



Executive Summary

Summary of Recommended Improvements:

<i>Recommended Improvements</i>	<i>Existing System CIP</i>	<i>Future System CIP</i>
Pipeline Improvements	<ul style="list-style-type: none"> Selected pipeline replacement projects and new pipelines (see Figure ES-3) 	<ul style="list-style-type: none"> Selected pipeline replacement projects and new pipelines (see Figure ES-3)
New Storage Facilities	<ul style="list-style-type: none"> New Joint Water Storage Facility (Joint facility with City of Roseville) (2.6 million gallon storage for SJWD Sierra Pressure Zone) 	<ul style="list-style-type: none"> New 3.0 million gallon Kokila Reservoir (Bacon Pressure Zone)
Pump Station Improvements		
ARC North	<ul style="list-style-type: none"> No additional capacity required New standby generator 	<ul style="list-style-type: none"> No additional capacity required
ARC South	<ul style="list-style-type: none"> 567 gpm (0.82 mgd) 	<ul style="list-style-type: none"> No additional capacity required New standby generator
Bacon	<ul style="list-style-type: none"> Electrical improvements New standby generator 	<ul style="list-style-type: none"> No additional capacity required
Lower Granite Bay	<ul style="list-style-type: none"> No additional capacity required 	<ul style="list-style-type: none"> New 10.1 mgd pump station
Upper Granite Bay	<ul style="list-style-type: none"> New 1,889 gpm (2.72 mgd) 	<ul style="list-style-type: none"> Expand by 1,553 gpm (2.24 mgd)
Sierra	<ul style="list-style-type: none"> 2,122 gpm (3.06 mgd) and Electrical Improvements New standby generator 	<ul style="list-style-type: none"> No additional capacity required
Other Miscellaneous Improvements	<ul style="list-style-type: none"> Install pressure reducing station between ARC North and ARC South Pressure Zones Emergency intertie with PCWA New meter on Gravity Line 	<ul style="list-style-type: none"> Relocate pressure zone break between Sierra and Gravity Pressure Zones New pressure reducing station from Lower Granite Bay to Bacon
Total Probable Construction Cost	\$16.1 million	\$19.2 million



EXECUTIVE SUMMARY

OVERVIEW

The previous Water Master Plan for the San Juan Water District (District) retail water system was prepared in 1995. Since that time, there has been considerable growth within the District's retail service area. The purpose of this Retail Water Master Plan Update is to identify existing system deficiencies and required system improvements and to formulate a comprehensive Capital Improvement Program (CIP) which meets the needs of existing and future retail customers.

The objectives of this Retail Water Master Plan Update were:

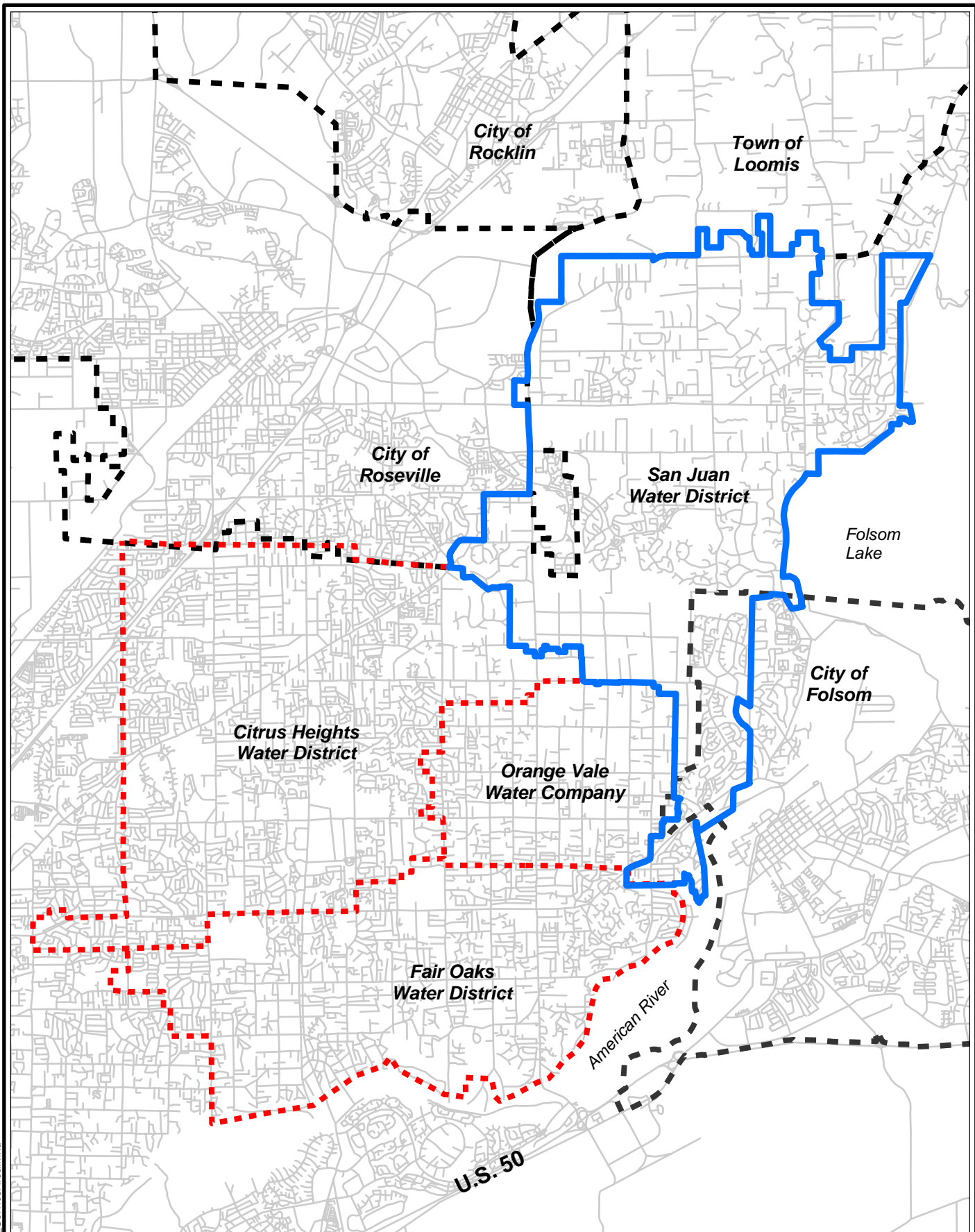
- Develop operational and design criteria under which the existing system will be analyzed and future facilities will be formulated.
- Evaluate existing water demands and project future (2009 and 2025) water demands.
- Develop an updated hydraulic model to assist with the analysis of the District's water system.
- Analyze the District's existing system under existing demand conditions and identify deficiencies and required improvements.
- Analyze the District's future (2025) system under projected 2025 demand conditions and identify required improvements.
- Recommend a retail water system Capital Improvement Program which meets the needs of existing and future customers.

