



**STRAND**  
**ASSOCIATES®**

*Excellence in Engineering<sup>SM</sup>*

# Land Use Assumptions and Capital Improvement Plans Fulfill Important Steps in the Impact Fee Development Process

**Tarkington Special Utility District**

**January 5, 2024**

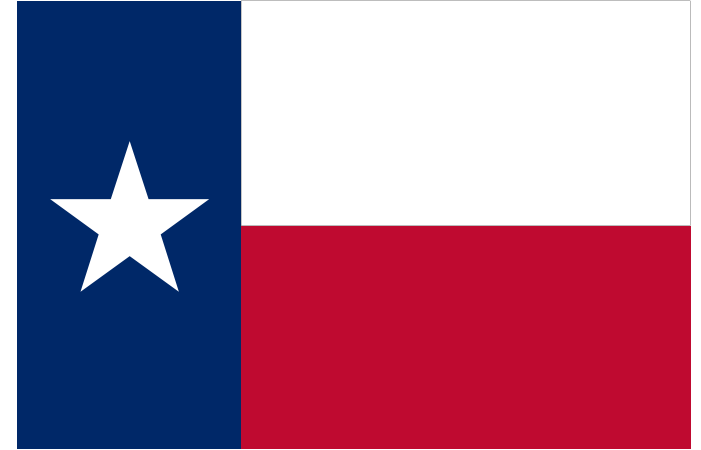
**Blake Faldyn  
Morgan Ruiz**

# Agenda

- What is an Impact Fee? Why Adopt Impact Fees?
- Impact Fee Development Process
- Capital Improvements Advisory Committee (CIAC) Roles and Responsibilities
- Land Use Assumptions (LUAs), Service Areas, and Service Units
- Water Capital Improvement Plan (CIP) Projects
- CIAC Feedback
- Next Steps

# What is an Impact Fee?

- Charge or assessment imposed by a District to generate revenue to fund or recoup costs of capital improvements or facility expansions associated with new development
- Governed by Texas Local Government Code, Chapter 395
- Can be assessed for water, wastewater, roadway, and drainage facilities and expansions thereof
- Items payable by impact fees include construction costs, survey and engineering fees, land acquisition costs, and consulting fees to prepare and update the CIPs
- Calculations consider only the portion of the CIPs attributable to new development over a period of 10 years



© vectorstock.com – sateda

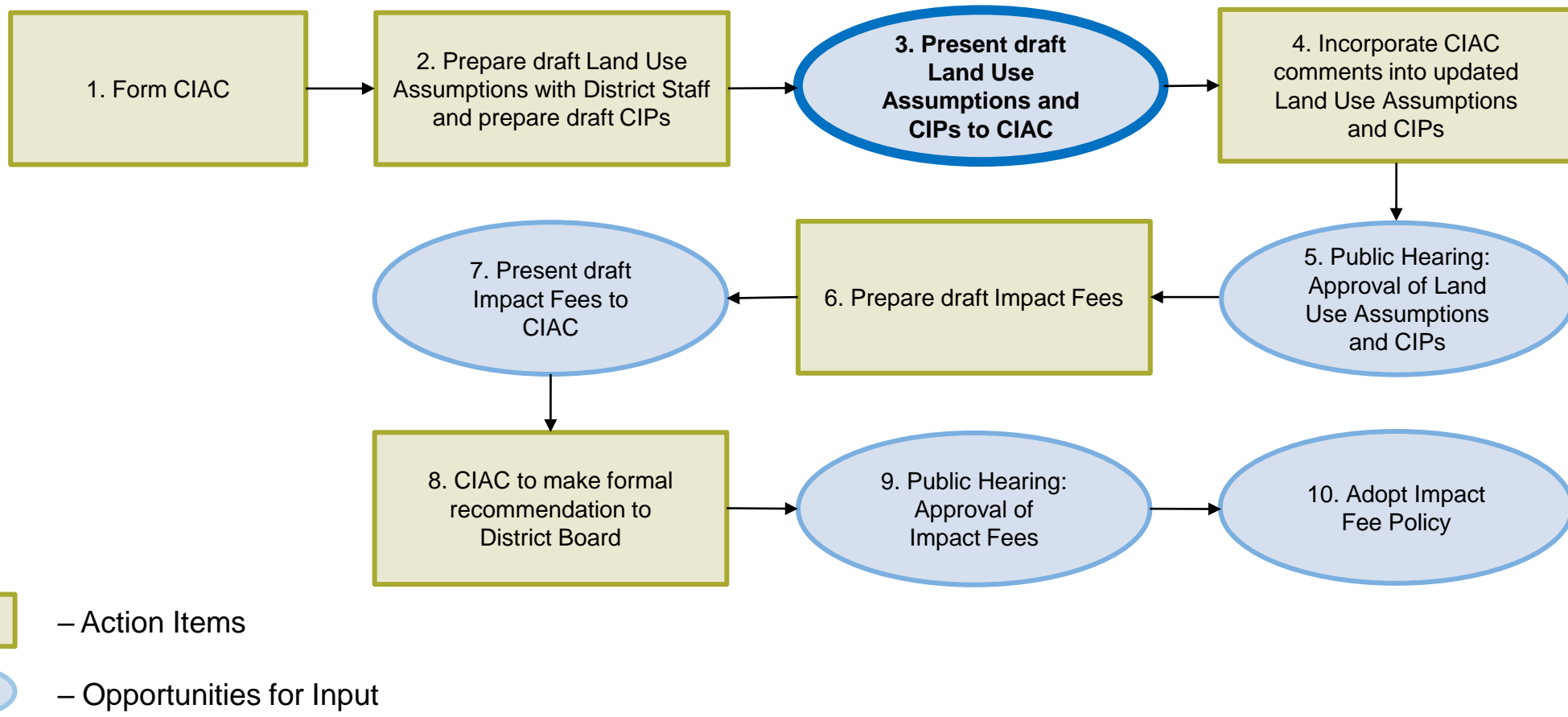
# Why Adopt Impact Fees?

