

# Big Bear Area Regional Wastewater Agency

## Comprehensive Sewer Rate Study March 2011



March 15, 2011

Ms. Jennifer McCullar  
Finance Manager  
Big Bear Area Regional Wastewater Agency  
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Big Bear Agency, CA 92314

**Subject: Regional Comprehensive Sewer Rate Study**

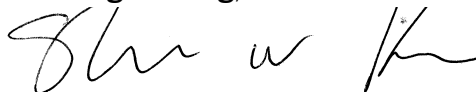
Dear Ms. McCullar:

HDR Engineering, Inc. (HDR) is pleased to present the final report on the regional comprehensive sewer rate study conducted for the Big Bear Area Regional Wastewater Agency (Agency). A key objective in developing the Agency's regional sewer rate study was to develop a financial plan and rates that generate adequate revenue to fund the Agency's operating and capital needs over a projected five year time period. Another objective of this study was to determine the appropriateness of the current rates by conducting a cost of service analysis. This report outlines the approach, methodology, findings, and conclusions of the comprehensive rate study process.

This report was developed utilizing the Agency's accounting, operating and billing records, current budgets, and future projections. HDR has relied upon this information to develop our analyses that form our findings, conclusions, and recommendations. At the same time, this study was developed utilizing generally accepted sewer rate setting principles. The conclusions and recommendations contained within this report is intended to provide a financial plan that meets the operating and capital needs of the Agency. Finally, this report provides the basis for developing and implementing rates that are cost-based, defensible, and equitable to the Agency's customers.

We appreciate the assistance provided by Agency staff in the development of this study. More importantly, we appreciate working with Agency's staff, management and Board on this project.

Sincerely yours,  
HDR Engineering, Inc.



Shawn Koorn  
Associate Vice President/  
Project Manager



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**Technical Appendices**



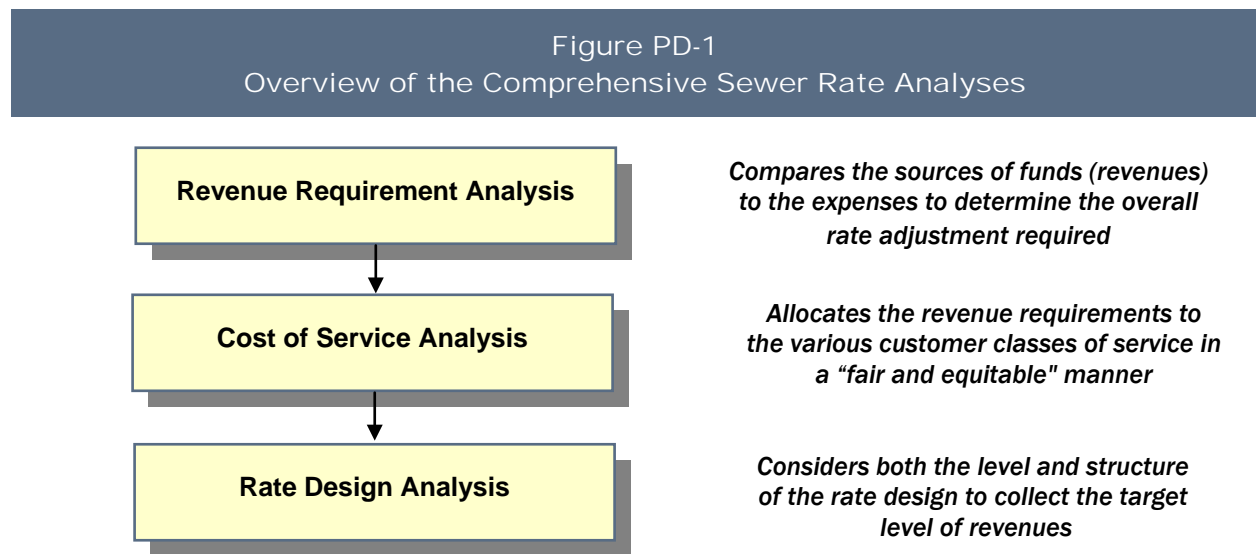
## Board Policy Direction

### Introduction

HDR Engineering, Inc. (HDR) was retained by the Big Bear Area Regional Wastewater Agency (Agency) to perform a regional comprehensive sewer rate study. HDR developed and prepared an analysis to determine the adequacy of the existing sewer rates and proposed a basis for adjustments to move to cost-based rates. HDR provided the initial draft report to the Agency in December 2010, and a subsequent draft report in February 2011. The Agency's staff and Board reviewed the reports and the Board, in consideration of the current state of the economy and its negative impact on the Agency's ratepayers, modified the Agency's capital plan and lowered the Agency's rate-funded capital, which impacted the results of the initial analysis. This section of this report will provide a brief overview of the rate study components and address the impact the Board policy direction outlined above. The original results and recommendations of the sewer cost of service study are contained in the subsequent sections of this report.

### Overview of the Rate Study Process

A comprehensive sewer rate study utilizes three interrelated analyses to address the adequacy and equity of utility rates. These three analyses are a revenue requirement analysis, a cost of service analysis, and a rate design analysis.



### Key Sewer Rate Study Results

A comprehensive review of the Agency's regional sewer rates was undertaken, including the development of the Agency's revenue requirements for FY 2011 – 2016, cost of service for FY 2012, and rate design for FY 2011 - 2016. The results, conclusions, and recommendations

were presented to the Board on February 18, 2011. Based on the recommendations of the study, and the subsequent discussion with the Board, the following findings, conclusions, and recommendations were noted.

- Rate adjustments are necessary to fund the Agency's operating and capital costs over the next five-year period (FY 2012 – FY 2016).
- Assumed new connections were limited to 25 EDUs per year through FY 2016 for a total of 125 new connections. This level of connections is consistent with the most recent experience of the Agency and reflects the uncertainty associated with a rebound in new construction. The original analysis assumed increasing annual EDUs over the five-year period for a total of 645 new connections. Using the lower level of connections is more conservative and was undertaken to better assure the Agency's 1) financial flexibility considering the uncertainty associated with connection fee revenue and 2) ability to secure debt financing for planned capital expenditures over the five-year period in review.
- Given the level of the Agency's capital improvements, additional long-term borrowing is appropriate and will minimize the projected rate adjustments.
- After review of the initial results of the rate study, the Board provided policy direction on the Agency's capital improvements and depreciation funding. The Board modified the scope of the load equalization basin capital project, reducing the expenditure and associated debt financing by \$982,500. The Board also reduced depreciation funding to approximately 50% of the annual estimated replacement requirement resulting in a reduction of \$880,000 in rate funded capital over the five-year period.
- Based upon Board policy direction, a five-year rate schedule has been developed which includes 6.0% annual rate adjustments in FY 2012 and FY 2013 followed by a 5.0% adjustment in FY 2014, and annual adjustments of 4.5% in FY 2015 and FY 2016.
- These adjustments align the Agency's rates with its operating and revised capital cost requirements and a 50% depreciation funding level and meet financial policy requirements associated with debt service coverage ratios and minimum fund balances.
- The proposed rate plan smoothes the rate adjustments, minimizes future rate impacts, and provides funding for future capital projects.
- Minor cost of service differences exist among the member agencies.
- A projection of the rate per EDU has been developed for FY 2012 through FY 2016.
- A flat annual charge combined with a volumetric charge (based on a three-year average of each member agency's metered wastewater flow) is recommended to align the Agency's rates with its operating and capital cost requirements.
- In 2015, the Agency should review the need for additional rate adjustments.
- Based on the five-year capital plan beginning in FY 2017, the Agency will have insufficient funds to finance these projects on a pay-as-you-go basis.

## Summary of the Revenue Requirement Analysis

The revenue requirement analysis sums the Agency's operating and capital expenses, and then subtracts out other revenues to determine the Agency's net revenue requirement, or the amount to be collected through rates. The net revenue requirement is then compared to revenue collected through rates to determine the overall rate adjustment needed.

As part of the revenue requirement analysis, several scenarios were considered in terms of rate funded capital improvements (that portion of capital expenditures funded through rates)

in addition to, or in place of, long-term borrowing. Since rates are impacted by both the level of, and the funding mechanism for capital costs, the scenarios considered rates under 1) one hundred percent, pay-as-you-go cash financing and 2) debt financing significant capital projects and cash financing the remaining capital costs. In order to fund annual capital improvements and minimize rate impacts, it was recommended that the Agency debt finance significant capital improvements and fund the remaining capital expenditures through rates (rate funded capital) and available reserves. This level of rate funded capital was based on a review of the Agency's long-term capital needs and prudent funding levels associated with annual asset replacement (i.e., annual depreciation expense). Provided below in Table PD-1 is a summary of the FY 2011 - FY 2016 capital improvement plan before any policy adjustments were made.

Table PD-1 Summary of the Capital Improvement Plan (\$000s)						
Project Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Capital Improvement Projects</b>						
Treatment Facility	\$192	\$941	\$998	\$25	\$34	\$428
Interceptor System	142	978	993	356	250	250
Effluent Disposal Assets	0	0	0	0	125	68
Flow Measuring Devices	0	0	28	0	44	0
Other Equipment	0	0	6	12	114	13
Transportation Equipment	45	0	65	11	147	0
Other Tangible Facilities	40	0	0	0	81	0
<b>Total Capital Improvements</b>	<b>\$419</b>	<b>\$1,919</b>	<b>\$2,090</b>	<b>\$404</b>	<b>\$795</b>	<b>\$759</b>
<b>Less: Funding Sources</b>						
Capital and Replacement Fund	\$236	\$18	\$191	\$184	\$583	\$294
Connection Fees	183	22	20	220	212	465
Revenue Bonds	0	1,879	1,879	0	0	0
<b>Total Outside Funding</b>	<b>\$419</b>	<b>\$1,919</b>	<b>\$2,090</b>	<b>\$404</b>	<b>\$795</b>	<b>\$759</b>
<b>Excess/(Shortfall) Funding Sources</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

This results of the original capital plan yielded the following net revenue requirement analysis and proposed rate adjustment for FY 2011 - FY 2016:

Table PD-2  
Summary of the Revenue Requirement Analysis (\$000s)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Net Revenue Requirement</b>	\$4,292	\$4,545	\$4,962	\$5,248	\$5,557	\$5,879
Rate Revenue Excess/(Shortfall)	(\$18)	(\$257)	(\$655)	(\$918)	(\$1,199)	(\$1,493)
% Rate Adjustment Required	0.4%	6.0%	15.2%	21.2%	27.5%	34.0%
<b>Proposed Rate Adjustment</b>	0.00%	6.00%	6.00%	6.50%	6.50%	6.50%

After considering the implications of these results, the Board opted to revise the capital improvement plan and the level of proposed depreciation funding and provided policy direction on these two issues. In revisiting the capital improvement plan and the level of depreciation funding, the Board determined that the rate adjustment scenario presented in Table PD-3 is sufficient for the planning period. It is important to note that any annual deficiencies shown in Tables PD-2 and PD-3 (under “Rate Revenue Excess/(Shortfall)” and “% Rate Adjustment Required”) are cumulative. That is, any adjustments in the initial years will reduce the deficiency in the later years.

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

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Net Revenue Requirement</b>	\$4,292	\$4,597	\$4,924	\$5,105	\$5,285	\$5,502
Rate Revenue Excess/(Shortfall)	(\$18)	(\$319)	(\$641)	(\$818)	(\$993)	(\$1,206)
% Rate Adjustment Required	0.4%	7.5%	15.0%	19.1%	23.1%	28.1%
<b>Proposed Rate Adjustment</b>	0.00%	6.00%	6.00%	5.00%	4.50%	4.50%

Leading to the determination of this rate adjustment scenario is a realignment of the Agency’s capital improvement plan. The revised capital improvement plan is shown in Table PD-4.

Table PD-4  
Summary of the Revised Capital Improvement Plan (\$000s)

Project Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Capital Improvement Projects</b>						
Treatment Facility	\$192	\$900	\$77	\$25	\$34	\$428
Interceptor System	142	978	993	356	250	250
Effluent Disposal Assets	0	0	0	0	125	68
Flow Measuring Devices	0	0	28	0	44	0
Other Equipment	0	0	6	12	114	13
Transportation Equipment	45	0	65	11	147	0
Other Tangible Facilities	40	0	0	0	81	0
<b>Total Capital Improvements</b>	<b>\$419</b>	<b>\$1,878</b>	<b>\$1,169</b>	<b>\$404</b>	<b>\$795</b>	<b>\$759</b>
Less: Funding Sources						
Capital and Replacement Fund	\$236	\$18	\$191	\$184	\$583	\$294
Connection Fees	183	22	20	220	212	465
Revenue Bonds	0	1,838	958	0	0	0
Total Outside Funding	\$419	\$1,878	\$1,169	\$404	\$795	\$759
<b>Excess/(Shortfall) Funding Sources</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

The differences between the original capital improvement plan and the revised capital improvement plan occur in the years FY 2013 and FY 2014 for the load equalization basin. The original capital plan included the complete construction of a new basin. The revised plan, discussed among the Agency's Board, involved the rehabilitation of the basin in lieu of complete replacement during the five-year period. This reduced the overall borrowing needs of the Agency and allowed for a modified rate plan.

As part of the revised analysis, the number of new connections was limited to the most recent level of annual connections of approximately 25. This level of connections was used in the revised analysis due to the uncertainty associated with new connections and the need to understand the impact on key financial indicators such as debt service coverage ratios (DCS ratio) and ending reserve levels if connections remain at this level throughout the five-year period. This change from the original plan reduces the risk associated with low levels of connections and provides a more conservative and fiscally sound review of the Agency's rates and financial strength.

A key element of proper funding is the adequacy of the Agency's debt service coverage (DSC) ratio. A DSC ratio determines the Agency's ability to repay annual debt service (principal and interest expense). The DSC ratio, in simplified form, is 1) total revenues less operating and maintenance expenses divided by 2) the annual debt service payments. The Agency's bond covenants require a minimum DSC ratio of 1.20, with connection fees included in revenues. However, it should be noted that the 1.20 DSC ratio is the absolute minimum that is allowed. Therefore, it is recommended that the Agency target a planning DSC ratio of 1.50 to 1.60 to provide for unexpected variances in operating performance. During the projected time period, after the proposed rate adjustments, and additional new long-term debt, the Agency's DSC ratio meets the minimum but falls below the target covenant requirements in three of the five years: 1.47, 1.38 and 1.48 in FY 2012, 2013, and 2014, respectively. The Agency will need to

manage covenant compliance and thus operating and capital expenses more tightly during this time period. If annual connections rebound above the 25 estimated, it will provide the Agency with additional flexibility.

Reserves are also a critical aspect of sound financial planning. The Agency currently has financial policies which require minimum fund balances. During the projected period through FY 2016, minimum fund balance requirements are met in all funds except the Capital and Replacement Fund (C & R Fund). The C & R minimum fund balance, for the purposes of this study, was determined to be the amount needed at the end of FY 2016 to fund the capital projects in the next five-year period on a pay-as-you-go basis. Based on this minimum balance assumption, the reserve fund should have a balance of no less than \$2.7 million at the end of FY 2016. Due primarily to the revised assumptions associated with connection fee revenue, and a reduction in the level of depreciation funding, the balance is approximately \$1 million at the end of FY 2016, or \$1.8 million less than the initial rate study. Based on this relatively low level of funds in the capital and replacement fund (estimated to be approximately one year of replacement capital), it is recommended the Agency review the additional need for rate adjustments beginning in FY 2015. During the rate review in FY 2015, if the Agency determines that funding future capital projects on a pay- as- you- go basis is most appropriate, the level of depreciation funding will need to be increased to achieve this objective. This will have a rate impact given the reduction in the level of depreciation funding as a result of the Board's policy direction in this study. A summary of the reserve fund beginning balances, annual activity and resulting ending balances prior to Board Policy Direction follows in Table PD-5.

Table PD-5  
Summary of the Reserve Fund Balances (\$000s)

Reserve Fund	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Operations Fund - Liquidity</b>						
Ending Balance	\$1,900	\$1,900	\$1,993	\$2,070	\$2,162	\$2,257
Target Ending Balance	1,900	1,897	1,992	2,070	2,161	2,257
Over/Under Target	\$0	\$3	\$1	\$0	\$1	\$0
<b>Operations Fund - Contingency</b>						
Ending Balance	\$625	\$625	\$678	\$708	\$740	\$773
Target Ending Balance	621	653	678	708	739	772
Over/Under Target	\$4	(\$28)	\$0	\$0	\$1	\$1
<b>Capital and Replacement Fund</b>						
Ending Balance	\$1,961	\$2,187	\$2,048	\$2,296	\$2,321	\$2,838
Target Ending Balance	1,961	2,114	2,268	2,421	2,575	2,728
Over/Under Target	\$0	\$73	(\$220)	(\$126)	(\$254)	\$109
<b>Emergency</b>						
Ending Balance	\$500	\$500	\$500	\$500	\$500	\$500
Target Ending Balance	500	500	500	500	500	500
Over/Under Target	\$0	\$0	\$0	\$0	\$0	\$0
<b>Debt Service</b>						
Ending Balance	\$603	\$758	\$913	\$913	\$913	\$913
Target Ending Balance	603	756	909	912	909	910
Over/Under Target	(\$0)	\$1	\$3	\$1	\$4	\$3
<b>Total Ending Fund Balance</b>	<b>\$5,588</b>	<b>\$5,970</b>	<b>\$6,132</b>	<b>\$6,487</b>	<b>\$6,635</b>	<b>\$7,280</b>
<b>Total Target Ending Fund Balance</b>	<b>\$5,585</b>	<b>\$5,920</b>	<b>\$6,347</b>	<b>\$6,610</b>	<b>\$6,884</b>	<b>\$7,168</b>
<b>Over/Under Target</b>	<b>\$4</b>	<b>\$50</b>	<b>(\$216)</b>	<b>(\$124)</b>	<b>(\$248)</b>	<b>\$113</b>

After the application of the revised assumptions associated with the capital improvement plan, depreciation funding, assumed annual debt service levels, and connection fees and the resulting impact on the reserve funds, the reserve fund balances and activity are shown in Table PD-6.

