



Chandler + Arizona
Where Values Make The Difference

Buildout & Beyond



WATER, WASTEWATER, RECLAIMED WATER MASTER PLAN UPDATE

PROJECT NO. WA0710-101

Executive Summary

September 2008



carollo
Engineers...Working Wonders With Water™

in association with

**BROWN AND
CALDWELL**

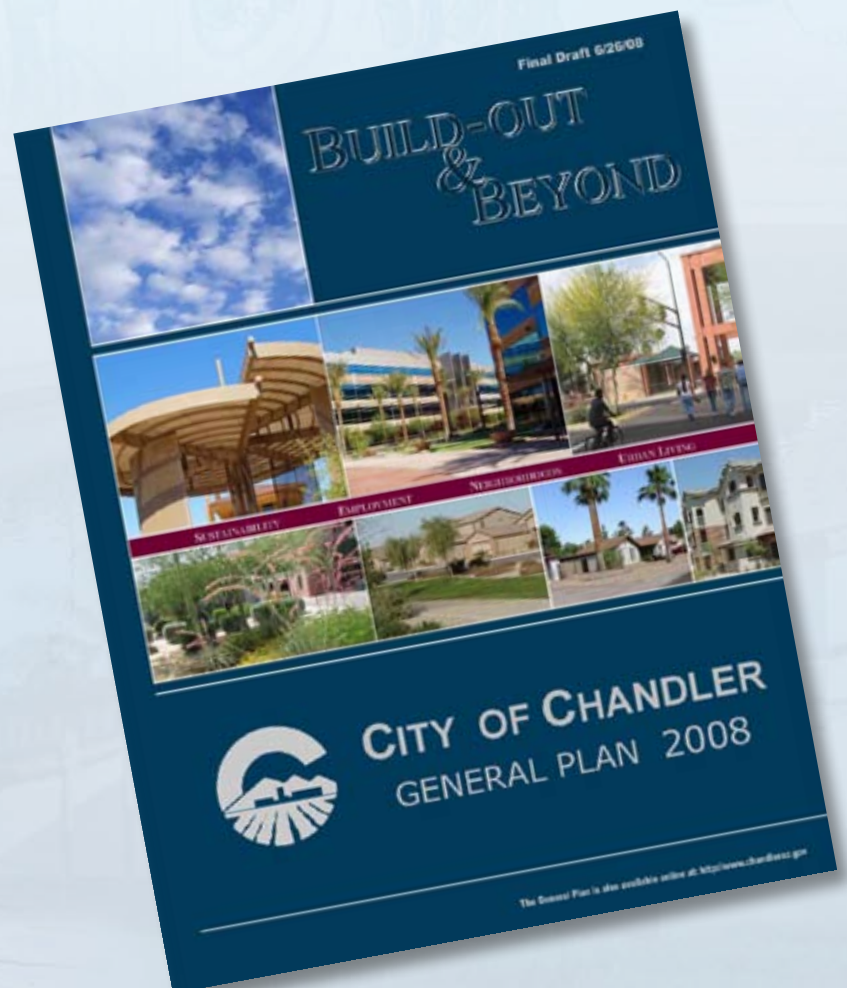
Buildout & Beyond

As the City of Chandler approaches residential buildout, its focus shifts from keeping pace with rapid growth to preparing for the future beyond buildout. The recently approved General Plan 2008 describes the City's vision for the future. At buildout and beyond, Chandler seeks to create a sustainable city through careful planning with a focus on economic development and revitalization.

The 2008 Water, Wastewater, Reclaimed Water Master Plan Update aligns with and builds upon the General Plan 2008 themes of economic development and revitalization.

