



Town of Cave Creek

INTEGRATED UTILITY MASTER PLAN EXECUTIVE SUMMARY



KEY OBJECTIVES OF THE PLAN

- Sustainable Growth
- Balance Water Resources
- Drought Resiliency
- Redundant Supply
- Dry Sewer and Septic Conversions
- Optimize Deliveries to Rancho Mañana

WHY AN INTEGRATED MASTER PLAN

The Town of Cave Creek (TOCC, Town) is committed to providing safe and reliable drinking water to its customers. The Town’s desire to integrate and optimize the water resources, water, wastewater, and reclaimed water infrastructure will allow for long-term system resiliency in times of uncertainty and growth.

The previous water and wastewater master plans were completed in 2008 and 2013. Additional planning documents have been prepared previously that address related topics including water resources, drought management, a fire infrastructure assessment, and collection system condition assessment. The TOCC identified the need to update all the master plans concurrently to have a single plan going forward for the Town’s water, wastewater, and reclaimed water system infrastructure. This Integrated Utility Master Plan (IUMP) provides a roadmap to guide the Town as it continues to focus on accommodating growth in undeveloped areas while continuing to provide reliable services to existing customers throughout their entire service area.



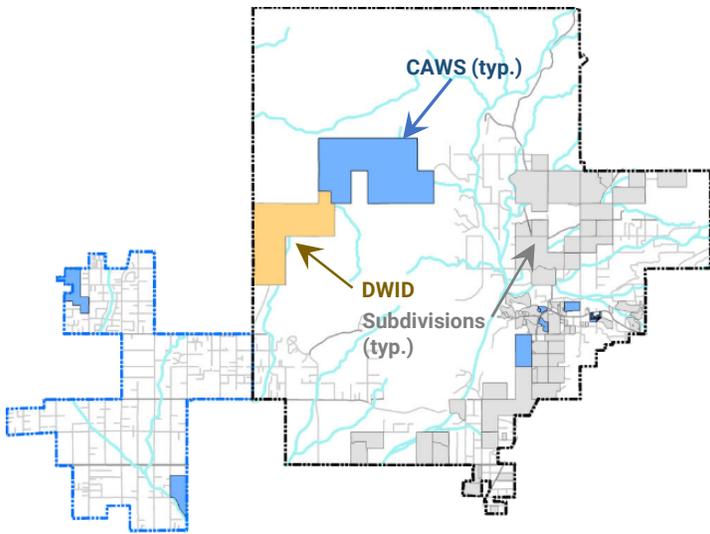
An Integrated Master Plan includes review of the entire, inter-related water cycle.

PLANNING FRAMEWORK

The IUMP established growth projections for the remaining undeveloped lands to establish sustainable growth limits that can be met by the TOCC's existing and future water resources and comply with the TOCC Water Resource Policies. Demand projections were developed for the following types of committed growth areas:

- Certificate of Assured Water Supply (CAWS)
- Committed Subdivisions
- Domestic Water Improvement District (DWID)

There are additional vacant lands located both inside and outside the TOCC service area which would require additional water resources to provide service.



To evaluate the TOCC's ability to supply additional customers, demand projections were developed for both the committed growth areas (CAWS, DWID and subdivisions) as well as future vacant and potential parcels. In addition to the projected growth areas, three specific areas within the TOCC service area that are currently on septic systems were evaluated for the feasibility to connect those neighborhoods to the TOCC collection system:

- Estado de Cholla – Currently Dry Sewer Area
- Canyon Ridge Estates – Currently Dry Sewer Area
- Black Mountain – Septic Only

