San Antonio Water System

2014 – 2023

Land Use Assumptions Plan for Water Supply, Water Service and Wastewater Service

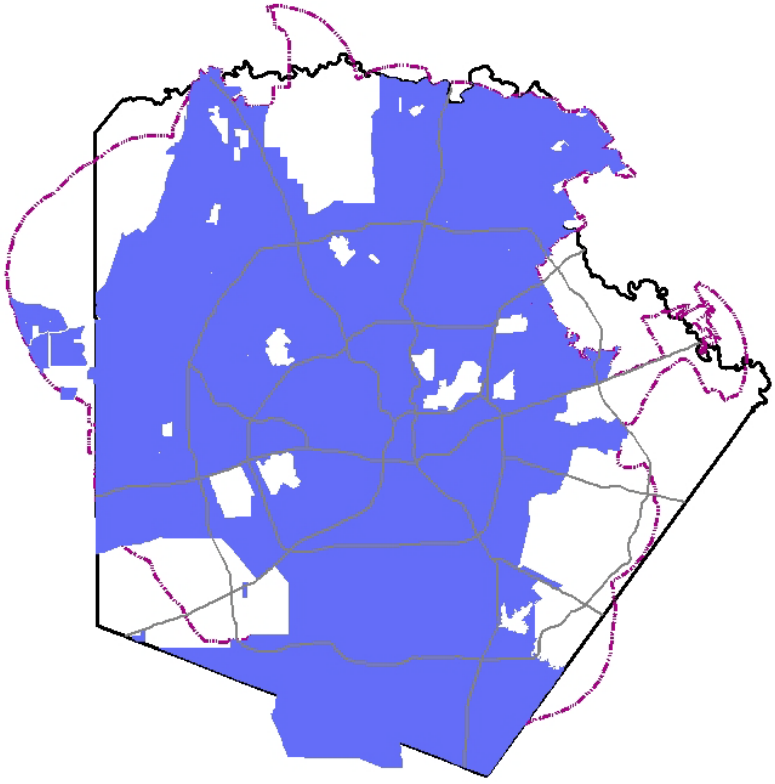
DRAFT May 2013

Land Use Assumptions Plan

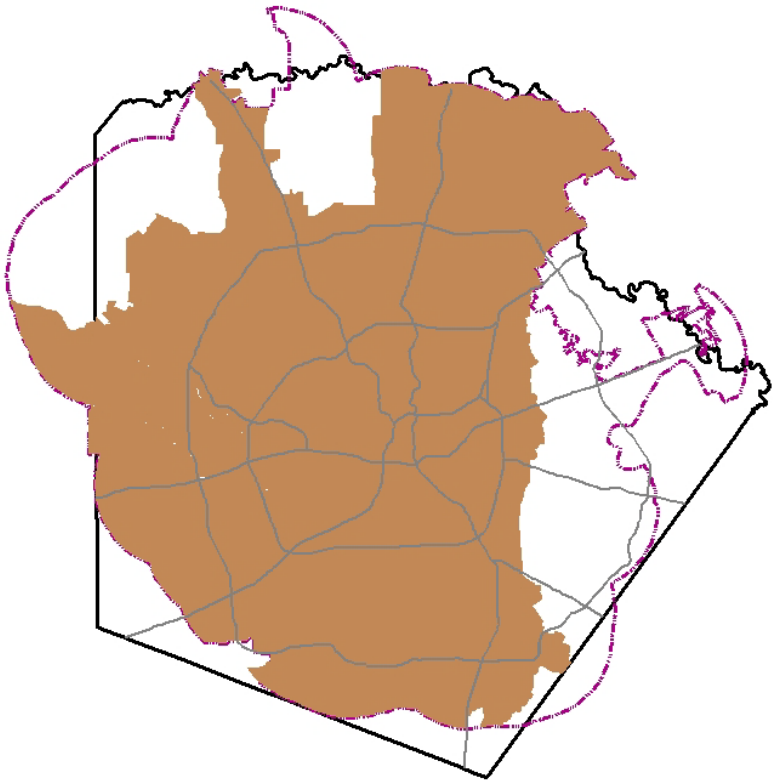
Chapter 395 of the Texas Local Government Code empowers cities to calculate, impose and collect impact fees to fund capital improvements required to serve new development. This legislation requires a utility to adopt a Land Use Assumptions Plan (LUAP) and a Capital Improvements Plan (CIP) before assessing or collecting impact fees. The CIP and the maximum allowable impact fees must be based upon the adopted LUAP.

