

HOLLISTER URBAN AREA WATER AND WASTEWATER *Master Plan*



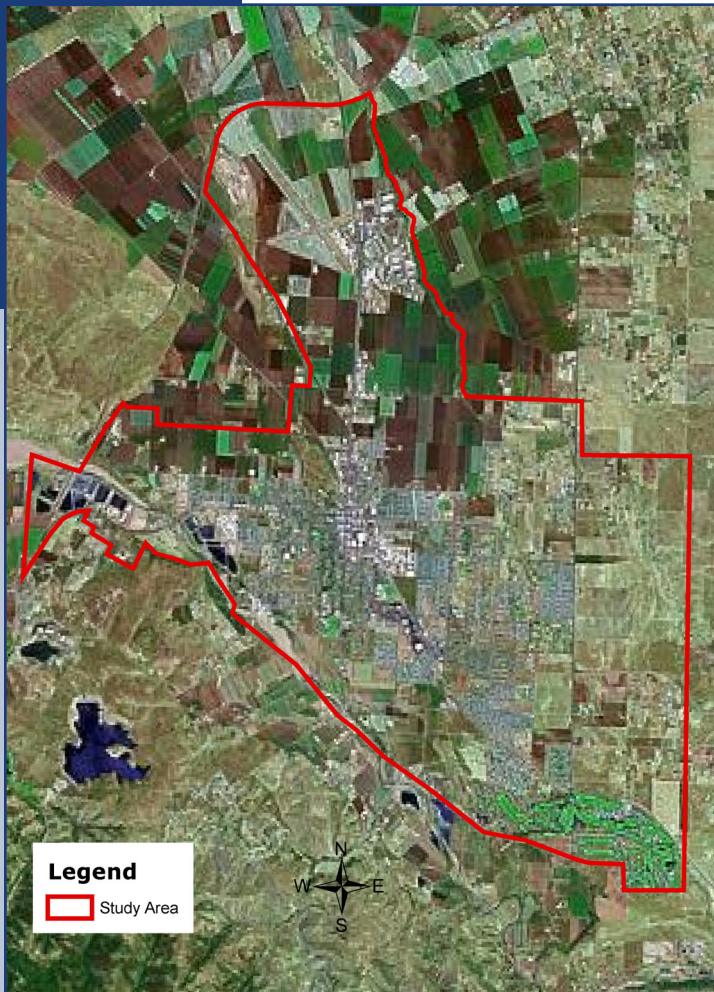
What is a Water and Wastewater Master Plan?

A blueprint used to guide future management and use of the water and wastewater resources for a designated area for an agreed upon time period.

Background

Northern San Benito County has a diverse and complex water supply system. The system is composed of a substantial groundwater basin, numerous river and creek channels, imported surface water from San Luis Reservoir, and significant opportunities for using recycled water. Recently, wastewater treatment and disposal has become a constraint to development of the Hollister Urban Area. The high level of minerals in the wastewater limits both disposal and recycle options due to adverse impacts to crops and groundwater. Although treated drinking water meets all federal and state drinking water regulations, hardness and minerals in the water supply need to be reduced. The reliability of imported water has declined significantly and the sustainability of local supplies requires review.

To address these issues using an integrated approach, a water and wastewater master plan is being prepared for the Hollister Urban Area in support of and consistent with the General Plans of San Benito County and the City of Hollister. The master plan will provide a long term vision to guide water and wastewater improvements.



Landmark Partnership

A partnership was formed between the City of Hollister, San Benito County and the San Benito County Water District to work together to address these issues. The three entities executed a Memorandum of Understanding and a Statement of Intent in 2004 to develop and maintain the Hollister Urban Area Water and Wastewater Master Plan.

Key Goals

- Improve water quality
- Increase the reliability of the water supply
- Coordinate infrastructure improvements for the water and wastewater systems
- Implement goals of Groundwater Management Plan
- Integrate Long-term Wastewater Management Program
- Support economic growth and development consistent with the City of Hollister and San Benito County General Plans and Policies
- Consider regional issues and solutions

Other Related Activities

This project is being coordinated with other ongoing projects:

- *Recycled Water Feasibility Study*
- *Groundwater Basin Management Plan*
- *Groundwater Modeling*
- *Urban Water Management Plan*
- *Wastewater Treatment Plant Improvements Project*
- *Long-term Wastewater Management Program*

Primary Elements

- Involve the community
- Confirm planning approach
- Establish evaluation criteria
- Develop and evaluate alternatives
- Develop financial and implementation plan

Public Workshop Schedule

Spring 2006	Planning Approach
Summer 2006	Alternatives Analysis
Fall 2006	Draft Implementation Plan

For more information, contact:

Harry Blohm, *Program Manager* | 831.637.8218



HOLLISTER URBAN AREA WATER AND WASTEWATER *Master Plan*

A Water Resources Master Plan is Underway

The Hollister Urban Area Water and Wastewater Master Plan (Master Plan), will provide a long term vision to guide water resource improvements to the Hollister Urban Area. Overall goals for the Master Plan include improving water quality to the urban area and increasing the reliability of the water supply, while integrating the goals and recommendations from the long-term wastewater and groundwater management programs, and considering regional issues and solutions.



What are Total Dissolved Solids and Where Do They Come From?

Total dissolved solids (TDS) is the measurement of the concentration of dissolved minerals in the water and is commonly known as salts. The Hollister Urban Area water supplies have high TDS, or salt, levels.

The Hollister Urban Area obtains its drinking water from groundwater with a small amount of imported surface water. As water naturally passes over or through soil and rocks before it reaches your home, it slowly dissolves materials and picks up their various mineral constituents. The longer the period of contact between water and soil or rocks, the greater the opportunity for these minerals to dissolve. Homeowners often think of high salt content as hard water and they install a water softener, which in turn, generates even higher salt levels in the water that leaves the home.

The Master Plan is considering alternatives for reducing salt levels in the water before it arrives at your home or treating wastewater so it can be used for growing crops.

The Master Plan is a cooperative effort of the City of Hollister, San Benito County and the San Benito County Water District.

How Do Salts Affect Agricultural Production?

At high levels in the soil, salts can interfere with the uptake of water and nutrients by plants. During irrigation, water will evaporate or be taken up by plants, leaving the salts behind. Unless the salts are flushed out of the soil, salts will accumulate over time and make it difficult to grow crops.

How are Salts Removed From the Water?

An in-house water softener with a special reverse osmosis system can reduce TDS levels, but is more expensive than typical water softeners. Softeners remove concentrated minerals and dispose of them to the sewers. This increases the minerals in the water leaving the wastewater treatment facility as the Hollister treatment facility is not designed to remove salts.

Large scale demineralization or other treatment will be required for the alternatives the Master Plan considers: reducing salt levels in the water before it arrives at your home or treating wastewater so it can be used for growing crops. The disadvantages of treatment include high costs and the disposal of brine concentrate. The advantage is that the water produced is of excellent quality. All solutions are costly, which is why the Master Plan technical studies are needed.

What TDS Levels Are Acceptable?

Average TDS levels currently range from an average of approximately 875 milligrams per liter (mg/L) in the Hollister groundwater supply to 1200 mg/L in the San Juan groundwater basin. Generally speaking, the imported water has TDS levels of 250 to 300 mg/L. For comparison, seawater contains about 35,000 mg/L TDS.

Hollister and Sunnyslope's treated drinking water meets all federal and state drinking water regulations. The State Department of Health Services has recommendations (not requirements) for TDS in drinking water. The recommended upper limit is 1000 mg/L, with a short term maximum of 1500 mg/L. The recommended standard is 500 mg/L. The Master Plan target is a TDS concentration of not greater than 500 mg/L. The target TDS for recycled water used for agriculture is 500 mg/L, not exceeding a maximum of 700 mg/L.

How Do Salts Affect Hollister Homes?

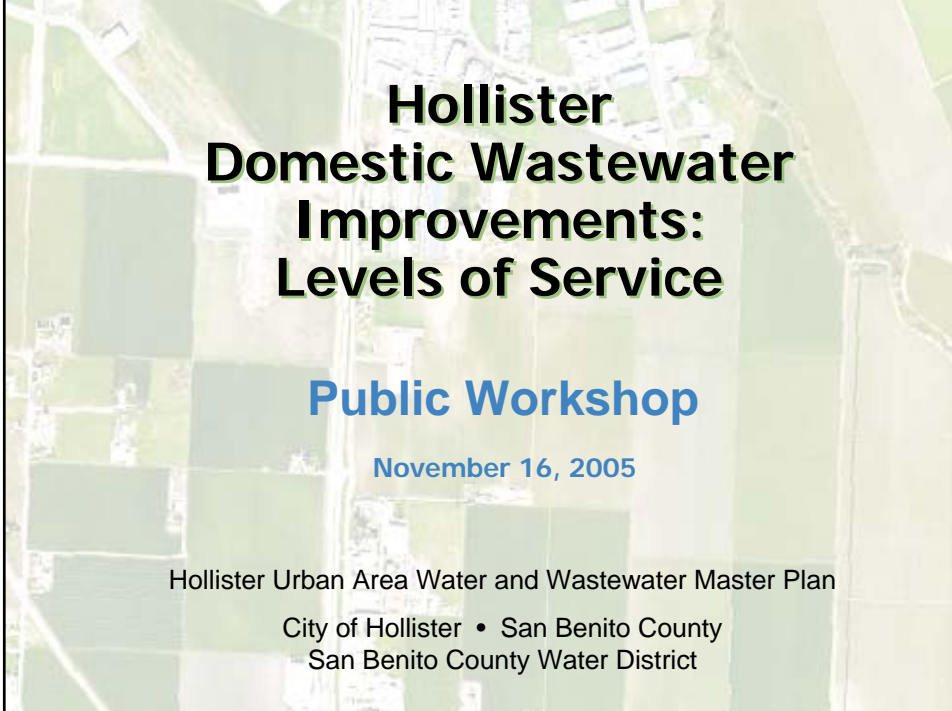
TDS is usually not a health concern, but can be a taste, odor, and color concern for drinking water. At levels over 500 mg/L, TDS can cause gastrointestinal irritation to consumers not used to these levels. Excess sodium may affect those restricted to low sodium diets or those suffering from toxemia. Other concerns include scaling on sinks and fixtures, leaving white spots on cars, deposits and corrosion of hot water heaters and pipes, and reduced effectiveness of detergent and shampoo.

The buildup in water using appliances can shorten appliance life and increase costs to consumers. Preliminary estimates indicate that local groundwater supplies may reduce the life expectancy of residential appliances by up to 25 percent, as compared with a water supply having a TDS level of 500 mg/L. Other residential costs include home softeners, bottled water and increased use of soap and detergents.

For more information, contact:

Harry Blohm, Program Manager | 831.637.8218






**Hollister
Domestic Wastewater
Improvements:
Levels of Service**

Public Workshop


November 16, 2005

Hollister Urban Area Water and Wastewater Master Plan
City of Hollister • San Benito County
San Benito County Water District



Purpose of Workshop

- Define Levels of Service
- Use Example from WWTP Improvements to Demonstrate LOS
- Applications to Project Description and Master Plan



Agenda

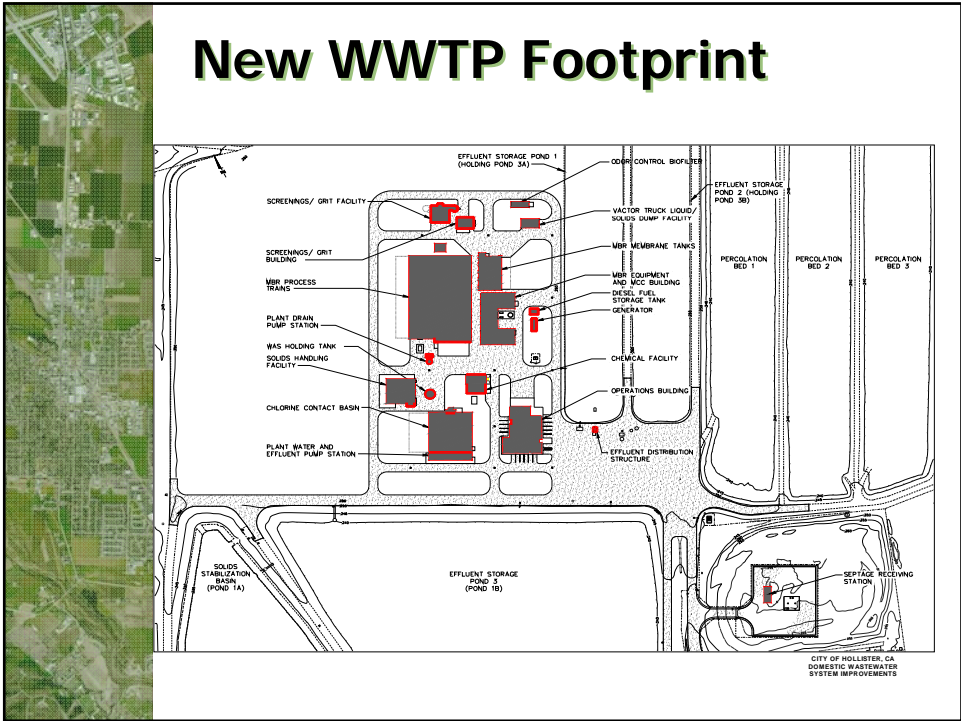
- Introduction and Purpose of Workshop
(John Gregg, Susan Thompson, Clint Quilter)
- Summary of Wastewater Treatment Improvements and LOS Provided
(Clint Quilter, George Harris)
- Master Plan Project Overview
(Harry Blohm)
- Question and Answer Session
(John, Clint, Susan)



Levels of Service = Levels of Reliability

- Water Supply (Quantity, Quality, Availability)
- Water Service (Quantity, Quality, Pressure, Availability)
- Wastewater Treatment, Disposal, and Reuse





- ### Seismic Design Issues
- Highly Seismic Area
 - Zone 4 per Uniform Building Code
 - Seismic Loading and Lateral Movement
 - Liquefaction Susceptibility



WWTP Level of Service Options

- Alternative I - Enhanced Structural Design
 - Protection of Personnel
 - Lowest Cost
- **Selected Alternative II - Piles under Essential Structures**
 - **Minimize Structural Damage**
 - **Intermediate Cost**
- Alternative III - Piles under All Structures
 - Maintain all Plant Operations
 - Highest Cost




Planned Levels of Service Applied to WWTP Improvements

High Level for Critical Facilities and Life Safety for all Facilities

Lower Level for Non-Critical Facilities

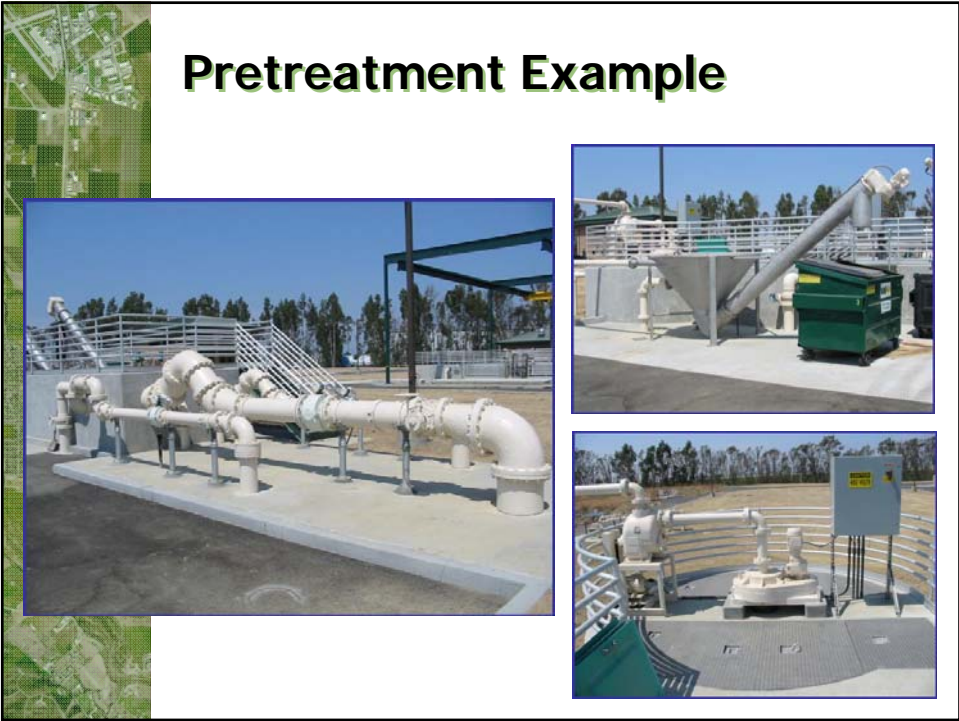
- Stockpiling materials
- Mutual aid
- Emergency response plan
- Trained personnel