Table PD-6  
Summary of the Reserve Fund Balances (\$000s)

Reserve Fund	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Operations Fund - Liquidity</b>						
Ending Balance	\$1,900	\$1,900	\$1,993	\$2,070	\$2,162	\$2,257
Target Ending Balance	<u>1,900</u>	<u>1,897</u>	<u>1,992</u>	<u>2,070</u>	<u>2,161</u>	<u>2,257</u>
Over/Under Target	\$0	\$3	\$1	\$0	\$1	\$0
<b>Operations Fund - Contingency</b>						
Ending Balance	\$625	\$625	\$678	\$708	\$740	\$773
Target Ending Balance	<u>621</u>	<u>653</u>	<u>678</u>	<u>708</u>	<u>739</u>	<u>772</u>
Over/Under Target	\$4	(\$28)	\$0	\$0	\$1	\$1
<b>Capital and Replacement Fund</b>						
Ending Balance	\$1,961	\$2,144	\$1,984	\$1,876	\$1,413	\$1,034
Target Ending Balance	<u>1,961</u>	<u>2,114</u>	<u>2,268</u>	<u>2,421</u>	<u>2,575</u>	<u>2,728</u>
Over/Under Target	\$0	\$29	(\$284)	(\$546)	(\$1,162)	(\$1,694)
<b>Emergency</b>						
Ending Balance	\$500	\$500	\$500	\$500	\$500	\$500
Target Ending Balance	<u>500</u>	<u>500</u>	<u>500</u>	<u>500</u>	<u>500</u>	<u>500</u>
Over/Under Target	\$0	\$0	\$0	\$0	\$0	\$0
<b>Debt Service</b>						
Ending Balance	\$603	\$718	\$833	\$833	\$833	\$833
Target Ending Balance	<u>603</u>	<u>717</u>	<u>830</u>	<u>832</u>	<u>829</u>	<u>830</u>
Over/Under Target	(\$0)	\$1	\$3	\$1	\$4	\$3
<b>Total Ending Fund Balance</b>	<b>\$5,588</b>	<b>\$5,886</b>	<b>\$5,988</b>	<b>\$5,986</b>	<b>\$5,648</b>	<b>\$5,397</b>
<b>Total Target Ending Fund Balance</b>	<b><u>\$5,585</u></b>	<b><u>\$5,881</u></b>	<b><u>\$6,268</u></b>	<b><u>\$6,531</u></b>	<b><u>\$6,804</u></b>	<b><u>\$7,088</u></b>
<b>Over/Under Target</b>	<b>\$4</b>	<b>\$6</b>	<b>(\$280)</b>	<b>(\$545)</b>	<b>(\$1,156)</b>	<b>(\$1,691)</b>

## Summary of Cost of Service Analysis

A cost of service analysis determines the equitable allocation of the Agency's revenue requirement to the three member agencies. The objective of the cost of service analysis is different from the revenue requirement analysis. The revenue requirement analysis determines the Agency's overall financial needs, while the cost of service analysis determines the fair and equitable collection of the revenue requirement. A summary of the cost of service analysis is provided in Table PD-7.

Table PD-7  
Summary of the FY 2012 Cost of Service Analysis (\$000s)

Member Agency	Present Rate Revenues	Allocated Costs	\$ Difference	% Difference
City of Big Bear Lake	\$2,267	\$2,388	(\$122)	5.4%
Big Bear City CDS	1,834	2,037	(\$203)	11.1%
CSA 53B	\$177	\$172	\$6	-3.1%
<b>Total</b>	<b><u>\$4,278</u></b>	<b><u>\$4,597</u></b>	<b><u>(\$319)</u></b>	<b><u>7.5%</u></b>

The cost of service analysis indicates minor cost of service differences among the member agencies compared to present rate revenues. Currently, the Agency charges the member agencies based solely on volume. The cost of service differences presented in the table above are primarily the result of including wastewater strength factors, a key cost driver at the treatment facility, as a cost component in the cost of service analysis.

In addition to the cost of service results, it is important to consider how the Agency incurs costs when establishing rates. This can be determined through a simple fixed vs. variable cost analysis. When looking at the Agency’s cost structure, a majority, 72% of the Agency’s net revenue requirement is fixed in nature. This aspect of how costs are incurred is important to how the proposed rate design is developed. In discussing this aspect of the study with Agency staff and management, it was determined that the proposed rate design would take into consideration the Agency’s cost structure.

### Summary of the Rate Design

The final step of the comprehensive sewer rate study process is the design of sewer rates to collect the desired level of revenue, based on the results of the revenue requirement and cost of service analysis. As alluded to in the cost of service results above, it is recommended that the Agency continue to bill the member agencies on a volumetric basis but include an annual flat charge per EDU.

A fixed rate per EDU has been proposed which reflects the occupancy characteristics of the Agency’s service area and the fixed nature of the Agency’s cost structure. The annual flat charge or fixed charge component will allow the Agency to recover its fixed costs irrespective of flow. As a result, approximately 72% of the Agency’s revenue would be collected on a per EDU basis, with the remaining 28% collected on a volume basis. The following tables provide the present and proposed rates for the City of Big Bear Lake, Big Bear City CSD, and CSA 53B customers.

Table PD-8 Present Sewer Rates			
	FY 2011 Present Rate	FY 2011 Billed Revenues	Implicit Charge Per EDU
<b>Annual Customer Charge</b>			
City of Big Bear Lake	\$173.76	\$2,264,634	\$197.11
Big Bear City CSD	173.76	\$1,832,198	\$154.55
CSA 53B	173.76	\$177,212	\$141.43

As can be seen in Table PD - 8, the present rate is comprised of an annual flat rate per EDU. This amount multiplied by the total EDUs reported by the member agencies establishes the total amount to be collected. This base amount is then pro-rated among the member agencies based on the actual metered volumes. This results in an implicit rate that is 100% volumetric.

Several alternative rate structures were discussed with Agency staff and bill comparisons developed to determine the impact to each member agency. The alternatives included maintaining the current rate structure which results in billing the member agencies on a purely volumetric basis, or including an annual fixed charge per EDU and charging for all metered volume. It was determined that the third option, a fixed annual charge per EDU and volumetric

charge for all metered wastewater is most appropriate based on the reasons provided above. This billing method incorporates the Agency's current billing practice, the cost of service results, and the Agency's cost structure.

The proposed rates for each member agency will be based on the annual per EDU charge and a volumetric charge for all metered volume based on the most recent, three-year average of each member agency's metered volume. The proposed rates are provided in Table PD - 9 for FY 2012 through FY 2016.

Table PD-9 Summary of the Revised Proposed Sewer Rates					
	Proposed FY 2012	Proposed FY 2013	Proposed FY 2014	Proposed FY 2015	Proposed FY 2016
<b>Annual Charge per EDU Billed Amount</b>	\$184.19	\$195.24	\$205.00	\$214.22	\$223.86
<b>Annual EDU Charge</b>					
City of Big Bear Lake	\$130.00	\$140.00	\$145.00	\$155.00	\$160.00
Big Bear City CSD	\$130.00	\$140.00	\$145.00	\$155.00	\$160.00
CSA 53B	\$130.00	\$140.00	\$145.00	\$155.00	\$160.00
<b>Charge - \$/1,000 Gal</b>					
City of Big Bear Lake	\$1.69	\$1.73	\$1.87	\$1.85	\$1.99
Big Bear CSD	\$1.69	\$1.73	\$1.87	\$1.85	\$1.99
CSA 53B	\$1.69	\$1.73	\$1.87	\$1.85	\$1.99
<b>Total Billed Amount (a)</b>					
City of Big Bear Lake	\$2,201,388	\$2,335,967	\$2,455,089	\$2,565,135	\$2,684,810
Big Bear CSD	\$2,113,688	\$2,247,754	\$2,356,471	\$2,470,631	\$2,579,712
CSA 53B	\$218,266	\$232,299	\$243,348	\$255,456	\$266,540
<b>Implicit Annual Charge per EDU (a):</b>					
City of Big Bear Lake	\$191.38	\$202.83	\$212.91	\$222.19	\$232.27
Big Bear CSD	\$178.14	\$189.28	\$198.27	\$207.70	\$216.68
CSA 53B	\$174.06	\$185.10	\$193.75	\$203.23	\$211.88

(a) Based on the projected EDUs and three-year average volume by member agency.

## Summary of the Sewer Rate Study

This completes the summary of the regional sewer rate study for the Agency. Annual adjustments of 6.0% per year were recommended in FY 2012 and FY 2013 followed by 6.5% adjustments in FY 2014 through FY 2016. These adjustments were revised based upon Board Policy Direction after presentation of the initial proposal. The revised adjustments are 6.0% adjustments in FY 2012 and FY 2013, followed by a 5.0% adjustment in FY 2014, and then by 4.5% adjustments each in FY 2015 and FY 2016. It is further recommended that the rate structure be revised to reflect an annual fixed charge per EDU plus a volumetric charge for all metered flow based on the most recent three-year average flows. A full and complete discussion of the development of the comprehensive rate study, the original recommendations, and results can be found in following sections of this report.



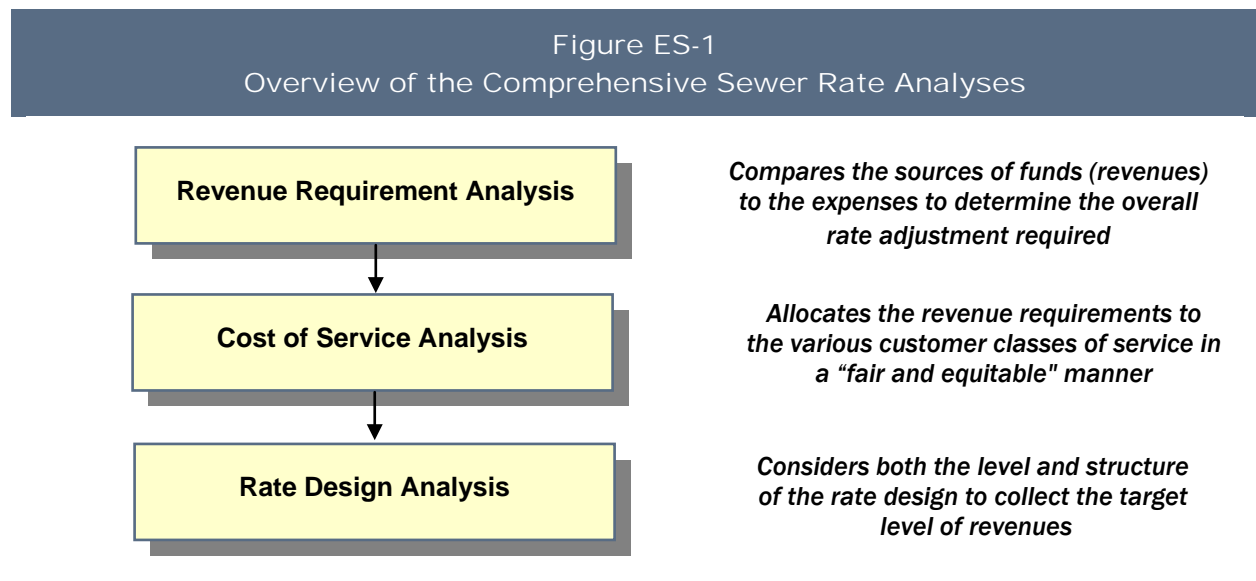
# Executive Summary

## Introduction

HDR Engineering, Inc. (HDR) was retained by the Big Bear Area Regional Wastewater Agency (Agency) to perform a regional comprehensive sewer rate study. The development of this study determines the adequacy of the existing sewer rates and provides the basis for adjustments to move to cost-based rates. This report describes the methodology, findings, and conclusions of the sewer rate study process.

## Overview of the Rate Study Process

A comprehensive sewer rate study typically utilizes three interrelated analyses to address the adequacy and equity of utility rates. These three analyses are a revenue requirement analysis, a cost of service analysis, and a rate design analysis.



## Key Sewer Rate Study Results

A comprehensive review of the Agency’s regional sewer rates was undertaken, including the development of the Agency’s revenue requirements for FY 2011 – 2016, cost of service for FY 2012, and rate design for FY 2011 - 2016. Based on the technical analysis undertaken as part of this study, the following findings, conclusions, and recommendations were noted.

- Rate adjustments are necessary to fund the Agency’s operating and capital costs over the next five-year period (FY 2012 – FY 2016).
- Given the level of the Agency’s capital improvements, additional long-term borrowing is necessary to minimize the projected rate adjustments.

- A five-year rate transition plan has been developed which includes 6.0% annual rate adjustments in FY 2012 and FY 2013 followed by annual adjustments of 6.5% in FY 2014 through FY 2016.
- These adjustments align the Agency's rates with its operating and capital cost requirements and meet financial policy requirements associated with debt service coverage ratios and minimum fund balances.
- The proposed rate transition plan smoothes the rate adjustments, minimizes future rate impacts, and provides funding for future capital projects.
- Minor cost of service differences exist among the member agencies.
- A projection of the rate per EDU has been developed for FY 2012 through FY 2016.
- A flat annual charge combined with a volumetric charge (based on a three-year average of member agency's metered wastewater flow) is recommended to align the Agency's rates with its operating and capital cost requirements.
- In 2015, the Agency should review the need for additional rate adjustments.

### **Summary of the Revenue Requirement Analysis**

The revenue requirement analysis sums the Agency's operating and capital expenses, and then subtracts out other revenues to determine the Agency's net revenue requirement, or the amount to be collected through rates. The net revenue requirement is then compared to revenue collected through rates to determine the overall rate adjustment needed.

As part of the revenue requirement analysis, several scenarios were considered in terms of rate funded capital improvements (that portion of capital expenditures funded through rates) in addition to, or in place of, long-term borrowing. Since rates are impacted by both the level of, and the funding mechanism for capital costs, the scenarios considered rates under 1) one hundred percent, pay-as-you-go cash financing and 2) debt financing significant capital projects and cash financing the remaining capital costs. In order to fund annual capital improvements and minimize rate impacts, it was recommended that the Agency debt finance significant capital improvements and fund the remaining capital expenditures through rates (rate funded capital) and available reserves. This level of rate funded capital was based on a review of the Agency's long-term capital needs and prudent funding levels associated with annual asset replacement (i.e., annual depreciation expense). Provided below in Table ES-1 is a summary of the Agency's revenue requirement analysis for FY 2011 - FY 2016.

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

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Sources of Funds</b>						
Rate Revenues	\$4,274	\$4,288	\$4,307	\$4,330	\$4,358	\$4,386
Other Revenues	157	156	154	152	150	147
<b>Total Source of Funds</b>	<b>\$4,431</b>	<b>\$4,444</b>	<b>\$4,461</b>	<b>\$4,483</b>	<b>\$4,508</b>	<b>\$4,533</b>
<b>Uses of Funds</b>						
O&M Expenses	\$3,734	\$3,728	\$3,915	\$4,067	\$4,247	\$4,435
Rate Funded Capital	236	400	475	605	735	865
Net Debt Service <sup>[1]</sup>	479	573	726	728	725	726
Minimum Reserve Funding	0	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$4,449</b>	<b>\$4,701</b>	<b>\$5,116</b>	<b>\$5,400</b>	<b>\$5,707</b>	<b>\$6,027</b>
<b>Total Revenue Requirement</b>						
Total Uses of Funds	\$4,449	\$4,701	\$5,116	\$5,400	\$5,707	\$6,027
Less Other Revenues	(157)	(156)	(154)	(152)	(150)	(147)
<b>Net Revenue Requirement</b>	<b>\$4,292</b>	<b>\$4,545</b>	<b>\$4,962</b>	<b>\$5,248</b>	<b>\$5,557</b>	<b>\$5,879</b>
Rate Revenue Excess/(Shortfall)	(\$18)	(\$257)	(\$655)	(\$918)	(\$1,199)	(\$1,493)
% Rate Adjustment Required	0.4%	6.0%	15.2%	21.2%	27.5%	34.0%
<b>Proposed Rate Adjustment</b>	<b>0.00%</b>	<b>6.00%</b>	<b>6.00%</b>	<b>6.50%</b>	<b>6.50%</b>	<b>6.50%</b>
Additional Revenue with Rate Adjustment	\$0	\$257	\$532	\$852	\$1,196	\$1,567
Revenue Excess/(Shortfall) after Rate Adj.	(\$18)	(\$0)	(\$123)	(\$66)	(\$3)	\$74
Additional Rate Adjustment Required	0.4%	0.0%	2.5%	1.3%	0.1%	-1.2%

[1] Net debt service is the total debt service less the debt service funded through connection fees (limited to the fees associated with 50 connections per year or approximately \$183,000 annually).

It is important to note the annual deficiencies presented above (under “Rate Revenue Excess/(Shortfall)” and “% Rate Adjustment Required”) are cumulative. That is, any adjustments in the initial years will reduce the deficiency in the later years. Over the projected period, rates need to be adjusted approximately 34.0% in order to adequately and properly fund the Agency’s operating and capital costs. Based on the revenue requirement analysis, HDR recommends the Agency adjust rates by 6.0% annually in FY 2012 and FY 2013 followed by annual adjustments of 6.5% in FY 2014 through FY 2016 to adequately fund the operating and capital needs of the Agency.

A key element of proper funding is the adequacy of the Agency’s debt service coverage ratio (DSC ratio). A DSC ratio determines the Agency’s ability to repay annual debt service (principal and interest expense). The DSC ratio, in simplified form, is 1) total revenues less operating and maintenance expenses divided by 2) the annual debt service payments. Generally speaking, acceptable DSC ratios range between 1.0 and 1.25. The Agency’s bond covenants require a minimum DSC ratio of 1.20, with connection fees included in revenues. However, it should be noted that the 1.20 DSC ratio is the absolute minimum that is allowed. Therefore, it is recommended that the Agency target a planning DSC ratio of 1.5. During the projected time period, after the proposed rate adjustments and additional new long-term debt, the Agency’s DSC ratio meets the minimum, and target, covenant requirements.

Reserves are also a critical aspect of sound financial planning. The Agency currently has financial policies which require minimum fund balances. During the projected period through FY 2016, minimum fund balance requirements are met.

