ECO:LOGIC
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Memorandum

To: David Grah, Director of Public Works

From: Georgette Aronow, Catherine Hansford, and Erin Costa

CC: John Enloe

Date: May 5, 2009

RE: 2008 Water and Sewer Rate Study

ECO:LOGIC has reviewed and analyzed the City's water and sewer rate and revenue needs and have prepared separate technical memorandums for water and sewer that are attached hereto. This memo summarizes the findings and recommendations for the water and sewer enterprise funds. The methodology used in calculating the rates is described in detail in the attached technical memos.

It should be noted that particular focus was given to the projected costs for each fund. City staff carefully reviewed the current costs and projected future year costs for the water and sewer funds, paying particular attention to personnel costs and capital costs.

For personnel costs, the City adjusted the annual cost based on a review of actual time spent (based on an analysis of time cards) by staff on water or sewer tasks over the last few years. For capital costs, the City staff looked the total value of the water and sewer systems if constructed today and an assumption of life between replacement or reconstruction for each element in the system.

WATER ENTERPRISE FUND

Based on the comparison of projected expenses versus revenues, it is recommended that monthly water rates be reduced over the next two fiscal years, and then increase from current levels in fiscal year 2011-12. Alternatively, the City could maintain the current rates and set the additional revenue generated into a rate stabilization fund to minimize future year increases.

The calculated water rates are as follows:

Table S-1

Calculated Water Rates

	Basis of Charge	EDU Factor	2008-09 Current Rate	Calculated Monthly Charge 2009-10	2010-11	2011-12	2012-13	2013-14
Residential								
Single Family Residence	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Multi-Family Residence	Unit	0.80	$25.60	$23.48	$24.85	$26.29	$27.83	$29.46
Hotel Manager Quarters	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Non-Residential								
Church*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Church Recreation Hall*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Hospital*	Bed	0.33	$10.67	$9.79	$10.36	$10.96	$11.60	$12.28
Lodge or Meeting Hall*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Hall Bar*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Public School	Student	0.04	$1.28	$1.17	$1.24	$1.31	$1.39	$1.47
Other School	Student	0.03	$1.02	$0.94	$0.99	$1.05	$1.11	$1.17
Fairgrounds	Each	7.00	$224.00	$205.46	$217.40	$230.06	$243.50	$257.78
Gas Station	Island	0.40	$12.80	$11.74	$12.42	$13.15	$13.91	$14.73
Self Serve Car Wash	Stall	3.00	$96.00	$88.06	$93.17	$98.60	$104.36	$110.48
Beauty or Barber Shop	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Bar*	Seat	0.08	$2.56	$2.35	$2.48	$2.63	$2.78	$2.95
Hotel Room*	Each	0.25	$8.00	$7.34	$7.76	$8.22	$8.70	$9.21
Laundry*	Each	3.00	$96.00	$88.06	$93.17	$98.60	$104.36	$110.48
Laundromat	per Washer	0.80	$25.60	$23.48	$24.85	$26.29	$27.83	$29.46
Restaurant	Seat	0.10	$3.20	$2.94	$3.11	$3.29	$3.48	$3.68
Trailer Dump Facility	Each	2.00	$64.00	$58.70	$62.11	$65.73	$69.57	$73.65
Commercial/ Other Fac	Toilet	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83

"t1"

* These fees are additive for each account.

SEWER ENTERPRISE FUND

Sewer rates are projected to increase each year through 2013-14, with an increase of 22% necessary in the first year of rate increases, and approximately 6% annually thereafter. The projected increase in rates is primarily being driven by cost adjustment factors that are intended to reflect inflation and other cost escalation pressures, while no new growth is anticipated to spread the increased costs over a greater number of customers. The calculated sewer rates are shown in Table S-2.

Based on a review of current EDU factors and wastewater generation rates, ECO:LOGIC is recommending that the EDU factor for gas station islands and hotels be revised. Gas stations typically have significant wastewater generation as the customers use the restrooms frequently, particularly in towns such as Bishop, which see tourism traffic. It is recommended that the EDU factor be increased from the current 0.4 to 1.9 equivalent dwelling units, as is the standard generation rate as reported by the State Water Resources Control Board (SWRCB).

Hotel rooms can also produce large wastewater flow. It is recommended that the EDU factor be increased from 0.25 to 0.4 EDUs per room, also based on the SWRCB published standards.

Table S-2

Calculated Sewer Rates

Customer Type	Basis of Charge	EDU Factor [1]	Current Rate	Calculated Rates 2009-10	2010-11	2011-12	2012-13	2013-14
Residential								
Single Family Residence	Each	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12
Multi-Family Residence	Unit	0.80	$16.00	$19.55	$20.77	$22.07	$23.44	$24.89
Hotel Manager Quarters*	Each	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12
Non-Residential								
Church*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Church Recreation Hall*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Hospital*	Bed	0.33	$6.67	$8.74	$9.29	$9.87	$10.48	$11.13
Lodge or Meeting Hall*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Hall Bar*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Public School	Student	0.04	$0.80	$0.88	$0.93	$0.99	$1.05	$1.12
Other School	Student	0.03	$0.64	$0.70	$0.75	$0.79	$0.84	$0.89
Fairgrounds	Each	7.00	$140.00	$164.86	$175.16	$186.10	$197.68	$209.91
Gas Station	Island	**1.90**	$8.00	$49.82	$52.93	$56.24	$59.75	$63.44
Self Serve Car Wash	Stall	3.00	$60.00	$54.21	$57.58	$61.17	$64.97	$68.98
Beauty or Barber Shop	Each	1.00	$20.00	$25.85	$27.47	$29.18	$31.00	$32.92
Bar*	Seat	0.08	$1.60	$1.95	$2.08	$2.21	$2.34	$2.49
Hotel Room*	Each	**0.48**	$5.00	$13.46	$14.31	$15.20	$16.15	$17.15
Laundry*	Each	3.00	$60.00	$99.83	$106.09	$112.73	$119.77	$127.19
Landromat*	per Washer	0.80	$16.00	$18.13	$19.27	$20.47	$21.74	$23.09
Restaurant*	Seat	0.10	$2.00	$3.50	$3.72	$3.96	$4.20	$4.47
Trailer Dump Facility	Each	2.00	$40.00	$48.87	$51.93	$55.17	$58.60	$62.23
Commercial/Other Fac.	Toilet	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12

* These fees are additive for each account. *"t1"*

[1] Proposed revised EDU factor noted in bold.

AUTOMATIC RATE INFLATORS

The City of Bishop is interested in instituting an automatic rate inflator. Based on ECO:LOGIC experience and research, there are two typical types of inflators commonly used. The first is a set, not to exceed, annual percentage increase, typically ranging 3 to 5 percent.

The second option is for the inflator to be tied to a price index such as the consumer price index (CPI) as published by the Bureau of Labor statistics. The CPI is more directly tied to national inflation. Given the current economic situation, CPI has fluctuated around zero for 2009 thus far.

We generally recommend that the City set a fixed not to exceed inflator that is more reflective of the projected cost needs of the individual City as opposed to the national CPI index.

The City of Bishop also has options as to when to institute the automatic inflator. The rate analysis projects rates from 2009/10 to 2013/14. If the City were to adopt the full five year rate schedule, the automatic inflator could go into effect in 2014/15. However, it is recommended, and arguably required by Proposition 218, that water and sewer rates be reviewed at least every

five years. However, the automatic rate inflator could ensure that the City's revenue needs stay on track in the event that the five-year rate review takes some time to implement.

The City also has the option of only adopting the first year rate projections (2009/10) and then having the rate inflator go into effect for the following year(s).

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City of Bishop – 2008 Water and Sewer Rate Study
Technical Memorandum No. 3 Revised

Prepared For:	**David Grah, Director of Public Works**
Prepared By:	Georgette Aronow, Catherine Hansford, and Erin Costa
CC:	John Enloe
Date:	May 5, 2009
Subject:	**Revised Draft Water Rates Analysis**

This memorandum summarizes the findings for the City of Bishop 2008 water rate study and provides supporting tables for the City's review. The analysis presented in this memorandum differs from previous memorandums by incorporating updated financial data for 2008-09, as provided by the City, and by funding improvements on a pay-as-you-go basis only. Prior memorandum discussion regarding the borrowing option for capital improvement project has been removed from the analysis.

Summary of Findings

WATER RATES

Based on the comparison of projected expenses versus revenues, it is recommended that monthly water rates be reduced over the next two fiscal years, and then increase from current levels in fiscal year 2011-12. Key aspects of the water rate analysis are bulleted below:

- ***Water Rates Projected through 2013-14***: Water rates are projected through 2013-14 and allow for increases in ongoing operations and maintenance costs as well as some funding of capital improvements on a pay-as-you-go basis.
- ***Rates Were Calculated Emphasizing Rate Equity***: Rate equity assumes that all customers pay their fair share of costs. Equivalent dwelling unit (EDU) factors and the estimated number of gallons per day per customer/account were used to determine rate equality. The flow usage factor for a single family residential unit was assumed to be 449 gallons per day (gpd) based on per capita consumption documented in the City's Master Plan, page 21.
- ***Rates Projected to Decrease Initially:*** Projected rates for fiscal years 2009-10 and 2010-11 are lower than current rates set by the City. The calculated reduced rates will cover projected expenses during these years and continue to maintain the enterprise fund's healthy operating reserve.