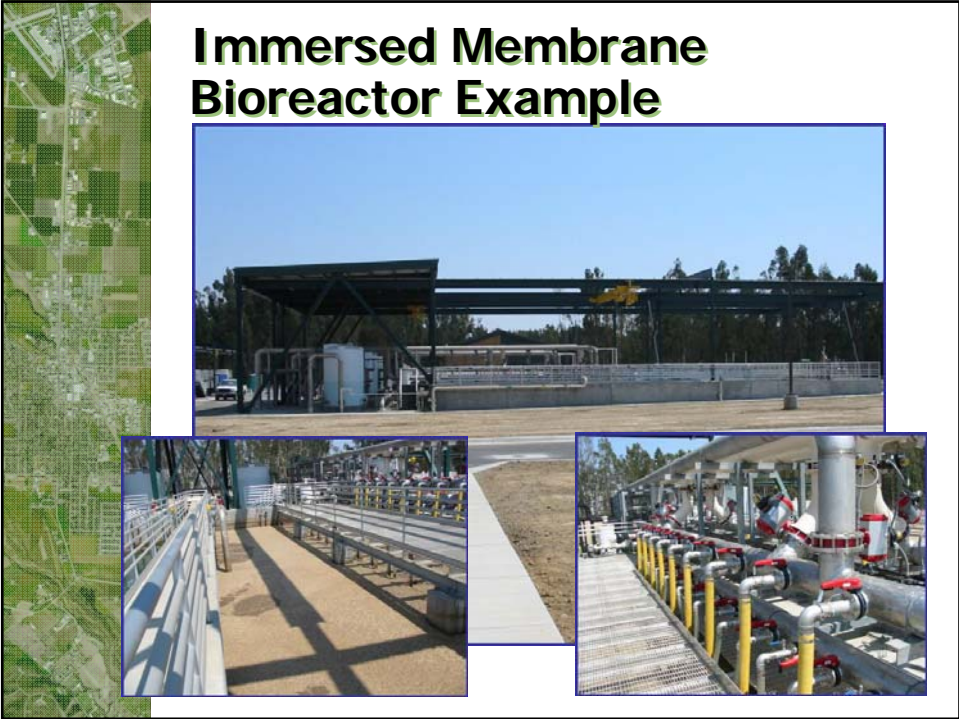



Operational Reliability (LOS) for New WWTP

- More System Redundancy
 - Process
 - Mechanical
- Stand-by Power
- Emergency Storage
 - Raw Sewage
 - Treated Effluent



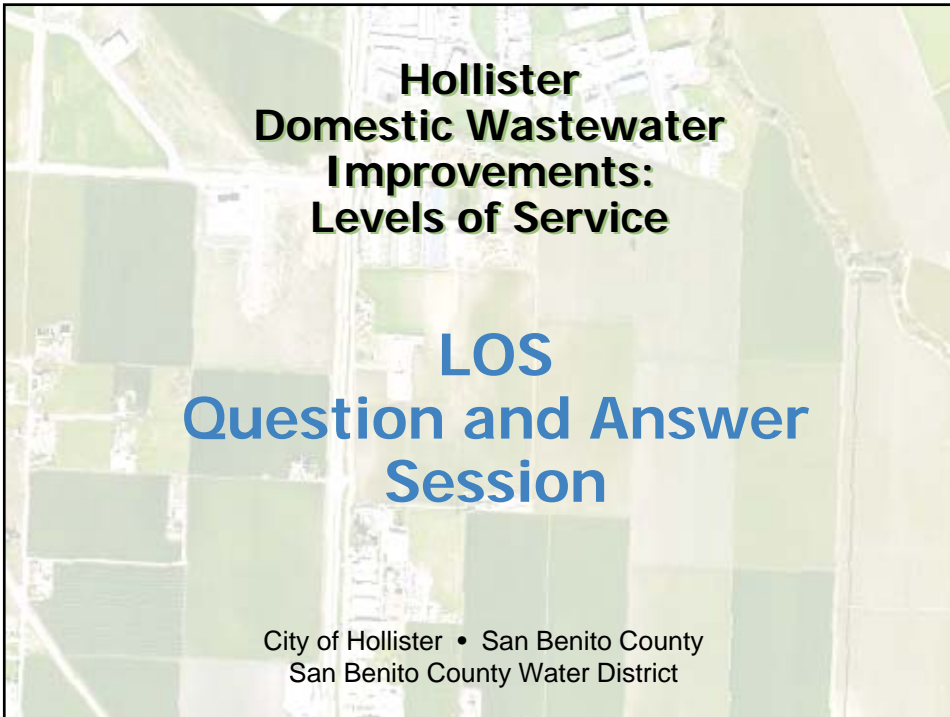






Future Workshop Topics


- Water Supply
- Water Service
- Wastewater Collection, Treatment, Disposal, and Reuse
- Project Description for EIR



Hollister Domestic Wastewater Improvements: Levels of Service

LOS Question and Answer Session

City of Hollister • San Benito County
San Benito County Water District



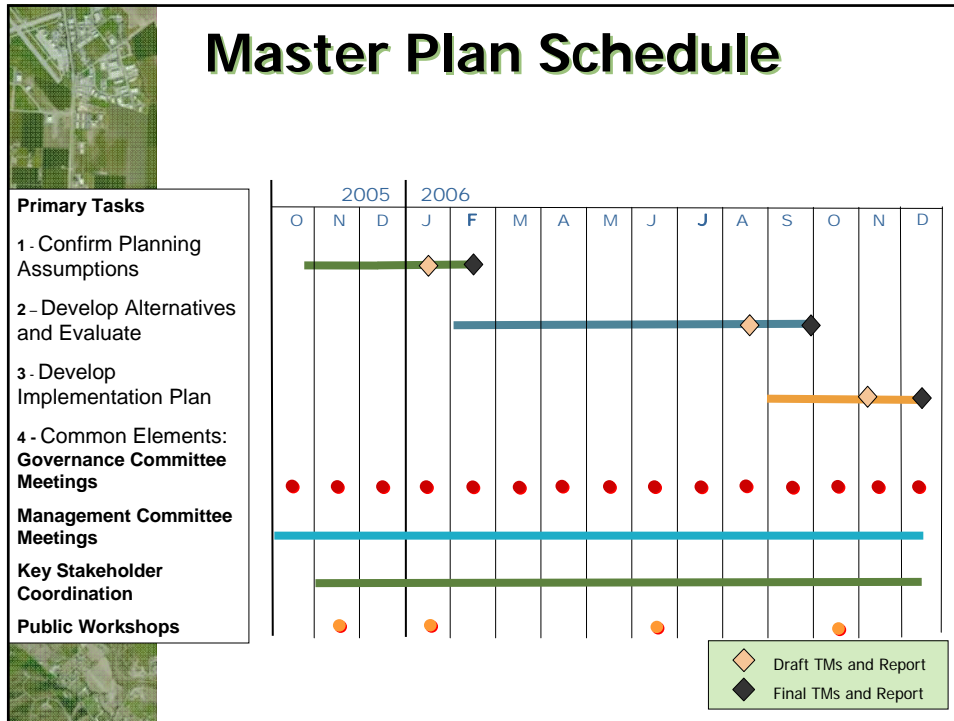
A Master Plan is:

A “blueprint” used to guide future management and use of a resource for an area for an agreed upon time period



Master Plan Goals

- Increase Reliability of Water Supply
- Coordinating Infrastructure Improvements for Water and Wastewater Systems
- Integrate Long-Term WWTP Improvements
- Develop Regional Solutions
- Support Economic Growth and Development




Coordination With Other Projects

- Recycled Water Feasibility Study
- Groundwater Basin Management Plan
- Groundwater Modeling
- Urban Water Management Plan
- Wastewater Treatment Plant (WWTP) Improvements
- Long-Term Wastewater Management Plan and EIR

Hollister Urban Area Water and Wastewater Master Plan

Public Workshop

March 22, 2006



HDR

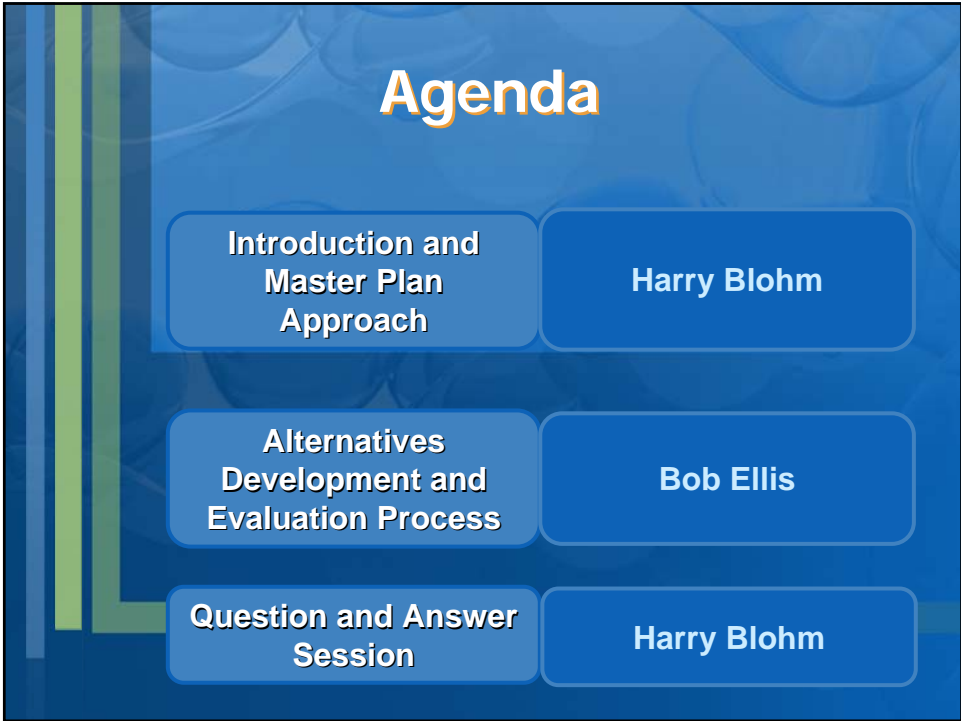
City of Hollister ● San Benito County ● San Benito County Water District

Purpose of Workshop

Inform the public about the master plan and its goals

Obtain input on current activities:


- Alternatives development
- Evaluation process



Hollister Urban Area Water Resources Issues

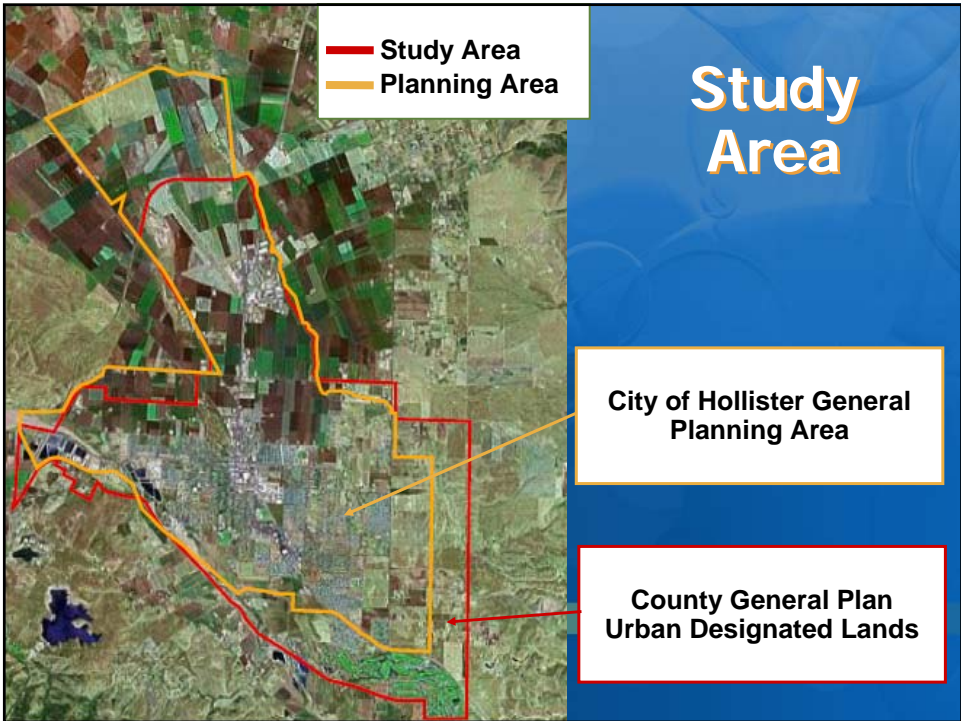
- Water Quality
- Water Supply Reliability
- Water and Wastewater System Improvements
- Regional Balance of Water Resources

Three Party Collaboration Required to Address Water Resources Issues



The image displays three logos side-by-side. From left to right: the City of Hollister logo featuring a yellow building and the text 'HOLLISTER Home town, California (Est. 1877)'; the San Benito County logo featuring a landscape with mountains and a river, with the text 'SAN BENITO COUNTY' and 'ESTABLISHED 1854'; and the San Benito County Water District logo featuring a dam and water, with the text 'SAN BENITO COUNTY WATER DISTRICT', 'ESTABLISHED 1962', 'MAY 2, 1962', and 'HOLLISTER, CA'.

This Master Plan will provide a “blueprint” to guide future management and use of the water and wastewater resources for the Hollister Urban Area through the year 2023.

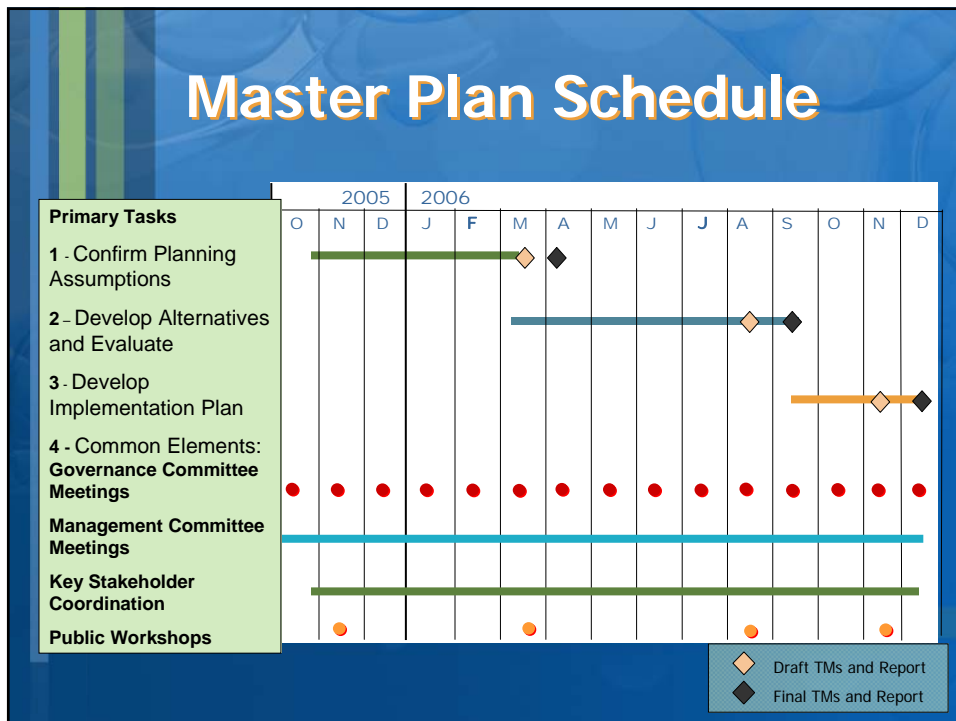


Master Plan Goals

- **Improve water quality**
- **Increase reliability of water supply**
- **Coordinate infrastructure improvements for water and wastewater systems**

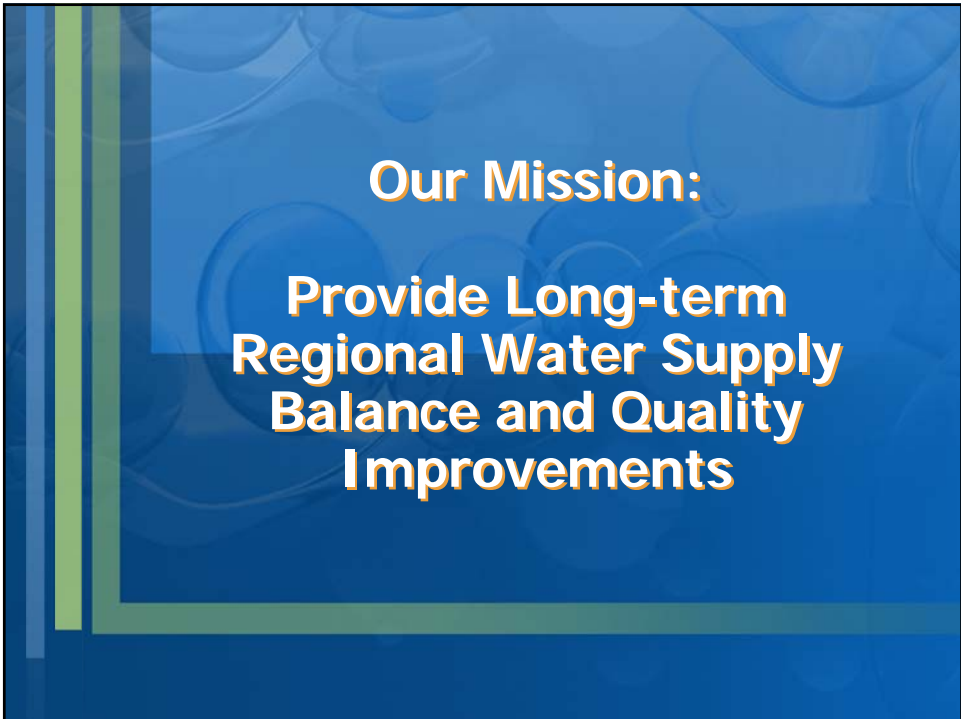
Master Plan Goals (continued)