The Land Use Assumptions Plan incorporates the best information available to project future land use and demand for service areas in which a municipality intends to supply utility services. The service areas established by SAWS for potable water are Water Supply, which includes all sources of water; System Development, which includes water pumps, storage tanks, and transmission lines; and Flow, which are water distribution lines. The wastewater service areas are Treatment, which is the water recycling centers; and Collection, the wastewater pipes and lift stations. Land use assumptions are based on a ten-year period. These assumptions may be general and do not require detailed projections for specific tracts of land.

The San Antonio Water System (SAWS) currently provides water and wastewater service to large portions of Bexar County and small parts of Atascosa and Medina counties. State authority is provided by a Certificate of Convenience & Necessity (CCN) and some service is provided by contract outside of the CCN. The following two maps show the general areas of service. These boundaries have recently changed with the addition of the CCNs formerly served by the Bexar Metropolitan Water District, and some pending CCN applications for water and sewer service have been withdrawn.



Water Service Area



Wastewater Service Area

Methodology

Current land use

Land use assumptions for the future are based on current land use. Current land use is primarily based on Bexar County Appraisal District databases but is refined with SAWS customer data, Alamo Area Council of Governments (AACOG) land use studies and aerial photo documentation. The area land use distribution is:

	Water		Wastewater	
Land Use	**Acres**	**Percentages**	**Acres**	**Percentages**
Commercial	**76,568**	**15%**	**83,335**	**15%**
Industrial	**5,675**	**1%**	**5,675**	**1%**
Residential	**123,323**	**24%**	**125,352**	**23%**
Undevelopable	**67,386**	**13%**	**68,037**	**13%**
Vacant	**244,449**	**47%**	**260,537**	**48%**
Total Acres	**517,402**		**542,937**	

Undevelopable land includes parks, lakes, cemeteries, roads, landfills, easements and floodplains. Vacant land does not fall into other categories and could develop into any of the other categories.

Population and Projections

The San Antonio area has an adopted methodology for projecting population for use by many area agencies. This process coordinates information from state and local agencies and incorporates data from private sector master plans.

The population projections in this LUAP are based on an area wide model for assessing future transportation improvements. The San Antonio-Bexar County Metropolitan Planning Organization (MPO) is the coordinating body for this information and the model is run by the Alamo Area Council of Governments (AACOG). This model is the most widely used tool for regional projections in the United States. A committee composed of representatives from such agencies as SAWS, City of San Antonio and neighboring cities,

TxDOT, Texas Workforce Commission, CPS Energy, and Bexar County serve as technical reviewers. Elected officials and Chambers of Commerce members also provide review.

The model projects allocated population within the MPO study area (Bexar County and parts of Comal and Guadalupe Counties). The population for the total area is consistent with projections provided by the Texas State Data Center (SDC) and the Texas Water Development Board (TWDB). The SDC projects county population using Census data and migration and birth rates within the state. The local modeling data inputs include existing land uses, household sizes and birthrates, employment numbers and types, future roads and developable land. The model projects future households, population and employment based on common transportation and land use relationships as well as local demographic relationships based on the inputs.

The model outputs are population, households and employment by 278 census tracts as well as further allocations to 917 smaller Transportation Analysis Zones (TAZ). SAWS projections are based on the best fit of the TAZ boundaries to the land use distribution.

EDU Calculations and Factors

For the LUAP, the common measure used is an Equivalent Dwelling Unit (EDU). This is the standardized measure of demand expressed as water flow for an average household unit. One water EDU equals 313 gallons per day. A single family residence using a $^{5}/_{8}$" meter has one EDU demand on the water system. Commercial and industrial users have larger meters, more demand and larger numbers of EDUs. A wastewater EDU is equivalent to 240 gallons.

The Population to EDU factor is useful to represent population as demand, currently and in the future. The EDUs are based on modified projections from the 2008 Water Infrastructure Plan. The water EDU calculation is shown below.

Water EDUs

Calculation of Water EDUs

1	2	3	4	5	6	7	8
	Active Meter	Apartment	(2 - 3)	Non-apartments	(4 * 5)	Apartment Units	(6 + 7)
Meter Size	Count	Master Meters	Meters	EDU/Meter Size	EDU	183,463	
5/8	394,855	1,456	393,399	1	393,399		
3/4	37,219	182	37,037	1.5	55,556		
1	12,669	583	12,086	2	24,172	93% occupancy	
1 1/2	7,022	344	6,678	5	33,390	170,621	
2	4,554	619	3,935	14	55,090		
3	853	210	643	30	19,290		
4	562	222	340	50	17,000		
6	210	197	13	105	1,365		
8	81	40	41	135	5,535		
10	18	7	11	190	2,090	1/2 units	
Total	**458,043**	**3,860**	**454,183**		**606,887**	**85,310**	**692,197**
2012 population		**1,659,593**		**Population/EDU =**	**2.40**		

