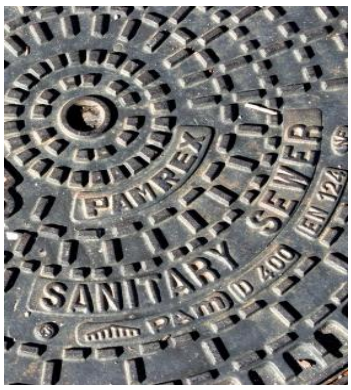
Richardson Bay Sanitary District

FINAL REPORT



Comprehensive Sewer Rate Study

June 2016

HDR Engineering, Inc.

June 30, 2016

Mr. Johnny Tucker
District Manager
Richardson Bay Sanitary District
500 Tiburon Blvd.
Tiburon, CA 94920

Subject: Development of the District's Comprehensive Sewer Rate Study

Dear Mr. Tucker:

HDR Engineering, Inc. (HDR) was retained by the Richardson Bay Sanitary District (District) to conduct a comprehensive sewer rate study. The objective of this study is to review the adequacy of the District's rates and project the revenues and expenses of the District for a five-year period. The District's rates should be set at a level which is sufficient to fund the operating and capital infrastructure needs of the District. At the same time, the District currently bills their customers on an annual basis through their property taxes and for single-family and multi-family customers a flat (fixed) rate structure is utilized. As a part of this study, HDR has reviewed the equity and cost basis for this rate structure.

The District retained HDR to provide an independent outside expert review of the District's current sewer rates. This study has been developed utilizing generally accepted sewer rate-setting techniques. The District's records and information were the key inputs into this study. Our review has been provided in the context of industry accepted practices, but also intended to comply with California legal requirements (i.e. Proposition 218).

We appreciate the assistance provided by the District's management and staff in the development of this study. Thank you for the opportunity to provide these professional and technical services to the District.

Sincerely yours,
HDR Engineering, Inc.

Tom Gould
Vice President
HDR's Business Leader
of Finance and Rates

Shawn Koorn
Associate Vice President

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Executive Summary

Introduction

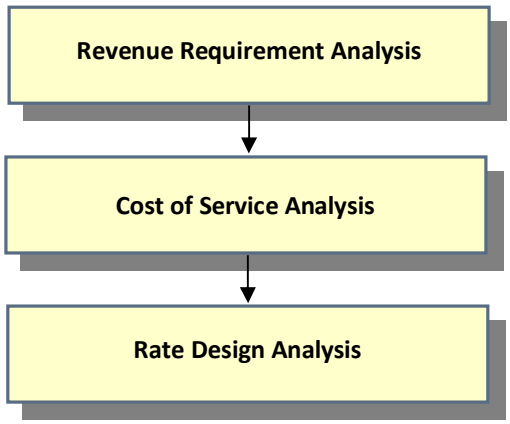
HDR Engineering, Inc. (HDR) was retained by the Richardson Bay Sanitary District (District) to conduct a comprehensive sewer rate study. The objective of the rate study was to review the District's operating and capital infrastructure costs in order to develop a financial plan and cost-based rates. This study determined the adequacy of the existing sewer rates and provides the framework and cost justification for any needed future adjustments.

There were two main issues driving the need for this rate study. First, Richardson Bay's wastewater is collected and then conveyed to the Sewerage Agency of Southern Marin (SASM) for treatment. The cost of wastewater treatment is a large proportion of the District's overall budget and the costs for treatment from SASM are anticipated to increase significantly over the next few years. These costs must be passed through to the District's customers. The other important aspect of this study is the establishment of cost-based rates. At the present time, the District uses a rate structure approach based upon equivalent dwelling units. While that rate structure is a common approach in California and a generally accepted industry practice, it must be administered in an equitable and cost-based manner and this study will review the per living unit cost relationship of serving a single-family residential customer and a multi-family customer. The rates adopted by the District should bear a reasonable and proportional relationship to the cost to serve the different types of customers served by the District.

Overview of the Technical Analysis

A comprehensive sewer rate study consists of three interrelated analyses; a revenue requirement analysis and a rate design analysis. Figure ES-1 provides an overview of these analyses.

Figure ES – 1
Overview of the Comprehensive Sewer Rate Analyses



Compares the revenues to the expenses of the utility to determine the overall rate adjustment required

Allocates the revenue requirement to the various customer classes of service in a "fair and equitable" manner

Considers both the level and structure of the rate design to collect the target level of revenues

The study conducted for the District completed each of these technical analyses which provided the cost-basis for the recommendations contained within this study.

Summary Results of the Revenue Requirement Analysis

The revenue requirement analysis is the first analytical step in the comprehensive rate study process. This analysis determines the adequacy of the District's overall sewer utility rates and other funding sources. From this analysis, a determination can be made as to the overall level of sewer rate adjustment needed to provide adequate and prudent funding for both operating and capital needs. It is important to note that the District's rates have been very stable for many years because one of the District's other funding sources is property tax revenues which have helped to off-set the need for rate adjustments. The cost of wastewater treatment is expected to increase significantly over the next five years and rates will need to be adjusted upward to reflect these increasing costs.

For this particular study, the revenue requirements were developed for the projected five-year time period of FY 2017 – FY 2021. The costs included with the revenue requirements are based upon the "cash basis" methodology and include O&M expenses, debt service, capital improvement funded from rates and any changes (±) to reserve levels. The District's property tax revenues are deducted from the total revenue requirement to determine the balance of revenues required from sewer rates.

The largest O&M expense the District incurs is related to wastewater treatment. Richardson Bay's wastewater is collected and then conveyed to SASM for treatment. The cost of wastewater treatment from SASM is anticipated to increase significantly over the next few years. While SASM has not formally announced the level of treatment cost adjustments in the near future, the District was provided with preliminary estimates from SASM. Those preliminary estimates indicated the following adjustments:

Fiscal Year	SASM Treatment Adj.
FY 2017	28.0%
FY 2018	28.0%
FY 2019	8.0%
FY 2020	8.0%
FY 2021	6.0%

The SASM treatment rate adjustments are driven by SASM's need to make major capital improvements to their treatment facilities to meet changing and increasingly stringent regulatory requirements. The impacts of the SASM treatment adjustments to the District's O&M costs are significant. The District's current treatment costs (FY 2016) is $1.6 million. With the adjustments to the SASM rate, the cost to the District will increase to slightly over $2.0 million in FY 2017 and continue to increase to slightly over $3.2 million by FY 2021.

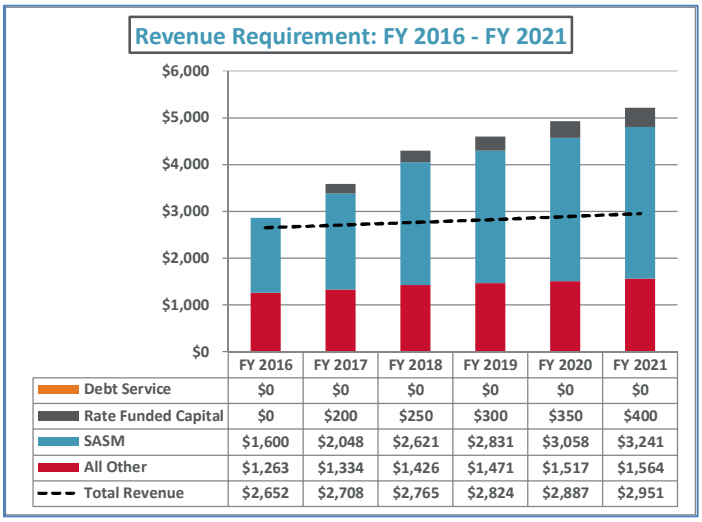
In addition, the other cost component within the District's revenue requirement which impacts the results was the amount of capital improvement funding from rates. This funding is used to repair and replace the District's collection system as it ages. In utility financial planning, a

general financial guideline states that, at a minimum, a utility should fund an amount within their rates that is at least equal to, or greater than, annual depreciation expense to fund renewal and replacement-related capital projects. Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of plant investment needs to be replaced (funded) to maintain the existing level of infrastructure (i.e. maintain service levels). As a part of this study, HDR has increased funding levels over time to provide the District with more adequate funding to maintain service levels.

Given a projection of the revenues and expenses, the revenue requirements were summarized. A summary of the revenue requirements is shown below in Table ES-1.

Table ES–1
Summary of the Revenue Requirement Analysis ($000s)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Sources of Funds						
Rate Revenues	$1,235	$1,241	$1,248	$1,254	$1,260	$1,266
Property Tax Revenue	1,390	1,439	1,489	1,541	1,595	1,651
Other Revenues	27	28	29	29	31	34
Total Source of Funds	**$2,652**	**$2,708**	**$2,765**	**$2,824**	**$2,886**	**$2,951**
Applications of Funds						
All Other O&M Expenses	$1,263	$1,334	$1,426	$1,471	$1,517	$1,564
SASM Treatment Expenses	1,600	2,048	2,621	2,831	3,058	3,241
Rate Funded Capital	0	200	250	300	350	400
Net Debt Service	0	0	0	0	0	0
Change in Working Capital +/-	(211)	(316)	(338)	36	155	366
Total Revenue Requirement	**$2,652**	**$3,266**	**$3,959**	**$4,638**	**$5,080**	**$5,571**
Balance/(Defic.) of Funds	**$0**	**($559)**	**($1,195)**	**($1,814)**	**($2,193)**	**($2,621)**
Cumulative Defic. as a % of Rates	**0.0%**	**45.0%**	**95.8%**	**144.7%**	**174.1%**	**206.9%**
Proposed Rate Adjustment	**0.0%**	**45.0%**	**35.0%**	**25.0%**	**12.0%**	**12.0%**



The results shown in Table ES-1 indicate major deficiencies in revenues beginning in FY 2017 and continuing over the five-year projected time period. On a cumulative basis, the rates are projected to be deficient by approximately 207% in FY 2021. These deficiencies are primarily driven by the increased costs associated with wastewater treatment from SASM. In addition, this study has also increased the funding of capital projects from rates. To address the

overall revenue deficiencies of the District, annual rate adjustments have been proposed (yellow band). The rate adjustments are designed to eliminate the overall revenue deficiencies in each year. The size and timing of the adjustments to the District's sewer rates is a policy decision of the Board. **HDR would recommend that the District implement the proposed overall sewer rate adjustments for the five year period shown in Table ES-1**.

Summary Results of the Cost of Service Analysis

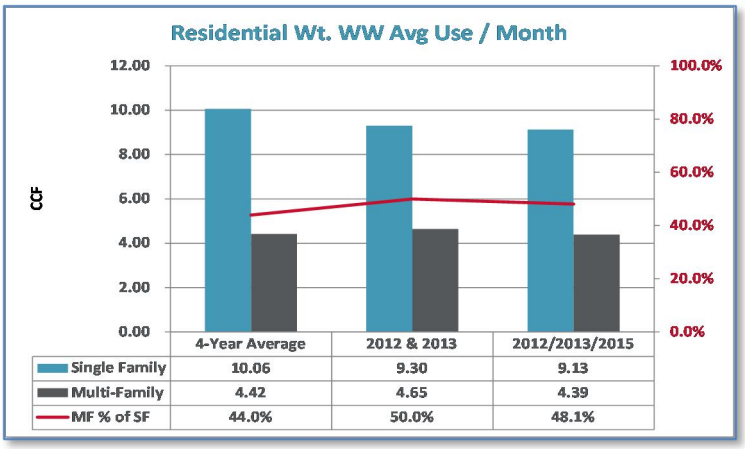
A cost of service analysis is concerned with the equitable (i.e., proportional) allocation of the total revenue requirements between the various customer classes of service (e.g. residential, multi-family and non-residential, etc.). There are two primary objectives in conducting a cost of service study. They are as follows:

- Equitably allocate the revenue requirements among the customer classes of service
- Derive average unit costs for subsequent rate designs

Simply stated, a cost of service analysis determine whether there are cost differences associated with serving different types of customers.

In conducting a cost of service, the costs are *functionalized*, *classified* and *allocated*. The functionalization of costs is simply the arrangement of costs by functional category (e.g. treatment, collection, etc.). Next, the classification of costs refers to the assignment of the functionalized costs to cost components (e.g., volume-related, strength-related, customer-related). Finally, given the assignment of the total revenue requirement to each of the cost components the final step is to equitably allocate each of the cost components on a proportional basis using an allocation factor. For example, volume-related costs are allocated to each class of service (e.g., residential, multi-family, non-residential) on the basis of the estimated volumes of wastewater contributed by each customer class.

The vast majority of costs associated with the District's system were classified as being volume-related. In this case, the classes of service were single-family residential/duplex, multi-family (3+ living units) and non-residential. Wastewater is not metered or measured at the customer's premises. Given that, wastewater volumes must be estimated for each class of service. To accomplish this, metered water consumption is used as a reasonable surrogate for wastewater flows. Specifically, winter water use is analyzed since it is assumed to be primarily indoor use with a minimal outdoor use component. Outdoor irrigation does not enter the wastewater flows and should be excluded. As a part of this study, water consumption data was reviewed for a three year period to establish the volume (flow) relationships by customer class of service. **An important finding from this analysis is that on a per living**



unit basis, a multi-family customer contributes approximately 55% of the flow when compared to a single-family residential/duplex customer.

The final step of the cost of service analysis is to proportionally allocate the classified costs to the customer classes of service using the allocation factors. A summary of the detailed cost responsibility developed for each class of service is shown below in Table ES-3.

Table ES - 3
Summary of the FY 2017 Cost of Service Analysis ($000s)

Class of Service	Present Rate Revenues	Allocated Costs	$ Difference	% Difference
Single-Family Residential/Duplex	$729	$1,152	($423)	58.0%
Multi-Family Residential (3+ units)	320	346	(27)	8.3%
Non-Residential	192	301	(109)	56.8%
Total	**$1,241**	**$1,799**	**($559)**	**45.0%**

As can be seen, there are cost differences associated with serving the different customer classes of service. The proportional allocation of costs reflects the facilities and costs for each customer class based on the respective benefit. The results of the study indicate the need for interclass adjustments to better reflect the relationship between a single-family residential/duplex customer and a multi-family customer on an EDU basis. The results of the cost of service analysis are primarily driven by the difference in the volumetric contributions of a single family residential/duplex customer, compared to multi-family customers, on a per living unit basis. Historically, the District has treated each living unit of a multi-family customer as one (1) EDU or the equivalent of a single-family residential customer.

From the above information, average unit costs, or cost-based rates were developed. These were used to develop the proposed rates.

Review of the Proposed Rate Designs

The final step of the District's sewer rate study is the design of sewer rates to collect the desired levels of revenue, based on the results of the prior analyses. A summary of the District's current sewer rate structure is presented below in Table ES-4.

Table ES–4
Overview of the District's Present Sewer Rates

Annual Rate Per Equivalent Dwelling Unit	$246.00/EDU

The District's approach is very simple to administer, but does not reflect individual differences between a single-family and multi-family residential customer. This study has highlighted the cost differences between the single-family and multi-family residential customers. To address

those cost differences, HDR has recommended the following customer classes of service for purposes of establishing sewer rates

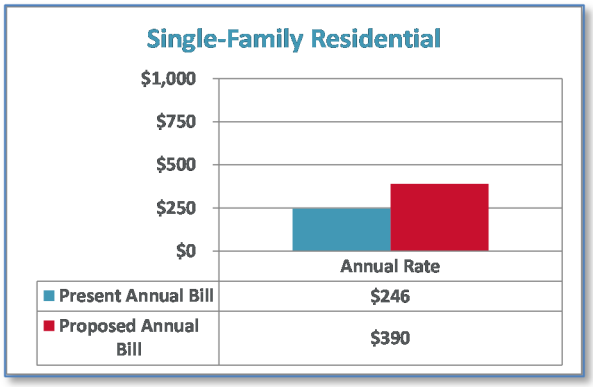
- Single-Family Residential/Duplex
- Multi-Family (3+ dwelling units)
- Non-Residential

The overall rate adjustments shown in the revenue requirements, along with the results from the cost of service were used to develop the final proposed rates. Table ES-5 provides a summary of the proposed rate designs for FY 2017 through FY 2021.

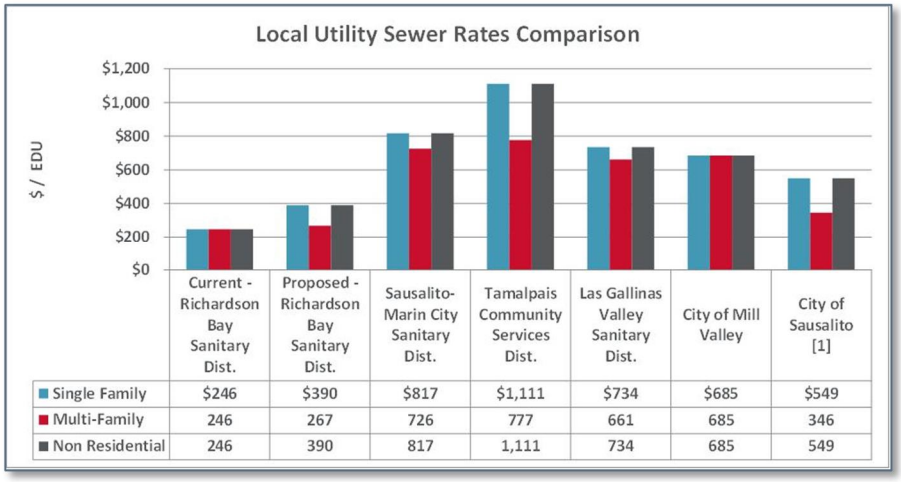
Table ES-5
Revised Cost/Rate Relationship ($/Equivalent Dwelling Unit Per Year)

	Current Rate	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Single-Family Residential/Duplex	$246.00	$390.00	$527.00	$658.00	$737.00	$826.00
Multi-Family Residential	246.00	267.00	360.00	451.00	505.00	565.00
Non-Residential	246.00	390.00	527.00	658.00	737.00	826.00

A bill comparison for a single-family residential customer is shown in the graph. As can be seen, for a single-family residential customer the impact for FY 2017 is an increase of $144 per year, or $12/month. It is important to note that duplex customers are billed under this same rate schedule and charged two (2) living units or an annual bill of $780/year. This compares to their current bill of $492/year.



Section 5 of the report provides a more detailed technical discussion of the development of the proposed rates and their cost-basis.



[1] - Assumes 5 CCF

One comparison that many utilities review is a comparison of rates/bills between neighboring, local, utilities. While this type of comparison may have been a consideration in the past during the rate setting process, under Proposition 218 it has minimal relevance in

that Proposition 218 requires the utility to establish cost-based and proportional rates, regardless of neighboring rates or their competiveness. However, in viewing the rate comparison developed as a part of this study, the District currently has exceptionally low rates in comparison to the neighboring utilities. Even with the proposed future adjustments, the single-family residential rate will be at $826.00/EDU in FY 2021, and the other local utilities served by SASM will also experienced increased costs of wastewater treatment similar to the District's adjustments.

Public Meetings and Public Hearing

As a part of the District's rate study process, public meetings were held during the regularly scheduled Board meetings held on March 15, 2016 and April 20, 2016. During these meetings, HDR reviewed with the Board the preliminary findings and conclusions from the study. During the meetings, HDR received policy direction from the Board. At the April 20, 2016 meeting, the Board selected their preferred set of proposed rates for Proposition 218 notification mailings. On June 21, 2016, the Board held a Proposition 218 hearing on the proposed rates. After receiving public comment from the public hearing and determining the number of protest votes from the public mailing, the District's Board unanimously adopted the proposed rates.

Summary

HDR worked with the District's Board and management team to develop rates which, in the opinion of HDR, are cost-based and compliant with the requirements of Proposition 218. HDR is also of the opinion that the proposed rates meet the industry definition of "cost-based" rates, along with the spirit (intent) and legal requirements of Proposition 218. As a part of this study, HDR has attempted to provide a clear record as to the rate setting theory and cost basis for the methodology used to establish the District's rates.

