

## Chapter 8: IMPROVEMENT PROGRAMS

This chapter describes the improvements to the City of Sunnyside's water system that address the needs of the existing and future customers based on the results of the system analyses presented in Chapters 3 and 6. The list and implementation schedule of planned improvements and studies/plans are provided to guide the City during its annual budgeting process. Emphasis has been placed on the improvements needed in the next six years. The present worth estimates are based on planning level costs for similar projects, and were projected forward with a 3% annual inflation rate.

### 8.1 CAPITAL IMPROVEMENT PLAN

Necessary improvements to the existing system, and those required to address anticipated growth are listed on Table 8-1. All projects have been assigned a number to help identify the project on Figures 8-1 and 8-2 as well as future reference on the table. The projects are organized by source/treatment, distribution, storage, and planning.

The projects are described as follows:

#### Source and Treatment Projects

- S-1 Hypochlorite conversion Well 6; moving hypochlorite generator to Well 12
  - Eliminate the gas chlorinator at Well 6 which is located about 75 feet from the Sunnyside High school. Replace with a hypochlorite tank and chlorinator.
  - Relocate an existing hypochlorite generator from the City's waste water treatment plant to Well 12 pump house to eliminate hauling the hypochlorite solution from Well 11 to Well 12.
- S-2 Install emergency hypochlorite storage tank and chlorinator at both the Grandview and Skyline tank sites
- S-3a Acquire the property for future well south of the freeway
- S-3b Drill and develop new well to meet projected needs
- S-3c Equip the new well and tie into the existing distribution system
- S-4a Acquire the property for future well north of the freeway
- S-4b Drill and develop new well to meet projected needs
- S-4c Equip the new well and tie into the existing distribution system

#### Fire Flow Distribution Projects

- D-1 Replace about 350 feet of existing distribution main on South 9<sup>th</sup> Street with an 8" main for improved fire flow to address a 46% deficiency.
- D-2 Complete loop on south 1<sup>st</sup> Street to mobile home park to improve a 23% fire flow shortage by installing an 8" main of approximate 550 feet.
- D-3 Complete 720 foot 12" loop on East Edison Road to improve fire flow that is currently 34% deficient.
- D-4 Replace approximately 700 feet of pipeline in Vine Street with 8" line to address a 29% shortage of fire flow.
- D-5 Replace about 840 feet 6" pipeline in Eastway Drive with a 12" line and connect to new 12" main from Federal Way to Eastway Drive for better fire flow to address a 28% deficiency.

- D-6 Complete loop on south side of Yakima Valley Highway with 12" line to improve a 10% fire flow shortage by installing 80 feet of 8" main.
- D-7 Complete loop on North Avenue with approximately 50 feet of 8" line to improve fire flow that is currently 22% deficient.
- D-8 Increase line size to hydrant on 11<sup>th</sup> Street to 8" for better fire flow to address a 35% shortage caused by the long distance (170 feet) from the main to the hydrant.
- D-9 Increase about 1350 feet of pipeline in Scoon Road from 8" to 12" for better fire flow in the area that is 23% deficient.
- D-10 Complete 5<sup>th</sup> and Blain loop and install 12" line from Federal Way for better fire flow (22% shortage) and better east-west hydraulics with about 1800 feet of new main.

#### System Looping Projects

- D-11 Install 390 feet of 8" line to connect the Madison and Parkland neighborhoods to complete looping and assist with fire .
- D-12 Replace all 4' water mains with 12' mains at various locations within central portion of the city (approximately 13,500 feet).
- D-13 Complete loop from Sunnyside-Mabton Road to Quail Lane with about 4,1790 feet of 12" main.
- D-14 Complete 12" loop east of the Port's Wastewater Treatment Plant with 3,00 feet of pipe for potential growth.
- D-15 Loop the SW portion of the residential area with 1,250 feet of 12" main for improved Service.
- D-16 Loop NW portion of service area with 12" main of approximately 5,850 feet in Sheller Road to Airport for growth.
- D-17 Install 4,920 feet of 12" main between East Edison and Yakima Valley Highway on Hanford Road for growth.
- D-18 Construct about an 13,170 feet 12" East Sunnyside loop (Allen-Ray –Alexander-Yakima Valley Highway) to service the area of potential growth.
- D-19 Construct an approximate 17,920 feet 16" South Sunnyside loop on Alexander from Picard Place to McLean Road for improved east-west flow in entire system, and for growth south of the freeway.
- D-20 Connect dead-end lines in Ravine Drive and Buena Vista Ave to Columbia Ave with about 530 feet of 8" line that will also help with fire flow.