- **Integrate long-term wastewater management program**
- **Support economic growth and development consistent with general plans**
- **Consider regional solutions**

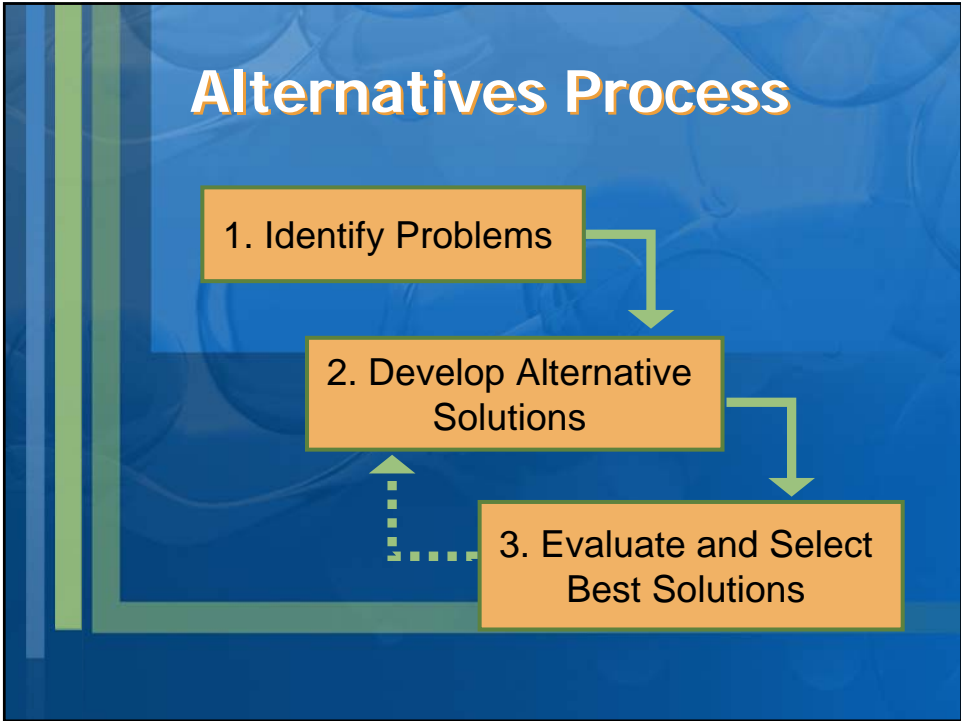




**Alternatives
Development and
Evaluation Process**



**Our Mission:
Provide Long-term
Regional Water Supply
Balance and Quality
Improvements**



Hollister Urban Area Problems

Water Quality Concerns

- Salts impacting drinking water
- Urban wastewater contributing to high salts in water
- Nitrates are localized concern

Current Water Quality Objectives

Drinking Water

- 500 mg/L for TDS or less
- 120 mg/L for hardness (calcium carbonate) or less

Recycled Wastewater

- Target TDS of 500 mg/L
- Not exceed 700 mg/L

Hollister Urban Area Problems

Water Supply Reliability

- Blue valve (CVP) water not consistently available
- Blue valve water availability will continue to decline over time
- Over drafted basin underlying the City

Hollister Urban Area Problems

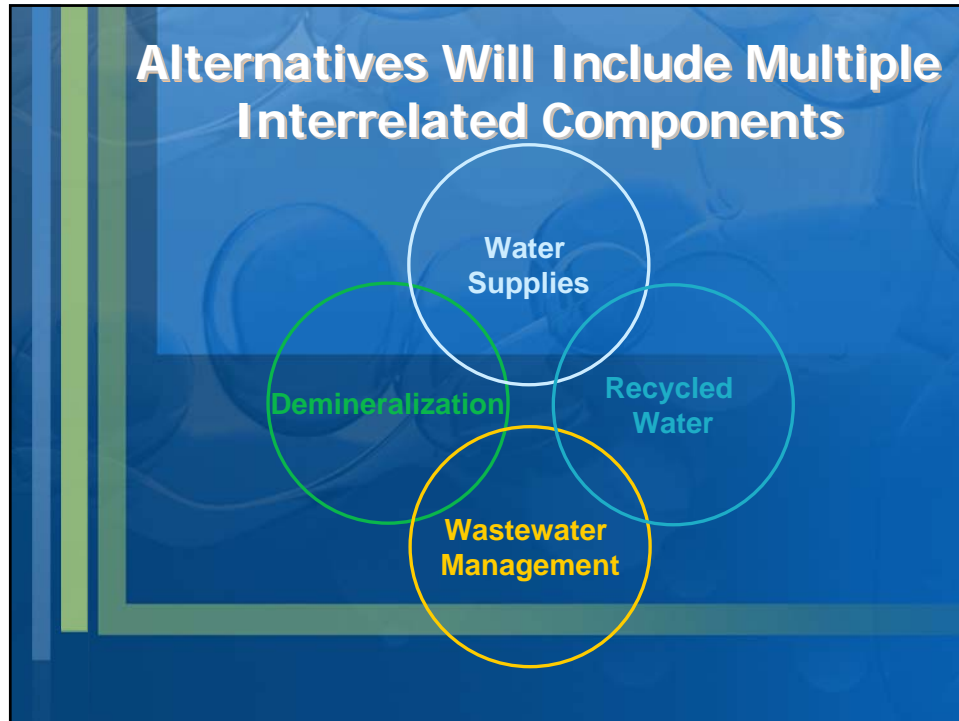
Water and Wastewater System Improvements

- Wastewater system must meet regional needs
- Drinking water supply must meet General Plan needs and regulatory requirements

Hollister Urban Area Problems

Regional Balance of Water Resources

- High groundwater levels
- Over drafted aquifer under City
- Implementation of recycled water program



- ### Alternatives Must Also Incorporate Ongoing Program Solution's
- Water Conservation
 - Salt Management
 - Groundwater Management
 - Long-Term Wastewater Management

Example Facilities for Key Components

Key Components	Potential Facilities
Water Supplies	<ul style="list-style-type: none"> • Alternative Supply Sources • Water System Infrastructure
Demineralization	<ul style="list-style-type: none"> • Treat Wastewater • Treat Groundwater • Brine Disposal Options
Wastewater Management	<ul style="list-style-type: none"> • Collection, Treatment, and Disposal Options
Recycled Water	<ul style="list-style-type: none"> • Regional Treatment Facility • Satellite Facilities with Centralized Plant

Example Program Solutions for Key Components

Key Components	Program Solutions
Water Supplies	<ul style="list-style-type: none"> • Supply Management Options • Water Conservation
Demineralization	<ul style="list-style-type: none"> • Water Softener Ordinance
Wastewater Management	<ul style="list-style-type: none"> • Source Controls
Recycled Water	<ul style="list-style-type: none"> • Marketing Plan • Sell Recycled Water

Example Evaluation Criteria for Alternatives Analysis

- Minimize Costs
 - ✓ Capital
 - ✓ O&M
 - ✓ Consumer
- Maximize Supply Reliability
- Improve Water Quality
- Support Economic Development
- Minimize Environmental Impacts
- Minimize Institutional Barriers and Risk of Delay

Public Input

*Alternatives to Be Considered
Evaluation Criteria*

Tentative Dates of Future Workshops

**Alternative Solutions:
August 2006**

**Draft Implementation Plan:
November 2006**


For More Information

**Contact Harry Blohm,
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(831) 637-8218
Hblohm@SBCWD.com**

Hollister Urban Area Water and Wastewater Master Plan

Public Workshop

October 24, 2006



HDR

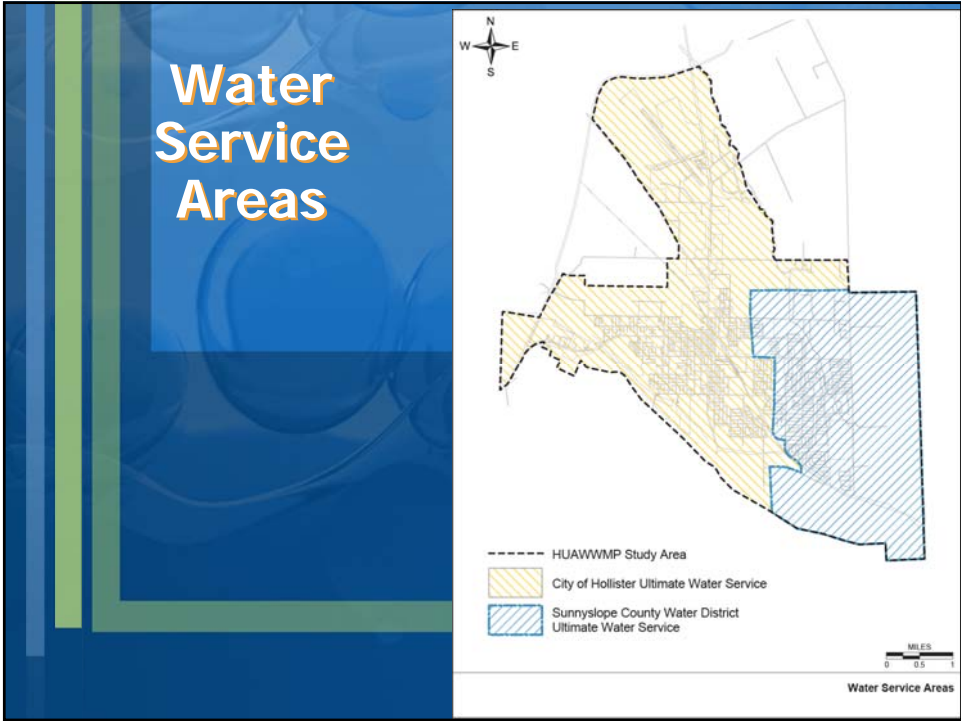
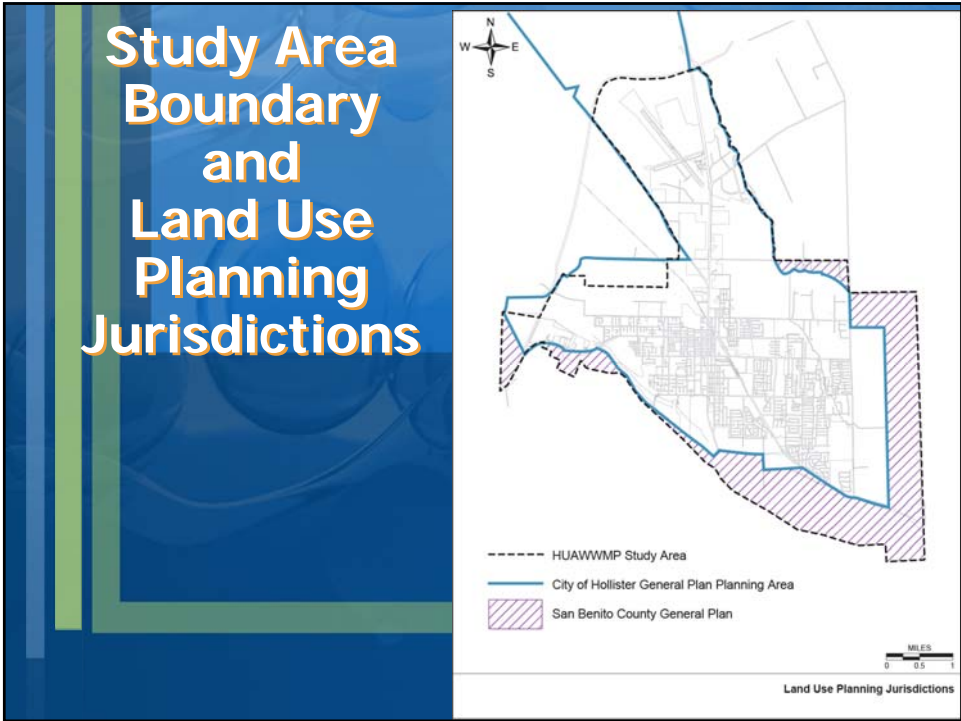
City of Hollister ● San Benito County ● San Benito County Water District

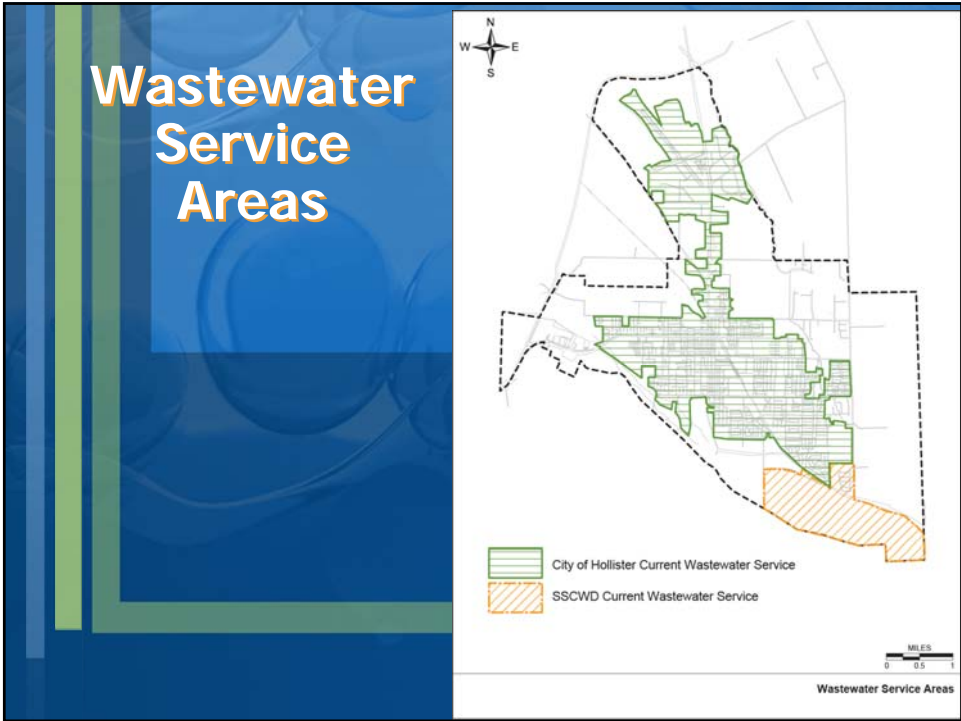
Purpose of Workshop

**Inform the public
about the master plan
and its goals**

**Obtain input on
current activities:
Alternative Projects**







Water Resources Challenges

- Drinking water tastes poor
- Wastewater effluent quality too poor for recycled use unless treated or blended
- Treated wastewater cannot be discharged to river
- Current abundance of groundwater likely to shrink in the future with increased ag and municipal growth

Water Resources Challenges

- CVP availability to be reduced in future
- CVP urban supply not guaranteed during a drought
- CVP ag supply could be minimal during a drought and will have a significant economic impact to region

March 22, 2006 Workshop

Questions included:

- What is the source of salt?
- How will it be removed and where will it go?
- How will costs be considered?