1. Introduction

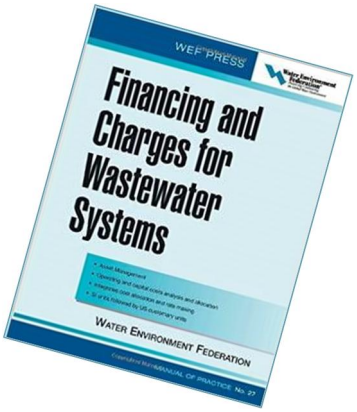
1.1 Introduction

HDR Engineering, Inc. (HDR) was retained by the Richardson Bay Sanitary District (District) to conduct a comprehensive sewer rate study. The objective of this study was to review the adequacy of the District's existing sewer rates, but more importantly, to project the District's revenues and expenses to determine the need for any future rate adjustments.

There were two main issues driving the need for this rate study. First, Richardson Bay's wastewater is collected and then conveyed to the Sewerage Agency of Southern Marin (SASM) for treatment. The cost of wastewater treatment is a large proportion of the District's overall budget and the costs for treatment from SASM are anticipated to increase significantly over the next few years. These costs must be passed through to the District's customers. The other important aspect of this study is the establishment of cost-based rates. At the present time, the District uses a rate structure approach based upon equivalent dwelling units. While that rate structure is a common approach in California and a generally accepted industry practice, it must be administered in an equitable and cost-based manner and this study will review the per living unit cost relationship of serving a single-family residential customer and a multi-family customer. The rates adopted by the District should bear a reasonable and proportional relationship to the cost to serve the different types of customers served by the District.

1.2 Overview of the District's Goals and Objectives

This study was developed to provide up to a five-year rate plan for the District. The study was developed and intended to achieve the following objectives:



- Developed to be in conformance with generally accepted sewer rate setting methodologies. These generally accepted methodologies are typically defined by the Water Environment Federation, Manual of Practice No. 27, Financing and Charges for Wastewater Systems.
- Determine the level of revenues needed by the District's rates and other funding sources to maintain operations at current service levels and account for anticipated expense increases.
- Affirm the appropriateness of the existing rate structure approach and maintain or develop new rate categories (e.g. multi-family) to provide equity among users.
- Calculate proposed rates which are in conformance with all applicable laws, including the provisions of Proposition 218.
- Provide a well written report documenting the various analyses undertaken as a part of this rate study.

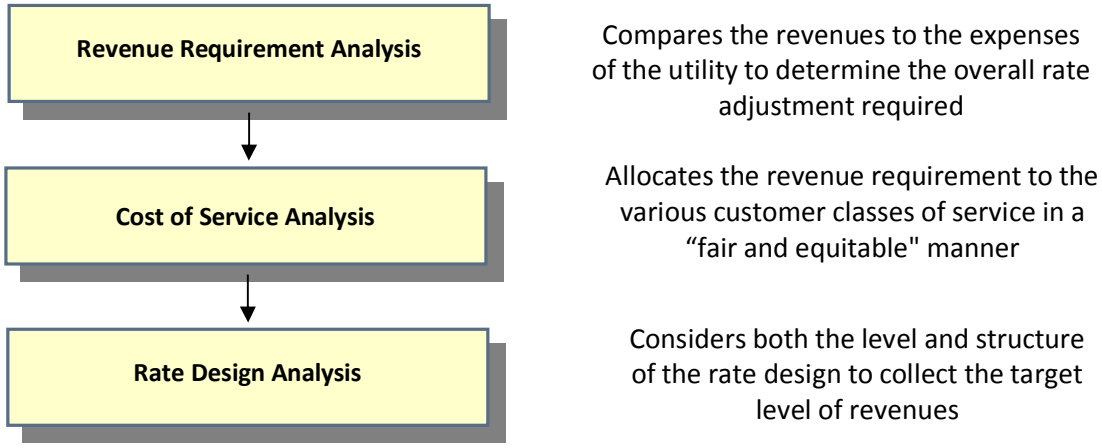
Given a set of goals and objectives for the study, the analytical process used for this study can be reviewed.

1.3 Overview of the Rate Study Process

User rates must be set at a level where a utility's operating and capital expenses are met with the revenues received from customers. This is an important point, as failure to achieve this objective may lead to insufficient funds to maintain system integrity. To evaluate the adequacy of the existing rates, a comprehensive sewer rate study is often performed.

A comprehensive sewer rate study consists of three interrelated analyses; a revenue requirement analysis, a cost of service analysis and, a rate design analysis. Figure 1-1 provides an overview of these analyses.

Figure 1 – 1
Overview of the Comprehensive Sewer Rate Analyses



The study conducted for the District completed each of these technical analyses which provided the cost-basis for the recommendations contained within this study.

1.4 Organization of the Report

This report is organized in a sequential manner that first provides an overview of utility rate setting principles, followed by sections which detail the specific steps used to review the District's sewer rates. The following sections comprise the District's sewer rate study report:

- Section 2 – Overview of Utility Rate Setting Principles
- Section 3 – Development of the Revenue Requirement Analysis
- Section 4 – Development of the Cost of Service Analysis
- Section 5 – Development of the Proposed Rate Designs

1.5 Summary

This report will review the comprehensive sewer rate analyses prepared for the Richardson Bay Sanitary District. This report has been developed utilizing "generally accepted" sewer rate setting methodologies. The next section of the report will provide a brief overview of the general rate setting process that was used to analyze and establish the proposed sewer rates for the District.

2. Overview of the Utility Rate Setting Process

2.1 Introduction

In developing and establishing utility rates, there are "generally accepted" principles or guidelines around which these types of rates should be set.[1] The purpose of this section of the report is to provide a general overview of the methodology and guidelines used for setting cost-based sewer rates. This should provide the reader with a better understanding of the general process that is detailed later in this report.

2.2 Global Principles Around Which Rates Should Be Set

As a practical matter, there should be a general set of principles around which rates should be set. These guiding principles may be items such as setting rates which are cost-based, easy to understand, etc. These types of principles may be referred to as "global principles" since they should be utilized by all utilities (e.g. water, sewer, electric, etc.) in the development of their rates.

Provided below is a brief listing of the global principles around which the District should consider setting its sewer rates:

- Rates should be cost-based and equitable, and set at a level such that they meet the full revenue requirements of the utility.
- Rates should be easy to understand and administer.
- Rates and the process of allocating costs should conform to "generally accepted" rate setting techniques.
- From the utility's perspective, rates should be stable, in their ability to provide adequate revenues to meet the utility's financial, operational, and regulatory requirements.
- From the customer's perspective, rate levels (bills) should be stable from year to year (i.e. when possible, small rate adjustments are preferred over large rate adjustments).

These guiding principles will be utilized within this study to help develop sewer rates which are cost-based and equitable. It should be noted that the District has used these basic principles in the past to establish their sewer rates.

2.3 Types of Utilities

Utilities are generally divided into two types - public and private utilities. Public utilities are usually owned by a city, county or special district, and theoretically operated at zero profit. A public utility is, in essence, locally owned since its customers are also its "owners". In contrast to this, a private utility is a "for profit" enterprise and is owned by a private company and/or stockholders. A private utility is capitalized by issuing stock to the general public. As such, the

[1] The Water Environment Federation, Manual of Practice No. 27, *Financing and Charges for Wastewater Systems*, is the most widely recognized source for "generally accepted" wastewater (sewer) rate setting principles.

shareholders are, in essence, the owners of the private utility. Therefore, the "owners" of a private utility may not be customers or local citizens, but rather numerous individuals or shareholders spread across the United States. As a point of reference, the District is a "public" utility.

Given these two vastly different forms of utility ownership, their financial operations and rate considerations also vary significantly. Public utilities are capitalized or financed by issuing debt and soliciting funds from customers through direct capital contributions or user rates. These public or municipal utilities are exempt from state and federal income taxes. In addition, a publicly elected City Council or Board of Directors usually regulates public utilities. In contrast, private utilities are taxable entities. Given their "for profit" status, their rates and operational affairs are generally regulated by a state public utility commission or other regulatory body.

> *"Public utilities are usually owned by a city, county or special district, and theoretically operated at zero profit."*

2.4 Determining the Revenue Requirement

Because public and private utilities have very different administrative and financial characteristics their methods differ for determining revenue requirements and setting rates.

2.4.1 Public Utilities

Most public utilities use the "cash basis" approach for establishing their revenue requirement and setting rates. This approach conforms to most public utility budgetary requirements and the calculation is easy to understand. A public utility totals its cash expenditures for a period of time to determine required revenues. The required revenues are comprised of:

- Operation and maintenance (O&M) expenses added to any applicable taxes or transfer payments to determine total operating expenses. Operation and maintenance expenses include the materials, electricity, labor, supplies, etc. needed to keep the utility functioning. O&M expenses can also include purchased services such as wastewater treatment at a regional facility.
- Capital costs which are calculated by adding debt service payments (principal and interest) to capital improvements financed with rate revenues. In lieu of including capital improvements financed with rate revenues, a utility sometimes includes (substitutes) annual depreciation expense to stabilize annual revenue requirements. Annual depreciation expense is reflective of the total investment in facilities and the proportion of the facilities which are annually becoming worn out and obsolete.

Under the "cash basis" approach, the sum of the capital and operating expenses equals the utility's revenue requirement during any period of time (see Table 2-1).

Table 2 – 1 Cash versus Utility Basis Comparison			
	Cash Basis		**Utility Basis (Accrual)**
+	O&M Expense	+	O&M Expense
+	Taxes or Transfer Payments	+	Taxes or Transfer Payments
+	CIP Funded from Rate Revenues (≥ Depreciation Expense)	+	Depreciation Expense
+	Debt service (Principal + Interest)	+	Return on Investment
=	Total Revenue Requirement	=	Total Revenue Requirement

Note that the two portions of the capital expense component (debt service and capital improvements projects [CIP] financed from rates) are necessary under the cash basis approach because utilities generally cannot finance all their capital facilities with long-term debt. Most public utilities utilize the "cash basis" methodology to establish their revenue requirements. An exception to this statement occurs if a public utility provides service to a wholesale or contract customer. In this situation, a public utility may use the "utility basis" approach to earn a fair return on its investment. In the case of the District, the "cash basis" methodology will be used to develop the revenue requirement analysis. This aspect of the study is discussed in Section 3.

2.5 Cost of Service Analysis

After the total revenue requirement is determined, it is equitably allocated to the users of the service. The allocation, usually established through a cost of service analysis, reflects the cost relationships for producing and delivering services. A cost of service analysis requires three analytical steps:

1. Costs are ***functionalized*** or grouped into the various cost categories related to providing service (collection, pumping, treatment, etc.). This step is largely accomplished by the utility's accounting system.
2. The functionalized costs are then ***classified*** to specific cost components. Classification refers to the arrangement of the functionalized data into cost components. For example, a sewer utility's costs are typically classified as volume, strength (BOD/TSS), or customer-related costs.
3. Once the costs are classified into components, they are ***allocated*** to the customer classes of service (residential, multi-family, commercial, etc.). The allocation is based on each customer class' relative contribution to the cost component. For example, customer-related costs are allocated to each class of service based on the total number of customers in that class of service. Once the total costs are allocated, the summary of the analysis provides the amount of revenues needed from each customer class of service to achieve equitable and cost-based rates.

The District's cost of service analysis utilized this same basic analytical framework. A more detailed discussion of the District's cost of service analysis can be found in Section 4.

2.6 Designing Sewer Rates

Rates that meet the utility's overall rate design objectives are developed based upon the findings and recommendations from the revenue requirement and cost of service analysis. The cost of service analysis provides average unit costs (rates) which are strictly cost-based and do not consider any other non-cost based goals and objectives (e.g. ability to pay, ease of understanding, etc.). In the design of final proposed rates, factors such as ability to pay, continuity of past rate philosophy, economic development, ease of administration, and customer understanding are typically taken into consideration. In California, Proposition 218 has greatly limited the ability of utilities to incorporate non-cost based goals into the rate design. This aspect of the District's rate study is discussed in Section 5.

2.7 Economic Theory and Rate Setting

One of the major justifications for a comprehensive sewer rate study is founded in economic theory. Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained. This statement's implications on utility rate designs are significant. For example, a sewer utility usually incurs strength-related costs in treating high strength wastewater. It follows that the customers who have higher strength levels and create greater treatment costs should pay for those strength-related facilities in proportion to their contribution to total plant loadings. When costing and pricing techniques are refined, consumers have a more accurate picture of what the commodity costs to produce and deliver. This price-equals-cost concept provides the basis for the subsequent analysis and comments.

> *"Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained."*

2.8 Summary

This section of the report has provided a brief introduction to the general principles, techniques, and economic theory used to set contemporary and cost-based sewer utility rates. These principles, techniques, and economic theory will become the basis for the District's analyses. The next section of the report will review the development of the District's revenue requirements.

3. Development of the Revenue Requirement Analysis

3.1 Introduction

This section of the report discusses the development of the District's revenue requirement analysis. The revenue requirement analysis is the first analytical step in the comprehensive rate study process. This analysis determines the adequacy of the District's overall sewer utility rates and other funding sources. From this analysis, a determination can be made as to the overall level of sewer rate adjustment needed to provide adequate and prudent funding for both operating and capital needs. Typically, one of the main objectives of a sewer rate study is to develop "fair and equitable" rates while attempting to also minimize the impacts to the utility's customers.

In developing the sewer revenue requirements, it was assumed that the utility must financially "stand on its own" and be properly funded. As a result, the revenue requirements as developed herein assume the full and proper funding needed to operate and maintain the District's wastewater system on a financially sound and prudent basis.

> *"Typically, one of the main objectives of a sewer rate study is to develop "fair and equitable" rates while attempting to also minimize the impacts to the utility's customers."*

The District's rates have been very stable for many, but the District's funding sources also include property tax revenues which have helped to off-set the need for rate adjustments. In the near future, the cost of wastewater treatment is expected to increase significantly and rates will need to be adjusted upward to reflect these increasing costs. Even with these rate increases, the District's rates will be very competitive with the local region. Provided below is a more detailed discussion of the development of the District's revenue requirement analysis.

3.2 Determining the Time Period and Method of Accumulating Costs

The first step of the revenue requirement analysis is to establish a "test period", or time frame of reference for the revenue requirement analysis. For this particular study, the revenue requirements were developed for the projected five-year time period of FY 2017 – FY 2021. By reviewing costs over an extended time period, the District can better anticipate and plan around any significant changes or needs in operating and capital requirements. At the same time, by reviewing this extended time frame, the District can minimize short-term rate impacts and overall long-term rates.

The second step in determining the revenue requirements for the District was to decide on the basis of accumulating costs. As noted in Section 2, a "cash basis" or "utility/accrual basis" approach may be utilized in developing revenue requirements. For this particular study the "cash basis" methodology was utilized. The "cash basis" approach is the most commonly used methodology of publicly owned utilities to set their revenue requirements. This methodology also closely conforms to the District's budgeting process.

Section 2 of this report provided a simplified overview of the "cash basis" methodology. In developing the actual revenue requirements for the District, this approach has been "tailored" to follow the District's system of accounts (budget/accounting documents). However, in general, even with these modifications, the District's revenue requirements still contain the basic cost components of a "cash basis" methodology. Table 3-1 provides a detailed summary of the "cash basis" approach that was used to develop the sewer revenue requirements for the District.

Table 3–1
Overview of the District's "Cash Basis" Revenue Requirement Analysis

+ Operation and Maintenance Expenses
  - ✓ Administration Expenses
  - ✓ Office Expenses
  - ✓ Operations Expenses
  - ✓ Trestle Glen Plant Maintenance
  - ✓ Water Reclamation Expenses
  - ✓ Pump Station Expenses
+ Rate Funded Capital Improvements[1]
+ Debt Service (P + I) – Existing and Future
± Change in Working Capital
= Total Sewer Revenue Requirement
− Property Tax Income
− Miscellaneous Revenues
= Net Revenue Requirement (Balance Required from Rates)

[1] Rate Funded Capital Improvements

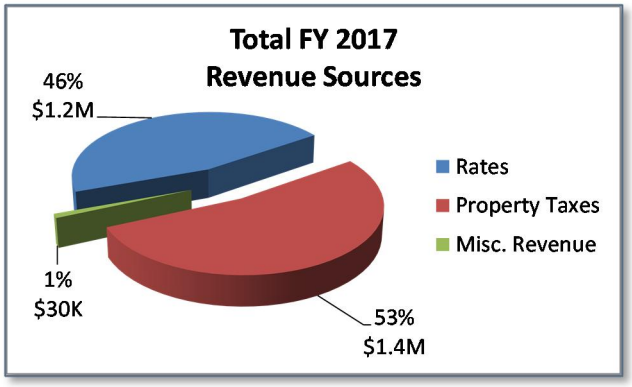
+ Total Sewer Capital Improvement Projects
− Funding Sources Other Than Rates
  - ✓ O&M Reserve Fund
  - ✓ Capital Reserve Fund
  - ✓ New Long-Term Debt Issuance
= Rate Funded Capital Improvements (≥ Annual Deprec. Exp.)

Given a time period around which to develop the District's revenue requirements, and a method to accumulate those costs, the focus now shifts to the development of the revenues and expenses, and ultimately to the development of the projected test period revenue requirement.

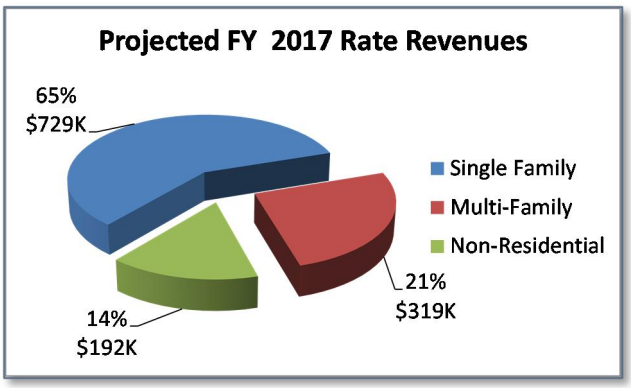
In developing the revenue requirement analysis, the primary financial inputs in this process were the District's accounting, budgeting, billing records, capital program (plan), and budget documents. Provided below is a detailed discussion of the steps and key assumptions contained within the development of the District's revenue requirement analysis.

3.3 Projection of Revenues

The first step in developing the revenue requirement analysis was to develop a projection of sewer revenues, at present rate levels. At the present time, the District has two major funding sources; property tax revenues and usage rates. For FY 2017, the District is anticipated to receive approximately $2.7 million. The graphic at right illustrates the proportion of revenue derived from property taxes, rates and other miscellaneous revenues. As can be seen, the largest proportion of revenues for the District is derived from property taxes and slightly over $1.4 million per year. For purposes of this study, property taxes are assumed to grow over the five year projected test period. They are assumed to increase at approximately 3.5% per year. This growth in property tax revenues is assumed to occur as a result of continued increased property valuations, but also as a result of assumed, but very limited, customer growth. Over the projected five year time period, the property tax revenues are projected to increase from approximately $1.4 million in FY 2017 to slightly less than $1.7 million in FY 2021. The property tax revenues received by the District may be used for general District purposes and applied to both operations and capital costs.



The other major source of funds for the District is usage rates. At the present time, the District annually charges customers $246/equivalent dwelling unit (EDU). For a single family home, the usage rate equates to $20.50/month. For purposes of this study, rate revenues, at present rate levels, needed to be projected for the five-year test period. In general, this process involved developing projected EDU's by customer group (e.g. single-family residential, multi-family, non-residential). The billing units for each customer group were then multiplied by the current annual rate ($246/EDU). The District has very limited customer growth and this study has assumed customer growth at 1/2 of 1% (0.5%) This method of independently calculating revenues directly links the projected rate revenues used within the analysis to the projected EDUs The projected EDU's by class of service were based on historical billing records for the FY 2014/15 time period.



The District also has a very minor amount of miscellaneous revenues. The largest source of miscellaneous revenues is reclaimed water sales and those are approximately $20,000. Other sources of miscellaneous revenues include inspection fees, interest income and other miscellaneous sources.

