Hollister Urban Area Water and Wastewater Master Plan Update

City of Hollister, San Benito County Water District, and Sunnyslope County Water District

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Executive Summary

The Hollister Urban Area Water and Wastewater Master Plan Update (Master Plan Update) provides a comprehensive plan and implementation program to meet the existing and future water resources needs of the Hollister Urban Area (HUA). The master plan was first prepared in 2008; however, since the completion of the 2008 Master Plan, there have been significant changes in water use patterns, economic activity, water supply (drought), development in the Hollister Urban Area (HUA) and State of California mandated water quality regulations. In addition, many of the recommendations of the 2008 Master Plan have been implemented. Thus, this Master Plan Update has been prepared to reflect changes since 2008 and update the recommendations.

This executive summary provides an overview of the background, improvements completed since the 2008 Master Plan, and the recommended program described in this Master Plan Update.

ES-1 Background

The HUA is located in San Benito County, California, approximately 50 miles southewast of the City of San Jose and 40 miles east of Monterey Bay. The HUA includes the City of Hollister and adjacent unincorporated areas of San Benito County designated for urban development. The 2008 Master Plan was a major milestone for regional cooperation and coordination of water, wastewater, and recycled water facilities to serve the HUA.

ES-1.1 Memorandum of Understanding

The 2008 Master Plan was initiated through the 2004 Memorandum of Understanding (2004 MOU) developed between the City of Hollister (City), San Benito County (County), and the San Benito County Water District (SBCWD). The 2004 MOU was subsequently amended in 2008 to include the Sunnyslope County Water District (SSCWD).

The 2004 MOU described the principles, objectives, and assumptions that formed the basis of the 2008 Master Plan, focusing on the following goals:

- Improve municipal, industrial, and recycled water quality.
- Increase the reliability of the water supply.
- Coordinate infrastructure improvements for water and wastewater systems.
- Implement goals of the Groundwater Management Plan.
- Integrate recommendations of the Long-term Wastewater Management Plans (LTWMP) with the Master Plan.
- Support economic growth and development consistent with the City of Hollister and San Benito County General Plans and Policies.
- Consider regional issues and solutions.

Since the goals of the 2008 Master Plan were largely achieved, the agencies recognized that that a new memorandum of understanding was needed to update the 2008 Master Plan and continue planning for the future. The 2014 Memorandum of Understanding (2014 MOU) was developed between the City, SBCWD, and SSCWD to facilitate and guide this update.

The 2014 MOU incorporated the principles, objectives, and assumptions from the 2004 MOU. In addition, the following issues were identified for evaluation in the Master Plan Update.

- Update water demand and wastewater flow projections.
- Review and evaluate previously identified long-term water supply options.
- Review drinking water goals for Total Dissolved Solids (TDS) and hardness.
- Review goals for recycled water TDS.
- Evaluate the need, timing, and estimated cost of the following facilities:
  - Expansion of the West Hills WTP,
  - Crosstown Pipeline,
  - Groundwater Demineralization or Softening,
  - Modifications and/or expansion of the City's Water Reclamation Facility and the SSCWD Ridgemark Wastewater Treatment Plant,
  - Expanding the recycled water system, and
  - Major infrastructure improvements to the water distribution system and the wastewater collection system.

The 2014 MOU also reaffirmed the institutional framework and responsibilities of the Governance and Management Committees.

ES-1.2 Related Planning Activities

There are a number of recently completed or ongoing planning activities that are related to the Master Plan Update. All work completed for this Master Plan Update was closely coordinated with these related planning activities, including the 2015 Hollister Urban Area Urban Water Management Plan (UWMP), the City's ongoing distribution system master plan, the groundwater sustainability plan, and perhaps most importantly the studies recently completed in response to California's new Hexavalent Chromium regulations.

On July 1, 2014, the California Division of Drinking Water (DDW) adopted water quality regulations that limit the levels of Hexavalent Chromium to a maximum of 10 parts per billion (ppb) in drinking water. This regulation impacts both the City and SSCWD.

Water quality sampling and testing by the City revealed that all four of the City's active water supply wells exceed the new Maximum Contaminant Level (MCL). As a result, the City prepared

the Hexavalent Chromium Compliance Plan for Groundwater Supply (Compliance Plan) in 2015. The objective of the City's Compliance Plan is to provide a reliable and cost-effective plan for the City to manage Hexavalent Chromium present in municipal water supply wells in accordance with DDW regulations. The recommended plan is to provide blending at three of the existing wells with treated surface water from the West Hills WTP. The fourth well (Well No.6) would be put on standby status. The West Hills WTP is under construction and will be operational by summer 2017. The recommended plan takes advantage of the economic efficiencies of currently planned water treatment and water supply infrastructure improvements to address the Hexavalent Chromium regulations in the City's water system.

SSCWD identified Hexavalent Chromium levels in excess of 10 ppb in Wells No. 7 and No.8. SSCWD's plan includes putting Well No. 8 on standby and blending supply from Well No. 7.

DDW approved the City and SSCWD compliance plans for Hexavalent Chromium.

On May 5, 2017, the Superior Court in Sacramento issued its final ruling in a case challenging the regulation that set a MCL of 10 ppb for Hexavalent Chromium. The court struck down that regulation for the time being and sent it back to the State Water Resources Control Board (SWRCB) for a better analysis of the economic feasibility of an MCL at different levels. Meanwhile, drinking water systems planning or already constructing new facilities to meet an MCL of 10 ppb must decide how to proceed with very little guidance except that at some point there will be a regulation for Hexavalent Chromium. Whether or not it will be changed from the previously adopted regulation is unknown at this time. Since the court ruling was issued after completion of the Master Plan Update, the recommendations in the plan for compliance with Hexavalent Chromium should be considered conservative and will need to be revisited following issuance of a new regulatory limit.

ES-1.3 Master Plan Update Objectives

The recommendations described in the previous subsection for compliance with the Hexavalent Chromium regulation increased the focus on providing high quality water to the HUA. Combined with the prior goals for TDS and hardness reduction, Hexavalent Chromium compliance makes water quality a key driver for future improvements. Thus, this Master Plan Update considers both future water supply needs as well as water quality.

The overall objectives of the Master Plan Update are to:

- Provide continuous improvement towards achieving drinking water and recycled water quality goals.
- Increase dry year water supply reliability.
- Provide adequate water supply to respond to long-term growth needs.
- Continue to address water, wastewater, and recycled water needs through coordinated regional solutions.

ES-1.4 Planning Period

The planning period for the Master Plan Update extends from 2015 to 2035. The initial year of the planning period was selected to provide a common baseline for data related to land use, water supply and demand, and wastewater flows. The final year of the planning period coincides with the planning horizon of the 2015 UWMP.

ES-2 Improvements Since 2008 Master Plan

Following completion of the 2008 Master Plan, the agencies collaborated to successfully implement major water, wastewater, and recycled water projects for the benefit of the HUA. Water Conservation and other water related programs have also continued.

SBCWD worked diligently to improve water supply reliability during drought conditions by purchasing additional out-of-basin water supplies, entering an agreement with the Santa Clara Valley Water District (SCVWD) to participate in the Semitropic Water Bank, and working with the U.S. Bureau of Reclamation (USBR) to renegotiate its historical use baseline for the municipal and industrial portion of its Central Valley Project (CVP) contract.

Several major capital improvement projects have been implemented since the 2008 Master Plan, including:

- Lessalt Water Treatment Plant Upgrade and Fairview Road Transmission Pipeline
- West Hills Water Treatment Plant and Transmission Pipeline to City Well Nos. 4 and 5
- SSCWD New Well No. 11
- City of Hollister Water Reclamation Facility Upgrade
- SSCWD Ridgemark Wastewater Treatment Plant
- Expansion of the recycled water system for agricultural reuse

In addition, the Water Resources Agency (WRA) has made significant strides in implementing water conservation measures in the HUA, including residential retrofits, education programs, and outreach programs. These ongoing water conservation programs have successfully reduced water demand in the HUA.

Both SSCWD and the City have also adopted water softener programs to remove self-regenerating water softeners (SRWS) in the HUA. The intent of these programs is to remove salt loading from the wastewater, thereby improving the resulting recycled water and reducing salt loading to the groundwater basin through percolation.

ES-3 Recommended Program

A comprehensive planning process was utilized to develop and evaluate a wide range of alternatives for both water supply and water, wastewater, and recycled water facilities and programs. The results of the evaluation are summarized in the following subsections along with the recommended implementation program through 2035.

ES-3.1 Water Supply Recommendations

The projected increase in water supply demands in the HUA between 2015 and 2035 is 4,340 AFY. The recommended priorities and actions for long-term water supply are summarized in Table ES-1. These recommendations include continuation of ongoing programs and new projects requiring further investigation. All of the long-term water supply options should be retained as a menu of alternatives to contribute to a diverse water supply portfolio. Due to the inherent uncertainties in California water supply (drought, environmental constraints, regulations, etc.) it is prudent to maintain maximum flexibility in planning for long-term water supplies.

Additional high quality water will be required to ensure compliance with the California Hexavalent Chromium regulations and to meet the TDS and hardness goals for the HUA. During normal years, the additional increment of high quality water is estimated to be approximately 1,800 AFY by 2025 and approximately 3,800 AFY by 2035 with an 85 percent blend ratio. With a phased blending program using a 75 percent blend ratio by 2025, the additional increment of high quality water would be reduced from 1,800 AFY to approximately 1,000 AFY.

The water supply options in Table ES-1 provide “building blocks” to meet the need for high quality water. For example, the proposed new well in the northern area of the City distribution system and the first phase of the North County groundwater project could provide sufficient supply to meet the 2025 high quality water need. Additional supply options will be required to meet the high quality water needs through 2035.

The quantity and timing of additional high quality water needs will be dependent upon actual demand growth, hydrologic conditions (wet, normal, and dry years), and allocations of existing CVP supplies by the USBR. In dry years, CVP allocations will be reduced resulting in the need for short-term supply augmentation. These short-term needs may be met by spot market purchases (if available and cost-effective), carryover storage in surface water reservoirs, groundwater banking, and mandatory conservation measures.

During extended dry year conditions, it may be necessary to relax the TDS and hardness goals. However, even during extended dry year conditions, sufficient high quality water supplies must be provided to meet the Hexavalent Chromium regulations.

ES-3.2 Recommended Water, Wastewater, and Recycled Water Facilities

The recommended water, wastewater, and recycled water facilities and improvements are summarized in Table ES-2, which is limited to the facilities and improvements that are recommended for implementation through 2025. Improvements needed beyond 2025 should be revisited in a subsequent Master Plan Update which should be completed no later than 2025. At that time, the actual growth in demands, water quality requirements, new regulations, and other factors can be reconsidered to develop recommendations and for appropriate scope and timing for facilities beyond 2025.

Table ES-1. Recommended Priorities and Actions for Long-Term Water Supply Program

Description	Priority Level[a]	Estimated Average Annual Supply (AFY)	Recommended Action
Surface Water			
Imported Surface Water Transfers / Spot Market	1	2,258[b]	Continue Existing Program
Semitropic Water Bank	2	(c)	Continue Existing Program
Local Surface Water Supplies	3	TBD[d]	Further Investigation Required
Local Surface Water Storage	3	TBD[d]	Further Investigation Required
Groundwater			
Local Wells with Treatment for Potable Use	1	1,000[e]	Identify Locations at Existing and/or New Wells and Confirm Treatment Process
Local Wells for M&I Landscape Irrigation	2	TBD[d]	Evaluate on Case-by-Case Basis
North County Direct Use	1	2,000 – 5,000[f]	Complete Feasibility and Environmental Studies
North County Wells Banking / Exchange	1	2,000 – 5,000[f]	Complete Feasibility and Environmental Studies
Recycled Water			
Expanded Reuse for M&I Landscape Irrigation	2	(g)	Evaluate Cost-Effectiveness Based on Infrastructure Needs
Expanded Reuse for Agricultural Irrigation	1	2,450[h]	Expand Existing Program When Required
Potable Reuse	3	TBD[d]	Monitor Technology and Regulations
Water Conservation	1	(i)	Continue Existing Program

(a) Priority level from Table 4-7.
(b) Based on 13,550 AF over past six years or annual average of 2,258 AFY.
(c) Semitropic Water Bank enhances dry year reliability, but does not increase supply.
(d) TBD is to be determined based upon results of further investigations.
(e) Achievable with new well(s) and/or increased use of existing wells.
(f) Preliminary investigations indicate that up to 5,000 AFY available in normal and wet years and up to 2,000 AFY available in dry years.
(g) City M&I landscape irrigation currently limited to approximately 167 AFY at Riverside Park.
(h) SBCWD agricultural irrigation was approximately 499 AFY in water year 2016 with additional 250 AF in October 2016. Could increase up to 2,450 AF by 2035.
(i) Significant reductions have already been achieved through regional efforts in water conservation. Further reductions to be determined based upon results of ongoing efforts.

The City and SSCWD have ongoing local improvements to their respective water distribution and wastewater collection systems. The current City and SSCWD 5-year CIPs are included in Appendix D. The current City CIP includes $1.46 million in water facilities and $6.8 million in wastewater facilities. The current SSCWD CIP includes $795,000 in water facilities and $30,000 in wastewater facilities. These facilities are not included in Table ES-2.

Table ES-2. Estimated Costs, Schedule and Actions for Recommended Facilities

Description[a]	Estimated Cost ($M) and Timeframe					Total	Recommended Action
	2017	2018	2019	2020	2021 - 2025		
Water Supply							
Local Surface Water Supplies and Storage		$0.1	$0.1	$0.1	TBD	$0.3	Complete further investigations
North County Groundwater		$0.2	$0.2	$0.3	$6.0	$6.7	Complete feasibility and environmental studies
Subtotal		**$0.3**	**$0.3**	**$0.4**	$6.0	**$7.0**	
Water Treatment							
New City Well with Wellhead Treatment[b]		$1.0	$2.0	$3.3		$6.3	Identify location for new well in Northerly part of service area and confirm treatment process
Expand WHWTP, 6.75 mgd					$7.0	$7.0	Expand WHWTP to 6.75 mgd
Subtotal		**$1.0**	**$2.0**	**$3.3**	**$7.0**	**$13.3**	
Water Distribution							
Connect City Wells 4 and 5 to WHWTP Transmission Pipeline	$2.4					$2.4	Complete design and construct
Crosstown Pipeline[c]	$0.6	$5.6				$6.2	Complete design and construct
Subtotal	**$3.0**	**$5.6**				**$8.6**	
Wastewater Treatment							
WRF Influent Flow Equalization at City WRF[d]			$0.5	$1.5		$2.0	Add flow equalization to improve treatment efficiency and increase recycled water production
Subtotal			**$0.5**	**$1.5**		**$2.0**	
Recycled Water							
Expand SBCWD Agricultural Irrigation System					TBD	TBD	Extend existing pipelines as required
Subtotal					**TBD**	**TBD**	
Total	**$3.0**	**$6.9**	**$2.8**	**$5.2**	**$13.0**	**$30.9**	

(a) Costs are referenced to the ENR, San Francisco Bay Area CCI Index for January 2017, at 10,532.
(b) Wellhead treatment costs are based on a 1.4 mgd treated capacity and reverse osmosis process. Evaluate alternatives including high quality groundwater.
(c) Crosstown Pipeline from City Well No. 5 to SSCWD Well Nos. 2 and 11, and connection to City Well No. 2.
(d) Estimated cost provided by City.
(e) Does not include City and SSCWD CIPs for water distribution and wastewater collection systems. Refer to Appendix D.

ES-3.3 Coordination with Related Planning Activities

Implementation of this Master Plan Update should be coordinated with other ongoing programs to provide opportunities for optimizing facilities sizing, reducing costs, and obtaining outside financing. Some of the major ongoing programs for coordination include the following:

- City's Water Distribution System Master Plan
- Groundwater Sustainability Study
- Santa Clara Valley Water District Pacheco Storage Reservoir Evaluation
- Pajaro River Watershed Integrated Regional Water Management Program
- USBR San Luis Reservoir Low Point Improvement Project

ES-3.4 Water System Operations

The water distribution system for the HUA consists of the combined systems serving the City and SSCWD. Historically, the City and SSCWD have closely coordinated the operation of this combined system. In 2013, the System Operations TM was prepared in anticipation of implementation of the recommended facilities in the 2008 Master Plan. Going forward, the HUA will increasingly utilize treated surface water from the new West Hills WTP. Therefore, it will become even more critical for the City, SSCWD, and SBCWD to cooperate in the efficient operation of the water supply, treatment and distribution facilities.

The continued cooperation and coordination of system operations will be required to provide efficiencies and maximize the following benefits to consumers in the HUA:

- Efficient use of limited high quality water supplies.
- Compliance with State and Federal drinking water standards especially the California Hexavalent Chromium limits.
- Continued progress toward meeting TDS and hardness goals established for drinking water in the HUA.
- Continue compliance with Waste Discharge Requirements for local wastewater treatment plants.
- Production of Title 22 recycled water from the City WRF for reuse by SBCWD for agricultural irrigation.

To achieve these benefits, the 2013 System Operations TM should be updated to ensure efficient operation of new facilities and to incorporate facilities developed since 2013 especially those associated with compliance with the Hexavalent Chromium regulations adopted in 2014. Specifically, some of the issues to be addressed in the update should include the following:

1. Production scheduling for the Lessalt and West Hills WTPs for seasonal and daily flow variations.
2. Scheduling of well operations to complement treated surface water deliveries and provide comparable average run times for all wells.
3. Efficient use of the Crosstown Pipeline to deliver treated surface water and enhance system reliability for seasonal and emergency operations.
4. More active use of treated water storage reservoirs to optimize use of high quality treated water supplies.
5. Continued use and upgrades as necessary for a fully coordinated and integrated telemetry and control system.

ES-3.5 Engineering

The technical work completed for this Master Plan Update provides a framework for water, wastewater, and recycled water facilities required through the year 2035. The facilities recommended for implementation before 2025 are shown on Figure ES-1. The locations presented on Figure ES-1 are preliminary and final locations will be determined during facilities planning and predesign work.

The next step in implementation will be to conduct engineering and related technical investigations for the recommended facilities. Engineering work would include facilities planning, predesign, design, construction management, and startup. Many of the proposed improvements will be phased and the engineering work would be scheduled accordingly. Construction contract packaging should also be evaluated to provide the greatest opportunities for competitive bidding by contractors.

ES-3.6 Environmental Compliance

The recommended facilities will require environmental compliance with the California Environmental Quality Act (CEQA) to evaluate the environmental impacts of the projects. Project-specific compliance would be determined on a case-by-case basis for individual projects.

For projects such as water distribution pipeline replacements, an exemption or a negative declaration may be sufficient for CEQA compliance. For larger, more complex projects, such as the North County Wells Banking / Exchange Project, a complete EIR will be required.

If federal grants or loans are used to pay for specific facilities, additional environmental review may be required to comply with the National Environmental Policy Act (NEPA). In addition, if federal facilities are impacted, such as the Hollister Conduit, NEPA may compliance also be triggered.

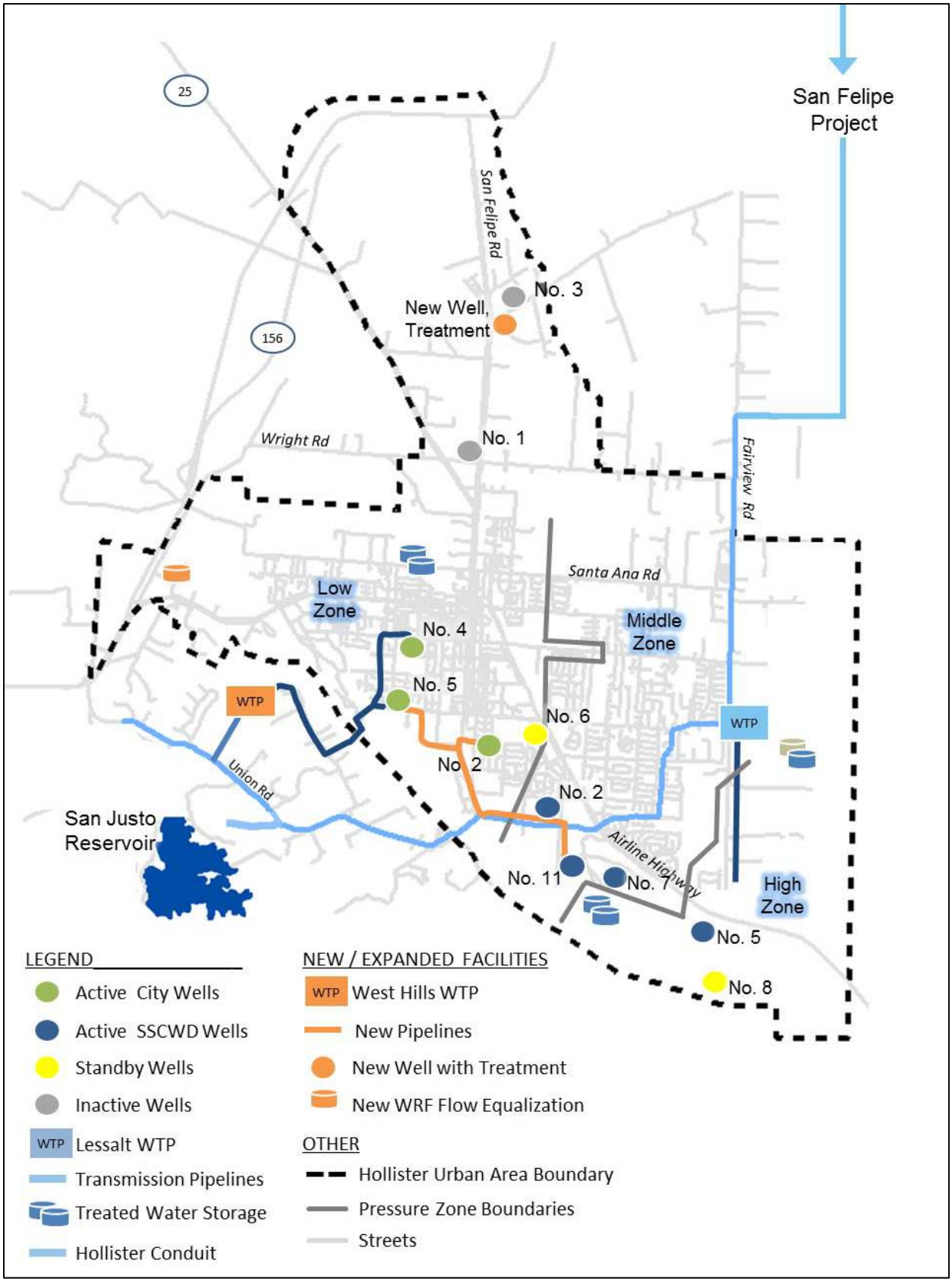

Figure ES-1. Recommended Facilities

ES-3.7 Permitting

Numerous federal, state, and local permits will also be required for implementation. The required permits will be identified during the preparation of the engineering predesign studies and environmental compliance documents. A permitting strategy should be developed to minimize project delays and potential mitigation costs.

ES-3.8 Institutional Agreements

Institutional agreements between agencies will be required to implement projects providing joint benefits. These agreements will be similar to the memoranda of understanding developed for previously completed projects, such as the Lessalt and West Hills WTPs and agricultural use of recycled water.

Multiple institutional agreements may be needed to implement the North County Wells Banking / Exchange Project. Depending on the final scope of the project, the following agreements may be required:

- Agreements between SBCWD and SCVWD and/or Pacheco Pass Water District (PPWD) for operation of the existing Pacheco Dam and Reservoir or an expanded facility.
- Agreement between the USBR and the SBCWD to use the Hollister Conduit for transmission of North County groundwater (Warren Act).
- Agreements between North County landowners and SBCWD for banking/exchange of groundwater and CVP supplies.

For the influent flow equalization facilities at the City's WRF, an agreement between the City and SBCWD will be required to recognize the multiple benefits provided by this facility. These benefits include improved treatment efficiency at the WRF reducing the occurrence of "off-spec" water which will ultimately result in the production of more recycled water for beneficial use.

ES-3.9 Financing

Financing of recommended projects may be through local funding and/or state and federal grants and loans. Past projects, such as the Hollister Urban Area Water Project, have been implemented through a combination of local financing and state grants. Opportunities for outside financing (grants or loans) should be fully explored from state water programs and federal infrastructure funding.

For local financing, the agencies will need to update their financial plans and rate studies. Rate study updates should include a review of both rates and connection fees. For the recommended new water facilities, benefits and costs should be allocated to water quality improvements and growth. For water supplies, capital costs and raw water acquisition costs need to be included.

It is recommended that the projected water demands, facilities timing, and financing plan be reviewed in three years by 2020. This interim milestone would provide the agencies the opportunity to verify actual trends in water demand growth and to adjust the schedules for facilities implementation and financing.

ES-3.10 Stakeholder Outreach

Stakeholder outreach was an integral part of the development of this Master Plan Update. Continued successful Implementation of the Master Plan Update recommendations will require a proactive approach to the various interest groups and stakeholders in the HUA, including:

- General public,
- Local interest groups (business, environmental, and others),
- Agricultural interests (for marketing of recycled water),
- Regulatory agencies,
- City, County, SBCWD, SSCWD elected officials and staff, and
- Regional interests outside San Benito County.

A first step in developing a responsive stakeholder outreach program would be to update the Communications Plan developed for implementation of the 2008 Master Plan.

ES-3.11 Use of Master Plan Update Processes and Tools

The agencies have invested substantial resources to the completion of this Master Plan Update. The processes and tools developed as part of this work should be utilized in the future evaluation of proposed new developments, proposed land use changes, refinements to the recommended facilities, and potential regional projects and programs. Some of the processes and tools to be utilized include the following:

- Process and criteria established for evaluation of alternatives;
- Water distribution system model for the City and SSCWD water systems; and
- Fact sheets developed to assist with public information and education programs.

It is also recommended that this Master Plan be updated no later than 2025. An update in this timeframe is necessary to adjust the recommendations for facilities beyond 2025 based upon actual growth rates, progress made in program implementation, new regulations, and potential new issues and opportunities.

ES-3.12 Recommended Implementation Schedule and Next Steps

Implementation of this Master Plan Update will require overall program and individual facilities activities. Some projects shown in Figure ES-1 are already under construction (e.g., connection of City Well No. 4 and No. 5 to the West Hills WTP Transmission Pipeline) or in design (e.g., Crosstown Pipeline).

The next major infrastructure improvements would be completed through 2025. Table ES-3 summarizes the recommended projects and programs along with a timeline and responsibilities for implementation.

Table ES-3. Summary of Timing and Responsibility for Recommended Improvements through 2025

Description	Date	Responsible Agency
Water Supply		
Continue and/or Expand Existing Programs		
Continue Imported Surface Water Transfers / Spot Market Purchases	Ongoing	SBCWD
Renew Semitropic Water Agreement	By 2021	SBCWD
Continue and Expand (As Necessary) Reuse for Agricultural Irrigation	Ongoing	SBCWD
Continue Water Conservation Program	Ongoing	WRA
New Programs		
Develop New M&I Well in Northerly Area of City Distribution System	2018 – 2020	City, SBCWD
Further Investigation of Local Surface Water Supplies and Storage	2018 – 2020	SBCWD
Evaluate Local Wells for M&I Landscape Irrigation on Case-By-Case Basis	Ongoing	All Agencies
Complete Feasibility and Environmental Studies for North County Groundwater Supply	2018 – 2020	SBCWD
Water Treatment		
Evaluate Need for and Type of Treatment for New City Well in North Area	2018 – 2020	City, SBCWD
Expand West Hills WTP from 4.5 mgd to 6.75 mgd	2025+	SBCWD
Water Distribution		
Connect City Wells No.4 and No.5 to WHWTP Transmission Pipeline	2017	City
Complete Crosstown Pipeline	2017 – 2018	City, SSCWD
Evaluate Need for Additional Treated Water Storage	2025	City, SSCWD
Complete Additional Operations Studies and Modeling to Provide Uniform Distribution of High Quality Water	2017 – 2018	City, SSCWD
Implement City and SSCWD CIPs for Water Distribution System Improvements	Ongoing	City, SSCWD
Wastewater Treatment		
Complete Influent Flow Equalization at City WRF	2018 – 2020	City, SBCWD
Evaluate Need to Connect Cielo Vista to City WRF	2025	City
Wastewater Collection		
Implement City and SSCWD CIPs for Wastewater Collection System Improvements	Ongoing	City, SSCWD
Updates to Planning Documents		
Update Water System Operations TM	2017	All Agencies
Complete Master Plan Update	By 2025	All Agencies

(a) Refer to Table ES-2 for estimated costs.
(b) Refer to Figure ES-1 for location of recommended facilities.

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1 Introduction and Background

The 2008 Hollister Urban Area Water and Wastewater Master Plan (2008 Master Plan) provided a long-term vision of water, wastewater, and recycled water management activities and infrastructure improvements through 2023. The 2008 Master Plan also presented future water demands and wastewater flows based on land use, historical water consumption data, and expected growth forecasts.

Since the completion of the 2008 Master Plan, there have been significant changes in water use patterns, economic activity, water supply (drought), development in the Hollister Urban Area (HUA) and State of California mandated water quality regulations.

