

Chapter 6 - Recommended Water System Improvements and Capital Improvements Plan

Introduction

This chapter summarizes the recommended improvements to the City of Stanfield's water system identified as part of this Water System Master Plan (WSMP) to address deficiencies and support anticipated growth and increased demands. The recommended improvements have been categorized and presented in a Capital Improvements Plan (CIP) format. The intent of this approach is to provide a "road map" of the improvements to be completed during the 20-year planning period. Priorities for improvements under the CIP are outlined, and estimated costs are presented. Long-term improvements are also identified in this chapter but are not included in the CIP. The long-term improvements will be development driven and will likely be funded by System Development Charges (SDC).

Improvements needed to serve the existing system have been prioritized to limit the burden on existing rate payers. The intent of this chapter is to give the City a prioritized list of improvements that should be implemented as funds are available.

Categories of Improvements

The City of Stanfield is proposing to complete water system improvements utilizing two different funding categories. These categories are:

- CIP - Improvements identified under the CIP category include capital improvements projects that need to be completed to address existing system deficiencies irrespective of growth.
- SDC - Improvements identified under the SDC category have been developed to address those needs in the system to specifically support growth and associated increased system demands.

Summary of Improvements

Presented hereafter is a summary of the recommended improvements identified based on the evaluation and computer water modeling efforts completed as part of this WSMP. The recommended water system improvements and their priorities are presented on Figure 6-1. Figure 6-2 shows the recommended long-term future development improvements. Cost estimates for the recommended improvements are shown on Figure 6-3 in order of priority. For a more comprehensive discussion with respect to the different elements (supply, storage, and distribution) of the water system and detailed evaluation, the reader is encouraged to reference other chapters in this WSMP.

Water Supply

As discussed in Chapter 3, the current water supply for the City is provided by five groundwater wells: the Railroad Well (Well No. 2), Well No. 3, Well No. 4, Pilot Well, and Well No. 5. The City currently obtains its municipal water supply primarily from Well No. 5 and utilizes Wells No. 3 and 4, and the Pilot Well for supplemental and emergency backup purposes. The Railroad Well (Well No. 2)

is used for irrigation purposes only. The current capacity from the City's primary well (Well No.5), along with the two supplemental wells (Wells No. 3 and 4), is approximately 2,150 gallons per minute (gpm). As shown on Figure 2-2 in Chapter 2, the 2037 peak daily flow requirement is estimated to be 1,030 gpm. It is not recommended the City increase its supply capacity at this time.

Water Storage

The City's water storage consists of three storage reservoirs, two of which are actively used, with a total available storage volume of 1,625,000 gallons. Reservoir No. 1 is a 50,000-gallon elevated steel reservoir constructed in 1920 as part of the original water system. Due to issues with leaks and structural integrity concerns, this elevated reservoir is no longer used as a part of the City's water system. However, it is the City's intention to rehabilitate the structure and maintain the reservoir as a landmark.

Reservoir No. 2 is a 625,000-gallon ground-level welded steel storage reservoir constructed in 1976, which was recently recoated as part of the 2013 improvements project. Water is pumped from Reservoir No. 2 into the North Stanfield pressure zone via the North Stanfield booster pump.

Reservoir No. 3 is a 1,000,000-gallon ground-level welded steel storage reservoir constructed in 2014. This reservoir is located in South Stanfield near the Pilot Travel Center. Water is pumped from the reservoir into the Old Town and South Stanfield pressure zones via the South Stanfield booster pump.

The needed storage for the 2037 design population is approximately 1,203,800 gallons. The current storage volume is adequate to meet these projected requirements. Since Reservoirs No. 2 and 3 have recently been coated, they are not anticipated to need recoating during the 20-year planning period. Based on current reservoir capacity and condition, it is not recommended the City increase or make changes to the current storage available to the City's water system. To maintain Reservoir No. 1 as a landmark, it is recommended the City follow the steps provided in Chapter 4.

Water Distribution

As outlined in Chapter 5, the City's distribution piping system is generally in good condition. However, several areas cannot currently provide adequate fire flow. Undersized lines, dead-end lines, and supply distribution within the City lead to low fire flow capacity and issues with water circulation in these areas; therefore, some areas need improvement, namely, areas with undersized main lines and dead-end lines. Improvements outlined in Chapter 5 include installing water main lines to replace undersized lines and improving system looping, circulation, and fire flow capacities. These improvements are recommended to address key areas of concern to improve fire flow capacity in the system.

Capital Improvements Plan

Introduction

A CIP provides a framework to prioritize and implement the City's facility and infrastructure asset improvement process over the planning period. A CIP is a financing and construction plan for projects that require significant capital investment and are essential to safeguarding the financial

health of the City while providing continued delivery of utility and other services to citizens and businesses.

As part of this WSMP, identified deficiencies and improvements required to address the water system needs of the City for the next 20 years have been outlined. The improvements have been incorporated into a CIP. The CIP will need to be reviewed and updated periodically (at least every five years) to accommodate changing community needs, additional improvements that may be identified through time, and changes in financial resources. The CIP lists the City's capital improvements projects, places the projects in a priority order (subject to periodic review), and provides a schedule for funding and constructing the projects.

The CIP is a tool to be used in the development of responsible and progressive financial planning. The program complies with the City's financial policies. City policies and the CIP form the basis for making annual capital budget decisions and supporting the City's continued commitment to sound, long-term financial planning and direction related to the City's water system.

The CIP identifies and prioritizes capital improvements projects of all types based on the water system master planning process. Capital improvement projects will be coordinated with the annual budget process to provide available resources to implement identified water system improvements. For each capital improvements project, the CIP provides a variety of information including a project description and the service need to be addressed, a proposed timetable, and proposed funding levels. Capital improvements projects are categorized by priority. Ongoing operating costs are not included in the CIP estimated project costs.

Development of a CIP is a collaborative effort between the City manager and engineer, Public Works director, City Council members, department heads, and the City's engineering and financial consultants. City staff participates in CIP development via specific master plans and other planning tools. Major capital improvements projects require City Council interaction during project development and where funding allocations are made.