RETAIL WATER SERVICE AREA AND CUSTOMERS

The District's retail area encompasses approximately 17 square miles (about 10,880 acres) and is located approximately 15 miles northeast of the City of Sacramento at the edge of the foothills of the Sierra Nevada. Water is provided on a retail basis to customers in the following areas:

- Unincorporated areas of Granite Bay, Placer County.
- The northeast portion of Sacramento County.
- A portion of the City of Roseville.
- A portion of the City of Folsom.

The retail service area (shown on Figure ES-1) is bounded by the Town of Loomis and City of Rocklin to the north, the City of Folsom and Folsom Lake to the east, the American River to the south, and the cities of Roseville and Citrus Heights to the west. The retail service area is divided into eight separate pressure (i.e., service) zones due to the variation in elevations across the service area.



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LEGEND

- RETAIL SERVICE AREA BOUNDARY
- WHOLESALE SERVICE AREA BOUNDARY
- CITY LIMITS
- ROADS

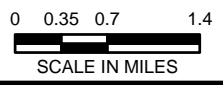


FIGURE ES-1

**San Juan Water District
Retail Water Master Plan
WATER SERVICE
AREA**





The population within the District’s retail service area has increased from 18,514 people in 1990 to 28,984 people in 2004. This represents a 57 percent increase over the past fourteen years. However, the District’s retail service area is nearly built out and, therefore, it is expected that the population will only increase to 29,633 by 2009, and to 32,137 by 2025.

Further discussion of the District’s service area and existing and future customers is provided in Chapter 2 of this Retail Water Master Plan Update.

WATER SUPPLY SOURCES

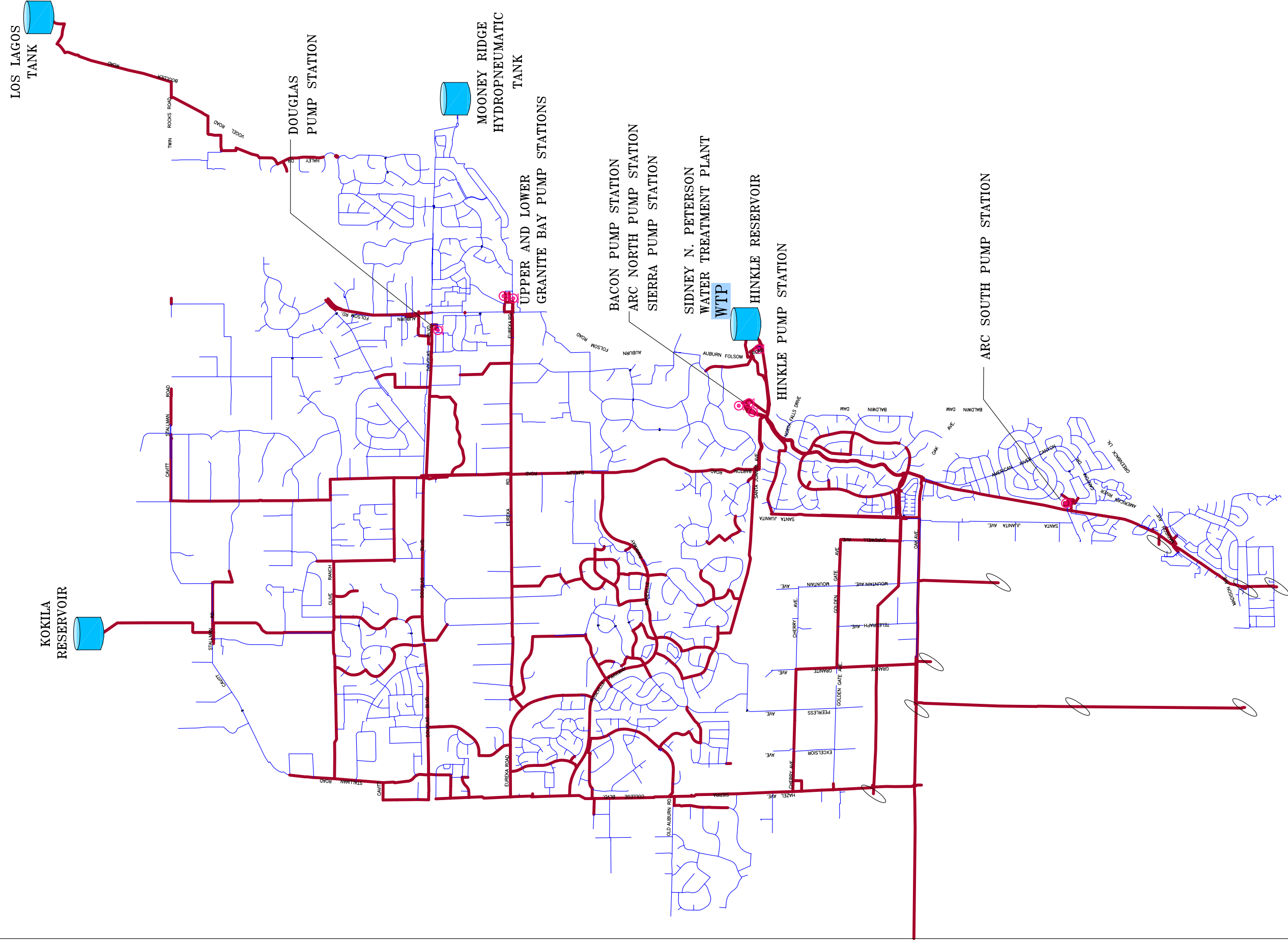
The District’s sole source of water supply is Folsom Reservoir, which is fed from the North, Middle and South Forks of the American River. The District is presently entitled to obtain up to 82,200 acre-feet per year (afa) of surface water from Folsom Lake. Thirty-three thousand (33,000) afa is based on pre-1914 water rights, 11,200 afa is from the District’s Central Valley Project (CVP) contract, and 13,000 afa from Public Law (PL) 101-514 “Fazio Water”. The remaining 25,000 afa are contract options the District has with Placer County Water Agency (PCWA) for water stored in reservoirs above Folsom Lake. Historically, this water supply has been sufficient to meet the needs of the retail community.