In anticipation of changes and to revisit the timing of additional capital improvements, the 2008 Master Plan recommended that an update be completed within approximately 10 years. This report provides the 2017 Hollister Urban Area Water and Wastewater Master Plan Update (Master Plan Update).

The following subsections summarize the historical planning documents, describe ongoing planning efforts and programs, and present the objectives and scope for the Master Plan Update.

1. 2008 Master Plan

The 2008 Master Plan provided a comprehensive plan and implementation program to meet the existing and future water resources needs of the HUA. The 2008 Master Plan was a major milestone for regional cooperation and coordination of water, wastewater, and recycled water facilities.

1.1.1 2004 Memorandum of Understanding

The 2008 Master Plan was initiated through the 2004 Memorandum of Understanding (2004 MOU) developed between the City of Hollister (City), San Benito County (County), and the San Benito County Water District (SBCWD). The 2004 MOU was subsequently amended in 2008 to include the Sunnyslope County Water District (SSCWD).

1.1.2 Goals and Objectives

The 2004 MOU described the principles, objectives, and assumptions that formed the basis of the 2008 Master Plan, focusing on the following goals:

- Improve municipal, industrial, and recycled water quality.
- Increase the reliability of the water supply.
- Coordinate infrastructure improvements for water and wastewater systems.
- Implement goals of the Groundwater Management Plan.
- Integrate recommendations of the Long-term Wastewater Management Plans (LTWMP) with the Master Plan.

- Support economic growth and development consistent with the City of Hollister and San Benito County General Plans and Policies.
- Consider regional issues and solutions.

1.1.3 Regional Approach and Agency Collaboration

The 2004 MOU also established the institutional framework for completing the 2008 Master Plan. A Governance Committee was established for overall direction, policy directives, and decision-making. The Governance Committee consists of two elected officials from each agency. A Management Committee was also established for day-to-day management and resolution of planning and technical issues. The Management Committee consists of one staff member from each agency and a program manager. This institutional framework enabled the agencies to work collaboratively in developing overall regional solutions.

1.1.4 Stakeholder and Public Involvement

The development of a comprehensive and responsive master plan involved extensive communications with key stakeholders. A Communications Plan was developed outlining the stakeholder involvement components for the 2008 Master Plan. The goals of the Communications Plan were as follows:

- Inform stakeholders of issues and potential solutions.
- Increase opportunities for public participation.
- Ensure and sustain successful implementation of the results.

Key stakeholders and the general public were highly involved in the master planning effort. The following key stakeholders were identified: environmental organizations, developers, special interest groups, local business owners, agricultural operators, drinking water and sewer customers, and political organizations.

Five public workshops were held to provide opportunities for stakeholders to understand the need and objectives, obtain information on potential alternatives, and provide input on key aspects of the 2008 Master Plan.

1.1.5 Planning Process

A comprehensive planning process was utilized to develop and evaluate a wide range of alternatives for integrated water resources management as illustrated in Figure 1-1. The planning process involved establishing the basis of planning, development of and initial screening of concepts, and final evaluation of alternative plans.

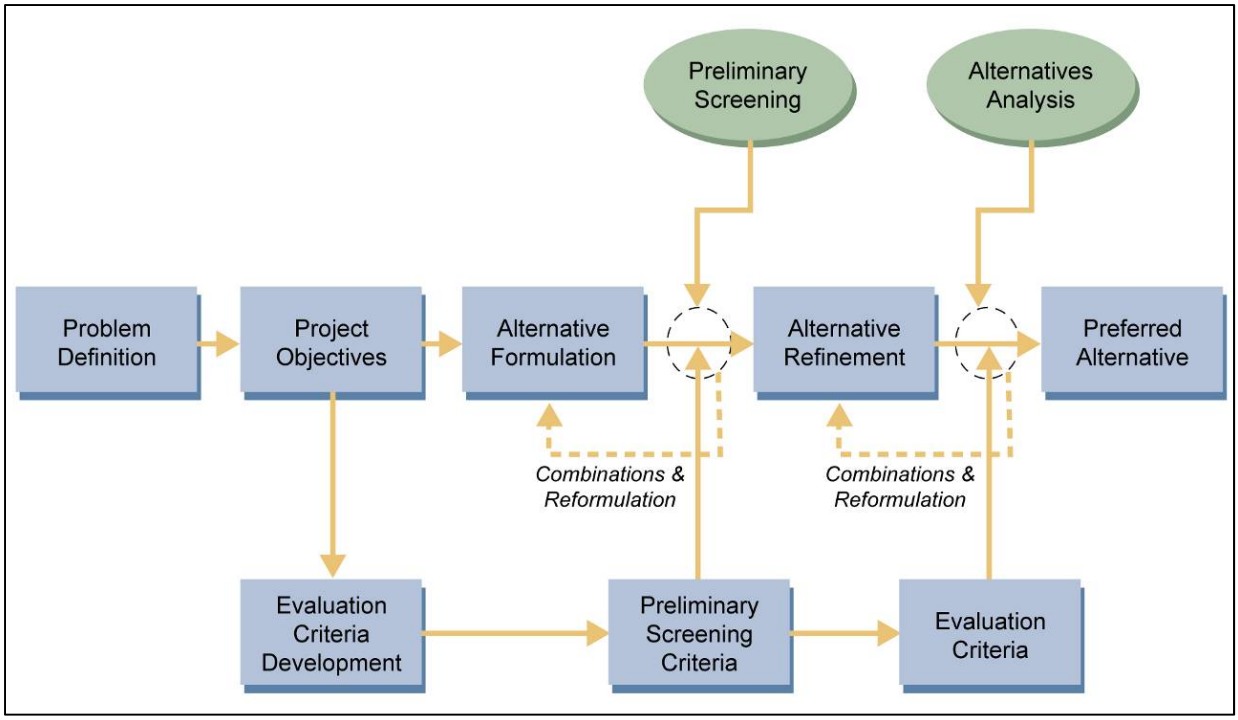

Figure 1-1. Comprehensive Planning Process

1.2 2009 Coordinated Water Supply and Treatment Plan

In 2009, the Coordinated Water Supply and Treatment Plan (Coordinated Plan) was completed. The purpose of the Coordinated Plan was to refine the water supply and treatment recommendations from the 2008 Master Plan. Water Supply and treatment were determined to be the critical first step in the implementation program.

The Coordinated Plan recommended the following:

- Upgrade of the existing Lessalt Water Treatment Plant (WTP).
- Construction of the new West Hills WTP.
- Firming up existing imported Municipal and Industrial (M&I) surface water supply from the Central Valley Project (CVP).
- Further Investigation of conjunctive use project with local surface water supplies and groundwater in the North County Area.

1.3 2011 Programmatic Environmental Impact Report

A Programmatic Environmental Impact Report (Programmatic EIR) was completed for the facilities recommended in the 2008 Master Plan and the 2009 Coordinated Plan. The Programmatic EIR provided the environmental coverage to proceed with the overall program for water, wastewater, and recycled water facilities. Individual project-specific environmental studies would be completed as required for new facilities. A project-specific EIR was subsequently completed for the new West Hills WTP and associated infrastructure.

1.4 2014 Memorandum of Understanding

Since the goals of the 2008 Master Plan were largely achieved, the agencies recognized that a new memorandum of understanding was needed to update the 2008 Master Plan and continue planning for the future. The 2014 Memorandum of Understanding (2014 MOU) was developed between the City, SBCWD, and SSCWD to facilitate and guide this update.

The 2014 MOU incorporated the principles, objectives, and assumptions from the 2004 MOU. In addition, the following issues were identified for evaluation in the Master Plan Update.

- Update water demand and wastewater flow projections.
- Review and evaluate previously identified long-term water supply options.
- Review drinking water goals for Total Dissolved Solids (TDS) and hardness.
- Review goals for recycled water TDS.
- Evaluate the need, timing, and estimated cost of the following facilities:
  - Expansion of the West Hills WTP,
  - Crosstown Pipeline,
  - Groundwater Demineralization or Softening,
  - Modifications and/or expansion of the City's Water Reclamation Facility and the SSCWD Ridgemark Wastewater Treatment Plant,
  - Expanding the recycled water system, and
  - Major infrastructure improvements to the water distribution system and the wastewater collection system.

The 2014 MOU also reaffirmed the institutional framework and responsibilities of the Governance and Management Committees.

1.5 Related Planning Activities

There are a number of recently completed or ongoing planning activities that are related to the Master Plan Update. All work completed for this Master Plan Update was closely coordinated with these related planning activities.

1.5.1 2015 Hollister Urban Area Urban Water Management Plan

The 2015 HUA Urban Water Management Plan (UWMP) was prepared as a collaborative effort between the City, SSCWD, and SBCWD. The plan was prepared in accordance with the Urban Water Management Planning Act and guidelines prepared by the Department of Water Resources (DWR). The 2015 UWMP is intended to help guide the area's future water management efforts.

The plan builds on and updates the 2010 UWMP, accounting for changes in the California Water Code and local planning and water management efforts. Specifically, Senate Bill 7 (Statewide Water Conservation), water loss data, and new water conservation programs have been included in the 2015 UWMP.

The water demand projections presented in this Master Plan Update were closely coordinated with the UWMP. Similarly, the evaluation of water supply availability was also closely coordinated with the UWMP.

1.5.2 Hexavalent Chromium Compliance Plans

On July 1, 2014, the California Division of Drinking Water (DDW) adopted water quality regulations that limit the levels of Hexavalent Chromium to a maximum of 10 parts per billion (ppb) in drinking water. This regulation impacts both the City and SSCWD.

Water quality sampling and testing by the City revealed that all four of the City's active water supply wells exceed the new Maximum Contaminant Level (MCL). As a result, the City prepared the Hexavalent Chromium Compliance Plan for Groundwater Supply (Compliance Plan) in 2015. Appendix A includes a Technical Memorandum (TM) summarizing the implementation of the City's Compliance Plan for Hexavalent Chromium. The DDW approval letter is also included in Appendix A.

The objective of the City's Compliance Plan is to provide a reliable and cost-effective plan for the City to manage Hexavalent Chromium present in municipal water supply wells in accordance with DDW regulations. The recommended plan is to provide blending at three of the existing wells with treated surface water from the West Hills WTP. The fourth well (Well No.6) would be put on standby status. The West Hills WTP is under construction and will be operational by summer 2017. The recommended plan takes advantage of the economic efficiencies of currently planned water treatment and water supply infrastructure improvements to address the Hexavalent Chromium regulations in the City's water system.

SSCWD identified Hexavalent Chromium levels in excess of 10 ppb in Wells No. 7 and No.8. SSCWD's Compliance Plan and DDW approval letter are included in Appendix B. The plan includes putting Well No. 8 on standby and blending supply from Well No. 7.

On May 5, 2017, the Superior Court in Sacramento issued its final ruling in a case challenging the regulation that set a MCL of 10 ppb for Hexavalent Chromium. The court struck down that regulation for the time being and sent it back to the SWRCB for a better analysis of the economic feasibility of an MCL at different levels. Meanwhile, drinking water systems planning or already constructing new facilities to meet an MCL of 10 ppb must decide how to proceed with very little guidance except that at some point there will be a regulation for Hexavalent Chromium. Whether or not it will be changed from the previously adopted regulation is unknown at this time. Since the court ruling was issued after completion of the Master Plan Update, the recommendations in the plan for compliance with Hexavalent Chromium should be considered conservative and will need to be revisited following issuance of a new regulatory limit.

1.5.3 City of Hollister Water Distribution System Master Plan

The City is preparing a distribution system master plan to evaluate the need to replace or upgrade aging infrastructure and plan for future system expansions.

1.5.4 Groundwater Sustainability Plan

The Sustainable Groundwater Management Act (SGMA) of 2014 provides a process and timeline for sustainable management of groundwater basins by local agencies. SGMA applies to groundwater basins or subbasins designated by DWR as high- or medium priority, such as the Hollister, San Juan Bautista, and Bolsa subbasins, which are managed by SBCWD. It requires establishment of one or more Groundwater Sustainability Agencies (GSAs) that encompass a basin or subbasin, development of one or more Groundwater Sustainability Plans (GSPs), and achievement of groundwater sustainability within 20 years.

Under SGMA, DWR has ranked all California groundwater basins identified in DWR Bulletin 118 (DWR 2003) as very low, low, medium or high priority. Prioritization criteria include factors such as number of public supply wells, total wells, irrigated acreage, population, reliance on groundwater, impacts on streamflow and habitat, and occurrence of problems (e.g., overdraft, seawater intrusion, and subsidence). A medium- or high-priority basin has State-wide importance, but may or may not have the aforementioned issues. In addition, a low- or very-low priority basin may or may not have problems; moreover, its ranking is not intended to downplay its local significance.

SGMA compliance for low and very-low priority basins is not required, but an overlying water or land use agency may volunteer to be a GSA and prepare a GSP. Very low rankings were assigned to the Santa Ana, Upper Santa Ana, Quien Sabe, Tres Pinos, San Benito River, Dry Lake, Bitter Water, Hernandez, Panoche, and Vallecitos Valley Basins.

The Hollister, San Juan Bautista, and Bolsa subbasins of the Gilroy-Hollister Basin have been ranked as medium priority and thus are subject to SGMA. In addition, the Llagas subbasin of the Gilroy-Hollister Basin (Santa Clara County) has been designated as high priority, and the Pajaro Valley Groundwater Basin (which overlaps Santa Cruz, Monterey, and San Benito counties) has been deemed high priority. Moreover, the Pajaro Valley Groundwater Basin has been designated as critically over-drafted. This has important ramifications for GSP preparation and implementation; specifically, GSPs for such over-drafted basins must be adopted with implementation underway by 2020 (two years early) and sustainability must be achieved by 2040.

1.6 Objectives and Scope for Master Plan Update

The objectives, scope, approach, and key planning assumptions for the Master Plan Update are described in the following subsections.

1.6.1 Objectives

The overall objectives of the Master Plan Update are the following:

- Provide continuous improvement towards achieving drinking water and recycled water quality goals.

- Increase dry year water supply reliability.
- Provide adequate water supply to respond to long-term growth needs.
- Continue to address water, wastewater, and recycled water needs through coordinated regional solutions.

1.6.2 Scope of Work

The Scope of Work for completion of the Master Plan Update includes the following tasks:

- Task 1 - Update Water Demands and Wastewater Flows
- Task 2 - Review Drinking Water Quality and Recycled Water Quality Goals
- Task 3 - Develop and Evaluate Long-Term Water Supply Options
- Task 4 - Facilities Review, Evaluation, and Update
- Task 5 - Institutional and Financial Arrangements Support
- Task 6 - Project Management, Meetings, and Reports

1.6.3 Planning Approach

The planning approach for the Master Plan Update is similar to the approach used for the 2008 Master Plan shown in Figure 1-1.

1.6.4 Study Area

The Study Area developed by the agencies includes lands that are planned for future development that may require municipal and industrial water supply and wastewater collection and treatment services. The Study Area shown in Figure 1-2 includes the Hollister Planning Area boundary which includes the Sphere of Influence adopted by the Local Agency Formation Commission and some adjacent lands. The Study Area also includes lands that are designated in the San Benito County General Plan as industrial, commercial, or residential having a minimum density of one dwelling unit per acre. As described in the City's General Plan, the City Planning Area includes the current City limits and the unincorporated lands which ultimately may be developed and annexed to the City.

1.6.5 Planning Period

The planning period for the Master Plan Update extends from 2015 to 2035. The initial year of the planning period was selected to provide a common baseline for data related to land use, water supply and demand, and wastewater flows. The final year of the planning period coincides with the planning horizon of the 2015 UWMP.

1.6.6 Stakeholder Involvement

Stakeholder involvement for the Master Plan Update includes public meetings, presentations to agency boards and the City Council, outreach to local planning groups and presentations to other local interest groups.

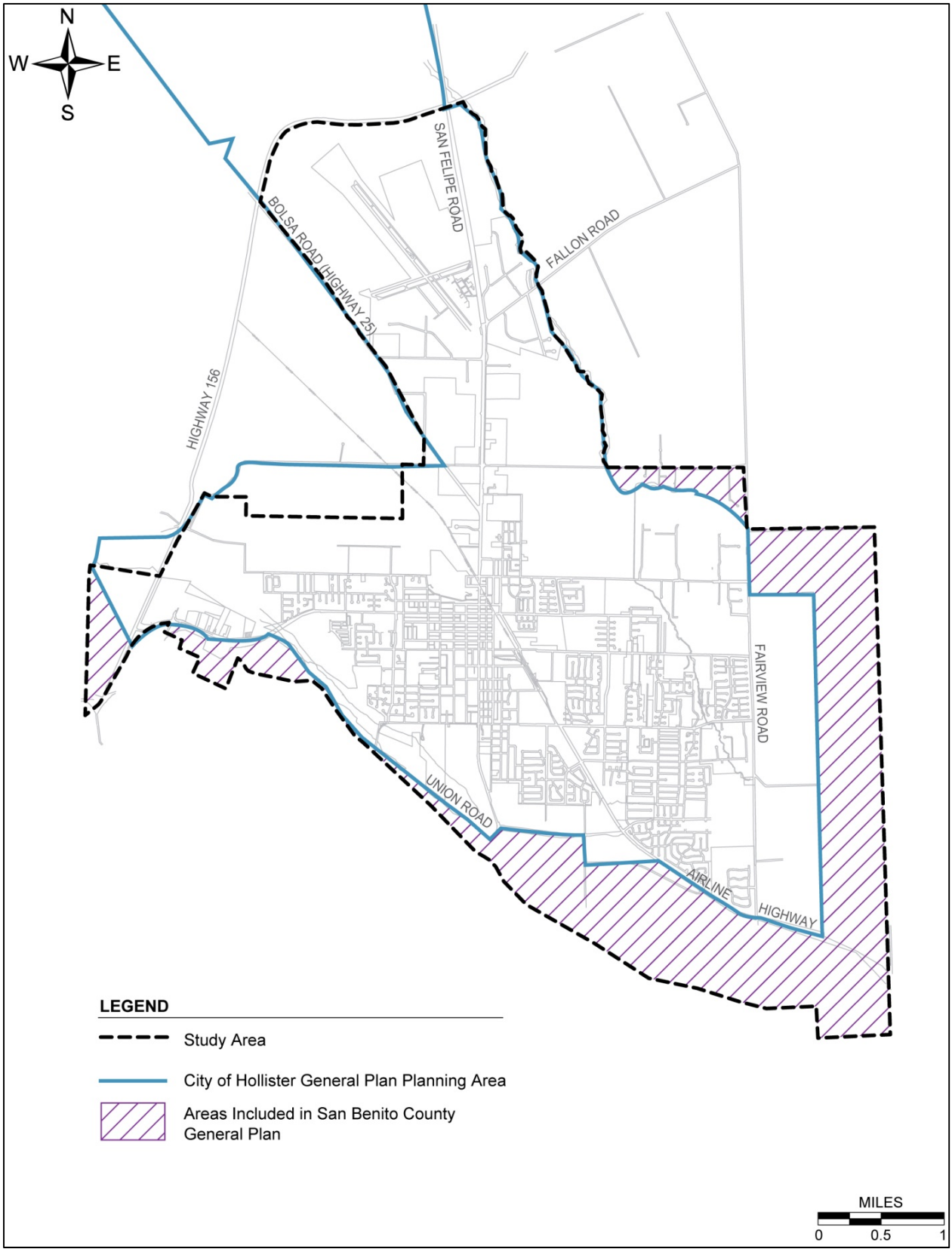

Figure 1-2. Study Area

1.7 Report Organization

This Master Plan Update provides a summary of pertinent background information, alternatives development and evaluation, and a recommended implementation program.

The Master Plan Update is organized into 6 sections which correspond to the work completed for each phase of the project as follows:

- Background
  - Section 1 - Introduction and Background
  - Section 2 - Improvements Since 2008 Master Plan
  - Section 3 - Projected Water Demands and Wastewater Flows
- Development and Evaluation of Alternatives
  - Section 4 - Long-Term Water Supply
  - Section 5 - Facilities Evaluation
- Recommended Implementation Program
  - Section 6 - Recommended Implementation Program

An Executive Summary precedes Section 1 for use in communicating the Master Plan Update results and recommendations.

1.8 Abbreviations

To conserve space and improve the text, the following abbreviations have been used in this Master Plan:

AA	average annual
ac	acre
AF	acre-feet
AFY	acre-feet per year
ADD	average daily demand
ADWF	average dry weather flow
AIPS	advanced integrated pond system
af/yr or afy	acre-feet per year
Agencies	City of Hollister, San Benito County Water District, and Sunnyslope County Water District
ASR	aquifer storage and recovery
BOD	biological oxygen demand
$CaCo_3$	calcium carbonate
CCR	Consumer Confidence Report
CEQA	California Environmental Quality Act
cfs	cubic feet per second

CIP	capital improvement program
City	City of Hollister
City Council	Hollister City Council
Coordinated Plan	2009 Coordinated Water Supply and Treatment Plan
County	San Benito County
CVP	Central Valley Project
D/DBP	Disinfectant/Disinfectant Byproducts
DDW	California Division of Drinking Water
Delta	Sacramento - San Joaquin Delta
du	dwelling units
DWR	California Department of Water Resources
DWTP	domestic wastewater treatment plant
EIR	Environmental Impact Report
ENR	Engineering News Record Construction Cost Index
EPA	U.S. Environmental Protection Agency
fps	feet per second
ft	feet
GMP	Groundwater Management Plan
GSA	Groundwater System Sustainability Agency
GSP	Groundwater Sustainability Plan
gpd/du	gallons per day per dwelling unit
gpd	gallons per day
gpm	gallons per minute
GWUDI	groundwater under the direct influence of surface water
hp	horsepower
hr	hour
H&SC	Health and Safety Code
HUA	Hollister Urban Area
I/I	inflow and infiltration
in	inch
IRWMP	Integrated Regional Water Management Plan
ISO	Insurance Services Office
IWTP	Industrial Wastewater Treatment Plant
LOD	Level of Development
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
LTWMP	Long-term Wastewater Management Plan

2008 Master Plan	2008 Hollister Urban Area Water and Wastewater Master Plan
Master Plan Update	2017 Hollister Urban Area Water and Wastewater Master Plan Update
MBR	membrane bioreactor
MCL	maximum contaminant level
MDD	maximum daily demand
MF	multi-family residential
Mgal or MG	million gallons
mgd	million gallons per day
MMD	Maximum Month Demand
mg/L	milligrams per liter
M&I	Municipal and Industrial
2004 MOU	2004 Memorandum of Understanding
2014 MOU	2014 Memorandum of Understanding
MSL	mean sea level
NPDES	National Pollution Discharge Elimination System
OCAP	Operation Criteria and Plan
O&M	Operation and maintenance
PEIR	2011 Programmatic Environmental Impact Report
PHD	peak hour demand
PPWD	Pacheco Pass Water District
PRPS	pressure reducing pressure sustaining
PRV	pressure reducing valve
psi	pounds per square inch
PUD	Planned Unit Development
PVWMA	Pajaro Valley Water Management Agency
PWWF	peak wet weather flow
RWQCB	California Regional Water Quality Control Board, Central Coast Region
SBCWD	San Benito County Water District
SBR	sequencing batch reactor
SCVWD	Santa Clara Valley Water District
SF	single family residential
SGMA	Sustainable Groundwater Management Act
SRWS	self regenerating water softener
SSCWD	Sunnyslope County Water District
State	State of California
SWP	State Water Project
SWTR	Surface Water Treatment Rule

TDS	total dissolved solids
Title 22	Title 22 of the California Code of Regulations
TM	Technical Memorandum
TSS	total suspended solids
USBR	United Stated Bureau of Reclamation
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirements
WRA	Water Resources Association of San Benito County
WRF	City of Hollister Water Reclamation Facility
WTP	water treatment plant
WWTP	wastewater treatment plant
yr	year

2 Improvements Since 2008 Master Plan

Following completion of the 2008 Master Plan, the agencies collaborated to successfully implement major water, wastewater, and recycled water projects for the benefit of the HUA. Water Conservation and other water related programs have also continued.

The major benefits received from the water, wastewater, and recycled water improvements are summarized in Figure 2-1. The improvements and resulting benefits are described in more detail in the following subsections.

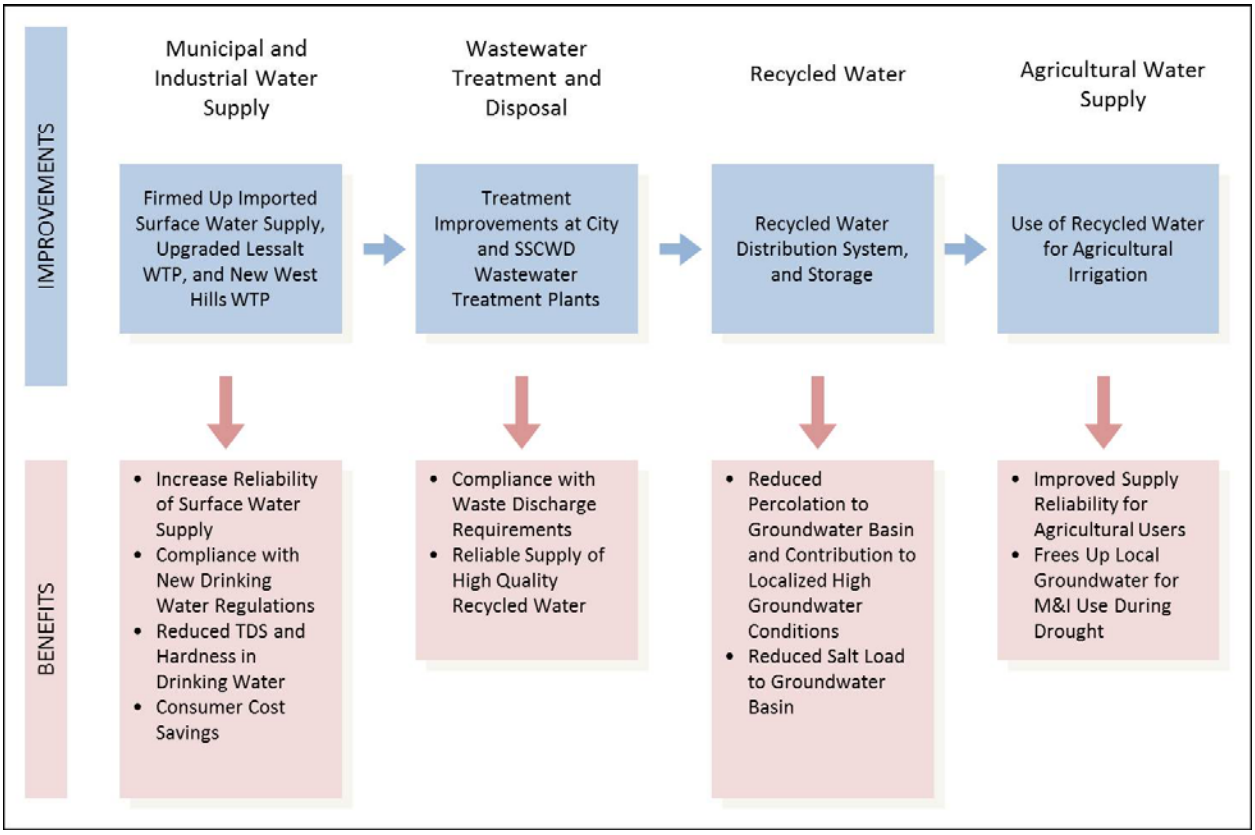

Figure 2-1. Major Improvements and Benefits since 2008 Master Plan

2.1 Water Supply Improvements

Significant actions have been taken to improve the reliability and sustainability of both surface water and groundwater supplies.

2.1.1 Surface Water Supply

The following subsections describe the major activities related to improving the reliability of surface water supplies.

2.1.1.1 IMPORTED SURFACE WATER TRANSFERS / SPOT MARKET

Over the past six years, the SBCWD has had an ongoing practice of purchasing out-of-basin water supplies to supplement its imported supplies from its existing CVP contract. These purchases have totaled 13,550 acre-feet (AF) over the period or an average of 2,258 AFY.

Purchases are made, when available and cost-effective, from a variety of sources including irrigation districts north of the Sacramento-San Joaquin River Delta (Delta), the San Joaquin River Exchange Contractors, and other sources. These purchases range from single year (spot market) purchases to multi-year agreements (typically up to 5 years).

2.1.1.2 SEMITROPIC WATER BANK

In February 2011, the SBCWD entered into an agreement with the Santa Clara Valley Water District (SCVWD) to participate in the Semitropic Water Bank. Under the terms of the agreement, the SBCWD will deliver 5,000 AF of CVP contract water to SCVWD. SCVWD will then store that amount of its CVP contract water supply, less 10 percent losses imposed by the Semitropic Agreement, on behalf of SBCWD for future recovery.

With this arrangement, SBCWD is able to improve its ability to manage current and long-term water supplies, providing a reliable supply for the two surface water treatment plants (Lessalt and West Hills WTPs), and providing a reliable dry year water supply.

2.1.1.3 BASELINE FOR CVP CONTRACT M&I SUPPLY

In 2014, the SBCWD renegotiated its baseline for the M&I portion of its CVP contract. Under the new agreement, the historic use applied by the U.S. Bureau of Reclamation (USBR) under its Shortage Policy is now set at the full M&I contract amount of 8,250 AFY.

