion. The City understands that certain elements of projects listed in the 2021 Water PFP may change. This rule defines what changes are not subject to ORS Chapter 197 or OAR Chapter 660 Division 18.

4) Land use amendments are those modifications or amendments to the list, location or provider of, public facility projects, which significantly impact a

public facility project identified in the comprehensive plan and which do not qualify under subsection (3)(a) or (b) of this rule. Amendments made pursuant to this subsection are subject to the administrative procedures and review and appeal provisions accorded "land use decisions" in ORS Chapter 197 and those set forth in OAR Chapter 660 Division 18.

FINDING: This rule is not an approval criterion. The City acknowledges that the City Council's adoption of this 2021 Water PFP and related amendments to the text of Chapter 8 is subject to the review and appeal procedures accorded "land use decisions" in ORS Chapter 197 and those set forth in OAR Chapter 660 Division 18. As indicated above, the City will submit this proposal to the Department of Land Conservation and Development as a post-acknowledgement plan amendment under OAR 660-018.

CONFORMANCE WITH OAR 660-011:

FINDING: The 2021 Water PFP complies with all regulations in OAR Chapter 660-011.

VII. Findings on OAR 660-0015, Compliance with Statewide Planning Goals

Goal 1: Citizen Involvement.

To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

FINDING: The proposed PFP will meet Goal 1 because the City has used its citizen involvement program to insure citizens have an opportunity to review and comment on the PFP and the proposed changes to Chapter 8 of the Comprehensive Plan[2]. For the 2021 Water PFP, and the related amendments to the text of Chapter 8, the City will hold at least two public hearings on this proposal, consistent with the City's acknowledged procedures for legislative amendments in Section 4.6.200 of the Development Code. Those hearings provide an opportunity for citizens to be involved in the adoption of the 2021 Water PFP. In addition, City staff described the public engagement efforts used for the entire Integrated Water System Master Plan during the October 11th work session before the Bend Planning Commission.

Goal 2: Land Use Planning

To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

[2] See Citizen Involvement Program: https://www.bendoregon.gov/home/showdocument?id=33917.

FINDING: The 2021 Water PFP meets this goal because it has been developed with and supported by an adequate factual base. This set of findings includes a Section V in which the City has outlined the evidence upon which the City relied to develop the 2021 Water PFP. These documents provide a factual base to show the PFP includes all necessary elements required under Division 11, specifically OAR 660-011-0010.

The 2021 Water PFP also meets this goal because the City has coordinated review of the PFP with affected governmental units. This report includes forgoing findings that address OAR 660-011-0015(2), regarding coordination with other public agencies and affected governments in plan preparation. The City contacted agency staff through electronic mail and requested comments from: 1) Bend LaPine School District; 2) Bend Parks and Recreation District; 3) Deschutes County, and; 4) the Arnold, Central Oregon, Swalley, and Tumalo Irrigation Districts. The forgoing finding addressing OAR 660-011-0015(2) documents how the City attempted to engage and meet with key staff of other affected governments to get their feedback on the development of the Integrated Water System Plan, including the Water PFP.

Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

To protect natural resources and conserve scenic and historic areas and open spaces.

FINDING: The 2021 Water PFP does not include any projects that could potentially affect Goal 5 resources already protected under the Bend Comprehensive Plan. The purpose of the 2021 Water PFP is to support the land uses allowed under the Bend Comprehensive Plan. Any development of land uses allowed under the Comprehensive Plan adjacent to identified Goal 5 resources will develop according to any adopted protection measures. The projects and improvements proposed in the 2021 Water PFP neither require nor propose any changes to any of the City's acknowledged protection measures.

Goal 6: Air, Water, and Land Resources Quality

To maintain and improve the quality of the air, water and land resources of the state.

FINDING: The 2021 Water PFP meets this goal because it includes capital water projects that will maintain the quality of water resources. Each water utility has identified water projects intended to efficiently deliver water to the customers of their respective utilities. Ensuring efficient distribution of groundwater, and according to existing water rights, will help maintain the quality of the water resources of the state.

Goal 7: Areas Subject to Natural Hazards

To protect people and property from natural hazards.

FINDING: This goal is not applicable because the 2021 Water PFP does not propose new capital projects in areas with identified Goal 7 natural hazards.

Goal 8: Recreational Needs

FINDING: The 2021 Water PFP meets this goal because it includes projects intended to improve water service in the three utilities that serve the Bend UGB. These projects, once constructed, will ensure that water service is provided to existing and proposed parks within the Bend UGB.

Goal 9: Economic Development

To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

FINDING: The 2021 Water PFP will meet this goal because the proposed improvements outlined in the PFP will maintain or improve existing water service to areas designated for employment. These projects include reservoir, booster pump station, and pipe improvement projects.

Goal 10: Housing

To provide for the housing needs of citizens of the state.

FINDING: The 2021 Water PFP meets this goal because it includes projects needed to serve residential areas that have been planned and zoned for needed housing. These areas within the UGB include those identified as Opportunity Areas and Expansion Areas in Chapter 11 of the Comprehensive Plan.

Goal 11: Public Facilities and Services

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

FINDING: The 2021 Water PFP proposes a plan to develop a timely, orderly, and efficient arrangement of water facilities and services to serve the land uses allowed under the Bend Comprehensive Plan. As demonstrated above, in Sections VI, the PFP satisfies the Goal 11administrative rule at OAR 660-011.

Goal 12: Transportation

To provide and encourage a safe, convenient and economic transportation system.

FINDING: This goal is not applicable because the 2021 Water PFP does not propose any changes to the City's transportation system that would trigger review under Goal 12 or its administrative rule under OAR 660-012.

Goal 13: Energy Conservation

To conserve energy.

FINDING: This goal is not applicable because the 2021 Water PFP does not propose any changes to the land uses allowed under the Bend Comprehensive Plan that would require more energy to be used.

Goal 14: Urbanization

To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

FINDING: The 2021 Water PFP meets this goal because it proposes improvements to the water systems and facilities that support the land uses in the Bend UGB. The 2021 Water PFP will support the orderly and efficient development of urban and urbanizable lands in the Bend UGB for future housing and employment. The PFP supports this orderly and efficient transition through short-term and long-terms projects that will either improve or extend water service to the areas of the Bend UGB, and those land uses contemplated under the Bend Comprehensive Plan.

Goals 15 through 19

FINDING: These goals are not applicable because the City is not located within the Willamette River Greenway, and is not located within or adjacent to any coastal or estuarine resources.

CONFORMANCE WITH THE STATEWIDE PLANNING GOALS:

FINDING: The 2021 Water PFP satisfies all applicable statewide planning goals.

VIII. Findings Demonstrating Compliance with Bend Comprehensive Plan

Future Plan Updates

The Comprehensive Plan is a document that changes over time to reflect new information and new directions for the future. Amendments or additions to the Comprehensive Plan text, exhibits, and policies go through a public hearing and review process before being adopted by the governing bodies. Changes and updates can be generated in at least six ways:

- *Regularly scheduled reviews and updates by the city and county. Every five years, beginning in the year 2000, the city and county will review the population growth, the housing mix and acreage needs, the industrial lands absorption, and the commercial lands absorption against the long-term forecasts in the Comprehensive Plan. Other issues may also be evaluated during these regular views.*

- *Preparation of more detailed refinement plans for neighborhoods or geographic areas. As provided for in Oregon land use law, the city or county may prepare more detailed land use and development plans for parts of the urban area that have large vacant or under-utilized parcels. Such refinement plans could address future street patterns and other utility systems, housing density and compatible uses, site and design standards, locations for parks, schools, and open space, and other land use issues.*

- *Evaluation of land use topics required to be reviewed under the Oregon Land Conservation and Development Commissions periodic review of the Comprehensive Plan. The state requires all local plans to be updated periodically to comply with applicable new state laws, administrative rules, or to incorporate new data available to the state.*

- *Other state laws or legislative actions that require changes to the Plan outside of the normal periodic review cycle. The state legislature or the voter referendum/initiative process can require changes to local land use plans within a specific time period.*

- *City or county response to new issues or changes. Issues that were unforeseen during the development of the plan can arise that have an impact on a particular neighborhood or the whole urban area. The city and county officials can direct staff to amend the Plan to address these issues.*

- *Changes proposed by individuals or other agencies. A proposal by an individual, corporation, or public agency to change to the Plan text, land use map, other exhibits, or policies shall be considered as determined by the procedures ordinance. A person or agency proposing a change has the burden to demonstrate a public need and benefit for the change.*

FINDING: The City proposes two amendments to the Bend Comprehensive Plan. One, is adoption of a 2021 Water Public Facility Plan for the water systems and facilities that serve the land uses in the Bend UGB. The second are a set of related amendments to the text of Chapter 8, Public Facilities and Services, to reflect those changes proposed by the 2021 Water PFP, and make some limited corrections.

The 2021 Water PFP and related amendments to Chapter 8 both address a public need and provide public benefits. Section V of this report refers to documentation that provides the factual base in the support of the 2021 Water PFP. The PFP identifies projects needed to improve water systems and facilities for the land uses in the Bend UGB. These materials identified in Section V have identified the public need for these improvements; the 2021 Water PFP satisfies this need and provides public benefits in the form of the projects themselves. In addition, the 2021 Water PFP satisfies the public need of serving the land uses contemplated and planned for under the Bend Comprehensive Plan. The public need for amending Chapter 8 of the Comprehensive Plan is to ensure the adoption of the PFP as an appendix to the Comprehensive Plan is consistent with previously adopted policies, including those for water systems and facilities in the Bend UGB. The benefit in amending Chapter 8 includes updating the text to reflect the changes to the water infrastructure systems planned beyond those reflected in the 2013 PFP and ensure that this chapter reflects those changes and projects needed to provide water service for the uses under the Comprehensive Plan.

The following plan policies were identified as being applicable to the review of the 2021 Water PFP and the conforming amendments to Chapter 8. These findings show the PFP and amendments to Chapter 8 are consistent with the applicable plan policies.

Chapter 1 – Plan Management and Citizen Involvement

Urban Planning Coordination

1-5. No new water or sewer service districts shall be created within the UGB without the concurrence of the city.

FINDING: The 2021 Water PFP does not propose to create new domestic water supply districts within the UGB. The PFP includes capital improvements for each water utility that serves land uses within the UGB. Both the 2021 Water PFP and the amendments to Chapter 8 continue to recognize the City, Avion Water Company, and Roats Water System as the water service providers in the Bend UGB.

Development within the Urban Growth Boundary

1-6 ***New developments shall pay to extend planned sewer, water, and transportation facilities to and through the property if the development occurs prior to the scheduled construction of those facilities shown in the capital improvement plan.***

FINDING: The 2021 Water PFP meets this criterion because it includes both large capital projects and local area improvements to improve water service to the land uses within the Bend UGB. Development within the City's water utility area in the UGB will be required to extend water facilities to and through property as required by this policy.

Chapter 5 – Housing

Neighborhood Appearance

5-32 Above-ground installations, such as water and sewer pumping stations, power transformer substations or natural gas pumping stations, shall be screened and designed to blend with the character of the area in which they are located.

FINDING: This policy is applicable because the 2021 Water PFP includes a number of improvement projects for reservoirs and booster pump stations. Development of these projects will be consistent with this policy because these improvements will be screened and designed to blend with the character of the area in which they are located. This requirement is consistent with language in the City's Standards and Specifications (see Part II, 4.4.9).

Public Utilities and Services

5-48. All residential areas shall be provided with community water and sewer services and other facilities necessary for safe, healthful, convenient urban living consistent with the density of development.

FINDING: The 2021 Water PFP is consistent with this policy because it includes planned improvements to the water systems and facilities that serve the land uses within the Bend UGB. Completion of these improvements will ensure the continued provision of water service throughout the City to ensure safe, healthful, and convenient urban living consistent with the density of development.

Chapter 6 – Economy

6-3. Investment in transportation, water, sewer, fiber, and other utility

infrastructure should be prioritized to serve economic lands

FINDING: The 2021 Water PFP is consistent with this policy because it includes projects that will serve economic lands in the UGB. The PFP includes water reservoir, booster pump station, and pipe improvement to the employment lands within the UGB.

6-4 Infrastructure will be planned, designed, and constructed to support continued economic growth and orderly development.

FINDING: The 2021 Water PFP is consistent with this plan policy because it includes water infrastructure projects that have been planned and will be designed and constructed to support continued economic growth and orderly development. As indicated in forgoing findings, the Water PFP includes a number of storage (reservoir), booster pump station and pipe improvement projects. The Water PFP shows that these projects are planned to support continued economic growth by ensuring a consistent supply of safe drinking water and water for fire suppression. In addition, this report includes forgoing findings addressing Statewide Planning Goals 11 and 14 that demonstrate how the improvements to the water systems within the Bend UGB will contribute to and support orderly development.

Chapter 8 – Public Facilities and Services

Water Facilities and Systems

Water Facilities and Systems

8-15 The City of Bend is the provider of water service for the City's service area under Statewide Planning Goal 11.

FINDING: The Water PFP satisfies this policy because it continues to recognize the City as the water service provider for its utility area. Neither the PFP nor the related text amendments to Chapter 8 of the Comprehensive Plan propose further changes regarding the City's service area.

8-16 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.

FINDING: The Water PFP satisfies this policy because it also continues to recognize the Avion Water Company as the water service provider for its service area, and consistent with the franchise agreement adopted through Ordinance NS 1514. There are no further changes to this policy proposed with the amendments to Chapter 8 of the Comprehensive Plan.

8-17 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.

FINDING: The Water PFP satisfies this policy because it continues to recognize Roats Water System as the water service provider for its service area, and consistent with the franchise agreement adopted through Ordinance NS 1747. There are no further changes to this policy proposed with the amendments to Chapter 8 of the Comprehensive Plan.

8-18 Within the urban planning area, public and private water systems shall be consistent with City Standards and Specifications for construction and service capabilities.

FINDING: This policy is not applicable to the Water PFP and proposed amendments to Chapter 8 because none of these documents propose changes to the City's Standards and Specifications.

8-19 The City shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary.

FINDING: This policy is not applicable because neither the Water PFP nor the amendments to Chapter 8 propose any changes to this policy. This report does recognize through forgoing findings that the City coordinated with the private providers of water service to get what data was available on existing infrastructure, its condition, and planned capital projects. In addition, this report also includes findings that document the City's efforts to coordinate with the irrigation district that have service areas within the Bend UGB to obtain their feedback on the development of the Integrated Water System Master Plan.

8-20 The City shall continue to implement a water conservation program that emphasizes education, enforcement, metering, and other methods to use water efficiently.

FINDING: The Water PFP is consistent with this policy because it includes capital projects (see Tables 10 and 11) that continue to implement water conservation.