Comments included:

- Use recycled water on crops (how, and is there a health issue?)
- Look beyond the study area. We want regional solutions
- Problem is too much water, especially high groundwater

Accomplishments Since Last Workshop

- SSCWD included
- Planning assumptions
- Demand projections
- Range of conservation levels
- Hydraulic model
- Wastewater treatment options
- Demineralization options
- Screening of alternative concepts
- Detailed alternatives
- Evaluation criteria
- TDS fact sheet
- Coordinate with Pajaro River IRWMP

Results from Technical and Economic Studies

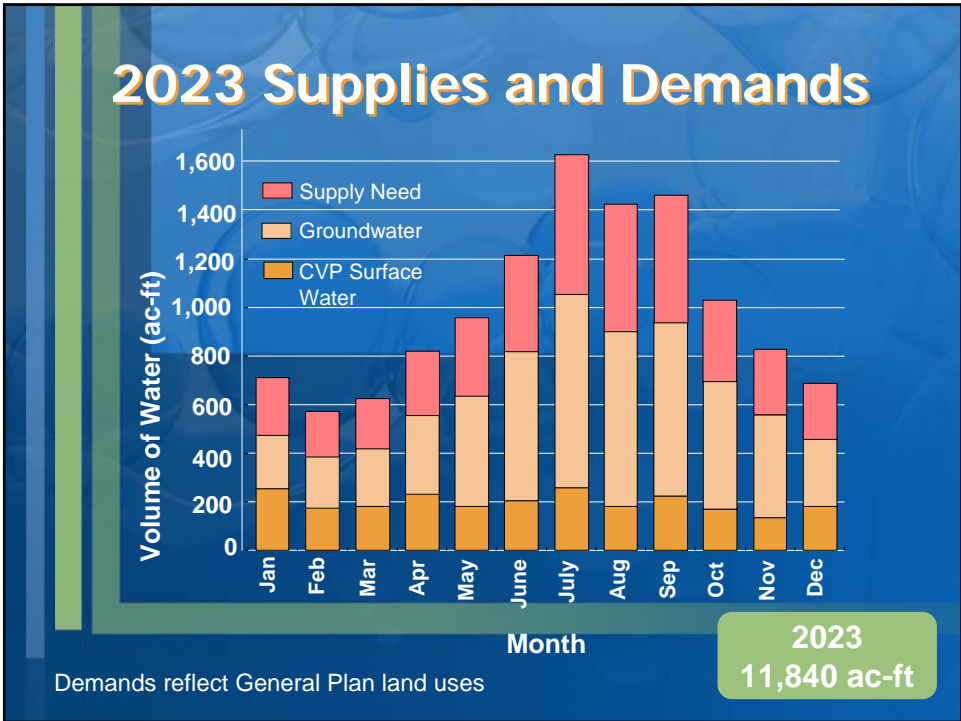
Master Plan Formulation Studies

TDS and Hardness Removal

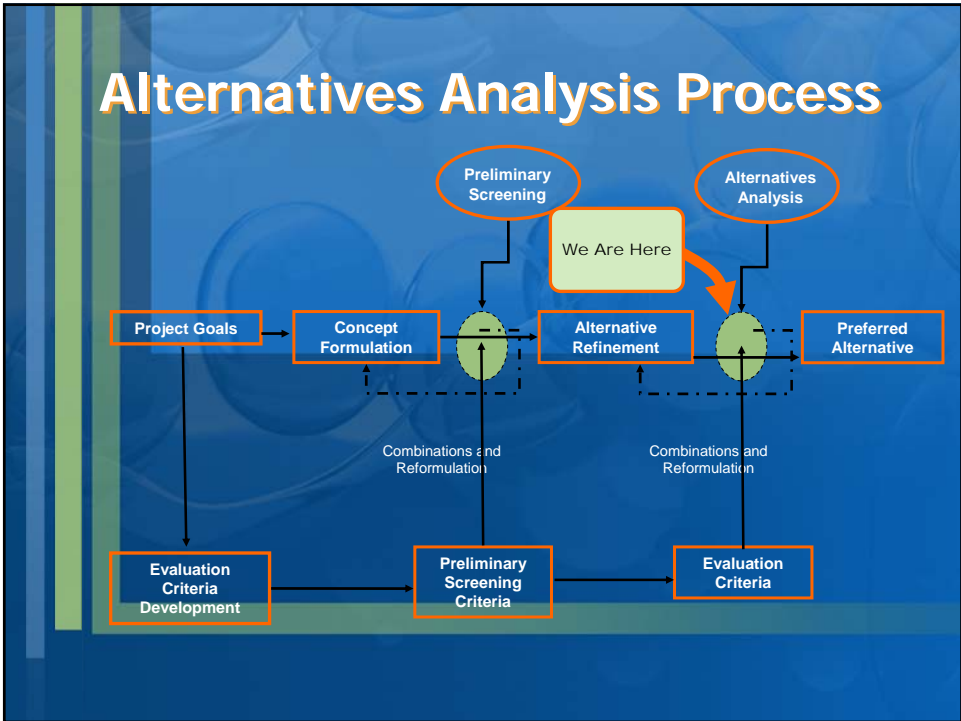
**Demineralize Drinking Water or
Recycled Water**

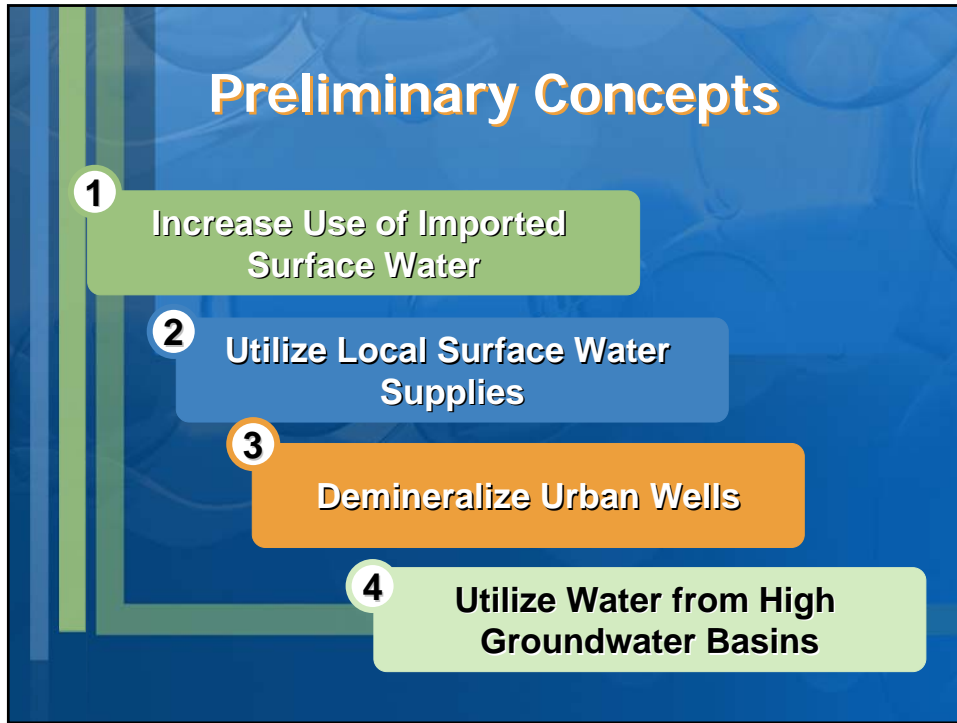
Regional Wastewater Treatment

Water Demand Projections



Alternatives Development





Common Program Elements

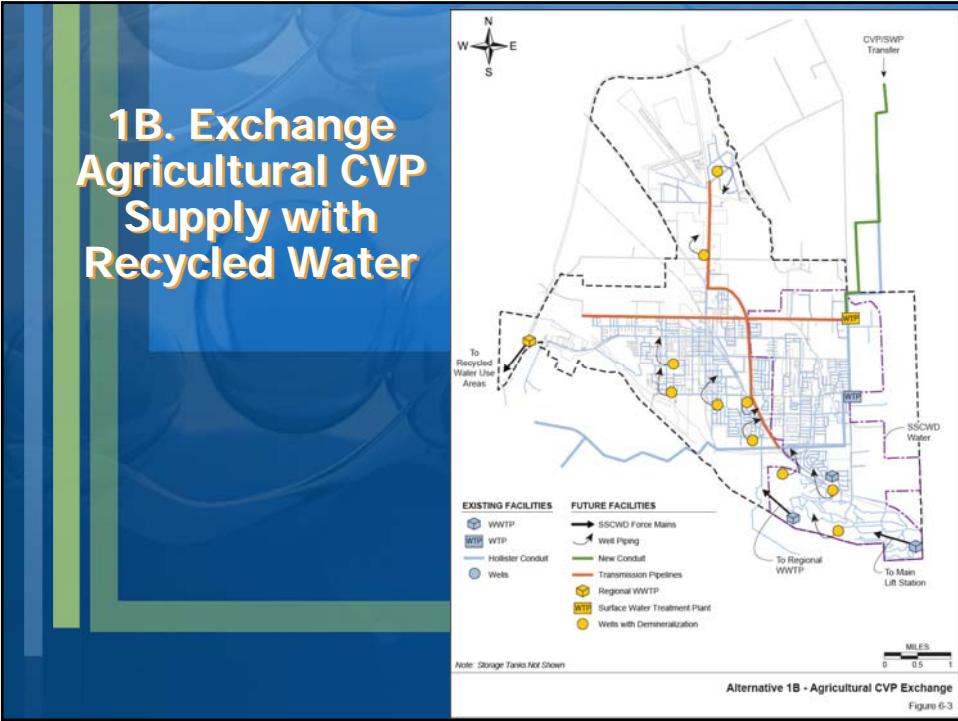
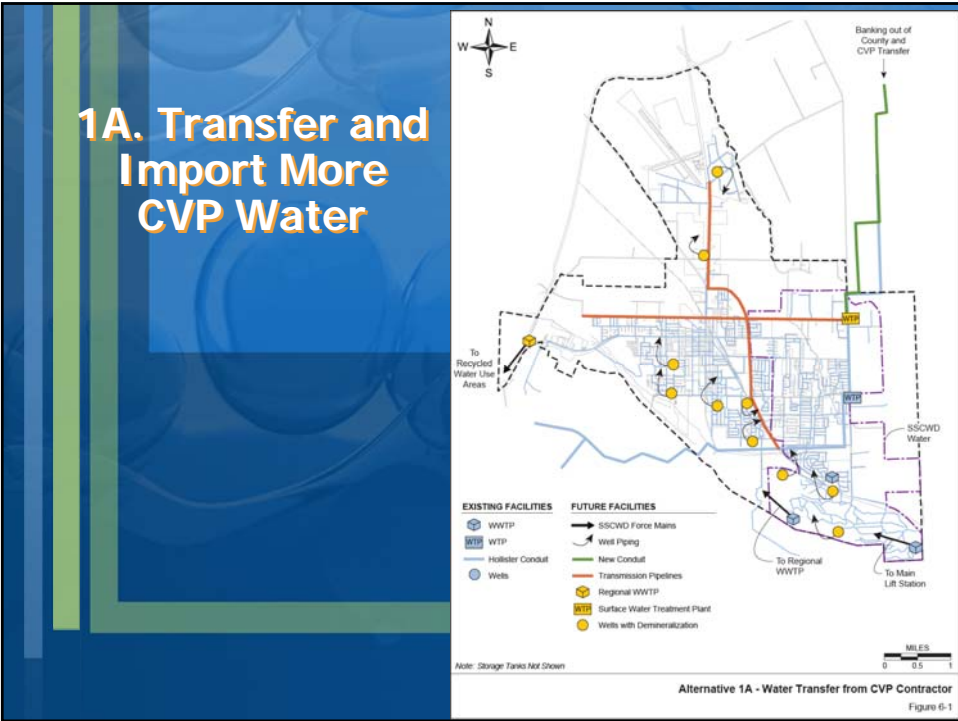
Key Components	Program Solutions
Water Supplies	<ul style="list-style-type: none"> • Water conservation • Optimize conjunctive use operations
Demineralization	<ul style="list-style-type: none"> • Water softener ordinance
Wastewater Management	<ul style="list-style-type: none"> • Source controls
Recycled Water	<ul style="list-style-type: none"> • Urban CVP water exchanged for recycled water • Marketing plan • Sell recycled water

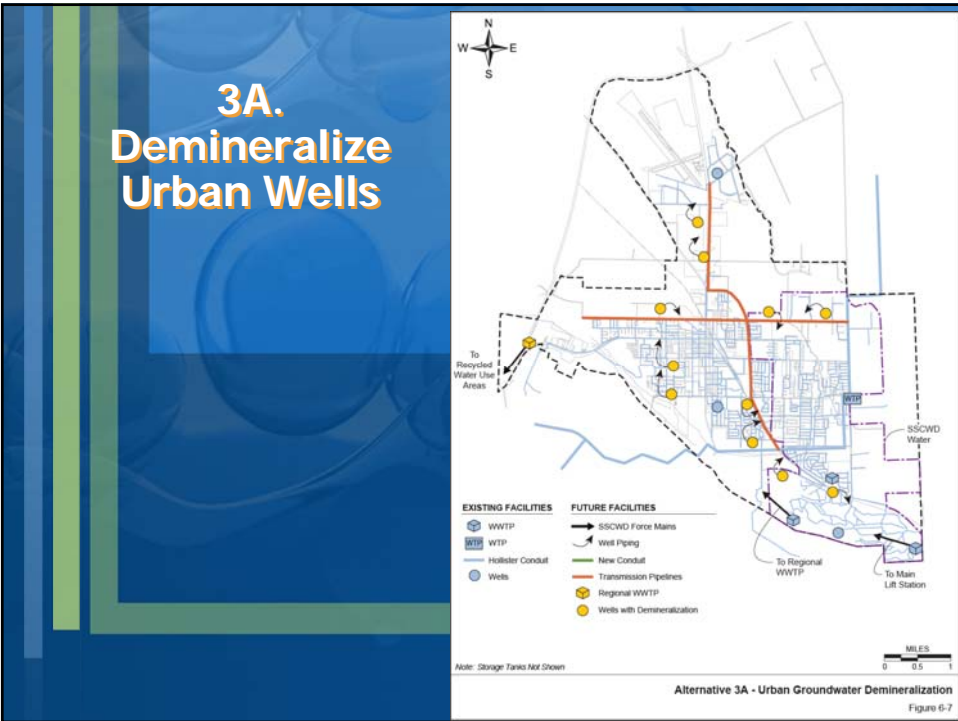
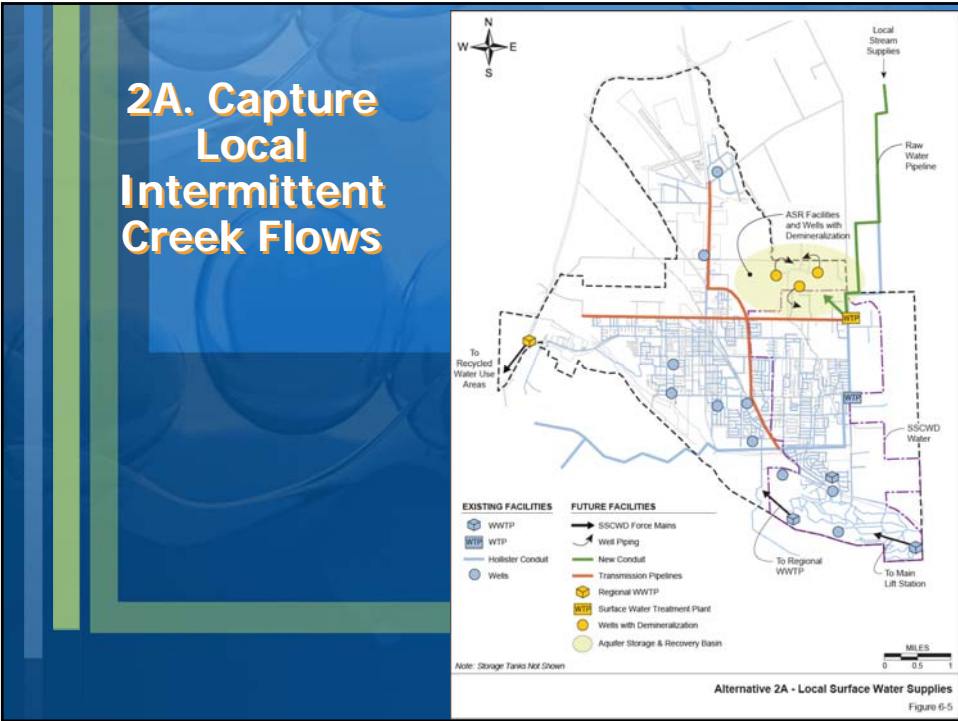
Common Facility Elements