Column 2 shows the distribution of meter sizes within the System. Since apartment master meter sizes are not clearly correlated to apartment use, they are removed until the end of the calculation. Column 5 shows the EDU to meter size ratio developed from data provided by the American Water Works Association (AWWA) and used in previous SAWS impact fee studies. The total in column 6 is water system EDUs, without considering apartments. Apartment units represent at least 25% of housing units in San Antonio so their count is important to the EDU calculation. The total number of units is estimated from data provided by SAWS, CPS Energy, the San Antonio Apartment Association, BCAD and private data sources. These sources and the 2010 Census show a 93% occupancy rate for all apartments. Occupancy represents active apartment units. Past SAWS studies have shown that the average apartment water use per unit represents approximately 50% of residential water use. Each of these considerations yields the apartment EDU total. This total is added to the EDUs and the sum is shown in column 8. The final calculation yields a population to EDU ratio of 2.40.

The population for 2012 is estimated from census tracts, residential and apartment connection data. Quality control is conducted to compare TAZ estimates to connections and persons per household estimates.

Wastewater EDUs

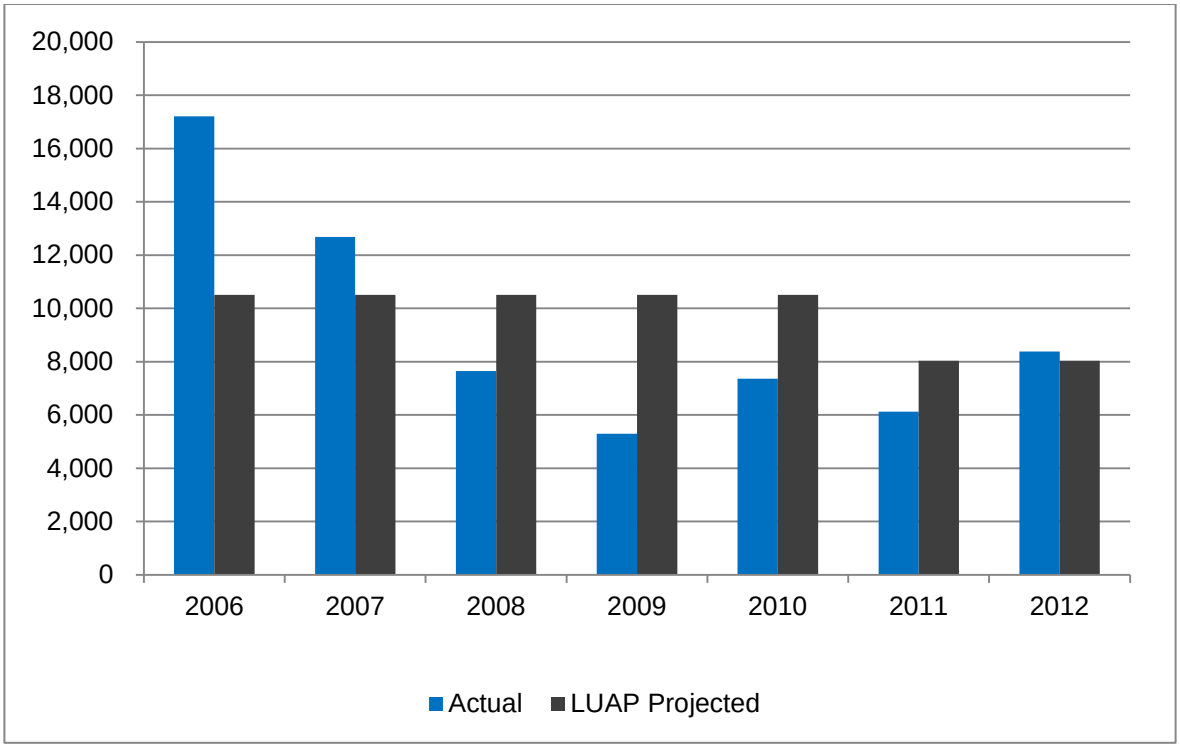
Calculation of Wastewater EDUs

1	2	3	4	5	6	7	8	9
				(2 (total) - 3(total))* 4 percentages		(5 * 6)		(7 + 8)
	Active Meter	Apartment		Non-apartments			Apartment Units	
Meter Size	Count	Master Meters	Percent by Size*	Meters	EDU/Meter Size	EDUs	182,223	
5/8			87.98%	384,606	1	384,606		
3/4			6.30%	34,571	1.5	51,857		
1			2.76%	9,374	2	18,748		
1 1/2			1.57%	5,132	5	25,660		
2			0.99%	3,336	14	46,704		
3			0.19%	758	30	22,740		
4			0.13%	511	50	25,550	93% occupancy	
6			0.05%	196	105	20,580	169,467	
8			0.02%	71	135	9,585		
10			0.01%	29	190	5,510		
Adjustment for SARA and Leon Springs						(20,047)	1/2 units	
Total	**395,227**	**3,798**		**438,584**		**591,493**	**84,734**	**676,226**
2012 population		**1,552,024**			**Population/EDU =**	**2.30**		