- Infrastructure improvements are needed to serve new development while maintaining regulatory compliance and the quality of life the existing consumers have come to appreciate
- Impact fees provide an alternative means to fund portions of costly off-site infrastructure improvements and facility expansions needed to serve new development
- Lessens the burden of increasing utility rates on existing residents and employers that are currently paying for such infrastructure improvements



Water Plant No. 1 Elevated Storage Tank

# Impact Fee Development Process Provides Multiple Opportunities for Input and Comment



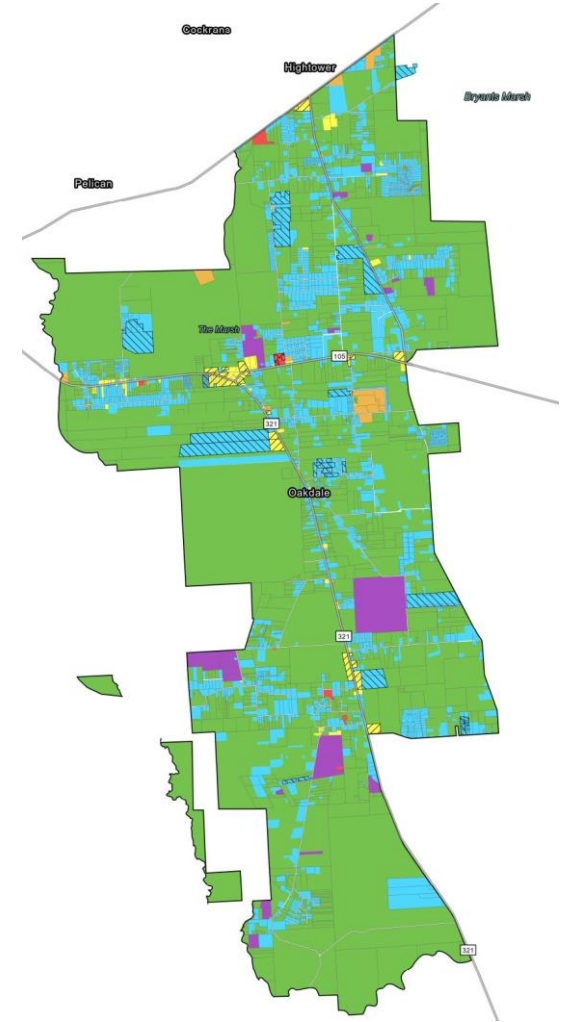
# CIAC Responsibilities Cover Key Aspects of Process and Ensure Appropriate Documentation

- Recommend LUAs, CIPs, and impact fees to the Tarkington Special Utility District (TSUD) Board of Directors
- Review CIPs and file written comments
- Monitor CIP implementation
- File semi-annual progress reports
- Advise the TSUD Board of Directors of the need to update or revise the LUAs, CIPs, and impact fees



# Appropriate Development of LUAs Delivers Strong Foundation for Impact Fee Process

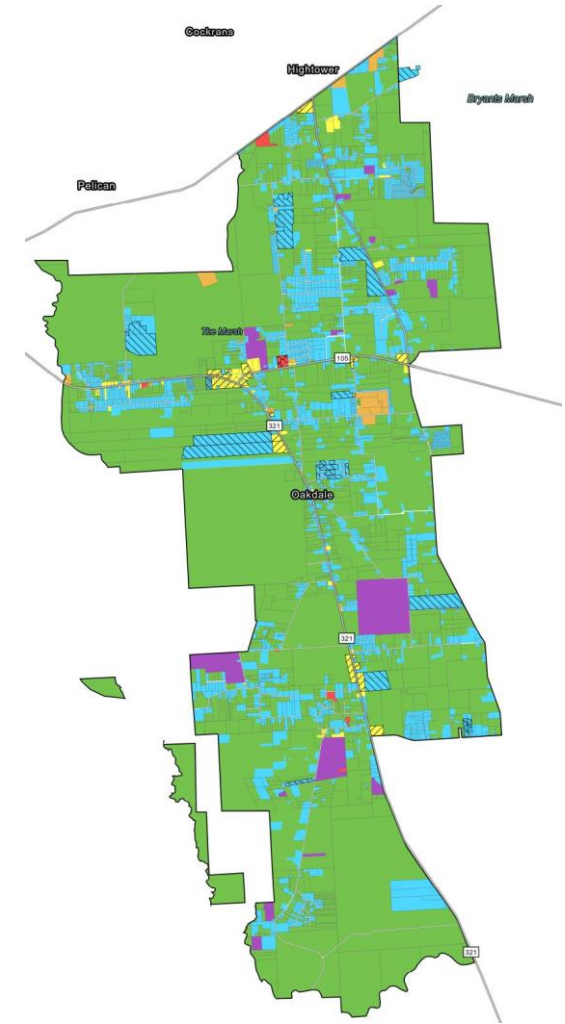
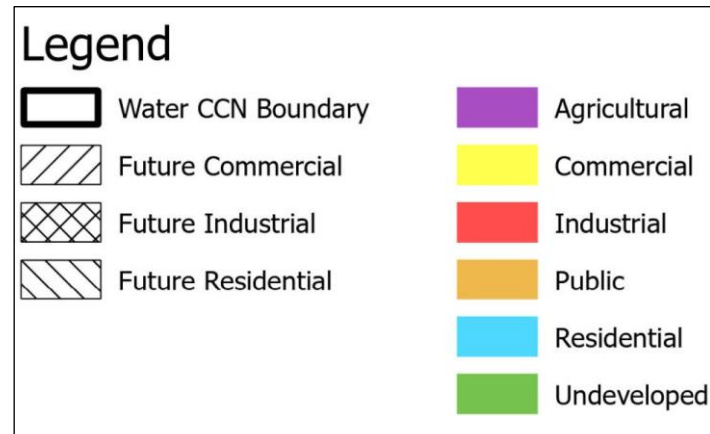
- LUAs: description of the service area and projections of changes in land uses, densities, and population in the service area over a 10-year period
- Work with District staff throughout process
- Integrate known and anticipated future developments
- Incorporate population trends and density projections from state planning entities and other available data
- Present draft LUAs to CIAC and incorporate feedback





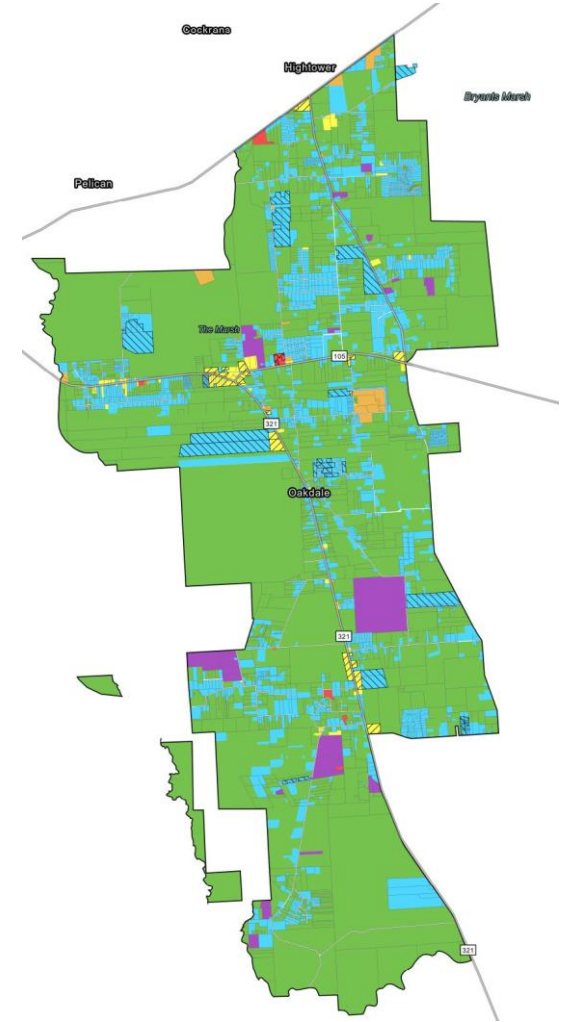
# Systemwide LUA Map Defines Service Area for Water Improvements