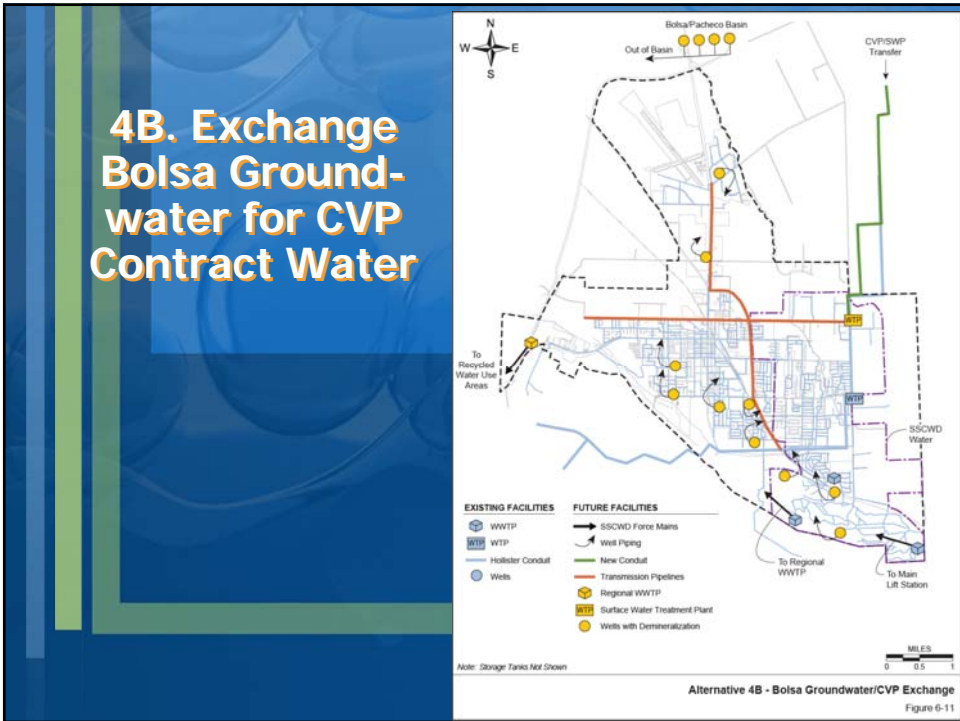
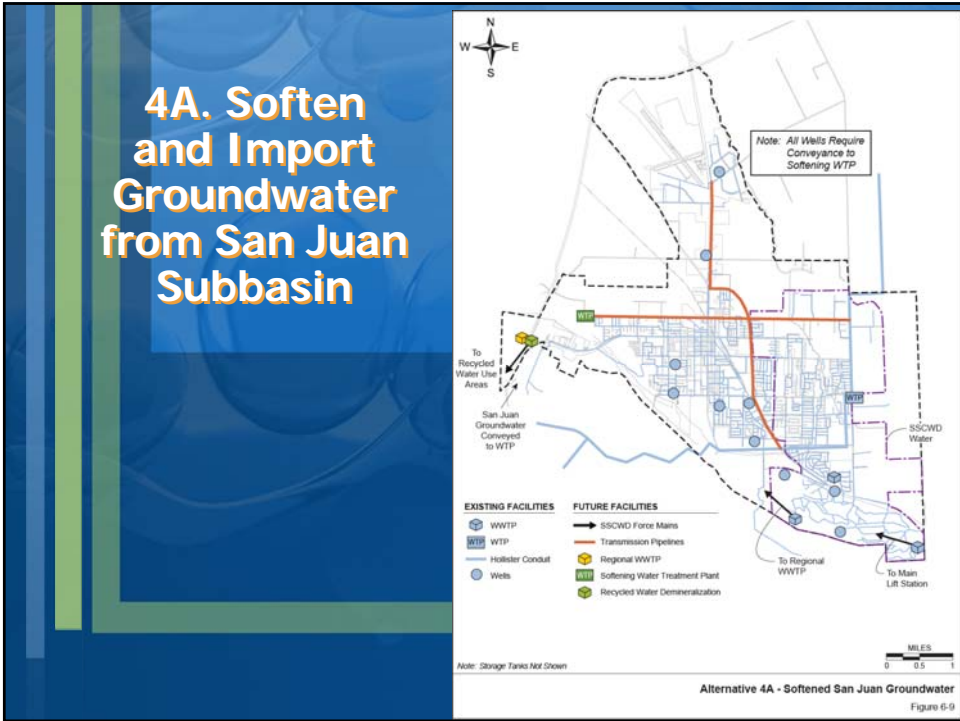
Key Components	Facilities
Water Supplies	<ul style="list-style-type: none"> • Water system infrastructure for growth and operations • “Cross-town Pipelines” for uniform water quality
Demineralization	<ul style="list-style-type: none"> • Brine disposal
Wastewater Management	<ul style="list-style-type: none"> • Wastewater collection infrastructure for growth and operations • New treatment and disposal for LTWMP
Recycled Water	<ul style="list-style-type: none"> • WWTP treatment capabilities

Alternative Projects

1A. Transfer and Import More CVP Water
1B. Exchange Agricultural CVP Water for Recycled Water
2A. Capture Local Intermittent Creek Flows
3A. Demineralize Urban Wells
4A. Soften and Import Groundwater from San Juan
4B. Exchange North Area Groundwater for CVP Water
5A. Combination







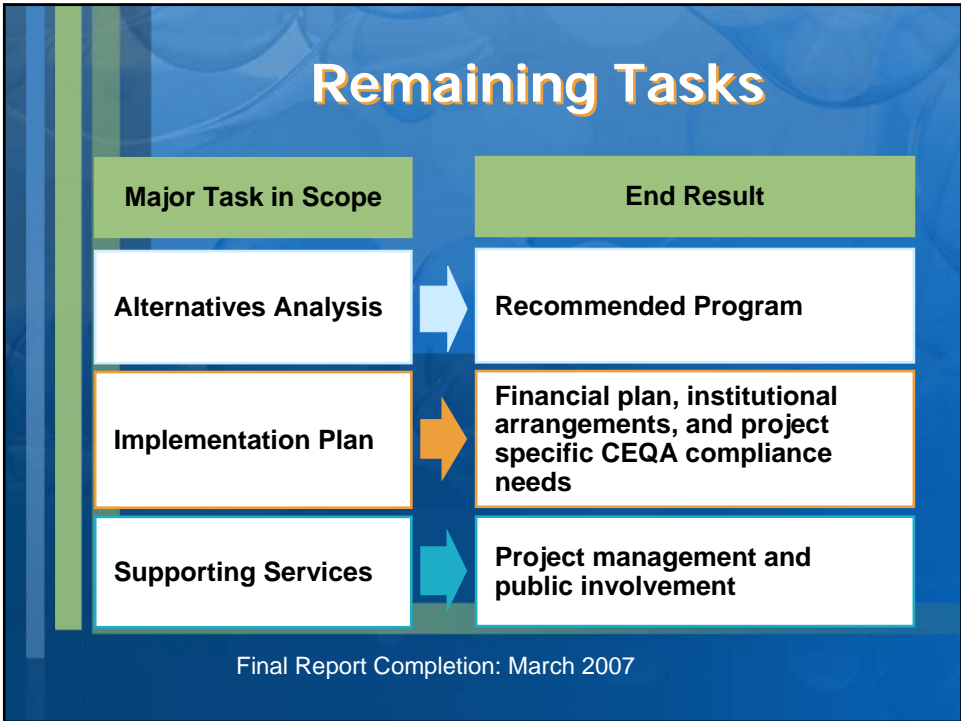
5A. Combination - Best Elements of Alternative Projects

For Example:
Exchange agricultural CVP supply with recycled water (Alt. 1B) and demineralize urban wells (Alt. 3A)

Evaluation Criteria

1. Minimize Costs	6. Minimize Environmental Impacts
2. Meet Drinking Water Quality Goals	7. Provide Flexibility for Phased Implementation
3. Meet Recycled Water Quality Goals	8. Minimize Risk of Implementation
4. Balance Water Supply for Enhanced Reliability	9. Maximize Availability of Supplies
5. Maximize Opportunities for Regional Solutions	

Public Input Needed on Alternative Projects



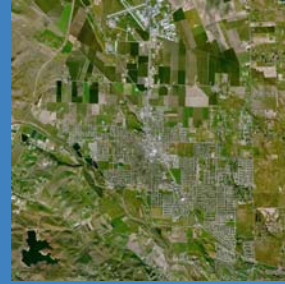
Alternatives Analysis Results

**Governance Committee
Meeting
November 15, 2006**

For More Information

**Contact Harry Blohm,
Program Manager
831.637.8218
Hblohm@SBCWD.com**

Hollister Urban Area Water and Wastewater Master Plan



HDR

City of Hollister ● San Benito County ● San Benito County Water District

TDS and Hardness Removal (Treatment Process)

GOAL: Meet drinking and recycled water quality goals and uniform water quality goal

OPTIONS:

- Softening
- Demineralization

CONCLUSIONS:

1. Demineralize urban wells
2. Imported groundwater could be softened or demineralized

Demineralize Drinking Water or Recycled Water (Treatment Location)

GOAL: Meet drinking and recycled water quality goals and uniform water quality goal

OPTIONS:

- Demineralize groundwater
- Demineralize groundwater and recycled water

CONCLUSION:

Demineralize groundwater

Regional Wastewater Treatment

GOAL: To develop a regional recycled water program

OPTIONS:

- Satellite treatment to achieve recycled water goals
- Regional WWTP with recycled water

CONCLUSION: Policy decision will be needed

1

Increase Use of Imported Surface Water

- Purchase, exchange, or transfer imported supplies
- Exchange imported agricultural water for municipal use
 - Fallow lands
 - Exchange for demineralized supply
 - Exchange for recycled water

2

Utilize Local Surface Supplies

- Capture intermittent creek flows
- Utilize existing reservoirs
- Reclaim quarries for storage
- In-county aquifer storage and recovery
- In-county artificial recharge
- New off-stream reservoir

3

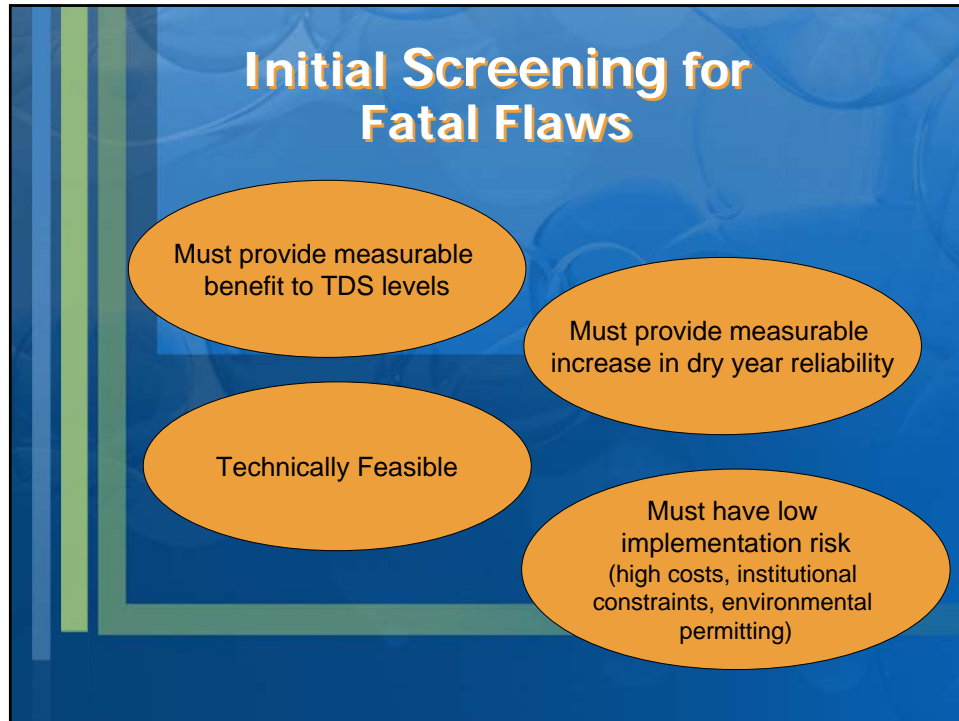
Demineralize Urban Wells

- **Demineralize or soften groundwater supply**
- **Demineralize existing and/or future City and Sunnyslope wells**

4

Utilize Water from High Groundwater Basins




- **Soften or demineralize high groundwater supplies and convey to urban area**
- **Use Bolsa, Pacheco, or San Juan groundwater supplies**



Hollister Urban Area

Water and Wastewater Master Plan

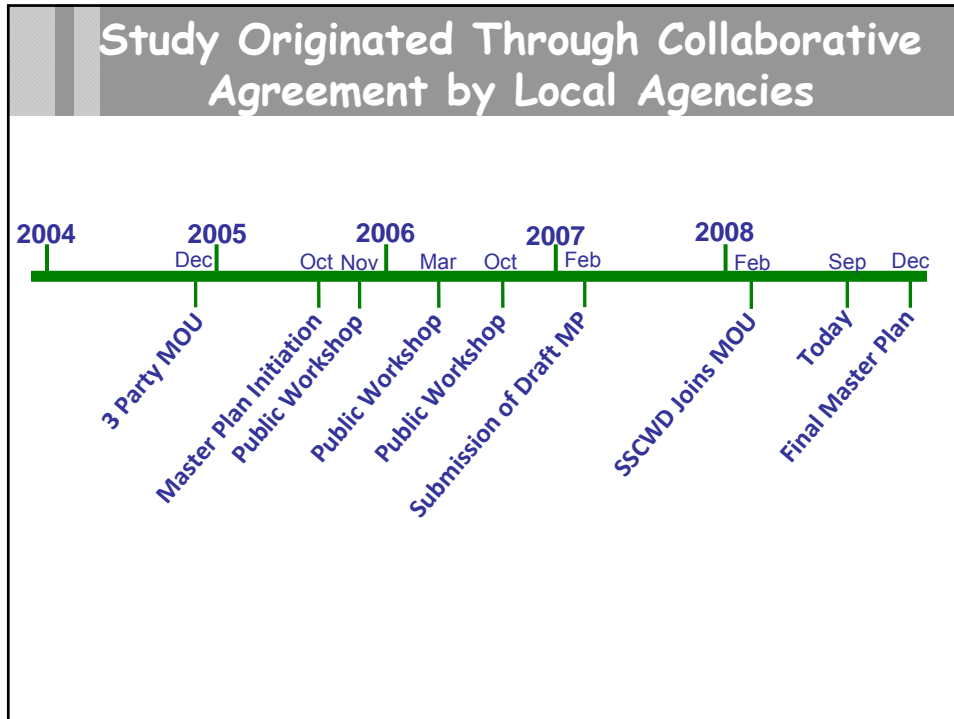
Public Meeting September 23, 2008



HDR City of Hollister ● San Benito County ● San Benito County Water District ● Sunnyslope County Water District

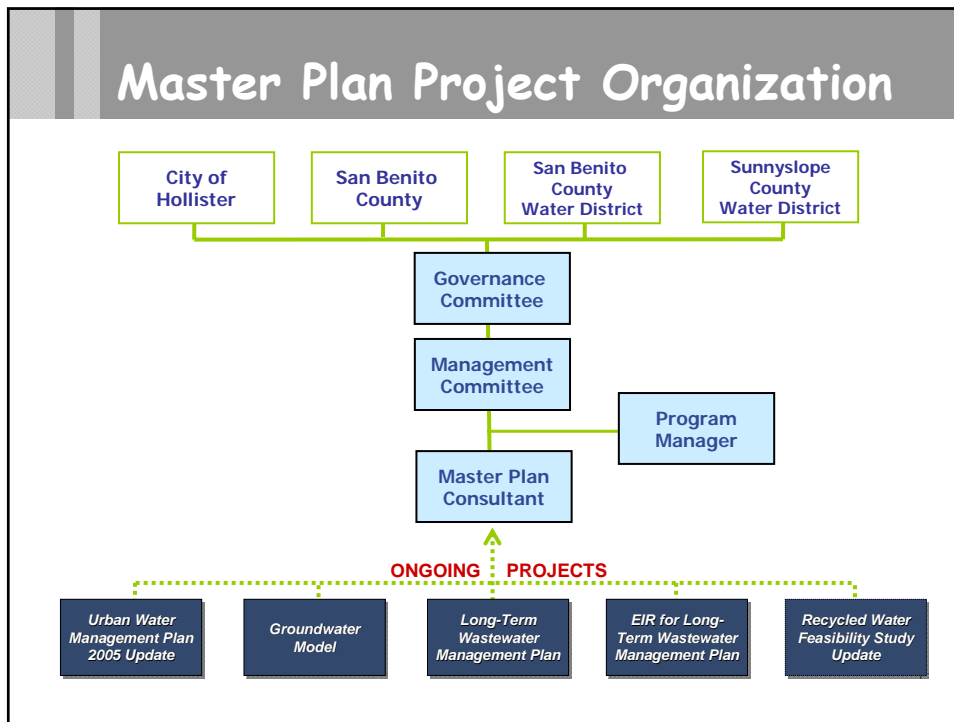
Presentation Agenda

Introduction and Background	Harry Blohm
Problem Definition	Bob Ellis
Alternatives Evaluation	Holly Kennedy
Recommended Plan	Bob Ellis
Next Steps	Harry Blohm



