Agenda Information Sheet

DEPARTMENT: **Water Utilities**

CM/ ACM: **Howard Martin, Utilities, 349-8232**

Date: **February 27, 2017**

SUBJECT

..Title

Receive a report and hold a discussion regarding the Water and Wastewater Forecasts for FY 2017-18 Annual Program of Services and the FY 2018-22 Capital Improvement Plans.

..Body

BACKGROUND

Staff has prepared updated Water and Wastewater forecasts that will support development of the FY 2018-2022 CIP's, FY 2017-2018 operating budgets, and other long-range service requirements. Forecasts are updated annually based on analyses of historical data to determine relationships between population, customers, production, treatment and consumption or usage data. This information is then compared to population growth projections and other land use assumptions to develop the new forecasts. As a part of these analyses, staff compared our population projections to the North Central Texas Council of Government (NCTCOG) population forecasts. The NCTCOG population forecasts for the North Central Texas 2040 Demographic Forecast provides long range estimates for two target years, 2035 and 2040. Denton staff population forecasts are approximately the same as the NCTCOG forecasts for these target years.

At this time, the Water forecast is virtually unchanged from the prior year. However, staff is continuing to evaluate the possible trend of decreasing gallons per capita per day (GPCD), as we indicated in the 2015 Water and Wastewater Rate Study. Staff is also continuing to further analyze correlations between total annual rainfall, rainfall patterns, and per capita water demand variability. The Wastewater forecast has continued previously revised methods that currently provide accurate predictions of residential and commercial billed volumes.
Exhibit 1 provides a summary of the Water utility forecast. Major points include the following:

- Projected water demands for Denton will not exceed its raw water rights from Lake Ray Roberts and Lake Lewisville until beyond the planning window. We anticipate purchases of water from the Dallas Water contract when our raw water demand exceeds our raw water rights. Staff will continue to evaluate options for new sources of raw water, including activation and renewal of the Dallas raw water contract and adding potential indirect water reuse to the Dallas contract.
- Additional treatment plant capacity will be needed prior to the summer of 2027. The current plan is to expand the Lake Ray Roberts treatment plant from 20 to 50 MGD. The engineering, design and construction of the next plant expansion will require a 3 to 4 year lead time.
- The raw water supply and treatment capacity are estimated to be sufficient to meet Denton's needs for beyond 20 years; additional improvements to the distribution system will be needed to insure the additional treated water capacity can be delivered to customers.

Exhibit 2 provides a summary of the Wastewater utility forecast. Significant points are as follows:

- The projected Wastewater treatment volumes show that additional treatment capacity in the Hickory/Pecan/Cooper Creek Basins will be needed between 2026 and 2029. However, the peak wet weather flows reaching the Pecan Creek plant will exceed the raw influent wastewater pumping capacity prior to the next plant capacity expansion. Therefore, to manage the peak wet weather flows for the up to the Year 2033 conditions, the West Wet Weather Pump Station and Storage Basin will be bid for construction in summer of 2017.

- The Wastewater collection system model shows the Hickory Creek Pump Station serving the entire Hickory Creek Basin will not be adequate for the upcoming 5 year CIP horizon. The Hickory Creek Detention Facility will be bid for construction in summer of 2017.

- Construction of several interceptor lines is included in the 5 year CIP to accommodate growth, and to limit wet weather overflows. These include the Pecan Creek Interceptor Phase IV, Cooper Creek Interceptor Phases I and II, and the Hickory Creek Interceptor Phases I, II, and III.

- Options for wastewater service in the Clear Creek/Milam Creek Basin were developed. Denton 288 L.P., a Texas limited partnership (Hills of Denton developer) that drove the need for a wastewater system in this basin declared bankruptcy and the lending institution took possession of the property. A two year extension agreement to provide water and wastewater service to the Hills of Denton property was approved by the PUB and City Council with BBVA Compass. The Hunt family then purchased the entire property from the bank and a five year extension of the Water/Wastewater agreement was approved by the PUB and City Council which extends the agreement to June 2018.

RECOMMENDATION

Information item only, no formal recommendation is requested at this time.

PRIOR ACTION/REVIEW (Council, Boards, Commissions)

No prior Board and Council actions or reviews have occurred to date.

FISCAL INFORMATION

The Water and Wastewater Utilities FY 2017-18 volume forecasts provide the basis for the FY 2017-2018 operating budget and FY 2018-2022 Capital Improvement Plan.

STRATEGIC PLAN RELATIONSHIP

The City of Denton's Strategic Plan is an action-oriented road map that will help the City achieve its vision. The foundation for the plan is the five long-term Key Focus Areas (KFA): Organizational Excellence; Public Infrastructure; Economic Development; Safe, Livable, and Family-Friendly Community; and Sustainability and Environmental Stewardship. While individual items may support multiple KFAs, this specific City Council agenda item contributes most directly to the following KFA and goal:

Related Key Focus Area: **Public Infrastructure**
Related Goal: **2.3 Promote superior utility services and facilities**

EXHIBITS

1. Water Utility Forecast

2. Wastewater Utility Forecast

Respectfully submitted:
Kenneth Banks
Director, Environmental Services and Utility Budgets

Prepared by:
Cassandra Ogden
Water Utilities Business Administrator

Water Volume Forecast FY 2018

Water Customers by Class

Fiscal Year	Residential		Commercial		Wholesale	Total
2012	27,207	0.8%	4,161	-1.8%	2	31,370
2013	27,486	1.0%	4,226	1.6%	2	31,714
2014	27,915	1.6%	4,301	1.8%	2	32,218
2015	28,722	2.9%	4,552	5.8%	2	33,276
2016	29,411	2.4%	4,640	1.9%	2	34,053
2017	30,040	2.1%	4,694	1.2%	2	34,734
2018	**30,682**	**2.1%**	**4,747**	**1.1%**	**2**	**35,429**
2019	31,338	2.1%	4,800	1.1%	2	36,137
2020	32,007	2.1%	4,853	1.1%	2	36,860
2021	32,691	2.1%	4,906	1.1%	2	37,597
2022	33,390	2.1%	4,959	1.1%	2	38,349
2023	34,103	2.1%	5,013	1.1%	2	39,116
2024	34,832	2.1%	5,067	1.1%	2	39,899
2025	35,576	2.1%	5,121	1.1%	2	40,696
2026	36,336	2.1%	5,175	1.1%	2	41,510
2027	37,112	2.1%	5,229	1.0%	2	42,341

