

TABLES

TABLE 1
WELLBORN SUD
2017 MASTER PLAN
EXISTING SYSTEM CAPACITIES

System Component	Units	2016			Remaining Avail. Supply	
		Current Capacity	Required Capacity	Capacity Used	Capacity	Connections
MAIN SYSTEM						
Connections						
Connections	conn.	6,528				
Other Supply Connections	conn.	-				
Water Supply Capacity						
Brushy Plant Well	gpm	550				Extra capacity from SWTP System
Delivery from SWTP	gpm	859				Extra capacity from Bird Pond System
Delivery from Bird Pond	gpm	909				Wheeled from OSR System (3 MGD max. deal)
CoB Jones Rd Interconnect	gpm	433				Purchased from CoB (3 MGD max. deal)
CoB Jones Rd Interconnect	gpm	967				Wheeled from OSR System (2 MGD max. deal)
CoCS Rock Prairie Rd Interconnect	gpm	400				Wheeled from OSR System (2 MGD max. deal)
CoCS Holleman Rd Interconnect	gpm	0				
Total Capacity	gpm	4,118	3,917	95%	202	336
Total Storage						
Brushy Plant GST	gal.	150,000				
Brushy Booster Station GST	gal.	5,000				
Wellborn Plant EST	gal.	1,000,000				
Arrington Rd Plant GST	gal.	211,000				Fills GST
Arrington Rd Plant EST	gal.	500,000				
SH 6 Plant GST	gal.	250,000				
Total Storage	gal.	2,116,000	1,305,600	62%	810,400	4,052
Elevated Storage						
Wellborn Plant EST	gal.	1,000,000				
Total Elevated Storage	gal.	1,000,000	652,800	65%	347,200	3,472
Pressure Tanks						
Brushy Plant PT	gal.	10,000				Not in service
Total PT Capacity	gal.	10,000	0		0	0
High Service Pumps						
Brushy Plant HSP	gpm	1,100				2 at 550 gpm each
CoB Jones Rd Interconnect	gpm	1,950				1 at 1,950 gpm; *2nd pump req'd to meet peak hourly demand w/ largest HSP out of service
Brushy Booster Station HSP	gpm	800				2 at 400 gpm each

Arrington Rd HSP	gpm	2,500				2 at 1,000 gpm each; 1 at 500 gpm
SH 6 Plant HSP	gpm	2,100				2 at 1,050 gpm each
Total High Service Pumps	gpm	8,450	13,056	155%	-4,606	-2,303
						2 gpm/conn. direct

BIRD POND SYSTEM

Connections						
Connections	conn.	318				
Other Supply Connections	conn.	1,441				
Water Supply Capacity						
Bird Pond Well #1	gpm	0				Not in service
Bird Pond Well #2	gpm	0				Not in service
Bird Pond Well #3	gpm	267				1/3 rd each of the total well field max. (800 gpm)
Bird Pond Well #4	gpm	267				1/3 rd each of the total well field max. (800 gpm)
Bird Pond Well #5	gpm	267				1/3 rd each of the total well field max. (800 gpm)
CoCS Foxfire Dr Interconnect	gpm	300				Wheeled from OSR System (2 MGD max. deal)
CoCS Arrington Rd Interconnect	gpm	0				Wheeled from OSR System (2 MGD max. deal)
Delivery to Wellborn	gpm	-909				Extra delivered to Wellborn System (no max.)
Total Capacity	gpm	191	191	100%	0	0
Total Storage						
Bird Pond Plant GST #1	gal.	210,000				
Bird Pond Plant GST #2	gal.	210,000				
Arrington Rd EST	gal.	500,000				
Total Storage	gal.	920,000	63,600	7%	856,400	4,282
Elevated Storage						
Arrington Rd EST	gal.	500,000				
Total Elevated Storage	gal.	500,000	63,600	13%	436,400	2,182
Pressure Tanks						
Bird Pond Plant PT	gal.	10,000				Not in use
Total PT Capacity	gal.	10,000	0		0	0
High Service Pumps						
Bird Pond Plant	gpm	2,500				2 at 1,000 gpm each; 1 at 500 gpm
Total High Service Pumps	gpm	2,500	1,055	42%	1,445	2,408
						0.6 gpm/conn. direct and supply