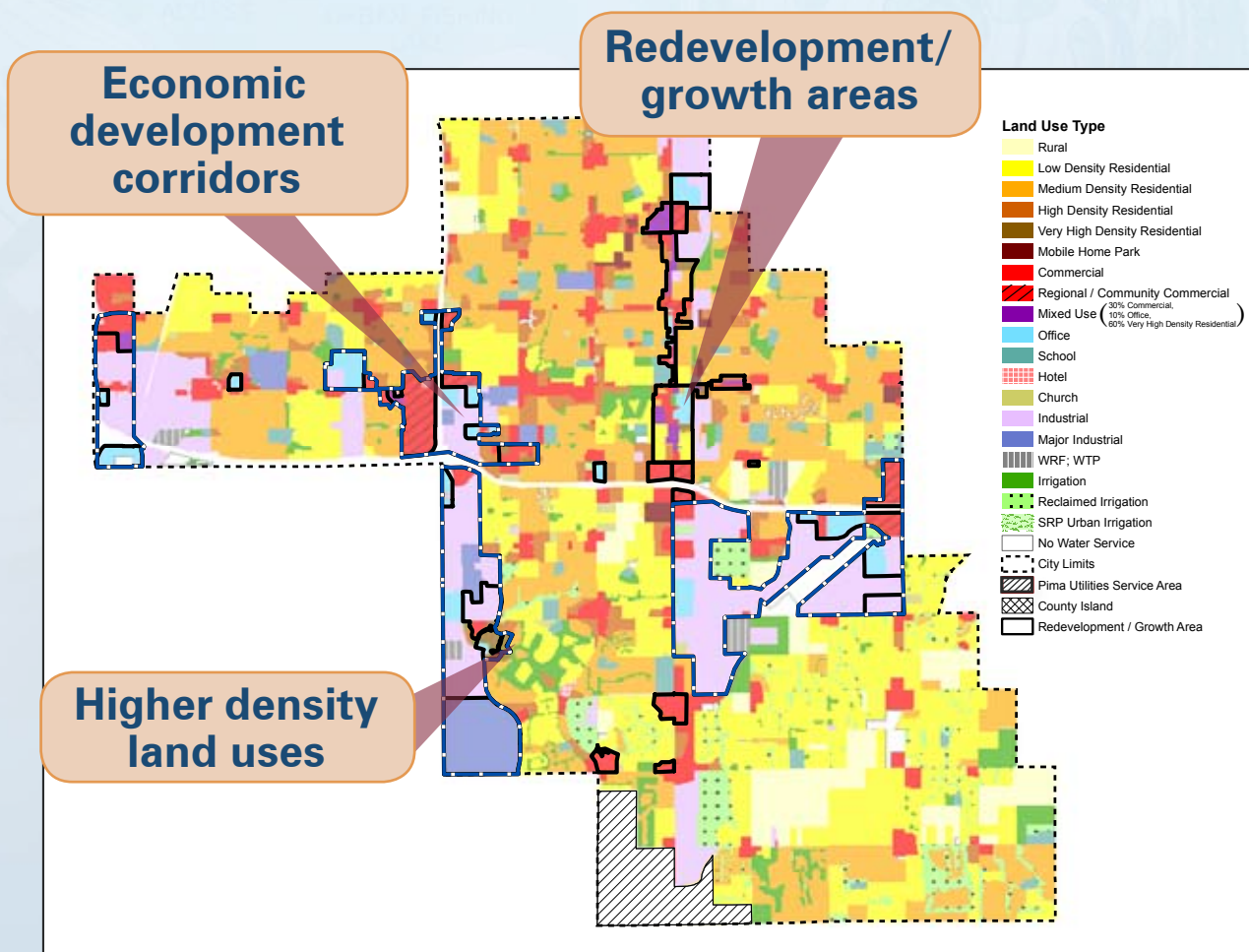
Land Use Drives Master Planning

The goals and objectives of the General Plan 2008 were incorporated into the Master Plan through the land use plan.



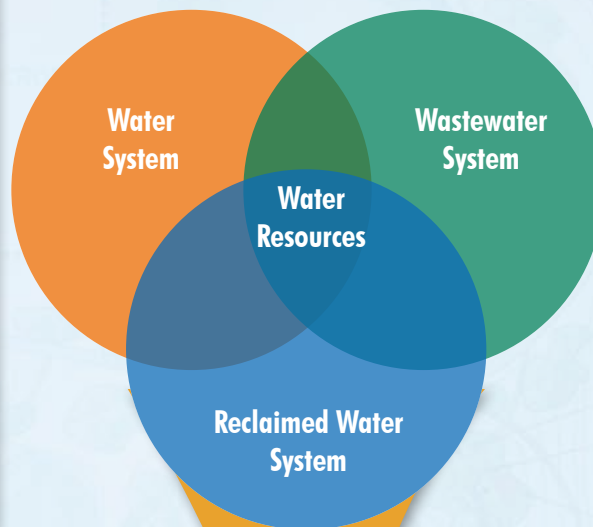
The Land Use Plan is an expression of the General Plan's vision

- ◆ Land Use Plan expresses the General Plan's vision of future economic development and community revitalization through higher density land uses, redevelopment/growth areas, and economic development corridors.
- ◆ Land use is the basis for water and wastewater projections.
- ◆ Water demand and wastewater flow projections are fundamental to assessing existing infrastructure and planning for future expansions and improvements.



2008 Master Plan

"Integration" is the process of planning and designing infrastructure in a coordinated manner to maximize the use of available water resources.



The Master Plan consists of strategies to develop, manage, and use Chandler's surface water, groundwater, and reclaimed water resources.

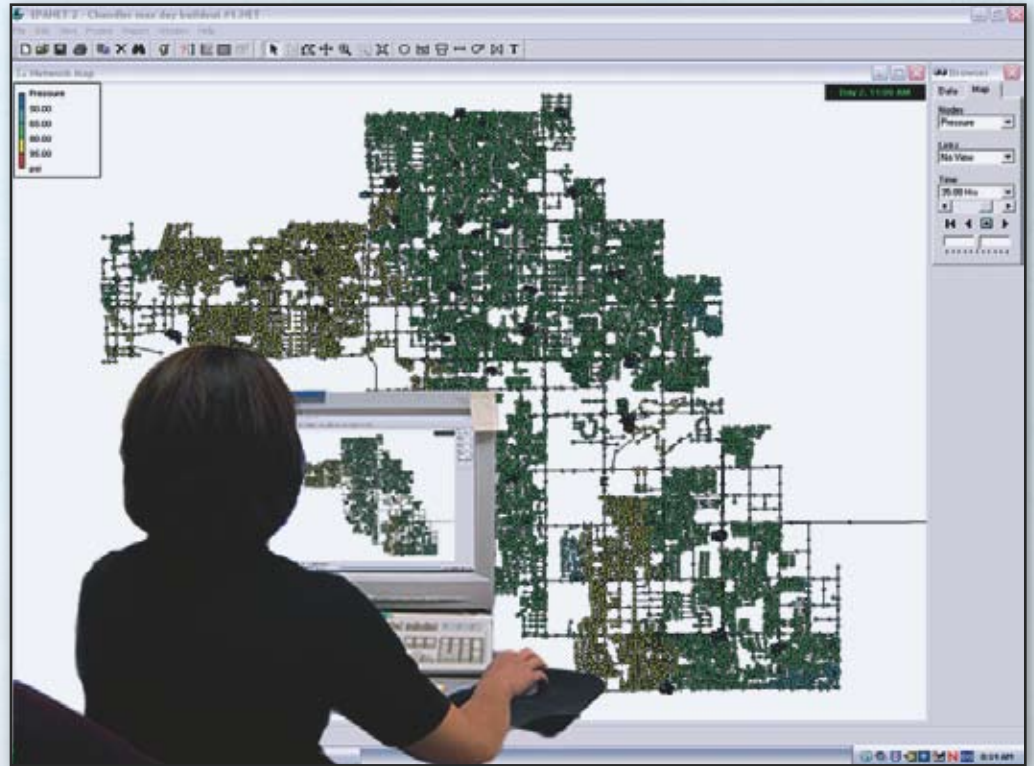
The Master Plan has been developed utilizing an integrated approach.