The wastewater EDU calculation is similar to the water calculation, however the meter size distribution for the BexarMet water customers/SAWS sewer customers is assumed to be the same as the SAWS water system. The percentages in column 4 above correspond to active meter counts in column 2 in the water EDU table. EDUs are adjusted to remove customers of the San Antonio River Authority and Leon Springs utilities, and the final calculation yields a population to EDU ratio of 2.30.

The following chart shows the variability of EDU growth per year for the SAWS water system, excluding the DSP service area. The average yearly growth rate from 2006 to 2010 was 10,500 EDUs per year. The 2006 LUAP projected approximately 10,300 EDUs per year, and the 2011 LUAP projected approximately 8,000 EDUs per year.

Historical EDU Change

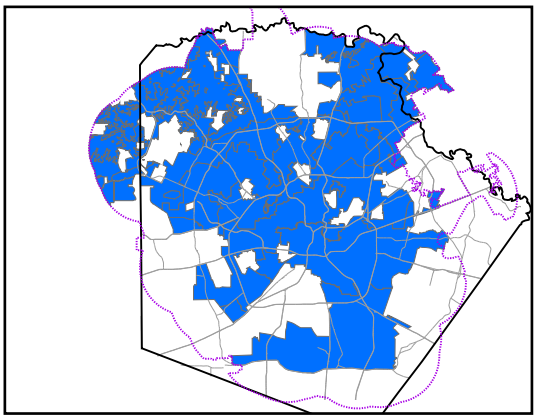


The following sections show the 2014 – 2023 service areas, and associated land use, population and EDU change.

Water Service Areas

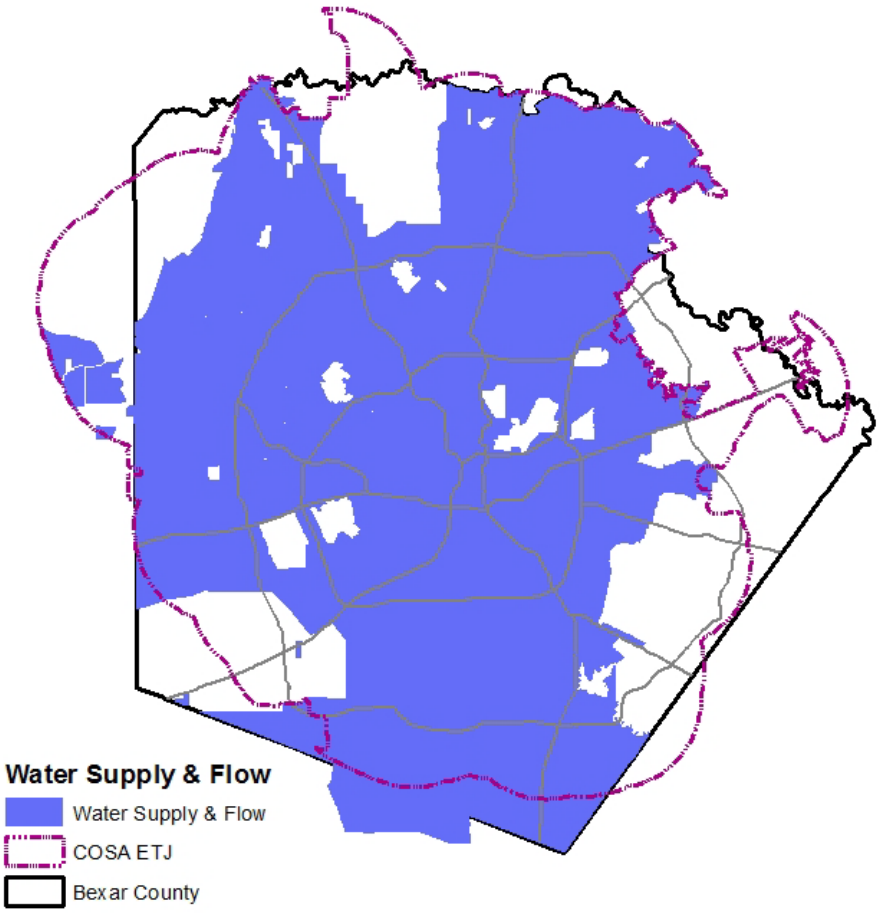
The changes from the existing water impact fee maps to the proposed maps are largely due to the addition of ten DSP service areas totaling 174,000 acres. SAWS driven changes located in the northwest portion of the county are due to a reduction in CCN application areas and an application for 21,000 acres that was withdrawn completely. SAWS was also granted a CCN application area that added 8,500 acres in the northeast portion of the SAWS service area.