System Component	Units	2016			Remaining Avail. Supply		
		Current Capacity	Required Capacity	Capacity Used	Capacity	Connections	Comments

SURFACE WATER TREATMENT PLANT SYSTEM

Connections

Connections	conn.	68					
Other Supply Connections	conn.	1,362					

Water Supply Capacity

SWTP	gpm	900					
Delivery to Wellborn	gpm	-859					Extra delivered to Wellborn System (no max.)
Total Capacity	gpm	41	41	100%	0	0	

Total Storage

SWTP GST Clearwell	gal.	722,000					
Total Storage	gal.	722,000	13,600	2%	708,400	3,542	

Pressure Tanks

SWTP PT	gal.	20,000					
Total PT Capacity	gal.	20,000	1,360	7%	18,640	932	

High Service Pumps

SWTP HSP	gpm	2,100					3 at 700 gpm each
Total High Service Pumps	gpm	2,100	953	45%	1,147	1,721	2 gpm/conn. direct and 0.6 gpm/conn. supply

OSR SYSTEM

Connections

Connections	conn.	695					
Other Supply Connections	conn.	1,796					

Water Supply Capacity

OSR Plant Well (Well No. 2)	gpm	1,100					Based on availability (3 MGD max. through CoB)
CoB Mumford Rd Delivery	gpm	-433					Based on availability (2 MGD max. through CoCS)
CoCS Sandy Point Rd Delivery	gpm	-700					Extra capacity from Black Jack System
Delivery from Black Jack	gpm	450					
Total Capacity	gpm	417	417	100%	0	0	

Total Storage

OSR Plant GST	gal.	243,000					
OSR Plant EST	gal.	200,000					
Total Storage	gal.	443,000	139,000	31%	304,000	1,520	

Elevated Storage

OSR Plant EST	gal.	200,000					
Total Elevated Storage	gal.	200,000	139,000	70%	61,000	305	200 gal./conn.

High Service Pumps

OSR Plant HSP	gpm	2,800				2 at 1,400 gpm
Total High Service Pumps	gpm	2,800	1,495	53%	1,305	0.6 gpm/conn. direct and supply

BLACK JACK SYSTEM

Connections						
Connections	conn.	405				
Other Supply Connections	conn.	713				
Water Supply Capacity						
Black Jack Well (Well No. 1)	gpm	2,000				
Delivery to OSR	gpm	-450				Extra delivered to OSR System (450 gpm max.) *Additional line capacity needed to increase delivery rate
Total Capacity	gpm	1,550	243	16%	1,307	2,178
Total Storage						
Black Jack Plant EST	gal.	200,000				
Total Storage	gal.	200,000	81,000	41%	119,000	595
Elevated Storage						
Black Jack Plant EST	gal.	200,000				
Total Elevated Storage	gal.	200,000	81,000	41%	119,000	595
High Service Pumps						
N/A		0				EST filled directly from well

TOTAL SYSTEM

Connections						
Connections	conn.	8,014				
Water Supply Capacity						
Total Capacity	gpm	5,010	4,808	96%	1,509	*Additional water supply capacity req'd by 2018 (proposed COB Bird Pond Interconnect)
Total Storage						
Total Storage	gal.	3,901,000	1,602,800	41%	2,798,200	
Elevated Storage						
Total Elevated Storage	gal.	1,900,000	936,400	49%	963,600	
High Service Pumps						
Total Pumping Capacity	gpm	15,850	16,559	104%	-709	*Additional HSP capacity req'd (proposed 2 nd pump at Jones Rd)