Historical and Projected Water Production

(MGD)

Fiscal Year	Actual	Normal	Dry	Wet	Rainfall
2012	18.4	18.4	19.9	17.0	33
2013	18.7	18.7	20.2	17.3	27
2014	16.9	19.2	20.7	17.7	26
2015	17.4	19.6	21.2	18.1	38
2016	17.8	20.1	21.7	18.5	61
2017		20.5	22.0	18.8	
2018		**20.9**	**22.5**	**19.2**	
2019		21.3	22.9	19.6	
2020		21.7	23.4	20.0	
2021		22.2	23.8	20.4	
2022		22.6	24.3	20.8	
2023		23.1	24.8	21.2	
2024		23.5	25.4	21.7	
2025		24.0	25.8	22.0	
2026		24.5	26.3	22.5	
2027		25.0	26.9	22.9	

Normal Year - 37 in rain in of rainfall annually
Dry Year - 27 in rain in of rainfall annually
Wet Year - 47 in rain in of rainfall annually

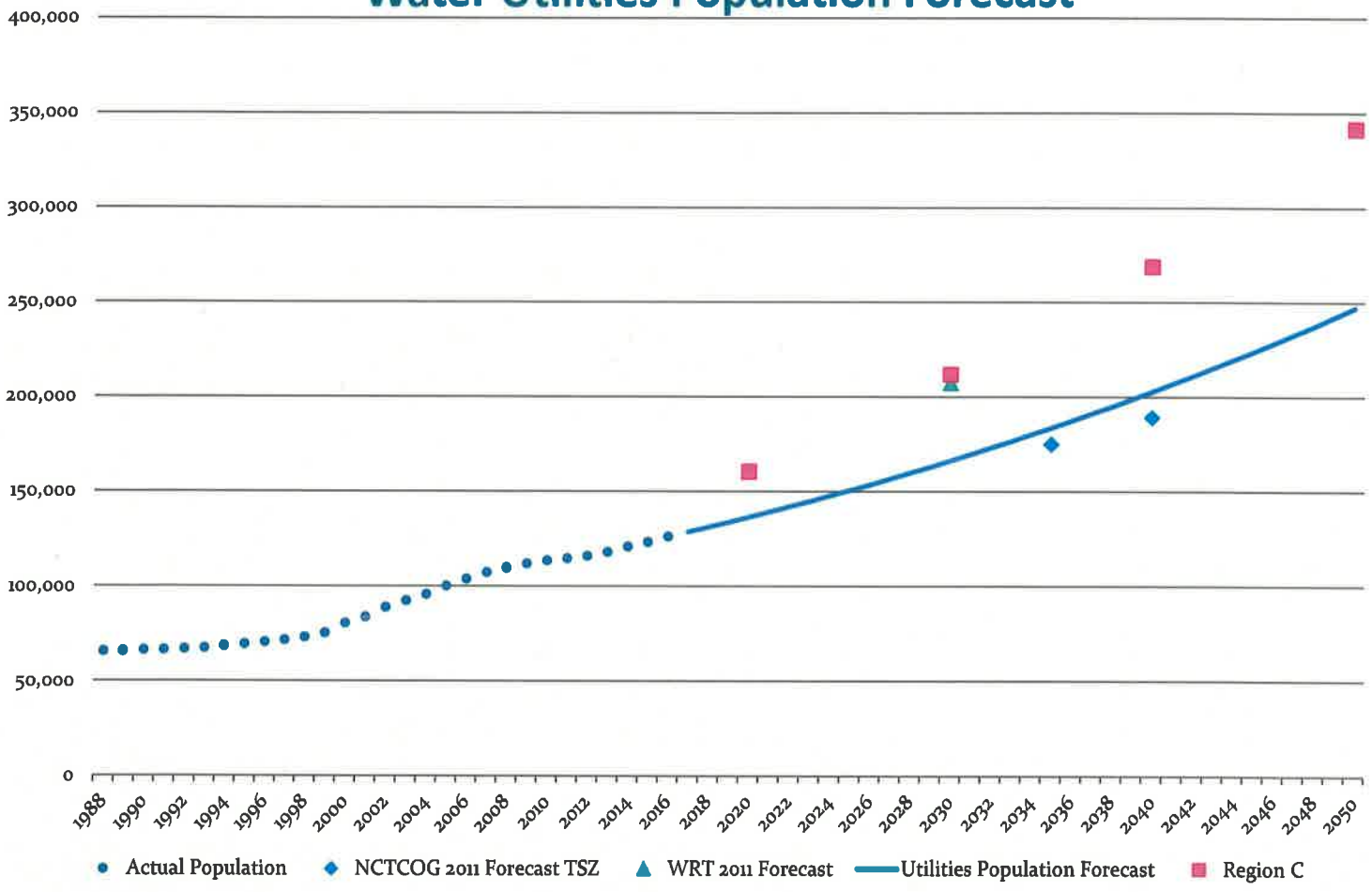
Historical and Projected Peak Day Water Production

(MGD)

