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DOCKET NO. 49154
SOAH DOCKET NO. 473-19-5677.WS

RATEPAYERS' APPEAL OF THE DECISION BY LAGUNA MADRE WATER DISTRICT TO CHANGE RATES	**§ § § §**	**STATE OFFICE OF ADMINISTRATIVE HEARINGS**

LAGUNA MADRE WATER DISTRICT'S
DIRECT TESTIMONY

COMES NOW, Laguna Madre Water District ("*District*") and files this its Direct Testimony as follows:

I. Procedural History

1. On January 29, 2019, South Padre Island Golf Course vs. SPI Golf Homeowners JV, Inc. ("*Ratepayer*") filed an appeal pursuant to Texas Water Code (TWC) §§13.043 and 13.1861 challenging a decision by the Laguna Madre Water District to increase Ratepayer;s rates for untreated irrigation water. On March 8, 2019, Ratepayers filed an amended appeal pursuant to TWC § 12.013, challenging the same increase.

2. On April 23, 2019, the Administrative Law Judge ("*ALJ*") issued Order No. 5, denying the Staff of the Public Utility Commission of Texas' ("*Staff*") and District's motions to dismiss and ordering the parties to file comments regarding how to proceed with the petition and propose a procedural schedule. On May 6, 2019, both District and Ratepayers filed their Comments on Procedural Schedule and Staff filed its comments on May 8, 2019.

3. On June 21, 2019 an Order of Referral to the State Office of Administrative Hearings ("*SOAH*") was filed referring this matter to the SOAH. The Order of Referral also ordered the parties to compile a List of Issues to be included in the Preliminary Order. On August 8, 2019, the PUC issued its Preliminary Order including the issues to be addressed by the parties. On September

9, 2019, SOAH issued Order No. 4 adopting the Procedural Schedule. The parties filed an Agreement to Modify Deadlines on November 4, 2019 to extend the deadlines. The deadline for District to file its direct testimony is November15, 2019. Therefore this direct testimony is timely filed.

II.
Laguna Madre Irrigation District's Direct Testimony

Attached hereto as Exhibit "A" is the Prefiled Testimony of Dan V. Jackson on behalf of Laguna Madre Water District.

Respectfully Submitted,

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CERTIFICATE OF SERVICE

I certify that a copy of this document will be served on all parties of record on November 14, 2019, in accordance with 16 TAC § 22.74 as follows:

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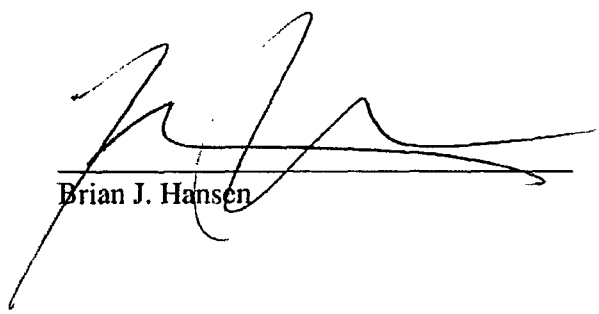


Brian J. Hansen

EXHIBIT "A"

SOAH DOCKET 473-19-5677.WS
RATEPAYERS' APPEAL OF THE DECISION BY
LAGUNA MADRE WATER DISTRICT TO CHANGE RATES

PREFILED TESTIMONY OF DAN V. JACKSON
ON BEHALF OF
LAGUNA MADRE WATER DISTRICT

NOVEMBER 15, 2019

Q. Please state your name and business address.

A. My name is Dan V. Jackson. My business address is 5500 Democracy Drive, Ste. 130, Plano, Texas 75024. My office telephone number is (972) 378-6588, and fax number is (972) 378-6988. My email address is djackson@willdan.com.

Q. What is your education and business background?

A. I received an M.B.A. in Finance and Accounting from the University of Chicago in 1984. I have over thirty-five years' professional experience, virtually all as a consultant. My consulting experience includes positions from 1984-1985 for Arthur Andersen & Co.; 1988-1990 for Deloitte and Touche; and 1990-1996 for Reed-Stowe & Co., Inc.

In 1997 I co-founded **Economists.com**, an economic and financial consulting firm providing services primarily to water and wastewater utilities, electric utilities and the telecommunications sector. The firm grew steadily, expanding our client base across the USA and several sovereign nations in the Pacific region.

In 2015 Economists.com was acquired by **Willdan Financial Services** (WFS), a wholly-owned subsidiary of Willdan Group (WGI). WGI has over 1,300 employees operating from offices throughout the USA. The firm has assisted over 1,200 clients, virtually all in the public sector, successfully address a broad range of financial challenges, such as setting utility rates, financing the costs of growth and generating revenues to fund desired services.

I now serve as Vice President and am in charge of the southwest operation of WFS. Willdan staff reporting to me in the Plano office, including Mr. Dan Lanning who has assisted me in preparing this testimony, are involved with the development of the rate-setting methodologies set forth in the American Water Works Association (AWWA) M1 manual *"Principles of Water Rates, Fees and Charges,"* and the AWWA M29 manual, *"Water Utility Capital Financing."* Willdan is nationally recognized for its expertise with its staff frequently being called upon to speak or instruct on utility financial matters, as subject matter experts, including the AWWA Utility Management conference.

Q. Please summarize your experience with water and wastewater utilities.

A. I have provided economic and financial consulting services for water and wastewater utilities across the United States and the Pacific region for over 30 years. My clients have been primarily public entities, ranging in population from less than 1,000 to over 300,000. I have prepared or overseen the production of over 300 utility rate studies and long-term financial plans over the past quarter century. I have prepared water and wastewater cost of service and rate studies, system privatization analyses, pro forma forecasts of growth and usage, CCN and system valuations, connection and impact fee studies, business and capital improvement plans, alternative water and wastewater treatment sources, contract negotiations, and economic feasibility analyses of desalination as a water treatment option. My clients have ranged from Arizona and Texas border communities to Northwestern metropolises, rural water districts, urban suburbs, and Northern inner-city communities. I have served over 90 separate clients in Texas, and 150 clients across the USA and in five sovereign nations.

Further, I have been engaged on numerous occasions by the Asian Development Bank and the World Bank to assist in projects that have brought potable water for the first time to villages in developing nations. This has lessened diseases and improved the lives of hundreds of thousands of people. I have worked on these engagements in such independent nations as Fiji, Samoa, Palau, Kiribati, the U.S. territory of American Samoa and the U.S. Commonwealth of Northern Mariana Islands.

I have provided expert witness testimony in numerous cases before the Texas Commission on Environmental Quality, other state Public Utility Commissions, state courts, federal courts and territorial legislatures. I am an occasional speaker at utilities conferences and trade associations, and have testified numerous times on the reasonableness of rates. I am also a published author, my novel *The Forgotten Men* is available at Amazon.com and my second novel is in the pre-publication stage.

My resume is attached as **Appendix A** to this prefiled testimony. My resume is a true and correct summary of my professional experience.

Q. What is the purpose of your testimony today?

A. I will address the reasonableness of the rate for raw water assessed by Laguna Madre Water District ("The District") to the SPI Golf Homeowners JV, Inc. ("SPI") and its other raw water customers. I will show that the rate charged by the District is fair, just and reasonable, and fully in accordance with both ratemaking principles and the District's long-standing calculation methodology, which has been essentially unchanged for twenty-three years.

My testimony is structured as follows:

Section I – General Background – in this section I will describe the Laguna Madre Water District in detail, including its customers, service territory and services provided. I will also outline my 28-year history as rate consultant to the District.

Section II – Cost of Service and Raw Water Rate – in this section I will outline the approach the District has adopted to develop its overall raw water cost of service and set its fair, just and reasonable raw water rate. The raw water approach utilizes the AWWA's Utility Basis Methodology, and has been utilized by the District, with the acceptance of its customers, since the raw water rate was first established in 1996. I will describe the original calculation, the history of rate revisions, and the District's most recent raw water rate analysis and rate implementation as a result of Willdan's 2018 Water and Wastewater Rate Study. I will show that the rate of $1.04 per 1,000 gallons is not only fair, just and reasonable, but it is actually nominally lower than the cost LMWD incurs in providing this service.

Q. Have you prepared any exhibits?

A. Yes. These exhibits are embedded within the text of this prefiled testimony. I have also included several appendixes, which I will reference during the course of this testimony.

Importantly, it should be noted that the District adopted the newest raw water rate in September 2018, at the conclusion of the Water and Wastewater Rate Study I prepared for the District. Therefore all data and analysis presented in this testimony will be based on data from the rate study and up to September 2018. This is the body of data on which I based my recommendations and the District set its raw water rate.

Q. Did you have any assistance in preparing your testimony?

A. I am responsible for the preparation of all of this testimony and accompanying exhibits. I have been assisted by Mr. Daniel Lanning, Project Manager for Willdan. Mr. Lanning is a professional with thirty years' experience in the utility industry. He is also a member of the AWWA's Rates and Charges Committee, which develops the manuals that serve as industry ratemaking standards. Mr. Lanning's resume is also included in Appendix A.

Q. Mr. Jackson, can you provide background as to your professional relationship with the Laguna Madre Water District?

A. Yes. I have had the privilege of serving as the District's water and wastewater rate consultant for the past 28 years. I began working for the District in 1991, and when I started my own firm, Economists.com in 1997, the District was one of my first two clients. The District represents the longest professional relationship I have had with any client in my 35 years of consulting experience.

I have completed the following engagements for the District:

1991	Water and Wastewater Rate Study (with another firm)
1993	Water and Wastewater Rate Study (with another firm)
1994-1995	Assistance with rate appeals to Texas Natural Resource Conservation Commission (with another firm)
1996	Tap Fee Study and Raw Water Rate (with another firm)

1997-1998	Water and Wastewater Rate Study
2000	Tap Fee Study and Raw Water Rate
2002	Water and Wastewater Rate Review
2002-2003	Evaluation of potential participation in Southmost Regional Water Authority
2003	Financial evaluation of proposed RO Plant
2003	Tap Fee Study
2004	Water and Wastewater Rate Analysis
2005	Water and Wastewater Rate Study
2005	Tap Fee Study
2007	Water and Wastewater Rate Review
2009	Analysis of Proposed Wholesale Rate to the City of Los Fresnos
2014	Water and Wastewater Rate Study
2018	Water and Wastewater Rate Study

I have been deeply involved with numerous ratemaking decisions evaluated by the District since the 1990s. Further, in the mid-1990s I designed the retail inverted block rate structure by meter size that the District employs to this day. In 1996 I personally developed the District's raw water rate based on the Utility Basis methodology. This methodology will be described in more detail in the next section, and it is used to this day to calculate the raw water rate. I have worked with five separate General Managers and over a dozen Board members, and have visited the District more than 150 times. It has been a privilege to have served as the District's rate consultant these many years.

General Background – Laguna Madre Water District

Q. Please describe the District.

A. The Laguna Madre Water District ("The District") is located in the Rio Grande Valley region at the southern tip of the state of Texas. The District is in Cameron County, near the cities of Brownsville and Harlingen, and is approximately twenty-five miles from the border with Mexico. The District includes the towns of Port Isabel, Laguna Vista, Laguna Heights and South Padre Island. The area is an immensely popular resort destination, offering a warm climate, resplendent beaches and a hospitable tourist environment.

The District is an independent government agency. It was created on November 14, 1960 pursuant to Article XVI, Section 59 of the Texas Constitution and Article 7881, Revised Civil Statutes of Texas. It was originally created as a Fresh Water Supply District but was converted into a Municipal Utility District by an order of the Texas Water Rights Commission on November 20, 1973. Presently the District is governed under Chapter 54 of the Texas Water Code.

Q. Who manages the District?

A. The District's general policy, procedures and overall management are supervised by a Board of Directors elected by a direct vote of District residents. The Board contains 5 seats, all of which are "at large", meaning that each Director is elected by all registered voters for four-year terms. The Board meets in an open public session every two weeks.

A salaried, professional General Manager supervises the District's day to day operations. The senior management team also consists of a Director of Operations and a Director of Finance. The General Manager retains authority to designate the District's senior management.

Q. Can you describe some of the District's basic system characteristics?

A. Yes. The District maintains approximately 110 miles of water main lines servicing both incorporated cities (Port Isabel, Laguna Vista, South Padre Island) and unincorporated

towns (Laguna Heights, Long Island). The water system contains 5 elevated and 2 ground storage tanks, and three water reservoirs. A 42-inch underground transmission line and accompanying network was completed in 1988, which is used as part of a comprehensive system to transport raw water from the Rio Grande. This line replaced an above-ground canal system that caused significant amounts of water loss and evaporation in the transportation of raw water.

The District contains 8.0 mgd of installed water treatment capacity, in the form of two treatment plants, which are located outside Port Isabel and Laguna Vista. The water system is fully integrated and serves all customers; neither treatment plant can be considered a sole source for raw or treated water for either the Mainland or South Padre Island.

The District's wastewater system is divided into two service areas, one on South Padre Island and one on the mainland. Unlike the water system, there is no interconnection between the wastewater systems on the island and the mainland. The total inch-miles of collection lines on the island and mainland are approximately equivalent. The District operates 27 lift stations and four wastewater treatment plants with a combined total 5.85 mgd of capacity. Two wastewater treatment plants are located on South Padre Island and two are located on the mainland.

A salaried, professional General Manager supervises the District's day to day operations. The senior management team also consists of a Director of Operations and a Director of Finance. The General Manager retains authority to designate the District's senior management.

Q. Please describe the District's customer classes.

A. The District's customer base and demand is fairly unique, because it serves one of the most popular resort areas in the state of Texas. According to the web site www.city-data.com, at present, the permanent population of Laguna Vista is 3,213, the population of Port Isabel is 5,022 and the population of South Padre Island is 2,889, for a combined total of 11,224. However, during spring break and summer, hundreds of thousands of visitors flood the island

and the surrounding mainland. This leads to significant demands on the system and substantial costs to provide water and wastewater service. Further, there are thousands of condominiums in the District's service territory that serve as second homes for many residents. Finally, during the winter season the District is home to many visitors from Canada and other colder climates, who are affectionately referred to as "winter Texans" by the permanent residents.

For this reason, back in the early 1990s the District, at my recommendation, established customer classes based on meter size. This is because customers with larger meters generally exerted a greater demand on the system. For example, hotels that were full during the summer and spring break and sparsely populated during the winter months contributed a much higher peaking factor to the system than a retail store or other commercial operation. By grouping customer classes according to meter size, the District avoids grouping all "commercial" customers into a single class, and subsequently charging a higher rate for a small commercial business because of the large peaking factors generated by the hotels and other seasonal businesses.

Table DVJ-1 presents the total number of active accounts by meter size at the time the 2018 rate study was completed. All of this data came from our rate study and was contained in the rate model used to develop all the District's rates. Raw water customers are a separate class and level of service, and are not included in this chart.

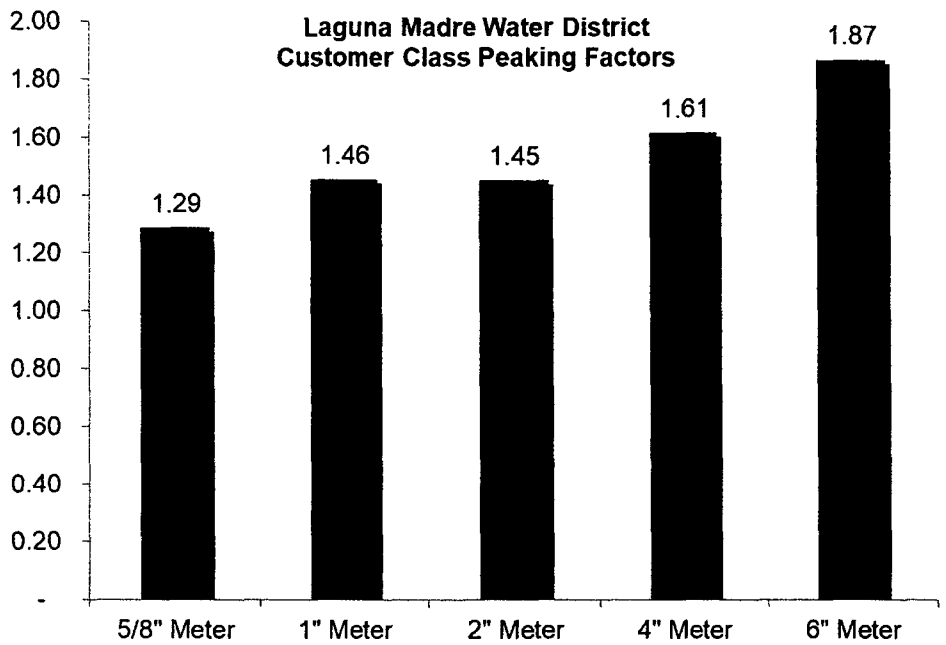
Chart DVJ-2 presents peaking factors by customer class. The chart reveals that the larger meters have greater peaking factors than the smaller meters. This means that the cost to serve these meters will be greater, which is logical and appropriate given that many of the seasonal businesses (hotels, condos, etc.) are served by larger meters.

Table DVJ-1

LAGUNA MADRE WATER DISTRICT
WATER AND WASTEWATER CUSTOMER ACCOUNTS
TEST YEAR 2018

		WASTEWATER Accounts	
5/8" Meter	4,875	5/8" Meter	4,460
1" Meter	1,494	1" Meter	1,190
2" Meter	302	2" Meter	287
4" Meter	75	4" Meter	74
6" Meter	34	6" Meter	33
8" Meter	1	8" Meter	1
Total	**6,781**	**Total**	**6,045**

Chart DVJ-2



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Q. How much raw and treated water does the District produce?

A. **Table DVJ-3** reveals that the District's raw and treated water production increased steadily over the past three years. Raw water increased from 1,316,632,000 gallons (3.61 MGD) in 2015 to 1,637,161,000 gallons (4.49 MGD) in 2017. The difference between the raw and treated water totals are due to a combination of two primary factors – the purchase of raw water by SPI and other customers, and inevitable production and transportation losses.

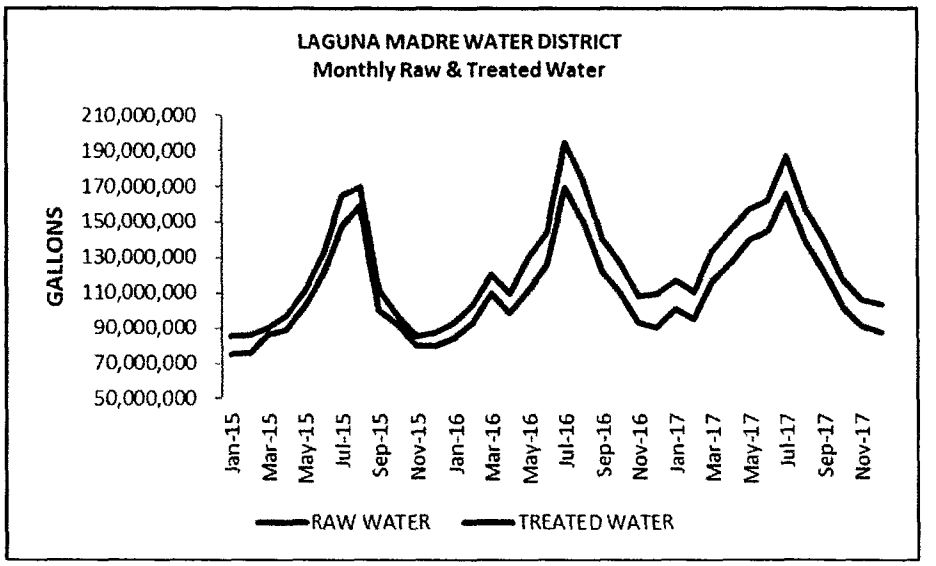
Table DVJ-3

LAGUNA MADRE WATER DISTRICT
RAW AND TREATED WATER PRODUCTION

	Raw Water Gallons	Treated Water Gallons
2015	1,316,632,000	1,204,310,000
2016	1,553,122,000	1,354,564,000
2017	1,637,161,000	1,429,201,000

Chart DVJ-4 shows monthly averages for the same three-year period. The chart reveals the significant variation in monthly usage between the peak summer periods and the more dormant winter months. This means that the District must size its raw water transportation, treatment and distribution facilities to meet the demands of the tourist season, even though this will result in substantial cost and extra capacity during the winter months. More detail on the District's volumes can be found in our 2018 rate study and long-term financial plan, which I am including as **Appendix B** to this testimony.

Chart DVJ-4



Q. How would you characterize The District's financial condition?

A. It would characterize the District's financial position as sound and stable. **Table DVJ-5** is a summary of the District's most recent audited financial statement. This financial statement is presented in its entirety in **Appendix C** to this testimony.

Table DVJ-5

LAGUNA MADRE WATER DISTRICT
HISTORICAL FINANCIAL STATEMENT SUMMARY

	2018	2017
INCOME STATEMENT		
Charges for Service	$ 9,391,158	$ 9,550,739
Property Taxes	1,475,769	1,486,069
Other Revenue	318,039	286,813
Total Revenue	11,184,966	11,323,621
Operating Expense	10,634,196	10,601,836
Operating Income (Loss)	550,770	721,785
Total Other Income / Expense	(146,274)	-
Excess of Revenues over Expenses	**404,496**	**721,785**
Ending Financial Position	**68,498,763**	**68,094,267**
BALANCE SHEET		
Current Assets	$ 15,001,957	$ 20,559,648
Capital Assets	81,069,844	76,697,405
Total Assets	**96,071,801**	**97,257,053**
Deferred Outfows	520,126	1,126,246
Total Liabilities	**27,777,692**	**30,068,278**
Deferred Inflows	315,472	220,754
Net Position		
Net Investment in capital assets	55,806,128	56,218,039
Resricted	3,200,219	3,084,681
Unrestricted	9,492,416	8,791,547
Total	**68,498,763**	**68,094,267**
Total Liabilities & Capital	**96,071,801**	**97,257,053**

While there are a lot of numbers in this table, I can summarize my findings as follows:

- In the most recent year available, 2018, The District generated total revenue of $11,184,966. Approximately 84% of this revenue was generated from its user rates, and 13% from property taxes.

- The District has generated positive cash flows from operations and net cash flows in each of the past two years.

- The District has the ability to set its annual rates at a level to ensure that it recovers all of its costs. Like utilities throughout the state of Texas, it has increased its rates in recent years and is expected to continue to do so in the future.