Identified Improvements

This section summarizes and describes the identified improvements included in the CIP. The prioritized list of improvements is outlined, and the estimated costs of the various CIP improvements are presented. The lists are presented in order of City-identified priority.

Recommended Water System Improvements to be Completed Within the Zero to 10-Year Planning Period

- Increase the line size on Main Street to 10-inch from Old Stage Road (or Ball Avenue) to West Page Avenue, increase the line size on West Page Avenue to 10-inch from Main Street to Barbara Street, and increase the line size on Barbara Street to 10-inch from West Page Avenue to West Wood Avenue.
- Increase the line size on Old Stage Road (or Ball Avenue) to 10-inch from Main Street to Glendening Street, and increase the line size on Glendening Street to 10-inch from Old Stage Road (or Ball Avenue) to Wood Avenue.

- Increase the line size on Dunne Street to 8-inch from Wood Avenue to Harding Avenue, and increase the line size on Wheeler Avenue to 6-inch from Dunne Street to the hydrant on the corner of Dunne Street and Wheeler Avenue.
- Add a new 8-inch line at the Stanfield Secondary School drop-off loop.
- Increase the line size on Seymour Street (or Coe Avenue) to 10-inch from Coe Avenue (or Sherman Street) to Hoosier Road.
- Add a new 8-inch line to loop the dead-end lines on Dunne Street, Earl Court, Jason Avenue, and Sloan Street.
- Add a new 8-inch line to loop the dead-end lines on Howard Street and Ardith Avenue.
- Add a new 8-inch line to loop the dead-end lines on Ardith Avenue and Harding Avenue.

Recommended Water System Improvements to be Completed Within the 10- to 20-Year Planning Period

- Add a new 8-inch line to loop the dead-end lines on Palm Street, Seibel Lane, Deer Run Court, and Main Street.
- Add a new 8-inch line to loop the dead-end line on Umatilla Street.
- Increase the line size on Locust Street to 10-inch from the North Stanfield booster pump station to the hydrant on Locust Street, east of Highway 395.
- Increase the line size from Sherman Street to the wastewater treatment facility (WWTF) to 10-inch, and add a new 10-inch line to loop the dead-end line at the WWTF to the dead-end line on Hoosier Road.
- Increase the line size on Coe Avenue to 8-inch from Wayne Street to Rauch Lane.
- Increase the line size on Harding to 10-inch from Willow Drive (east) to Glendening Street.
- Add a new 8-inch line to loop the dead-end line on Willow Drive.

Development-Driven Water System Improvements

All other improvements mentioned in Chapter 5 are expected to be needed to support development but are not included in the CIP. Improvements needed to support development will likely be funded by the City's SDC charges.

Estimated Costs

The recommended CIP-funded improvements and associated costs are shown on Figures 6-1 and 6-3, respectively. It is recommended the estimated costs be increased by an inflation rate of 3 to 5 percent annually, or more depending on market conditions, to account for potential increases in project costs in future years.

Environmental and Cultural Resource Review

Introduction

This section presents a preliminary environmental review of the recommended water system improvements. A more detailed report should be completed to meet specific agency funding requirements.

Affected Environment/Environmental Consequences

Land Use

The City of Stanfield is located on Highway 395, between Interstate 84 and the City of Hermiston, Oregon, as shown on Figure 1-1 in Chapter 1. The current zoning in the City is shown on Figure 2-1 in Chapter 2. As shown, 11 land use classifications have been identified within city limits: Residential, Residential/Neighborhood Commercial Subdistrict, Residential/Multi-family Subdistrict, Residential/Manufactured Home Park Subdistrict, Residential/Urban Holding Subdistrict, Downtown District, Downtown/Tourist Commercial Subdistrict, Light Industrial, General Industrial, General Industrial/Transportation Subdistrict, and Open Space. The proposed improvements would be located in an area designated residential and downtown areas. No conditional use permits will be required, because improvements are primarily repairs to existing portions of the system.

Important Farmland

Typically, soils throughout the City of Stanfield are designated as sandy loams. A web soil survey on the U.S. Department of Agriculture Natural Resources Conservation Service website for the area around the City of Stanfield shows the primary soils around the City. Primary soils in the improvement area are as listed on Table 6-1.

**TABLE 6-1
FARMLAND CLASSIFICATION UMATILLA COUNTY, OREGON**

Map Unit Symbol	Map Unit Name	Rating
42A	Kimberly fine sandy loam, 0 to 3 percent slopes	Prime Farmland if Irrigated
27A	Esquatzel silt loam, 0 to 3 percent slopes	Prime Farmland if Irrigated

Some improvements are located on soil classified as Prime Farmland if Irrigated; however, no Prime Farmland would be impacted, because all improvements would occur underground, and none of the improvements would be on land zoned for farmland.

Formally Classified Lands

Formally classified lands are lands designated by federal, state, and local governments for special purposes. These include parks, monuments, landmarks, historic trails, wild and scenic areas, wilderness areas, Native American-owned lands, etc.

No formally classified lands are located within the improvements area. The Umatilla River is a considered a cultural and historic feature of Oregon but is not located in the

improvements area; therefore, the recommended improvements will have no effect on wild and scenic rivers. The water tower located in downtown Stanfield has cultural and historic significance and would not be impacted by the improvements described in this WSMP.

Floodplains

According to the Federal Emergency Management Agency (FEMA) Map Service Center, FEMA Flood Insurance Rate Map (FIRM) Panels Number 41059C0611G, 41059C0612G, 41059C0613G, and 41059C0614G have been assigned to the improvement area. Some improvements are located in "Special Flood Hazard Areas." The improvements described in this WSMP will be designed as to not impact floodplains. Improvements that take place within the designated floodplain may require a Umatilla County Floodplain Development Permit. The FEMA FIRM panels are shown on Figure 1-2 in Chapter 1.