WATER RESOURCES

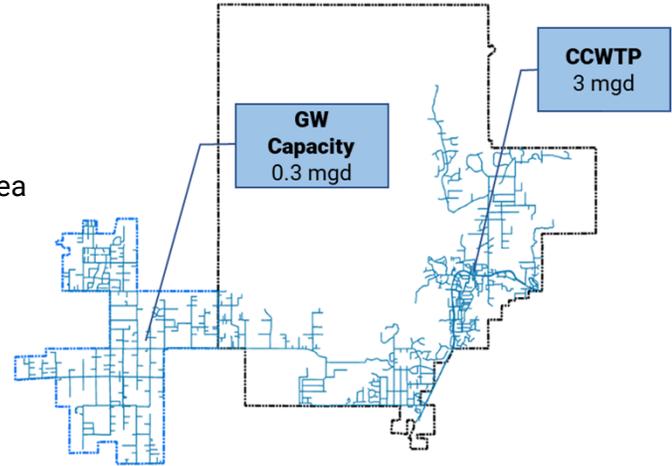
The TOCC has three (3) sources that it relies upon to meet the demands of the community, which are Central Arizona Project (CAP), groundwater (GW), and reclaimed water. The primary water supply utilized by the TOCC is CAP surface water that is delivered to customers from the Town's Water Treatment Plant (CCWTP). The TOCC acquired the Desert Hills (DH) Water Company which includes three (3) operational potable groundwater wells. The TOCC is located within the Phoenix Active Management Area (AMA) and is subject to the Assured Water Supply Program. Currently, the Town sends all the reclaimed water generated at the Water Ranch Water Reclamation Facility (WRF) to the Rancho Manaña Golf Course.

To evaluate future demand scenarios, the IUMP considered the available water resources under both normal and drought conditions. The purpose of the IUMP is not to forecast specific drought water supply reduction or durations. Rather, its purpose is to provide a range of conditions that will identify potential supply shortfalls and provide the TOCC guidance in selecting mitigation strategies. The evaluation of available water resources and projected demands demonstrated that depending on projected growth conditions and CAP reductions, a water supply shortfall can occur. Development of additional groundwater resources for back-up purposes is recommended as well as additional renewable water resources may be necessary to meet projected demands. Potential strategies that should be considered to make up potential shortfalls included the following:

- Administrative Strategies – Agreements / exchanges with other Agencies, Water Banking Firming and customer conservation outreach
- Wet Water Strategies – Drill new wells / rehabilitate wells, improve efficiencies with Rancho Manaña deliveries

WATER

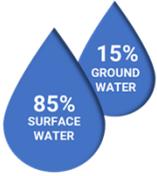
The TOCC owns and operates the Cave Creek Water Treatment Plant (CCWTP) and three active groundwater wells located in Desert Hills. Water system elevations within the TOCC service area range from 1,750 feet (ft) to 2,500 ft and includes 16 pressure zones (PZ).. The existing potable water distribution system is adequately sized to meet existing and projected maximum day demand however the following improvements were identified to improve the TOCC’s overall system reliability, redundancy and system performance to meet future growth.



WATER - 5-YR CIP (Cave Creek)

5-YR CIP

Project	Estimated Cost
2025 - 2029	
Water Resources	
W26 - Barlett Dam Expansion	\$3,228,000
Future Water Resources	\$4,850,000
Phoenix ASR	\$400,000
W16-2 and Cave Creek Well Rehabilitation (Project Number 24505007)	\$1,600,000
WTP / Supply	
W01 - City of Phoenix Interconnection (COPI)	\$19,644,330
CAP Booster Station Repairs	\$750,000
W22 - WTP Assessment and Upgrades	\$800,000
CAP4 Raw Water Booster	\$1,000,000
W27 - COPI Aeration	\$750,000
Booster Stations	
W05 - Rockaway Zone 9 Booster Pump Station	\$618,500
38th Street Booster Station Replacement	\$225,000
Neary Pump Replacement	\$250,000
W12 - Galloway Booster Station Upgrades	\$300,000
Pipelines	
Rehab 6" Waterline Across Cave Creek Wash	\$250,000
W25 - Waterline Looping & Replacement Program	\$750,000
Rehab 8" Waterline Across Cave Creek Wash	\$650,000
W21 - Zone 1 Pipeline Improvements	\$631,000
W13 - Second Feed to West Side of Cave Creek - Phase 1	\$1,775,000
W04 - Zone 9 Pipeline Improvements	\$150,000
Valves	
W02 - Rebuild Zone 6 PRV	\$307,000
W03 - Upgrade Carol Heights to Rockaway Fill Valves	\$524,900
W23 - Zone 4 to 1 PRV Improvement	\$43,500
Miscellaneous	
Miscellaneous	\$1,842,500
2025-2029 Water CIP Total	\$41,339,730

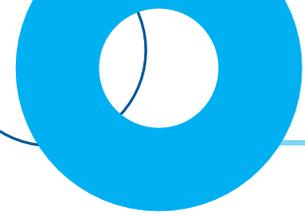


WATER – 2030-2050 CIP (Cave Creek)