#### Main Replacement and Pressure Improvement

- D-21 Miscellaneous and service line repair throughout the distribution system as needed
- D-22 Install new pressure reducing station to improve pressure near the Grandview tanks (exact location to be determined)

#### **Water Storage Improvements**

- R-1 Structural upgrade to the Skyline Reservoir to improve the seismic stability of the standpipe
- R-2 Repaint the interior and exterior of the Skyline Reservoir
- R-3 Repair and recoat the Grandview reservoirs as needed

- R-4a Purchase property for additional reservoir
- R-4b Construct new reservoir of approximately 2.6 million gallon capacity

The switching from gas to sodium hypochlorite at Well 6 and the installation of emergency disinfection equipment at reservoirs and other reservoir improvements are identified as maintenance and are scheduled throughout the next six years. Fire flow improvements, looping projects for the existing system, additional PRV stations and miscellaneous main replacements are also identified as maintenance items, and are scheduled. These projects include the deficiencies identified in previous hydraulic models. Their scheduling has been modified to address areas of current greater concern. Growth projects such as additional source(s), storage, and pipelines are labeled growth related, but not all are scheduled at this time since they are dependent on developer contributions and other financing (loans and grants). The planning and development of an additional source of water is identified, with the schedule providing adequate lead time before projected demand.

The structural and seismic upgrades to the Skyline Reservoir are the most critical improvements to be made, followed by switching the method of chlorination at Well 6.

Project W-18 (Alexander–Picard Place loop) may be mostly funded by development sources with the City contributing \$160,000 towards the cost of that project.

## **8.2 PLANNING IMPROVEMENT PLAN**

Planning-related projects are also listed to assist in budgeting and scheduling. These projects include regular updates to the Wellhead Protection Program and Water Use Efficiency programs. A Cost of Service Study and the next Water System Plan are also identified. In addition to the WSP, annual funds are being allocated to provide ongoing engineering and planning related to growth projects. New source and storage are two major projects that need substantial lead time for planning, property acquisition, and planning. The lead and copper monitoring plan is in need of updating to identify additional sites. Updating the Emergency Response Plan is also identified.

