

# Alliance Regional Water Authority

## Blanco Basin Wastewater Treatment Plant Feasibility Study

September 27, 2017

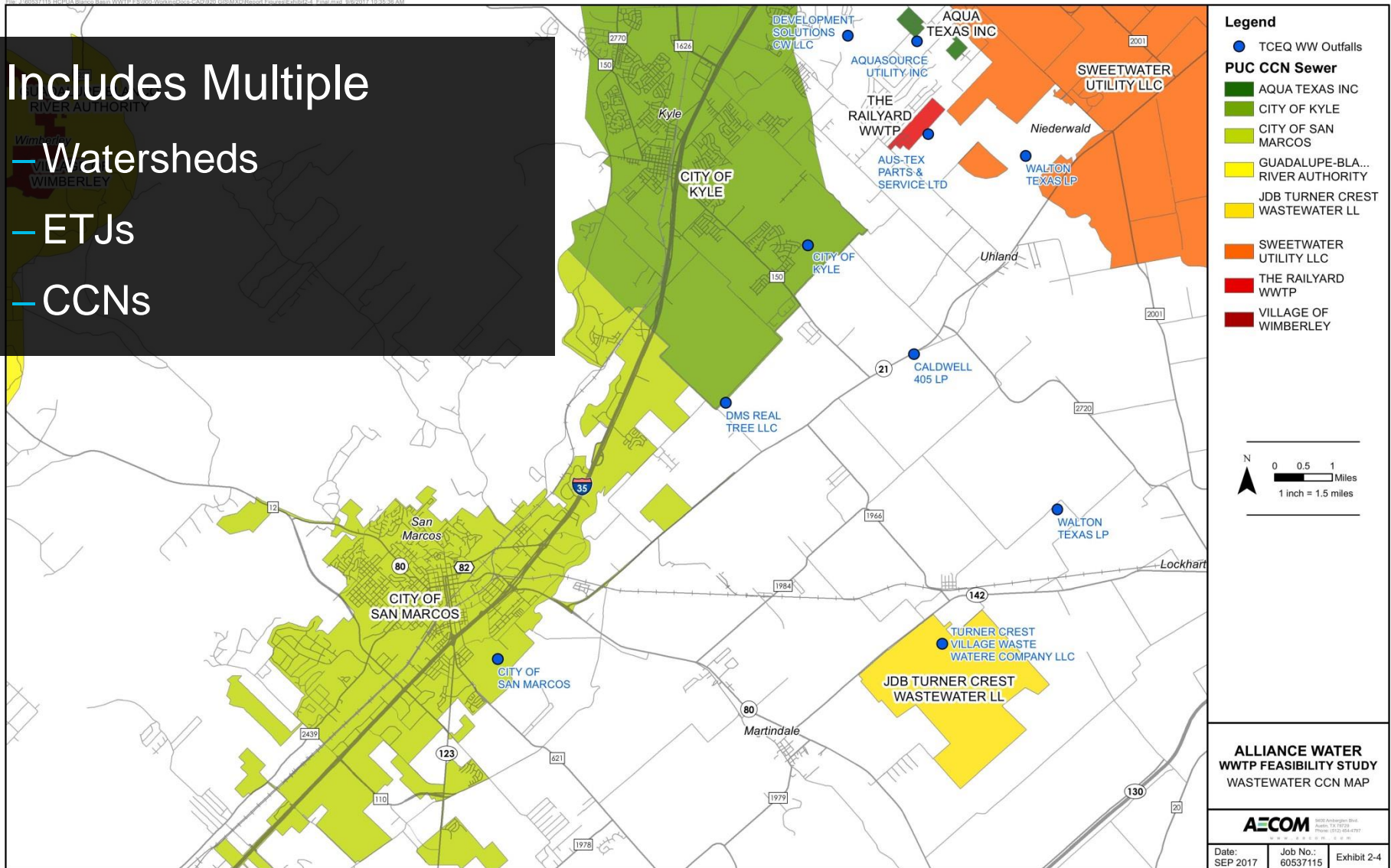
# Agenda

---

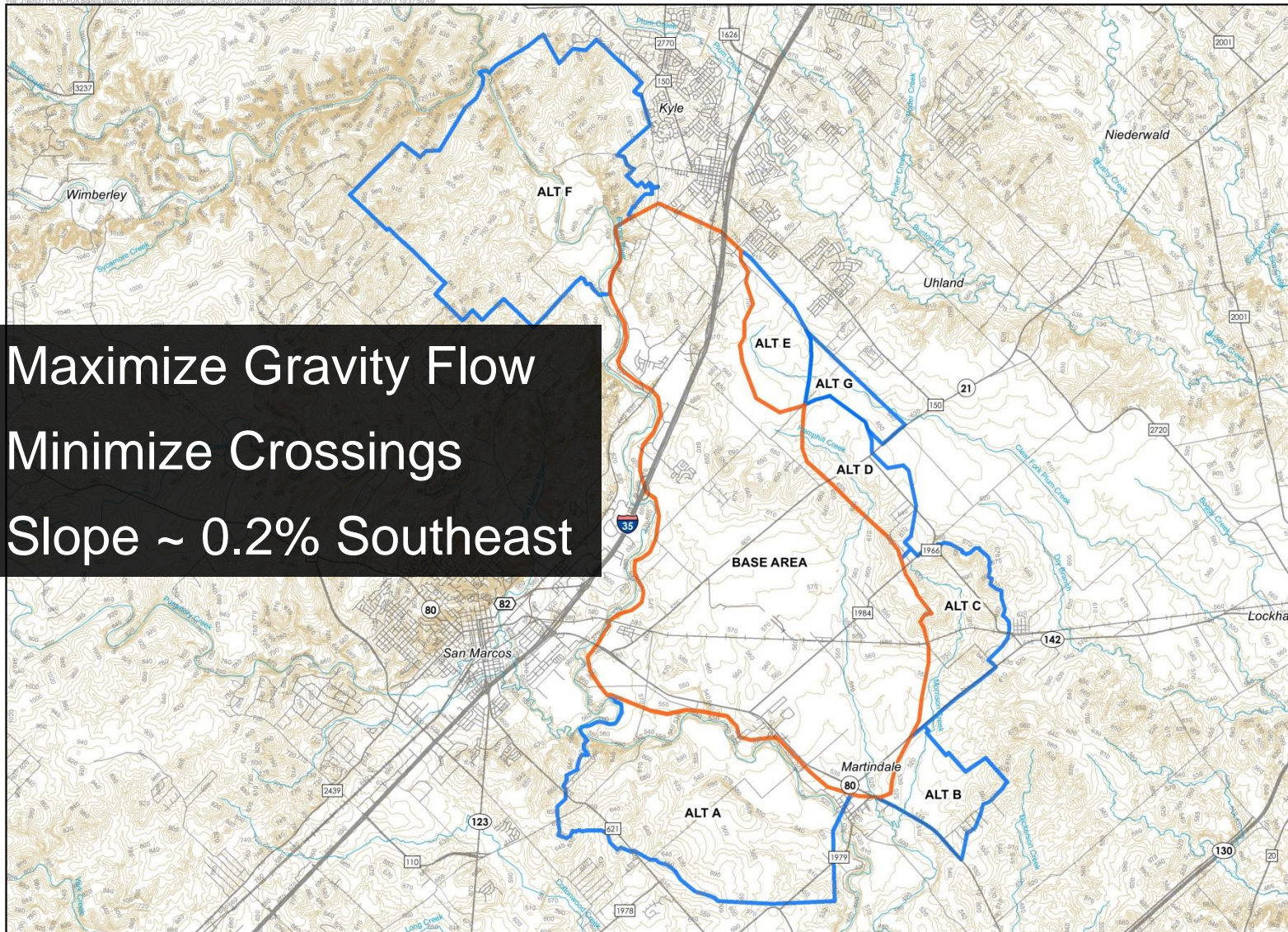
- Opening Statements/Introductions
- Project Scope
  - Service Area Boundary
  - Population Projections
  - WWTP Capacity and Siting
  - Cost Analysis
- Summary/Close
- Questions