Table 1 provides a summary of the calculated water rates. The calculated rates incorporate annual cost inflators for all expenditures. The cost inflators are held constant through the 2013-14 fiscal year.

Table 1
City of Bishop
Water Enterprise Fund
Summary of Calculated Water Rates -- FY 08-09 to FY 13-14

DRAFT

	Basis of Charge	EDU Factor	2008-09 Current Rate	Calculated Monthly Charge 2009-10	2010-11	2011-12	2012-13	2013-14
Residential								
Single Family Residence	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Multi-Family Residence	Unit	0.80	$25.60	$23.48	$24.85	$26.29	$27.83	$29.46
Hotel Manager Quarters	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Non-Residential								
Church*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Church Recreation Hall*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Hospital*	Bed	0.33	$10.67	$9.79	$10.36	$10.96	$11.60	$12.28
Lodge or Meeting Hall*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Hall Bar*	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Public School	Student	0.04	$1.28	$1.17	$1.24	$1.31	$1.39	$1.47
Other School	Student	0.03	$1.02	$0.94	$0.99	$1.05	$1.11	$1.17
Fairgrounds	Each	7.00	$224.00	$205.46	$217.40	$230.06	$243.50	$257.78
Gas Station	Island	0.40	$12.80	$11.74	$12.42	$13.15	$13.91	$14.73
Self Serve Car Wash	Stall	3.00	$96.00	$88.06	$93.17	$98.60	$104.36	$110.48
Beauty or Barber Shop	Each	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Bar*	Seat	0.08	$2.56	$2.35	$2.48	$2.63	$2.78	$2.95
Hotel Room*	Each	0.25	$8.00	$7.34	$7.76	$8.22	$8.70	$9.21
Laundry*	Each	3.00	$96.00	$88.06	$93.17	$98.60	$104.36	$110.48
Laundromat	per Washer	0.80	$25.60	$23.48	$24.85	$26.29	$27.83	$29.46
Restaurant	Seat	0.10	$3.20	$2.94	$3.11	$3.29	$3.48	$3.68
Trailer Dump Facility	Each	2.00	$64.00	$58.70	$62.11	$65.73	$69.57	$73.65
Commercial/ Other Fac	Toilet	1.00	$32.00	$29.35	$31.06	$32.87	$34.79	$36.83

"t1"

* These fees are additive for each account.

Water Rate Analysis

The water rate methodology consists of several steps that systematically result in the calculated future water rates by customer type. The primary steps in computing the rates are as follows:

1. ***Establish the Annual Costs to be Funded*** – Annual Costs include operations and maintenance, facility replacement, capital improvements, and existing debt service.

2. ***Establish the Water Customer Base and User Characteristics*** – The water customer base includes residential and commercial users. User characteristics are based on estimated or assumed water flow. One EDU is assumed to use 449 gallons per day (gpd), per the City's Master Plan, page 21.

3. ***Determine the Unit Cost for Purposes of Allocating Costs to Customer Categories*** – The unit cost is calculated by dividing the annual cost/expenses by the total annual water flow, which results in a cost per million gallons of flow. This cost is converted into a cost per gallon of flow per day.

4. ***Calculate the Base User Charge per Month*** – The cost per gallon of flow is multiplied by the assumed water use per account per day to determine the flat monthly water service charge.

Each of these steps is described in greater detail below.

WATER RATE MODEL

The following discussion provides an overview of each primary step in the methodology used to calculate future water rates for residential and commercial customers within the City of Bishop.

PROJECTED COSTS TO BE FUNDED

The City has amended the water enterprise fund capital expenditures for fiscal year 2008-09, and these costs provide the platform for projecting future capital improvement costs. The City based the capital expenditure cost on the total value of the water system if constructed today and an assumption of life between replacement or reconstruction for each element in the system. This report assumes that the City pays for capital improvements on a pay-as-you-go basis. The amount indicated for each year is based on the projection of City staff of $360,830 escalated by five percent per year.

The calculated rates are based on projected annual water costs for operations and maintenance and capital costs of the water enterprise fund. A historical comparison of revenues and costs is presented in **Table 2**.

Table 2
City of Bishop
Water Enterprise Fund
Historical Budget Information

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	Water Enterprise Fund Fiscal Year Ended June 30					Current Cost Projection	% Change
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09 [1]	2003-2008
REVENUES							
Operating Revenues							
Service Collections	$358,892	$819,404	$967,511	$1,057,198	$1,095,739	$1,100,000	25.11%
Service Penalties	$2,640	$2,294	$2,828	$4,591	$5,583	$6,000	17.84%
Interest Earnings	$5,574	$9,004	$27,569	$42,895	$52,187	$60,000	60.84%
Miscellaneous Income	$2,178	$19,486	$1,043	$9,416	$6,321	$4,000	12.93%
ESCSD/ Poleta Project	$55,000	$0	$0	$0	$0	$0	
Reimbursement Small Claims	$0	$22	$33	$10	$0	$0	
Water Permits	$0	$0	$25	$0	$0	$0	
Subtotal Revenues	**$424,284**	**$850,210**	**$999,009**	**$1,114,110**	**$1,159,830**	**$1,170,000**	**22.49%**
EXPENSES							
Operating Expenses							
Salaries and Benefits	$276,921	$329,935	$435,417	$449,532	$527,000	$480,000	11.63%
Services and Supplies	$144,693	$134,132	$159,070	$159,102	$158,710	$143,880	(0.11%)
Capital Equipment	$0	$0	$0	$0	$0	$17,730	
Capital Replacement	$0	$0	$0	$0	$5,000	$5,000	
Capital Improvements	$0	$0	$0	$0	$566,500	$360,830	
Subtotal Operating Expenses	**$421,614**	**$464,067**	**$594,487**	**$608,634**	**$1,257,210**	**$1,007,440**	**19.03%**
Net Operating Revenues	**$2,670**	**$386,143**	**$404,522**	**$505,476**	**($97,380)**	**$162,560**	
Debt Service							
Current Debt Service	$42,186	$53,386	$53,386	$53,386	$54,200	$54,200	5.14%
Future Debt Service							
Subtotal Debt Service	**$42,186**	**$53,386**	**$53,386**	**$53,386**	**$54,200**	**$54,200**	**5.14%**
Debt Service Coverage [2]	0.06	7.23	7.58	9.47	(1.80)	3.00	
Non-Operating Expenses							
Depreciation [3]	$13,929	$16,585	$20,600	$24,511	$24,511	$0	(100.00%)
Interest	$19,593	$18,620	$18,088	$17,280	$17,280	$17,280	(2.48%)
Subtotal Non-Operating Expenses	**$33,522**	**$35,205**	**$38,688**	**$41,791**	**$41,791**	**$17,280**	**(12.41%)**
Subtotal Expenses	**$497,322**	**$552,658**	**$686,561**	**$703,811**	**$1,353,201**	**$1,078,920**	**16.75%**
Net Op. Rev after D/S and Depreciation	**($73,038)**	**$297,552**	**$312,448**	**$410,299**	**($193,371)**	**$91,080**	

Source: City of Bishop *"t2"*

[1] This column reflects current cost projections and many not correspond to the budget as adopted for FY 2008/09.

[2] Debt service coverage is the number of times that debt service (the amount of money necessary to pay interest and principal requirements for a given or series of years) would be covered by net revenues before debt service is subtracted.

[3] 2008-09 is the base year for the rate model. Going forward, depreciation has been accounted for in the capital improvements cost.

The 2008-09 costs are used as the base year cost for future year projections. The costs are projected using the following annual percentage increases:

Cost Category	Annual Cost Adjustment Factor
Salaries and Benefits	7.0%
Services and Supplies	5.0%
Capital Equipment	5.0%
Capital Replacement	5.0%
Capital Improvements	5.0%

Per the City's methodology, depreciation has been accounted for in the capital improvements budgeted costs for fiscal year 2008-09 and is not therefore projected as a separate expense line item.

The cost adjustment factors are less than the historical average annual increase in expenses and reflect an expectation that cost increases will be more moderate in the future. The cost adjustment factors fall within the typical range for projecting future costs for the purpose of rate setting.

Table 3 shows projected water expenses by line item for the next five years.

WATER CUSTOMERS AND USAGE ASSUMPTIONS

The City currently bills on a flat monthly charge basis. **Table 4** shows the assumed water usage for each customer category. The water usage is assumed based on the water usage of 449 gallons per day for a residential unit, per the City's Master Plan. Usage for the remaining customer types is calculated based on the EDU factors shown in **Table 1**.