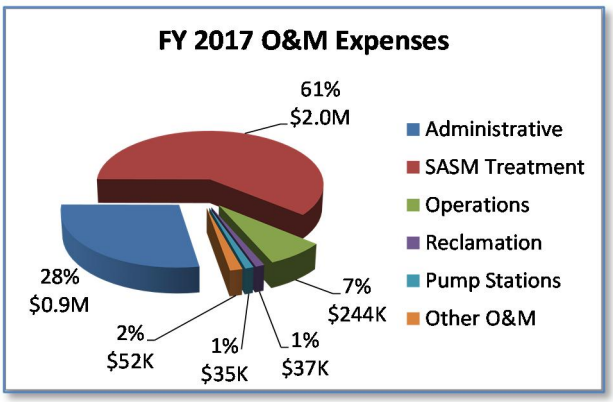
Over the five-year planning horizon, assuming no rate adjustments, the District's total revenues are anticipated to grow from approximately $2.7 million in FY 2017 to just below $3.0 million in FY 2021.

3.4 Projection of Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the District to collect wastewater and have it treated. O&M expenses are expensed during the current year and are not capitalized or amortized over an extended period of years.

In general, operation and maintenance expenses are grouped into a number of different functional categories (see Table 3-1). To begin the process of projecting O&M expenses over the planning horizon, escalation factors were developed. Escalation factors were developed for the basic types of expenses that the utility incurs: salaries (labor), benefits/health insurance, materials and supplies, equipment, utilities, miscellaneous (general inflation), etc. In general, the escalation factors were typically in the 3%/year to 4%/year range. There were two exceptions to that general assumption. The first was related to health insurance benefits which have historically exceeded general inflation levels. For this study, an escalation of health benefits of 6%/year was assumed. The other escalation factor which did not follow general inflation was related to the purchased wastewater treatment provided by the Sewerage Agency of Southern Marin (SASM). A more detailed discussion of the projection of SASM wastewater treatment costs is provided below. The escalation factors used within this study can be found in Technical Appendix on Exhibit 2.

To project future O&M expenses, the first step was to determine the functional categories for purposes of projecting costs. HDR reviewed the utility's accounting and budgeting documents and determined that it contained enough detail for the revenue requirement analysis. Therefore, in developing this analysis, HDR maintained the overall functional nature of the District's system of accounts. The utility's budget for FY 2016 was used as a starting point and projected (escalated) based upon the previously mentioned escalation factors. In projecting the O&M expenses, no unusual or extraordinary O&M expenses were anticipated or projected over this five-year period. The projection of O&M includes within the Administrative – Benefits line the Employer Payment of Unfunded Liability. The assumed expenses were provided by the District and estimated from the Annual Valuation Report from CalPERS. The projected costs included in FY 2016/17 were $18,344 and $31,497 in FY 2017/18 is $31,497. In the following years, $50,000 per year of funding has been included. The issue of the funding of this component was closely reviewed by the Board.



The largest O&M expense the District incurs is related to wastewater treatment. Richardson Bay's wastewater is collected and then conveyed to SASM for treatment. The cost of wastewater treatment from SASM is anticipated to increase significantly over the next few years. SASM recently and formally announced the level of treatment cost adjustments for the next five

years. Provided below are the rate adjustments for treatment of wastewater by SASM.

Fiscal Year	SASM Treatment Adj.
FY 2017	28.0%
FY 2018	28.0%
FY 2019	8.0%
FY 2020	8.0%
FY 2021	6.0%

The need for the SASM treatment rate adjustments are driven by SASM's need to make major capital improvements to their treatment facilities to meet changing and increasingly stringent regulatory requirements. The impacts of the SASM treatment adjustments to the District's O&M costs are significant. The District's current treatment costs (FY 2016) is $1.6 million. With the adjustments to the SASM rate, the cost to the District will increase to approximately $2.0 million in FY 2017 and continue to increase to slightly over $3.2 million by FY 2021.

The District's current total operation and maintenance expenses are approximately $2.8 million in FY 2016. With the assumed escalation and SASM adjustments, the O&M expenses for the District in FY 2017 are projected to be approximately $3.3 million. Over the five year period, the District's projected O&M expenses are anticipated to increase to approximately $4.8 million. From current O&M expenditure levels, this is a $2.0 million increase or an approximate 71% increase in the District's O&M expenses over the next five years. Again, the vast majority of this increase ($1.6 million) is a function of the increases in SASM wastewater treatment expenses.

3.5 Projection of Sewer Capital Improvements Funded from Rates

Utilities incur a variety of needs for their capital programs. There are typically three major types of capital projects which a utility may incur. These are as follows:

- Regulatory related
- Growth/expansion related, and
- Renewal and replacement related.

Each of these types of projects may be funded in a slightly different manner. The focus of this study was on the adequate funding of renewal and replacement related projects. Renewal and replacement projects, are as the name implies, related to maintaining the existing plant infrastructure. As facilities become worn out or obsolete, they must be renewed or replaced to maintain the existing plant in service and service levels. For purposes of rate setting, it is desirable to establish rates such that the utility has long-term, consistent and sustainable funding levels within their rates for renewal and replacement funding.

In utility financial planning, a general financial guideline states that, at a minimum, a utility should fund an amount within their rates that is at least equal to, or greater than, annual depreciation expense to fund renewal and replacement-related capital projects. Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of plant investment needs to be replaced (funded) to maintain the existing level of infrastructure (i.e. maintain service levels). However, it must be kept in mind that, in theory, annual depreciation expense reflects an investment in

infrastructure that was placed in service an average of 25 years ago, assuming a 50-year useful (depreciable) life. Simply funding an amount equal to annual depreciation expense will not be sufficient to fund the *replacement cost* of an existing or depreciated facility. Therefore, consideration should be given to funding within rates some amount greater than annual depreciation expense for the on-going system renewals and replacements.

> *"A general financial guideline that can be used to determine proper funding levels for capital improvements from rates is that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expenses."*

In the case of the District, there is a capital improvement plan related to their collection system. Even with the limited size and scope of the capital plan, it is prudent for the District to provide adequate funding to maintain their existing facilities. Failure to do so will simply create greater costs now and over the long term. For example, high levels of inflow and intrusion (I&I) within the collection system creates greater costs for collection, pumping and treatment.

Provided below in Table 3-2 is a summary of the capital plan developed for the District.

Table 3-2
Summary of the Sewer Capital Improvement Funding ($000)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Capital Projects -						
Pump Stations	$110	$205	$84	$173	$89	$663
Sewer Lines	480	339	84	87	89	91
Trestle Glen Upgrades	4	58	58	52	4	4
Future Unidentified Projects	0	0	23	0	168	0
Transfer to Capital Fund	0	0	0	0	0	0
Total Capital Projects	**$594**	**$602**	**$250**	**$312**	**$350**	**$758**
Less: Outside Funding Sources -						
O&M Reserve Fund	$0	$0	$0	$0	$0	$0
Capital Reserve Fund	594	402	0	12	0	358
New Revenue Bond	0	0	0	0	0	0
Total Outside Funding	**$594**	**$402**	**$0**	**$12**	**$0**	**$358**
Total Rate Funded Capital	**$0**	**$200**	**$250**	**$300**	**$350**	**$400**

In reviewing Table 3-2, a few items should be noted. First, there are approximately $2.9 million in future capital projects. On average, this is approximately $477,000 per year. Hence, this study's focus on the need for a strong and consistent funding source for capital projects.

Using the financial guideline of funding, at a minimum, an amount equal to greater than annual depreciation expense, the District has an annual depreciation expense of approximately $403,000. In this capital plan, it has been assumed that the District gradually increase their

level of rate funded capital to approximately $400,000/year (yellow band). This level of funding has the direct benefit of moving the District to a more sufficient funding level for renewal and replacement capital items. A more detailed exhibit of the capital improvement funding plan and the specific capital projects can be found on Exhibit 4 of the Technical Appendix.

3.6 Projection of Debt Service

The next component of the District's revenue requirement analysis is the component for debt service. Debt is usually undertaken to fund major capital projects. At the current time, the District has no outstanding debt or related debt service payments, and no new debt issues are anticipated over this time period.

3.7 Change in Working Capital (Fund Reserves)

The final item of the revenue requirement is any change in working capital (reserves). Reserves can effectively be used to smooth out the revenue requirements from year-to-year. In the case of the District, for purposes of the revenue requirements, two reserves are being utilized; the O&M reserve and the capital reserve.[2] For this study, both the O&M and capital reserves have been utilized. The O&M reserve has been used to smooth out the need for rate adjustments from year-to-year. When the total revenue requirements exceed the total revenue sources, the O&M reserves may be drawn down slightly to help mitigate the rate adjustment. Alternatively, the capital reserve provides the opportunity to set aside and accumulate funds for capital projects. In both cases, the change in capital for the O&M reserve and for the capital reserve may be an addition or subtraction from the total revenue requirements.

In the initial years of this revenue requirement (FY 2016 – FY 2018), the O&M reserves are being drawn down to minimize the overall revenue requirement and the impact to rates. In contrast to this, in the latter years, the capital reserves are being replenished and increased to help pay for capital projects.

As a part of this study, minimum funding of the reserves has been assumed. For the O&M reserve, a minimum fund balance of 90 days of O&M, or approximately $900,000 has been assumed. For the capital reserve fund, a minimum fund balance of approximately the annual average of the six year capital plan (i.e., $477,000). Under this financial plan, the ending fund balances for the O&M reserve and the capital reserve are slightly below the minimum fund balances, but not unreasonably below the targeted level.

The District also has a third reserve; a catastrophic reserve. This reserve was funded by the District a number of years ago and is currently funded at $1.0 million. No additions to this reserve have been assumed, and no draw down or uses of these funds are assumed. As the name implies, the purpose of this fund is to address major infrastructure issues under emergency conditions. However, that would not preclude the District from using these funds for other purposes, provided Board direction was given.

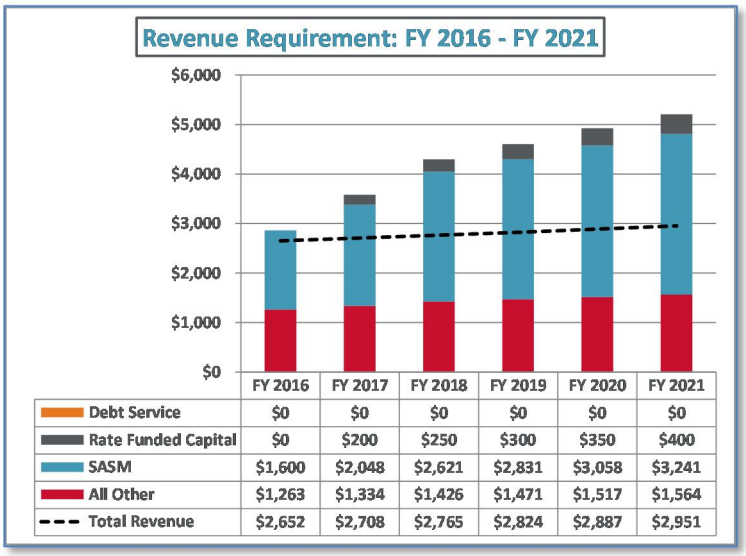
[2] The District also has a Catastrophic Relief Fund (reserve) which is currently funded with $1.0 million. It has been assumed that these funds will only be used for emergency purposes.

3.8 Summary of the Revenue Requirement Analysis

The above "cash basis" components come together to develop the overall revenue requirements for the District. In developing the final revenue requirements, consideration was given to the financial planning considerations of the District. In particular, emphasis was placed on attempting to minimize rates, yet still have adequate funds to support the operational activities and capital projects throughout the projected time period. A summary of the revenue requirements is shown below in Table 3-3.

Table 3–3
Summary of the Revenue Requirement Analysis ($000s)

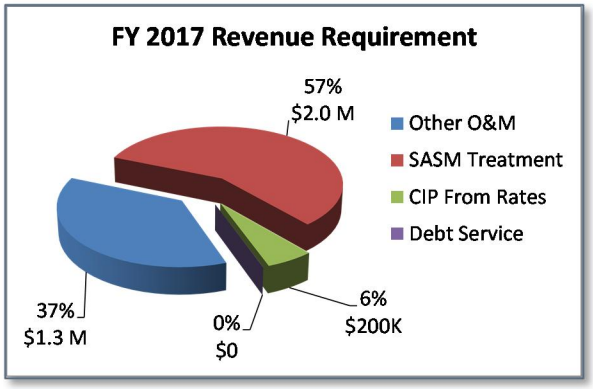
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Sources of Funds						
Rate Revenues	$1,235	$1,241	$1,248	$1,254	$1,260	$1,266
Property Tax Revenue	1,390	1,439	1,489	1,541	1,595	1,651
Other Revenues	27	28	29	29	31	34
Total Source of Funds	**$2,652**	**$2,708**	**$2,765**	**$2,824**	**$2,886**	**$2,951**
Applications of Funds						
All Other O&M Expenses	$1,263	$1,334	$1,426	$1,471	$1,517	$1,564
SASM Treatment Expenses	1,600	2,048	2,621	2,831	3,058	3,241
Rate Funded Capital	0	200	250	300	350	400
Net Debt Service	0	0	0	0	0	0
Change in Working Capital +/-	(211)	(316)	(338)	36	155	366
Total Revenue Requirement	**$2,652**	**$3,266**	**$3,959**	**$4,638**	**$5,080**	**$5,571**
Balance/(Defic.) of Funds	**$0**	**($559)**	**($1,195)**	**($1,814)**	**($2,193)**	**($2,621)**
Cumulative Balance as a % of Rates	**0.0%**	**45.0%**	**95.8%**	**144.7%**	**174.1%**	**206.9%**
Proposed Rate Adjustment	**0.0%**	**45.0%**	**35.0%**	**25.0%**	**12.0%**	**12.0%**



The results shown in Table 3–3 indicate major deficiencies in revenues beginning in FY 2017 and continuing over the five-year projected time period. On a cumulative basis, the rates are projected to be deficient by approximately 207% in FY 2021. These deficiencies are primarily driven by the increased costs associated with wastewater treatment from SASM. In addition, this study has also increased the funding of capital projects from rates. This funding has been increased from $0 in FY 2016 to $400,000 in FY 2021.

As noted previously, $400,000 is approximately the amount of the District's current annual depreciation expense.

To address the overall revenue deficiencies of the District, annual rate adjustments have been proposed (yellow band). The rate adjustments are designed to eliminate the overall revenue deficiencies in each year. While the overall percentage adjustment to the rates is significant, the overall $/EDU will still very competitive with the local neighboring utilities. A comparison with other neighboring utilities is provided in Section 5.



While Table 3-3 is a summary of the revenue requirement analysis, the more detailed analysis of the District's revenue requirements can be found in Technical Appendix, Exhibit 3.

3.9 Consultant's Conclusions and Recommendations

Based upon the revenue requirement analysis developed herein, it is projected that the District will operate at a significant deficiency for the projected planning period. These deficiencies are primarily a result of the increased wastewater treatment costs from SASM, along with the need to increase funding for capital improvement projects (renewal and replacement capital projects).

The size and timing of the adjustments to the District's sewer rates is a policy decision of the Board. HDR would recommend that the District implement the proposed overall sewer rate adjustments for the five year period shown in Table 3-3. These rate adjustments should adequately fund the District's operating and capital needs, based upon the analysis and assumptions used herein, over the time period reviewed. Even with these proposed adjustments the District should annually monitor/review their rates to compare them to the financial plan developed herein.

3.10 Summary

This section of the report has provided a discussion of the District's revenue requirement analysis. The revenue requirement analysis developed a financial plan to support the District's operating and capital infrastructure requirements. A rate transition plan was developed to implement the needed rate adjustments, while attempting to minimize the impacts to customers. The next section of the report will discuss the cost of service analysis developed for the District.

4. Development of the Cost of Service Analysis

4.1 Introduction

In the previous section of the report, the revenue requirement analysis that was developed focused on the total sources and applications of funds required to adequately fund the District's overall operating and capital needs. This section of the report will discuss and review the cost of service analysis. A cost of service analysis is concerned with the equitable (i.e., proportional) allocation of the total revenue requirements between the various customer classes of service (e.g., residential, multi-family and non-residential). The previously developed revenue requirements will be utilized in the development of the cost of service analysis.

Following the generally-accepted guidelines and principles of a cost of service analysis will inherently lead to rates which are equitable, cost-based, and not viewed as arbitrary or capricious in nature.

> *"Following the generally-accepted guidelines and principles of a cost of service analysis will inherently lead to rates which are equitable, cost-based and not viewed as arbitrary or capricious in nature."*

4.2 Objectives of a Cost of Service

There are two primary objectives in conducting a cost of service study. They are as follows:

- Equitably (i.e., proportionally) allocate the revenue requirements among the customer classes of service
- Derive average unit costs for subsequent rate designs

The objectives of the sewer cost of service analysis are different from determining revenue requirements. As noted in the previous section, a revenue requirement analysis determines the utility's overall financial needs, while the cost of service study determines the "fair and equitable" manner to collect those revenue requirements.

The second rationale for conducting a cost of service analysis is to ensure that a rate is designed such that it properly reflects the costs being incurred by the District. For example, a sewer utility incurs costs related to volume, strength and customer-related cost components. Volume related costs are related to wastewater flows on the system. Given that, the most equitable manner to allocate volume-related costs to each customer group is on the basis of their proportional usage. Each of these types of costs may be collected in a slightly different manner as to allow for the development of rates which collect costs in the same manner as they are incurred.

4.3 General Cost of Service Procedures

In order to determine the cost to serve each customer class of service on the District's system, a cost of service analysis is conducted. A cost of service study utilizes a three-step approach to review costs. These steps take the form of *functionalization*, *classification*, and *allocation*. Provided below is a detailed discussion of the cost of service study conducted for the District, and the specific steps taken within the analysis.

4.3.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (plant) data by major operating functions within each utility. For example, treatment, pumping, distribution, etc. Within this study, the functionalization of the cost data was largely accomplished through the District's system of accounts.

4.3.2 Classification of Costs

The second analytical task performed is the classification of the functionalized expenses to the various cost components incurred. This task reviews each cost and attempts to determine why the cost was incurred and what type of need was being met (e.g., volume, strength, customer). The cost classifiers used for the cost of service study are as follows:

- **Volume Related Costs**

Volume related costs are those that tend to vary according to the quantity of wastewater collected and/or treated. The collection and pumping system costs are included in this component.

- **Strength Related Costs**

Strength related costs are those costs associated with the additional handling and treatment of high "strength" wastewater. Strength of sewerage is typically measured in biochemical oxygen demand (BOD) and total suspended solids (TSS). The higher the level of BOD or TSS, the higher the cost of treatment.

- **Customer Related Costs**

Customer related costs include the costs of billing, collecting, and accounting. Customer costs typically vary with the addition or deletion of a customer. These costs may also be

Terminology of a Sewer

Functionalization – The arrangement of the cost data by functional category (e.g. treatment, collection etc.).

Classification – The assignment of functionalized costs to cost components (e.g. volume, strength, and customer related).

Allocation – Allocating the classified costs to each class of service based upon each class's proportional contribution to that specific cost component.

Volume Costs – Costs that are classified as volume related vary with the total flow of sewer (e.g. power for pumping plant).

Strength Costs – Costs classified as strength related refer to the wastewater treatment function. Typically, strength-related costs are further defined as biochemical oxygen demand (BOD) and total suspended solids (TSS). Different types of customers may have high wastewater strength characteristics and high strength wastewater costs more to treat. Facilities are often designed and sized around meeting these costs.

Customer Costs – Costs classified as customer related vary with the number of customers on the system, e.g. billing costs.

Direct Assignment – Costs that can be clearly identified as belonging to a specific customer group or group of customers.

further subcategorized as “actual” or “equivalent dwelling” customer-related costs. “Actual” customer costs do not vary on a per unit basis, regardless of the size or volume contribution of the customer. For example, postage for a customer bill is the same regardless of the amount of the bill or the type of customer. In contrast to this, an “equivalent dwelling” customer cost indicates that the costs are incurred on the basis of the number of equivalent dwellings. In this particular case, SASM charges the District for wastewater treatment on the basis of the number of equivalent dwellings on the District’s system.

- **Revenue Related Costs**

Some costs associated with the District may vary with the amount of revenue received by the utility. An example of a revenue related cost would be the interest received on investments.