Wetlands and Waterbodies

The National Wetlands Inventory Map (see Figure 6-4) identifies Freshwater Emergent wetlands within the project vicinity of some of the improvements located in the southwest portion of the City. However, the recommended improvements would be designed to avoid permanent impacts to wetlands. A wetland determination/delineation should be completed prior to construction. If wetlands are found that would be impacted by the recommended improvements, permits may be required.

The Umatilla River is the closest river to the recommended improvements described in this WSMP. The Umatilla River is approximately 0.12 mile from the nearest recommended improvement. Erosion and sediment control best management practices (BMPs) will be used to reduce impacts to the river.

Cultural/Historic Resources

According to the Oregon Historic Sites Database, there are four historic properties located in the City of Stanfield: one is listed as eligible for inclusion on the National Register of Historic Properties (NRHP), two are listed as not eligible or non-contributing, and one as undetermined. The eligible property is the Hope Presbyterian Church of Stanfield located at 210 East Taft. The church was built circa 1910.

According to the Oregon Archaeological Records Remote Access Database, six cultural resource surveys were completed in the vicinity of the City. Three were large-scale linear surveys that passed through the City and included one highway survey, one transmission line corridor, and one pipeline expansion. Only one cultural resource was located and recorded within the city limits. This resource is the historic canal U.S. Feed Canal, recorded in 1992 for the Pacific Gas Transmission Co.-Pacific Gas & Electric Co. (PGT-PG&E) Pipeline Expansion Project. This canal is identified as a part of the U.S. Bureau of Reclamation's Umatilla Project, providing agricultural water for historic homesteads and farms. Other components of the Umatilla Project were recommended eligible for the NRHP. The eligibility for the NRHP for this portion of the U.S. Feed Canal remains undetermined but was recommended eligible as well.

Although the U.S. Feed Canal is the only recorded cultural resource within the city limits, one additional resource was recorded adjacent to the city limits. A segment of the Stanfield Branch Furnish Ditch is located approximately 800 feet northeast of the city limits. This resource was recorded in 1992 for the PGT-PG&E Pipeline Expansion Project and was recommended as eligible for the NRHP, although its status remains undetermined. The second cultural resource is 3,200 feet (0.6 mile) south of the City where human remains were reported on private land by two local informants. Some of the remains were allegedly reburied in the 1960s. The exact location of these burials and reburials was undetermined during an investigation in 1985.

General Land Office maps do not show any significant cultural features in the vicinity but do show natural features, such as land undulations, adjacent to the Umatilla River. Aerial maps show an irrigation ditch or canal and ephemeral canals south of Stage Gulch Road and County Road 1186, which is identified on the 1908 Umatilla map and modern topographic maps as Stanfield Drain. This canal feature appears above the recorded Stanfield Branch Furnish Ditch. The Stage Gulch Road itself appears on the 1908 map, indicating its historic date. A Union Pacific Railroad line is identified on the western boundary of the city limits, but no historical routes are delineated nearby.

Hunn et al. 2015¹ recorded locations in Oregon and Washington that were occupied, utilized, and referred to by local tribal populations. Among these locations are several sites in proximity to present-day Stanfield. These locations are noteworthy as they provide a pre-contact context to the locality of the City. Two jackrabbit hunting and resource gathering locations are identified 7-1/2 straight line miles below and above the City on the Umatilla River. In addition to these hunting locations, the nearby confluence of the Umatilla and Columbia Rivers is significant to local tribal groups for salmon and lamprey eel fishing.

Potential impacts to archaeological resources as a result of construction include excavation, sediment disturbance, sediment compaction, and other ground-disturbing construction activities. The Oregon State Historic Preservation Office and the Confederated Tribes of the Umatilla Indian Reservation should be consulted prior to finalizing the project design.

Additional requirements may be necessary depending on federal involvement (funding or permits), which may necessitate compliance with Section 106 of the National Historic Preservation Act. If no federal nexus is identified, the project must still comply with Oregon Revised Statutes (ORS) (ORS 97.740, ORS 358.905-358.961, ORS 390.235) and Oregon Administrative Rules (OAR) 736-051-0090, which protects Native American cairns, graves, and associated items, items of cultural patrimony, and archaeological sites on non-federal and private lands. Additional archaeological survey, testing, and/or permitting may be required to comply with state laws.

¹ Hunn, Eugene S., E. Thomas Morning Owl, Phillip E. Cash Cash, and Jennifer Karson Engum 2015 *Čáw Pawá Láakni, They Are Not Forgotten: Sahaptian Place Names Atlas of the Cayuse, Umatilla, and Walla Walla*. Tamástslíkt Cultural Institute, Pendleton, Oregon.

Biological Resources

Important fish and wildlife habitat in the area of the recommended improvements includes the riparian area surrounding the Umatilla River. Riparian areas are critical to the health of streams, as the riparian vegetation provides shade and temperature regulation, provides cover for aquatic organisms, and stabilizes streambanks, thus preventing erosion.

Information from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service websites and corresponding species lists indicate the following federally listed species and critical habitat may occur in Umatilla County (see Table 6-2).

**TABLE 6-2
ENDANGERED SPECIES ACT-LISTED SPECIES AND CRITICAL HABITAT IN UMATILLA COUNTY**

Species	ESA Status	Critical Habitat in Project Vicinity	Potential Effect
Steelhead (<i>Oncorhynchus mykiss</i> , Middle Columbia River Evolutionarily Significant Unit)	Threatened	Yes. The Umatilla River is included in steelhead designated critical habitat.	None. There will be no in-water work or discharge to waters listed as supporting or providing habitat for steelhead.
Bull Trout (<i>Salvelinus confluentus</i>)	Threatened	Yes. The Umatilla River is included in bull trout designated critical habitat.	None. There will be no in-water work or discharge to waters listed as supporting or providing habitat for bull trout.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Threatened	No. There is no yellow-billed cuckoo proposed critical habitat in Oregon.	None. There is no suitable habitat for this species in the improvement areas.
Gray wolf (<i>Canis lupus</i>)	Endangered	No. There is no gray wolf designated critical habitat in Oregon.	None. There is no suitable habitat in the improvement areas.