Because of the foothill-type geology underlying the District’s retail service area, groundwater pumping for municipal supply is not feasible within the District’s retail service area.





Further description of the District’s water supplies is provided in Chapter 4 of this Retail Water Master Plan Update.

RETAIL WATER SYSTEM FACILITIES

The District’s retail water system consists of one surface water treatment plant (WTP), three treated water storage reservoirs, one hydropneumatic tank, eight pump stations (three of these facilities are in the same building), and about 200 miles of transmission and distribution mains. These facilities are described in detail in Chapter 2 of this Retail Water Master Plan Update. Table ES-1 provides a summary of these facilities. The locations of the facilities are shown on Figure ES-2.



LEGEND

-  WATER TREATMENT PLANT
-  RESERVOIR
-  WHOLESALE METER
-  PUMP STATION
-  PIPELINE 12" AND LARGER

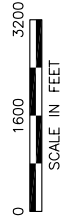


Figure ES-2

San Juan Water District
Retail Water Master Plan
SYSTEM MAP

Table ES-1. Summary of Existing Retail Water System Facilities

Facility Type	Facility Name	Capacity
Water Treatment Plant	Sidney N. Peterson Water Treatment Plant ^(a)	Treatment Capacity = 120 mgd
Storage Reservoirs	3 distribution system reservoirs: <ul style="list-style-type: none"> • Hinkle Reservoir (62 MG total; approximately 11.4 MG available to retail system)^(a) • Kokila Reservoir (4.56 MG) • Los Lagos Tank (1.65 MG) 1 hydropneumatic tank: <ul style="list-style-type: none"> • Mooney Ridge (50,000 gallon) 	Total Nominal Storage Capacity = 68.26 million gallons Storage Capacity Available to Retail System = 17.7 million gallons
Pumping Facilities ^(b)	Bacon Pump Station (serves three pressure zones): <ul style="list-style-type: none"> • Bacon Pressure Zone (15,000 gpm) • ARC-North Pressure Zone (3,600 gpm) • Sierra Pressure Zone (5,250 gpm) Granite Bay Pump Station (serves two pressure zones): <ul style="list-style-type: none"> • Lower Granite Bay (3,090 gpm) • Upper Granite Bay (740 gpm) Douglas Pump Station (600 gpm) ARC-South Pump Station (3,000 gpm) Hinkle-Crown Point Pump Station (2,880 gpm) ^(c)	Firm Pumping Capacity = 34,160 gpm (49.2 mgd) (assumes largest pump at each pump station is out of service)
Transmission and Distribution Mains	About 200 miles of 4-inch to 12-inch diameter distribution mains and 16-inch to 72-inch diameter transmission mains	
Emergency Interties ^(d)	Citrus Heights Water District (3) City of Folsom (1) City of Roseville (2) Fair Oaks Water District (2) Placer County Water Agency (2) CO-OP (3)	Capacities for these interties are detailed in Table 4-1

^(a) The Sidney N. Peterson WTP and Hinkle Reservoir are shared by the District’s wholesale and retail customers. It is assumed that approximately 11.4 MG (about 27 percent of the 42.3 MG total usable capacity) is available for the District’s retail customers from the Hinkle Reservoir.

^(b) Pumping capacities shown are firm pumping capacities, assuming that the largest pump is out of service.

^(c) Capacity shown is the firm pumping capacity of the new Hinkle-Crown Point Pump Station (currently under construction and anticipated to be completed in 2006) which will replace the existing Hinkle-Crown Point Pump Station (which has a firm pumping capacity of 1,510 gpm).