# Identification of Blanco Basin Service Area

- Includes Multiple
  - Watersheds
  - ETJs
  - CCNs



# Proposed Blanco Basin Service Area



**Legend**

- 10-ft Contours
- Base Area
- Alternative Area

N

0 0.5 1 Miles

1 inch = 1.5 miles

- Maximize Gravity Flow
- Minimize Crossings
- Slope ~ 0.2% Southeast

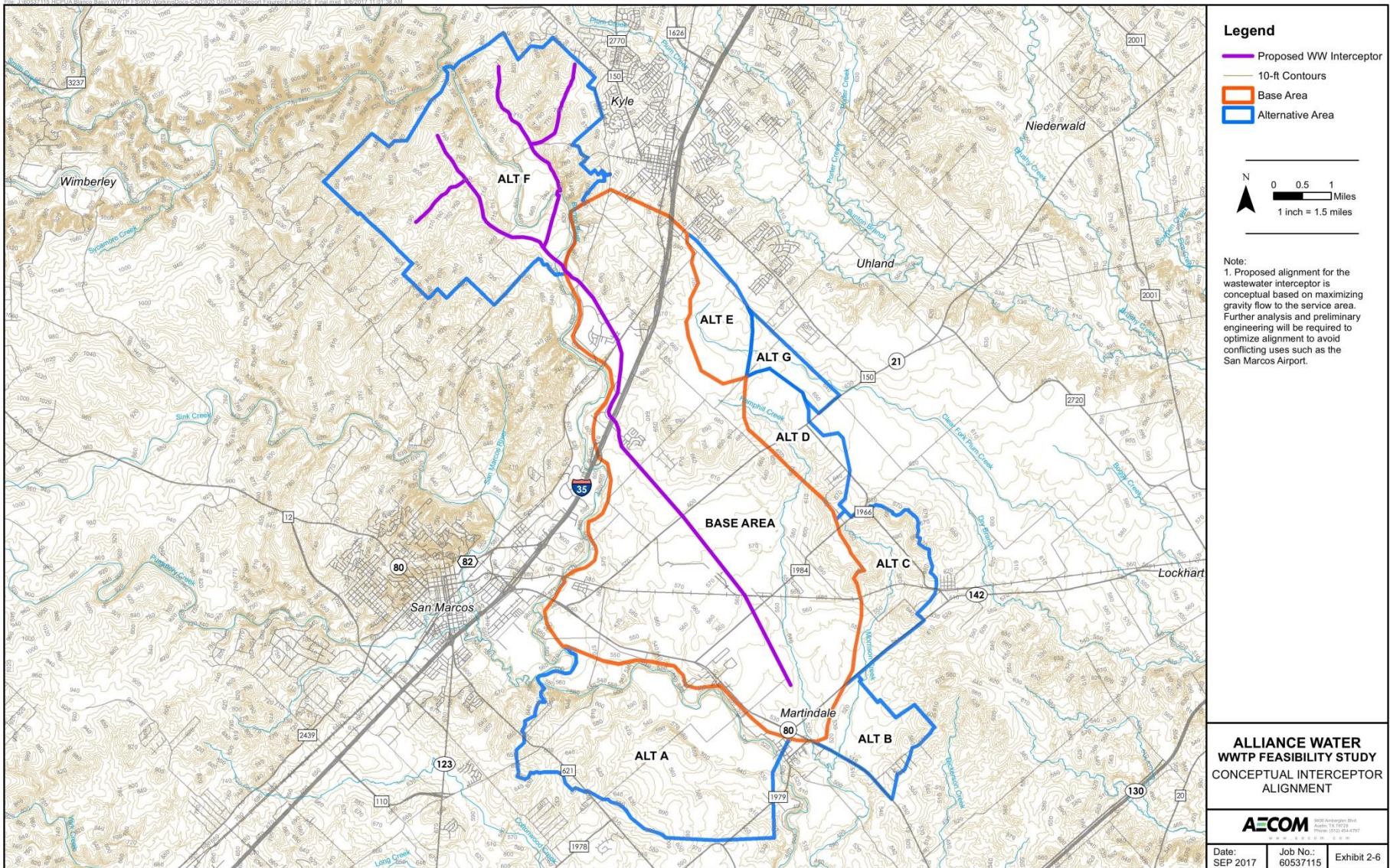
**ALLIANCE WATER  
WWTP FEASIBILITY STUDY  
STUDY AREA**