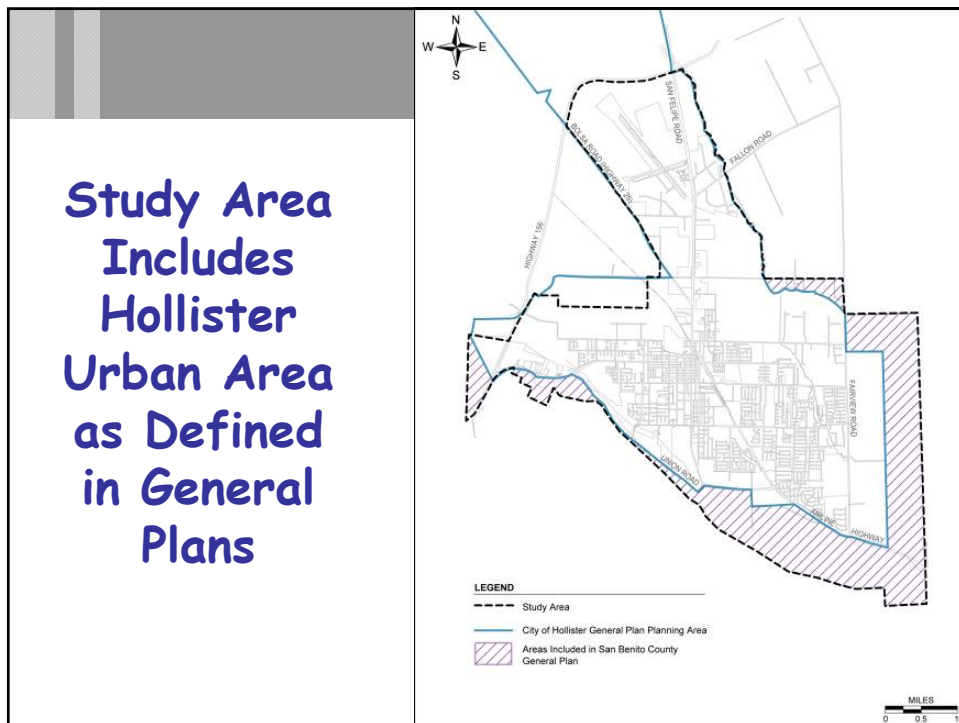
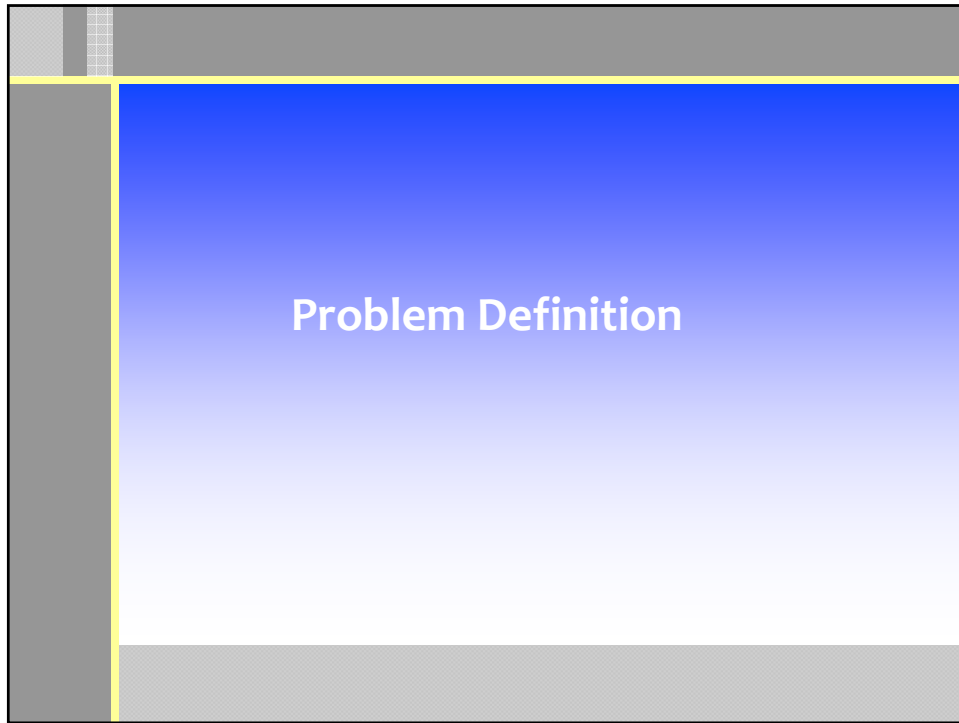
Purpose of Today's Workshop

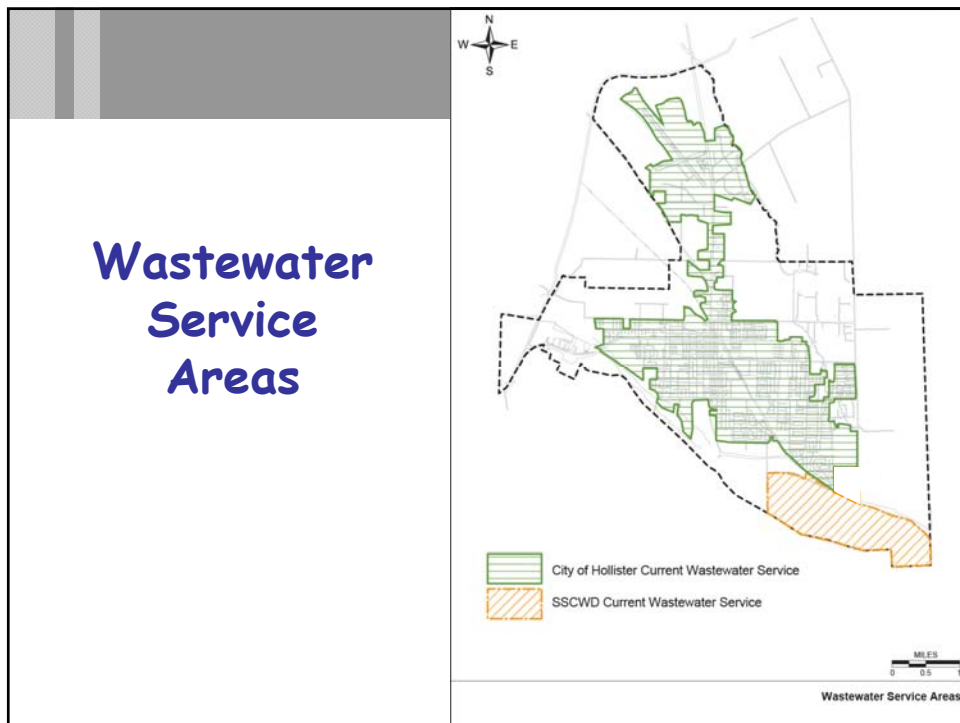
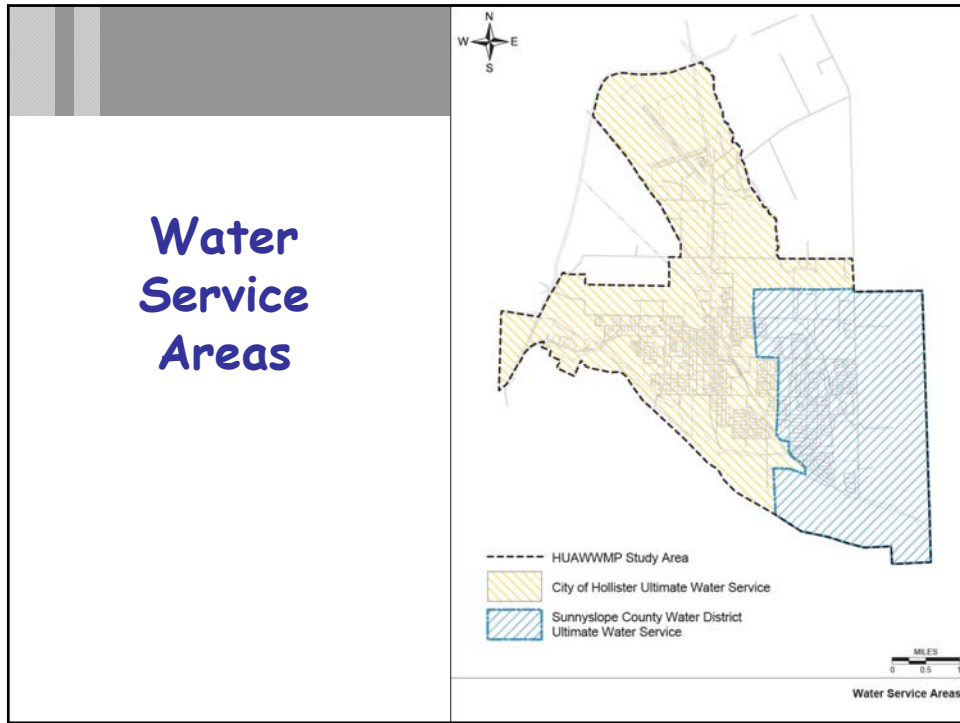
- Inform the Public about the Master Plan's Recommended Alternative and its Benefits
- Obtain Input on Recommended Alternative
- Discuss Next Steps for Implementation



Plan will Provide Long-Term Vision for Water and Wastewater Management

- Improve drinking water and recycled water quality
- Increase reliability of water supply
- Coordinate infrastructure improvements for water and wastewater systems



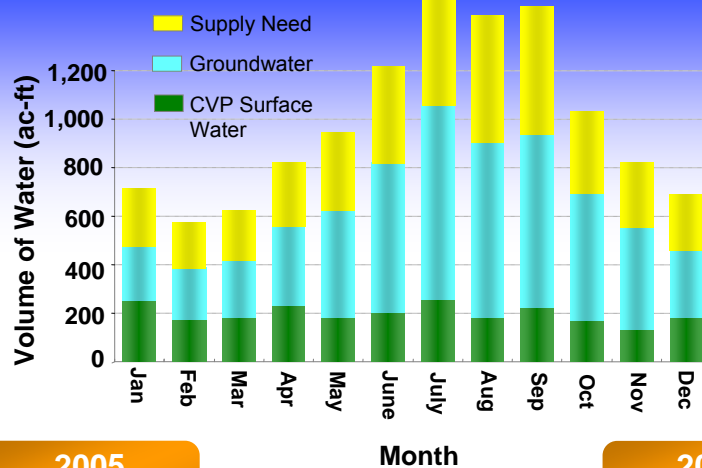


Water Quality Challenges

- Water supply is hard and has high salinity
 - ✦ Drinking water tastes poor and results in widespread home softener use
 - ✦ Wastewater effluent salinity too high for agricultural recycled use unless treated or blended

	Hardness (mg/l)	TDS (mg/l)
Existing Water Quality	300 – 440	700 - 950
MOU Goal	120	500

Future Water Supply Needs Significantly Exceed Available Supply



2005
7,965 ac-ft

2023
11,840 ac-ft

Previous Workshops

Questions included:

- What is the source of salt?
- How will it be removed and where will it go?
- How will costs be considered?

Comments included:

- Use recycled water on crops (how, and is there a health issue?)
- Look beyond the study area. We want regional solutions
- Problem is too much water, especially high groundwater in some areas

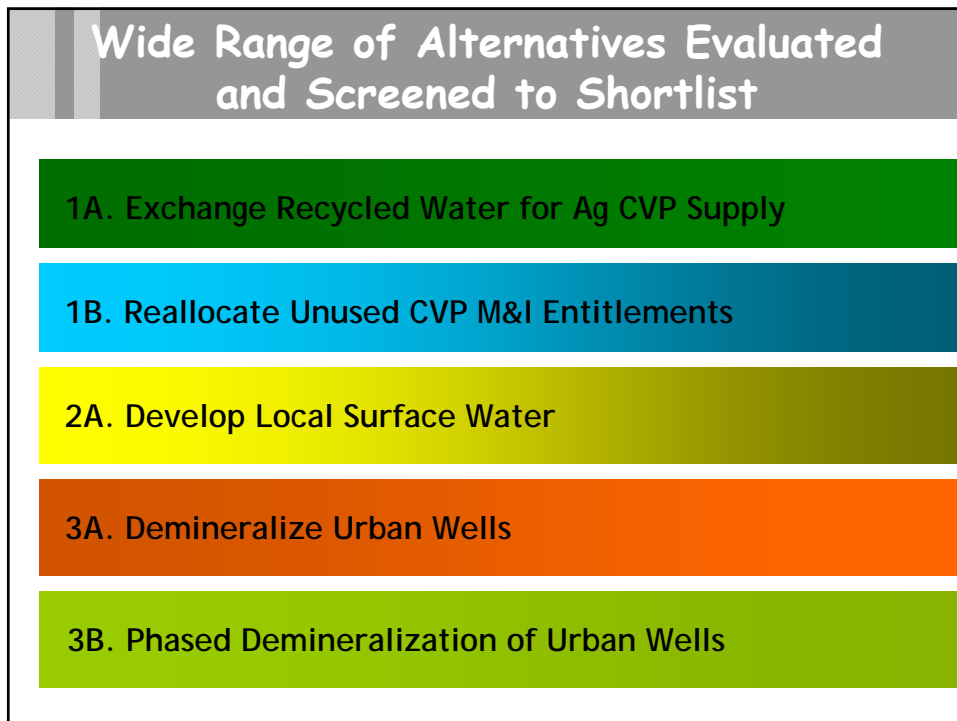
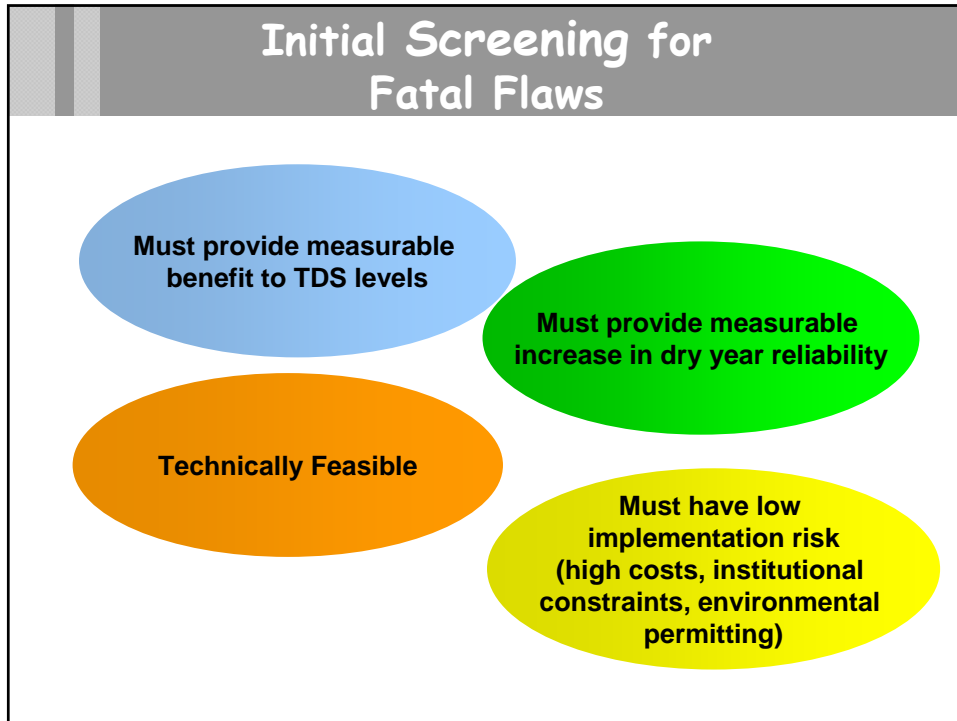
Alternatives Evaluation

Alternatives Build Upon Projects Currently in Progress or Planned

- **Facilities Under Construction**
 - New DWTP and Seasonal Storage Reservoir
 - Phase 1 Recycled Water
- **Currently Planned Projects**
 - Lessalt WTP Upgrade
 - SSCWD WWTP Upgrade
- **Reasonably Expected Before 2023**
 - New Wells to Support Growth
 - Expansion of DWTP
 - Phase 2A Recycled Water Project

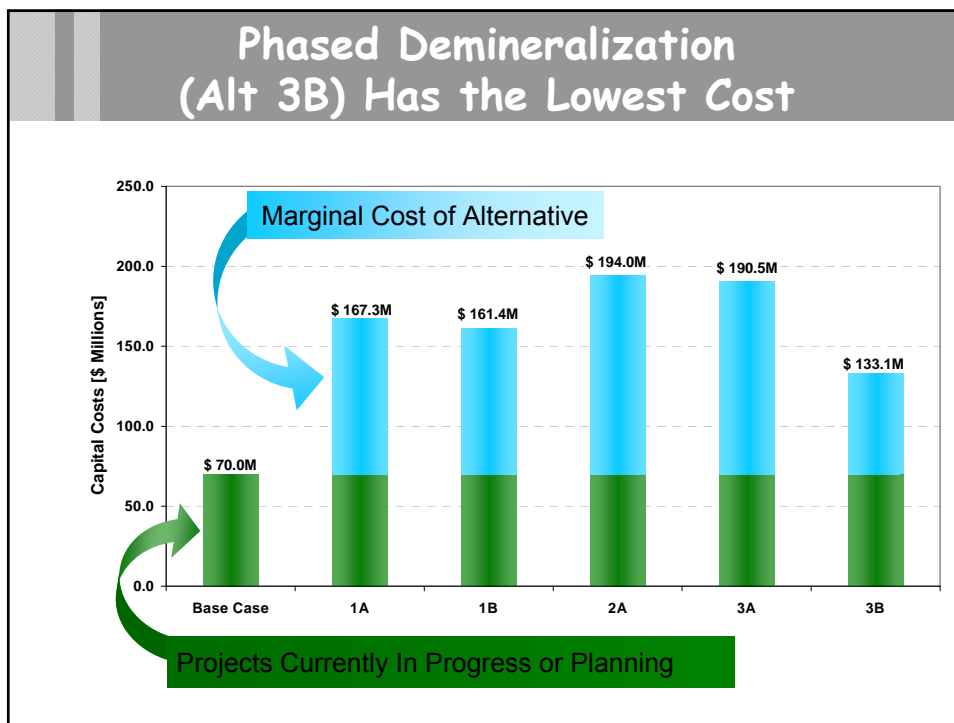
Preliminary Concepts

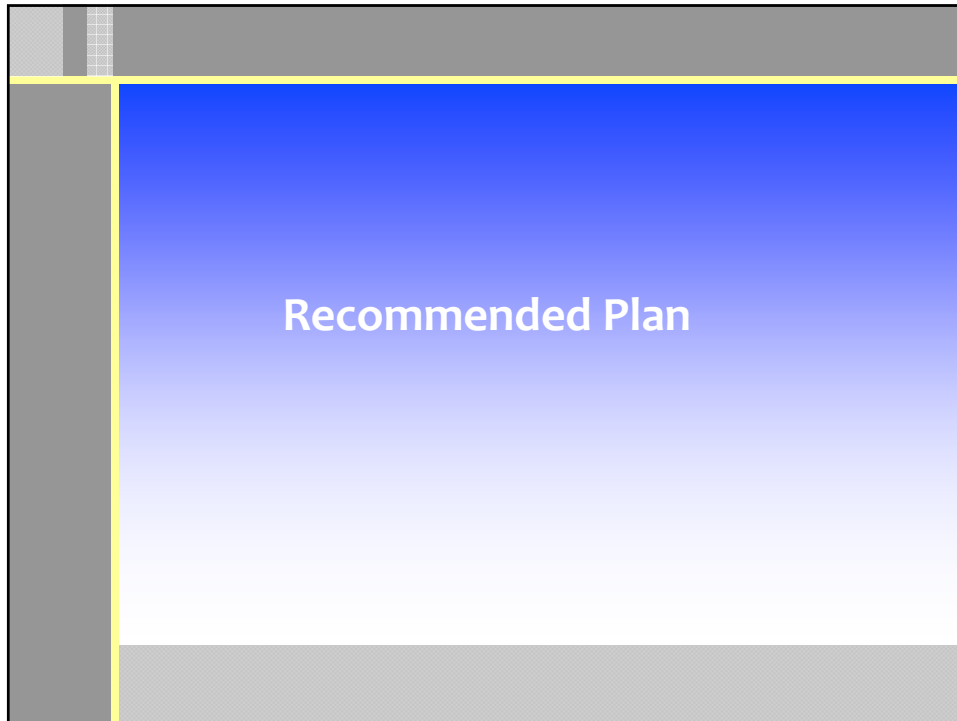
- 1 **Increase Use of Imported Surface Water**
- 2 **Utilize Local Surface Water Supplies**
- 3 **Demineralize Urban Wells**
- 4 **Utilize Water from High Groundwater Basins**