## Summary of Cost of Service Analysis

A cost of service analysis determines the equitable allocation of the Agency's revenue requirement to the three member agencies. The objective of the cost of service analysis is different from the revenue requirement analysis. The revenue requirement analysis determines the Agency's overall financial needs, while the cost of service analysis determines the fair and equitable collection of the revenue requirement. A summary of the cost of service analysis is provided in Table ES-2.

Table ES - 2 Summary of the FY 2012 Cost of Service Analysis (\$'000s)				
Member Agency	Present Rate Revenues	Allocated Costs	\$ Difference	% Difference
City of Big Bear Lake	\$2,272	\$2,361	(\$89)	3.9%
Big Bear City CDS	1,838	2,014	(\$176)	9.6%
CSA 53B	\$178	\$170	\$8	-4.4%
<b>Total</b>	<b>\$4,288</b>	<b>\$4,545</b>	<b>(\$257)</b>	<b>6.0%</b>

The cost of service analysis indicates minor cost of service differences among the member agencies compared to present rate revenues. Currently, the Agency charges the member agencies based solely on volume. The cost of service differences presented in the table above are primarily the result of including wastewater strength factors, a key cost driver at the treatment facility, as a cost component in the cost of service analysis.

In addition to the cost of service results, it is important to consider how the Agency incurs costs when establishing rates. This can be determined through a simple fixed vs. variable cost analysis. When looking at the Agency's cost structure, a majority, approximately 72%% of the Agency's net revenue requirement are fixed in nature. This aspect of how costs are incurred is important to how the proposed rate design is developed. In discussing this aspect of the study with Agency staff and management, it was determined that the proposed rate design would take into consideration the Agency's cost structure.

## Summary of the Rate Design

The final step of the comprehensive sewer rate study process is the design of sewer rates to collect the desired level of revenue, based on the results of the revenue requirement and cost of service analysis. As alluded to in the cost of service results above, it is recommended that the Agency continue to bill the member agencies on a volumetric basis but include an annual flat charge per EDU.

A fixed rate per EDU has been proposed which reflects the occupancy characteristics of the Agency's service area and the fixed nature of the Agency's cost structure. The annual flat charge or fixed charge component will allow the Agency to recover its fixed costs irrespective of flow. As a result, approximately 72% of the Agency's revenue would be collected on a per EDU basis, with the remaining 28% collected on a volume basis. The following tables provide the

present and proposed rates for the City of Big Bear Lake, Big Bear City CSD, and CSA 53B customers.

Table ES – 3 Present Sewer Rates			
	FY 2011 Present Rate	FY 2011 Billed Revenues	Implicit Charge Per EDU
<b>Annual Customer Charge</b>			
City of Big Bear Lake	\$173.76	\$2,264,634	\$197.11
Big Bear City CSD	173.76	\$1,832,198	\$154.55
CSA 53B	173.76	\$177,212	\$141.43

As can be seen in Table ES – 3, the present rate is comprised of an annual flat rate per EDU. This amount multiplied by the total EDUs reported by the member agencies establishes the total amount to be collected. This base amount is then pro-rated among the member agencies based on the actual metered volumes. This results in an implicit rate that is 100% volumetric.

Several alternative rate structures were discussed with Agency staff and bill comparisons developed to determine the impact to each member agency. The alternatives included maintaining the current rate structure which results in billing the member agencies on a purely volumetric basis, or including an annual fixed charge per EDU and charging for all metered volume. It was determined that the third option, a fixed annual charge per EDU and volumetric charge for all metered wastewater is most appropriate based on the reasons provided above. This billing method incorporates the Agency’s current billing practice, the cost of service results, and the Agency’s cost structure.

The proposed rates for each member agency will be based on the annual per EDU charge and a volumetric charge for all metered volume based on the most recent, three-year average of each member agency’s metered volume. The proposed rates are provided in Table ES-4 for FY 2012 through FY 2016.

Table ES - 4  
Summary of the Proposed Sewer Rates

	Proposed FY 2012	Proposed FY 2013	Proposed FY 2014	Proposed FY 2015	Proposed FY 2016
<b>Annual Charge per EDU</b>	\$184.19	\$195.24	\$207.93	\$221.44	\$235.84
<b>Billed Amount:</b>					
<b>Annual EDU Charge</b>					
City of Big Bear Lake	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
Big Bear City CSD	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
CSA 53B	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
<b>Charge - \$/1,000 Gal</b>					
City of Big Bear Lake	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
Big Bear City CSD	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
CSA 53B	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
<b>Total Billed Amount (a)</b>					
City of Big Bear Lake	\$2,209,777	\$2,350,593	\$2,517,067	\$2,701,661	\$2,901,739
Big Bear City CSD	\$2,119,824	\$2,256,946	\$2,413,984	\$2,584,673	\$2,767,327
CSA 53B	\$218,775	\$232,920	\$248,928	\$266,180	\$284,550
<b>Implicit Annual Charge per EDU:</b>					
City of Big Bear Lake	\$191.56	\$202.65	\$215.55	\$229.53	\$244.60
Big Bear City CSD	\$178.34	\$189.19	\$201.47	\$214.59	\$228.57
CSA 53B	\$174.27	\$185.05	\$197.13	\$210.00	\$223.64

(b) Based on the projected EDUs and three-year average volume by member agency.

## Summary of the Sewer Rate Study

This completes the regional sewer rate study for the Agency. Annual adjustments of 6.0% per year are recommended in FY 2012 and FY 2013 followed by annual adjustments of 6.5% in FY 2014 through FY 2016. In addition, it is recommended that the rate structure be revised to reflect an annual fixed charge per EDU plus a volumetric charge for all metered flow based on the most recent three-year average flows. A full and complete discussion of the development of the comprehensive rate study and the proposed rate adjustments can be found in following sections of this report.



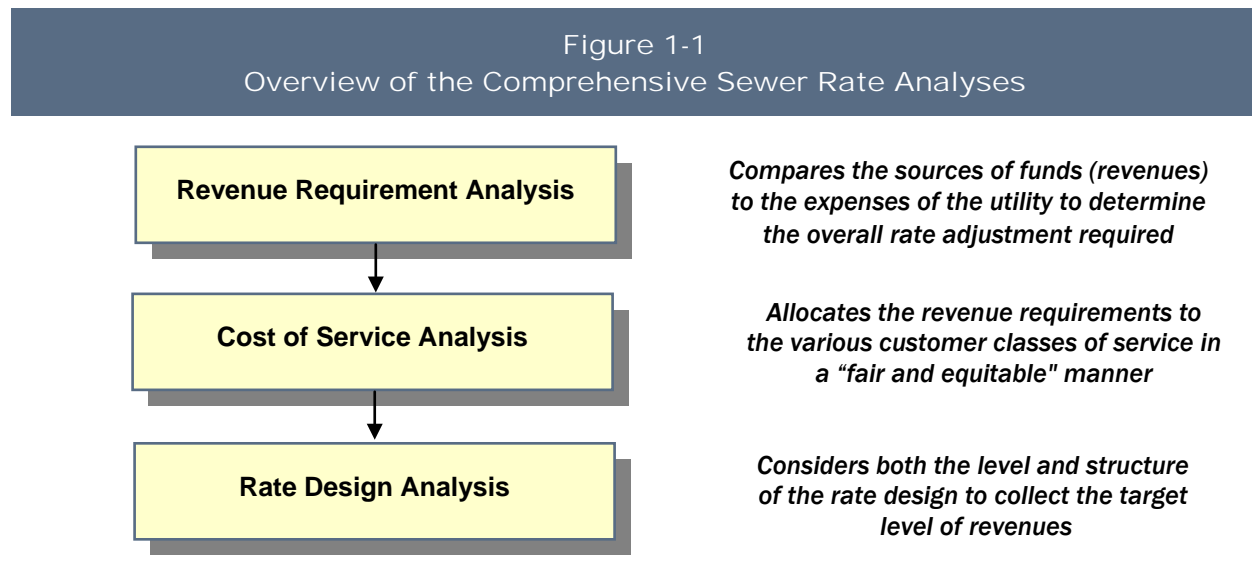
## Section 1 Introduction

### 1.1 Introduction

The Big Bear Area Regional Wastewater Agency (Agency) retained HDR Engineering, Inc. (HDR) to perform a comprehensive regional sewer rate study. This rate study determines the adequacy of the existing rates, provides the basis for cost-based rate adjustments, and addresses the fairness and equity of the rate structure. This report describes the methodology, findings, and conclusions of the rate study process.

### 1.2 Overview of the Rate Study Process

This study consists of three interrelated analyses performed for the Agency. Figure 1-1 provides an overview of these analyses.



The primary focus of a revenue requirement analysis is the determination of the overall revenue sources and expenses of the utility. From this analysis, a determination is made as to the overall level of a rate adjustment. Next, a cost of service analysis is performed to equitably allocate the revenue requirement to the member agencies (i.e., City of Big Bear Lake, Big Bear City CSD, CSA 53B) served by the Agency. Finally, the last step of the rate study process is the rate design. Rates are designed to collect the appropriate level of revenues while considering other rate design goals and Agency objectives (e.g., revenue stability, continuity in philosophy, etc.). As a part of this study, HDR developed each of these analyses to analyze the Agency's current sewer rates. At the same time, HDR utilized "generally accepted" cost of service and rate setting techniques and industry best practices in the development of the Agency's regional sewer rate study.

### **1.3 Report Organization**

This report is organized as follows:

- Section 2 provides background information about the utility rate setting process.
- Section 3 reviews the revenue requirement analysis.
- Section 4 reviews the cost of service analysis.
- Section 5 reviews the rate design analysis.

A technical appendix is attached at the end of the report which provides the analyses used in the preparation of this report.



## Section 2

# Overview of the Rate Setting Process

## 2.1 Introduction

This section provides background information about the rate setting process, including descriptions of generally accepted principles, types of utilities, methods of determining revenue requirement, the cost of service approach, and rate design. This information is useful for gaining a better understanding of the details presented in Sections 3 through 5.

## 2.2 Generally Accepted Rate Setting Principles

As a practical matter, utilities should consider setting their rates around some generally accepted or global principles and guidelines. Utility rates should be:

- Cost-based, equitable, and set at a level that meets the utility's full revenue requirement.
- Easy to understand and administer.
- Designed to conform with generally accepted rate setting techniques.
- Stable in their ability to provide adequate revenues for meeting the utility's financial, operating, and regulatory requirements.
- Established at a level that is stable from year to year from a customer's perspective.

## 2.3 Types of Utilities

Utilities are generally divided into two types:

- **Public utilities** are usually owned by a city, county, or special district, and are theoretically operated at zero profit. A public utility is locally owned since its customers are also its owners. As a point of reference, the Agency is a public utility.

Public utilities are capitalized or financed by issuing debt and soliciting funds from customers through direct capital contributions or user rates. Public or municipal utilities are typically exempt from state and federal income taxes. A publicly elected Agency council or board of trustees usually regulates public utilities.

*"Public utilities are . . . theoretically operated at zero profit. As a point of reference, the Agency is a public utility".*

- **Private utilities** are "for profit" enterprises and are owned by a private company and/or stockholders. The 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.

A private utility is capitalized by issuing stock to the general public. Private utilities are taxable entities. Given their for-profit status, their rates and operations are generally regulated by a state public utility commission or other regulatory body.

## 2.4 Determining the Revenue Requirement

Because public and private utilities have very different administrative and financial characteristics, their methods differ for determining revenue requirement 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 operating and capital expenses to determine the required revenues. These operating and capital costs may be offset by “other”, or miscellaneous revenues, if they exist.
- Adds operating and maintenance (O&M) expenses to any applicable taxes or transfer payments to determine total operating expenses. Operating and maintenance expenses include the materials, electricity, labor, supplies, etc. needed to keep the utility functioning.
- Calculates capital costs by adding debt service funded through rates (principal and interest) to capital improvements funded through rates (rate funded capital improvements). When determining rate funded capital improvements, annual depreciation expense may be used as the minimum annual capital improvement amount to be collected through rates when the amounts from the capital improvement plan are lower due to timing. In theory, annual depreciation expense represents the amount that should be collected on average, over the long term, for annual asset replacement. When annual depreciation expense is used to determine rate funded capital it results in a more stable revenue requirement and thus, more stable rates.

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).

Note that the two portions of the capital expense component (debt service and capital improvements financed from rates) are necessary under the cash basis approach because utilities generally cannot finance all their capital facilities with long-term debt. An exception occurs if a public utility provides service to a wholesale or contract customer. In this situation, a public utility could use the “utility basis” approach (see below) to earn a fair return on its investment.

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
+ Capital Improvements Financed with Rate Revenues (≥ Depreciation Expense)	+ Depreciation Expense
+ Debt service (Principal + Interest)	+ Return on Investment
= Total Revenue Requirement	= Total Revenue Requirement

## 2.4.2 Private Utilities

Most private utilities use a “utility basis” or accrual approach for establishing revenue requirement and setting rates (see Table 2-1). A private utility typically:

- Totals its O&M expenses, taxes, and depreciation expense for a period of time. Including depreciation expense in the revenue requirement recoups the cost of capital facilities over their useful lives in preparation for timely asset replacement.
- Adds a fair return on investment.

Private utilities must pay state and federal income taxes along with any applicable property, franchise, sales, or other form of revenue taxes. The return portion of this type of revenue requirement pays for the private utility’s interest expense on indebtedness, provides funds for a return to the utility’s shareholders in the form of dividends, and leaves a balance for retained earnings and cash flow purposes.

## 2.5 Analyzing Cost of Service

After the total revenue requirement is determined, it is allocated to the users of the service. The allocation, usually analyzed through a cost of service study, reflects the cost relationships for producing and delivering services.

A cost of service study requires three steps:

1. Costs are *functionalized* or grouped into the various cost categories related to providing service (treatment, collection, 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-, or customer-related.
3. Once the costs are classified into components, they are *allocated* to the customer classes of service (i.e., City of Big Bear Lake, Big Bear City CSD, CSA 53B.). The allocation is based on each member agency’s relative contribution to the cost component. For example, volume-related costs are allocated to each member agency based on the total volume for the member agency. Once costs are allocated, the required revenues by member agency to determine cost-based rates can be determined.

## 2.6 Designing Rates

Rates that meet the utility’s objectives are designed based on the results of both the revenue requirement and the cost of service analysis. This results in rates that are cost-based; however, rate design may also consider factors such as ability to pay, continuity of past rate philosophy, economic development, ease of administration, and customer understanding.



## Section 3

# Development of the Revenue Requirement

### 3.1 Introduction

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

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

Provided below is a detailed discussion of the development of the revenue requirement analysis for the Agency's sewer utility.

### 3.2 Determining the Time Period and Approach

The first step in calculating the revenue requirement was to establish a time frame for the revenue requirement analysis. For this study, the revenue requirement was developed for a six-year projected time period (FY 2011 – FY 2016). This time period coincided with the recent capital improvement plan and budget analysis developed by the Agency. By anticipating future financial requirements, the Agency can begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates.

The second step in determining the revenue requirement for the Agency was to decide on the basis of accumulating costs. For the Agency's revenue requirement, a cash basis approach was utilized. The cash basis approach is the most commonly used methodology by municipal utilities to set their revenue requirement. Section 2 of this report provided a simple overview of the cash basis methodology. The actual revenue requirement developed for the Agency was customized to follow the Agency's system of accounts (budget documents). However, in general, even with these modifications, the Agency's revenue requirement still contains the basic cost components of a cash basis methodology. Table 3-1 provides a summary of the cash basis approach used to develop the Agency's revenue requirement.

Table 3-1  
Overview of Cash Basis Revenue Requirement

- + Operation and maintenance exp.
- + Rate funded capital improvements<sup>[a]</sup>
- + Debt Service (P + I) funded from rates
- ± Minimum reserve funding
- Other Revenues
- = Total Revenue Requirement

- <sup>[a]</sup> Rate funded capital improvements
- + Total capital improvement projects
  - Funding sources other than rates
    - ✓ Capital & Replacement Fund
    - ✓ Connection Fees
    - ✓ Proceeds from Debt Issuance
  - = Net Capital Improve. Funded From Rates

Given a time period around which to develop the revenue requirement and a method to accumulate the appropriate costs, the focus then shifts to the development and projection of the revenues and expenses for the Agency.

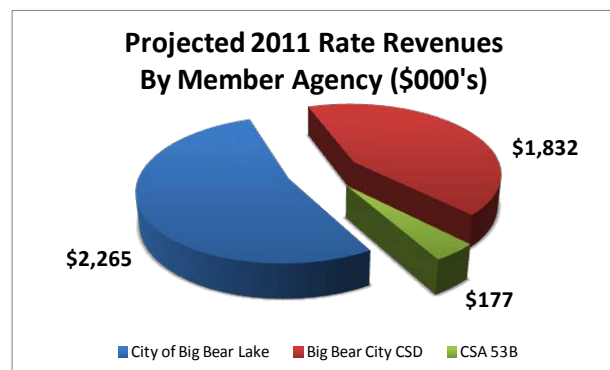
The primary financial inputs in this process were the Agency’s historical billing records, current operating budget, and capital improvement plan. Presented below is a detailed discussion of the steps and key assumptions contained in the development of the projections of the Agency’s revenues and expenses.

### 3.3 Projection of Revenues

The first step in developing the revenue requirement was to develop a projection of rate revenues received by the Agency. This includes both rate revenues (calculated at present rate levels) and miscellaneous revenues. In general, this process involved developing projected billing units for each customer group. The billing units for each customer group were then multiplied by the applicable current rates. This method of independently calculating revenues assures the projected revenues used within the analysis tie to the projected billing units. Other miscellaneous revenues were based on historical accounting records and recent revenue projections.

#### 3.3.1 Projection of Rate Revenues

Currently, the Agency has three major customers: City of Big Bear Lake, Big Bear City CSD, and CSA 53B. In total, at present rates, the Agency is projected to receive approximately \$4.27 million in rate revenue in FY 2011. Over the planning horizon of this study, customer growth is expected to be 0.33% in FY 2011 and increase slightly each year to 0.64% in FY 2016, resulting in total rate revenues of approximately \$4.39 million in FY 2016 at present rate levels. The rate revenue



projections, at current rates, are used to determine future rate adjustments based on projected operating and capital needs.