Therefore, going forward in dry years, the allocation under the USBR Shortage Policy will be established as a percent of 8,250 AF. In past years, the historic use was set at a lower baseline, resulting in less available water in drought years. The historic use prior to 2011 was only 4,426 AFY. The benefit to the SBCWD and the HUA will be a more reliable dry year supply of imported surface water for M&I use.

2.1.2 Groundwater

Improvements have also been completed to increase the reliability and sustainability of groundwater supplies.

2.1.2.1 MANAGED PERCOLATION

There are a variety of ongoing activities for percolation to enhance groundwater supplies.

In the past, CVP percolation was used to recharge the groundwater basin. CVP percolation peaked in 1997 and was reduced subsequently in response to the successful recovery of the groundwater basin from overdraft. Direct in-stream recharge of CVP water is not expected to occur because of concerns for release of invasive Dreissenid (zebra) mussels.

In most years, local surface water released from Hernandez and Paicines Reservoirs is percolated along the San Benito River and Tres Pinos Creek. Releases of local surface water have been limited typically to percolation upstream of the confluence of San Benito River and Tres Pinos Creek. This has helped maintain groundwater levels without causing shallow

groundwater problems and competing for available storage space with the City's wastewater percolation ponds. In recent years when both Paicines and Hernandez were dry for the entire year due to drought conditions, there were no releases for groundwater percolation.

Wastewater is percolated at the City's WRF and is also percolated at the SSCWD Ridgemark WWTP and by Tres Pinos Water District. Recent changes in operation of the wastewater facilities have decreased the volume percolating to the groundwater.

2.1.2.2 SSCWD WELL, NO.11

SSCWD developed a new well (Well No.11, Lico) in 2009. This well has a capacity of 1,200 gpm and provides groundwater supply to the middle zone of the distribution system.

2.2 Water Treatment and Distribution

Major improvements and additions have been completed to facilities for the treatment and distribution of surface water supplies. The water service areas for the City and SSCWD are shown in Figure 2-2 and the major water facilities are shown in Figure 2-3 and Figure 2-4.

2.2.1 Surface Water Treatment Plants

Treated surface water plants include the existing Lessalt WTP and the new West Hills WTP, which will be completed in mid-2017.

2.2.1.1 LESSALT WATER TREATMENT PLANT

The Lessalt WTP, owned by the SBCWD and operated by SSCWD under contract, was placed into operation in January 2003. The plant, shown in Figure 2-5, was upgraded in 2014 to comply with the requirements of the Disinfectants and Disinfection Byproducts (D/DBP) Rule. The treated water is distributed to both City and SSCWD customers.

The plant has a rated capacity of 2.0 mgd capable of treating 2,240 AF of imported CVP supply annually. The plant has a short-term production capacity of up to 2.5 mgd.

2.2.1.2 WEST HILLS WATER TREATMENT PLANT

The West Hills WTP and associated transmission facilities are designed for an ultimate capacity of 9 mgd. The Phase 1 treatment and raw water pumping facilities will be constructed with an initial capacity of 4.5 mgd. The plant, shown in Figure 2-6, is currently under construction with completion by mid-2017. The treatment objectives for the West Hills WTP include:

- Reliably meet all applicable drinking water regulations, in particular the Stage 2 D/DBP Rule.
- Remove total organic carbon (TOC) from the source water such that byproducts formed during disinfection within the 14-day distribution system water age remain within the regulated limits.
- Provide pretreatment to reduce iron and manganese in the San Justo Reservoir source water.

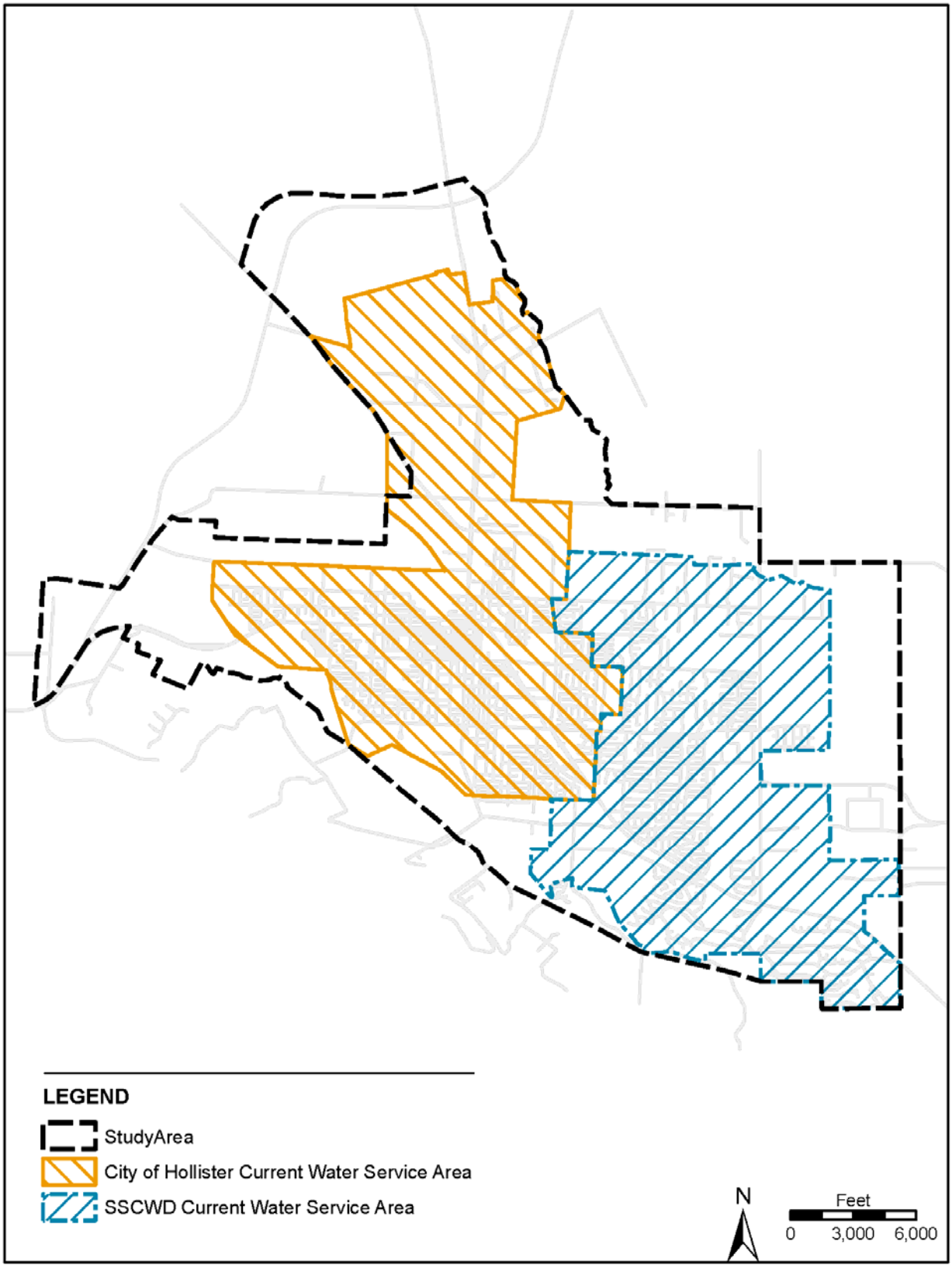

Figure 2-2. Water Service Areas

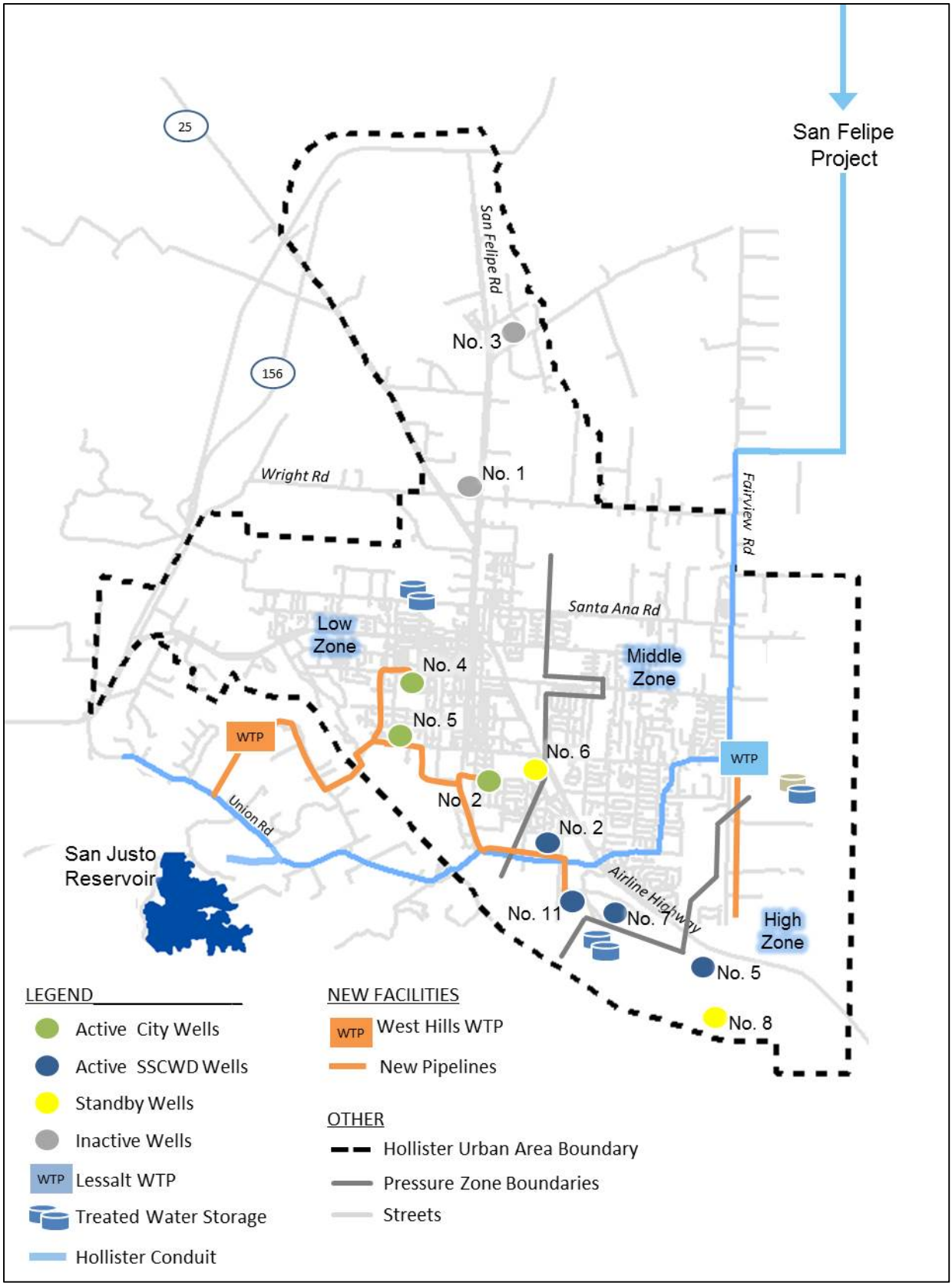

Figure 2-3. Water Distribution System Facilities

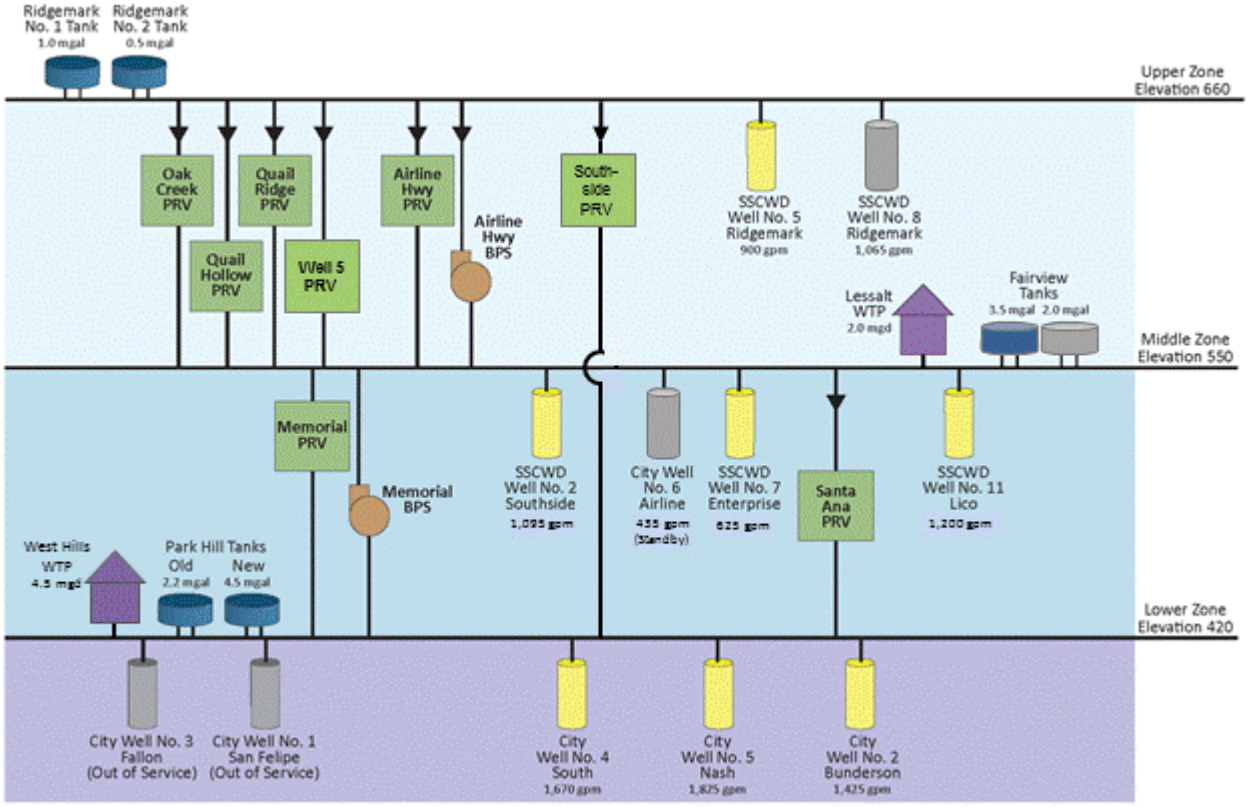

Figure 2-4. Water Distribution System Hydraulic Profile

The West Hills WTP process and facilities include a raw water pump station, raw water conveyance and treated water transmission pipelines, pre-oxidation for iron and manganese removal, ballasted flocculation clarification pretreatment with enhanced organics removal, conventional gravity filtration, chemical feed and storage, treated water storage tank, and solids handling systems. Water will be delivered from the Hollister Conduit to the plant. Once on-site, the primary treatment processes, storage tank, and the distribution system will operate by gravity. The treated water pipeline will connect to the existing City distribution system at City Well No. 5 and City Well No. 4. The Crosstown Pipeline project will include the extension of the transmission pipeline to the middle zone.

Figure 2-5. Lessalt Water Treatment Plant

Figure 2-6**. West Hills Water Treatment Plant**

2.2.2 Water Distribution System Improvements

Water distribution system improvements include new transmission pipelines, treated water storage reservoirs, and improvements to the distribution systems.

2.2.2.1 TRANSMISSION PIPELINES

New water transmission pipelines completed in 2014 to complement the Lessalt WTP are a major component of improvements since the 2008 Master Plan.

Fairview Road Transmission Pipeline

The Fairview Road Transmission Pipeline consists of 4,000 feet of 16-inch diameter pipeline extending from the Lessalt WTP to the south as shown on Figure 2-3. This pipeline provides treated surface water from the Lessalt WTP to the high zone of the distribution system.

Crosstown Pipeline

The Crosstown Pipeline was planned as a future transmission pipeline to extend delivery of treated surface water from the West Hills WTP to the middle zone. A preliminary alignment for the Crosstown Pipeline is shown on Figure 2-7.

As previously described, the City completed a study in 2015 to evaluate alternatives to comply with new California DDW regulations for the control of Hexavalent Chromium in groundwater used for M&I supply. The recommended compliance plan is to accelerate implementation of the Crosstown Pipeline to provide treated surface water to blend with groundwater from wells exceeding the Hexavalent Chromium limits.

2.2.2.2 TREATED WATER STORAGE RESERVOIRS

The location and capacity of existing treated water storage reservoirs are shown in Figure 2-3 and Figure 2-4.

Fairview Tanks

There are two tanks located at the Fairview site. The 3.5 MG tank is operational and owned by SSCWD. The 2.0 MG tank is currently out of service. The 2.0 MG tank was originally owned by the City but is now owned by SSCWD.

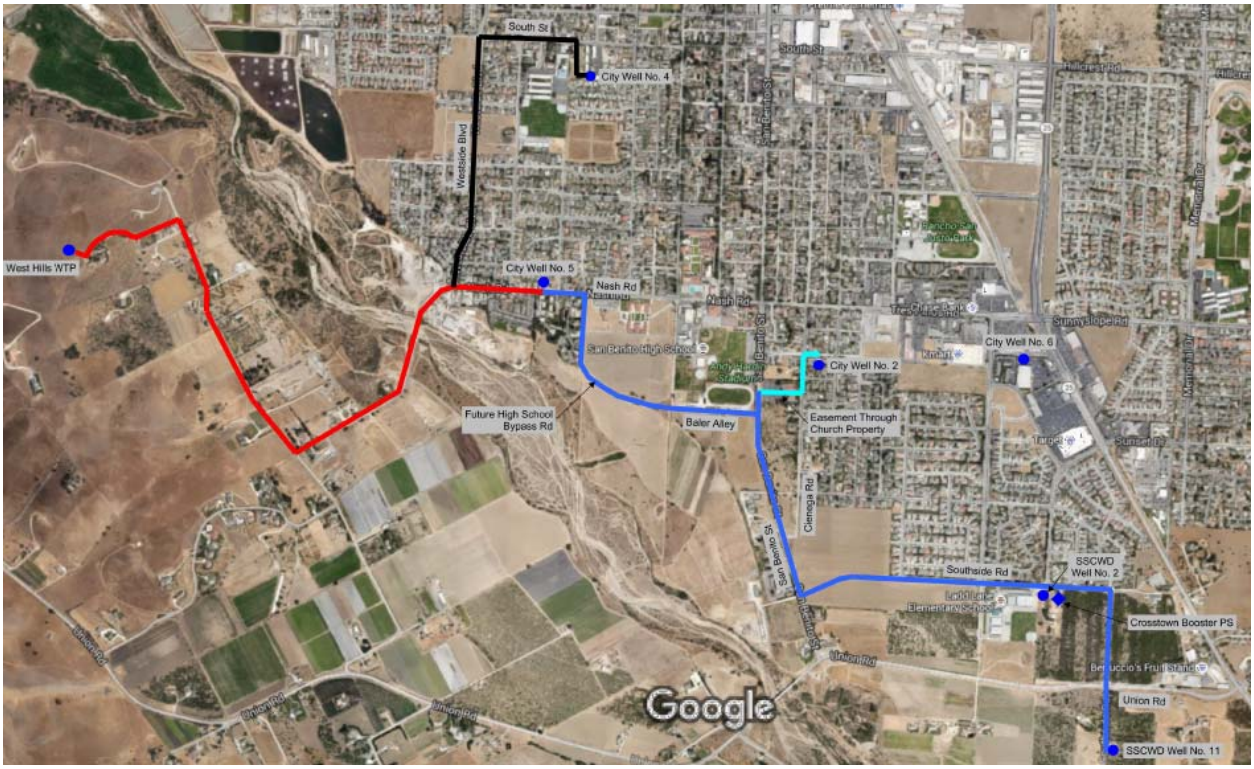

Figure 2-7. Preliminary Crosstown Pipeline Alignment

The 2.0 MG tank was taken out of service due to the long residence times with both tanks in service. In addition, the 2.0 MG tank is in need of a major rehabilitation. SSCWD plans to rehabilitate the tank and place it back in service as demands increase at some time in the future.

West Hills WTP Clearwell

The West Hills WTP clearwell is a 0.5 MG storage reservoir being constructed with the new WTP. Space is reserved at the plant site for the addition of a second 0.5 MG clearwell as part of the ultimate plant capacity for a total onsite storage capacity of 1.0 MG.

2.2.2.3 WATER DISTRIBUTION SYSTEM

The City and SSCWD have ongoing programs for improvements and upgrades to their respective water distribution systems. The most recent capital improvement programs for each agency are included in Appendix B. The City is also completing a Water Distribution System Master Plan as previously described.

2.3 Wastewater Treatment

There are three wastewater treatment facilities serving the HUA and the service areas for each plant are shown on Figure 2-8. Major upgrades have been completed to the City and SSCWD facilities since completion of the 2008 Master Plan.

2.3.1 City Water Reclamation Facility

The City's original Domestic Wastewater Treatment Plant (DWTP) was completed in 1980. Numerous additions and modifications were completed over the next 20 years.

The City's Industrial Wastewater Treatment Plant (IWTP) was completed in 1971. The IWTP was originally designed to treat high-strength wastewater from local industrial facilities, such as canneries and food processing facilities. The IWTP is still operated for the San Benito Foods tomato cannery during the summer months.

To comply with the new waste discharge requirements (WDR), the City completed the Water Reclamation Facility (WRF) in 2010. The City's WRF is shown in Figure 2-9. The WRF replaced the DWTP. The WRF has a current capacity of 4.5 mgd and produces Title 22 effluent suitable for use as recycled water.

The WRF is the designated regional wastewater treatment facility for the HUA. This designation is defined in Sections 2.1.1 and 2.2.4 of the 2004 MOU (amended in 2008 and 2014). This provision does not preclude satellite separation plants for local water recycling including SSCWD's Ridgemark Wastewater Treatment Plant.

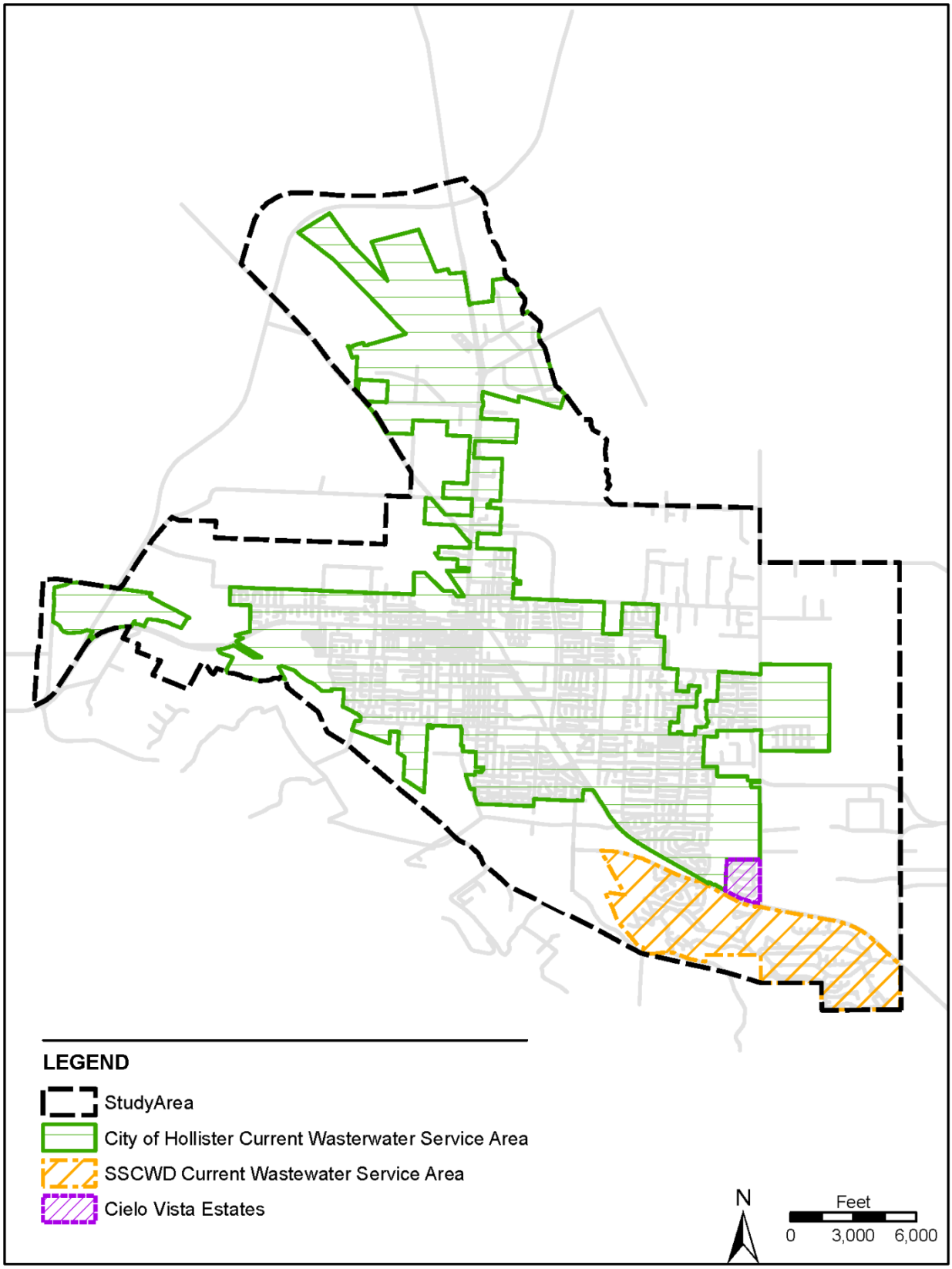

Figure 2-8. Wastewater Service Areas

Figure 2-9. City Water Reclamation Facility

2.3.2 SSCWD Ridgemark Wastewater Treatment Plant

The SSCWD originally operated two wastewater treatment plants serving residential and a few commercial businesses in the Ridgemark area. In 2013, the two original plants were replaced by a single, new 0.35 mgd wastewater treatment plant, shown in Figure 2-10.

Figure 2-10. SSCWD Ridgemark Wastewater Treatment Plant

2.3.3 Cielo Vista Estates Wastewater Treatment Plant

Cielo Vista Estates established as San Benito County Service Area No. 22 on April 1, 1987 and was granted a WDR permit by the RWQCB on July 10, 1987. Cielo Vista Estates is located northwest of the intersection of Fairview Road and Airline Highway, and consists of approximately 70 acres of residential development with approximately 76 residences.

The wastewater treatment facility consists of an enclosed package sequencing batch reactor (SBR) with capacity to treat up to 30,000 gallons per day of domestic wastewater. Average influent wastewater flow is estimated at 20,000 gallons per day which is consistent with this level of development. Treated effluent is disposed of via leach fields adjacent to the treatment facility.

2.4 Recycled Water

A significant benefit of the integrated water resources program in the 2008 Master Plan was the development of recycled water as an additional source of supply. The City's WRF produces Title 22 unrestricted water which is currently used by the City for park irrigation and by SBCWD for agricultural irrigation. The facilities to distribute the recycled water are shown on Figure 2-11.

Landscape irrigation at the City's Riverside Park was an average of approximately 167 AFY. Recently completed agricultural irrigation facilities by the SBCWD provided approximately 499 AF in water year 2016 (through September 2016). An additional 250 AF was delivered in October 2016.

In September 2014, SBCWD was awarded a $2.1 million grant toward the implementation of facilities for agricultural reuse of recycled water from the City WRF. As shown on Figure 2-11, new pipelines were constructed to deliver recycled water to parcels along Wright Road. Turnouts were also added to the original 20-inch diameter recycled water pipeline from the WRF. In 2016, the SBCWD lined a storage pond at the WRF to hold up to 15 AF of recycled water to provide flexibility in operations and delivery.

The SSCWD Ridgemark WWTP was designed with provisions for future addition of facilities capable of producing Title 22 water for landscape irrigation. To date, no timeline has been established by SSCWD for completing these Title 22 facilities.

