



TOWN OF YOUNTVILLE

RECYCLED WATER RATE

STUDY 2012

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Background and Objectives

Since 1977, the Town of Yountville (Town) has operated the Joint Wastewater Treatment Plant (JTP) for the Town and the State of California Veterans Home, and the JTP has produced recycled water for irrigation. The Town is in the process of expanding its recycled water system in order to reduce discharges to the Napa River. The Town must upgrade the recycled water infrastructure by December 2013 and the existing SCADA system by December 2015 to comply with NPDES (National Pollutant Discharge Elimination System) permit requirements issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB). In September 2011, Winzler & Kelly completed the *Technical Memorandum 2 Town of Yountville Recycled Water Expansion Project – Feasibility Study* which presented several alternatives for expanding the system to serve additional customers.

Bartle Wells Associates (BWA) has been retained to evaluate recycled water rates for both existing and potential customers based on the expansion project alternatives. Recycled water rates are typically designed to achieve a balance of different objectives than potable rates. Whereas the purpose of potable water rates is to recover the cost of providing service, the goal of the Town's recycled water rates is to provide incentive to use or transition to recycled water. The continued use of recycled water is essential in meeting the Town's goals of reducing effluent discharge and making beneficial use of all recycled water generated at the Joint Treatment Plant (JTP) year round which will reduce groundwater pumping, River water pumping, and the reliance on purchasing water. The purpose of this recycled water rate study is to:

- Continue serving existing customers while expanding the system to add new customers
- Encourage customers to purchase recycled water during the winter months
- Develop a rate structure that prices recycled water competitively compared to other options for irrigation
- Recover revenue to offset a portion of recycled water system expenses
- Provide consistency in rates and agreement terms among customers.

This report summarizes our recycled rate recommendations based on input from the Town Council, the project team including Town staff and engineers, and both current and potential future recycled water customers.

Current Recycled Water Rates

The costs of providing recycled water are commonly recovered from a combination of methods with the costs being shared among wastewater rate payers, the California Department of Veterans Affairs, and recycled water customers. For the Town of Yountville, recycling water is an essential component in the overall wastewater system that minimizes effluent discharges into the Napa River and thereby benefitting all customers. As so, the recycled water rates should reflect the purpose for why the recycled water system was developed. The recycled water system has historically been primarily funded with wastewater revenues and will continue to do so in the future. For 2011/12, the Town's annual recycled water sales revenue is estimated at \$30,000, accounting for approximately 3 percent of total revenues for the Wastewater Utility Enterprise.

The current recycled water rates are negotiated by user agreements. The rate structure is comprised of a fixed monthly meter charge and a usage charge per acre foot based on the amount of recycled water purchased. The meter charge ranges from \$150 to \$668 per month and does not change annually. For all customers, the consumption charge is \$108 per acre foot (AF) (except for Mondavi which is charged \$103.19 per AF). The consumption charges are escalated 5 percent each year. Table 1 summarizes the Town’s current recycle water customers and rates.

Table 1. Current Recycled Water Rates									
Customer	Monthly Meter Charge	Usage Charge per AF (1)	Month Rate Adjusted	Original Contract Date	Base Allocation Months	Estimated 2011			
						Recycled Water Use (AF)	Annual Meter Charge (2)	Annual Consumption Charge (3)	Total Recycled Water Charge
Vintner's Golf Club	n/a	n/a	n/a	1994	Year-round	61.34	\$0	\$0	\$0
Chimney Rock	\$13	\$108	Apr	1979	Jun - Oct	38.05	\$63	\$4,109	\$4,172
Stag's Leap	\$495	\$108	Sept	Jan-98	April - Oct	51.67	\$3,465	\$5,581	\$9,046
Clos du Val/Regusci	\$667.57	\$108	July	Jul-03	Jun - Oct	48.88	\$3,338	\$5,279	\$8,617
Mondavi	n/a	\$103.19	Nov	Nov-09	Nov-May	<u>71.19</u>	<u>\$0</u>	<u>\$7,346</u>	<u>\$7,346</u>
Total						209.79	\$6,865	\$22,315	\$29,181
						% of Total	23.5%	76.5%	100.0%

1 - Use Charge is increased 5% annually based on agreement date.
2 - The meter charge is only charged in the months when recycled water is purchased.
3 - Customers are only charged for consumption during their respective base allocation months.