### 3.3.2 Projection of Other Revenues

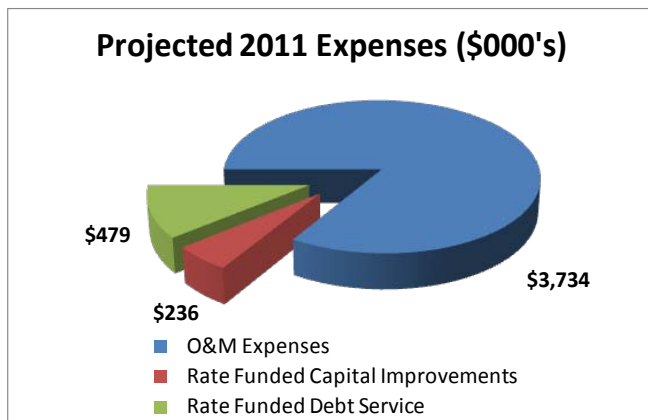
In addition to rate revenues, the Agency also receives a variety of other revenues which includes standby charges, rental income, waste disposal, and other revenues. The utility is projected to receive approximately \$157,000 in other revenues in FY 2011. Other revenues are expected to decrease slightly over time as a result of declining standby charges due to a reduction in un-connected parcels.

On a combined basis, taking into account the rate revenues along with other revenues, the Agency's total projected revenues are expected to be approximately \$4.43 million in FY 2011, increasing slightly to \$4.53 million in FY 2016.

## 3.4 Projection of Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the Agency to operate and maintain the existing facilities. The costs incurred in this area are expensed during the current year and are not capitalized or depreciated.

In general, operation and maintenance expenses are grouped into a number of different functional categories. 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 the Agency incurs: salaries, benefits, materials and supplies, repairs and replacements, equipment rental, sludge removal, chemicals, miscellaneous, power, other utilities, communications expense, contractual services-other, contractual services-professional, permits and fees, property tax expense, other operating expense, and insurance. The escalation factors used were in the range of 1.8% to 5.1% per year, depending on the type of cost and historical, and recent, inflationary trends.

To project future O&M expenses, the first step was to determine the functional categories for purposes of projecting costs. HDR reviewed the Agency's FY 2011 budget and determined it contained sufficient detail to develop the revenue requirement analysis. Therefore, in developing this analysis, HDR maintained the overall functional nature of the Agency's system of accounts.

Given the functionalized FY 2011 O&M expenses, HDR then escalated the O&M expenses based on the previously mentioned escalation factors. Total operation and maintenance expenses for the Agency are projected to be approximately \$3.73 million in FY 2011, increasing to approximately \$4.44 million by FY 2016 primarily as a result of assumed inflation over the time period. As part of the projection of future O&M expenses, there were several budget items in the FY 2011 budget where the current level of expenditures would not be continued. These items included contractual services and materials and supplies. There were also items, such as chemicals and general operating expense that needed to be increased in future years to reflect increasing costs over time. These adjustments to future

projections were taken into consideration to determine the future O&M for the Agency's revenue requirement over the next six-year period.

### 3.5 Projection of Capital Improvements Funded Through Rates

The Agency has large capital improvement projects, and routine capital expenses, planned over the study's time horizon. As part of the analysis, several scenarios were reviewed to meet the requirements of the capital improvement plan and minimize long-term rate impacts. The scenarios considered the impact on rates from funding capital improvements through one hundred percent, pay-as-you-go cash financing, as well as debt financing the larger capital projects and cash financing the remaining improvements. In order to fund annual capital improvements and minimize rate impacts, it was recommended that the Agency debt finance significant capital improvements and fund the remaining capital expenditures through rates (rate funded capital improvements). This level of rate funded capital was based on a review of the Agency's long-term capital needs and prudent funding levels associated with annual asset replacement (i.e., annual depreciation expense). This level of rate funded capital will assure future capital replacements in a timely manner while minimizing the associated rate impacts.

For the five-year projection period through FY 2016, capital projects total approximately \$5.62 million. Funding for the Agency's capital projects include \$3.42 million in debt issued in FY 2012, and the remaining \$2.21 million funded through rates, existing fund balance, and connection fees. A detailed summary of the capital projects is provided in Table 3-2.

Table 3 - 2 Summary of the Capital Improvement Plan (\$000s)						
Project Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Capital Improvement Projects</b>						
Treatment Facility	\$192	\$941	\$998	\$25	\$34	\$428
Interceptor System	142	978	993	356	250	250
Effluent Disposal Assets	0	0	0	0	125	68
Flow Measuring Devices	0	0	28	0	44	0
Other Equipment	0	0	6	12	114	13
Transportation Equipment	45	0	65	11	147	0
Other Tangible Facilities	40	0	0	0	81	0
<b>Total Capital Improvements</b>	<b>\$419</b>	<b>\$1,919</b>	<b>\$2,090</b>	<b>\$404</b>	<b>\$795</b>	<b>\$759</b>
Less: Funding Sources						
Capital and Replacement Fund	\$236	\$18	\$191	\$184	\$583	\$294
Connection Fees	183	22	20	220	212	465
Revenue Bonds	0	1,879	1,879	0	0	0
<b>Total Outside Funding</b>	<b>\$419</b>	<b>\$1,919</b>	<b>\$2,090</b>	<b>\$404</b>	<b>\$795</b>	<b>\$759</b>
<b>Excess/(Shortfall) Funding Sources</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

The ongoing replacement of assets is often included in determining the capital requirements of a utility. A standard benchmark for asset replacement is annual depreciation expense. Annual

depreciation expense reflects the current investment in facilities being depreciated or “losing” its useful life. Therefore, this portion of facility investment needs to be replaced to maintain the existing level of infrastructure. It should be noted that in theory, annual depreciation expense reflects the value of the infrastructure investment on average, 15 years ago, assuming a 30-year useful life. It should be noted, that funding an amount equal to annual depreciation expense will likely be insufficient to replace the existing or depreciated facility simply due to price inflation. Therefore, whenever possible, the Agency should be funding capital projects from rates in an amount greater than annual depreciation expense.

### **3.6 Projection of Debt Service**

The final component of the Agency’s revenue requirement is debt service. At the present time, the Agency has two outstanding debt obligations, with combined annual debt service of \$602,751 in FY 2011. In addition, it is assumed that the Agency will issue \$3.75 million in long-term debt to finance future capital improvement projects. The additional long-term debt will increase the annual debt service payments by approximately \$310,000 per year.

Generally, revenue bonds contain rate covenants requiring rates to be set at a level sufficient to meet a specified minimum debt service coverage ratio (DSC ratio). This is a financial measure of the utility’s ability to repay the debt. In general, the DSC ratio is set at a level such that revenues less operating expenses will be between 1.0 and 1.25 times greater than the maximum annual debt service on the outstanding debt. Given a minimum DSC ratio, it is often prudent to plan or set rates at a level which exceeds this minimum. This guarantees meeting the minimum DSC ratio, and at the same time, provides a slight cushion for unexpected changes. This should also strengthen the Agency’s ability to issue revenue bonds in the future, if necessary, since bond rating agencies would review the Agency’s past financial strength and ability to repay the bonds.

The Agency’s debt service coverage ratio on its existing debt is 1.20 and includes connection fees in the revenue or numerator portion of the DSC ratio. Rate increases will be necessary to issue additional long-term debt associated with the Agency’s large capital improvement projects through FY 2016.

### **3.8 Summary of the Revenue Requirement**

Given the above projections of revenues and expenses, a summary of the revenue requirement for the Agency can be developed. In developing the final revenue requirement, consideration was given to the financial planning considerations of the Agency. 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. As noted in the previous discussion, several alternatives were reviewed with staff based on various capital funding levels and financing alternatives. The results presented in Table 3-3 allow the Agency to maximize annual capital improvements and minimize long-term rate impacts while funding a prudent level of capital through rates. Detailed analysis can be found in the Technical Appendices.

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

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Sources of Funds</b>						
Rate Revenues	\$4,274	\$4,288	\$4,307	\$4,330	\$4,358	\$4,386
Other Revenues	157	156	154	152	150	147
<b>Total Source of Funds</b>	<b>\$4,431</b>	<b>\$4,444</b>	<b>\$4,461</b>	<b>\$4,483</b>	<b>\$4,508</b>	<b>\$4,533</b>
<b>Uses of Funds</b>						
O&M Expenses	\$3,734	\$3,728	\$3,915	\$4,067	\$4,247	\$4,435
Rate Funded Capital	236	400	475	605	735	865
Net Debt Service <sup>[1]</sup>	479	573	726	728	725	726
Minimum Reserve Funding	0	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$4,449</b>	<b>\$4,701</b>	<b>\$5,116</b>	<b>\$5,400</b>	<b>\$5,707</b>	<b>\$6,027</b>
<b>Total Revenue Requirement</b>						
Total Uses of Funds	\$4,449	\$4,701	\$5,116	\$5,400	\$5,707	\$6,027
Less Other Revenues	(157)	(156)	(154)	(152)	(150)	(147)
<b>Net Revenue Requirement</b>	<b>\$4,292</b>	<b>\$4,545</b>	<b>\$4,962</b>	<b>\$5,248</b>	<b>\$5,557</b>	<b>\$5,879</b>
Rate Revenue Excess/(Shortfall)	(\$18)	(\$257)	(\$655)	(\$918)	(\$1,199)	(\$1,493)
% Rate Adjustment Required	0.4%	6.0%	15.2%	21.2%	27.5%	34.0%
<b>Proposed Rate Adjustment</b>	<b>0.00%</b>	<b>6.00%</b>	<b>6.00%</b>	<b>6.50%</b>	<b>6.50%</b>	<b>6.50%</b>
Additional Revenue with Rate Adjustment	\$0	\$257	\$532	\$852	\$1,196	\$1,567
Revenue Excess/(Shortfall) after Rate Adj.	(\$18)	(\$0)	(\$123)	(\$66)	(\$3)	\$74
<b>Additional Rate Adjustment Required</b>	<b>0.4%</b>	<b>0.0%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>0.1%</b>	<b>-1.2%</b>

[1] Net debt service is the total debt service less the debt service funded through connection fees (limited to the fees associated with 50 connections per year or approximately \$183,000 annually).

It is important to note the annual deficiencies in Table 3-3 above (under “Rate Revenue Excess/(Shortfall)” and “% Rate Adjustment Required”) are cumulative. That is, any adjustment in the initial years will reduce the needed deficiency in the following years. The results of the revenue requirement analysis indicate a deficiency of funds over the planning period. The deficiency ranges from approximately \$18,000 in FY 2011 to \$1.49 million in FY 2016, or a cumulative deficiency in FY 2016 of 34.0%. Based on the revenue requirement analysis developed, HDR recommends the Agency adjust utility rates beginning in FY 2012. It is recommended that annual adjustments of 6.0% be implemented in FY 2012 and FY 2013. Annual adjustments of 6.5% are recommended for FY 2014 through FY 2016 to adequately fund the operating and capital needs of the Agency. It should be noted that even with these proposed rate adjustments, the Agency will be utilizing available fund balance in several years of the analysis to minimize additional rate adjustments.

### 3.8 Summary of the Designated Reserve Funds

Reserves are an important part of a utility’s financial picture. There can be many different purposes for reserves. The Agency currently has five designated reserve funds: the operations fund (liquidity and contingency), capital and replacement fund, emergency fund, and the debt service fund. A connection fee fund has been established for this analysis to track connection fee revenues and uses. It is important for the Agency to set a minimum balance on the reserve

funds. When the fund balance reaches the minimum level, it is a signal for action on the Agency's part.

Table 3-4 Summary of the Reserve Fund Balances		
Fund	Minimum Balance	Purpose
Operating – Contingency	2 months of O&M, \$621,000 in FY 2011 ( increases by the annual % change in O&M)	contingency (variance from budget)
Operating – Liquidity	\$1.9 million at July 1 of each year (increases by the annual % change in O&M)	liquidity (a)
Capital and Replacement	variable minimum balance based on future capital requirements	adequately fund capital improvements on a timely basis
Debt Service	current year debt service at July 1	principal and interest payments
Emergency	\$500,000	emergency
(a) The seasonal nature of the Agency's revenues, 98% of operating revenues are received during the months of December and April, requires a liquidity fund for cash flow purposes. This portion of the operating fund is reduced monthly until the next payment is received from the member agencies. The liquidity portion of the operating fund will be close to zero prior to the December 31st member agency payment.		

The connection fee fund does not have a specified target balance for this analysis, only that the funds be used for the replacement of excess capacity, or growth related projects. Provided in Table 3-5 is a summary of the reserve fund balances and the target ending fund balances.

Table 3-5  
Summary of the Reserve Fund Balances (\$000s)

Reserve Fund	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b>Operations Fund - Liquidity</b>						
Ending Balance	\$1,900	\$1,900	\$1,993	\$2,070	\$2,162	\$2,257
Target Ending Balance	1,900	1,897	1,992	2,070	2,161	2,257
Over/Under Target	\$0	\$3	\$1	\$0	\$1	\$0
<b>Operations Fund - Contingency</b>						
Ending Balance	\$625	\$625	\$678	\$708	\$740	\$773
Target Ending Balance	621	653	678	708	739	772
Over/Under Target	\$4	(\$28)	\$0	\$0	\$1	\$1
<b>Capital and Replacement Fund</b>						
Ending Balance	\$1,961	\$2,187	\$2,048	\$2,296	\$2,321	\$2,838
Target Ending Balance	1,961	2,114	2,268	2,421	2,575	2,728
Over/Under Target	\$0	\$73	(\$220)	(\$126)	(\$254)	\$109
<b>Emergency</b>						
Ending Balance	\$500	\$500	\$500	\$500	\$500	\$500
Target Ending Balance	500	500	500	500	500	500
Over/Under Target	\$0	\$0	\$0	\$0	\$0	\$0
<b>Debt Service</b>						
Ending Balance	\$603	\$758	\$913	\$913	\$913	\$913
Target Ending Balance	603	756	909	912	909	910
Over/Under Target	(\$0)	\$1	\$3	\$1	\$4	\$3
<b>Total Ending Fund Balance</b>	<b>\$5,588</b>	<b>\$5,970</b>	<b>\$6,132</b>	<b>\$6,487</b>	<b>\$6,635</b>	<b>\$7,280</b>
<b>Total Target Ending Fund Balance</b>	<b>\$5,585</b>	<b>\$5,920</b>	<b>\$6,347</b>	<b>\$6,610</b>	<b>\$6,884</b>	<b>\$7,168</b>
<b>Over/Under Target</b>	<b>\$4</b>	<b>\$50</b>	<b>(\$216)</b>	<b>(\$124)</b>	<b>(\$248)</b>	<b>\$113</b>

As shown in Table 3-4, the reserve funds are drawn down to the annual minimum levels based on the development of revenue requirement and proposed rate increases. It is important to note that excess reserves are not available to off-set or mitigate the Agency's future needed rate adjustment as the current fund balances reflect the increased revenue from the proposed rate adjustments. While fund balances are available, specifically in the capital and replacement fund, these funds are necessary in order to fund future capital improvements in the next five-year period (FY 2017 – FY 2021).

### 3.9 Consultant's Recommendations

Based upon the revenue requirement analysis, HDR recommends the Agency implement annual rate adjustments of 6.0% in FY 2012 and FY 2013 followed by annual adjustments of 6.5% in FY 2014 through FY 2016. The proposed adjustments would move the Agency closer to fully supporting the current level of operations and capital needs over the next ten-year period.



## Section 4

# Development of the Cost of Service

### 4.1 Introduction

In the previous section, the revenue requirement analysis focused on determining the appropriate amount of operating and capital costs to be collected through rates. This section will discuss the development of the cost of service analysis for the Agency. A cost of service analysis is concerned with the equitable allocation of the revenue requirement among the Agency's customers, or as noted herein, the member agencies; the City of Big Bear Lake, the Big Bear City CSD, and CSA 53B. The revenue requirement presented in Section 3 of this report is utilized in the cost of service analysis.

In recent years, increasing emphasis has been placed on cost of service studies by government agencies, customers, utility regulatory commissions, and other parties. This interest has been generated in part by continued inflationary trends, increased operating and capital expenditures, and concerns of equity in rates among customers. 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 Study

There are two primary objectives in conducting a cost of service study:

- Allocate the revenue requirement among the customer classes of service
- Derive average unit costs for subsequent rate designs

The objectives of a cost of service analysis are different from determining the revenue requirement. 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 in which to collect the revenue requirement.

The second rationale for conducting a cost of service analysis is to design the rates such that they properly reflect the costs incurred by the Agency. For example, the Agency incurs costs related to flow or total volume, the strength of the wastewater flow, and customer cost components. Each of these types of costs may be collected in a slightly different manner to allow for the development of a rate that collects costs in the same manner as they are incurred.

### 4.3 Determining the Customer Classes of Service

The first step in a cost of service study is to determine the customer classes of service. The Agency is a regional sewer service provider and provides service to three separate area member agencies. For purposes of the cost of service analysis, costs are allocated among the following customer groups:

- City of Big Bear Lake
- Big Bear City CSD
- CSA 53B

The goal of the cost of service analysis is to determine if significant cost differences exist among the member agencies based on the each agency's specific volumes and strengths of sewer volumes.

## 4.4 General Cost of Service Procedures

In order to determine the cost to serve each member agency, a cost of service analysis is conducted. A cost of service study utilizes a three-step approach to review costs. These were previously discussed in our generic discussion in Section 2, and take the form of functionalization, classification, and allocation. Provided below is a detailed discussion of the cost of service study conducted for the Agency, and the specific steps taken in the analysis.

### 4.4.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (facility) data by major operating functions within each utility. For example, pumping, treatment, collection, etc. Given that the Agency is primarily a treatment facility with a minimal collection system, the functionalization of the cost data was largely accomplished through the Agency's system of accounts.