Water Supply Service Areas



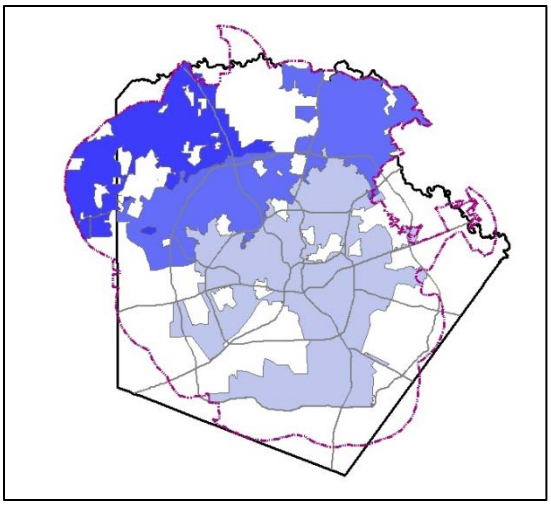
Water Supply is the infrastructure associated with providing new water sources to the System. The proposed Water Supply Service Area now includes the former Bexar Met service area and recent changes to CCN boundaries as well as pending application areas.

Existing



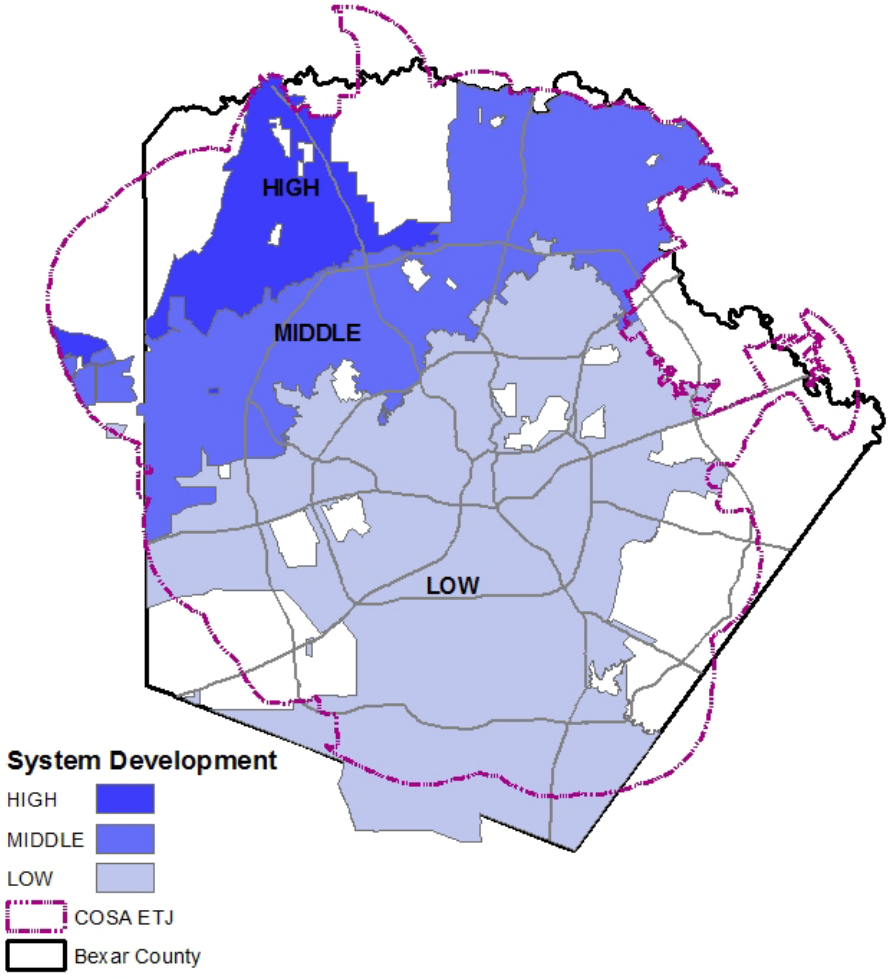
Proposed

Water System Development Service Areas



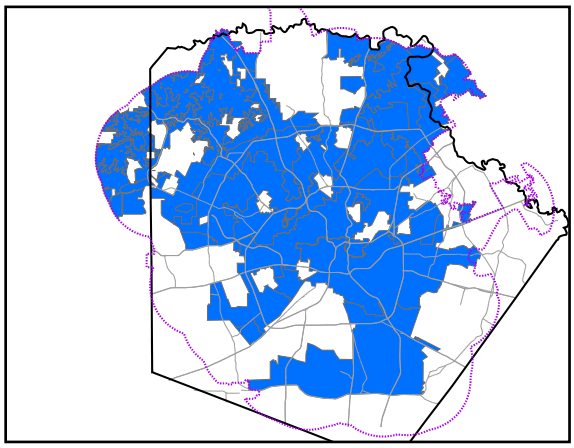
System Development is the infrastructure associated with pumping and delivering water to the distribution system. The proposed service area now includes the former Bexar Met service area and recent changes to CCN boundaries as well as pending application areas.

Existing



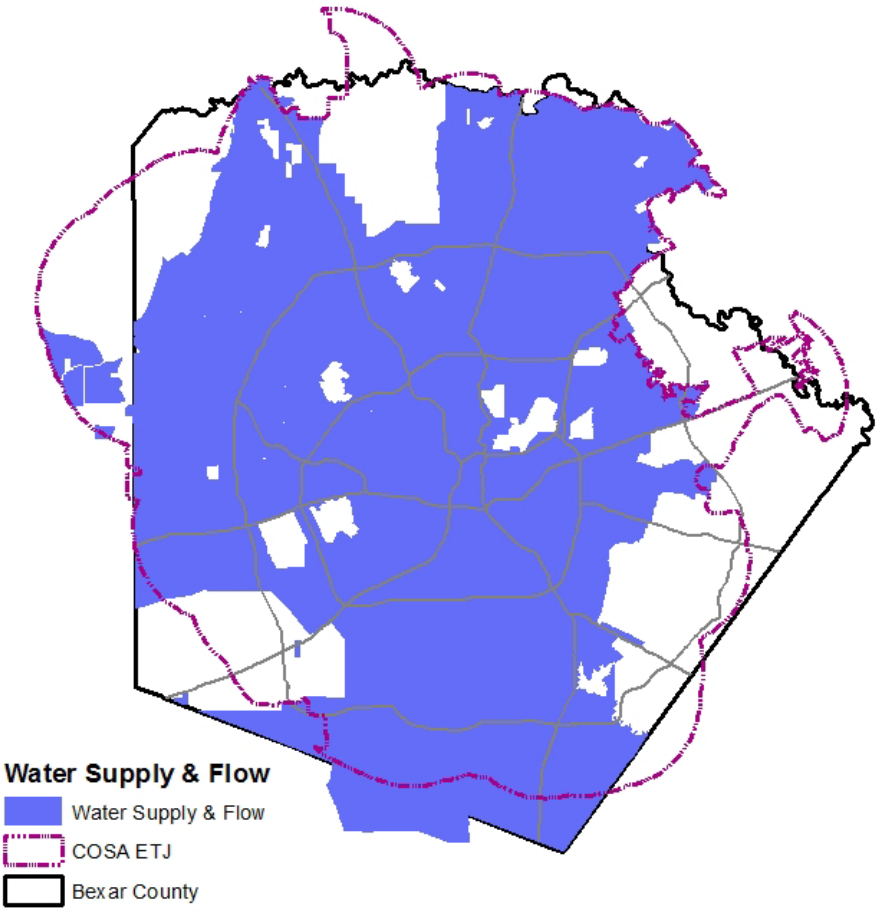
Proposed