8-21 The City may allow water service outside the UGB at rural levels consistent with Goal 11.

FINDING: This policy is not applicable because no new water service is proposed to areas outside of the Bend UGB.

Chapter 11 – Growth Management

General Area Planning Policies

11-39 Area Plans are intended to coordinate development and provide flexibility to tailor land use regulations and/or transportation and infrastructure plans to respond to area- or site-specific conditions.

FINDING: The 2021 Water PFP is consistent with this policy because it includes significant capital projects that will help inform any analysis on future demand for public and private water facilities needed to serve an area plan. Development proposed in area plans will be evaluated by the appropriate water utility to determine the impact on their capacity.

Master Planning Policies

11-49 The purposes of master plans are to:

- ***promote and facilitate coordinated development and efficient use of land;***
- ***provide a process to consider future development on larger sites and to analyze future demand on public facilities; and***
- ***provide an opportunity for innovative and creative development while providing long-term predictability for the applicants, surrounding neighborhoods, and the entire community.***

FINDING: This finding addresses the second bullet under Policy 11-49. The proposed Water PFP includes updated data on existing and future water infrastructure projects that will help inform future considerations of master plans under the Comprehensive Plan and the Bend Development Code.

Annexation Policies

11-66 Existing rural infrastructure systems and urban systems (water, sewer, transportation, stormwater) serving annexed areas may be required to be modernized and constructed to the City's standards and specifications, as determined by the City.

FINDING: The 2021 Water PFP is consistent with this policy because it includes capital improvement projects for both the City and the Avion Water Company, including those for upgrading water infrastructure serving areas that will be annexed. The City's capital improvement projects are listed in Table 10, and summarized in Table 11. The projects identified by Avion Water Company are presented in Table 12. Additionally, existing Comprehensive Plan Policy 8-16 refers to the franchise agreement between Avion Water Company and the City through which Avion has agreed to provide water in the

City limits through new infrastructure construction to the City's Standards and Specifications.

CONFORMANCE WITH THE BEND GENERAL PLAN:

FINDING: The 2021 Water PFP is consistent with all applicable provision of Bend's Comprehensive Plan.

IX. Findings on Compliance with Bend Development Code 4.6.200, Legislative Amendments

4.6.200 – Legislative Amendments

A. Applicability, Procedure and Authority. Legislative amendments generally involve broad public policy decisions that apply to other than an individual property owner. These include, without limitation, amendments to the text of the Comprehensive Plan and map, Development Code and changes in the zoning map not directed at a small number of properties. They are reviewed using the Type IV procedure in accordance with Chapter 4.1, Land Use Review and Procedures and shall conform to BDC 4.6.600, Transportation Planning Rule Compliance. A legislative amendment may be approved or denied.

FINDING: This criterion is applicable because the City proposes a legislative amendment to the text of the Bend Comprehensive Plan and has followed the applicable procedures. This proposed amendment includes adopting the 2021 Water PFP as an appendix to the Comprehensive Plan, and related amendments to the text of Chapter 8, Public Facilities and Services.

B. Criteria for Legislative Amendments. The applicant shall submit a written narrative which explains how the approval criteria will be met. A recommendation or a decision to approve or to deny an application for a legislative amendment shall be based on all of the following criteria:

1. The request is consistent with the applicable State land use law;

FINDING: The findings under Sections VI, VII, and VIII above show the 2021 Water PFP is consistent with Statewide Planning Goal 11, its administrative rule at OAR 660 Division 11, and the applicable statewide planning goals.

2. ***The request is consistent with the applicable Bend Comprehensive Plan goals and policies;***

FINDING: The 2021 Water PFP meets this criterion because the findings in Section IX show the 2021 Water PFP is consistent with the Bend Comprehensive Plan.

3. ***The applicant can demonstrate a public need or benefit for the proposed amendment.***

FINDING: The 2021 Water PFP meets this criterion because the City has demonstrated the PFP fulfills a public need and provides a public benefit. The public need satisfied by the adoption of the 2021 Water PFP is the need to have public and private water infrastructure that can serve the land uses contemplated and allowed under the Bend Comprehensive Plan. These uses include those that will be developed in the Opportunity Areas, and in the UGB Expansion Areas. The current Water PFP was completed in 2013, and does not include projects needed to serve both the entire UGB, and local area improvements needed to serve the UGB Expansion Areas. The public benefit for the change includes the proposed improvements to the water infrastructure systems that will support the development of land uses allowed under the Comprehensive Plan.

CONFORMANCE WITH THE BEND DEVELOPMENT CODE SECTION 4.6.200:

FINDING: The 2021 Water PFP is consistent with Bend Development Code Section 4.6.200.

CONCLUSIONARY FINDINGS: Based on the findings above, the proposed 2021 Water Public Facilities Plan and the related amendments to the text of Chapter 8 of the Comprehensive Plan are consistent with and implements Goal 11, OAR 660-011 Public Facilities and Planning, all applicable statewide planning goals, all applicable policies of Bend's Comprehensive Plan and is consistent with Bend Development Code Section 4.6.200.

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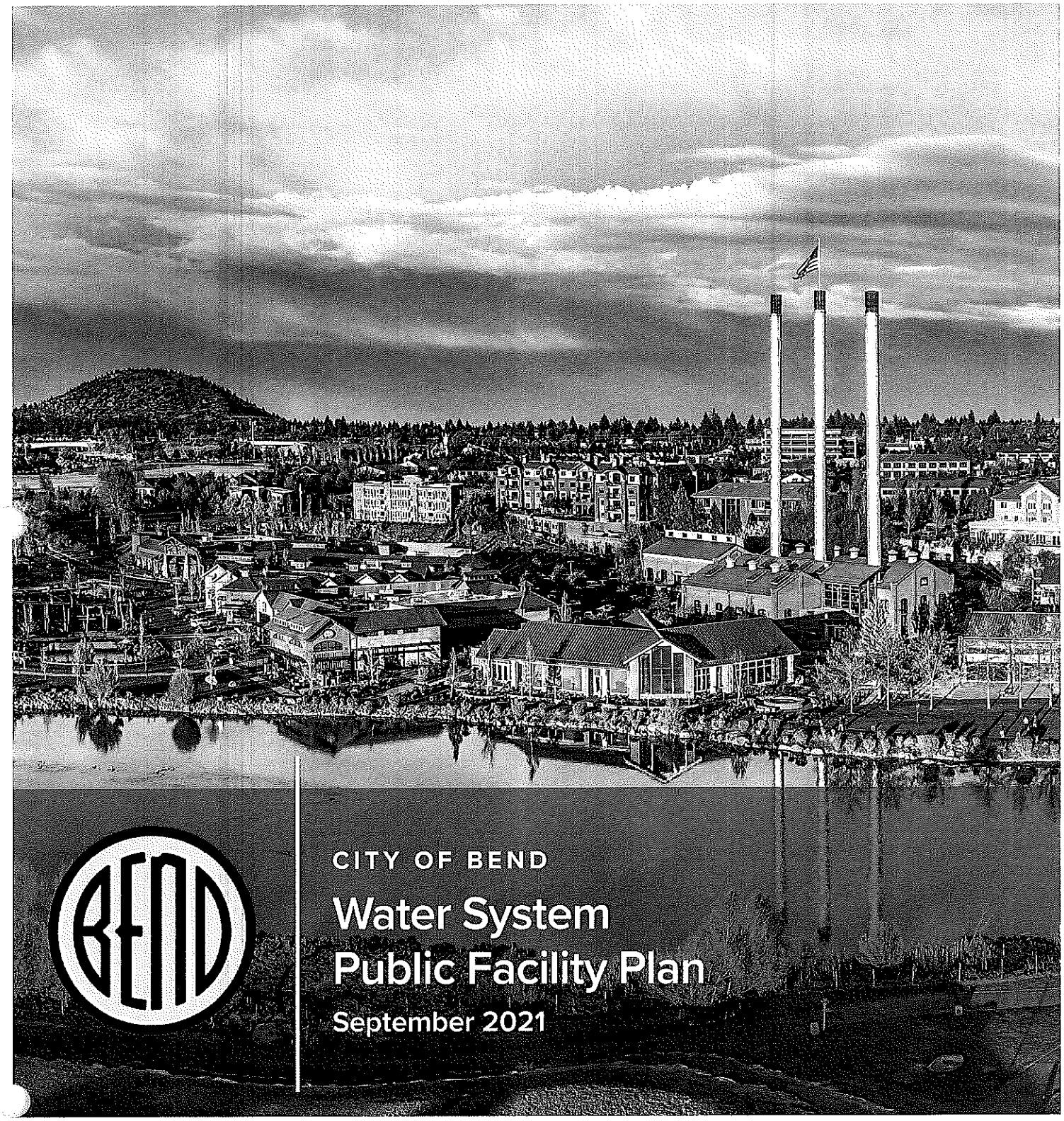

CITY OF BEND

Water System Public Facility Plan

September 2021

Water System Public Facility Plan

City of Bend

September 2021

Renews: 06/30/2023

Murraysmith

345 Bobwhite Court
Suite 230
Boise, ID 83706

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Water System Public Facility Plan

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Water System Public Facility Plan

1. Purpose

This Water System Public Facility Plan (Water PFP) is prepared to comply with Statewide Planning Goal 11, Public Facilities and Services, and its implementing rule at OAR 660-011. The previous Water PFP was completed in 2012 and amended in 2013; this 2021 Water PFP is intended to replace the 2013 Water PFP. The intent of this plan is to comply with Goal 11 and OAR 660-011 for the water public facility systems (as defined under OAR 660-011-0000(7)) for the City of Bend (City), Avion Water Company (Avion), and Roats Water System (Roats), for the planned land uses under the Bend Comprehensive Plan. The Bend City Council adopted the most recent version of the Comprehensive Plan in 2016, along with an urban growth boundary expansion (Ordinance 2271), acknowledged by the Oregon Department of Land Conservation and Development on December 6, 2016. The Comprehensive Plan was amended in 2018 (Ordinance NS-2313, passed September 19, 2018, updated the Plan to improve the sewer system with the adoption of the 2018 Collection System Public Facility Plan, and amendments related to access to parks). The Comprehensive Plan outlines land uses within the Bend urban growth boundary (UGB). These land uses include those within the UGB, both within the City limits and within the unincorporated areas of the UGB that are zoned UA, Urbanizable Area.

The previous Water PFP was adopted by Ordinance No. 2194, in February of 2013 (after remand from the Land Use Board of Appeals), with the City's Water System Master Plan, Water System Master Plan Optimization Study and Water Management and Conservation Plan. Subsequently, the City performed an Urban Growth Boundary Expansion Study (UGB Study, 2016) which helped provide the basis for the 2016 UGB expansion. The expanded UGB includes redevelopment areas within the City limits (also known as Opportunity Areas) and 2,380 acres of expansion lands. This 2021 Water PFP replaces the 2013 Water PFP. This 2021 Water PFP documents capital improvement projects to support growth in the new UGB including expansion areas.

The Water PFP specifically addresses the requirements of Goal 11 and its administrative rule and draws on key elements from the City's Integrated Water System Master Plan (iWSMP) and City, Avion, and Roats Water Management and Conservation Plans (WMCP), and any additional data provided for each respective system. The components required by Goal 11 and each water providers compliance with Goal 11 are outlined in this Water PFP. Additionally, tables are included in this document detailing the pertinent locations for additional information in respect to each component of Goal 11.

The purpose of the plan is to help assure that development within the UGB is guided and supported by the types and levels of urban facilities and services appropriate for the needs and requirements of the urban areas to be served, and that those facilities and services are provided

in a timely, orderly, and efficient arrangement, as required by Goal 11 and its implementing administrative rule at Oregon Administrative Rule (OAR) 660-011.

2. PFP Goal 11 Compliance Components

The Goal 11 administrative rule, OAR 660-011, lists certain elements that must be included in a Goal 11 PFP. These elements are listed at OAR 660-011-0010(1)(a) through (1)(g). The rule further requires that the local government preparing the PFP consider and describe how the PFP will guide and support the land uses designated in the acknowledged comprehensive plan. This Water PFP includes the following Goal 11 compliance components:

a) An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the Bend Comprehensive Plan (2018).

b) A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. Public facility project descriptions or specifications of these projects, as necessary.

c) Rough cost estimates of each public facility project.

d) A map or written description of each public facility project's general location or service area.

e) Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated.

f) An estimate of when each facility project will be needed.

g) A discussion of the City's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.

3. Background

The City's existing Urban Growth Boundary (UGB) is served by three primary water suppliers, the City, Avion Water Company (Avion), and Roats Water System (Roats). Both Avion and Roats are rate and service regulated utilities under the Oregon Public Utility Commission. The City also serves water to the Tetherow destination resort, the Westside Transect area including the Tree Farm rural residential development and Awbrey Meadows, which are located outside the UGB. No special districts provide potable water within the Bend UGB. The current UGB, and service areas of the three utilities are presented in **Figure 1**. The City operates a public drinking water system (Public Water System Identification Number 4100100) that supplies water to its customers from both surface and ground water sources. The City's water system is regulated by

the Oregon Drinking Water Program under the Oregon Department of Human Services and the Oregon Water Resources Department. Both Avion and Roats are rate and service regulated private water utilities that are regulated under the Oregon Public Utility Commission and Oregon Water Resources Department. Data included in this Water PFP is primarily from the sources listed below and additional detail on each system is available in these sources.