- **Direct Assignment**

Certain costs associated with operating the utility may be directly traced to a specific customer or class of service. These costs are then “directly assigned” to that specific class of service.

4.3.3 Allocation of Costs

The final analytical task performed with the data in the cost of service analysis is the allocation of the classified costs. For each of the classified costs noted above, an allocation factor must be developed which will equitably allocate each specific type of cost in a “fair and equitable” manner to the customer classes of service (e.g., residential, multi-family, and non-residential). For example, in developing the volume allocation factor, consideration is given to the total estimated wastewater flow of each class of service in order to equitably allocate these costs. The allocation of costs is performed after the classification of the test period’s data is complete. The various classification totals are allocated among rate groups or customer classes of service based upon the nature of the classification.

A more detailed discussion of the specific cost of service methodology is provided below.

4.4 Functionalization and Classification of Plant in Service

HDR utilized the District’s historical plant records to functionalize the utility plant accounts. Classification was then accomplished by reviewing each group of assets and determining which cost classifiers the assets were related to, or why the cost was incurred. For example, the sewer utility accounts were classified as being related to volume, strength, customer, revenue or direct assignment. It should be noted that an account (asset item) may be classified to more than one cost component (e.g. 50% volume-related; 50% strength-related). The vast majority of the District’s plant in service was classified as being volume-related.

The detailed exhibit of the classification of sewer plant in service can be found on Exhibit 10, in the Technical Appendix.

4.5 Functionalization and Classification of Operating Expenses

Operating expenses are generally functionalized and classified in a manner similar to the corresponding plant account. For example, collection system O&M expenses are classified in

the same manner (percentages) as the collection system plant in service. This approach to classification of operating expenses has been used for this analysis.

The major O&M expense for the District is their SASM treatment expense ($2.0 M). As discussed above, this particular cost was classified to the customer-related equivalent dwelling unit category. This cost classification reflects the way in which SASM charges the District for wastewater treatment. At the same time, the property taxes received during the year ($1.4 M) were applied against the SASM treatment expense in the same manner as the original classification. The residual, or approximately $544,000, is included within the rates and assigned to customer classes of service on the basis of the number of equivalent dwelling units in each class of service.

The revenue requirement for FY 2017 was functionalized and classified in this process. In summary form, the classification for the revenue requirement was approximately 70% volume related and 30% equivalent dwelling unit related. Provided below in Table 4-1 is a summary of the classification of the total revenue requirement for FY 2017.

Table 4 - 1
Summary of the Classification of FY 2017 Revenue Requirements ($000s)

Cost Classifier	Classified Costs	% of Total
Volume-Related	$1,187	65.9%
Strength-Related – BOD	11	0.6%
Strength-Related – SS	11	0.6%
Customer-Related – Actual	0	0.0%
Customer Related – EDUs	592	32.9%
Revenue Related	0	0.0%
Total	**$1,799**	**100.0%**

A more detailed review of the classification of the District's revenue requirements can be found on Exhibit 11 of the Technical Appendix. The basis, or methodology, for the classification process used in this study is provided within the Water Environment Federation, Manual of Practice No. 27 on wastewater ratemaking. The methodology provided in the manual was then applied to the District specific circumstances and operations to develop the appropriate classification of the FY 2017 revenue requirements.

4.6 Customer Classes of Service

At the present time, the District has a single rate which is on a $/EDU basis. This rate applies to all customers of the District's system. One of the objectives of a cost of service is to determine whether cost differences exist between the various types of customers served. If significant cost differences exist, then sewer rates for individual customer classes of service may be appropriate. For purposes of this cost of service, the following customer classes of service were reviewed.

- Single-Family Residential (includes Duplexes)
- Multi-Family Residential (3+ living units)
- Non-Residential

In summary, in determining classes of service for cost of service purposes, the objective is to group customers together into similar or homogeneous groups based upon usage and/or facility requirements. In reviewing the District's classes of service, they reflect industry standard customer classes of service.

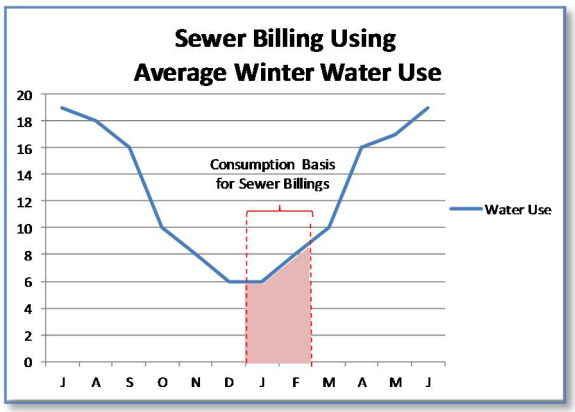
4.7 Development of Allocation Factors

Once the classification process is complete, and the classes of service to be reviewed have been defined, the District's various classified costs are then *allocated* to each of the classes of service. The classified costs were allocated to the various classes of service using the following allocation methods.

- **Volume Allocation Factor**

Volume-related costs are generally allocated on the basis of contribution of flows by each customer class of service. In order to develop this allocation factor, some knowledge of the contribution to flows, by customer class of service, must be determined. Given that wastewater flows for retail customers are typically not metered, two different methods were used to estimate the volume contributions by customer class of service. For the residential/duplex and multi-family customers, winter water use was used as a starting point and then annualized to reflect total annual wastewater contribution. Winter water use was utilized to attempt to avoid the inclusion of summer irrigation (lawn watering). Summer outdoor irrigation use is water consumption that does not go to the wastewater treatment plant, and as such should not be included within the wastewater volume allocation factor. In contrast to this method for estimating residential and multi-family volumes, for non-residential, the volumes were based upon total annual water consumption and then adjusted to eliminate the group's limited outdoor irrigation use. A more detailed discussion of the development of the volume estimates and the volume allocation factor is provided below.

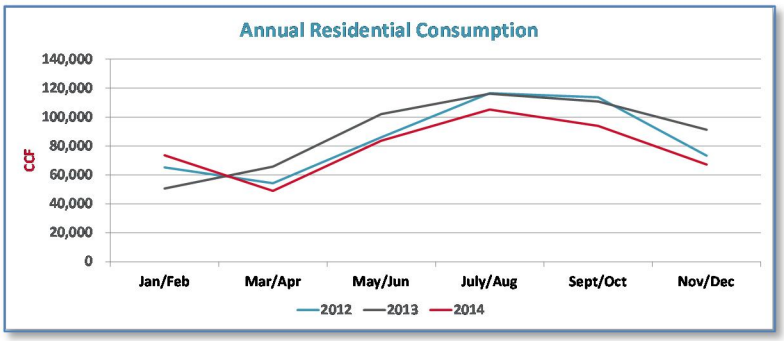
Unlike water, electricity or natural gas, wastewater is not metered. Volumetric contributions of wastewater must be estimated and volumes are typically estimated and may be billed on the basis of water consumptive use. However, as previously discussed above, all metered water use does not end up as wastewater; for example, water used for outdoor irrigation is not discharged to the District's sewer system. As a result of that, when water consumption data is used to estimate wastewater volumes, water use date must be adjusted to attempt to reflect only the volume of water that is estimated to be returned as wastewater. This is particularly true for residential customers, which in some cases may be as much as 50% to 60% of the annual consumptive water use. To address this concern, sewer utilities typically utilize average winter water use as the basis for the sewer billing.



Typically, average winter water use (AWWU) is the basis for residential and multi-family estimates of volumetric contributions. The winter time period is presumed to primarily reflect "indoor" use. The average winter water use may be defined in slightly different ways at different utilities, particularly when there is a limitation or

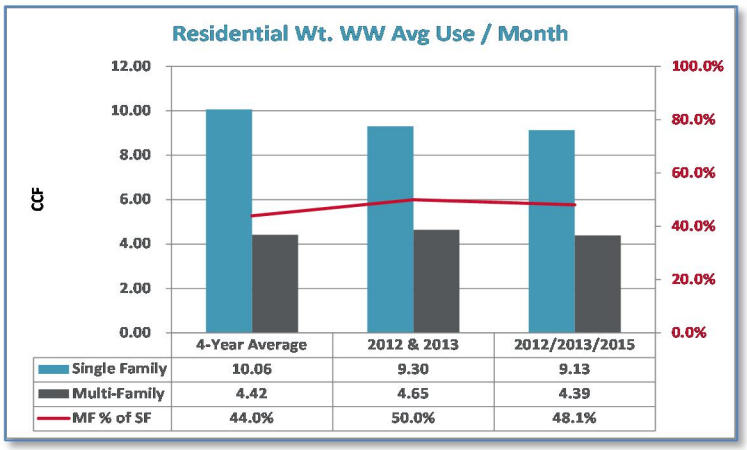
constraints on the availability of water consumption data. In the case of the District, a two month period of mid-December to mid-February is currently used to determine average winter water use, or flow contributions for residential customers.

It is important to also understand that the data derived from the analysis of winter water use is not an exact measurement of the flow contributions from a customer group. It is impossible for any party to state, with confidence, that the flow contribution of a class of service is exactly XX gallons per month. A winter water use analysis is a limited sample of water consumption data that is used to establish a reasonable surrogate for annual wastewater contributions. Whether the winter water consumption is reflective of annual wastewater contributions is unclear[3]. In essence, the utility is sampling a very limited portion of the annual water use and, from that sample, must make a determination of what is believed to be the annual wastewater contributions.



The District obtains water consumption data from the Marin Municipal Water District (MMWD) and from that consumption data analyzes the usage patterns of their customers. As a part of this study, the District's customer data and information was reviewed. HDR reviewed consumption data over the three year period of 2012, 2013 and 2014. A multi-year period was reviewed because consumption varies from year-to-year. The selection and use of a single-year may not fairly reflect typical or average flow contributions. At the same time, the local area is in a severe drought and the Water District has requested/required reductions in water use. This also impacts the data as can be seen in the above graphic.

An important component of the review of the consumption data was to compare the per living unit use of a single-family residential/duplex customer to the usage patterns of a multi-family customer (i.e. 3+ living units per account). From that data, HDR concluded that there were differences in volumetric contributions (i.e., water usage) between the single-family/duplex customers and the multi-family customers, on a per living unit basis.



[3] Simplistically, one would assume that the sum of the annual flow estimates would equal the total metered flow at the treatment plant. The other complicating factor is infiltration and inflow (I&I) within the system which may also be included within the estimate.

The data was relatively consistent for each year and indicated that on a per living unit basis, a multi-family customer does not contribute as much wastewater flow (volume) as a single-family/duplex customer. Based upon the usage analysis developed as a part of this study, the following relationships for annual volumetric contributions per living unit were calculated for purposes of allocating costs and eventually designing the final proposed rates.

Class of Service	Estimated Volumes (AWWU)	Relationship to Single-Family Use
Single-Family Residential/Duplex	9.13 CCF/Month	100%
Multi-Family (3+ Units)	5.02 CCF/Month	55%

As the above table indicates, on a per living unit basis, the contribution of wastewater for a multi-family customer was estimated to be about 55% of a single-family/duplex customer. To estimate the total volumes for each class of service, the number of EDU's for each class of service, as reported by SASM, was multiplied by the estimated volume per month and annualized to establish a total annual volume.

For the non-residential customers, their wastewater volume was estimated based upon annual water use, with a 10% adjustment for outdoor irrigation use. On a volume per EDU basis, it was calculated at 9.04 CCF/month, which is nearly identical to the single-family residential/duplex estimate. This is a reasonable estimate since the volume for an "EDU" for a residential or non-residential customer should be the same.

For purposes of the volume allocation factor, infiltration and inflow (I&I) was not factored into the analysis. In many cases, I&I is proportionally assigned on the basis of the volumes of each class of service, thus, technically resulting in the same proportional allocation of costs prior to adding in I&I.

The volume allocation factor can be found on Exhibit 6 of the Technical Appendix.

- **Customer-Related Costs**

Customer-related costs within the cost of service study are assigned between "actual" customers and equivalent dwelling units. The "actual" customer allocation factor used the number of accounts for each class of service based upon the CY 2014 billing data. The vast majority of the District's accounts are related to the single-family residential. In contrast to the actual number of accounts, the other type of customer-related cost is the number of equivalent dwelling units (EDUs). As noted previously SASM treatment costs are charged on an EDU basis and thus classified and equitably allocated on the number of EDUs for each customer class of service. The number of EDUs for each class of service was derived from a SASM report for FY 2014/15. On an EDU basis, the majority of the EDUs are still related to single-family residential, but non-residential has a greater proportion than under the actual customer related allocation factor. The customer allocation factors developed as a part of this study can be found on Exhibit 7 of the Technical Appendix.

- **Strength-Related Allocation Factor**

Strength-related costs were classified between biochemical oxygen demand (BOD)[4] and total suspended solids (TSS)[5]. Both of these types of costs were allocated to the various classes of service based upon the relative estimated wastewater strengths of each class of service. Strengths are measured in milligrams per liter, and multiplied by the annual estimated flows to develop an overall relationship of total pounds. The allocation factor assumes that all customers have domestic level strengths of 225 milligrams/liter (mg/l). Any high strength customers, or those with greater than domestic strength, are assessed a high strength surcharge for their excess strength contributions. Within this study, a very limited amount of costs are allocated on the basis of strength. The strength allocation factors can be found on Exhibit 8 of the Technical Appendix.

- **Revenue-Related Costs**

Revenue-related costs were allocated based upon the revenues at present rates for each class of service. Revenue-related costs are those costs that vary with the amount of revenue received. Revenues at present rates for FY 2017 were developed within the revenue requirement study previously discussed. The revenue-related allocation factor can be found on Exhibit 9 of the Technical Appendix.

The basis, or methodology, for the development of the allocation factors is based on the cost allocation process outlined in the Water Environment Federation rate setting manual (Manual of Practice No. 27). The methodology provided in the manual was then applied to the District specific customer classes of service and the customer characteristics to develop a proportional allocation of the FY 2017 revenue requirements.

4.8 Allocation of the Classified Costs

The allocation of the classified costs is the next step of the cost of service. The total classified costs from Table 4-1 are allocated to the customer classes of service based on the above allocation factors. This results in an equitable (i.e., proportional) allocation of costs to the customer classes of service. The results of the allocation of the total classified costs are summarized below in Table 4-2.

[4] BOD is the amount of dissolved oxygen that must be present in water in order for microorganisms to decompose the organic matter in the wastewater.
[5] TSS is the entire amount of organic and inorganic particles dispersed in wastewater.

Table 4 - 2 Summary of the Allocation of the Classified FY 2017 Revenue Requirements ($000s)				
Cost Classifier	**Total Classified Costs**	**Single-Family Resid./Duplex**	**Multi-Family Residential**	**Non-Residential**
Volume-Related	$1,187	$790	$190	$206
Strength-Related – BOD	11	7	2	2
Strength-Related – SS	11	7	2	2
Customer-Related – Actual	0	0	0	0
Customer Related – EDUs	592	348	152	92
Revenue Related	0	0	0	0
Total	**$1,799**	**$1,152**	**$346**	**$301**

In allocating costs to the classes of service, the corresponding allocation factor was used to assign costs to each class of service. For example, the volume-related costs were allocated to each class of service based upon the volume allocation factor previously developed which proportionally assigned the costs on the basis of the estimated wastewater flows (volumes) from each customer class of service. The other major cost allocated within Table 4-2 is related to customer-related-EDUs. The customer allocation factor developed for EDUs, based upon the SASM report with the number of EDUs by class of service was utilized to equitably allocate the costs. The detailed allocation table can be found on Exhibit 12 of the Technical Appendix.

Given the equitable allocation of costs, the final step of the cost of service study is to compare the allocated costs to the current revenues received from each customer class of service. This provides an important measure of the equity between the various customer classes of service. This last step is discussed in more detail below.

4.9 Summary of the Sewer Cost of Service Analysis

In summary form, this cost of service analysis began by functionalizing the District's plant asset records and operating expenses. The functionalized plant and expense accounts were then classified into their various cost components (Table 4-1). The individual classification totals were then allocated to the various customer groups based on the appropriate allocation factors. The allocated expenses for each customer group were then aggregated to determine each customer group's overall revenue responsibility (Table 4-2).

The allocation of costs reflects the facilities and costs allocated to each customer class which reflects their respective proportional benefit. The cost of service analysis results indicated some cost differences between the customer classes of service. It should be noted that the cost of service analysis developed by HDR is not a simple fixed/variable analysis, rather, the cost of service analysis allocates costs between the various customer classes of service based on each customer classes proportional share of volume, strength, and customer-related costs

A summary of the detailed cost responsibility developed for each class of service is shown below in Table 4-3.

Table 4 - 3 Summary of the FY 2017 Cost of Service Analysis ($000s)				
Class of Service	**Present Rate Revenues**	**Allocated Costs**	**$ Difference**	**% Difference**
Single-Family Residential/Duplex	$729	$1,152	($423)	58.0%
Multi-Family Residential (3+ units)	320	346	(27)	8.3%
Non-Residential	192	301	(109)	56.8%
Total	**$1,241**	**$1,799**	**($559)**	**45.0%**

The cost of service results indicated that some costs differences exist between the customer classes of service. In particular, the relationship between single-family residential and multi-family residential needs to be addressed. At the present time, the District assesses a multi-family living unit as one (1) EDU; the same as a single-family residential customer. As this study has shown, on a volume basis, a multi-family customer has lower average wastewater flows than a single-family residential customer on a per living unit basis. The proposed rates discussed in Section 5 of this report will address this issue.

The results, as would be expected, are similar for single-family residential and non-residential. The non-residential billing is based upon flow and converted to an EDU. Thus, the results for the non-residential class of service should closely follow the results for single-family residential, or the basis for defining an EDU.

4.10 Average Unit Costs

As discussed at the beginning of this chapter, a cost of service provides two key pieces of information; the equitable allocation of costs to the customer classes of service (Table 4-3) and average unit costs which are useful for the eventual design of rates. Provided below in Table 4-4 is a summary of the calculated average unit costs.

Table 4 - 4 Summary of the FY 2017 Average Unit Costs			
Class of Service	**Allocated Costs ($000)**	**Total EDUs**	**Ave. Unit Cost $/EDU**
Single-Family Residential/Duplex	$1,152	2,950	$390.51
Multi-Family Residential (3+ units)	346	1,293	$267.84
Non-Residential	301	778	$387.70
Total	**$1,799**	**5,021**	**$358.48**

The average unit costs are calculated by taking the total allocated cost of service for each customer class of service and dividing by the number of equivalent dwelling units. The per unit cost, stated as $/EDU, provides a starting point for establishing the final cost-based rates for the District.

The results, as shown in Table 4-4, indicate that the $/EDU rate for single-family residential/duplex and non-residential are very similar. The multi-family residential rate is lower than the single-family residential and non-residential as their flow contributions are assumed to be less than a single-family or non-residential customer. In other words, each multi-family living unit is not the equivalent of an EDU on the basis of the flow.

4.11 Major Assumptions of the Sewer Cost of Service Study

A number of assumptions were used within the sewer cost of service analysis. Listed below is a brief discussion of the major assumptions used.

- The test period used for cost allocation purposes was FY 2017. The revenue and expense data was developed within the revenue requirement study.
- A "cash basis" cost of service methodology was utilized.
- The classification of plant in service was developed based upon "generally accepted" cost of service procedures and utility specific data, when available.
- Sewer volumes (i.e. usage) are not metered at the individual customer level. The volumetric contributions for single-family residential/duplex and multi-family residential were estimated based upon a review of three years of metered winter water consumption. This approach[6] is an industry accepted practice of developing and providing a reasonable surrogate and estimate of volumetric contributions by customer class of service. The non-residential volumes were based upon the SASM count of EDU's for non-residential, which is based upon the residential average for establishing one (1) EDU.

4.12 Consultant's Cost of Service Conclusions and Recommendations

The section of the report has developed a cost of service analysis for the District using "generally accepted" cost of service methods. The results of the study indicate the need for interclass adjustments to better reflect the relationship between a single-family residential/duplex customer and a multi-family customer on an EDU basis. The results of the cost of service analysis are primarily driven by the different in the volumetric contributions of a single family residential/duplex customer, compared to multi-family customers, on a per living unit basis. Historically, the District has treated each living unit of a multi-family customer as one (1) EDU or the equivalent of a single-family residential customer.