**Table 8-1 Capital Improvement Plan**

Code	Project Description	Item	Basis	2016 Present Worth Cost	Anticipated Year of Construction	2017	2018	2019	2020	2021	2022	Total for 2017-2022 (Inflation adjusted)
<b>Water Supply Projects</b>												
<b>Source &amp; Treatment</b>												
S-1	Hypochlorite conversion Well 6, moving hypochlorite generator to Well 12	Lump Sum	Maintenance	\$5,000	2017	\$5,200						
S-2	Hypochlorite storage and emergency feed, Grandview & Skyline	Lump Sum	Maintenance	\$245,000	2021-2022					\$225,200	\$52,200	\$277,400
S-3a	Property Acquisition for South Well	Lump Sum	Growth	\$150,000	2020				\$168,900			\$168,900
S-3b	South Well - Saddle Mountain (construction; 1000 gpm; 900 feet deep)	900 feet bgs	Growth	\$550,000	2021					\$637,400		\$637,400
S-3c	South Well Facilities(piping, pump, disinfection, controls, power)	Lump Sum	Growth	\$605,000	2022						\$722,400	\$722,400
S-4a	Property Acquisition for North Well	Lump Sum	Growth	\$150,000								\$0
S-4b	North Well - Saddle Mountain (construction; 1000 gpm; 900 feet deep)	900 feet bgs	Growth	\$550,000								\$0
S-4c	North Well Facilities(piping, pump, disinfection, controls, power)	Lump Sum	Growth	\$605,000								\$0
<b>Water Supply Subtotal:</b>				<b>\$2,860,000</b>		<b>\$5,200</b>	<b>\$0</b>	<b>\$0</b>	<b>\$168,900</b>	<b>\$862,600</b>	<b>\$-</b>	<b>\$1,036,700</b>
<b>Water Distribution System Improvements</b>												
<b>Fire Flow</b>												
D-1	S. 9th St. - 8" waterline	350LF	Maintenance	\$35,000	2017	\$36,100						\$36,100
D-2	S. 1st St. to trailer park - 8" waterline loop	550LF	Maintenance	\$55,000	2017	\$57,700						\$57,700
D-3	Edison Rd. to hydrant - 12" waterline	720 LF	Maintenance	\$72,000	2018		\$76,400					\$76,400
D-4	Vine Ave. - 8" waterline	700LF	Maintenance	\$70,000	2019			\$76,500				\$76,500
D-5	Eastway Dr. -12" waterline; 12" waterline from Federal Way	840LF	Maintenance	\$84,000	2020				\$94,600			\$94,600
D-6	Yakima Valley Rd - 12" waterline loop	80LF	Maintenance	\$8,000	2021					\$9,300		\$9,300
D-7	North Ave. - 8" waterline loop	50LF	Maintenance	\$5,000	2021					\$5,800		\$5,800
D-8	S. 11th St. - 8" tap to hydrant	170LF	Maintenance	\$17,000	2021					\$19,700		\$19,700
D-9	Scoon r and Private Road - 12" waterline	1350LF	Maintenance	\$135,000	2021					\$156,500		\$156,500
D-10	S 5th St. to Blaine Ave Loop - 12" waterline from Federal Way	1800 LF	Maintenance	\$180,000	2022						\$208,600	\$208,600
<b>System Looping</b>												
W-11	Madison to Parkland neighborhood - 8" waterline loop	390LF	Maintenance	\$39,000	2019			\$42,600				\$42,600
W-12	Replace all 4" waterlines with 12" waterlines	13,500LF	Maintenance	\$1,350,000	2018-2035		\$106,100	\$109,300	\$112,600	\$115,900	\$119,400	\$563,300
W-13	Sunnyside - Mabton Rd. to Quail Ln. - 12" waterline loop	4,170LF	Maintenance	\$417,000	2020				\$469,500			\$469,500
W-14	South Sunnyside (east of Port WWTP) - 12" waterline loop	3,600LF	Growth	\$360,000								\$0
W-15	West 12" waterline loop	1,250LF	Maintenance	\$125,000	2021					\$144,900		\$144,900
W-16	Sheller Rd. to Airport - Morgan 12" waterline loop	5,850LF	Growth	\$585,800								\$0
W-17	E. Edison Ave. to Yakima Valley Hwy. - 12" waterline loop	4,920LF	Growth	\$492,000								\$0
W-18	East Sunnyside - Ray Rd. - 12" waterline loop	13,170LF	Growth	\$1,317,000								\$0
W-19	Alexander - Picard Place -16" waterline loop	7,920LF	Growth	\$792,000								\$0
W-20	Columbia Ave. - 8" waterline loop	530LF	Maintenance	\$530,000	2022	\$530,000					\$632,820	
<b>Main Replacement &amp; Pressure Improvement</b>												
W-21	Miscellaneous main / service line replacement	\$100K Annual	Maintenance	\$500,000	Annual		\$106,100	\$109,300	\$112,600	\$115,900	\$119,400	\$563,300
W-22	New PRV Station	Lump Sum	Maintenance	\$75,000	2019			\$82,000				
<b>Water Distribution Subtotal:</b>				<b>\$7,168,800</b>		<b>\$623,800</b>	<b>\$288,600</b>	<b>\$337,700</b>	<b>\$789,300</b>	<b>\$568,000</b>	<b>\$1,080,220</b>	<b>\$3,687,620</b>
<b>Water Storage Improvements</b>												
R-1	Structural Upgrade for Skyline Reservoir	Lump Sum	Maintenance	\$1,250,000	2017	\$1,287,500						\$1,287,500
R-2	Repaint Skyline Reservoir Interior/Exterior	Lump Sum	Maintenance	\$250,000	2018		\$265,200					\$265,200
R-3	Repair and recoat Gramview Reservoirs	Lump Sum	Maintenance	\$100,000	2019			\$109,300				
R-4a	Property Acquisition	Lump Sum	Growth	\$150,000	2025							\$0
R-4b	Zone 1 Reservoir (2.6 MG)	Lump Sum	Growth	\$3,000,000	2026							\$0
<b>Water Storage Subtotal:</b>				<b>\$3,150,000</b>		<b>\$1,287,500</b>	<b>\$265,200</b>	<b>\$109,300</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,662,000</b>
<b>Total Water System Capital Improvements</b>				<b>\$13,178,800</b>		<b>\$1,916,500</b>	<b>\$553,800</b>	<b>\$447,000</b>	<b>\$958,200</b>	<b>\$1,430,600</b>	<b>\$1,080,220</b>	<b>\$6,386,320</b>