TABLE 2
WELLBORN SUD
2017 MASTER PLAN
CURRENT AND FUTURE PROJECTED WATER RIGHTS CONSUMPTION

Water Source	2015/2016					2020				2025				2030			
	Used (MGD)	Used (AF/Y)	Available (AF/Y)	Capacity Used	AF/Y per conn.	Percent of Supply	Projected Use (AF/Y)	Available (AF/Y)	Capacity Used	Projected Use (AF/Y)	Available (AF/Y)	Capacity Used	Projected Use (AF/Y)	Available (AF/Y)	Capacity Used	Projected Use (AF/Y)	Available (AF/Y)
Simsboro Aquifer**	1.20	1,341.59	3,366.65	40%	0.17	39.8%	1,662.00	3,366.65	49%	2,325.19	3,366.65	69%	3,212.83	3,366.65	95%	3,212.83	3,366.65
Yegua-Jackson Aquifer**	0.79	888.80	1,132.81	78%	0.11	26.4%	1,101.07	1,132.81	97%	1,132.81	1,132.81	100%*	1,132.81	1,132.81	100%	1,132.81	1,132.81
Navasota River*	0.81	910.21	4,000.00	23%	0.12	28.5%	1,189.96	4,000.00	30%	1,708.27	4,000.00	43%	2,406.54	4,000.00	60%	2,406.54	4,000.00
Purchased from Bryan*	0.16	178.14	3,362.66	5%	0.02	5.3%	220.69	3,362.66	7%	288.42	3,362.66	9%	376.95	3,362.66	11%	376.95	3,362.66
Total	2.96	3,318.74	11,862.12	28%	0.42	100.00%	4,173.73	11,862.12	35%	5,454.68	11,862.12	46%	7,129.13	11,862.12	60%	7,129.13	11,862.12

Water Source	2035				2040			
	Projected Use (AF/Y)	Available (AF/Y)	Capacity Used	Capacity Used***	Projected Use (AF/Y)	Available (AF/Y)	Capacity Used	Capacity Used***
Simsboro Aquifer	3,366.65	3,366.65	100% ⁺⁺	104%	3,492.32	3,366.65	104%	104%
Yegua-Jackson Aquifer	1,132.81	1,132.81	100%	107%	1,216.07	1,132.81	107%	107%
Navasota River	4,000.00	4,000.00	100% ⁺⁺⁺	102%	4,089.98	4,000.00	102%	102%
Purchased from Bryan	818.27	3,362.66	24%	100% ^{****}	3,379.35	3,362.66	100% ^{****}	100% ^{****}
Total	9,317.73	11,862.12	79%	103%	12,177.71	11,862.12	103%	103%

* 2015 connections= 7,594 conn.

** 2016 connections= 8,014 conn.

* Yegua-Jackson capacity reached 2021

** Simsboro capacity reached 2031

*** Navasota River capacity reached 2035

**** CoB capacity reached 2040

**** All water rights used by 2040

TABLE 3
WELLBORN SUD
MASTER PLAN 2017
PROJECTED GROWTH

<i>Historical Connection Trend</i>		<i>2011 KSA Master Plan</i>		<i>TDWB Projections</i>	
Year	Connections	Year	Connections	Year	Connections
1999	2,364				
2000	2,379				
2001	2,536				
2002	2,601				
2003	2,711				
2004	2,816				
2005	2,957				
2006	3,083				
2007	3,378				
2008	3,559				
2009	3,960				
2010	4,065	2010	4,065		
2011	5,123				
2012	6,473				
2013	6,810				
2014	7,248				
2015	7,594	2015	5,366		
2016	8,014				
2022	11,050	2020	7,093	2020	4,445
2027	14,442	2025	9,349	2030	5,094
2032	18,875	2030	12,341	2040	5,765
2040	28,967				
		Projections from the Master Plan prepared by KSA Engineering in August 2011		Projections based on 2.5 persons per connection	

Items in **bold** are historical data provided by Wellborn SUD
Projected Growth Rate: 5.5% increase in connections per year