^(d) Citrus Heights Water District, Fair Oaks Water District and the CO-OP interties are predominately one-way interties into these adjacent agencies. However, there is also potential to provide localized service during an emergency.



CURRENT AND PROJECTED FUTURE WATER DEMAND

As described in Chapter 5, current potable water demands for the District were estimated based on historic production data. Water production records were reviewed to identify the total annual demand and average day demand for 2004. A summary of existing demands is shown in Table ES-2.

Table ES-2. Existing Retail Water Demands for the San Juan Water District (2004)^(a)

Demand Condition	2004 Retail Water Demand
Annual Demand	17,941 acre-feet
Average Day	16.0 mgd

^(a) The existing (2004) demands are based on actual data (via SCADA and/or metering) provided to WYA by the District.

Future water demands for the District were determined using two methodologies: one based on future population projections and one based on future land use and unit water use factors. Future maximum day and peak hour demands were determined using peaking factors derived from historic demands within each pressure zone. The maximum day peaking factors for each pressure zone ranged from 1.2 to 2.5 times the average day demand. The peak hour peaking factors for each pressure zone ranged from 2.3 to 4.0 times the average day demand. A summary of future demands for 2009 and 2025 is provided in Table ES-3.

Table ES-3. Estimated Future Retail Water Demands for the San Juan Water District

Demand Condition	2009 Retail Water Demand	2025 Retail Water Demand
Annual Demand (based on population projections)	18,060 acre-feet	19,580 acre-feet
Annual Demand (based on land use projections) ^(a)	20,100 acre-feet	21,970 acre-feet
Average Day Demand	17.9 mgd	19.6 mgd
Maximum Day Demand ^(b)	35.9 mgd	39.3 mgd
Peak Hour Demand ^(c)	60.1 mgd	65.7 mgd

^(a) Used for 2025 system analysis (see Chapter 8).

^(b) Based on the average day to maximum day peaking factors presented in Table 5-5.

^(c) Based on the average day to peak hour peaking factors presented in Table 5-5.

HYDRAULIC MODEL UPDATE

One of the objectives of this Retail Water Master Plan Update was to develop a reliable, representative hydraulic model of the District's water system which could be used with confidence to conduct detailed hydraulic analyses of pump stations, transmission and distribution pipelines and overall system configuration. Since the last model update, there has been new development and several CIP projects have been constructed. With this information, WYA developed an updated water system hydraulic model using H₂ONET. The updated model was then calibrated using actual field data and verified using data from the District's Supervisory Control and Data Acquisition (SCADA) system. A detailed description of the model development, calibration, and verification is provided in Chapter 6 of this Retail Water Master Plan Update. Additional data related to the verification of the updated model is provided in Appendix A.

EVALUATION OF EXISTING AND FUTURE WATER SYSTEM

Pumping Capacity Evaluation

The District's pumping capacity was evaluated to assess its ability to deliver a firm, reliable capacity to the retail service area as described in Chapter 3. The firm capacity is defined as the total pump station installed capacity with the largest pump out of service. To ensure pumping capacity reliability, each pump station should have at least two pumps, a lead pump and a standby pump to use in the event of a mechanical failure. Another consideration in determining pumping capacity reliability is the presence of a backup power supply at each pumping facility in the event of a power outage.

Water Storage Capacity Evaluation

The existing storage facilities were evaluated to determine whether they have sufficient capacity to provide the total required operational, fire flow and emergency storage using the District's current design criteria, as described in Chapter 3. The volume required for each of these three storage components is detailed below:

- Operational Storage: 25 percent of the maximum day demand.
- Emergency Storage: 50 percent of the maximum day demand.
- Fire Flow Storage: The required fire flow times the fire flow duration period, as required by the California Fire Code.

Water Distribution System Evaluation

The existing water distribution system was evaluated under the following demand scenarios:

- Peak Hour Demand
- Maximum Day Demand plus Fire Flow.



Each of the above demand conditions was simulated using the calibrated hydraulic model. The results of these model simulations were then compared to the established planning and design criteria described in Chapter 3. Additional model simulations were conducted to evaluate potential system improvements and/or enhancements, including new pipeline connections, parallel pipelines or replacement mains.

A detailed description of the evaluation of the existing water system is provided in Chapter 7 of this Retail Water Master Plan Update. A detailed description of the evaluation of the 2025 water system is provided in Chapter 8 of this Retail Water Master Plan Update.

RECOMMENDED SYSTEM IMPROVEMENTS

The recommended improvements needed to eliminate deficiencies identified in the analysis of the existing and 2025 distribution systems are described in Chapters 7 and 8, respectively, and are summarized below. A description of the recommended CIP program and associated costs is provided in Chapter 9.

Pressure Zone Boundary Modifications

No pressure zone boundary modifications are recommended for the existing water system.

For the 2025 water system, relocation of the pressure zone boundary between the District's Sierra and Gravity Pressure Zones in the Peerless Avenue area is recommended (requires opening and closing certain gate valves).

Pipelines

For the existing water system, the recommended pipeline improvements are presented in Table ES-4:

For the 2025 water system, the recommended pipeline improvements are presented in Table ES-5.