Current Recycled Water Users

The Town currently has 5 recycled water customers including the Vintner’s Golf Course and four vineyards. These existing customers are known as “Tier 1” customers and have priority to receive recycled water. Based on an agreement with the Veteran’s Home and the State of California, the Vintner’s Golf Course is not charged for recycled water. The recycled water rates for the other four customers generally include a monthly meter charge and a consumption rate per acre foot. Each contract has an average delivery rate of 88,000 (0.088 mgd) or a total minimum delivery rate of 0.264. The Town can always meet the minimum daily flow to each of its users.

Between 2004 and 2011, the Town has on average supplied 236 AF per year (AFY) of recycled water to the Tier 1 existing customers, not including Mondavi whose short-term agreement to purchase recycled water from the Town was first negotiated in 2009. Since then, the Town has provided an average of 333 AFY to the current recycled water customers. Annual recycled water deliveries are shown on Table 2.

Table 2. Annual Recycled Water Supplies to Current Customers in Acre Feet (1)

Customer	2004	2005	2006	2007	2008	2009	2010	2011	8-Yr Avg
Vintner's Golf Club	80.09	122.22	89.17	60.69	82.48	74.50	47.19	61.34	77.21
Chimney Rock	59.28	62.84	64.38	72.20	80.27	66.89	40.93	38.05	60.61
Stag's Leap	40.17	24.15	25.22	47.87	45.50	76.04	54.50	51.67	45.64
Clos du Val/Regusci	51.76	40.56	43.17	58.64	67.87	69.41	42.25	48.88	52.82
<u>Mondavi (2)</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>91.12</u>	<u>97.72</u>	<u>71.19</u>	<u>86.68</u>
Total	231.30	249.77	221.94	239.40	276.12	377.96	282.59	271.13	322.95
Percent Change		8.0%	-11.1%	7.9%	15.3%	36.9%	-25.2%	-4.1%	

1 - Winzler & Kelly calculates an average of 336 AF over the same period by including estimates of use for frost protection during December through April.

2 - Based on a 3-year average since Mondavi began purchasing water in 2009.

- **Vintner's Golf Club**

The Veteran's Home and Vintner's Golf has been using recycled water since 1977 when the Joint Treatment Plant was constructed. The land is owned by the State of California and was included in the original water reuse permit. In 1994, the State leased the property to the R.B. Imo Corporation who developed the golf course. The Vintners Golf Course opened in 1998 and includes a 9-hole public golf course, driving range, clubhouse/restaurant, parking lot, and three ornamental storage ponds. The golf club surrounds the Joint Treatment Plant and is located directly east of the Veteran's Home. The terms of the lease extends 30 years from the opening of the golf course. The agreement entitles the golf course to a volume of recycled water equal to the amount of wastewater produced by the Veterans Home and is supplied as needed year-round for no charge. In 2011, the Town supplied Vintner's Golf Club with 61.34 AF of recycled water.

- **Chimney Rock (CRP Associates, LLC)**

The Chimney Rock site has been utilizing recycled water from the Town since 1979 and was included in the original water reuse permit. Originally a golf course, the site was purchased in 1999 by CRP Associates who removed the golf course. The site is now a winery and vineyard located roughly 4 miles east of the Joint Treatment Plant. Chimney Rock is guaranteed a base allocation of 88,000 gpd of recycled water during the months of June through October. If supply is sufficient, they may request additional water not exceeding 21 million gallons per calendar year. The vineyard's two storage ponds have a capacity of 30 AF and 4.8 AF. The current monthly meter charge is \$150 and the consumption charge is \$108 per AF. In 2011, the Town supplied Chimney Rock with 38.05 AF of recycled water.