TABLE 4
WELLBORN SUD
2017 MASTER PLAN
2027 PROJECTED SYSTEM CAPACITIES

System Component	Units	2027		Remaining Avail. Supply		Comments
		Current Capacity	Required Capacity	Capacity Used	Capacity	
MAIN SYSTEM						
Connections						
Connections	conn.	12,596				
Other Supply Connections	conn.	-				
Water Supply Capacity						
Brushy Plant Well	gpm	550				
Delivery from SWTP	gpm	1,964				Extra capacity from SWTP System
Delivery from Bird Pond	gpm	1,459				Extra capacity from Bird Pond System
CoB Jones Rd Interconnect	gpm	0				Wheeled from OSR System (3 MGD max. deal)
CoB Jones Rd Interconnect	gpm	0				Purchased from CoB (3 MGD max. deal)
CoCS Rock Prairie Rd Interconnect	gpm	0				CoCS agreements ends in 2020
CoCS Holleman Rd Interconnect	gpm	0				CoCS agreements ends in 2020
OSR Jones Rd Interconnect	gpm	5,100				*Proposed OSR Supply Booster Pump Station
Total Capacity	gpm	9,073	7,558	83%	1,516	2,526
Total Storage						
Brushy Plant GST	gal.	150,000				
Brushy Booster Station GST	gal.	5,000				
Wellborn Plant EST	gal.	1,000,000				
Arrington Rd Plant GST	gal.	211,000				
Arrington Rd Plant EST	gal.	500,000				Fills GST
SH 6 Plant GST	gal.	250,000				
Millican EST	gal.	1,500,000				*Proposed 1.5 MG Millican EST
OSR Standpipes	gal.	810,000				*Proposed OSR Supply BPS Location; Additional 500,000 gal. Standpipe; 310,000 gal. Standpipe
Total Storage	gal.	4,426,000	2,519,200	57%	1,906,800	9,534
Elevated Storage						
Wellborn Plant EST	gal.	1,000,000				
Millican EST	gal.	1,500,000				*Proposed 1.5 MG Millican EST
Total Elevated Storage	gal.	2,500,000	1,259,600	50%	1,240,400	12,404 100 gal./conn.
Pressure Tanks						
Brushy Plant PT	gal.	10,000				Not in service
Total PT Capacity	gal.	10,000	0		0	0
WPEC						

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High Service Pumps

Brushy Plant HSP	gpm	1,100				2 at 550 gpm each
CoB Jones Rd Interconnect	gpm	3,900				2 at 1,950 gpm
Brushy Booster Station HSP	gpm	800				2 at 400 gpm each
Arrington Rd HSP	gpm	2,500				2 at 1,000 gpm each; 1 at 500 gpm
SH 6 Plant HSP	gpm	4,200				1 at 2,100 gpm and 2 at 1,050 gpm each
OSR Supply BPS HSP	gpm	7,650				*Proposed Supply pumps 3 at 2,550 gpm each
Total High Service Pumps	gpm	20,150	18,894	94%	1,256	837 1.5 gpm/conn. direct *Able to meet peak hourly demand w/ largest HSP (OSR Supply BPS) out of service (w/ proposed improvements)

BIRD POND SYSTEM

Connections

Connections	conn.	568
Other Supply Connections	conn.	2,432

Water Supply Capacity

Bird Pond Well #1	gpm	0				Not in service
Bird Pond Well #2	gpm	0				Not in service
Bird Pond Well #3	gpm	267				1/3 rd each of the total well field max. (800 gpm)
Bird Pond Well #4	gpm	267				1/3 rd each of the total well field max. (800 gpm)
Bird Pond Well #5	gpm	267				1/3 rd each of the total well field max. (800 gpm)
CoCS Foxfire Dr Interconnect	gpm	0				CoCS agreements ends in 2020
CoCS Arrington Rd Interconnect	gpm	0				CoCS agreements ends in 2020
Delivery to Wellborn	gpm	-1,459				Extra delivered to Wellborn System (no max.)
CoB Bird Pond Interconnect	gpm	1,000				500 gpm wheeled & 500 gpm purchased from CoB (3 MGD max. deal each)

Total Capacity

	gpm	341	341	100%	0	0
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Total Storage

Bird Pond Plant GST #1	gal.	210,000				
Bird Pond Plant GST #2	gal.	210,000				
Arrington Rd EST	gal.	500,000				
Total Storage	gal.	920,000	113,600	12%	806,400	4,032

Elevated Storage

Arrington Rd EST	gal.	500,000				
Total Elevated Storage	gal.	500,000	113,600	23%	386,400	1,932

Pressure Tanks

Bird Pond Plant PT	gal.	10,000				Not in use
Total PT Capacity	gal.	10,000	0		0	0

High Service Pumps

Bird Pond Plant	gpm	2,500				2 at 1,000 gpm each; 1 at 500 gpm
Total High Service Pumps	gpm	2,500	1,800	72%	700	1,167 0.6 gpm/conn. direct and supply

System Component	Units	2027		Remaining Avail. Supply	
		Current Capacity	Required Capacity	Capacity Used	Connections

SURFACE WATER TREATMENT PLANT SYSTEM

Connections

Connections	conn.	68			
Other Supply Connections	conn.	2,727			

Water Supply Capacity

SWTP	gpm	2,100			
Delivery to Wellborn	gpm	-1,964			
Total Capacity	gpm	136	136	100%	0
Total Storage					

Extra delivered to Wellborn System (no max.)