Table ES-4. Recommended Pipelines CIP for Existing System

CIP ID ^(a)	Pressure Zone	Description of Location	Length, feet	Diameter, inches	
				Existing	Recommended
FF01	Upper Granite Bay	Along Skyway Lane from 8032 Skyway Lane to Mooney Ridge Tank Site	630	6	8
FF02	Crown Point	Along Lou Place between Crown Point Vista and Troy Way, and along Edward Court south of Lou Place	790	6	8
PH02	Sierra	From JWSF along Sierra College Boulevard into Sierra Pressure Zone	8,400	NA	24
PH03	Bacon	Along Eureka Road, from Barton road to Auburn-Folsom Road ^(c)	5,275	16	18
EI02 ^(b)	Bacon	From Sierra College Boulevard to Kokila Reservoir	1,500	NA	12
PH05 ^(d)	Lower Granite Bay	Along Cavitt-Stallman Road between Oak Pine Lane and Sierra Ponds Lane	2,550	NA	12
PH06 ^(d)	Lower Granite Bay	Along Twin Rocks Road between Vogel Valley Road and Sierra Ponds Lane (with one connection at Turner Drive)	6,570	NA	16

- (a) The “FF” in the CIP ID stands for fire flow, “PH” stands for peak hour, and “EI” stands for Emergency Intertie. This means the CIP is fire flow or peak hour related.
- (b) CIP is required for emergency intertie connection from PCWA to the District
- (c) CIP also includes replacement of the parallel 12-inch and 14-inch diameter pipelines along Eureka from Providence Lane to Auburn-Folsom Road
- (d) The benefit and cost associated to these CIPs shall be proportionately shared by existing and future customers.

Table ES-5. Recommended Pipelines CIP for 2025 System

CIP ID ^(a)	Pressure Zone	Description	Length, feet	Diameter, inches	
				Existing	Recommended
BPH03	Lower Granite Bay	From proposed pump station near Hinkle Reservoir to Auburn-Folsom Road, and along Auburn-Folsom Road to Eureka Road	8,400	NA	24
BFF01 ^(b)	Bacon	Along Auburn-Folsom Road, from Country Court to Eureka Road	920	6	8

- ^(a) The “BFF” or “BPH” designation in the CIP ID corresponds to 2025 fire flow or 2025 peak hour, respectively. This means the CIP is related to maintaining either the fire flow or peak hour criteria.
- ^(b) The benefit and cost associated to these CIPs shall be proportionately shared by existing and future customers.

Pressure Reducing Station

For the existing water system, a new pressure reducing station between the ARC-North and ARC-South Pressure Zones is recommended.

For the 2025 water system, a new pressure reducing station between the Lower Granite Bay and Bacon Pressure Zones is recommended.

Storage Facilities

For the existing water system, the construction of the Joint Water Storage Facility and pipeline (a joint facility with the City of Roseville with 2.6 MG for the District) is recommended in order to provide operational and fire flow storage for the District's Sierra Pressure Zone.

For the 2025 water system, the construction of a new 3.0 MG tank at the existing Kokila Reservoir site (at a higher base elevation of 505 feet) is recommended to improve the operation of the Kokila Reservoir in the District's Bacon Pressure Zone.

Pump Stations

For the existing water system, the following pump station improvements are recommended:

- Upper Granite Bay Pump Station
 - 4.96 mgd additional capacity which includes 2.72 mgd of capacity required for existing conditions and 2.24 mgd of added capacity to meet 2025 conditions
- Bacon Pump Station
 - New standby generator
 - Electrical system improvements

- Sierra Pump Station
 - Replacement of four existing pumps
 - Electrical system improvements
 - New standby generator for Sierra and ARC-North Pump Station (separate from Bacon)

For the 2025 water system, the following pump station improvements are recommended:

- Lower Granite Bay Pump Station
 - New pump station (10.1 mgd) near the Hinkle Reservoir on the water treatment plant site. Pump station sized to provide 2025 maximum day demand plus fire flow to the Lower Granite Bay Pressure Zone and the maximum day demand to the Upper Granite Bay Pump Station. And to improve system reliability/redundancy in the Bacon Pressure Zone, the capacity is also large enough to provide average day demands to all these zones.
- ARC-South Pump Station
 - New standby generator