**AECOM**

9000 Ardmore Blvd  
Austin, TX 78759  
Phone: (512) 454-4700  
Fax: (512) 454-4701

Date: SEP 2017	Job No.: 60537115	Exhibit 2-5
-------------------	----------------------	-------------

# Conceptual Interceptor Alignment



# Population Projections

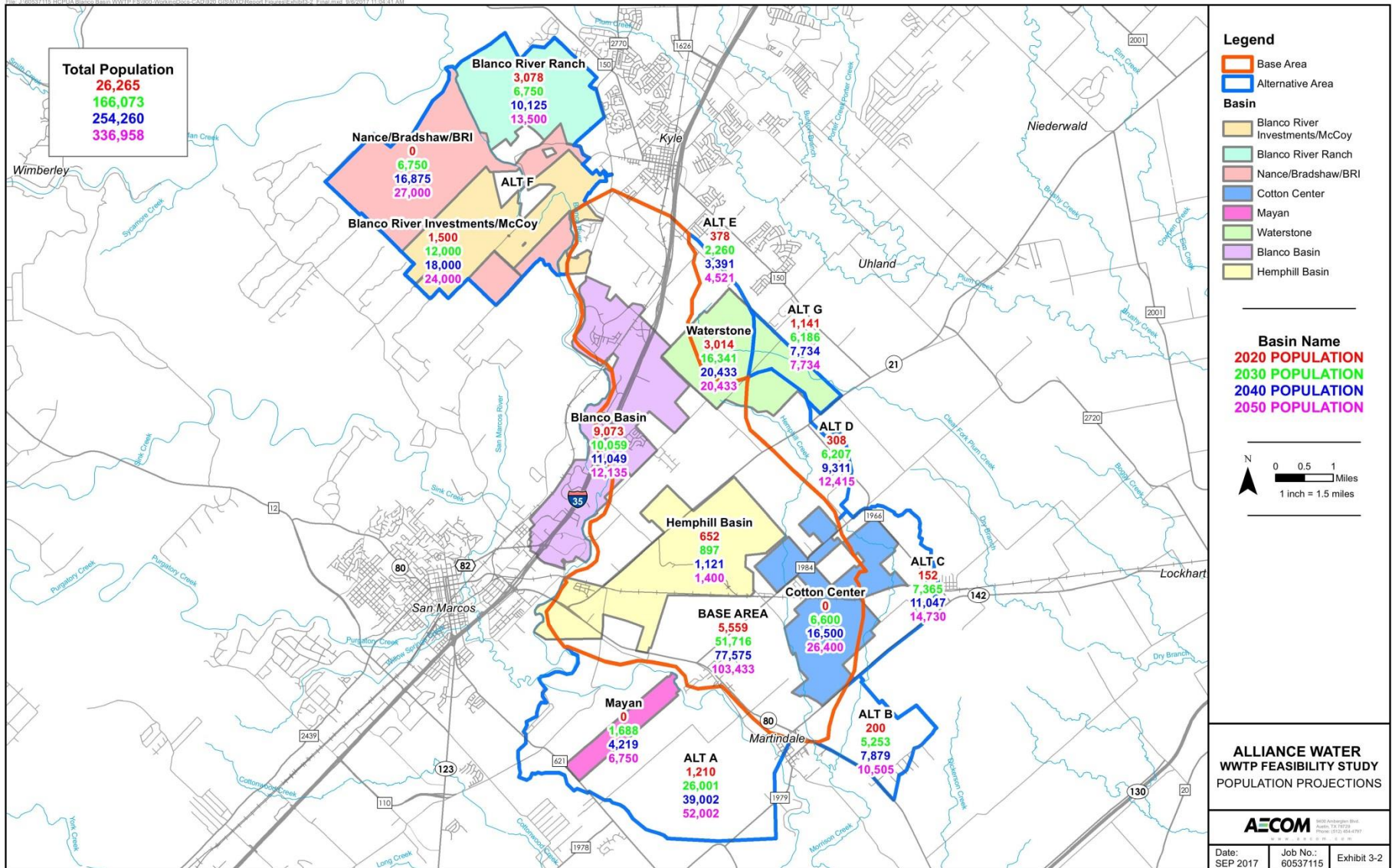
---

- 2010 U.S. Census Data
- Water User Group Growth Rates
- San Marcos Wastewater Master Plan
- Development Projections
  - Cotton Center
  - Mayan
  - Waterstone (LaSalle)
  - Whisper North and South
  - Blanco River Ranch
  - Blanco River Investments
  - McCoy
  - Nance
  - Bradshaw
- Density for Non-Development Areas

# Feasibility Study Area Population through 2050

Study Area	LUE Ultimate	Ultimate Density (LUE/Ac)	Population Projections			
			2020	2030	2040	2050
<b>Base Area</b>	<b>Population Subtotal</b>		<b>16,143</b>	<b>72,435</b>	<b>108,331</b>	<b>143,215</b>
Waterstone (Partial)	1,941	4.3	859	4,656	5,822	5,822
Blanco Basin (WWMP)	4,045	2.1	9,073	10,059	11,049	12,135
Hemphill Basin (WWMP)	467	0.2	652	897	1,121	1,400
Cotton Center (Partial)	6,808	4.3	0	5,106	12,766	20,425
Open Area	34,478	4.0	5,559	51,716	77,575	103,433
<b>Alternative A</b>	<b>Population Subtotal</b>		<b>1,210</b>	<b>27,689</b>	<b>43,221</b>	<b>58,752</b>
Mayan	2,250	5.3	0	1,688	4,219	6,750