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Code	Project Description	Item	Basis	2016 Present Worth Cost	Anticipated Year of Construction	2017	2018	2019	2020	2021	2022	Total for 2017-2022 (Inflation adjusted)
	Planning Improvement Plan											
P-1	Wellhead Protection Program Update		Maintenance	\$8,000	2017	\$8,200		\$8,700		\$9,300		\$26,200
P-2	Update Emergency Response Plan		Maintenance	\$7,500	2018		\$7,500					\$7,500
P-3	Water Use Efficiency Program Update		Maintenance	\$5,000	2019			\$5,500				\$5,500
P-4	Update Lead and Copper Monitoring Plan		Maintenance	\$5,000	2019	\$5,000						\$5,000
P-5	Update Cross Connection Control Ordinance		Maintenance	\$5,000	2018		\$5,300					\$5,300
P-6	Water Cost of Service, Rates, SDC Study		Maintenance	\$80,000	2021		\$84,900					\$84,900
P-7	Update Water System Master Plan and Miscellaneous On-going Planning		Maintenance	\$200,000	2026	\$20,600	\$21,200	\$21,900	\$22,500	\$123,200	\$23,900	\$233,300
P-8	New Source Well Study		Growth	\$50,000	2018			\$54,600				\$54,600
P-9	Additional Storage Study		Growth	\$30,000	2024						\$46,371	\$46,371
<b>Total Water System Planning Projects</b>				<b>\$390,500</b>		<b>\$33,800</b>	<b>\$118,900</b>	<b>\$90,700</b>	<b>\$22,500</b>	<b>\$132,500</b>	<b>\$70,271</b>	<b>\$468,671</b>
<b>Project Totals</b>				<b>\$13,569,300</b>		<b>\$1,950,300</b>	<b>\$672,700</b>	<b>\$537,700</b>	<b>\$980,700</b>	<b>\$1,563,100</b>	<b>\$1,150,491</b>	<b>\$6,854,991</b>