- City's 2021 iWSMP and WMCP
- Avion 2006 Water Master Plan, 2011 and 2016 WMCP, project list, geographic information system (GIS) data, and data provided by Avion
- Roats 2019 WMCP and data provided by Roats

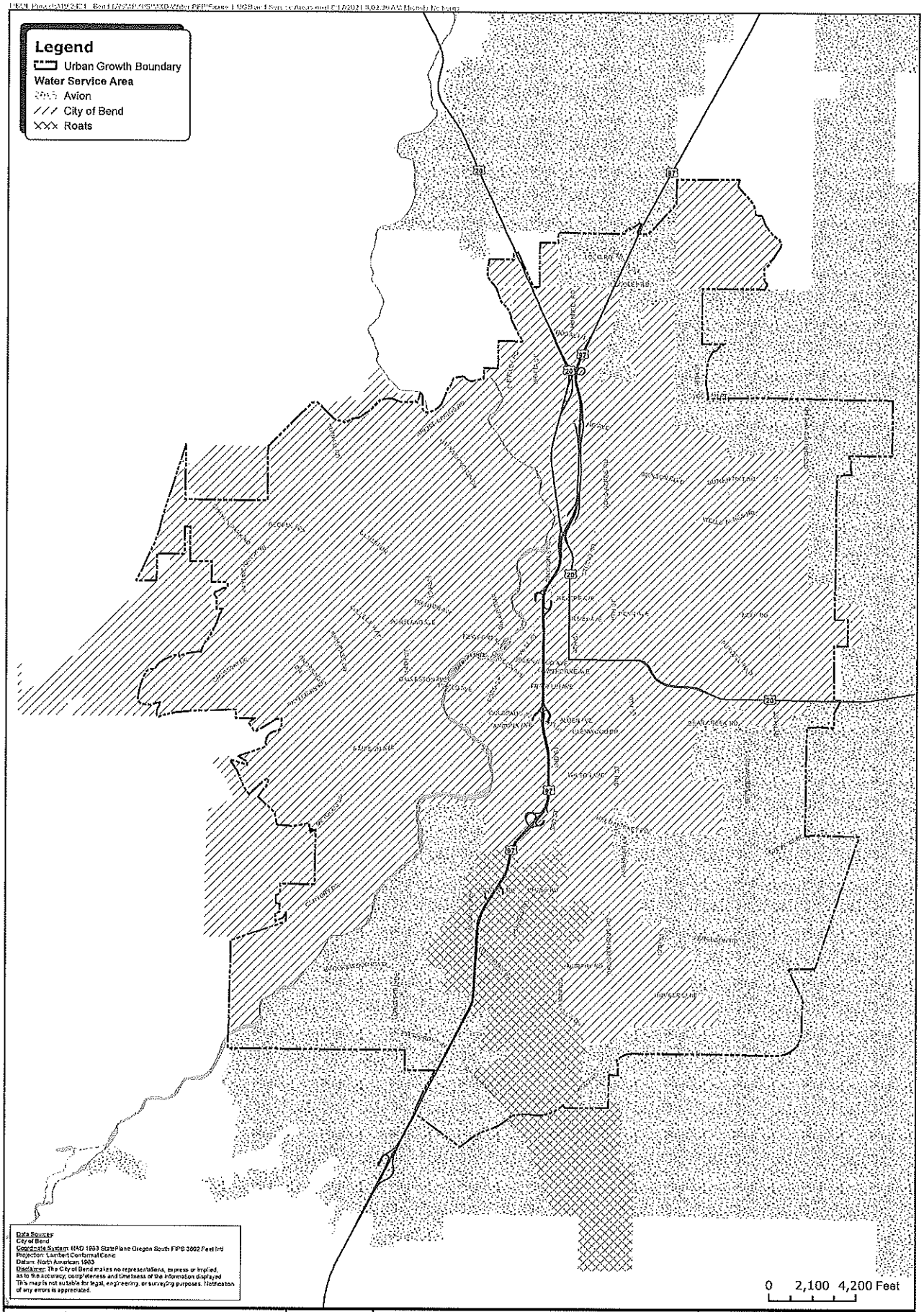
The City relies on the above-mentioned documents as the Goal 2 factual base to support the Water PFP. These documents are incorporated by reference herein and are also considered part of the public record before the City Council.

4. Inventory of the Existing Systems and Condition

This section addresses the following requirements:

- OAR 660-011-0010(1)(a) Systems Inventory and Condition

An inventory of components and general assessment of the condition of all the significant public facility systems is included. This includes supply, pumping, storage, and distribution infrastructure. The current UGB, City and private utility service areas, and existing City and Avion water systems are shown in **Figure 2**.



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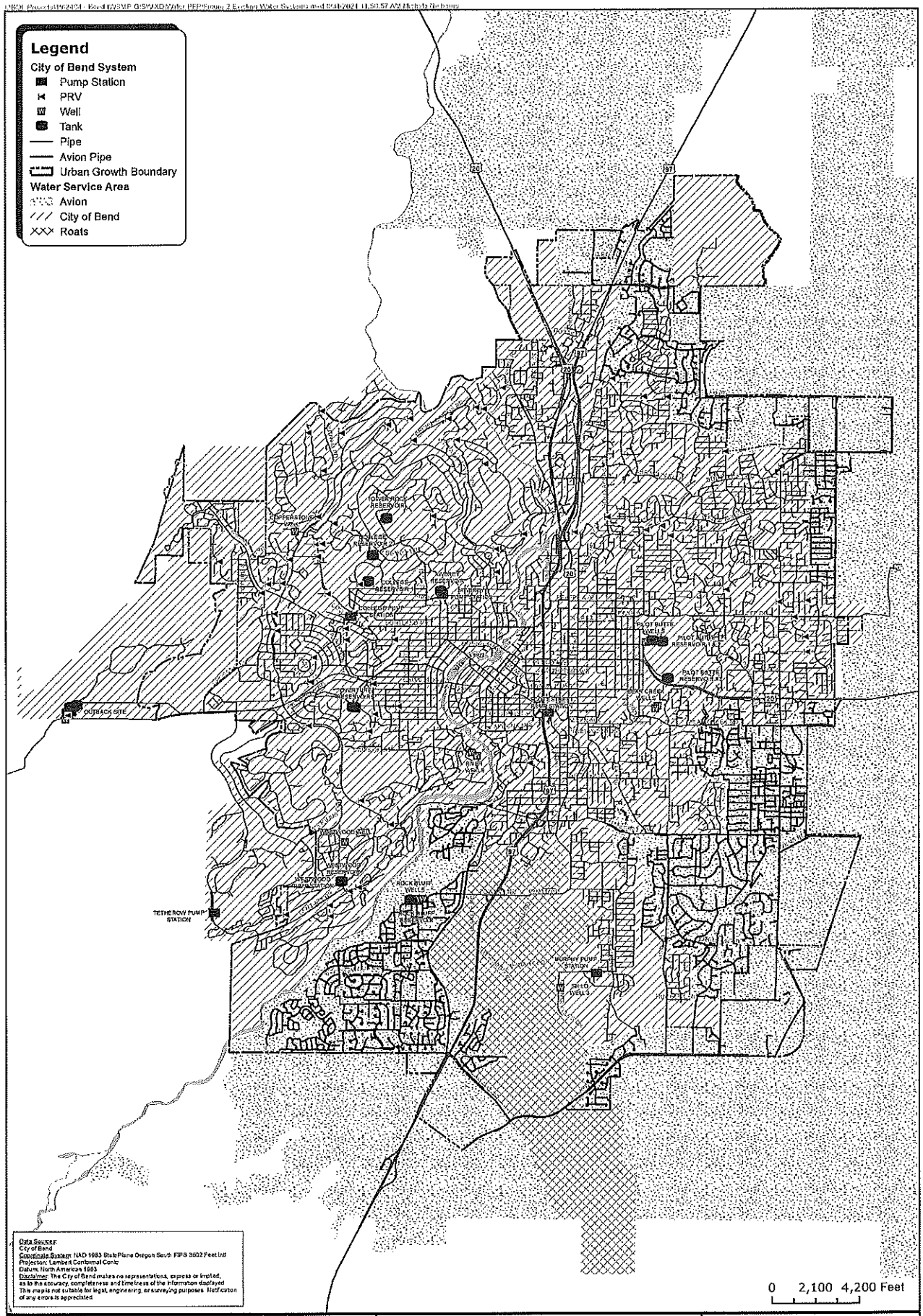
BEND

City of Bend
Water Public Facilities Plan

Figure 1
UGB and
Water Service Areas

September 2021

19-2484



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BEND

City of Bend
Water Public Facilities Plan

Figure 2
City Existing System & Avion Pipe within UGB

September 2021

19-2484

4.1 City of Bend

The City has the largest service area in the UGB covering over 16,000 acres. The City system's water supply, transmission and distribution system is responsible for the delivery of treated water to approximately 25,500 service connections to residential, commercial, and industrial customers.

In addition to the territory within the UGB, and for which the City has planned for urban uses, the City provides potable water to the following developments outside of the City limits and the City's UGB:

- Tetherow, a Goal 8 destination resort that abuts Bend on the south and west
- The Westside Transect, including the Tree Farm rural residential development, an area for which Deschutes County adopted an exception to Goal 14
- Awbrey Meadows, an area on the northern side of Awbrey Butte that was located outside of the UGB before it was established

The purpose for documenting these other water commitments is to demonstrate that between the uses planned for within the UGB and these commitments to provide water to these limited number of developments outside of the UGB, the City will still have adequate water supply to serve those land uses planned for within the UGB. Goal 11 prohibits the extension of sewer lines from within a UGB to serve land uses outside a UGB. However, it does not prohibit the extension of water lines from areas within a UGB to serve land uses outside the UGB, provided those same land uses are allowed under the County's Comprehensive Plan and Zoning Code.

4.1.1 City System Inventory

The City has the capability to supply treated water to customers by utilizing groundwater and surface water. The groundwater is supplied by the Deschutes Regional Aquifer and is primarily used to supply peak demands. The City's existing surface water system begins in the Bend Municipal Watershed (BMW) established by agreement with the United States Forest Service (USFS) in 1926. It includes the Prowell Springs Diversion and a surface water intake facility. Surface water is the primary source year-round. Both sources are known to have excellent water quality. The City's existing water system consists of a surface water intake facility, a water filtration facility, 8 groundwater facilities consisting of 20 active wells, 15 finished water storage reservoirs, 6 active booster pump stations, approximately 440 miles of transmission and distribution mains, nearly 10 miles of 30-inch and 36-inch ductile iron raw water pipeline, and associated appurtenances including various valves, hydrants, and meters. The system includes six primary pressure zones with an additional twenty-three subzones.

The City holds numerous surface water and groundwater rights. The City holds 36.1 cubic feet per second (cfs), equivalent to 23.3 million gallons per day (mgd) of surface water rights. There

are seasonal use, priority date, and ordinance and permit limitations on some of these water rights. The City also has 68.2 cfs (44.1 mgd) in groundwater rights.

The WFF was constructed in 2015 and has 4 primary membrane filters each with approximately 2,200 gallons per minute (gpm) capacity for a total capacity of 13,200 gpm and one backwash recovery rack with approximately 1,200 gpm capacity. **Table 1** through **Table 4** provide summaries of existing groundwater facilities, storage reservoirs, booster pump stations, and distribution pipe. The piping summarized includes the distribution network piping that conveys treated water. The 9.5 miles of 30-inch and 36-inch raw water pipe is not included in the distribution pipe table below.

Table 1 | City System Existing Groundwater Facilities

Well	Status	Zone Directly Served	Capacity[1] (gpm)
Bear Creek Well 1	Active	4B	1,050
Bear Creek Well 2	Active	4B	1,100
Copperstone Well	Active	3	950
Outback Well 1	Active	3	800
Outback Well 2	Active	3	950
Outback Well 3	Active	3	1,050
Outback Well 4	Active	3	1,150
Outback Well 5	Active	3	1,050
Outback Well 6	Active	3	1,100
Outback Well 7	Active	3	1,300
Pilot Butte Well 1	Active	5	750
Pilot Butte Well 2	Inactive	5	-
Pilot Butte Well 3	Active	5	900
Pilot Butte Well 4	Active	5	1,150
River Well 1	Active	5	1,800
River Well 2	Active	5	1,900
Rock Bluff Well 1	Active	4B	750
Rock Bluff Well 2	Active	4B	800
Rock Bluff Well 3	Active	4B	800
Shilo Well 1	Inactive	3	-
Shilo Well 2	Inactive	3	-
Shilo Well 3	Active	4B	1,200
Westwood Well	Active	4A	700
		Total	**21,250**

Note:
1. Flow rates were determined from available data sources including typical flow rates in SCADA data, GIS recorded data, model results, and pump curves to the nearest 50 gallons.

Table 2 | City System Existing Storage Reservoirs

Reservoir	Reservoir Type	Pressure Zone Directly Served	Capacity (MG)	Overflow Height (feet)	Floor Elevation (feet)	Diameter (feet)
Awbrey	Concrete	5	5.00	20.5	3,775	206.3
College 1	Welded Steel	2	0.50	23.3	4,096	60.8
College 2	Welded Steel	2	1.00	31.5	4,088	74.1
Outback CT Basin	Bolted Steel	3 (through Outback 2)	1.50	31.0	3,980	91.5
Outback 1	Bolted Steel	3 (through Outback 2)	2.00	35.1	3,976	98.6
Outback 2	Welded Steel	3	3.00	35.4	3,976	120.8
Outback 3	Welded Steel	3	3.63	29.4	3,982	146
Overturf East	Riveted Steel	4A	1.45	28.0	3,843	94
Overturf West	Riveted Steel	4A	1.45	28.0	3,843	94
Pilot Butte 1	Welded Steel	5	1.50	31.5	3,750	89.3
Pilot Butte 2	Welded Steel	4B	1.00	39.5	3,840	65.2
Pilot Butte 3	Concrete	5	5.00	24.3	3,757	188
Rock Bluff 1	Welded Steel	4B	1.54	39.0	3,840	82
Tower Rock	Welded Steel	1	1.00	31.0	4,213	74
Westwood	Welded Steel	4	0.50	31.5	3,845	53.3
		Total	30.07			

Table 3 | City System Existing Booster Pump Stations

Station	Pump	VFD	Motor Horsepower (hp)	Zone From-To	Flow Rate[1] (gpm)	Elevation (feet)
Awbrey	Pump 1	No	200	5 to 1	1,200	3,778
	Pump 2	No	350	5 to 1	1,200	3,778
	Pump 3	No	350	5 to 1	1,200	3,778
College	Pump 1	No	50	3 to 2	1,100	3,723
	Pump 2	No	50	3 to 2	1,100	3,723
Murphy Road	Pump 1	Yes	25	4B to 3D	300	3,746
	Pump 2	Yes	25	4B to 3D	300	3,746
	Pump 3	Yes	25	4B to 3D	300	3,746
	Pump 4	Yes	25	4B to 3D	300	3,746
	Pump 5	Yes	25	4B to 3D	300	3,746
Scott Street	Pump 1	No	50	5 to 4B	1,000	3,649
	Pump 2	No	50	5 to 4B	1,000	3,649
	Pump 3	No	50	5 to 4B	1,000	3,649
Tetherow	Jockey	Yes	7.5	3 to 2A	120	3,877
	Pump 1	Yes	15	3 to 2A	300	3,877
	Pump 2	Yes	60	3 to 2A	700	3,877
	Pump 3	Yes	60	3 to 2A	700	3,877
	Pump 4	Yes	60	3 to 2A	700	3,877
	Pump 5	Yes	60	3 to 2A	700	3,877
	Pump 6	Yes	60	3 to 2A	700	3,877
Westwood	Pump 1	No	20	4A to 3C	275	3,836
	Pump 2	No	40	4A to 3C	550	3,836
	Pump 3	No	75	4A to 3C	900	3,836
	Pump 4	No	40	4A to 3C	550	3,836

Note:

1. Flow rates were determined from available data sources including typical flow rates in SCADA data, GIS recorded data, model results, and pump curves.