Water Flow Service Areas



Flow is the distribution system. The proposed service area now includes the former Bexar Met service area and recent changes to CCN boundaries as well as pending application areas.

Existing



Proposed

Water Population by Service Area

	Population		EDUs		
	2014	2023	2014	2023	Change
Supply	1,674,505	1,904,466	697,711	793,527	95,817
Flow	1,674,505	1,904,466	697,711	793,527	95,817

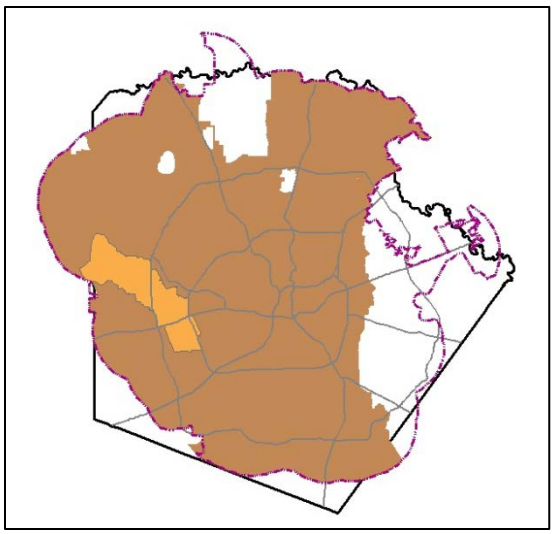
	Population		EDUs		
System Development	2014	2023	2014	2023	Change
High	44,747	65,826	18,645	27,428	8,783
Middle	538,582	647,217	224,409	269,674	45,265
Low	1,091,176	1,191,422	454,657	496,426	41,769
Total	1,674,505	1,904,466	697,711	793,527	95,817

The future EDU projection is the future population projection divided by the population to EDU ratio.