10-YR CIP

2035-2050 CIP

Project	Estimated Cost
2030 - 2034	
Water Resources	
Future Water Resources	\$5,050,000
WTP / Supply	
W24 - WTP Upgrade Plant to Pall units	\$7,750,000
Booster Stations	
W09 - Cahava No. 1 and DWID Booster Station	\$870,000
W10 - Cahava No. 2 Booster Station (Developer Funded)	\$550,000
W17 - Booster Station Quick Connects for Fire flows	\$1,421,000
Pipelines	
W04 - Zone 9 Pipeline Improvements	\$400,000
W06 - Zone 8 Pipeline Improvements	\$2,307,240
W11 - Cave Creek Road Pipeline Improvements	\$1,232,007
W18 - CAP Pipeline Improvements	\$2,900,000
W25 - Waterline Looping & Replacement Program	\$750,000
Miscellaneous	
Miscellaneous	\$1,005,000
2030-2034 Water CIP Total	\$23,685,247
2035-2039	
Water Resources	
Future Water Resources	\$500,000
Pipelines	
W13-A - Second Feed to West Side of Cave Creek - Phase 2	\$3,413,880
W18 - CAP Pipeline Improvements	\$2,900,000
W25 - Waterline Looping & Replacement Program	\$750,000
Miscellaneous	
Miscellaneous	\$1,900,000
2035-2039 Water CIP Total	\$9,463,880
2040-2050	
Water Resources	
Future Water Resources	\$500,000
W19 - Alternative Supply Connection Study	\$50,000
Pipelines	
W25 - Waterline Looping & Replacement Program	\$750,000
Miscellaneous	
Miscellaneous	\$2,000,000
2040-2059 Water CIP Total	\$3,300,000



WATER - 2025-2050 CIP (Desert Hills)

5-YR CIP
 10-YR CIP
 2035-2050 CIP

Project	Estimated Cost
2025 - 2029	
Water Resources	
Future Water Resources	\$4,850,000
Purchase of NIA Water Allocation	\$315,424
Well Supply	
W14-A - 3rd Ave/Joy Ranch Well Head Arsenic Treatment	\$2,150,000
W16-1 - Evaluate Additional Groundwater Wells in Desert Hills	\$50,000
Tanks	
Steel Storage Tank Reconditioning	\$1,500,000
Pipelines	
Annual Pipeline Improvement Program	\$750,000
W13 - Second Feed to West Side of Cave Creek - Phase 1	\$1,775,000
Water Meter Replacement Program	\$600,000
Service Line Replacement Program	\$525,000
Booster Stations	
W15 (Option 1 or 2) 7th Street Booster Station Improvements	\$130,000
Miscellaneous	
Miscellaneous	\$300,000
2025-2029 Water CIP Total	\$12,945,424
2030 - 2034	
Water Resources	
Future Water Resources	\$5,000,000
Well Supply	
W07 - Galvin Well Improvement	\$470,000
W08 - Joy Ranch and 3rd Ave Well Improvements	\$1,856,000
Pipelines	
Annual Pipeline Improvement Program	\$750,000
Service Line Replacement Program	\$750,000
Miscellaneous	
Miscellaneous	\$250,000
2030-2034 Water CIP Total	\$9,076,000
2035 - 2039	
Water Resources	
Future Water Resources	\$500,000
Tanks	
Steel Storage Tank Reconditioning	\$1,500,000
Pipelines	
W13-A - Second Feed to West Side of Cave Creek - Phase 2	\$3,413,880
Water Meter Replacement Program	\$600,000
Miscellaneous	
Miscellaneous	\$250,000
2035-2040 Water CIP Total	\$6,263,880
2040-2050	
Water Resources	
Future Water Resources	\$500,000
Well Supply	
W14-B - 3rd Ave/Joy Ranch Well Head Arsenic Treatment	\$4,300,000
W15 - 7th Street and Joy Ranch	\$1,624,000
W19 - Alternative Supply Connection Study	\$50,000
Miscellaneous	
Miscellaneous	\$250,000
2040-2050 Water CIP Total	\$6,724,000

WASTEWATER

The TOCC's wastewater system covers approximately 2 square miles. It serves a portion of the TOCC's potable water service area, which generally includes incorporated areas of the TOCC east of 44th Street. The TOCC does not provide any wastewater services within the Desert Hills service area. Wastewater is treated at the Town's Water Ranch WRF. Most of the existing collection system has adequate capacity to convey peak dry weather flows with improvements limited to addressing performance, capacity, and condition concerns at lift stations to allow for optimized system operation and conveyance and connecting dry sewer or septic areas to the collection system.