Table 4|City System Existing Distribution Pipe (miles)

Installation Timeframe	Material	6 Inch and Less	8 Inch	10 to 14 Inch	16 to 18 Inch	24 to 36 Inch	Total (miles)
Before 1950	CI	2.64	0.90	1.54	0.88	0.00	5.97
	DI	0.66	0.14	0.26	0.26	0.00	1.32
	Other	0.30	0.00	0.35	0.12	0.00	0.77
1950-1959	CI	1.64	0.86	0.14	0.42	0.00	3.06
	DI	0.15	0.17	0.39	1.43	0.00	2.14
	Other	0.39	0.00	0.82	0.82	0.31	2.33
1960-1969	CI	3.46	1.26	1.79	0.00	0.00	6.51
	DI	0.73	0.15	1.09	0.01	0.00	1.97
	Other	0.00	0.00	0.00	0.00	0.00	0.00
1970-1979	CI	5.97	4.40	2.00	0.00	0.00	12.37
	DI	6.63	6.84	5.87	0.00	0.00	19.33
	Other	0.25	0.00	0.00	0.00	0.00	0.25
1980-1989	CI	0.05	0.30	0.00	0.00	0.00	0.35
	DI	2.07	10.47	9.50	1.57	0.00	23.61
	Other	0.21	0.68	0.27	0.11	0.00	1.27
1990-1999	CI	0.12	0.31	0.00	0.00	0.00	0.43
	DI	3.69	58.96	41.46	9.17	2.01	115.29
	Other	0.00	0.21	0.00	0.00	0.00	0.21
2000-2009	CI	0.00	0.13	0.00	0.00	0.00	0.13
	DI	1.18	78.93	18.09	13.07	4.80	116.08
	Other	0.01	0.06	0.00	0.00	0.00	0.07
2010-2019	DI	0.32	22.96	6.88	1.94	1.69	33.79
	Other	0.40	0.00	0.00	0.00	0.14	0.54
Unknown	CI	16.26	9.35	4.45	0.67	0.00	30.73
	DI	13.47	11.42	22.80	7.76	0.65	56.10
	Other	3.21	0.27	0.87	0.23	0.13	4.71
	Total	63.81	208.77	118.57	38.47	9.73[1]	439.35

Note:
1. There is an additional 9.5 miles of 30-inch and 36-inch ductile iron raw water pipeline constructed in 2014 not included in this table.

4.1.2 City System Condition

As part of the 2021 iWSMP the project consultant completed an analysis of the existing system infrastructure to evaluate the facility and pipe condition. Assessment of the well, tank, and booster pump station facilities included a review of background data, City staff input, and an onsite examination. The analysis of the pipe was based on available GIS data including diameter, material, valve frequency, and break and leak history.

Based on the assessment, each facility was ranked, and improvements were identified that are required to maintain current facilities and extend their useful life. Facilities have a mix of elements, each containing a range of conditions from excellent to very poor, however, to assess the overall condition of a facility, a Facility Condition Index was applied with possible overall ratings of Excellent, Good, Fair, Poor, and Very Poor. The index is based on the ratio of overall deferred or backlog maintenance to the estimated cost of replacing the facility.

The City's pipe GIS data (2018) was used to assign each pipe in the system a condition replacement rating based on material, diameter, valve frequency, and break history. A higher rating indicates worse pipe condition. Certain types of materials, such as steel, cast iron, or galvanized iron are older and more prone to leaks and no longer meet the City's material standards. These materials were more heavily weighted, contributing to a higher rating. Ductile Iron pipe was given a 0 rating since it is the City's current standard for pipe material. Additionally, small diameter pipe that no longer meet City standards received higher ratings.

Figure 3 shows the Facility Condition Index rating for each facility and the pipe condition replacement ratings.

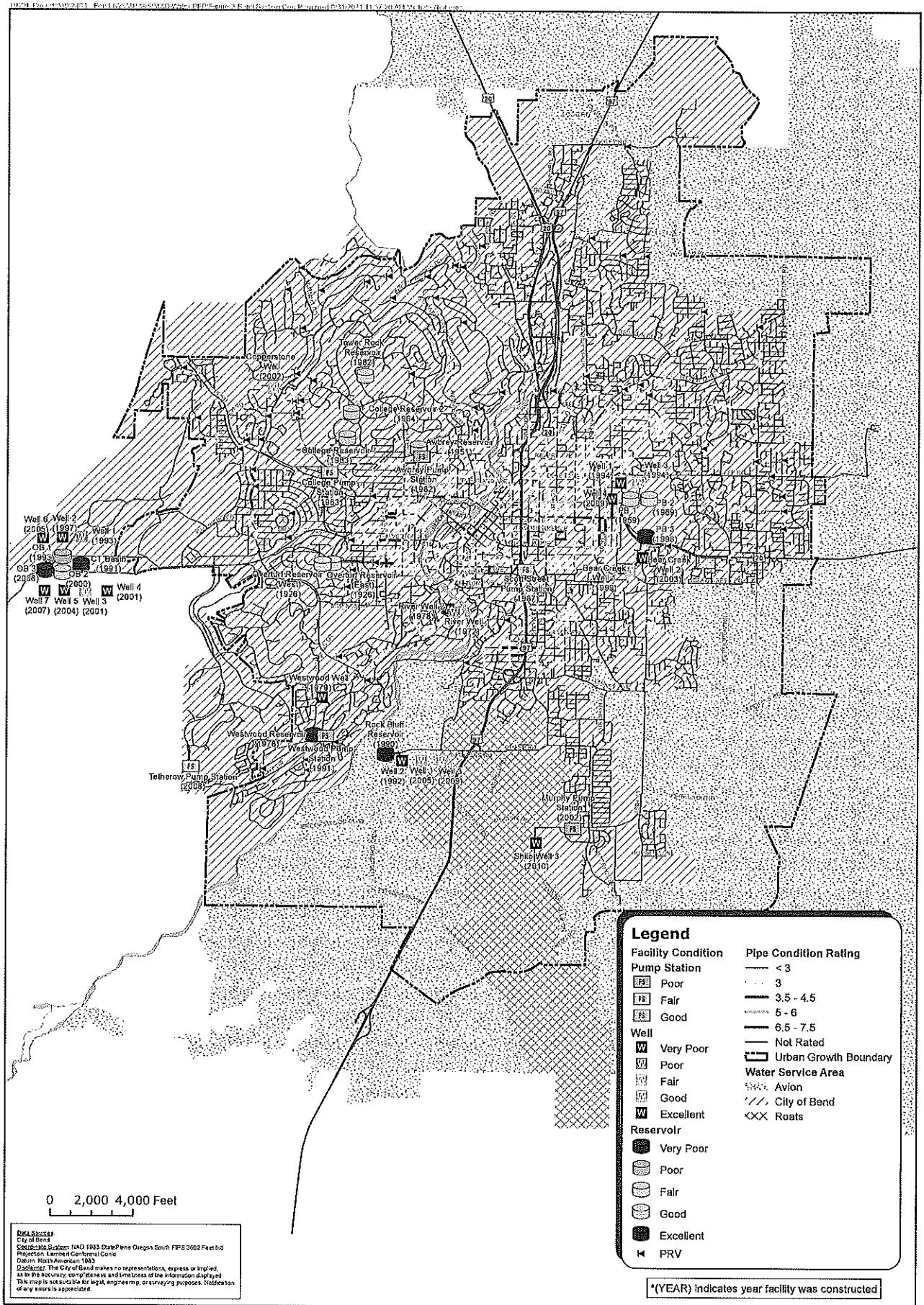
4.2 Avion Water Company

Avion Water Company's service area is the second largest in the Bend UGB covering over 6,000 acres. A large portion of Avion's service area is outside the current UGB in Crook and Deschutes counties. Avion serves an estimated 8,600 service connections within the City limits. The most recently available Avion system data is cited here from their 2006 Water Master Plan, 2011 WMCP, and 2016 WMCP Update.

Recently completed projects include an additional production well at the China Hat Reservoir Site and three distribution piping improvements including a 24-inch main near 15th Street and Knott Road, an extension near Empire Road, and a new 16-inch main near Neff Road and Hamby Road to the intersection of Eagle Road and Bradetich Loop.

Avion's water is supplied from ground water in the Deschutes Regional Aquifer. Avion began acquiring water rights in its own name on May 21, 1969. It currently has 34 water rights totaling 73.80 cfs (33,124 gpm). The system has 11 groundwater wells across eight stations with a total capacity of 14,867 gpm. The system has seven reservoirs totaling nearly 12.4 million gallons in storage. The distribution system includes approximately 310 miles of pipe, with 147 miles in the Bend UGB. Most of the pipe is PVC and has diameters ranging from smaller than 6-inch up to 24-inch.

Avion does not have condition information for its system. The system's piping within the UGB and service area are shown in **Figure 2. Table 5** through **Table 7** provide summaries of existing groundwater facilities, storage reservoirs, and the UGB distribution pipe.



murraysmith

BEND

City of Bend
Water Public Facilities Plan

Figure 3
City System Condition

September 2021

19-2484

Table 5|Avion System Existing Groundwater Facilities

Location	Capacity (gpm)	Number of Wells
Tekampe (A, B, & C Wells)	2,630	3
Parrell Road	1,290	1
Riverbend (Wells 1 & 2)	1,969	2
China Hat (Wells 1, 2 & 3)	4,902	3
Dyer Site	2,077	1
Deschutes River Woods	1,999	1
Total	**14,867**	**11**

Table 6|Avion System Existing Storage Reservoirs

Reservoir	Capacity (MG)
China Hat Road #1	2.9
China Hat Road #1	4.6
Deschutes River Woods	2.4
Dyer	2.3
Conestoga	0.14
Middle Sundance	0.02
Whispering Pines	0.05
Total	**12.41**

Table 7|Avion System Existing Distribution Pipe in the Bend UGB

Diameter	Length (miles)
Unknown	6.9
Less than 6-inch	42.3
6-inch	12.8
8-inch	49.1
10-inch	0.1
12-inch	25.9
14-inch	0.4
16-inch	0.5
18-inch	4.6
20-inch	4.3
24-inch	0.003
Total	**146.9**

4.3 Roats Water System

Roats Water System, the smallest of the three utilities, covers about 1,500 acres and has 2,456 service connections. Most of Roats' service territory is within the Bend UGB and surrounded by the City's service area and Avion's service area. The Roats system data cited below is taken from their 2019 WMCP. Roats' service area is comprised of two interconnected water systems, Woodside Ranch, and Homeplace. In this Water PFP and in documents prepared for or by Roats, the service area within the UGB is referred to as Homeplace. Roats relies on groundwater for its supply and has five water rights in the Deschutes Regional Aquifer totaling 9.48 cfs (4,255 gpm). The system has 10 wells of which three are in the Homeplace area, four are in Woodside Ranch, one is in the Avion service area and is conveyed to the Roats system through an intertie, and two are in the recently acquired Juniper area. Roats total capacity for the ten wells is 3,917 gpm. Roats stores water in four reservoirs with a total storage capacity of 2.97 million gallons. Roats distributes water through a piping system that includes pipe from 2 to 16 inches in diameter with approximately 132,200 feet of pipe that serves the Homeplace service area.

Roats does not have condition information for its system. The system's service area is shown in **Figure 2. Table 8** and **Table 9** provide summaries of existing groundwater facilities, storage reservoirs, and the UGB distribution pipe.

Table 8|Roats System Existing Groundwater Facilities

Well Number	Capacity (gpm)
3	113
4	210[1]
5	115
6	115
7	157
8	337
9	325
10	1,800
Hole Ten North	675
Hole Ten South	70
Total	**3,917**

Note:
1. Well 4 has a standby diesel pump with a 2,000 gpm capacity.

Table 9 | Roats System Existing Storage Reservoirs

Reservoir Number	Location	Capacity (MG)
1	Brookswood Blvd.	0.32
2	N. Woodside Rd.	0.06
3	S. Woodside Rd.	0.09
4	Deschutes River Woods	2.5
	Total	2.97

5. Public Facility Projects, Costs, and Timeframe

This section addresses the following requirements:

- OAR 660-011-0010(1)(b) Project List and Description
- OAR 660-011-0010(1)(c) Project Cost Estimates
- OAR 660-011-0010(1)(d) Project Locations
- OAR 660-011-0010(1)(f) Project Needed Timeframe

A list of planned projects including the estimated timeframe for when the project is needed or will be completed, and an estimate of the cost is included for each system.

5.1 City of Bend

Employee and housing unit projections across the City's water service area were developed for the UGB expansion and included in the City's Comprehensive Plan (2016). These projections and water demand forecasts developed for the iWSMP were used to estimate future water demand. The projected demands were then used to determine the hydraulic capacity of the system and identify improvements to the City's water infrastructure. Extensive analysis was completed to identify areas of deficiencies. The analysis incorporated condition, capacity, criticality, and operations assessment for all major facilities and the pipe network. Additional detail on the demand projections and analysis are in the 2021 iWSMP.

Improvement projects were identified to address system deficiencies where required to serve projected growth in the City's service area within a 20-year timeframe. Cost estimates were developed for each project and project phasing was done to develop a capital improvement plan that accounts for funding and staffing constraints.

It should be noted that while projections were used to determine future demand and timeframes, the actual timing of any improvements will be based primarily on when the system reaches certain demand thresholds versus specific predetermined timelines. The improvements in **Table 10** that are required based on growth in demand will be triggered by increases in maximum day and average day demand. In prior planning documents, projections have been higher than actual demand increases so detailed budgeting, planning, and implementation of the

improvements will be done as needed with consideration to the most recent demand trends and thresholds.

5.1.1 City System Project Cost Assumptions

Unit cost rates used for the capital improvement projects are planning-level estimates and are consistent with the Class 5 Estimate approach used in the iWSMP. Project unit cost estimates were prepared in accordance with the guidelines of the American Association of Cost Engineers (AACE) International, the Association for the Advancement of Cost Engineering. (*AACE International Recommended Practice No. 56R-08 Cost Estimate Classification System - As Applied for the Building and General Construction Industries - TCM Framework: 7.3 - Cost Estimating and Budgeting Rev. March 6, 2019*). Unit project costs developed produce "rough cost estimates" consistent with the definition of Oregon Administrative Rules 660-011-0005(2) and 660-011-035. The true cost and resulting feasibility of a planned project will depend on the actual labor and material costs, competitive market conditions, site conditions, final project scope, implementation schedule, continuity of personnel, and other variable factors. Therefore, the actual unit project costs will vary from the estimates presented here. 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.

All costs identified in this section reference U.S. dollars. The Engineering News Record Construction Cost Index (ENR CCI) basis is 12,341 (Seattle, August 2020).