### 4.4.2 Classification of Costs

The second analytical task performed in a cost of service study is the classification of the costs, or the revenue requirement. Classification determines why the expenses were incurred or what type of need is being met. The Agency's facility accounts and revenue requirement were reviewed and classified using the following cost classifiers:

- **Volume Related Costs:** Volume related costs are those costs which tend to vary with the total quantity of wastewater collected and treated by member agency. A majority of collection system costs and treatment 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" sewer. Strength of wastewater is typically measured in biochemical oxygen demand (BOD) and total suspended solids (SS). Increased levels of BOD or SS generally equate to increased treatment costs. Pre-treatment is generally required if the discharge is known to regularly exceed the typical waste strength.
- **Direct Assignments:** Certain costs associated with

#### Terminology of a Sewer Cost of Service Analysis

**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 member agency based on each member agency'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. chemical use at the treatment facility).

**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 suspended solids (SS). Member agencies with higher wastewater strength characteristics, cost more to treat. Facilities are often designed and sized around meeting these costs.

**Direct Assignment** – Costs that can be clearly identified as belonging to a specific member agency.

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.

Other cost classifiers (e.g., revenue, customer, etc.) can be used in the development of a cost of service analysis. However, for the Agency’s analysis these cost classifiers were the most appropriate given the regional service and cost drivers for the treatment facility.

#### 4.4.3 Development of Allocation Factors

Once the classification process is complete, and the customer groups have been defined, the various classified costs were allocated to each member agency. The Agency’s classified costs were allocated to the member agencies using the following allocation factors:

- **Volume Allocation Factor:** Volume-related costs are generally allocated on the basis of contribution to wastewater flows. In order to develop this allocation factor, some knowledge of the contribution to flows must be determined. For the Agency, each member agency’s wastewater flow is metered at the entry point of the Agency’s system. The annual metered wastewater by member agency for calendar year 2009 was the basis for the development of the volume allocation factor.
- **Strength Allocation Factor:** Strength-related costs are classified between biochemical oxygen demand (BOD) and suspended solids (SS). Each of these types of costs is allocated to the member agencies based on the relative estimated strengths that each member agency contributes to the overall flow at the treatment facility. The Agency’s strength characteristics by member agency were based on recent testing of the wastewater and typical industry strength factors.

It should be noted that no costs were directly assigned to any member agency during the development of the cost of service analysis.

Given the development of the allocation factors, the final step in the cost of service study is to allocate the classified costs to the various customer classes of service.

#### 4.5 Functionalization and Classification of Plant in Service

The first step of the cost of service is the functionalization and classification of facilities, or the infrastructure in place to provide service. In performing the functionalization of facilities, HDR utilized the Agency’s historical facility records. Once the facilities were functionalized, the analysis shifted to classification of the asset. The classification process included reviewing each group of assets and determining which cost classifiers the assets were related to. For example, the Agency’s assets were classified as: volume-related, strength-related, or direct assignment. Provided below is a brief discussion of the classification process used.

Treatment facility costs are classified as volume and/or strength related. For the Agency’s treatment facility, the costs were classified 50% to volume, 35% to BOD, and 15% to SS. This classification was based on discussions with Agency staff and the nature of the treatment facility operations. Sewer collection lines are typically 100% volume related as they are in place simply to move the wastewater from the entry point to the treatment facility. General facility assets are classified to reflect all assets above. In other words, the general facility assets are in place to support both the collection and treatment operations of the Agency. The classification of general facilities therefore is a weighted average of the collection and treatment classification. A more detailed exhibit of the Agency’s functionalization and classification of facility investment can be found in the Technical Appendix, Exhibit 9.

Table 4 – 1  
Summary of the Classification of Sewer Facilities

Category	Volume Related	BOD Strength Related	SS Strength Related	Direct Assignment
<b>Treatment</b>	50%	35%	15%	0%
<b>Collection</b>	100%	0%	0%	0%
<b>General Facilities</b>	61%	27%	12%	0%

## 4.6 Functionalization and Classification of Operating Expenses

Operating expenses are generally functionalized and classified in a manner similar to the corresponding facility account. For example, maintenance of collection lines is typically classified in the same manner (classification percentages) as the facility account for collection lines. This approach to classification of operating expenses was used for this analysis.

For the Agency’s study, the revenue requirement for FY 2012 was functionalized, classified, and allocated. As noted earlier, the Agency utilized a cash basis revenue requirement, which was comprised of operation and maintenance expenses, taxes, debt service, and capital improvements funded from rates. A more detailed review of the classification of revenue requirement can be found in the Technical Appendix, Exhibit 10.

## 4.7 Major Assumptions of the Cost of Service Study

A number of key assumptions were used in the Agency’s cost of service study. Below is a brief discussion of the major assumptions used.

- The test period used for the cost of service analysis was FY 2012. The revenue and expense data was previously developed within the revenue requirement study.
- The revenue projections were based on the revenues collected from the member agencies, based on the current billing practices of the Agency.
- A cash basis approach was utilized which conforms to generally accepted cost of service approaches and methodologies.
- The classification of the Agency’s facilities was developed based upon generally accepted cost allocation techniques and Agency specific data.
- Member agency volumes used in this study were based on actual metered wastewater flow.

## 4.8 Summary of the Cost of Service Results

In summary, the cost of service analysis began by functionalizing the Agency’s facility values and then the operating expenses. The functionalized facility and expense accounts were then classified into their various cost components. The individual classification totals were then allocated to the member agencies based on the appropriate allocation factors. The allocated expenses for each member agency were then aggregated to determine the total cost associated with each member agency. A summary of the detailed cost responsibility developed for each class of service is shown in Table 4-2.

Table 4-2  
Summary of the Cost of Service Analysis (\$000s)

Member Agency	Present Rate Revenues	Allocated Costs	\$ Difference	% Difference
City of Big Bear Lake	\$2,272	\$2,361	(\$89)	3.9%
Big Bear City CDS	1,838	2,014	(\$176)	9.6%
CSA 53B	\$178	\$170	\$8	-4.4%
<b>Total</b>	<b>\$4,288</b>	<b>\$4,545</b>	<b>(\$257)</b>	<b>6.0%</b>

The cost of service analysis indicates minimal cost of service differences among the member agencies. When reviewing cost of service results it is important to have a benchmark on the level of interclass adjustments. The general rule of thumb is if the adjustment to rates for each member agency is within  $\pm 5\%$  of the overall cost of service results, then a member agency is considered to be paying its fair, or equitable, allocation of costs. For example, to be within the  $\pm 5\%$  of the Agency's cost of service results the member agency cost of service differences would be between 1.0% and 11.0%. While CSA 53B is outside this general rule of thumb, it should be noted that this is the first comprehensive cost of service analysis conducted for the Agency. In addition, a cost of service analysis is based on one year's data, and wastewater volumes may change over time. As a result, it would be appropriate to re-evaluate these findings over time, and adjust if necessary. Given the analysis, it appears that actual rate revenues received from each member agency are similar to the cost of service results. As a result, the Agency's current practice of billing each member agency on actual metered wastewater volumes closely reflects the results of the cost of service and are considered cost-based and equitable.

The cost of service analysis allocated costs to the customer classes primarily based on volume and the strength treatment requirements of the wastewater. However, when analyzing and designing rates, other factors need to be considered such as how the Agency incurs costs. When reviewing the Agency's net revenue requirement, a majority approximately 72%, are fixed in nature and approximately 28% are variable. This aspect of how costs are incurred is important to how the proposed rate design is developed. In discussing this aspect of the study with Agency staff and management, it was determined that the proposed rate design should take into consideration the Agency's cost structure.

#### 4.9 Consultant's Conclusions and Recommendations

As was presented in Table 4-2 based on the allocation of costs, the Agency's rate structure is cost-based and equitable. It is recommended that the Agency review its rate structure, in conjunction with the cost of service analysis, to determine if revisions are necessary to better reflect how the Agency incurs costs.



## Section 5

# Development of the Sewer Rate Designs

### 5.1 Introduction

The final step of the comprehensive rate study process is the design of sewer rates to collect the desired levels of revenues, based on the results of the revenue requirement and cost of service analysis. In reviewing sewer rate designs, consideration is given to the level of the rates and the structure of the rates.

### 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 conservation, 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)

Many contemporary rate economists and regulatory agencies feel the last consideration, cost-based rates, should be of paramount importance and provide the primary guidance to utilities on rate structure and policy.

It is important that the Agency provide its customers with a proper price signal as to what their consumption or usage is costing. This goal may be approached through rate level and structure. When developing the proposed rate designs, all the above listed criteria were taken into consideration. However, it should be noted that it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration the customer's ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between the goals and objectives.

### 5.3 Review of the Overall Rate Adjustments

As indicated in the results of the revenue requirement analysis the recommendation is an annual adjustment of 6.0% in FY 2012 and FY 2013. These are followed by annual adjustments of 6.5% in FY 2014 through FY 2016. The results of the cost of service analysis also showed that the Agency's current rate structure is cost-based and equitable. The next section will discuss a modification to the Agency's current rate structure that incorporates the nature of the Agency's cost structure and reflects the cost of service analysis.

### 5.4 Present and Proposed Sewer Rates

Currently, each member agency is provided the same rate per EDU. This rate multiplied by the total EDUs in the combined service areas represents the total revenues to be collected through rates. This amount is then prorated among the member agencies based on each member

agency's pro-rata share of wastewater volume. In essence, the current revenue requirement is allocated to each member agency based on volume and results in a variable rate per EDU based on volume. Table 5-1 provides a summary of the present EDU charge for the City of Big Bear Lake, Big Bear City CSD, and CSA 53B.

Table 5 – 1  
Present Sewer Rates

	<b>FY 2011 Present Rate</b>	<b>FY 2011 Billed Revenues</b>	<b>Implicit Charge Per EDU</b>
<b>Annual Customer Charge</b>			
City of Big Bear Lake	\$173.76	\$2,264,634	\$197.11
Big Bear City CSD	173.76	\$1,832,198	\$154.55
CSA 53B	173.76	\$177,212	\$141.43

During discussions of the cost of service results with Agency staff, it was determined that alternative rate structures and bill comparisons would be developed for review and possible implementation. The alternatives included maintaining the current rate structure, billing each member agency on a purely volumetric basis, or including an annual fixed charge per EDU and charging for all metered volumes. It was determined that the third option, a fixed minimum charge per EDU and volumetric charge for all metered wastewater would be prudent at this time for several reasons. First, the Agency incurs the majority of its costs on a fixed basis. Second, the occupancy characteristics associated with the service area, approximately 38% occupancy (62% vacancy or part-time rate), creates excess capacity and additional fixed costs. As a result a large proportion of the EDUs in the service area are connected to the system, but generate little wastewater volume. Third, if the Agency's costs are allocated strictly on volume (as they are under the current rate structure), then the member agency with higher occupancy and/or sewer volume pays for a disproportionate share of, or subsidizes other member agency's allocable system costs. If the Agency's costs were largely variable, this would be considered more equitable; however, the Agency's costs are largely fixed.

A service charge or fixed rate per EDU has been established which reflects the Agency's fixed cost structure and will allow the Agency to recover its fixed costs regardless of flow by member agency. The volumetric charge or variable rate charge has been calculated by determining the variable portion of the Agency's revenue requirement and dividing by a three-year average flow to determine a rate per 1,000 gallons. Provided in Table 5-2 is a summary of the proposed rates by member agency for FY 2012 through FY 2016.

Table 5 – 2  
Summary of the Proposed Sewer Rates

	Proposed FY 2012	Proposed FY 2013	Proposed FY 2014	Proposed FY 2015	Proposed FY 2016
<b>Annual Charge per EDU</b>	\$184.19	\$195.24	\$207.93	\$221.44	\$235.84
<b>Billed Amount:</b>					
<b>Annual EDU Charge</b>					
City of Big Bear Lake	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
Big Bear City CSD	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
CSA 53B	\$130.00	\$140.00	\$150.00	\$160.00	\$170.00
<b>Charge - \$/1,000 Gal</b>					
City of Big Bear Lake	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
Big Bear City CSD	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
CSA 53B	\$1.70	\$1.73	\$1.81	\$1.92	\$2.06
<b>Total Billed Amount (a)</b>					
City of Big Bear Lake	\$2,209,777	\$2,350,593	\$2,517,067	\$2,701,661	\$2,901,739
Big Bear City CSD	\$2,119,824	\$2,256,946	\$2,413,984	\$2,584,673	\$2,767,327
CSA 53B	\$218,775	\$232,920	\$248,928	\$266,180	\$284,550
<b>Implicit Annual Charge per EDU:</b>					
City of Big Bear Lake	\$191.56	\$202.65	\$215.55	\$229.53	\$244.60
Big Bear City CSD	\$178.34	\$189.19	\$201.47	\$214.59	\$228.57
CSA 53B	\$174.27	\$185.05	\$197.13	\$210.00	\$223.64
(a) Based on the projected EDUs and three-year average volume by member agency.					

## 5.5 Summary of the Sewer Rate Study

This completes the analysis for the Agency's sewer utility rates. It is recommended that annual adjustments of 6.0% are implemented in FY 2012 and FY 2013 followed by annual adjustments of 6.5% in FY 2014 through FY 2016 to adequately fund the Agency's operating and capital costs. The rate structure suggested is consistent with the cost of service analysis, and reflects the actual cost to serve each of the member agencies, the Agency's fixed cost structure, and the occupancy characteristics of the Agency's service area.



## Technical Appendices

**Big Bear Area Regional Wastewater Agency  
Summary of the Revenue Requirement  
Exhibit 1**

	FY 2011	FY 2012	Projected FY 2013	FY 2014	FY 2015	FY 2016
<b>Sources of Funds</b>						
Rate Revenues	\$4,273,975	\$4,287,875	\$4,306,989	\$4,330,446	\$4,358,247	\$4,386,048
Other Revenues	157,020	155,989	154,356	152,222	149,636	147,058
<b>Total Sources of Funds</b>	<b>\$4,430,995</b>	<b>\$4,443,864</b>	<b>\$4,461,344</b>	<b>\$4,482,668</b>	<b>\$4,507,883</b>	<b>\$4,533,106</b>
<b>Uses of Funds</b>						
Operations and Maintenance	\$3,733,998	\$3,728,299	\$3,915,369	\$4,067,245	\$4,246,957	\$4,435,310
Capital Improvements Funded through Rates	236,166	400,000	475,000	605,000	735,000	865,000
Net Debt Service Funded through Rates	478,626	572,934	725,877	728,127	725,002	726,202
Total Minimum Reserve Funding	0	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$4,448,791</b>	<b>\$4,701,233</b>	<b>\$5,116,246</b>	<b>\$5,400,372</b>	<b>\$5,706,960</b>	<b>\$6,026,512</b>
<b>TOTAL REVENUE REQUIREMENT:</b>						
<b>Total Uses of Funds</b>	\$4,448,791	\$4,701,233	\$5,116,246	\$5,400,372	\$5,706,960	\$6,026,512
<b>Less: Other Revenues</b>	(\$157,020)	(\$155,989)	(\$154,356)	(\$152,222)	(\$149,636)	(\$147,058)
<b>NET REVENUE REQUIREMENT</b>	<b>\$4,291,771</b>	<b>\$4,545,244</b>	<b>\$4,961,890</b>	<b>\$5,248,150</b>	<b>\$5,557,324</b>	<b>\$5,879,454</b>
<b>Rate Revenue Excess/(Shortfall)</b>	<b>(\$17,796)</b>	<b>(\$257,369)</b>	<b>(\$654,901)</b>	<b>(\$917,704)</b>	<b>(\$1,199,077)</b>	<b>(\$1,493,406)</b>
<b>% Rate Adjustment Required</b>	<b>0.4%</b>	<b>6.0%</b>	<b>15.2%</b>	<b>21.2%</b>	<b>27.5%</b>	<b>34.0%</b>
<b>Proposed Rate Adjustment</b>	<b>0.00%</b>	<b>6.00%</b>	<b>6.00%</b>	<b>6.50%</b>	<b>6.50%</b>	<b>6.50%</b>
<b>Additional Revenue with Proposed Rate Adjustment</b>	<b>\$0</b>	<b>\$257,273</b>	<b>\$532,344</b>	<b>\$851,513</b>	<b>\$1,195,969</b>	<b>\$1,566,925</b>
<b>Revenue Excess/(Shortfall) after Proposed Rate Adjustment</b>	<b>(\$17,796)</b>	<b>(\$96)</b>	<b>(\$122,558)</b>	<b>(\$66,192)</b>	<b>(\$3,108)</b>	<b>\$73,520</b>
<b>Additional Rate Adjustment Required</b>	<b>0.4%</b>	<b>0.0%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>0.1%</b>	<b>-1.2%</b>
<b>Current Rate Structure - \$173.76/EDU</b>						
\$/EDU on Proposed Adjustment	\$173.76	\$184.19	\$195.24	\$207.93	\$221.44	\$235.84
Bill Difference - Annually	\$0.00	\$10.43	\$11.05	\$12.69	\$13.52	\$14.39
Cumulative Annual Difference	\$0.00	\$10.43	\$21.48	\$34.17	\$47.68	\$62.08
<b>Debt Service Coverage Ratio (all debt) - Without Connection Fees Minimum 1.0 coverage</b>						
<b>Before Rate Adjustment</b>	1.16	0.95	0.60	0.46	0.29	0.11
<b>After Proposed Rate Adjustment</b>	1.16	1.29	1.19	1.39	1.60	1.83
<b>Debt Service Coverage Ratio (all debt) - With Connection Fees Minimum 1.2 coverage</b>						
<b>Before Rate Adjustment</b>	1.45	1.33	1.04	1.00	0.93	0.75
<b>After Proposed Rate Adjustment</b>	1.45	1.67	1.63	1.93	2.25	2.48
<b>Ending Fund Balance</b>	\$5,588,498	\$5,970,235	\$6,131,865	\$6,486,605	\$6,635,460	\$7,280,322
<b>Target Minimum Fund Balance</b>	\$5,584,881	\$5,920,389	\$6,347,377	\$6,610,406	\$6,883,663	\$7,167,514

	Budget	Projected					Notes:
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
<b>Revenues:</b>							
Customer Growth	Budget	0.33%	0.45%	0.54%	0.64%	0.64%	
Rental Income	Budget	1.30%	1.30%	1.30%	1.40%	1.40%	
Waste Disposal	Budget	0.00%	0.00%	0.00%	0.00%	0.00%	
Other Revenues	Budget	0.00%	0.00%	0.00%	0.00%	0.00%	
<b>Expenses:</b>							
Salaries	Budget	5.00%	5.10%	4.90%	4.70%	4.70%	
Benefits	Budget	5.00%	5.10%	4.90%	4.70%	4.70%	
Materials & Supplies	Budget	-10.20%	3.00%	3.30%	3.50%	3.50%	
Repairs and Replacements	Budget	1.80%	3.00%	3.30%	3.50%	3.50%	
Equipment Rental	Budget	2.70%	3.00%	3.30%	3.50%	3.50%	
Sludge Removal	Budget	2.70%	3.00%	3.30%	3.50%	3.50%	
Chemicals	Budget	2.70%	20.61%	-11.78%	3.44%	3.74%	
Miscellaneous	Budget	3.00%	3.00%	3.00%	3.00%	3.00%	
Power	Budget	2.70%	3.00%	3.30%	3.50%	3.50%	
Other Utilities	Budget	2.70%	3.00%	3.30%	3.50%	3.50%	
Communications Expense	Budget	-23.30%	3.00%	3.30%	3.50%	3.50%	
Contractual Services - Other	Budget	2.70%	3.00%	3.30%	3.50%	3.50%	
Contractual Services - Professional	Budget	-47.20%	9.20%	-3.20%	9.40%	9.40%	
Permits and Fees	Budget	10.00%	10.00%	10.00%	5.00%	5.00%	
Property Tax Expense	Budget	3.70%	3.70%	3.70%	3.70%	3.70%	
Other Operating Expense	Budget	-35.60%	3.00%	3.30%	3.50%	3.50%	
Insurance	Budget	5.00%	5.00%	5.00%	5.00%	5.00%	
<b>Interest</b>		1.00%	1.00%	1.00%	1.00%	1.00%	
<b>New Debt Service [1]</b>							
Revenue Bond							
Term in Years		20	20	20	20	20	
Rate		5.00%	5.00%	5.00%	5.00%	5.00%	

Note: [1] Only applicable if the use of long-term borrowing is assumed.