- Net capital assets after depreciation are approximately $81,069,844 in 2018, for a base of 6,781 water and 6,045 wastewater customers. This reflects the significant cost the District incurs in transporting raw water, delivering treated water and collecting and treating wastewater for its unique service area.

- The District's net investment in capital assets is $55,806,128 as of 2018. Further, the District has $9,492,416 in unrestricted net assets.

What does all this mean? Quite simply, that these standard financial indicators reinforce my assertion that the District is managed prudently, in sound financial condition, and has made the necessary but difficult decisions to set its rates and fees for service at a level that will ensure continued financial health.

Section II – Cost of Service and Raw Water Rate

Q. Mr. Jackson, please provide background on how the raw water rate was established.

A. My recollection is that the Raw Water rate was established in 1996, when a local golf course that had just been constructed approached the District about providing raw water as a source of irrigation. The District asked me to develop a methodology for the calculation of a fair, just and reasonable rate for raw water.

Right away I realized that for many reasons the provision of raw water would be fundamentally different than the District's other customers. First, much of the District's treatment and distribution assets would not be used and useful in the provision of raw water, so any rate should not include costs related to those assets. Second, the District anticipated that customers other than just the golf course would be interested in purchasing raw water. This would include customers both inside and outside the boundaries of the District. This has indeed turned out to be the case as customers other than the golf course have purchased raw water over the years, though not in the quantity originally envisioned.

Third, the District assesses taxes to fund a significant portion of its infrastructure development. However, many of the District's actual and potential raw water customers, such as the Cities of Los Fresnos, Port Isabel, Laguna Vista and South Padre Island, are not subject to the District's taxes. Therefore, a fair and reasonable rate calculation must take this into consideration.

A fourth reason involves the fact that one of the principal components of raw water service is the raw water transportation system the District completed in 1988. Prior to that time, the District transported its raw water approximately 26 miles through an open-air canal system. This led to significant water loss through evaporation. The raw water line and transportation system eliminated much of this loss, which has significantly benefited the District.

However, though the line and transportation system have a useful life exceeding 50 years, the District chose to fund the approximately $8.0 million cost through a revenue bond with a

term of 20 years. By the time the raw water service rate was being contemplated in 1996, the debt was almost 50% retired. This meant that any raw water rate that utilized the Cash Basis of ratemaking would fund a very small portion of the debt service for the transportation system, and no portion of the cost after the year 2007. Since these raw water agreements were anticipated to remain in place for decades beyond 2007, use of the cash basis would essentially mean that these customers would be using a transportation system for which they had paid little or none of the cost.

For all of these reasons, I determined in 1996 that the most appropriate methodology on which to base the raw water rate was the AWWA-approved Utility Basis.

Q. Did the initial raw water customer, the golf course, agree to the use of the Utility Basis to calculate its rate?

A. Yes. I developed a spreadsheet outlining a basic calculation of the Utility Basis methodology in 1996 and conveyed it to the representative of the golf course. At the time I did this I was employed by another consulting firm, and I did not retain any documentation related to this when I departed the firm.

In August 2000, as CEO of Economists.com, I updated the rate calculation and submitted it to the legal counsel for the golf course. The spreadsheet and letter I submitted is contained as **Appendix D** to this testimony. It outlines the use of the Utility Basis in calculating the raw water rate, and the general assumptions I employed in making the calculation. As the appendix shows, I calculated the rate based on general assumptions regarding the size of the Rate Base and rate of return for the assets used and useful to the raw water transportation system, depreciation expense for those assets used and useful, and O&M expense.

While the golf course's representatives did have questions about one of the factors used in the calculation, I am not aware of any concern or dispute on their part over the use of the Utility Basis methodology that the District employed.

I continue to employ the Utility Basis methodology and the same cost components every time I calculate the District's raw water rate, as I have done so for the past twenty-three years.

Q. How is the Utility Basis calculated?

A. According to the AWWA Manual M-1, the Utility Basis is composed of three primary elements of cost:

Operating Expenses – the day-to-day operations of the District, including salaries, purchased power and water, rent, chemicals, general overhead, administration, etc.

Depreciation – the loss in value of facilities, not covered by normal maintenance, that allows the utility to recover its investment over its useful life

Return on Rate Base – intended to pay the interest portion of debt and provide a fair rate of return

Q. Did you ever consider establishing two raw water rates, one based on the Cash Basis for customers inside the District and one based on the Utility Basis for customers outside the District's boundaries?

A. No. In my opinion this would have been perceived as unfair to the party that paid a higher rate for what they considered to be the same service, and would have invited a rate protest before the TCEQ and/or the PUC. Additionally, the principal purchaser of raw water inside the District's boundaries, the golf course, was not established until 1996. Therefore, using the cash basis to set the golf course's rate would have resulted in the same issue I outlined above – a customer receiving service from a raw water line for which they paid little if any of the cost.

Q. When did you complete the most recent calculation of the District's raw water rate?

A. I completed this calculation as a component of the *2018 Water and Wastewater Rate Study and Financial Forecast*, completed by Willdan in August 2018. A copy of this rate study is presented as Appendix B to this testimony.

As part of this rate study, I utilized Willdan's comprehensive water and wastewater rate design and forecast model. I originally designed this model when I founded Economists.com in 1997, and the model has now been utilized in over 300 water and wastewater rate studies and financial plans throughout the USA and in six nations and US territories/commonwealths. It is the cornerstone of Willdan's rate practice and is generally recognized as one of the premier ratemaking tools in the nation. While the model has to be significantly updated to meet the needs of each individual client, and while it has been revised to incorporate new Excel software capabilities, the model's architecture has remained remarkably consistent over the past two decades. It closely mirrors AWWA ratemaking methodology for both the Cash Basis and Utility Basis as outlined in Manual M-1. The relevant detailed calculation pages of the model are presented in **Appendix E** to this testimony.

The rate study contained two alternative sets of rate plan recommendations. The first alternative maintained the District's existing rate design, with a series of annual adjustments for each of the next five years. The second alternative examined the impact of implementing a per-unit monthly charge for the District's many condominium and multi-unit complexes. The District's Board of Directors ultimately chose the first alternative, maintaining the existing rate design.

The District's raw water rate was calculated to be the same under either alternative.

Q. Can you walk us through how you calculated the raw water rate?

A. Yes. I first want to point out that as with any financial forecast model, my rate model for the District is based on a series of assumptions. Remember, forecasts are not guarantees, they are predictions based on reasonable assumptions. The rate model and rate study covered a variety of topics and objectives, including but not limited to:

- Were District revenues covering the cost of providing service?
- What level of account and customer growth is expected over the next decade? How will that impact the District's cost of service?

- What are customer usage patterns, and how are they anticipated to change in the coming years?
- What are the District's capital requirements, and how much debt is the District anticipated to issue in the next decade?
- Should the District fundamentally alter its methodology for charging its critical hotel/condominium class to implement a per unit charge?
- What rate adjustments are required to ensure that the District will recover the cost of service in the current year and future years?

The calculation of a raw water rate was only one component of this multi-faceted rate study. As will be illustrated later in this testimony, **total revenue from raw water sales is estimated to be less than $100,000 per year, which is less than 1.0% of the District's total 2018 revenues**.

When I prepared the 2018 rate study, I used a series of broad assumptions to calculate each of the three components of the raw water rate – operating expenses, depreciation/replacement, and return on rate base. The use of broad assumptions is common in the development of these rate studies, as it serves to limit the budget and the financial burden of these studies on the District's ratepayers. It is particularly appropriate with regards to an issue like the raw water rate, which impacts less than 1.0% of the District's revenues. I also felt that it was appropriate because my 28 years of experience as the District's rate consultant has provided me with an in-depth knowledge and understanding of the District's finances and customer base, so I can easily discern which assumptions would be considered reasonable and appropriate.

As part of developing this testimony, I re-examined each of these assumptions and prepared a much more in-depth analysis of raw water costs. I used data available in 2018 at the time of the rate study, in keeping with general Commission guidelines regarding rate reviews.

My conclusion is that my rate study assumptions were not only appropriate, but were actually conservative in nature and beneficial to raw water customers. As I will illustrate, while the

District only seeks confirmation of its adopted rate of $1.04 per 1,000 gallons, the true raw water rate per 1,000 gallons is actually higher.

I will now examine each of the three components of the raw water rate. For each of the components, I will first discuss the assumptions I used in the study, and then I will provide the more in-depth analysis that supports those assumptions and ends up recommending a higher rate.

Please further note that all of these calculations are contained in detail in the rate model presented both in our 2018 rate study (Appendix B) and my testimony (Appendix E).

Q. Please discuss the first component of the rate water rate – operating expenses.

A. Operating expenses are based on the District's adopted budget, in this case for the Fiscal Year beginning October 1 2017 and ending September 30 2018. The District's budget separates its operating expenses into several categories based on the type of service, i.e. plant, distribution, laboratory, maintenance, etc. This makes the process of functionalizing costs more straightforward.

Table DVJ-6 presents the functionalization of the District's budgeted expenses between the water and wastewater divisions, and within the water division to Raw Water Supply/Transmission, Treatment, Distribution, Administration and Customer Billing. Once again, the comprehensive rate model presented as Appendix E of this testimony presents an allocation of costs for every individual budget line item. The following is notable about this table:

- The District's budget format ensures that certain categories of cost, such as wastewater collection and plant, are not allocated in any part to the water department.
- However, other categories of cost that are clearly water-related are allocated 100% to the water department. This includes water plant and distribution systems.
- A percentage of maintenance, laboratory, administration, finance, electrical and construction are allocated to water. Allocations vary based on the individual line item. I worked with District staff to develop the most reasonable allocation of cost for each line

item, and the result reflects the professional judgement of those who are most familiar with the District's operations.

- Only a portion of the water plant and distribution costs are allocated to supply/transmission. This portion is related to the reservoirs and the transmission lines.
- Reflecting the highly conservative and beneficial to raw water customers' nature of our calculation, we have not at this time assigned any of the costs of maintenance, laboratory, electrical or construction to raw water. I reserve the right to revisit this assumption at a later date.
- No debt service is assigned to raw water supply/transmission. Again, this is a highly conservative assumption, as we have not at this time audited past bond issues to determine the amounts funded specifically for reservoirs, pump stations and transmission line maintenance. Once again, based on input from these proceedings, we reserve the right to revisit this assumption.

Table DVJ-6

LAGUNA MADRE WATER DISTRICT
TEST YEAR WATER EXPENSES

SCENARIO: 2019 11 04 Scenario 1 -- Status Quo

	FY 2018 Budget	[redacted]	Allocated to: Raw Water Supply/ Transmission	Treatment	Distribution	Administration	Customer
Operating Expenses							
01 -- Water Plant	$ 1,440,534	$ 1,440,534	$ 360,134	$ 1,080,401	$ -	$ -	$ -
03 -- Distribution	739,372	739,372	184,843	-	554,529	-	-
04 -- WW Collection	382,961	-	-	-	-	-	-
05 -- Maintenance	280,801	148,825	-	74,412	74,412	-	-
06 -- Laboratory	259,447	129,724	-	129,724	-	-	-
07 -- Administration	968,121	513,104	-	-	-	384,828	128,276
08 -- Wastewater Plant	1,674,560	-	-	-	-	-	-
10 -- Finance	878,816	521,689	-	-	-	391,267	130,422
11 -- Electrical	200,280	100,140	-	50,070	50,070	-	-
12 -- Construction and Maintenance	304,515	152,258	-	76,129	76,129	-	-
Total Operating	**7,129,407**	**3,745,645**	**544,977**	**1,410,736**	**755,140**	**776,095**	**258,698**
Capital Outlays	**855,494**	**161,076**	**35,958**	**46,651**	**66,277**	**9,143**	**3,048**
Debt Service -- Current	**932,150**	**339,907**	**-**	**186,845**	**95,632**	**-**	**57,430**
Debt Service -- Future	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total Expenses	**8,917,050**	**4,246,628**	**580,934**	**1,644,231**	**917,049**	**785,237**	**319,176**

I complete the process of allocating operating expenses to Supply/Transmission – Raw Water in **Table DVJ-7**. This table allocates operating costs to Supply-Transmission and other functions, and forecasts operating costs for the ten-year period FY 2018 – FY 2027.

Again, I will spare the reader the detail of describing all of the assumptions I used in calculating this forecast. The assumptions are described in detail in our rate study, and are also thoroughly documented in the rate model presented as Appendix E.

However, forecast expense increases are based on two primary assumptions. The first is that most expenses will increase at the rate of inflation, which we estimate to be 3.0% per year. Inflationary trends both in the state of Texas and nationally establish that 3.0% is a reasonable estimate of forecast inflation. The second assumption is that certain expenses, i.e. chemicals, electricity, etc. will increase at rates equivalent to the increase in water volumes and/or customers. The model's line by line delineation of expense increases outlines which expenses are assumed to increase by a combination of inflation and volume/customer growth.

The following is notable about **Table DVJ-7**:

- The table shows operating expenses by function. Only Supply/Transmission-related operating costs are included in the calculation of the unit rate, as will be shown later.
- Administration costs are allocated to Supply/Transmission based on the percentage of Supply/Transmission costs to total non-administration costs. Again, this is a conservative assumption meant to minimize the raw water rate, as treatment and distribution costs include a significant amount of debt principal and interest. This minimizes the administration costs allocable to Supply/Transmission.
- Because the Raw Water rate is calculated through the Utility Basis, no capital outlays are included in the Raw Water Cost of Service.

In summary, for the test year 2018, Supply/Transmission Raw Water Costs are estimated to be $544,977, and are forecast to increase to $827,106 by FY 2027. Administration allocation is $131,788 in Test Year 2018, and are expected to increase to $189,686 by FY 2027.

Table DVJ-7

LAGUNA MADRE WATER DISTRICT
FORECAST WATER EXPENSES

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Water Costs										
Supply/Transmission										
Operating	$ 544,977	$ 595,959	$ 629,735	$ 654,568	$ 680,439	$ 707,397	$ 735,489	$ 764,769	$ 795,289	$ 827,106
Capital Outlays	35,958	37,036	38,148	39,292	40,471	41,685	42,935	44,223	45,550	46,917
Total Supply/Transmission	580,934	632,996	667,883	693,860	720,910	749,082	778,425	808,992	840,839	874,023
Treatment	1,644,231	1,783,513	1,877,067	1,944,470	2,014,585	2,086,514	2,162,410	2,241,411	2,324,685	2,410,382
Distribution	917,049	983,546	1,214,991	1,246,840	1,279,773	1,313,543	1,348,720	1,385,104	1,423,765	1,462,751
Admin	785,237	856,609	885,858	916,206	947,697	980,377	1,014,295	1,049,500	1,086,045	1,123,984
Customer	319,176	343,180	352,641	362,907	373,518	384,023	395,380	407,129	419,288	431,874
Total Water Costs	**4,246,628**	**4,599,844**	**4,998,440**	**5,164,283**	**5,336,483**	**5,513,539**	**5,699,230**	**5,892,136**	**6,094,621**	**6,303,015**
Allocation of Administration to Supply/Transmission.										
Supply/Transmission	$ 580,934	$ 632,996	$ 667,883	$ 693,860	$ 720,910	$ 749,082	$ 778,425	$ 808,992	$ 840,839	$ 874,023
Treatment	1,644,231	1,783,513	1,877,067	1,944,470	2,014,585	2,086,514	2,162,410	2,241,411	2,324,685	2,410,382
Distribution	917,049	983,546	1,214,991	1,246,840	1,279,773	1,313,543	1,348,720	1,385,104	1,423,765	1,462,751
Admin	na	na	na	na	na	na	na	na	na	na
Customer	319,176	343,180	352,641	362,907	373,518	384,023	395,380	407,129	419,288	431,874
Total Water Costs	$ 3,461,391	$ 3,743,235	$ 4,112,582	$ 4,248,077	$ 4,388,785	$ 4,533,162	$ 4,684,935	$ 4,842,636	$ 5,008,576	$ 5,179,030
Percent Supply/Transmissio	16.8%	16.9%	16 2%	16.3%	16 4%	16.5%	16.6%	16.7%	16.8%	16 9%
Admin Allocation	131,788	144,856	143,863	149,649	155,670	162,002	168,530	175,325	182,325	189,686
Operating	$ 544,977	$ 595,959	$ 629,735	$ 654,568	$ 680,439	$ 707,397	$ 735,489	$ 764,769	$ 795,289	$ 827,106
Administration	131,788	144,856	143,863	149,649	155,670	162,002	168,530	175,325	182,325	189,686

Q. Is it appropriate to include Administration expenses in the calculation of the Supply/Transmission – Raw Water Rate?

A. Absolutely. The District is a large organization that is responsible for the management and supply of water to hundreds of thousands of persons who visit South Padre Island in the summer months, not to mention the thousands of permanent residents of the District. The securing of Raw Water and the maintenance of a 26-mile transmission line and associated reservoirs and pump stations is an integral component of that service. Administration is vital to the maintenance and perpetuation of the District's operations – it is a reasonable cost of providing a service. These systems do not operate and manage themselves, and the raw water transmission system cannot be expected to function without an active administration and management structure in place to oversee all operations.

It is wholly appropriate to allocate a modest proportion of Administration costs to Supply/Transmission, given the District's continuing efforts to maintain the transmission lines

and secure the increasingly-elusive water rights necessary to service the District's customer base. In fact, as the line continues to age and water rights become ever more scarce in future years, it would be reasonable to increase the percentage of Administration costs allocable to Supply/Transmission. I reserve the right to revisit these assumptions in later years as circumstances inevitably change.

Finally, I would note that no customer billing costs such as meter reading and monthly billing/collections are allocated to Supply/Transmission. These costs are accounted for separately by the District's accounting system and our rate model, and are not factored into any component of the raw water rate. This is part of the District's overall policy of ensuring that only costs that are fair, just and reasonable to the provision of raw water are included in the raw water rate.

Q. Mr. Jackson, let's now address the second component of the Supply-Transmission Raw Water Rate as calculated under the Utility Basis – Depreciation expense. How did you develop these costs?

A. I accomplished this through a straightforward, if fairly tedious, exercise. Because raw water revenues are less than 1.0% of the District's revenue base, I made a general estimate of depreciation expense in the 2018 rate study. For the purpose of these proceedings, I obtained and evaluated a comprehensive listing of the District's asset base as of the end of FY 2018. I have incorporated this asset listing into the rate model. The listing includes for every asset the original value, depreciation lifespan, depreciation basis, annual depreciation expense and net asset value. I then worked with District staff to identify every asset that is used and useful in the process of transferring raw water to the District. I summarized the annual depreciation for the current year and the ten-year forecast period for each of these assets.

I present the overall summary of the District's fixed assets as shown in this asset listing in **Table DVJ-8.** It reveals that assets used and useful to the supply and transmission of raw water are approximately 14.9% of the District's total asset base.

Table DVJ-8

LAGUNA MADRE WATER DISTRICT TOTAL FIXED ASSET BASE			
	Total System	Supply/ Transmission	Percent
Total Assets	$ 119,468,909	$ 17,827,648	14.9%
Accumulated Depreciation	50,718,043	7,912,458	15.6%
Net Assets	68,750,866	9,915,191	14.4%

Table DVJ-9 presents the total depreciation expense for FY 2018 and the ten-year forecast period. It shows that for FY 2018, the total depreciation expense for Supply/Transmission related assets is $622,707. By FY 2028 this total is $501,094. Once again, the individual line-by-line calculation of depreciation expense that comprises these totals is contained in the rate model, but it is too voluminous to be embedded in this testimony.

Table DVJ-9

LAGUNA MADRE WATER DISTRICT
SUPPLY/TRANSMISSION DEPRECIATION EXPENSE AND RETURN ON INVESTMENT

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Annual Depreciation Expense/ Replacement Reserve		$ 622,707	$ 593,462	$ 593,462	$ 588,834	$ 588,186	$ 561,211	$ 561,211	$ 527,902	$ 526,054	$ 501,094
Total Assets	17,827,648										
Less Accumulated Depreciation	7,912,458										
Net Assets – Beginning of Year		9,915,191	9,292,484	8,699,021	8,105,559	7,516,725	6,928,539	6,367,329	5,806,118	5,278,216	4,752,163
Plus Water Rights		2,644,503	2,644,503	2,644,503	2,644,503	2,644,503	2,644,503	2,644,503	2,644,503	2,644,503	2,644,503
Plus Working Capital											
Raw Water O&M – Total		676,765	740,815	773,598	804,216	836,110	869,399	904,019	940,094	977,614	1,016,791
Raw Water O&M – Per Day		1,854	2,030	2,119	2,203	2,291	2,382	2,477	2,576	2,678	2,786
45 Day FERC Standard		83,437	91,333	95,375	99,150	103,082	107,186	111,454	115,902	120,526	125,358
Plus Inventories/Prepaids											
Inventories/Prepaids		593,554	593,554	593,554	593,554	593,554	593,554	593,554	593,554	593,554	593,554
Percent Raw Water		14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%
Raw Water Inventories/Prepaids		85,602	85,602	85,602	85,602	85,602	85,602	85,602	85,602	85,602	85,602
Sub-Total		12,726,732	12,113,922	11,524,501	10,934,814	10,349,912	9,765,830	9,208,888	8,652,125	8,126,849	7,396,666
Less Depreciation Expense		622,707	593,462	593,462	588,834	588,186	561,211	561,211	527,902	526,054	501,094
Net Rate Base		12,106,025	11,520,460	10,931,039	10,345,980	9,761,726	9,204,620	8,647,677	8,124,223	7,602,795	6,895,572
Return on Investment	6.0%	726,362	691,228	655,862	620,759	585,704	552,277	518,861	487,453	456,168	413,734

Q. Why is it appropriate to include depreciation expense in this calculation?

A. There are several reasons why it is appropriate. First, depreciation is a fundamental component of the Utility Basis. Therefore, ratemaking methodology, as outlined in AWWA Manual M-1, clearly allows this expense to be included in the rate to be charged to Raw Water customers.

Second, depreciation (and the accompanying Return on Investment) is recovered in lieu of debt principal under the Utility Basis. If depreciation is not included, debt principal must be included.