- Each parcel of land was evaluated for existing land uses
- Map colors were made to show current land usage (residential, commercial, industrial, etc.)
- Future development shown using hatching for residential, commercial, and industrial land uses



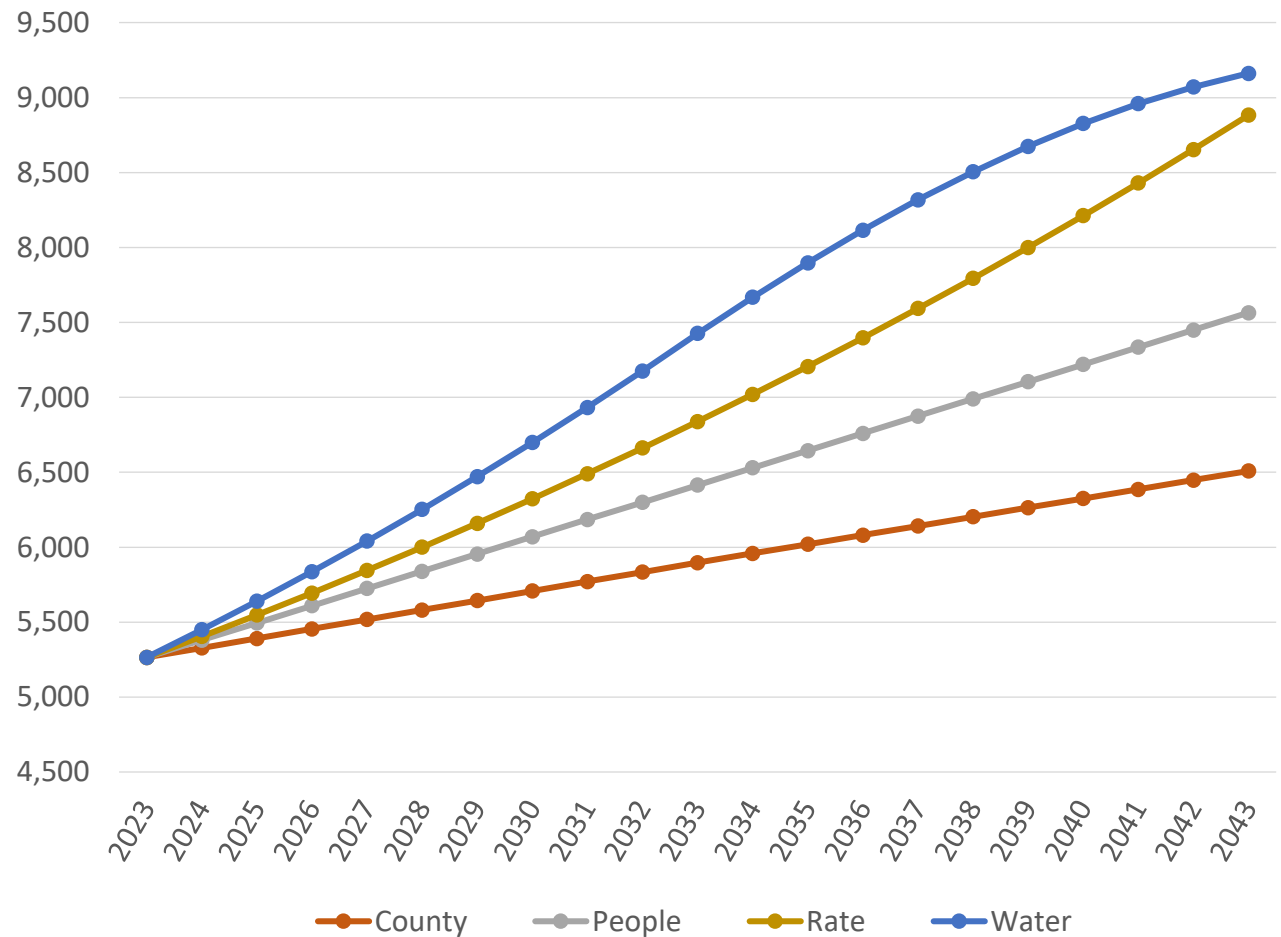
# Population Density Assumptions Reviewed to Identify Possible Full Build-Out Population

- Initial density assumptions:
  - 52% acreage usable for residences
  - 48% usable for streets, drainage, and open spaces
  - Single family residential = 2.5 units per acre
  - Texas Drinking Water Watch = 3.00 people per household
- Population density example:
  - 100-acre single family residential development
  - 52 acres available for residential use
  - 130 single family residences assumed
  - Population increase = 390 people



# Texas Water Development Board Predictions and Historical Growth Trends Analyzed in Preparation of LUA Population Projections

- Three methodologies used to project population growth, tied closely to TWDB and historical growth trends
- Higher population projection needed early on based on known and anticipated future developments