Wastewater Service Areas

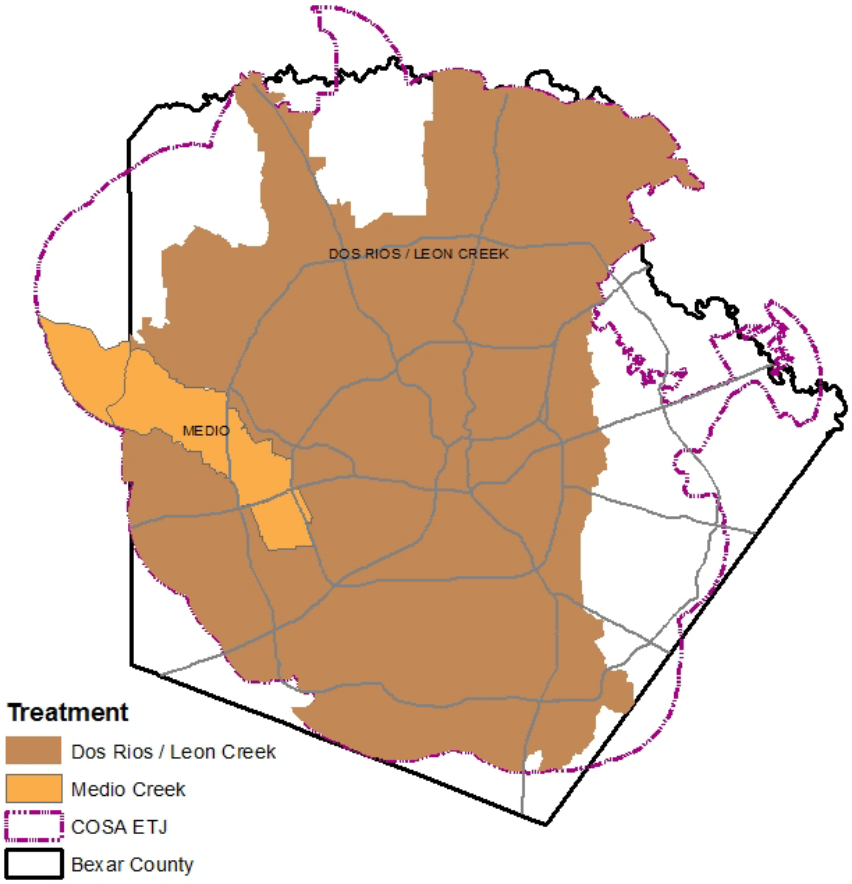
The changes from the current wastewater impact fee maps to the proposed impact fee maps are in the northwest and southeast portions of the wastewater service area. The changes in the northwest were due to reduced CCN application areas. One application was reduced from 62,000 acres to 24,000 acres and another reduced from 50,000 acres to 9,000 acres. The southeast area was reduced due to an application area being amended from 30,000 acres to 22,000 acres.

Wastewater Treatment Service Areas



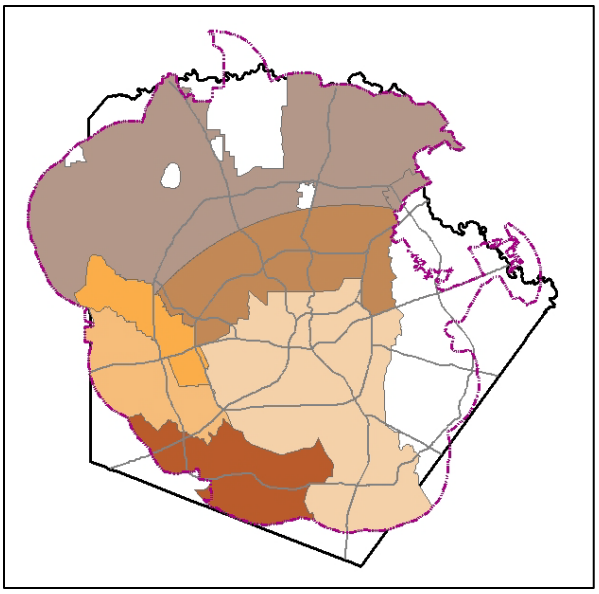
Currently there are two treatment service areas, Medio Water Recycling Center (WRC) and Dos Rios/Leon WRC. The service areas are reduced due to reduced CCN application areas.