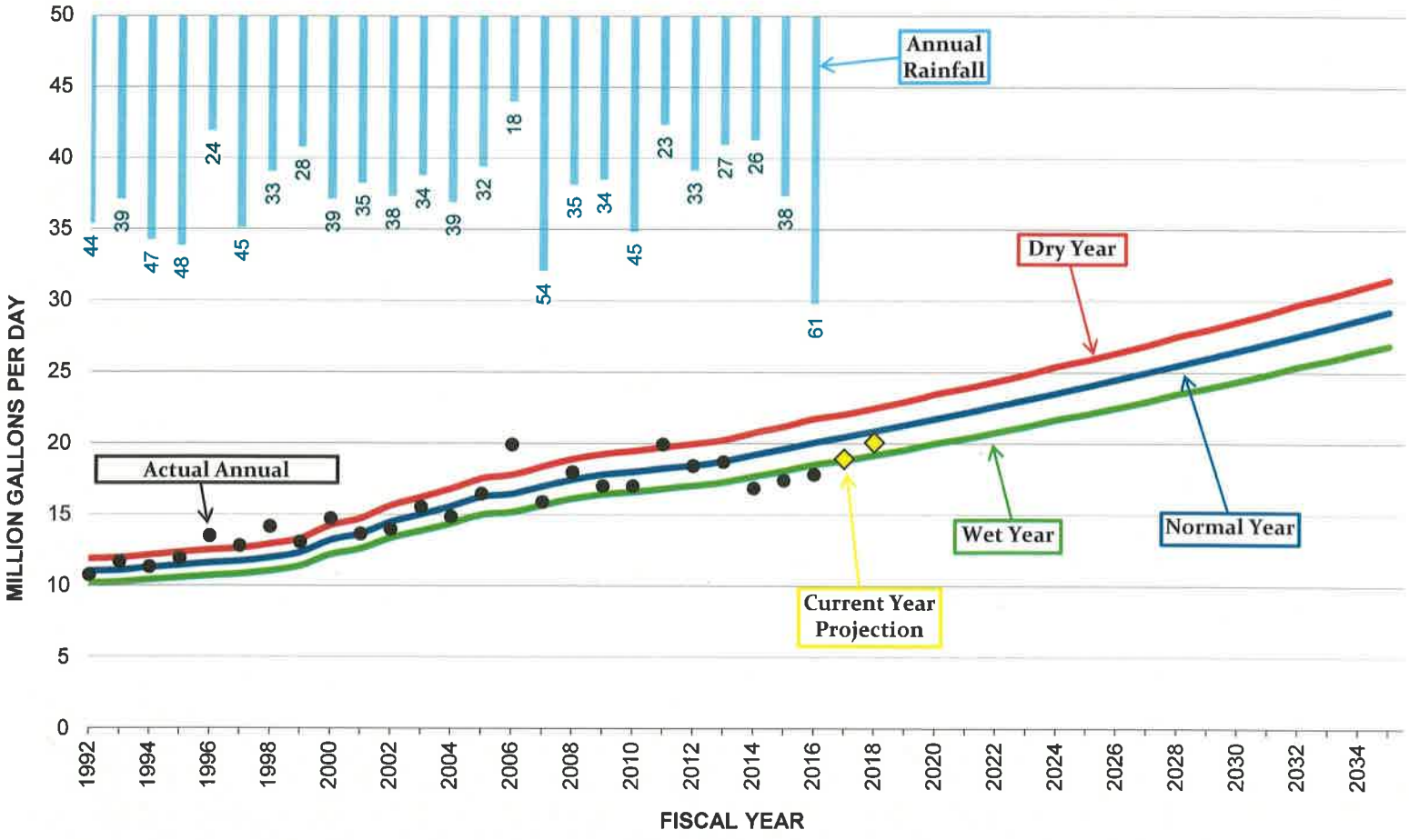
Fiscal Year	Actual	Normal	Dry	Wet	Rainfall
2012	34.5	33.8	36.5	31.2	33
2013	31.7	34.3	37.0	31.6	27
2014	25.9	35.2	37.9	32.4	26
2015	34.3	35.9	38.8	33.1	38
2016	29.8	36.7	39.7	33.9	61
2017		37.5	40.3	34.4	
2018		**38.2**	**41.1**	**35.1**	
2019		39.0	42.0	35.8	
2020		39.8	42.9	36.6	
2021		40.6	43.7	37.3	
2022		41.4	44.5	38.0	
2023		42.2	45.4	38.8	
2024		43.1	46.5	39.7	
2025		44.0	47.3	40.4	
2026		44.8	48.2	41.2	
2027		45.7	49.2	42.0	

Normal Year - 37 in rain in of rainfall annually
Dry Year - 27 in rain in of rainfall annually
Wet Year - 47 in rain in of rainfall annually