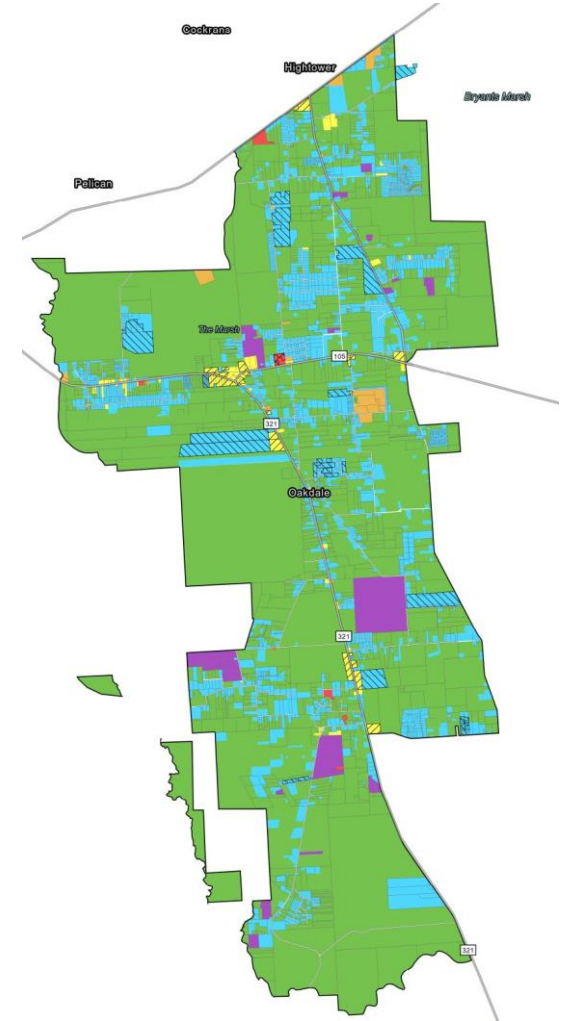
# Water Connections Considered as Basis for LUA Population Projections

- Water connections population projections:
  - + 3.5% annually for first 10 years
  - 0.25% annual growth rate reduction for years 11-20 (i.e., 3.25%, 3.00%, 2.75%...)
  - Results in a 10-year population of 7,427
  - Results in a 20-year population of 9,163
  - 55% of 20-year growth anticipated in the first 10 years
- Systemwide LUA's population projections:
  - Full build-out yields a population growth of 3,822
  - Results in a 20-year population of 9,087

Year	TWDB (County Ratio)	Steady Growth (People)	Steady Growth (Rate)	Water Connections
2023	5,265	5,265	5,265	5,265
2024	5,328	5,380	5,405	5,449
2025	5,392	5,495	5,548	5,640
2026	5,455	5,610	5,695	5,837
2027	5,518	5,725	5,846	6,042
2028	5,581	5,840	6,001	6,253
2029	5,645	5,955	6,160	6,472
2030	5,708	6,070	6,323	6,699
2031	5,771	6,185	6,490	6,933
2032	5,834	6,300	6,662	7,176
<b>2033</b>	5,898	6,415	6,839	<b>7,427</b>
2034	5,959	6,530	7,020	7,668
2035	6,020	6,645	7,206	7,898
2036	6,081	6,760	7,397	8,115
2037	6,142	6,875	7,593	8,318
2038	6,203	6,990	7,794	8,505
2039	6,264	7,105	8,001	8,676
2040	6,325	7,220	8,213	8,827
2041	6,386	7,335	8,431	8,960
2042	6,448	7,450	8,654	9,072
<b>2043</b>	6,509	7,565	8,883	<b>9,163</b>

# Service Units Provide Basis of Measurement for Collection of Impact Fees

- Service units
  - Means to measure use of capital facilities by new development
- Water = Connections
  - Capacity consumed by a single equivalent residential water meter connection
  - 5/8" meter rated for 10 gpm continuous flow
  - Impact fees may be escalated based on water meter types and sizes per AWWA



# TCEQ's Capacity Requirements Compared to Water Production Improvements Based on Connection Growth

- TCEQ connections
  - Current = 1,757 connections (December 2023)
  - 10-year = 995 additional connections (2,752 total)
- Total storage – 200 gallons per connection
  - 744,000 gallons = 3,720 total connections (47.2%)
- Elevated storage – 100 gallons per connection
  - 500,000 gallons = 5,000 total connections (35.1%)



Water Plant No. 1 Well, GST, and EST



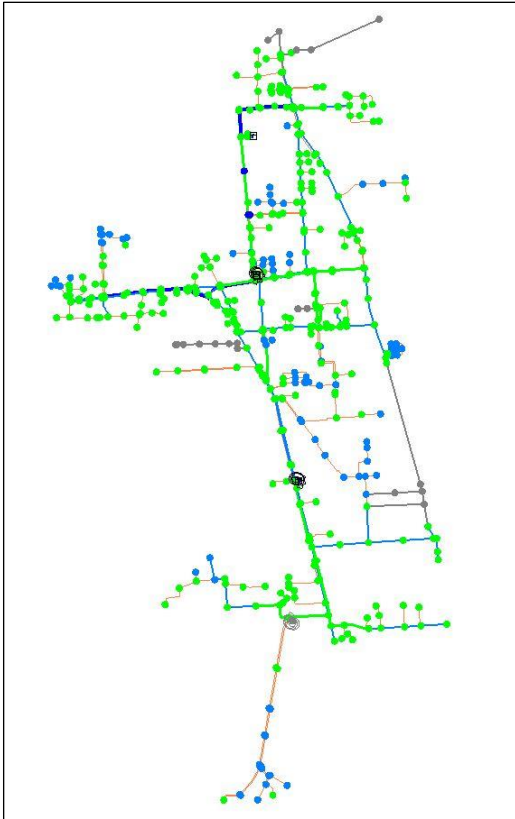
# Production and Pumping Improvements Required to Maintain System Pressures and Meet TCEQ Capacity Requirements

- Water production – 0.6 gpm per connection
  - 1,605 gpm = 2,675 total connections (65.7%)
  - 85% Rule = 2,274 total connections\*
- Service pumping – 0.892 gpm per connection
  - Water Plant Nos. 1 and 2 – 2,100 gpm  
= 2,355 total connections (74.6%)\*
- System pressures – minimum of 35 psi
- Groundwater Treatment Plant Improvements
  - One well, treatment, ground storage, and pumping

