Water and Sewer Capacity Charges

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Prepared By

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EXECUTIVE SUMMARY

Capacity charges are one-time payments used to construct system improvements needed to accommodate new development. The Town of Queen Creek has completed engineering studies to identify growth-related capital improvements for water and sewer service. TischlerBise used these studies and the Town's Capital Improvements Plan (CIP) to prepare the water and sewer capacity charges. Because the CIP is updated annually, all calculations are in current dollars (not inflated over time), with the expectation that costs will be periodically updated as part of the regular budgetary process.

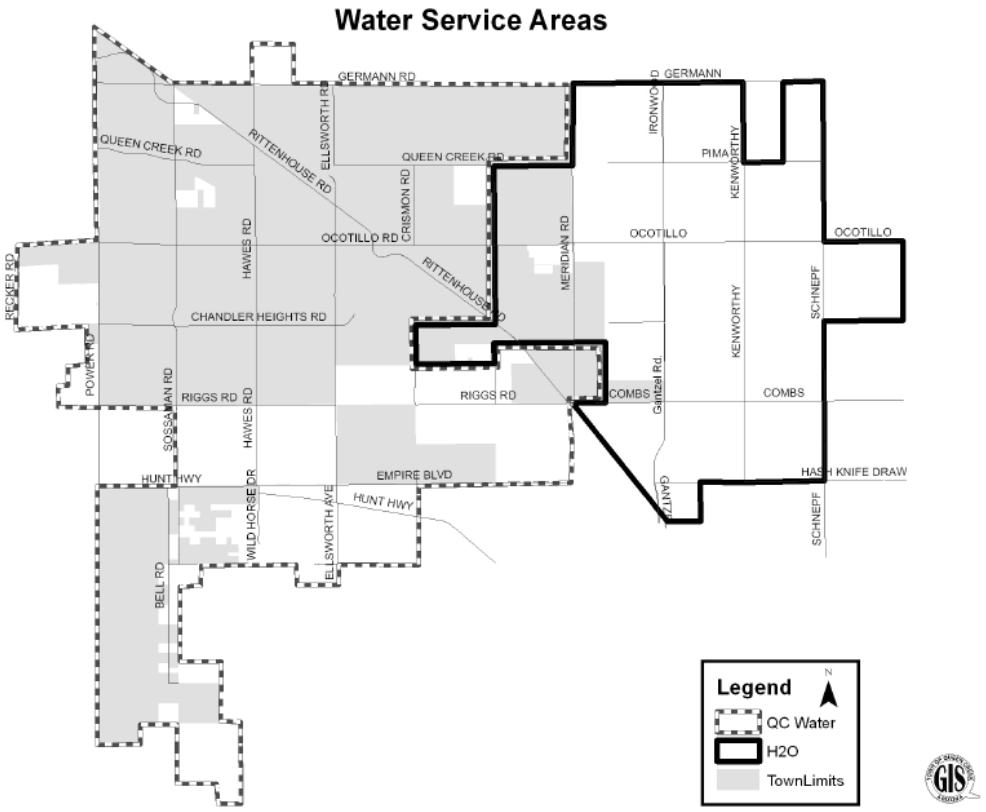
Report Organization

The Capacity Charges report uses a "drill-down" layout that presents general information first, followed by the underlying details. All readers will want to know the bottom-line, which is presented in the Executive Summary. If you want to know the specifics, the middle sections of the report discuss the Water and Sewer Capacity Charges. These sections provide the capacity charge formula then explain the individual formula components. The final section in this document provides the demographic data, such as population and housing unit projections for the Town of Queen Creek.

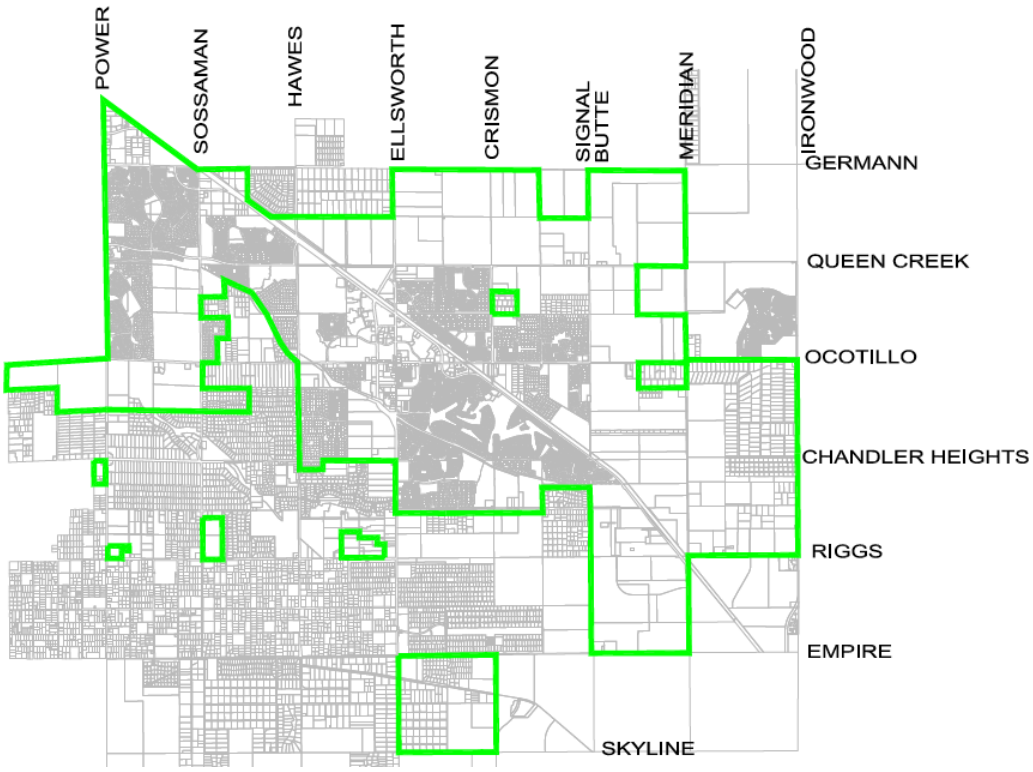
Service Areas

The capacity charges study addresses the need for growth-related improvements in Queen Creek's water and sewer service areas. Figure 1 indicates current Town boundaries, boundaries of the previous Queen Creek water service area, and the newly acquired H2O service area. Queen Creek is interconnecting the two water service areas and will provide uniform service to the combined area. The map at the bottom of Figure 1 indicates the boundaries of the sewer service area. The Town of Queen Creek will provide utility service to customers located outside the municipal boundaries. According to Arizona's Development Fee Act [see ARS 9-463.05.T(9)] a service area must be within the boundaries of a municipality. Given this inconsistency, Queen Creek will implement capacity charges for water and wastewater utilities under ARS 9-511.01.

Figure 1 – Service Area Maps



Sewer Service Areas



Capacity Charge Methods and Cost Components

In Queen Creek, two methods will be used in the capacity charges for water and sewer infrastructure. As shown in Figure 2, the capacity charge for water includes cost recovery for water storage and booster pumps, plus planned improvements for new water supply wells and major water lines. Sewer capacity charges are based on planned improvements for wastewater collection, treatment, and reuse.

Figure 2 – Capacity Charges Methods and Components

	Cost Recovery	**Plan-Based**
Water	Storage and Booster Pumps (initial five years)	Major Water Lines, Wells, Storage, and Booster Pumps
Sewer	Not applicable	Wastewater Collection, Treatment, and Reuse

Proposed Capacity Charges in Queen Creek

Figure 3 provides a schedule of proposed capacity charges to be imposed on new water and sewer customers. The Town of Queen Creek does not currently collect a development fee for water facilities, but does impose a wastewater development fee by meter size. The proposed sewer capacity charges are only 3% higher than the current wastewater development fees.

Figure 3 – Combined Charges by Meter Size

All Development Types (per meter)							
	Water		Wastewater		TOTAL		*Increase/*
Meter Size (inches)	*Current*	*Proposed*	*Current*	*Proposed*	*Current*	*Proposed*	*(Decrease)*
0.75 displacement	$0	$4,014	$4,942	$5,082	$4,942	$9,096	$4,154
1.00 displacement	$0	$6,806	$8,396	$8,629	$8,396	$15,435	$7,039
1.50 displacement	$0	$13,189	$16,312	$16,738	$16,312	$29,927	$13,615
2.00 compound/turbine	$0	$21,166	$26,081	$26,875	$26,081	$48,041	$21,960
3.00 compound	$0	$42,707	$52,710	$54,243	$52,710	$96,950	$44,240
3.00 turbine	$0	$47,892	$59,116	$60,831	$59,116	$108,723	$49,607
4.00 compound	$0	$67,837	$83,961	$86,172	$83,961	$154,009	$70,048
4.00 turbine	$0	$81,798	$101,280	$103,910	$101,280	$185,708	$84,428

Current water and wastewater fees in comparable communities are listed in Figure 4. Proposed capacity charges are generally less than current amounts in other communities. For example, Gilbert's current fee is $5,042 for water and $5,866 for sewer.

Figure 4 – Water and Wastewater Fees in Comparable Communities

Current Development Fees in Queen Creek's Comparable Communities

Ranked by Total per Single Family Dwelling

Jurisdiction	*Parks*	*Library + Gen Gov*	*Fire*	*Police*	*Streets*	*Water**	*Wastewater***	*Total*
Chandler	$3,740	$172	$344	$164	$3,983	$5,053	$6,553	$20,009
Peoria-Northern	$2,622	$844	$683	$452	$8,160	$3,890	$1,923	$18,574
Marana-Northwest	$3,294	$0	$0	$0	$7,372	$2,331	$4,544	$17,541
Gilbert	$4,030	$383	$821	$612	$423	$5,042	$5,866	$17,177
Surprise-SPA 6	$785	$903	$688	$371	$5,715	$4,691	$3,039	$16,192
Surprise-SPA 4	$785	$903	$688	$371	$5,715	$4,691	$3,039	$16,192
Surprise-SPA 2	$785	$903	$688	$371	$5,715	$4,691	$3,039	$16,192
Surprise-SPA 5	$785	$903	$688	$371	$5,396	$4,691	$3,039	$15,873
Surprise-SPA 3	$785	$903	$688	$371	$5,396	$4,691	$3,039	$15,873
Peoria-Central	$2,622	$844	$683	$452	$5,304	$3,890	$1,923	$15,718
Peoria-Southern	$2,622	$844	$683	$452	$2,300	$3,890	$1,923	$12,714
Queen Creek	$4,325	$1,370	$693	$704	$631	$0	$4,942	$12,665
Surprise-SPA 1	$785	$903	$688	$371	$0	$5,995	$3,853	$12,595
Goodyear-South	$939	$138	$1,057	$377	$941	$4,789	$4,193	$12,434
Buckeye Zone 3	$1,109	$165	$1,178	$506	$246	$4,599	$4,607	$12,410
Goodyear-North	$939	$138	$1,057	$377	$593	$4,789	$4,193	$12,086
Buckeye Zone 2	$1,109	$165	$1,178	$506	$246	$2,407	$6,155	$11,766
Buckeye Zone 1	$1,109	$165	$1,178	$506	$246	$3,522	$4,336	$11,062
Marana-Northeast	$3,294	$0	$0	$0	$7,624	$0	$0	$10,918
Apache Junction	$1,801	$721	$0	$294	$6,323	$0	$0	$9,139
Marana-South	$3,294	$0	$0	$0	$3,465	$2,331	$0	$9,090
Fountain Hills	$2,118	$79	$0	$0	$5,614	$0	$0	$7,811
Maricopa	$1,323	$17	$836	$68	$2,589	$0	$0	$4,833

** includes water resources*

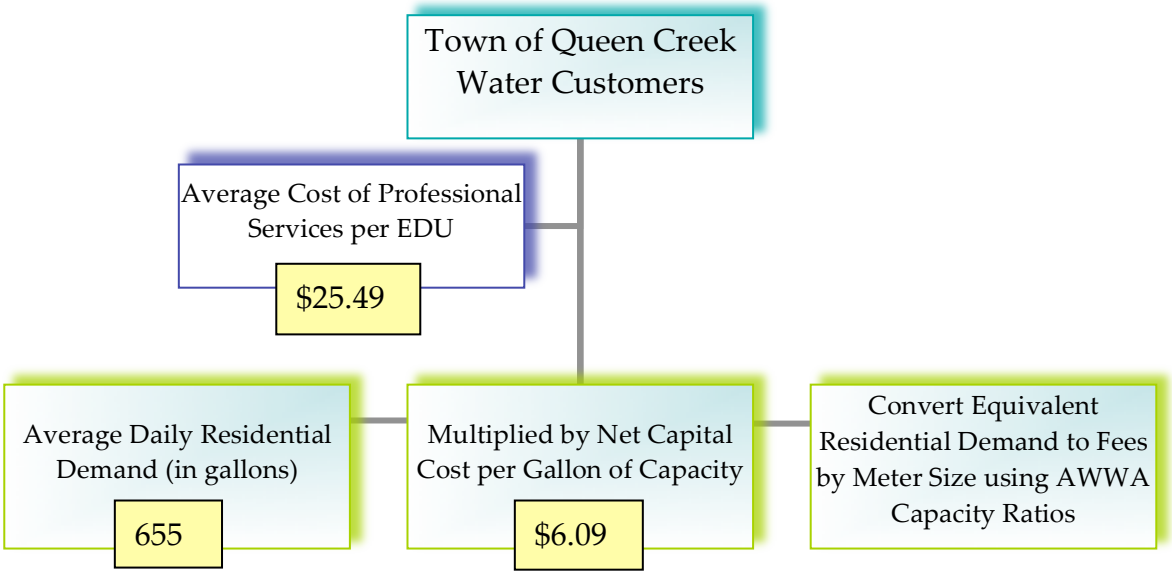
*** includes reclaimed/reuse water*

Source: Municipal Survey, Arizona League of Cities and Towns, 2013.

WATER CAPACITY CHARGES

Water capacity charges include the cost of professional services per Equivalent Dwelling Unit (i.e. $25.49 per EDU) for preparing the capacity charge study, analyzing the ten-year need for infrastructure improvements, and updating the long-range water master plan. In addition, the water capacity charge includes the net capital cost per gallon of capacity for system improvements such as major water lines, wells, storage, and booster pumps (i.e. an infrastructure cost of $6.09 per gallon of average day capacity). As shown in Figure 5, the net capital cost per gallon of capacity is multiplied by the water demand factor per equivalent residential unit (i.e. 655 gallons per average day). Nonresidential fees are derived from capacity ratios (published by the American Water Works Association) according to the size of the new connection's water meter. The capacity charges use average day demand factors but the engineering analysis of system improvements accounts for peak water demand, plus fire flow requirements.

Figure 5 – Water Capacity Charge Formula



Water Charge Calculations

Cost components used to derive water capacity charges are shown in the boxed area of Figure 6, including storage and booster pumps, major water line, and supply-related improvements. Water capacity charges are based on meter sizes and their respective capacity ratio relative to a 0.75-inch meter. The capacity ratios by meter size are from the American Water Works Association (see Manual 6). The proposed water capacity charge for the smallest meter size is equal to 655 multiplied by $6.09, plus $25.49 per EDU for professional services, or $4,014 (truncated). The cost of professional services was allocated to the projected increase in EDUs over the next ten years.

Figure 6 – Proposed Water Capacity Charges

Input Variables

	Cost per Gallon of Average Day Capacity
Cost Recovery for Storage and Booster Pumps	$2.32
Combined Projects System Improvements	$3.77
Revenue Credit per Gallon of Capacity	$0.00
Net Cost per Gallon of Capacity	$6.09
Professional Services Cost per EDU =>	$25.49
Average Day Gallons of Capacity per EDU =>	655

All Development Types (per meter)

Meter (inches) and Type	*Capacity Ratio**	*Proposed Water Capacity Charges*	*Current Amount*	*$ Change*
0.75 displacement	1.00	$4,014	$0	$4,014
1.00 displacement	1.70	$6,806	$0	$6,806
1.50 displacement	3.30	$13,189	$0	$13,189
2.00 compound/turbine	5.30	$21,166	$0	$21,166
3.00 compound	10.70	$42,707	$0	$42,707
3.00 turbine	12.00	$47,892	$0	$47,892
4.00 compound	17.00	$67,837	$0	$67,837
4.00 turbine	20.50	$81,798	$0	$81,798

** Source American Water Works Association, M6.*

Water Demand Analysis

Both current and projected EDUs and average daily water use are shown in Figure 7. For the water master plan update, Sunrise Engineering assumed an EDU requires 655 gallons on an average day. Land use assumptions used in the Town's development fee study are summarized in Appendix A. Over the next five year, the Town expects an average of 688 new residential units per year. The table below indicates the water service area expects an average increase of 1,250 EDUs per year, which include the water demand from nonresidential development. Over the next ten years, Sunrise Engineering assumed about 60% of the increase would be within the previous Town of Queen Creek service area and 40% of the increase would be in the newly acquired H2O service area.

Figure 7 – Projected Annual Water System Demand

Year		Water Equivalent Dwelling Units	Million Gallons Per Average Day	Annual Increase EDUs	Annual Increase MGD	Cumulative Increase EDUs	Cumulative Increase MGD
Past3	FY10-11	18,809	11.17				
Past2	FY11-12	19,250	11.88	441	0.71		
Past1	FY12-13	20,227	12.50	977	0.62		
Base	FY13-14	21,302	13.16	1,075	0.66		
Future1	FY14-15	22,552	14.77	1,250	1.61	1,250	1.61
Future2	FY15-16	23,802	15.59	1,250	0.82	2,500	2.43
Future3	FY16-17	25,052	16.41	1,250	0.82	3,750	3.24
Future4	FY17-18	26,302	17.23	1,250	0.82	5,000	4.06
Future5	FY18-19	27,552	18.05	1,250	0.82	6,250	4.88
Future6	FY19-20	28,802	18.87	1,250	0.82	7,500	5.70
Future7	FY20-21	30,052	19.68	1,250	0.82	8,750	6.52
Future8	FY21-22	31,302	20.50	1,250	0.82	10,000	7.34
Future9	FY22-23	32,552	21.32	1,250	0.82	11,250	8.16
Future10	FY23-24	33,802	22.14	1,250	0.82	12,500	8.98
Future11	FY24-25	35,052	22.96	1,250	0.82	13,750	9.79
Future12	FY25-26	36,302	23.78	1,250	0.82	15,000	10.61
Future13	FY26-27	37,552	24.60	1,250	0.82	16,250	11.43
Future14	FY27-28	38,802	25.42	1,250	0.82	17,500	12.25
Future15	F289-29	40,052	26.23	1,250	0.82	18,750	13.07
Future16	FY29-30	41,302	27.05	1,250	0.82	20,000	13.89
Future17	FY30-31	42,552	27.87	1,250	0.82	21,250	14.71

Cost Recovery for Water Storage and Booster Pumps

Based on the analysis by Sunrise Engineering, the acquisition of the H2O water system provided surplus capacity in both storage tanks and booster pumps. The oversized facilities have an asset value of $11.35 million and will accommodate increase in water demand over the next five years. Dividing the value of surplus facilities by the five-year increase in water demand yields a cost recovery of $2.32 per gallon of average day water capacity.

Figure 8 – Asset Value of Oversized H2O Water System

Asset	*Value*
Purchased Improvements with Surplus Capacity (Storage and Booster Pumps)	$11,350,000
Total	$11,350,000
Five-Year Increase in Average Day Gallons of Capacity =>	4,880,000
Cost Recovery per Gallon of Capacity =>	$2.32

Water System Improvements

For the combined water system, major growth-related capital improvements needed over the next ten years are listed in Figures 9 and 10. Figure 9 lists water system improvements needed during years one to five, with years six to ten shown in Figure 10. Major water lines are needed to move surplus water from the H2O area to the previous Town of Queen Creek service area. Also, Queen Creek must provide additional wells, storage tanks, and booster pumps. Over the next ten years, the Town will spend approximately $33.89 million on growth-related improvements to the combined water system. At the bottom of Figure 10, the capital cost of $3.77 per gallon of capacity is based on the projected ten-year increase in water shown above in Figure 7.

Figure 9 - Water System CIP Years 1 to 5

COMBINED SYSTEM PROJECTS Years 1 to 5

Project #	Location	Project	FY 15 Requested	FY 16 Requested	FY 17 Requested	FY 18 Requested	FY 19 Requested	Total 5 year Projection
WA055	Combs Road Interconnection	Combs Road & Schnepf Well Bore HDPE Main 12-inch 200'	$25,000					$25,000
WA056	Queen Creek Interconnection	Queen Creek & Meridian Road 5600' of 12-inch main	$672,000					$672,000
WA057	Ocotillo Interconnection	Signal Butte to Meridian 12-inch Main 3,200'	$384,000					$384,000
WA058	Riggs / Meridian / Empire	Combs & Rittenhouse Bore Phase I 16-inch 2800'	$336,000					$336,000
WA060	Villages Interconnect	300' Village Loop Rd	$36,000					$36,000
WA027	Power & Ocotillo	Sossaman well transmission line to Sossaman site 1800'		$216,000				$216,000
WA063	Germann Transmission	Sossaman to Hawes 12", 6200'		$744,000				$744,000
WA059	Crismon Rd.	Empire to Hunt 12-inch water line 2200' to loop upper zone			$264,000			$264,000
WA064	Ellsworth Loop	Loop Road to Ellsworth Rd 12-inch Main 1300' & Bore				$156,000		$156,000
WA065	Box Canyon Transmission	Riggs to Skyline, with Inline Booster Pump 12", 14000'					$1,680,000	$1,680,000
WA062	Ocotillo Transmission	186th Street to Sossaman 12" Main Trans Line 3,700'					$444,000	$444,000
WA007	Sossaman Water Production Facility	Wells, storage tanks, and booster pumps	$1,350,000	$2,000,000	$1,000,000			$4,350,000
WA076	Gantzel Secondary Well	Equipment, testing, transmission line		$250,000				$250,000
WA077	Pecan North Well	Equipment, testing, transmission line			$250,000			$250,000
WA018	Box Canyon Water Storage Facility	Lower tank and boosters				$150,000	$1,747,000	$1,897,000
WA080	Ironwood Secondary Well	Well and transmission line					$1,250,000	$1,250,000
WA081	Shea Secondary Well	Well and transmission line					$1,250,000	$1,250,000
		TOTALS:	$2,803,000	$3,210,000	$1,514,000	$306,000	$6,371,000	$14,204,000

Figure 10 - Water System CIP Years 6 to 10

COMBINED SYSTEM PROJECTS Years 6 to 10

Project #	Location	Project	FY 20 Requested	FY 21 Requested	FY 22 Requested	FY 23 Requested	FY 24 Requested	Total 5 year Projection
WA066	Riggs Transmission	School to Hawes Rd 12" Main 3, 900'	$468,000					$468,000
WA067	Riggs Transmission	Ellsworth to Rittenhouse 16" Main 15,400'	$1,480,000					$1,480,000
WA068	Riggs / Meridian / Empire	Combs & Rittenhouse Phase II 12" 13,720'		$1,646,400				$1,646,400
WA069	Signal Butte Transmission	Riggs to Empire w/ PRV 12" Main 2, 700'		$324,000				$324,000
WA070	Ellsworth Transmission	Empire to San Tan w/ PRV 12-inch Main 2, 700'		$324,000				$324,000
WA071	Ryan Rd. Transmission	Ellsworth to Meridian Main 15, 900'			$1,980,000			$1,980,000
WA072	Cloud Rd.	Crismon to Rittenhouse 12", 7200'			$2,250,000			$2,250,000
WA073	Crismon Transmission	Ryan to Queen Crk 12" Main 2, 700'				$324,000		$324,000
WA074	Signal Butte Transmission	Ryan to Queen Crk 12" Main 2, 700'				$324,000		$324,000
WA075	Meridian Transmission	Ryan to Queen Crk 12" Main 2, 700'				$324,000		$324,000
WA037	Chandler Heights	Hawes to East of Ellsworth 12-inch main, 4400'				$1,103,000		$1,103,000
WA035	Ellsworth Rd.	2800' of 12" main from Hunt Hwy to San Tan Blvd				$702,000		$702,000
WA004	Ocotillo Rd.	12" Crismon Rd to Rittenhouse Rd To Ash Creek					$264,000	$264,000
WA013	Ellsworth & Rittenhouse	Barnes Pkwy Connection 12", 1800'					$500,000	$500,000
WA015	Crismon Rd.	3000' of 12" Hastings to Orchard Ranch south of Cloud Rd					$650,000	$650,000
WA034	Hunt Hwy.	5500' of 12" main from Hawes to Ellsworth Rd					$1,378,000	$1,378,000
WA078	Church Farms Water Prod. Facility	Well, tank, and boosters		$2,500,000				$2,500,000
WA079	Church Farms Secondary Well	Well and transmission line					$1,250,000	$1,250,000
WA030	Box Canyon Upper Reservoir	Water storage facility				$1,897,000		$1,897,000
		TOTALS:	$1,948,000	$4,794,400	$4,230,000	$4,674,000	$4,042,000	$19,688,400
							GRAND TOTAL 10-YEARS	$33,892,400
							Ten-Year Increase in Gallons of Capacity per Average Day =>	8,980,000
							Cost per Gallon of Capacity =>	$3.77

Credit Evaluation

The cost recovery for surplus capacity in storage tanks and booster pumps will be used to pay the growth share of debt service on the bonds issued to acquire the H2O water system. New water customers will pay the entire growth share of debt service through the capacity charges. The remaining portion of debt service payments is a general obligation of all customers, providing equal benefit to both existing and new water

customers. Because there is no double payment for the growth share of debt service, a revenue credit for water user charges (i.e. rate payments) is not applicable.

Projected Revenue from Water Capacity Charges

Figure 11 summarizes projected capacity charge revenue and expenditures for growth-related water system improvements over the next five years. TischlerBise only provided a five-year revenue projection because the cost recovery component will drop out of the charges after five years. Also, the Town plans to update capacity charges at least every five years.

Water capacity charges should yield approximately $20.07 million over the next five years. Due to development agreements issued in the H2O service area, projected revenue assumes 250 EDUs per year will pay capacity charges while another 250 EDUs will be exempt from water capacity charges.

The upper portion of Figure 11 summarizes major growth-related expenditures over the next five years. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in revenues and the timing of capital improvements.

Figure 11 – Five-Year Revenue Projection

Five-Year Growth-Related Costs for Water Infrastructure

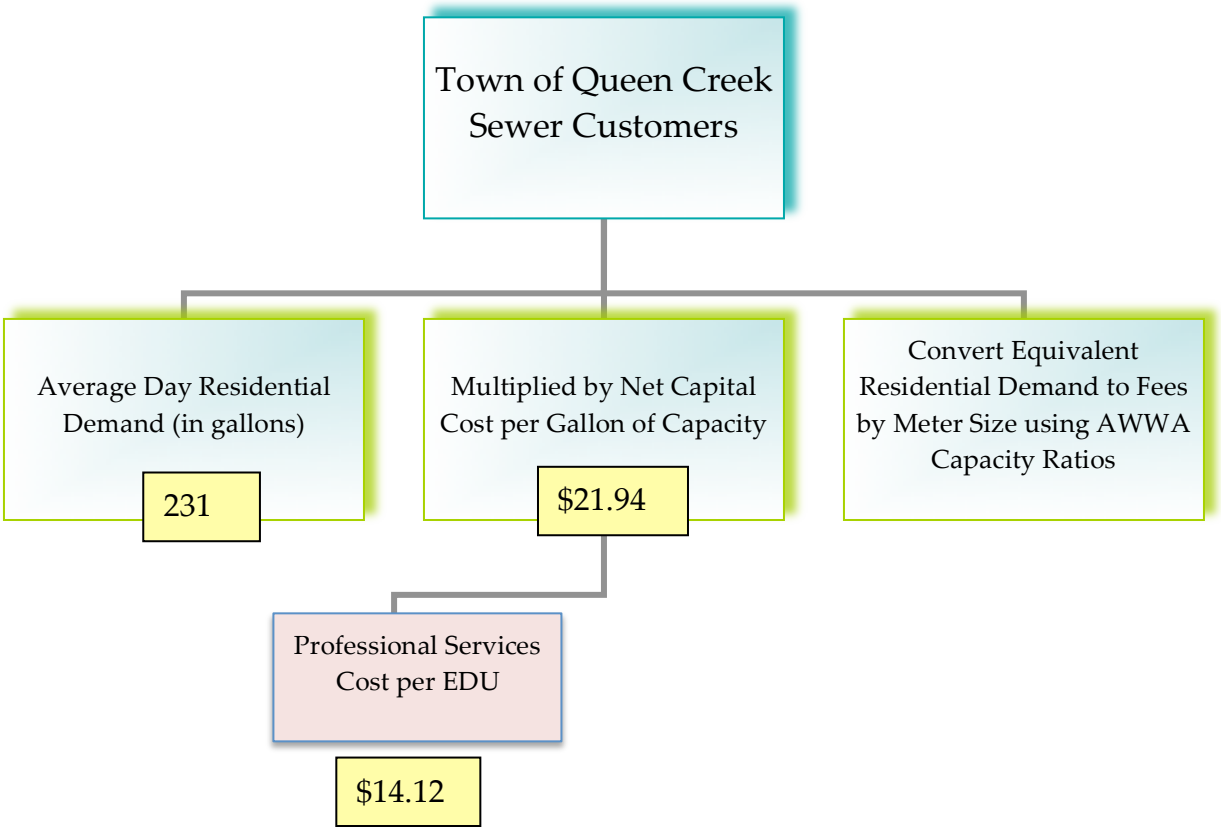
Cost Recovery for Storage and Booster Pumps	$11,350,000
Major Water Lines and Ground Water Supply	$14,204,000
Total	$25,554,000
Water Capacity Charge per EDU =>	$4,014

	Fiscal Year	*Water Equivalent Dwelling Units*	*EDU's not Grandfathered*
Base	FY13-14	21,302	21,302
Year 1	FY14-15	22,552	22,302
Year 2	FY15-16	23,802	23,302
Year 3	FY16-17	25,052	24,302
Year 4	FY17-18	26,302	25,302
Year 5	FY18-19	27,552	26,302
	Five-Yr Increase	6,250	5,000
	Total Projected Revenue (rounded) =>		$20,070,000

SEWER CAPACITY CHARGES

Sewer system capacity charges are based on planned improvements to the wastewater collection system, the need for additional wastewater treatment capacity, improvements to allow reuse of reclaimed water. As shown in Figure 12, the net capital cost of $21.94 per gallon of capacity is multiplied by a sewer demand factor (i.e., 231 gallons of average daily wastewater flow) to yield the proportionate sewer capacity charge per EDU. Nonresidential fees are derived from capacity ratios according to the size of the new customer's water meter.

Figure 12 - Sewer System Capacity Charge Formula



Sewer Charge Calculations

Cost components for sewer capacity charges are shown in the boxed area of Figure 13. Capacity ratios convert the equivalent dwelling unit charge into a proportionate amount for larger meter sizes. The capacity ratios by meter size are from the American Water Works Association (see Manual 6). For a new nonresidential customer requiring a 2" meter, the sewer capacity charge is 231 gallons per day x $21.94 per gallon of capacity x 5.3, plus $14.13 for professional services, which equals $26,875 (truncated).

Figure 13 – Proposed Sewer Capacity Charges

Input Variables

	Cost per Gallon of Average Day Capacity
Wastewater Treatment Cost (Principal plus Interest)	$14.90
Wastewater Collection and Reuse	$7.04
Revenue Credit per Gallon of Capacity	$0.00
Net Capital Cost per Gallon of Capacity	$21.94
Professional Services Cost per EDU =>	$14.12
Average Day Gallons of Capacity per EDU =>	231

All Development Types (per meter)

Meter (inches) and Type	*Capacity Ratio**	*Proposed Sewer Capacity Charge*	*Current Fee*	*$ Change*	*Percent Change*
0.75 displacement	1.00	$5,082	$4,942	$140	3%
1.00 displacement	1.70	$8,629	$8,396	$233	3%
1.50 displacement	3.30	$16,738	$16,312	$426	3%
2.00 compound/turbine	5.30	$26,875	$26,081	$794	3%
3.00 compound	10.70	$54,243	$52,710	$1,533	3%
3.00 turbine	12.00	$60,831	$59,116	$1,715	3%
4.00 compound	17.00	$86,172	$83,961	$2,211	3%
4.00 turbine	20.50	$103,910	$101,280	$2,630	3%

** Source American Water Works Association, M6.*

Sewer Demand Analysis

Figure 14 indicates sewer EDUs and the average daily wastewater flow through 2030. To account for sewer flow from nonresidential development, the average annual increase of 700 EDUs per year is slightly higher than the Town's projected increase of 688 residential units per year, as shown in Appendix A.

Figure 14 - Projected Annual Sewer System Demand

Year		Sewer Equivalent Dwelling Units	Million Gallons Per Avg Day	Annual Increase EDUs	Annual Increase MGD	Cumulative Increase EDUs	Cumulative Increase MGD
Past3	FY10-11	6,586	1.40				
Past2	FY11-12	6,726	1.30	140	-0.10		
Past1	FY12-13	7,451	1.40	725	0.10		
Base	FY13-14	8,068	1.50	617	0.10		
Future1	FY14-15	8,768	2.03	700	0.53	700	0.53
Future2	FY15-16	9,468	2.19	700	0.16	1,400	0.69
Future3	FY16-17	10,168	2.35	700	0.16	2,100	0.85
Future4	FY17-18	10,868	2.51	700	0.16	2,800	1.01
Future5	FY18-19	11,568	2.67	700	0.16	3,500	1.17
Future6	FY19-20	12,268	2.83	700	0.16	4,200	1.33
Future7	FY20-21	12,968	3.00	700	0.16	4,900	1.50
Future8	FY21-22	13,668	3.16	700	0.16	5,600	1.66
Future9	FY22-23	14,368	3.32	700	0.16	6,300	1.82
Future10	FY23-24	15,068	3.48	700	0.16	7,000	1.98
Future11	FY24-25	15,768	3.64	700	0.16	7,700	2.14
Future12	FY25-26	16,468	3.80	700	0.16	8,400	2.30
Future13	FY26-27	17,168	3.97	700	0.16	9,100	2.47
Future14	FY27-28	17,868	4.13	700	0.16	9,800	2.63
Future15	F289-29	18,568	4.29	700	0.16	10,500	2.79
Future16	FY29-30	19,268	4.45	700	0.16	11,200	2.95
Future17	FY30-31	19,968	4.61	700	0.16	11,900	3.11

Sewer System Improvements

A summary of Queen Creek's CIP for growth-related sewer projects is shown in Figure 15. At the top of the table is the projected cost per gallon for wastewater treatment capacity. Because Queen Creek shares a regional treatment facility, planned expansions must be coordinated with other jurisdictions and are currently scheduled to go online in 2018 and 2025. To ensure the Town does not run out of treatment capacity between 2018 and 2025, staff recommends expansion of Queen Creek's capacity by two MGD.

As shown in the lower portion of Figure 15, Queen Creek also plans to spend approximately $13.94 million over the next ten years for collection system

improvements and implementation of a Reuse Plan (phase 1). Given the requirement in Arizona to replenish ground water with surface water supplies or reclaimed water, the total cost of the Reuse Plan is considered to be growth-related. Without recharge capacity, the Town will not be able to extract additional groundwater from future wells. The cost of collection system and reuse projects is $7.04 per gallon of capacity.

Figure 15 - Sewer System Capital Improvements Plan

Greenfield Water Reclamation Plant Expansion

Estimated Capital Cost	$20,000,000
Estimated Interest Cost	$9,800,000
Additional Capacity (avg day gallons)	2,000,000
Cost per Gallon of Capacity	$14.90

Wastewater Collection and Reuse

#	*Description*	*FY14-15*	*FY15-16*	*FY16-17*	*FY17-18*	*FY18-19*	*Five Years FY20-24*	*Total Over Ten Years*
WW010	Power Rd & Ocotillo Lift Station (80% growth share)	$1,080,000						$1,080,000
WW009	Interceptor Sewer (Phases II & III)	$734,560	$700,000					$1,434,560
WW015	Cloud Rd: Ellsworth to 220th St		$680,000					$680,000
WW025	Ocotillo Rd: 188th to Power	$500,000						$500,000
WW027	Cloud Rd: Signal Butte to 220th St		$750,000					$750,000
WW029	Signal Butte: Riggs to Cloud			$500,000				$500,000
WW034	Rittenhouse FCD Channel				$2,000,000			$2,000,000
RW001	Reuse Plan Phase I						$7,000,000	$7,000,000
	Total	$2,314,560	$2,130,000	$500,000	$2,000,000	$0	$7,000,000	$13,944,560
	Ten-Year Increase in Gallons of Wastewater Flow per Average Day =>							1,980,000
	Cost per Gallon of Capacity =>							$7.04

Credit Evaluation

Projected principal and interest cost for wastewater treatment capacity will be paid from future sewer capacity charge revenue. New sewer customers will pay the entire growth share of debt service through the capacity charges. Because there is no double payment for the growth share of debt service, a revenue credit for sewer user charges (i.e. rate payments) is not applicable.

Projected Revenue from Sewer Capacity Charges

Figure 16 summarizes sewer capacity charge revenue and growth-related capital costs for the next ten years. Sewer capacity charges are expected to generate approximately $35.57 million over the next ten years.

Estimated capital costs for growth-related sewer system improvements are approximately $43.74 million over the next ten years. The projected deficit is due to surplus capacity in the wastewater treatment plant that will be offset by capacity charges collected beyond year 10.

The cash flow summary provides an indication of anticipated revenue from sewer capacity charges and planned expenditures necessary to accommodate new development. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the capacity charge revenue and timing of capital improvements.

Figure 16 – Ten-Year Revenue Projection

Ten-Year Growth-Related Costs for Water Infrastructure

GWRP Expansion (principal plus interest)	$29,800,000
Wastewater Collection and Reuse	$13,944,560
Total	$43,744,560

	Fiscal Year	*Sewer Capacity Charge* $5,082 per EDU
Base	FY13-14	8,068
Year 1	FY14-15	8,768
Year 2	FY15-16	9,468
Year 3	FY16-17	10,168
Year 4	FY17-18	10,868
Year 5	FY18-19	11,568
Year 6	FY19-20	12,268
Year 7	FY20-21	12,968
Year 8	FY21-22	13,668
Year 9	FY22-23	14,368
Year 10	FY23-24	15,068
Ten-Yr Increase		7,000
	Total Projected Revenue (rounded) =>	$35,574,000

IMPLEMENTATION AND ADMINISTRATION

TischlerBise recommends that capacity charges be deposited in a separate interest bearing account. Also, the Town should prepare an annual report on capacity charge collections and expenditures similar to the accounting requirements for development fees. To ensure reasonable benefit to new utility customers that pay the one-time charges, TischlerBise recommends that capacity charges be spent within ten years of when they are collected, with the expenditures limited to growth-related system improvements in Queen Creek's CIP. It is not necessary to track charges on a project-specific basis. Rather, the common approach is to consider the first funds into the account as first funds out of the account.

Credits and Reimbursements

A general requirement that is common to capacity charges is the evaluation of credits. A revenue credit may be necessary to avoid potential double payment situations arising from one-time capacity charges plus the payment of other revenues that may also fund growth-related capital improvements. The determination of credits is dependent upon the methodology used in the cost analysis.

Policies and procedures related to site-specific credits or developer reimbursements will be addressed in the ordinance that establishes the capacity charges. Project-level improvements (required as part of the development approval process) are not eligible for credits against capacity charges. If a developer constructs a system improvement included in the capacity charges, it will be necessary to either reimburse the developer or provide a credit against the charges in the area benefiting from the system improvement. The latter option is more difficult to administer because it creates unique charges for specific geographic areas.

It is usually better for the Town to establish a reimbursement agreement with the developer that constructs a system improvement. The reimbursement agreement should be limited to a payback period of no more than ten years and the Town should not pay interest on the outstanding balance. The developer must provide sufficient documentation of the actual cost incurred for the system improvement. Queen Creek should only agree to pay the lesser of the actual construction cost or the estimated cost used in the capacity charge analysis. If the Town pays more than the cost used in the cost analysis, there will be insufficient capacity charge revenue. Reimbursement agreements should only obligate the Town to reimburse developers annually from charges collected in the benefiting area. Developers must accept the risk that the pace of development may decrease and there is no obligation of full reimbursement if actual capacity charge revenue is less than expected.

Site specific credits or developer reimbursements for one type of system improvement does not negate payment of charges for other system improvements. For example, construction of a large sewer line does not negate payment for treatment capacity.

APPENDIX A - DEMOGRAPHIC DATA

Although long-range projections are necessary for planning capital improvements, a shorter time frame of five years is critical for the analysis of capacity charges. Infrastructure costs are based on fiscal year 2013-14 data and the first projection year for the capital improvements plan is fiscal year 2014-15. The Town of Queen Creek fiscal year begins July 1st.

Key growth indicators for the Town of Queen Creek are summarized in Figure A1. For the water and sewer study, Queen Creek anticipates a housing growth rate averaging 7.3% per year between 2013 and 2018. Nonresidential floor area located in the Town of Queen Creek is projected to increase at an average rate of 4.7% per year from 2013 to 2018.

Figure A1 – Summary of Queen Creek Growth Indicators

Queen Creek, Arizona

Year	Cumulative	
	Housing Units	*Nonresidential Sq Ft x 1000*
2010	8,557	
2013	9,473	3,211
2014	10,173	3,363
2015	10,903	3,515
2016	11,603	3,667
2017	12,263	3,819
2018	12,913	3,971
2023	16,083	4,731

	2013 to 2018 Average Annual	
	Increase	*Linear Growth Rate*
Residential Units	688	7.3%
Nonresidential Sq Ft x 1000	152	4.7%