ESA = Endangered Species Act

The recommended improvements described in this WSMP would not impact biological resources as there is no suitable habitat for ESA-listed species, and no in-water work would be performed.

Water Quality

The recommended improvements lie within the Columbia Plateau Regional Aquifer System. According to the U.S. Geologic Survey website, this system occupies approximately 50,600 square miles and extends across a large part of southeastern and central Washington, a small part of northern Idaho, and northeastern Oregon, including nearly all of Umatilla County. According to the U.S. Environmental Protection Agency (EPA), the City of Stanfield is not located in a sole source aquifer area.

The City of Stanfield is located within the boundaries of the Stage Gulch Critical Groundwater Area. However, these improvements would not impact on groundwater. The recommended improvements would not increase the amount of water withdrawn from the

groundwater area and will likely reduce leaks. Erosion and sediment control BMPs would be used to prevent runoff and leaching into groundwater.

The Umatilla River is listed on the Oregon Department of Environmental Quality (DEQ) 303(d) list for lead, iron, and copper year-round. The recommended improvements would not involve any in-water work and would be at least 0.12 mile from the Umatilla River.

Socioeconomic/Environmental Justice

The population of the City of Stanfield, as of 2016, is estimated at 2,130. The profile published by the U.S. Census Bureau shows that the City is a predominately white community at 80.9 percent; 11.2 percent other race; 0.8 percent American Indian/Alaskan Native; 0.3 percent Asian; and 6.6 percent identifying as two or more races. The U.S. Census Bureau 2015 estimate for median household income for the City of Stanfield is \$51,016, versus \$50,229 for the State of Oregon.

It is not anticipated that elderly or minority populations residing adjacent to the improvements area would be impacted by the project. No business or residential relocations would be required as part of the recommended improvements.

Air

According to the DEQ, the City is not in an air quality non-attainment area, and the improvements area would not require an EPA air quality permit. However, construction activities would be subject to any dust or particulate ordinances of Umatilla County and the City, as appropriate.

Noise

The water system improvements will not emit additional noise. However, construction activities would create significant intermittent and temporary noise. To minimize impacts, work will generally be confined to the improvements area during daylight hours. Construction activities would be subject to any noise ordinance of the County and/or City.

Traffic

During construction, there may be temporary increases in traffic due to construction vehicles. No permanent or long-term impacts to transportation are anticipated as a result of the recommended improvements.

Hazardous Material

When asbestos cement pipe is encountered and repairs are needed, the City and contractor will follow OAR 340-248, Asbestos Requirements. The City and contractor may initiate consultation with the Occupation Safety and Health Administration prior to construction, if necessary.

There are two DEQ Hazardous Waste Site Reports for the City of Stanfield. The first is for the Pilot Travel Center, which is located in the southeast portion of town. The Pilot Travel

Center is considered a hazardous waste generator; the status has been conditionally exempt since December 31, 2007. The second site is the PG&E Northwest Stanfield City Meter Station, located in the north portion of the City. The PG&E station is considered a hazardous waste generator with reports in years 1991 through 1998. The station's current status is conditionally exempt as of March 1999. Neither site is anticipated to be disrupted during any of the recommended improvements described in this WSMP.

Summary

As previously mentioned, this limited environmental review is a brief collection of available information. A full Environmental Report would be completed, as needed, in conjunction with a funding application to meet specific agency requirements should the City decide to pursue funding for the recommended improvements.

General Operation and Maintenance Recommendations

Diligent operation and maintenance (O&M) activities for the various water system components are critical to providing a reliable water system that operates efficiently. One of the most valuable tools in analyzing present trends and projecting future needs of a water system and for general equipment upkeep is accurate and complete records. Data on such items as daily flows from master meters, water quality tests, as-built records on all underground piping, service lines, and tap locations, etc., should be kept by the City. Methodically kept records will be a tremendous asset to the City in operating and maintaining the water system.