Chandler's Toolbox for FUTURE PLANNING

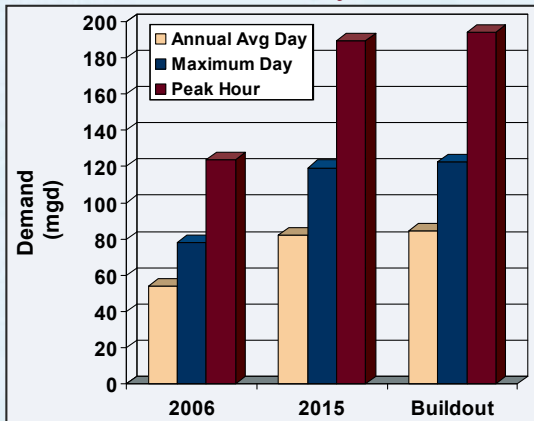
*The Master Plan
utilized
Chandler's
toolbox for
Planning
Maintaining
Expanding
Revitalizing
the City's
infrastructure.*



Water System Master Plan

provides for flexible and efficient use of water resources

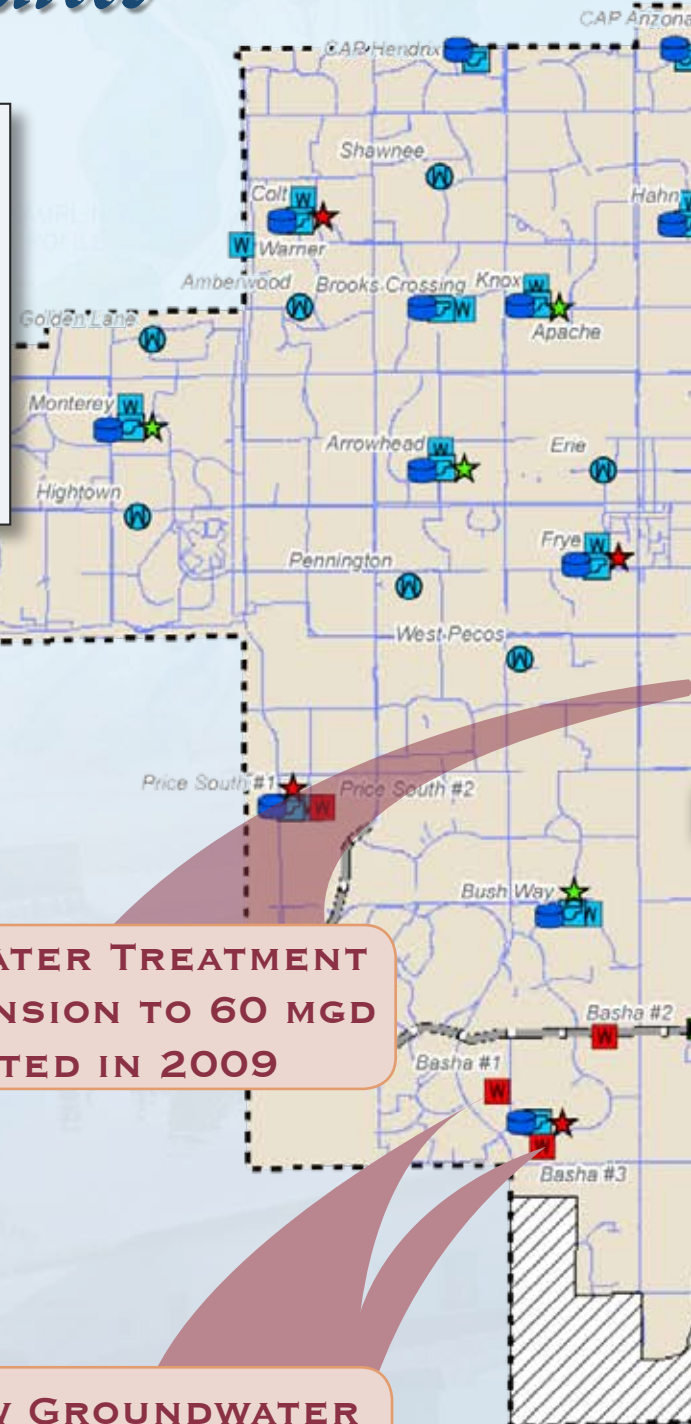
Water Demand Projections



- Proposed New CIP Improvements**
- Type
- ★ Booster Pump Station Improvement
 - Booster Pump Station Expansion
 - Additional Operational Storage
 - PRV
- Water Facilities from FY 2008 - 2013 CIP**
- Type
- WTP
 - Direct Discharge Well
 - Well Discharging to Storage
 - ★ Booster Pump Station Improvements
 - PRV
- Transmission Mains**
- Diam
- 12"
 - 16"
 - 24" (Proposed to be Deleted)
 - Reservoir Supply System
- Existing Water Facilities**
- Type
- WTP
 - Reservoir
 - Booster Pump Station
 - Well Discharging to Storage
 - Direct Discharge Well
- City Limits
- ▨ Pima Utilities Service Area
- Transmission Mains
- Future Pressure Zones**
- 1
 - 2