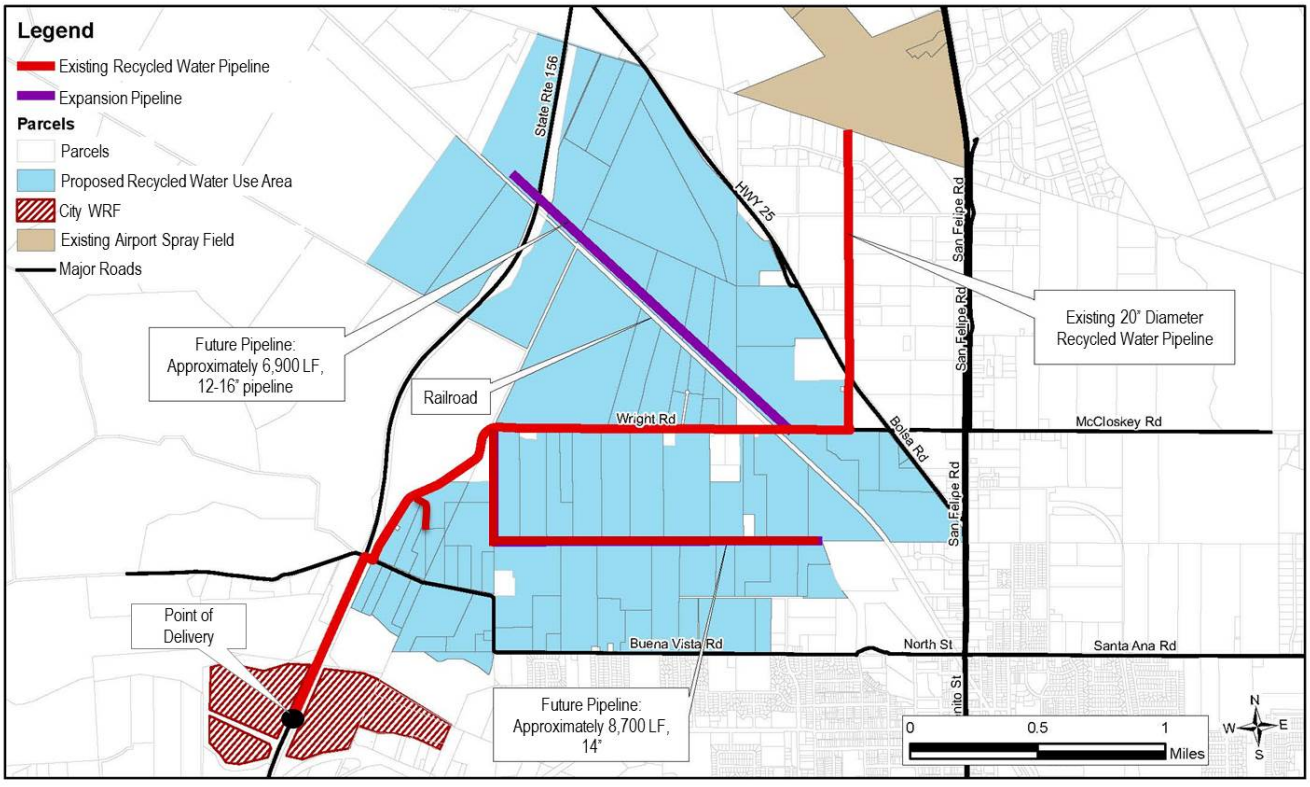

Figure 2-11. Recycled Water Facilities

2.5 Water Conservation

Water conservation is an important tool to manage demands in the HUA. During the multiple year drought, the state mandated water retailers to reduce their demand.

On April 1, 2015, Governor Brown issued an Executive Order mandating water reduction in urban areas to reduce potable urban water usage by 25 percent statewide. The City and SSCWD were required to submit their monthly water demand reduction accomplishments to the State Water Resources Control Board (SWRCB) to document their respective achievements in reducing water demand. As of September 2015, the City and SSCWD had reduced 26.4 and 36.2 percent from 2013 water use, respectively, surpassing the mandated conservation requirement. Other ongoing water conservation programs include:

- Irrigation rebate program
- Green Business Committee
- Home water survey program
- Toilet replacement program
- High-efficiency clothes washer program
- Education program (classroom presentations, fieldtrips to WRF and WTP, Ag in the Classroom, Farm Day)
- Outreach programs including ads in local newspaper, bill inserts, newsletters, San Benito County Fair, Water Awareness Month (May), Water-Wise demonstration garden, water conservation library for public use, WRA website, water efficient landscape plans, and web and print ads in the Hollister Free Lance newspaper and website.

In July 2014, the WRA also added a Turf Removal Program to encourage customers to remove high water use turf areas form residential parcels. This program complements the irrigation hardware rebates and free water efficient landscape plans. In Fiscal Year 15/16, the program expanded from offering a $1 per square foot of turf removed up to 500 square feet to 1,000 square feet. As of November 2015, over 88,000 square feet of turf have been removed in the HUA.

These ongoing water conservation programs have successfully reduced water demand in the basin. However, some of these measures may be reaching saturation. For example, the number of remaining toilets eligible for rebates is limited, as many residents have already installed low flow toilets. It is important to continue and diversify these plumbing and landscape conversion programs and public outreach to encourage the public to continue to use water wisely.

Together, the state-ordered demand reduction coupled with the expansion of ongoing water conservation efforts, has successfully lowered water demand in the HUA. A recent summary of the key conservation best management practices being implemented is presented in Table 2-1.

2.6 Other Programs

In addition to the improvements and water conservation programs described above, the following programs were also implemented to improve water quality and water conservation awareness in the HUA.

Table 2-1. Summary of Water Conservation Best Management Practice Achievements

BMP		2014			2015			2016		
Residential Surveys	2010 Goal	City	SS	SB	City	SS	SB	City	SS	SB
SF	200	159	188	3	159	153	1	106	102	1
MF	50	71	11	10	34	6	0	0	2	0
Plumbing Retrofits	2010 Goal	City	SS	SB	City	SS	SB	City	SS	SB
SF	522	180	195	3	159	152	1	120	101	12
MF	133	71	11	10	24	6	0	24	0	0
Large Landscape Audits	3% of accounts/yr	City	SS	SB	City	SS	SB	City	SS	SB
		0	0	0	0	0	1	0	0	0
High-Eff. Washer Rebates ($100)	80 budgeted	City	SS	SB	City	SS	SB	City	SS	SB
		18	30	0	32	28	0	7	11	0
ULF Toilet Replacements	Type	City	SS	SB	City	SS	SB	City	SS	SB
	Rebates	24	37	1	33	67	2	14	29	0
	SF giveaway	59	47	1	48	30	4	35	16	0
	MF giveaway	24	4	9	10	7	0	7	17	0
	Institutional	0	0	0	0	0	0	0	0	0
	Commercial	7	0	0	15	1	0	17	5	0
Landscape Irrigation Hardware Rebate Program		City	SS	SB	City	SS	SB	City	SS	SB
		0	25	0	0	58	0	12	0	0
Water Softener Replacement Program		City	SS	SB	City	SS	SB	City	SS	SB
		21	36	1	25	105	0	8	63	0

Source: Adapted from Water Resource Association of San Benito County BMP Spreadsheet. SS – SSCWD. SB – SBCWD. SF – Single Family. MF – Multi-Family.

2.6.1 Water Softener Rebate Programs

Since 2008, a program has been in place to issue rebates to those water customers who remove a self-regenerating water softeners (SRWS) without replacement ($300) or with transition to an off-site exchange service ($250). In July 2014, the City also enacted an ordinance that prohibits the installation of new SRWS that use sodium and/or potassium salts. SSCWD also adopted a new code through Ordinance #79 prohibiting new or replacing existing SRWS. The intent of these programs is to remove salt loading from the wastewater, thereby improving the resulting recycled water and reducing salt loading to the groundwater basin through percolation. The recent status of the water softener rebate program is presented in Table 2-1.

2.6.2 Irrigation Education

The District, in collaboration with the WRA, has been offering a series of classes since 2009 on irrigation efficiency and other agriculture practices. These workshops provide concepts, tools, and examples for optimizing irrigation and nitrogen management efficiency in row, tree, and greenhouse crop production. The classes also focus on keeping records and acquiring data needed for water quality regulation and reporting. The WRA also offers classes to residential customers. These classes instruct customers on topics such as efficient irrigation practices, converting landscapes to be water wise, and composting.

3 Projected Water Demands and Wastewater Flows

Demand projections are required for the Master Plan Update to identify future urban water supply needs and wastewater flows for the planning horizon of 2035. This section summarizes past projections and changed conditions, and presents the methodology and updated water, wastewater, and recycled water projections through 2035.

3.1 Previous Projections

The following subsections present a summary of past projections that have been prepared for the 2008 Master Plan and the 2010 Urban Water Management Plan.

3.1.1 2008 Master Plan

The 2008 Master Plan included a detailed analysis of historical water use and future water projections. The analysis incorporated land use planning data from the adopted General Plans for the City and San Benito County, respectively, and evaluation of unit demands, system losses, and water conservation projections.

At the time of the 2008 Master Plan, the average annual water demand was estimated to be approximately 7,965 AFY and was projected to increase to 11,840 AFY 2023 and to 20,150 AFY by buildout of the HUA. The growth in demands presented in the 2008 Master Plan is presented in Figure 3-1.

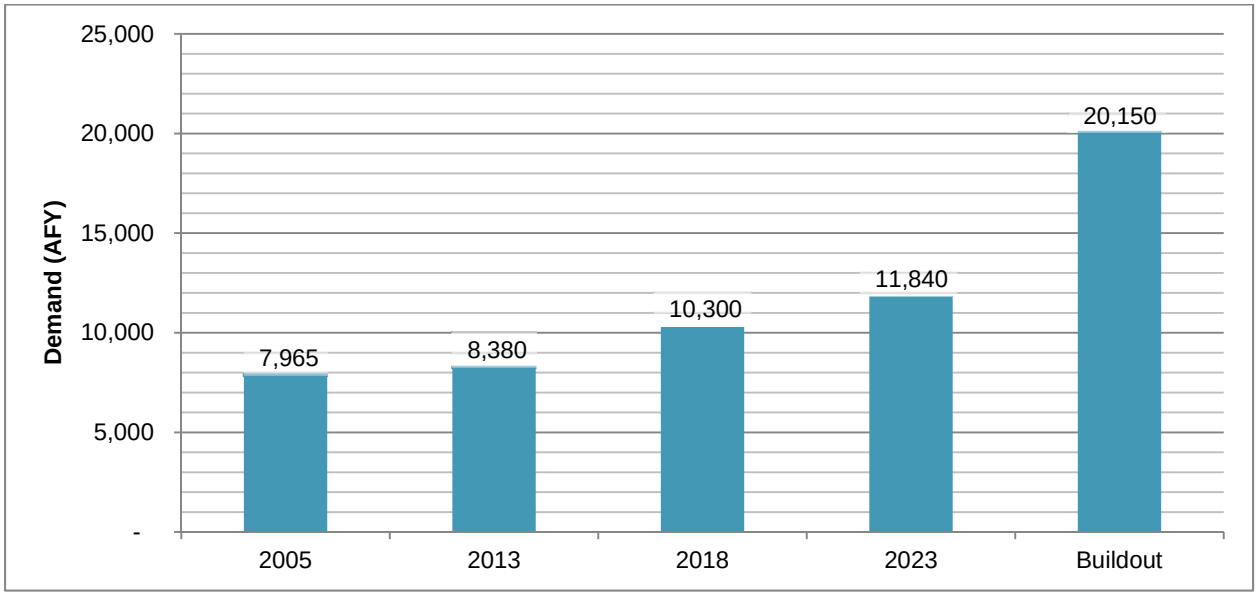

Figure 3-1. 2008 Master Plan Water Demand Projection

The 2008 Master Plan also considered flows to the wastewater treatment facilities. The total average dry weather flow (ADWF) was estimated to be approximately 3.0 mgd, increasing to 4.5 mgd by 2023. The City's WRF was expected to increase from 2.7 mgd to 4.4 mgd, while SSCWD's Ridgemark WRF was expected to increase from 0.3 mgd to 0.46 mgd.

3.1.2 2010 Urban Water Management Plan

The 2010 UWMP included an analysis of past and projected water demands, as required by the State and prescribed in the 2010 UWMP Guidebook. As presented in the 2010 UWMP, the total water use from 2005 to 2010 decreased from approximately 6,791 AFY to 5,856 AFY, despite a relatively consistent population in the HUA. The factors believed to contribute to this decrease are described in Section 3.2.

Water demand was projected to increase to 8,624 AFY in 2020 and to 11,583 by 2030, which included estimated system losses at approximately 7 percent of demand.

3.2 Changed Conditions since Prior Projections

Since the 2008 Master Plan was completed, several key conditions affecting water demand have changed, including those described in the following subsections.

3.2.1 Economic Downturn

The “Great Recession,” which marked the country’s largest downturn in economic activity since the Great Depression, officially lasted from December 2007 to June 2009. During that period and the ensuing years, growth in development, including the residential housing market, stagnated and there was a sharp cutback in consumer spending. In addition, approximately 10 percent of the housing stock in Hollister was in some form of foreclosure. As a result, much of the growth that was anticipated to occur following the lifting of the City’s building moratorium in 2008, has been delayed. After several years of limited or no growth, there now appears to be a renewed interest in residential housing construction in the HUA as builders are anticipating a rebound of housing demand.

3.2.2 Ongoing Drought

San Benito County, like all of California, has experienced severe drought conditions. Since 2008, six of the seven subsequent years have been drought years and the period between 2012 and 2016 represents perhaps the worst prolonged drought in the State’s historical record.

On January 17, 2014, Governor Jerry Brown proclaimed a State of Emergency recognizing that the state was facing water shortfalls in the driest year in recorded state history. Then, on April 1, 2015, following the lowest snowpack ever recorded in California, Governor Brown announced a mandatory 25 percent reduction in water consumption throughout the state.

The prolonged drought conditions have had significant impact on the water demands.

3.2.3 Water Conservation

In addition to the drought, the Water Conservation Bill of 2009, Senate Bill x7-7, required a 20 percent reduction in per-capita urban consumption by 2020 (often referred to as 20 by 2020). SBX7-7 requires that urban water purveyors make incremental progress toward the conservation goal by reducing per-capita water use by at least 10 percent by the end of 2015. To enforce this requirement, SBx7-7 further requires that urban water purveyors are not eligible for state water grants or loans unless they comply with their water conservation requirements.

The effect of SBx7-7 has been a heightened awareness and implementation of conservation measures in the HUA. As previously described, the WRA is responsible for managing the conservation efforts in the HUA, including providing incentives for new plumbing fixtures (e.g., low flush toilets, etc.), and providing information and education on conservation measures for the public. As described in Section 3.4.4, the WRA has been very successful in its efforts to provide incentives for new plumbing fixtures.

3.2.4 County General Plan Update

San Benito County adopted their 2035 General Plan Update in July 2015. Although zoning and density changes to the County's General Plan and the potential consequences were discussed and considered, it had relatively little impact on the HUA.

3.3 Methodology

As previously described, the approach used to the project the water demands presented in the 2008 Master Plan was based on planned future land uses and the application of water use factors to those respective lands. The land use designations and densities were identified in the City and County General Plans for vacant lands within the HUA Study Area. The future demands were then added to the existing demand to determine a total forecasted demand for 2023 and beyond.

The updated forecasts presented herein rely on earlier projections to understand total potential demand in the HUA. However, the near term demand projections presented herein (through 2025) rely on the current understanding of population growth within the HUA based on input from the City's Planning Department and SSCWD.

In addition, an analysis of recent residential water demand and wastewater flows from 2010 through 2014 was conducted to understand changes and trends in residential unit consumption and production that may have arisen due to the ongoing drought, water conservation, and changes in typical residential lot size. The unit factors resulting from this analysis were then applied to the anticipated population growth and associated new developments to project future potable water demand and wastewater flows.

3.4 Analysis of Recent Historical Data

The following subsections present an analysis of recent historical connections, water consumption, unit factors, conservation and unaccounted for water.

3.4.1 Connections

During the period between 2010 and 2014, the City's potable water system grew from approximately 5,830 total connections to over 6,000, which is an average of approximately 50 new connections per year or slightly less than one percent annual growth on average. Of the nearly 200 new connections added during the period, over 80 percent were single family residential (SFR) connections.

Similarly, SSCWD's system grew from approximately 5,300 in 2010 to nearly 5,500 connections in early 2015. On average, approximately 40 new connections were added per year during the period, reflecting slightly less than one percent annual growth on average.

The addition of new connections during the period from 2010 to 2014 is presented in Table 3-1.

Table 3-1. Historical Connections (Number of Connections)

	2010	2011	2012	2013	2014
City	5,831	5,860	5,893	5,962	6,026
SSCWD	5,304	5,351	5,373	5,418	5,470
Total	**11,135**	**11,211**	**11,266**	**11,380**	**11,496**
New Connections		**76**	**55**	**114**	**116**

3.4.2 Water Consumption

As expected with an increase in connections, the City's water consumption also increased. During the period, consumption increased from a total of 2,750 AFY reported in 2010 to 3,010 AFY in 2014, reflecting a nearly 10 percent growth. However, despite an increase in the number of connections, SSCWD's total water consumption, as reported in the volume of water billed to its customers, decreased from 2,960 AFY in 2010 to 2,558 AFY in 2014. That decrease reflects a nearly 14 percent decrease in total water consumption for SSCWD.

As shown in Table 3-2, the total water consumption for the combined system declined from 5,710 AFY in 2010 to 5,568 AFY in 2014.

Table 3-2. Historical Water Consumption (AFY)

	2010	2011	2012	2013	2014
City	2,750	2,827	2,864	2,986	3,010
SSCWD	2,960	2,440	2,653	2,810	2,558
Total	**5,710**	**5,267**	**5,517**	**5,796**	**5,568**
Annual Increase		**(443)**	**250**	**279**	**(228)**

3.4.3 Unit Factors

Water consumption was evaluated to better understand the variation in water use by customer types, including SFR, multi-family residential (MFR), commercial, industrial, and landscape irrigation. The unit demand by customer type for the City connections is presented in Table 3-3.

Table 3-3. City Unit Demands (AFY / Connection)

Customer Type	2010	2011	2012	2013	2014	Average
SFR	0.33	0.33	0.34	0.35	0.32	0.33
MFR	1.28	1.32	1.29	1.27	1.20	1.27
Commercial	0.86	0.86	0.83	0.87	0.79	0.84
Institutional	1.20	1.20	1.19	1.37	1.38	1.27
Landscape	2.49	2.87	2.57	2.52	4.51	2.99
Total	0.47	0.48	0.48	0.50	0.50	0.48

With the exception of the Landscape category, the unit demands are relatively stable for the period. The residential and commercial customer types demonstrate a slight decline during the period, which is likely attributed to increased water conservation, particularly in light of the on-going drought. The Institutional and Landscape unit demands have increased during the period; there appears to be an anomaly in the 2014 Landscape data.

Typical lot sizes for new residential units have decreased from a historical size of approximately 7,000 to 8,000 square feet per lot to 6,000 square feet or less per lot. Smaller lots require less water for outdoor irrigation. This transition to smaller lot sizes has occurred over a long period of time. As a result, the unit demands shown in Table 3-3 do include consideration of smaller lot sizes.

Unit demands for SSCWD were evaluated in aggregate for the period and by customer type for 2011. The former analysis revealed that 2011 had the lowest unit demands for the period, with an average annual water use of 0.46 AFY per connection, compared to a high of 0.56 AFY per connection in 2010 and an overall average of 0.48 AFY per connection for the period.

The SSCWD unit demands by customer account type, based on the water consumption in 2011, are presented in Table 3-4.

Table 3-4. SSCWD Unit Demands for 2011 (AFY / Connection)

Customer Type	2011
SFR	0.40
MFR	1.08
Commercial	0.78
Institutional	1.04
Landscape	2.51
Total[(a)]	0.46

(a) Based on connections for each customer type.

3.4.4 Water Conservation

The WRA began tracking water conservation activities in 2003. Since that time, significant strides in conservation have occurred, as demonstrated in Table 3-5.

In addition to the indoor plumbing retrofits identified in Table 3-5, approximately 88,000 square feet of turf has been removed and/or replaced with drought tolerant landscaping since early 2014. Based on a typical evapotranspiration rate of 3 AFY/acre for the region, the turf removal equates to approximately 6 AFY of water conservation savings due to turf removal. As a result, the total estimated annual conservation savings are estimated to be approximately 440 AFY.

Based on discussions with staff at the WRA, many of the quantifiable indoor conservation retrofits are reaching saturation in the existing system. Furthermore, while the current ongoing drought has led some customers to remove their turf in the last two years, this method of conservation is not expected to continue, particularly when drought conditions dissipate and mandatory rationing is discontinued.

Table 3-5. Water Conservation Activities

	Water Fixture Replacements			
	Toilets	**Showerheads**	**Faucet Aerators**	**High Efficiency Washing Machines**
2003	1,794	612	510	170
2004	783	654	545	168
2005	604	657	548	261
2006	513	866	721	259
2007	497	497	414	240
2008	530	642	535	187
2009	560	564	470	163
2010	310	438	365	139
2011	279	512	426	81
2012	181	549	458	59
2013	223	531	443	51
Total Fixtures	**6,274**	**6,521**	**5,434**	**1,778**
Estimated Water Savings (AFY)	**200 AFY**	**90 AFY**	**85 AFY**	**60 AFY**
Total Estimated Water Savings	**435 AFY**			

As demonstrated in Table 3-5, the majority of the indoor plumbing retrofits occurred prior to the period of analysis (2010 – 2014). Given the recent drought conditions, it is expected that water consumption has been depressed in recent years. Taken together, it is difficult to predict any further decline in unit water demand due to conservation when considering the elasticity in behavior that may occur once the drought subsides. As a result, for the purposes of projecting future demands, specific reductions in unit demands due to further water conservation are not included.

3.4.5 Unaccounted for Water

In order to estimate the total water demand, unaccounted for water (e.g., system losses, other non-metered water) must also be estimated. To do so, the total water production, including the water produced at the City's wells, SSCWD's wells, and the Lessalt WTP, was compared to the total metered water in the combined system. A summary of the unaccounted for water analysis is presented in Table 3-6.

Table 3-6. Unaccounted for Water

Year	Production (AFY)			Consumption (AFY)			Unaccounted for Water	
	City Wells	Lessalt + SSCWD Wells	Total	City	SSCWD	Total	Total (AFY)	Total (%)
2010	2,056	3,458	5,514	2,750	2,457	5,207	307	6%
2011	1,607	3,996	5,602	2,827	2,483	5,310	293	6%
2012	2,120	3,815	5,934	2,864	2,153	5,017	917	18%
2013	2,951	3,210	6,162	2,986	3,176	6,162	0	0%
2014	2,755	2,864	5,619	3,010	2,440	5,450	169	3%
							Average	**7%**

As shown in Table 3-6, the unaccounted for water averages approximately 7 percent of the total annual consumption, which is consistent with past estimates from the 2008 Master Plan as well as typical industry averages which range between 5 and 10 percent.

Two years, 2012 and 2013, seem to be outliers. There appears to be a significant drop in the SSCWD metered consumption for July through October of 2012, which led to the large discrepancy between production and consumption. It also seems unlikely that production would perfectly match consumption, as was the case in 2013.

3.5 Population Projections

As previously described, population growth was used as the basis to update the water demand and wastewater flow projections.

In collaboration with City, SBCWD and SSCWD staff, the population projections summarized in Table 3-7 were developed. These projections are based on a representative period from 1990's census data, which reflects an approximately 4 percent annual growth rate. However, population growth was limited to 1,500 people per year through 2020 due to the current development landscape in the HUA as well as recognition of existing infrastructure limitations (e.g., Highway 101 capacity limitations).

Table 3-7. Projected Population Growth

	2015	2016-2020	2021-2025	2026- 2030	2031 -2035
New	1,500	7,500	8,450	10,280	12,500
Cumulative New	1,500	9,000	17,450	27,730	40,230

A summary of the projected new connections associated with the population growth is presented in Table 3-8. As shown, there will be an estimated 10,500 new connections during the planning period.

Table 3-8. Projected New Connections

	2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	Total
SFR[(a)]	379	1,894	2,134	2,596	3,158	10,161
MFR[(b)]	13	63	71	87	105	339
Total	**392**	**1,957**	**2,205**	**2,683**	**3,263**	**10,500**
Cumulative	**392**	**2,349**	**4,554**	**7,237**	**10,500**	

(a) Number of SFR connections is based upon 3.3 persons per household.
(b) 6 units per MFR connection were assumed.

Figure 3-2 illustrates the number of connections in the City and SSCWD water service areas since 2010 as well as the projected number of new connections described above. As shown, it is anticipated that the system will see an increase from approximately 11,510 existing connections to approximately 22,010 connections in 2035.

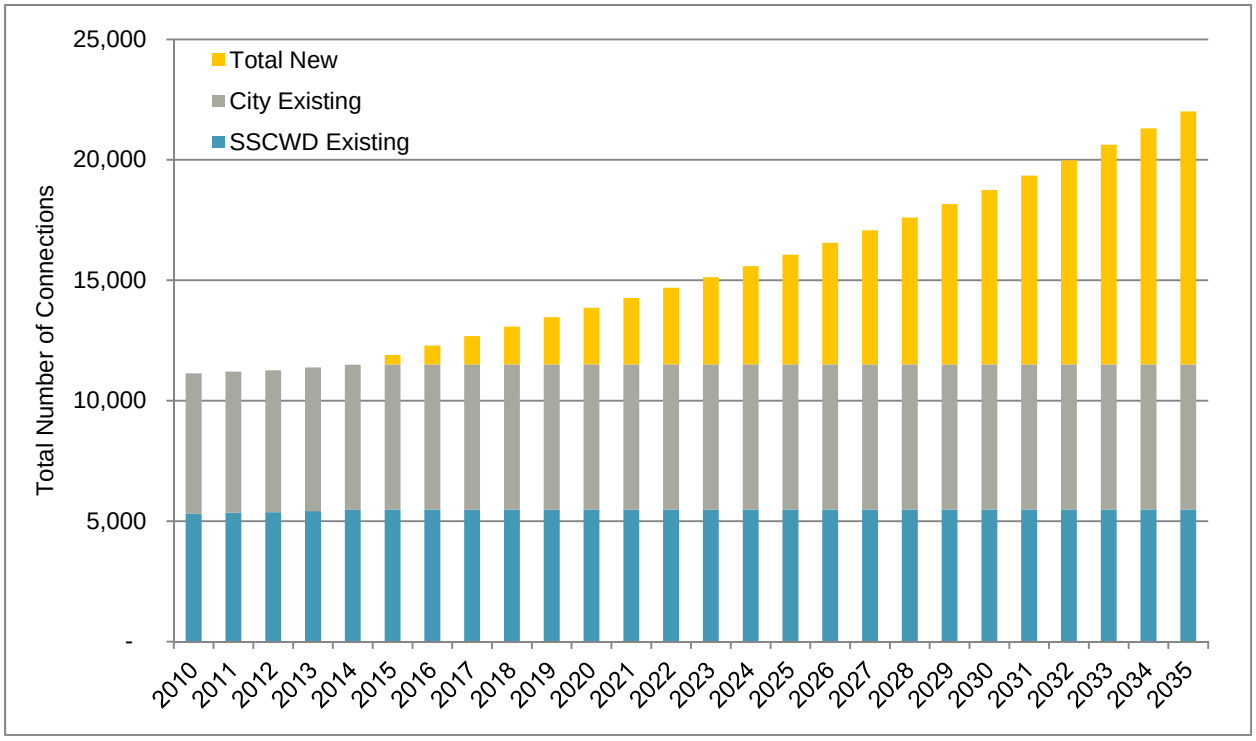

Figure 3-2. Projected New Connections

3.6 Water Demands

Based on the unit demands presented in Section 3.4 and the new connections presented in Section 3.5, the projected water demands are summarized in Table 3-9, Table 3-10, and Figure 3-3.

Table 3-9. New Water Demand by Customer Class (AFY)

	2015 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	Total
SFR[(a)]	756	710	863	1,050	3,380
MFR[(b)]	96	90	110	134	430
Commercial/Industrial[(c)]	75	63	63	63	264
Losses[(d)]	60	56	68	83	267
Total	**987**	**919**	**1,104**	**1,330**	**4,340**

(a) SFR demand is based on a unit demand of 0.33 AFY.
(b) MFR demand is based on a unit demand of 1.27 AFY.
(c) Commercial / Industrial demands were estimated based on 12.5 AFY of new demand per year.
(d) Losses were estimated based as 7 percent of residential demand.

The projected demand presented in Table 3-9 reflects the projected new connections presented in Section 3.5 as well as an allowance for new commercial and industrial demands, estimated at 12.5 AFY. The projected demands also include system losses estimated at 7 percent of residential demand.

Table 3-10, presents the total estimated potable water demand for the combined systems as well as the demands for the City and SSCWD. As shown, the total system demand is expected to increase from approximately 5,830 AFY in recent years to approximately 10,170 AFY in 2035.

Table 3-10. Projected Water Demand (AFY)

	Existing	2020	2025	2030	2035
City	3,150	3,580	3,980	4,460	5,040
SSCWD	2,680	3,240	3,760	4,380	5,130
Total	**5,830**	**6,820**	**7,740**	**8,840**	**10,170**

The projected water demand is also presented by pressure zone in Table 3-11.

Table 3-11. Projected Water Demand by Pressure Zone (mgd)

	Existing	2020	2025	2030	2035
Low Zone	2.7	3.1	3.5	4.1	4.8
Middle Zone	1.8	2.1	2.4	2.8	3.2
High Zone	0.7	0.8	1.0	1.0	1.1
Total (ADD)	**5.2**	**6.1**	**6.9**	**7.9**	**9.1**
Total (MMD)[(a)]	**7.8**	**9.1**	**10.4**	**11.8**	**13.6**
Total (MDD)[(b)]	**10.4**	**12.2**	**12.8**	**15.8**	**18.2**

(a) Max month demand is estimated at 1.5 times average day demand.
(b) Max day demand is estimated at 2.0 times average day demand.