- **Stag's Leap Wine Cellars**

Stag's Leap Wine Cellars is located approximately 3 miles east of the Joint Treatment Plant, and the site contains vineyards, related improvements, and an irrigation pond with 129.6 acres of vineyards. The original agreement was negotiated in January 1998 and was later updated in September 2003. Stag's Leap is guaranteed a base allocation of 88,000 gpd of recycled water during the months of April through October. If supply is sufficient, Stag's Leap may request additional water not exceeding 25 million gallons per calendar year. The vineyard's two storage ponds have a combined capacity of 8.5

AF. The current monthly meter charge is \$495, and the consumption charge is \$108 per AF. In 2011, the Town supplied Stag's Leap with 51.67 AF of recycled water.

- **Clos Du Val/Regusci Vineyards (Clos Du Val Wine Company Ltd and Regusci-Simone Ranch Limited Partnership)**

Clos Du Val/Regusci Vineyards is comprised of four separate parcels located approximately 4 miles east of the Joint Treatment Plant, and the site contains vineyards, related improvements, and an irrigation pond with 184.1 acres of vineyards. The original agreement was negotiated in January 1998 and was later updated in September 2003. Clos Du Val/Regusci is guaranteed a base allocation of 85,000 gpd of recycled water during the months of June through October. If supply is sufficient, Clos Du Val/Regusci may request additional water not exceeding 25 million gallons per calendar year. The vineyard's storage pond has a total capacity of 49.5 AF. The current monthly meter charge is \$667.57, and the consumption charge is \$108 per AF. In 2011, the Town supplied Clos Du Val/Regusci with 48.88 AF of recycled water.

- **Robert Mondavi Vineyards**

The Mondavi Wappo Hill Vineyards include 377 acres of vineyards. In 2009, the Town entered into a short-term agreement with Mondavi to purchase recycled water during the winter months of November through March. The agreement was renewed in November 2010. Mondavi diverts water from the Napa River to fill their ponds, however they can only do so when there is sufficient flow. The vineyard has sufficient storage and can store recycled water for irrigation use during the summer and for frost protection in early spring. Mondavi can purchase up to 120 AF of recycled water annually at a rate of \$103.19 per AF. The vineyard is not charged a monthly meter charge. In 2011, the Town supplied Mondavi with 71.19 AF of recycled water.

Although Mondavi currently purchases recycled water from the Town, Mondavi is not considered a Tier 1 customer. Under the terms of the current agreement, the golf course and other vineyards customers have priority to purchase recycled water before Mondavi .

Peak vs. Off-Peak Seasons

Between 2007 and 2010, the Town's total average annual effluent was 429 AFY (Table 2-1, *Technical Memo 2 Recycled Water Expansion Project – Feasibility Study*). The Town is currently allowed to discharge into the Napa River between October 1 and May 15 provided that there is sufficient dilution (43:1 ratio) in the river.

The Town's demand for recycled water is based on seasonal storage and fluctuates based on the need for irrigation. The peak demand season for recycled water is the dry months during the months of June through October. The off-peak season is the wet season during the months of November through May when there is typically little demand for irrigation and excess recycled water. Based on existing agreements, only Tier 1 customers would have priority to purchase recycled water during the peak season. The proposed expansion project will extend the recycled water system to additional customers and all

agreements will be re-negotiated to provide access to water during the peak season while encouraging taking water in the off-peak season for storage and later use.

Table 3. Peak vs. Off-Peak Season	
Season	Dates
Peak	June 1 - October 31
Off-Peak	November 1 - May 31

Tier 2 Customers - Potential Recycled Water Users

The *Technical Memorandum 2 Town of Yountville Recycled Water Expansion Project –Feasibility Study* identifies three new potential recycled water customers. The new “Tier 2” customers include: Beringer, Herrick Ranch, and Silverado West and East. Based on Winzler & Kelly’s estimates of irrigation per acre, the total demand for the new Tier 2 customers is 446 AF/year. Mondavi is also considered a Tier 2 customer because they currently do not have priority to purchase water during the peak season. Table 4 summarizes the Tier 2 customers and their vineyard surface area. It is important to note that the list of potential customers has not contractually agreed to receive recycled water, but all have expressed interest in using recycled water for irrigation.