SWTP GST Clearwell	gal.	722,000			
Total Storage	gal.	722,000	13,600	2%	3,542

Pressure Tanks

SWTP PT	gal.	20,000			
Total PT Capacity	gal.	20,000	1,360	7%	932

High Service Pumps

SWTP HSP	gpm	2,800			
Total High Service Pumps	gpm	2,800	1,772	63%	1,621

4 at 700 gpm each

2 gpm/conn. direct and 0.6 gpm/conn. supply

OSR SYSTEM

Connections

Connections	conn.	755			
Other Supply Connections	conn.	3,609			

Water Supply Capacity

OSR Plant Well (Well No. 2)	gpm	1,100			
CoB Mumford Rd Delivery	gpm	-500			
CoCS Sandy Point Rd Delivery	gpm	0			
Delivery from Black Jack	gpm	1,350			
Simsboro Well	gpm	3,000			
Carrizo Well at Benchley	gpm	700			
OSR Supply BPS Delivery	gpm	-5,100			
Total Capacity	gpm	550	453	82%	162
Total Storage					

Based on availability (3 MGD max. through CoB)

CoCS agreements ends in 2020

Extra capacity from Black Jack System

*Proposed Simsboro Well

*Proposed Carrizo Well

*Proposed OSR Supply BPS Delivery

OSR Plant GST	gal.	243,000			
OSR Plant EST	gal.	200,000			
Total Storage	gal.	443,000	151,000	34%	1,460

Elevated Storage

OSR Plant EST	gal.	200,000							
Total Elevated Storage	gal.	200,000	151,000	76%	49,000	245		200 gal./conn.	
<i>High Service Pumps</i>									
OSR Plant HSP	gpm	6,400							*Proposed replacement HSPs 2 at 3,200 gpm each
Total High Service Pumps	gpm	6,400	2,619	41%	3,781	6,302		0.6 gpm/conn. direct and supply	

BLACK JACK SYSTEM

<i>Connections</i>									
Connections	conn.	455							
Other Supply Connections	conn.	1,874							
<i>Water Supply Capacity</i>									
Black Jack Well (Well No. 1)	gpm	2,000							
Delivery to OSR	gpm	-1,350							Extra delivered to OSR System (1,350 gpm max.)
Total Capacity	gpm	650	273	42%	377	628			
<i>Total Storage</i>									
Black Jack Plant EST	gal.	200,000							
Total Storage	gal.	200,000	91,000	46%	109,000	545			
<i>Elevated Storage</i>									
Black Jack Plant EST	gal.	200,000							
Total Elevated Storage	gal.	200,000	91,000	46%	109,000	545			
<i>High Service Pumps</i>									
N/A			0						*Proposed Booster Pump to increase delivery to OSR 300 gpm

TOTAL SYSTEM

<i>Connections</i>									
Connections	conn.	14,442							
<i>Water Supply Capacity</i>									
Total Capacity	gpm	10,373	8,760	84%	1,613				
<i>Total Storage</i>									
Total Storage	gal.	6,211,000	2,888,400	47%	3,322,600				
<i>Elevated Storage</i>									
Total Elevated Storage	gal.	3,400,000	1,615,200	48%	1,784,800				
<i>High Service Pumps</i>									
Total Pumping Capacity	gpm	31,850	25,085	79%	6,765				*Able to meet peak hourly demand w/ largest HSP (OSR Supply BPS) out of service (w/ proposed improvements)