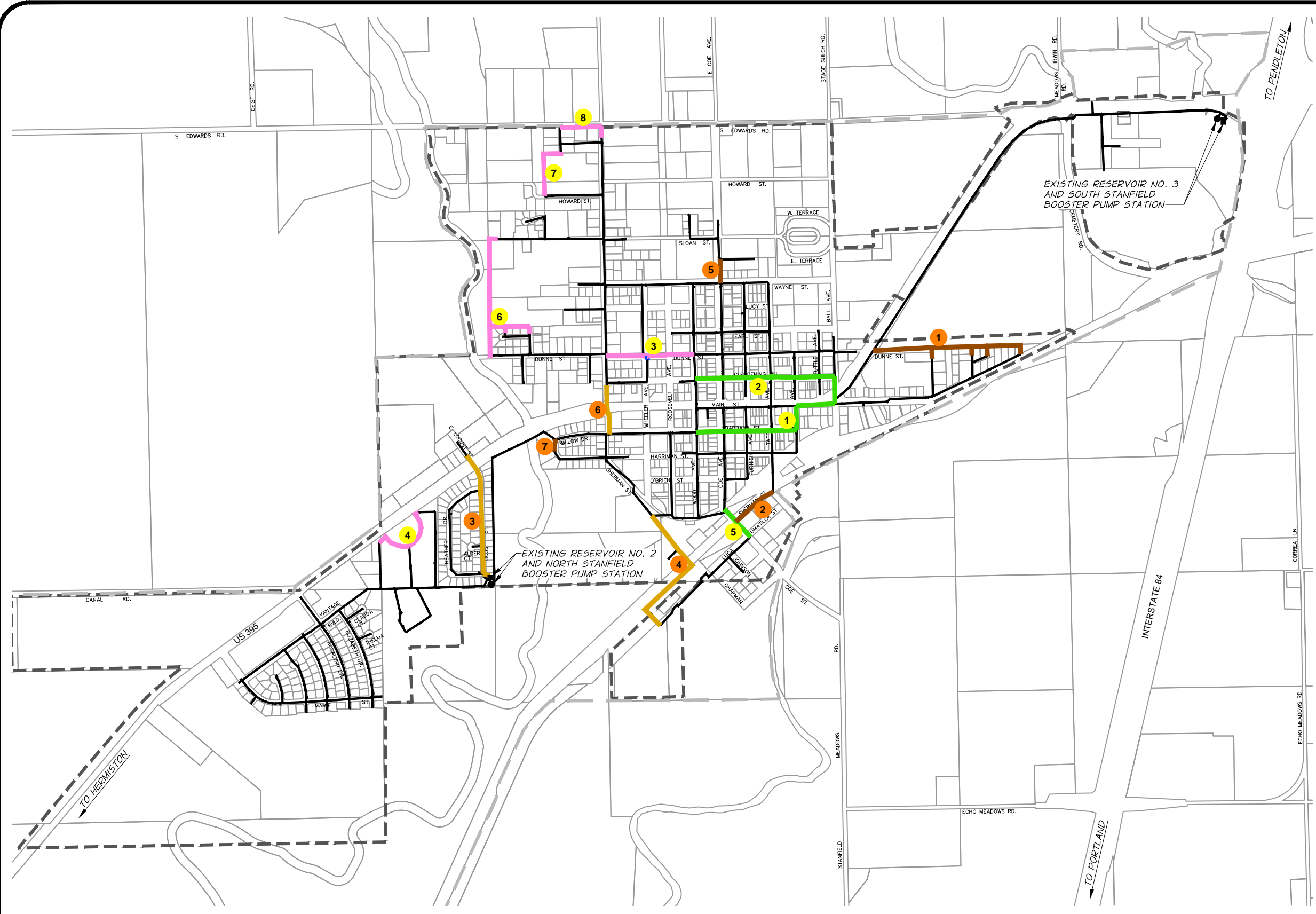
The following recommendations are intended to provide general guidance to the City and are not intended to constitute a comprehensive list of O&M activities related to the water system. Several of the recommendations are related to the recommended improvements previously discussed in this chapter. The recommended O&M activities and suggested recurrence intervals are as follows:

- Obtain water quality tests as required by regulations and submit the results to the Oregon Health Authority - Drinking Water Services.
- Record daily master water meter readings. Record the readings at the same time of day so the data are comparable over equal time periods.
- Record monthly static and pumping water levels in the City wells.
- Record daily chemical consumption, when applicable, to track chemical use relative to water flow data.
- Keep maintenance records on all valves, fire hydrants, and miscellaneous system components in the system.
- Exercise fire hydrants annually and record information on their condition.
- Exercise valves annually and record operation data and any problems experienced.
- Maintain the City's service agreement for the annual maintenance of system pressure relief valves.
- Exercise pumps per the manufacturer's recommendations.

- Clean and inspect the reservoirs every five to seven years or as often as required.
- Annually review water loss to identify potential leaks or improperly operating water meters.

Implementation and continued practice of these measures, many of which the City already perform, should help the water system continue to serve the City of Stanfield for many years to come.

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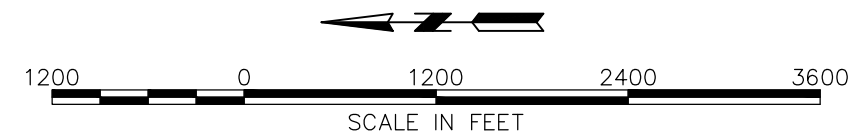
- CITY LIMITS
- URBAN GROWTH BOUNDARY

PROPOSED HIGH PRIORITY IMPROVEMENTS (0-10 YEAR PLANNING PERIOD)

- 10" PIPING
- 8" PIPING
- 6" PIPING
- # PROPOSED PRIORITY NUMBER

PROPOSED MEDIUM PRIORITY IMPROVEMENTS (10-20 YEAR PLANNING PERIOD)