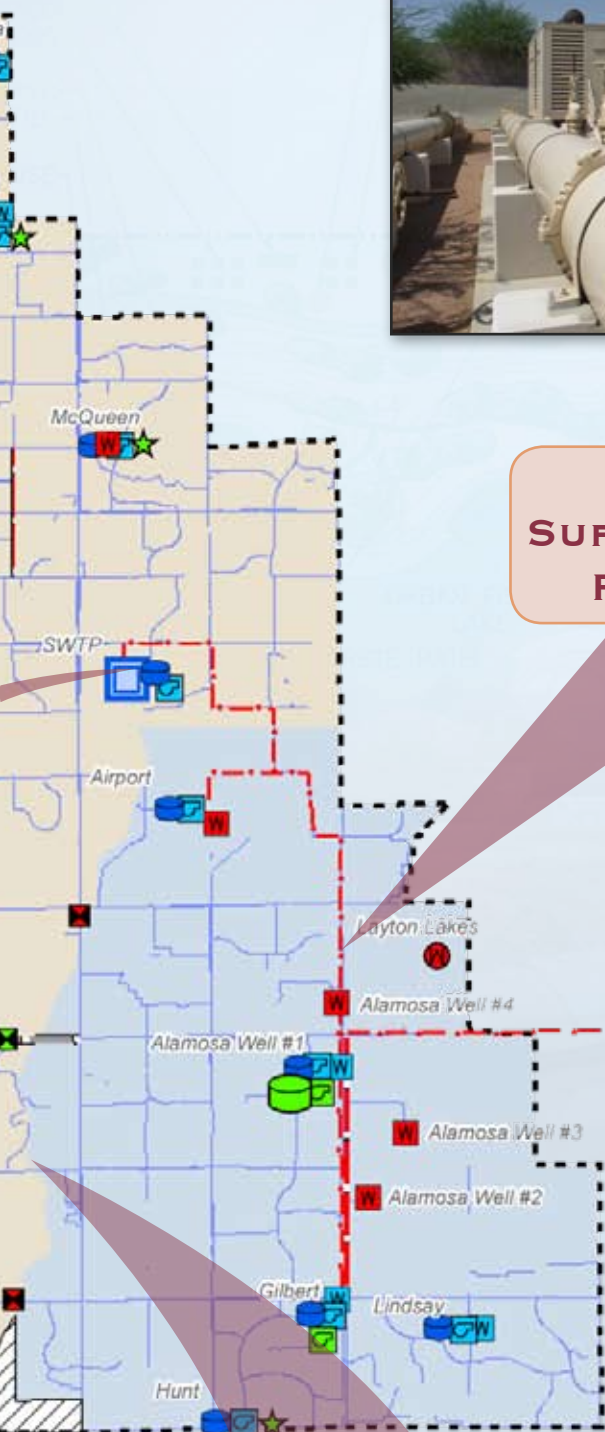
**SURFACE WATER TREATMENT
PLANT EXPANSION TO 60 MGD
COMPLETED IN 2009**

**NEW GROUNDWATER
WELLS**





NEW RESERVOIR SUPPLY SYSTEM SERVES PRESSURE ZONE 2



NEW PRESSURE ZONE BOUNDARY IMPROVES OPERATION

SANTAN VISTA WATER TREATMENT PLANT COMPLETED IN 2009



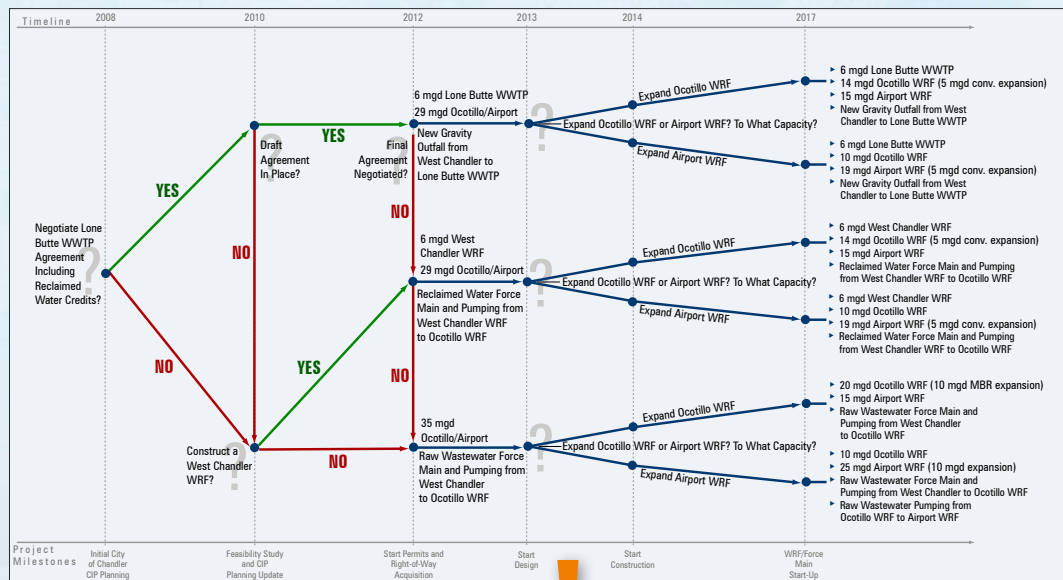
KEY FEATURES

- ◆ Santan Vista and Pecos Water Treatment Plants provide 84 mgd treatment capacity and dual surface water sources for system reliability.
- ◆ New pressure zone boundary stabilizes system pressure and operation of Zone 1.
- ◆ New groundwater wells provide water supply reliability with a production capacity of 74.2 mgd.
- ◆ Well capacity maintenance.
- ◆ Booster Pump Station upgrades improve system operation and saves energy.
- ◆ Alamosa WPF operational storage.
- ◆ Total water treatment capacity will meet the annual average day demand during an emergency outage at either the Pecos or Santan Vista Water Treatment Plants. This amount of supply reliability will meet the basic needs for health, safety, and welfare of each household.
- ◆ Future Asset Management program.

Decision Making Process Resolves Wastewater Management Approach

The West Chandler Wastewater Management Study was a systematic approach to evaluating treatment alternatives for wastewater generated in West Chandler. The purpose of the study was to develop alternatives to the Lone Butte Wastewater Treatment Plant when the facility's lease agreement expires in 2017.