Miscellaneous Improvements

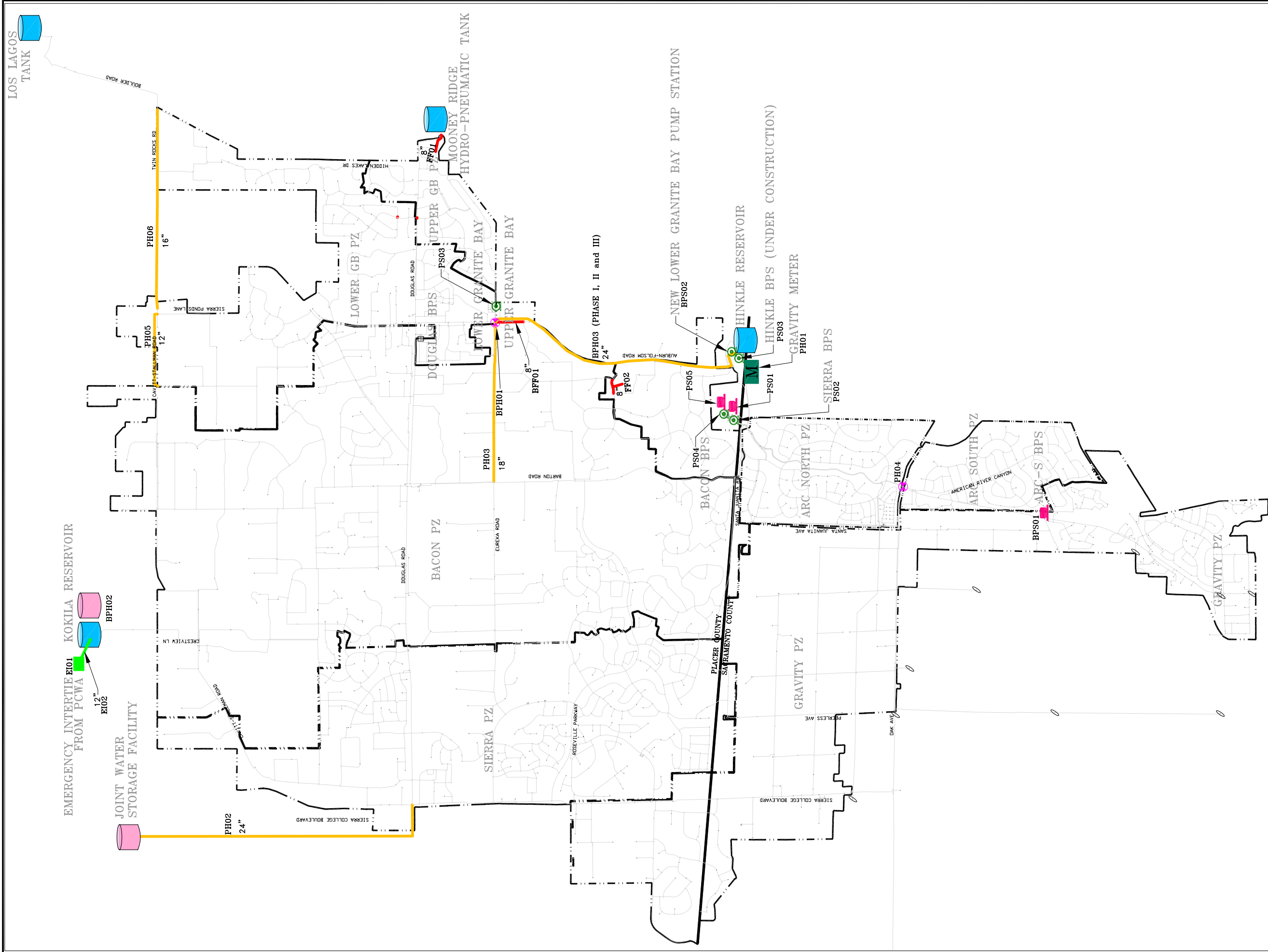
For the existing water system, the following miscellaneous improvements are recommended:

- Construction of an emergency intertie from the PCWA water system into the Kokila Reservoir. This project includes a pressure sustaining station and a new, 12-inch diameter pipeline (approximately 1,500 lf) from Sierra College Boulevard to the Kokila Reservoir site.
- Construction of a new meter station on gravity line leaving Hinkle Reservoir. This meter provides a method for measuring the supply provided to the Gravity system.

RECOMMENDED CAPITAL IMPROVEMENT PROGRAM

Based on the analysis performed by WYA for the existing and 2025 water system, a Capital Improvement Program (CIP) has been recommended. The CIP, described in Chapter 9 of this Retail Water Master Plan Update, includes the individual improvement projects described above to address identified deficiencies in the existing and 2025 water system. Locations of the recommended existing and 2025 water system improvements are shown on Figure ES-3.

Estimates of probable construction costs are presented in Table ES-6 in January 2006 dollars based on an Engineering News Record (ENR) Construction Cost Index (CCI) of 7660 (20 Cities Average). Costs include a 25 percent construction contingency and project cost allowances for engineering (15 percent), construction management (10 percent) and program implementation (10 percent). A summary of estimated costs by improvement type is provided in Table ES-7.



LEGEND

- EXISTING PIPELINE
- PRESSURE ZONE BOUNDARY
- COUNTY LINE
- MAX DAY PLUS FIRE IMPROVEMENTS
- PEAK HOUR IMPROVEMENTS
- STORAGE TANK
- RECOMMENDED STORAGE TANK
- RECOMMENDED PUMP STATION IMPROVEMENT
- RECOMMENDED PRESSURE REDUCING STATION
- STANDBY GENERATOR
- METER

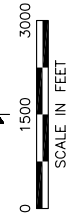
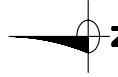


Figure ES-3
San Juan Water District
Retail Water Master Plan
RETAIL SYSTEM
CIP RECOMMENDATIONS