TABLE 5
WELLBORN SUD
2017 MASTER PLAN
PROJECTED WATER SUPPLY CAPACITY SUMMARY

Year	No. of Conn.	Current Capacity (MGD)	Required Capacity (MGD)	Capacity Used (Current)	Proposed Additional Supply (MGD)	Proposed Total Supply (MGD)	Capacity Used (Proposed)	Comments
2016	8,014	7.2	6.9	96%	0	7.2	96%	CoB Jones Rd Interconnect - 1.4 MGD Purchased and 0.6 MGD Wheeled; CoCS Rock Prairie Rd Interconnect - 0.6 MGD Wheeled; CoCS Foxfire Dr Interconnect - 0.4 MGD Wheeled
2022	11,050	7.2	9.5	132%	4.2	11.5	83%	2nd Jones Rd. Pump & CoB Bird Pond Interconnect (increase in CoB purchased); SWTP 1.8 MGD Expansion (3 MGD total); Black Jack line improvements; CoB Jones Rd Interconnect - 1.6 MGD Purchased and 2.5 MGD Wheeled; CoB Bird Pond Interconnect - 1.4 MGD Purchased
2027	14,442	7.2	12.5	173%	3.5	14.9	84%	†3,000 gpm OSR Simsboro Well; †700 gpm Benchley Carrizo Well; *OSR Supply BPS; Less CoB 3 MGD Purchased from Jones Rd Interconnect; CoB Bird Pond Interconnect - 0.7 MGD Purchased and 0.7 MGD Wheeled; Black Jack booster pump; *1.5 MG Millican EST SWTP 3 MGD Expansion (6 MGD total); ASR (350 gpm from Bird Pond Wells #1 & #2); *Combine SWTP and Bird Pond Pressure Plane; CoB Bird Pond Interconnect - 0.7 MGD Purchased and 0.7 MGD Wheeled
2032	18,875	7.2	16.3	226%	4.0	19.0	86%	
2040	28,967	7.2	25.0	347%	6.2	25.2	99%	†SWTP 6 MGD Expansion (12 MGD total); CoB Bird Pond Interconnect - 0.4 MGD Purchased and 0.6 MGD Wheeled

* Proposed Improvement has no contribution to total system additional supply (only wheeling, EST requirements, etc.)

† Additional Water Rights required

TABLE 6
WELLBORN SUD
2017 MASTER PLAN
PRELIMINARY COST ESTIMATE THROUGH 2027

Item	Unit	Quantity	Unit Cost (\$)	Total Cost (\$)	Capacity Multiplier*	Total Adjusted Cost (\$)
<u>Immediate Improvements - 2017:</u>						
<u>Construction:</u>						
Water Line Improvements:						
10" Line out of Black Jack Plant along FM 2549 (Increased OSR Delivery)	L.F.	2,800	50.00	140,000	1.00	140,000
10" Line along Old Hearne Rd. (Increased OSR Delivery)	L.F.	15,500	50.00	775,000	1.00	775,000
10" Line for Bird Pond Interconnect with City of Bryan	L.F.	8,000	50.00	400,000	1.00	400,000
6" Line along River Place Ct.	L.F.	1,500	30.00	45,000	1.00	45,000
Tie-in 2" and 12" w/ 6" Line at Rock Prairie Rd. and Robin Dr.	EA.	1	15,000	15,000	1.00	15,000
Tie-in 1 1/2" and 14" w/ 4" Line at FM 2154 and Barron Cut-Off Rd.	EA.	1	20,000	20,000	1.00	20,000
Subtotal:				1,395,000		1,395,000
Plant Improvements:						
Bird Pond Rd. Plant Interconnect with City of Bryan on University Dr. E.	EA.	1	130,000	130,000	1.00	130,000
Additional 1,950 gpm High Service Pump at Jones Road Interconnect	EA.	1	195,000	195,000	1.00	195,000
Subtotal:				325,000		325,000
Total 2017 Construction:				1,720,000		1,720,000
Other:						
Contingency (20%)				344,000	1.00	344,000
Engineering, Surveying, Geotechnical Investigation, Materials Testing, Project Representative, Financial, Right-of-Way Acquisition, Right-of-Way Agent, and Legal Fees (20%)				344,000		
Total 2017:				2,408,000	1.00	2,408,000