4.13 Summary

This section of the report has discussed the cost of service conducted for the District. The information contained in this section of the report will be used to develop the final proposed rates for the District for FY 2017 – FY 2021. This aspect of the study is discussed in the next section of the report.

[6] WEF Manual of Practice No. 27 discusses this approach.

5. Development of the Rate Designs

5.1 Introduction

The final step of the District's sewer rate study is the design of sewer rates to collect the desired levels of revenue, based on the results of the prior analyses. In reviewing District's rates, consideration was given to establishing cost-based and equitable rates. The rate designs proposed within this section of the report reflect the findings, conclusions and recommendations from the prior sections of the report.

5.2 Rate Design Criteria and Considerations

Prudent rate administration dictates that several criteria must be considered when setting utility rates. Some of these rate design criteria are listed below:

- Rates which are easy to understand from the customer's perspective
- Rates which are easy for the utility to administer
- Consideration of the customer's ability to pay
- Continuity, over time, of the rate making philosophy
- Policy considerations (encourage efficient use, economic development, etc.)
- Provide revenue stability from month to month and year to year
- Promote efficient allocation of the resource
- Equitable and non-discriminatory (cost-based)
- Compliance with State law

The primary rate design criteria for the rates proposed within this study is the provision of rates which are equitable and non-discriminatory (i.e., cost-based).

5.3 Review of the District's Present Rate

The District's current rate design consists of a fixed equivalent dwelling unit (EDU) charge. The present equivalent dwelling unit charge is $246.00/EDU. For single-family residential and multi-family residential customers, the rate is essentially a flat or fixed charge of one (1) EDU or $246.00/year. In contrast to this, non-residential (i.e. commercial) customers are billed based upon their water consumption history which is converted to an EDU measure. A summary of the District's current sewer rate structure is presented below in Table 5-1.

Table 5–1
Overview of the District's Present Sewer Rates

Annual Rate Per Equivalent Dwelling Unit	$246.00/EDU

The District's approach is very simple to administer, but does not reflect individual differences between a single-family and multi-family residential customer.

5.4 Review of the Overall Rate Revenue Adjustments

As indicated in the revenue requirement analysis, the overall rate revenues of the District will need to be increased over the next five years. For purposes of designing rates, rates have been developed for a five-year period using the recommended adjustments shown below in Table 5-2.

Table 5–2
Recommended Overall Rate Revenue Adjustments

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Recommended Rate Adjustment	45.0%	35.0%	25.0%	12.00%	12.00%

The District, as a matter of policy may adopt rates for up to five year period. While rates have been developed and shown for the five-year period that does not imply that the District must adopt the entire set of rates. In addition, the adjustments shown in Table 5-2 are the revenue adjustments needed by the District on an overall revenue basis. As will be seen below, and for reasons related to Proposition 218, the results of the cost of service should be used to establish rates by customer class of service and differentiated on a $/EDU basis.

5.5 Customer Classes of Service (Rate Schedules)

While the District currently has a single rate schedule, stated in a $/EDU basis, this study has highlighted the cost differences between the single-family and multi-family residential customers. To address those cost differences, HDR has recommended the following customer classes of service for purposes of establishing sewer rates

- Single-Family Residential/Duplex
- Multi-Family (3+ dwelling units)
- Non-Residential

The advantage of moving to rates by customer class of service is that it allows for the development of rates which are more reflective of the cost differences between the various customer types. This will create more equitable and cost-based rates for each of the customer groups.

5.6 Rate Alternative 1; Status Quo – Maintain Existing Rate Relationships

The first rate design alternative maintains the current rate design approach; a single $/EDU for all customers. This alternative is shown below in Table 5-3.

Table 5–3 Rate Design Alternative 1 Status Quo - Maintain Existing Cost/Rate Relationship ($/Equivalent Dwelling Unit Per Year)						
	Current Rate	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
All Customers	$246.00	$357.00	$482.00	$602.00	$674.00	$755.00

This alternative has been provided to the District simply as a point of reference for the needed adjustments compared to their existing rate structure. However, while this existing rate structure provides sufficient revenue each year, **this rate alternative is not recommended by HDR for adoption by the District**. Under this rate structure, a single-family residential, duplex and multi-family living unit are each charged one (1) equivalent dwelling unit. **This rate structure fails to recognize or take into account the cost differences (proportional allocation) between the single-family residential/duplex customers and the multi-family residential customers and likely violates the cost-based requirements of Proposition 218.** These cost differences were clearly demonstrated within the cost of service analysis. Given that significant shortcoming, a different rate design alternative was developed which takes into account the cost differences and establishes $/EDU rates by customer class of service to fairly and proportionally charge these different customer groups.

5.7 Rate Alternative 2; Rates by Customer Class of Service

The cost of service analysis demonstrated that cost differences exist between the residential/duplex customers and the multi-family customers. To develop rate designs which vary by customer class of service, a number of technical steps in the analysis are required. These are discussed in more detail below.

5.7.1 Equitable Assignment of Fixed and Variable Costs

The use of a $/EDU rate structure may appear to be a rate design based solely on fixed costs, but the reality is the $/EDU rate is a blend of the fixed and variable costs incurred by the District. As will be recalled from the cost of service discussion, approximately 30% of the District's costs are of a fixed EDU basis, while the remaining 70% is more volumetric in nature (See Table 4-1). Furthermore, the amount of volumetric costs assigned to a class of service should be proportional to the assumed volumetric contributions of each class of service.

As noted above, 30% of the District's revenue requirement is considered a fixed cost (customer related – EDU) and should be equitably assigned as such on a $/EDU basis. In contrast to fixed costs and fixed charges, variable costs are related to the volumes of wastewater contributed by the various customer classes of service. The volumetric costs should be assigned proportionally based upon the estimated volumes of each class of service. HDR's analysis of historical winter water consumption data indicated that the relationship of usage (i.e., flow) between a single-family residential/duplex customer and a multi-family customer was estimated to be 55% (of a

single-family residential customer)[7]. In other words, the average volumes of wastewater contributed on a per living unit basis by the District's multi-family customers is slightly more than one-half of the average per living unit contributions of the District's single-family residential/duplex customers. The 70% portion of the $/EDU rate related to variable (volume) related costs should reflect this difference in flow contributions.

Given an equitable approach to assign the fixed and variable portions of the rate by customer class of service, the two parts can be combined into a single $/EDU rate for each customer class of service which is reflective of the differences in variable costs. This analysis is shown below in Table 5-4.

Table 5-4
Technical Basis for the Development of the District's Proposed Rates
($/Equivalent Dwelling Unit)

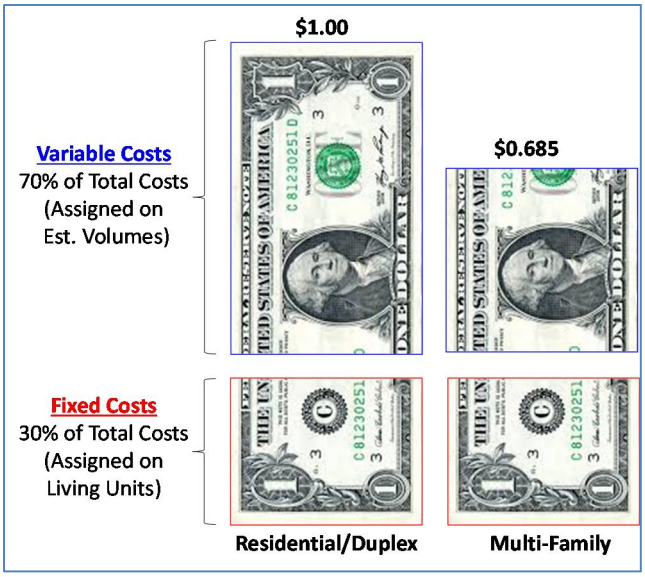
	Total Cost	Fixed Costs [1]	Variable Costs [2]	Volume Contrib.[2]	Total Rate [3]	Calc. Rate Relationship	Proposed Rate [4]
Fixed/Variable Alloc.		**30%**	**70%**				
Cost/1.0 Units	$246	$74	$172				
Single-Family/Duplex	$246	$74	$172	100%	$246	100.0%	$390
Multi-Family		$74	$95	55%	$169	68.5%	$267

[1] – Fixed costs are allocated on an EDU basis
[2] – Variable costs are allocated on the estimated EDU/per living unit volumetric contribution of each class of service (HDR usage analysis)
[3] – Total Rate = Fixed cost allocation plus variable cost allocation for each class – charged on an EDU basis (e.g., duplex = 2 EDUs x $/EDU Rate). Note: rate as shown is at present rates and does not produce revenue equal to the District's FY 2017 revenue requirement
[4] – $/EDU rate designed to produce the FY 2017 revenue requirement of the District

While Table 5-4 may appear complicated, it is not as complicated as it may first appear. The analysis begins by reviewing the District's current rate of $246/EDU and dividing it between the two components of fixed and variable costs. As noted previously, the fixed component is approximately 30% of the costs and the remaining variable component is 70%. Applying these percentages to the existing $246/EDU rate means that $74/EDU is the fixed portion of the rate and $172/EDU is the variable portion. At this point, the variable portion ($172/EDU) must be adjusted for the multi-family rate to reflect the difference in flows. In this case, the $172/EDU is multiplied by 55% (multi-family flow relationship) to produce a variable cost rate of $95.00/EDU for the multi-family customers. When the fixed and variable rates are combined, they produce the rate by customer class of service. Since a single-family residential/duplex customer is considered one (1) EDU, their combined rate (fixed and variable costs) is $246.00/EDU ($74/EDU fixed + $172/EDU variable). In contrast to this, the combined rate for

[7] See Section 4.7 – Volume allocation factor discussion.

multi-family customers is $169.00/EDU ($74/EDU fixed + $95/EDU). **When the $169.00/EDU rate for multi-family is compared to the single-family/duplex rate of $246.00/EDU the total multi-family rate is 68.5% of the single-family residential/duplex rate.** The graphic to the right provides a simple visual explanation of how the fixed and variable costs are melded together to establish the final rate relationship between the single-family residential/duplex customers and the multi-family customers.



The above calculation to establish the rate relationship between residential and multi-family is based upon the existing $246/EDU rate. The revenue requirement analysis developed indicated that rates need to be adjusted by 45% for FY 2017. To accomplish that and establish cost-based and proportional rates for FY 2017 (and beyond), the rate relationships developed above between single-family residential/duplex and multi-family is carried forward. It is the 68.5% rate relationship for multi-family which is carried forward in the design of the rates for the next five years. Referencing back to Table 5-4, at the far right of the table, the required single-family residential/duplex rates needed to produce the FY 2017 total revenue requirement is $390.00/EDU. Given the single-family residential/duplex rate, that implies that the multi-family rate should be $267.00/EDU ($390/EDU x 68.5% = $267.00/EDU).

The $/EDU rate for non-residential is set at the same rate as single-family residential. An "EDU" is also often referred to as an equivalent residential unit (ERU) and thus an EDU or ERU is valued at the same level as the single-family residential customer. The other way that this may be viewed is the results of the cost of service shown in Tables 4-3 and 4-4 indicate a rate adjustment and resulting rate similar to single-family residential.

A revenue check can be used to provide a revenue proof of this rate design for FY 2017. This aspect of the analysis is provided below in Table 5-5.

Table 5–5
Rate Design Alternative 2 Revenue Proof

Class of Service	Proposed FY 2017 Rate ($/EDU)	No. of EDUs	Total Revenue
Single-Family Resid./Duplex	**$390.00**	2,950	$1,150,500
Multi-Family Residential	**267.00**	1,293	345,231
Non-Residential	**390.00**	778	303,420
Total		5,021	$1,799,151
Target Revenue			$1,799,945 [1]

[1] – Target revenue = FY 2017 present rate revenue (Table 3-3) $1,241,342
$1,241,342 x 1.45 (FY 2017 45% increase) = $1,799,945

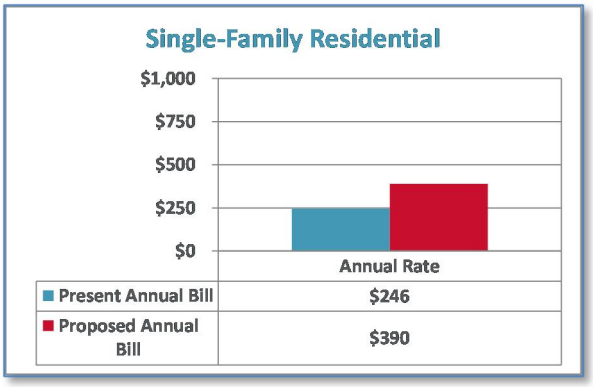
The rates shown in Table 5-5 produce the targeted revenue levels of $1.799 million. This amount is 45% greater than the current rate revenues of $1.241 million. The targeted level of revenue is consistent with, and derived from, the findings and conclusions of the revenue requirement analysis.

Given the FY 2017 rate design, the District will have established cost-based based and proportional rates. The rates for FY 2018 through FY 2021 adjust the prior year's rates by the proposed annual adjustments. Each customer group receives the same percentage adjustment in each year. Table 5-6 provides a summary of the proposed rate designs for FY 2017 through FY 2021.

Table 5–6
Rate Design Alternative 2
Revised Cost/Rate Relationship ($/Equivalent Dwelling Unit Per Year)

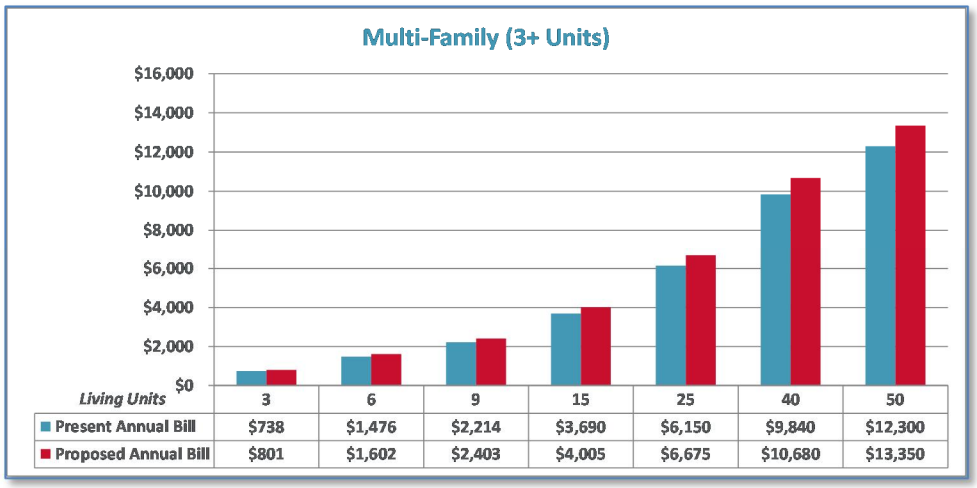
	Current Rate	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Single-Family Residential/Duplex	$246.00	$390.00	$527.00	$658.00	$737.00	$826.00
Multi-Family Residential	246.00	267.00	360.00	451.00	505.00	565.00
Non-Residential	246.00	390.00	527.00	658.00	737.00	826.00

As can be seen, the FY 2017 rates are derived from Table 5-4 and 5-5. The rate adjustments for FY 2018 through FY 2021 are equal to the overall rate adjustments in each particular year. These adjustments were developed and recommended within the revenue requirement analysis and summarized in Table 5-2. In equally adjusting the rates for FY 2018 through FY 2021 the presumption is that the FY 2017 rates have been set at cost-based levels and reflect the proportional relationships.



A bill comparison for a single-family residential customer is shown in the above graph. As can be seen, for a single-family residential customer the impact for FY 2017 is an increase of $144 per year, or $12/month. It is important to note that duplex customers are billed under this rate and charged 2 living units or an annual bill of $780/year. This compares to their current bill of $492/year.

The multi-family rate is still charged on a living unit basis (e.g. a 10 unit apartment is assessed 10 units x $267/living unit). The multi-family rate has been adjusted to reflect the results of the cost of service analysis. In this case, the multi-family rate has been set at 68.5% of single-family residential/duplex rate schedule. As can be seen in the above bill comparison, the impacts of this rate change for FY 2017 will be relatively minimal. Beyond FY 2017, the percentage rate adjustments for multi-family will be the same as the other customer classes of service.



Living Units	3	6	9	15	25	40	50
Present Annual Bill	$738	$1,476	$2,214	$3,690	$6,150	$9,840	$12,300
Proposed Annual Bill	$801	$1,602	$2,403	$4,005	$6,675	$10,680	$13,350

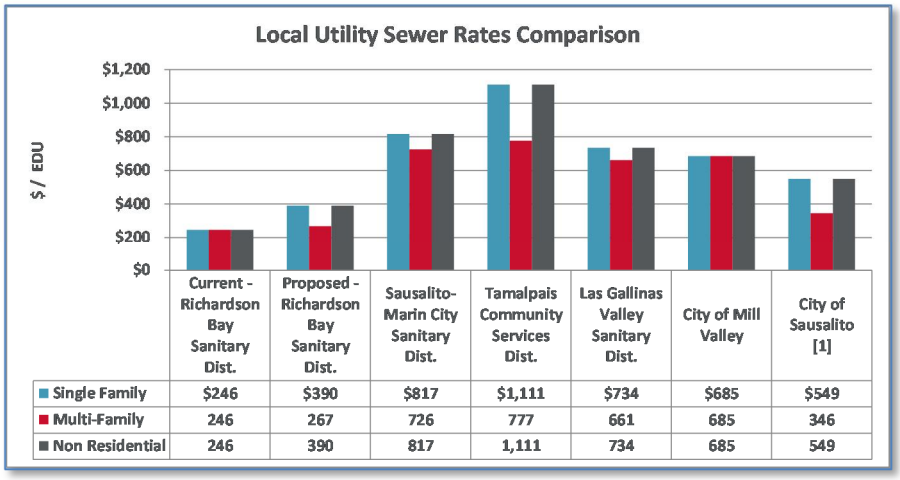
The final rate schedule is the non-residential customer class of service. As discussed previously, the number of billing units for non-residential is based upon the calculation of an EDU for residential and then compared to their actual consumption to determine their total billable EDUs in any particular year. This study has not proposed any change to the method or way in which the non-residential billing units are determined for billing purposes. The bill comparison for non-residential illustrates the impact of the FY 2017 rate adjustment at varying levels of EDUs. Beyond FY 2017, the percentage rate adjustments for non-residential rates will be the same as the other customer classes of service.

EDU	1	2	3	4	5	6	7
Present Annual Bill	$246	$492	$738	$984	$1,230	$1,476	$1,722
Proposed Annual Bill	$390	$780	$1,170	$1,560	$1,950	$2,340	$2,730

This concludes the discussion of the proposed rate design alternatives for the District. While two alternatives have been presented, the first alternative is likely not appropriate, nor recommended, given that it does not follow the results of the cost of service analysis and produce cost-based and proportional rate designs.

5.8 Local Sewer Rate Comparison

One comparison that many utilities review is a comparison of the rates/bills for neighboring, local, utilities. The comparison shown in the graph is the present and proposed FY 2017 rate for the District. While this type of comparison may have been a past consideration in the rate setting process, under Proposition 218 it has minimal relevance in that Proposition 218 legally requires the establishment of cost-based and proportional rates. However, in viewing the rate comparison developed as a part of this study, the District currently has exceptionally low rates in comparison to the neighboring utilities. Even with the proposed future adjustments, the single-family residential rate will be at $826.00/EDU in FY 2021.



	Current - Richardson Bay Sanitary Dist.	Proposed - Richardson Bay Sanitary Dist.	Sausalito-Marin City Sanitary Dist.	Tamalpais Community Services Dist.	Las Gallinas Valley Sanitary Dist.	City of Mill Valley	City of Sausalito [1]
Single Family	$246	$390	$817	$1,111	$734	$685	$549
Multi-Family	246	267	726	777	661	685	346
Non Residential	246	390	817	1,111	734	685	549

[1] Assumes 5 CCF/Month

5.9 Development of Cost-Based Sewer Rates

In the development of this study, HDR worked with the District's Board and management team to develop the proposed rates, which have been developed to meet the legal requirements of California Constitution article XIII D, section 6 (Article XIII D). A key component of Article XIII D is the development of rates which reflect the cost of providing service and are proportionally allocated between the various customer classes of service. HDR would point out that there is no single methodology for equitably assigning costs to the various customer groups. The Water Environment Federation Manual of Practice #27 provides various methodologies which may be used to establish cost-based rates. Unfortunately, Article XII D is not prescriptive and does not provide a specific methodology for establishing rates. Given that, HDR developed the District's proposed sewer rates based on generally accepted rate setting methodologies to meet the requirements of Article XIII D.