But there is an even more basic, and more important reason. The District's boundaries are over 26 miles from the Rio Grande, its raw water source. Unlike many utilities in the Rio Grande Valley and throughout the state of Texas, the District had to construct a complex, elaborate and expensive conveyance system to transport raw water to its service area. This conveyance system is composed of the transmission line itself, pump stations, reservoirs, and the rolling stock necessary for maintenance crews to maintain the system. This is an extraordinarily expensive system, and like all assets, it will wear out over time.

As I stated earlier in this testimony, the District funded the initial construction of the raw water line with a 20-year revenue bond in 1988. This bond was paid off in 2007. Other assets used and useful to Supply/Transmission, such as the reservoirs and pump stations, have been funded from other bond issues over the years. As is common with utilities, the District funded multiple projects with each of its bond issues. It would be very difficult to reconstruct those multiple bond issues over the past several decades to attempt to isolate transmission-related costs, and it is uncertain the District even maintains this documentation in sufficient detail. This makes the utilization of a cash basis methodology that includes the debt service on assets used and useful to the raw water transportation system virtually impossible to calculate, document or implement. But a Utility Basis based on existing asset records is far easier to calculate.

Finally, there is the issue of timing. Even if it could be calculated, a "cash basis" methodology implemented to calculate the raw water rate would essentially mean that any purchaser of raw water after the year 2007 pays little or none of the cost of the millions of dollars of infrastructure required to convey water to the District. This is unreasonable and inappropriate, and it is a critical reason why the District chose to use a Utility Basis calculation in 1996. Under the Utility Basis, as the system depreciates, raw water purchasers reimburse the District for these depreciated costs. The depreciation cost is calculated in line with the useful life of the asset. It is fair and reasonable, and completely in accordance with national ratemaking methodology.

Finally, it must be noted that the Utility Basis was implemented in 1996, was explained to Raw Water Purchasers at the time, has been updated repeatedly over the years and has never been objected to in the past 23 years of administration of the rate.

Q. Please now describe the third category of the Supply/Transmission Rate.

A. The third element of cost is the Return on Investment that the District is entitled to receive for providing raw water availability. The calculation of the rate of return/return on investment is also summarized in Table DVJ-9.

Q. Why is the District entitled to receive a return on investment for providing raw water service?

A. There are several reasons why this is appropriate. First, the District has invested approximately $17.8 million in the assets required to transport raw water. This is a significant investment for which the District's raw water customers benefit.

Further, the District's raw water customers may at any time cease purchasing raw water and obtain their water from another source. Therefore, the District is assuming risk in acquiring the water rights and investing in the conveyance system of sufficient size to service raw water customers. Ratemaking methodology allows the utility to earn a reasonable return for assuming this risk.

Third, many of the District's historical and potential raw water customers reside outside the District's boundaries, or are not required to pay any of the District's assessed property taxes. This includes such entities as the cities of South Padre Island, Port Isabel, Laguna Vista and Los Fresnos. Therefore the Utility Basis, and its accompanying return on investment, are entitled to be recovered from Raw Water customers.

Q. How do you calculate the rate base on which the rate of return is calculated?

A. I start with the net raw water supply/transmission assets, as shown in Table DVJ-8. In 2018 this total is $9,915,191. To this total I add water rights of $2,644,503, Working Capital of $83,437, and Inventories/Prepaids of $85,602. The total is $12,728,732, from which I subtract depreciation of $622,707 for a net rate base of $12,106,025. The calculation of 2018 and the forecast for 2019-2027 is presented in Table DVJ-9.

Q. Why have you incorporated water rights into the rate base?

A. I included these rights simply because they are a valuable asset for the District, an asset without which the District can neither provide raw water service nor potable water service to any of its customers. Water rights in Texas are becoming increasingly scarce, and rights in the Rio Grande Valley are becoming ever more expensive. In 2018 the District paid $2,648

per acre foot for the latest purchase of these rights, and it expects to pay even more in the future.

Further, in *The Regulation of Public Utilities Theory and Practice*, Second Edition (1988) by Charles R. Phillips Jr., the author states plainly on page 337: "... the cost of acquiring water rights, as well as water power sites, is usually included in the rate base." While the AWWA Manual M-1 does not speak directly to water rights inclusion in rate base, it does allow for the inclusion of the cost of reservoirs in rate base as part of source of supply assets (Manual M-1, Seventh Edition, p. 41). It should be noted that Manual M-1 is published as a guide for ratemaking, not a decree on how rates are to be determined. The example used in the manual is a clear acknowledgement that all sources of supply assets should be included in the rate base.

At present the District possesses 7,513 acre feet of water rights. It has acquired these water periodically over the past forty-plus years. At my request, staff undertook an extensive search for records on the purchase price of these rights. The results are contained in the workpapers presented with my prefiled testimony. I should note that the District could locate no records of purchases prior to 1971, so I used the lowest acquired value for these rights. Also, I excluded those rights acquired through the District's annexation policy, as in my judgment this is equivalent to the rate base treatment of construction in progress. These adjustments show that both my calculations and the District's policy are attempting to be as cautious as possible and provide all potential benefits to raw water customers.

To summarize, I have assessed the value of $2,644,503 for the District's 7,513 acre feet to rate base. This is the equivalent of $352 per acre foot, which is a historical or original value that is far less than the current value of $2,648 per acre foot as manifested in the District's most recent purchases. This brings the total rate base in 2018 to **$11,936,987.** I should note that no depreciation expense is calculated for these water rights.

Q. Why did you include working capital and inventories/prepaids balances?

A. These are standard components of rate base, as outlined by the AWWA in Manual M-1. The use of 45 days of working capital is based on FERC standards, and the amount of inventories/prepaids assigned to raw water mirrors the percentage of raw tater to total assets (14.4%). This total is left unchanged for the ten-year period. Finally, I note that it is possible to include Construction Work in Progress totals, but I do not have any reasonable estimates of those totals at this time.

Q. How did you determine the District's reasonable rate of return?

A. I based the rate of return on a combination of the District's current weighted average cost of capital, made up of debt and equity components. This is illustrated in **Table DVJ-10** below.

The first component, debt, is calculated by taking the weighted average of all the District's outstanding bonds. This is 2.77%. The equity component is based on similar equity components for utilities granted in Texas and other states. This total is estimated to be 7.02%. The final section of Table DVJ-10 calculates the weighted average of these two components, resulting in a rate of return of 6.12%.

In Table DVJ-9 I have used a rounded total of 6.0% for my return on investment calculation.

Table DVJ-10

LAGUNA MADRE WATER DISTRICT
RATE OF RETURN CALCULATION

1 Debt Component

Bond Issue	FY 2018 Ending	Interest Rate	Total System Weighted Interest
Series 2012 Tax Bonds	12,245,000	3.50%	1.75%
Seires 2016 Tax Bonds	2,110,000	2.29%	0.20%
Series 2015 Revenue Bond	4,885,000	2.64%	0.53%
Series 2016 Revenue Bond	5,255,000	1.37%	0.29%
Total Outstanding Debt	**24,495,000**		**2.77%**

Source: 2018 Financial Statements

2 Equity Component

Utility	Agency	Decision Year	%
Rio Concho Aviation	Texas	2017	8.48%
Cypress Gardens Mobile Home	Texas	2019	9.07%
Double Diamond Utility Co	Texas	2018	8.79%
Hampstead Area Water Co	NH	2018	9.95%
Arizona Water Company	AZ	2019	9.33%
Denver Water Report	CO	2014	7.97%
City of Lodi, WI Water Public Utility	WI	2019	6.71%
Average Texas Return on Equity			8.78%
Average five state Return on Equity			8.61%
Average Municipal Return on Equity			**7.92%**

3 Rate of Return Calculation

Rate Base Calculation	Total System	Source
System Assets net Depreciation	$ 68,750,866	Table DVJ-8
Working Capital Calculation:		
FY 2018 O&M	$ 7,129,408	Rate Model Water WW Summary
O&M $/day	19,533	
45 Days FERC Convention (no Lead/Lag Study)	878,968	
Materials, Inventories & Prepaid Expenses:		
Inventories FY 2018	$ 520,778	LMWD FY 2018 Financial Statement
Prepaid FY 2018	72,776	
Sub Total	$ 593,554	
Total Rate Base FY 2018	**$ 70,223,388**	

Capital Structure - Total System	$	Cost of Capital	Weighted %
Outstanding Debt	$ 24,495,000	2.77%	0.97%
Equity	45,728,388	7.92%	5.16%
Weighted Rate of Return	**70,223,388**		**6.12%**

Q. Now that you have described each element of the Supply/Transmission Raw Water rate, can you summarize the overall rate for us?

A. Yes. A summary of the recommended raw water rate for 2018 and 2019 is presented in **Table DVJ-11**. The table shows that I calculate the District's raw water rate to be $1.23 for FY 2018 and $1.22 for FY 2019.

Table DVJ-11

LAGUNA MADRE WATER DISTRICT
SUPPLY/TRANSMISSION RAW WATER RATE PER 1,000 GALLONS

		Rate Study		Revised	
		2018	2019	2018	2019
Operating Costs – Net of Capital Outlays		$ 580,934	$ 632,996	$ 544,977	$ 595,959
Administration Costs		131,788	144,856	131,788	144,856
Depreciation/Line Replacement		278,563	278,563	622,707	593,462
Return on Raw Water Line Investment		683,100	668,250	726,362	691,228
Total		**1,674,386**	**1,724,665**	**2,025,834**	**2,025,505**
Water Consumption Percent Increase		0.82%	0.80%	0.82%	0.80%
Total	1,637,161,000	1,650,653,678	1,663,901,111	1,650,653,678	1,663,901,111
Supply/Transmssion Cost		$ 1,674,386	$ 1,724,665	$ 2,025,834	$ 2,025,505
Raw Water Gallons		1,650,653,678	1,663,901,111	1,650,653,678	1,663,901,111

Q. Why does this raw water rate differ from the rate calculated in the 2018 rate study?

A. Like most rate studies, the report we prepared for the District in 2018 addressed a multitude of topics. These topics included, but were not limited to: forecast cost increases over the next decade, account and volume growth estimates, the impact of the District's capital improvement plan on rates and the cost of service, the development of a long-term rate plan, and the impact of converting multi-family rates to a per unit basis. The rate study itself is included as Appendix B to this prefiled testimony.

A calculation of the raw water rate was also completed as part of this study. However, revenues from the raw water rate are forecast to be **less than 1% of the District's total revenue base**. In an effort to minimize the cost to the District of preparing this study, as well

as to balance the level of effort with the other goals and objectives of this study, we utilized a series of reasonable estimates to calculate the raw water rate.

One of the primary purposes of this testimony is to test and verify the estimates we used in the rate study with a more detailed analysis.

Table DVJ-11 shows that operating and administration expenses are virtually identical to those presented in our rate study. However, we were not sufficiently subtracting out capital outlays from operating costs in the rate study, a nominal difference at best. Our estimates of water volumes transported to the District are unchanged as well.

The only significant difference between the rate study estimate of raw water costs and the calculations presented in this testimony is in our estimates of the rate base used and useful to the supply/transportation of raw water. In the rate study we estimated rate base to be $11,385,000 for FY 2018. Our more detailed analysis conducted for the purposes of this testimony reveals that our rate study estimate was excessively conservative, and the true value is $12,106,025 for FY 2018. Further, the rate study did not factor in the value of the District's raw water rights. The higher rate base value leads to a higher annual depreciation expense, as well as a higher return on investment.

The District based its adopted raw water rate on the 2019 rate of $1.04/1,000 gallons as calculated in our 2018 rate study. This made perfect sense, as the rate went into effect at the beginning of FY 2019. A more detailed analysis of the District's costs indicates that the true rate for FY 2019 should be $1.22/1,000 gallons.

Q. What is your forecast rate for the period 2019 – 2027?

A. My revised forecast is contained in **Table DVJ-12**. It shows that the District's raw water rate is forecast to decline nominally in each of the next ten years. However, in no year prior to 2027 is the cost or rate forecast to fall below the District's current rate of $1.04 per 1,000 gallons.

Further, this forecast is based on the assumption that the District will not have any significant capital repairs or investments in its raw water conveyance system in the next decade. District staff informs me that the District is considering a $25 million bond in 2020 that will be partially used to fund a reservoir and filtration system, as well as the replacement of a raw water transfer pump station. These investments would add millions of dollars to the rate base, and would significantly increase both annual depreciation expense and the return on investment. But at this time I am being conservative and not including these totals. I reserve the right to adjust this calculation at a later date if it becomes more certain that these investments will occur.

Further, I consider the rate of return to be very low, given near record low interest rates at this time. If interest rates increase, the District should consider adjusting its Rate of Return accordingly.

Table DVJ-12

LAGUNA MADRE WATER DISTRICT
SUPPLY/TRANSMISSION RAW WATER RATE PER 1,000 GALLONS

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Operating Costs – Net of Capital Outlays		$ 544,977	$ 595,959	$ 629,735	$ 654,568	$ 680,439	$ 707,397	$ 735,469	$ 764,769	$ 795,289	$ 827,106
Administration Costs		131,788	144,856	143,863	149,649	155,670	162,002	168,530	175,325	182,325	189,586
Depreciation/Line Replacement		622,707	593,462	593,462	588,834	586,186	561,211	561,211	527,902	526,054	501,094
Return on Raw Water Line Investment		726,362	691,228	655,862	620,759	585,704	552,277	518,861	487,453	456,168	413,734
Total		2,025,834	2,025,505	2,022,923	2,013,809	2,009,999	1,982,887	1,984,091	1,955,449	1,959,835	1,931,519
Water Consumption Percent Increase		0.82%	0.80%	0.78%	0.76%	0.75%	0.73%	0.71%	0.70%	0.68%	0.67%
WTP #1	-	-	-	-	-	-	-	-	-	-	-
WTP #2	1,637,161,000	1,650,653,678	1,663,901,111	1,676,919,659	1,689,723,814	1,702,326,498	1,714,739,298	1,726,972,657	1,739,036,034	1,750,938,027	1,762,686,489
Sub-Total	1,637,161,000	1,650,653,678	1,663,901,111	1,676,919,659	1,689,723,814	1,702,326,498	1,714,739,298	1,726,972,657	1,739,036,034	1,750,938,027	1,762,686,489
Supply/Transmission Cost		$ 2,025,834	$ 2,025,505	$ 2,022,923	$ 2,013,809	$ 2,009,999	$ 1,982,887	$ 1,984,091	$ 1,955,449	$ 1,959,835	$ 1,931,519
Raw Water Gallons		1,650,653,678	1,663,901,111	1,676,919,659	1,689,723,814	1,702,326,498	1,714,739,298	1,726,972,657	1,739,036,034	1,750,938,027	1,762,686,489

Q. If certain other utilities in the Rio Grande Valley charged less for raw water than the District, should this be relevant to the setting of the District's raw water rate?

A. No, for several reasons. First, many utilities charge less than their cost of service for water and wastewater service. They make the managerial decision to subsidize their water fund from the General Fund or other revenue sources. So just because another utility's rate is lower does not mean that the utility's costs are lower.

Second, it is not uncommon for utilities to implement cross-subsidies from one rate class to another. For example, many utilities charge higher rates to commercial customers and use these additional revenues to keep residential rates as low as possible. So it is entirely possible that a lower raw water rate charged by another utility is done deliberately as a "loss leader" or a matter of utility policy.

Third, it costs millions of dollars to build, repair, maintain and expand a water system. Certain utilities may choose to keep their rates artificially low by not undertaking the capital investments required to properly maintain their water systems. It results in a lower rate but a lesser quality of service, not to mention the increased risk of catastrophic failure.

Fourth, every utility's costs are unique, based on such factors as geographic features, supply issues, etc. The District's raw water conveyance system is a classic example of this. The District must build a complex, expensive system to convey raw water over 26 miles from its source to the District's boundaries. Many other utilities in the Rio Grande Valley are located on or very near to the Rio Grande itself. When the District has to invest $17.8 million in a conveyance system, its rate is bound to be higher than many other utilities in the Rio Grande Valley who are not faced with this burden. So if another city has a lower raw water rate, this fact is basically irrelevant if that other city did not have the challenges and expense of conveying its raw water 26 miles to its service territory.

The District's actual and recommended rate is based on the cost it incurs in producing and transporting raw water to its customer base. In my opinion it is fair, just and reasonable, and should be adopted by the Commission.

Q. Now that you have established the reasonableness of the District's rate of $1.04 per 1,000 gallons, what is the financial impact of this rate on the purchasers of water?

A. My opinion has always been that the dollars at stake in these proceedings are not a substantial portion of the District's revenue base. **Table DVJ-13** is a historical summary of raw water purchases by the District's major customers. As the table reveals, in no year were the District's sales of raw water greater than $100,000. This means that raw water sales represent less than 1.0% of the District's revenue base. The nominal amount of revenues certainly justifies my use of general assumptions in the rate study to set the raw water rate, general assumptions that have been verified as accurate and even conservative a result of this prefiled testimony. Details behind this table can be found in **Appendix F** of my prefiled testimony.

Table DVJ-13

LAGUNA MADRE WATER DISTRICT
RAW WATER SALES

Year	Total	SPI Golf Touchstone Golf	Port Isabel	Espiritu Santo
1996	$ 8,121	$ 8,121	$ -	$ -
1997	27,597	27,597	-	-
1998	33,420	33,420	-	-
1999	34,607	34,607	-	-
2000	57,730	57,730	-	-
2001	63,714	63,714	-	-
2002	61,955	61,955	-	-
2003	53,766	53,766	-	-
2004	69,039	69,039	-	-
2005	58,937	58,937	-	-
2006	81,292	81,292	-	-
2007	72,945	72,945	-	-
2008	79,386	79,386	-	-
2009	67,561	67,561	-	-
2010	42,232	42,232	-	-
2011	28,147	28,147	-	-
2012	26,981	26,981	-	-
2013	48,244	48,244	-	-
2014	47,824	47,824	-	-
2015	45,723	45,723	-	-
2016	87,071	84,791	2,281	-
2017	93,633	89,234	4,399	-
2018	89,340	88,770	570	-
2019	83,317	81,029	607	1,682

Q. Do you wish to provide any additional information as part of your testimony?

A. Yes. In its preliminary order, PUC staff included a list of additional issues to be addressed. These issues are outlined in **Appendix G** of my testimony. My intention is to provide a road map for how the information sought in these issues can be acquired by staff. Please note that I was unable to answer all questions, but I responded to those I could.

Q. Does this conclude your testimony?

A. Yes it does. However, I reserve the right to make any necessary adjustments during the course of these proceedings.

Dan V. Jackson. M.B.A.

Vice President and Principal in Charge

Education

Master of Business Administration, University of Chicago, 1984; Specialization in Finance/Accounting

Bachelor of Arts, University of Chicago, 1982; Major in Social Sciences
Dean's Honor List

Areas of Expertise

Rate Design
Cost of Service
Financial Forecasting
Strategic Planning
Utility/Company Valuation
Acquisition Analysis
Privatization Analysis
Economic Impact and Development
Expert Witness Testimony

Affiliations

Member, American Water Works Association

National Association for Business Economics

Commissioner, Community Development Commission, City of Dallas, Texas, 1993-1995

Other

The Forgotten Men – Fiction – Mediaguruz Publishing; Amazon.com

30 Years Experience

Mr. Jackson has 35 years experience as an international financial expert, having completed more than 300 water, wastewater, electric, gas, solid waste and stormwater rate/cost of service studies and long-term financial plans for clients in the USA and the Pacific region. He also has served as an expert witness in state court, federal court and before several public utility commissions. Mr. Jackson's prior experience includes positions with Deloitte and Touche, Arthur Andersen and Reed-Stowe and Company. In 1997, Mr. Jackson co-founded Economists.com LLC, which became an international consulting firm with offices in Dallas and Portland, Oregon. Willdan acquired Economists.com in 2015, and Mr. Jackson now serves as Vice President and Managing Principal. Mr. Jackson has given dozens of lectures and presentations before professional associations, and is also a published author; his novel **The Forgotten Men** is available on Amazon.com.

His experience is summarized below.