Component cost rates include materials, installation, and half-road surface restoration in four categories (arterial, collector, local, and dirt). Unit installation and material costs vary by pipe diameter. Component cost markups are included for mobilization, traffic control, erosion control, contractor's overhead and profit, and contingency costs to determine construction costs. Project cost estimates have engineering and administration costs added to the construction costs.

5.1.2 City System Projects

Improvement project descriptions, cost summaries, and timeframes are provided in **Table 10**. Project locations are in **Figure 4**. Each project includes a unique identifier and a description of the improvement, including location reference, Class 5 cost estimate (in August 2020 dollars), and timeframe for project implementation. Projects are grouped in three timeframes. The 10-year horizon covers years 2021 through 2030. The 20-year covers years 2031-2040 and the remaining projects are beyond 2040. The projects are spread beyond 20 years due to constraints in funding and staff resource availability to implement the plan. In addition to timeframe, projects are organized by the following categories. Some projects provide improvement across multiple categories. Summaries of the projects by category and timeframe are in **Table 11**.

- Facility Condition Projects – Improvements to existing reservoirs, wells, and pump stations to maintain and extend their useful life.

- Pipe Replacement Projects– Replacement of existing pipe prioritized by ratings based on material, diameter, valve frequency, and break history.
- Facility Capacity Projects – New reservoirs, wells, and pressure reducing valve (PRV) stations to provide additional system capacity.
- Pipe Capacity Projects – New pipe and the upsize of existing pipe to increase capacity.
- Planning/ Conservation Projects – Projects outside the previous categories that contribute to the overall capacity, condition, and resilience of the system, including things such as planning studies and additional conservation related programs

Table 10 | City System Projects

ID	Project Category	Project Name	Timeframe	Cost[1]
CP-1	Pipe Capacity	Ironwood Court Redundant Looping	2021-2030	$239,000
CP-5	Pipe Capacity	Murphy Road Redundant Looping	2021-2030	$0[2]
FFCP-3	Pipe Capacity	New Zone 4I pipe	2021-2030	$287,000
FFP-1	Pipe Capacity	Transect Area New Development	2021-2030	$0[2]
FFP-3	Pipe Capacity	Clay Avenue and 3rd Street Looping Part 1	2021-2030	$47,000
FFP-4	Pipe Capacity	Builders Street Looping	2021-2030	$535,000
FFP-5	Pipe Capacity	Adams Place Upsize	2021-2030	$543,000
FFP-7	Pipe Capacity	12th and Juniper Streets Improvements	2021-2030	$1,829,000
FFP-8	Pipe Capacity	Quincy Avenue Upsize	2021-2030	$341,000
FFP-9	Pipe Capacity	4th Street Looping	2021-2030	$105,000
FFP-10	Pipe Capacity	Awbrey Road and Portland Avenue	2021-2030	$1,788,000
FFP-11	Pipe Capacity	Greenwood Avenue and 3rd Street Intersection New Pipe	2021-2030	$145,000
FFP-12	Pipe Capacity	River's Edge Golf Course Area Upsize	2021-2030	$685,000
FFP-13	Pipe Capacity	Riverhouse Resort Looping	2021-2030	$345,000
FFP-14	Pipe Capacity	Regency Street Upsize	2021-2030	$316,000
FFP-16	Pipe Capacity	Zone 1 Dead-End Fire Flow Improvements	2021-2030	$1,022,000
FFP-17	Pipe Capacity	Highway 20 Looping	2021-2030	$600,000
FFP-19	Pipe Capacity	5th Street and Hawthorne Avenue Looping	2021-2030	$316,000
FFP-20	Pipe Capacity	8th Street and Bear Creek Road Looping and Upsize	2021-2030	$1,463,000
FFP-21	Pipe Capacity	Pilot Butte and Neff Road Upsize	2021-2030	$2,111,000
FFP-22	Pipe Capacity	Cascade View Drive and Trenton Looping	2021-2030	$883,000
FFP-23	Pipe Capacity	Foxwood Upsize	2021-2030	$276,000
FFP-24	Pipe Capacity	Silver Buckle and Broken Arrow Road Upsize	2021-2030	$689,000
FFP-25	Pipe Capacity	Karena Court Upsize	2021-2030	$128,000
FFP-26	Pipe Capacity	Wall Street and Harriman Street and Highway 20 Looping	2021-2030	$737,000

ID	Project Category	Project Name	Timeframe	Cost[1]
FFP-27	Pipe Capacity	Xerxes Avenue and 4th Street Looping	2021-2030	$183,000
FFP-28	Pipe Capacity	Sawyer Reach Lane Upsize	2021-2030	$188,000
FFP-29	Pipe Capacity	Peerless Court Looping	2021-2030	$375,000
FFP-30	Pipe Capacity	Wilson Avenue and 15th Street Industrial Service Looping	2021-2030	$248,000
FFP-33	Pipe Capacity	Bend River Promenade Looping	2021-2030	$233,000
FFP-34	Pipe Capacity	High Desert Lane Looping	2021-2030	$77,000
FFP-35	Pipe Capacity	Addison Avenue Upsize	2021-2030	$1,873,000
FFP-38	Pipe Capacity	5th Street and Glenwood Drive Upsize	2021-2030	$248,000
FFP-40	Pipe Capacity	Glassow Drive Looping	2021-2030	$237,000
FFP-42	Pipe Capacity	Seward Avenue Upsize	2021-2030	$164,000
FFP-43	Pipe Capacity	McClain Drive Upsize	2021-2030	$782,000
O-1	Planning/Conservation	Outback Facility Plan	2021-2030	$500,000
O-2	Planning/Conservation	Conservation Program	2021-2030	$1,538,000
O-4	Planning/Conservation	Hydropower Feasibility Study	2021-2030	$0[2]
O-5	Planning/Conservation	Water System Master Plan Update #1	2021-2030	$1,000,000
O-6	Planning/Conservation	Water Management Conservation Plan Update #1	2021-2030	$200,000
O-10	Planning/Conservation	Traffic Signal Improvements	2021-2030	$25,000
O-11	Planning/Conservation	Outback Land Acquisition	2021-2030	$5,000,000
O-12	Planning/Conservation	Standards & Specs Update	2021-2030	$150,000
P-3	Pipe Capacity	Discovery West Looping	2021-2030	$0[2]
P-13	Pipe Capacity	New Awbrey Transmission	2021-2030	$10,312,000
P-14	Pipe Capacity	Upsize Pilot Butte Reservoir 1 Transmission Pipe	2021-2030	$342,000
P-15	Pipe Capacity	Newport Avenue Replacement	2021-2030	$3,984,000
P-17	Pipe Capacity	Revere Division and Thurston Upsize Part 1	2021-2030	$2,077,000
P-19	Pipe Capacity	6th Street Upsize	2021-2030	$3,625,000
P-23	Pipe Capacity	Awbrey Reservoir Outlet Transmission Upsize	2021-2030	$260,000
P-28	Pipe Capacity	Neff and Purcell Intersection	2021-2030	$19,000
PR-1A	Pipe Replacement	Pipe Replacement Program Years 1 to 10	2021-2030	$33,788,000
PR-P2	Pipe Replacement	Awbrey Butte Distribution Improvements	2021-2030	$2,737,000
PR-P3	Pipe Replacement	Awbrey Butte Distribution Improvements	2021-2030	$3,346,000
PR-P4	Pipe Replacement	Awbrey Butte Distribution Improvements	2021-2030	$1,104,000
PR-P5	Pipe Replacement	Pilot Butte Distribution Improvements	2021-2030	$5,940,000
PR-P6	Pipe Replacement	Pilot Butte Distribution Improvements	2021-2030	$2,314,000
PS-1	Facility Condition	Awbrey Pump Station	2021-2030	$3,459,000
PS-6	Facility Condition and Capacity	Replacement of Murphy Pump Station	2021-2030	$0[2]
T-1	Facility Condition	Outback Reservoir 1	2021-2030	$1,585,000
T-4	Facility Condition and Capacity	Outback CT Basin	2021-2030	$500,000
T-5	Facility Condition	Awbrey Reservoir	2021-2030	$3,547,000

ID	Project Category	Project Name	Timeframe	Cost[1]
T-17	Facility Condition	Rock Bluff Reservoir Interior Coating	2021-2030	$700,000
T-18	Facility Condition	Outback Reservoir 2 Interior Coating	2021-2030	$1,300,000
TR-1	Planning/Conservation	Pretreatment	2021-2030	$16,000,000
V-6	Facility Capacity	New Zone 4A to 4I PRV	2021-2030	$155,000
W-1	Facility Condition	Outback Well 1	2021-2030	$1,223,000
W-2	Facility Condition	Outback Well 2	2021-2030	$1,531,000
W-10	Facility Condition	River Well 1	2021-2030	$2,198,000
W-11	Facility Condition	River Well 2	2021-2030	$2,928,000
CP-2	Pipe Capacity	Rainier Drive Redundant Looping	2031-2040	$176,000
CP-3	Pipe Capacity	High Lakes Elementary Redundant Looping	2031-2040	$210,000
CP-4	Pipe Capacity	Fred Meyer Redundant Looping	2031-2040	$776,000
CP-6	Pipe Capacity	Forest Ridge Avenue and Mt. Washington Drive Crossing	2031-2040	$359,000
CP-7	Pipe Capacity	Bend High School Redundant Looping	2031-2040	$497,000
CP-8	Pipe Capacity	Deschutes Brewery Redundant Looping	2031-2040	$195,000
FFCP-1	Pipe Capacity	Awbrey Meadows pipe	2031-2040	$1,226,000
FFCP-2	Pipe Capacity	New Zone 7C pipe	2031-2040	$137,000
FFP-2	Pipe Capacity	Awbrey Meadows	2031-2040	$5,030,000
FFP-3	Pipe Capacity	Clay Avenue and 3rd Street Looping Part 2	2031-2040	$100,000
FFP-6	Pipe Capacity	Brosterhous Road Fire Service Upsize	2031-2040	$898,000
FFP-15	Pipe Capacity	Franklin Avenue and 1st Street Looping	2031-2040	$299,000
FFP-18	Pipe Capacity	Greenwood Avenue and Hill Street Upsize	2031-2040	$482,000
FFP-31	Pipe Capacity	Quimby Avenue Upsize	2031-2040	$372,000
FFP-32	Pipe Capacity	Nels Anderson Road Upsize	2031-2040	$463,000
FFP-36	Pipe Capacity	Cady Way Upsize	2031-2040	$468,000
FFP-37	Pipe Capacity	Industrial Way Upsize	2031-2040	$159,000
FFP-39	Pipe Capacity	Red Lion Inn Looping	2031-2040	$336,000
FFP-41	Pipe Capacity	Castlewood Drive Upsize	2031-2040	$144,000
O-3	Planning/Conservation	Conservation Program	2031-2040	$1,538,000
O-7	Planning/Conservation	Water Management Conservation Plan Update #2	2031-2040	$200,000
O-8A	Planning/Conservation	Water System Master Plan Update #2	2031-2040	$1,000,000
P-17	Pipe Capacity	Revere Division and Thurston Upsize Part 2	2031-2040	$2,077,000
P-20	Pipe Capacity	8th Street Upsize and Parallel Transmission	2031-2040	$5,985,000
P-27	Pipe Capacity	Upsize 6-inch pipe on Purcell Boulevard	2031-2040	$185,000
PR-1B	Pipe Replacement	Pipe Replacement Program Years 11 to 20	2031-2040	$66,970,000
PS-2	Facility Condition	College Pump Station	2031-2040	$1,276,000
PS-3	Facility Condition	Tetherow Pump Station	2031-2040	$1,967,000
PS-4	Facility Condition and Capacity	Westwood Pump Station	2031-2040	$160,000
T-9	Facility Capacity	New Overturf Zone 4 Reservoir	2031-2040	$11,219,000

ID	Project Category	Project Name	Timeframe	Cost[1]
T-10	Facility Condition and Capacity	Existing Overturf Reservoirs	2031-2040	$1,100,000
T-12	Facility Condition	Pilot Butte Reservoir 1	2031-2040	$1,454,000
T-13	Facility Condition	Pilot Butte Reservoir 2	2031-2040	$1,533,000
T-14	Facility Condition	Pilot Butte Reservoir 3	2031-2040	$904,000
T-15	Facility Condition	Rock Bluff Reservoir 1	2031-2040	$1,429,000
T-16	Facility Condition and Capacity	Westwood Reservoir	2031-2040	$340,000
V-1	Facility Capacity	New Zone 2A to 3C PRV	2031-2040	$155,000
V-4	Facility Capacity	New Zone 4F to 6B PRV	2031-2040	$155,000
V-5	Facility Capacity	New Zone 6 to 7C PRV	2031-2040	$155,000
W-3	Facility Condition	Outback Well 3	2031-2040	$1,633,000
W-4	Facility Condition	Outback Well 4	2031-2040	$954,000
W-5	Facility Condition	Outback Well 5	2031-2040	$912,000
W-13	Facility Condition	Bear Creek Well 1	2031-2040	$2,116,000
W-14	Facility Condition	Bear Creek Well 2	2031-2040	$1,160,000
W-15	Facility Capacity	New Bear Creek Zone 4 Well	2031-2040	$4,049,000
W-16	Facility Condition	Pilot Butte Well 1	2031-2040	$853,000
W-17	Facility Condition	Pilot Butte Well 3	2031-2040	$1,645,000
W-21	Facility Condition	Rock Bluff Well 2	2031-2040	$2,382,000
W-23	Facility Capacity	New Wilson Zone 4 Well 1	2031-2040	$4,358,000
W-24	Facility Capacity	New Wilson Zone 4 Well 2	2031-2040	$4,358,000
W-25	Facility Condition and Capacity	Westwood Well	2031-2040	$180,000
P-1	Pipe Capacity	Outback Site Transmission	Beyond 2040	$815,000
P-2	Pipe Capacity	Outback North Transmission Replacement	Beyond 2040	$3,927,000
P-4	Pipe Capacity	Zone 3 to 4A Mt. Washington Drive and Rivers Edge PRV Pipe Upsize	Beyond 2040	$246,000
P-5	Pipe Capacity	Skyline Ranch Road Parallel	Beyond 2040	$5,923,000
P-6	Pipe Capacity	Niagara Court Upsize	Beyond 2040	$477,000
P-7	Pipe Capacity	Archie Briggs and Falcon Ridge Upsize	Beyond 2040	$94,000
P-8	Pipe Capacity	Mirror Lake Place Looping	Beyond 2040	$79,000
P-9	Pipe Capacity	Skyliners Road and Flagline Drive Upsize	Beyond 2040	$385,000
P-10	Pipe Capacity	New Zone 5 Overturf Reservoir and Well Transmission	Beyond 2040	$1,564,000
P-11	Pipe Capacity	Zone 4F and Zone 4A Distribution Connection	Beyond 2040	$257,000
P-12	Pipe Capacity	15th Street Upsize	Beyond 2040	$192,000
P-16	Pipe Capacity	Roanoke Avenue Looping	Beyond 2040	$340,000
P-18	Pipe Capacity	4th Street Upsize	Beyond 2040	$297,000
P-21	Pipe Capacity	Metolius Drive Upsize	Beyond 2040	$19,000
P-22	Pipe Capacity	Pilot Butte Parallel Transmission on Lafayette Avenue	Beyond 2040	$1,344,000
P-24	Pipe Capacity	New and Upsize Bear Creek Well Transmission	Beyond 2040	$894,000