- 10" PIPING
- 8" PIPING
- # PROPOSED PRIORITY NUMBER



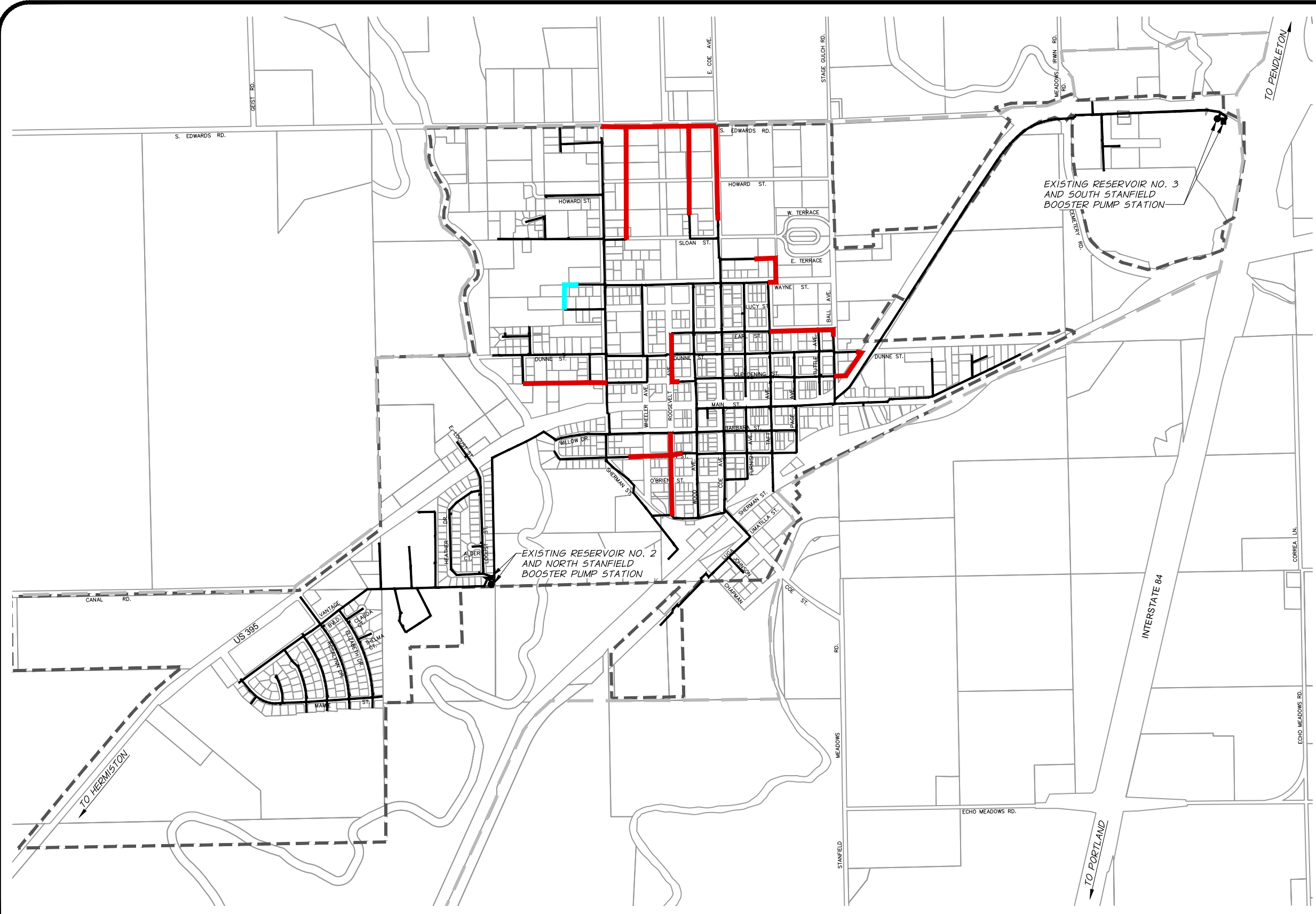
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CITY OF
STANFIELD, OREGON
WATER SYSTEM MASTER PLAN

**RECOMMENDED WATER
SYSTEM IMPROVEMENTS**

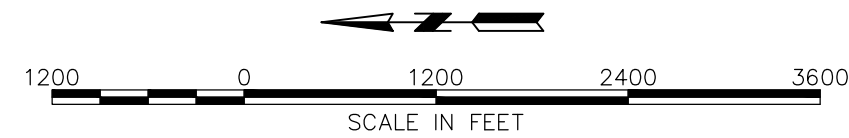
FIGURE
6-1

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LEGEND

- CITY LIMITS
- - - URBAN GROWTH BOUNDARY
- PROPOSED LONG-TERM FUTURE DEVELOPMENT IMPROVEMENTS (SDC FUNDED)
- 8" PIPING
- 6" PIPING



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CITY OF
STANFIELD, OREGON
WATER SYSTEM MASTER PLAN

**RECOMMENDED LONG-TERM FUTURE
DEVELOPMENT IMPROVEMENTS**

FIGURE
6-2

**CITY OF STANFIELD, OREGON
 WATER SYSTEM MASTER PLAN
 WATER SYSTEM IMPROVEMENTS COST ESTIMATE
 (YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed High Priority Improvements No. 1					
1	Mobilization/Demobilization	LS	\$ 12,000	All Req'd	\$ 12,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	20,000	All Req'd	20,000
3	10-inch Polyvinyl Chloride (PVC) Water Line, including Valves	LF	60	1,940	116,400
4	Connection to Existing Main Line	EA	3,000	10	30,000
5	Existing Fire Hydrant Connection to New Main Line	EA	2,500	2	5,000
6	Existing Water Services Connection to New Main Line	EA	600	17	10,200
7	Asphalt Surface Restoration	SY	60	1,500	90,000
Estimated Construction Cost					\$ 283,600
Construction Contingency (15%)					43,000
Total Estimated Construction Cost					\$ 326,600
Preliminary, Design, and Construction Engineering (20%)					65,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					33,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 424,600
Proposed High Priority Improvements No. 2					
1	Mobilization/Demobilization	LS	\$ 12,000	All Req'd	\$ 12,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	20,000	All Req'd	20,000
3	10-inch PVC Water Line, including Valves	LF	60	1,860	111,600
4	Connection to Existing Main Line	EA	3,000	13	39,000
5	Existing Water Services Connection to New Main Line	EA	600	11	6,600
6	Asphalt Surface Restoration	SY	60	1,450	87,000
Estimated Construction Cost					\$ 276,200
Construction Contingency (15%)					41,000
Total Estimated Construction Cost					\$ 317,200
Preliminary, Design, and Construction Engineering (20%)					63,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					32,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 412,200



**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed High Priority Improvements No. 3					
1	Mobilization/Demobilization	LS	\$ 7,000	All Req'd	\$ 7,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	20,000	All Req'd	20,000
3	6-inch PVC Water Line, including Valves	LF	50	40	2,000
4	8-inch PVC Water Line, including Valves	LF	55	1,020	56,100
5	Connection to Existing Main Line	EA	3,000	4	12,000
6	Existing Fire Hydrant Connection to New Main Line	EA	2,500	1	2,500
7	Existing Water Services Connection to New Main Line	EA	600	9	5,400
8	Asphalt Surface Restoration	SY	60	830	49,800
Estimated Construction Cost					\$ 154,800
Construction Contingency (15%)					23,000
Total Estimated Construction Cost					\$ 177,800
Preliminary, Design, and Construction Engineering (20%)					36,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					18,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 231,800

Proposed High Priority Improvements No. 4

1	Mobilization/Demobilization	LS	\$ 5,000	All Req'd	\$ 5,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	8-inch PVC Water Line, including Valves	LF	55	900	49,500
4	Connection to Existing Main Line	EA	3,000	3	9,000
5	Asphalt Surface Restoration	SY	60	695	41,700
Estimated Construction Cost					\$ 115,200
Construction Contingency (15%)					17,000
Total Estimated Construction Cost					\$ 132,200
Preliminary, Design, and Construction Engineering (20%)					26,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					13,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 171,200