HDR is of the opinion that the proposed rates meet the legal requirements of Article XIII D. HDR reaches this conclusion based upon the following:

- **The revenues derived from the sewer rates do not exceed the funds required to provide the property related service (i.e. sewer service)**. The proposed rates are designed to collect the overall revenue requirements of the District. A detailed revenue requirement analysis was developed to provide the justification of the overall revenue/rate levels.
- **The revenues derived from the sewer rates shall not be used for any purpose other than that for which the fee or charge is imposed**. The revenues derived from the

District's sewer rates are used exclusively to operate and maintain the District's sewer system.

- **The amount of a fee or charge imposed upon a parcel or person as an incident of property ownership shall not exceed the proportional costs of the service attributable to the parcel.** This study has focused almost exclusively on the issue of proportional assignment of costs to customer classes of service.
  - ✓ The proposed rates reflect the cost incurrence of the District in that the fixed and variable costs which District incurs have been analyzed as a part of this study. The fixed costs (30%) as derived in the cost of service (Table 4-1) are equitably assigned on a fixed EDU basis and the variable costs (70%) are equitably assigned based upon the three-year analysis of the volumetric contributions of each customer class of service. This results in the equitable, or proportional, assignment of costs to customer groups.
  - ✓ The assignment of 30% of the fixed costs on an EDU basis does not violate Proposition 218. As the court noted in Yolo Ratepayers v. City of Davis, "the law does not prohibit the City from using a traditional rate structure that recovers all fixed costs through a fixed charge."[8]
  - ✓ The proposed rates have appropriately grouped customers into customer classes of service (single-family residential/duplex, multi-family residential and non-residential). The grouping of customers and rates into these classes of service creates the equity and fairness expected under Proposition 218 by having differing rates by customer classes of service which reflect both the level of revenue to be collected by the utility, but also the manner in which these costs are incurred and equitably assigned to customer classes of service based upon their proportional impacts.

HDR, as a part of this study, has attempted to provide a clear record as to the rate setting theory and cost-basis for the methodology used to establish the District's rates and why, in the opinion of HDR, the proposed rates are cost-based and meet Proposition 218 requirements. In summary, the District has proposed rates nearly identical to the average unit costs (i.e. cost-based rates) in the cost of service analysis (compare Table 4-4 to Table 5-3).

5.10 Summary of the Sewer Rate Study

This completes the analysis for the District's sewer rates. This study has provided a comprehensive review of the District's sewer rates. Adoption of the proposed cost-based rates will allow the District to meet their projected sewer costs and collection system financial obligations and major capital projects for the time period reviewed.

[8] Yolo Ratepayers vs. City of Davis, p. 11

6. Public Meetings and Public Hearings

5.1 Introduction

The District's Board, as a part of the rate setting process held public meetings and a public hearing to formally adopt the District's proposed rates. This section of the report will provide a brief overview of the public meetings and the public hearing.

5.2 Pubic Meetings

The District's Board holds regularly scheduled Board meetings to discuss District business matters. As a routine matter, the District provides a public notice of all Board meetings and an agenda.

As a part of the District's rate study process, public meetings were held during the regularly scheduled Board meetings held on March 15, 2016 and April 20, 2016. During these meetings, HDR reviewed with the Board the preliminary findings and conclusions from the study. On the March 15th meeting, HDR presented the preliminary findings of the study. The Board requested additional scenarios be developed to understand the sensitivity of certain assumptions within the study. At the April 20, 2016 meeting, the Board reviewed the alternative scenarios for the revenue requirement analysis and the differing impact to the proposed rate designs. From this discussion and review, the Board selected their preferred set of proposed rates for Proposition 218 notification mailings. The Board also set the time and date for the public hearing.

5.3 Public Hearing (Proposition 218 Hearing)

Proposition 218 requires notification of a public hearing to adopt revised rates. Given the policy direction of the Board at the April 20, 2016 Board meeting, HDR and the District developed a Proposition 218 notification mailing (See Technical Appendix).

On June 21, 2016, the Board held a Proposition 218 hearing on the proposed rates. The public hearing was attended by five District customers. The public hearing was opened and HDR provided a summary overview of the study. This was followed by a public comment period. After receiving public comment from the public hearing and determining the number of protest votes from the public mailing, the District's Board unanimously adopted the proposed rates. Attached as a part of the Technical Appendix is the District's rate resolution.

Technical Appendix

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement Summary
Exhibit 1

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Revenue						
Rate Revenue	$1,235,166	$1,241,342	$1,247,549	$1,253,786	$1,260,055	$1,266,355
Property Tax Income	1,390,000	1,438,650	1,489,003	1,541,118	1,595,057	1,650,884
Miscellaneous Revenue	26,979	27,601	28,111	29,256	31,414	33,753
Total Revenue	**$2,652,145**	**$2,707,593**	**$2,764,662**	**$2,824,160**	**$2,886,526**	**$2,950,993**
Expenses						
All Other O&M Expenses	$1,263,364	$1,334,440	$1,426,235	$1,470,872	$1,516,938	$1,564,481
SASM Expenses	1,600,000	2,048,000	2,621,440	2,831,155	3,057,648	3,241,106
Rate Funded Capital	0	200,000	250,000	300,000	350,000	400,000
Debt Service	0	0	0	0	0	0
Change in Working Capital	(211,219)	(316,243)	(338,485)	36,205	155,066	365,951
Total Expenses	**$2,652,145**	**$3,266,196**	**$3,959,190**	**$4,638,232**	**$5,079,652**	**$5,571,538**
Balance/Deficiency of Funds	**$0**	**($558,604)**	**($1,194,528)**	**($1,814,072)**	**($2,193,126)**	**($2,620,545)**
Proposed Rate Adjustment	**0.0%**	**45.0%**	**35.0%**	**25.0%**	**12.0%**	**12.0%**
Add'l Revenue from Adj.	**$0**	**$558,604**	**$1,194,528**	**$1,814,072**	**$2,193,126**	**$2,620,545**
Total Bal./(Def.) after Rate Adj.	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Average Single Family Annual Bill ($/EDU)	**$246.00**					
Avg Annual Bill after Rate Ad.	$246.00	$357.00	$482.00	$603.00	$675.00	$756.00
Change	0.00	111.00	125.00	121.00	72.00	81.00
Total Reserve Funds	**$2,593,393**	**$1,894,915**	**$1,599,336**	**$1,643,338**	**$1,986,921**	**$2,015,335**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Escalation Factors
Exhibit 2

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	***Notes***
Revenues							
Customer Growth	Calculated	0.5%	0.5%	0.5%	0.5%	0.5%	
Miscellaneous	Budget	0.5%	0.5%	0.5%	0.5%	0.5%	
Reclaimed Water	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Flat	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	
Property Tax	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	*3% + Cust. Growth*
Expenses							
Salaries	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Benefits	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Benefits - Medical	Budget	6.0%	6.0%	6.0%	6.0%	6.0%	
Benefits - Other	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	
Materials & Supplies	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	
Equipment	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	
Miscellaneous	Budget	1.5%	1.5%	1.5%	1.5%	1.5%	
Utilities	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	
Insurance	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	
Reclaimed Water	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Flat	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	
SASM	Budget	28.0%	28.0%	8.0%	8.0%	6.0%	
Interest	0.15%	0.20%	0.25%	0.30%	0.35%	0.40%	
New Debt							
Revenue Bond							
Term (Yrs.)	20	20	20	20	20	20	
Rate	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	
Low Interest Loan							
Term (Yrs.)	20	20	20	20	20	20	
Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement
Exhibit 3

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Revenue							
Rate Revenue							
Single Family	$725,798	$729,427	$733,075	$736,740	$740,424	$744,126	As Customer Growth
Multi-Family	318,078	319,668	321,267	322,873	324,487	326,110	As Customer Growth
Nonresidential	191,290	192,246	193,207	194,173	195,144	196,120	As Customer Growth
Total Rate Revenue	**$1,235,166**	**$1,241,342**	**$1,247,549**	**$1,253,786**	**$1,260,055**	**$1,266,355**	
Miscellaneous Revenue							
Property Tax Income	$1,390,000	$1,438,650	$1,489,003	$1,541,118	$1,595,057	$1,650,884	As Property Tax
Inspections	2,000	2,010	2,020	2,030	2,040	2,051	As Miscellaneous
Reclaimed Water	20,000	20,600	21,218	21,855	22,510	23,185	As Reclaimed Water
Misc. Revenue	500	503	505	508	510	513	As Miscellaneous
Interest Income	4,479	4,488	4,368	4,864	6,353	8,005	Calculated
Total Miscellaneous Revenue	**$1,416,979**	**$1,466,251**	**$1,517,114**	**$1,570,374**	**$1,626,470**	**$1,684,637**	
Total Revenue	**$2,652,145**	**$2,707,593**	**$2,764,662**	**$2,824,160**	**$2,886,526**	**$2,950,993**	
Expenses							
Administrative							
Board Members Stipend	$10,000	$10,300	$10,609	$10,927	$11,255	$11,593	As Salaries
Election Expense	250	251	253	254	255	256	As Miscellaneous
Payroll Expense	479,174	493,549	508,356	523,606	539,315	555,494	As Salaries
Payroll Taxes	36,651	37,751	38,883	40,050	41,251	42,489	As Salaries
Benefits *[1]*	225,867	264,140	322,064	331,726	341,678	351,928	As Benefits
Other Post Employment Benefits	67,172	69,523	71,956	74,475	77,081	79,779	As Benefits - Other
Professional Fees	50,000	51,500	53,045	54,636	56,275	57,964	As Salaries
Permits	500	503	505	508	510	513	As Miscellaneous
SASM	1,600,000	2,048,000	2,621,440	2,831,155	3,057,648	3,241,106	As SASM
Insurance	35,000	36,225	37,493	38,805	40,163	41,569	As Insurance
Claims	1,000	1,035	1,071	1,109	1,148	1,188	As Insurance
Publishing Legal Notices	200	207	214	222	230	238	As Insurance
Total Administrative	**$2,505,814**	**$3,012,984**	**$3,665,889**	**$3,907,473**	**$4,166,809**	**$4,384,116**	

[1] - "Benefits" line item includes Employer Payment of Unfunded Liability (CalPERS); provided for FY 2016 & FY 2017, projected for FY 2018 +

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement
Exhibit 3

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Office Expenses							
Administrative Petty Cash	$300	$300	$300	$300	$300	$300	As Flat
Maintenance	2,500	2,588	2,678	2,772	2,869	2,969	As Materials & Supplies
Computer Supplies	2,000	2,070	2,142	2,217	2,295	2,375	As Materials & Supplies
Office Supplies	3,000	3,105	3,214	3,326	3,443	3,563	As Materials & Supplies
Office Equipment Repair	500	520	541	562	585	608	As Equipment
Office Equipment Rental	500	520	541	562	585	608	As Equipment
Communications	17,500	17,588	17,675	17,764	17,853	17,942	As Miscellaneous
Total Office Expenses	**$26,300**	**$26,690**	**$27,091**	**$27,504**	**$27,929**	**$28,366**	
Operations							
Manager Petty Cash	$400	$400	$400	$400	$400	$400	As Flat
Laundry	3,000	3,015	3,030	3,045	3,060	3,076	As Miscellaneous
PG&E	30,000	31,200	32,448	33,746	35,096	36,500	As Utilities
Water	1,500	1,560	1,622	1,687	1,755	1,825	As Utilities
Garbage	2,700	2,808	2,920	3,037	3,159	3,285	As Utilities
Truck Expense	20,000	20,800	21,632	22,497	23,397	24,333	As Equipment
Education	500	518	536	554	574	594	As Benefits - Other
Publications (Magazines)	250	251	253	254	255	256	As Miscellaneous
Dues, Memberships	5,200	5,226	5,252	5,278	5,305	5,331	As Miscellaneous
Sewer Repair & Maintenance	165,000	170,775	176,752	182,938	189,341	195,968	As Materials & Supplies
Emergency Repair - Other	10,000	10,350	10,712	11,087	11,475	11,877	As Materials & Supplies
Safety	2,000	2,010	2,020	2,030	2,040	2,051	As Miscellaneous
Total Operations	**$240,550**	**$248,913**	**$257,577**	**$266,555**	**$275,857**	**$285,495**	
Trestle Glen Plant Maint.							
Maintenance	$20,000	$20,700	$21,425	$22,174	$22,950	$23,754	As Materials & Supplies
Total Trestle Glen Plant Maint.	**$20,000**	**$20,700**	**$21,425**	**$22,174**	**$22,950**	**$23,754**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement
Exhibit 3

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Water Reclamation							
Repair & Maintenance	$6,000	$6,210	$6,427	$6,652	$6,885	$7,126	As Materials & Supplies
Chemicals - NaOCl	30,000	31,050	32,137	33,262	34,426	35,631	As Materials & Supplies
Self Monitoring	700	704	707	711	714	718	As Miscellaneous
Total Water Reclamation	**$36,700**	**$37,964**	**$39,271**	**$40,624**	**$42,025**	**$43,474**	
Pump Stations							
Bel Gardens R&M	$1,000	$1,035	$1,071	$1,109	$1,148	$1,188	As Materials & Supplies
Del Mar R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Hawthorne Terrace R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Greenwood Beach R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Harbor Point I R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Harbor Point IIA R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Harbor Point IIB R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Harbor Point III R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
HPIII Emergency Generator R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Cove I R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Cove II R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Strawberry Circle R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Harbor Cove Way R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Strawberry Spit I R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Strawberry Spit II R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Strawberry Spit III R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Seminary Cove Pump R&M	1,000	1,035	1,071	1,109	1,148	1,188	As Materials & Supplies
Emergency Generators R&M	17,000	17,595	18,211	18,848	19,508	20,191	As Materials & Supplies
Total Pump Stations	**$34,000**	**$35,190**	**$36,422**	**$37,696**	**$39,016**	**$40,381**	
Total O&M Expenses	**$2,863,364**	**$3,382,440**	**$4,047,675**	**$4,302,027**	**$4,574,586**	**$4,805,587**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement
Exhibit 3

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Rate Funded Capital	**$0**	**$200,000**	**$250,000**	**$300,000**	**$350,000**	**$400,000**	2014 Dep. = $403,209
Debt Service							
New Revenue Bond	$0	$0	$0	$0	$0	$0	Calc'd @ 5.5% for 20 Yrs.
Total Debt Service	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Change in Working Capital							
To/From O&M Reserve	($211,219)	($316,243)	($338,485)	$36,205	$55,066	$90,951	
To/From Capital Reserve	0	0	0	0	100,000	275,000	
Total Change in Working Capital	**($211,219)**	**($316,243)**	**($338,485)**	**$36,205**	**$155,066**	**$365,951**	
Total Revenue Requirement	**$2,652,145**	**$3,266,196**	**$3,959,190**	**$4,638,232**	**$5,079,652**	**$5,571,538**	
Bal./(Def.) of Funds	$0	($558,604)	($1,194,528)	($1,814,072)	($2,193,126)	($2,620,545)	
Bal./(Def.) as a % of Rates	0.0%	45.0%	95.8%	144.7%	174.1%	206.9%	
Proposed Rate Adjustment	**0.0%**	**45.0%**	**35.0%**	**25.0%**	**12.0%**	**12.0%**	
Add'l Revenue from Adj.	$0	$558,604	$1,194,528	$1,814,072	$2,193,126	$2,620,545	
Bal./(Def.) after Rate Adj.	$0	$0	$0	$0	$0	$0	
Bal./(Def.) as a % of Rates after Adj.	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Requirement
Exhibit 3

	Budget	Projected					
	FY 2016	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Average Single Family Annual Bill ($/EDU)	$246.00						
Avg Annual Bill after Rate Ad.	$246.00	$357.00	$482.00	$603.00	$675.00	$756.00	
Change		111.00	125.00	121.00	72.00	81.00	
Cumulative Change		111.00	236.00	357.00	429.00	510.00	
O&M Reserve Fund							
Beginning Fund Balance	**$1,397,248**	**$1,186,028**	**$869,785**	**$531,300**	**$567,505**	**$622,571**	
Sources of Funds	0	0	0	36,205	55,066	90,951	
Uses of Funds	(211,219)	(316,243)	(338,485)	0	0	0	
Ending Fund Balance	**$1,186,028**	**$869,785**	**$531,300**	**$567,505**	**$622,571**	**$713,522**	
Target Min: 90 days of O&M	*$706,035*	*$834,026*	*$998,057*	*$1,060,774*	*$1,127,980*	*$1,184,939*	
Capital Reserve Fund							
Beginning Fund Balance	**$980,864**	**$407,364**	**$25,129**	**$68,036**	**$75,832**	**$364,349**	
Sources of Funds	0	0	22,706	0	268,114	275,000	
Connection Fee Revenue	20,000	20,100	20,201	20,302	20,403	20,505	As Customer Growth
Uses of Funds	(593,500)	(402,335)	0	(12,505)	0	(358,042)	
Ending Fund Balance	**$407,364**	**$25,129**	**$68,036**	**$75,832**	**$364,349**	**$301,812**	
Target Min: Avg annual CIP (6 yrs.)	*$477,730*	*$477,730*	*$477,730*	*$477,730*	*$477,730*	*$477,730*	
Catastrophic Relief Fund							
Beginning Fund Balance	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	
Sources of Funds	0	0	0	0	0	0	
Uses of Funds	0	0	0	0	0	0	
Ending Fund Balance	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	
Total Reserve Funds	**$2,593,393**	**$1,894,915**	**$1,599,336**	**$1,643,338**	**$1,986,921**	**$2,015,335**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Capital Improvement Plan
Exhibit 4

Inflation 2.7%

Capital Projects	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	*Notes*
Pump Stations							
Strawberry Spit I PS Rehab Piping & Pumps	$0	$0	$0	$0	$0	$0	
Cove I PS Rehab Piping & Pumps	0	0	0	86,657	0	0	
Cove II PS Rehab Piping & Pumps	0	0	84,378	0	0	0	
Del Mar PS Rehab Piping & Pumps	0	102,700	0	0	0	0	
Hawthorne Terr PS Rehab Piping & Pumps	0	102,700	0	0	0	0	
Belveron Gardens PS Rehab Piping & Pumps	0	0	0	0	88,996	0	
Harbor Point 2A PS Rehab Piping & Pumps	0	0	0	0	0	91,399	
Seminary Cove PS Rehab Piping & Pumps	0	0	0	86,657	0	0	
Upgrade Motor Starters at SC,HC WAY,HP2A,HP2B	35,000	0	0	0	0	0	
Upgrade Wetwell Level Sensors	75,000	0	0	0	0	0	
Replace Emergency Generators	0	0	0	0	0	571,245	
Total Pump Stations	**$110,000**	**$205,400**	**$84,378**	**$173,313**	**$88,996**	**$662,644**	
Sewer Lines							
Project to be determined by TV project (1000ft.)	$0	$0	$0	$0	$0	$0	
2015-16 Pipe Bursting Project (4,000ft.)	400,000	0	0	0	0	0	
Condition Assesment and Retelevise (25,000ft.)	0	256,750	0	0	0	0	
Manhole Rehab (approx. 10 MH)	30,000	30,810	31,642	32,496	33,374	34,275	
Emergency Sewer Line Repair	50,000	51,350	52,736	54,160	55,623	57,124	
Total Sewer Lines	**$480,000**	**$338,910**	**$84,378**	**$86,657**	**$88,996**	**$91,399**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Capital Improvement Plan
Exhibit 4