Open Area	17,334	4.0	1,210	26,001	39,002	52,002
<b>Alternative B</b>	<b>Population Subtotal</b>		<b>200</b>	<b>5,253</b>	<b>7,879</b>	<b>10,505</b>
Open Area	3,502	4.0	200	5,253	7,879	10,505
<b>Alternative C</b>	<b>Population Subtotal</b>		<b>152</b>	<b>8,859</b>	<b>14,782</b>	<b>20,704</b>
Cotton Center (Partial)	1,992	4.2	0	1,494	3,734	5,975
Open Area	4,910	4.0	152	7,365	11,047	14,730
<b>Alternative D</b>	<b>Population Subtotal</b>		<b>907</b>	<b>9,456</b>	<b>13,374</b>	<b>16,478</b>
Waterstone (Partial)	1,354	4.3	599	3,249	4,063	4,063
Open Area	4,138	4.0	308	6,207	9,311	12,415
<b>Alternative E</b>	<b>Population Subtotal</b>		<b>1,934</b>	<b>10,696</b>	<b>13,939</b>	<b>15,069</b>
Waterstone (Partial)	3,516	4.4	1,556	8,436	10,548	10,548
Open Area	1,507	4.0	378	2,260	3,391	4,521
<b>Alternative F</b>	<b>Population Subtotal</b>		<b>4,578</b>	<b>25,500</b>	<b>45,000</b>	<b>64,500</b>
Blanco River Ranch	4,500	2.4	3,078	6,750	10,125	13,500
BRI/McCoy	8,000	4.1	1,500	12,000	18,000	24,000
Nance/Bradshaw/BRI	9,000	2.8	0	6,750	16,875	27,000
<b>Alternative G</b>	<b>Population Subtotal</b>		<b>1,141</b>	<b>6,186</b>	<b>7,734</b>	<b>7,734</b>
Waterstone (Partial)	2,578	6.0	1,141	6,186	7,734	7,734
<b>TOTAL STUDY AREA</b>			<b>26,265</b>	<b>166,073</b>	<b>254,260</b>	<b>336,958</b>