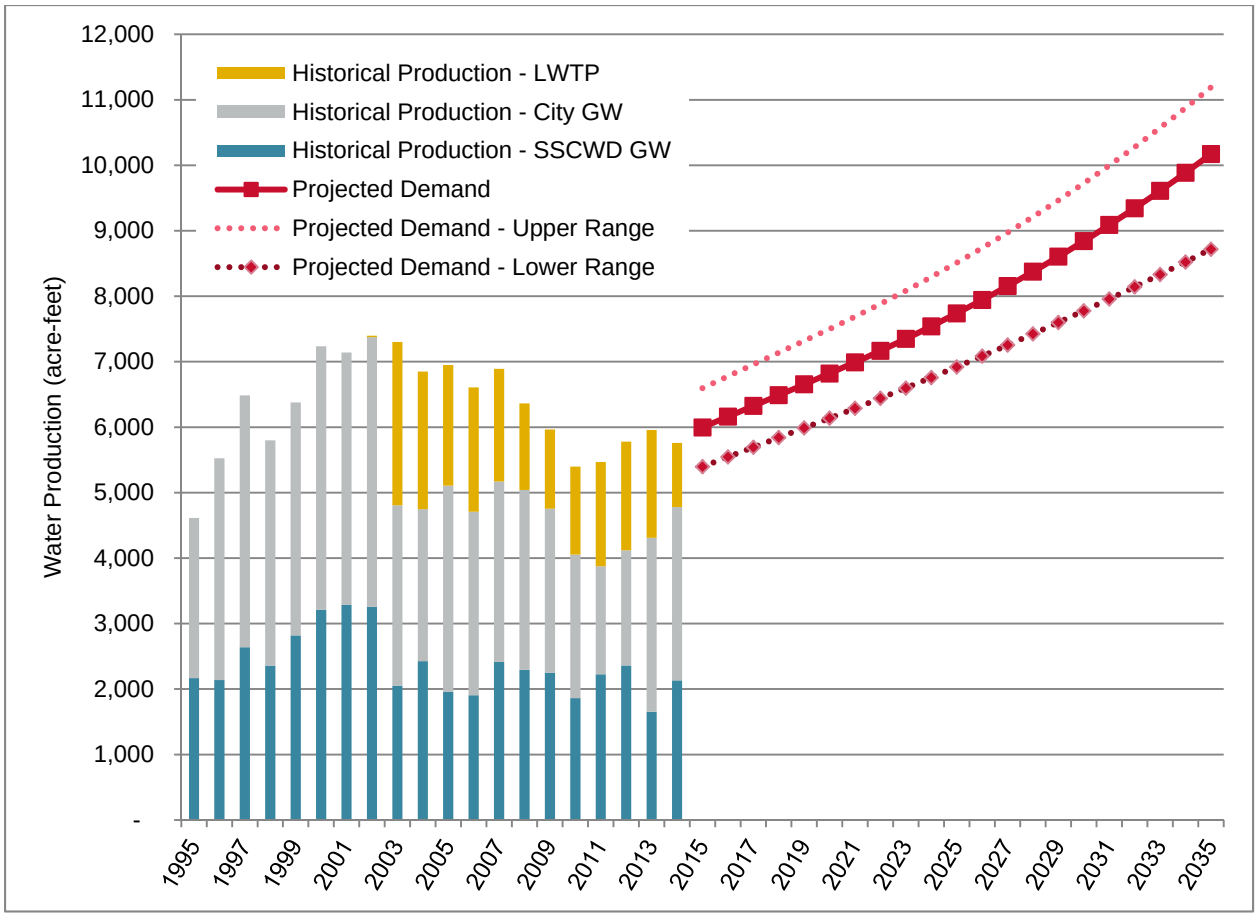

Figure 3-3. Projected Water Demand

Due to the inherent uncertainty in projecting future conditions, a range is presented in Figure 3-3. The upper band of the range is based on a 10 percent increase over the projected flows. The lower band reflects both a slower growth rate (reduced from 4 percent to 2 percent) and a reduction in unit consumption by 10 percent. Due to this uncertainty, it will be important to identify triggers in the Master Plan Update such that the implementation of new water supply infrastructure needed to serve the future demand is complete in a timely manner.

As previously described, the 2008 Master Plan projected the demand for 2023 to be approximately 11,840 AFY. As shown in Figure 3-3, the projected demand for the same period is only 7,350, reflecting a decrease of approximately 4,490 AFY. That decrease is attributed to the changed conditions described in Section 3.2. Namely, there has been an extended drought that has impacted water use behaviors, increased awareness and implementation of water conservation, and finally, there was a significant delay in the expected growth in the region due to the “Great Recession.”

3.7 Wastewater Flows

The following subsections describe the projected wastewater flows for the City’s WRF and SSCWD, respectively.

3.7.1 City WRF Flows

The historical influent flows to the City's WRF are illustrated in Figure 3-4 and summarized in Table 3-12. As shown, there appears to be a downward trend for the period between January 2010 and mid-2013, with some recovery in 2014. The ADWF during the period was approximately 2.1 mgd while the average annual (AA) flow was only slightly higher at 2.2 mgd.

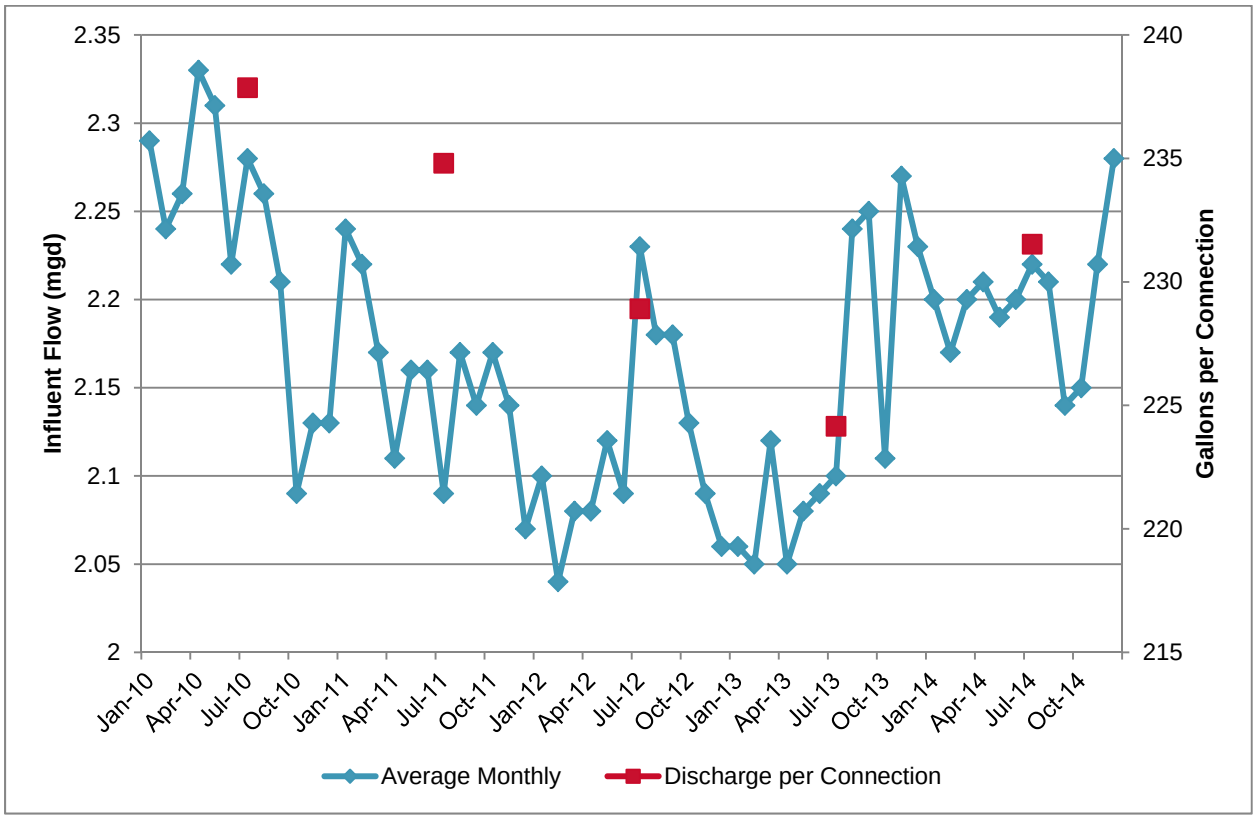

Figure 3-4. Historical Influent Flow to City's WRF

As shown in Figure 3-4, the unit discharge per connection decreased from approximately 240 gallons per connection per day (gal/con-day) in 2010 to a low of 224 gal/con-day in 2013, before rebounding to 232 gal/con-day. The overall average contribution per connection was approximately 231 gal/con-day.

Table 3-12. Historical Influent Flow to City's WRF

	2010	2011	2012	2013	2014	Average
ADWF (mgd)	2.14	2.13	2.09	2.07	2.17	2.12
AA (mgd)	2.23	2.15	2.12	2.14	2.20	2.16
Connections (No.)	9,011	9,085	9,145	9,250	9,358	
ADWF / Connection	238	235	229	224	232	231

The average contribution per connection was used to project the future growth in influent flow to the City's WRF. Similar to the projections for the water demand, an upper and lower bound were

also projected to reflect the uncertainty associated with the projections. The upper bound is based on a 10 percent increase in flows, similar to the water demand projections. Similarly, the lower bound was based on a 10 percent reduction of the flows.

Based on the contribution per connection described above and the new connections presented in Section 3.5, the projected wastewater flows to the City's WRF are summarized in Table 3-13 and Figure 3-5.

Table 3-13. Projected ADWF Flows to City's WRF (mgd)

	2020	2025	2030	2035
Projected ADWF	2.7	3.2	3.8	4.6
Upper Range	3.0	3.5	4.2	5.1
Lower Range	2.4	2.9	3.5	4.1

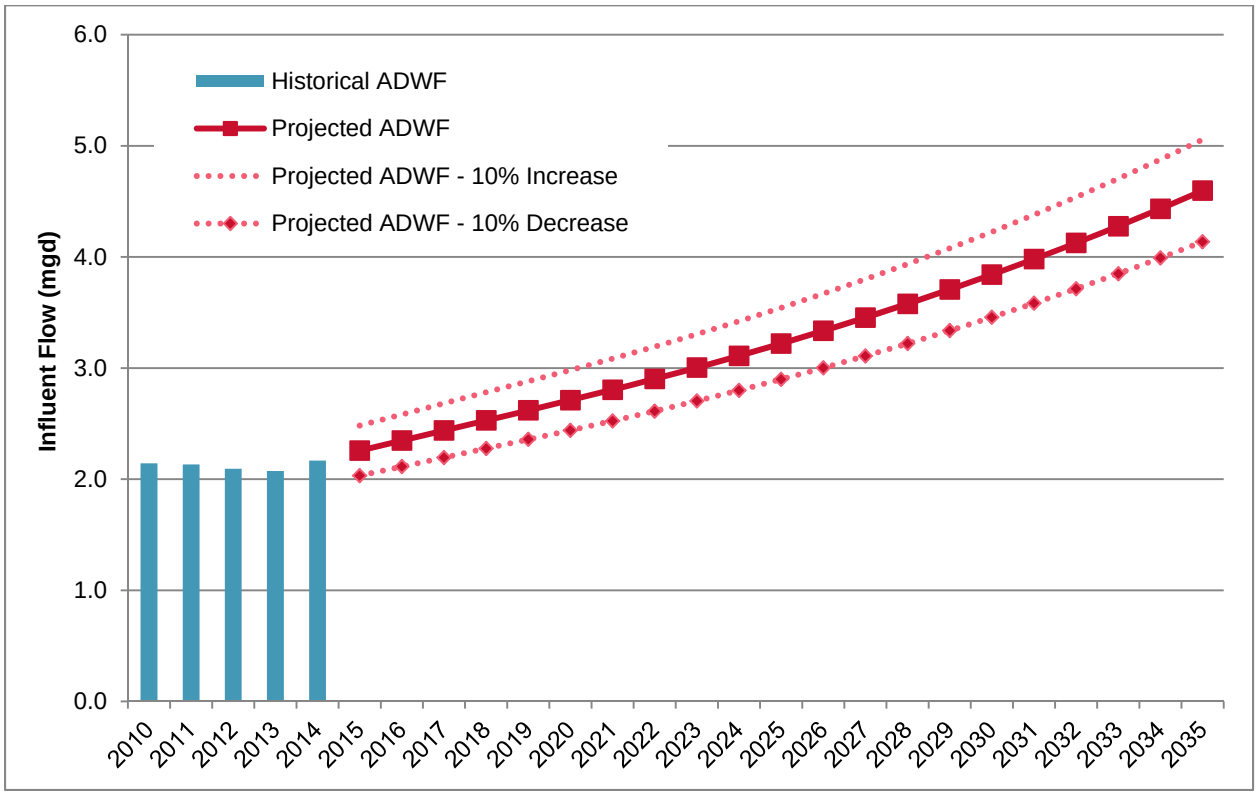

Figure 3-5. Projected ADWF at City's WRF

3.7.2 Ridgemark WWTP Flows

The service area for the Ridgemark WWTP is very small, with just over 1,200 connections. Growth in the service area is relatively small in comparison to that expected for the rest of the HUA. Approximately 465 additional connections are expected in the Ridgemark WWTP service area. Based on historical influent flows to the plant between 2010 and 2014, it is expected that each connection will contribute approximately 155 gpd. As a result, influent ADWF to the

Ridgemark WWTP is expected to grow from 0.18 mgd to approximately 0.24 mgd, as shown in Figure 3-6.

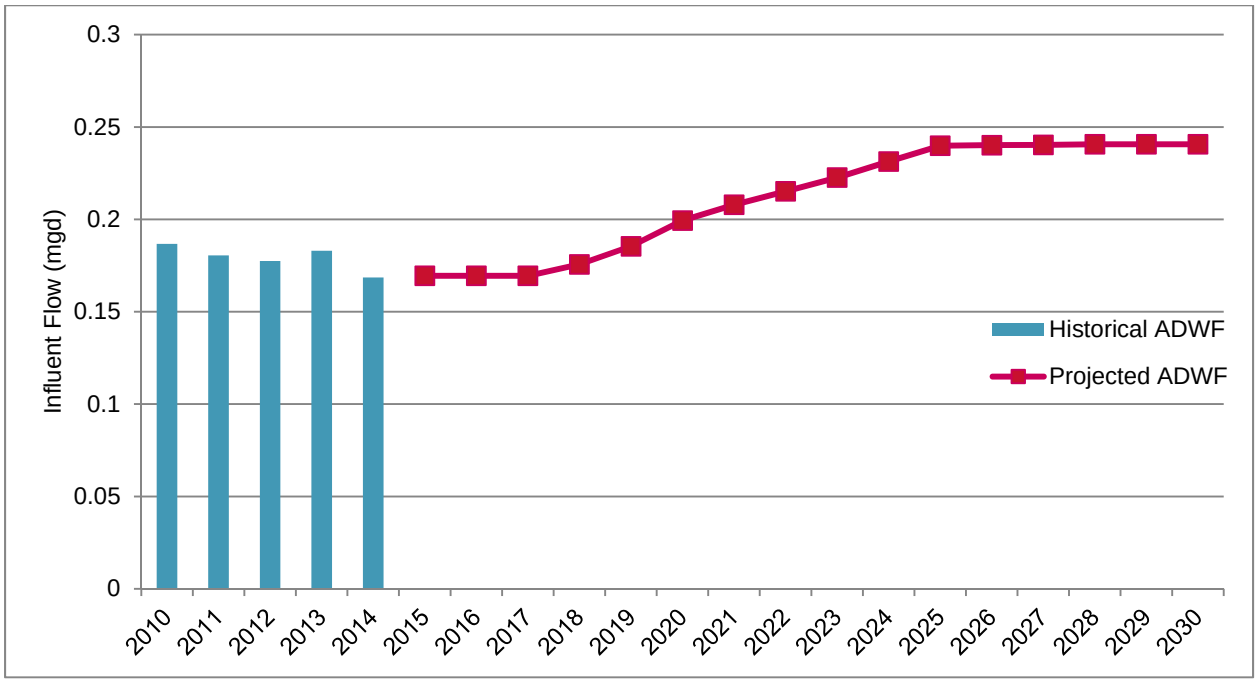

Figure 3-6. Projected ADWF at Ridgemark WWTP

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4 Long-Term Water Supply

Northern San Benito County has a diverse and complex water supply composed of imported surface water from San Luis Reservoir, a substantial groundwater basin, numerous river and creek channels for groundwater recharge, and significant opportunities for water recycling. However, imported surface water supplies are subject to reduced deliveries due to drought and environmental constraints in the Sacramento-San Joaquin Delta. Local groundwater supplies in the HUA are high in TDS, hardness, and in some areas have Hexavalent Chromium concentrations exceeding California DDW standards. Hexavalent Chromium Compliance Plans for the City and SSCWD are summarized in Appendices A and B, respectively.

To meet increased water demands and achieve the reliability and water quality objectives for the HUA, long-term water supply options have been developed and evaluated.

4.1 Existing Water Supply Sources

Water supplies for the HUA currently include local groundwater, imported surface water, and recycled water as described in the following subsections.

4.1.1 Groundwater

The HUA overlies the Gilroy-Hollister groundwater basin, designated as DWR Basin No. 3-3. The San Benito County portion of the basin is bounded by the Pajaro River in the north, the Diablo Range on the east and the Gabilan Range to the southwest. The basin covers 200 square miles of the Pajaro River watershed and is drained by its tributaries, most notably the San Benito River.

The total groundwater storage within the Gilroy-Hollister groundwater basin is estimated to be approximately 500,000 AF within the upper 200 feet of the basin. Previous estimates of this groundwater safe yield range from 40,000 to 54,000 AFY.

Both the City and SSCWD utilize groundwater wells for M&I supply. In 2015, the City and SSCWD pumped a combined total of 3,964 AF (1,949 AF and 1,278 AF, respectively) from the groundwater basin.

The groundwater has a high mineral content with some wells exceeding 1,000 mg/L TDS compared to the California recommended secondary drinking water standards of 500 mg/L TDS. Hardness in existing M&I groundwater supplies ranges from 300 to 400 mg/L. All active City wells and two SSCWD wells exceed the California DDW standard of 10.0 ppb for Hexavalent Chromium.

Each water year, SBCWD oversees the preparation of an Annual Groundwater Report that describes current groundwater conditions. The report documents water supply sources and use, groundwater levels and storage, and management activities over the water year (October to September). Recommendations are provided with regard to the future surface water imports, groundwater replenishment, groundwater pumping, and groundwater charges.

As described in Section 1.5.4, SBCWD will be preparing a Groundwater Sustainability Plan for local subbasins impacted by the Sustainable Groundwater Management Act.

4.1.2 Surface Water

The SBCWD purchases imported CVP surface water from the United States Bureau of Reclamation (USBR). SBCWD's contract with the USBR is for a total supply of 43,800 AFY, of which 35,550 AFY is for agricultural use and 8,250 AFY is for M&I use. The current contract extends until the year 2027 and may be renewed thereafter.

In USBR contract year 2016 (March 2016 – February 2017), water allocations were reduced by USBR to 5 percent of the contract amount for agriculture and 55 percent of the contract amount for M&I. With these allocations, available imported CVP water was 1,912 AF for agricultural use and 4,538 AF for M&I. As described in Section 2.1.1.3, in 2014 SBCWD renegotiated its baseline for the M&I portion of its CVP contract to be the full contract amount under the USBR Shortage Policy. However, under extreme drought conditions, these minimum allocations may not be available based upon historical allocations by USBR.

CVP water is imported through the Sacramento River-San Joaquin River Delta to San Luis Reservoir and conveyed through the Hollister Conduit. The Hollister Conduit is a pressurized pipeline consisting of 60-inch and 42-inch diameter pipeline. The Hollister Conduit has a design capacity of 83 cfs and extends approximately 19.5 miles from the bifurcation with the Santa Clara Conduit to the terminus at San Justo Reservoir. San Justo Reservoir is located south of the City and has a storage capacity of 10,300 AF.

Imported water is delivered to agricultural, municipal, and industrial customers through 120 miles of pressurized laterals and has also historically been released at controlled rates to local creeks and the San Benito River for percolation into the groundwater basin.

4.2 Long-Term Water Supply Need

The need for a reliable long-term water supply is driven by water quantity and water quality needs for the HUA.

4.2.1 Water Quantity

As described in Section 3, water demands for the HUA are projected to increase from 5,830 AFY in 2015 to 10,170 AFY by 2035, resulting in an increase of 4,340 AFY over the 20-year planning period.

An extensive evaluation of future water supply needs under various hydrologic conditions was completed as part of the 2015 Urban Water Management Plan. The results of that evaluation are summarized in Table 4-1, Table 4-2, and Table 4-3.

Table 4-1. Normal Year Supply and Demand (AFY)

Normal Year	2020	2025	2030	2035
Supply Total	7,336	8,256	9,356	10,686
CVP	4,760	5,600	5,600	7,280
Groundwater	2,460	2,540	3,640	3,290
Recycled Water	116	116	116	116
Drought Demand	7,336	8,256	9,356	10,686
CVP Users Outside HUA	400	400	400	400
Projected Full HUA Demand	6,936	7,856	8,956	10,286
Conservation	0	0	0	0
Difference	0	0	0	0
Required Conservation	0%	0%	0%	0%

Source: 2015 Hollister Urban Area Urban Water Management Plan

Table 4-2. Single Dry Year Supply and Demand (AFY)

Single Dry Year	2020	2025	2030	2035
Supply Total	5,949	6,685	7,117	8,115
CVP	3,300	3,300	3,300	3,300
CVP Reserve		100	500	1,399
Groundwater	2,533	3,169	3,201	3,300
Recycled Water	116	116	116	116
Drought Demand	5,949	6,685	7,117	8,115
CVP Users Outside HUA	400	400	400	400
Projected Full HUA Demand	6,936	7,856	8,956	10,286
Conservation	(1,387)	(1,571)	(2,239)	(2,572)
Difference	0	0	0	0
Required Conservation	20%	20%	25%	25%

Source: 2015 Hollister Urban Area Urban Water Management Plan.

As shown by the updated water demand projections in Section 3 and the results of the 2015 UWMP, a significant increase in a reliable water supply will be required over the 20-year planning period.

4.2.2 Water Quality

As part of this Master Plan Update, previously established goals for drinking water and recycled water were reviewed and evaluated relative to affordability, consumer benefits, and current technology.

Table 4-3. Multiple Dry Years Supply and Demand (AFY)

Multiple Dry Year 1	2020	2025	2030	2035
Supply Total	6,296	7,078	8,013	8,629
CVP	4,760	5,198	5,198	5,198
Groundwater	1,420	1,764	2,699	3,315
Recycled Water	116	116	116	116
Drought Demand	6,296	7,078	8,013	8,629
CVP Users Outside HUA	400	400	400	400
Projected Full HUA Demand	6,936	7,856	8,956	10,286
Conservation	(1,040)	(1,178)	(1,343)	(2,057)
Difference	0	0	0	0
Required Conservation	15%	15%	15%	20%
Multiple Dry Year 2	**2020**	**2025**	**2030**	**2035**
Supply Total	5,549	6,285	6,716	7,715
CVP	3,300	3,300	3,300	3,300
CVP Reserve				999
Groundwater	2,133	2,869	3,300	3,300
Recycled Water	116	116	116	116
Drought Demand	5,549	6,285	6,716	7,715
CVP Users Outside HUA	0	0	0	0
Projected Full HUA Demand	6,936	7,856	8,956	10,286
Conservation	(1,387)	(1,571)	(2,239)	(2,572)
Difference	0	0	0	0
Required Conservation	20%	20%	25%	25%
Multiple Dry Year 3	**2020**	**2025**	**2030**	**2035**
Supply Total	5,549	6,285	6,716	7,715
CVP	3,300	3,300	3,300	3,300
CVP Reserve				999
Groundwater	2,133	2,869	3,300	3,300
Recycled Water	116	116	116	116
Drought Demand	5,549	6,285	6,716	7,715
CVP Users Outside HUA	0	0	0	0
Projected Full HUA Demand	6,936	7,856	8,956	10,286
Conservation	(1,387)	(1,571)	(2,239)	(2,572)
Difference	0	0	0	0
Required Conservation	20%	20%	25%	25%

Source: 2015 Hollister Urban Area Urban Water Management Plan

4.2.2.1 DRINKING WATER QUALITY

As specified in Section 2.2.2 of the 2004 MOU, the goal for TDS was set at 500 mg/L and the goal for hardness was set at 120 mg/L. Subsequently, the agencies agreed to revise the hardness goal to 150 mg/L to be consistent with comparable utilities and industry standards.

The facilities completed since the 2008 Master Plan and described in Section 2 of this Master Plan Update provide a significant improvement in drinking water quality. It is estimated that the first phase facilities will provide system-wide annual average TDS of approximately 500 mg/L and hardness of approximately 200 mg/L.

While the initial improvements meet the TDS goal, they do not fully meet the hardness goal of 150 mg/L. Following a thorough review of the need to modify the hardness goal, the agencies reaffirmed their desire to maintain the hardness goal at 150 mg/L.

To achieve the drinking water quality goals, additional improvements will be required in water supply and treatment facilities. The significant water quality improvements made to date are a result of an approximate blend of 65 percent imported surface water and 35 percent groundwater. This blend ratio will be achieved in 2017 with the completion of the West Hills WTP. A blend ratio of at least 50 percent high quality surface water is required for the City to achieve compliance with the Hexavalent Chromium regulations. SSCWD blend ratios are described in Appendix B.

Considering the growth in water demands and the continued need to lower drinking water hardness, the blend of high quality water to untreated groundwater will need to increase. As shown in Figure 4-1, the additional increment of high quality water is estimated to be approximately 1,800 AFY by 2025 and approximately 3,880 AFY by 2035. This amount of additional high quality water is a total blend of approximately 85 percent high quality water and 15 percent untreated groundwater.

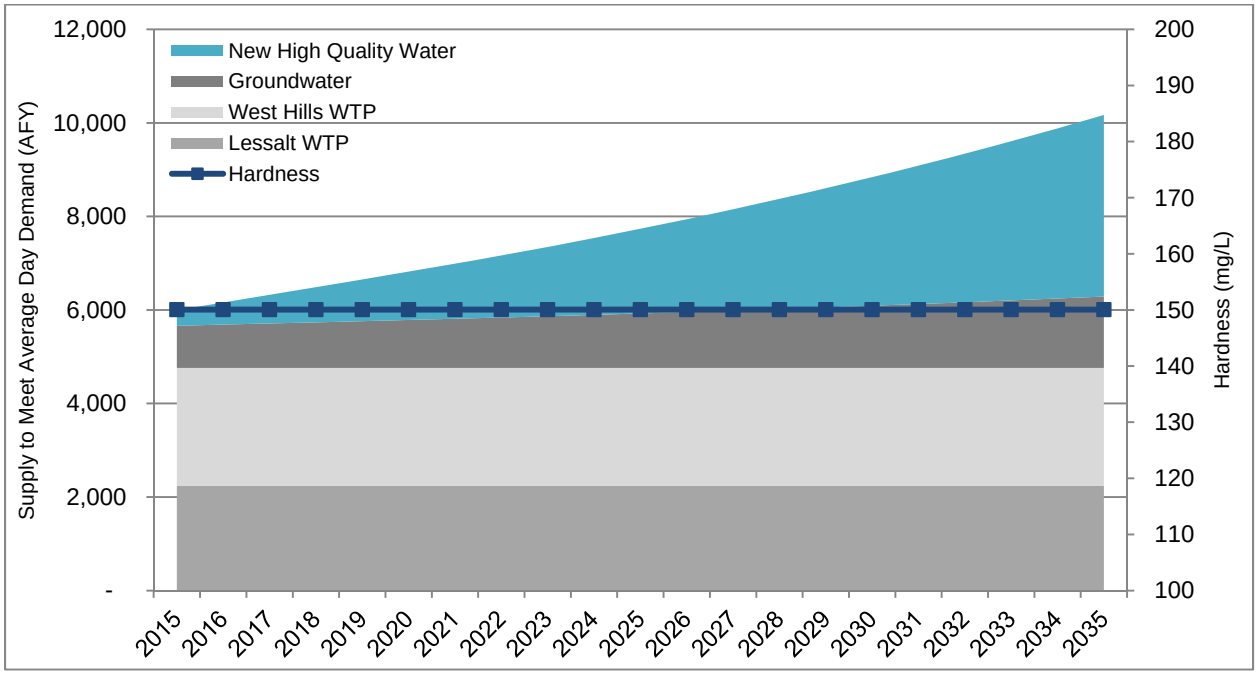

Figure 4-1. Projected Requirement for High Quality Water

The increase in high quality treated water could be achieved by developing additional imported surface water, adding supply from North County groundwater, softening or demineralization of

local groundwater wells, or a combination of these options. To maintain flexibility and affordability, it is recommended that the increased blending ratio be phased in over the planning period as summarized in Table 4-4.

Table 4-4. Proposed Blending Ratios for High Quality Water and Local Groundwater

Timeframe	Blending Ratios (%)		
	High Quality Water[(a)]	Untreated Groundwater	Total
Existing (2017)[(b)]	65	35	100
2025	75	25	100
2035	85	15	100
Dry Year Minimum[(c)]	50	50	100

(a) High quality water may consist of imported surface water, groundwater from North County, softening or demineralization of local groundwater, or a combination of these supplies.
(b) Assumes West Hills WTP and Crosstown Pipeline are operational.
(c) Dry year minimum required to meet Hexavalent Chromium regulations. See Appendices A and B for City and SSCWD Hexavalent Chromium Compliance Plans.

As previously described, the City's active wells exceed DDW's Hexavalent Chromium MCL of 10 ppb. The City's Compliance Plan relies on blending active wells with treated surface water from the new West Hills WTP. The blend ratio required to meet the standard is 50 percent untreated groundwater and 50 treated surface water.

SSCWD has also experienced Hexavalent Chromium levels exceeding DDW regulations in some wells. DDW has approved a groundwater blending solution for SSCWD to comply with Hexavalent Chromium regulations, as described in Appendix B.