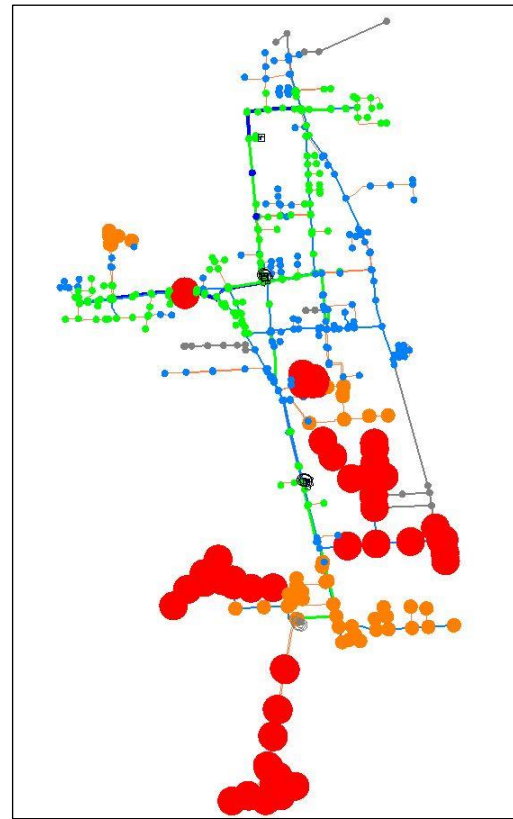


Water Plant No. 2 Pump Station, GST, and EST

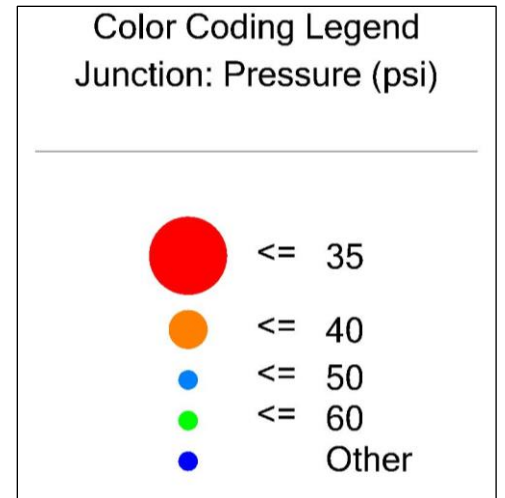
# Calibrated Hydraulic Model Used to Simulate System Pressure Changes Because of Anticipated 10-Year Development Growth



Existing system pressures



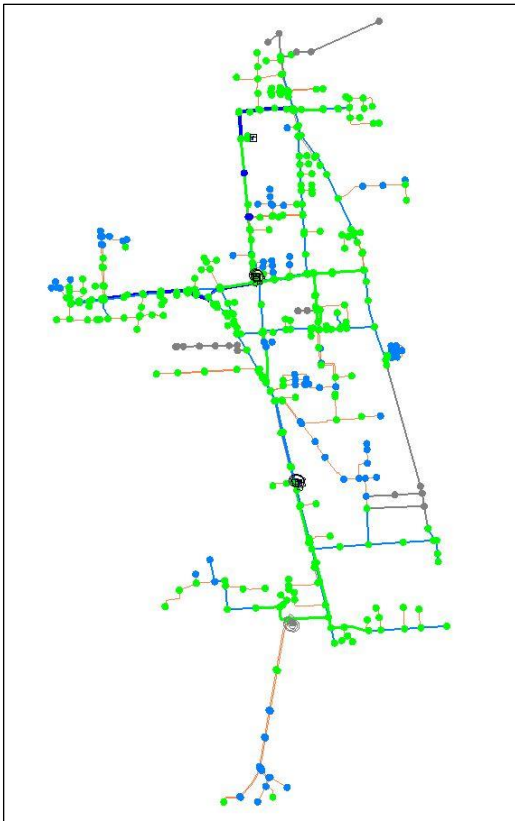
10-year system pressures  
(no improvements)



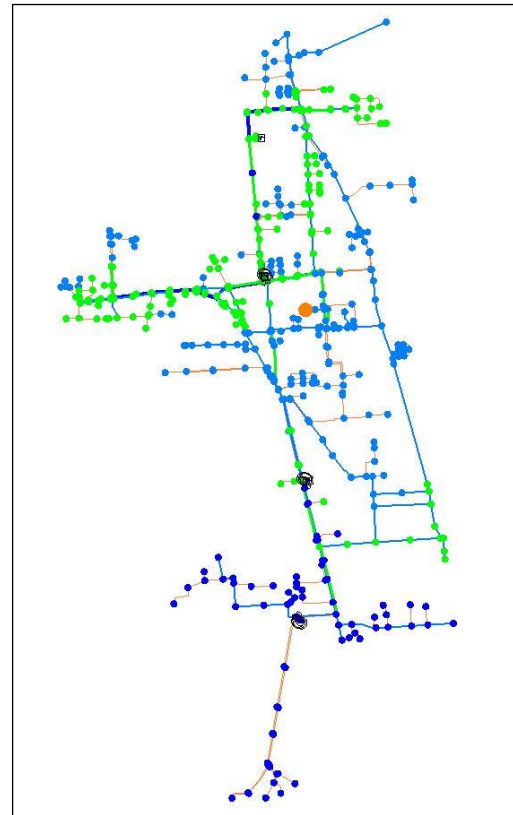
Legend



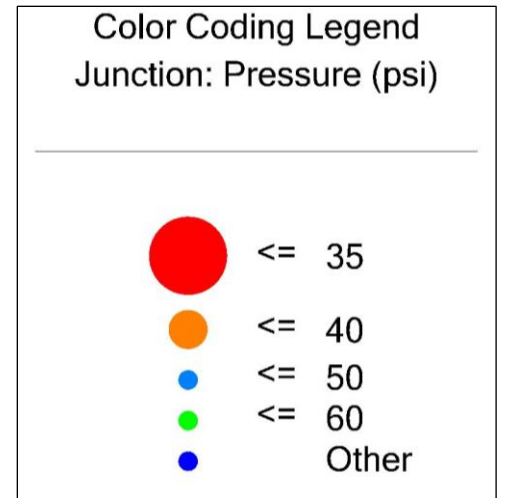
# Water Distribution System Improvements Needed to Increase Development-Related Pressure Deficiencies