WASTEWATER – 2025 -2035 CIP

↑ 5-YR CIP
 ↓ 10-YR CIP

Project	Estimated Cost
2025 - 2029	
WWTP	
WWTP Equipment Repairs & Improvements	350,000
WW04 - WWTP SBR Tank Improvements	150,000
WW12 - WWTP Replace Order Control Units	750,000
Lift Stations	
WW07 - Chuparosa Lift Station Repairs	1,038,850
Collection System	
WW05 - Manhole Rehabilitation Program	700,000
WW06 - Collection System Repairs	1,150,000
WW01 - Reroute Stagecoach Lift Station Flows	350,000
WW03 - Rancho Manaña Lift Station Replacement	375,000
WW10-1 - Collection System Assessments	200,000
WW10-2 - Force Main Assessments and Cleaning	200,000
WW08-1 - Dry Sewer Connections Phase 1	2,150,000
Miscellaneous	
Miscellaneous	300,000
2025-2029 Water CIP Total	7,713,850
2030 - 2034	
WWTP	
WWTP Equipment Repairs & Improvements	375,000
WW04 - WWTP SBR Tank Improvements	2,155,500
Lift Stations	
WW03 - Rancho Manaña Lift Station Replacement	1,461,600
WW02 - Stagecoach Pass LS improvements - New pumps/piping	100,000
Collection System	
WW05 - Manhole Rehabilitation Program	250,000
WW06 - Collection System Repairs	1,000,000
WW08-2 - Dry Sewer Connections Phase 2	2,150,000
Miscellaneous	
Miscellaneous	225,000
2030-2034 Water CIP Total	7,717,100

WASTEWATER – 2035-2040 CIP



Project	Estimated Cost
2035 - 2039	
WWTP	
WWTP Equipment Repairs & Improvements	400,000
Collection System	
WW09 - Black Mountain Septic to Sewer Conversion	5,000,000
WW11 - New Redundant Force Main along East New River Road	1,146,080
WW05 - Manhole Rehabilitation Program	250,000
WW06 - Collection System Repairs	500,000
Miscellaneous	
Miscellaneous	225,000
2035-2039 Water CIP Total	7,521,080
2040 - 2050	
WWTP	
WWTP Equipment Repairs & Improvements	400,000
Collection System	
WW09 - Black Mountain Septic to Sewer Conversion	5,000,000
WW05 - Manhole Rehabilitation Program	250,000
WW06 - Collection System Repairs	500,000
Miscellaneous	
Miscellaneous	225,000
2040-2050 Water CIP Total	6,375,000

RECLAIMED WATER

The Water Ranch WRF produces Class A+ reclaimed water quality. The TOCC currently sends all the reclaimed water generated to the Rancho Manaña Golf Course for irrigation. However, in months that the reclaimed water either exceeds the irrigation needs and / or available storage in the golf course ponds, water is discharged into Galloway Wash before flowing into the Cave Creek Wash. If the reclaimed water is not sufficient to meet peak summer irrigation demand, the TOCC supplements reclaimed water with untreated CAP water. To better balance water resources and to improve the efficiency of the use of the reclaimed water, the following improvements were identified.

Project	Estimated Cost
2030 - 2034	
City of Phoenix Reclaimed Water Exchange (Option 3)	825,000
Rancho Manaña Efficiency Upgrades	550,000
2030-2034 Reclaimed CIP Total¹	1,375,000

Notes:

The total project costs for the TOCC IUMP Reclaimed Improvements include the highest project cost of R01 – COP Reclaimed Water Exchange (Option 3), which was selected for conservatism.

CAPITAL IMPROVEMENT PLAN

Each IUMP element includes development of a capital improvement plan (CIP) through the buildout horizon summarized on page 4 and shown on pages 5 and 6. The **Water CIP** includes WTPs, booster stations, wells, pipelines, valves, tanks, water resources, and miscellaneous projects. The **Wastewater CIP** includes WWTP, lift stations, collection system, and pipeline projects. The **Reclaimed Water CIP** includes a pipeline project and Rancho Manaña efficiency projects.