Water/Wastewater -- Rate Studies and Long Term Financial Plans for which Mr. Jackson served as Project Manager

Allen, TX	2007, 2009, 2012
Balch Springs, TX	2017
Cedar Hill, TX	2016, 2018
Celina, TX	2014, 2018, 2019
Coppell, TX	2017
Denton County FWSD 1A, TX	2017
Denton County FWSD 8C, TX	2018
DeSoto, TX	2005 -- 2019
Duncanville, TX	2002, 2003, 2007, 2013, 2014, 2018
Fairview, TX	2016, 2018
Frisco, TX	2017
Garland, TX	2009 –2012
Grand Prairie, TX	2019
Hackberry, TX	2006
Hutchins, TX	2017,2019
Kaufman, TX	1994
League City, TX	2019
Little Elm, TX	2001, 2004,2008-2016
McKinney, TX	2016, 2010, 2019
Mesquite, TX	2018
Midlothian, TX	2000, 2003, 2006, 2010, 2011, 2016
Oak Point, TX	2006, 2011
Parker, TX	2016
Plano, TX	2017
Princeton, TX	2012
Prosper, TX	2005, 2016, 2018
Richardson, TX	2016
Rowlett, TX	2009, 2017, 2019
Royse City, TX	2007, 2011,2018
Rockwall,TX	2018
Sachse, TX	2014
Venus, TX	2005, 2012
Waxahachie, TX	2012
Alamo Heights, TX	2018

Amarillo, TX	2017
Aqua Water Supply Corporation, TX	2003
Brady, TX	2016
Castroville, TX	2016,2018
Cibolo Creek Municipal Authority	2012, 2015
Donna, TX	2007, 2011, 2012, 2013,2015-2018
El Paso County WCID #4, TX	2005, 2007, 2010, 2011, 2015,2019
El Paso County Tornillo WCID, TX	2006, 2010
Groesbeck, TX	2001, 2004
Harker Heights, TX	2006
Hewitt, TX	2009 – 2015
Hondo, TX	2019
Jonah Special Utility District, TX	2006
Kempner WSC, TX	2014-2015
Laredo, TX	2018,2019
Laguna Madre Water District, TX	1991, 1994, 1999, 2005, 2014, 2018
La Villa, TX	2007
Leander, TX	2017-2018
League City, TX	2019
Liberty Hill, TX	2018,2019
Los Fresnos, TX	2007
McLendon-Chisholm, TX	2019
Mercedes, TX	2001, 2003
New Braunfels, TX	2019
North Fort Bend Water Authority, TX	2011, 2016
Paris, TX	1995
Port of Houston Authority, TX	2001
Raymondville, TX	2001
Robinson, TX	2012, 2014, 2015
Robstown, TX	2014, 2015
San Juan, TX	2019
Schertz, TX	2012 – 2019
Seguin, TX	2015 -- 2019
Selma, TX	2018
Schertz-Seguin Local Govt Corporation, TX	2010 – 2019
Sonora, TX	2012
Southmost Regional Water Authority, TX	2001
Tomball, TX	2018
Troup, TX	2006
Venus, TX	2005, 2012
West Harris County Regional Water Auth, TX	2003, 2006, 2010, 2011
Webb County, TX	2011
Whitehouse, TX	2008
Winona, TX	2009
Yancey Water Supply Corporation, TX	2005
Bisbee, AZ	2000 – 2005, 2018
Buckeye, AZ	2013, 2015, 2016
Camp Verde Sanitary District, AZ	2006, 2008
Carefree, AZ	2018
Casa Grande, AZ	2009
Chino Valley, AZ	2010-2018
Chloride Domestic Water Imp District, AZ	2003
Clarkdale, AZ	2005

Clifton, AZ	2018
Cottonwood, AZ	2004, 2007, 2009
Douglas, AZ	2009, 2011
Eagar, AZ	2006, 2011, 2012
Eloy, AZ	2007, 2011-2013
Florence, AZ	2008, 2012
Flowing Wells Improvement District, AZ	2008
Goodyear, AZ	2014, 2015,2019
Holbrook, AZ	2004
Jerome, AZ	2019
Marana, AZ	2008 – 2013, 2016
Miami, AZ	2010 – 2012, 2015
Nogales, AZ	2011, 2015-2016, 2018
Patagonia, AZ	1999, 2002
Payson, AZ	2006, 2010, 2012, 2013, 2014
Prescott, AZ	2008
Quartzsite, AZ	2004, 2009, 2011, 2012, 2018
Queen Creek, AZ	2004, 2007, 2015, 2016
Safford, AZ	2006
San Luis, AZ	2002, 2012, 2013, 2017, 2018
Show Low, AZ	2011, 2014
Somerton, AZ	1999, 2002, 2005-2010,2018
Tombstone, AZ	2001
Tonto Village DWID, AZ	2018
Wellton, AZ	2003
Willcox, AZ	2002
Winslow, AZ	2016, 2018
Yuma, AZ	2007, 2014, 2015, 2018
North Chicago, IL	2001,2005
Ada, OK	2014, 2015,2018
Chickasha, OK	2016
Edmond, OK	2010, 2015,2017,2018
Miami, OK	2009, 2014,2017
Pryor, OK	2016
Hot Springs, AR	2005, 2009-2018
North Little Rock Wastewater Utility, AR	1999, 2003, 2006, 2011-2015
Russellville, AR	2013,2014,2015,2019
Sarpy County, NE	2018
South Adams County WSD, CO	2013

Solid Waste and Stormwater – Rate Studies and Long Term Financial Plans

Duncanville, TX	2007
Hewitt, TX	2010
Mercedes, TX	1999
San Luis, AZ	2003, 2013
Somerton, AZ	2006
San Marcos, TX	2018
Hot Springs, AR	2011, 2012, 2013, 2016
Miami, OK	2009

Water/Wastewater –CCN/ System Valuations and Acquisitions

Avondale, AZ	2006
Buckeye, AZ	2013-2015
Casa Grande, AZ (private)	2015
Chino Valley, AZ	2006, 2016,2018
Cottonwood, AZ	2009, 2012
Clarksdale, AZ	2009
Florence, AZ	2007, 2014
Marana, AZ	2009, 2010
Pine Strawberry Water Imp District, AZ	2009
Prescott, AZ	2006
Prescott Valley, AZ	1998
Queen Creek, AZ	2008, 2011
Show Low, AZ	2010, 2011
Aubrey, TX	2015
Arlington, TX	1999, 2001
Celina, TX	2006, 2015
Forney Lake WSC, TX	2016
Gunter, TX	2006
Kempner WSC, TX	2016
Taylor, TX	1999
Whitehouse, TX	2006
Van Alstyne, TX	2019
Rockwall, TX	2005
Trinity Water Reserve, TX	2000
North Chicago, IL	2001
North Little Rock WWU, AR	2015

Water/Wastewater – Impact Fee Studies

East Medina County Special Utility District, TX	2000
Cibolo Creek Municipal Authority, TX	2015
Harlingen, TX	2005
Laguna Madre Water District, TX	1993, 1996, 2000, 2003
Los Fresnos, TX	2006
Mesquite, TX	1996
San Luis, AZ	2002
Marana, AZ	2011- 2014
Wellton, AZ	2003
Prescott, AZ	2007
Yuma, AZ	2004, 2007, 2016
Hot Springs, AR	2005, 2009, 2016

Regulated Utilities – Pacific Region

Water Authority of Fiji – Water and Wastewater Tariff Review, 2016. Tariff Review Update and Tariff Application, 2019. NOTE: projects funded by PRIF/ADB.

Palau Public Utilities Corporation -- Electric tariff study, 2008. Electric, Water and Wastewater Tariff Study, 2018. NOTE: projects funded by PRIF/ADB.

Republic of Kiribati – Water and Wastewater Cost of Service and Tariff Review Study, 2019.

Commonwealth Utilities Corporation Saipan – Ongoing water, wastewater and electric rate and financial consulting assistance, 2005-2018. 15 Separate engagements over the past decade.

American Samoa Power Authority -- Electric, water, wastewater and solid waste rate study, 2009, 2014; Water and Wastewater Bond Financing Assistance, 2016.

EPC, Independent State of Samoa - Electric cost of service and tariff study, 2013.

Guam Power Authority – Electric Load Forecast Study, 2011.

Water/Wastewater – Other Studies

City of Paris, TX – Campbell's Soup Co. wholesale contract review/negotiations.

City of Conroe, TX – Evaluation of proposed long-term wholesale contract.

Cities of Bellmead, Woodway and Hewitt, TX – Least cost alternative analysis and assistance with wholesale contract negotiations with City of Waco.

City of Lubbock, TX – Analysis of reasonableness of rates for Franklin Water System, January 2002.

City of Rockwall, TX – Wholesale contract review, 2005.

City of Miami, OK – Non-rate revenue study, 2010.

Town of Payson, AZ – Financial feasibility and economic impact study of C.C. Cragin Reservoir, 2011.

City of Duncanville, TX – Water and wastewater cost allocation study, 2002.

City of Whitehouse, TX – Economic analysis of potential acquisition of a water supply corporation, 2006.

City of Midlothian, TX – Drought management plans, 2001.

City of Midlothian, TX – Assistance with wholesale contract negotiations, 2000-2001.

City of Arlington, TX – Cost of service study for non water/sewer revenues, 1997.

City of Arlington, TX – Lease vs. purchase analysis of city fixed assets, 1998.

City of Donna, TX – Water and wastewater affordability analysis, 2005.

Southmost Regional Water Authority – Economic and financial impact of proposed desalination treatment plant, 2001.

Texas Water Development Board Region M – Financial feasibility analysis of water resource alternatives, 2006.

Laguna Madre Water District – Lost/unaccounted for water study, 1992.

Schertz Seguin Local Government Corporation – Assistance in contract negotiations with SAWS, 2010.

California-American Water Company – Reasonableness of rate structure for City of Thousand Oaks, 2003.

California-American Water Company – Reasonableness of rate structure for City of Felton, 2004.

Forsyth County, GA – Business plan with extensive recommendations for managing

unprecedented growth in volume and customer connections. Ten-year projection of operating income, 1998.

City of Lakeland, FL – Valuation of wastewater reuse alternatives over 20-year timeframe.

Border Environment Cooperation Commission and City of Bisbee, AZ – Wastewater system improvements plan, 2003.

Water Infrastructure Finance Authority of Arizona – Evaluation of 40-year wastewater construction financing plan for Lake Havasu City, 2002.

Water Infrastructure Finance Authority of Arizona – Comprehensive residential water and wastewater rate survey for the state of Arizona, 2004-2008.

City of Plano, TX – evaluation of long-term contract with North Texas Municipal Water District, 2015-2016.

Expert Witness Testimony

City of Arlington, TX – Seven separate cost of service analyses and testimony in wholesale contract rate proceedings before TNRCC. Largest ongoing wastewater rate dispute in Texas history, 1990-1994.

Cameron County Fresh Water Supply District No. 1 vs. Town of South Padre Island (TNRCC Docket 30346-W) – Expert testimony on reasonableness of rate structure, 1992.

Cameron County Fresh Water Supply District No. 1 vs. Sheraton Hotel/Outdoor Resorts (TNRCC Docket 95-0432-UCR) – Expert testimony on reasonableness of rate structure, 1993.

City of Celina, TX (SOAH Docket 2003-0762-DIS) – Expert testimony on the proposed creation of a Municipal Utility District, 2004.

East Medina County Special Utility District (SOAH Docket 582-02-1255) – Expert testimony on CCN application, 2003.

East Medina County Special Utility District (SOAH Docket 582-04-1012) – Expert testimony on CCN application, 2004.

City of Karnes City, TX – Expert testimony on valuation of CCN before the Texas Commission on Environmental Quality, 2009.

City of Princeton, TX (SOAH Docket 582-06-1641 and TCEQ Docket 2006-0044-UCR) – Expert testimony on ability to serve proposed service territory, 2007.

Town of Little Elm, TX (SOAH Docket 582-01-1618) – Expert testimony on reasonableness of rate structure, 2001.

Schertz Seguin Local Government Corporation – Expert testimony addressing application of San Antonio Water System for groundwater permits for Gonzalez County UWCD, 2009.

City of Ruidoso, NM – Expert testimony on reasonableness of Wastewater Rates, 2010.

City of Hot Springs, AR – Expert witness testimony on Reasonableness of Solid Waste Rates, 2010.

Dallas County Water Control and Improvement District No. 6 (TNRCC Docket 95-0295-MWD) – Hearing on the merits for proposed wastewater treatment plant permit, 1995.

Commonwealth Utilities Corporation Saipan -- Expert testimony before Commonwealth Public Utilities Commission on reasonableness of rate structure, 2010-2015.

City of Mesquite, Texas vs. Southwestern Bell Telephone Company (No. 3-89-0115-T, U.S. Federal Court Northern Texas) -- 18 year estimate of revenues excluded from municipal franchise fees by SWB. Expert testimony on SWB accounting and franchise policies and Discovery disputes, 1991-1995.

City of Port Arthur, et. al., vs. Southwestern Bell Telephone Company (No. D-142,176, 136th

Judicial District Court of Beaumont, Texas) -- 20 year estimate of revenues excluded from municipal franchise fees by SWB. Expert testimony on SWB accounting and franchise policies. Case settled on first day of trial for approximately $30 million, 1993-1995.

Southwestern Bell Telephone Company vs. City of Arlington, Texas (No. 3:98-CV-0844-X, U.S. Federal Court Northern Texas) -- 15 year estimate of access revenues excluded from municipal franchise fees by SWB. Expert testimony on SWB accounting and franchise policies, 1996.

Metro-Link Telecom vs. Southwestern Bell Telephone Company (No. 89-CV-0240, 56th Judicial District Court Galveston County Texas) -- 20 year pro forma model calculating lost revenue from the cancellation of a trunk line leasing contract. The model formed the basis of a $5.7 million judgment against SWB, 1994

Complaint of the City of Denton against GTE Southwest, Inc. (PUC Docket 14152), 1994.

GTE vs. City of Denton (No. 95-50259-367, 367th Judicial District Court of Denton County, Texas) -- 10 year estimate of revenues excluded from municipal franchise fees by GTE, 1994-1996.

MAS vs. City of Denton, Texas (No. 99-50263-367, Judicial District Court of Denton County, Texas) – Testimony on reasonableness of franchise fee payment calculations.

Regulated Utilities – USA

City of Miami, OK – Electric, water and wastewater and electric rate study, 2006.

Bonneville Power Administration ---Participation in Average System Cost (ASC) program, including proposed changes in ASC methodology, 1988-1990.

Houston Lighting & Power -- Feasibility/Prudence analysis of South Texas Nuclear Project vs. alternate forms of energy. Analysis formed the basis of partner's expert testimony before the Public Utility Commission of Texas, 1988.

Kansas Power & Light – Analysis of proposed merger with two separate companies, 1988.

Greenville Electric Utility System- Development of short-term cash investment policy in accordance with state law, 1989.

Horizon Communications– Business plan development, 2000.

City of Mercedes, TX – Economic Impact of New City Projects, 2000.

Telecommunications

City of Dallas, TX – Forecast of economic and financial construction and non-construction damages resulting from franchise's failure to fulfill terms of agreement, 2004

City of Dallas, TX ---Financial evaluation and forecast of alternative wireless services contracts, 2005.

City of Dallas, TX --Evaluation and advice concerning VOIP contract with SBC, 2003

Voice Web Corporation-- Financial forecast and strategic plan for CLEC development, 2001

United Telephone of Ohio -- Pro forma forecast model forecasting the impact on financial statements of proposed changes in state telecommunications regulatory structures. Model was used as the basis for privatization bids for Argentine and Puerto Rican Telephone Companies, 1988.

Bonneville Power Administration – Evaluation and financial forecast of long-term fiber optic leasing operation, 1999.

Bonneville Power Administration – Economics of Fiber Analysis, 1999.

City of Portland, Oregon –Municipal Franchise Fee Review, 2000.

US West, Inc. – Valuation study and financial forecast of headquarters operation. Used as basis for Partner's allocated cost testimony before the Public Utility Commission in Washington and

Utah.

Virgin Islands Telephone Company -- Business Interruption study assessing impact of Hurricane Hugo on company operations, outside plant, and total revenue. Included valuation and 10 year financial forecast of revenues and expenses, 1990.

Star-Tel -- Estimate of revenues lost due to rival's unfair business practices, 1995.

Cities of Denton and Carrollton, Texas -- Review of municipal franchise fee payments by GTE, 1994-1996.

Winstar Gateway Network -- forecast of average lifespan per ANI for specific customer classes.

Advisory Commission on State Emergency Communications -- Review of E911 Equalization Surcharge Payments by AT&T, ATC Satelco, and Lake Dallas Telephone Company.

Northern Telecom -- Projection of potential revenue generated from the long-term lease of DMS-100 switching units to Pacific Bell.

Publications/Presentations/Seminars

- ***The Forgotten Men (fiction)*** – Mediaguruz Publishing, 2012.
- *Raising Water and Wastewater Rates – How to Maximize Revenues and Minimize Headaches – Arizona Small Utilities Association, August 2002; Texas Section AWWA, April 2003*
  Wholesale Providers and the Duty to Serve: A Case Study – Water Environment Federation, September 1996.
- *Lease vs. Purchase – A Guideline for the Public Sector* – Texas Town and City, March 1998•.
- *An Introduction to Lease vs. Purchase* – Texas City Managers Association – May 1998.
- *Technische Universiteit Delft* – Delft Netherlands -- Annual Infrastructure Conference – May 2000, 2001.
- *The US Water Industry – A Study in the Limits of Privatization* -- Technische Universiteit Delft – Delft Netherlands – March 2007.
- *The New Information Economy: Opportunity or Threat to the Rio Grande Valley?* – Rio Grande Valley Economic Summit -- Oct 2000.
- *The Financial Benefits of Regionalization – A Case Study* – Texas Water Development Symposium – September 2010.
- *Developing Conservation Water Rates Without Sacrificing Revenue* – TWCA Conference, San Antonio Texas, October 2012.
- *Water Rates – Challenges for Pacific Utilities – Pacific Water and Wastes Conference, American Samoa, September 2014.*

Daniel D. Lanning

Senior Consultant and Financial Analyst

Education
Bachelor of Science, Accounting, Bentley University, Waltham Massachusetts

Areas of Expertise
Management Consulting
Impact Fee Studies
Financial Analysis
Utility Rate and Cost Studies
Feasibility and Financial Analysis and Reporting
Expert Witness
Utility Regulation

Affiliations
American Water Works Association (AWWA)
Texas Section American Water Works Association

Societies
Member: AWWA Rates and Charges Committee, Accounting and Finance Subcommittee;
Member Task Force Revising AWWA Manual M-1 –Water Rates and Charges;
Member Task Force to prepare AWWA Manual M-52 – Developing Rates for Small Systems;
Member Task Force to edit/revise AWWA Manual M-29 – Fundamentals of Water Utility Capital Financing
Water Environment Federation -- Member Financing and Charges for Wastewater Systems Task Force that prepared WEF Manual of Practice No. 27, Financing and Charges for Wastewater Systems.

Over 35 Years of Utility Financial Experience

Mr. Lanning is a management consultant with over 35 years of domestic and international experience in utility financial/cost of service studies and energy efficiency and procurement matters. As a consultant, he has served as project manager, task leader, and key staff person on cost of service, impact fee, asset valuation, financial feasibility and management studies for public and private utilities. He has presented testimony before local and federal courts and state regulatory agencies supporting positions utility cost of service issues. He has served for the past decade on the AWWA Rates and Charges Committee. Prior to his consulting career, *Mr. Lanning served as a member of the New Hampshire Public Utilities Commission staff* where he held several positions including Assistant Finance Director, Chief Auditor, and a PUC Examiner.

Water/Wastewater – Cost of Service and Rate Studies
Mr. Lanning has developed and updated over 150 water, wastewater cost of service, rate and long-term financial planning studies for domestic and international government and private (IOU) entities. These studies regularly involve evaluating utility capital improvement plans, capital financing alternatives, operating statistics and budget reporting. Mr. Lanning also has significant experience designing computer financial models for utilities and other government entities. Example projects include: San Luis, AZ (W/WW and Solid Waste Rates); McKinney, TX (W/WW Rates); Richardson, TX (W/WW Rates); Richwood, TX (Wholesale Rate Design); and USAID (Bosnia and Herzegovina sector wide financial strengthening of water/ wastewater utilities).

Stormwater and Solid Waste – Rate Studies and Long-term Financial Plans
Mr. Lanning has led and participated in numerous important stormwater and solid waste financial, rate and cost of service studies and projects. These studies included developing fees for retail solid waste, tipping fees for landfills, and developing stormwater and wastewater fees utilizing impervious area data.

Water/Wastewater - Impact Fees
Mr. Lanning has prepared impact/capacity fee analyses in Texas, Arizona, and Massachusetts. Recent example impact/capacity fee studies include: Yuma, AZ; Marana, AZ; Seguin, TX; and Cibolo Creek Municipal Authority, TX. These studies required strict adherence with state statutes that include preparation of specific reports and participation in public meetings.

Water/Wastewater – Asset Valuation
Mr. Lanning has prepared numerous asset valuations for water and wastewater utilities. These studies were used as guide for asset sale/purchases or as part of cost of service studies that develop rates for wholesale customers.

Energy – Procurement and Energy Management Project Feasibility
Mr. Lanning has been a key participant in several energy deregulation and comprehensive energy management projects. These projects include evaluating energy cost savings from proposed projects and developing electric procurement strategies/policies. Example studies include: Dallas, TX and Houston, TX.

Professional Experience

Mr. Lanning has led and participated in over 100 important financial, rate and Impact Fee studies and projects as a consultant. A sample list of water and wastewater rate and solid waste analysis projects include:

San Luis, AZ (W/WW and Solid Waste Rates)

Yuma, AZ (W/WW Capacity/Impact Fees, Solid Waste)

Winslow, AZ (W/WW Rates and Bond Feasibility Study)

Douglas, AZ (Solid Waste Rates)

Marana, AZ (W/WW Impact Fees)

Town of Camp Verde, AZ (W/WW Rates)

Nogales, AZ (Water Cost Analysis)

League City, TX (W/WW Rate Study)

Rowlett, TX (W/WW Rate Study)

Royse City, TX (W/WW Rate Study)

San Juan, TX (W/WW Rate Study)

Grand Prairie, TX (W/WW Rate Revenue Requirement Study)

McKinney, TX (W/WW Rates)

Frisco, TX (W/WW Rates)

Amarillo TX (W/WW Rates)

Laredo, TX (W/WW Rates)

Brady, TX (W/WW Rates)

Celina, TX (W/WW Rate Study)

Rockwall, TX (W/WW Rates; Asset Valuation)

Los Fresnos, TX (W/WW Rates)

Balch Springs, TX (W/WW Rates)

Hutchins, TX (W/WW Rates)

University Park, TX (W/WW Rates)

Highland Park, TX (W/WW Rates)

City of Schertz TX (W/WW Rates)

Beeville, TX (W/WW Rates)

West Harris Regional Water Authority, TX (Wholesale Water Rates)

Plano, Garland, Richardson, Mesquite, TX (Evaluation of Wholesale Water Contract)

Midlothian, TX (W/WW Rates)

Fairview, TX (W/WW Rates)

Richardson, TX (W/WW Rates)

Royse City, TX (W/WW Rates)

Schertz Seguin Local Government Corporation (Wholesale W Rates)

Seguin, TX (W/WW Impact Fee)

Liberty Hill, TX ((W/WW Impact Fees)

Hot Springs, AR (W/WW Impact Fees and Non-Revenue Water Audit)

Cibolo Creek Municipal Authority, TX (W/WW Impact Fees and WW Rate Analysis)

Fort Worth, TX (W/WW Impact Fees)

City of North Little Rock, AR (Utility

The City of Westminster, Colorado (W/WW Rates)

Duluth, MN (WW Rates)

City of Lansing, MI (CSO Value Engineering Study)

City of Oswego, NY (W/WW Rates)

City of New Bedford, MA (CSO Affordability and SRF Funding Application)

Brewer Water District, ME (W Rates)

Los Angeles Department of Water and Power (Integrated Resource Plan – Financial Model)

City of Fort Worth, TX (Wholesale Rates & Contract Negotiations)

Falls Church, VA (Utility Asset Valuation)

USAID (Bosnia and Herzegovina sector wide financial strengthening of water/ wastewater utilities)

Waller Lansden Dortch, & Davis, LLP (Representing Trustee of Jefferson County, AL sewer debt)

OK Foods Inc., Muldrow, OK (W Rates)

Corporation (IFC) and Egyptian Ministry of Housing, Utilities & Urban Developments (Purchase Feasibility Study)

City of Nashua, NH (Negotiation Support - Purchase of Private Water System)

Professional Activities

- Water Rates in New England - A Decade of State Regulatory Decisions – North Atlantic Water Workers Symposium, 1994.
- SDWA Impact on Rates -- Joint New England Water Works Association and New Hampshire Water Works Association Meeting, January 1995.
- Developing Performance Measures -- Round Table Moderator; New England Water Works Association - 114th Annual Conference, 1995.
- Benchmarking Performance Measures: What Are They? Why Use Them? Round Table Moderator; New England Water Works Association - 115th Annual Conference, 1996.
- Water Utility Rate Making -- Seminar Moderator; New England Water Works Association one day seminar, 1996, 1997, 1998.
- Data Requirements: Computer and Billing Systems -- Session Presenter; NEWWA seminar "Water Utility Rate Making," 1996.
- The Breakup of Power in New England: Changes in the Rules of the Game -- J.S. Kowalczyk and D.D. Lanning. New England Health Care Engineers Conference, 1997
- The Energy Supermarket -- J.S. Kowalczyk and D.D. Lanning, Rhode Island Water Works Association, December 1997.
- Electric Utility Restructuring -- Round Table Moderator; New England Water Works Association - 117th Annual Conference, 1998.
- Cost of Service vs. Reality -- Presentation, New York Water Works Association, 1998.
- Contributions In Aid of Construction - Past, Present and Future -- AWWA Conference, June 2000, Denver CO
- Is Deregulation An Alternative Means To Rate Stability? Southwest Section AWWA Annual Conference, Boiser City, LA, September 2000
- Charting a Course through the Deregulated Energy Environment: The City of Dallas Experience -- R. R. Rogers, J. Dillard, D. D. Lanning; AWWA/WEF Joint Management Conference, Portland OR; February, 2001
- Rate 101 Seminar – Fundamentals of Ratemaking – Seminar Moderator – Texas AWWA one day seminar, October, 2002
- User Fees: Cause and Effect – Presenter – 2003 Arkansas Water Works and Water Environment Association Conference Short School "Visionaries for Arkansas", April, 2003
- The Road to SB5 Compliance/Sustainable Energy Management, Piecing the Puzzle Together in Dallas -- J. Dillard, F. Fakheri, D. Long, D. Lanning (Presenter) Texas American Water Works Association, Texas Water 2003, April, 2003User Fees: Cause and Effect – Presenter – 2003 Arkansas Water Works and Water Environment Association Conference Short School "Visionaries for Arkansas", April, 2003
- How Utility Rates and Charges Are Determined – Presenter – Kansas Water Environmental Association, 58th Annual Conference – April, 2003
- Rate 101 Seminar – Fundamentals of Water and Wastewater Rates – Government Financial Officers Association of Texas 2004 Annual Conference – April 2004 – Presenter ("Revenue Requirements") and Lead Moderator.
- Alternative Financing Available for Water/Wastewater Utility Energy Saving Improvements: Two Examples From New York -- C. Korzenko and D. Lanning, (co-presenters) American Water Works Association (AWWA) 2005 Annual Conference and Exposition – San Francisco.