Alternatives Evaluated on Both Economic and Noneconomic Criteria

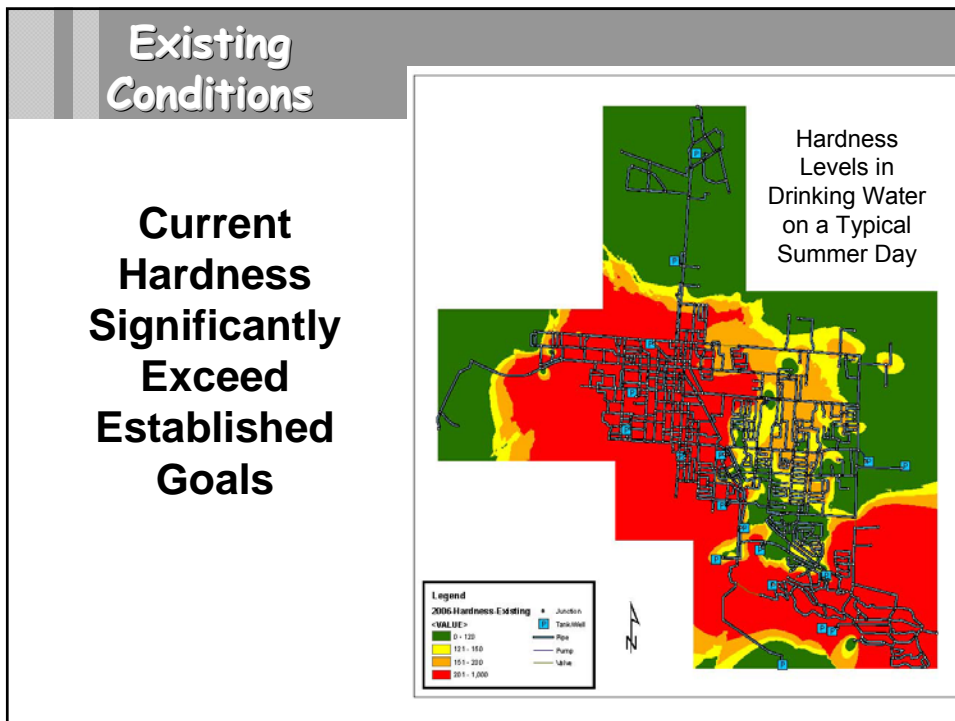
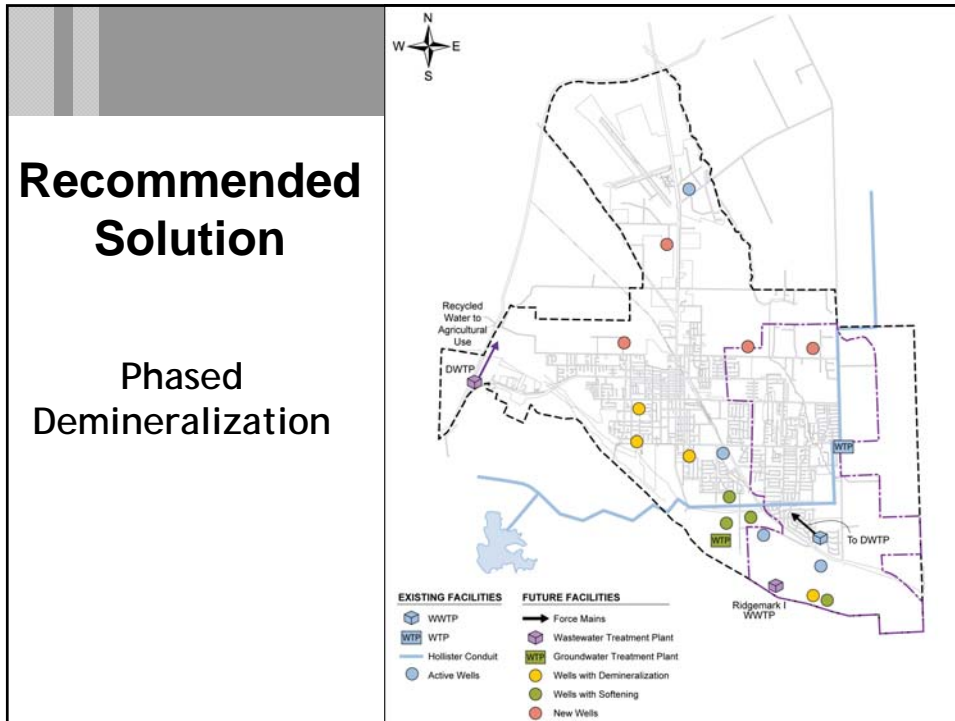
<ul style="list-style-type: none"> ● MOU-Based Criteria <ul style="list-style-type: none"> ● Minimize Costs ● Meet Drinking Water Quality Goals ● Meet Recycled Water Quality Goals ● Balance Water Supply for Enhanced Reliability 	<ul style="list-style-type: none"> ● Other Criteria <ul style="list-style-type: none"> ● Maximize Availability of Supplies ● Maximize Opportunities for Regional Solutions ● Minimize Environmental Impacts ● Maximize Flexibility for Phased Implementation ● Minimize Risks of Implementation
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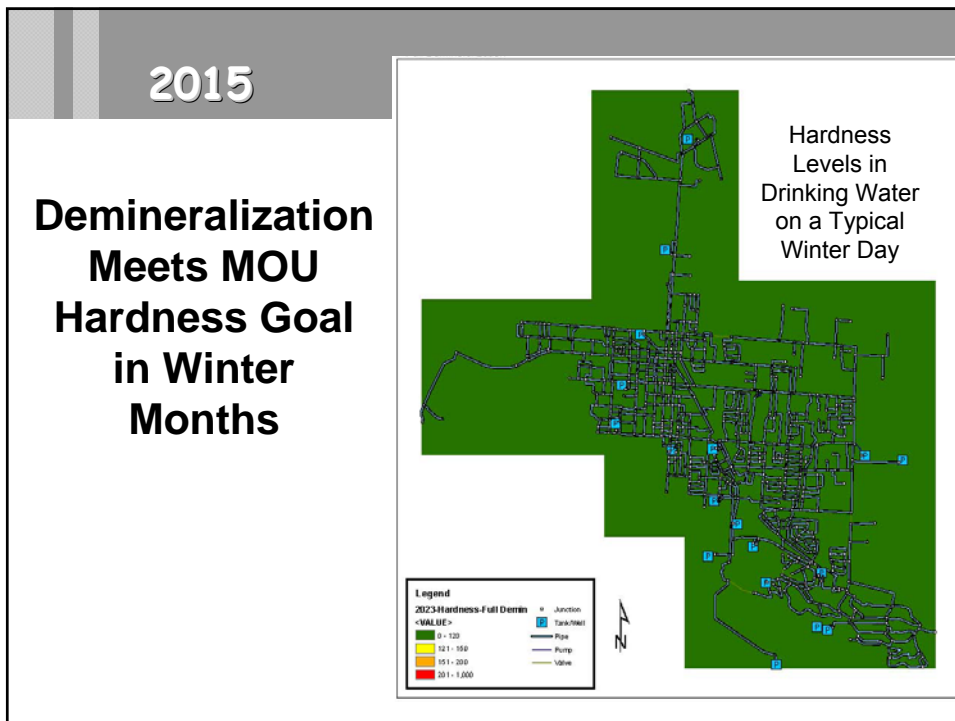
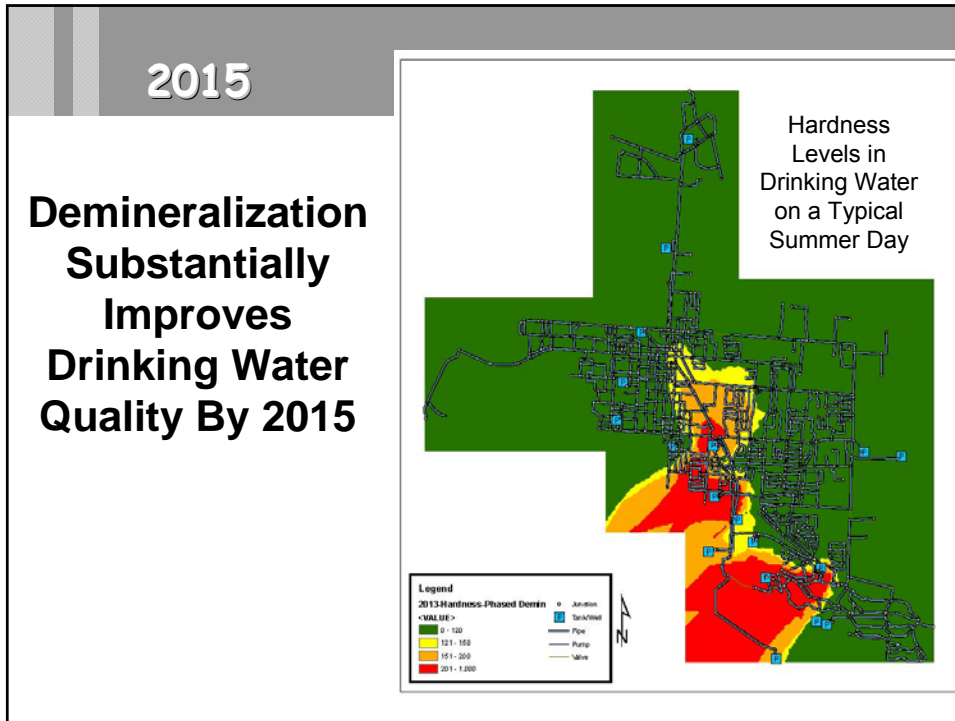


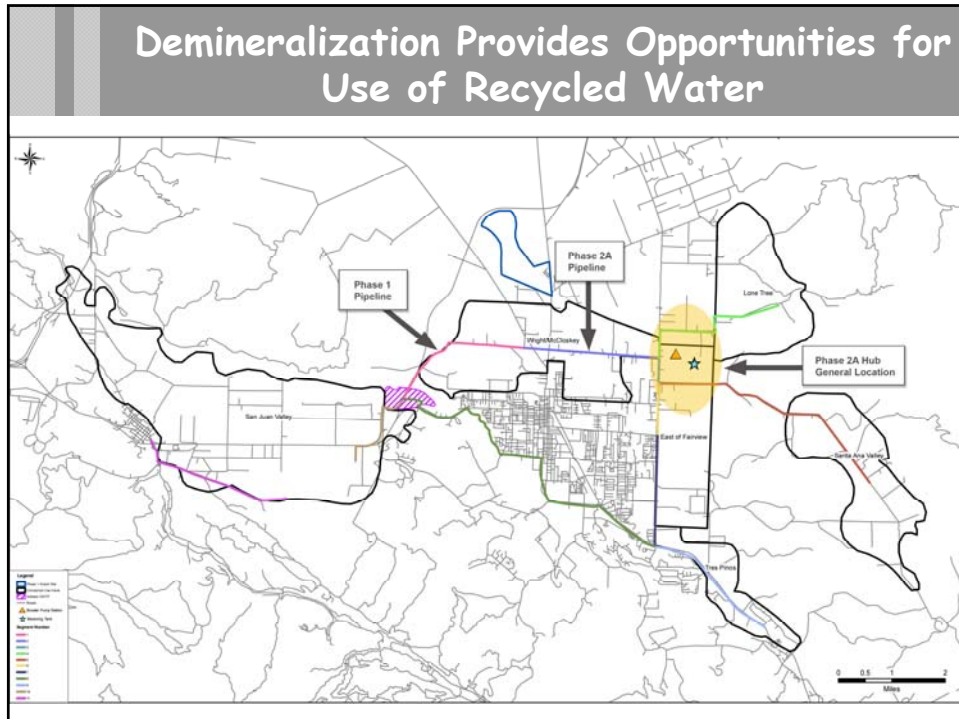


Recommended Plan Should Include Short-Term and Long-Term Actions

- Groundwater demineralization best meets goals and evaluation criteria
- Phased demineralization (Alt. 3B) is logical first step to demineralize urban wells, providing:
 - Opportunity for Phasing,
 - Opportunity for Cost Savings, and
 - Addresses Water Quality Issues within Service Area
- Other alternatives involving CVP (Alts 1A and 1B) and local surface supplies (Alt 2A) should continue to be pursued for long-term water supply needs







Implementation Phasing

Current Projects

- Ongoing program solutions and current wastewater projects

Phase 1 - Near Term (to 2015)

- Phase 1 implementation of groundwater demineralization facilities
- Recycled water for agricultural use

Phase 2 - Intermediate Term (to 2023)

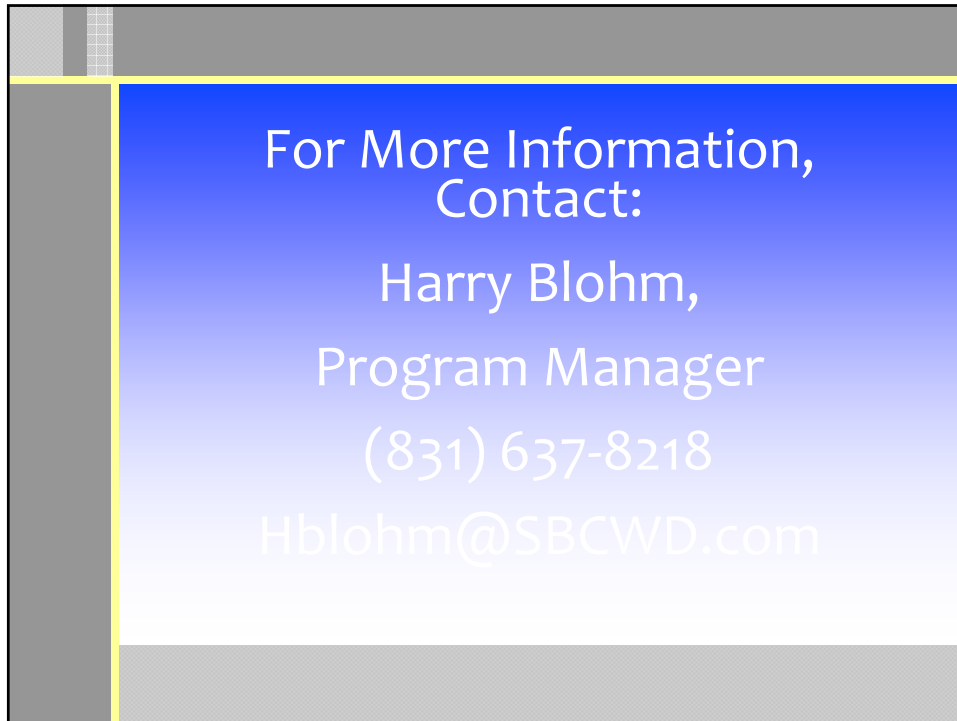
- Phase 2 implementation of groundwater demineralization facilities
- Expand DWTP and recycled water facilities

Phase 3 - Long Term (after 2023)

- Development of a long-term water supply meeting projected demands



- ### Next Steps
1. Benefit and Cost Allocation
 2. Financing Strategy
 3. CEQA Compliance
 4. Permitting Strategy
 5. Engineering
 6. Coordinate with Ongoing Programs
 7. Stakeholder Outreach
 8. Initiate Investigation of Long-term Water Supply Options



For More Information,
Contact:
Harry Blohm,
Program Manager
(831) 637-8218
Hblohm@SBCWD.com

A. Problem Definition: Water resource issues to be addressed by the Master Plan:

- Drinking water tastes poor and results in widespread home softener use
- Wastewater effluent salinity too high for recycled use unless treated or blended
- CVP reliability and availability is declining
- Coordination of water and wastewater system improvements
- Regional balance of water resources including high groundwater areas

B. Project Objectives:

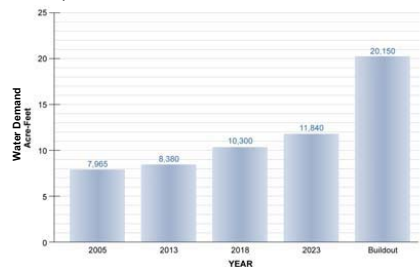
To provide a long term vision, through 2023, of water and wastewater management actions and infrastructure improvements for management of those resources for the Hollister Urban Area

C. Evaluation Criteria Development:

Developed through workshops with Governance and Management Committees and public input.