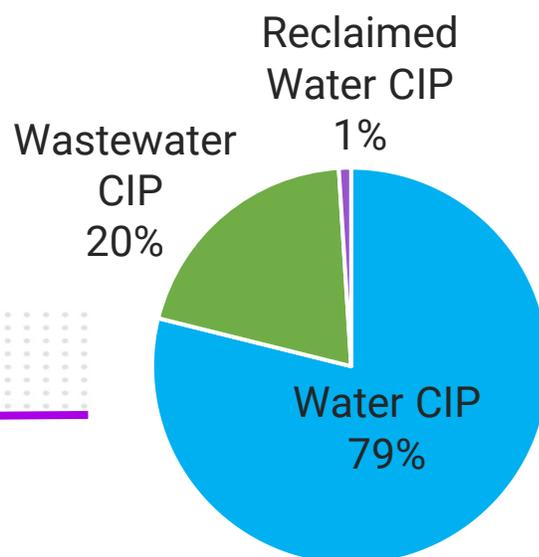
WATER CIP

ELEMENT	TOTAL COST (TOCC)	TOTAL COST (DH)
Water Resources	\$16,178,000	\$11,165,424
WTP / Supply	\$30,694,330	\$10,500,000
Booster Stations	\$2,944,500	\$130,000
Pipelines	\$19,609,127	\$9,163,880
Valves	\$875,400	-
Tanks	-	\$3,000,000
Miscellaneous	\$6,747,500	\$1,050,000
Total	\$77,048,857	\$35,009,304



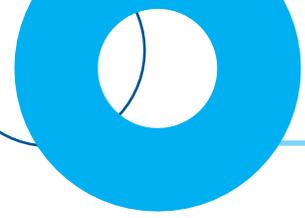
WASTEWATER CIP

ELEMENT	TOTAL COST
WWTP	\$4,580,500
Lift Stations	\$2,600,450
Collection System	\$21,171,080
Miscellaneous	\$975,000
Total	\$29,327,030