	Budget		Projected				Notes:
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
<b>Big Bear Area Regional Wastewater Agency EDUs</b>							
City of Big Bear Lake	11,489	11,535	11,599	11,678	11,770	11,863	
Big Bear City CSD	11,855	11,887	11,930	11,982	12,045	12,107	
CSA 53B	1,253	1,255	1,259	1,263	1,268	1,272	
<b><u>New EDUs</u></b>							
City of Big Bear Lake	23	46	64	78	93	93	
Big Bear City CSD	16	31	43	53	62	62	
CSA 53B	1	2	3	4	5	5	
	-----	-----	-----	-----	-----	-----	
Total New EDUs	40	80	110	135	160	160	
<b>Connection Fee Revenues</b>							
Connection Fee	\$3,031	\$3,670	\$3,670	\$3,670	\$3,670	\$3,670	
New EDUs	40	80	110	135	160	160	
	-----	-----	-----	-----	-----	-----	
Connection Fee Revenues	\$121,249	\$293,600	\$403,700	\$495,450	\$587,200	\$587,200	
<b>Big Bear Area Regional Wastewater Agency Standby Charge Parcels</b>							
<b><u>Number of Vacant Parcels</u></b>							
City of Big Bear Lake	1,692	1,646	1,582	1,504	1,411	1,318	
Big Bear City CSD	2,668	2,637	2,594	2,541	2,479	2,417	
CSA 53B	274	272	268	264	259	254	
<b><u>Reduction in Parcels</u></b>							
City of Big Bear Lake	(80)	(46)	(64)	(78)	(93)	(93)	
Big Bear City CSD	95	(31)	(43)	(53)	(62)	(62)	
CSA 53B	(7)	(2)	(3)	(4)	(5)	(5)	
	-----	-----	-----	-----	-----	-----	
Total New EDUs	8	(80)	(110)	(135)	(160)	(160)	
<b>Standby Charge - Revenues</b>							
Average Standby Charge							
City of Big Bear Lake	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	
Big Bear City CSD	\$20.50	\$20.50	\$20.50	\$20.50	\$20.50	\$20.50	
CSA 53B	\$24.45	\$24.45	\$24.45	\$24.45	\$24.45	\$24.45	
	-----	-----	-----	-----	-----	-----	
Standby Charge Revenues	\$95,240	\$93,614	\$91,377	\$88,633	\$85,380	\$82,127	

**Big Bear Area Regional Wastewater Agency**  
**Revenue Requirement**  
**Projected 2011-2015**  
**Exhibit 3**

	Budget		Projected				Notes:
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
<b>SOURCES OF FUNDS</b>							
Rate Revenues							
City of Big Bear Lake	\$2,264,597	\$2,271,962	\$2,282,089	\$2,294,518	\$2,309,249	\$2,323,980	As Customer Growth
Big Bear City CSD	1,832,168	1,838,127	1,846,321	1,856,376	1,868,294	1,880,212	As Customer Growth
CSA 53B	177,210	177,786	178,578	179,551	180,704	181,856	As Customer Growth
Total Retail Rate Revenues	\$4,273,975	\$4,287,875	\$4,306,989	\$4,330,446	\$4,358,247	\$4,386,048	
Other Revenues							
Standby Charge	\$95,240	\$93,614	\$91,377	\$88,633	\$85,380	\$82,127	Calculated
Rental Income	45,793	46,388	46,991	47,602	48,269	48,944	As Rental Income
Waste Disposal	15,987	15,987	15,987	15,987	15,987	15,987	As Waste Disposal
Other Revenue	0	0	0	0	0	0	As Other Revenues
Total Other Revenues	\$157,020	\$155,989	\$154,356	\$152,222	\$149,636	\$147,058	
<b>TOTAL SOURCES OF FUNDS</b>	<b>\$4,430,995</b>	<b>\$4,443,864</b>	<b>\$4,461,344</b>	<b>\$4,482,668</b>	<b>\$4,507,883</b>	<b>\$4,533,106</b>	
<b>USES OF FUNDS</b>							
Operating Expenses							
<i>Salaries and Benefits</i>							
Salaries and Wages	\$1,198,799	\$1,258,739	\$1,322,935	\$1,387,758	\$1,452,983	\$1,521,273	As Salaries
Employee Benefits	715,175	750,934	789,231	827,904	866,815	907,555	As Benefits
Accrued Benefits Expense	15,000	15,750	16,553	17,364	18,180	19,035	As Benefits
Payroll Tax Expense	16,828	17,669	18,571	19,480	20,396	21,355	As Benefits
Total Salaries and Benefits	\$1,945,802	\$2,043,092	\$2,147,290	\$2,252,507	\$2,358,375	\$2,469,218	
<i>Power</i>							
Fuel for Power Production	\$304,100	\$312,311	\$321,680	\$332,295	\$343,926	\$355,963	As Power
Gas Admin Building	3,250	3,338	3,438	3,551	3,676	3,804	As Power
Gas Treatment Plant	15,000	15,405	15,867	16,391	16,964	17,558	As Power
Electricity - Treatment Plant	86,500	88,836	91,501	94,520	97,828	101,252	As Power
Electricity - Stations	39,900	40,977	42,207	43,599	45,125	46,705	As Power
Electricity - Admin Building	4,600	4,724	4,866	5,027	5,202	5,385	As Power
Electricity - Lucerne	540	555	571	590	611	632	As Power
Total Power	\$453,890	\$466,145	\$480,129	\$495,974	\$513,333	\$531,299	
<i>Sludge Removal</i>	226,100	\$232,205	\$239,171	\$247,063	\$255,711	\$264,661	As Sludge Removal
<i>Chemicals</i>							
Odor Control-Disinfectant	\$57,900	\$59,463	\$71,719	\$63,268	\$65,443	\$67,892	As Chemicals
Polymer	18,740	19,246	23,213	20,478	21,182	21,974	As Chemicals
Laboratory Reagents	7,400	7,600	9,166	8,086	8,364	8,677	As Chemicals
Total chemicals	\$84,040	\$86,309	\$104,098	\$91,832	\$94,989	\$98,543	
<i>Materials and Supplies</i>							
Office Equip, Supplies, Expense	\$58,100	\$52,174	\$53,739	\$55,512	\$57,455	\$59,466	As Materials & Supplies
Safety Supplies and Expenses	13,800	12,392	12,764	13,185	13,647	14,125	As Materials & Supplies
Laboratory Supplies	12,240	10,992	11,321	11,695	12,104	12,528	As Materials & Supplies
Fuel - Vehicles	15,500	13,919	14,337	14,810	15,328	15,864	As Materials & Supplies
Oils, Antifreeze, Filters	17,700	15,895	16,371	16,912	17,504	18,116	As Materials & Supplies
Degreasers and Solvents	1,180	1,060	1,091	1,127	1,167	1,208	As Materials & Supplies
Hardware, Cleaning, Painting	5,900	5,298	5,457	5,637	5,835	6,039	As Materials & Supplies
Ground Maint and Supplies	18,900	16,972	17,481	18,058	18,690	19,344	As Materials & Supplies
Electrical Supplies	6,600	5,927	6,105	6,306	6,527	6,755	As Materials & Supplies
Welding and Fab Supplies	2,300	2,065	2,127	2,198	2,274	2,354	As Materials & Supplies
Tools and Equipment	3,300	2,963	3,052	3,153	3,263	3,378	As Materials & Supplies
Plumbing Supplies	12,200	10,956	11,284	11,657	12,065	12,487	As Materials & Supplies
Tertiary Water	0	0	0	0	0	0	As Materials & Supplies
Purchase Discounts	0	0	0	0	0	0	As Materials & Supplies
Total Materials and Supplies	\$167,720	\$150,613	\$155,131	\$160,250	\$165,859	\$171,664	

Big Bear Area Regional Wastewater Agency  
Revenue Requirement  
Projected 2011-2015  
Exhibit 3

	Budget			Projected			Notes:
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
<i>Repairs and Replacements</i>							
Mainline	\$68,400	\$69,631	\$71,720	\$74,087	\$76,680	\$79,364	As Repairs and Replacements
Pumps, Motors, Bearings	16,900	17,204	17,720	18,305	18,946	19,609	As Repairs and Replacements
Equip and Machinery	74,000	75,332	77,592	80,152	82,958	85,861	As Repairs and Replacements
Vehicles	15,000	15,270	15,728	16,247	16,816	17,404	As Repairs and Replacements
Generators	22,000	22,396	23,068	23,829	24,663	25,526	As Repairs and Replacements
Irrigation System - Lucerne	4,900	4,988	5,138	5,307	5,493	5,685	As Repairs and Replacements
Other	1,792	1,824	1,879	1,941	2,009	2,079	As Repairs and Replacements
Total Repairs and Replacements	\$202,992	\$206,646	\$212,845	\$219,869	\$227,565	\$235,529	
<i>Equipment Rental</i>	\$1,000	\$1,027	\$1,058	\$1,093	\$1,131	\$1,171	As Equipment Rental
<i>Utilities Expense</i>							
Water	\$3,780	\$3,882	\$3,999	\$4,130	\$4,275	\$4,425	As Other Utilities
Trash Pick Up	3,480	3,574	3,681	3,803	3,936	4,074	As Other Utilities
Solid Waste Disposal	14,700	15,097	15,550	16,063	16,625	17,207	As Other Utilities
Total Utilities Expense	\$21,960	\$22,553	\$23,230	\$23,996	\$24,836	\$25,705	
<i>Communications Expense</i>							
SCADA	\$27,500	\$21,093	\$21,725	\$22,442	\$23,228	\$24,041	As Communications Expense
Radio Service and Repair	1,000	767	790	816	845	874	As Communications Expense
Television	540	414	427	441	456	472	As Communications Expense
Telephone Service and Repair	16,800	12,886	13,272	13,710	14,190	14,687	As Communications Expense
Internet Access	1,200	920	948	979	1,014	1,049	As Communications Expense
Total Communications Expense	\$47,040	\$36,080	\$37,162	\$38,388	\$39,732	\$41,123	
<i>Contractual Services - Other</i>							
Fiscal Agent and Bank Fees	\$8,094	\$8,312	\$8,561	\$8,844	\$9,154	\$9,474	As Contractual Services - Other
Testing	24,000	24,648	25,387	26,225	27,143	28,093	As Contractual Services - Other
Uniform, Towel and Rag	13,800	14,173	14,598	15,080	15,607	16,154	As Contractual Services - Other
Medical and EAP	6,250	6,419	6,611	6,829	7,069	7,316	As Contractual Services - Other
Security, Fire Alarm	2,760	2,835	2,920	3,016	3,121	3,231	As Contractual Services - Other
Web Site Hosting	31	31	32	33	35	36	As Contractual Services - Other
Landscaping	5,800	5,957	6,135	6,338	6,560	6,789	As Contractual Services - Other
Labor	14,500	14,892	15,338	15,844	16,399	16,973	As Contractual Services - Other
Heating, Ventilation, Air Cond	3,800	3,903	4,020	4,152	4,298	4,448	As Contractual Services - Other
Answering Service	600	616	635	656	679	702	As Contractual Services - Other
Janitorial	6,300	6,470	6,664	6,884	7,125	7,374	As Contractual Services - Other
Total Contractual Services - Other	\$85,934	\$88,254	\$90,902	\$93,902	\$97,188	\$100,590	
<i>Contractual Services - Professional</i>							
Engineering	\$104,600	\$55,229	\$60,310	\$58,380	\$63,868	\$69,871	As Contractual Services - Professional
Legal	54,000	28,512	31,135	30,139	32,972	36,071	As Contractual Services - Professional
Other	30,749	16,235	17,729	17,162	18,775	20,540	As Contractual Services - Professional
Total Contractual Services - Professional	\$189,349	\$99,976	\$109,174	\$105,680	\$115,614	\$126,482	
<i>Permits and Fees</i>	\$111,302	\$122,432	\$134,675	\$148,142	\$155,550	\$163,327	As Permits and Fees

Big Bear Area Regional Wastewater Agency  
 Revenue Requirement  
 Projected 2011-2015  
 Exhibit 3

	Budget			Projected			Notes:
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	
<i>Insurance</i>							
Workman's Compensation	\$47,584	\$49,963	\$52,462	\$55,085	\$57,839	\$60,731	As Insurance
General Liability and Vehicle	63,057	66,210	69,520	72,996	76,646	80,478	As Insurance
Other Insurance Expense	0	0	0	0	0	0	As Insurance
Total Insurance	\$110,641	\$116,173	\$121,982	\$128,081	\$134,485	\$141,209	
<i>Other Expense</i>							
Memberships, Dues and Subscrip	\$21,977	\$14,153	\$14,578	\$15,059	\$15,586	\$16,131	As Other Operating Expense
Directors Fees	10,000	6,440	6,633	6,852	7,092	7,340	As Other Operating Expense
Public Notices	1,709	1,101	1,134	1,171	1,212	1,254	As Other Operating Expense
Education and Training	46,619	30,023	30,923	31,944	33,062	34,219	As Other Operating Expense
Advertising	2,709	1,745	1,797	1,856	1,921	1,988	As Other Operating Expense
Total Other Expense	\$83,014	\$53,461	\$55,065	\$56,882	\$58,873	\$60,933	
<i>Taxes and Transfers</i>							
Property Tax	\$3,215	\$3,334	\$3,457	\$3,585	\$3,718	\$3,855	As Property Tax Expense
Total Taxes and Transfers	\$3,215	\$3,334	\$3,457	\$3,585	\$3,718	\$3,855	
<b>TOTAL OPERATIONS &amp; MAINTENANCE [1]</b>	<b>\$3,733,998</b>	<b>\$3,728,299</b>	<b>\$3,915,369</b>	<b>\$4,067,245</b>	<b>\$4,246,957</b>	<b>\$4,435,310</b>	
[1] Budgeted Depreciation, Non-operating Income, and Non-operating Expenses were not included in the Analysis							
<b>NET Capital Funded Through Rates</b>	<b>\$236,166</b>	<b>\$400,000</b>	<b>\$475,000</b>	<b>\$605,000</b>	<b>\$735,000</b>	<b>\$865,000</b>	
<i>Debt Service</i>							
1998 ABAG Bond	\$212,010	\$210,375	\$208,000	\$210,250	\$207,125	\$208,325	Debt Schedule
2006 MuniFinance	390,741	390,741	390,741	390,741	390,741	390,741	Debt Schedule
New Revenue Bond	0	155,318	310,636	310,636	310,636	310,636	Est. of 20 yrs @ 5.0%
Total Debt Service	\$602,751	\$756,434	\$909,377	\$911,627	\$908,502	\$909,702	
<i>Less: Debt Service Funding</i>							
Growth Related Funding	\$124,125	\$183,500	\$183,500	\$183,500	\$183,500	\$183,500	
Rate Related Funding	0	0	0	0	0	0	
Total Less Debt Service Funding	\$124,125	\$183,500	\$183,500	\$183,500	\$183,500	\$183,500	
<b>Net Debt Service Funded through Rates</b>	<b>\$478,626</b>	<b>\$572,934</b>	<b>\$725,877</b>	<b>\$728,127</b>	<b>\$725,002</b>	<b>\$726,202</b>	
<i>Minimum Reserve Funding</i>							
To Operations - Liquidity	\$0	\$0	\$0	\$0	\$0	\$0	
To Operations - Contingency	0	0	0	0	0	0	
To Capital and Replacement Fund	0	0	0	0	0	0	
Total Minimum Reserve Funding	\$0	\$0	\$0	\$0	\$0	\$0	
<b>TOTAL USES OF FUNDS</b>	<b>\$4,448,791</b>	<b>\$4,701,233</b>	<b>\$5,116,246</b>	<b>\$5,400,372</b>	<b>\$5,706,960</b>	<b>\$6,026,512</b>	
<b>TOTAL REVENUE REQUIREMENT:</b>							
Total Uses of Funds	\$4,448,791	\$4,701,233	\$5,116,246	\$5,400,372	\$5,706,960	\$6,026,512	
Less: Other Revenues	(\$157,020)	(\$155,989)	(\$154,356)	(\$152,222)	(\$149,636)	(\$147,058)	
<b>NET REVENUE REQUIREMENT</b>	<b>\$4,291,771</b>	<b>\$4,545,244</b>	<b>\$4,961,890</b>	<b>\$5,248,150</b>	<b>\$5,557,324</b>	<b>\$5,879,454</b>	
Rate Revenue Excess/(Shortfall)	(\$17,796)	(\$257,369)	(\$654,901)	(\$917,704)	(\$1,199,077)	(\$1,493,406)	
% Rate Adjustment Required	0.4%	6.0%	15.2%	21.2%	27.5%	34.0%	
<b>Proposed Rate Adjustment</b>	<b>0.00%</b>	<b>6.00%</b>	<b>6.00%</b>	<b>6.50%</b>	<b>6.50%</b>	<b>6.50%</b>	
Additional Revenue with Proposed Rate Adjustment	\$0	\$257,273	\$532,344	\$851,513	\$1,195,969	\$1,566,925	
Revenue Excess/(Shortfall) after Proposed Rate Adjustment	(\$17,796)	(\$96)	(\$122,558)	(\$66,192)	(\$3,108)	\$73,520	
<b>Additional Rate Adjustment Required</b>	<b>0.4%</b>	<b>0.0%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>0.1%</b>	<b>-1.2%</b>	