Inflation 2.7%

Capital Projects	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	*Notes*
Trestle Glen Upgrades							
Office Equipment/Furniture	$0	$0	$0	$0	$0	$0	
Small Tools	3,500	3,595	3,692	3,791	3,894	3,999	
Slurry Seal	0	0	7,383	0	0	0	
TG Office Roof Rehab	0	8,216	0	0	0	0	
Trucks	0	46,215	47,463	48,744	0	0	
Total Trestle Glen Upgrades	**$3,500**	**$58,026**	**$58,537**	**$52,536**	**$3,894**	**$3,999**	
Future Unidentified Projects	$0	$0	$0	$0	$0	$0	
Transfer to Capital Fund	$0	$0	$22,706	$0	$168,114	$0	
Total Capital Projects	**$593,500**	**$602,336**	**$250,000**	**$312,505**	**$350,000**	**$758,042**	
Funding Sources							
O&M Reserve Fund	$0	$0	$0	$0	$0	$0	
Capital Reserve Fund	593,500	402,335	0	12,505	0	358,042	
New Revenue Bond	0	0	0	0	0	0	
Total Funding Sources	**$593,500**	**$402,335**	**$0**	**$12,505**	**$0**	**$358,042**	
Rate Funded Capital	**$0**	**$200,000**	**$250,000**	**$300,000**	**$350,000**	**$400,000**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenues at Present Rates
Exhibit 5

		Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Total
Single Family	***$/EDU***													
Number of ERUs	$246	0	0	0	0	0	0	2,950	0	0	0	0	0	**2,950**
Single Family Revenue		$0	$0	$0	$0	$0	$0	$725,798	$0	$0	$0	$0	$0	**$725,798**
Multi-Family	***$/EDU***													
Number of ERUs	$246	0	0	0	0	0	0	1,293	0	0	0	0	0	**1,293**
Multi-Family Revenue		$0	$0	$0	$0	$0	$0	$318,078	$0	$0	$0	$0	$0	**$318,078**
Nonresidential														
Number of ERUs	$246	0	0	0	0	0	0	778	0	0	0	0	0	**778**
Nonresidential Revenue		$0	$0	$0	$0	$0	$0	$191,290	$0	$0	$0	$0	$0	**$191,290**
													Total Revenue	**$1,235,166**

** Number of EDUs from SASM 2014/15 Member Agency Assesment **

FY 14/15 Actual	**$1,232,005**
Difference	*$3,161*
Percent	*0.3%*

Summary

	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Total
Revenue													
Single Family	$0	$0	$0	$0	$0	$0	$725,798	$0	$0	$0	$0	$0	$725,798
Multi-Family	0	0	0	0	0	0	318,078	0	0	0	0	0	318,078
Nonresidential	0	0	0	0	0	0	191,290	0	0	0	0	0	191,290
Total Revenue	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,235,166**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,235,166**
Customer													
Single Family	0	0	0	0	0	0	2,950	0	0	0	0	0	2,950
Multi-Family	0	0	0	0	0	0	1,293	0	0	0	0	0	1,293
Nonresidential	0	0	0	0	0	0	778	0	0	0	0	0	778
Total Customer	**0**	**0**	**0**	**0**	**0**	**0**	**5,021**	**0**	**0**	**0**	**0**	**0**	**5,021**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Volume Allocation Factor
Exhibit 6

	Volume Allocation						
	# of EDUs [1]	**Calculated Winter Water Avg/EDU/Mo. [2]**	**Assumed Annual Flow (CCF) [3]**	**Inflow & Infiltration 0%**	**Total Annual Flow @ Plant (CCF)**	**Total Annual Flow @ Plant (MGD)**	**% of Total**
Single Family	2,950	9.13	323,246	0	323,246	0.66	66.6%
Multi-Family	1,293	5.02	77,914	0	77,914	0.16	16.0%
Non Residential	778	9.04	84,317	0	84,317	0.17	17.4%
	---		---	---	---	---	---
	5,021		485,477	0	485,477	0.99	100.0%
					Actual Flows [4]	0.77	

Notes:

[1] - Based on FY 14/15 SASM Report
[2] - SF based on avg of 2012, 2013, & 2015; MF is 55% of SF based on data; and Non Res is calc'd based on 2014 annual flow
[3] - Non Res 2014 annual flow was reduced by 10% due to assumed outdoor irrigative use
[4] - 2014/15 ADDF est.; "Flow Monitoring Study & Options for Flow Based Rates" pg. 4

Allocation Factor **(VOL)**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Customer Allocation Factors
Exhibit 7

	Actual Customer		*Weighted Customer*			
	# of Accts. [1]	**% of Total**	**# of EDUs [2]**	**Weighting Factor**	**Weighted Customer**	**% of Total**
Single Family	2,613	90.9%	2,950	1.00	2,950	58.8%
Multi-Family	155	5.4%	1,293	1.00	1,293	25.8%
Non Residential	106	3.7%	778	1.00	778	15.5%
	---	---	---		---	---
	2,874	100.0%	5,021		5,021	100.0%

Notes:

[1] - Based on CY 2014 Billing
[2] - Based on FY 14/15 SASM Report

Allocation Factor ***(AC)*** ***(WCA)***

Richardson Bay Sanitary District
Sewer Cost of Service Study
Strength Allocation Factors
Exhibit 8

		Strength Allocation					
		BOD			**Suspended Solids**		
	Annual Flow (CCF)	**Avg. Factor (mg/l)**	**Calculated Pounds**	**% of Total**	**Avg. Factor (mg/l)**	**Calculated Pounds**	**% of Total**
Single Family	323,246	225	60,657	66.6%	225	60,657	66.6%
Multi-Family	77,914	225	14,620	16.0%	225	14,620	16.0%
Non Residential	84,317	225	15,822	17.4%	225	15,822	17.4%
			---	---		---	---
			91,100	100.0%		91,100	100.0%
Allocation Factor				**(BOD)**			**(SS)**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Revenue Allocation Factor
Exhibit 9

	Revenue Allocation	
	Projected FY 2017	**% of Total**
Single Family	$729,427	58.8%
Multi-Family	319,668	25.8%
Non Residential	192,246	15.5%
	---	---
	$1,241,342	100.0%
Allocation Factor		**(RR)**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Functionalization and Classification of Plant in Service
Exhibit 10

	Net Plant 6/30/2015	Volume (VOL)	Strength Related: Bio-Oxygen Demand (BOD)	Strength Related: Suspended Solids (SS)	Customer Related: Actual Customer (AC)	Customer Related: Equivalent Dwelling (EDU)	Revenue Related (RR)	Direct Assignment (DA)	Basis of Classification
Treatment									
Water Reclamation Facilities	$39,269	$19,635	$9,817	$9,817	$0	$0	$0	$0	50% VOL 25% BOD 25% SS
Total Treatment	$39,269	$19,635	$9,817	$9,817	$0	$0	$0	$0	
Collection									
Pipeline Infrastructure	$386,775	$386,775	$0	$0	$0	$0	$0	$0	100% VOL
Sewer Construction Improvmnt	6,681,302	6,681,302	0	0	0	0	0	0	100% VOL
Total Collection	$7,068,077	$7,068,077	$0	$0	$0	$0	$0	$0	
Pump Stations									
Pump Station Infrastructure	$777,505	$777,505	$0	$0	$0	$0	$0	$0	100% VOL
Pump Station Imprvmnts	2,212,032	2,212,032	0	0	0	0	0	0	100% VOL
Sewer Construction Improvmnt	14,653	14,653	0	0	0	0	0	0	100% VOL
Total Pump Stations	$3,004,189	$3,004,189	$0	$0	$0	$0	$0	$0	
Misc. Improvements									
Capital Improvement Projects	$3,834,495	$3,827,049	$3,723	$3,723	$0	$0	$0	$0	As Above
Total Misc. Improvements	$3,834,495	$3,827,049	$3,723	$3,723	$0	$0	$0	$0	
Buildings									
Trestle Glen Facilities	$230,313	$230,313	$0	$0	$0	$0	$0	$0	100% VOL
Total Buildings	$230,313	$230,313	$0	$0	$0	$0	$0	$0	
Plant Before General Plant	**$14,176,344**	**$14,149,263**	**$13,540**	**$13,540**	**$0**	**$0**	**$0**	**$0**	
% Plant Before General Plant	*100.0%*	*99.8%*	*0.1%*	*0.1%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*Factor PBGP*
General Plant									
Office Equipment	$2,009	$2,005	$2	$2	$0	$0	$0	$0	As PBGP
Small Tools	16,108	16,077	15	15	0	0	0	0	As PBGP
Generator Shed	18,069	18,034	17	17	0	0	0	0	As PBGP
Total General Plant	$36,186	$36,117	$35	$35	$0	$0	$0	$0	
Net Plant In Service	**$14,212,530**	**$14,185,380**	**$13,575**	**$13,575**	**$0**	**$0**	**$0**	**$0**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Allocation of Revenue Requirement
Exhibit 11.1

			Strength Related		***Customer Related***				
	Expenses	**Volume**	**Bio-Oxygen Demand**	**Suspended Solids**	**Actual Customer**	**Equivalent Dwelling**	**Revenue Related**	**Direct Assignment**	
	FY 2017	*(VOL)*	*(BOD)*	*(SS)*	*(AC)*	*(EDU)*	*(RR)*	*(DA)*	*Basis of Classification*
Expenses									
Administrative									
Board Members Stipend	$10,300	$10,280	$10	$10	$0	$0	$0	$0	As Net Plant in Service
Election Expense	251	251	0	0	0	0	0	0	As Net Plant in Service
Payroll Expense	493,549	492,606	471	471	0	0	0	0	As Net Plant in Service
Payroll Taxes	37,751	37,678	36	36	0	0	0	0	As Net Plant in Service
Benefits [1]	264,140	263,635	252	252	0	0	0	0	As Net Plant in Service
Other Post Employment Benefits	69,523	69,390	66	66	0	0	0	0	As Net Plant in Service
Professional Fees	51,500	51,402	49	49	0	0	0	0	As Net Plant in Service
Permits	503	502	0	0	0	0	0	0	As Net Plant in Service
SASM	2,048,000	0	0	0	0	2,048,000	0	0	100% EDU
Insurance	36,225	36,156	35	35	0	0	0	0	As Net Plant in Service
Claims	1,035	1,033	1	1	0	0	0	0	As Net Plant in Service
Publishing Legal Notices	207	207	0	0	0	0	0	0	As Net Plant in Service
Total Administrative	**$3,012,984**	**$963,140**	**$922**	**$922**	**$0**	**$2,048,000**	**$0**	**$0**	
Office Expenses									
Administrative Petty Cash	$300	$299	$0	$0	$0	$0	$0	$0	As Net Plant in Service
Maintenance	2,588	2,583	2	2	0	0	0	0	As Net Plant in Service
Computer Supplies	2,070	2,066	2	2	0	0	0	0	As Net Plant in Service
Office Supplies	3,105	3,099	3	3	0	0	0	0	As Net Plant in Service
Office Equipment Repair	520	519	0	0	0	0	0	0	As Net Plant in Service
Office Equipment Rental	520	519	0	0	0	0	0	0	As Net Plant in Service
Communications	17,588	17,554	17	17	0	0	0	0	As Net Plant in Service
Total Office Expenses	**$26,690**	**$26,639**	**$25**	**$25**	**$0**	**$0**	**$0**	**$0**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Allocation of Revenue Requirement
Exhibit 11.1

			Strength Related		***Customer Related***				
	Expenses	**Volume**	**Bio-Oxygen Demand**	**Suspended Solids**	**Actual Customer**	**Equivalent Dwelling**	**Revenue Related**	**Direct Assignment**	
	FY 2017	*(VOL)*	*(BOD)*	*(SS)*	*(AC)*	*(EDU)*	*(RR)*	*(DA)*	*Basis of Classification*
Operations									
Manager Petty Cash	$400	$399	$0	$0	$0	$0	$0	$0	As Net Plant in Service
Laundry	3,015	3,009	3	3	0	0	0	0	As Net Plant in Service
PG&E	31,200	31,140	30	30	0	0	0	0	As Net Plant in Service
Water	1,560	1,557	1	1	0	0	0	0	As Net Plant in Service
Garbage	2,808	2,803	3	3	0	0	0	0	As Net Plant in Service
Truck Expense	20,800	20,760	20	20	0	0	0	0	As Net Plant in Service
Education	518	517	0	0	0	0	0	0	As Net Plant in Service
Publications (Magazines)	251	251	0	0	0	0	0	0	As Net Plant in Service
Dues, Memberships	5,226	5,216	5	5	0	0	0	0	As Net Plant in Service
Sewer Repair & Maintenance	170,775	170,449	163	163	0	0	0	0	As Net Plant in Service
Emergency Repair - Other	10,350	10,330	10	10	0	0	0	0	As Net Plant in Service
Safety	2,010	2,006	2	2	0	0	0	0	As Net Plant in Service
Total Operations	**$248,913**	**$248,437**	**$238**	**$238**	**$0**	**$0**	**$0**	**$0**	
Trestle Glen Plant Maint.									
Maintenance	$20,700	$20,660	$20	$20	$0	$0	$0	$0	As Net Plant in Service
Total Trestle Glen Plant Maint.	**$20,700**	**$20,660**	**$20**	**$20**	**$0**	**$0**	**$0**	**$0**	
Water Reclamation									
Repair & Maintenance	$6,210	$3,105	$1,553	$1,553	$0	$0	$0	$0	As Treatment
Chemicals - NaOCl	31,050	15,525	7,763	7,763	0	0	0	0	As Treatment
Self Monitoring	704	352	176	176	0	0	0	0	As Treatment
Total Water Reclamation	**$37,964**	**$18,982**	**$9,491**	**$9,491**	**$0**	**$0**	**$0**	**$0**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Allocation of Revenue Requirement
Exhibit 11.1

			Strength Related		***Customer Related***				
	Expenses	**Volume**	**Bio-Oxygen Demand**	**Suspended Solids**	**Actual Customer**	**Equivalent Dwelling**	**Revenue Related**	**Direct Assignment**	
	FY 2017	*(VOL)*	*(BOD)*	*(SS)*	*(AC)*	*(EDU)*	*(RR)*	*(DA)*	*Basis of Classification*
Pump Stations									
Bel Gardens R&M	$1,035	$1,035	$0	$0	$0	$0	$0	$0	As Pump Stations
Del Mar R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Hawthorne Terrace R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Greenwood Beach R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Harbor Point I R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Harbor Point IIA R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Harbor Point IIB R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Harbor Point III R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
HPIII Emergency Generator R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Cove I R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Cove II R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Strawberry Circle R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Harbor Cove Way R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Strawberry Spit I R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Strawberry Spit II R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Strawberry Spit III R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Seminary Cove Pump R&M	1,035	1,035	0	0	0	0	0	0	As Pump Stations
Emergency Generators R&M	17,595	17,595	0	0	0	0	0	0	As Pump Stations
Total Pump Stations	**$35,190**	**$35,190**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Total O&M Expenses	**$3,382,440**	**$1,313,049**	**$10,696**	**$10,696**	**$0**	**$2,048,000**	**$0**	**$0**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Allocation of Revenue Requirement
Exhibit 11.1

			Strength Related		***Customer Related***				
	Expenses	**Volume**	**Bio-Oxygen Demand**	**Suspended Solids**	**Actual Customer**	**Equivalent Dwelling**	**Revenue Related**	**Direct Assignment**	
	FY 2017	*(VOL)*	*(BOD)*	*(SS)*	*(AC)*	*(EDU)*	*(RR)*	*(DA)*	*Basis of Classification*
Rate Funded Capital	**$200,000**	**$199,618**	**$191**	**$191**	**$0**	**$0**	**$0**	**$0**	As Net Plant in Service
Debt Service									
New Revenue Bond	$0	$0	$0	$0	$0	$0	$0	$0	As Net Plant in Service
Total Debt Service	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Change in Working Capital									
To/From O&M Reserve	($316,243)	($315,639)	($302)	($302)	$0	$0	$0	$0	As Net Plant in Service
To/From Capital Reserve	0	0	0	0	0	0	0	0	As Net Plant in Service
Total Change in Working Capital	**($316,243)**	**($315,639)**	**($302)**	**($302)**	**$0**	**$0**	**$0**	**$0**	
Total Revenue Requirement	**$3,266,196**	**$1,197,027**	**$10,585**	**$10,585**	**$0**	**$2,048,000**	**$0**	**$0**	
Less: Miscellaneous Revenue									
Property Tax Income	$1,438,650	$0	$0	$0	$0	$1,438,650	$0	$0	As SASM
Inspections	2,010	737	7	7	0	1,260	0	0	As Total Rev Req
Reclaimed Water	20,600	7,550	67	67	0	12,917	0	0	As Total Rev Req
Misc. Revenue	503	184	2	2	0	315	0	0	As Total Rev Req
Interest Income	4,488	1,645	15	15	0	2,814	0	0	As Total Rev Req
Total Miscellaneous Revenue	**$1,466,251**	**$10,115**	**$89**	**$89**	**$0**	**$1,455,957**	**$0**	**$0**	
Net Revenue Requirement	**$1,799,946**	**$1,186,912**	**$10,495**	**$10,495**	**$0**	**$592,043**	**$0**	$0	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Allocation of Revenue Requirement
Exhibit 12

	Net Revenue Requirement	Single Family	Multi-Family	Non Residential	*Basis*
Volume	**$1,186,912**	$790,284	$190,486	$206,142	*(VOL)*
Bio-Oxygen Demand	**$10,495**	$6,988	$1,684	$1,823	*(BOD)*
Suspended Solids	**$10,495**	$6,988	$1,684	$1,823	*(SS)*
Actual Customer	**$0**	$0	$0	$0	*(AC)*
Equivalent Dwelling	**$592,043**	$347,892	$152,462	$91,690	*(EDU)*
Revenue Related	**$0**	$0	$0	$0	*(RR)*
Direct Assignment	**$0**	$0	$0	$0	*(DA)*
Total Net Revenue Requirement	**$1,799,946**	**$1,152,151**	**$346,317**	**$301,477**	

Richardson Bay Sanitary District
Sewer Cost of Service Study
Summary of Cost of Service
Exhibit 13

	Test Year FY 2017	Single Family	Multi-Family	Non Residential
Revenue at Present Rates	**$1,241,342**	$729,427	$319,668	$192,246
Allocated Revenue Requirement	**$1,799,946**	$1,152,151	$346,317	$301,477
Balance/(Deficiency) of Funds	***($558,604)***	*($422,724)*	*($26,648)*	*($109,231)*
Required % Change in Rates	**45.0%**	**58.0%**	**8.3%**	**56.8%**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Unit Costs
Exhibit 14

	Total	Single Family	Multi-Family	Non Residential
Volume ($/CCF)	**$2.44**	$2.44	$2.44	$2.44
Bio-Oxygen Demand ($/CCF)	**$0.02**	$0.02	$0.02	$0.02
Suspended Solids ($/CCF)	**$0.02**	$0.02	$0.02	$0.02
RR & DA ($/CCF)	**$0.00**	$0.00	$0.00	$0.00
Total $/CCF	**$2.49**	**$2.49**	**$2.49**	**$2.49**
Customer $/EDU/Mth	**$9.83**	**$9.83**	**$9.83**	**$9.83**
Total Rate $ / EDU / Month	**$29.87**	**$32.54**	**$22.32**	**$32.31**
Total Rate $ / EDU / Year	**$358.48**	**$390.51**	**$267.84**	**$387.70**

Richardson Bay Sanitary District
Sewer Cost of Service Study
Rate Design

Target Revenue FY 2017 = $1,799,946

	Total Cost	Fixed Cost	*Variable Contribution*	Vaiable Cost	Total Rate	Weighting Factor *Calc.*	Weighting Factor *Utilized*
Fixed/Variable Allocation		***30%***		***70%***			
Cost/1.0 Units	$246	$74		$172			
Single Family / Duplex		$74	100%	$172	$246	100.0%	100.0%
Multi-Fam (3+ Units)		74	55%	95	169	68.5%	68.5%
Non Residential		74	100%	172	246	100.0%	100.0%

Unit Equivalency	**EDU's**	**Weighting Factor**	**Weighted EDU's**	***% of Total***
Single Family / Duplex	2,950	100.0%	2,950	*63.9%*
Multi-Fam (3+ Units)	1,293	68.5%	886	*19.2%*
Non Residential	778	100.0%	778	*16.9%*
	---		---	
Total	**5,021**		**4,614**	