Decision Matrix



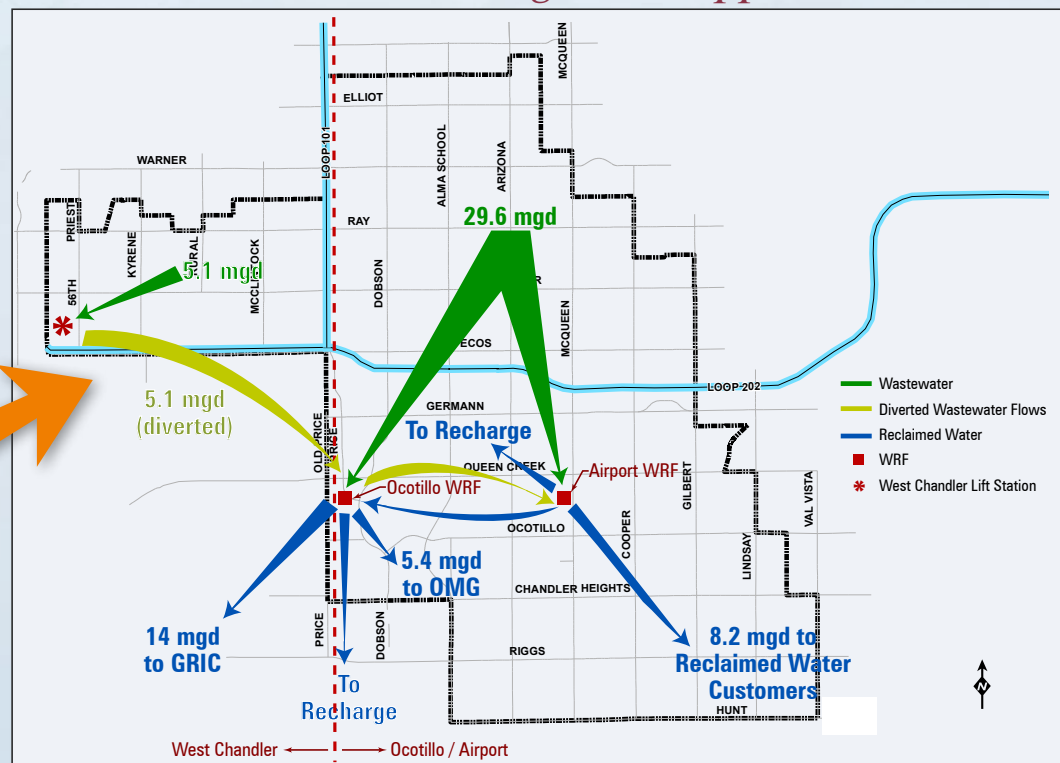
Wastewater management alternatives were evaluated based upon technical/institutional issues and estimated budgetary costs. The City used a weighting and ranking system to select the preferred wastewater management approach.

Evaluation Criteria	Weighting Factor	Ranking	Description
Estimated Project Cost	20		
Compatibility with Surrounding Community	20		
Long-Term Operations and Maintenance Costs	15		
Vulnerability to Catastrophic Failure (force mains, treatment facility, influent sewer, reclaimed water distribution)	10	6	Best alternative at satisfying the criterion
Reclaimed Water Management	10	5	Much better at satisfying the criterion than the other alternatives
Operational Flexibility to Receive or Divert Wastewater	10	4	Better at satisfying the criterion than the other alternatives
Right-of-Way/Easement/Permit Acquisition	5	3	Of equal satisfaction as the other alternatives
Disruption to Community During Construction	5		
Operational Control of Facilities	5	2	Less able to satisfy the criteria than the other alternatives
TOTAL	100	1	Much less able to satisfy the criteria than the other alternatives



Management of wastewater from West Chandler has a significant impact on the Wastewater and Reclaimed Water Master Plans.

Selected Wastewater Management Approach

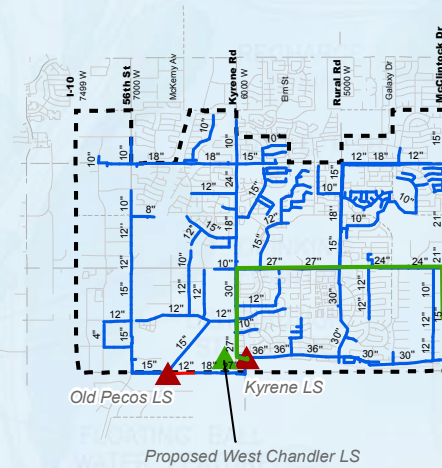
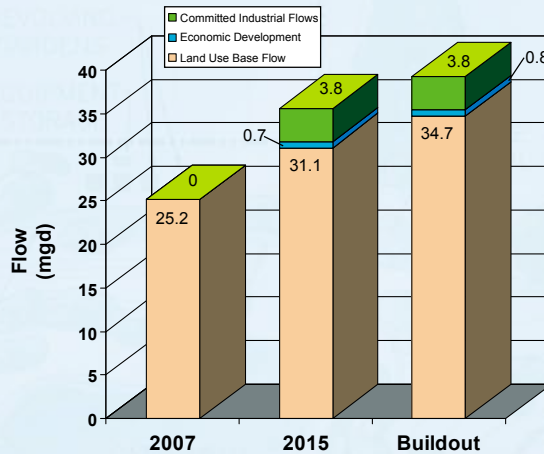


KEY RECOMMENDATIONS RELATED TO LONE BUTTE REPLACEMENT

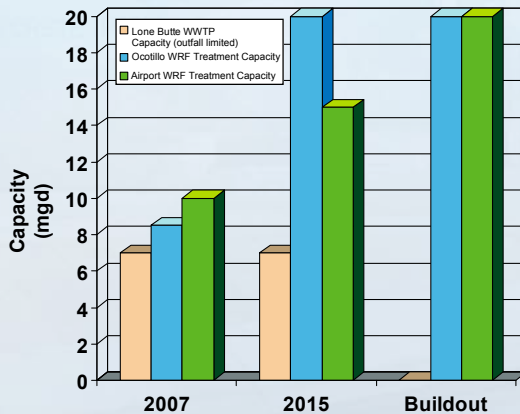
- The Lone Butte Wastewater Treatment Plant agreement will be allowed to expire in 2017.
- A new lift station and dual force mains will be constructed in West Chandler to convey wastewater to the Ocotillo Water Reclamation Facility.
- Ocotillo Water Reclamation Facility will be expanded to treat increased flows.
- The existing Ocotillo Water Reclamation Facility will be upgraded for future reliability and improved odor control.