Table ES-6. Recommended Total CIP

CIP ID	Pressure Zone	Diameter (in)		Address	Quantity	Unit Cost ^(a)	Major Infrastructure Construction Cost by Phase						Total Cost (\$)		
		Existing	Proposed				2006	2007	2008	2009	2010	2011		2016 ^(b)	
Existing Capital Improvement Program															
Emergency Intertie Facility															
EI01	Bacon			Intertie facility with PCWA at Kokila Reservoir ^(c)	1	\$109,000 /ls							\$88,000	\$88,000	
Pipelines															
FF01	Upper Granite Bay	6	8	From Skyway Lane to Mooney Ridge	630 lf	\$127 /lf							\$80,000	\$80,000	
FF02	Crown Point	6	8	Along Lou Place between Crown Point Vista Pipeline and Troy Way	460 lf	\$127 /lf							\$58,000	\$58,000	
FF02	Crown Point	6	8	Along Edward Court south of Lou Place	330 lf	\$127 /lf							\$42,000	\$42,000	
PH02	Sierra	NA	24	From the JWSF site to Sierra College Boulevard ^(d)	6,636 lf	\$2,179,000 /ls							\$1,765,000	\$1,765,000	
PH03	Bacon	16	18	Along Eureka Road, from Barton Road to Auburn Folsom Road	5,275 lf	\$253 /lf	\$1,336,000	\$1,765,000					\$1,336,000	\$1,336,000	
EI02	Bacon	NA	12	From Sierra College Boulevard to Kokila Reservoir Site	1,500 lf	\$182 /lf				\$273,000			\$273,000	\$273,000	
BPH03 - Phase I	Lower Granite Bay	NA	24	From Auburn-Folsom Road to Eureka Road ^(e,f)	4,200 lf	\$318 /lf		\$1,095,000					\$1,095,000	\$1,095,000	
BPH03 - Phase II	Lower Granite Bay	NA	24	From Auburn-Folsom Road to Eureka Road ^(e,f)	4,200 lf	\$318 /lf						\$1,095,000	\$1,095,000	\$1,095,000	
Meter Station															
PH01	Gavity			Meter station on gravity line leaving Hinkle Reservoir	1	\$109,000 /ls			\$109,000					\$109,000	
Pressure Reducing Station															
PH04	ARC South			Pressure reducing valve at Oak Avenue on American River Canyon Drive	1	\$109,000 /ls			\$109,000					\$109,000	
Pump Station Improvements/Upgrades															
PS01	ARC North/Sierra			800 KW Standby Generator ^(g)	1	\$380,000 /ls			\$308,000					\$308,000	
PS02	Sierra			Pump Station Improvements for Sierra Pump Station ^(g)	1	\$250,000 /ls		\$250,000						\$250,000	
PS04	Bacon			Pump Station Improvements for Bacon Pump Station ^(h)	1	\$90,000 /ls	\$90,000							\$90,000	
PS05	Bacon			1,000 KW Standby Generator ^(g)	1	\$450,000 /ls			\$365,000					\$365,000	
Pump Station															
PS03	Upper Granite Bay			4.96 mgd Upper Granite Bay Pump Station ⁽ⁱ⁾	4.96 mgd	\$1,328,000 /ls				\$730,000				\$730,000	
Storage Tank															
PH02	Sierra			2.6 MG JWSF with City of Roseville ^(d)	2.6 MG	\$2,180,000 /ls		\$1,766,000						\$1,766,000	
Subtotal							\$1,426,000	\$4,876,000	\$891,000	\$1,003,000	\$1,363,000	\$0	\$0	\$9,559,000	
Construction Contingency (25%)							\$357,000	\$1,219,000	\$223,000	\$251,000	\$341,000	\$0	\$0	\$2,390,000	
Total Construction Cost							\$1,783,000	\$6,095,000	\$1,114,000	\$1,254,000	\$1,704,000	\$0	\$0	\$11,949,000	
Engineering (15%)							\$267,000	\$914,000	\$167,000	\$188,000	\$256,000	\$0	\$0	\$1,792,000	
Construction Management (10%)							\$178,000	\$610,000	\$111,000	\$125,000	\$170,000	\$0	\$0	\$1,195,000	
Program Implementation (10%)							\$178,000	\$610,000	\$111,000	\$125,000	\$170,000	\$0	\$0	\$1,195,000	
Total Capital Improvement Program Cost for Existing System							\$2,410,000	\$8,230,000	\$1,500,000	\$1,690,000	\$2,300,000	\$0	\$0	\$16,130,000	
Future Capital Improvement Program															
Emergency Intertie Facility															
EI01	Bacon			Intertie facility with PCWA at Kokila Reservoir ^(j)	1	\$109,000 /ls							\$21,000	\$21,000	
Pipelines															
BFF01	Bacon	6	8	Along Auburn Folsom Road, from Country Court to Eureka Road	920 lf	\$127 /lf							\$116,000	\$116,000	
PH05	Lower Granite Bay	NA	12	Along Cavitt-Stallman Road between Oak Pine Lane and Sierra Ponds Lane	2,550 lf	\$182 /lf							\$465,000	\$465,000	
PH06	Lower Granite Bay	NA	16	Along Twin Rocks Road between Vogel Valley Road and Sierra Ponds Lane (with one connection at Turner Drive)	6,570 lf	\$228 /lf							\$1,497,000	\$1,497,000	
BPH03 - Phase I	Lower Granite Bay	NA	24	From Auburn-Folsom Road to Eureka Road ^(e,k)	4,200 lf	\$318 /lf		\$240,000					\$240,000	\$240,000	
BPH03 - Phase II	Lower Granite Bay	NA	24	From Auburn-Folsom Road to Eureka Road ^(e,k)	4,200 lf	\$318 /lf				\$240,000			\$240,000	\$240,000	
PH02	Sierra	NA	24	From the JWSF site to Sierra College Boulevard ^(l)	1,764 lf	\$2,179,000 /ls		\$414,000					\$414,000	\$414,000	
Pressure Zone Boundary Modification ^(m)															
NA	Gravity/Sierra			Reallocate pressure zone break located north of Peerless Avenue to the intersection of Peerless Avenue and Cherry Avenue		- ⁽ⁿ⁾								\$0	
Pressure Reducing Station															
BPH01	Bacon			Pressure reducing valve from new Lower Granite Bay Pump Station to Bacon Pressure Zone	1	\$109,000 /ls							\$109,000	\$109,000	
Pump Station Improvements/Upgrades															
PS01	ARC North/Sierra			800 KW Standby Generator ⁽ⁱ⁾	1	\$380,000 /ls			\$72,000					\$72,000	
PS05	Bacon			1,000 KW mgd Standby Generator ⁽ⁱ⁾	1	\$450,000 /ls			\$86,000					\$86,000	
BPS01	ARC South			200 KW mgd Standby Generator	1	\$170,000 /ls			\$170,000					\$170,000	
Pump Station															
PS03	Upper Granite Bay			4.96 mgd Upper Granite Bay Pump Station ⁽ⁱ⁾	4.96 mgd	\$1,328,000 /ls			\$598,000					\$598,000	
BPS02	Lower Granite Bay			10.1 mgd Pump Station Improvements for Lower Granite Bay Pressure Zone	10.1 mgd	\$2,872,000 /ls				\$2,872,000				\$2,872,000	
Storage Tank															
PH02	Sierra			2.6 MG JWSF with City of Roseville ⁽ⁱ⁾	2.6 MG	\$2,180,000 /ls		\$414,000						\$414,000	
BPH02	Bacon			3.0 MG Kokila Reservoir	3.0 MG	\$4,051,000 /ls							\$4,051,000	\$4,051,000	
Subtotal							\$0	\$1,068,000	\$328,000	\$598,000	\$3,112,000	\$0	\$4,051,000	\$11,365,000	
Construction Contingency (25%)							\$0	\$267,000	\$82,000	\$150,000	\$778,000	\$0	\$1,560,000	\$2,841,000	
Total Construction Cost							\$0	\$1,335,000	\$410,000	\$748,000	\$3,890,000	\$0	\$7,798,000	\$14,206,000	
Engineering (15%)							\$0	\$200,000	\$62,000	\$112,000	\$584,000	\$0	\$1,170,000	\$2,131,000	
Construction Management (10%)							\$0	\$134,000	\$41,000	\$75,000	\$389,000	\$0	\$780,000	\$1,421,000	
Program Implementation (10%)							\$0	\$134,000	\$41,000	\$75,000	\$389,000	\$0	\$780,000	\$1,421,000	
Total Capital Improvement Program Cost for Buildout System							\$0	\$1,800,000	\$550,000	\$1,010,000	\$5,250,000	\$0	\$10,530,000	\$19,180,000	
Total CIP															\$35,310,000