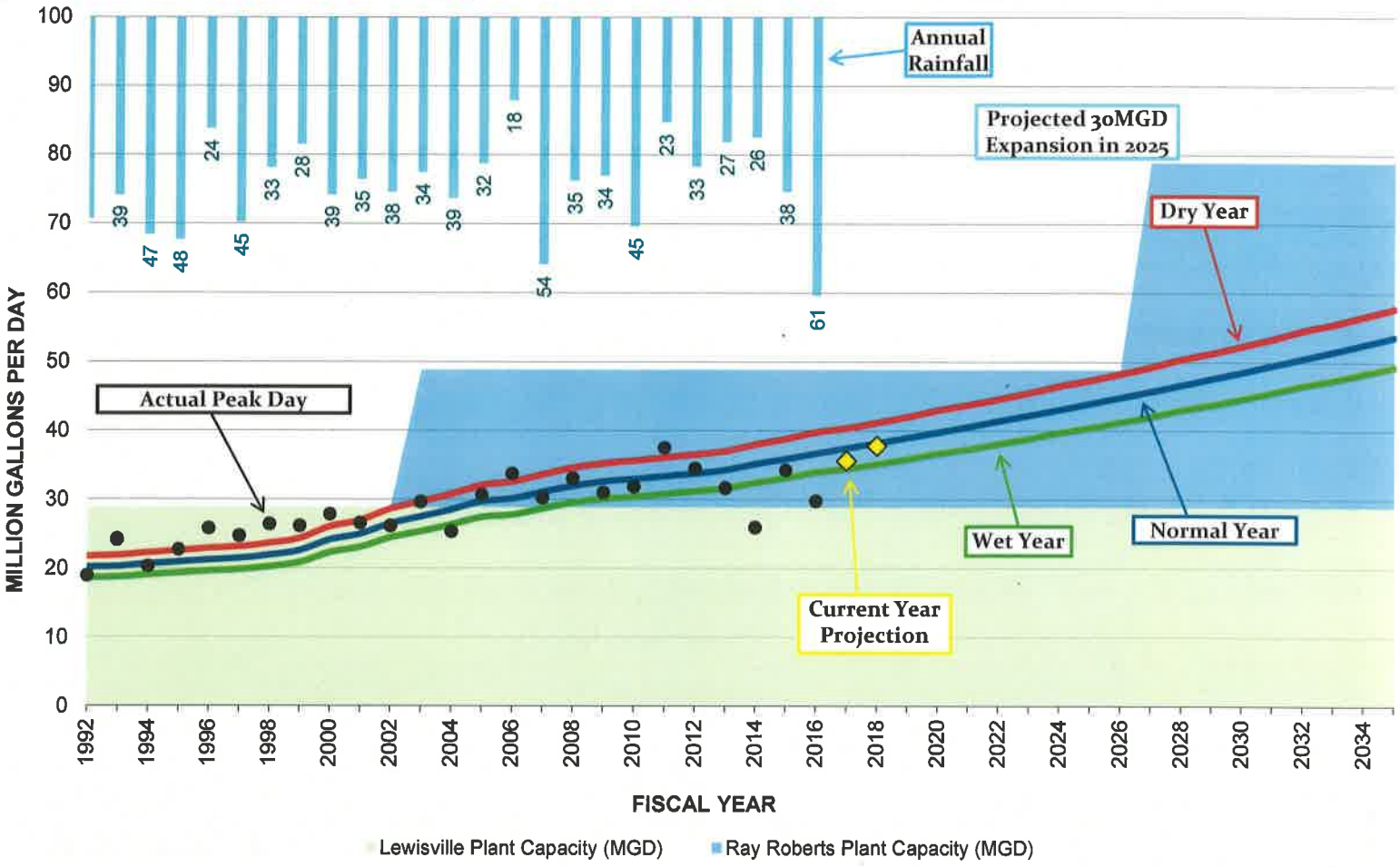
Water Utilities Population Forecast



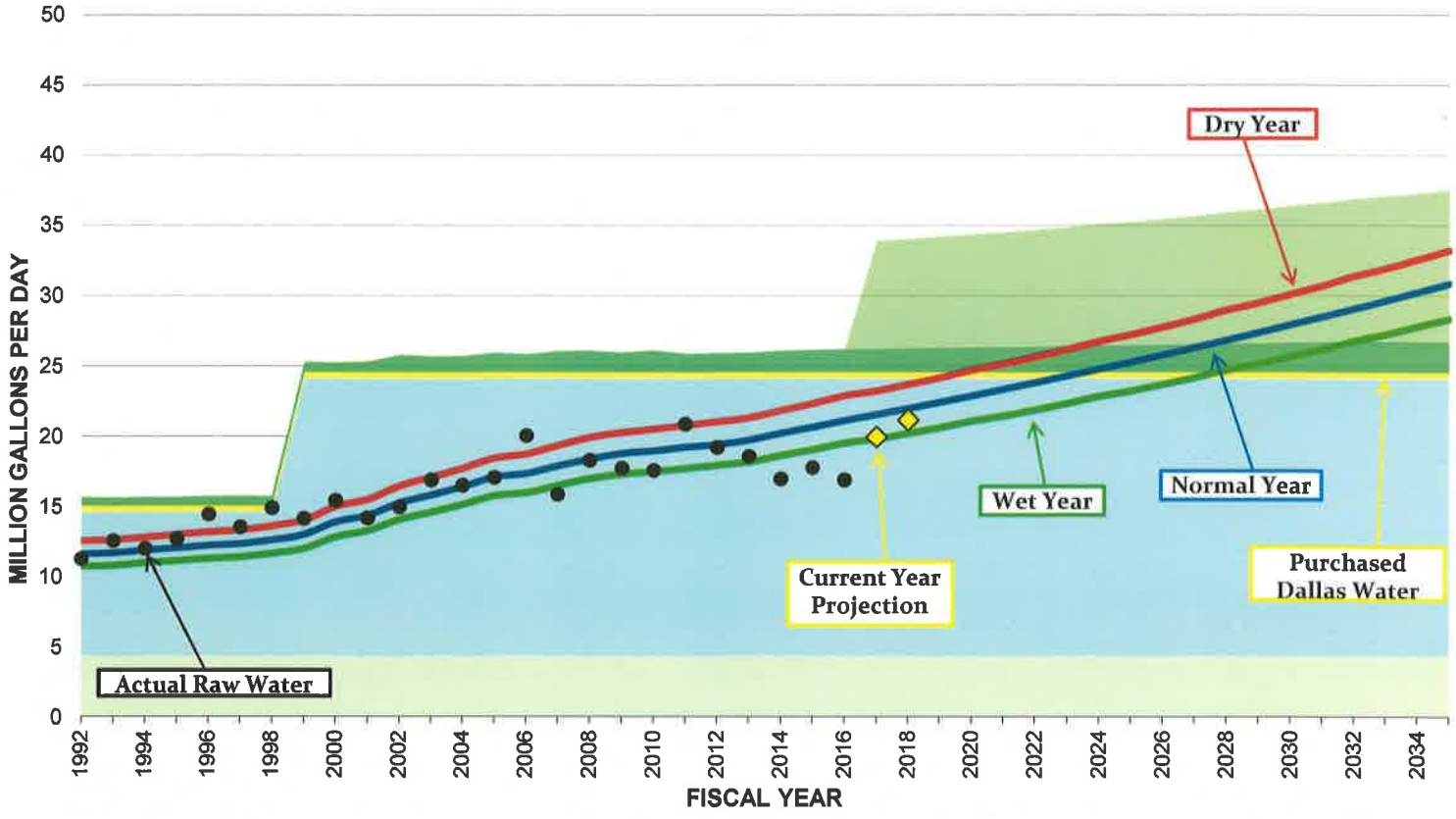
Historical and Projected Water Production