COST ALLOCATION AND UNIT COST CHARGES

Table 5 shows the projected revenue requirement to be met by water sales. The revenue requirement is based on the projected expenses shown in **Table 3**, plus some additional funding to allow for the accumulation of a reserve fund.

The projected revenue to be generated by water sales is divided by the total annual water usage to determine a cost per million gallons of flow. The cost per million gallons is converted into a cost per gallon per day, which is then used as the basis for allocating costs to each customer category.

The monthly water service charges per customer account are shown in **Table 6** for each customer type.

Table 3
City of Bishop
Water Enterprise Fund
Projected Water Expenses

DRAFT

	Annual Cost Adj. Factor	Current Costs 2008-09	Projected 2009-10	2010-11	2011-2012	2012-13	2013-14
Expenses							
Salaries & Benefits	7.0%	$480,000	$513,600	$549,552	$588,021	$629,182	$673,225
Services & Supplies	5.0%	$143,880	$151,074	$158,628	$166,559	$174,887	$183,631
Capital Equipment	5.0%	$17,730	$18,617	$19,547	$20,525	$21,551	$22,629
Capital Replacement	5.0%	$5,000	$5,250	$5,513	$5,788	$6,078	$6,381
Capital Improvements	5.0%	$360,830	$378,872	$397,815	$417,706	$438,591	$460,521
Subtotal Expenses		**$1,007,440**	**$1,067,413**	**$1,131,055**	**$1,198,599**	**$1,270,289**	**$1,346,387**
Debt Service							
Current Water Debt Service		$54,200	$54,200	$54,200	$54,200	$54,200	$54,200
New Water Debt Service			$0	$0	$0	$0	$0
Subtotal Debt Service		**$54,200**	**$54,200**	**$54,200**	**$54,200**	**$54,200**	**$54,200**
Reserve Fund [1]		$0	$8,007	$8,005	$8,001	$8,001	$8,003
Total		**$1,061,640**	**$1,129,620**	**$1,193,260**	**$1,260,800**	**$1,332,490**	**$1,408,590**
Percent Increase			**6.4%**	**5.6%**	**5.7%**	**5.7%**	**5.7%**

"t3"

[1] The Reserve Fund line allows the model to generate net revenues that then can be applied to a reserve fund for operating and maintenance costs.

Table 4
City of Bishop
Water Enterprise Fund
Customer Water Usage Assumptions and Total Annual Usage

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Customer Type	EDU Factor	Number of Units/Accounts	Assumed Usage Per Acct gal/day [1]	Assumed Usage mg/d	Total Annual Usage mg
		(A)	(B)	(C)=(A)x(B)/1000000	(D)= (C)x(365)
Residential					
Single Family Residence	1.00	579	449	0.2600	94.89
Multi-Family Residence	0.80	1,299	359	0.4666	170.31
Hotel Manager Quarters*	1.00	18	449	0.0081	2.95
Non-Residential					
Church*	1.00	16	449	0.0072	2.62
Church Recreation Hall*	1.00	9	449	0.0040	1.47
Hospital*	0.33	221	150	0.0331	12.08
Lodge or Meeting Hall*	1.00	4	449	0.0018	0.66
Hall Bar*	1.00	2	449	0.0009	0.33
Public School	0.04	2,060	18	0.0370	13.50
Other School	0.03	102	14	0.0015	0.53
Fairgrounds	7.00	1	3,143	0.0031	1.15
Gas Station	0.40	31	180	0.0056	2.03
Self Serve Car Wash	3.00	12	1,347	0.0162	5.90
Beauty or Barber Shop	1.00	8	449	0.0036	1.31
Bar*	0.08	276	36	0.0099	3.62
Hotel Room*	0.25	869	112	0.0975	35.60
Laundry*	3.00	1	1,347	0.0013	0.49
Landromat*	0.80	61	359	0.0219	8.00
Restaurant*	0.10	2,362	45	0.1061	38.71
Trailer Dump Facility	2.00	2	898	0.0018	0.66
Commercial/Other Fac.	1.0	674	449	0.3026	110.46
Total			**11,600**	**1.390**	**507.27**

"t5"

* These fees are additive for each account.

[1] Usage assumption based on the Water Master Plan.

Table 5
City of Bishop
Water Enterprise Fund
Water O&M and Capital Costs Allocated To Water Sales

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Cost Items		Total Flow (MG)	Costs Allocated to Water Sales (User Charges) for Fiscal Years: Base Year 2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Total Costs	*A (From Table 3)*		$1,061,640	$1,129,620	$1,193,260	$1,260,800	$1,332,490	$1,408,590
Allowance for Other Revenues [1]	*B*		($70,000)	($39,390)	($39,710)	($40,050)	($40,410)	($40,790)
Costs Allocated to Water Sales	***C=A+B***		**$991,640**	**$1,090,230**	**$1,153,550**	**$1,220,750**	**$1,292,080**	**$1,367,800**
Unit Cost Determination								
			--- Unit Cost per MG of Flow ---					
Unit Cost per MG of Flow	*D=C/Water Flow*	507.27	$1,954.86	$2,149.22	$2,274.04	$2,406.52	$2,547.13	$2,696.40
Cost per Gallon of Flow			$0.0020	$0.0021	$0.0023	$0.0024	$0.0025	$0.0027

"t5"

[1] Includes 50% of current interest earnings to provide a cushion in event of lower interest rates as future market conditions are unknown.

Table 6
City of Bishop
Water Enterprise Fund
Calculation of Base Rate for Monthly Charge

DRAFT

Customer Type	Assumed Usage Per Acct gallons per day	Assumed Usage Per Acct gallons per month	Water Service Charge per Account per Month (C)				
			2009-10	2010-2011	2011-2012	2012-2013	2013/2014
Cost per MG flow (A)			$0.0021	$0.0023	$0.0024	$0.0025	$0.0027
Residential	*(B)*	*(C)=(B)x(365)/12*			*------(D) = (A)x(C)------*		
Single Family Residence	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Multi-Family Residence	359	10,926	$23.48	$24.85	$26.29	$27.83	$29.46
Hotel Manager Quarters*	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Non-Residential							
Church*	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Church Recreation Hall*	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Hospital*	150	4,554	$9.79	$10.36	$10.96	$11.60	$12.28
Lodge or Meeting Hall*	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Hall Bar*	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Public School	18	546	$1.17	$1.24	$1.31	$1.39	$1.47
Other School	14	435	$0.94	$0.99	$1.05	$1.11	$1.17
Fairgrounds	3,143	95,600	$205.46	$217.40	$230.06	$243.50	$257.78
Gas Station	180	5,463	$11.74	$12.42	$13.15	$13.91	$14.73
Self Serve Car Wash	1,347	40,971	$88.06	$93.17	$98.60	$104.36	$110.48
Beauty or Barber Shop	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83
Bar*	36	1,093	$2.35	$2.48	$2.63	$2.78	$2.95
Hotel Room*	112	3,414	$7.34	$7.76	$8.22	$8.70	$9.21
Laundry*	1,347	40,971	$88.06	$93.17	$98.60	$104.36	$110.48
Landromat*	359	10,926	$23.48	$24.85	$26.29	$27.83	$29.46
Restaurant*	45	1,366	$2.94	$3.11	$3.29	$3.48	$3.68
Trailer Dump Facility	898	27,314	$58.70	$62.11	$65.73	$69.57	$73.65
Commercial/Other Fac.	449	13,657	$29.35	$31.06	$32.87	$34.79	$36.83

"t9"

* These fees are additive for each account.

PROJECTED CASH FLOW

Table 7 shows the projected cash flow for the ongoing operations and maintenance of the water enterprise fund. In order to minimize projected rate increases the calculated rates provide sufficient revenue to cover costs while allowing the City to maintain an operating reserve.