	Budget		Projected			Notes:	
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015		FY 2016
<b>Current Rate Structure - \$173.76/EDU</b>							
\$/EDU after Rate Adjustment Required	\$174.48	\$184.19	\$200.18	\$210.58	\$221.57	\$232.92	
Bill Difference - Annually	\$0.72	\$9.71	\$15.99	\$10.40	\$10.98	\$11.36	
Cumulative Annual Difference	\$0.72	\$10.43	\$26.42	\$36.82	\$47.81	\$59.16	
\$/EDU on Proposed Adjustment	\$173.76	\$184.19	\$195.24	\$207.93	\$221.44	\$235.84	
Bill Difference - Annually	\$0.00	\$10.43	\$11.05	\$12.69	\$13.52	\$14.39	
Cumulative Annual Difference	\$0.00	\$10.43	\$21.48	\$34.17	\$47.68	\$62.08	
<b>Debt Service Coverage Ratio (all debt) - With Connection Fees</b>							
Before Rate Adjustment	1.45	1.33	1.04	1.00	0.93	0.75	Minimum 1.2
After Proposed Rate Adjustment	1.45	1.67	1.63	1.93	2.25	2.48	Minimum 1.2
<b>Debt Service Coverage Ratio (all debt) - Without Connection Fees</b>							
Before Rate Adjustment	1.16	0.95	0.60	0.46	0.29	0.11	Minimum 1.0
After Proposed Rate Adjustment	1.16	1.29	1.19	1.39	1.60	1.83	Minimum 1.0
<b>Cash Reserves</b>							
<b>Operations Fund - Liquidity</b>							
Beginning Balance	\$1,900,000	\$1,900,000	\$1,900,000	\$1,993,000	\$2,070,000	\$2,162,000	
Plus: Additions	0	0	93,000	77,000	92,000	95,000	
Less: Uses of Funds	0	0	0	0	0	0	
Ending Balance	\$1,900,000	\$1,900,000	\$1,993,000	\$2,070,000	\$2,162,000	\$2,257,000	
<i>Min. Fund Balance - Beginning Balance for Liquidity</i>	\$1,900,000	\$1,897,100	\$1,992,288	\$2,069,569	\$2,161,013	\$2,256,854	
<b>Operations Fund - Contingency</b>							
Beginning Balance	\$625,000	\$625,000	\$625,000	\$678,000	\$708,000	\$740,000	
Plus: Additions	0	0	53,000	30,000	32,000	33,000	
Less: Uses of Funds	0	0	0	0	0	0	
Ending Balance	\$625,000	\$625,000	\$678,000	\$708,000	\$740,000	\$773,000	
<i>Min. Fund Balance - 2 Months O&amp;M Contingency</i>	\$621,383	\$652,561	\$677,874	\$707,826	\$739,218	\$772,483	
<b>Capital and Replacement Fund</b>							
Beginning Balance	\$1,322,354	\$1,960,747	\$2,187,484	\$2,048,114	\$2,295,854	\$2,320,709	
Plus: Additions							
Rate Funded Capital	236,166	400,000	475,000	605,000	735,000	865,000	
Cannibal Warranty Payment	788,000	0	0	0	0	0	
Less: Uses of Funds							
Capital Funding	236,166	18,167	190,812	184,068	583,038	293,657	
Transfer to Op Fund-Liquidity	0	0	93,000	77,000	92,000	95,000	
Transfer to Op Fund-Contingency	0	0	53,000	30,000	32,000	33,000	
Transfer to Conn. Fee Fund Capital Funding Shortfall	131,811	0	0	0	0	0	
Transfer to Debt Service Fund for New Debt Issue	0	155,000	155,000	0	0	0	
Rate Revenue Excess/(Shortfall)	(17,796)	(96)	(122,558)	(66,192)	(3,108)	73,520	
Ending Balance	\$1,960,747	\$2,187,484	\$2,048,114	\$2,295,854	\$2,320,709	\$2,837,571	
<i>Minimum Fund Balance = Annual Capital Requirements</i>	1,960,747	2,114,293	2,267,838	2,421,384	2,574,929	2,728,475	
<b>Emergency Reserves</b>							
Beginning Balance	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	
Plus: Additions	0	0	0	0	0	0	
Less: Uses of Funds	0	0	0	0	0	0	
Ending Balance	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	
<i>Minimum Fund Balance -</i>	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	
<b>Debt Service Fund</b>							
Beginning Balance	\$602,751	\$602,751	\$757,751	\$912,751	\$912,751	\$912,751	
Plus: Additions	0	155,000	155,000	0	0	0	
Less: Uses of Funds	0	0	0	0	0	0	
Ending Balance	\$602,751	\$757,751	\$912,751	\$912,751	\$912,751	\$912,751	
<i>Minimum Fund Balance = Annual Debt Service Payments</i>	\$602,751	\$756,434	\$909,377	\$911,627	\$908,502	\$909,702	
<b>Connection Fee Fund</b>							
Beginning Balance	(\$0)	\$0	\$88,267	\$288,065	\$380,047	\$572,207	
Plus: Additions	175,205	293,600	403,700	495,450	587,200	587,200	
Plus: Transfer from Cap. and Repl. Fund for Funding Shortfall	131,811	0	0	0	0	0	
Less: Uses of Funds	307,016	205,333	203,902	403,468	395,040	648,514	
Interest Revenue	0	441	1,440	1,900	2,861	2,554	
Ending Balance	\$0	\$88,267	\$288,065	\$380,047	\$572,207	\$510,893	
Total Ending Fund Balance	\$5,588,498	\$5,970,235	\$6,131,865	\$6,486,605	\$6,635,460	\$7,280,322	
<i>Target Ending Minimum Fund Balance</i>	5,584,881	5,920,389	6,347,377	6,610,406	6,883,663	7,167,514	
Targe Ending Fund Balance/(Deficiency)	\$3,617	\$49,846	(\$215,512)	(\$123,801)	(\$248,203)	\$112,808	



**Big Bear Area Regional Wastewater Agency  
 Development of the Volume  
 Allocation Factor  
 Exhibit 5**

	<b>CY 2009 Annual flow in 1,000 gal [1] [2]</b>	<b>Total Annual Flow at Plant 1,000 gal</b>	<b>Avg. Daily Flow At Plant (MGD)</b>	<b>% of Total</b>
City of Big Bear Lake	385,143	385,143	1.06	52.63%
Big Bear City CSD	316,730	316,730	0.87	43.28%
CSA 53B	29,896	29,896	0.08	4.09%
	-----	-----	-----	-----
Total Consumption	731,769	731,769	2.00	100.00%
		731,769	2.00	

**Allocation Factor (VOL)**

*NOTES:*

[1] Based on BBARWA Member Agency Flow

[2] Inflow and Infiltration Included in Annual Flow by Agency

**Big Bear Area Regional Wastewater Agency  
Development of the Strength  
Allocation Factor  
Exhibit 6**

	Bio-Chemical Oxygen Demand [1]				Suspended Solids [2]		
	Annual Flow (1,000 gal)	Avg. Factor (mg/l)	Calculated Pounds	% of Total	Avg. Factor (mg/l)	Calculated Pounds	% of Total
City of Big Bear Lake	385,143	237	761,266	50.89%	270	867,266	50.91%
Big Bear City CSD	316,730	260	686,796	45.91%	296	781,891	45.90%
CSA 53B	29,896	192	47,873	3.20%	218	54,355	3.19%
Total	731,769		1,495,935	100%		1,703,512	100%
<b>Allocation Factor</b>		<b>245</b>	<b>1,498,267</b>	<b>(BOD)</b>	<b>279</b>	<b>1,704,105</b>	<b>(SS)</b>

**NOTES:**

[1] Based on June - July 2010 Sampling

[2] Based on same ratio as BOD samples

[3] System BOD & SS Provided by the Agency in the file titled Master\_Plan\_Fee\_Study\_Flow\_Data.xlsx File

**Big Bear Area Regional Wastewater Agency**  
**Functionalization and Classification of Plant in Service**  
**Exhibit 7**

PLANT DESCRIPTION	Net Book Value 2010	Volume (VOL)	Strength Related		Direct (DA) [1]	Basis of Classification
			Bio-Oxygen Demand (BOD)	Suspended Solids (SS)		
<b>TREATMENT PLANT</b>						
Effluent Disposal Assets	\$1,559,959	\$1,559,959	\$0	\$0	\$0	100% VOL
Treatment Plant	9,067,658	4,533,829	3,173,680	1,360,149	0	50% VOL 35% BOD 15% SS
TOTAL TREATMENT	\$10,627,616	\$6,093,788	\$3,173,680	\$1,360,149	\$0	
<b>COLLECTION</b>						
Flow Measuring Devices	\$88,275	\$88,275	\$0	\$0	\$0	100% VOL
Interceptor System	908,534	908,534	0	0	0	100% VOL
TOTAL COLLECTION	\$996,809	\$996,809	\$0	\$0	\$0	
<b>TOTAL TREATMENT &amp; COLLECTION PLANT</b>	<b>\$11,624,425</b>	<b>\$7,090,597</b>	<b>\$3,173,680</b>	<b>\$1,360,149</b>	<b>\$0</b>	
PERCENT TREATMENT & COLLECTION PLANT	100.0%	61.0%	27.3%	11.7%	0.0%	Factor Trt&Collect
<b>GENERAL PLANT</b>						
Administration Building	\$1,642,650	\$1,001,974	\$448,473	\$192,203	\$0	As Gactor Trt&Collect
Land	816,823	498,241	223,008	95,575	0	As Gactor Trt&Collect
Other Equipment	1,025,310	625,412	279,928	119,969	0	As Gactor Trt&Collect
Other Tangible Plant	384,537	234,558	104,986	44,994	0	As Gactor Trt&Collect
Power Generation Equipment	1,219,808	744,051	333,030	142,727	0	As Gactor Trt&Collect
Studies and Maps	27,306	16,656	7,455	3,195	0	As Gactor Trt&Collect
Transportation Equipment	170,713	104,131	46,608	19,975	0	As Gactor Trt&Collect
TOTAL GENERAL PLANT	\$5,287,147	\$3,225,022	\$1,443,488	\$618,638	\$0	
<b>TOTAL WASTEWATER PLANT - NET BOOK VALUE</b>	<b>\$16,911,573</b>	<b>\$10,315,619</b>	<b>\$4,617,168</b>	<b>\$1,978,786</b>	<b>\$0</b>	

**NOTES:**

[1] Specific assets only benefitting one user or customer class

**Big Bear Area Regional Wastewater Agency**  
**Functionalization and Classification of**  
**Revenue Requirement**  
**Exhibit 8**

	Expenses FY 2012	Volume (VOL)	Bio-Oxygen Demand (BOD)	Suspended Solids (SS)	Direct (DA)	Basis of Classification
<b>USES OF FUNDS</b>						
<b>Operating Expenses</b>						
<i>Salaries and Benefits</i>						
Salaries and Wages	\$1,258,739	\$767,798	\$343,659	\$147,282	\$0	As Total Wastewater Plant
Employee Benefits	750,934	458,050	205,019	87,865	0	As Total Wastewater Plant
Accrued Benefits Expense	15,750	9,607	4,300	1,843	0	As Total Wastewater Plant
Payroll Tax Expense	17,669	10,778	4,824	2,067	0	As Total Wastewater Plant
	-----	-----	-----	-----	-----	
Total Salaries and Benefits	\$2,043,092	\$1,246,233	\$557,801	\$239,058	\$0	
<i>Power</i>						
Fuel for Power Production	\$312,311	\$179,076	\$93,264	\$39,970	\$0	As Treatment Plant
Gas Admin Building	3,338	3,338	0	0	0	100% VOL
Gas Treatment Plant	15,405	15,405	0	0	0	100% VOL
Electricity - Treatment Plant	88,836	50,938	26,529	11,369	0	As Treatment Plant
Electricity - Stations	40,977	40,977	0	0	0	100% VOL
Electricity - Admin Building	4,724	4,724	0	0	0	100% VOL
Electricity - Lucerne	555	555	0	0	0	100% VOL
	-----	-----	-----	-----	-----	
Total Power	\$466,145	\$295,013	\$119,793	\$51,340	\$0	
<i>Sludge Removal</i>	\$232,205	\$133,144	\$69,342	\$29,718	\$0	As Treatment Plant
<i>Chemicals</i>						
Odor Control-Disinfectant	\$59,463	\$59,463	\$0	\$0	\$0	100% VOL
Polymer	19,246	19,246	0	0	0	100% VOL
Laboratory Reagents	7,600	7,600	0	0	0	100% VOL
	-----	-----	-----	-----	-----	
Total chemicals	\$86,309	\$86,309	\$0	\$0	\$0	
<i>Materials and Supplies</i>						
Office Equip, Supplies, Expense	\$52,174	\$31,825	\$14,244	\$6,105	\$0	As Treat. & Collect. Plant
Safety Supplies and Expenses	12,392	7,559	3,383	1,450	0	As Treat. & Collect. Plant
Laboratory Supplies	10,992	6,705	3,001	1,286	0	As Treat. & Collect. Plant
Fuel - Vehicles	13,919	8,490	3,800	1,629	0	As Treat. & Collect. Plant
Oils, Antifreeze, Filters	15,895	9,695	4,340	1,860	0	As Treat. & Collect. Plant
Degreasers and Solvents	1,060	646	289	124	0	As Treat. & Collect. Plant
Hardware, Cleaning, Painting	5,298	3,232	1,447	620	0	As Treat. & Collect. Plant
Ground Maint and Supplies	16,972	10,353	4,634	1,986	0	As Treat. & Collect. Plant
Electrical Supplies	5,927	3,615	1,618	693	0	As Treat. & Collect. Plant
Welding and Fab Supplies	2,065	1,260	564	242	0	As Treat. & Collect. Plant
Tools and Equipment	2,963	1,808	809	347	0	As Treat. & Collect. Plant
Plumbing Supplies	10,956	6,683	2,991	1,282	0	As Treat. & Collect. Plant
Tertiary Water	0	0	0	0	0	As Treat. & Collect. Plant
Purchase Discounts	0	0	0	0	0	As Treat. & Collect. Plant
	-----	-----	-----	-----	-----	
Total Materials and Supplies	\$150,613	\$91,870	\$41,120	\$17,623	\$0	
<i>Repairs and Replacements</i>						
Mainline	\$69,631	\$42,473	\$19,011	\$8,147	\$0	As Treat. & Collect. Plant
Pumps, Motors, Bearings	17,204	10,494	4,697	2,013	0	As Treat. & Collect. Plant
Equip and Machinery	75,332	45,951	20,567	8,814	0	As Treat. & Collect. Plant
Vehicles	15,270	9,314	4,169	1,787	0	As Treat. & Collect. Plant
Generators	22,396	13,661	6,115	2,621	0	As Treat. & Collect. Plant
Irrigation System - Lucerne	4,988	3,043	1,362	584	0	As Treat. & Collect. Plant
Other	1,824	1,113	498	213	0	As Treat. & Collect. Plant
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Total Repairs and Replacements	\$206,646	\$126,049	\$56,418	\$24,179	\$0	

**Big Bear Area Regional Wastewater Agency  
Functionalization and Classification of  
Revenue Requirement  
Exhibit 8**

	Expenses FY 2012	Volume (VOL)	Bio-Oxygen Demand (BOD)	Suspended Solids (SS)	Direct (DA)	Basis of Classification
<i>Equipment Rental</i>	\$1,027	\$626	\$280	\$120	\$0	As Total Wastewater Plant
<i>Utilities Expense</i>						
Water	\$3,882	\$2,368	\$1,060	\$454	\$0	As Total Wastewater Plant
Trash Pick Up	3,574	2,180	976	418	0	As Total Wastewater Plant
Solid Waste Disposal	15,097	9,209	4,122	1,766	0	As Total Wastewater Plant
Total Utilities Expense	\$22,553	\$13,757	\$6,157	\$2,639	\$0	
<i>Communications Expense</i>						
SCADA	\$21,093	\$12,866	\$5,759	\$2,468	\$0	As Total Wastewater Plant
Radio Service and Repair	767	468	209	90	0	As Total Wastewater Plant
Television	414	253	113	48	0	As Total Wastewater Plant
Telephone Service and Repair	12,886	7,860	3,518	1,508	0	As Total Wastewater Plant
Internet Access	920	561	251	108	0	As Total Wastewater Plant
Total Communications Expense	\$36,080	\$22,008	\$9,850	\$4,222	\$0	
<i>Contractual Services - Other</i>						
Fiscal Agent and Bank Fees	\$8,312	\$5,070	\$2,269	\$973	\$0	As Treat. & Collect. Plant
Testing	24,648	15,035	6,729	2,884	0	As Treat. & Collect. Plant
Uniform, Towel and Rag	14,173	8,645	3,869	1,658	0	As Treat. & Collect. Plant
Medical and EAP	6,419	3,915	1,752	751	0	As Treat. & Collect. Plant
Security, Fire Alarm	2,835	1,729	774	332	0	As Treat. & Collect. Plant
Web Site Hosting	31	19	9	4	0	As Treat. & Collect. Plant
Landscaping	5,957	3,633	1,626	697	0	As Treat. & Collect. Plant
Labor	14,892	9,083	4,066	1,742	0	As Treat. & Collect. Plant
Heating, Ventilation, Air Cond	3,903	2,380	1,065	457	0	As Treat. & Collect. Plant
Answering Service	616	376	168	72	0	As Treat. & Collect. Plant
Janitorial	6,470	3,947	1,766	757	0	As Treat. & Collect. Plant
Total Contractual Services - Other	\$88,254	\$53,833	\$24,095	\$10,326	\$0	
<i>Contractual Services - Professional</i>						
Engineering	\$55,229	\$33,688	\$15,078	\$6,462	\$0	As Treat. & Collect. Plant
Legal	28,512	17,392	7,784	3,336	0	As Treat. & Collect. Plant
Other	16,235	9,903	4,433	1,900	0	As Treat. & Collect. Plant
Total Contractual Services - Professional	\$99,976	\$60,983	\$27,295	\$11,698	\$0	
<i>Permits and Fees</i>	\$122,432	\$70,201	\$36,561	\$15,669	\$0	As Treatment Plant
<i>Insurance</i>						
Workman's Compensation	\$49,963	\$30,476	\$13,641	\$5,846	\$0	As Salaries and Benefits
General Liability and Vehicle	66,210	40,386	18,076	7,747	0	As Salaries and Benefits
Other Insurance Expense	0	0	0	0	0	As Salaries and Benefits
Total Insurance	\$116,173	\$70,862	\$31,717	\$13,593	\$0	