^(a) Pipe cost based on January 2006 20-City ENR Index (7660).
^(b) Includes all facilities required to be constructed between 2011 to 2025 to serve anticipated development.
^(c) Based on existing system's proportionate share of the facility cost which is approximately eighty-one percent (Bacon Pressure Zone is currently 81% built, see Chapter 2) of the total unit price.
^(d) Based on existing system's proportionate share of the facility cost which is approximately eighty-one percent (Sierra Pressure Zone is currently 81% built, see Chapter 2) of the total unit price.
^(e) Construction schedule for the 24-inch diameter pipeline along Auburn Folsom Road is Phase I at 40 percent completion in 2007, Phase II at 30 percent completion in 2009 and Phase III at 30 percent completion in 2012.
^(f) Based on existing system's proportionate share of the facility cost which is approximately eighty-two percent (Lower Granite Bay Pressure Zone is currently 82% built, see Chapter 2) of the total unit price by phase.
^(g) Capital cost includes replacing all four pumps and installing new electrical service.
^(h) Capital cost includes installing new electrical service.
⁽ⁱ⁾ Based on existing system's proportionate share of the facility cost which is approximately 55% of the total unit price (2.72mgd/4.96 mgd) of the new Upper Granite Bay Pump Station.
^(j) Based on 2025 system's proportionate share of the facility cost which is approximately nineteen percent (Bacon Pressure Zone is currently 81% built (see Chapter 2), which leaves 19% to be built) of the total unit price.
^(k) Based on 2025 system's proportionate share of the facility cost which is approximately eighteen percent (Lower Granite Bay Pressure Zone is currently 82% built (see Chapter 2), which leaves 18% to be built) of the total unit price by phase.
^(l) Based on 2025 system's proportionate share of the facility cost which is approximately nineteen percent (Sierra Pressure Zone is currently 81% built (see Chapter 2), which leaves 19% to be built) of the total unit price.
^(m) Capital cost is minor (District labor cost); therefore, no cost is allocated.
⁽ⁿ⁾ Based on 2025 system's proportionate share of the facility cost which is approximately 45% of the total unit price ((4.96-2.72mgd)/4.96 mgd) of the new Upper Granite Bay Pump Station.

EI - Emergency Intertie
FF - Existing Fire Flow
PH - Existing Peak Hour
BFF - Buildout Fire Flow
BPH - Buildout Peak Hour
PS - Pump Station Improvement for District's Retail Existing System.
BPS - Pump Station Improvement for District's Retail Buildout System.
NA - Not Available



Table ES-7. Summary of CIP Costs by Improvement Type^(a)

Recommended Improvements	Existing System CIP	Future System CIP	Totals
Pipeline Improvements	\$9.69 million	\$5.05 million	\$14.71 million
New Storage Facilities	\$2.98 million	\$7.53 million	\$10.51 million
Pump Station Improvements	\$2.94 million	\$6.41 million	\$9.35 million
Other Improvements	\$0.52 million	\$0.22 million	\$0.74 million
Totals	\$16.13 million	\$19.18 million	\$35.31 million

^(a) Costs based on January 2006 dollars based on an ENR CCI of 7660 (20 Cities Average). Costs included 25 percent construction contingency and cost allowances for engineering (15 percent), construction management (10 percent), and program implementation (10 percent).