Table 7
City of Bishop
Water Enterprise Fund
Projected Cash Flow

DRAFT

	Inflation Assumption	Budgeted 2008-09	Projected 2009-10	2010-11	2011-12	2012-13	2013-14
Revenues							
Monthly Charge		$32.00	$29.35	$31.06	$32.87	$34.79	$36.83
Annual Charge		$384.00	$352.22	$372.68	$394.39	$417.44	$441.90
Water Sales [1]		**$1,100,000**	**$1,090,230**	**$1,153,550**	**$1,220,750**	**$1,292,080**	**$1,367,800**
Other Revenues							
Penalties [2]		$6,000	$5,450	$5,770	$6,100	$6,460	$6,840
Interest Income		$60,000	$30,000	$30,000	$30,000	$30,000	$30,000
Other Revenues		$4,000	$4,000	$4,000	$4,000	$4,000	$4,000
Subtotal		**$70,000**	**$39,450**	**$39,770**	**$40,100**	**$40,460**	**$40,840**
Subtotal Revenues		**$1,170,000**	**$1,129,680**	**$1,193,320**	**$1,260,850**	**$1,332,540**	**$1,408,640**
Expenses							
Salaries and Benefits	7.0%	$480,000	$513,600	$549,550	$588,020	$629,180	$673,220
Services and Supplies	5.0%	$143,880	$151,070	$158,620	$166,550	$174,880	$183,620
Capital Equipment	5.0%	$17,730	$18,620	$19,550	$20,530	$21,560	$22,640
Capital Replacement	5.0%	$5,000	$5,250	$5,510	$5,790	$6,080	$6,380
Capital Improvements	5.0%	$360,830	$378,870	$397,810	$417,700	$438,590	$460,520
Subtotal Expenses		**$1,007,440**	**$1,067,410**	**$1,131,040**	**$1,198,590**	**$1,270,290**	**$1,346,380**
Net Revenue Before Debt Service		**$162,560**	**$62,270**	**$62,280**	**$62,260**	**$62,250**	**$62,260**
Debt Service							
Current Debt Service		$54,200	$54,200	$54,200	$54,200	$54,200	$54,200
Addl' Debt Service			$0	$0	$0	$0	$0
Total Debt Service		**$54,200**	**$54,200**	**$54,200**	**$54,200**	**$54,200**	**$54,200**
Debt Service Coverage [3]		*3.00*	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*
Net Revenue After Debt Service		$108,360	$8,070	$8,080	$8,060	$8,050	$8,060
Beginning Operating Balance [4]		**$1,212,690**	**$1,321,050**	**$1,329,119**	**$1,337,199**	**$1,345,259**	**$1,353,309**
Net Revenues		**$108,360**	**$8,070**	**$8,080**	**$8,060**	**$8,050**	**$8,060**
Ending Operating Balance		$1,321,050	$1,329,119	$1,337,199	$1,345,259	$1,353,309	$1,361,370
Target Operating Balance [5]		*$503,720*	*$533,705*	*$565,520*	*$599,295*	*$635,145*	*$673,190*

"t7"

[1] Water Sales calculated in the model.

[2] Revenue penalties are tied to water sales (historically half a percent of sewer sales).

[3] Debt service coverage is the number of times that debt service (the amount of money necessary to pay interest and principal requirements for a given or series of years) would be covered by net revenues before debt service is subtracted.

[4] Water enterprise fund cash balance as of July 1, 2008.

[5] The target operating balance represents 6 months of operating expenses, excluding debt service and CIP Improvements/Depreciation.

ECO:LOGIC
ENGINEERS · CONSULTANTS

City of Bishop – 2008 Water and Sewer Rate Study
Technical Memorandum No. 2 Revised

Prepared For:	David Grah, Director of Public Works
Prepared By:	Georgette Aronow, Catherine Hansford, and Erin Costa
CC:	John Enloe
Date:	May 5, 2009
Subject:	**Revised Draft Sewer Rates Analysis**

This memorandum summarizes the findings for the City of Bishop 2008 sewer rate study. In support of the findings are tables generated from the project's financial model, which are also included in this memorandum. The analysis presented in this memorandum differs from previous memorandums by incorporating updated financial data for 2008-09, as provided by the City, and by funding improvements on a pay-as-you-go basis only. Prior memorandum discussion regarding the borrowing option for capital improvement projects has been removed from the analysis.

Summary of Findings

SEWER RATES

Sewer rates are projected to increase each year through 2013-14, with an increase of 33% necessary in the first year of rate increases, and approximately 6% annually thereafter. The projected increase in rates is primarily being driven by cost adjustment factors that are intended to reflect inflation and other cost escalation pressures, while no new growth is anticipated to spread the increased costs over a greater number of customers. Key aspects of the sewer rate analysis are bulleted below:

- ***Sewer Rates Projected through 2013-14***: Sewer rates are projected through 2013-14 and allow for increases in ongoing operations and maintenance costs as well as funding of capital improvements on a pay-as-you-go basis.
- ***Flow Characteristics Calculated*** – The flow assumed for each user is based on the City's current single family residential user equivalent or equivalent dwelling unit (EDU). The flow usage factor for a single family residential unit was assumed to be **263 gallons per day (gpd)** based on current flows at the wastewater treatment plant. The average flow was determined by dividing the average flow at the plant by the current number of equivalent dwelling units (EDUs).

- ***Influent Concentration*** – Wastewater influent characteristics (biological oxygen demand and suspended solids) were assumed for each user group category based on industry averages and ECO:LOGIC rate study experience.

  Adding these characteristics to the rate analysis enhances rate equity, as certain users place more demand on the wastewater system as a result of heavy influent concentrations.

Table 1 provides a summary of the calculated sewer rates though 2013-14. The calculated rates incorporate annual cost inflators for all expenditures. The cost inflators are held constant through the 2013-14 fiscal year.

Table 1
City of Bishop
Sewer Enterprise Fund
Rate Summary - Current vs. Calculated Rates

DRAFT

Customer Type	Basis of Charge	EDU Factor [1]	Current Rate	Calculated Rates 2009-10	2010-11	2011-12	2012-13	2013-14
Residential								
Single Family Residence	Each	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12
Multi-Family Residence	Unit	0.80	$16.00	$19.55	$20.77	$22.07	$23.44	$24.89
Hotel Manager Quarters*	Each	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12
Non-Residential								
Church*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Church Recreation Hall*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Hospital*	Bed	0.33	$6.67	$8.74	$9.29	$9.87	$10.48	$11.13
Lodge or Meeting Hall*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Hall Bar*	Each	1.00	$20.00	$23.55	$25.02	$26.59	$28.24	$29.99
Public School	Student	0.04	$0.80	$0.88	$0.93	$0.99	$1.05	$1.12
Other School	Student	0.03	$0.64	$0.70	$0.75	$0.79	$0.84	$0.89
Fairgrounds	Each	7.00	$140.00	$164.86	$175.16	$186.10	$197.68	$209.91
Gas Station	Island	**1.90**	$8.00	$49.82	$52.93	$56.24	$59.75	$63.44
Self Serve Car Wash	Stall	3.00	$60.00	$54.21	$57.58	$61.17	$64.97	$68.98
Beauty or Barber Shop	Each	1.00	$20.00	$25.85	$27.47	$29.18	$31.00	$32.92
Bar*	Seat	0.08	$1.60	$1.95	$2.08	$2.21	$2.34	$2.49
Hotel Room*	Each	**0.48**	$5.00	$13.46	$14.31	$15.20	$16.15	$17.15
Laundry*	Each	3.00	$60.00	$99.83	$106.09	$112.73	$119.77	$127.19
Landromat*	per Washer	0.80	$16.00	$18.13	$19.27	$20.47	$21.74	$23.09
Restaurant*	Seat	0.10	$2.00	$3.50	$3.72	$3.96	$4.20	$4.47
Trailer Dump Facility	Each	2.00	$40.00	$48.87	$51.93	$55.17	$58.60	$62.23
Commercial/Other Fac.	Toilet	1.00	$20.00	$24.44	$25.96	$27.58	$29.30	$31.12

* These fees are additive for each account. *"t1"*

[1] Proposed revised EDU factor noted in bold.

Sewer Rate Analysis

OVERVIEW

The sewer rate methodology consists of several steps that systematically result in the calculated future monthly service charges by customer type. The primary steps in computing the rates are as follows:

1. ***Establish the Annual Costs to be Funded*** – Annual costs include operations and maintenance, facility replacement, capital improvements, and debt service.
2. ***Establish the Sewer Customer Base and User Characteristics*** – The sewer customer base includes residential and non-residential users. The user characteristics include flow, biological oxygen demand (BOD) and suspended solids (SS).
3. ***Allocate the Annual Costs to Either Flow, BOD, or SS*** – The Annual Costs are distributed to either flow, BOD, or SS depending on an ***assumed*** percentage distribution of O&M operations (or Project capital expenditures) attributed to flow, BOD, or SS.
4. ***Determine the Unit Cost per Flow, BOD, or SS*** – The Unit Cost is determined by dividing the allocated cost per flow or concentration category by the total system demand for that category. This is determined for each Cost Category (as described under Step 1 above).
5. ***Determine the Annual Cost per Customer Type*** – The Unit Costs (for flow, BOD, and SS by Cost Category) are then multiplied by number of customers to determine the annual user cost per customer type. The annual amount per customer type can be divided by 12 to establish the monthly charge per customer type.

Each of these steps is described in greater detail below. In addition, the next section of this memorandum describes some of the major assumptions used in calculating the future sewer user charges.

ANNUAL COSTS TO BE FUNDED

CAPITAL IMPROVEMENT PROJECTS IDENTIFIED

The City and its engineer, Nolte Associates, Inc. recently completed the Wastewater Master Plan. The Master Plan identifies and recommends capital projects to be completed over the near (1 to 5 years) and long term (6 to 20 years). With this knowledge, the City has amended the sewer enterprise fund capital expenditures for fiscal year 2008-09, and these costs provide the platform for projecting future capital improvement costs. The City based the capital expenditure cost on the total value of the sewer system if constructed today and an assumption of life between replacement or reconstruction for each element in the system.