Existing system pressures



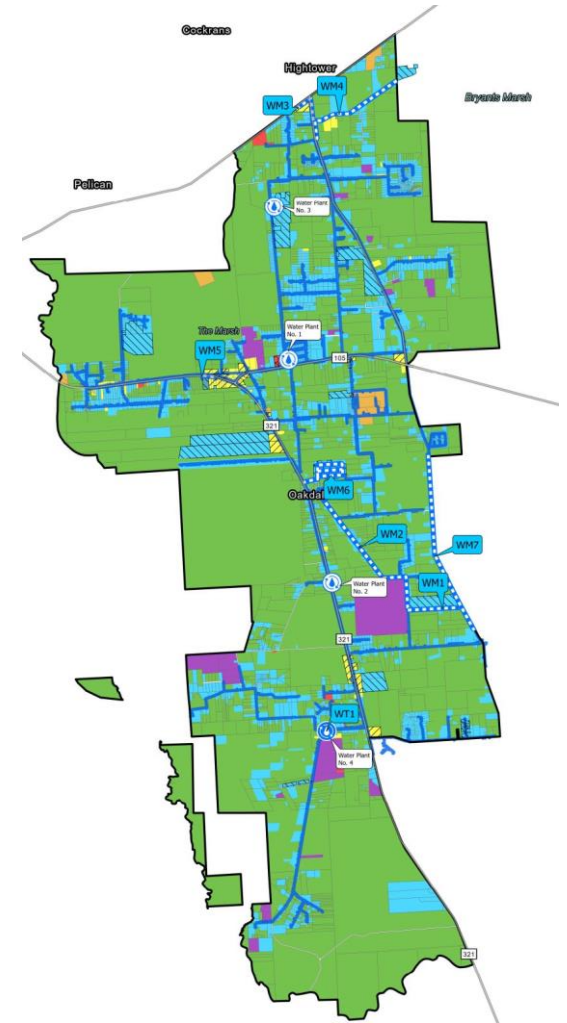
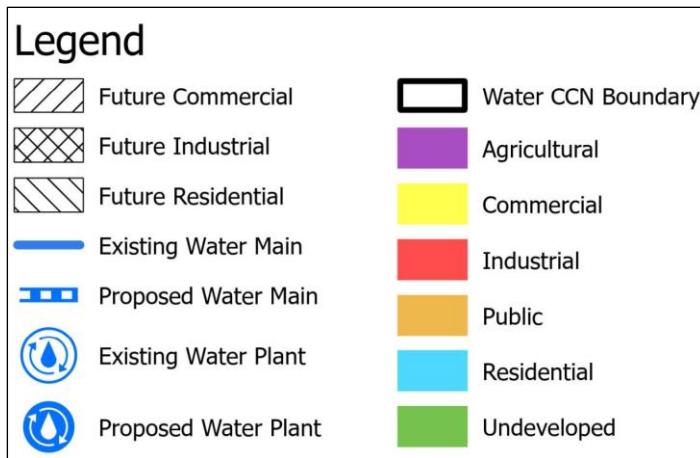
10-year system pressures  
(with improvements)



Legend

# TCEQ Compliance Maintained Through Combination of Water Treatment, Storage, Pumping, and Distribution Projects

- WT = Water Treatment (1 project)
- WM = Water Mains (7 projects)
- Study = Water Impact Fee Study



# Impact Fees Fund Eligible Capacity Improvements on the Water CIP

Water CIP Projects				Connections Served By Project				Opinion of Probable Costs		
ID	Name	Year	Project Description	Ultimate	Existing	10-Year	10-Year (%)	Total Costs (2023 Dollars)	10-Year Costs (2023 Dollars)	10-Year Costs (Escalated)
WT1	Plant 4 Improvements	2031	Construct a groundwater plant having one well, BPS, GST, and treatment facilities.	667	0	205	30.7%	\$ 3,900,000	\$ 1,198,651	\$ 1,672,923
WM1	County Road 2278B WM	2024	4,700 LF of 6-inch water main extension along County Road 2278B.	125	0	125	100.0%	\$ 1,015,000	\$ 1,015,000	\$ 1,076,505
WM2	County Road 2274 WM	2025	14,750 LF of 6-inch water main replacement along County Road 2274.	210	85	125	59.5%	\$ 3,180,000	\$ 1,892,857	\$ 2,087,859
WM3	FM 2518 WM	2026	3,400 LF of 6-inch water main extension along FM 2518.	15	0	9	60.0%	\$ 735,000	\$ 441,000	\$ 505,889
WM4	County Road 2184 WM	2028	12,200 LF of 6-inch water main extension along County Road 2184.	47	0	47	100.0%	\$ 2,620,000	\$ 2,620,000	\$ 3,250,758
WM5	TX-321 WM	2030	1,100 LF of 6-inch water main replacement along TX-321.	52	3	29	55.8%	\$ 250,000	\$ 139,423	\$ 187,105
WM6	County Road 2271 WM	2032	9,700 LF of 6-inch water main replacement along County Road 2271, 2272, and 2273.	65	28	22	33.8%	\$ 2,090,000	\$ 707,385	\$ 1,026,768
WM7	CR 2285/ FM 163 WM	2033	15,950 LF of 6-inch water main extension along County Road 2285/ FM 163.	140	0	140	100.0%	\$ 3,420,000	\$ 3,420,000	\$ 5,162,691
Study	Study	2023	Water Impact Fee Study	1	0	1	100.0%	\$ 55,000	\$ 55,000	\$ 55,000
								\$ 17,265,000	\$ 11,489,316	\$ 15,025,499