# Population Projections by Area



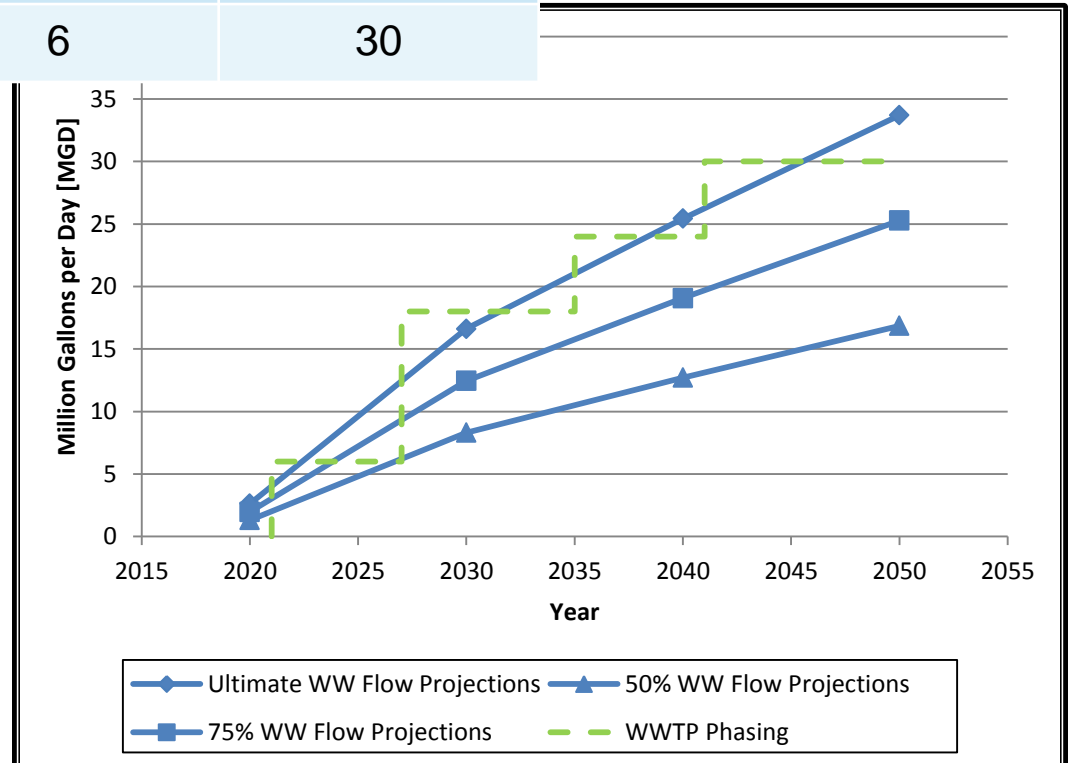


# Wastewater Treatment Facilities Capacity

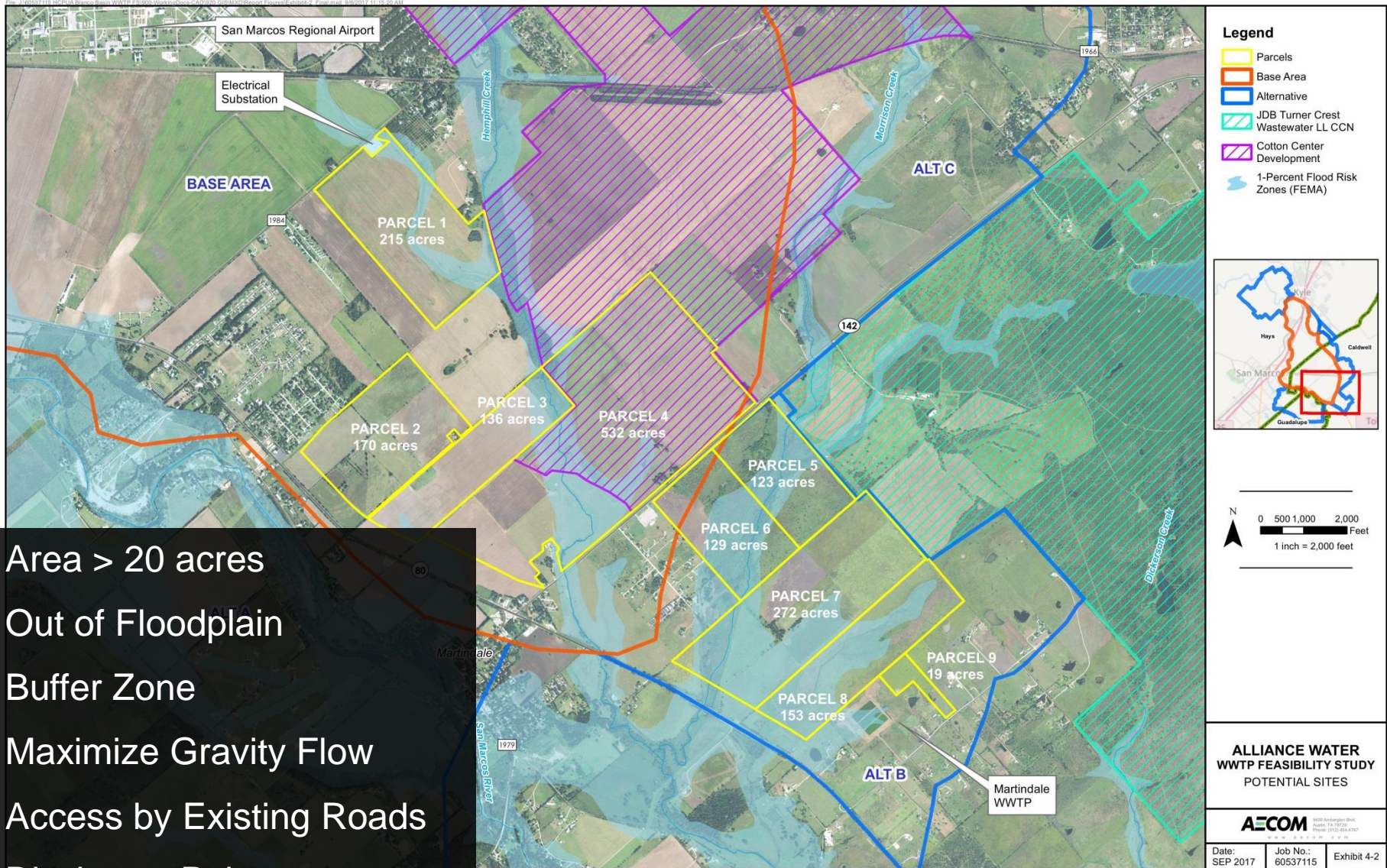
Study Area	Wastewater Flow Projections (MGD)				
	2020	2030	2040	2050	
<b>Base Area</b>	<b>MGD Subtotal</b>	<b>1.61</b>	<b>7.24</b>	<b>10.83</b>	<b>14.32</b>
Waterstone (Partial)		0.09	0.47	0.58	0.58
Blanco Basin (WWMP)		0.91	1.01	1.10	1.21
Hemphill Basin (WWMP)		0.07	0.09	0.11	0.14
Cotton Center (Partial)		0.00	0.51	1.28	2.04
Open Area		0.56	5.17	7.76	10.34
<b>Alternative A</b>	<b>MGD Subtotal</b>	<b>0.12</b>	<b>2.77</b>	<b>4.32</b>	<b>5.88</b>
Mayan		0.00	0.17	0.42	0.68
Open Area		0.12	2.60	3.90	5.20
<b>Alternative B</b>	<b>MGD Subtotal</b>	<b>0.02</b>	<b>0.53</b>	<b>0.79</b>	<b>1.05</b>
Open Area		0.02	0.53	0.79	1.05
<b>Alternative C</b>	<b>MGD Subtotal</b>	<b>0.02</b>	<b>0.89</b>	<b>1.48</b>	<b>2.07</b>