Item	Unit	Quantity	Unit Cost (\$)	Total Cost (\$)	Capacity Multiplier*	Total Adjusted Cost (\$)
<u>Future Improvements - 2022:</u>						
Construction:						
Water Line Improvements:						
16" Line along Dowling Rd.	L.F.	8,900	93.00	827,700	0.50	413,850
16" Line along FM 2154	L.F.	26,500	93.00	2,464,500	0.50	1,232,250
20" Line along Koppe Bridge Dr.	L.F.	3,000	116.00	348,000	0.40	139,200
Subtotal:				3,640,200		1,785,300
Plant Improvements:						
SWTP Expansion to 3 MGD	EA.	1	1,739,000	1,739,000	1.00	1,739,000
Additional 2,100 gpm High Service Pump at SH 6 Plant	EA.	2	128,000	256,000	0.96	245,760
Subtotal:				1,995,000		1,984,760
Total 2022 Construction:				5,635,200		3,770,060
Other:						
Contingency (20%)				1,127,000	1.00	1,127,000
Engineering, Surveying, Geotechnical Investigation, Materials Testing, Project Representative, Financial, Right-of-Way Acquisition, Right-of-Way Agent, and Legal Fees (20%)				1,127,000		
Total 2022:				7,889,200	1.00	1,127,000
						6,024,060

Item	Unit	Quantity	Unit Cost (\$)	Total Cost (\$)	Capacity Multiplier*	Total Adjusted Cost (\$)
<u>Future Improvements – 2027:</u>						
Construction:						
Water Line Improvements:						
12" Line along Peach Creek Rd. and Rock Prairie Rd.	L.F.	33,600	81.00	2,721,600	0.50	1,360,800
20" Supply line for delivery from OSR to Jones Rd. Interconnect	L.F.	52,000	134.00	6,968,000	1.00	6,968,000
20" Line from new Simsboro Well to OSR Supply Booster Pump Station	L.F.	18,300	134.00	2,452,200	1.00	2,452,200
Subtotal:				12,141,800		10,781,000
Plant Improvements:						
Addition of 3,000 gpm Simsboro Well near Old San Antonio Rd.	EA.	1	2,352,000	2,352,000	0.89	2,093,280
1.5 MG Millican Elevated Tank near FM 2154 and Dickson Rd.	EA.	1	3,965,000	3,965,000	0.34	1,348,100
Booster Pump added to Black Jack Plant	EA.	1	81,000	81,000	1.00	81,000
Addition of 700 gpm Carrizo Well at OSR Plant	EA.	1	1,102,000	1,102,000	0.89	980,780
Replace High Service Pumps at OSR Plant, 3,200 gpm each	EA.	2	336,000	672,000	0.56	376,320
Addition of OSR Supply Booster Pump Station at OSR Standpipe	EA.	1	1,243,000	1,243,000	0.89	1,106,270
Subtotal:				9,415,000		5,985,750
Total 2027 Construction:				21,556,800		16,766,750
Other:						
Contingency (20%)				4,311,000	1.00	4,311,000
Engineering, Surveying, Geotechnical Investigation, Materials Testing, Project Representative, Financial, Right-of-Way Acquisition, Right-of-Way Agent, and Legal Fees (20%)				4,311,000		
Total 2027:				30,178,800	1.00	4,311,000
						25,388,750
TOTAL PROPOSED SYSTEM IMPROVEMENTS				40,476,000		33,820,810

* Capacity Multiplier is used to calculate the cost associated with system growth up to Year 2027. For Line Improvements, the capacity multiplier is based on the ratio of the pipe diameter required in 2027 to the pipe diameter recommended to allow for growth after 2027. The cost of the line improvements is generally proportional to the line diameter. Example: Modeling indicates the Water Line along Peach Creek Rd. and Rock Prairie Rd. is required by 2027. A 6" line is adequate to meet the projected demand in 2027, but additional modeling indicates a 12" line is required to meet future needs. Capacity Multiplier = $6 / 12 = 0.5$

For Plant Improvements, the capacity multiplier is the ratio of the capacity required for 2027 to the capacity recommended to allow for growth after 2027. The cost of the plant improvements generally follows an economy of scale and is evaluated using the formulas Adjusted Cost = $K * Capacity^{0.6}$ and Capacity Multiplier = Adjusted Cost / Total Cost. Example: For the Addition of 3,000 gpm Simsboro Well near Old San Antonio Rd. Adjusted Cost = $19,282.55 * (3,000 * 0.83)^{0.6} = 2,103,217$ and Capacity Multiplier = $2,103,217 / 2,352,000 = 0.89$. Where $K = 2,352,000 / 3,000^{0.6} = 19,282.55$, 3,000 gpm is the full capacity, and only 83% is required for 2027.