This report assumes that the City pays for capital improvements on a pay-as-you-go basis. The amount budgeted for each year is based on staff's 2008-09 cost estimate of $351,874 escalated by five percent per year.

PROJECTED O&M COSTS TO BE FUNDED

The calculated rates are based on projected annual sewer costs for operations and maintenance and capital costs of the sewer enterprise fund. A historical comparison of revenues and expenses is presented in **Table 2**.

Table 2
City of Bishop
Sewer Enterprise Fund
Historical Budget Information

DRAFT

	Sewer Enterprise Fund Fiscal Year Ended June 30					Current Cost Proj. [2]	% Change
	2004	2005	2006	2007	2008	2008/09	2004-2009
REVENUES							
Operating Revenues							
Sewer Service Collections	$273,310	$394,559	$484,330	$598,496	$682,575	$700,000	20.7%
Sewer Service Penalties	$2,229	$1,218	$1,394	$2,580	$3,490	$4,000	12.41%
Sewer Permits	$0	$1,255	$67	$27	$0	$0	
Reimbursement Small Claims	$0	$22	$22	$10	$0	$0	
Interest Earnings	$14,673	$18,971	$28,882	$35,747	$29,196	$40,000	22.21%
Miscellaneous Income	$1,000	$0	$0	$12,087	$9,882	$6,000	43.10%
Subtotal Revenues	**$291,212**	**$416,025**	**$514,695**	**$648,947**	**$725,143**	**$750,000**	**25.62%**
EXPENSES							
Operating Expenses							
Salaries and Benefits	$296,235	$333,358	$436,137	$467,384	$528,700	$475,000	9.90%
Services and Supplies	$103,231	$132,696	$95,010	$73,960	$71,645	$85,600	(3.68%)
Capital Equipment	$0	$0	$0	$0	$0	$32,695	
Capital Replacement	$0	$0	$0	$0	$5,000	$5,000	
Capital Improvements[1]	$0	$0	$0	$0	$233,500	$351,874	
Subtotal Operating Expenses	**$399,466**	**$466,054**	**$531,147**	**$541,344**	**$838,845**	**$950,169**	**20.38%**
Net Operating Revenues	**($108,254)**	**($50,029)**	**($16,452)**	**$107,603**	**($113,702)**	**($200,169)**	**1.24%**
Current Debt Service	$0	$0	$0	$0	$11,200	$11,200	
Non-Operating Expenses							
Depreciation	$10,938	$12,143	$14,030	$18,214	$18,214	$0	
Interest	$19,593	$18,620	$18,088	$17,275	$17,275	$17,275	
Subtotal Expenses	**$429,997**	**$496,817**	**$563,265**	**$576,833**	**$874,334**	**$967,444**	**17.61%**
Net Op. Rev after D/S	**($138,785)**	**($80,792)**	**($48,570)**	**$72,114**	**($149,191)**	**($217,444)**	**9.40%**

Source: City of Bishop *"t2"*

[1] 2008-09 is the base year for the rate model. Depreciation has been accounted for in the capital improvements cost in future years.
[2] This column reflects current cost projections and may not correpsond to the budget as adopted for FY 2008-09.

Table 3 shows the projected expenses by year through 2013-14.

Table 3
City of Bishop
Sewer Enterprise Fund
Summary of Projected Expenses

DRAFT

Expenditures	Annual Cost Adj. Factor	Current Costs 2008-09	Projected 2009-10	2010-11	2011-12	2012-13	2013-14
Salaries and Benefits	7.00%	$475,000	$508,250	$543,827	$581,895	$622,628	$666,212
Services and Supplies	5.00%	$85,600	$89,880	$94,374	$99,093	$104,047	$109,250
Capital Improvements	5.00%	$351,874	$369,468	$387,942	$407,339	$427,706	$449,091
Capital Equipment	5.00%	$32,695	$34,329	$36,046	$37,848	$39,740	$41,727
Capital Replacement	5.00%	$5,000	$5,250	$5,513	$5,788	$6,078	$6,381
Subtotal		**$950,169**	**$1,007,177**	**$1,067,701**	**$1,131,963**	**$1,200,199**	**$1,272,661**
Current Debt Service		$11,200	$11,200	$11,200	$11,200	$11,200	$11,200
Reserve Fund		$0	$36,000	$40,000	$44,000	$48,000	$52,000
Total		**$961,369**	**$1,054,377**	**$1,118,901**	**$1,187,163**	**$1,259,399**	**$1,335,861**

"t3"

The projected costs were escalated each year using the following annual percentages for expense line items:

Cost Category	Annual Cost Adjustment Factor
Salaries and Benefits	7.0%
Services and Supplies	5.0%
Capital Improvements	5.0%
Capital Equipment	5.0%
Capital Replacement	5.0%

The cost adjustment factors, shown above, fall within the typical range for projecting future costs for the purpose of rate setting and take into consideration historical average annual increases in costs as shown in **Table 2**.

Per the City's methodology, depreciation has been accounted for in the budgeted capital improvements cost for fiscal year 2008-09. Depreciation is therefore not projected as a separate expense line item in the model.

SEWER CUSTOMERS AND USAGE ASSUMPTIONS

Table 4 shows the assumed wastewater characteristics assumed for each customer type. The average daily wastewater flow (ADWF) per equivalent dwelling unit was determined by dividing the average flow at the treatment plant by the current number of EDUs. A single family residence is typically set equal to one EDU, as is the case in Bishop. The flow factors for the other customer categories was determined by multiplying the 263 gpd times the EDU factor for each category.

ECO:LOGIC reviewed the current EDU factors and corresponding assumed wastewater flow. Based on our review, it appeared that the majority of customer categories tend to fall within the parameters as stated by the State Water Resources Control Board (SWRCB) SRF policy revenue program guidelines, (Appendix A) and within the range of flow based on ECO:LOGIC sewer rate study experience, with the exception of two categories, gas station islands and hotels. According the SWRCB, a gas station per set of pumps generates approximately 500 gpd in wastewater flow and hotels or motels without kitchens generate approximately 100 to 150 gallons per day per unit. The current and proposed revised EDU factors and corresponding ADWF is shown in **Table 5**.

In addition to flow data, wastewater influent strength characteristics were added for each customer type. The BOD and SS strength is identical for each customer category and is intended to reflect an average strength between BOD and SS.

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Table 4
City of Bishop
Sewer Enterprise Fund
Summary of Wastewater User Characteristics

DRAFT

Customer Category	Basis of Charge	Number	Flow EDU Factor [1]	Wastewater Characteristics ADWF/User GPD [2]	BOD MG/L	SS MG/L	Existing Treatment Capacity/Load Flow MGD	BOD Lbs/Day	SS Lbs/Day	Total Annual Capacity/Load Flow MG	BOD Lbs/Year	SS Lbs/Year
		(A)		(B)	(C)	(D)	(E)=(A)x(B)/1000000	(F)= (C)x(E)x8.34	(G)= (D)x(E)x8.34	(K)=(E)x365	(L)=(F)x(K)x8.34	(M)=(G)x(K)x8.35
Residential												
Single Family Residence	Each	577	1.0	263	200	200	0.1518	253	253	55.39	92,389	92,389
Multi-Family Residence	Unit	1,299	0.8	210	200	200	0.2733	456	456	99.76	166,396	166,396
Hotel Manager Quarters	Each	18	1.0	263	200	200	0.0047	8	8	1.73	2,882	2,882
Non-Residential												
Church	Each	16	1.00	263	175	175	0.0042	6	6	1.54	2,242	2,242
Church Recreation Hall	Each	9	1.00	263	175	175	0.0024	3	3	0.86	1,261	1,261
Hospital	Bed	221	0.33	88	250	250	0.0194	40	40	7.08	14,752	14,752
Lodge or Meeting Hall	Each	4	1.00	263	175	175	0.0011	2	2	0.38	560	560
Hall Bar	Each	2	1.00	263	175	175	0.0005	1	1	0.19	280	280
Public School	Student	2,060	0.04	11	130	130	0.0217	23	23	7.91	8,576	8,576
Other Student	Student	102	0.03	8	130	130	0.0009	1	1	0.31	340	340
Fairgrounds	Each	1	7.00	1,841	175	175	0.0018	3	3	0.67	981	981
Gas Station	Island	31	**1.90**	500	250	250	0.0155	32	32	5.66	11,796	11,796
Self Serve Car Wash	Stall	12	3.00	789	20	20	0.0095	2	2	3.46	576	576
Beauty or Barber Shop	Each	8	1.00	263	240	240	0.0021	4	4	0.77	1,537	1,537
Bar	Seat	276	0.08	21	200	200	0.0058	10	10	2.12	3,535	3,535
Hotel Room	Each	869	**0.48**	125	310	310	0.1086	281	281	39.65	102,506	102,506
Laundry	Each	1	3.00	789	450	450	0.0008	3	3	0.29	1,081	1,081
Laundromat	Washer	61	0.80	210	150	150	0.0128	16	16	4.68	5,860	5,860
Restaurant	Seat	2,362	0.10	26	500	500	0.0621	259	259	22.67	94,551	94,551
Trailer Dump Facility	Each	2	2.00	526	200	200	0.0011	2	2	0.38	640	640
Commercial/Other Facilities	Toilet	674	1.00	263	200	200	0.1773	296	296	64.70	107,921	107,921
TOTAL							**0.8773**	**1,700**	**1,700**	**320.20**	**620,663**	**620,663**

[1] Proposed revised EDU factors noted in bold. *"t4"*

[2] The ADWF was determined by multiplying the 263 gpd for a single family residence (1 EDU) times the EDU factor for each customer category.