Table 4. Potential Tier 2 Customers	
Customer	Area (Acres)
1. Beringer	240
2. Herrick Ranch	171
3. Mondavi	318
4. Silverado	
East	130
West	<u>94</u>
Total Potential Tier 2 Customers	953

Recycled Water Expansion Project Alternatives

To comply with mandated permit requirements, the Town is currently conducting a feasibility study examining several expansion alternatives. Each alternative will fund distribution pipelines and other infrastructure that will enable the Town to deliver recycled water to additional customers and thereby minimizing discharges to the Napa River and pumping from the River and groundwater. The feasibility study is on track for completion in May 2012. As shown on Table 5, the alternatives range from an estimated cost of \$1.4 million to \$11.7 million with the ultimate decision based on input the RWQCB.

Table 5. Recycle Water System Expansion Project Alternatives		
Alternative	Est. Project Cost	Description
1	\$3,200,000	Base Project - Expansion to Beringer, Herrick Ranch & Silverado West
2	\$4,300,000	Expansion to all Tier 2 customers
3	\$11,700,000	Expansion to all Tier 2 and future Tier 3 customers
4	\$1,429,000	Minimum Project - Expansion to Silverado West and Herrick Ranch

In April 2012, the Town received confirmation from RWQCB that to comply with the requirements of the Town’s NPDES permit the expansion project needs to add additional customers. As such, the recycled water rates and debt service estimates included in this report cover a range of possible scenarios for comparative purposes.

Project Funding Options

BWA evaluated several financing options and forecasted annual debt service payments for each of the project alternatives for three funding options – 1) 25% USBR Grant / 75% SRF Loan, 2) 100% SRF Loan, and 3) 100% Revenue Bond or COP Funding. Table 6 summarizes the projected annual debt service payments for the four project alternatives based on a 20 year term.

- **25% USBR Grant / 75% SRF Loan**

The U.S. Bureau of Reclamation (USBR) administers funds for recycled water feasibility and construction projects through the Water Reclamation and Reuse Program authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI). Projects are authorized by Congress and recommended in the President’s annual budget request by the Bureau of Reclamation. Congress then appropriates funds and the Bureau ranks and prioritizes projects and disburses the money. The program provides as much as 25 percent of construction costs with a maximum of \$20 million. To be eligible, a project must have a feasibility study, comply with environmental regulations, and demonstrate the ability to pay the remainder of the construction costs. Projects that receive precedence are those that postpone the development of new water supplies, reduce diversions from natural watercourses, decrease demand on federal water supply facilities, or that have a regional or watershed perspective.

To finance the remaining 75 percent of the expansion project, the Town can apply for a low cost loan through the Clean Water State Revolving Fund (SRF) Financial Assistance program administered by the State Water Resources Control Board (SWRCB). The SRF loan program offers 20-year fixed-rate loans for eligible wastewater projects. The program can currently be used to fund up to \$50 million of projects per year. The interest rate is set at roughly one half of the state’s general obligation bond rate; current interest rates are around 2.6%. Debt service repayment starts one year after the project is completed. The program does not fund the replacement of facilities that were previously grant-funded. Debt repayment is typically secured by an agency’s legal pledge to raise rates and fees as needed to repay debt service. Before loans are awarded, agencies need to complete a credit check process which includes a thorough review of the enterprise’s finances. Rates also need to be adopted

and in place before the loan will be awarded. The Town will also have to legally abide by the debt covenants designed to ensure adequate repayment security. The debt service covenant requirement requires the Town to maintain a debt service coverage ratio of 120 percent on income from all revenues. Therefore, rates must be designed to ensure adequate coverage.