ID	Project Category	Project Name	Timeframe	Cost[1]
P-25	Pipe Capacity	Bear Creek Road Upsize 15th Street to McCartney Drive	Beyond 2040	$573,000
P-26	Pipe Capacity	Bear Creek Road Connections	Beyond 2040	$786,000
PR-1C	Pipe Replacement	Pipe Replacement Program Years 21 to 30	Beyond 2040	$35,620,000
PS-5	Facility Condition and Capacity	Scott Pump Station	Beyond 2040	$1,465,000
T-2	Facility Condition and Capacity	Replacement Outback Reservoir 2	Beyond 2040	$17,866,000
T-3	Facility Condition	Outback Reservoir 3	Beyond 2040	$2,284,000
T-6	Facility Condition	College Reservoir 1	Beyond 2040	$987,000
T-7	Facility Condition	College Reservoir 2	Beyond 2040	$944,000
T-8	Facility Condition	Tower Rock Reservoir	Beyond 2040	$1,257,000
T-11	Facility Capacity	New Overturf Zone 5 Reservoir	Beyond 2040	$9,009,000
V-2	Facility Capacity	New Zone 4B to 5 PRV	Beyond 2040	$155,000
V-3	Facility Capacity	New Zone 4F to 5D PRV	Beyond 2040	$155,000
W-6	Facility Condition	Outback Well 6	Beyond 2040	$2,660,000
W-7	Facility Condition	Outback Well 7	Beyond 2040	$730,000
W-8	Facility Capacity	New Outback Well	Beyond 2040	$2,711,000
W-9	Facility Condition	Copperstone Well	Beyond 2040	$1,676,000
W-12	Facility Capacity	New Overturf Zone 5 Well	Beyond 2040	$3,386,000
W-18	Facility Condition	Pilot Butte Well 4	Beyond 2040	$774,000
W-19	Facility Condition	Rock Bluff Well 1	Beyond 2040	$812,000
W-20	Facility Condition	Rock Bluff Well 3	Beyond 2040	$830,000
W-22	Facility Condition	Shilo Well	Beyond 2040	$1,926,000
W-26	Facility Capacity	New Purcell Paula Zone 5 Well 1	Beyond 2040	$4,321,000
W-27	Facility Capacity	New Purcell Paula Zone 5 Well 2	Beyond 2040	$4,321,000
O-8B	Planning/Conservation	Water System Master Plan Update #3	Beyond 2040	$1,000,000
O-9	Planning/Conservation	Beyond 2040 Conservation Program	Beyond 2040	$7,998,000

Note:

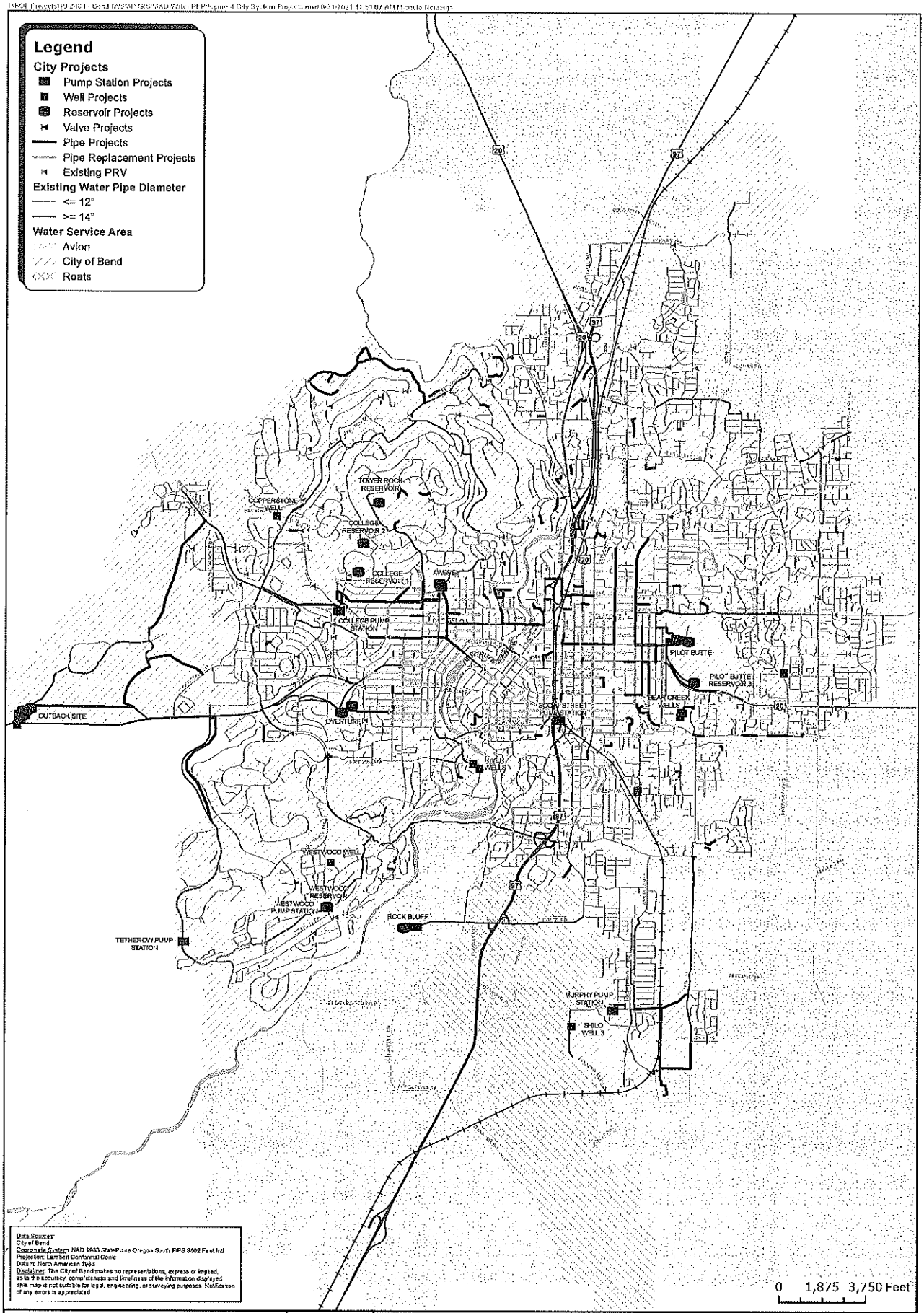
1. Costs are in 2020 Dollars.
2. Projects with no cost are already funded or will be funded privately.

Table 11 | City System Projects Summary

Project Category	Cost[1] by Timeframe (Million $)			Total Cost[1]
	2021-2030	2031-2040	Beyond 2040	
Capacity	$41 M	$47 M	$62 M	$150 M
Condition	$68 M	$87 M	$50 M	$205 M
Planning/Conservation	$24 M	$3 M	$9 M	$36 M
Total	$133 M	$137 M	$121 M	$391 M

Note:

1. Costs are in 2020 Dollars.



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BEND

City of Bend
Water Public Facilities Plan

Figure 4
City Projects

September 2021

19-2484

5.2 Avion Water Company

Projects for Avion are shown in **Table 12.**

Table 12 | Avion System Projects

Project	Description	Timeframe	Cost[1]
Dyer Well	New production well at Dyer Reservoir Site	Near-Term	$1,250,000[2]
24" Water Line China Hat	Fill in section of 24" pipe completing the run from China Hat Reservoir to NE corner of 15th and Knott (1250')	Near-Term	$250,000[2]
Highway 20 Crossing	Improve crossing of Highway 20 at Hamby Road	Near-Term	$100,000[2]
Dyer Reservoir, Well and Booster Station	A new 2.5 million gallon reservoir w/ a 2000 gpm well and large capacity booster station	Long-Term	$2,300,000
12" Water Line Brookswood	12" water line from Riverbend well site to the PRV station on Brookswood	Long-Term	$200,000
18" line from DRW reservoir to Brookswood	Install 18" Line from DRW reservoir to Brookswood	Long-Term	$170,000

Note:
1. Costs are in 2006 Dollars unless noted otherwise.
2. Costs are in 2020 Dollars.

5.3 Roats Water System

Projects for Roats are shown in **Table 13.**

Table 13 | Roats System Projects

Project	Description	Timeframe	Cost
Improvements in prior Juniper Utility Service Territory	Infrastructure improvements in accordance with City of Bend standards and specifications in prior Juniper Utility service territory (purchased from City of Bend).	Near-Term	Costs to be determined by current market costs at time of installations

6. Funding

This section addresses the following requirements:

- OAR 660-011-0010(1)(g) Project Funding

6.1 City of Bend

The City's financial plan to fund ongoing system operations and the escalated costs of the improvements defines a strategy for the water utility to maintain sufficient funds to construct,

operate, and manage the system on a continuing basis based on a 30-year implementation timeframe of the improvements.

The water utility is responsible for funding all its costs. The primary source of funding is derived from ongoing monthly charges for service, with additional revenues coming from system development charges, installation fees, reconnect fees, and other miscellaneous revenue. The City controls the level of user charges and, subject to the City Council, can adjust user charges as needed to meet financial objectives.

The current financial forecast indicates that the utility is currently covering all financial obligations under existing rates, however as the City prepares to fund the needed capital improvement identified, rates will need to increase annually to support the capital funding plan.

The financial plan proposes the following rate increases and debt issuances to satisfy the identified future obligations of the utility.

- 10-year Annual Rate Increases:
  - 3.0 percent in FY 2022 – FY 2023
  - 4.0 percent from FY 2024 – FY 2026
  - 4.5 percent from FY 2027– FY 2030
- 10-year Revenue Bonds:
  - $23.9M in FY 2026
  - $33.9M in FY 2029
  - Annual new debt service payments are forecast to go from $2.0 million with the first issuance to $4.7 million at the second new debt issuance. Including this new debt, total debt service will increase from $5.6 million in FY 2021 to $8.9 million by FY 2030.

Table 14 shows a summary of the projected Undesignated Operating Reserve and residual Capital Reserve ending balances through FY 2030 based on the rate forecasts presented above. The undesignated operating reserve is maintained at a minimum of 3 months of O&M expenses, and the capital reserve balance fluctuates depending on the level of capital projects funded; however, it never falls below the minimum target of $5.0 million.

Table 14|City Ending Reserve Balance Summary ($ in millions)

Ending Reserve Balances	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Undesignated Operating	$3.2	$3.6	$3.7	$4.2	$4.2	$4.6	$4.7	$4.9	$5.2	$5.2
Capital	$57.3	$53.2	$47.8	$37.1	$14.7	$20.5	$16.1	$15.3	$39.7	$25.5
Total	**$60.5**	**$56.8**	**$51.5**	**$41.3**	**$18.9**	**$25.1**	**$20.8**	**$20.2**	**$44.9**	**$30.7**

The analysis assumes revenue growth and expense inflationary factors. If the forecasting factors change significantly, the existing rate strategy may need to be updated and revised. The City will continue to annually review and update the key underlying assumptions that compose the multi-year financial plan at least annually, to ensure that adequate revenues are collected to meet the City's total financial obligations.

6.2 Avion Water Company

Avion Water Company is an investor-owned public utility that is regulated by the Public Utility Commission (PUC). Avion recovers from its customers all operating costs for providing tariff services to its customers along with the opportunity to earn a rate of return on its net invested capital. The total revenue is determined by agreement between Avion and the PUC and approximately 55-60 percent of the revenue is realized from base rate charges and 40-45 percent from variable use rate charges.

6.3 Roats Water System

Roats is a rate and service regulated utility under the jurisdiction of the Oregon Public Utility Commission. Customers are billed monthly for both a base fee and water usage, which covers operations, maintenance, and improvement costs. Base fees cover the cost of services that occur regardless of how much the service is used (e.g., reading and maintenance of meters, water quality monitoring, infrastructure maintenance, etc.) Base rates are determined by meter size and as of April 2017 are set at $33.45 for 5/8-inch and ¾-inch meters and $48.17 for 1-inch meters. The usage charge is $0.95 per 100 cubic feet. Customers with a separate irrigation line are charged a flat monthly irrigation fee of $41.02.

7. Policy Statements and Agreements

This section addresses the following requirements:

- OAR 660-011-0010(1)(e) Policy Statements

A summary of the policy statements and management agreements are included that identify the City, Avion, and Roats as the providers of water service within the Bend UGB for their respective service areas.

7.1 Policy Statements for Water Providers

The City has entered into franchise agreements with each utility for providing water service in areas of the UGB not already served by the City. From the Comprehensive Plan (2018), the policies for Water Facilities and Systems are as stated (see Comprehensive Plan Chapter 8, Public Facilities and Services):

- The City of Bend is the provider of water service for the City's service area under Statewide Planning Goal 11. [8-15]

- 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. [8-16]

- Roats Water System 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. [8-17]

- Within the urban planning area, public and private water systems shall be consistent with City Standards and Specifications for construction and service capabilities. [8-18]

- The City shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary. [8-19]

- The City shall continue to implement a water conservation program that emphasizes education, enforcement, metering, and other methods to use water efficiently. [8-20]

- The City may allow water service outside the UGB at rural levels consistent with Goal 11. [8-21]

7.2 Joint Management Agreement

On February 24, 1998, the City and Deschutes County entered into a joint management agreement (JMA) for planning in the Bend UGB. The City and County entered a revised JMA on July 7, 2017, that included the areas added to the Bend UGB in 2016 that were subsequently zoned Urbanizable Area (UA). This 2017 JMA replaced the 1998 JMA.