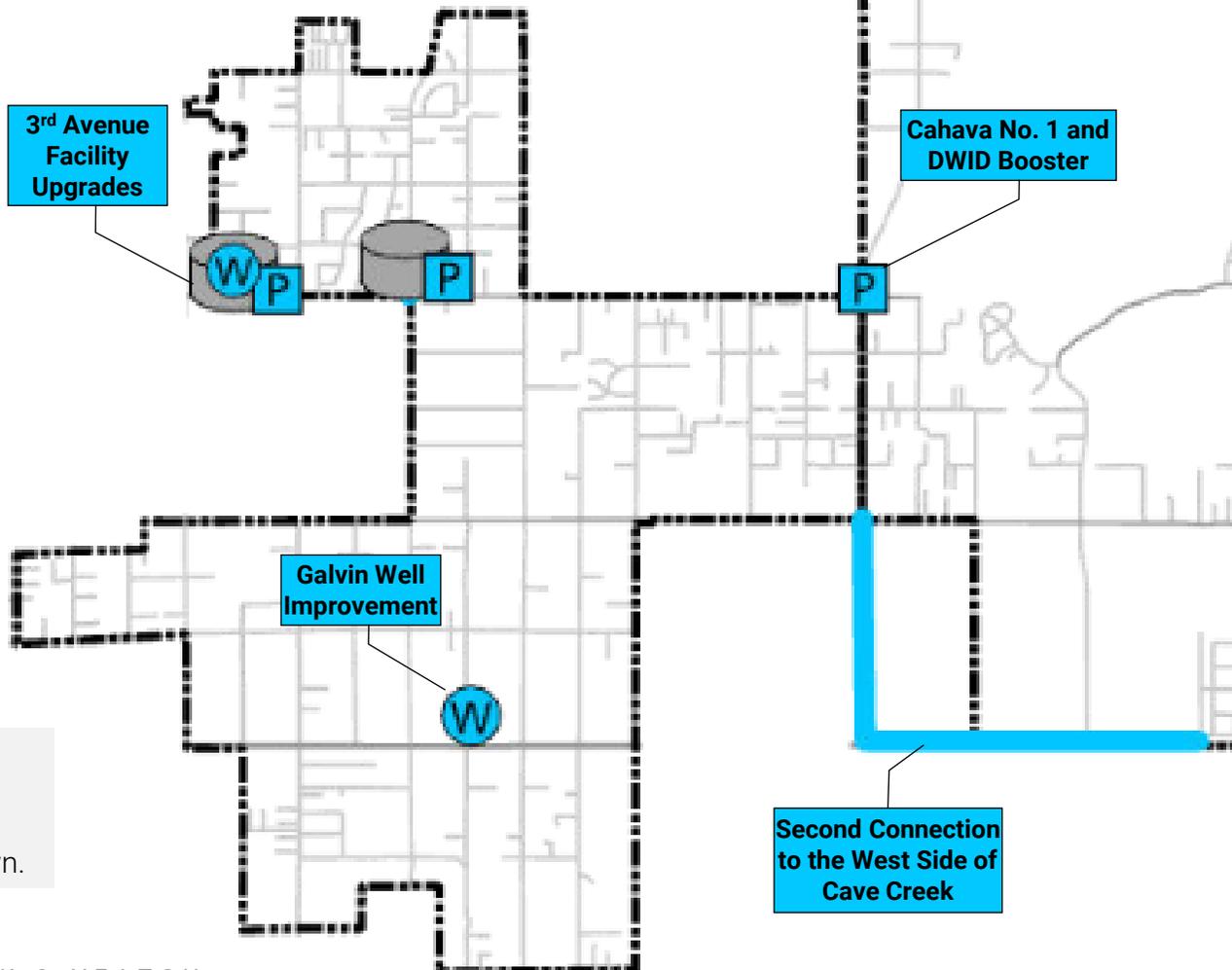
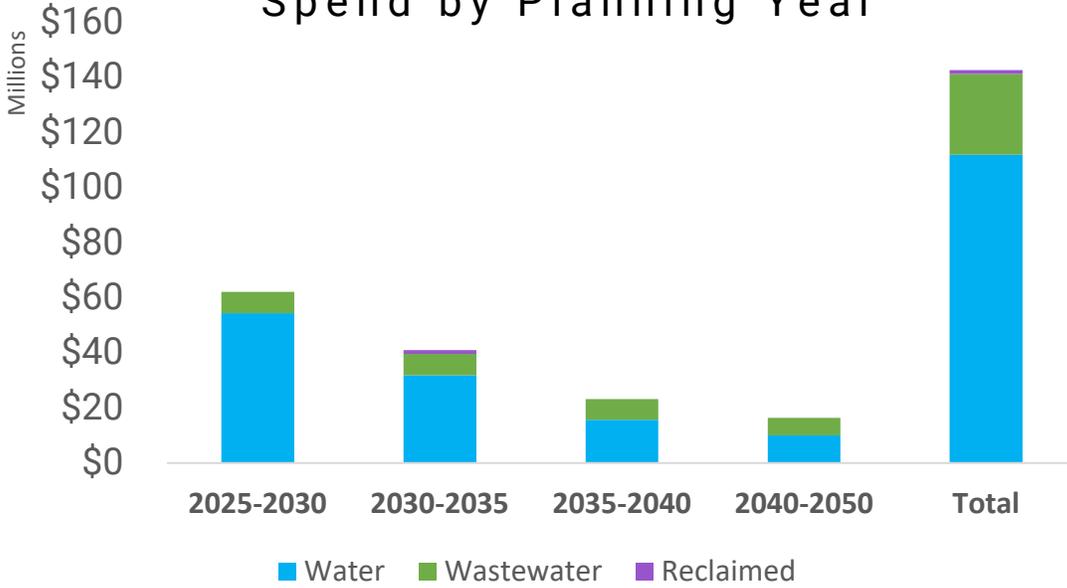
RECLAIMED WATER CIP