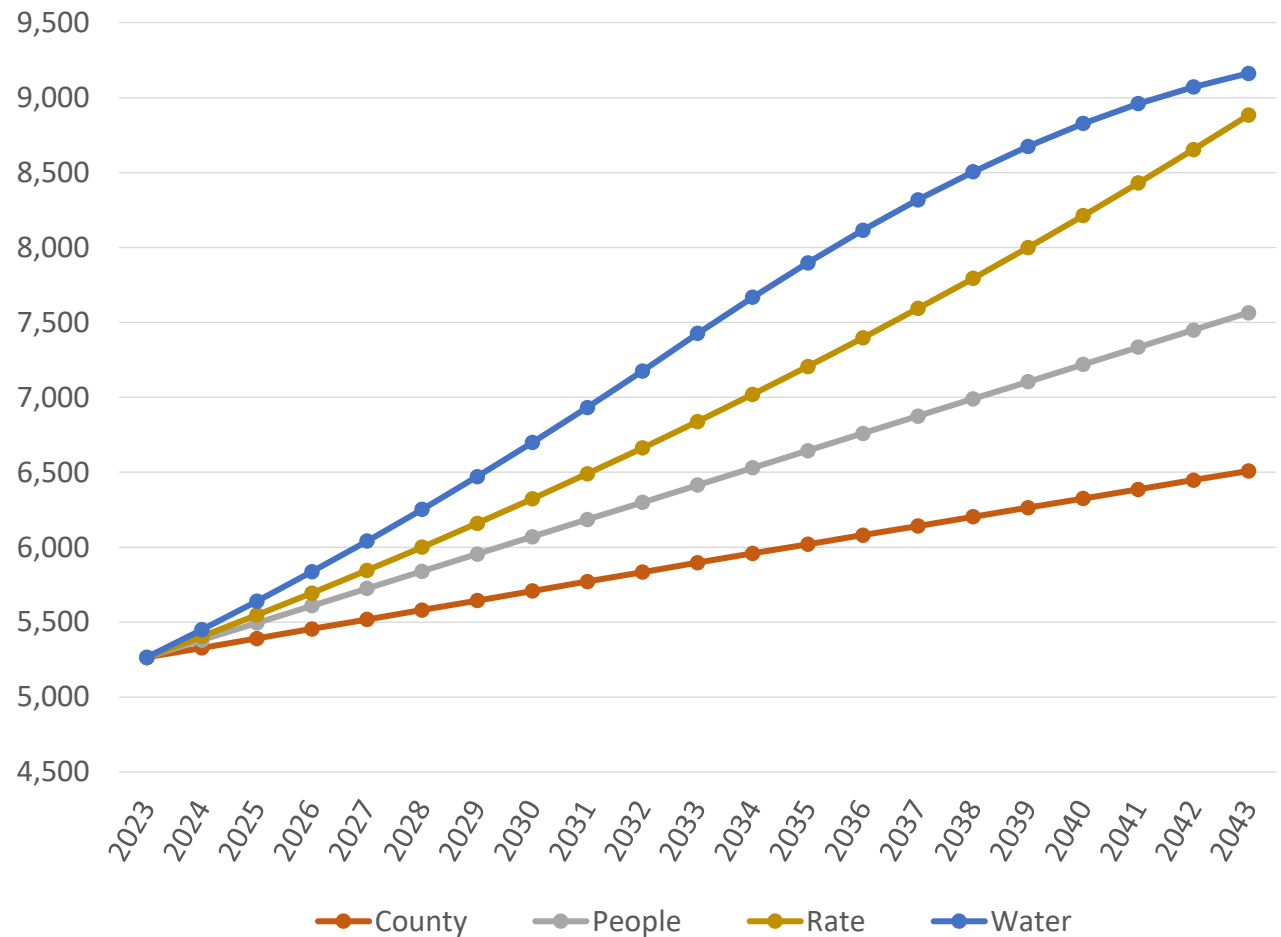


# Incorporating CIAC Feedback Improves Confidence in Impact Fee Study

- Consensus items:
  - Population projections
  - Additional development areas for the future land use assumptions Map
  - Water CIPs to include all projects
  - Proposed prioritization of CIP projects

# Texas Water Development Board Predictions and Historical Growth Trends Analyzed in Preparation of LUA Population Projections

- Three methodologies used to project population growth, tied closely to TWDB and historical growth trends
- Higher population projection needed early on based on known and anticipated future developments



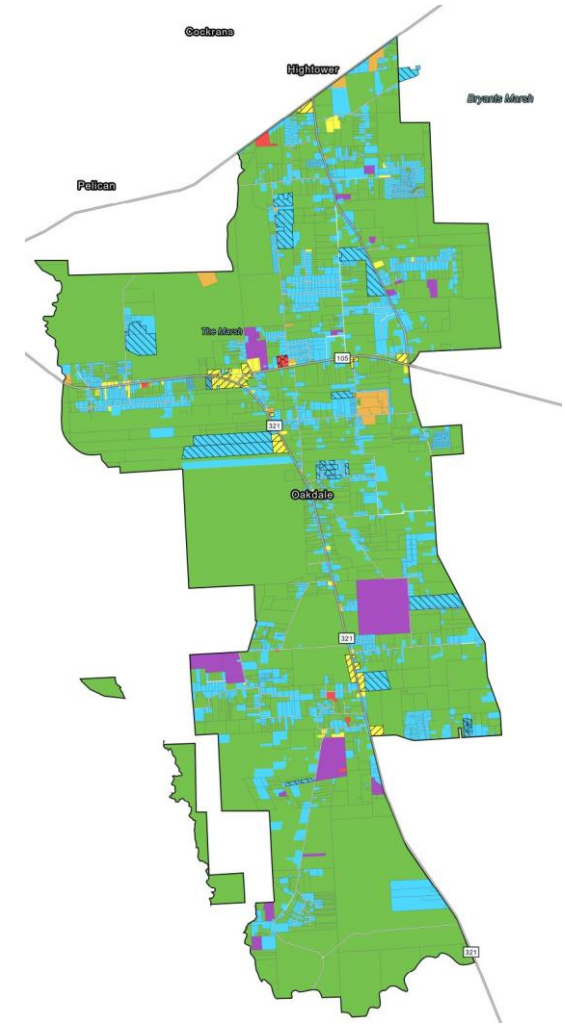
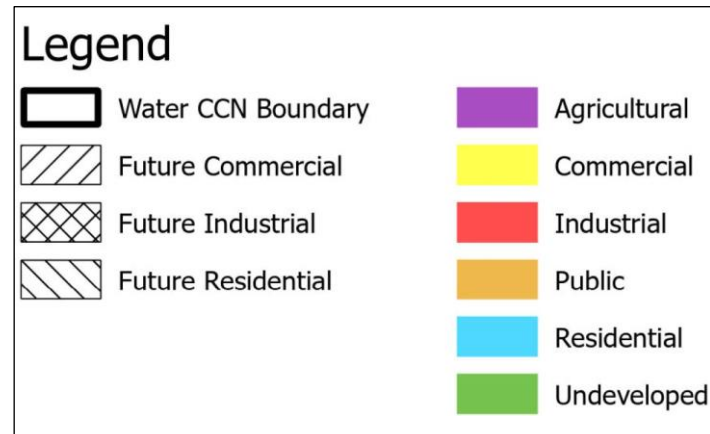
# Water Connections Considered as Basis for LUA Population Projections

- Water connections population projections:
  - + 3.5% annually for first 10 years
  - 0.25% annual growth rate reduction for years 11-20 (i.e., 3.25%, 3.00%, 2.75%...)
  - Results in a 10-year population of 7,427
  - Results in a 20-year population of 9,163
  - 55% of 20-year growth anticipated in the first 10 years
- Systemwide LUA's population projections:
  - Full build-out yields a population growth of 3,822
  - Results in a 20-year population of 9,087

Year	TWDB (County Ratio)	Steady Growth (People)	Steady Growth (Rate)	Water Connections
2023	5,265	5,265	5,265	5,265
2024	5,328	5,380	5,405	5,449
2025	5,392	5,495	5,548	5,640
2026	5,455	5,610	5,695	5,837
2027	5,518	5,725	5,846	6,042
2028	5,581	5,840	6,001	6,253
2029	5,645	5,955	6,160	6,472
2030	5,708	6,070	6,323	6,699
2031	5,771	6,185	6,490	6,933
2032	5,834	6,300	6,662	7,176
<b>2033</b>	5,898	6,415	6,839	<b>7,427</b>
2034	5,959	6,530	7,020	7,668
2035	6,020	6,645	7,206	7,898
2036	6,081	6,760	7,397	8,115
2037	6,142	6,875	7,593	8,318
2038	6,203	6,990	7,794	8,505
2039	6,264	7,105	8,001	8,676
2040	6,325	7,220	8,213	8,827
2041	6,386	7,335	8,431	8,960
2042	6,448	7,450	8,654	9,072
<b>2043</b>	6,509	7,565	8,883	<b>9,163</b>