Table 5
City of Bishop
Sewer Enterprise Fund
Summary of Existing Rates and EDUs

Customer Type	Effective Jul-07	Basis	Existing EDU Factor	Existing Flow (GPD)	Revised EDU Factor	Revised Flow (GPD)
Residential						
Single Family	$20.00	Each	1.00	263		
Multi-Family	$16.00	Unit	0.80	210		
Hotel Manager Quarters	$20.00	Each	1.00	263		
Non-Residential						
Church	$20.00	Each	1.00	263		
Church Recreation Hall	$20.00	Each	1.00	263		
Hospital	$6.67	Bed	0.33	88		
Lodge or Meeting Hall	$20.00	Each	1.00	263		
Hall Bar	$20.00	Each	1.00	263		
Public School	$0.80	Student	0.04	11		
Other School	$0.64	Student	0.03	8		
Fairgrounds	$140.00	Each	7.00	1,841		
Gas Station	$8.00	Island	0.40	105	1.90	500
Self Serve Car Wash	$60.00	Stall	3.00	789		
Beauty or Barber Shop	$20.00	Each	1.00	263		
Bar	$1.60	Seat	0.08	21		
Hotel Room	$5.00	Each	0.25	66	0.48	125
Laundry	$60.00	Each	3.00	789		
Landromat	$16.00	Washer	0.80	210		
Restaurant	$2.00	Seat	0.10	26		
Trailer Dump Facility	$40.00	Each	2.00	526		
Other Facilities	$20.00	Toilet	1.00	263		

t5

SEWER MODEL COST ALLOCATION

After the costs to be funded have been established and the customer base and user characteristics have been determined, the next step is to fairly allocate the costs to each customer type.

Costs are allocated to customer type and ultimately rate payers as follows:

1. Allocate the annual costs (by cost category) to flow, BOD, and SS
2. Determine the Unit Cost for flow, BOD, and SS per cost category
3. Use the Unit Costs to determine the costs allocated to customer types based on the flow and concentration of influent (flow, BOD, and SS)

The cost allocation tables discussed below are for fiscal year 2009-10.

COST ALLOCATION TO FLOW, BOD, AND SS AND UNIT DETERMINATION

Operation, maintenance and capital costs are first allocated to treatment and collection, as shown in **Table 6**. These costs are then carried forward into **Table 7** for the allocation to flow, BOD, and SS.

Costs are allocated to flow, BOD, and SS based on percentage allocation or distribution factors. These percentage allocation factors are based on the distribution of the treatment facilities O&M activities between or related to flow, BOD, and SS (collection costs are assumed to be 100 percent flow related). It should be noted that this distribution is estimated based on ECO:LOGIC's sewer rate study experience and not actual city data.

Table 6 shows the calculation of the unit costs by cost category for flow, BOD, and SS. The costs are allocated to flow, BOD, and SS based on percent allocation factors as described above. The allocated costs are then divided by the total influent, shown in **Table 4**, to determine the unit cost per flow, BOD, and SS. These unit costs are then used to determine the cost allocated to each customer type and ultimately the calculated rates for each customer account.

COST ALLOCATION BY CUSTOMER CATEGORY

Table 8 shows the cost allocated to flow, BOD, and SS by customer category for 2009-10. The unit costs determined in **Table 7** are multiplied by flow, BOD, or SS for each customer type. For example, single family residential customers are allocated approximately $169,195 of the projected $1,024,000 total costs.

CALCULATED RATES

Based on the costs allocated to each customer type, **Table 9** presents the calculated rates for 2009-10.

Table 6
City of Bishop
Sewer Enterprise Fund
Projected Costs and Distribution between Collection and Treatment System

DRAFT

	Annual Cost Adj. Factor	Current Costs 2008-09	Projected 2009-10	Allocation		Collection Cost	Treatment Cost
				Collection	Treatment		
		Years Inflated:	1				
Expenditures							
Salaries and Benefits	7.00%	$475,000	$508,250	20%	80%	$101,650	$406,600
Services and Supplies	5.00%	$85,600	$89,880	20%	80%	$17,976	$71,904
Capital Improvements	5.00%	$351,874	$369,468	20%	80%	$73,894	$295,575
Capital Equipment	5.00%	$32,695	$34,329	20%	80%	$6,866	$27,463
Capital Replacement	5.00%	$5,000	$5,250	20%	80%	$1,050	$4,200
Subtotal		**$950,169**	**$1,007,177**			**$201,435**	**$805,742**
Current Debt Service	0.00%	$11,200	$11,200	n/a	n/a		
Additional Debt Service	0.00%	$0	$0	n/a	n/a		
Reserve Fund/Coverage	0.00%	$0	$36,000	n/a	n/a		
Total		**$961,369**	**$1,054,377**				

"t6"

Table 7
City of Bishop
Sewer Enterprise Fund
Unit Cost Determination

DRAFT

Cost Category	Allocated Costs	Percent Allocation			Cost			Total Influent			Unit Cost Per:		
		Flow	BOD	SS	Flow	BOD	SS	Flow MG	BOD Klbs	SS Klbs	Mgal of Flow ($/Mgal)	Klb of BOD ($/Klb)	Klb of SS ($/Klb)
	(A)	*(B)*	*(C)*	*(D)*	*(E) = (A)*(B)*	*(F)=(A)*(C)*	*(G)=(A)*(D)*	*(H)*	*(I)*	*(J)*	*(K)=(E)/(H)*	*(L)=(F)/(I)*	*(M)=(G)/(J)*
	from Table 6								*from Table 4*				
Collection System Costs	$201,435	100%	0.00%	0.00%	$201,435	$0	$0	319.19	618.97	618.97	$631.09	$0.00	$0.00
Treatment Costs	$805,742	60%	20.00%	20.00%	$483,445	$161,148	$161,148	319.19	618.97	618.97	$1,514.61	$260.35	$260.35
Debt Service	$11,200	60%	20.00%	20.00%	$6,720	$2,240	$2,240	319.19	618.97	618.97	$21.05	$3.62	$3.62
Reserve Fund	$36,000	60%	20.00%	20.00%	$21,600	$7,200	$7,200	319.19	618.97	618.97	$67.67	$11.63	$11.63
SUBTOTAL	**$1,054,377**												
Other Cost Impacts													
Other Revenues	($30,650)	60%	20.00%	20.00%	($18,390)	($6,130)	($6,130)	319.19	618.97	618.97	($57.61)	($9.90)	($9.90)
Rounding	$273	60%	20.00%	20.00%	$164	$55	$55	319.19	618.97	618.97	$0.51	$0.09	$0.09
Total	**($30,377)**				**($18,226)**	**($6,075)**	**($6,075)**				**($57.10)**	**($9.82)**	**($9.82)**
TOTAL	**$1,024,000**										**$2,177.31**	**$265.78**	**$265.78**

"t7"

Table 8
City of Bishop
Sewer Enterprise Fund
Allocation of Costs to Flow, BOD, and SS by Customer Category