4.2.2.2 RECYCLED WATER

Section 2.3.3 of the 2004 MOU specified that recycled water shall have a target TDS of 500 mg/L and shall not exceed 700 mg/L. Current effluent from the City's WRF averages approximately 1,000 mg/L TDS. When all first phase facilities from the 2008 Master Plan are complete, the average effluent from the City's WRF is projected to be approximately 800 mg/L TDS.

A review of the TDS goal for recycled water was completed as part of this Master Plan Update. Based upon this review, the agencies reaffirmed their desire to maintain the original goal for TDS in recycled water. Further reductions to fully achieve the original goal will require additional improvements to drinking water quality, continued limits on the use of softeners, additional wastewater treatment, or a combination of these measures.

4.3 Surface Water

Long-term surface water supply options include both imported and local supplies as described in the following subsections.

4.3.1 Imported Surface Water Transfers/ Spot Market

As previously described in Section 2, SBCWD has an on-going practice of purchasing out-of-basin water supplies to supplement its imported supplies from its CVP contact. Average annual purchases have been 2,258 AFY during the past six years.

4.3.2 Semitropic Water Bank

As previously described in Section 2, SBCWD entered into a contract with SCVWD to store water in the Semitropic Water Bank. This agreement allows SBCWD to store up to 5,000 AFY in the Semitropic Water Bank. However, this is not a net increase in overall supply because the stored water originates from existing CVP contract supplies. It is also important to note, that water must be available in San Luis Reservoir in order to exercise this storage. In severe drought years, such as 2014, diversions were not available. This agreement is subject to renewal in 2021.

4.3.3 Local Surface Water Supplies

The 2008 Master Plan and the 2009 Coordinated Plan considered several concepts for the development of local surface water supplies. Specifically, these plans recommended that the development of Arroyo Dos Picachos, Arroyo de las Viboras, and Pacheco Creek be further considered for long-term water supply.

These streams are seasonal in nature, yielding water only during the winter through late spring. Therefore, it was recommended that these supplies be developed using seasonal diversion dams (e.g., inflatable dams, rehabilitation or operation of an existing structure) along with earthwork to create a small impoundment upstream of the diversion structure. Once diverted, water could be directed to a recharge area for groundwater storage and later pumping and recovery, conveyed to the HUA for treatment and distribution, or to the San Justo Reservoir for storage. Potential diversion locations on Pacheco Creek, Arroyo de las Viboras, and Arroyo Dos Picachos, shown in Figure 4-2, range from 0.1 to 1.2 miles from the Hollister Conduit.

Table 4-5 summarizes the potential water supply availability for Pacheco Creek, Arroyo de las Viboras, and Arroyo Dos Picachos. While SBCWD holds a water right for Arroyo Dos Picachos, a Hollister Irrigation District water right for Pacheco Creek must be reviewed to determine its current status, and a new water right filing would be required for Arroyo de las Viboras.

Table 4-5. Potential Water Availability from Local Surface Water Supplies

Source	Water Right	Diversion Rate	Potential Water Supply (acre-feet)
Pacheco Creek	Hollister Irrigation District	15.19 cfs, 365 days/yr	11,000 [(a)]
	Pacheco Pass Water District	-	7,250 [(b)]
Arroyo de las Viboras	Pacheco Pass Water District	3.75 cfs, Dec 15- May 1	2,226.5[(c)]
	Unadjudicated	-	1,377 [(d)]
Arroyo Dos Picachos	SBCWD	4.75 cfs, 151 days/yr	1,422

(a) Water rights Decision No. 187, dated 1928. Additional unadjudicated supply may also exist in above normal and wet years.
(b) License 2879, dated October 24, 1933.
(c) License 2486, dated February 20, 1935.
(d) Estimated average year unadjudicated supply, based on GMP Update.

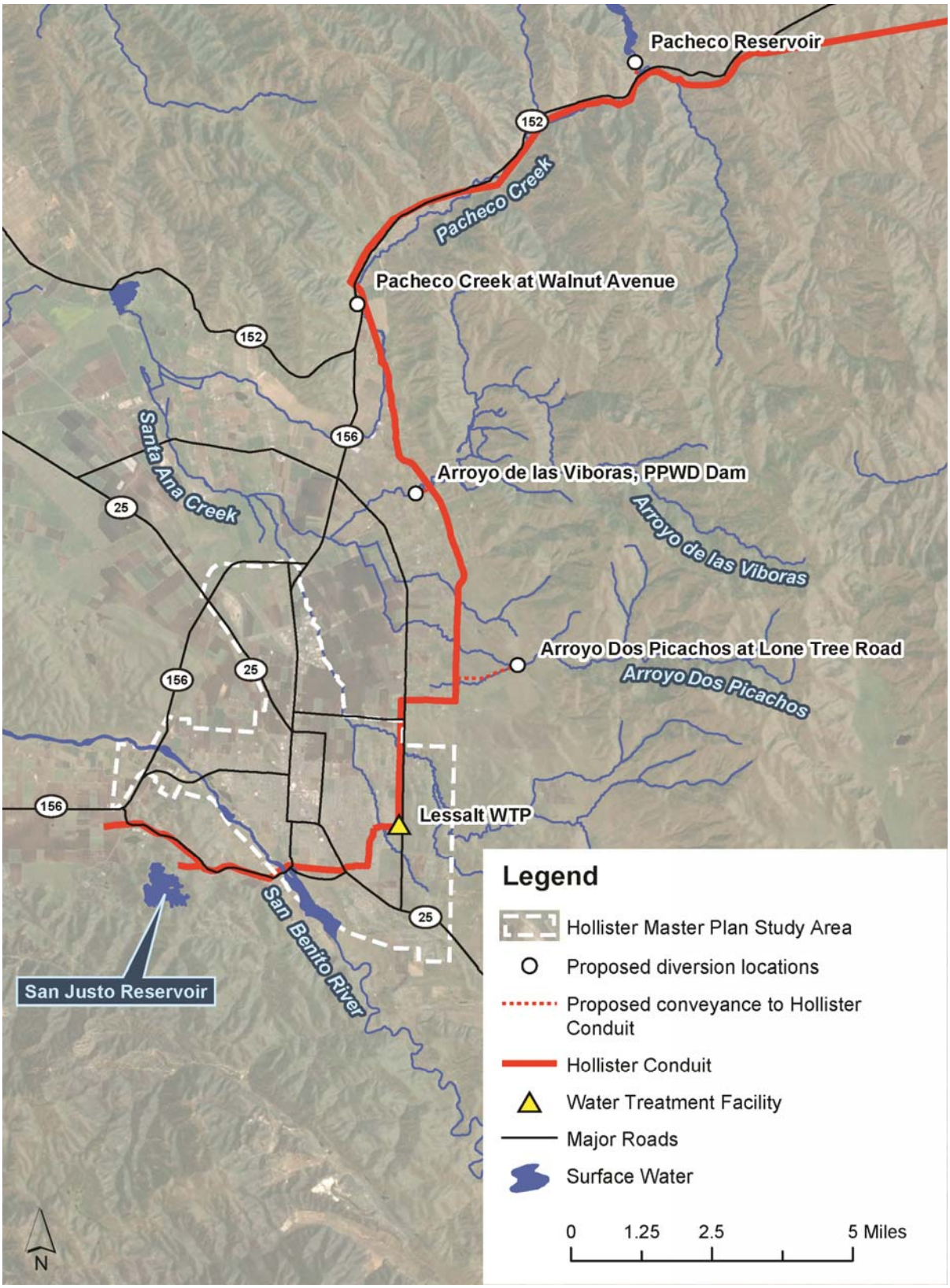

Figure 4-2. Locations of Potential Local Surface Water Supplies

Diversions from the Arroyo de las Viboras and Arroyo Dos Picachos would occur during wet months, typically December through April. Diversions from Pacheco Creek could potentially occur throughout the year due to the storage provided by Pacheco Reservoir.

4.3.4 Local Surface Water Storage

Local surface water storage would involve reoperation of existing reservoirs or development of new storage reservoirs. The benefit of reoperation or an increase in local surface water storage would be to better manage the use of existing supplies, increasing supplies from local sources as identified in Subsections 4.3.3, or a combination of these benefits.

4.3.4.1 EXISTING LOCAL SURFACE WATER STORAGE RESERVOIRS

The existing major surface water storage reservoirs in San Benito County include San Justo Reservoir, (10,300 AF), Hernandez Reservoir (17,200 AF), and Paicines Reservoir (2,870 AF). Pacheco Reservoir (6,140 AF) is located in Santa Clara County just north of the San Benito County border.

San Justo Reservoir is the terminal reservoir for the Hollister Conduit and stores imported CVP water for municipal and agricultural use. An ongoing infestation of Zebra Mussels has created water quality and operational issues for the reservoir. To prevent the spread of Zebra Mussels, SBCWD has opted not to use water from San Justo Reservoir for diversion to percolation basins for groundwater recharge.

Hernandez Reservoir is designed and operated to supplement the groundwater supply in northern San Benito County. Groundwater storage benefits resulting from Hernandez Reservoir releases do not simply equal the amount of water released from the reservoir because the releases commingle with natural runoff and base flow along the 66 miles of river channel between the reservoir and the downstream end of the groundwater basin where the river joins the Pajaro River. Under low- to moderate-flow conditions, the groundwater recharge benefit attributable to the project equals total recharge minus recharge that would have occurred without the reservoir. Under high-flow conditions when natural runoff created continuous outflow to the Pajaro River, releases provide no recharge benefit because the natural flow already exceeds the percolation capacity of the river channel. Furthermore, some of the released water is lost to seepage and evapotranspiration between the reservoir and the Paicines basin, and the lost water does not contribute benefits to the groundwater basin.

Paicines Reservoir is an offstream reservoir between the San Benito River and Tres Pinos Creek approximately 5 miles south of Tres Pinos. It is filled by water diverted from the San Benito River, with some of the diversions consisting of natural runoff and some consisting of rediversion of water stored and released from Hernandez Reservoir. The stored water is released for percolation to Tres Pinos Creek and the San Benito River to provide additional groundwater recharge during the dry season.

Pacheco Reservoir, constructed in 1938, is owned and operated by Pacheco Pass Water District (PPWD). PPWD releases water from the reservoir to Pacheco Creek during the dry season to increase groundwater recharge in the Pacheco Subbasin. SBCWD has been collaborating with the Santa Clara Valley Water District (SCVWD) to identify potential

opportunities to improve the facilities at Pacheco Reservoir and optimize the use of available storage for groundwater recharge primarily in San Benito County. A new larger reservoir upstream of the existing Pacheco Reservoir is also being evaluated by SBCWD.

4.3.4.2 NEW LOCAL SURFACE WATER STORAGE RESERVOIRS

Several potential sites for new surface water storage reservoirs have been identified in previous planning studies. Additional evaluation of previously identified and potential additional sites is required to determine technical feasibility, estimated costs, and environmental constraints.

4.4 Groundwater

Groundwater is a major source of supply for both M&I users and agriculture in San Benito County. Potential long-term water supply options using groundwater include improving water quality, changing the beneficial uses, and conjunctive use programs.

4.4.1 Local Wells with Treatment for M&I Use

With this option, groundwater would be demineralized or softened to reduce TDS, hardness, and Hexavalent Chromium levels. Individual wellhead treatment is a viable concept for the demineralization option. Softening of the groundwater could also be utilized as a treatment process instead of demineralization; however, it does not have the same treatment capability with respect to TDS and Hexavalent Chromium reduction. The treated supply would be blended with the existing CVP and remaining groundwater supplies in the distribution system.

4.4.2 Local Wells for M&I Landscape Irrigation

Local wells could be used to irrigate large landscape users such as parks, schools, and golf course. This option would free up imported treated surface water for potable use and reduce the quantity of new high quality treated water needed to meet future demands.

SSCWD has developed a preliminary plan to use groundwater for landscape irrigation. A preliminary layout of the facilities is shown on Figure 4-3.

4.4.3 North County Wells Direct Use

The North County Groundwater consists of the Pacheco, eastern portion of the Bolsa, and northern portions of the Hollister East groundwater subbasins as defined by SBCWD. Groundwater in this area originates from several different sources, including percolation from local surface water in Pacheco Creek, Arroyo de las Viboras, and Arroyo Dos Picachos.

The source of water influences the quality of the groundwater, specifically the TDS concentration. Water originating from the south has TDS concentrations ranging from approximately 500 to 1,000 mg/L, whereas lower TDS water (less than 500 mg/L) can be found in the northern area of the basin near Pacheco Creek and near Arroyo de las Viboras to the east.

An area of historically high groundwater exists in the Bolsa Subbasin. Previous studies have evaluated additional pumping in this area to alleviate the high groundwater conditions and potentially enhance recharge of higher quality water into the North Area subbasins.

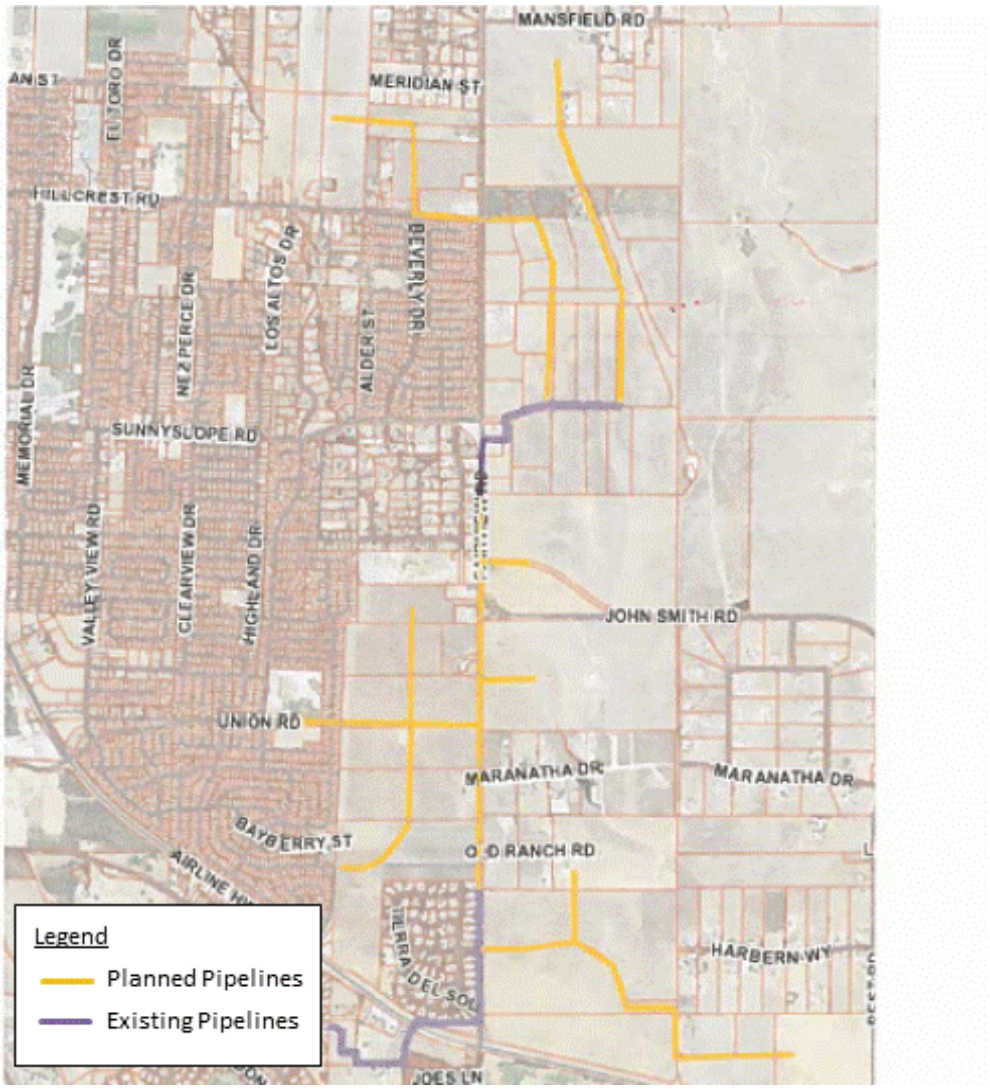

Figure 4-3. SSCWD Preliminary Irrigation Water Distribution System

Groundwater recharge in the North Area is also heavily influenced by the activities of PPWD. The PPWD includes areas in both Santa Clara County and northern San Benito County. Water released from the Pacheco Reservoir is percolated into the groundwater in the North Area. A smaller, approximately 50 AF reservoir, owned by PPWD is located on Arroyo de Las Viboras.

Numerous studies and reports have been completed regarding the groundwater in the North County. As an extension of the 2009 Coordinated Plan, additional work was completed on preliminary facilities planning for the North County Groundwater. This work included an update to the groundwater model and evaluation of a preliminary project configuration. The updated groundwater model was then used to simulate operations of the proposed facilities.

The preliminary project configuration was based on pumping from seven North County wells as shown on Figure 4-4. The locations and pumping rates for the wells were selected for this analysis on the basis of preliminary simulations. The purpose of the modeling analysis was to determine the approximate sustainable yield of the low-TDS groundwater zone and identify a

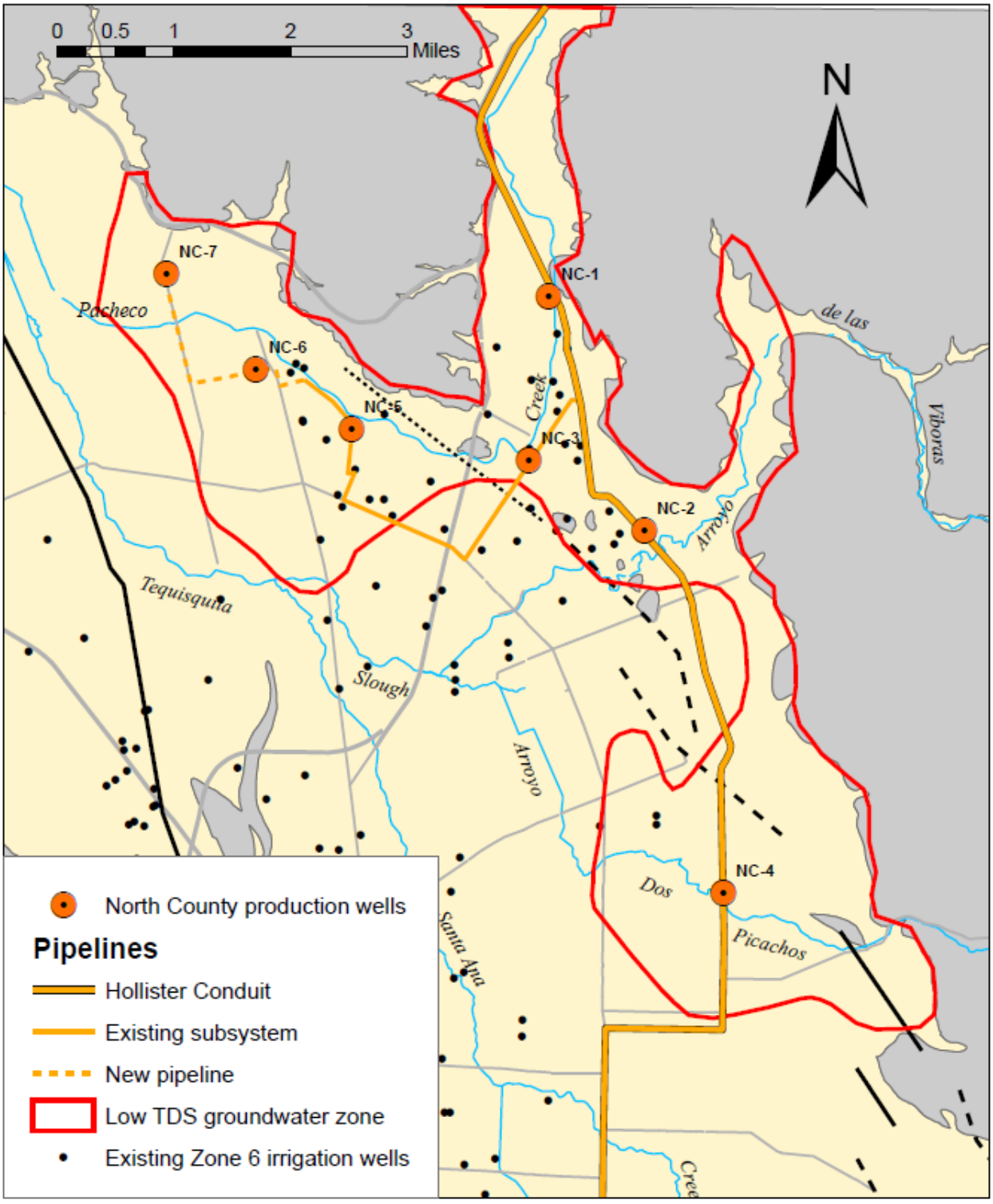

Figure 4-4. Preliminary Concept of North County of Groundwater Wells

set of hypothetical well locations and pumping rates that would efficiently extract that yield. Based on these preliminary studies, a yield of up to 5,000 AFY during normal and wet years and 2,000 AFY during droughts appears feasible.

Preliminary studies to date considered a phased approach to implementation of this option. The initial phase would include the four easterly wells closest to the Hollister Conduit. The preliminary cost estimate for these initial four wells and associated piping and connections is approximately $6 million.

4.4.4 North County Wells Banking/Exchange

This option would be a conjunctive use operation using imported surface water supplies and North County Groundwater. In normal and wet years, groundwater users would forego pumping and use surface water, where available, for agricultural irrigation. This practice would allow groundwater to be “banked” for use in dry years. This conjunctive use operation could also be expanded to include all of SBCWD Zone 6.

4.5 Recycled Water

The upgrade of the City WRF in 2008 provided Title 22 water suitable for landscape and agricultural irrigation. The estimated quantities of recycled water from the WRF are summarized in Table 4-6.

Table 4-6. Available Recycled Water Supply

	2015		2025	
	No Seasonal Storage	Seasonal Storage[(a)]	No Seasonal Storage	Seasonal Storage[(a)]
Total Available Annual Supply[(b)]	2,397	2,397	167	3,548
Riverside Park Demand[(c)]	167	167	167	167
Airport Spray Field Demand[(d)]	294	294	294	294
Available Agricultural Supply[(e)]	700	1,800	1,230	2,450
Equivalent Agricultural Acreage[(f)]	230	600	410	820

(a) Seasonal storage is assumed to be approximately 800 acre-feet in volume located at the WRF.
(b) Based on total treated effluent at the WRF in 2012 projected at approximately 4 percent per year to 2015 and 2025, respectively.
(c) Based on actual recycled water used in 2012; not expected to increase over time.
(d) Based on actual recycled water used in 2012; not expected to increase over time. It is possible that less water could be used while still maintaining spray field facilities, such that additional water could be available for beneficial agricultural reuse.
(e) Estimated recycled water supply available for agricultural irrigation if no supply augmentation is provided in peak periods.
(f) Calculated based on an average evapotranspiration rate of 3 acre-feet per acre.

The SSCWD Ridgemark WWTP was upgraded in 2013. Provisions were included in the upgrade to add Title 22 facilities at some point in the future. At this time, SSCWD has not established a timeframe for the upgrade to allow for the production and utilization of recycled water in Ridgemark area.

4.5.1 Expanded M&I Landscape Irrigation

As shown in Table 4-6, approximately 167 AFY of recycled water is currently used to irrigate the City's Riverside Park. By the end of 2017, groundwater will be used to irrigate the park thereby freeing up the recycled water for use by agricultural irrigators. Any future expansion of M&I landscape irrigation would require a significant investment in a recycled water distribution system due to the decentralized locations for potential use.

4.5.2 Expanded Agricultural Irrigation

In 2016, the SBCWD completed a distribution system for agricultural irrigation along Wright Road as well as lined one of the effluent storage ponds at the City's WRF. These facilities are shown in Figure 2-11. The SBCWD provided approximately 499 AF in water year 2016 (through September 2016). An additional 250 AF was delivered in October 2016.

The SBCWD has plans in place to expand the agricultural irrigation systems. However, current demand for agricultural use of recycled water exceeds the available supply. Therefore, there is no need to expand the distribution system in the near term.

4.5.3 Indirect/Direct Potable Reuse

Due to the extreme drought conditions in recent years, many agencies around the State are exploring options for indirect and direct potable reuse. Given that effluent from the City's WRF is either percolated to the groundwater basin or reused for agricultural irrigation, potable reuse may not be a cost effective water supply solution for the HUA. Similarly, effluent from the Ridgemark WWTP is also percolated to the groundwater basin.

4.6 Water Conservation

As described in Section 2, the Water Resources Association of San Benito County has a comprehensive and successful water conservation program. Continued implementation of this program is needed into the future.

4.7 Screening Criteria

Screening criteria were developed to prioritize the long-term water supply options. The criteria are described below.

- **Provides Significant Increase in Water Supply.** A significant increase in water supply was established as adding 1,000 AFY or more to the existing water supply. This quantity of water (1,000 AFY) represents approximately 10 percent of the projected 2035 water demand of 10,170 AFY as previously described.

- **Increases Dry Year Water Supply Reliability.** This criterion is defined as contributing to a diverse portfolio of water supply sources with the ability to provide sustained yield during extended dry periods.

- **Maximizes Use of Local Resources.** Provides local control of water supplies to minimize impacts in reductions in the availability of imported surface water supplies.

- **Minimizes Implementation Risk.** This criterion is defined as minimizing implementation risks due to environmental impacts, permitting and/or community opposition. This criterion includes the potential for phased implementation to increase flexibility and affordability.

It is assumed that each option will include required treatment facilities, blending, or other measures to meet drinking water and recycled water quality goals.

4.8 Summary Comparison of Alternatives

The screening criteria described in the previous subsection were applied to long-term water supply options to establish priorities for future implementation. A workshop was held in October 2016 with the agencies to complete the analysis and evaluate the results.

Table 4-7 summarizes the results of the screening process and Table 4-8 summarizes the prioritization of long-term water supply options.

The priorities in Table 4-7 were established based on the following definitions:

- Priority Level 1 meets 3 or more screening criteria.
- Priority Level 2 meets 2 screening criteria.
- Priority Level 3 meets less than 2 screening criteria.

Priorities have been identified to establish the relative amount of resources and timing to be applied to the long-term water supply options. Priority levels may be adjusted going forward based upon the availability of additional data and analyses, changes in technology, affordability, or other factors determined by the agencies.

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Table 4-7. Long-Term Water Supply Options Screening

Options	Screening Criteria				Priority Level	Comments
	Provides Significant Increase in Water Supply	Increases Dry Year Water Supply Reliability	Maximizes Use of Local Resources	Minimizes Implementation Risk		
SURFACE WATER						
Imported Surface Water Transfers/Spot Market	√	√	X	√	1	Already in progress. Revisit annually as needed.
Semitropic Water Bank	X	√	X	√	2	Enhances dry year reliability, but not annual water supply.
Local Surface Water Supplies	–	X	√	X	3	Major infrastructure required is significant and significant environmental issues. Could consider as a component of a North County conjunctive use project.
Local Surface Water Storage	–	√	–	X	3	Further investigation required to identify locations, feasibility, and permitting/environmental issues.
GROUNDWATER						
Local Wells with Treatment for Potable Use	√	√	√	X	1	Requires treatment by demineralization or softening to meet water quality goals. Significant costs depending upon treatment process required.
Local Wells for M&I Landscape Irrigation	–	–	√	√	2	Increases non-potable supply only which may offset potable water demand. May encourage 'bad behavior' during drought conditions.
North County Wells Direct Use	√	√	√	x	1	Potentially requires significant raw water transmission; expect scrutiny from NGOs and significant environmental issues related to Pacheco Creek.
North County Wells Banking / Exchange	√	√	√	x	1	Extensive institutional work required and potential for issues related to Pacheco Creek.
RECYCLED WATER						
Expanded Reuse for M&I Landscape Irrigation	X	√	√	X	2	
Expanded Reuse for Agricultural Irrigation	√	√	√	√	1	Already in progress; frees up groundwater for M&I use.
Potable Reuse	X	–	√	X	3	High cost per AF, reduces availability for agricultural use, already practicing percolation for groundwater basin augmentation so incremental new supply is minimal.
Water Conservation Continue Existing Program	–	√	√	√	1	Already in progress.

(a) '√' = Meets screening criterion, '–' = Needs more information, and 'x' = Does not meet criterion.
(b) Priority Level 1 = meets 3 or more screening criteria; Priority Level 2 = meets 2 screening criteria; and Priority Level 3 = meets less than 2 screening criteria.
(c) Assume each option will include required treatment facilities, blending, or other measures to meet drinking water and recycled water quality goals.

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Table 4-8. Prioritization of Long-Term Water Supply Options

Water Supply Source	Priority Level 1	Priority Level 2	Priority Level 3
Surface Water	• Imported Surface Water Transfers / Spot Market	• Semitropic Water Bank	• Local Surface Water Supplies • Local Surface Water Storage
Groundwater	• Local Wells with Treatment for Potable Use • North County Wells Direct Use • North County Wells Banking / Exchange	• Local Wells for M&I Landscape Irrigation[(a)]	
Recycled Water	• Expanded Reuse for Agricultural Irrigation	• Expanded Reuse for M&I Landscape Irrigation	• Potable Reuse
Water Conservation	• Continue Existing Programs		

(a) Evaluate higher priority opportunities for local wells for M&I landscape irrigation on a case-by-case basis.
(b) Assume each option will include required treatment facilities, blending, or other measures to meet drinking water and recycled water goals.
(c) Priority levels may be adjusted based upon availability of additional data and analyses, changes in technology and affordability, or other factors.