Historical and Projected Peak Day Finished Water Production



Raw Water Rights and Requirements with Indirect Reuse



Reserves

	Water
Working Capital	8%
Operating Reserves	25-42%
Total	33-50%
Operating Days	(120-180 days)

- Working capital ("WC") provides liquidity for payables and payment cycles. Funds above this level are applied to the operating reserve.
- Operating reserves ("OR") help managing expense and demand volatility, cover emergencies, and improve overall resiliency. In general, Funds with more stable revenue collection can consider lower OR targets.
- As outlined in the Utilities Financial Strategies, Funds above operating reserves may be used for debt reduction payments, one-time capital expenses, capital funding using cash, or various rate increase mitigation strategies

Questions?

Wastewater Volume Forecast FY 2018

Wastewater Customers by Class

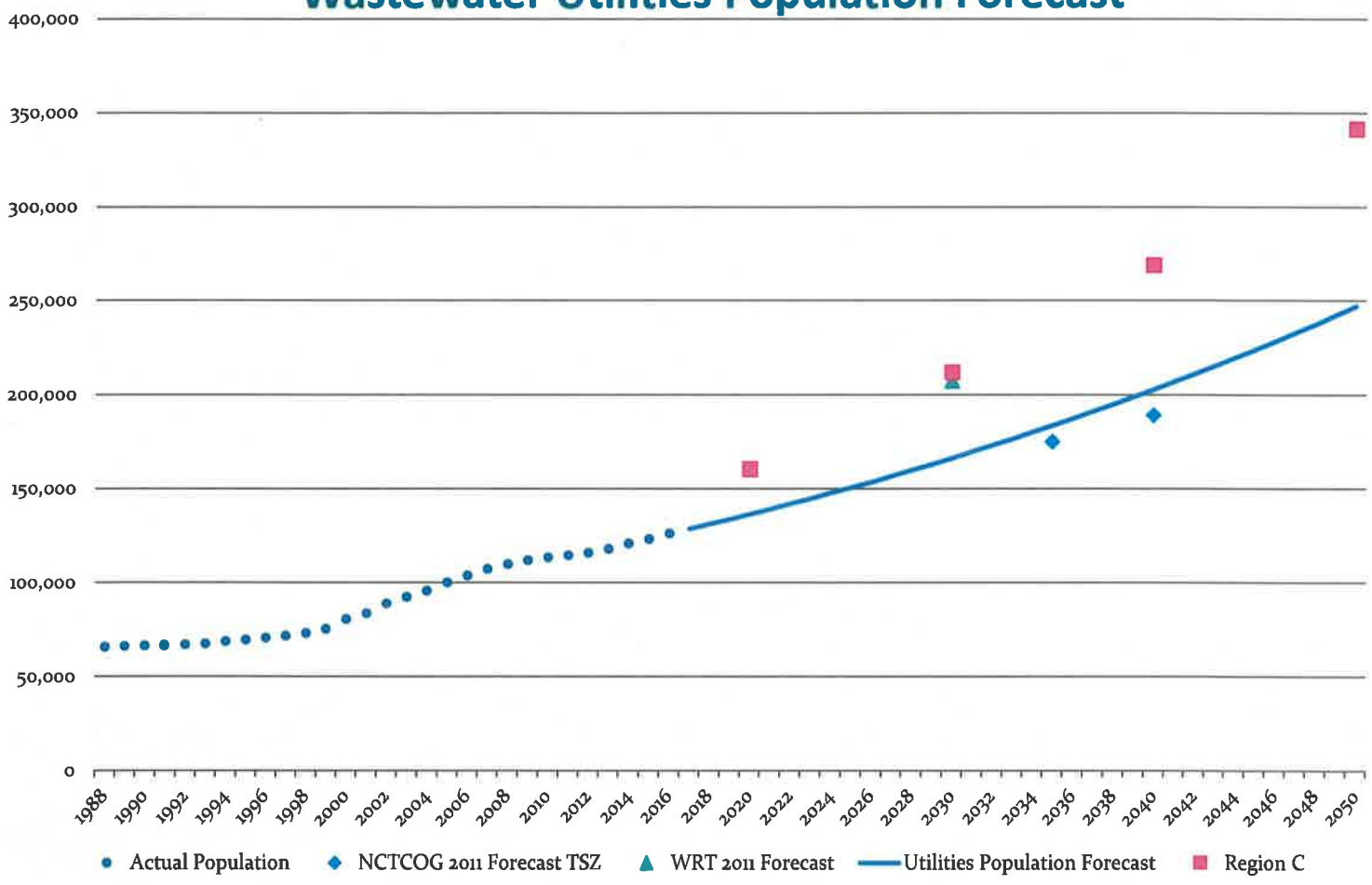
Fiscal Year	Residential		Commercial		Wholesale	Total
2012	26,691	0.8%	3,066	1.1%	4	29,761
2013	26,995	1.1%	3,091	0.8%	4	30,090
2014	27,548	2.0%	3,148	1.8%	4	30,700
2015	28,048	1.8%	3,178	1.0%	4	31,230
2016	28,851	2.9%	3,211	1.0%	4	32,066
2017	29,486	2.2%	3,253	1.3%	4	32,742
2018	**30,134**	**2.2%**	**3,295**	**1.3%**	**4**	**33,433**
2019	30,797	2.2%	3,338	1.3%	4	34,139
2020	31,475	2.2%	3,381	1.3%	4	34,860
2021	32,167	2.2%	3,425	1.3%	4	35,597
2022	32,875	2.2%	3,470	1.3%	4	36,349
2023	33,598	2.2%	3,515	1.3%	4	37,117
2024	34,337	2.2%	3,561	1.3%	4	37,902
2025	35,093	2.2%	3,607	1.3%	4	38,704
2026	35,865	2.2%	3,654	1.3%	4	39,523
2027	36,654	2.2%	3,701	1.3%	4	40,359