Wastewater System Master Plan solidifies future conveyance and treatment

Projected Flows



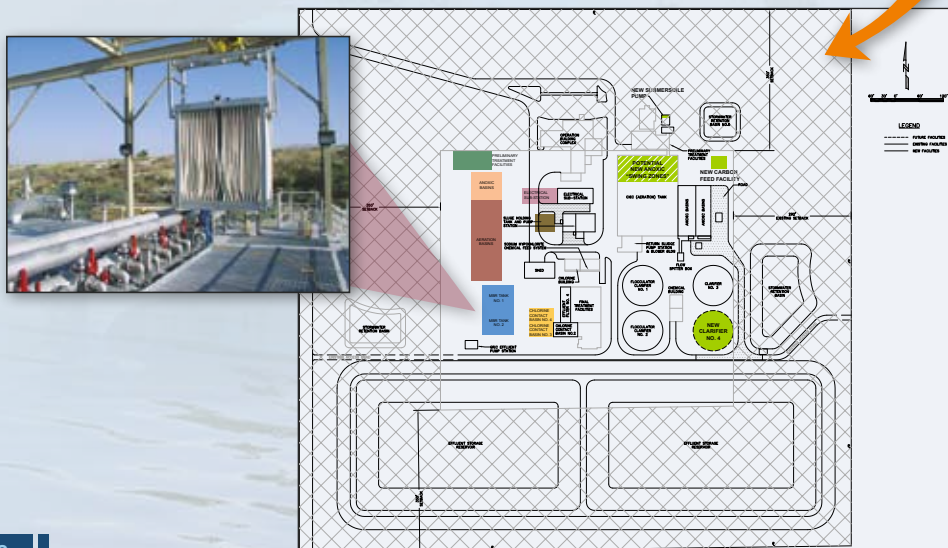
Plant Capacity

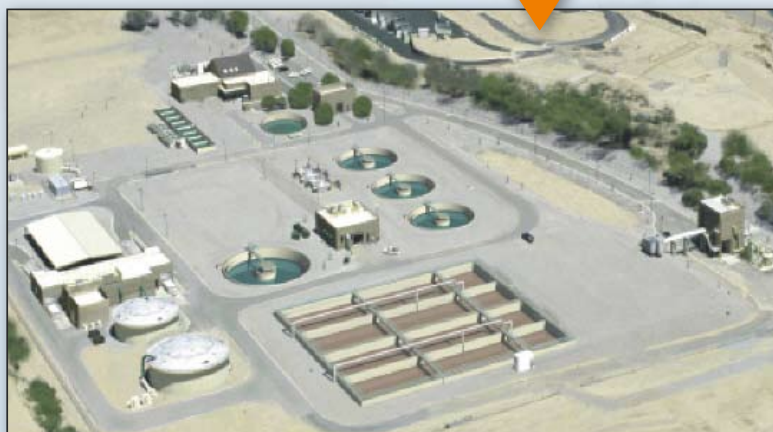
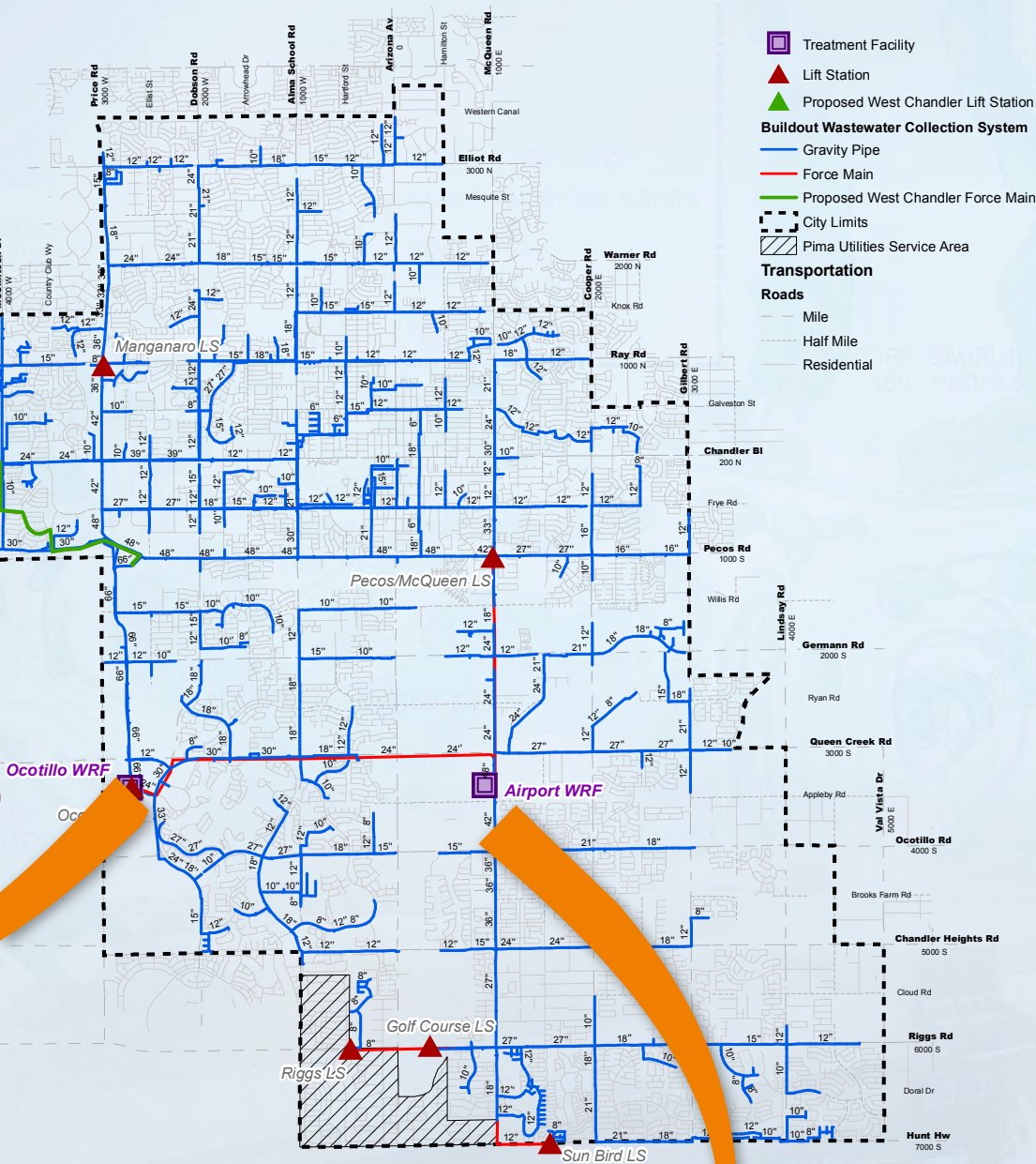
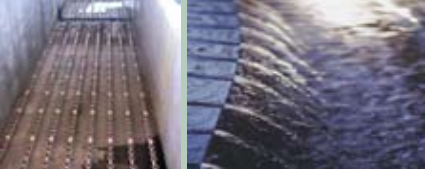