- Rate 101 Seminar – Fundamentals of Water and Wastewater Rates – Government Financial Officers Association of Texas 2005 Fall Conference – November 2005 – Presenter ("Revenue Requirements") and Lead Moderator.
- "Planning and Financing Water and Wastewater Utility Infrastructure Replacement" – S. Kuhr, G. Nestel, H. Reynolds and D. Lanning – Underground Infrastructure Management - magazine and web site – five articles published between 2005 and 2008.
- "Now That I Must Do It, How Do I Do It? What You Need to Know About the Fundamentals of Water Utility Capital Finance - An Introduction to AWWA's New and Improved Manual M29", American Water Works Association (AWWA) conference ACE 07 Workshop June 24, 2007 – Workshop Presentater - "Financial Requirements Planning Process".
- "Everything You Ever Wanted to Know About Finance Management but were Afraid to Ask: An Overview of the New AWWA Financial Management for Water Utilities Manual," American Water Works Conference (AWWA) ACE 08 Workshop, June 8, 2008 – Workshop Presenter – "Operational and Capital Planning, Capital Assets, CIP and Planning, Benchmarking, Strategic Financial Planning".
- "Inside/Outside Rates: Refinements in the M1 Manual" Eric Rothstein and Dan Lanning; AWWA 2012 Annual Conference and Exhibits (ACE12) Rate and Charges Committee Session "AWWA's Updated M1 Manual - Perspectives on a Changing World"; June 13, 2012.

Testimony Experience

The following is a list of testimony experience Mr. Lanning has as a commission staff member:

- Southern New Hampshire Water Co. NH – Revenue Requirement
- Pennichuck Water Works NH – Revenue Requirement
- Manchester Water Works NH – System Development Charge
- Concord Steam Corp. NH – Revenue Requirement
- Manchester Gas Company NH – Revenue Requirement
- Public Service Company of New Hampshire – Fuel Adjustment Charge
- Gas Service Inc. NH – Revenue Requirement

The following is a list of testimony experience Mr. Lanning has as a consultant:

- Kent County Water Authority, RI – Fire Protection
- Lakes Region Water Company, NH – Rates
- Tilton Northfield Aqueduct, NH – Rates
- Five Town Water Study Committee, NH – Cost of Service Study, Intervention in Manchester Water Works Rate Filing
- Pittsfield Aqueduct Company NH – Rates and Financing
- Carleton Trust Water Systems NH – Asset Valuation and Rates
- Brewer Water District, ME – Rates
- Garland Power and Light, TX – Petition for Transmission Improvements - Competitive Renewable Energy Zone

Societies

- American Water Works Association; Member: Rates and Charges Committee, Accounting and Finance Subcommittee; **Member Task Force revising AWWA Manual M-1 –Water Rates and Charges; Member Task Force to prepare AWWA Manual M-52 – Developing Rates for Small Systems; Member Task Force to edit/revise AWWA Manual M-29 – Fundamentals of Water Utility Capital Financing.**
- Water Environment Federation: **Member Financing and Charges for Wastewater Systems Task Force that prepared WEF Manual of Practice No. 27, Financing And Charges For Wastewater Systems.**

LAGUNA MADRE WATER DISTRICT

2018

LAGUNA MADRE WATER DISTRICT (LMWD)

WATER AND WASTEWATER RATE STUDY AND FINANCIAL FORECAST

WILLDAN

LAGUNA MADRE WATER DISTRICT

2018 WATER AND WASTEWATER RATE STUDY AND FINANCIAL FORECAST

FINAL
AUGUST 2018

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LAGUNA MADRE WATER DISTRICT
WATER AND WASTEWATER RATE STUDY
AND LONG-TERM FINANCIAL PLAN

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Acknowledgements

During the course of this study, several individuals provided invaluable perspective and considerable time and effort in assisting the project team. These professionals included the District's Board of Directors, Carlos Galvan, Charles Ortiz, Robert Gomez, Daisy Bodden, Eduardo Salazar and Minnie Mata. The participation of these individuals was critical to the success of this study, and the project team owes a debt of gratitude to them for their hard work, dedication and professionalism.

The project team has relied upon the extensive data supplied by the District. Thus, the integrity of the study is largely dependent upon the accuracy of this data. Every effort has been made by the project team to validate and confirm the information contained herein prior to the preparation of the final study documents. **This report presents no assurance or guarantee that the forecast contained herein will be consistent with actual results or performances.** These represent forecasts based on a series of assumptions about future behavior, and are not guarantees. Any changes in assumptions or actual events may result in significant revisions to the forecast and its conclusions. The cash flow projections and debt service coverage calculations are not intended to present overall financial positions, results of operations, and/or cash flows for the periods indicated, in conformity with guidelines for presentation of a forecast established by the American Institute of Certified Public Accountants.

Executive Summary

Executive Summary

In January 2018 the Laguna Madre Water District ("the District") engaged **Willdan Financial Services** (formerly **Economists.com**) to prepare a water and wastewater rate study and long-term financial plan. Over the past decade the District has faced many operational and financial challenges, including:

- The growth of hotels, restaurants and other tourist-related accounts in its service area
- The increasing scarcity of water supply and the persistent drought in the Rio Grande Valley
- The need to fund a significant level of capital improvements to ensure the continued high quality of service

The purpose of this study is to assess the District's current rate structure and its ability to recover sufficient revenues to finance operating and capital expenditures over the next decade.

Rate Comparison

In order to illustrate the relative burden of the District's ratepayers, the District's water and wastewater rates were compared to surrounding communities in the Rio Grande Valley. The number of representative cities was limited to allow the data in this analysis to be manageable and easily analyzed.

Table ES-1 and **ES-2** summarize the data collected for this analysis. The comparison is for 10,000 gallons of water usage, and 5,000 gallons of wastewater usage. These totals are standard for rate comparisons in Texas, although it should be noted that under the District's rate charging methodology, 10,000 gallons of water results in 7,500 gallons of wastewater charge if the customer does not have an additional irrigation meter.

The tables reveal that ratepayers in the District continue to pay among the lowest rates in the Rio Grande Valley for residential water and wastewater service. The District's ratepayers also pay significantly less than the state average for water and wastewater service.

Finally, widely-respected organizations such as the *American Water Works Association Research Foundation* have stated that they expect the average water and wastewater rate to rise 5.0% annually over the next decade. Increasing costs will continue to place pressure on water and wastewater managers throughout the United States to adjust rates accordingly.

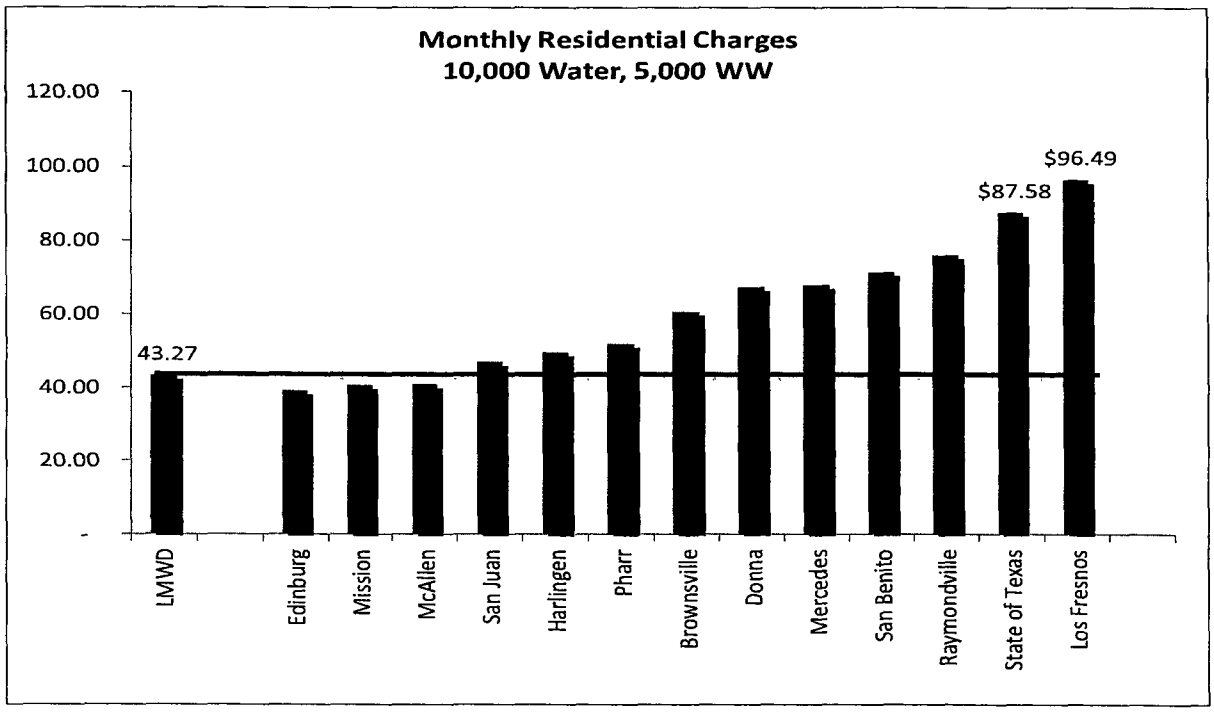
Table ES-1

LAGUNA MADRE WATER DISTRICT
COMPARISON OF MONTHLY RESIDENTIAL CHARGES

City	10,000 Water	5,000 WW	Total
LMWD	27.08	16.19	43.27
Brownsville	36.03	24.63	60.66
Donna	42.78	24.41	67.19
Edinburg	28.21	11.11	39.32
Harlingen	25.03	24.03	49.06
Los Fresnos	57.51	38.98	96.49
McAllen	22.55	18.50	41.05
Mercedes	36.89	31.11	68.00
Mission	25.42	15.20	40.62
Pharr	32.51	19.45	51.96
Raymondville	52.53	23.36	75.89
San Benito	40.82	30.68	71.50
San Juan	28.55	18.60	47.15
State of Texas*	58.55	29.03	87.58

* Texas Municipal League 2017 Water and Wastewater Rate Survey

Table ES-2



Customers and Meters – Current Year and Forecast

According to standard utility ratemaking methodology, in order to allocate revenue requirements equitably among system users, customers must be classified into relatively homogeneous groups with similar usage characteristics or service demands. Costs are then allocated to the customer classes in proportion to each class' usage characteristics.

As stated in Section I of this report, the District defines customer classes by meter size, beginning with 5/8" and including 1", 2", 4" and 6" meters. Account growth was robust during the period 2000-2010, but there has been decline in growth between 2011 and 2015. This has reversed itself and since 2015 there has been a moderate growth in customers which is anticipated to continue through the next 10 years.

Table ES-3 presents the project team's ten-year forecast of future water and wastewater connections by defined customer class. The tables reveal that the project team is forecasting a modest growth rate of approximately 50 new accounts per year. The totals are the similar for water and wastewater because of the expectation that all future accounts will have both water and wastewater service. The tables further show that water accounts are forecast to reach a total of 7,231 by FY 2027 or an annual growth rate of 0.72%. Wastewater accounts are forecast to reach a total of 6,405 by FY 2025, or an annual growth rate of 0.64%. The addition of these new connections will result in both non-recurring connection fees and increasing monthly water revenues.

Table ES-3

LAGUNA MADRE WATER DISTRICT
FORECAST TOTAL ACCOUNTS
WATER and WASTEWATER Customer Classes

	5/8" Meter	1" Meter	2" Meter	4" Meter	6" Meter	8" Meter	Total
2016	4,709	1,442	295	72	32	1	6,550
2017	4,785	1,461	295	73	32	1	6,646
Mar17- Feb18	4,809	1,474	296	72	32	1	6,684
2018	4,875	1,494	302	75	34	1	6,781
2019	4,910	1,499	307	78	36	1	6,831
2020	4,945	1,504	312	81	38	1	6,881
2021	4,980	1,509	317	84	40	1	6,931
2022	5,015	1,514	322	87	42	1	6,981
2023	5,050	1,519	327	90	44	1	7,031
2024	5,085	1,524	332	93	46	1	7,081
2025	5,120	1,529	337	96	48	1	7,131
2026	5,155	1,534	342	99	50	1	7,181
2027	5,190	1,539	347	102	52	1	7,231
	WASTEWATER Total Accounts						
2016	4,333	1,153	280	71	31	1	5,869
2017	4,393	1,166	280	72	31	1	5,943
Mar17- Feb18	4,410	1,175	281	71	31	1	5,969
2018	4,460	1,190	287	74	33	1	6,045
2019	4,485	1,195	292	77	35	1	6,085
2020	4,510	1,200	297	80	37	1	6,125
2021	4,535	1,205	302	83	39	1	6,165
2022	4,560	1,210	307	86	41	1	6,205
2023	4,585	1,215	312	89	43	1	6,245
2024	4,610	1,220	317	92	45	1	6,285
2025	4,635	1,225	322	95	47	1	6,325
2026	4,660	1,230	327	98	49	1	6,365
2027	4,685	1,235	332	101	51	1	6,405

Customer Water and Wastewater Usage – Historical and Forecast

Table ES-4 presents the District's historical and forecast water consumption and billing units. Usage is forecast to increase nominally in each year of the next decade.

Table ES-4

LAGUNA MADRE WATER DISTRICT
FORECAST TOTAL BILLED CONSUMPTION NET OF MINIMUMS

	5/8" Meter	1" Meter	2" Meter	4" Meter	6" Meter	8" Meter	Total
2016	337,245,600	456,851,900	96,217,200	184,887,400	93,509,400	300	1,168,711,800
2017	360,368,400	484,239,000	113,043,500	206,778,100	99,994,800	100	1,264,423,900
Mar17- Feb18	353,935,000	485,153,500	107,657,000	208,898,700	94,387,200	100	1,250,031,500
2018	355,214,724	485,968,063	108,563,204	213,250,756	97,336,800	100	1,260,333,646
2019	356,489,853	486,781,262	109,461,906	217,515,771	100,199,647	100	1,270,448,540
2020	357,760,438	487,593,106	110,353,289	221,698,767	102,982,971	100	1,280,388,671
2021	359,026,527	488,403,599	111,237,530	225,804,300	105,693,049	100	1,290,165,105
2022	360,288,166	489,212,750	112,114,798	229,836,519	108,335,375	100	1,299,787,709
2023	361,545,403	490,020,565	112,985,255	233,799,218	110,914,789	100	1,309,265,330
2024	362,798,283	490,827,051	113,849,056	237,695,872	113,435,579	100	1,318,605,941
2025	364,046,852	491,632,213	114,706,353	241,529,676	115,901,570	100	1,327,816,764
2026	365,291,152	492,436,059	115,557,291	245,303,577	118,316,186	100	1,336,904,366
2027	366,531,229	493,238,595	116,402,008	249,020,298	120,682,510	100	1,345,874,740
	WASTEWATER Billing Units						
2018	224,961,846	313,267,536	69,748,883	153,997,429	55,209,368	75	817,185,135
2019	226,222,842	314,583,786	70,964,020	160,240,568	58,555,390	75	830,566,681
2020	227,483,839	315,900,036	72,179,157	166,483,707	61,901,412	75	843,948,226
2021	228,744,836	317,216,286	73,394,295	172,726,846	65,247,435	75	857,329,772
2022	230,005,833	318,532,536	74,609,432	178,969,985	68,593,457	75	870,711,318
2023	231,266,830	319,848,786	75,824,569	185,213,124	71,939,479	75	884,092,863
2024	232,527,827	321,165,036	77,039,707	191,456,263	75,285,501	75	897,474,409
2025	233,788,824	322,481,287	78,254,844	197,699,402	78,631,524	75	910,855,955
2026	235,049,821	323,797,537	79,469,981	203,942,541	81,977,546	75	924,237,500
2027	236,310,818	325,113,787	80,685,119	210,185,680	85,323,568	75	937,619,046

Cost of Service and Net Revenue Requirement

Table ES-5 presents the District forecast Net Revenue Requirement for the ten-year period. The table reveals that the total revenue requirement is expected to increase by an average annual rate of **5.2%** over the next decade. The primary reasons for this are the debt service from the CIP and the increases in operating expenses.

Table ES-5

LAGUNA MADRE WATER DISTRICT
CURRENT AND FORECAST NET REVENUE REQUIREMENT

SCENARIO: 2018 08 16 Scenario 1 -- Status Quo

	Operating Expenses	Capital Outlays	Current Debt Service	Future Debt Service	Total Cost of Service	Less Non-Rate Revenues	Net Revenue Requirement
	[redacted]						
2018	$ 3,745,645	$ 161,076	$ 339,907	$ -	$ 4,246,628	$ 331,677	$ **3,914,952**
2019	4,093,246	165,908	340,690	-	4,599,844	331,677	**4,268,167**
2020	4,286,975	170,885	339,628	200,951	4,998,440	331,677	**4,666,763**
2021	4,447,143	176,012	340,177	200,951	5,164,283	331,677	**4,832,606**
2022	4,613,768	181,292	340,471	200,951	5,336,483	331,677	**5,004,806**
2023	4,787,132	186,731	338,725	200,951	5,513,539	331,677	**5,181,863**
2024	4,967,530	192,333	338,415	200,951	5,699,230	331,677	**5,367,553**
2025	5,155,269	198,103	337,812	200,951	5,892,136	331,677	**5,560,459**
2026	5,350,671	204,046	338,953	200,951	6,094,621	331,677	**5,762,945**
2027	5,554,072	210,167	337,824	200,951	6,303,015	331,677	**5,971,338**
	WASTEWATER Revenue Requirement						
2018	3,383,763	533,342	592,242	-	4,509,347	103,959	**4,405,388**
2019	3,702,293	549,342	593,722	666,515	5,511,873	103,959	**5,407,914**
2020	3,891,037	565,823	591,715	669,358	5,717,933	103,959	**5,613,974**
2021	4,088,319	582,797	592,755	906,428	6,170,299	103,959	**6,066,340**
2022	4,241,199	600,281	593,358	885,048	6,319,886	103,959	**6,215,927**
2023	4,400,290	618,290	590,183	885,114	6,493,876	103,959	**6,389,918**
2024	4,565,868	636,838	589,792	884,704	6,677,202	103,959	**6,573,243**
2025	4,738,216	655,944	588,907	883,818	6,866,885	103,959	**6,762,926**
2026	4,917,634	675,622	590,585	882,456	7,066,296	103,959	**6,962,338**
2027	5,104,433	695,891	588,805	890,470	7,279,599	103,959	**7,175,640**
	TOTAL Revenue Requirement						
2018	7,129,408	694,418	932,150	-	8,755,976	435,635	**8,320,340**
2019	7,795,539	715,251	934,412	666,515	10,111,716	435,635	**9,676,081**
2020	8,178,012	736,708	931,344	870,309	10,716,373	435,635	**10,280,737**
2021	8,535,462	758,809	932,932	1,107,379	11,334,582	435,635	**10,898,946**
2022	8,854,966	781,574	933,830	1,085,999	11,656,368	435,635	**11,220,733**
2023	9,187,422	805,021	928,908	1,086,065	12,007,416	435,635	**11,571,780**
2024	9,533,398	829,171	928,208	1,085,655	12,376,432	435,635	**11,940,796**
2025	9,893,486	854,047	926,720	1,084,769	12,759,021	435,635	**12,323,385**
2026	10,268,305	879,668	929,537	1,083,407	13,160,918	435,635	**12,725,282**
2027	10,658,505	906,058	926,630	1,091,421	13,582,613	435,635	**13,146,978**
							5.2%

Section IV and Appendix A present all calculations behind the development of the net revenue requirement in detail. The following primary assumptions were utilized in the development of this forecast:

- Most personnel and operating expenses were forecast to increase approximately 3.0% per year.
- Certain expenses, such as chemicals, electricity, gasoline, insurance and workers compensation, are forecast to increase at rates exceeding the inflation rate. Certain other expenses are increased proportionately as the District's customers and billing units increase.