**Big Bear Area Regional Wastewater Agency  
Functionalization and Classification of  
Revenue Requirement  
Exhibit 8**

	Expenses FY 2012	Volume (VOL)	Bio-Oxygen Demand (BOD)	Suspended Solids (SS)	Direct (DA)	Basis of Classification
<b>Other Expense</b>						
Memberships, Dues and Subscrip	\$14,153	\$8,115	\$4,227	\$1,811	\$0	As Total Wastewater Plant
Directors Fees	6,440	3,693	1,923	824	0	As Total Wastewater Plant
Public Notices	1,101	631	329	141	0	As Total Wastewater Plant
Education and Training	30,023	17,215	8,966	3,842	0	As Total Wastewater Plant
Advertising	1,745	1,000	521	223	0	As Total Wastewater Plant
Total Other Expense	\$53,461	\$30,654	\$15,965	\$6,842	\$0	
<b>Taxes and Transfers</b>						
Property Tax	\$3,334	\$2,034	\$910	\$390	\$0	As Treat. & Collect. Plant
Total Taxes and Transfers	\$3,334	\$2,034	\$910	\$390	\$0	
<b>TOTAL OPERATIONS &amp; MAINTENANCE [1]</b>	<b>\$3,728,299</b>	<b>\$2,303,575</b>	<b>\$997,307</b>	<b>\$427,417</b>	<b>\$0</b>	
<b>NET Capital Funded Through Rates</b>	<b>\$400,000</b>	<b>\$229,357</b>	<b>\$119,450</b>	<b>\$51,193</b>	<b>\$0</b>	As Total Wastewater Plant
<b>Debt Service</b>						
1998 ABAG Bond	\$210,375	\$120,627	\$62,823	\$26,924	\$0	As Total Wastewater Plant
2006 MuniFinance	390,741	224,048	116,685	50,008	0	As Treatment Plant
New Revenue Bond	155,318	95,965	41,547	17,806	0	As Total Wastewater Plant
Total Debt Service	\$756,434	\$440,640	\$221,056	\$94,738	\$0	
<i>Less: Debt Service Funding</i>						
Growth Related Funding	\$183,500	\$106,893	\$53,625	\$22,982	\$0	As Debt
Rate Related Funding	0	0	0	0	0	As Debt
Total Less Debt Service Funding	\$183,500	\$106,893	\$53,625	\$22,982	\$0	
<b>Net Debt Service Funded through Rates</b>	<b>\$572,934</b>	<b>\$333,747</b>	<b>\$167,431</b>	<b>\$71,756</b>	<b>\$0</b>	
<b>Minimum Reserve Funding</b>						
To Operations - Liquidity	\$0	\$0	\$0	\$0	\$0	As O&M Expenses
To Operations - Contingency	0	0	0	0	0	As O&M Expenses
To Capital and Replacement Fund	0	0	0	0	0	As O&M Expenses
Total Minimum Reserve Funding	\$0	\$0	\$0	\$0	\$0	
<b>TOTAL USES OF FUNDS</b>	<b>\$4,701,233</b>	<b>\$2,866,679</b>	<b>\$1,284,188</b>	<b>\$550,366</b>	<b>\$0</b>	
<b>Less: Other Revenues</b>						
Standby Charge	\$93,614	\$57,083	\$25,571	\$10,959	\$0	As Total Uses of Funds
Rental Income	46,388	28,286	12,671	5,431	0	As Total Uses of Funds
Waste Disposal	15,987	9,748	4,367	1,872	0	As Total Uses of Funds
Other Revenue	0	0	0	0	0	As Total Uses of Funds
Total Other Revenues	\$155,989	\$95,118	\$42,610	\$18,261	\$0	
<b>NET REVENUE REQUIREMENTS</b>	<b>\$4,545,244</b>	<b>\$2,771,562</b>	<b>\$1,241,578</b>	<b>\$532,105</b>	<b>\$0</b>	

[1] Budgeted Depreciation, Non-operating Income, and Non-operating Expenses were not Included in the Analysis

**Big Bear Area Regional Wastewater Agency  
Allocation of Revenue Requirement  
Exhibit 9**

<b>Classification Components</b>	<b>FY 2012 Net Revenue Requirement</b>	<b>City of Big Bear</b>	<b>Big Bear CSD</b>	<b>CSA 53B</b>	<i>Allocation Factor</i>
Volume Related	\$2,771,562	\$1,458,723	\$1,199,607	\$113,232	(VOL)
Strength Related					
Bio-oxygen Demand	\$1,241,578	\$631,826	\$570,019	\$39,733	(BOD)
Suspended Solids	532,105	270,897	244,230	16,978	(SS)
	-----	-----	-----	-----	
Total Strength Related	\$1,773,683	\$902,723	\$814,248	\$56,711	
<b>NET REVENUE REQUIREMENT</b>	<b>\$4,545,244</b>	<b>\$2,361,446</b>	<b>\$2,013,855</b>	<b>\$169,943</b>	

**Big Bear Area Regional Wastewater Agency  
 Summary of Cost of Service Analysis  
 Exhibit 10**

	<b>FY 2012 Expenses</b>	<b>City of Big Bear</b>	<b>Big Bear CSD</b>	<b>CSA 53B</b>	<i>Allocation Factor</i>
Revenues at Present Rates [1]	\$4,287,875	\$2,271,962	\$1,838,127	\$177,786	
Allocated Revenue Requirement	\$4,545,244	\$2,361,446	\$2,013,855	\$169,943	
Balance/(Deficiency) of Funds	----- (\$257,369)	----- (\$89,484)	----- (\$175,728)	----- \$7,843	
<b>Required % Rate Adjustment</b>	<b>6.0%</b>	<b>3.9%</b>	<b>9.6%</b>	<b>-4.4%</b>	

[1] Revenues are based on current per EDU charge, not adjusted for volume by Member Agency

**Big Bear Area Regional Wastewater Agency**  
**Average Unit Cost - EDUs**  
**Exhibit 11**

	<b>FY 2012 Expenses</b>	<b>City of Big Bear</b>	<b>Big Bear CSD</b>	<b>CSA 53B</b>
Volume \$/EDU	\$112.68	\$126.97	\$101.19	\$90.37
Strength \$/EDU				
Bio-oxygen Demand	\$50.48	\$54.99	\$48.08	\$31.71
Suspended Solids	21.63	23.58	20.60	13.55
Total Strength \$/EDU	----- \$72.11	----- \$78.57	----- \$68.68	----- \$45.26
Average Allocated Cost \$/EDU	\$184.79	\$205.54	\$169.87	\$135.63
Average Total Revenue \$/EDU	\$174.33	\$197.75	\$155.05	\$141.89
Basic Data:				
Annual Volumes (gallons)	731,769	385,143	316,730	29,896
Number of Accounts (EDUs)	24,597	11,489	11,855	1,253

**Big Bear Area Regional Wastewater Agency**  
**Average Unit Cost - Gallons**  
**Exhibit 12**

	<b>FY 2012 Expenses</b>	<b>City of Big Bear</b>	<b>Big Bear CSD</b>	<b>CSA 53B</b>
Volume (\$ / 1,000 gallons)	\$3.79	\$3.79	\$3.79	\$3.79
Strength (\$ / 1,000 gallons)				
Bio-oxygen Demand	\$1.70	\$1.64	\$1.80	\$1.33
Suspended Solids	0.73	0.70	0.77	0.57
Total Strength (\$ / 1,000 gallons)	\$2.42	\$2.34	\$2.57	\$1.90
Average Allocated Cost (\$ / 1,000 gallons)	\$6.21	\$6.13	\$6.36	\$5.68
Average Total Revenue (\$ / 1,000 gallons)	\$5.86	\$5.90	\$5.80	\$5.95
Basic Data:				
Annual Volumes (1,000 gallons)	731,769	385,143	316,730	29,896
Number of Accounts (EDUs)	24,597	11,489	11,855	1,253



Big Bear Area Regional Wastewater Agency  
Wastewater Rate Bill Comparison

RATE OPTION 1 - Maintain Current Rates  
Step 1: Calculate Revenues Based on EDU Projection

	Current Rates - FY 2010/2011			FY 2012 Proposed Rate Adjustment	Proposed FY 2011/2012 Rates			FY 2013 Proposed Rate Adjustment	Proposed FY 2012/2013 Rates			FY 2014 Proposed Rate Adjustment	Proposed FY 2013/2014 Rates			FY 2015 Proposed Rate Adjustment	Proposed FY 2014/2015 Rates			FY 2016 Proposed Rate Adjustment	Proposed FY 2015/2016 Rates		
	Annual Customer Charge	Number of EDU's	Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Rate Revenues
City of Big Bear Lake	\$173.76	11,489	\$1,996,329	6.00%	\$184.19	11,535	\$2,124,655	6.00%	\$195.24	11,599	\$2,264,590	6.50%	\$207.93	11,678	\$2,428,069	6.50%	\$221.44	11,770	\$2,606,443	6.50%	\$235.84	11,863	\$2,797,748
Big Bear CSD	\$173.76	11,855	2,059,994	6.00%	\$184.19	11,887	2,189,341	6.00%	\$195.24	11,930	2,329,077	6.50%	\$207.93	11,982	2,491,414	6.50%	\$221.44	12,045	2,667,174	6.50%	\$235.84	12,107	2,855,256
CSA 53B	\$173.76	1,253	217,721	6.00%	\$184.19	1,255	231,227	6.00%	\$195.24	1,259	245,744	6.50%	\$207.93	1,263	262,560	6.50%	\$221.44	1,268	280,689	6.50%	\$235.84	1,272	300,066
		24,597	\$4,287,875			24,677	\$4,545,222	6.0%		24,787	\$4,839,411			24,922	\$5,182,043			25,082	\$5,554,307			25,242	\$5,953,070
							\$4,545,244				\$4,961,890				\$5,248,150				\$5,557,324				\$5,879,454

Step 2: Proportion EDU Revenue Based on Historical Volumes

	3-Year Average Flow %	Rate Revenues	Proposed Rate Revenues	Proposed Rate Revenues	Proposed Rate Revenues	Proposed Rate Revenues
City of Big Bear Lake	52.99%	\$2,271,962	\$2,408,319	\$2,564,197	\$2,745,743	\$2,942,990
Big Bear CSD	42.87%	1,838,127	1,948,447	2,074,560	2,221,439	2,381,021
CSA 53B	4.15%	177,786	188,456	200,654	214,860	230,295
		\$4,287,875	\$4,545,222	\$4,839,411	\$5,182,043	\$5,554,307

RATE OPTION 2 - 100% Volumetric Billing

	Current Rates - FY 2010/2011			FY 2012 Proposed Rate Adjustment	Proposed FY 2011/2012 Rates			FY 2013 Proposed Rate Adjustment	Proposed FY 2012/2013 Rates			FY 2014 Proposed Rate Adjustment	Proposed FY 2013/2014 Rates			FY 2015 Proposed Rate Adjustment	Proposed FY 2014/2015 Rates			FY 2016 Proposed Rate Adjustment	Proposed FY 2015/2016 Rates		
	Charge - \$/1,000 Gal	Number of EDU's	Rate Revenues		Charge - \$/1,000 Gal	Estimated Metered Flows	Proposed Rate Revenues		Charge - \$/1,000 Gal	Estimated Metered Flows	Proposed Rate Revenues		Charge - \$/1,000 Gal	Estimated Metered Flows	Proposed Rate Revenues		Charge - \$/1,000 Gal	Estimated Metered Flows	Proposed Rate Revenues		Charge - \$/1,000 Gal	Estimated Metered Flows	Proposed Rate Revenues
City of Big Bear Lake	\$173.76	11,489	\$1,996,329	6.00%	\$5.76	417,750	\$2,408,241	6.00%	\$6.11	420,061	\$2,566,570	6.50%	\$6.51	422,896	\$2,753,054	6.50%	\$6.93	426,257	\$2,953,961	6.50%	\$7.38	429,618	\$3,170,578
Big Bear CSD	\$173.76	11,855	2,059,994	6.00%	\$5.76	337,980	1,946,765	6.00%	\$6.11	339,200	2,072,511	6.50%	\$6.51	340,697	2,217,937	6.50%	\$6.93	342,471	2,373,325	6.50%	\$7.38	344,245	2,540,531
CSA 53B	\$173.76	1,253	217,721	6.00%	\$5.76	32,690	188,294	6.00%	\$6.11	32,776	200,260	6.50%	\$6.51	32,881	214,057	6.50%	\$6.93	33,006	228,733	6.50%	\$7.38	33,131	244,508
		24,597	\$4,274,044			788,420	\$4,541,299			792,036	\$4,839,341			796,474	\$5,185,048			801,734	\$5,556,019			806,994	\$5,955,618
							\$ Difference- Option 2 Less Option 1				\$ Difference- Option 2 Less Option 1				\$ Difference- Option 2 Less Option 1				\$ Difference- Option 2 Less Option 1				\$ Difference- Option 2 Less Option 1
Variance From Option 1							(\$2,078)				\$2,373				\$7,311				\$10,971				\$16,300
City of Big Bear Lake							(1,682)				(3,502)				(7,696)				(11,432)				(11,432)
Big Bear CSD							(163)				(394)				(803)				(1,562)				(2,321)
CSA 53B							(\$3,923)				(\$70)				\$3,005				\$1,712				\$2,547

Rate Option 3 - Fixed Charge + Volumetric Billing  
Based on 3 year rolling average metered flows

	Current Rates - FY 2010/2011			FY 2012 Proposed Rate Adjustment	Proposed FY 2011/2012 Rates			FY 2013 Proposed Rate Adjustment	Proposed FY 2012/2013 Rates			FY 2014 Proposed Rate Adjustment	Proposed FY 2013/2014 Rates			FY 2015 Proposed Rate Adjustment	Proposed FY 2014/2015 Rates			FY 2016 Proposed Rate Adjustment	Proposed FY 2015/2016 Rates				
	Annual Customer Charge	Number of EDU's	Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Fixed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Fixed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Fixed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Fixed Rate Revenues		Annual Customer Charge	Number of EDU's	Proposed Fixed Rate Revenues	Annual Customer Charge	Number of EDU's
City of Big Bear Lake	\$173.76	11,489	\$1,996,329	6.00%	\$130.00	11,535	\$1,499,602	6.00%	\$140.00	11,599	\$1,623,888	6.50%	\$150.00	11,678	\$1,751,625	6.50%	\$160.00	11,770	\$1,883,248	6.50%	\$170.00	11,863	\$2,016,727		
Big Bear CSD	\$173.76	11,855	2,059,994	6.00%	\$130.00	11,887	1,545,258	6.00%	\$140.00	11,930	1,670,130	6.50%	\$150.00	11,982	1,797,323	6.50%	\$160.00	12,045	1,927,128	6.50%	\$170.00	12,107	2,058,182		
CSA 53B	\$173.76	1,253	217,721	6.00%	\$130.00	1,255	163,202	6.00%	\$140.00	1,259	176,218	6.50%	\$150.00	1,263	189,413	6.50%	\$160.00	1,268	202,808	6.50%	\$170.00	1,272	216,300		
		24,597	\$4,274,044			24,677	\$3,208,062			24,787	\$3,470,236			24,922	\$3,738,360			25,082	\$4,013,184			25,242	\$4,291,208		
							3-Year Average Metered Flows				3-Year Average Metered Flows				3-Year Average Metered Flows				3-Year Average Metered Flows				3-Year Average Metered Flows		
							\$1.70	417,750	\$710,175		\$1.73	420,061	\$726,705		\$1.81	422,896	\$765,442		\$1.92	426,257	\$818,413		\$2.06	429,618	\$885,012
							\$1.70	337,980	574,566		\$1.73	339,200	586,816		\$1.81	340,697	616,661		\$1.92	342,471	657,545		\$2.06	344,245	709,146
							\$1.70	32,690	55,573		\$1.73	32,776	56,702		\$1.81	32,881	59,515		\$1.92	33,006	63,372		\$2.06	33,131	68,250
							788,420	\$1,340,314			792,036	\$1,370,223			796,474	\$1,441,619			801,734	\$1,539,330			806,994	\$1,662,408	
							\$4,548,376				\$4,840,459				\$5,179,979				\$5,552,514				\$5,953,616		
							\$ Difference- Option 3 Less Option 1				\$ Difference- Option 3 Less Option 1				\$ Difference- Option 3 Less Option 1				\$ Difference- Option 3 Less Option 1				\$ Difference- Option 3 Less Option 1		
Variance From Option 1							(\$198,542)				(\$213,605)				(\$228,676)				(\$241,329)				(\$252,539)		
City of Big Bear Lake							171,378				192,545				203,651				215,364				215,364		
Big Bear CSD							30,319				32,266				34,067				35,885				37,721		
CSA 53B							\$3,154				\$1,048				(\$2,064)				(\$1,793)				\$546		