- **100% SRF Loan**

If the USBR grant funding is unavailable, the Town may also apply for a SRF loan to pay for the entire project cost. The same terms apply as described in the first option. Of the options evaluated, this is the second least expensive option.

- **Revenue Bond and Certificates of Participation (COPs) Financing**

Revenue bonds and Certificates of Participation (COPs) are the most common types of debt financing used by utility enterprises, such as water and wastewater agencies. Although there are some technical differences between bonds and COPs, both function almost exactly the same from the issuer’s standpoint. The security is the same for both types of borrowings, they are rated identically by the ratings agencies, and they bear the same interest costs in the marketplace. The key difference is that COPs are not considered “debt” under California law and therefore do not require voter authorization.

Debt repayment is secured by an agency’s binding legal pledge to raise rates and charges necessary to repay debt and achieve a specified debt service coverage ratio. Revenue bonds and COPs are typically issued with terms of up to 30 years and offer relatively low tax-exempt municipal interest rates.

Table 6. Estimated Annual Debt Service Estimates (Assumes 20-Year Term)				
Financing Mechanism	Alternative 1: \$3.2M	Alternative 2: \$4.3M	Alternative 3: \$11.7M	Alternative 4: \$1.4M
25% USBR Grant / 75% SRF Loan	\$169,000	\$227,000	\$617,000	\$75,000
100% SRF Loan	\$225,000	\$302,000	\$822,000	\$100,000
Revenue Bonds / COPs	\$286,100	\$379,900	\$1,063,400	\$139,100

The Town is currently pursuing the USBR grant and SRF loan option and has already received two planning grants – a \$75,000 grant from the SWRCB and a \$65,000 USBR planning grant. BWA recommends that the Town first apply for grants and loans as they are most often the lowest cost option before issuing bonds or COPs. Borrowing assumptions for each funding option are included in the appendices. The assumptions and debt service estimates will be updated when the Town selects an expansion project alternative as the rates and costs of each option may vary somewhat from current levels.

Approach to Structuring Recycled Water Rates

Water rates are typically structured based on a cost of service approach with the rates set to recover the entire cost of providing water service each year. However, the cost of service approach is not always feasible with recycled water as these expenditures are often shared with the water and/or wastewater

systems. The Town does not currently separate out the operating costs between the wastewater and recycled water systems because these systems are interrelated. All expenditures related to the recycled water system costs are included in the wastewater budget and are funded by the Town’s wastewater customers and the Veterans Home.

Town staff analyzed preliminary cost estimates for providing recycled water independent of wastewater. However, given the small recycled water customer base, the draft calculations resulted in significantly higher rates than the current rates. Therefore, the next step was to utilize a hybrid cost recovery/market-based approach that recovered a portion of expenses while taking into consideration how much current and future customers are willing to pay for recycled water. With this approach, the recycled water rates were structured to balance two objectives – recognizing that recycled water is a valuable commodity and that customers have other options for irrigation water while recouping a portion of operating costs so that the recycled water system is not entirely funded by wastewater customers and the Veteran’s Home. The Town can always transition to a rate structure based on additional revenue recovery in the future once the expansion project has been completed.

Recycled Water Utility Costs

Table 6-1 in the *Technical Memorandum 2 Town of Yountville Recycled Water Expansion Project – Feasibility Study* estimated the annual energy costs for pumping recycled water. These utility costs account only for the pumping of the recycled water from the Town’s storage ponds to each customer. The estimate also includes an allocation for staff based on 196 hours annually at \$100 an hour. Table 7 estimates annual pumping expenses at \$54,100 assuming that the Town will pump an average of 336 AF of recycled water each year.