D. Alternative Formulation:

Based upon the projected water demands and wastewater flows in the study area, through 2023, four concepts were developed.

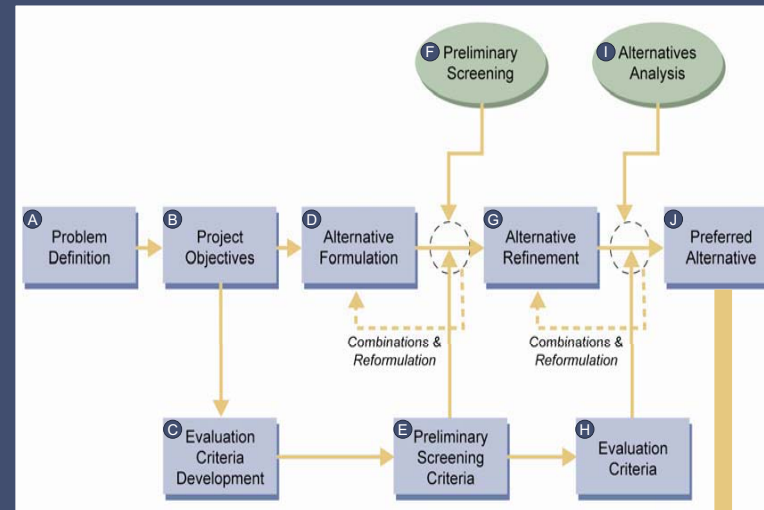


- Concept 1 – Increase Use of Imported Surface Water
- Concept 2 – Utilize Local Surface Water Supplies
- Concept 3 – Demineralization of Urban Wells
- Concept 4 – Utilization of Water from High Groundwater Basins

E. Preliminary Screening Criteria:

- Measurable benefit to TDS and hardness levels
- Measurable increase in dry year reliability
- Minimum implementation risks associated with technical feasibility, institutional constraints, high costs, and environmental permitting
- The ability to be combined with other concepts

Master Plan Process

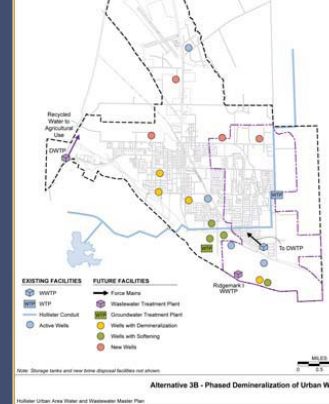


I. Alternatives Analysis:

Alternatives	Evaluation Criteria										
	Minimize Costs	Meet Drinking Water Quality Goals	Meet Recycled Water Quality Goals	Balance Supply for Reliability	Maximize Availability of Supplies	Maximize Opportunities for Regional Solutions	Minimize Environment + all Impacts	Provide Flexibility for Phased Implementation	Minimize Risks of Implementation		
1A – Exchange Recycled Water for Ag CVP Supply	L	H	H	L	M	L	M	L	L		
1B – Reallocate Unused CVP M&I Entitlements	L	H	H	L	M	L	M	L	L		
2A – Develop Local Surface Water	L	H	H	L	M	L	M	L	L		
3A – Demineralization to Meet Water Quality Goals	L	H	H	H	H	M	M	H	M		
3B – Phased Demineralization of Urban Wells	M	M	M	H	H	M	M	H	H		

Legend: L = Low, M = Medium, H = High

Alternative 3B provides the best combination of maximum reliability, maximum availability, and flexibility for phased implementation while minimizing cost and risk.



F. Preliminary Screening:

Concept/Alternative	Measurable TDS Benefit	Measurable Increase in Dry Year Reliability	Measurable Increase in Recycled Water Reliability	Measurable Increase in Regional Solutions	Notes
Baseline Concept: MAINTAIN CURRENT PROGRAMS					
Continue Current Programs	X	X	Y	Y	Does not meet preliminary screening criteria for TDS improvement or increase in dry year reliability. Cannot forward only to serve as point of comparison for other alternatives.
Concept 1: INCREASE IMPORTED SURFACE WATER					
1A - Exchange Recycled Water for Agricultural Supply	-	-	X	N	Needs significant quantity of dry year supply to meet reliability goals.
1B - Reallocate Unused CVP M&I Entitlements	-	-	X	N	Requires significant flow to meet dry year reliability goals; requires complex.
2A - Develop Local Surface Water	-	-	X	Y	Supports LTWMP plan to reuse wastewater; more information needed on institutional risks associated with blending.
2B - Recycled Water with CVP Water	-	-	Y	Y	Supports LTWMP plan to reuse wastewater; more information needed on institutional risks associated with blending.
2C - Recycled Water with Groundwater and Recycled Water	-	-	Y	Y	Supports LTWMP plan to reuse wastewater; more information needed on institutional risks associated with blending.
2D - Recycled CVP M&I Supply	-	-	Y	Y	Supports LTWMP plan to reuse wastewater; more information needed on institutional risks associated with blending.
2E - Reallocate Unused CVP M&I Entitlements	-	-	Y	Y	More information needed on flow associated with reallocation.
Concept 2: UTILIZE LOCAL SURFACE SUPPLIES					
2.1 Capture Intermittent Creek Flows					
2.1A - Arroyo Das Pichas and Los Viveros	-	-	-	Y	Dry year supply inadequate to meet reliability goals; facilities, storage, and institutional information needed.
2.1B - Pacheco Creek	-	-	-	Y	Quality and institutional information needed.
2.2 Utilize Existing Reservoirs					
2.2A - Mendocino Reservoir	X	X	-	N	Poor water quality; minimal reliability benefit; not carried forward.
2.2B - Pacheco Reservoir	X	X	X	N	Poor water quality; minimal reliability benefit; construction may have environmental and permitting constraints; not carried forward.
2.2C - San Joaquin Reservoir	-	-	-	Y	Could be combined with a storage option; more information needed on modifications and operation.
2.2D - Reklam Quarters for Storage	X	-	-	N	Timing of availability makes this storage option infeasible.
2.2E - In-Basin Artificial Recharge	-	-	-	Y	This storage option cannot be carried forward due to water quality.
2.2F - In-Basin Artificial Recharge	-	-	-	X	Lack of available sites in the urban area makes this storage option technically infeasible; not carried forward.
2.2G - New Off-Stream Reservoir	X	-	-	X	This storage option has significant institutional constraints; not carried forward.
Concept 3: DEMINERALIZATION OF URBAN WELLS					
3.1 Demineralize Existing and New City and SCSGD Wells					
3.1A - Phased Demineralization of Existing and New City and SCSGD Wells	-	-	-	Y	Initial demineralization of one or more wells requires meeting of uniform water quality objective.
3.1B - Softening of Existing and New City and SCSGD Wells	-	-	-	X	Softening of centralized facility is not as attractive as demineralization; preliminary analysis indicates that softening will not meet hardness goal.
Concept 4: UTILIZATION OF WATER FROM HIGH GROUNDWATER BASINS					
4.1 Demineralize or Soften Groundwater and Import to Urban Area					
4.1A - Exchange Groundwater for CVP Supply	-	-	-	X	More information needed on institutional risks.
4.1B - Blend Groundwater with Recycled Water for Agricultural and Municipal Use	-	-	-	X	Supports LTWMP plan to reuse wastewater; but timing of availability makes this option infeasible; during the planning horizon.

Legend: X = Meets Screening Criteria, - = Needs More Information, Y = Does Not Meet Criteria and Option is Eliminated, N = No

G. Alternative Refinement:

Initial screening resulted in five alternatives for further analysis:

- Alternative 1A – Exchange agricultural CVP supply with recycled water
- Alternative 1B – Reallocate unused CVP M&I entitlements
- Alternative 2A – Capture intermittent creek flows
- Alternative 3A – Demineralization to meet MOU goals
- Alternative 3B – Phased demineralization of urban wells

H. Evaluation Criteria:

MOU Based Criteria:

- Minimize Costs
- Meet Drinking Water Quality Goals
- Meet Recycled Water Quality Goals
- Balance Water Supply for Enhanced Reliability

Additional Criteria:

- Maximize Availability of Supplies
- Maximize Opportunities for Regional Solutions
- Minimize Environmental Impacts
- Provide Flexibility for Phased Implementation
- Minimize Risk of Implementation

Water Supply is Hard and has High Salinity

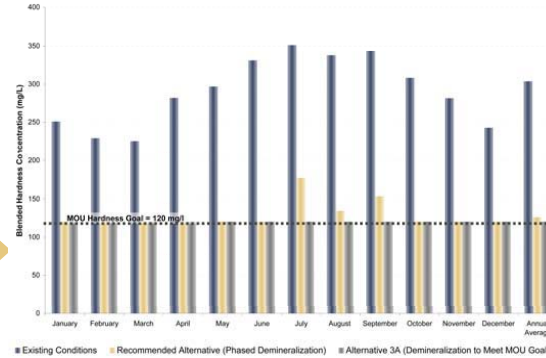
- Drinking water tastes poor, due to high hardness, and results in widespread home softener use
- Wastewater effluent too salty for recycled use unless treated or blended

The Recommended Program Will:

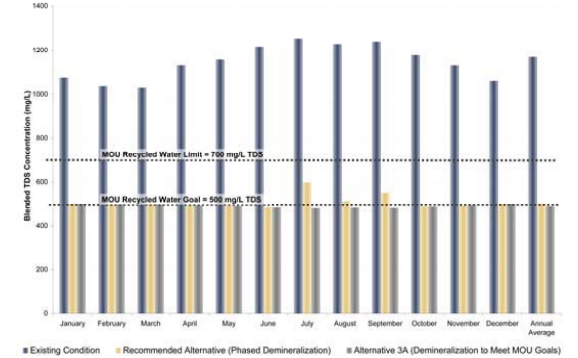
- Lower drinking water hardness, improve taste
- Result in significant consumer cost savings (e.g., water softeners, detergent use, etc.)
- Reduce wastewater effluent salinity
- Provide reliable water supply for agricultural use

Improved Drinking Water & Recycled Water Quality

Seasonal Drinking Water Hardness Concentrations, 2023 Conditions

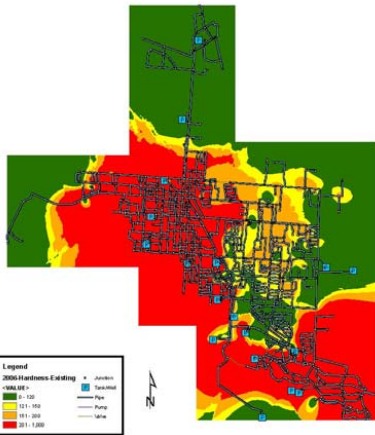


Seasonal Recycled Water TDS Concentrations, 2023 Conditions



Improved Drinking Water Quality

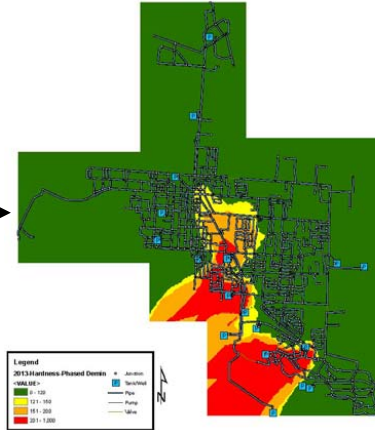
Existing Conditions Summer Day



Implement Phased
Demineralization

Drinking Water
Hardness is
Reduced

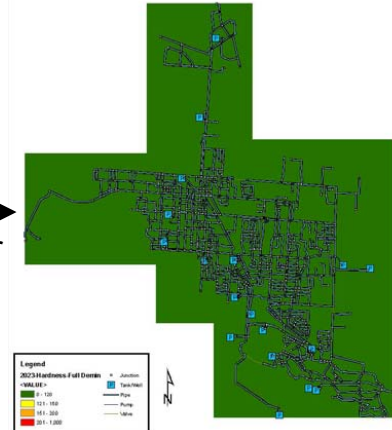
2015 Summer Day



Winter has Lower
Max Day Demand

Distribution of Softer
Water is Improved

2015 Winter Day



Infrastructure Improvements

The urban water supply plan is a phased solution including an initial phase of demineralization at four urban wells, continued use of imported CVP supplies treated at the Lessalt WTP, and groundwater softening of several SSCWD wells.

In Phase 1, demineralization water treatment facilities would be provided for three existing City wells and one SSCWD well. Later, if required, additional demineralization facilities would be added at other urban wells.

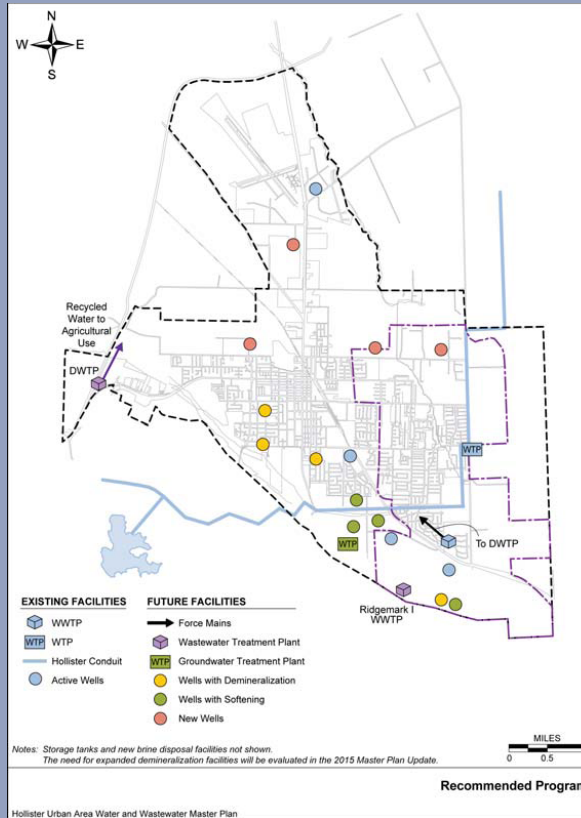
SSCWD would also construct a groundwater softening plant, to lower drinking water hardness.

Wastewater treatment would be provided at the City of Hollister Domestic Wastewater Treatment Plant and the upgraded SSCWD Ridgemark Wastewater Treatment Plant.

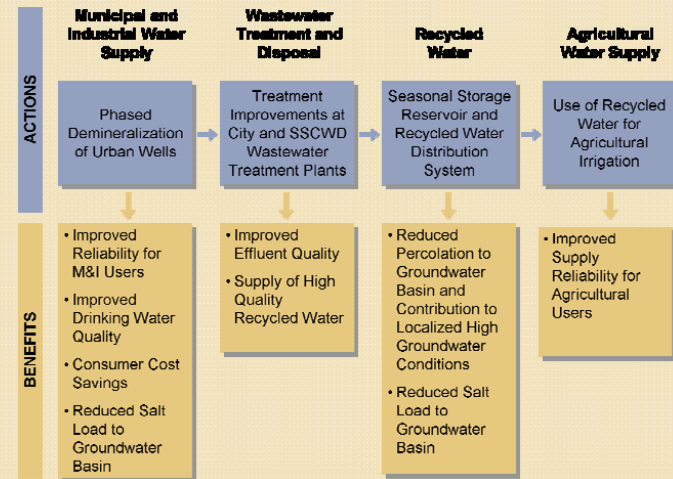
Both treatment plants would produce recycled water.

Recycled water from the City's plant would be conveyed to Phase 1 spray fields at the Hollister Municipal Airport and irrigation at the new Brigantino Park. In a later phase, it would be used for agricultural irrigation in the Wright Road / McCloskey Road corridor.

Similarly, SSCWD would convey recycled water to the Ridgemark Golf Course for irrigation use.



Major Actions and Benefits of Integrated Water Resources Plan



Implementation Program Phasing

Implementation of the recommended program will be conducted in 3 phases:

Current Projects - already under construction or in design

Phase 1 – projects through 2015

Phase 2 – projects through 2023

Phase 3 – long-term after 2023