Cotton Center (Partial)		0.00	0.15	0.37	0.60
Open Area		0.02	0.74	1.10	1.47
<b>Alternative D</b>	<b>MGD Subtotal</b>	<b>0.09</b>	<b>0.95</b>	<b>1.34</b>	<b>1.65</b>
Waterstone (Partial)		0.06	0.32	0.41	0.41
Open Area		0.03	0.62	0.93	1.24
<b>Alternative E</b>	<b>MGD Subtotal</b>	<b>0.19</b>	<b>1.07</b>	<b>1.39</b>	<b>1.51</b>
Waterstone (Partial)		0.16	0.84	1.05	1.05
Open Area		0.04	0.23	0.34	0.45
<b>Alternative F</b>	<b>MGD Subtotal</b>	<b>0.46</b>	<b>2.55</b>	<b>4.50</b>	<b>6.45</b>
Blanco River Ranch		0.31	0.68	1.01	1.35
BRI/McCoy		0.15	1.20	1.80	2.40
Nance/Bradshaw/BRI		0.00	0.68	1.69	2.70
<b>Alternative G</b>	<b>MGD Subtotal</b>	<b>0.11</b>	<b>0.62</b>	<b>0.77</b>	<b>0.77</b>
Waterstone (Partial)		0.11	0.62	0.77	0.77
<b>TOTAL STUDY AREA</b>					
		<b>2.63</b>	<b>16.61</b>	<b>25.43</b>	<b>33.70</b>