Rate Calculation	**Revenue Required**	**Weighted EDU's**	**Required Rate ($/EDU)**
	$1,799,946	4,614	$390

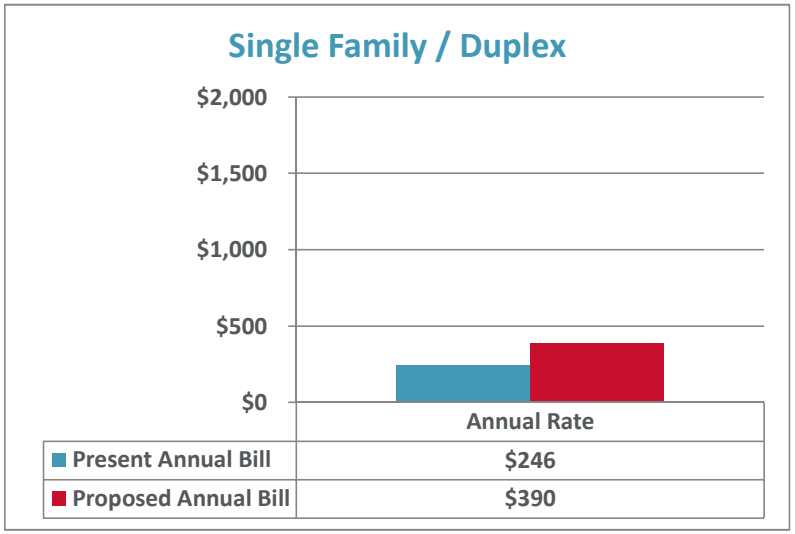
Revenue Check

Rate Calculation	**EDU's**	**Required Rate ($/EDU)**	**Weighting Factor**	**Equiv. Rate ($/EDU)**	**Revenue**
Single Family / Duplex	2,950	$390	100.0%	$390	$1,150,656
Multi-Fam (3+ Units)	1,293	390	68.5%	267	345,231
Non Residential	778	390	100.0%	390	303,264

				Total Revenue	**$1,799,151**
				Target	$1,799,946
				Difference	($795)
				Percent	0.0%

Richardson Bay Sanitary District
Sewer Cost of Service Study
Rate Design Summary

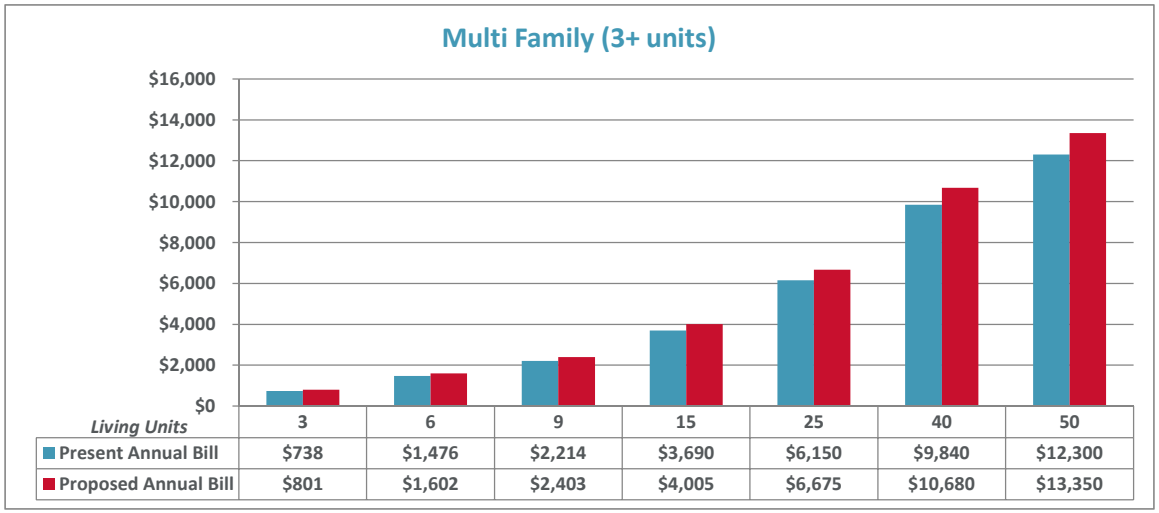
	Present	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**
Propsed Adj.	***Rates***	*45.0%*	*35.0%*	*25.0%*	*12.0%*	*12.0%*
	$/EDU					
Single Family	$246	$390	$527	$658	$737	$826
Multi-Family	$246	$267	$360	$451	$505	$565
Non Residential	$246	$390	$527	$658	$737	$826



Richardson Bay Sanitary District
Sewer Cost of Service Study
Single Family / Duplex

Present Annual Bill	Proposed Annual Bill	Difference $	Difference %
$246	$390	$144.00	58.5%

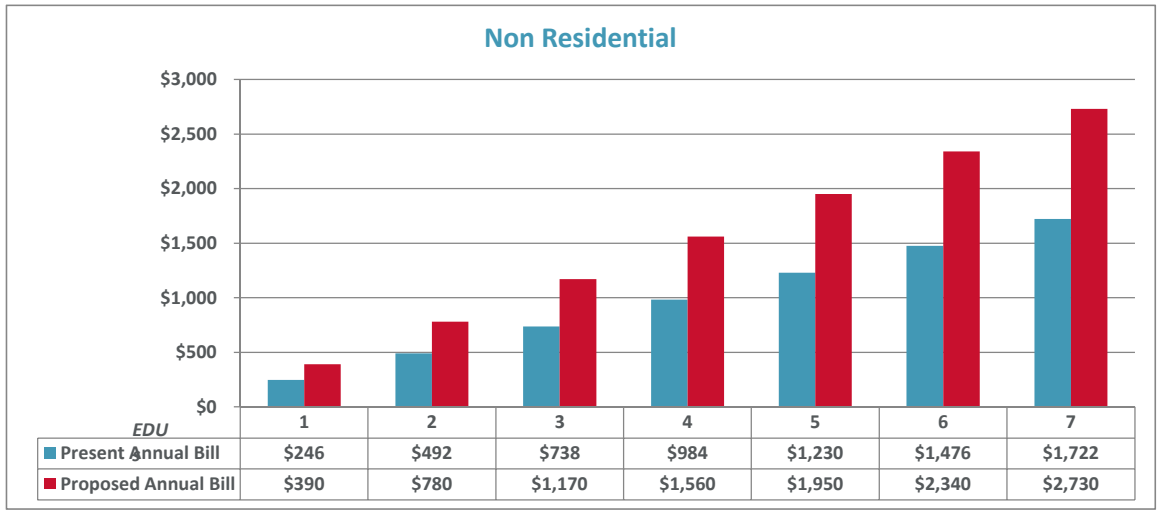
Present Rate	Proposed Rate
$246 / *EDU*	$390 / *EDU*



Richardson Bay Sanitary District
Sewer Cost of Service Study
Multi Family (3+ units)

Dwelling Units	Present Annual Bill	Proposed Annual Bill	Difference $	Difference %
3	$738	$801	$63.00	8.5%
6	$1,476	$1,602	126.00	8.5%
9	$2,214	$2,403	189.00	8.5%
15	$3,690	$4,005	315.00	8.5%
25	$6,150	$6,675	525.00	8.5%
40	$9,840	$10,680	840.00	8.5%
50	$12,300	$13,350	1,050.00	8.5%

Present Rate	Proposed Rate
$246.00 / *Living Unit*	$267.00 / *Living Unit*



Richardson Bay Sanitary District
Sewer Cost of Service Study
Non Residential

EDUs	Present Annual Bill	Proposed Annual Bill	Difference $	Difference %
1	$246	$390	$144.00	58.5%
2	$492	$780	288.00	58.5%
3	$738	$1,170	432.00	58.5%
4	$984	$1,560	576.00	58.5%
5	$1,230	$1,950	720.00	58.5%
6	$1,476	$2,340	864.00	58.5%
7	$1,722	$2,730	1,008.00	58.5%

Present Rate	Proposed Rate
$246.00 / *EDU*	$390.00 / *EDU*

Richardson Bay Sanitary District
Proposed Sewer Rate Adjustments
Proposition 218 Notification

Proposition 218 Notification: You are receiving this notice because you are a Richardson Bay Sanitary District sewer customer and/or you own property that is receiving sewer services. A public hearing will cover the proposed rate adjustments for sewer services for a five-year period. If adopted, the proposed rate adjustments will become effective for Tax Years 2016/17 through 2020/21. This notice also provides information on how rates are calculated, the reasons for the required rate adjustments, how customers can receive more information on the effect of the proposed rate adjustments on their sewer bills, and how to file a protest against the proposed rate adjustments.

A Public Hearing will be held during the District's regularly scheduled Board Meeting on June 21, 2016, at 4:00 p.m., at the District's office located at 500 Tiburon Blvd., Tiburon. The proposed rate adjustments will be presented to the District's Board of Directors for adoption at this meeting.

Managing and keeping costs down is one of the District's main concerns. The Richardson Bay Sanitary District is responsible for the collection of wastewater and the operation, maintenance and improvements of the District's sewer collection system. The District is committed to providing reliable sewer service at the lowest possible cost while meeting legal requirements, growing State and Federal Clean Water standards, and protecting the environment. Rising costs of wastewater treatment, along with the repair and replacement of the District's aging collection system are necessitating adjustments to the sewer rates. The District's expenditures and revenues must balance while maintaining a high level of service.

Basis of Proposed Rates: The District collects their customer's wastewater through its system of collection lines, interceptors and pumps. The collected wastewater is sent to the Sewerage Agency of Southern Marin (SASM) for treatment. The cost of wastewater treatment by SASM is approximately 60% of the District's overall budget and the costs for treatment from SASM are anticipated to increase significantly over the next few years. SASM is legally required to make major improvements to their wastewater treatment plant to meet the increasingly stringent regulatory requirements. SASM has projected a doubling of their cost of treatment over the next five years. These increased treatment costs can not be absorbed by the District and must be passed through to the District's customers.

The proposed rates were designed to fairly and equitably recover the cost of providing sewer service from all customer classes. The District charges an annual rate which is billed on the basis of equivalent dwelling (living) units. Historically, the District has charged the same rate for single-family and multi-family customers. The comprehensive rate study conducted by the District determined that the volumes of wastewater and associated cost to provide service to a multi-family dwelling unit was less than a single-family residential customer. The proposed rates have established separate, cost-based, rates for single-family residential/duplex and multi-family (3+ living units) customers.

Average Monthly Rate: The proposed FY 2016/17 annual rate for a single-family residential customer is $390.00. This is equal to a rate of $32.50 per month. In comparison to other neighboring sewer utility's rates, the District's are very competitive.

Richardson Bay Sanitary District

Proposed Sewer Rates - FY 2016/17 through FY 2020/21

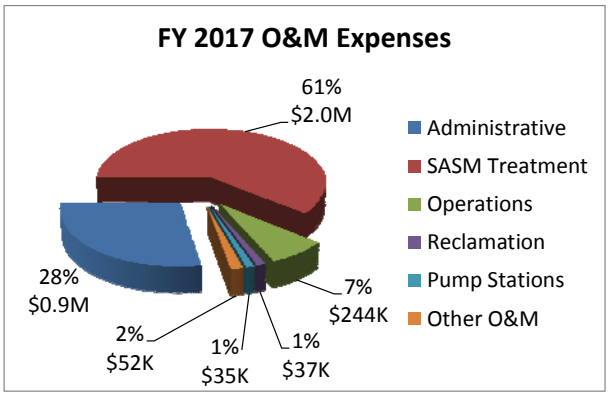
		Proposed Annual Rate - $/Equivalent Dwelling Unit				
Class of Service	**Present Rate**	**FY 2016/17**	**FY 2017/18**	**FY 2018/19**	**FY 2019/20**	**FY 2020/21**
Single-Family Residential/Duplex	$246.00	$390.00	$527.00	$658.00	$737.00	$826.00
Multi-Family Residential	$246.00	$267.00	$360.00	$451.00	$505.00	$565.00
Non-Residential	$246.00	$390.00	$527.00	$658.00	$737.00	$826.00

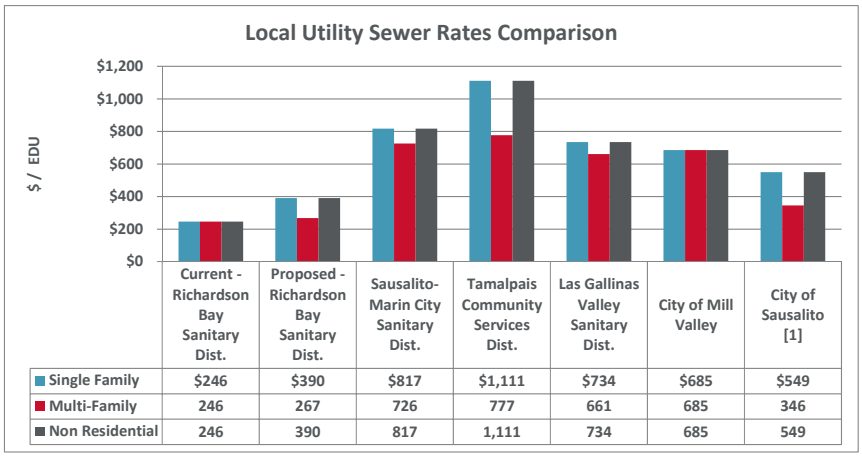
Does the District also receive property taxes as a source of revenue?
Yes, the District receives approximately $1.4 million per year in property tax revenue which is used to off-set the District's total costs and the sewer rates charged to customers.

When was the last time the District changed their sewer rates?
The District has not changed or adjusted their sewer rates in approximately 30 years.

When would new rates take effect?
The rates will take effect after a Public Hearing. The rates will appear on the next property tax bill.

How do the District's rates compare to other neighboring utilities?
The District's rates are very competitive and even with the proposed rate adjustment will be at or below a number of neighboring sewer utilities. [See graph below right].





	Current - Richardson Bay Sanitary Dist.	Proposed - Richardson Bay Sanitary Dist.	Sausalito-Marin City Sanitary Dist.	Tamalpais Community Services Dist.	Las Gallinas Valley Sanitary Dist.	City of Mill Valley	City of Sausalito [1]
Single Family	$246	$390	$817	$1,111	$734	$685	$549
Multi-Family	246	267	726	777	661	685	346
Non Residential	246	390	817	1,111	734	685	549

If you wish to protest this proposed sewer rate adjustment, you may:

Attend the Public Hearing
A Public Hearing will be held on June 21, 2016 at 4:00 P.M. at the District's office, located at 500 Tiburon Blvd.

-OR-

Submit a written protest
Written protests of the proposed rate change have to identify the address of the impacted property and include the signature(s) of the property owner(s). If the District receives written protests against the proposed sewer rates by the majority of the affected property owners prior to the end of the hearing, the District's Board will not approve the change. In compliance with Proposition 218, only one protest for each property will be counted. **A written protest regarding the rate increase for sewer services may be mailed to the Richardson Bay Sanitary District, 500 Tiburon Blvd, Tiburon, CA 94920.** All written protests need to be received by the District at or before the close of the public hearing.

Why are the sewer rate increases required?

The District's costs have risen primarily based on these major factors:

Increased Costs of Wastewater Treatment

The District conveys their wastewater to the Sewerage Agency of Southern Marin (SASM) for treatment. The cost of wastewater treatment is projected to roughly double over this time period as a result of major capital improvements to SASM's wastewater treatment plant. At the present time, the District's cost of treatment is approximately $1.6 million per year and is projected to increase to approximately $3.2 million by FY 2020/21. The majority of the increases to SASM costs will occur in the first two years (FY 2016/17 and FY 2017/18).

Maintaining the Existing Collection System

The District's collection system is aging and requires adequate funding to be properly maintained. The District's investment in collection facilities is approximately $14 million. At the present time, the District's rates provide little or no funding for the maintenance and repair of the District's collection system. With the proposed rate adjustments, and at the end of the five year period, the District will be funding approximately $400,000 per year from rates to maintain the collection system in proper working order.

For additional information, please visit us at:
www.RichardsonBaySD.org

Or by phone: (415) 388-1345

RESOLUTION NO. ____

A RESOLUTION OF THE RICHARDSON BAY SANITARY DISTRICT AMENDING THE SCHEDULE OF FEES AND CHARGES OF THE DISTRICT FOR PROGRAMS AND FACILITIES PROVIDED BY THE DISTRICT

RICHARDSON BAY SANITARY DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

WHEREAS, the Richardson Bay Sanitary District has established various schedules of rates, fees, and charges for services, programs and facilities provided by the District.

WHEREAS, the District desires to adjust the rates, fees, and charges, and to implement new rates, fees, and charges for various District services, programs, and facilities provided by the District, as set forth in the comprehensive schedule of fees and charges, attached hereto as **Attachment A** and incorporated herein by this reference; and

WHEREAS, the District collects their customer's wastewater through its system of collection lines, interceptors and pumps. The collected wastewater is sent to the Sewerage Agency of Southern Marin (SASM) for treatment. The cost of wastewater treatments by SASM are anticipated to increase significantly over the next few years as SASM is legally required to make major improvements to their wastewater treatment plant to meet the increasingly stringent regulatory requirements. SASM has projected a doubling of their cost of treatment over the next five years. These increased treatment costs cannot be absorbed by the District and must be passed through to the District's customers; and

WHEREAS, the proposed rates were designed to fairly and equitably recover the cost of providing sewer service from all customer classes. The District charges an annual rate which is billed on the basis of equivalent dwelling (living) units. Historically, the District has charged the same rate for single-family and multi-family customers. The comprehensive rate study conducted by the District determined that the volumes of wastewater and associated cost to provide service to a multi-family dwelling unit was less than a single-family residential customer. The proposed rates have established separate, cost based, rates for single-family residential/duplex and multi-family (3+ living units) customers; and

WHEREAS, the District has made available in the office of the District data concerning the rates, fees, and charges; and

WHEREAS, the District has held a duly noticed public hearing regarding the amendments to the comprehensive schedule of fees and charges; and

WHEREAS, all legal prerequisites to the adoption of the Resolution have occurred;

NOW, THEREFORE, BE IT RESOLVED as follows:

Section 1: The Board of Directors hereby finds and determines that based upon the data, information, and analysis presented to the District concerning the rates, fees, and charges described in Attachment A, such rates, fees, and charges do not constitute taxes as defined by Section 1 of Article XIIIC of the California Constitution.

Section 2: The Board of Directors hereby establishes, amends, and modifies the rates, fees, and charges for services, programs, and facilities provided by the District as set forth in Attachment A. The Board of Directors is taking action only on those rates, fees, and charges shown to change in Attachment A and all other taxes, rates, fees, and charges that are not shown to change in Attachment A are not readopted or revised by this Resolution.

Section 3: Immediately upon the effective date of the rates, fees, and charges established, amended, or modified by this Resolution, such rates, fees, and charges shall supersede and prevail over any prior provisions concerning the same item in any former resolution, motion, or other action of the District.

The foregoing Resolution was duly and regularly adopted by the Board of Directors of the Richardson Bay Sanitary District at its regular meeting held on the ____ day of _____, 2016 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
District Secretary

ATTACHMENT A

COMPREHENSIVE SCHEDULE OF FEES AND CHARGES FOR THE RICHARDSON BAY SANITARY DISTRICT

For Single-Family residency from $246 to $390 for the fiscal year of 2016-2017

To $527 for fiscal year 2017-2018
To $658 for fiscal year 2018-2019
To $737 for fiscal year 2019-2020
To $826 for fiscal year 2020-2021

For Multi-family residential units from $246 to $267 for the fiscal year of 2016-2017

To $360 for fiscal year 2017-2018
To $451 for fiscal year 2018-2019
To $505 for fiscal year 2019-2020
To $565 for fiscal year 2020-2021

For Non-residential units from $246 to $390 per the fiscal year of 2016-2017

To $527 for fiscal year 2017-2018
To $658 for fiscal year 2018-2019
To $737 for fiscal year 2019-2020
To $826 for fiscal year 2020-2021