DRAFT

Unit Cost/Customer Category	Flow MG/Yr	BOD Klb/Yr	SS Klb/Yr	Collection Flow ($/Mgal)	Treatment Flow ($/Mgal)	Treatment BOD ($/Klb)	Treatment SS ($/Klb)	Debt Service Flow ($/Mgal)	Debt Service BOD ($/Klb)	Debt Service SS ($/Klb)	Reserve Fund Flow ($/Mgal)	Reserve Fund BOD ($/Klb)	Reserve Fund SS ($/Klb)	Subtotal	Other Revenue Impacts Flow ($/Mgal)	Other Revenue Impacts BOD ($/Klb)	Other Revenue Impacts SS ($/Klb)	Total
Unit Cost *(from Table 7)*				**$629.09**	**$1,509.82**	**$259.64**	**$259.64**	**$20.99**	**$3.61**	**$3.61**	**$67.46**	**$11.60**	**$11.60**	**$2,777**	**($56.92)**	**($9.79)**	**($9.79)**	**$2,701**
	(from Table 5)																	
Residential																		
Single Family Residence	55.39	92	92	$34,845	$83,627	$23,988	$23,988	$1,162	$333	$333	$3,736	$1,072	$1,072	**$174,157**	($3,153)	($904)	($904)	**$169,195**
Multi-Family Residence	99.76	166	166	$62,757	$150,616	$43,203	$43,203	$2,094	$601	$601	$6,729	$1,930	$1,930	**$313,664**	($5,678)	($1,629)	($1,629)	**$304,728**
Hotel Manager Quarters	1.73	3	3	$1,087	$2,609	$748	$748	$36	$10	$10	$117	$33	$33	**$5,433**	($98)	($28)	($28)	**$5,278**
Subtotal	**156.88**	**261.67**	**261.67**	**$98,688**	**$236,852**	**$67,939**	**$67,939**	**$3,292**	**$944**	**$944**	**$10,582**	**$3,035**	**$3,035**	**$493,253**	**($8,930)**	**($2,561)**	**($2,561)**	**$479,201**
Non-Residential																		
Church	1.54	2	2	$966	$2,319	$582	$582	$32	$8	$8	$104	$26	$26	**$4,653**	($87)	($22)	($22)	**$4,522**
Church Recreation Hall	0.86	1	1	$544	$1,304	$327	$327	$18	$5	$5	$58	$15	$15	**$2,617**	($49)	($12)	($12)	**$2,544**
Hospital	7.08	15	15	$4,451	$10,682	$3,830	$3,830	$148	$53	$53	$477	$171	$171	**$23,868**	($403)	($144)	($144)	**$23,176**
Lodge or Meeting Hall	0.38	1	1	$242	$580	$146	$146	$8	$2	$2	$26	$7	$7	**$1,163**	($22)	($5)	($5)	**$1,130**
Hall Bar	0.19	0	0	$121	$290	$73	$73	$4	$1	$1	$13	$3	$3	**$582**	($11)	($3)	($3)	**$565**
Public School	7.91	9	9	$4,976	$11,943	$2,227	$2,227	$166	$31	$31	$534	$99	$99	**$22,333**	($450)	($84)	($84)	**$21,714**
Other Student	0.31	0	0	$197	$473	$88	$88	$7	$1	$1	$21	$4	$4	**$885**	($18)	($3)	($3)	**$860**
Fairgrounds	0.67	1	1	$423	$1,015	$255	$255	$14	$4	$4	$45	$11	$11	**$2,036**	($38)	($10)	($10)	**$1,978**
Gas Station	5.66	12	12	$3,559	$8,542	$3,063	$3,063	$119	$43	$43	$382	$137	$137	**$19,085**	($322)	($115)	($115)	**$18,532**
Self Serve Car Wash	3.46	1	1	$2,174	$5,218	$150	$150	$73	$2	$2	$233	$7	$7	**$8,014**	($197)	($6)	($6)	**$7,806**
Beauty or Barber Shop	0.77	2	2	$483	$1,159	$399	$399	$16	$6	$6	$52	$18	$18	**$2,555**	($44)	($15)	($15)	**$2,482**
Bar	2.12	4	4	$1,333	$3,200	$918	$918	$44	$13	$13	$143	$41	$41	**$6,664**	($121)	($35)	($35)	**$6,475**
Hotel Room	39.65	103	103	$24,942	$59,861	$26,615	$26,615	$832	$370	$370	$2,675	$1,189	$1,189	**$144,658**	($2,257)	($1,003)	($1,003)	**$140,394**
Laundry	0.29	1	1	$181	$435	$281	$281	$6	$4	$4	$19	$13	$13	**$1,236**	($16)	($11)	($11)	**$1,198**
Laundromat	4.68	6	6	$2,947	$7,073	$1,522	$1,522	$98	$21	$21	$316	$68	$68	**$13,656**	($267)	($57)	($57)	**$13,274**
Restaurant	22.67	95	95	$14,264	$34,234	$24,549	$24,549	$476	$341	$341	$1,530	$1,097	$1,097	**$102,477**	($1,291)	($926)	($926)	**$99,336**
Trailer Dump Facility	0.38	1	1	$242	$580	$166	$166	$8	$2	$2	$26	$7	$7	**$1,207**	($22)	($6)	($6)	**$1,173**
Commercial/Other Facilities	64.70	108	108	$40,702	$97,686	$28,020	$28,020	$1,358	$389	$389	$4,365	$1,252	$1,252	**$203,435**	($3,683)	($1,056)	($1,056)	**$197,639**
Subtotal	**163.33**	**251.07**	**251.07**	**$160,491**	**$148,907**	**$65,189**	**$65,189**	**$2,070**	**$906**	**$906**	**$6,653**	**$2,913**	**$2,913**	**$357,689**	**($5,614)**	**($2,458)**	**($2,458)**	**$347,160**
TOTAL	**320.20**	**620.66**	**620.66**	**$201,435**	**$483,445**	**$161,148**	**$161,148**	**$6,720**	**$2,240**	**$2,240**	**$21,600**	**$7,200**	**$7,200**	**$1,054,377**	**($18,226)**	**($6,075)**	**($6,075)**	**$1,024,000**

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Table 9
City of Bishop
Sewer Enterprise Fund
Detailed Sewer Rate Calculation

DRAFT

Customer Category	Number of Customers	Allocated Cost	Annual Cost Per Customer	Monthly Cost Per Customer 2009-10 Mo. Charge	Basis of Charge	Current Charge
	(A)	*(B) See Table 8*	*(C)=(B)/(A)*	*(D)=(C)/12*		
Residential						
Single Family Residence	577	$169,195	$293.23	$24.44	Each	$20.00
Multi-Family Residence	1,299	$304,728	$234.59	$19.55	Unit	$16.00
Hotel Manager Quarters	18	$5,278	$293.23	$24.44	Each	$20.00
Subtotal		**$479,201**				
Non-Residential						
Church	16	$4,522	$282.62	$23.55	Each	$20.00
Church Recreation Hall	9	$2,544	$282.62	$23.55	Each	$20.00
Hospital	221	$23,176	$104.87	$8.74	Bed	$6.67
Lodge or Meeting Hall	4	$1,130	$282.62	$23.55	Each	$20.00
Hall Bar	2	$565	$282.62	$23.55	Each	$20.00
Public School	2,060	$21,714	$10.54	$0.88	Student	$0.80
Other Student	102	$860	$8.43	$0.70	Student	$0.64
Fairgrounds	1	$1,978	$1,978.36	$164.86	Each	$140.00
Gas Station	31	$18,532	$597.82	$49.82	Island	$8.00
Self Serve Car Wash	12	$7,806	$650.52	$54.21	Stall	$60.00
Beauty or Barber Shop	8	$2,482	$310.21	$25.85	Each	$20.00
Bar	276	$6,475	$23.46	$1.95	Seat	$1.60
Hotel Room	869	$140,394	$161.56	$13.46	Each	$5.00
Laundry	1	$1,198	$1,198.01	$99.83	Each	$60.00
Laundromat	61	$13,274	$217.61	$18.13	Washer	$16.00
Restaurant	2,362	$99,336	$42.06	$3.50	Seat	$2.00
Trailer Dump Facility	2	$1,173	$586.47	$48.87	Each	$40.00
Commercial/Other Facilities	674	$197,639	$293.23	$24.44	Toilet	$20.00
Subtotal		**$544,799**				
TOTAL		**$1,024,000**				

"t9"

PROJECTED CASH FLOW

Table 10 shows the projected cash flow for the ongoing operations and maintenance of the sewer enterprise fund. The revenue projections show the need for an immediate increase in sewer rates in 2009-10 and each subsequent year through 2013-14.

In order to minimize projected rate increases the calculated rates provide sufficient revenue to cover costs and minimum levels of net revenues. The accumulation of net revenues allows the City to build up an operating reserve. An operating reserve of approximately 6 months of operating costs would allow the City to be prepared in times of unforeseen costs or if revenues do not accumulate as projected. The rate projections as shown allow a reserve buildup of approximately 5.3 months of operating, maintenance, and capital costs over 5 years time.

Table 10
City of Bishop
Sewer Enterprise Fund
Projected Cash Flow

DRAFT

	Inflation Assumption	Current Cost Prj. 2008-09	Projected 2009-10	2010-11	2011-12	2012-13	2013-14
Revenues							
Monthly Charge		$20.00	$24.44	$25.96	$27.58	$29.30	$31.12
Annual Charge		$240	$293.23	$311.55	$331.02	$351.62	$373.38
Sewer Sales [1]		**$700,000**	**$1,024,000**	**$1,088,000**	**$1,156,000**	**$1,228,000**	**$1,304,000**
Other Revenues							
Penalties [2]		$4,000	$4,820	$5,120	$5,440	$5,780	$6,140
Interest Income		$40,000	$20,000	$20,000	$20,000	$20,000	$20,000
Other Revenues		$6,000	$6,000	$6,000	$6,000	$6,000	$6,000
Subtotal		**$50,000**	**$30,820**	**$31,120**	**$31,440**	**$31,780**	**$32,140**
Subtotal Revenues		**$750,000**	**$1,054,820**	**$1,119,120**	**$1,187,440**	**$1,259,780**	**$1,336,140**
Expenses							
Salaries and Benefits	7.0%	$475,000	$508,250	$543,830	$581,900	$622,630	$666,210
Services and Supplies	5.0%	$85,600	$89,880	$94,370	$99,090	$104,040	$109,240
Capital Equipment	5.0%	$32,690	$34,320	$36,040	$37,840	$39,730	$41,720
Capital Replacement	5.0%	$5,000	$5,250	$5,510	$5,790	$6,080	$6,380
Capital Improvements	5.0%	$351,870	$369,460	$387,930	$407,330	$427,700	$449,090
Subtotal Expenses		**$950,160**	**$1,007,160**	**$1,067,680**	**$1,131,950**	**$1,200,180**	**$1,272,640**
Net Revenue before Debt Service		**($200,160)**	**$47,660**	**$51,440**	**$55,490**	**$59,600**	**$63,500**
Debt Service							
Current Debt Service		$11,200	$11,200	$11,200	$11,200	$11,200	$11,200
Add'l Debt Service		$0	$0	$0	$0	$0	$0
Total Debt Service		**$11,200**	**$11,200**	**$11,200**	**$11,200**	**$11,200**	**$11,200**
Debt Service Coverage [3]		*(17.87)*	*4.26*	*4.59*	*4.95*	*5.32*	*5.67*
Net Revenue after Debt Service		**($211,360)**	**$36,460**	**$40,240**	**$44,290**	**$48,400**	**$52,300**
Beginning Operating Balance [4]		**$557,780**	$346,420	$382,880	$423,120	$467,410	$515,810
Net Revenues		($211,360)	$36,460	$40,240	$44,290	$48,400	$52,300
Ending Operating Balance		**$346,420**	**$382,880**	**$423,120**	**$467,410**	**$515,810**	**$568,110**
Target Operating Balance [5]		*$475,080*	*$503,580*	*$533,840*	*$565,975*	*$600,090*	*$636,320*

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[1] Sewer sales calculated by the model.

[2] Revenue penalties are tied to sewer sales (historically half a percent of sewer sales).

[3] Debt service coverage is the number of times that debt service (the amount of money necessary to pay interest and principal requirements for a given or series of years) would be covered by net revenues before debt service is subtracted.

[4] Beginning operating balance reflects unrestricted cash and cash equivalents as of July 1, 2008.

[5] The target operating balance represents 6 months of operating expenses, excluding debt service and depreciation.

Appendix A

SWRCB SRF Revenue Program User Characteristic Guidelines

POLICY FOR IMPLEMENTING THE STATE REVOLVING FUND FOR CONSTRUCTION OF WASTEWATER TREATMENT FACILITIES

Prepared by:
THE DIVISION OF FINANCIAL ASSISTANCE

STATE WATER RESOURCES CONTROL BOARD
STATE OF CALIFORNIA

Last amended on January 22, 2003

COMMERCIAL USER STRENGTH CHARACTERISTICS

STANDARD CLASSIFICATIONS	BOD_5(ppm)	SS(ppm)
Residential (average varies depending on average water usage per capita)	175 to 250	175 to 250
Auto Steam Cleaning	1,150	1,250
Bakery, wholesale	1,000	600
Bars without dining facilities	200	200
Car Wash	20	150
Department and Retail Store	150	150
Hospital and Convalescent	250	100
Hotel with dining facilities	500	600
Hotel/Motel without dining	310	120
Industrial Laundry	670	680
Laundromat	150	110
Laundry, commercial	450	240
Market with garbage grinders	800	800
Mortuary	800	800
Professional Office	130	80
Repair Shop and Service Station	180	280
Restaurant	1,000	600
School and College	130	100
Septage	5,400	12,000
Soft Water Service	3	55

TABLE G-1

Estimated water consumption at different types of establishments.

TYPE OF ESTABLISHMENT	FLOW in GPD per PERSON or UNIT
Dwelling units, residential:	
Private dwellings on individual wells or metered supply	50-75
Private dwellings on public water supply, unmetered	100-200
Subdivision dwelling on individual well, or metered supply, per bedroom	150
Subdivision dwelling on public water supply, unmetered, per bedroom	200
Dwelling units, multiple:	
Apartment houses on individual wells	75-100
Apartment houses on public water supply, unmetered	100-200
Hotels:	50-100
Boarding houses:	50
Lodging houses and tourist homes:	40
Motels, without kitchens, per unit:	100-150
Camps:	
Pioneer type	25
Children's, central toilet and bath	40-50
Day camp, no meals	15
Luxury, private bath	75-100
Labor	35-50
Trailer with private toilet and bath, per unit	125-150*
Restaurants (including toilet):	
Average	7-10
Kitchen wastes only	2.5-3
Short order	4
Short order, paper service	1-2
Bars and cocktail lounges:	2
Average type, per seat	35
Average type, 24 hour, per seat	50
Tavern, per seat	20
Service area, per counter seat (highway)	350
Service area, per table seat (highway)	150
Institutions:	
Average type	75-125
Hospitals	150-250
Schools:	
Day	5-10
Day, with cafeteria or lunch room	10-15
Day, with cafeteria and showers	15-20
Boarding	75
Theaters:	
Indoor, per seat, two showings per day	3
Outdoor, including food stand, per car	3-5
Automobile service station:	
Per vehicle served	10
Per set of pumps	500
Stores:	
First 25 feet of frontage	450
Each additional 25 feet of frontage	400
Country clubs:	
Resident type	100
Transient type, serving meals	17-25
Offices:	10-15
Factories, sanitary wastes, per shift:	15-35
Self service laundry:	250-500
Bowling alleys, per alley:	200
Swimming pools and beaches, toilet and shower:	10-15
Picnic parks, with flush toilets:	5-10
Fairgrounds (based on daily attendance):	1
Assembly halls, per seat:	2
Airport, per passenger:	2½

* Add 125 gal. per space for lawn sprinkling, car washing, leakage, etc. NOTE: Water under pressure, flush toilets, and wash basins are assumed unless otherwise noted. Figures are flows per capita per day unless otherwise stated.

TABLE G-2

Design unit sewage flows for recreational facilities

(Yellowstone National Park)

Establishment	Unit	Flow in gpd
Cafeteria	Table seat	150
Campground (developed)	Person	25
Cocktail lounge	Seat	20
Coffee shop	Counter seat	250
Dining room	Table seat	150
Dormitory, bunkhouse	Person	50
Fish cleaning station	Station	7,500
Gas station	Station	2,000-5,000
Hospital	Bed	200
Hotel	Person	75
Laundromat	Washing machine	500
Lodge or cabins	Person	50
Mess hall	Person	15
Offices and stores	Employee	25
Residence homes, apartments	Person	75
Trailer village	Person	35
Visitor centers	Visitor	5

TABLE G-3

Sewage flows from commercial districts

Establishment	Unit	Flow in gpd
Airport	Passenger	5
Hotel	Person	100
Motel	Person	50
Restaurant	Meal	7
Shopping Center	Employee	60
Small business	Employee	20
Theater	Seat	5

TABLE G-4

Average sewerage flows from institutional facilities

Establishment	Unit	Flow in gpd
Elementary schools	Student & Staff	10
High schools	Student & Staff	20
Medical Hospital	Patient & Staff	175
Mental hospital	Patient & Staff	125
Prisons	Inmate & Staff	175

TABLE G-5

Miscellaneous water usage estimates

Item	Unit	Avg. gal. used
Air conditioner, home type, water cooled	gpd	2,880
Automatic home laundry machine	Load	30-50
" " " "	Person	6½-9
Bathtub	Per Use	30
Dishwashing machine, home type	Load	4-8
" " " "	Person	6
Dishwashing machine, commercial type, stationary rack	gpm	6-9
" " " " , Conveyor type	gpm	4-6
Drinking fountain, continuous flowing	gph	75
Garbage disposal, home type	Person	1-4
Shower head	Per Use	25-30
Wash basin	Per Use	1½
Water closet, tank	Per Use	4-5
Water closet, flush valve	gpm	30

TABLE G-6

Typical composition of domestic waste

Constituent	Strong	Medium	Weak
Alkalinity (as CaCO3)*	200	100	50
Biochemical Oxygen Demand, 5-day, 20°C (BOD_5)	300	200	100
Chemical Oxygen Demand (COD)	1000	500	250
Chlorides*	100	50	30
Grease	150	100	50
Nitrogen, (total as N)	85	40	20
Organic	35	15	8
Free ammonia50	50	25	12
Nitrites	0	0	0
Nitrates	0	0	0
Phosphorus, (total as P)	20	10	6
Organic	5	3	2
Inorganic	15	7	4
Settleable solids, (ml/liter)	20	10	5
Solids, total	1200	700	350
Dissolved, total	850	500	250
Fixed	525	300	145
Volatile	325	200	105
Suspended, total	350	200	100
Fixed	75	50	30
Volatile	275	150	70
Total organic carbon (TOC)	300	200	100

NOTE: All values except settleable solids are expressed in mg/liter. * Values should be increased by amount in carriage water.