As shown on Table 4-8, many of the highest priority options (Levels 1 and 2) include continuation of ongoing programs as follows:

- Imported Surface Water Transfers/ Spot Market
- Semitropic Water Bank
- Expanded Reuse for M&I Irrigation
- Expanded Reuse for Agricultural Irrigation
- Water Conservation

Since these programs are ongoing, the agencies have already budgeted time and resources for their continued implementation.

The other options presented on Table 4-8 include the following:

- Local Wells with Treatment for Potable Use.
- North County Wells Direct Use
- North County Wells Banking/Exchange
- Local Wells for M&I Landscape Irrigation
- Local Surface Water Supplies
- Local Surface Water Storage
- Potable Reuse

Some preliminary studies have been completed for several of these options (e.g. North County Wells and Local Surface Water Supplies). Additional studies will be required to evaluate feasibility, estimated costs, and potential timing of these long-term water supply options.

All of the long-term water supply options should be retained as a menu of alternatives to contribute to a diverse water supply portfolio. Due to the inherent uncertainties in California water supply (drought, environmental constraints, regulations, etc.), it is prudent to maintain maximum flexibility in planning for long-term water supplies. A summary of the long-term water supply options is provided in Table 4-9.

Table 4-9. Summary of Long-Term Water Supply Options

Description	Priority Level[(a)]	Estimated Average Annual Supply (AFY)
Surface Water		
Imported Surface Water Transfers / Spot Market	1	2,258[(b)]
Semitropic Water Bank	2	(c)
Local Surface Water Supplies	3	TBD[(d)]
Local Surface Water Storage	3	TBD[(d)]
Groundwater		
Local Wells with Treatment for Potable Use	1	1,000[(e)]
Local Wells for M&I Landscape Irrigation	2	TBD[(d)]
North County Direct Use	1	2,000 – 5,000[(f)]
North County Wells Banking / Exchange	1	2,000 – 5,000[(f)]
Recycled Water		
Expanded Reuse for M&I Landscape Irrigation	2	(g)
Expanded Reuse for Agricultural Irrigation	1	2,450[(h)]
Potable Reuse	3	TBD[(d)]
Water Conservation	1	(i)

(a) Priority level from Table 4-7 and Table 4-8.
(b) Based on 13,550 AF over past six years or annual average of 2,258 AFY.
(c) Semitropic Water Bank enhances dry year reliability, but does not increase supply.
(d) TBD is yet to be determined based upon results of further investigations.
(e) Achievable with new well(s) and/or increased use of existing wells.
(f) Preliminary investigations indicate that up to 5,000 AFY available in normal and wet years and up to 2,000 AFY available in dry years.
(g) City M&I landscape irrigation currently limited to approximately 167 AFY at Riverside Park.
(h) SBCWD agricultural irrigation was approximately 499 AFY in water year 2016 with additional 250 AF in October 2016. Could increase up to 2,450 AF by 2035.
(i) Significant reductions have already been achieved through regional efforts in water conservation. Further reductions to be determined based upon results of ongoing efforts.

5 Facilities Evaluation

One of the primary objectives of this Master Plan Update is to evaluate the need, timing, and estimated costs of additional water, wastewater, and recycled water improvements. This evaluation will assist the agencies in planning and budgeting for capital improvements.

5.1 Evaluation Criteria

To evaluate the need, timing, and estimated costs for infrastructure improvements, the following evaluation criteria have been utilized.

5.1.1 Timing of Needs to Meet Water Demands

As described in Section 3, significant increases in water demands and wastewater flows are projected through 2035. Water demands and wastewater flow increases require additional infrastructure for both the water distribution system and the wastewater collection system.

5.1.2 Ability to Meet Water Quality Goals

In addition to the increases in water demands and wastewater flows, water quality considerations are a key component of identifying the need for new facilities.

As described in Section 4, significant improvements have been made in drinking water quality. However, additional high quality water supplies and facilities will be needed to fully achieve drinking water goals established by the agencies. In addition, the 2014 California DDW regulation of Hexavalent Chromium in groundwater supplies has a major impact on the groundwater supply in the HUA. The City and SSCWD Hexavalent Chromium Compliance Plans are summarized in Appendices A and B, respectively.

Similarly, for wastewater treatment and recycled water facilities, additional improvements will be required to achieve established goals. Recycled water quality is also directly linked to drinking water quality improvements in TDS.

5.1.3 Water Distribution System Modeling

The existing water distribution system model for the HUA was used to assist in the evaluation of facilities needs and operations. The model was used to evaluate existing and future system deficiencies and the benefit achieved with additional infrastructure improvements. Modeling of the water distribution system has progressed from the 2008 Master Plan to reflect the updated demands presented in this Master Plan Update, as well as the new facilities constructed since 2008 and those newly proposed facilities included within this plan.

The model results provide flow and pressure data as well as water quality estimates for TDS and hardness. In addition to the modeling conducted for this Master Plan Update, the City and SSCWD have continued to use the distribution system model to evaluate fire protection needs, the impacts of proposed new developments, and the need for replacement of aging pipes in the water distribution system. Modeling results are included in Appendix C.

One of the most significant changes in the distribution system and associated model has been the number and locations of connections to provide treated surface water from the West Hills

WTP. The Crosstown Pipeline was accelerated to facilitate compliance with the California Hexavalent Chromium regulations for the groundwater supplies.

The compliance plan for the City includes connections at City Well Nos. 2, 4, and 5. The extension of the Crosstown Pipeline to serve SSCWD and the middle pressure zone will include connections at SSCWD Well Nos. 2 and 11. Due to the increased number of connections and the location of these connections, benefits will also be achieved in the uniform distribution of high quality surface water, lowering both TDS and hardness throughout the distribution system.

As shown in the modeling of future conditions in Appendix C, several pockets of high TDS and hardness remain. The area north of the City will be addressed by the addition of a new well (with treatment if required) to replace abandoned City Well Nos. 1 and 3. The areas in the middle and high zones may be addressed through future optimization of the distribution system or other improvements.

5.1.4 Cost Estimates and Economics

Preliminary cost estimates have been developed for the projects and alternatives identified during the completion of this Master Plan Update. For previously planned projects or local distribution system or collection system improvements, cost estimates developed by others have been used.

Capital cost estimates were prepared by applying unit costs, cost curves and recent bid data to the estimated quantities or capacities for proposed improvement projects. Allowances were added for contingency (30 percent) and engineering, administration, and permitting (30 percent).

All preliminary cost estimates have been adjusted to current dollars. The basis for the estimates is the ENR Construction Cost Index (CCI) for the San Francisco Bay Area for January 2017 which is 10,532. Cost estimates for the 2008 Master Plan were based on an ENR CCI of 9,133. Therefore, construction cost estimates have increased by approximately 16.3% percent since completion of the 2008 Master Plan.

5.2 Water Supply

The evaluation of long-term water supply options was presented in Section 4. The results of the analysis and prioritization are summarized in Table 4-9.

To provide a reliable water supply for M&I use in the HUA, a robust portfolio should be maintained. This portfolio of water supplies includes groundwater, imported surface water supplies, local surface water supplies, and recycled water as described in Section 4.

In California, environmental requirements and regular droughts have a significant impact on all water supplies especially imported supplies from the Delta. Therefore, the agencies should continue to pursue a variety of water supplies to ensure reliable supply under all hydrologic conditions.

5.3 Water Treatment and Distribution

Treated surface water and groundwater are delivered to the HUA through SBCWD surface water treatment facilities and City and SSCWD wells and distribution systems.

5.3.1 Water Treatment

The Lessalt WTP and West Hills WTP provide high quality treated surface water to the HUA. The West Hills WTP is currently under construction and will be operational by the summer of 2017.

The combined maximum production capacity of the two WTP's is 6.5 mgd (2.0 mgd for Lessalt and 4.5 mgd for West Hills). The West Hills WTP is designed for expansion to an ultimate maximum capacity of 9.0 mgd. The West Hills WTP will operate at approximately one-half of its maximum capacity on an annual average basis due to the available raw water supply as well as the seasonal variation in M&I demands.

A comparison of the projected potable water demands and the existing water production facilities is presented in Table 5-1. As shown, existing groundwater wells and surface water treatment plants have adequate production capacity to meet current and projected potable water demands through 2030. However, this comparison does not include consideration of additional high quality water blending discussed later in this subsection.

As described in subsection 4.2.3, drinking water quality goals are a major driver for future water system infrastructure improvements. Figure 4-1 and Table 4-4 summarize the demand for additional high quality water and resulting blending ratios.

Two alternatives were considered for future expansion of the West Hills WTP to achieve the drinking water quality goals. Figure 5-1 illustrates the first alternative in which the timing of expansions to achieve the drinking water quality goals is based on a fixed blending ratio. **Error! Reference source not found.** illustrates the timing of expansions to achieve the drinking water quality goals in a phased blending approach.

5.3.1.1 WEST HILLS WTP

Figures 5-1 and 5-2 show the future expansions of the West Hills WTP from 4.5 mgd to 6.75 mgd in an initial expansion, and then later from 6.75 mgd to 9.0 mgd in a second expansion.

The first expansion would include an additional 2.25 mgd pump and controls at the raw water pump station, a second Actiflo-Carb unit at 4.5 mgd, an additional 2.25 mgd filter, a second 0.5 MG clearwell, and ancillary facilities for chemical storage, electrical, instrumentation and controls. The estimate cost of this first expansion is approximately $7.0 million.

The second expansion would include an additional 2.25 pump and controls at the raw water pump station, an additional 2.25 mgd filter, and ancillary facilities. The estimated cost of this expansion is approximately $2 million.

Table 5-1. Evaluation of Treated Water Production Capacity

	Year				
	2015	**2020**	**2025**	**2030**	**2035**
PROJECTED DEMANDS (MGD)					
Average Day	5.2	6.1	6.9	7.9	9.1
Maximum Month Daily Average (MMD)[a]	7.8	9.1	10.4	11.8	13.6
Maximum Day (MDD)[b]	10.4	12.2	13.8	15.8	18.2
PRODUCTION FACILITIES (MGD)					
Surface Water					
Lessalt WTP	2	2	2	2	2
West Hills WTP	0	4.5	4.5	4.5	4.5
Subtotal Surface Water	**2**	**6.5**	**6.5**	**6.5**	**6.5**
City Groundwater Wells					
No. 2 Bundeson (1,425 gpm)	2.05	2.05	2.05	2.05	2.05
No. 4 South (1,670 gpm)	2.40	2.40	2.40	2.40	2.40
No. 5 Nash (1,825 gpm)	2.63	2.63	2.63	2.63	2.63
No. 6 Airline (435 gpm)[c]	0	0	0	0	0
Subtotal City Wells	*7.09*	*7.09*	*7.09*	*7.09*	*7.09*
SSCWD Groundwater Wells					
No. 2 Southside (1,095 gpm)	1.58	1.58	1.58	1.58	1.58
No. 5 Ridgemark (900 gpm)	1.30	1.30	1.30	1.30	1.30
No. 7 Enterprise (625 gpm)[d]	0.90	0.90	0.90	0.90	0.90
No. 8 Ridgemark (1,065 gpm)[c]	0	0	0	0	0
No. 11 Lico (1,200 gpm)	1.73	1.73	1.73	1.73	1.73
Subtotal SSCWD Wells	*5.50*	*5.50*	*5.50*	*5.50*	*5.50*
Subtotal Groundwater	**12.59**	**12.59**	**12.59**	**12.59**	**12.59**
Total Production Facilities	**14.59**	**19.09**	**19.09**	**19.09**	**19.09**
Total Production Firm Capacity[e]	**11.96**	**16.46**	**16.46**	**16.46**	**16.46**
MMD Surplus / (Deficit)[f]	**4.2**	**7.3**	**6.1**	**4.6**	**2.8**
MDD Surplus / (Deficit)[f]	**1.6**	**4.3**	**2.6**	**0.7**	**(1.7)**

(a) Maximum Month Daily Average= 1.5 x Average Day.
(b) Maximum Day = 2.0 x Average Day.
(c) City Well No.6 (0.61mgd) and SSCWD Well No. 8 (1.73 mgd) on Standby Status.
(d) SSCWD Well No.7 design capacity is 760 gpm but throttled to 625 gpm for Chromium VI Compliance.
(e) Firm capacity assumes the largest well, City Well No 4 (2.63 mgd) is out of service.
(f) Rounded.

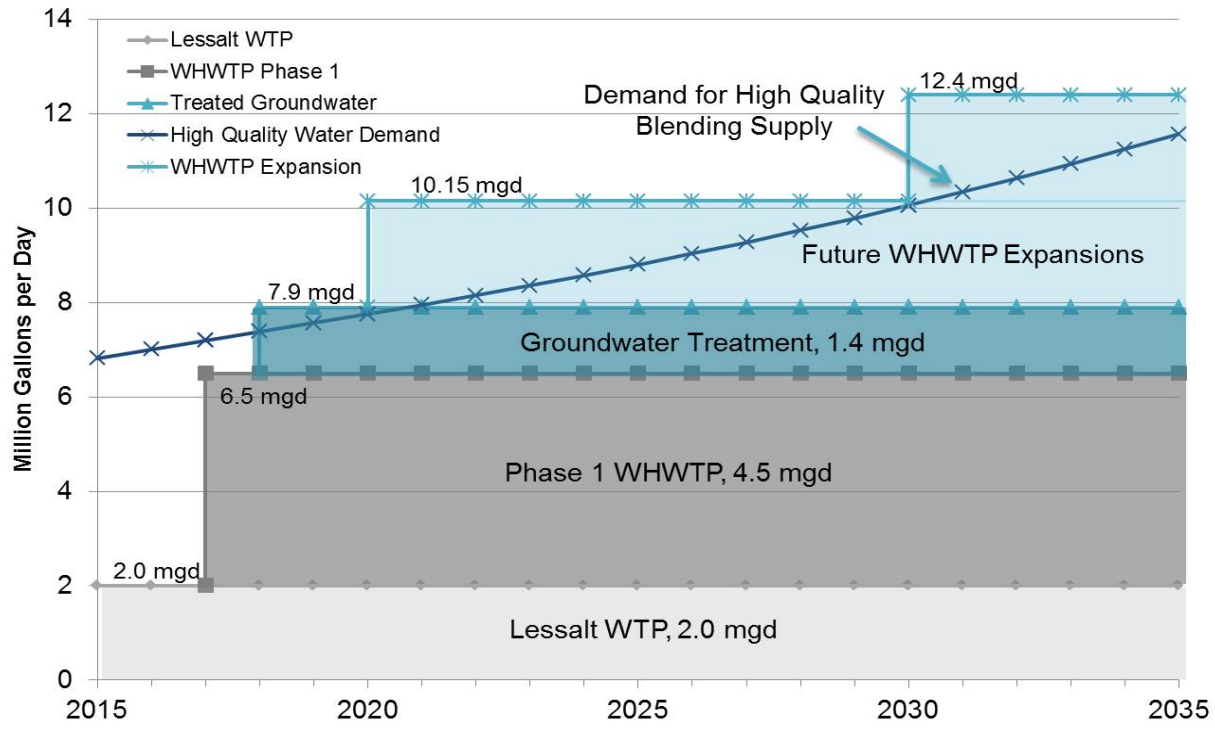

Figure 5-1. Capacity to Provide High Quality Water Supply, Fixed Blending of 85%

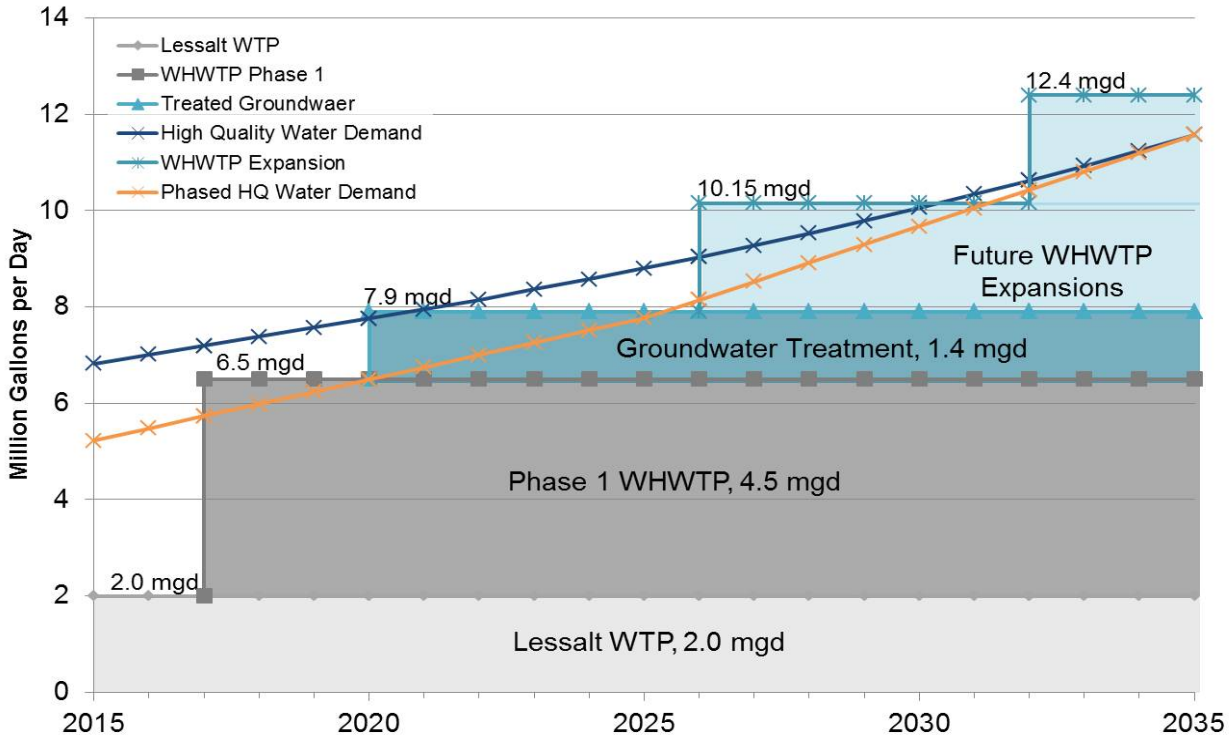

Figure 5-2. Capacity to Provide High Quality Water Supply, Phased Blending 65% to 85%

The combined cost of the two expansions is approximately $9 million. Alternatively, a single expansion from 4.5 mgd to 9.0 mgd could be constructed at an estimated cost of approximately

$8.4 million. The advantage of two expansions is to spread out the capital cost. However, due to the minimal cost difference between two expansions, the agencies may want to only have a single construction project to build out the plant capacity to 9.0 mgd.

5.3.1.2 GROUNDWATER TREATMENT

As described in Section 5.1.3, a new well is needed in the northerly area of the City's water distribution system. The need for and type of treatment required will be based on the results of water quality testing, evaluation of alternative treatment processes, and estimated costs. Alternatives to treatment may be feasible by moving the new well location further to the north to an area with higher quality water supply.

The additional supply of high quality water provided by the new well will also allow expansion of the West Hills WTP to be deferred as shown on Figures 5-1 and 5-2. This deferral will provide time for the agencies to firm up additional surface water supplies and develop financing for the West Hills WTP expansion.

5.3.2 Water Distribution

The City and SSCWD both have Capital Improvement Programs (CIPs) to address the repair, replacement, and upgrades to their respective water distribution systems (see Appendix D). Water distribution facilities for new development are the responsibility of the developer. The following subsections address only major improvements to the water distribution system,

5.3.2.1 CROSSTOWN PIPELINE

As described in Section 2, and shown on Figure 2-7, the Crosstown Pipeline will form the infrastructure backbone for delivery of high quality surface water from the West Hills WTP. The Crosstown Pipeline also provides the facilities required for blending and compliance by the City with the new Hexavalent Chromium regulations.

5.3.2.2 TREATED WATER STORAGE

The treated water storage evaluation from the 2008 Master Plan has been updated. Based on a review of current operational data and in consultation with the City and SSCWD, operational requirements have been reduced from 33 percent of MDD to 20 percent of MDD. Once the West Hills WTP is in service along with blending facilities of wells for Hexavalent Chromium, the existing treated water storage reservoirs may need to be operated more actively then they have been in the past. Historically, the City and SSCWD have operated their respective treated water storage reservoirs at or close to full capacity. To optimize the use of high quality surface water, the fill and draw cycle of these treated water reservoirs will need to be operated more actively in the future.

The treated water storage evaluation results are summarized in Table 5-3. The analysis shows that no additional treated water is required until after 2025. As part of the next Master Plan Update, treated water storage criteria should be reviewed to determine the need for additional storage.

As described in Section 2, the 2.0 MG Fairview Tank was taken out of service in 2015. SSCWD plans to review the need for this facility in the future as demands increase. The tank will require a major rehabilitation if it is put back in service.

The West Hills WTP has a capacity of 0.5 MG. The plant design includes provisions for a second 0.5 MG clearwell, for a total capacity at the site of 1.0 MG. This treated water storage capacity is reserved for plant operational needs and is not included in the system storage evaluation.

Table 5-2. Treated Water Storage Evaluation

		2015	2020	2025	2030	2035
PROJECTED DEMANDS						
Average Day Demand	mgd	5.2	6.1	6.9	7.9	9.1
Maximum Day Demand	mgd	10.4	12.2	13.8	15.8	18.2
STORAGE REQUIREMENTS[a]						
Operational Requirements	MG	2.1	2.4	2.8	3.2	3.6
Emergency Reserve	MG	5.2	6.1	6.9	7.9	9.1
Fire Flow Storage	MG	0.96	0.96	0.96	0.96	0.96
Total Storage Requirements	**MG**	**8.3**	**9.5**	**10.7**	**12.1**	**13.7**
EXISTING STORAGE FACILITIES						
Fairview Road (SSCWD)	MG	3.5	3.5	3.5	3.5	3.5
Fairview Road (SSCWD)[b]	MG	0.0	0.0	0.0	0.0	0.0
Ridgemark #1 (SSCWD)	MG	1.0	1.0	1.0	1.0	1.0
Ridgemark #2 (SSCWD)	MG	0.5	0.5	0.5	0.5	0.5
Park Hill #1 (City)	MG	2.2	2.2	2.2	2.2	2.2
Park Hill #2 (City)	MG	4.5	4.5	4.5	4.5	4.5
Total Existing Storage	**MG**	**11.7**	**11.7**	**11.7**	**11.7**	**11.7**
SYSTEM-WIDE STORAGE REQUIREMENTS						
Requirement	MG	8.3	9.5	10.7	12.1	13.7
Available	MG	11.7	11.7	11.7	11.7	11.7
Surplus / (Deficit)	**MG**	**3.4**	**2.2**	**1.0**	**(0.4)**	**(2.0)**
PROJECTED MAX DAY DEMANDS BY ZONE						
Low	mgd	5.4	6.3	7.0	8.3	9.5
Middle	mgd	3.7	4.3	4.9	5.6	6.4
High	mgd	1.3	1.5	1.9	1.9	2.2
Total Demand	**mgd**	**10.4**	**12.2**	**13.8**	**15.8**	**18.2**
STORAGE REQUIREMENTS BY ZONE						
Low Zone Storage Requirements						
Operational Requirements	MG	1.1	1.2	1.4	1.7	1.9
Emergency Reserve	MG	2.7	3.1	3.5	4.1	4.8
Fire Flow Storage[a]	MG	0.42	0.42	0.42	0.42	0.42
Total Storage Requirements	MG	4.2	4.7	5.3	6.2	7.1
Existing Low Zone Storage	MG	6.7	6.7	6.7	6.7	6.7
Storage Surplus / (Deficit)	**MG**	**2.5**	**2.0**	**1.4**	**0.5**	**(0.4)**
Middle Zone Storage Requirements						
Operational Requirements	MG	0.7	0.9	1	1.1	1.3
Emergency Reserve	MG	1.8	2.2	2.4	2.8	3.2
Fire Flow Storage[b]	MG	0.3	0.3	0.3	0.3	0.3
Total Storage Requirements	MG	2.8	3.4	3.7	4.2	4.8
Existing Middle Zone Storage	MG	3.5	3.5	3.5	3.5	3.5
Storage Surplus / (Deficit)	**MG**	**0.7**	**0.1**	**(0.2)**	**(0.7)**	**(1.3)**
High Zone Storage Requirements						
Operational Requirements	MG	0.3	0.3	0.4	0.4	0.4
Emergency Reserve	MG	0.7	0.9	1.0	1.0	1.1

		2015	2020	2025	2030	2035
Fire Flow Storage	MG	0.24	0.24	0.24	0.24	0.24
Total Storage Requirements	MG	1.2	1.4	1.6	1.5	1.7
Existing Middle Zone Storage	MG	1.5	1.5	1.5	1.5	1.5
Storage Surplus / (Deficit)	**MG**	**0.3**	**0.1**	**(0.1)**	**(0.1)**	**(0.2)**
Cumulative Storage Surplus / (Deficit)						
High Zone	**MG**	**0.3**	**0.1**	**(0.1)**	**(0.1)**	**(0.2)**
Middle + High Zone	**MG**	**1.0**	**0.2**	**(0.3)**	**(0.8)**	**(1.5)**
Low + Middle + High Zone	**MG**	**3.4**	**2.1**	**1.0**	**(0.4)**	**(2.0)**

(a) Storage requirements include 20% of MDD for operational storage, 50% of MDD for emergency reserve, and fire flows which include 2,000 gpm for 2 hours the High Zone, 3,000 gpm for 3 hours for the Middle Zone, and 4,000 gpm for 4 hours for the Low Zone.
(b) The 2.0 MG Fairview tank is not in service.
(c) Fire protection for the Low one is 0.96 MG and assumed to be partially met from the High and Middle Zones.
(d) Fire protection for the Middle Zone is 0.54 MG and assumed to be partially met from the High Zone.

5.4 Wastewater Treatment

There are three wastewater treatment facilities serving the HUA as follows:

- City Water Reclamation Facility
- SSCWD Wastewater Treatment Plant
- Cielo Visto Wastewater Treatment Plant

The service areas for these facilities are shown on Figure 2-8. The City and SSCWD both have CIPs for their respective wastewater collection system improvements (see Appendix D). Wastewater collection facilities for new developments are the responsibility of the developer.

5.4.1 City Water Reclamation Facility

The projected wastewater flows for the City (Section 3) and the current capacity of the City WRF are shown on Figure 5-3. As shown, an expansion of the WRF may be required near the end of the planning period. Thus, it is recommended that the wastewater flow projections be updated as part of the next Master Plan Update to confirm the need and timing for an expansion.

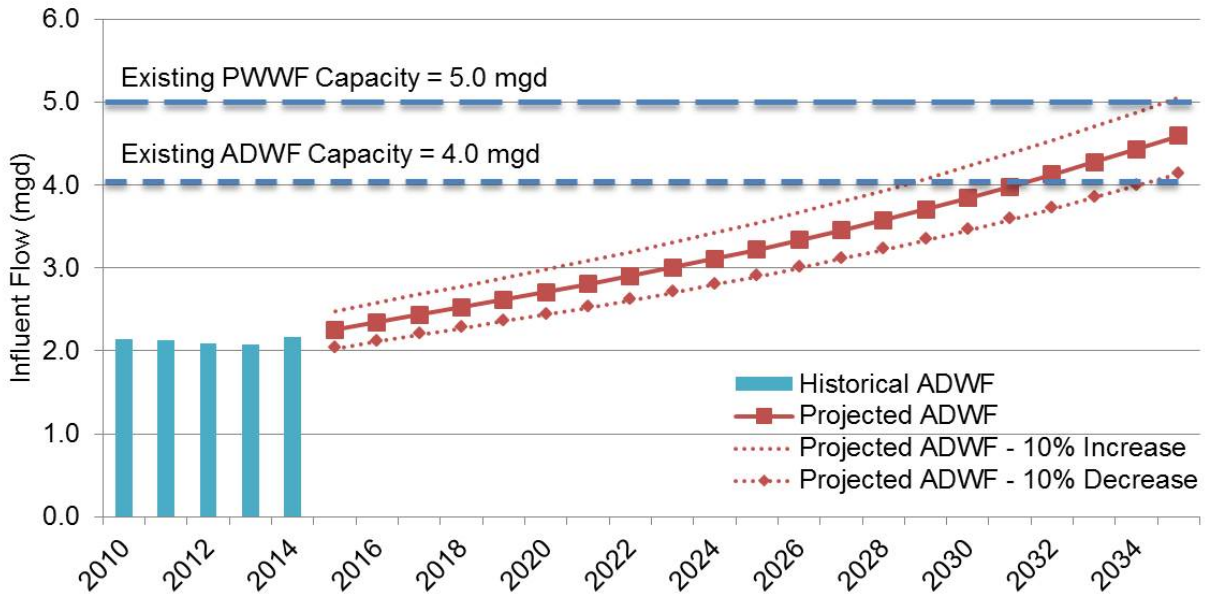

Figure 5-3. City WRF Capacity Evaluation

5.4.2 SSCWD Ridgemark Wastewater Treatment Plant

The projected wastewater flows for SSCWD (Section 3) and the current capacity of the SSCWD Ridgemark WWTP are shown on Figure 5-4. As illustrated, no expansion of the SSCWD Ridgemark WWTP is anticipated.