# WWTP Phasing

Initiate Design (Year)	Complete Construction (Year)	Additional Capacity (MGD)	Cumulative Capacity (MGD)
2018	2021	6	6
2023	2027	12	18
2031	2035	6	24
2037	2041	6 </tr	



# Potential WWTP Sites



- Area > 20 acres
- Out of Floodplain
- Buffer Zone
- Maximize Gravity Flow
- Access by Existing Roads
- Discharge Point

# Cost Analysis

---

- Interceptor
  - Ultimate Size
  - Phased Size
  - Equal Phased Size
- Blanco Basin WWTP
- Compare to Pumping, Conveyance, and Treatment at Existing WWTPs
- Interim Wastewater Facilities
  - Interim LS (1 MGD)

# Summary of Cost Components

Complete Construction (Year)	Component	Capacity Avg Flow (MGD)	Blanco Basin WWTP Cost (2017 \$)	San Marcos WWTP Expansion Cost (2017 \$)
2021	Interceptor (Alt 1)	24.7	\$35.7M	\$35.7M
	Treatment	6	\$44.4M	\$42.0M
	Lift Station	6	--	\$11.7M
	Forcemain	6	--	\$16.5M
2027	Treatment	12	\$67.7M	\$84.0M
	Lift Station	12	--	\$17.5M
	Forcemain	12	--	\$18.8M
2035	Treatment	6	\$33.9M	\$42.0M
	Lift Station	6	--	\$8.8M
	Forcemain	6	--	\$14.1M
2041	Treatment	6	\$33.9M	\$42.0M
	Lift Station	6	--	\$8.8M
	Forcemain	6	--	\$14.1M
<b>TOTAL</b>			<b>\$215.6M</b>	<b>\$356.0M</b>

- Interceptor + Blanco Basin WWTP is more cost-effective than Lift Station + Force Main + Expansion of Existing WWTPs.

## Recommendations

---

- Apply for TPDES Permit - 6 MGD Initial Capacity
- Construct Interceptor and 6 MGD WWTP by January 2021
- Monitor Growth Rate in Service Area To Determine When Additional Capacity Required
- Use Lift Stations to Convey Developments' Flows to Existing WWTPs Until Regional WWTP in Service

## Initial Steps

---

- Initiate Preliminary Engineering of the Blanco Basin WWTP
  - Finalize Site Selection and Outfall Location
  - Conceptual Design for TPDES Permit Application
- Acquire Parcel for Blanco WWTP Site
- Initiate TPDES Permit Application to TCEQ
- Initiate Preliminary Engineering of Interceptor
  - Finalize Route and Define Easement Acquisition

# Thank You

Alliance Regional Water Authority

Blanco Basin WWTP Feasibility Study

September 27, 2017