- The District is forecast to add three wastewater plant personnel and two water treatment plant personnel.
- Beginning FY 2019 the District will be contributing $300,000 annually toward reducing its unfunded pension liability over a ten-year period.
- Capital outlay expenditures are forecast to increase at a rate of 3.0% per year.
- The District's CIP over the next ten years is estimated to be $7,430,500 for the water system and $11,568,661 for the wastewater system.
- The District is forecast to issue revenue bonds totaling $2,500,000 for the water system and $8,000,000 for the wastewater system in the next five years.

Alternative Rate Plans

After extensive discussions with the District's staff and Board of Directors, the project team has developed two rate plan alternatives for the District to evaluate in setting rate policy for the next decade. The alternative is as follows:

Alternative 1 – Status Quo – Under this alternative, the District maintains its existing rate structure and gallon allowance. A series of annual adjustments are implemented that are forecast to enable the District to fund all existing and future operating and capital requirements.

Alternative 2 – Multi-Family – In this alternative a Multi-Family rate class is added for apartment and condominium complexes. This new rate class will have its minimum charge be charged based on number of units in each complex. Each unit will be charged a minimum charge and given the allowance of 4,000 gallons. Volumes that exceed the total of the units' minimum gallon allowance will be charged at tiers which are equivalent to the 5/8" tier rates.

NOTE: Alternatives presented in this report are for information purposes only and do not represent a recommendation or "endorsement" of either alternative. The purpose of these alternatives is to provide District staff and the Board with sufficient information to set the most reasonable and prudent financial course for the District.

Rate Plan Alternative 1 – Status Quo

The proposed rate plan assumes that the District chooses to maintain the same rate structure that currently exists. There would be no changes to the existing rate structure or classes of customers. Under this scenario a series of annual rate adjustments would be made to all customer classes.

The rate plan for the water utility is presented in **Table ES-6**, and for the wastewater utility is in **Table ES-7**. An analysis of the impact of the rate plan on average usage for each meter size is presented in **Table ES-8**. The following is notable:

- The first water rate adjustment of 7.0% would be in effect on October 1 2018.
- 2.0% water increases are recommended for October 2019, October 2020 with no adjustment in October 2021.
- Wastewater rate adjustments are recommended to take effect on October 1 of each of the next five years.
- The reason for the larger wastewater rate adjustments is to ensure that within five years the wastewater rates fully fund the cost of service, as outlined earlier in this section.

Table ES-6

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 Scenario 1 -- Status Quo

		Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
[redacted]							
Monthly Charge		$ 12.26	$ 13.12	$ 13.38	$ 13.65	$ 13.65	$ 13.92
Usage Charge -- Per 1,000 Gal							
4,001	10,000	2.47	2.64	2 70	2.75	2.75	2.80
10,001	20,000	3.89	4.16	4.25	4.33	4.33	4.42
20,001	Above	5.55	5.94	6.06	6.18	6.18	6.30
[redacted]							
Monthly Charge		$ 23.07	$ 24.68	$ 25.18	$ 25.68	$ 25.68	$ 26.20
Usage Charge -- Per 1,000 Gal							
4,001	20,000	2.52	2.70	2.75	2.81	2.81	2.86
20,001	40,000	3.78	4.04	4.13	4.21	4.21	4.29
40,001	Above	5.32	5.69	5.81	5 92	5 92	6.04
[redacted]							
Monthly Charge		$ 111.06	$ 118.83	$ 121.21	$ 123.64	$ 123.64	$ 126.11
Usage Charge -- Per 1,000 Gal							
15,001	100,000	2 63	2.81	2 87	2.93	2.93	2.99
100,001	200,000	3 95	4.23	4.31	4.40	4.40	4.49
200,001	Above	5.90	6.31	6 44	6.57	6.57	6.70
[redacted]							
Monthly Charge		$ 418.64	$ 447.94	$ 456.90	$ 466.04	$ 466.04	$ 475.36
Usage Charge -- Per 1,000 Gal							
50,001	500,000	2.76	2.95	3 01	3.07	3.07	3.13
500,001	1,000,000	4.14	4.43	4.52	4.61	4.61	4.70
1,000,001	Above	5.69	6.09	6.21	6.33	6.33	6.46
[redacted]							
Monthly Charge		$ 784.00	$ 838.88	$ 855.66	$ 872.77	$ 872.77	$ 890.23
Usage Charge -- Per 1,000 Gal							
50,001	500,000	2.60	2.78	2 84	2.89	2.89	2.95
500,001	1,000,000	3.90	4.17	4.26	4.34	4.34	4.43
1,000,001	Above	5.25	5.62	5.73	5.84	5.84	5.96
[redacted]							
Monthly Charge		$ 840.00	$ 898.80	$ 916.78	$ 935.11	$ 935.11	$ 953.81
Usage Charge -- Per 1,000 Gal							
50,001	500,000	2.84	3.04	3.10	3.16	3.16	3.22
500,001	1,000,000	4.20	4.49	4.58	4.68	4.68	4.77
1,000,001	Above	5.69	6.09	6.21	6.33	6.33	6.46

Table ES-7

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 Scenario 1 -- Status Quo

		WASTEWATER RATES -- ALTERNATIVE 1					
		Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
5/8" Meter							
Monthly Charge		$ 13.46	$ **16.15**	$ 19.06	$ 20.58	$ 21.61	$ 22.48
Usage Charge -- Per 1,000 Gal							
4,001	**10,000**	2.73	**3.28**	3.87	4.17	4.38	4.56
10,001	**20,000**	4 23	**5.08**	5.99	6.47	6.79	7.06
20,001	**Above**	6 00	**7.20**	8.50	9.18	9.63	10.02
1" Meter							
Monthly Charge		$ 21.83	$ **26.20**	$ 30.91	$ 33.38	$ 35.05	$ 36.46
Usage Charge -- Per 1,000 Gal							
4,001	**20,000**	2.73	**3.28**	3.87	4.17	4.38	4.56
20,001	**40,000**	4.10	**4.92**	5.81	6.27	6.58	6.85
40,001	**Above**	6.12	**7.34**	8.67	9.36	9.83	10.22
2" Meter							
Monthly Charge		$ 148.46	$ **178.15**	$ 210.22	$ 227.04	$ 238.39	$ 247.92
Usage Charge -- Per 1,000 Gal							
15,001	**100,000**	2.97	**3.56**	4.21	4.54	4.77	4.96
100,001	**200,000**	4.46	**5.35**	6.32	6.82	7.16	7.45
200,001	**Above**	6.18	**7.42**	8.75	9.45	9.92	10.32
4" Meter							
Monthly Charge		$ 340.56	$ **408.67**	$ 482 23	$ 520.81	$ 546 85	$ 568.73
Usage Charge -- Per 1,000 Gal							
50,001	**500,000**	3.09	**3.71**	4.38	4.73	4.96	5.16
500,001	**1,000,000**	4.63	**5.56**	6.56	7.08	7.43	7.73
1,000,001	**Above**	6.30	**7.56**	8.92	9.63	10.12	10.52
6" Meter							
Monthly Charge		$ 560.00	$ **672.00**	$ 792.96	$ 856.40	$ 899 22	$ 935.19
Usage Charge -- Per 1,000 Gal							
50,001	**500,000**	2.70	**3.24**	3.82	4.13	4.34	4.51
500,001	**1,000,000**	4.05	**4.86**	5.73	6.19	6.50	6.76
1,000,001	**Above**	5.40	**6.48**	7.65	8.26	8.67	9.02
8" Meter							
Monthly Charge		$ **896.00**	$ 1,075.20	$ 1,268.74	$ 1,370.23	$ 1,438 75	$ 1,496.30
Usage Charge -- Per 1,000 Gal							
50,001	**500,000**	**2.93**	3.52	4.15	4.48	4.70	4.89
500,001	**1,000,000**	**4.42**	5.30	6.26	6.76	7.10	7.38
1,000,001	**Above**	**5.89**	7.07	8.34	9.01	9.46	9.84

Table ES-8

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 Scenario 1 -- Status Quo

	MONTHLY Gallons	Effective Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
[redacted]							
Low	5,000	$ 30.24	**$ 34.37**	$ 38.03	$ 40.11	$ 41.30	$ 42.62
		-	**4.13**	3.66	2.08	1.19	1.32
Average	10,000	52.83	**59.87**	66.01	69.52	71.49	73.74
		-	**7.04**	6.14	3.51	1.97	2.26
High	30,000	223.95	**252.95**	277.68	291.94	299.78	309.06
		-	**29.00**	24.73	14.26	7.84	9.29
[redacted]							
Average	20,000	117.98	**133.34**	146.48	154.05	158.23	163.14
		9.13	**15.36**	13.15	7.57	4.17	4.92
High	40,000	255.08	**288.03**	316.08	332.26	341.14	351.69
		9.13	**32.95**	28.05	16.18	8.88	10.55
[redacted]							
Average	50,000	429.53	**489.03**	542.29	572.37	589.68	608.75
		-	**59.50**	53.25	30.08	17.31	19.07
High	100,000	672.41	**763.39**	843.51	889.08	914.91	944.06
		-	**90.98**	80.12	45.57	25.83	29.15
[redacted]							
Average	200,000	1,520.83	**1,716.75**	1,883.21	1,979.35	2,031.97	2,094.71
		-	**195.92**	166.47	96.13	52.62	62.74
High	400,000	2,536.33	**2,863.59**	3,141.98	3,302.67	3,390.73	3,495.53
		-	**327.26**	278.40	160.69	88.06	104.80
[redacted]							
Average	300,000	2,500.25	**2,813.88**	3,074.88	3,226.96	3,308.49	3,408.91
		-	**313.63**	261.00	152.09	81.53	100.41
High	600,000	4,119.00	**4,638.08**	5,071.64	5,323.88	5,459.60	5,625.80
		-	**519.08**	433.56	252.24	135.72	166.20

Alternative 2 – Multi-Family Rate Class

This proposed alternative rate plan assumes that the District chooses to add a Multi-Family rate class for apartment and condominium complexes. This new rate class will be charged based on number of units in each complex. The units will be charged the 5/8" Meter rate. Each unit will be charged a minimum charge and given the allowance of 4,000 gallons. Volume that exceeds the total of the units' minimum gallon allowance will be charged the 5/8" tier rates.

As with any change in rate structure, conversion to a multi-family rate will impact every account differently. Certain customers will pay significantly more under this plan, while other customers will pay significantly less. The key factor that affects the change in a multi-family account is the **average usage per unit** – while there are exceptions, the general guidelines are as follows:

- 1,000 - 2,000 monthly gallons use per unit will realize a substantial increase in monthly charge;
- 3,000 – 4,000 monthly gallons use per unit will realize a little or no increase in monthly charge;
- 5,000 – above monthly gallons use per unit will realize a substantial decrease in monthly charge;

The reason for this disparity of impact on multi-family customer accounts is the monthly gallon allowance in the District's minimum charge. The gallon allowance converted to a charge per gallon (e.g., dividing the 4,000 gallon allowance by the 1" Meter minimum charge) is more than the rate per gallon in each of the tiered volume rate blocks.

It is important to point out that the data available to the project team in developing this alternative rate classification **is highly preliminary, uncertain and cannot be guaranteed by the project team**. The project team recommends that any conversion to a per unit rate be instituted only after District personnel conduct a thorough audit of all qualifying accounts to verify the number of units that would be subjected to the charge. Ideally, the District should obtain a signed document from each account agreeing to the number of units to be included in charge. This minimizes the risk of future billing disputes.

The Alternative 2 rate plan for the water utility is presented in **Table ES-9** and for the wastewater utility is in **Table ES-10**. An analysis of the impact of the rate plan on average usage for each meter size is presented in **Table ES-11**. The following is notable about this rate plan:

- The project team estimates that conversion to multi-family rate within the existing current rate structure is forecast to result in approximately $500,000 or 10% less water revenue.
- As a result of this, Table ES-9 reveals that a 16% increase in water rates is required to be effective October 2018. There would be 2.0% annual adjustments to be effective October 2019 and October 2020, with no increase in October 2021.
- Wastewater rate adjustments are recommended to take effect on October 1 of each of the next five years.
- The reason for the larger wastewater rate adjustments is to ensure that within five years the wastewater rates fully fund the cost of service, as outlined earlier in this section.
- Proposed rate structure assumes that District will recover the $500,000 in lost revenue through an additional adjustment to other water customers.

Table ES-9

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 - Scenario 2 -- Condo Unit Rate

		Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
[redacted]							
Monthly Charge		$ 12.26	**$ 14.22**	$ 14.51	$ 14.80	$ 14.80	$ 15.09
Usage Charge -- Per 1,000 Gal							
4,001	**10,000**	2.47	**2.87**	2.92	2.98	2.98	3.04
10,001	**20,000**	3.89	**4.51**	4.60	4.69	4.69	4.79
20,001	**Above**	5.55	**6.44**	6.57	6.70	6.70	6.83
[redacted]							
Monthly Charge		$ 23.07	**$ 26.76**	$ 27.30	$ 27.84	$ 27.84	$ 28.40
Usage Charge -- Per 1,000 Gal							
4,001	**20,000**	2.52	**2.92**	2.98	3.04	3 04	3.10
20,001	**40,000**	3.78	**4.38**	4.47	4.56	4.56	4.65
40,001	**Above**	5.32	**6.17**	6.29	6.42	6.42	6.55
[redacted]							
Monthly Charge		$ 111 06	**$ 128.83**	$ 131.41	$ 134.03	$ 134.03	$ 136.72
Usage Charge -- Per 1,000 Gal							
15,001	**100,000**	2.63	**3.05**	3.11	3.17	3.17	3.24
100,001	**200,000**	3.95	**4.58**	4.67	4.77	4.77	4.86
200,001	**Above**	5.90	**6.84**	6.98	7.12	7.12	7.26
[redacted]							
Monthly Charge		$ 418.64	**$ 485.62**	$ 495 33	$ 505.24	$ 505.24	$ 515.35
Usage Charge -- Per 1,000 Gal							
50,001	**500,000**	2.76	**3.20**	3.27	3.33	3.33	3.40
500,001	**1,000,000**	4.14	**4.80**	4.90	5.00	5.00	5.10
1,000,001	**Above**	5.69	**6.60**	6.73	6.87	6.87	7.00
[redacted]							
Monthly Charge		$ 784.00	**$ 909.44**	$ 927.63	$ 946.18	$ 946.18	$ 965.11
Usage Charge -- Per 1,000 Gal							
50,001	**500,000**	2.60	**3.02**	3.08	3.14	3.14	3.20
500,001	**1,000,000**	3.90	**4.52**	4.61	4.71	4.71	4.80
1,000,001	**Above**	5.25	**6.09**	6.21	6.34	6.34	6.46
[redacted]							
Monthly Charge		$ 12.26	**$ 14.22**	$ 14.51	$ 14.80	$ 14.80	$ 15.09
Usage Charge -- Per 1,000 Gal							
-	**10,000**	2.47	**2.87**	2.92	2.98	2.98	3.04
10,001	**20,000**	3.89	**4.51**	4.60	4.69	4.69	4.79
20,001	**Above**	5.55	**6.44**	6.57	6.70	6.70	6.83

Table ES-10

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 - Scenario 2 -- Condo Unit Rate

		WASTEWATER RATES					
		Effective Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
5/8" Meter							
Monthly Charge		$ 13.46	$ 16.42	$ 19.38	$ 20.93	$ 21.97	$ 23.07
Usage Charge -- Per 1,000 Gal							
4,001	10,000	2.73	3.33	3.93	4.24	4.46	4.68
10,001	20,000	4.23	5.16	6.09	6.58	6.91	7.25
20,001	Above	6.00	7.32	8.64	9.33	9.80	10.28
1" Meter							
Monthly Charge		$ 21.83	$ 26.63	$ 31.43	$ 33.94	$ 35.64	$ 37.42
Usage Charge -- Per 1,000 Gal							
4,001	20,000	2.73	3.33	3.93	4.24	4.46	4.68
20,001	40,000	4.10	5.00	5.90	6.37	6 69	7.03
40,001	Above	6.12	7.47	8.81	9.52	9.99	10.49
2" Meter							
Monthly Charge		$ 148.46	$ 181.12	$ 213.72	$ 230.82	$ 242.36	$ 254 48
Usage Charge -- Per 1,000 Gal							
15,001	100,000	2.97	3.62	4.28	4.62	4.85	5.09
100,001	200,000	4.46	5.44	6.42	6 93	7.28	7.65
200,001	Above	6.18	7.54	8.90	9.61	10.09	10.59
4" Meter							
Monthly Charge		$ 340.56	$ 415.48	$ 490 27	$ 529.49	$ 555.97	$ 583.76
Usage Charge -- Per 1,000 Gal							
50,001	500,000	3.09	3.77	4.45	4 80	5 04	5.30
500,001	1,000,000	4.63	5.65	6.67	7.20	7.56	7.94
1,000,001	Above	6.30	7.69	9.07	9.80	10.28	10.80
6" Meter							
Monthly Charge		$ 560.00	$ 683.20	$ 806.18	$ 870.67	$ 914.20	$ 959.91
Usage Charge -- Per 1,000 Gal							
50,001	500,000	2.70	3.29	3.89	4.20	4.41	4.63
500,001	1,000,000	4.05	4.94	5.83	6.30	6.61	6.94
1,000,001	Above	5.40	6.59	7.77	8.40	8.82	9.26
Multi Family							
Monthly Charge		$ 13.46	$ 16.42	$ 19.38	$ 20.93	$ 21.97	$ 23.07
Usage Charge -- Per 1,000 Gal							
4,001	10,000	2.73	3.33	3.93	4.24	4.46	4.68
10,001	20,000	4 23	5.16	6 09	6.58	6.91	7.25
20,001	Above	6.00	7.32	8.64	9 33	9.80	10.28

Table ES-11

LAGUNA MADRE WATER DISTRICT

Alternative: 2018 08 16 - Scenario 2 -- Condo Unit Rate

	MONTHLY Gallons	Current	Effective Oct-18	Effective Oct-19	Effective Oct-20	Effective Oct-21	Effective Oct-22
[redacted]							
Low	5,000	$ 30.24	$ **36.01**	$ 39.75	$ 41.89	$ 43.09	$ 44.71
			5.77	3.75	2.13	1.21	1.62
Average	10,000	52.83	**62.82**	69.10	72.71	74.71	77.47
			10.00	6.28	3.61	2.00	2.76
High	30,000	223.95	**265.93**	291.25	305.93	313.89	325.19
			41.98	25.32	14.68	7.97	11.30
[redacted]							
Average	20,000	117.98	**140.13**	153.59	161.38	165.62	171.61
			22.15	13.46	7.79	4.24	5.99
High	40,000	255.08	**302.86**	331.58	348.24	357.26	370.09
			47.78	28.72	16.66	9.02	12.83
[redacted]							
Average	50,000	429.53	**511.84**	566.28	597.16	614.76	638.15
			82.31	54.43	30.88	17.60	23.38
High	100,000	672.41	**800.26**	882.20	929.03	955.29	990.93
			127.85	81.94	46.82	26.26	35.65
[redacted]							
Average	200,000	1,520.83	**1,805.45**	1,975.89	2,074.85	2,128.35	2,204.62
			284.62	170.44	98.96	53.50	76.27
High	400,000	2,536.33	**3,011.24**	3,296.27	3,461.68	3,551.21	3,678.63
			474.91	285.03	165.40	89.53	127.43
[redacted]							
Average	300,000	2,500.25	**2,964.27**	3,231.68	3,388.41	3,471.30	3,592.95
			464.02	267.42	156.73	82.89	121.65
High	600,000	4,119.00	**4,884.54**	5,328.71	5,588.60	5,726.59	5,928.05
			765.54	444.17	259.89	137.99	201.46

Raw Water Rate

The District has a limited number of customers who purchase raw water from the water treatment plant reservoirs for irrigation purposes. The cost of providing this water incorporates O&M for the transmission portion of the distribution system as well as replacement costs for the 36" line that transports raw water to the District. It also includes a 6% return on the book value of the 36" line to recover the District's cost to finance the line.

Table ES-12 presents the project team's recommendations for a 5-year implementation schedule of raw water rates.

Table ES-12

LAGUNA MADRE WATER DISTRICT Raw Water Rate Recommendations		
Recommended Raw Water Rate		**1,000 Gal**
Current	$	0.80
Oct-18		**1.04**
Oct-19		1.04
Oct-20		1.04
Oct-21		1.04

Section I

SECTION I

Introduction

Background and Study Objectives

In January 2018 the Laguna Madre Water District ("the District") engaged **Willdan Financial Services** ("Willdan", formerly **Economists.com**) to prepare a water and wastewater rate study and long-term financial plan. Over the past decade the District has faced many operational and financial challenges. These challenges have included:

- The growth of homes, hotels, restaurants and other accounts in this primarily tourist-driven service area
- The increasing scarcity of water supply and the persistent drought in the Rio Grande Valley
- The need to fund a significant level of capital improvements to meet increasing demand and ensure the continued high quality of service

The purpose of this study is to assess the District's current rate structure and its ability to recover sufficient revenues to finance operating and capital expenditures over the next decade.

In order to achieve these objectives, the project team completed the following scope of services:

1) Reviewed the District's water and wastewater system operating and capital costs for the current year.
2) Forecast these costs for a period ten years into the future, taking into account the significant additional capital requirements outlined in Section IV.
3) Forecast expected growth in the District's service area and assessed its impact on revenues and expenses.
4) Provided alternative recommended water and wastewater rate structures by defined customer class for both the current year and the forecast period.
5) Analyzed and provided a set of recommendations for raw water charges.
6) Ensured that the recommended rates under all alternatives meet generally accepted ratemaking standards, as delineated by such organizations as the American Water Works Association and the Texas Commission on Environmental Quality. The rate alternatives are judged to be just and reasonable, in line with the District's operating and capital costs, and applied in a fair and equitable manner to all customer classes.

7) Developed a comprehensive rate model that calculates water and wastewater rates for the current year and the forecast period.

The project team visited the District several times during the course of this project in order to gather data and obtain critical background information for use in this study. Additional telephone conferences and data transfers took place during the course of the study. Throughout this engagement, District officials and advisors were kept continuously apprised of the project team's progress.