Ocotillo WRF



10 mgd Site Expansion





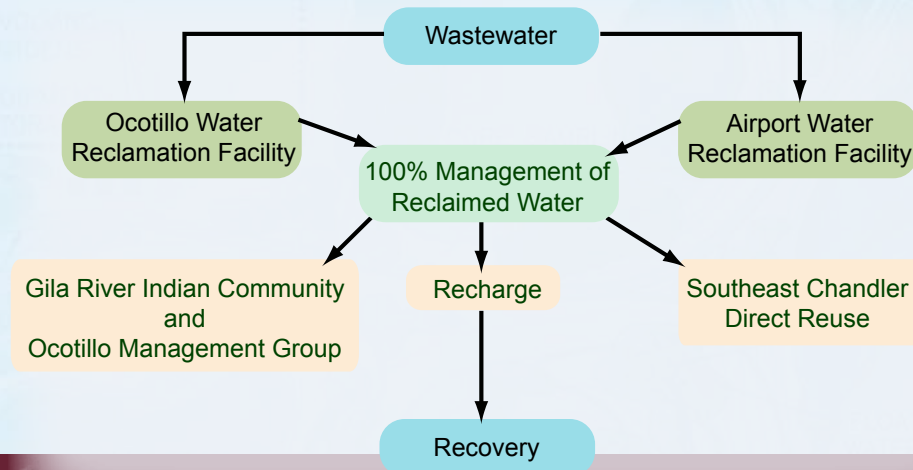
Airport WRF

KEY FEATURES

- ◆ Recommendation for 10 mgd treatment expansion at the Ocotillo Water Reclamation Facility (WRF) for West Chandler, future growth, and committed industrial wastewater flows.
- ◆ Ocotillo WRF Expansion Preliminary Design/ Feasibility Study.
- ◆ Ocotillo WRF Short Term Improvements.
- ◆ West Chandler Lift Station and Dual Force Main by 2017.
- ◆ 5 mgd expansion of WRF capacity for future growth by 2017.
- ◆ Commitment to ongoing asset management program for rehabilitation of facilities and sewer interceptors.
- ◆ Force mains interconnecting water reclamation facilities to transfer wastewater and reclaimed water increases redundancy and reliability.
- ◆ Rehabilitation of 66-inch sewer interceptor.

Reclaimed Water System

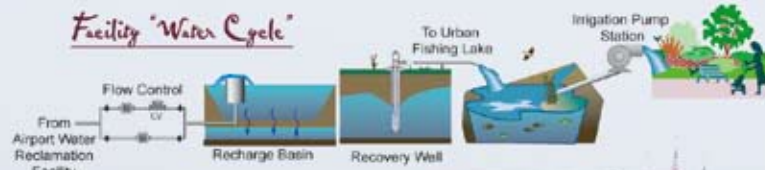
Master Plan maximizes the utilization of a sustainable water resource