Wastewater Discharge by Customer Class

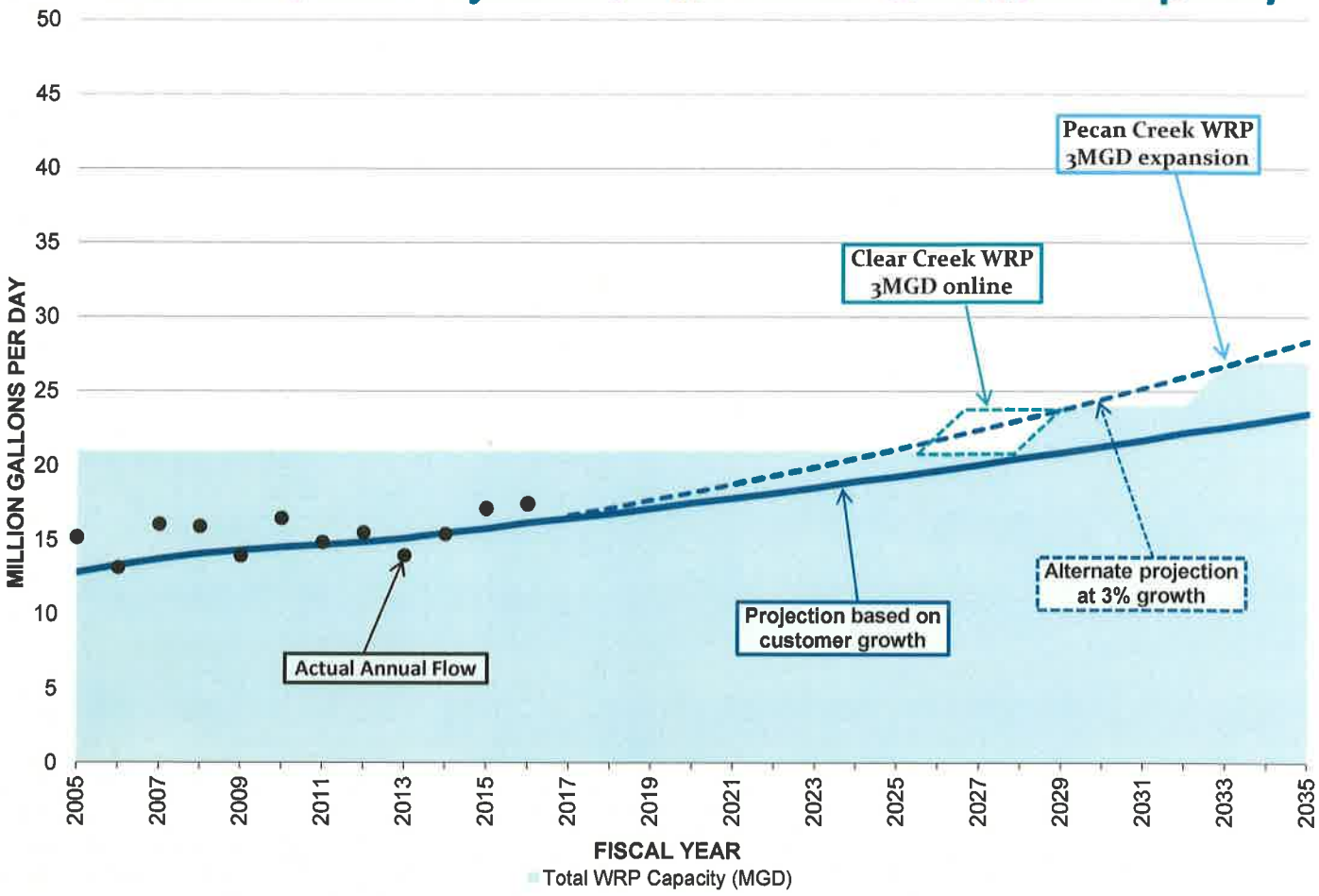
(MGD)

Fiscal Year	Residential	Commercial	Wholesale	Total
2012	4.76	5.44	0.49	10.70
2013	4.95	5.27	0.52	10.74
2014	4.88	5.41	0.58	10.87
2015	4.61	5.43	0.59	10.62
2016	4.64	5.78	0.68	11.10
2017	4.70	5.83	0.70	11.24
2018	**4.76**	**5.90**	**0.71**	**11.39**
2019	4.83	5.97	0.72	11.54
2020	4.90	6.05	0.73	11.70
2021	4.98	6.13	0.74	11.87
2022	5.07	6.21	0.75	12.06
2023	5.16	6.30	0.76	12.25
2024	5.26	6.39	0.77	12.45
2025	5.37	6.49	0.78	12.67
2026	5.48	6.59	0.79	12.89
2027	5.60	6.70	0.80	13.13