This study presents a summary of the methodology and calculations behind the recommendations presented by the project team to the District. All aspects of the scope of services have been completed.

Report Organization

This report is organized into the following sections:

Section I – Introduction -- outlines the background, objectives and scope of this water and wastewater rate study and long-term financial plan.

Section II -- Demographic Profile - presents a description and demographic profile for the Laguna Madre Water District. This includes a comparison of the surrounding area's current monthly charges for water and wastewater service. It also analyzes the District's current rate structure including the volumes included in the monthly charges.

Section III – Test Year and Forecast Volumes – analyzes the District's water and wastewater customer base. Presents current year and forecast volumes by defined customer class. Also analyzes the peak day requirements for each customer class.

Section IV – Test Year and Forecast Volumes and Revenue Requirements -- outlines the process of developing the water and wastewater cost structure. The total current or "test year" revenue requirements are compiled, and costs are functionalized between treatment, distribution/collection, administration and customer billing. Using the test year as a basis, costs are forecast for a period ten years into the future.

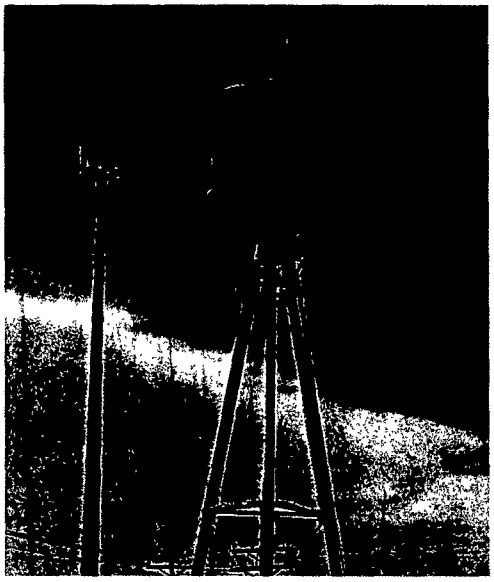
Section V – Rate Plan Alternatives – analyzes the ability of the current rate structure to fund all operating and capital requirements over the next decade, including the need to fund a portion of the District's long-term capital improvements plan through revenue bonds. Presents alternative rate and financial plans for the District to incorporate to ensure that all long-term goals are achieved.

Appendix A – presents a hard copy printout of the critical interactive Microsoft Excel spreadsheet model schedules developed for the District. The model automatically generates all calculations based on a set of defined user inputs. A copy of this model will be provided to the District so that staff may use it as a tool for future rate development.

Section II

SECTION II

Demographic Profile



This section of the 2018 Rate Study and Long-Term Financial Plan presents a portrait both of the Laguna Madre Water District and the surrounding community. The District's current rate structure is presented, as is an analysis of customer classes and total volumes allowed in the water and wastewater minimum charges.

District Overview

The Laguna Madre Water District ("The District") is located in the Rio Grande Valley region at the southern tip of the state of Texas. The District is in Cameron County, near the cities of Brownsville and Harlingen, and is approximately twenty miles from the border with Mexico. The District includes the towns of Port Isabel, Laguna Vista, Laguna Heights and South Padre Island. The area is an immensely popular resort destination, offering a warm climate, resplendent beaches and a hospitable tourist environment.

The District is an independent governmental entity. It was created on November 14, 1950 pursuant to Article XVI, Section 59 of the Texas Constitution and Article 7881, Revised Civil Statutes of Texas. The District was originally created as a Fresh Water Supply District but was converted into a Municipal Utility District by an order of the Texas Water Rights Commission on November 20, 1973. Presently the District functions under the authority of the Texas Commission on Environmental Quality ("TCEQ") and is operated under and governed by Chapter 54 of the Texas Water Code.

The District's general policy, procedures and overall management are supervised by a Board of Directors elected by a direct vote of District residents. The Board contains five seats, all of which are "at large", meaning that each Director is elected by all registered voters for four-year terms. The Board meets in an open public session once every two weeks.

A salaried, professional General Manager manages the District's day-to-day operations. The senior management team also consists of a Director of Operations and a Director of Finance. The General Manager retains authority to designate the District's senior management.

Originally the District was known as the Cameron County Fresh Water Supply District No. 1. In February 1996 the Board of Directors authorized the change to its present name.

Table II-1 presents current Directors and District senior management.

Table II-1

LAGUNA MADRE WATER DISTRICT
CURRENT BOARD AND SENIOR MANAGEMENT

Board of Directors		Administration	
Scott D. Fiedman	Chairman	Carlos Galvan	General Manager
Rick Wells	Vice-Chairman	Robert Gomez	Director of Operations
Doyle Wells, III	Secretary	Eduardo Salazar	Director of Finance
Herb Houston	Director	Charles Ortiz	District Engineer
Alex Avalos	Director	Daisy Bodden	Executive Secretary
		Minnie Mata	Customer Service Manager

System Characteristics

The Laguna Madre Water District maintains approximately 110 miles of water main lines serving the incorporated cities of South Padre Island, Port Isabel, and Laguna Vista, and the unincorporated areas of Laguna Heights and Long Island. The water system contains 5 elevated and 2 ground storage tanks, and three water reservoirs. A 42-inch underground transmission line was completed in 1992 to transport raw water from the Rio Grande. The District contains 8.0 mgd installed water treatment capacity, in the form of two treatment plants, which are located outside of Port Isabel and Laguna Vista. The water system is fully integrated and serves all customers; neither treatment plant can be considered a sole source of water for the mainland or South Padre Island.

The District's wastewater system is divided into two service areas, one on South Padre Island and one on the mainland. Unlike the water system, there is no interconnection between the wastewater systems on the Island and mainland. The total inch-miles of collection lines on the Island and mainland are approximately equivalent. The District operates 27 lift stations and four wastewater treatment plants with 5.85 mgd capacity. Two wastewater treatment plants are located on South Padre Island and two are on the mainland.

Population

According to the US Bureau of the Census and the respected web site www.city-data.com, the permanent population totals for the primary cities located in the District are contained in **Table II-2** below. The chart reveals that there has been only limited growth in the permanent population. However, as a destination vacation resort, the District has experienced growth in temporary population, hotels and businesses that has far exceeded the rate of growth of the permanent population.

Table II-2

LAGUNA MADRE WATER DISTRICT
HISTORICAL AND CURRENT POPULATIONS

	2000	2010	2012	2014	2016
Port Isabel	4,865	5,006	5,047	5,015	5,019
Laguna Vista	1,658	3,117	3,166	3,200	3,200
South Padre Island	2,422	2,816	2,896	2,889	2,874
Laguna Heights	1,990	3,488	na	na	na

Growth in median household income is presented in **Table II-3**. The table illustrates that, since 2000, the District's population centers have experienced MHI growth at a rate nominally less than that of the state of Texas.

Table II-3

LAGUNA MADRE WATER DISTRICT
MEDIAN HOUSEHOLD INCOMES

	2000	2016	Average Annual Inc.
Port Isabel	$ 25,323	$ 34,905	37.8%
Laguna Vista	43,641	60,355	38.3%
South Padre Island	45,417	45,900	1.1%
Laguna Heights	18,083	24,182	33.7%
State of Texas	39,927	56,565	41.7%

Water and Wastewater System Customer Classes

Table II-4 below presents water and wastewater customer classes. The table reveals that the District has established its customer classes based on meter size. A small portion of water accounts are irrigation-only and do not have wastewater service. The District maintains no wastewater-only customers.

At this time the District assesses a single minimum charge for its multi-family, apartment and condominium accounts. However, one alternative rate plan to be presented in this report is to segregate these customers into a separate customer class. This alternative is further discussed in Section V of this report.

The District also provides raw water to golf course customers.

Table II-4

LAGUNA MADRE WATER DISTRICT
EXISTING CUSTOMER CLASSES

Water	Wastewater
5/8" Meter	5/8" Meter
1" Meter	1" Meter
2" Meter	2" Meter
4" Meter	4" Meter
6" Meter	6" Meter
8" Meter	8" Meter
Raw Water	

Current Rates

Table II-5 presents the District's current water and wastewater rate structure. It was adopted by the Board in March 2016.

Table II-5

LAGUNA MADRE WATER DISTRICT
CURRENT RATE STRUCTURE

			[redacted] Rate	WASTEWATER Rate
5/8" Meter				
Base Charge	-	4,000	$ 12.26	$ 13.46
Usage Charge	4,001	10,000	2.47	2.73
	10,001	20,000	3.89	4.23
	20,001	Above	5.55	6.00
1" Meter				
Base Charge	-	4,000	23.07	21.83
Usage Charge	4,001	20,000	2.52	2.73
	20,001	40,000	3.78	4.10
	40,001	Above	5.32	6.12
2" Meter				
Base Charge	-	15,000	111.06	148.46
Usage Charge	15,001	100,000	2.63	2.97
	100,001	200,000	3.95	4.46
	200,001	Above	5.90	6.18
4" Meter				
Base Charge	-	50,000	418.64	340.56
Usage Charge	50,001	500,000	2.76	3.09
	500,001	1,000,000	4.14	4.63
	1,000,001	Above	5.69	6.30
6" Meter				
Base Charge	-	50,000	784.00	560.00
Usage Charge	50,001	500,000	2.60	2.70
	500,001	1,000,000	3.90	4.05
	1,000,001	Above	5.25	5.40
8" Meter	-	50,000	840.00	896.00
Base Charge	50,001	500,000	2.84	2.93
Usage Charge	500,001	1,000,000	4.20	4.42
	1,000,001	Above	5.69	5.89

As the table reveals, the District maintains a conservation-based inverted block rate structure. The District originally adopted its inverted block rate structure in 1994. Under this rate structure, ratepayers who use increasing amounts of water and wastewater service pay increasing amounts per 1,000 gallons. The intent of this rate structure is to encourage conservation while ensuring that ratepayers are not charged excessive amounts for non-discretionary amounts of water usage.

Wastewater is charged based on 75% of water usage. Certain water customers possess both a domestic meter and a specific irrigation meter; for these customers no wastewater is charged on the irrigation meter but 100% of water gallons is charged for wastewater on the domestic meter. The reasoning is that customers with irrigation meters supply all of their non-sewer water usage through that irrigation meter.

One issue that arose during the course of the previous (2014) rate study, which was prepared by Economists.com (now Willdan), was the appropriateness of the minimum gallon allowance provided in the minimum charge for each rate class. The District provides an allowance of 4,000 gallons in its 5/8" Meter minimum charge. In addition, the allowance for 1" Meter minimum charge was 6,000 gallons, 26,000 for 2" Meter minimum charge and 100,000 for 4", 6" and 8" Meter minimum charges. Based on a comparison to other water utility providers in the Rio Grande Valley it was determined that the District minimum allowance was one of the highest. The District has since reduced the allowances to 4,000 gallons for 1" Meter minimum charge, 15,000 gallons for 2" Meter minimum charge and 50,000 gallons for 4", 6" and 8" Meter minimum charges.

Rate Comparison

In order to illustrate the relative burden of the District's ratepayers, the District's water and wastewater rates were compared to surrounding communities in the Rio Grande Valley. The number of representative cities was limited to allow the data in this analysis to be manageable and easily analyzed.

Table II-6 and **Chart II-7** on the following pages summarize the data collected for this analysis. The comparison is for 10,000 gallons of water usage, and 5,000 gallons of wastewater usage. These totals are standard for rate comparisons in Texas, although it should be noted that under the District's rate charging methodology, 10,000 gallons of water results in 7,500 gallons of wastewater charge.

Before continuing, a few important points must be addressed. First, no charges for garbage collection or sales taxes have been included in this comparison. Second, no activation or other non-rate charges have been included. Third, where appropriate, certain cities that charge for service based on cubic feet of water have had their rates converted to an equivalent charge per 1,000 gallons. Finally, comparisons such as these are for usage charges only. This type of comparison may have the unintended effect of discriminating against communities who choose to finance system expansions through revenue bonds (which are included in rates) as opposed to those who utilize general obligation bonds, which are funded through taxes. All else being equal, a utility that primarily or exclusively uses general obligation bonds will have a lower rate per 1,000 gallons but a higher tax rate.

The water rates contained in this sample are primarily one of two rate designs: uniform or inverted blocks. Uniform rates mean that all residential customers are charged the same unit price regardless of usage, while inverted blocks charge a higher unit rate for additional water usage. Across the nation, the general trend has been towards inverted blocks and away from uniform rates in recent years, to take advantage of the conservation incentives built into inverted blocks.

The tables reveal that ratepayers in the District pay among the lowest rates in the Rio Grande Valley for residential water and wastewater service. The District's ratepayers also pay significantly less than the state average for water and wastewater service.

Finally, widely-respected organizations such as the *American Water Works Association Research Foundation* have stated that they expect the average water and wastewater rate to rise 5.0% annually over the next decade. Increasing costs will continue to place pressure on water and wastewater managers throughout the United States to adjust rates accordingly.

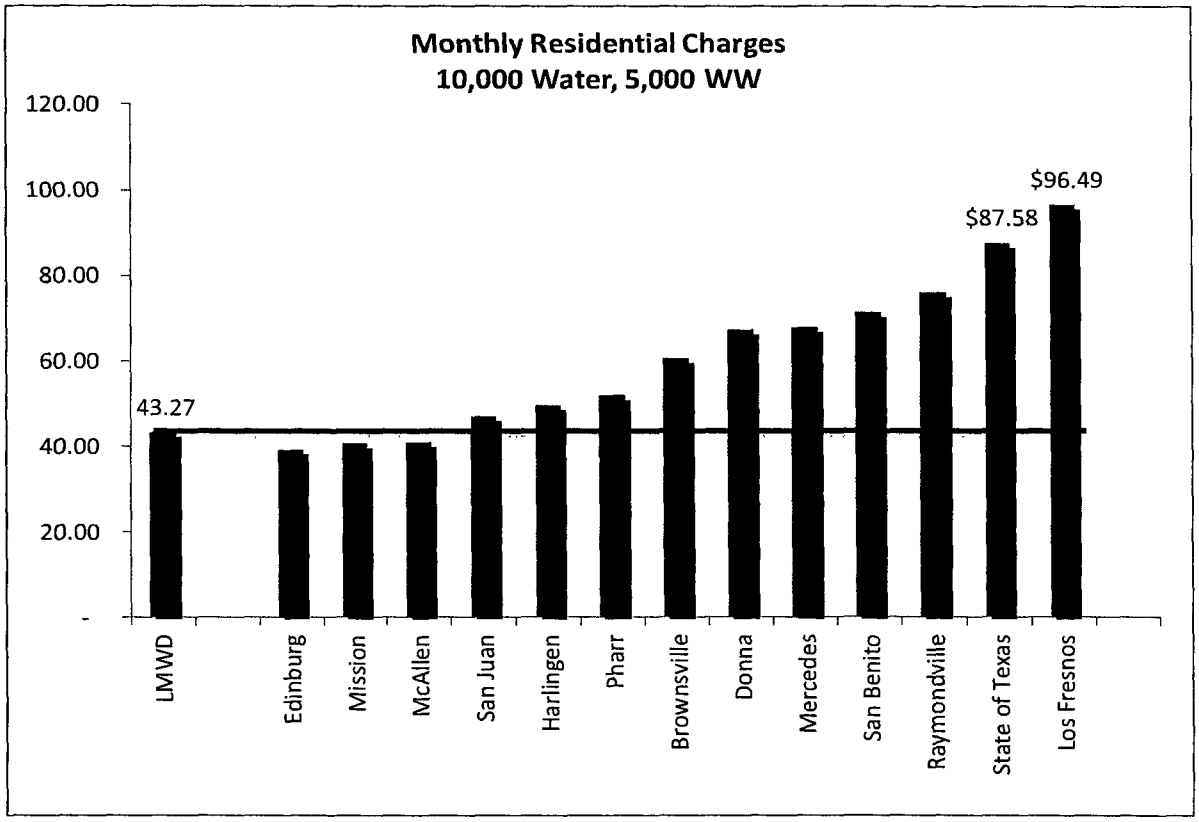
Table II-6

LAGUNA MADRE WATER DISTRICT
COMPARISON OF MONTHLY RESIDENTIAL CHARGES

City	10,000 Water	5,000 WW	Total
LMWD	27.08	16.19	43.27
Brownsville	36.03	24.63	60.66
Donna	42.78	24.41	67.19
Edinburg	28.21	11.11	39.32
Harlingen	25.03	24.03	49.06
Los Fresnos	57.51	38.98	96.49
McAllen	22.55	18.50	41.05
Mercedes	36.89	31.11	68.00
Mission	25.42	15.20	40.62
Pharr	32.51	19.45	51.96
Raymondville	52.53	23.36	75.89
San Benito	40.82	30.68	71.50
San Juan	28.55	18.60	47.15
State of Texas*	58.55	29.03	87.58

* Texas Municipal League 2017 Water and Wastewater Rate Survey

Chart II-7

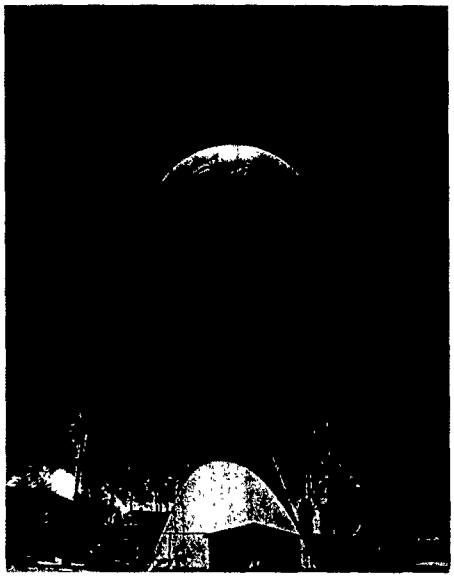

Monthly Residential Charges
10,000 Water, 5,000 WW
120.00
100.00
80.00
60.00
40.00
20.00
-
43.27
$87.58
$96.49
LMWD
Edinburg
Mission
McAllen
San Juan
Harlingen
Pharr
Brownsville
Donna
Mercedes
San Benito
Raymondville
State of Texas
Los Fresnos


08/12/2014

Section III

SECTION III

Test Year and Forecast Volumes



The first step in analyzing the District's current and projected expenses and revenue requirements is to examine current and historical water and wastewater utility conditions. Correspondingly, the analysis of the District's existing rate structure for water and wastewater service begins with a thorough review of patterns of usage, both for the system as a whole and for specified customer classes.

Customer billing records provided by District staff present detailed data on the number and usage levels by customer class for each billing period, as well as water and wastewater revenues. Additionally, District staff expended considerable effort in generating specific usage reports for use by the project team during the preparation of this study. The volumetric data presented in this section is derived primarily from these sources. The project team appreciates the level of effort and professionalism displayed by District staff in fulfilling these data requests.

Customers and Meters – Current Year and Forecast

According to standard utility ratemaking methodology, in order to allocate revenue requirements equitably among system users, customers must be classified into relatively homogeneous groups with similar usage characteristics or service demands. Costs are then allocated to the customer classes in proportion to each class' usage characteristics.

As stated in Section I of this report, the District defines customer classes by meter size, beginning with 5/8" and including 1", 2", 4", 6" and 8" meters. **Table III-1** presents the forecast average number of water and wastewater customers for each class for the test year, which encompasses the period October 2017 through September 2018. The chart reveals that in the test year there are **6,781** estimated water customers and **6,045** wastewater active accounts.

Table III-1

LAGUNA MADRE WATER DISTRICT
WATER AND WASTEWATER CUSTOMER ACCOUNTS
TEST YEAR 2018

		WASTEWATER Accounts	
5/8" Meter	4,875	5/8" Meter	4,460
1" Meter	1,494	1" Meter	1,190
2" Meter	302	2" Meter	287
4" Meter	75	4" Meter	74
6" Meter	34	6" Meter	33
8" Meter	1	8" Meter	1
Total	**6,781**	**Total**	**6,045**

Table II-2 presents historical customer accounts for 2000, 2005, 2011 and annually for 2016 through 2018. The chart shows that account growth was robust during the period 2000-2010, but has lessened since 2011.

Table III-2

LAGUNA MADRE WATER DISTRICT
Historical Total Accounts

			WASTEWATER	
	TOTAL	NEW	TOTAL	NEW
2000	3,728		3,605	
2005	5,201	1,473	4,872	1,267
2011	6,237	1,036	5,385	513
2016	6,550	313	5,869	484
2017	6,646	96	5,943	74
Mar17- Feb18	6,684	39	5,969	27
Test Year 2018	6,781	97	6,045	76

Table III-3 presents the project team's ten-year forecast of future water connections by defined customer class, while **Table III-4** presents the ten-year forecast of future wastewater connections. The tables reveal that the project team is forecasting a modest growth rate of approximately 50 new accounts per year. The totals are the similar for water and wastewater because of the expectation that all future accounts will have both water and wastewater service. The tables further show that water accounts are forecast to reach a total of **7,231** by FY 2027 or an annual growth rate of 0.72%. Wastewater accounts are forecast to reach a total of **6,405** by FY 2027, or an annual growth rate of 0.64%. The addition of these new connections will result in both non-recurring connection fees and increasing monthly water revenues.

Should these new water and wastewater connections not be realized, or be connected at a slower pace than that outlined in this forecast, revisions may be required to the project team's financial and rate recommendations.