AWARD
WINNER

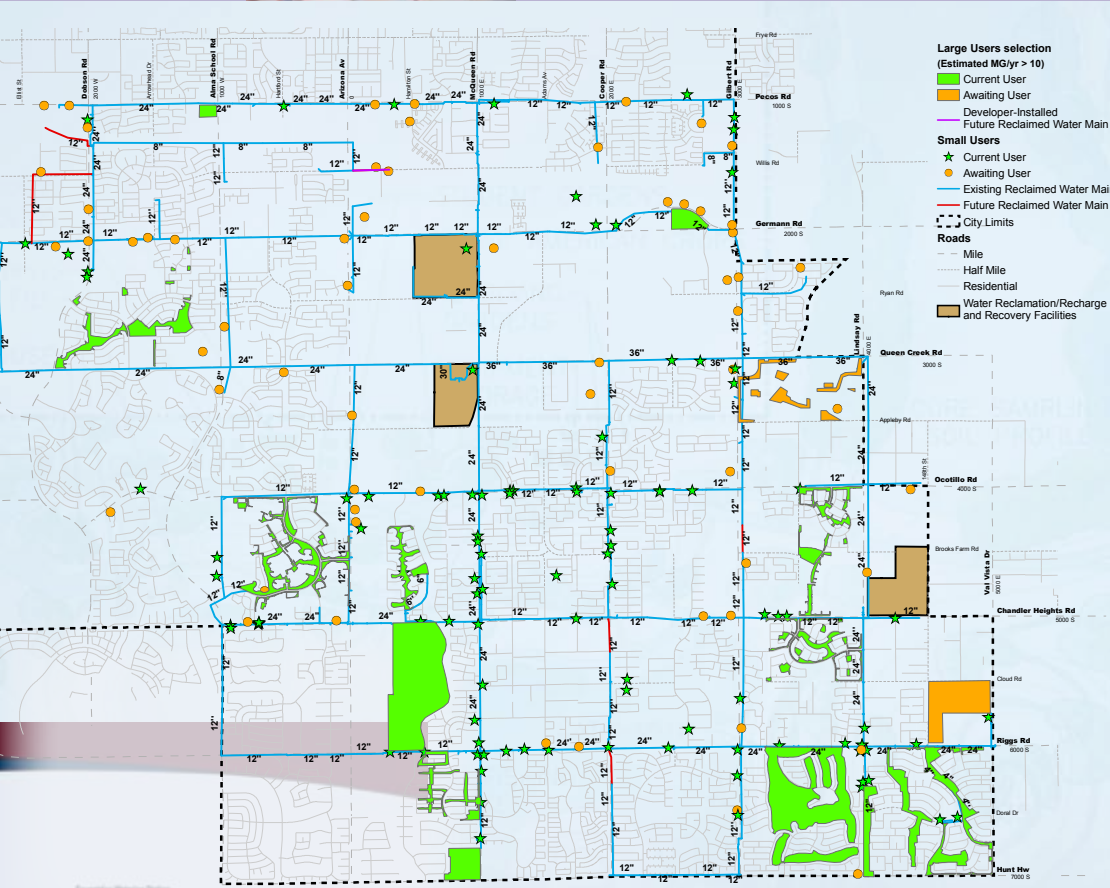
Chandler Heights Recharge Facility

Facility "Water Cycle"



Veterans Oasis Park





KEY FEATURES

- Ocotillo WRF GRIC, and recharge pump station expansion.
- Aquifer storage and recovery well capacity expansion.
- Reconfigured delivery system saves costs and improves operation.
- Chandler's recharge facilities provide for 100% reclaimed water utilization.
- System operation is managed through scheduling of user deliveries.
- Locating recharge and reuse facilities at the City's multi-use sites provides for efficient use of land resources.



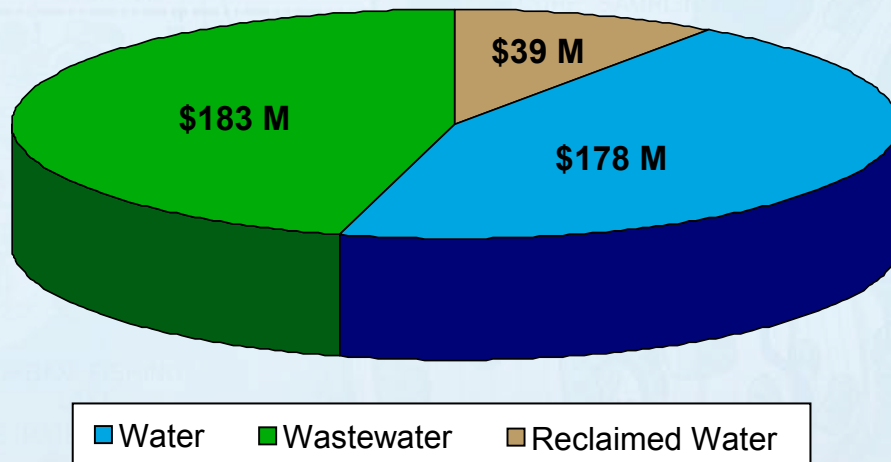
Tumbleweed Park Recharge and Recovery Facility



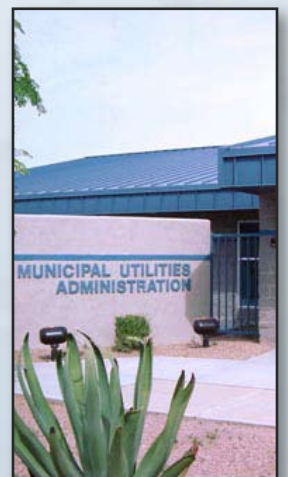
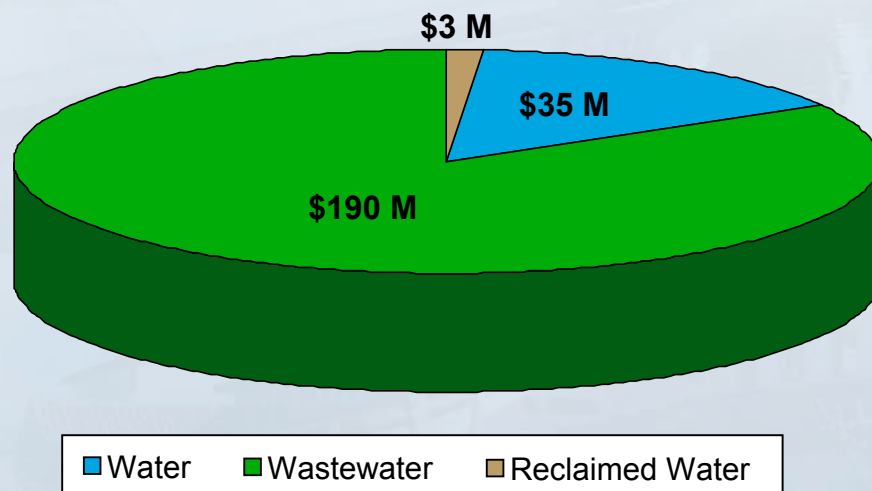


The Master Plan defines Chandler's buildout CIP

*Proposed 2008-2013 CIP Costs Totaling \$400 M
(escalated to time of construction)*



*Proposed 2013-Buildout CIP Costs Totaling \$228 M
(escalated to time of construction)*





Buildout & Beyond...

MASTER PLAN UPDATE PROVIDES FOR A...

Flexible

Reliable

Sustainable

WATER, WASTEWATER, AND RECLAIMED WATER SYSTEM INCORPORATING...

Interconnected water reclamation facilities.

Expanded/upgraded Ocotillo Water Reclamation Facility.

*Integration of the Santan Vista Water Treatment Plant and
Reservoir Supply System.*

100% reclaimed water utilization.

Dual surface water source capabilities.



ACKNOWLEDGEMENTS

The Carollo Engineers/Brown and Caldwell team wishes to extend its appreciation and gratitude to all of the City staff members who contributed their time and expertise to the success of this project:

- ◆ Planning and Development Department
- ◆ Public Works Department/Engineering Division
- ◆ Municipal Utilities Department