Table 7. Average Annual Recycled Water Pumping Costs	
Average annual recycled water pumped 2004-2010 (AFY)	336
Average pumping rate (gpm)	350
Total hours of pumping per year	5,214
Rated pump power (hp)	40
Horsepower to kilowatt conversion	0.746
kW hr consumed per yr (assumes 90% electrical efficiency)	172,860
kW hr per million gallons pumped	1,579
Avg cost per kW hr	\$0.20
Avg annual pump operation cost	\$34,500
<u>O&M (based on 196 hours annually at \$100/hr)</u>	<u>\$19,600</u>
Total Annual Cost	\$54,100
Source: Table 6-1, Town of Yountville Recycled Water Expansion Project - Feasibility Study	

Proposed Recycled Water Rate Structure

The purpose of this study is to recover costs equitably while providing consistency in rates and agreement terms among customers. The current contracts for Tier 1 customer were negotiated separately in different years, and therefore the rates and annual adjustment periods for each customer vary. The proposed recycled water rate structure would apply to all recycled water customers and is based on a two-tiered rate structure based on customer priority and seasonal demand as shown on Table 8. The rates for the peak season (June 1 through October 31) are given priority to the Tier 1 customers while the rates for the off-peak season (November 1 through May 31) are designed to encourage customers in Tier 2 to purchase recycled water when there is an excess supply.

Table 8. Proposed Recycled Water Rate Tiered Structure	
Customer Priority	Season
Tier 1 Customers Chimney Rock Clos du Val Stag's Leap	Peak (June 1 - October 31)
Tier 2 Customers Beringer Herrick Ranch Mondavi Silverado East and West	Off-Peak (November 1 - May 31)

The proposed recycled water rates will be comprised of both a fixed charge and a consumption charge based on the amount of recycled water purchased. Similar to the Town's current domestic water rates, the monthly fixed charge is the total of the meter charge and system replacement charge. The meter charge recovers the fixed costs related to the recycled water system irrespective of the amount of recycled water sold while the system replacement charge recoups the costs for repairs and replacements of recycled water assets. The fixed charge will be charged 12 months of each year regardless of whether a customer purchases any recycled water. The consumption charge is a per acre foot charge based on the annual pumping costs shown on Table 7. Table 9 summarizes the proposed recycled water rate components.

Table 9. Proposed Recycled Water Rate Components		
Rate Component	Purpose	Calculation
<i>Fixed Charge</i>		
Meter Charge	Recover fixed costs	Annual debt service for expansion project
System Replacement Charge	Recover Annual repairs and replacements	Estimated Depreciation for Recycled Water System
<i>Variable Charge</i>		
	Recover utility costs that vary based on the amount of water sold	Estimated pumping costs
Monthly Recycled Water Rate = Fixed Charge (Meter Charge + System Replacement Charge) + Variable Charge per Acre Foot Purchased		

Stakeholder's Input

On March 23, 2012, the Town held a second stakeholder's meeting to gain input on the proposed recycled water rates from both current and future customers. Representatives from six wineries including Beringer Vineyards, Chimney Rock, Clos du Val, Herrick Ranch, Mondavi, and Stag's Leap Wine Cellars, discussed the expansion alternatives and the viability of recycled water compared to other sources of water for irrigation. All attendees agreed that the recycled water system is beneficial to the Town, vineyards, and environment as a whole. The stakeholders were amenable to the proposed tiered rate structure and rate components and provided valuable recommendations including:

- During the off-peak season, the Tier 2 consumption charge should be 50 percent of the peak season charge.
- Tier 1 customers could consider relinquishing a portion of their base allocation during the peak season to allow Tier 2 customers to purchase water during the summer months.
- Annual increases to both the fixed charges and consumption charges should be predictable.

The Town still needs to negotiate contract terms with both current and future customers once the expansion project alternative has been selected and will likely hold additional stakeholder meeting(s) in the future.

Proposed Recycled Water Rate Calculations

Tables 10 through 13 detail the proposed recycled rate calculations for each project alternative. The rates shown assume that the Town will finance the selected project with a 25% USBR grant / 75% SRF loan which is the lowest cost borrowing option.

Fixed Charge (Meter Charge + System Replacement Charge)

The meter charge component varies based on the project selected and estimated annual debt service. The capital costs of the expansion will be shared with the Town's wastewater customers. In 2010, the Town completed a five-year wastewater study which included a borrowing to fund a recycled water expansion project. The monthly meter charge ranges from \$8.83 to \$72.62.