From the JMA, the policies impacting this Water PFP include:

- The City will prepare, adopt, and amend Goal 11 public facility plans, as required by ORS 197.712(2)(e). City will coordinate the preparation and the amendment of public facility plans with the County, special districts, state agencies, federal agencies, and private providers of public facilities as required by OAR 660-011-015(2). [3.3.d]

- The City has the authority but not the obligation to provide extraterritorial water service within the UA in those areas not already within either the existing Avion Water Company or Roats Water Company service areas. The County will not approve the formation of any domestic water supply district that attempts to form as a special district under ORS 264 within the UA without the concurrence of the City, as contemplated by Bend Comprehensive Plan Policy 1-5. [6.1]

- The City may choose to provide extraterritorial water service outside the UGB in compliance with applicable state statutes, planning goals and subject to any applicable County land use decision. [6.2]

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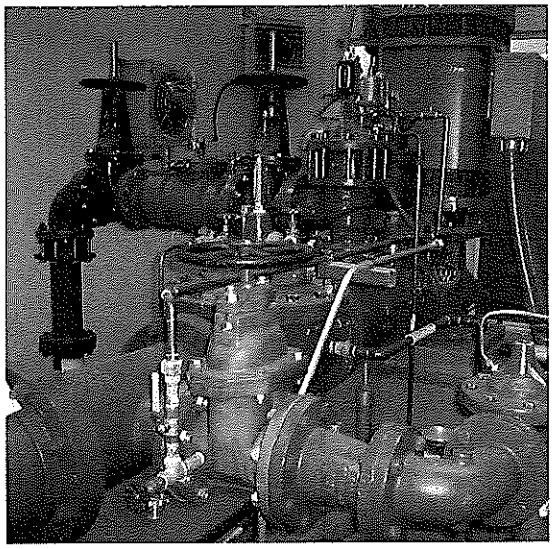
Chapter 8: Public Facilities and Services



Adopted Amendments

EFFECTIVE DATE	ORD #	CHANGES
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
October 19, 2018	NS-2313	Update to reflect changes from 2018 Collection System Public Facility Plan
January ##, 2022	####	2021 Water Public Facility Plan Replacing 2013 Water Public Facility Plan and updating text in Chapter 8

BACKGROUND

Context

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 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 impact 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 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.

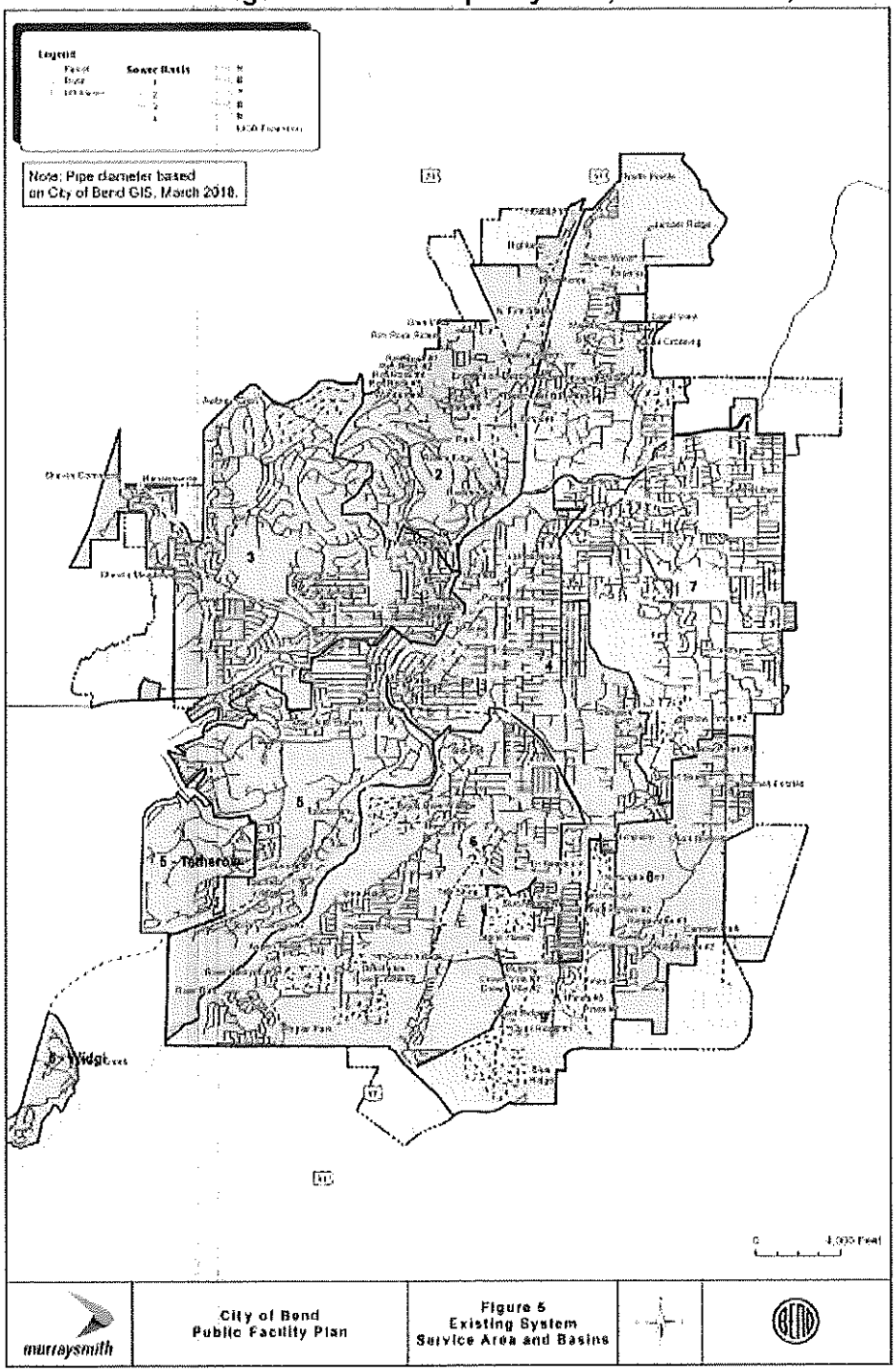
In 2017, the City began work to update the Public Facility Plan for the sewer collection system (CSPFP) to reflect those improvements that would be needed to serve the entire UGB, development in the Opportunity Areas, and those projects that were identified to serve the Expansion Areas included in the 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 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



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 (11 to 20 years) to provide reliable sewer collection throughout the City's current UGB.

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/3rd 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.

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 go 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 in 2017 dollars by project category.

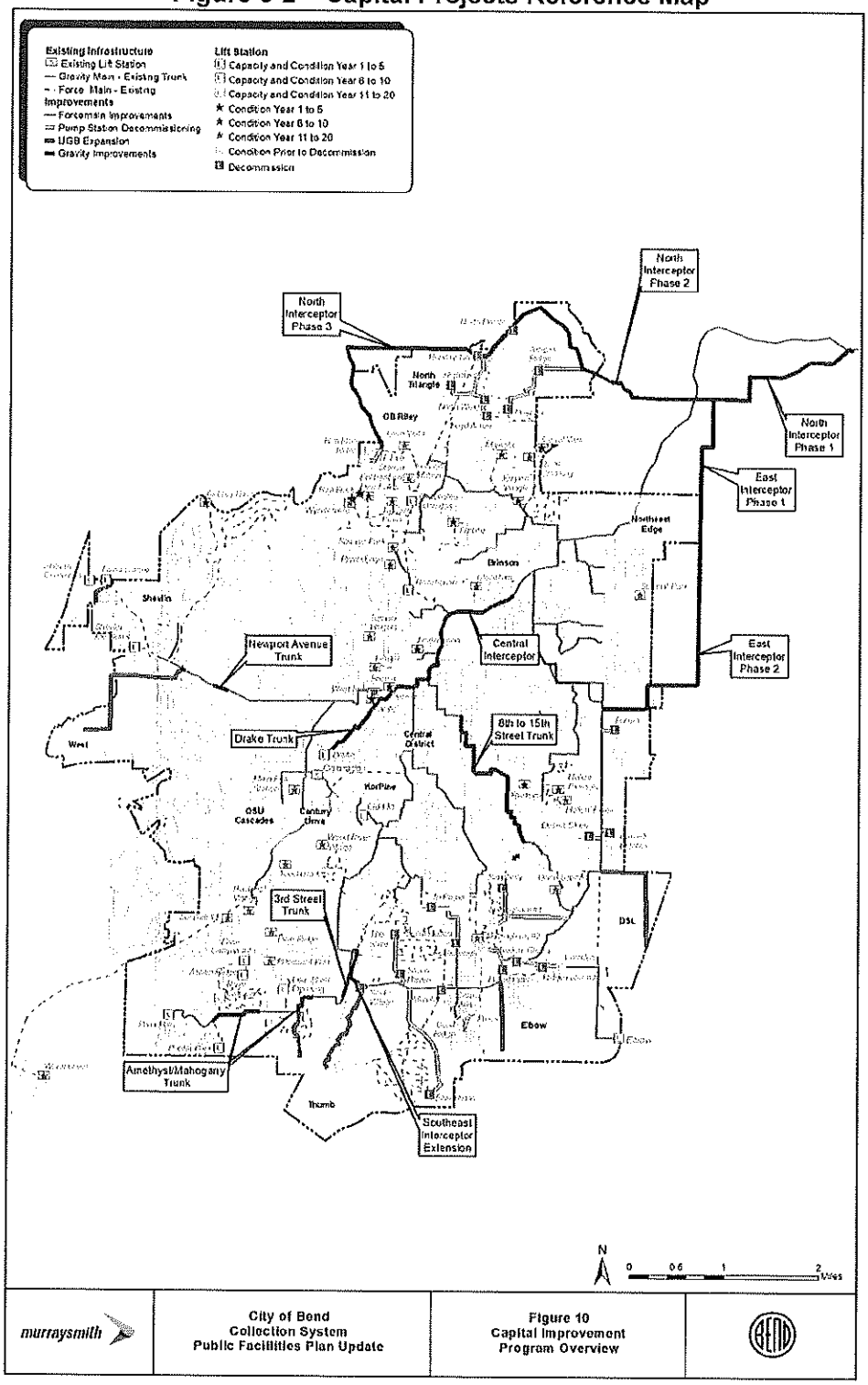
Table 8-2
Capital Improvement Program Cost Summary

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
Total	$98.8	$85.4	$90.6	$274.8

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

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 2nd year of this phase in.

The financial plan indicates that rate increases of approximately 6% per year will be needed through FY 2021 to meet current water reclamation utility rate revenue requirements. Annual inflationary rate increases are anticipated for the remainder of 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 includes the City's sewer SDC, and at its current rate of $4,655 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. .

Water Facilities and Systems

The quality of water in the Bend urban growth boundary ~~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 2013, the City Council adopted the 2013 Water Public Facility Plan (WPFP) The Council adopted this version of the WPFP through Ordinance No. 2194, after a previous version of the WPFP was remanded from the Oregon Land Use Board of Appeals (LUBA) (See LUBA No. 2012-043). This 2013 WPFP was subsequently appealed to, and later affirmed by LUBA in September 2013 (See LUBA No. 2013-037).

Between 2019 and 2021, the City engaged a project team to develop an Integrated Water System Master Plan (iWSMP). This integrated plan included: 1) an updated Water System Master Plan for the City of Bend water utility; 2) a Water Management and Conservation Plan to maintain the City's water rights with the Oregon Water Resources Department, and; 3) a Goal 11 Water Public Facility Plan. The 2021 Water PFP replaces the 2013 Water PFP as Appendix G to the Bend Comprehensive Plan. The 2021 Water PFP will serve as the Goal 11 public facility plan for water in the Bend UGB, and identifies the capital improvements needed to serve the existing and planned land uses within Bend's UGB.

The final Integrated Water System Master Plan (2021) provides the factual base on the City's current and future water facilities and infrastructure for the 2021 Water Public Facility Plan. This final document includes the required inventory and general assessment of the City's water facilities and systems. The iWSMP also includes

information and documentation of the City's water rights and supply, including consideration of factors that will influence both surface and groundwater supplies such as droughts, forest fires, and extreme weather patterns caused by climate change. The 2021 Water PFP also relies on planning documents and data for the water facilities and infrastructure of the Avion Water Company and Roats Water System.
~~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 2021 ~~2006~~ included about 25,500~~22,000~~ service connections. Since 1926, the City of Bend's ~~source~~ primary source of water has been from ~~Bridge Creek in the Tumalo Creek~~ Bend Municipal ~~w~~Watershed. ~~Tumalo Bridge Creek~~ This water 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~~ Bend Municipal 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 which the City added to comply with these rules in 2016. ~~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~~Bend Municipal source can deliver up to ~~13.5~~11.6 million gallons per day per USFS Special Use permit and City Ordinance (limits diversion to 18.2 cfs). The City supplements the ~~Bridge Creek~~surface water supply ~~source with deep groundwater wells~~with groundwater from the Deschutes Regional Aquifer. ~~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.~~

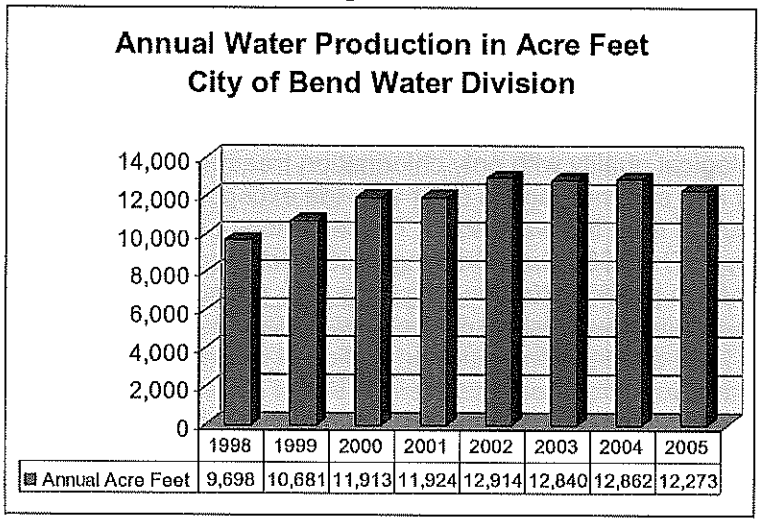
The 2021 Water PFP includes tabular and narrative data that describes the City's existing water system, its components and their existing condition, and annual water use. The City's existing water system consists of the surface water intake facility, a water filtration facility (WFF), 8 groundwater facilities consisting of 20 active wells, 15 finished water storage reservoirs, 6 active booster pump stations, approximately 440 miles of transmission and distribution mains, nearly 10 miles of raw water pipeline, and

associated appurtenances including various valves, hydrants, and meters. The system includes six primary pressure zones with an additional twenty-three subzones.

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~~2021, the City updated its required Water Management and Conservation Plan (WMCP) which outlines various conservation related benchmarks, in order to meet conditions by the Oregon Water Resources Department as part of obtaining new and maintaining existing water rights to meet the needs of growth.