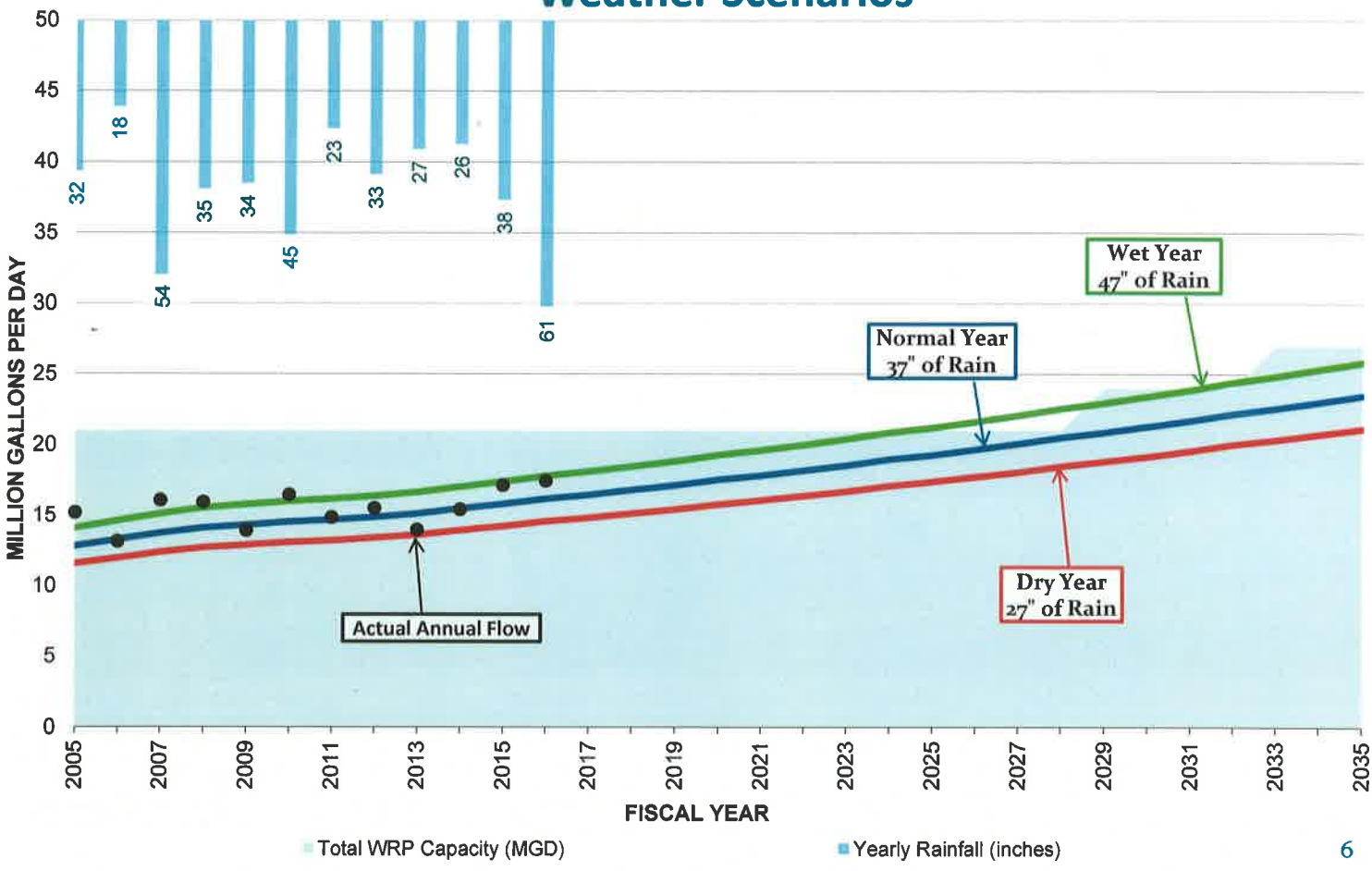
Wastewater Utilities Population Forecast



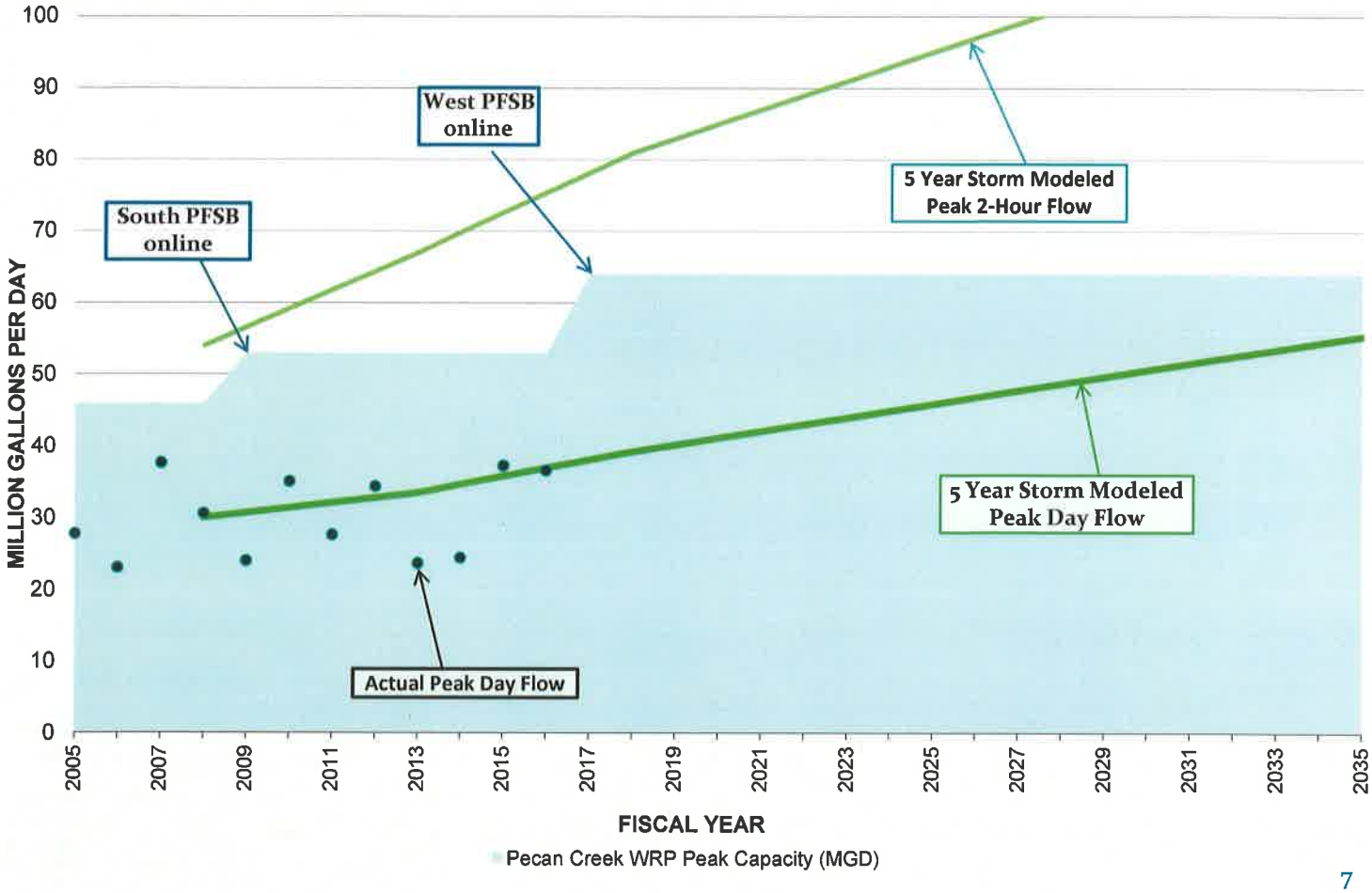
Historical and Projected Flows Versus Treatment Capacity