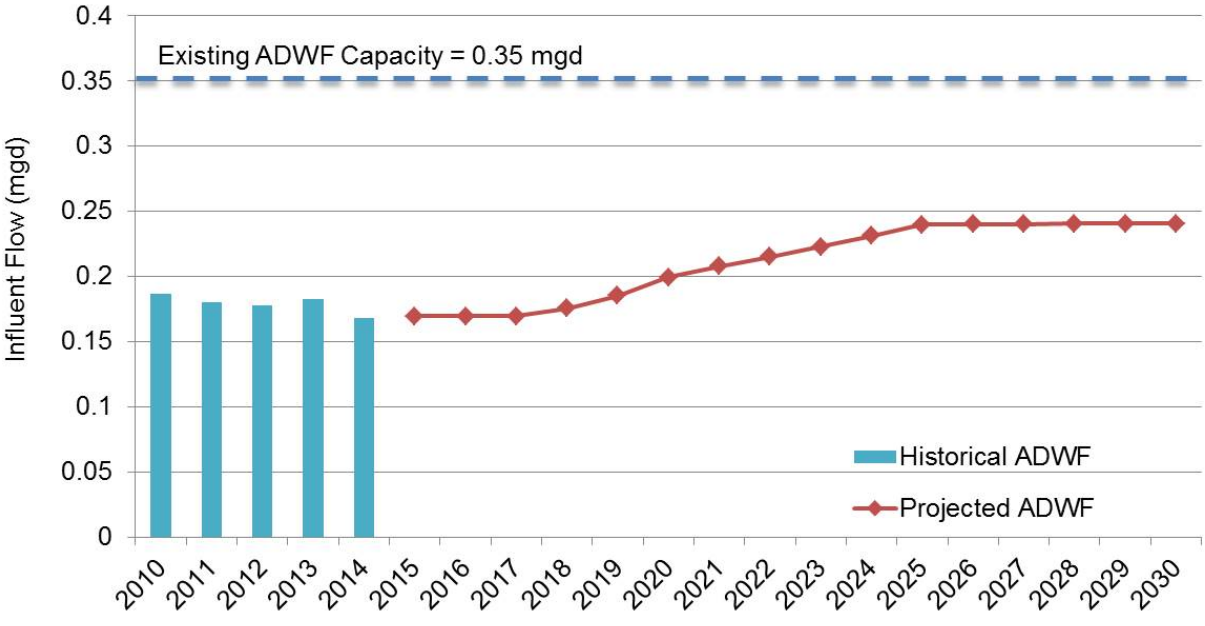

Figure 5-4. SSCWD Ridgemark WWTP Capacity Evaluation

5.4.3 Cielo Vista Wastewater Treatment Plant

The service area for the Cielo Vista WWTP is fully developed and no new flows are anticipated. If the facility cannot meet Waste Discharge Requirements in the future, the flows could be redirected and connected to the City's WRF.

5.5 Recycled Water

SBCWD's agricultural recycled water program has been a success in that during the first full agricultural season, the demand for recycled water outpaced the available supply. To improve the reliability of supply (and treatment efficiency at the WRF), the City is planning to add a 1 MG flow equalization facility at the WRF. Additional analysis is needed to determine if seasonal storage to further increase the available supply is cost effective. However, as additional recycled water is available with increasing wastewater flows, SBCWD should continue to evaluate opportunities to expand the distribution system to add additional customers and maximize the use of the available supply.

Due to the decentralized nature of existing M&I irrigation demands, a recycled water system for M&I irrigation is not expected to be cost effective.

5.6 Water Conservation

The Water Resources Association of San Benito County's existing water conservation program should be continued and expanded as appropriate to continue bringing awareness to water use efficiencies, conservation opportunities, and waste avoidance.

5.7 Summary of Facilities Evaluation

Based on the information presented above, recommendations were developed for water treatment, water distribution, wastewater collection and treatment, and recycled water. The recommended facilities are summarized in Table 5-3.

Table 5-3. Recommended Facilities

Description[a]	Estimated Cost ($M) and Timeframe						
	2017	2018	2019	2020	2021 - 2025	2026 - 2035	Total
Water Treatment							
New City Well with Wellhead Treatment[b]		$1.0	$2.0	$3.3			$6.3
Expand WHWTP, 6.75 mgd					$7.0		$7.0
Expand WHWTP, 9.0 mgd						$2.0	$2.0
Subtotal		**$1.0**	**$2.0**	**$3.3**	**$7.0**	**$2.0**	**$15.3**
Water Distribution							
Connect City Wells No.4 and No.5 to WHWTP Transmission	$2.4						$2.4
Crosstown Pipeline[c]	$0.6	$5.6					$6.2
System Improvements for High Quality Water Distribution[d]					TBD	TBD	TBD
Rehabilitate 2.0 MG Fairview Tank[e]						$1.0	$1.0
Subtotal	**$2.6**	**$5.6**				**$1.0**	**$9.6**
Wastewater Treatment							
WRF Influent Flow Equalization[f]			$0.5	$1.5			$2.0
Expand City WRF[e]						TBD	TBD
Subtotal			**$0.5**	**$1.5**			**$2.0**
Recycled Water							
Expand SBCWD Agricultural Irrigation System					TBD		TBD
Upgrade Ridgemark WWTP to Title 22[e]						$7.0	$7.0
Subtotal						**$7.0**	**$7.0**
Total	**$2.6**	**$6.6**	**$2.5**	**$4.8**	**$7.0**	**$10.0**	**$33.9**

(a) Costs are referenced to the ENR, San Francisco Bay Area CCI Index for January 2017, at 10,532. TBD costs to be determined based upon operational results of new facilities and further studies.
(b) Wellhead treatment costs are based on a 1.4 mgd treated capacity and reverse osmosis process. Further study is needed to confirm location and process. Evaluate alternatives including high quality North County groundwater.
(c) Crosstown Pipeline from City Well No. 5 (Nash) to SSCWD Well Nos. 2 and 11, and includes connection to City Well No. 2.
(d) Complete additional operations studies and modeling to provide uniform distribution of quality water.
(e) Estimated cost provided by SSCWD.
(f) Estimated cost provided by City.
(g) Does not include City and SSCWD CIPs for water distribution and wastewater collection systems. See Appendix D.

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6 Recommended Implementation Program

The 2008 Master Plan provided the foundation for major improvements to the water and wastewater infrastructure for the HUA. Those improvements have provided significant benefits to drinking water quality, the ability to comply with waste discharge requirements, and the use of recycled water. This Master Plan Update provides recommended facilities and programs for additional water, wastewater, and recycled water improvements through 2035.

6.1 Facilities and Programs

The facilities and programs recommended as part of this Master Plan Update are summarized in the following subsections.

6.1.1 Water Supply

The projected increase in water supply demands in the HUA between 2015 and 2035 is 4,340 AFY (Table 3-10). The recommended priorities and actions for long-term water supply are summarized in Table 6-1. These recommendations are described in Section 4 and include continuation of ongoing programs and new projects requiring further investigation. All of the long-term water supply options should be retained as a menu of alternatives to contribute to a diverse water supply portfolio. Due to the inherent uncertainties in California water supply (drought, environmental constraints, regulations, etc.) it is prudent to maintain maximum flexibility in planning for long-term water supplies.

As described throughout this Master Plan Update, additional high quality water will be required to meet the TDS and hardness goals as well as to ensure compliance with the California Hexavalent Chromium regulations. During normal years, the additional increment of high quality water is estimated to be approximately 1,800 AFY by 2025 and approximately 3,800 AFY by 2035 with an 85 percent blend ratio. With a phased blending program using a 75 percent blend ratio by 2025, the additional increment of high quality water would be reduced from 1,800 AFY to approximately 1,000 AFY.

The water supply options in Table 6-1 provide “building blocks” to meet the need for high quality water. For example, the proposed new well in the northern area of the City distribution system and the first phase of the North County groundwater project could provide sufficient supply to meet the 2025 high quality water need. Additional supply options will be required to meet the high quality water needs through 2035.

The quantity and timing of additional high quality water needs will be dependent upon actual demand growth, hydrologic conditions (wet, normal, and dry years), and allocations of existing CVP supplies by the USBR. In dry years, CVP allocations will be reduced resulting in the need for short-term supply augmentation. These short-term needs may be met by spot market purchases (if available and cost-effective), carryover storage in surface water reservoirs, groundwater banking, and mandatory conservation measures.

Table 6-1. Recommended Priorities and Actions for Long-Term Water Supply Program

Description	Priority Level[a]	Estimated Average Annual Supply (AFY)	Recommended Action
Surface Water			
Imported Surface Water Transfers / Spot Market	1	2,258[b]	Continue Existing Program
Semitropic Water Bank	2	(c)	Continue Existing Program
Local Surface Water Supplies	3	TBD[d]	Further Investigation Required
Local Surface Water Storage	3	TBD[d]	Further Investigation Required
Groundwater			
Local Wells with Treatment for Potable Use	1	1,000[e]	Identify Locations at Existing and/or New Wells and Confirm Treatment Process
Local Wells for M&I Landscape Irrigation	2	TBD[d]	Evaluate on Case-by-Case Basis
North County Direct Use	1	2,000 – 5,000[f]	Complete Feasibility and Environmental Studies
North County Wells Banking / Exchange	1	2,000 – 5,000[f]	Complete Feasibility and Environmental Studies
Recycled Water			
Expanded Reuse for M&I Landscape Irrigation	2	(g)	Evaluate Cost-Effectiveness Based on Infrastructure Needs
Expanded Reuse for Agricultural Irrigation	1	2,450[h]	Expand Existing Program When Required
Potable Reuse	3	TBD[d]	Monitor Technology and Regulations
Water Conservation	1	(i)	Continue Existing Program

(j) Priority level from Table 4-7.
(k) Based on 13,550 AF over past six years or annual average of 2,258 AFY.
(l) Semitropic Water Bank enhances dry year reliability, but does not increase supply.
(m) TBD is to be determined based upon results of further investigations.
(n) Achievable with new well(s) and/or increased use of existing wells.
(o) Preliminary investigations indicate that up to 5,000 AFY available in normal and wet years and up to 2,000 AFY available in dry years.
(p) City M&I landscape irrigation currently limited to approximately 167 AFY at Riverside Park.
(q) SBCWD agricultural irrigation was approximately 499 AFY in water year 2016 with additional 250 AF in October 2016. Could increase up to 2,450 AF by 2035.
(r) Significant reductions have already been achieved through regional efforts in water conservation. Further reductions to be determined based upon results of ongoing efforts.

During extended dry year conditions, it may be necessary to relax the TDS and hardness goals. However, even during extended dry year conditions, sufficient high quality water supplies must be provided to meet the Hexavalent Chromium regulations.

6.1.2 Water, Wastewater, and Recycled Water Facilities

The recommended water, wastewater, and recycled water facilities and improvements are summarized in Table 6-2. Table 6-2 is limited to the facilities and improvements that are recommended for implementation through 2025. Improvements needed beyond 2025 should be

revisited in a subsequent Master Plan Update which should be completed no later than 2025. At that time, the actual growth in demands, water quality requirements, new regulations, and other factors can be reconsidered to develop recommendations and for appropriate scope and timing for facilities beyond 2025.

Table 6-2. Estimated Costs, Schedule and Actions for Recommended Facilities

Description[a]	Estimated Cost ($M) and Timeframe					Total	Recommended Action
	2017	2018	2019	2020	2021 - 2025		
Water Supply							
Local Surface Water Supplies and Storage		$0.1	$0.1	$0.1	TBD	$0.3	Complete further investigations
North County Groundwater		$0.2	$0.2	$0.3	$6.0	$6.7	Complete feasibility and environmental studies
Subtotal		**$0.3**	**$0.3**	**$0.4**	$6.0	**$7.0**	
Water Treatment							
New City Well with Wellhead Treatment[b]		$1.0	$2.0	$3.3		$6.3	Identify location for new well in Northerly part of service area and confirm treatment process
Expand WHWTP, 6.75 mgd					$7.0	$7.0	Expand WHWTP to 6.75 mgd
Subtotal		**$1.0**	**$2.0**	**$3.3**	**$7.0**	**$13.3**	
Water Distribution							
Connect City Wells 4 and 5 to WHWTP Transmission Pipeline	$2.4					$2.4	Complete design and construct
Crosstown Pipeline[c]	$0.6	$5.6				$6.2	Complete design and construct
Subtotal	**$3.0**	**$5.6**				**$8.6**	
Wastewater Treatment							
WRF Influent Flow Equalization at City WRF[d]			$0.5	$1.5		$2.0	Add flow equalization to improve treatment efficiency and increase recycled water production
Subtotal			**$0.5**	**$1.5**		**$2.0**	
Recycled Water							
Expand SBCWD Agricultural Irrigation System					TBD	TBD	Extend existing pipelines as required
Subtotal					**TBD**	**TBD**	
Total	**$3.0**	**$6.9**	**$2.8**	**$5.2**	**$13.0**	**$30.9**	

(f) Costs are referenced to the ENR, San Francisco Bay Area CCI Index for January 2017, at 10,532.
(g) Wellhead treatment costs are based on a 1.4 mgd treated capacity and reverse osmosis process. Evaluate alternatives including high quality groundwater.
(h) Crosstown Pipeline from City Well No. 5 to SSCWD Well Nos. 2 and 11, and connection to City Well No. 2.
(i) Estimated cost provided by City.
(j) Does not include City and SSCWD CIPs for water distribution and wastewater collection systems. Refer to Appendix D.

The City and SSCWD have ongoing local improvements to their respective water distribution and wastewater collection systems. The current City and SSCWD 5-year CIPs are included in Appendix D. The current City CIP includes $1.46 million in water facilities and $6.8 million in wastewater facilities. The current SSCWD CIP includes $795,000 in water facilities and $30,000 in wastewater facilities. These facilities are not included in Table 6-2.

6.2 Coordination with Related Planning Activities

Implementation of this Master Plan Update should be coordinated with other ongoing programs to provide opportunities for optimizing facilities sizing, reducing costs, and obtaining outside financing. Some of the major ongoing programs for coordination include the following:

- City's Water Distribution System Master Plan
- Groundwater Sustainability Study
- Santa Clara Valley Water District Pacheco Storage Reservoir Evaluation
- Pajaro River Watershed Integrated Regional Water Management Program
- USBR San Luis Reservoir Low Point Improvement Project

6.3 Water System Operations

As described throughout this Master Plan Update, the water distribution system for the HUA consists of the combined systems serving the City and SSCWD. Historically, the City and SSCWD have closely coordinated the operation of this combined system. In 2013, the System Operations TM was prepared in anticipation of implementation of the recommended facilities in the 2008 Master Plan.

Going forward, the HUA will increasingly utilize treated surface water from the new West Hills WTP. Therefore, it will become even more critical for the City, SSCWD, and SBCWD to cooperate in the efficient operation of the water supply, treatment and distribution facilities.

The continued cooperation and coordination of system operations will be required to provide efficiencies and maximize the following benefits to consumers in the HUA:

- Efficient use of limited high quality water supplies.
- Compliance with State and Federal drinking water standards especially the California Hexavalent Chromium limits.
- Continued progress toward meeting TDS and hardness goals established for drinking water in the HUA.
- Continue compliance with Waste Discharge Requirements for local wastewater treatment plants.

- Production of Title 22 recycled water from the City WRF for reuse by SBCWD for agricultural irrigation.

To achieve these benefits, the 2013 System Operations TM should be updated to ensure efficient operation of new facilities and to incorporate facilities developed since 2013 especially those associated with compliance with the Hexavalent Chromium regulations adopted in 2014. Specifically, some of the issues to be addressed in the update should include the following:

6. Production scheduling for the Lessalt and West Hills WTPs for seasonal and daily flow variations.
7. Scheduling of well operations to complement treated surface water deliveries and provide comparable average run times for all wells.
8. Efficient use of the Crosstown Pipeline to deliver treated surface water and enhance system reliability for seasonal and emergency operations.
9. More active use of treated water storage reservoirs to optimize use of high quality treated water supplies.
10. Continued use and upgrades as necessary for a fully coordinated and integrated telemetry and control system.

6.4 Engineering

The technical work completed for this Master Plan Update provides a framework for water, wastewater, and recycled water facilities required through the year 2035. The recommended facilities are described in detail in Section 5 and those near-term facilities recommended for implementation before 2025 are shown on Figure 6-1. The locations presented on Figure 6-1 are preliminary and final locations will be determined during facilities planning and predesign work.

The next step in implementation will be to conduct engineering and related technical investigations for the recommended facilities. Engineering work would include facilities planning, predesign, design, construction management, and startup. Many of the proposed improvements will be phased and the engineering work would be scheduled accordingly. Construction contract packaging should also be evaluated to provide the greatest opportunities for competitive bidding by contractors.

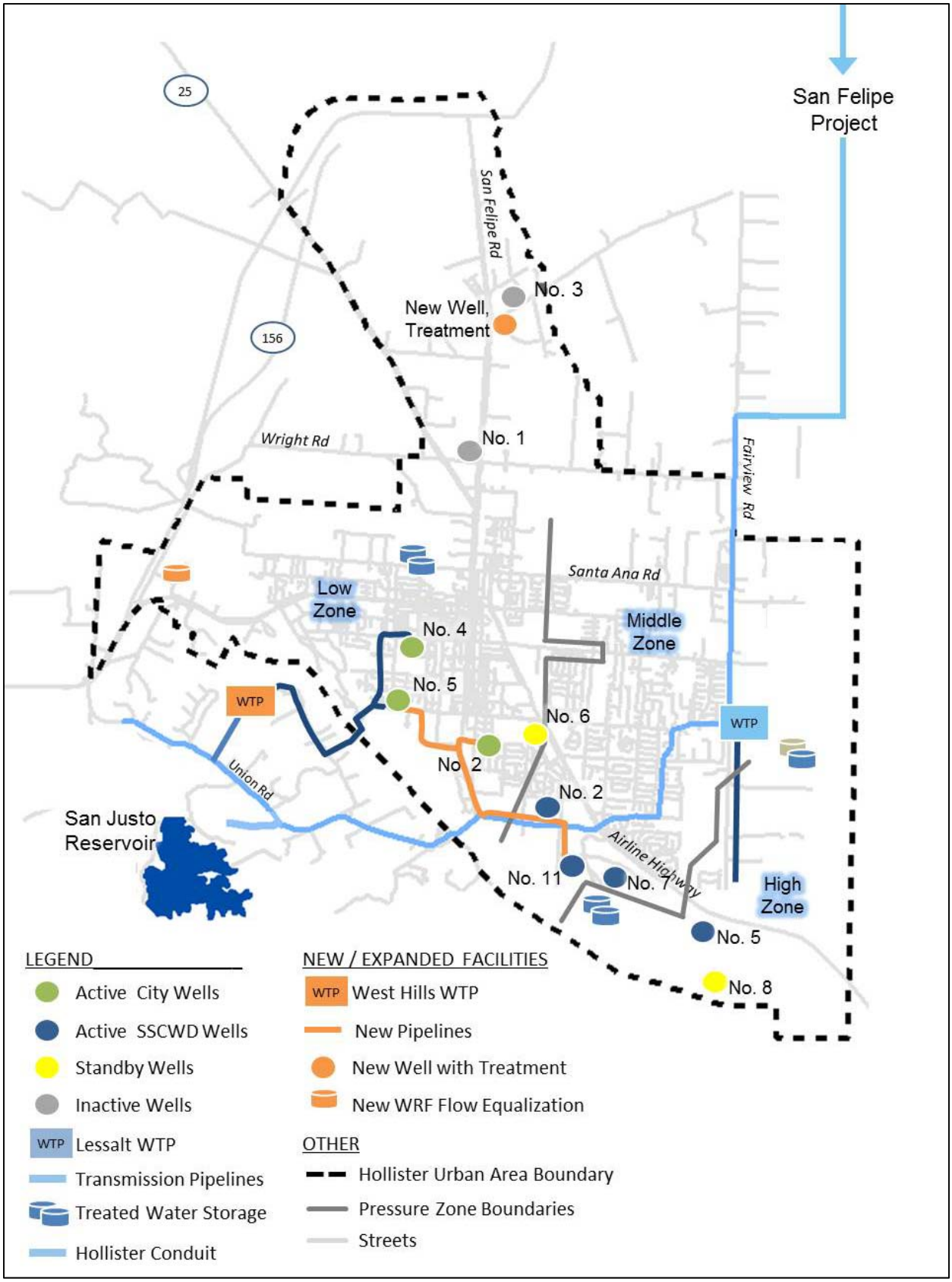

Figure 6-1. Recommended Facilities

6.5 Environmental Compliance

The recommended facilities will require environmental compliance with the California Environmental Quality Act (CEQA) to evaluate the environmental impacts of the projects. Project-specific compliance would be determined on a case-by-case basis for individual projects.

For projects such as water distribution pipeline replacements, an exemption or a negative declaration may be sufficient for CEQA compliance. For larger, more complex projects, such as the North County Wells Banking / Exchange Project, a complete EIR will be required.

If federal grants or loans are used to pay for specific facilities, additional environmental review may be required to comply with the National Environmental Policy Act (NEPA). In addition, if federal facilities are impacted, such as the Hollister Conduit, NEPA may compliance also be triggered.

6.6 Permitting

Numerous federal, state, and local permits will also be required for implementation. The required permits will be identified during the preparation of the engineering predesign studies and environmental compliance documents. A permitting strategy should be developed to minimize project delays and potential mitigation costs.

6.7 Institutional Agreements

Institutional agreements between agencies will be required to implement projects providing joint benefits. These agreements will be similar to the memoranda of understanding developed for previously completed projects, such as the Lessalt and West Hills WTPs and agricultural use of recycled water.

Multiple institutional agreements may be needed to implement the North County Wells Banking / Exchange Project. Depending on the final scope of the project, the following agreements may be required:

- Agreements between SBCWD and SCVWD and/or PPWD for operation of the existing Pacheco Dam and Reservoir or an expanded facility.
- Agreement between the USBR and the SBCWD to use the Hollister Conduit for transmission of North County groundwater (Warren Act).
- Agreements between North County landowners and SBCWD for banking/exchange of groundwater and CVP supplies.

For the influent flow equalization facilities at the City's WRF, an agreement between the City and SBCWD will be required to recognize the multiple benefits provided by this facility. These benefits include improved treatment efficiency at the WRF reducing the occurrence of "off-spec" water which will ultimately result in the production of more recycled water for beneficial use.

6.8 Financing

Financing of recommended projects may be through local funding and/or state and federal grants and loans. Past projects, such as the Hollister Urban Area Water Project, have been implemented through a combination of local financing and state grants. Opportunities for outside financing (grants or loans) should be fully explored from state water programs and federal infrastructure funding.

For local financing, the agencies will need to update their financial plans and rate studies. Rate study updates should include a review of both rates and connection fees. For the recommended new water facilities, benefits and costs should be allocated to water quality improvements and growth. For water supplies, capital costs and raw water acquisition costs need to be included.

As shown on Table 6-2, financing for the expansion of the West Hills WTP is shown in the 2021 to 2025 timeframe. Figure 5-2 shows that the first expansion should be online by 2026. However, this timing will be subject to actual growth in demands. The financing for this project will be required several years prior to the start of construction.

It is recommended that the projected water demands, facilities timing, and financing plan be reviewed in three years by 2020. This interim milestone would provide the agencies the opportunity to verify actual trends in water demand growth and to adjust the schedules for facilities implementation and financing.

6.9 Stakeholder Outreach

Stakeholder outreach was an integral part of the development of this Master Plan Update. Continued successful Implementation of the Master Plan Update recommendations will require a proactive approach to the various interest groups and stakeholders in the HUA, including:

- General public,
- Local interest groups (business, environmental, and others),
- Agricultural interests (for marketing of recycled water),
- Regulatory agencies,
- City, County, SBCWD, SSCWD elected officials and staff, and
- Regional interests outside San Benito County.

A first step in developing a responsive stakeholder outreach program would be to update the Communications Plan developed for implementation of the 2008 Master Plan.

6.10 Use of Master Plan Update Processes and Tools

The agencies have invested substantial resources to the completion of this Master Plan Update. The processes and tools developed as part of this work should be utilized in the future evaluation of proposed new developments, proposed land use changes, refinements to the

recommended facilities, and potential regional projects and programs. Some of the processes and tools to be utilized include the following:

- Process and criteria established for evaluation of alternatives;
- Water distribution system model for the City and SSCWD water systems; and
- Fact sheets developed to assist with public information and education programs.

It is also recommended that this Master Plan be updated no later than 2025. An update in this timeframe is necessary to adjust the recommendations for facilities beyond 2025 based upon actual growth rates, progress made in program implementation, new regulations, and potential new issues and opportunities.

6.11 Recommended Implementation Schedule and Next Steps

Implementation of this Master Plan Update will require overall program and individual facilities activities. Some projects shown in Figure 6-1 are already under construction (e.g., connection of City Well No. 4 and No. 5 to the West Hills WTP Transmission Pipeline) or in design (e.g., Crosstown Pipeline).

The next major infrastructure improvements would be completed through 2025. Table 6-3 summarizes the recommended projects and programs along with a timeline and responsibilities for implementation.

Table 6-3. Summary of Timing and Responsibility for Recommended Improvements through 2025

Description	Date	Responsible Agency
Water Supply		
Continue and/or Expand Existing Programs		
Continue Imported Surface Water Transfers / Spot Market Purchases	Ongoing	SBCWD
Renew Semitropic Water Agreement	By 2021	SBCWD
Continue and Expand (As Necessary) Reuse for Agricultural Irrigation	Ongoing	SBCWD
Continue Water Conservation Program	Ongoing	WRA
New Programs		
Develop New M&I Well in Northerly Area of City Distribution System	2018 – 2020	City, SBCWD
Further Investigation of Local Surface Water Supplies and Storage	2018 – 2020	SBCWD
Evaluate Local Wells for M&I Landscape Irrigation on Case-By-Case Basis	Ongoing	All Agencies
Complete Feasibility and Environmental Studies for North County Groundwater Supply	2018 – 2020	SBCWD
Water Treatment		
Evaluate Need for and Type of Treatment for New City Well in North Area	2018 – 2020	City, SBCWD
Expand West Hills WTP from 4.5 mgd to 6.75 mgd	2025+	SBCWD
Water Distribution		
Connect City Wells No.4 and No.5 to WHWTP Transmission Pipeline	2017	City
Complete Crosstown Pipeline	2017 – 2018	City, SSCWD
Evaluate Need for Additional Treated Water Storage	2025	City, SSCWD
Complete Additional Operations Studies and Modeling to Provide Uniform Distribution of High Quality Water	2017 – 2018	City, SSCWD
Implement City and SSCWD CIPs for Water Distribution System Improvements	Ongoing	City, SSCWD
Wastewater Treatment		
Complete Influent Flow Equalization at City WRF	2018 – 2020	City, SBCWD
Evaluate Need to Connect Cielo Vista to City WRF	2025	City
Wastewater Collection		
Implement City and SSCWD CIPs for Wastewater Collection System Improvements	Ongoing	City, SSCWD
Updates to Planning Documents		
Update Water System Operations TM	2017	All Agencies
Complete Master Plan Update	By 2025	All Agencies

(c) Refer to Table 6-2 for estimated costs.
(d) Refer to Figure 6-1 for location of recommended facilities.

Appendices

A

Appendix A

City of Hollister Hexavalent Chromium Compliance Plan

B

Appendix B

SSCWD Hexavalent Chromium Compliance Plan

C

Appendix C

Water Distribution System Modeling Results

Water Distribution System Modeling Results

The existing distribution system hydraulic model was updated to reflect new infrastructure constructed since the 2008 Master Plan and the increase in water demands observed during the period. The model was then used to evaluate the distribution of high quality water for the following scenarios:

1. Existing Conditions
2. WHWTP Operational
3. Crosstown Pipeline and New Well
4. Crosstown Pipeline and New Well with Treatment

The table below presents a summary of the infrastructure, operational, and water quality assumptions associated with each scenario.

Demands / Facilities	Near Term Through 2020				Long Term
	Scenario I Existing Conditions	**Scenario II WHWTP Operational**	**Scenario III Crosstown and New Well**	**Scenario IV Crosstown and New Well**	**Scenario V 2035 Conditions**
Demand Condition	2015 MMD	2015 MMD	2015 MMD	2015 MMD	2035 MMD
West Hills WTP Capacity	0	4.5 mgd	4.5 mgd	4.5 mgd	9.0 mgd
Crosstown Pipeline	N/A	City Wells No. 4 & 5	City Wells No. 2, 4 & 5 SSCWD Wells No. 2 & 11	City Wells No. 2, 4 & 5 SSCWD Wells No. 2 & 11	City Wells No. 2, 4 & 5 SSCWD Wells No. 2 & 11
New Fallon Well	N/A	N/A	Online No Treatment TDS = 678 Hardness = 206	Online Treatment TDS = 500 Hardness = 150	Online Treatment TDS = 500 Hardness = 150

The distribution of high quality water was evaluated based on both hardness and TDS. The results of the modeling analysis are presented in the following pages.

D

Appendix D

Water and Wastewater CIPs for City and SSCWD