The city's ~~2007 Water System Master Plan~~ 2021 Water PF~~Public Facility Plan Update~~ identifies water supply, transmission, and storage needs throughout the city's service territory within the UGB. This 2021 Water PFP also includes this information for the respective services areas of the Avion Water Company and Roats Water Company. Additional wells, reservoirs, main transmission lines, and smaller distribution lines will be needed to meet the projected urban area growth.

~~**Figure 8-3**~~



~~**Figure 8-4**~~

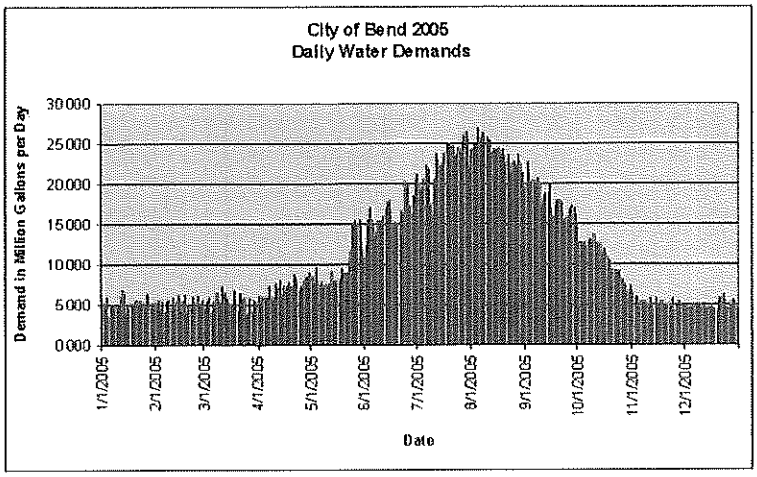
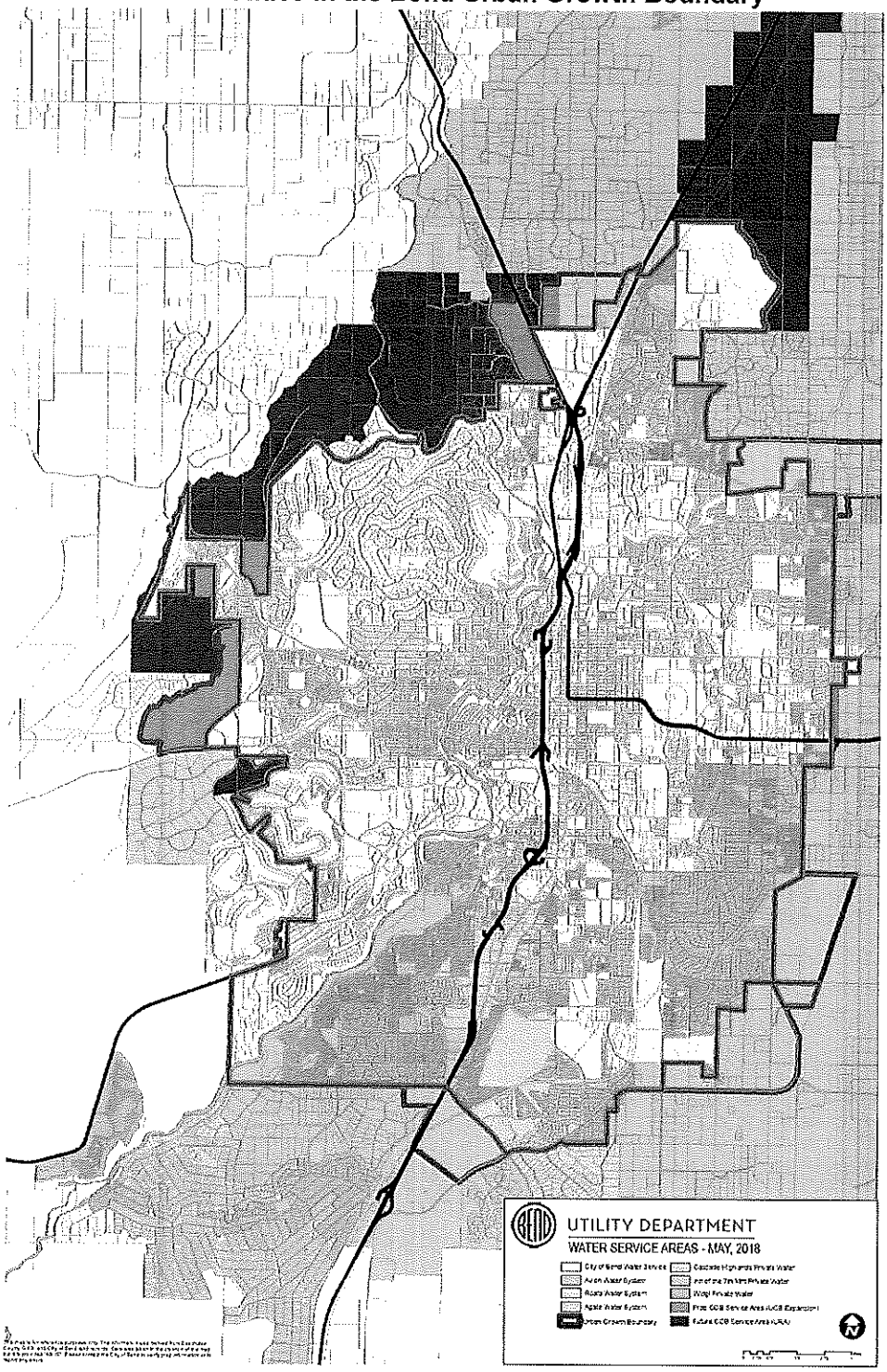

City of Bend 2005
Daily Water Demands
Demand in Million Gallons per Day
30000
25000
20000
15000
10000
5000
0000
1/1/2005
2/1/2005
3/1/2005
4/1/2005
5/1/2005
6/1/2005
7/1/2005
8/1/2005
9/1/2005
10/1/2005
11/1/2005
12/1/2005
Date

Figure 8-~~35~~
Water Utilities in the Bend Urban Growth Boundary



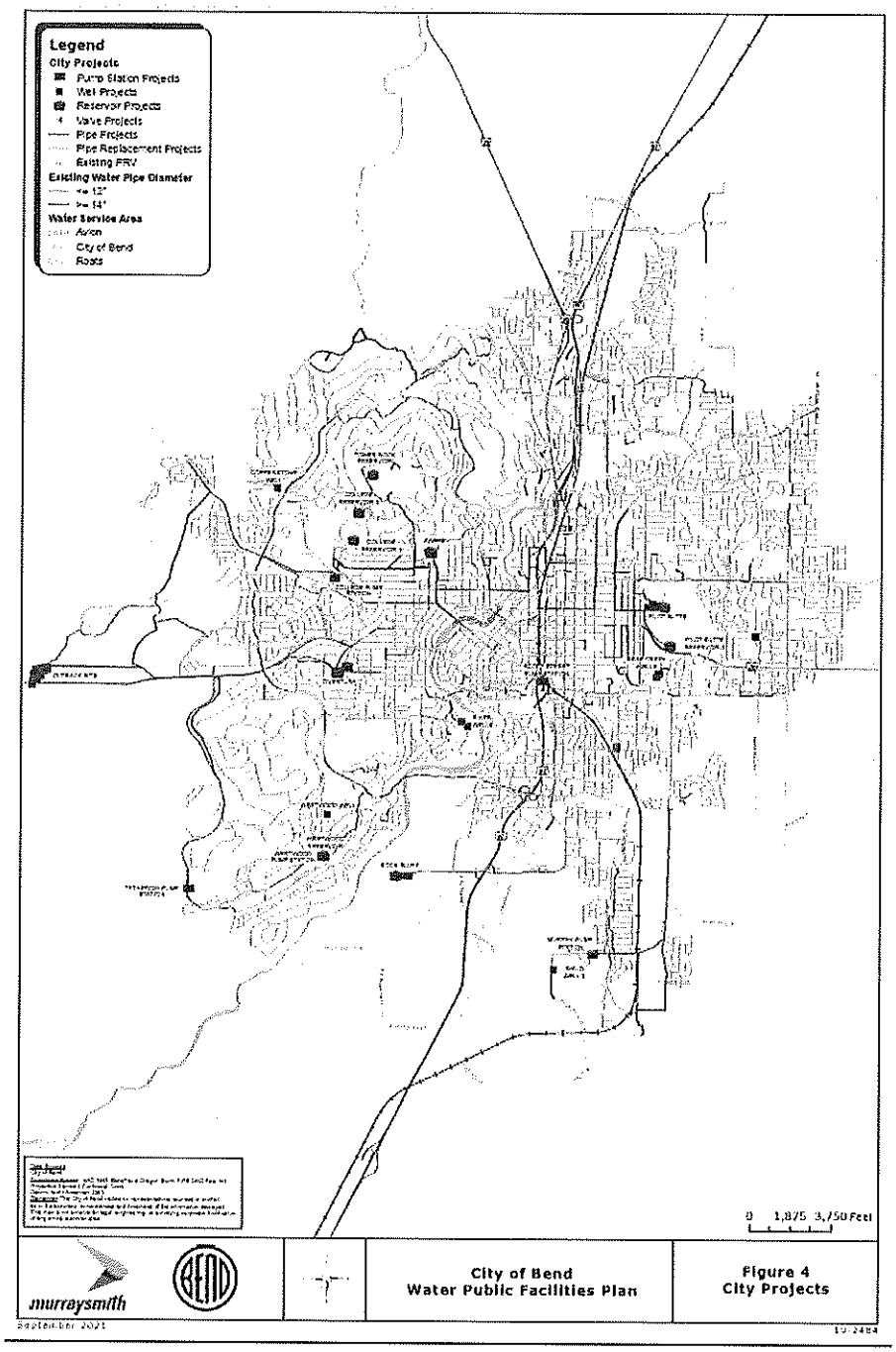
Capital Improvement Program

The 2021 Water PFP includes those capital improvements identified by the City's project team, and the Avion and Roats water Companies. The Water PFP includes the city's detailed CIP for three time periods: (1) 2021-2030; (2) 2031-2040, and; (3) beyond the year 2040 and beyond. The following table summarizes the CIP projects for the City's water utility by project category for each of these time periods. For the purpose of complying with Statewide Planning Goal 11, Public Facilities and Services, all projects identified in the 2021 Water PFP for the City's utility are considered long term projects. Once this PFP has been adopted by City Council, project staff will identify those projects to recommend to City Council in the 2022-2026 Capital Improvement Program budget for the City as short-term projects.

Table 8-3
City Capital Improvement Program by Project Category and Time Period

Project Category	2021-2030	2031-2040	Beyond 2040	Total Estimated Cost
Capacity	$41 M	$47 M	$62 M	$150 M
Condition	$68 M	$87 M	$50 M	$205 M
Other	$24 M	$3 M	$9 M	$36 M
Totals	$133 M	$137 M	$121 M	$391 M

Figure 8-4, City of Bend Water Capital Improvement Projects


Legend
City Projects
Pump Station Projects
Well Projects
Reservoir Projects
Valve Projects
Pipe Projects
Pipe Replacement Projects
Existing PRV
Existing Water Pipe Diameter
Water Service Area
Avion
City of Bend
Roats
0 1,875 3,750 Feet
murraysmith
City of Bend
Water Public Facilities Plan
Figure 4
City Projects
September 2021

Private Providers

Currently, the City of Bend serves water to approximately ~~70~~75% 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-~~5~~3 shows the extent of both the city's service area (blue) and the private providers; Avion (~~light yellow or tan)~~ (orange or pink) and Roats (green). The City has entered into franchise agreements with ~~Avian~~ Avion 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~~city's Municipal 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

The ~~2013~~2021 Water Public Facility ~~Facilities~~ Plan lists the various water improvement projects the city plans to construct through the year ~~2028~~2040 to support the projected growth and planned land uses in the Bend ~~urban area~~UGB. 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 water utility 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~~.~~. These fees are earmarked for major system improvements identified in the ~~city's~~ City's 2021 Water PFP ~~2007 Water System Master Plan Update~~ such as reservoirs, wells, transmission lines, and treatment facilities. ~~As of~~ For fiscal year 2021-2023, ~~2006-07~~, the water System Development Charge is 100 percent of the allowable maximum charge. The 2021-2023 Water SDC is $5,857 per equivalent dwelling unit (EDU). 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 Residential and Non-residential customers inside the city limits, water utility rates are based on meter size plus a rate of $2.02 per 100 cubic feet for all other water uses. Residential and Non-residential water utility customers outside of the City limits pay higher per meter size rates and higher per cubic foot rates. ~~For more information about short and long term projects for the City's water system please see the 2013 Water Public Facilities Plan.~~

The 2021 Water Public Facility Plan summarizes the funding mechanisms that Avion Water Company and Roats Water System use to fund the operation and improvements of their respective water utilities.

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 8-43
Stormwater Management Budget for Fiscal Year 2013-2014

Stormwater Management Budget (Fiscal Year 2013-2014):	
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
Total	**$5,524,700**

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 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 curb-side pickup of municipal solid waste and recyclable materials. Recyclables

picked up at curb-side 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 curb-side 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, 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 Park 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 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.

A facility to house Public Transportation operations was 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

8-15 The City of Bend is the provider of water service for the City's service area under Statewide Planning Goal 11

8-16 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.

8-17 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.

8-18 Within the urban planning area, public and private water systems shall be consistent with City Standards and Specifications for construction and service capabilities.

8-19 The City shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary.

8-20 The City shall continue to implement a water conservation program that emphasizes education, enforcement, metering, and other methods to use water efficiently.

8-21 The City may allow water service outside the UGB at rural levels consistent with Goal 11.

Storm Drainage Facilities and Systems

8-22 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.

8-23 The City will initiate funding options (e.g., SDCs, grants, low-income loans) for stormwater capital projects in accordance with

applicable laws.

8-24 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.

8-25 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.

8-26 The City shall work to minimize the discharge of untreated stormwater run-off from streets directly into the Deschutes River and Tumalo Creek.

8-27 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.

8-28 The ability to provide stormwater facilities for developments proposed for annexation into the City shall be a consideration for annexation approval.

8-29 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.

8-30 The City shall implement and enforce requirements for an erosion and sediment control program for public and private construction and post-construction activities.

8-31 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.

8-32. 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 stormwater pollution prevention.

8-33 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.

8-34 Development on slopes in excess of 10 percent shall require special consideration to prevent construction-related and post-construction erosion.

8-35 The City shall regulate development near water courses to reduce erosion and pollution and to provide open, natural areas.

8-36 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.

8-37 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.

8-38 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.

8-39 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.

8-40 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.

8-41 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.

8-42 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

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

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

8-45 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.

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

Public Buildings and Facilities

8-47 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 access to principal streets.

8-48 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

8-49 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.