Table III-3

LAGUNA MADRE WATER DISTRICT
FORECAST TOTAL ACCOUNTS
WATER Customer Classes

	5/8" Meter	1" Meter	2" Meter	4" Meter	6" Meter	8" Meter	Total
[redacted]							
2016	4,709	1,442	295	72	32	1	6,550
2017	4,785	1,461	295	73	32	1	6,646
Mar17- Feb18	4,809	1,474	296	72	32	1	6,684
2018	4,875	1,494	302	75	34	1	6,781
2019	4,910	1,499	307	78	36	1	6,831
2020	4,945	1,504	312	81	38	1	6,881
2021	4,980	1,509	317	84	40	1	6,931
2022	5,015	1,514	322	87	42	1	6,981
2023	5,050	1,519	327	90	44	1	7,031
2024	5,085	1,524	332	93	46	1	7,081
2025	5,120	1,529	337	96	48	1	7,131
2026	5,155	1,534	342	99	50	1	7,181
2027	5,190	1,539	347	102	52	1	7,231
[redacted]							
2017	76	19	0	0	-	-	96
Mar17- Feb18	24	14	1	(0)	-	-	39
2018	35	5	5	3	2	-	50
2019	35	5	5	3	2	-	50
2020	35	5	5	3	2	-	50
2021	35	5	5	3	2	-	50
2022	35	5	5	3	2	-	50
2023	35	5	5	3	2	-	50
2024	35	5	5	3	2	-	50
2025	35	5	5	3	2	-	50
2026	35	5	5	3	2	-	50
2027	35	5	5	3	2	-	50

Table III-4

LAGUNA MADRE WATER DISTRICT
FORECAST TOTAL ACCOUNTS
WASTEWATER Customer Classes

	5/8" Meter	1" Meter	2" Meter	4" Meter	6" Meter	8" Meter	Total
WASTEWATER Total Accounts							
2016	4,333	1,153	280	71	31	1	5,869
2017	4,393	1,166	280	72	31	1	5,943
Mar17- Feb18	4,410	1,175	281	71	31	1	5,969
2018	4,460	1,190	287	74	33	1	6,045
2019	4,485	1,195	292	77	35	1	6,085
2020	4,510	1,200	297	80	37	1	6,125
2021	4,535	1,205	302	83	39	1	6,165
2022	4,560	1,210	307	86	41	1	6,205
2023	4,585	1,215	312	89	43	1	6,245
2024	4,610	1,220	317	92	45	1	6,285
2025	4,635	1,225	322	95	47	1	6,325
2026	4,660	1,230	327	98	49	1	6,365
2027	4,685	1,235	332	101	51	1	6,405
WASTEWATER Annual New Accounts							
2017	60	13	-	-	-	-	74
Mar17- Feb18	17	8	1	-	-	-	27
2018	25	5	5	3	2	-	40
2019	25	5	5	3	2	-	40
2020	25	5	5	3	2	-	40
2021	25	5	5	3	2	-	40
2022	25	5	5	3	2	-	40
2023	25	5	5	3	2	-	40
2024	25	5	5	3	2	-	40
2025	25	5	5	3	2	-	40
2026	25	5	5	3	2	-	40
2027	25	5	5	3	2	-	40

Raw and Treated Water Production

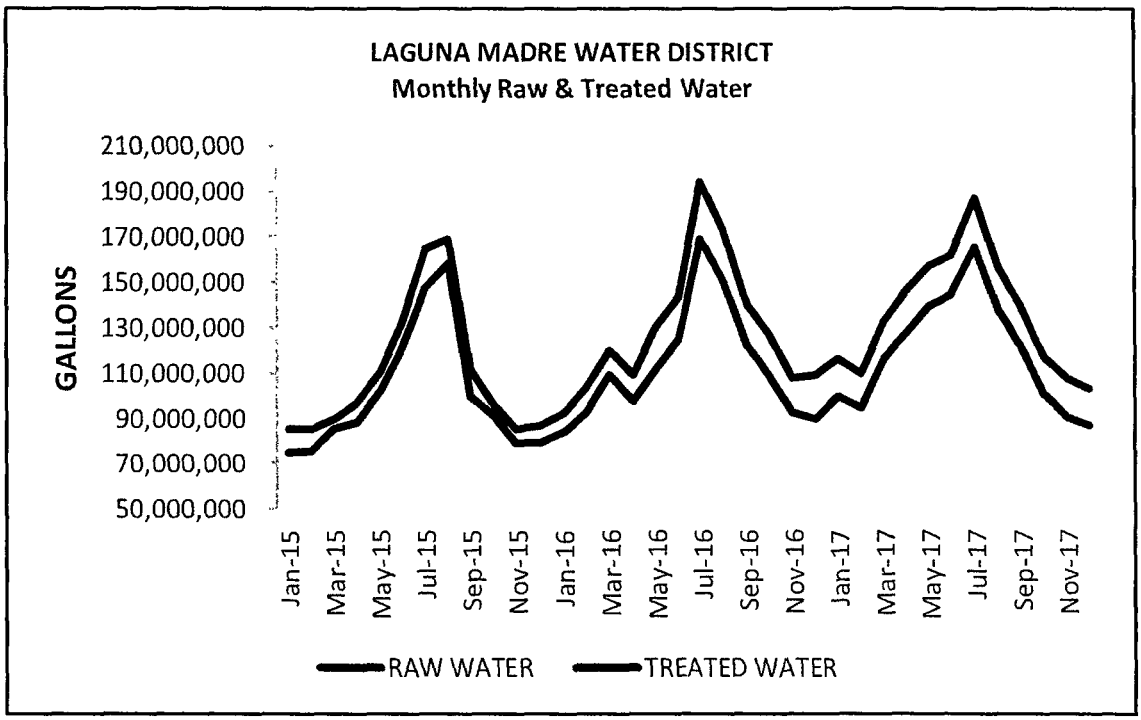
Table III-5 and **Chart III-6** presents the District's historical water usage over the past three years. The District's treated water production has nominally increased during the period 2015-2017. Raw water production is larger due to a combination of raw water usage by large irrigation customers and transportation and production losses.

Table III-5

LAGUNA MADRE WATER DISTRICT
RAW AND TREATED WATER PRODUCTION

	Raw Water Production	Treated Water Production
2015	1,316,632,000	1,204,310,000
2016	1,553,122,000	1,354,564,000
2017	1,639,161,000	1,429,201,000

Table III-6



Customer Water Usage – Historical and Forecast

Table III-7 presents the District's historical and forecast water consumption and billing units. The table reveals that usage increased annually from 2016 through the Test Year. Usage is forecast to increase nominally in each year of the next decade. Table III-7 and **Chart III-8** on the following page reveal that the 1" customer class is the largest user, followed by the 5/8" customer class.

Chart III-9 presents average monthly water consumption by meter size.

Table III-7

LAGUNA MADRE WATER DISTRICT
FORECAST TOTAL BILLED CONSUMPTION NET OF MINIMUMS

	5/8" Meter	1" Meter	2" Meter	4" Meter	6" Meter	8" Meter	Total
2016	337,245,600	456,851,900	96,217,200	184,887,400	93,509,400	300	1,168,711,800
2017	360,368,400	484,239,000	113,043,500	206,778,100	99,994,800	100	1,264,423,900
Mar17- Feb18	353,935,000	485,153,500	107,657,000	208,898,700	94,387,200	100	1,250,031,500
2018	355,214,724	485,968,063	108,563,204	213,250,756	97,336,800	100	1,260,333,646
2019	356,489,853	486,781,262	109,461,906	217,515,771	100,199,647	100	1,270,448,540
2020	357,760,438	487,593,106	110,353,289	221,698,767	102,982,971	100	1,280,388,671
2021	359,026,527	488,403,599	111,237,530	225,804,300	105,693,049	100	1,290,165,105
2022	360,288,166	489,212,750	112,114,798	229,836,519	108,335,375	100	1,299,787,709
2023	361,545,403	490,020,565	112,985,255	233,799,218	110,914,789	100	1,309,265,330
2024	362,798,283	490,827,051	113,849,056	237,695,872	113,435,579	100	1,318,605,941
2025	364,046,852	491,632,213	114,706,353	241,529,676	115,901,570	100	1,327,816,764
2026	365,291,152	492,436,059	115,557,291	245,303,577	118,316,186	100	1,336,904,366
2027	366,531,229	493,238,595	116,402,008	249,020,298	120,682,510	100	1,345,874,740
	WASTEWATER Billing Units						
2018	224,961,846	313,267,536	69,748,883	153,997,429	55,209,368	75	817,185,135
2019	226,222,842	314,583,786	70,964,020	160,240,568	58,555,390	75	830,566,681
2020	227,483,839	315,900,036	72,179,157	166,483,707	61,901,412	75	843,948,226
2021	228,744,836	317,216,286	73,394,295	172,726,846	65,247,435	75	857,329,772
2022	230,005,833	318,532,536	74,609,432	178,969,985	68,593,457	75	870,711,318
2023	231,266,830	319,848,786	75,824,569	185,213,124	71,939,479	75	884,092,863
2024	232,527,827	321,165,036	77,039,707	191,456,263	75,285,501	75	897,474,409
2025	233,788,824	322,481,287	78,254,844	197,699,402	78,631,524	75	910,855,955
2026	235,049,821	323,797,537	79,469,981	203,942,541	81,977,546	75	924,237,500
2027	236,310,818	325,113,787	80,685,119	210,185,680	85,323,568	75	937,619,046

Chart III-8

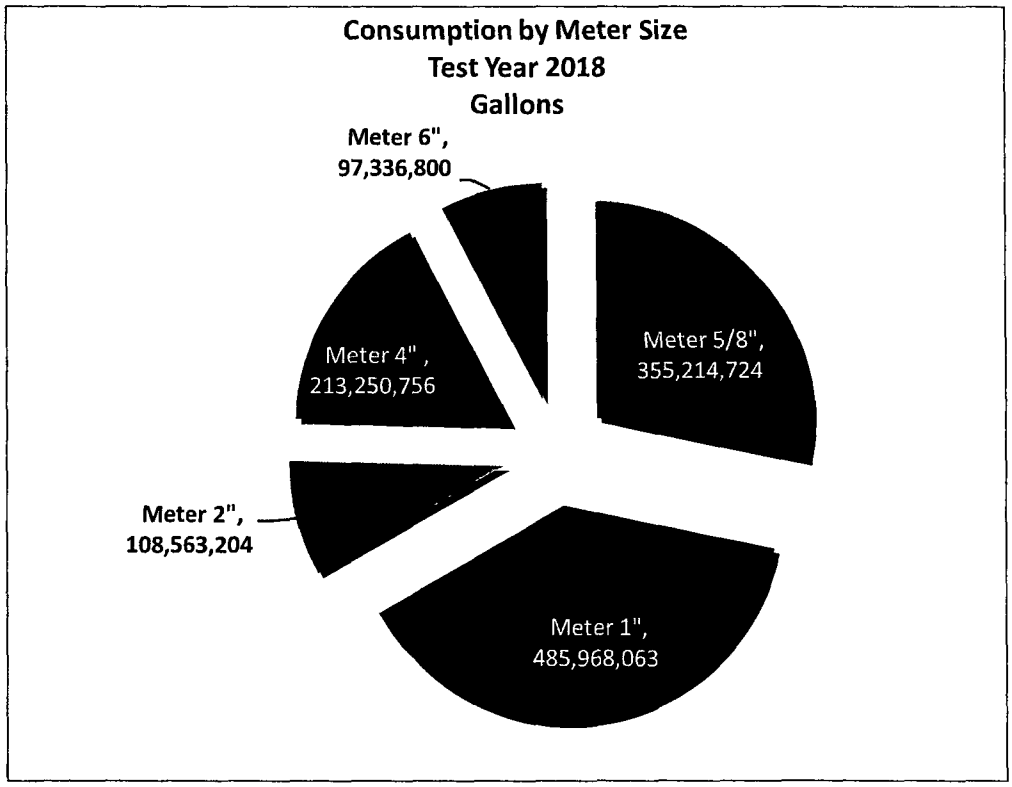
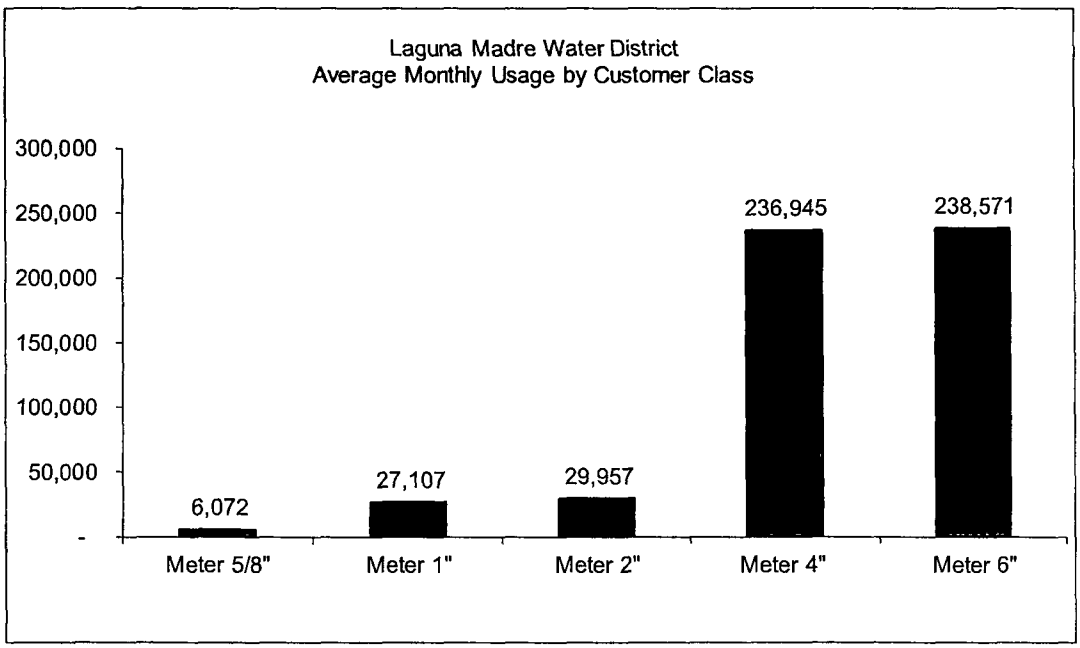


Chart III-9



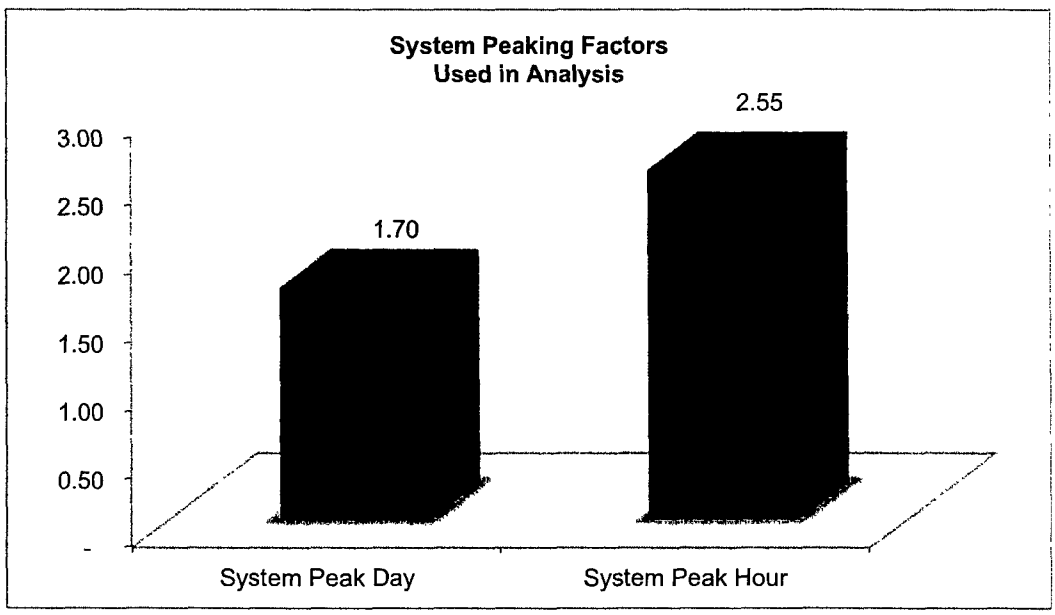
Peaking Factors

The cost of providing water to customers depends not only on the amount of water each class uses, but also on how that usage occurs over time. The maximum-day and maximum-hour peaking requirements of a water utility's customers are an important influence on the utility's costs. Because water utilities attempt to meet all of the demands of their customers, water systems are sized to meet customers' peak requirements. Therefore, during off-peak periods, there are usually significant costs associated with the unused capacity of the system. These costs must be allocated in proportion to the contribution of each customer class to the system peak, in order to develop equitable cost-based rates. Thus, it is necessary to determine the peak rate of use relative to the average rate of use for each class. This ratio is called a ***Peaking Factor***.

The calculation of peaking factors for individual classes relies on available pumping and consumption information as well as professional judgment. If customer meters could record daily flow rates for each customer, more refined information could be obtained on peaking factors. This is not feasible because of the enormous cost that would be imposed on the utility. Therefore, it is accepted practice in the water industry to develop peaking factor estimates based on standard formulas using system peak day information and monthly customer class use records. This is a conservative methodology, since customer class peaking factors based on peak months will inevitably be lower than the system-wide peaking factor, which is based on the peak day.

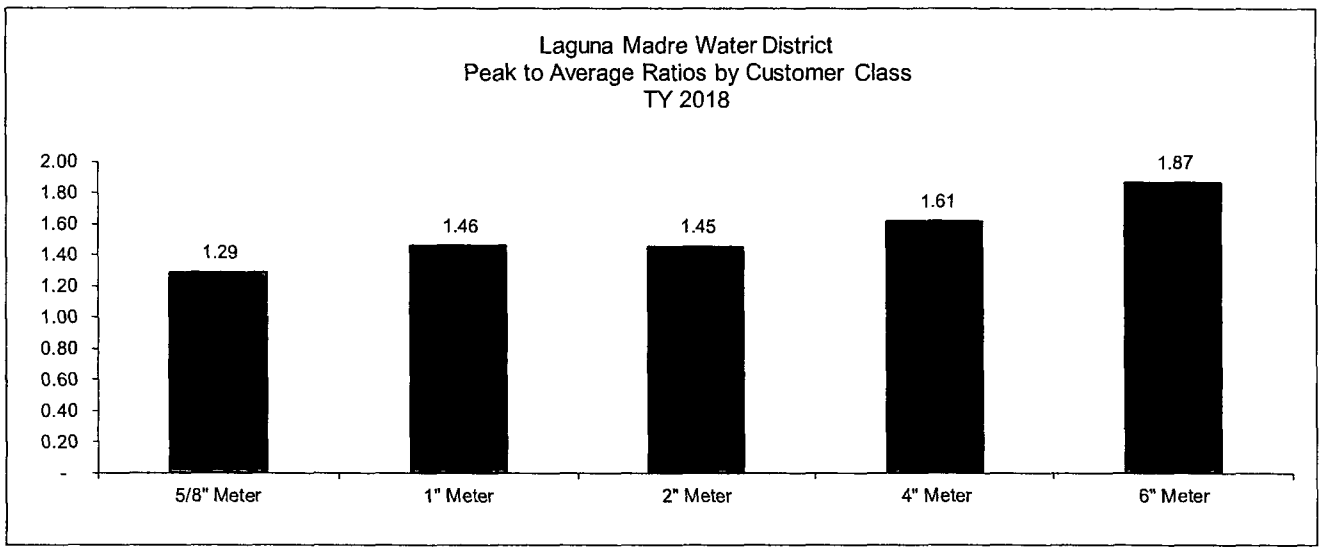
The system peak to average ratios used in the cost of service analysis are presented in **Chart III-10**. These are based on a study prepared for the District in 2012 by CDM-Smith.

Chart III-10



Based on AWWA guidelines, the customer class peaking factors calculated in this study are for non-coincidental peaks. The individual customer class peaking factors developed for this analysis are presented in **Chart III-11** below. A general rule of thumb is that the higher the peaking factor for a given customer class, the higher that customer class' per unit cost of water service. It is clear that as meter sizes increase, so does the peaking factor.

Chart III-11



Wastewater Treatment Plant Flows

Table III-12 presents total influent flows and strengths at each of the District's wastewater treatment plants. The strength factors are used as a critical input to recommended BOD and TSS rates per pound for high strength sewage.

Table III-12

LAGUNA MADRE WATER DISTRICT
WASTEWATER PLANT INFLUENT

	Port Isabel			Andy Bowie			Isla Blanca			Laguna Vista			
	Total Gallons	BOD mg/l	TSS mg/l	Total Gallons	BOD mg/l	TSS mg/l	Total Gallons	BOD mg/l	TSS mg/l	Total Gallons	BOD mg/l	TSS mg/l	Total Gallons
2015	270,242,000	185	115	159,053,100	149	174	302,959,000	183	234	150,260,000	102	110	882,514,100
2016	271,024,000	216	129	163,723,600	161	150	284,441,000	188	242	93,416,000	96	116	812,604,600
2017	248,900,000	221	121	162,706,900	163	137	273,461,000	190	206	59,015,000	137	186	744,082,900

Section IV

SECTION IV

Test Year and Forecast Revenue Requirement

This section of the water and wastewater rate study and long-term financial plan focuses on the District's test year and forecast revenue requirements. For the purposes of rate design, the test year consists of the District's current fiscal year, October 1 2017 through September 30 2018. The figures presented in this section are based on the District's adopted FY 2018 budget.

The calculation of a revenue requirement differs from a utility's budget in that it represents only that amount that must be raised through the District's water and wastewater rates. This means that non-rate revenue (such as interest income, and connection fees) must be subtracted from the budget operating and capital expenditures to determine the net revenue requirement to be raised from rates.

As is typical for publicly owned utilities, the District's system revenue requirements were developed using the cash basis of ratemaking. Under the cash basis, as defined by the AWWA Manual M-1, system revenue requirements consist of cash expenditures and other financial commitments (such as debt service coverage or reserves) that must be met through system operating revenues and other revenue sources. The following specific items are included in the City's revenue requirements that must be raised from rates:

O&M expenses

Capital Outlays

Debt Service

Because the District is an independent governmental and financial entity, there are no funds transfers to be included in the revenue requirement. All data used in the development of the revenue requirements was obtained from the financial statements, budgets and other information provided by District staff.

The revenue requirement and cost of service calculations contained in this section are presented in detail in the comprehensive water and wastewater cost of service rate model in Appendix A.

Operating Expenses and Capital Outlays

Table IV-1 presents the District's test year 2018 forecast of operating expenses and capital outlays for the water and wastewater system. The forecast is based on the District's Board-approved FY 2018 budget.

Operating expenses represent personnel, chemicals, electricity and other day-to-day expenses incurred by the District. Capital outlays typically reflect the acquisition of various tractors, dump trucks, pick-up trucks, computer equipment, and so on. These expenses are separate and distinct from the major capital improvements (i.e. water system expansion, well purchases, etc.) funded through the District's long-term debt.

The table reveals that the water system's test year operating expenses and capital outlays are forecast to be **$7,823,816**, of which **$3,906,721** is for the water utility and **$3,917,105** is for the wastewater utility. Details behind these calculations can be found in the rate model presented in Appendix A.