Figure 8-1 Sunnyside Water System CIP 6-year

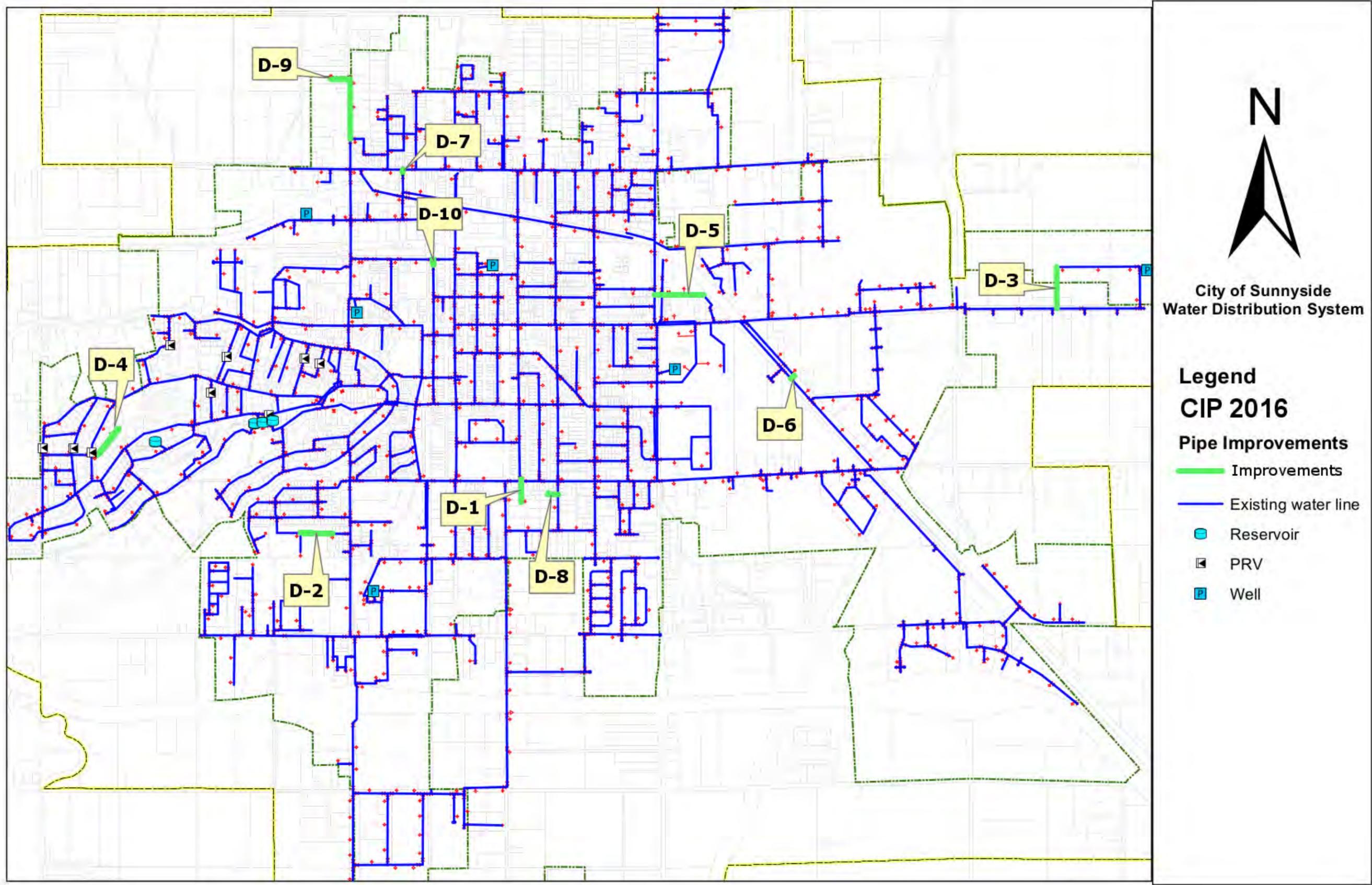
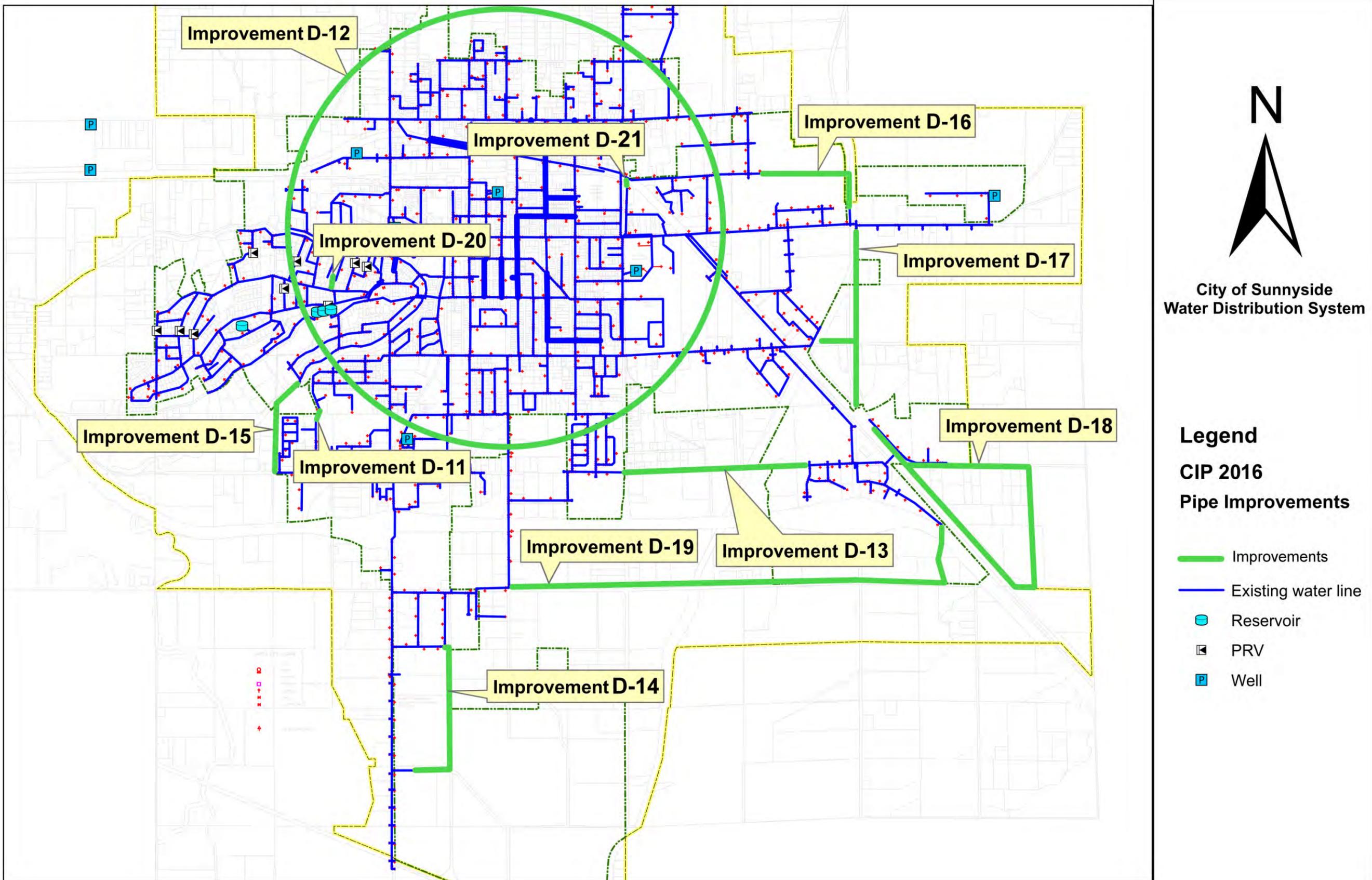