Existing



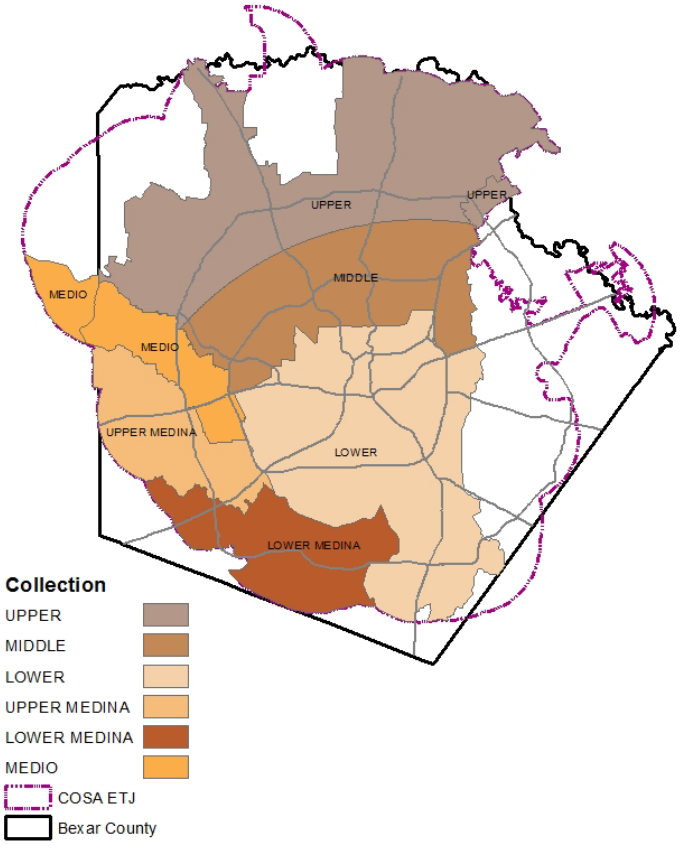
Proposed

Wastewater Collection Service Areas



The Collection service area reflects the boundaries of the sewershed served by the WRCs but also designates areas that have higher costs mainly due to distance to the WRC. The service areas are reduced due to reduced CCN application areas.

Existing



Proposed

Wastewater Population by Service Area

	Population		EDU		
Treatment	2014	2023	2014	2023	Change
Medio	92,266	113,389	40,116	49,300	9,184
Leon Creek/Dos Rios	1,474,670	1,682,008	641,161	731,308	90,147
Total	1,566,937	1,795,397	681,277	780,607	99,331

	Population		EDU		
Collection	2014	2023	2014	2023	Change
Medio	92,266	113,389	40,116	49,300	9,184
Upper Medina	44,124	88,922	19,184	38,662	19,478
Lower Medina	19,786	28,777	8,602	12,512	3,909
Upper Collection	353,873	439,169	153,858	190,943	37,085
Middle Collection	546,490	575,286	237,604	250,124	12,520
Lower Collection	510,398	549,854	221,912	239,067	17,155
Total	1,566,937	1,795,397	681,277	780,607	99,331

The future EDU projection is the future population projection divided by the population to EDU ratio.

Glossary

Land Use Assumptions are expressed in terms of **Equivalent Dwelling Units (EDU's).** An EDU is a standardized measure of consumption or demand expressed as water use or wastewater flow for an average household unit.

- **Water EDU** – 313 gallons per day of average water flow. This is equivalent to the average water demand from a single family residence.

- **Sewer EDU** - 240 gallons per day of average sewer flow.

- **Impact Fee** – A charge or assessment imposed upon new development in order to generate revenue for funding and recovering the costs of capital improvements or facility expansions required to serve that development.

Definitions

AACOG - Alamo Area Council of Governments

BMWD - Bexar Metropolitan Water District

CCN - Certificate of Convenience and Necessity

CIAC - Capital Improvements Advisory Committee

CIP - Capital Improvements Program

EDU - Equivalent Dwelling Unit

ETJ - Extra-territorial Jurisdiction

GPCD - Gallon per Capita per Day

LUAP - Land Use Assumptions Plan

MPO - San Antonio/Bexar County Metropolitan Planning Organization

MSA - Metropolitan Statistical Area (for San Antonio is 8 counties)

SARA - San Antonio River Authority

SDC - State Data Center (Office of State Demographer)

TAZ - Transportation Analysis Zone

TCEQ - Texas Commission for Environmental Quality

TWDB - Texas Water Development Board

USA - Utility Service Agreement

WRC - Water Recycling Center