# Systemwide LUA Map Defines Service Area for Water Improvements

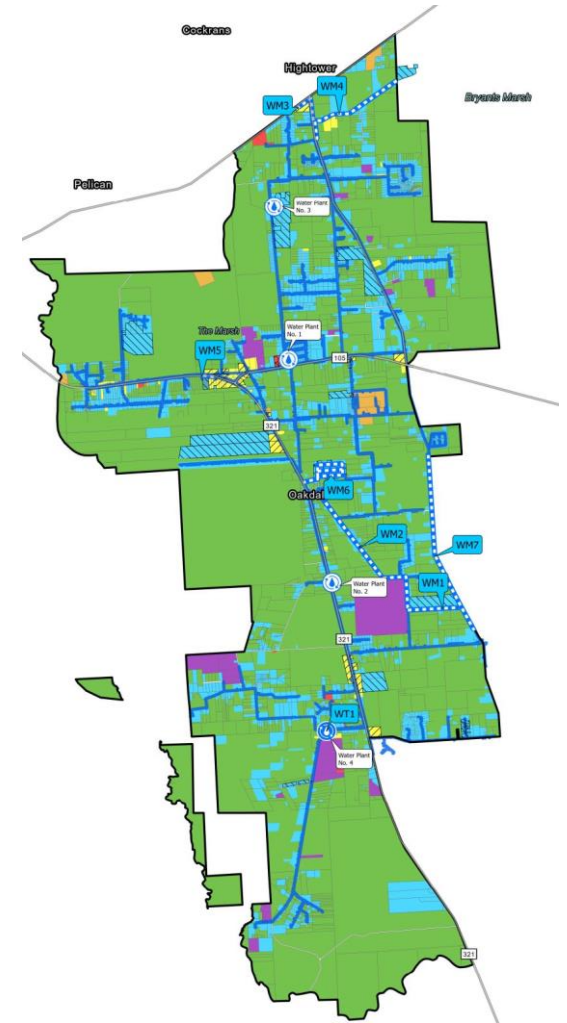
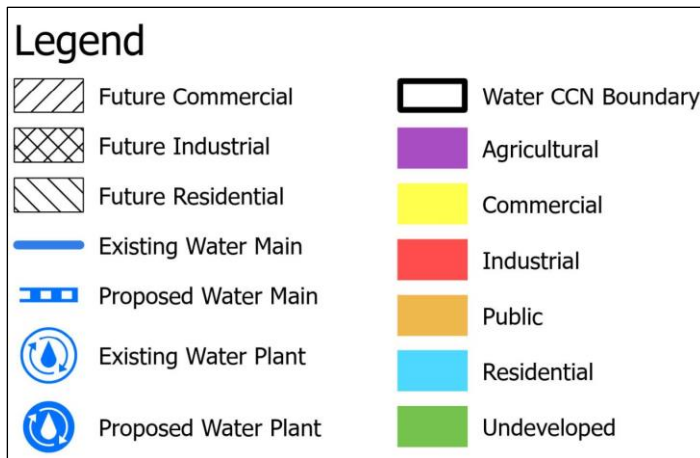
- Each parcel of land was evaluated for existing land uses
- Map colors were made to show current land usage (residential, commercial, industrial, etc.)
- Future development shown using hatching for residential, commercial, and industrial land uses





# TCEQ Compliance Maintained Through Combination of Water Treatment, Storage, Pumping, and Distribution Projects

- WT = Water Treatment (1 project)
- WM = Water Mains (7 projects)
- Study = Water Impact Fee Study





# Impact Fees Fund Eligible Capacity Improvements on the Water CIP

Water CIP Projects				Connections Served By Project				Opinion of Probable Costs		
ID	Name	Year	Project Description	Ultimate	Existing	10-Year	10-Year (%)	Total Costs (2023 Dollars)	10-Year Costs (2023 Dollars)	10-Year Costs (Escalated)
WT1	Plant 4 Improvements	2031	Construct a groundwater plant having one well, BPS, GST, and treatment facilities.	667	0	205	30.7%	\$ 3,900,000	\$ 1,198,651	\$ 1,672,923
WM1	County Road 2278B WM	2024	4,700 LF of 6-inch water main extension along County Road 2278B.	125	0	125	100.0%	\$ 1,015,000	\$ 1,015,000	\$ 1,076,505
WM2	County Road 2274 WM	2025	14,750 LF of 6-inch water main replacement along County Road 2274.	210	85	125	59.5%	\$ 3,180,000	\$ 1,892,857	\$ 2,087,859
WM3	FM 2518 WM	2026	3,400 LF of 6-inch water main extension along FM 2518.	15	0	9	60.0%	\$ 735,000	\$ 441,000	\$ 505,889
WM4	County Road 2184 WM	2028	12,200 LF of 6-inch water main extension along County Road 2184.	47	0	47	100.0%	\$ 2,620,000	\$ 2,620,000	\$ 3,250,758
WM5	TX-321 WM	2030	1,100 LF of 6-inch water main replacement along TX-321.	52	3	29	55.8%	\$ 250,000	\$ 139,423	\$ 187,105
WM6	County Road 2271 WM	2032	9,700 LF of 6-inch water main replacement along County Road 2271, 2272, and 2273.	65	28	22	33.8%	\$ 2,090,000	\$ 707,385	\$ 1,026,768
WM7	CR 2285/ FM 163 WM	2033	15,950 LF of 6-inch water main extension along County Road 2285/ FM 163.	140	0	140	100.0%	\$ 3,420,000	\$ 3,420,000	\$ 5,162,691
Study	Study	2023	Water Impact Fee Study	1	0	1	100.0%	\$ 55,000	\$ 55,000	\$ 55,000
								\$ 17,265,000	\$ 11,489,316	\$ 15,025,499

## Next Steps

Action	Anticipated Date
CIAC Presentation No. 1 – Draft Land Use Assumptions and Water CIPs	Mid January 2024
Board Meeting – Public Hearing for Approval of Land Use Assumptions and CIPs	April 8, 2024
CIAC Presentation No. 2 – Draft Impact Fees	End April 2024
Board Meeting – Public Hearing for Approval of Impact Fees	July 8, 2024
Board Meeting – Adopt Impact Fee Policy	August 12, 2024

# Questions?



© ma\_rish – vectorstock.com



**STRAND**  
**ASSOCIATES®**

*Excellence in Engineering<sup>SM</sup>*