Figure 8-2 Sunnyside Water System CIP 20-year



### **Planning Improvement Plan**

- P-1 Review and update as necessary the potential contaminate inventory every two years
- P-2 Review and update as necessary the Emergency Response Plan
- P-3 Review and modify the Water Use Efficiency Program Goals and Measures
- P-4 Update Lead and Copper Monitoring program to include additional potential monitoring sites
- P-5 Update Cross Connection Control Ordinance
- P-6 Water Cost of Service Study to evaluate modifying consumption rates, and ensure adequate funding for operations and CIP program
- P-7 Update Water System Plan and enable miscellaneous on-going planning. Although the 6 year planning period will not expire until 2023, WSP funding appears in 2021 to allow project to start in late 2021, after a new source is developed. Adequate time will therefore be allowed to assemble 2021 data, and request an extension of water right permit (if required), and to have the WSP submitted by the fall summer/early fall of 2022.
- P-B New Source Study to determine location and anticipated depth of additional source(s)
- P-9 Additional Storage Study to determine best location and type for additional storage (high elevation ground level tank, standpipe, composite elevated storage, or ground level with booster pumps & emergency power)

### **8.3 OPERATIONS AND MAINTENANCE IMPROVEMENT PROGRAM**

As previously noted in Chapter 6.11, the following are the operations and maintenance areas that need continuing attention:

1. Modifying the structure of the existing crew by assigning senior members of the crew primary responsibility for the day-to-day operations of the system, while the remaining maintenance staff can work various projects as needed. By having staff assume some of the routine operation related responsibilities of the Division Supervisor, he would be available for increased project planning efforts.
2. Increased attention to maintaining the system map to ensure that is current and accurately represents existing facilities.
3. Ongoing efforts to maintain and enhance the Division's Operations and Maintenance Manual
4. Continue analysis of system vulnerability and modifications to the Operations and Maintenance Manual and Emergency Response Plan
5. Ensure the various program specific plans are updated as scheduled including:
  - a. Wellhead Protection
  - b. Emergency Response Plan
  - c. Water Use Efficiency
  - d. Lead and Copper Monitoring Plan
  - e. Cross Connection Control Ordinance

### **8.4 ADDITIONAL RECOMMENDATIONS**

In addition to the Capital Improvement Plan and the Operations and Maintenance improvements discussed above, the following recommendations are made to assist in the addressing future system needs:

1. The City should be watching for the possibility of acquiring existing well(s) and related water rights, especially south of the interstate.
2. The Water Division should closely track annual water demand and the impact of new commercial connections to ensure timely addition of new source(s) of supply.
3. File request of extension of water right permit (GA-31581) before Feb 1, 2017.