**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed High Priority Improvements No. 5					
1	Mobilization/Demobilization	LS	\$ 7,000	All Req'd	\$ 7,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	10-inch PVC Water Line, including Valves	LF	60	440	26,400
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Existing Water Services Connection to New Main Line	EA	600	2	1,200
6	Asphalt Surface Restoration	SY	60	340	20,400
7	Railroad Crossing	LS	75,000	All Req'd	75,000
Estimated Construction Cost					\$ 146,000
Construction Contingency (15%)					22,000
Total Estimated Construction Cost					\$ 168,000
Preliminary, Design, and Construction Engineering (20%)					34,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					17,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 219,000

Proposed High Priority Improvements No. 6					
1	Mobilization/Demobilization	LS	\$ 10,000	All Req'd	\$ 10,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	15,000	All Req'd	15,000
3	8-inch PVC Water Line, including Valves	LF	55	2,080	114,400
4	Connection to Existing Main Line	EA	3,000	4	12,000
5	Gravel Surface Restoration	SY	10	1,615	16,150
Estimated Construction Cost					\$ 167,550
Construction Contingency (15%)					25,000
Total Estimated Construction Cost					\$ 192,550
Preliminary, Design, and Construction Engineering (20%)					39,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					19,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 250,550

**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed High Priority Improvements No. 7					
1	Mobilization/Demobilization	LS	\$ 5,000	All Req'd	\$ 5,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	8-inch PVC Water Line, including Valves	LF	55	700	38,500
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Gravel Surface Restoration	SY	10	545	5,450
Estimated Construction Cost					\$ 64,950
Construction Contingency (15%)					10,000
Total Estimated Construction Cost					\$ 74,950
Preliminary, Design, and Construction Engineering (20%)					15,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					7,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 96,950
Proposed High Priority Improvements No. 8					
1	Mobilization/Demobilization	LS	\$ 6,000	All Req'd	\$ 6,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	8-inch PVC Water Line, including Valves	LF	55	620	34,100
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Asphalt Surface Restoration	SY	60	470	28,200
Estimated Construction Cost					\$ 84,300
Construction Contingency (15%)					13,000
Total Estimated Construction Cost					\$ 97,300
Preliminary, Design, and Construction Engineering (20%)					19,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					10,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 126,300

**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed Medium Priority Improvements No. 1					
1	Mobilization/Demobilization	LS	\$ 11,000	All Req'd	\$ 11,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	15,000	All Req'd	15,000
3	8-inch PVC Water Line, including Valves	LF	55	2,140	117,700
4	Connection to Existing Main Line	EA	3,000	5	15,000
5	Asphalt Surface Restoration	SY	60	1,395	83,700
6	Gravel Surface Restoration	SY	10	265	2,650
Estimated Construction Cost					\$ 245,050
Construction Contingency (15%)					37,000
Total Estimated Construction Cost					\$ 282,050
Preliminary, Design, and Construction Engineering (20%)					56,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					28,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 366,050

Proposed Medium Priority Improvements No. 2					
1	Mobilization/Demobilization	LS	\$ 5,000	All Req'd	\$ 5,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	7,000	All Req'd	7,000
3	8-inch PVC Water Line, including Valves	LF	55	560	30,800
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Gravel Surface Restoration	SY	10	430	4,300
Estimated Construction Cost					\$ 53,100
Construction Contingency (15%)					8,000
Total Estimated Construction Cost					\$ 61,100
Preliminary, Design, and Construction Engineering (20%)					12,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					6,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 79,100

**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed Medium Priority Improvements No. 3					
1	Mobilization/Demobilization	LS	\$ 10,000	All Req'd	\$ 10,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	10-inch PVC Water Line, including Valves	LF	60	1,500	90,000
4	Connection to Existing Main Line	EA	3,000	5	15,000
5	Existing Fire Hydrant Connection to New Main Line	EA	2,500	2	5,000
6	Existing Water Services Connection to New Main Line	EA	600	17	10,200
7	Asphalt Surface Restoration	SY	60	1,165	69,900
Estimated Construction Cost					\$ 210,100
Construction Contingency (15%)					32,000
Total Estimated Construction Cost					\$ 242,100
Preliminary, Design, and Construction Engineering (20%)					48,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					24,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 314,100