ELEMENT	TOTAL COST
Pipelines	825,000
Miscellaneous	\$550,000
Total	\$1,375,000



CAPITAL IMPROVEMENT PLAN

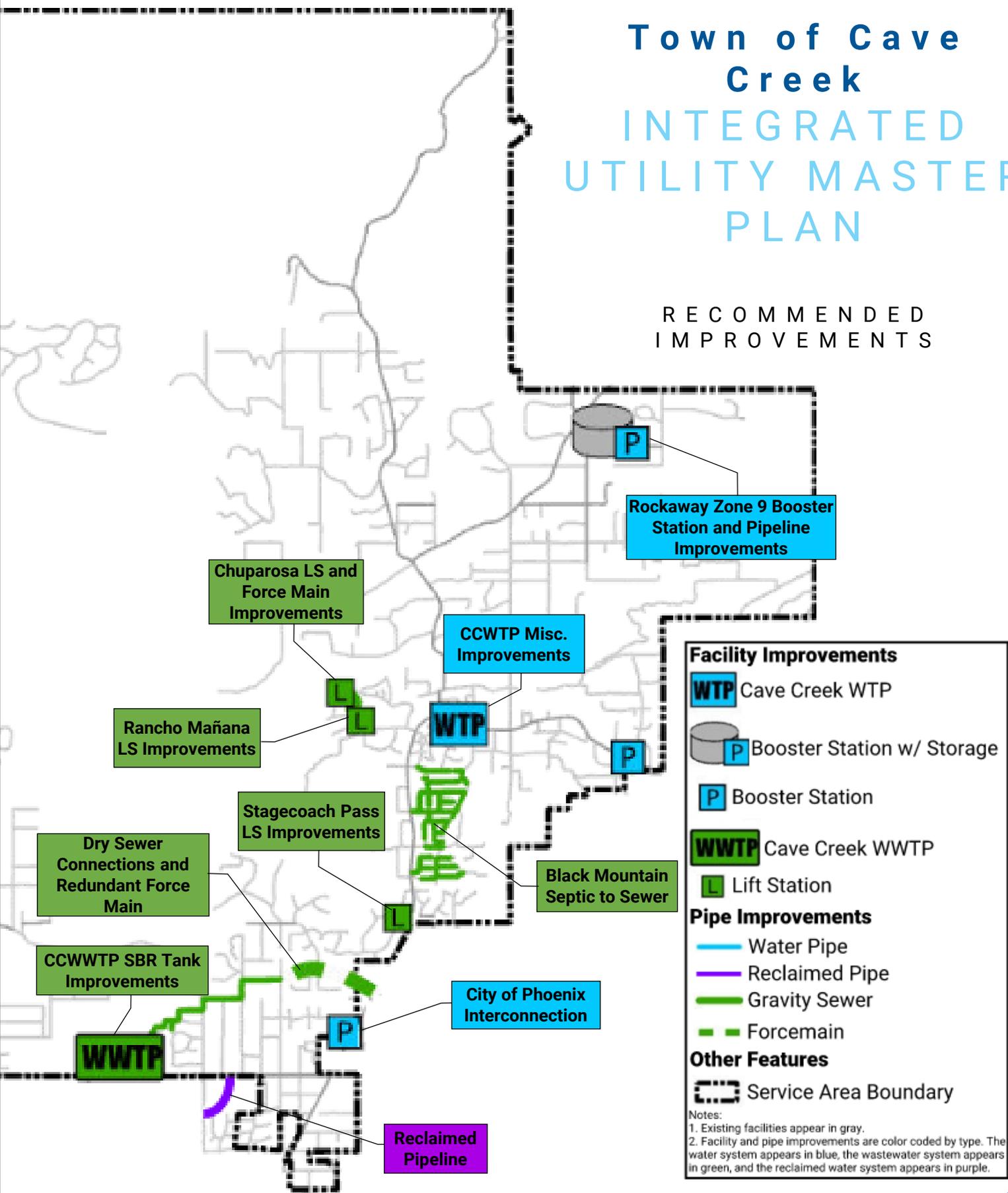
Spend by Planning Year



Note: For clarity of the figure, not all CIP projects are shown.

Town of Cave Creek INTEGRATED UTILITY MASTER PLAN

RECOMMENDED IMPROVEMENTS



Facility Improvements

- WTP** Cave Creek WTP
-  Booster Station w/ Storage
-  Booster Station
- WWTP** Cave Creek WWTP
-  Lift Station

Pipe Improvements

-  Water Pipe
-  Reclaimed Pipe
-  Gravity Sewer
-  Forcemain

Other Features

-  Service Area Boundary

Notes:

1. Existing facilities appear in gray.
2. Facility and pipe improvements are color coded by type. The water system appears in blue, the wastewater system appears in green, and the reclaimed water system appears in purple.



IN ASSOCIATION WITH:

