Sewer Tap Fee Analysis Report

City of Peculiar, Missouri

Prepared March 4, 2016

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Executive Summary

GettingGreatRates.com analyzed the sewer tap-on fee needs of the City of Peculiar, MO. The result is a set of tap-on fees, based upon water meter size, that will generate an appropriate amount of revenue and fairly treat properties that will be developed in the near future.

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Introduction

The city of Peculiar, Missouri, later called "the City" or "you," hired George Butler Associates, Inc., later called "GBA," for a number of services. Among them is tap-on fee analysis, later just called the "analysis." In late 2015, GBA hired GettingGreatRates.com, later called "me" or "I," to perform a tap-on fee analysis for the City by subcontract to GBA. Since then GBA and I have worked together in a coordinated fashion to assure that the City's needs are met. In coordination with GBA, I researched and assembled a draft of this report. I sent it to GBA for review and comment and subsequently sent a revised version to the City for review and comment. I received and incorporated into the final report some comments from the City. Therefore, this report has now been through a rather rigorous review process. The result is an analysis and a narrative report that will serve as guidance for the City in its efforts to set and maintain appropriate and fairly structured sewer system tap-on fees.

Before proceeding, I need to define the term "tap-on fees." Also called simply, "tap fees" or "connection fees," tap-on fees are those charges you and other cities assess to grant a developer the right to connect a home or other development to your sewer system. You and other sewer utilities may assess several sub-fees, such as:

- A charge for the permit to connect,
- A charge for each trap that will be on the property,
- A charge to have connections inspected and approved by the utility, and perhaps,
- A charge for the cost of piping and other connection appurtenances you require the developer to purchase from the City.

You and other cities may assess these fees separately or in combinations. When I use the terms "tap fee" and "tap-on fee," I mean all fees assessed to a new tap other than situation-specific connection materials and equipment you use or sell for making those taps.

You also need some context for the analysis project. Normally, we do tap-on fee analysis as one task within a comprehensive rate analysis. In that way, user fees, tap-on fees and other fees and charges can be set so that they are coordinated, they are designed to recover costs appropriately and they are consistent in their overall levels and in how they treat existing and prospective customers. Such rigorous coordination was not possible in this study since user fees had already been calculated. However, I endeavored to calculate and recommend tap-on fees that will be fairly structured and recover an appropriate amount of your capacity costs.

This report package is composed of two parts; this narrative report and a printout of the tap-on fee analysis model.

1. The narrative report describes what should be done to the utility's tap-on fees and why. The narrative report, however, goes a bit beyond that narrow scope by placing tap-on fees into context with other costs and fees. Therefore, the report covers these issues: principles, general issues, tap-on fee-related issues and tap-on fee setting recommendations.
2. The second part of the report package is a printout of the spreadsheet model worksheets and a capital cost table supplied by GBA. The model worksheets are simply a set of integrated calculations that mathematically depict or "model" the utility's situation in order to arrive at the recommended fees. The model is called, "Peculiar, MO; Sewer Tap Fees Scenario 2016-1." Later in this report this name will be shortened to "Tap Fee Scenario 1" or just simply "the model."

As you read this report, please keep this in mind. This report does not *direct* the City to do anything. Actions you take or do not take are strictly up to you. The report is meant to inform and educate so you can make well-informed decisions about actions to take. And the report and model are not legal recommendations. For legal issues consult your attorney.

Principles

I use several guiding principles when I help systems set their utility rates, fees and policies. As you read the report and the model, keep in mind that my recommendations have been weighed against these principles:

1. Water, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly.
2. In addition to functioning in a business-like manner, a utility has a responsibility to its customers to nearly guarantee its long-term prosperity for their benefit. The customers expect the service to be there whenever they want to use it. Thus, a utility must err on the conservative side by maintaining strong reserves that will enable it to weather financial storms.

3. If a service costs the utility money, the utility should recover that cost from the most logical "person" if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility capacity by paying commensurate tap fees. Likewise, service users should pay for their use. Each user or class of users should pay their fair share of service costs.
4. Sometimes contradicting point 3 above, if adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, consider the necessity of the change carefully before making it. For example, while it may be warranted, raising the tap fee markedly may make it less attractive to developers, perhaps to the point that they would decide to develop elsewhere. Thus, in the attempt to generate more net revenue by raising tap fees, net revenues may actually go down due to fewer taps being made.

General Issues

GBA has prepared a wealth of infrastructure data and information for the City. I have used and will refer to some of that information. I will also cite some of that information as reference points in this report.

Concerning construction of the model, the tables presented in this report are actually a small subset of our rate analysis model. The sheets used in this analysis are focused only on tap-on fee issues. By necessity, we had to assume that all other rates and fees were set at least at levels that will adequately fund operation of the system plus those debt and capacity costs that will not be recovered by tap-on fees. I suspect that the current user rates were actually set high enough to cover capacity costs, as well. If that is the case, tap-on fees should end up being additional revenues that, in the future, will allow you to "slow down" future user rate increases. The model, therefore, aims at calculating tap-on fees that will be fairly structured and as adequate as they can be while still keeping the City competitive with neighboring cities' tap-on fees. You will see later in this report that remaining competitive has turned out to be the over-riding factor for tap-on fees.

As you set and later reset rates and fees I suggest you follow the guidance I give in my book, "How to Get Great Rates." I gave a copy to Carl Brooks so check with him about reviewing it.

Tap-on fee calculation should include several steps or parts:

- Establishment of the costs to appropriately recover through tap-on fees. This is the "cost basis" for tap fees,
- Establishment of the time period over which to recover those costs, and the resulting amount to recover in a full year's time,
- An estimation of the number of new taps that will be made over that time period, or preferably, the number of new taps of the various meter sizes that will be made over that time period, and

- A calculation of the per meter size fee that recovers costs equitably and as adequately as competition will allow.

Each of these steps will be discussed at some length in the following subsections.

The Concept of Meter Size-based Tap-on Fees for Sewer Systems

The cost to provide capacity to serve is closely related to water meter size for water systems. The bigger the water meter, the higher will be the potential to draw water by that customer. Water systems are designed and built to be able to supply adequate flow at a certain design capacity. That capacity can be broken down into service to XX number of residential sized meters (five-eighths or three-quarter inch) and some lesser number of larger meters. Thus, each water meter size should pay a share of capacity costs based upon the capacity of each meter size to pass water.

A four-inch meter is 6.4 times bigger than a five eighths inch meter (a typical residential meter) on a diameter basis. But, according to the American Water Works Association, the authority on such issues, on the basis of sustainably passing water and metering it accurately, that meter is 75 times bigger than a five eighths inch meter. Thus, a four-inch meter should be assessed 75 "shares" of system capacity costs compared to a five-eighths inch meter. Other meter size capacities vary commensurately and should be assessed tap-on fees accordingly.

Water meter size is not quite a direct indicator of the potential to contribute wastewater flow to the sewer system. But unless a customer has on-site water storage, a high rate of sewer line inflow and infiltration, or receives fluids in incoming shipments that go down the sewer, water meter size works well for assessing sewer system capacity charges, too.

All of this said, it would not be appropriate to divvy <u>all</u> sewer infrastructure costs on a meter size basis. Some infrastructure costs are like fixed operating costs – they are related to the fact that you have customers, not to the size of customers' water meters. Thus, to calculate water meter-size based tap-on fees fairly, one must deduct from the total infrastructure costs those costs that are "fixed." That will be discussed in a later subsection of this report.

While it is better to recover capacity costs "up front" in tap-on fees, which can and usually should also be done based upon meter size, part of or all of the capacity costs can also be recovered over time through capacity surcharges to the minimum charge. Therefore, as a part of their regular minimum charge, each customer regardless of meter size should pay an equal share of all costs that do not vary by meter size. In addition, each should pay for their share of capacity costs, preferably based upon meter size, either as a tap-on fee, a minimum charge surcharge or a combination of both. In your case, we will trust that minimum charges will recover all appropriate costs and only consider tap-on fees here.

Cost Basis for Tap-on Fee Calculations

Please review the GBA table called, "ALLOCATION OF CAPITAL COSTS TO CUSTOMER CATEGORIES" attached to this report as page 19. This table is a summation of more detailed costs to replace existing wastewater infrastructure plus build additional infrastructure that will be needed in the near future. Tom Nevins, P.E. with GBA did a significant amount of excellent work to prepare this background data. I am sure he has shared it with you. While I usually use "book value" from audited financial statements as the cost basis for capacity costs, Mr. Nevins' data is far superior so in your case, I have used that as your capacity cost basis.

In Table 2, page 15, in the "Calculation of Annualized Capacity Cost" section you will see four types of assets with their amounts highlighted blue. These are the sums of individual items from Mr. Nevins' data compilation work. The part of these amounts that should be attributed to all customers or new connections equally, estimated at 50 percent, were deducted, leaving the "Capacity Costs" that can potentially be attributed to new connections. This portion of the value of the system, $7.5 million, is subject to being recovered with tap-on fees.

Time Period for Cost Recovery

I chose 30 years as the time period for capacity cost recovery through tap-on fees for a few reasons. Most bonds issued to fund such infrastructure have a maximum term of 20 years. In other words, most lenders are "betting" that the facilities they fund will last longer than that. Most facilities are designed to have a useful life of approximately 20 years, although I am sure that most engineers try to include more useful life in their designs when they can. Thus, most water-related facilities last thirty years or so with piping systems lasting 50 or more years. That makes 30 years a reasonable and fairly conservative timeframe for tap-on fee planning.

Even so, 30 years is a long time to do financial forecasting. Fortunately, rate and tap-on fee calculations should be redone about every five years for a city the size and growth rate of Peculiar. Thus, over time rate and tap-on fee projections can be adjusted to better comport with what you discover as time passes.

Number and Meter Size of New Taps

Long projections are risky, but we still must make projections. There are currently 1,857 sewer connections, as shown in the right-hand column of Table 3, page 16. These connections consist of 1,652 city water customers and 205 customers of a public water supply district. Based upon the long-term growth rate estimated by both the City and by GBA at 1.0 percent per year, I have projected the number of new customers you expect to hook up during each of the next 10 years; 19 new connections next year and then a growth rate after that of 1.0 percent. All of the factors just mentioned are shown in Table 4, page 17.

As further described in the "Cost Basis…" subsection above, my recommendation is to base tap-on fees on the capability of different meter sizes to sustainably pass high flows because such flow is what forces a sewer utility to build extra capacity to receive and treat wastewater. Table 3 does the calculation of tap-on fees for the various water meter sizes.

Not knowing in advance how many meters of each size you will connect in the coming years, I made the assumption that the meter sizes of new connections will be in the same ratio as the currently connected customers. That distribution is shown in the right-hand column of Table 3, page 16. For example, 98 percent of your current customers are served by three-quarter inch meters. Therefore, I projected that 98 percent of new customers in the future will also be served by three-quarter inch meters.

Recommendations for Tap-on Fees

The following recommended tap-on fees are indicated by the Scenario 1 model. These are the fees that I recommend you adopt initially.

Table 1 - Recommended Tap-on Fees

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Meter Size in Inches	**Tap Fee; In-city Customer**	**Tap Fee; Out of City Customer (50% More)**
Five Eighths	$2,107	$3,161
Three Quarters	$2,107	$3,161
One Inch	$5,156	$7,734
One & a Half Inch	$10,237	$15,355
Two Inch	$32,592	$48,889
Two & a Half Inch	$60,537	$90,806
Three Inch	$88,482	$132,722
Four Inch	$152,500	$228,750
Six Inch	$325,249	$487,873
Eight Inch	$569,129	$853,694
Ten Inch	$853,656	$1,280,484
Twelve Inch	$1,077,213	$1,615,820

1. *Calculation of tap-on fee revenues shown in Table 4, page 17, assumed you will make these adjustments early enough to enable you to collect at these rates for new connections made after May 1, 2016.*
2. *If all goes as modeled, on the one-year anniversary of making the rate adjustments called for above, or at the same time you make other rate and fee adjustments, whichever comes first, and for several years thereafter, raise all tap-on fees across the board by 3.0 percent.*

Overall Level of Recommended Fees; Competitiveness is the Limiting Factor

Remaining competitive with neighboring cities is the limiting factor in how high, overall, you can set tap-on fees. Therefore, when I modeled new tap-on fees I aimed at not changing the tap-on fees of new sewer customers that are served by five-eighths and three-quarter inch water meter sizes. Tap-on fees of the remaining meter sizes were then allowed to rise to the proportionate level that the AWWA ratios indicated. This will result, over time, in recovering 15.6 percent of the system's capacity costs. To help you put that recovery rate into perspective, I usually see capacity cost recovery rates in the range of five percent up to 50 percent. Rarely do I see recovery over that. This is simply due to the fact that almost all water-related utilities price tap-on fees too low and if you want to be competitive with them, you must approach their fee level.

Another point of reference is the capital cost summary table prepared by GBA, page 18 of this report. GBA calculated that weighted average tap-on fees would need to be right at $4,500 to fully recover capital costs by the time the facilities are being fully utilized at "buildout." The weighted average of the fees I calculated is $2,761 and that will rise annually by an inflationary factor of three percent over 30 years. Thus, the 30-year averaged fees I modeled will be higher than the initial fees shown in Table 1, page 7, and they may well approach those GBA calculated.

Comments on the Calculation Methodology, Strategies and Fee Comparisons

First, you should note that in Table 3, page 16, I assigned the same "AWWA-based Capacity Cost Each Meter Size" amount to five-eighths and three-quarter inch meters. That is because the vast majority of customers that are served by these meter sizes are single family residential properties. It will simplify your administration duties when you assess the same tap-on fee to these customers and there is little difference in the actual cost of capacity to serve these two meter sizes anyway.

In Table 2, page 15, I solved for tap-on fees that will keep the City competitive with the two neighboring cities of Belton and Raymore for in-town residential fees because we can reasonably assume that nearly all residential properties in those cities are also served by five-eighths or three-quarter inch water meters. (See Table 5, page 18.) The other cities do not assess meter size-based tap-on fees for commercial developments. In most places, most general business customers are served by residential sized meters. While it is likely that most of the others are served by 1.0 or 1.5 inch meters, it is not so reasonable to assume a meter size for them. In addition, all three cities assess sub-fees for the number of traps expected on a commercial property to be developed. Thus, comparisons of the current commercial tap-on fees is murky at best and comparisons to the meter size-based tap-on fees that I recommend is even harder to make.

However, IF one were to assume 10 traps on a representative commercial property and it was to be served by a 1.0-inch meter, Peculiar's current tap-on fee is slightly higher than those of Belton and Raymore and the fees I recommend would be $2,000 higher than that.

It may well be that the recommended tap-on fee for large meter sizes, say 4.0 inches and greater, would be too high to remain competitive with your neighbors. However, seldom will you connect a new customer that will be served by such a large meter. That means large meter new taps will account for very little revenue over time. And that means that you will give up little revenue if you have to grant fee relief to such a prospective new customer in order to "land" them. Sticking to the fee schedule from bottom to top would technically yield the greatest degree of fee structure fairness. However, for all practical purposes, only new taps in the smaller meter sizes will make a meaningful difference on a revenue basis. Thus, the benefits of "landing" a large meter-size development (likely a large employer and a high-volume sewer customer) will usually outweigh what is given up in tap-on fees. You should adopt a fee structure that includes large meter sizes, but as such prospective customers consider locating in Peculiar, you should consider each situation on its merits.

One upside of setting tap-on fees that are too low is this. Use by your customer base is fairly stable, meaning your revenue stream from those fees is also fairly stable. However, the number of new connections you make can vary dramatically from year to year. If you assess high tap-on fees and you experience some down years in new connections, your revenues will suffer dramatically. This is not reason enough to set tap-on fees too low, but at least collecting tap-on fees that are too low is not all downside to the utility.

Closing

Y**ou would do well to adopt the tap-on fees calculated in Tap Fee Scenario 1.**

These fees will contribute significant revenues toward building capacity to serve new customers while keeping your tap fees competitive with those of neighboring cities and priced in relation to the cost of building capacity to serve.

Finally, as you address issues raised in this report and the analysis, you will have questions. Ask them. My goal is to help you set and keep fair and appropriate tap-on fees. That takes time and effort and it may stretch out beyond the "conclusion" of the project.

Peculiar, MO; Sewer Tap Fees Scenario 2016-1
Modeling Results

March 4, 2016

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Note: This document is a print out of the spreadsheet model used to calculate new sewer tap-on fees. These calculations are complex and are based upon many conditions and assumtions. These issues, and others, are described in a narrative report that accompanies this model.

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Definitions

Affordability Index	The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. Affordability index is a primary factor in determining grant and loan eligibility and grant amount.
Analysis Year	The year following the "test year." Generally, rate analysis is done during the year following the "test year" and intial rate adjustments are done later still during the analysis year or sometime during the following year once the analysis shows how rates should be adjusted. See related "test year."
Capital Improvement Plan or Program (CIP)	A schedule of anticipated capital improvements. These are the more expensive items such as treatment plants, lines and other expensive infrastructure that generally requires bond or grant funding.
Capital Improvement Reserves	Cash reserves dedicated to funding the CIP
Comprehensive Rate Analysis	A thorough examination of a system's operating, capital improvement, equipment replacement and other costs, revenues, current rates, number of users and their use of the system, growth rates and all other key issues surrounding the system. This examination will determine how rates and fees should be set in the future to cash-flow the system properly, to build appropriate reserves and to be fair to ratepayers. It also will determine how policies should be adjusted to enable the system to operate well now, operate well in the medium-range future (about 10 years) and prepare for expected and expectable events such as capital improvements and equipment replacement.
Connection Charge	See hook-up fee
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost to Produce	There are several ways to define and calculate cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. This calculation will yield the average cost to produce. In a proportional to use rate structure, this is the unit charge. See "Cost Calculations" at the bottom of Chart 19.
Cost to Serve Rates	Rates where fixed and variable costs generated by each user class are paid by that class with minimum and unit charges, respectively. Similar to and sometimes the same as "proportional to use" rates.
Cost Types; Fixed and Variable	The two main types of costs are fixed - those that are related to the fact that someone is a customer; and variable - those that are related to the volume of the commodity delivered to customers. Generally, fixed costs should be recovered with minimum charges and variable costs with unit charges.
Coverage Ratio (CR)	Incomes available to pay debt divided by the amount of the debt for that year. Most systems should have a CR of 1.25 or higher.
Current Position	For purposes of this report, for one year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up
Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Equivalent Dwelling Unit (EDU) or Equivalent Residential Unit (ERU)	Based upon number of water using fixtures, average flow, potential flow or similar criteria; the consumption rate of the average single family home is rated at one EDU. All other types of customers are then compared on this measuring basis and the EDUs are calculated. Generally the purpose of this exercise is to calculate fees that each EDU must pay.
Hook-up Fee, Tap Fee, Impact Fee, Availability Charge, Capacity Charge	There are many terms and many and varied definitions of terms in use that are related to fees charged to connect new customers. For purposes of this model, all charges related to connecting new customers will be "rolled together" into a tap fee, usually including a charge that buys a new customer system capacity. This combined charge may be a few hundred dollars for a residential customer, if little or no capacity costs are included, to many thousands of dollars for a large industrial customer with capacity costs included.

Definitions

Incremental Rate Increases (Inflationary Increases)	Rate increases done, generally annually, following the initial rate adjustment. The usual goal of such increases is to keep the system's incomes on track to meet reserve targets. Rate structure fairness is a small issue, if it is an issue at all. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in follow up to the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that cover the system's short-term expected costs and do it with a structure that is fair to ratepayers. Initial adjustments should be followed in subsequent years with incremental rate increases.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well.
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of an asset. One asset may cost less to build but it may be more expensive to operate and maintain, yielding a higher total life-cycle cost.
Marginal Costs	The parts of a utility's costs that are unavoidable in the course of serving a particular customer, a group of customers, more volume to all customers or some other marginal use of the system. Such customer(s) or extra use could be added at a discounted but still profitable fee, if desired. Generally marginal costs are less than the average costs but when extra use requires a system upsizing, they can be greater. These costs are especially useful when considering selling service at wholesale or charging "snow birds" while they are away.
Operating Costs	Definitions and calculations vary. For rate setting purposes operating costs are costs incurred because a system is operated. Such costs are usually recovered primarily through unit charges.
Operating Reserves or Working Capital	Analogous to current position, this is the net revenues retained to fund operating costs during times when costs exceed incomes.
Operating Revenues	Revenues collected in the form of user fees and similar operating cost-related fees
Operating Ratio (OR)	Current incomes divided by current expenses, not including debt. An OR of 1.0 is "break even." Most systems should have an OR of 1.25 or higher.
Payback Period	In this case, time required for the investment made to get this analysis to return that investment through increased user and other fees
Potential Demand	The volume of service that a user could demand for a short period of time at full volume use. The potential demand limiting factor is usually the size of the customer's meter or service line.
Proportional to Use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge. This rate structure is similar to and often the same as cost to serve rates.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule
Return on Investment	In this case, the dollar amount or percentage of revenue gain enabled by this rate analysis. Related to payback period.
Snow Bird	A customer, usually residential, that goes away during part of the year. Most commonly, people of "means" who live in the north who "fly south" for the winter. But, this category includes everyone who is absent for a significant part of the year but returns to their permanent residence.
Test Year	The one year period from which data was gathered to be the basis of the rate analysis, which is usually the last completed fiscal year. See related "analysis year."
Usage Allowance	The volume, if any, that is "given away" with the minimum charge. Most systems give away no volume. Those that give away an unlimited volume have what are called "flat rates" - a minimum charge only.
User Fee, User Charge, User Rates	Fees assessed to customers for use of the system. Does not include tap, capacity or connection fees, late payment penalties or other types of charges.

Definitions

Water Loss	Measured by volume or percent, the part of a water system's net water production that does not reach customers or is not billed to customers. This loss also includes billable volume lost due to under-registering customer meters.
Working Capital, Net Income	The amount left in the operating fund after paying all costs due during that month, year or other time period. Working capital of $0 is "break even." Related to "current position."
Working Capital Goal or Operating Reserves Goal	The desired operating fund reserve, in dollars or percent, at a stated point in time. Small systems (1,000 connections) generally should target 35 percent or greater. Larger systems can target a lower percentage. The goal for each system should be based upon the needs of that system and the risk the customers are willing to take.

Table 2 - Capacity Cost; Its Amount and How it May be Recovered

Peculiar, MO; Sewer Tap Fees Scenario 2016-1

This table shows tap and capacity costs to expect. From these costs, tap fees will be developed in Table 3.

	Test Year Starting 1/1/16	Year Starting 1/1/17	Year Starting 1/1/18	Year Starting 1/1/19	Year Starting 1/1/20	Year Starting 1/1/21	Year Starting 1/1/22	Year Starting 1/1/23	Year Starting 1/1/24	Year Starting 1/1/25	Year Starting 1/1/26	Year Starting 1/1/27
Expected New Taps Each Year	18.0	19.0	19.2	19.0	19.1	19.3	19.5	19.7	19.9	20.1	20.3	20.5

Calculation of Annualized Capacity Cost

Data source for blue highlighted items: "ALLOCATION OF CAPITAL COSTS TO CUSTOMER CATEGORIES" table, George Butler Associates, Inc., dated 2/7/2016. That table has been appended to the report.

	System Capital Cost	% of Total Attribu-table to Capacity	Capacity Cost	Average Annual Capacity Cost (Depre-ciation)
Waterwater Treatment Plant	$2,250,000	50.0%	$1,125,000	$65,563
Lift Stations: Area-wide	$1,650,000	50.0%	$825,000	$48,079
Sewers: Interceptors	$2,596,476	50.0%	$1,298,238	$75,659
Future Capital Improvements	$8,424,712	50.0%	$4,212,356	$245,488
Totals	$14,921,188	50.0%	$7,460,594	$434,790

Note: It is assumed that half of the infrastructure costs are related to capacity and the other half are related to the costs to hook up any customer regardless of whether they will be a high or low volume customer or high peak flow or level flow customer.

Costs Associated With Making New Connections

	Estimated Non-capital Costs per Connection												
Average Annual Capacity Cost (Depre-ciation)		$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790	$434,790
Account Set up and Field Costs for New Connections	$75	$1,350	$1,428	$1,471	$1,479	$1,524	$1,570	$1,617	$1,666	$1,716	$1,768	$1,821	$1,876
Total Costs for New Connections		$436,140	$436,217	$436,261	$436,269	$436,313	$436,359	$436,407	$436,455	$436,506	$436,558	$436,611	$436,666
Target Amount to Recover From Tap Fees Calculated in Table 3	15.6%	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827	$67,827

Note: These costs should be recovered by fees charged for making new taps (usually called, "tap fees"). This table only calculates the maximum level of those revenues. Table 3 calculates the structure of those fees.

Note: Connection charges should almost always cover at least the staff time and "out of pocket" costs to make connections.

Table 3 - Tap Fees Based on Meter Size

Peculiar, MO; Sewer Tap Fees Scenario 2016-1

This table calculates tap fees to charge each meter size and total tap fee revenues that would be generated during this, a partial year, as well as one full year following initial adjustment. This table only covers meter size-based fees. If you also sell materials, you should charge separately to recover those costs, plus the cost of administering those sales.

In-City Customers

Meter Size	Meter Size in Square Inches	Mix of New Taps in a Typical Year	AWWA Capacity Multiplier for Each Meter Size	Total AWWA Capacity "Shares" Attributable to Each Meter Size Group	AWWA-based Capacity Cost Each Meter Size	Economy of Scale Discount Rate	Field and Admin Costs per New Tap From Table 1	Out of City Surcharge Factor	Total New Tap Fees Each Meter Size	Full-year Tap Fee Income From Each Size Class	Number Meters on System at End of Previous Year
Five Eighths	0.31	0.0	1.0	0.0	$2,032	100%	$75	100%	$2,107	$0	0
Three Quarters	0.44	16.5	1.5	24.8	$2,032	100%	$75	100%	$2,107	$34,798	1,611
One Inch	0.79	0.2	2.5	0.4	$5,081	100%	$75	100%	$5,156	$846	16
One & a Half Inch	1.77	0.0	5.0	0.1	$10,162	100%	$75	100%	$10,237	$210	2
Two Inch	3.14	0.2	16.0	3.3	$32,517	100%	$75	100%	$32,592	$6,681	20
Two & a Half Inch	4.91	0.0	29.8 *	0.0	$60,462	100%	$75	100%	$60,537	$0	0
Three Inch	7.07	0.0	43.5	0.9	$88,407	100%	$75	100%	$88,482	$1,814	2
Four Inch	12.57	0.0	75.0	0.8	$152,425	100%	$75	100%	$152,500	$1,563	1
Six Inch	28.27	0.0	160.0	0.0	$325,174	100%	$75	100%	$325,249	$0	0
Eight Inch	50.27	0.0	280.0	0.0	$569,054	100%	$75	100%	$569,129	$0	0
Ten Inch	78.54	0.0	420.0	0.0	$853,581	100%	$75	100%	$853,656	$0	0
Twelve Inch	113.10	0.0	530.0	0.0	$1,077,138	100%	$75	100%	$1,077,213	$0	0
	Subtotal:	16.9		30.2					$0	$45,912	1,652

* Not included in AWWA study results, so these values are estimates

Out of City Customers

Five Eighths	0.31	0.0	1.0	0.0	$2,032	100%	$75	150%	$3,161	$0	0
Three Quarters	0.44	2.1	1.5	3.2	$2,032	100%	$75	150%	$3,161	$6,642	205
One Inch	0.79	0.0	2.5	0.0	$5,081	100%	$75	150%	$7,734	$0	0
One & a Half Inch	1.77	0.0	5.0	0.0	$10,162	100%	$75	150%	$15,355	$0	0
Two Inch	3.14	0.0	16.0	0.0	$32,517	100%	$75	150%	$48,889	$0	0
Two & a Half Inch	4.91	0.0	29.8 *	0.0	$60,462	100%	$75	150%	$90,806	$0	0
Three Inch	7.07	0.0	43.5	0.0	$88,407	100%	$75	150%	$132,722	$0	0
Four Inch	12.57	0.0	75.0	0.0	$152,425	100%	$75	150%	$228,750	$0	0
Six Inch	28.27	0.0	160.0	0.0	$325,174	100%	$75	150%	$487,873	$0	0
Eight Inch	50.27	0.0	280.0	0.0	$569,054	100%	$75	150%	$853,694	$0	0
Ten Inch	78.54	0.0	420.0	0.0	$853,581	100%	$75	150%	$1,280,484	$0	0
Twelve Inch	113.10	0.0	530.0	0.0	$1,077,138	100%	$75	150%	$1,615,820	$0	0
	Subtotal:	2.1		3.2					$0	$6,642	205
	Total:	19.0		33.4				Projected Tap Fees for One Full Year Following Initial Adjustment		$52,554	1,857
Economy of Scale Factor:	0.0%	Capacity Cost to Recover per AWWA Capacity Multiplier Unit:			$2,032				Prorated Tap Fees to Collect This Year	$35,276	

(This amount is the full-year tap fee prorated to account for time of year when rates will be adjusted initially. This amount is included in Table 4 where it is called, "Meter-size Based Tap Fees.")

Notes:

Because growth rates and meter sizes to be installed in future years cannot be predicted with certainty, tap fee revenues are also uncertain. However, the projections above are based upon historical growth and meter sizes so they should be reasonable estimates. Generally, tap fees should only be used to pay for capital improvements so there is usually time to make adjustments in fee levels.

Economy of Scale Discount Rate - Generally the cost of infrastructure to serve a customer does not go up as quickly as their capacity (meter size) goes up. That is called economy of scale. This value is an estimate of the economy of scale the system enjoys as meter size goes up. Generally this factor should be no more than about 7%.

In the interest of simplicity, 3/4 inch meters, which are usually residential meters, were calculated at the 5/8 inch meter capacity for tap fee calculation purposes.

Table 4 - User Base, Growth and Tap Fee Incomes

Peculiar, MO; Sewer Tap Fees Scenario 2016-1

Projected New Connections

It is assumed the growth rate will average 1.0 percent over the next 10 years.	Infla./De-flation (–) Factor	Test Year Starting 1/1/16	Year Starting 1/1/17	Year Starting 1/1/18	Year Starting 1/1/19	Year Starting 1/1/20	Year Starting 1/1/21	Year Starting 1/1/22	Year Starting 1/1/23	Year Starting 1/1/24	Year Starting 1/1/25	Year Starting 1/1/26	Year Starting 1/1/27
Average Users for the Year	N.A.	1857	1876	1895	1914	1933	1953	1972	1992	2012	2032	2052	2073
Users Added/Lost During the Year	N.A.	18.0	19.0	19.2	19.0	19.1	19.3	19.5	19.7	19.9	20.1	20.3	20.5
User Growth or Loss Rate	N.A.	1.03%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Rate Increases Projected for Future Years	N.A.	NA	NA	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Tap Fee Incomes to Expect at These Growth and Inflationary Increase Rates

Meter-size Based Tap Fees Projected From Table 3		$35,276	$54,685	$55,515	$57,753	$60,080	$62,501	$65,020	$67,640	$70,366	$73,202	$73,934	$76,914

Table 5 - Tap Fee Comparisons: Peculiar, Belton and Raymore, MO

Peculiar, MO; Sewer Tap Fees Scenario 2016-1

Data Source: George Butler Associates, with trap count assumptions made by GettingGreatRates.com

	Peculiar Current Connection Plus Permit Fees	Peculiar Current Fee per Trap	Assume 10 Traps Residential or Commercial	Current Total Tap-on Fees
In-town Residential	$2,100	$0	10	$2,100
Out of Town Residential	$3,000	$0	10	$3,000
In-town Commercial	$2,625	$50	10	$3,125

	Peculiar Recommended Tap-on Fees	Peculiar Recommended Fee per Trap	Assume 10 Traps Residential or Commercial	Recommended Total Tap-on Fees
In-town Residential	$2,107	$0	10	$2,107
Out of Town Residential	$3,161	$0	10	$3,161
In-town Commercial	$5,156	$0	10	$5,156

Assumption for Comparison Purposes: Meter Size for In-town Commercial property in all three cities is 1.0 Inches

	Belton Current Connection Plus Permit Fees	Belton Current Fee per Trap	Assume 10 Traps Residential or Commercial	Total Tap-on Fees
In-town Residential	$1,200	$47	10	$1,670
Out of Town Residential	Unknown	Unknown	10	Unknown
In-town Commercial	$2,000	$59	10	$2,590

	Raymore Current Connection Plus Permit Fees	Raymore Current Fee per Trap	Assume 10 Traps Residential or Commercial	Total Tap-on Fees
In-town Residential	$1,433	$47	10	$1,903
Out of Town Residential	Unknown	Unknown	10	Unknown
In-town Commercial	$2,363	$59	10	$2,953

CITY OF PECULIAR
PECULIAR, MISSOURI

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Tapping Fee Breakdown.xlsx
Tap Fee Cost Allocation

ALLOCATION OF CAPITAL COSTS TO CUSTOMER CATEGORIES

Sewer Tap Fee Rate Analysis

Source of Capital Cost	Number of Future Customers =			1,700 SFDU Equivalents
	System Capital Cost, $			Unit Allocated Cost, $/SFDU Equivalent Customer
	Total	Allocated to Benefited Customer Group		
		Existing	Future	
Existing System Depreciated Capital				
Wastewater Treatment Plant	2,250,000	1,125,000	1,125,000	662
Lift Stations				
Local / Subdivision	NA 1)	NA 1)	NA 1)	0
Area -wide	1,650,000	825,000	825,000	485
Sewers				
Collectors (Local / Subdivision)	NA 1)	NA 1)	NA 1)	0
Interceptors	2,596,476	1,298,238	1,298,238	764
Future Capital Improvements	8,424,712	4,157,915	4,266,797	2,510
TOTAL	14,921,188	7,406,153	7,515,035	4,421
Individual Service Tapping and Customer Account Setup Cost 2)				75
Total Tapping Fee				4,496

1) Assumed cost of improvement initially paid by developer and included in lot price paid by customer

2) Estimated by City managers at 1 hour for clerical time to set up new account + 1 hour for City inspector to inspect builder's work of connecting service lateral to the City to the sewer