Proposed Medium Priority Improvements No. 4

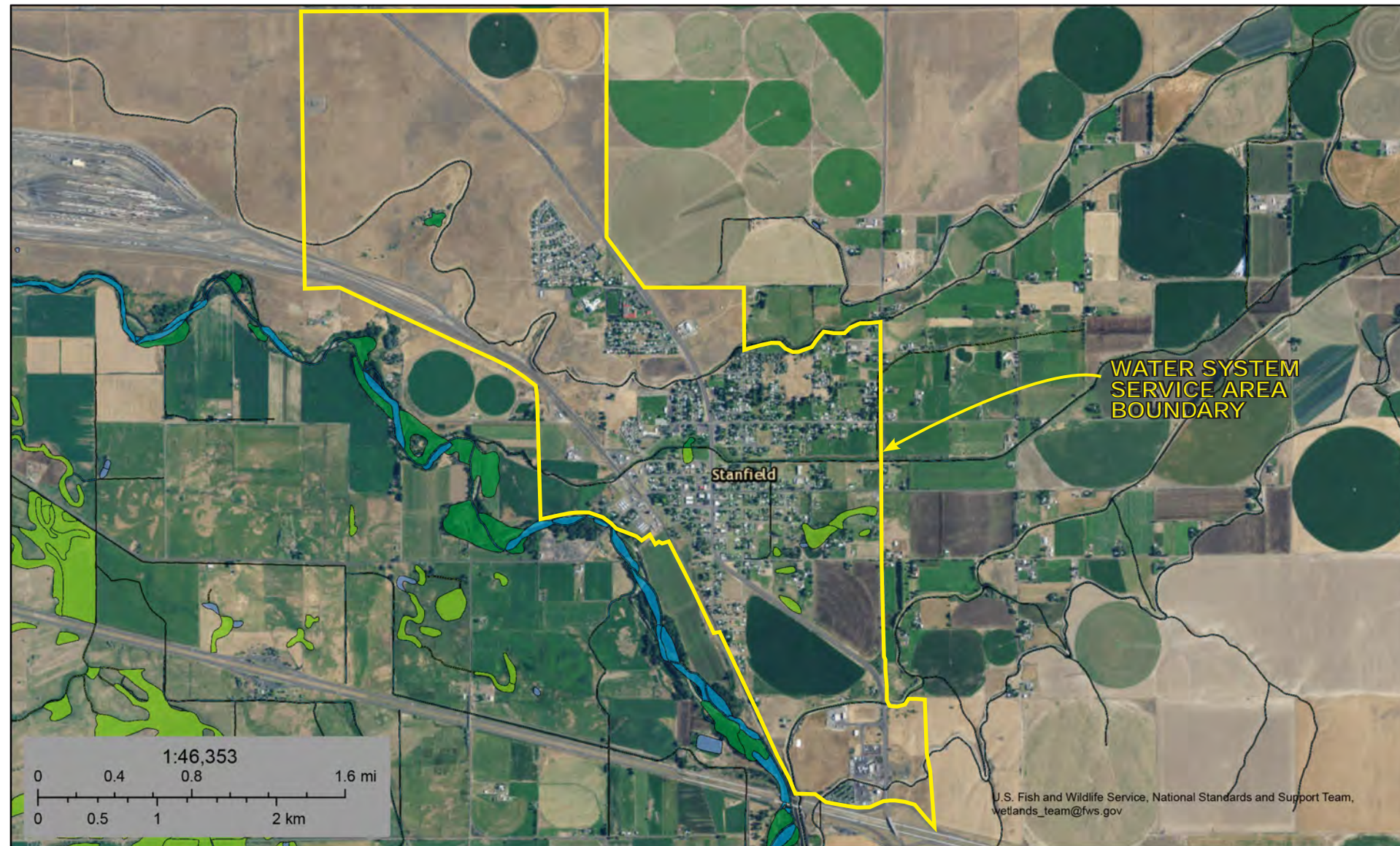
1	Mobilization/Demobilization	LS	\$ 11,000	All Req'd	\$ 11,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	20,000	All Req'd	20,000
3	10-inch PVC Water Line, including Valves	LF	60	1,740	104,400
4	Connection to Existing Main Line	EA	3,000	3	9,000
5	Existing Fire Hydrant Connection to New Main Line	EA	2,500	1	2,500
6	Existing Water Services Connection to New Main Line	EA	600	1	600
7	Gravel Surface Restoration	SY	10	1,345	13,450
8	Railroad Crossing	LS	75,000	All Req'd	75,000
Estimated Construction Cost					\$ 235,950
Construction Contingency (15%)					35,000
Total Estimated Construction Cost					\$ 270,950
Preliminary, Design, and Construction Engineering (20%)					54,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					27,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 351,950

**CITY OF STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
WATER SYSTEM IMPROVEMENTS COST ESTIMATE
(YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed Medium Priority Improvements No. 5					
1	Mobilization/Demobilization	LS	\$ 5,000	All Req'd	\$ 5,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	50,000	All Req'd	50,000
3	8-inch PVC Water Line, including Valves	LF	55	280	15,400
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Existing Water Services Connection to New Main Line	EA	600	2	1,200
6	Asphalt Surface Restoration	SY	60	215	12,900
Estimated Construction Cost					\$ 90,500
Construction Contingency (15%)					14,000
Total Estimated Construction Cost					\$ 104,500
Preliminary, Design, and Construction Engineering (20%)					21,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					10,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 135,500
Proposed Medium Priority Improvements No. 6					
1	Mobilization/Demobilization	LS	\$ 6,000	All Req'd	\$ 6,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	10,000	All Req'd	10,000
3	10-inch PVC Water Line, including Valves	LF	60	580	34,800
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Existing Water Services Connection to New Main Line	EA	600	3	1,800
6	Asphalt Surface Restoration	SY	60	445	26,700
7	Highway 395 Boring	LS	40,000	All Req'd	40,000
Estimated Construction Cost					\$ 125,300
Construction Contingency (15%)					19,000
Total Estimated Construction Cost					\$ 144,300
Preliminary, Design, and Construction Engineering (20%)					29,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					14,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 187,300




**CITY OF STANFIELD, OREGON
 WATER SYSTEM MASTER PLAN
 WATER SYSTEM IMPROVEMENTS COST ESTIMATE
 (YEAR 2017 COSTS)**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Proposed Medium Priority Improvements No. 7					
1	Mobilization/Demobilization	LS	\$ 5,000	All Req'd	\$ 5,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	50,000	All Req'd	50,000
3	8-inch PVC Water Line, including Valves	LF	55	160	8,800
4	Connection to Existing Main Line	EA	3,000	2	6,000
5	Asphalt Surface Restoration	SY	60	110	6,600
Estimated Construction Cost					\$ 76,400
Construction Contingency (15%)					11,000
Total Estimated Construction Cost					\$ 87,400
Preliminary, Design, and Construction Engineering (20%)					17,000
Environmental Report, Cultural Resource Investigation, Permitting, Plan Reviews (10%)					9,000
TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)					\$ 113,400



November 3, 2017

Wetlands

- | | | |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland |  Lake |
|  Estuarine and Marine Wetland |  Freshwater Forested/Shrub Wetland |  Other |
| |  Freshwater Pond |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper



CITY OF
STANFIELD, OREGON
WATER SYSTEM MASTER PLAN
NATIONAL WETLANDS INVENTORY MAP

**FIGURE
6-4**