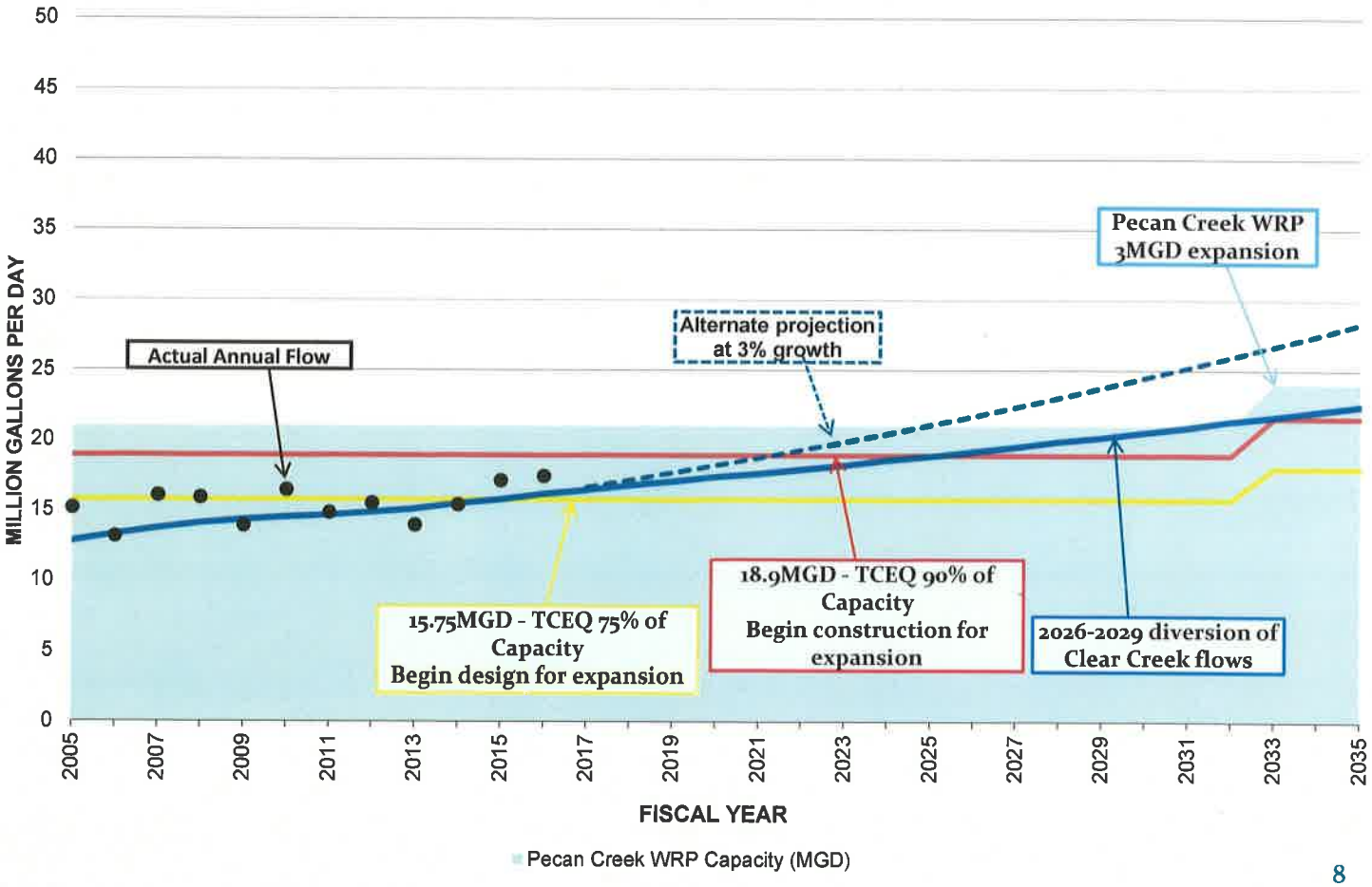
Historical and Projected Flows Versus Treatment Capacity, Weather Scenarios



Peak Flows Versus Peak Treatment Capacity



Pecan Creek Plant Flows Versus Treatment Capacity



Reserves

	Wastewater
Working Capital	8%
Operating Reserves	20-31%
Total	28-39%
Operating Days	(100-140 days)

- Working capital ("WC") provides liquidity for payables and payment cycles. Funds above this level are applied to the operating reserve.
- Operating reserves ("OR") help managing expense and demand volatility, cover emergencies, and improve overall resiliency. In general, Funds with more stable revenue collection can consider lower OR targets.
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