The system replacement charge also varies based on the total number of current and future recycled water customers. Annual depreciation is assumed to be 10 percent of the total depreciation included in the 2011/12 wastewater/recycled water budget. Depending on the project alternative, the monthly system replacement charge ranges from \$191 to \$236.

Consumption Charge

For all project alternatives, the consumption charge for the peak season is \$161.01 per acre foot, and the charge during the off-peak season is half of the peak season charge at \$80.51 per acre foot.

Table 10. Recycled Water Rate Calculation - Alternative 1: \$3.2M (1)		
	Tier 1 Customers	Tier 2 Customers
Monthly Fixed Meter Charge		
Annual Debt Service for \$3.2M Expansion Project (Table 6) (1)	\$169,000	\$169,000
<u>Total Number of Wastewater Customers</u>	<u>708</u>	<u>708</u>
Annual Meter Charge	\$238.70	\$238.70
Monthly Meter Charge	\$19.89	\$19.89
Monthly Fixed System Replacement Charge		
Depreciation/Annual Replacement Cost (2)	\$15,730	\$15,730
<u>Total Number of Recycled Water Customers</u>	<u>7</u>	<u>7</u>
Annual System Replacement Charge	\$2,247.14	\$2,247
Monthly System Replacement Charge	\$187.26	\$187.26
Total Monthly Fixed Charge	\$207	\$207
Consumption Charge		
Average Annual Recycled Water Pumping Costs (Table 7)	\$54,100	-
<u>Current Average Annual Effluent Produced (AF)</u>	<u>336</u>	-
Consumption Charge per AF	\$161.01	-
50% of Tier 1 Consumption Charge (per AF)	-	\$80.51
<i>Consumption Charge per 1,000 gallons</i>	<i>\$0.49</i>	<i>\$0.25</i>
<i>Consumption Charge per HCF</i>	<i>\$0.37</i>	<i>\$0.18</i>
1 - Assumes project is financed with a 25% USBR grant and 75% SRF loan		
2 - Based on 10% of depreciation included in 2011/12 Wastewater/Recycled Water Budget		

Table 11. Recycled Water Rate Calculation - Alternative 2: \$4.3M (1)		
	Tier 1 Customers	Tier 2 Customers
Monthly Fixed Meter Charge		
Annual Debt Service for \$4.3M Expansion Project (Table 6)	\$227,000	\$227,000
<u>Total Number of Wastewater Customers</u>	<u>708</u>	<u>708</u>
Annual Meter Charge	\$320.62	\$320.62
Monthly Meter Charge	\$26.72	\$26.72
Monthly Fixed System Replacement Charge		
Depreciation/Annual Replacement Cost (2)	\$15,730	\$15,730
<u>Total Number of Recycled Water Customers</u>	<u>8</u>	<u>8</u>
Annual System Replacement Charge	\$1,966.25	\$1,966
Monthly System Replacement Charge	\$163.85	\$163.85
Total Monthly Fixed Charge	\$191	\$191
Consumption Charge		
Average Annual Recycled Water Pumping Costs (Table 7)	\$54,100	-
<u>Current Average Annual Effluent Produced (AF)</u>	<u>336</u>	-
Consumption Charge per AF	\$161.01	-
50% of Tier 1 Consumption Charge (per AF)		\$80.51
<i>Consumption Charge per 1,000 gallons</i>	<i>\$0.49</i>	<i>\$0.25</i>
<i>Consumption Charge per HCF</i>	<i>\$0.37</i>	<i>\$0.18</i>
1 - Assumes project is financed with a 25% USBR grant and 75% SRF loan		
2 - Based on 10% of depreciation included in 2011/12 Wastewater/Recycled Water Budget		

Table 12. Recycled Water Rate Calculation - Alternative 3: \$11.7M (1)		
	Tier 1 Customers	Tier 2 Customers
Monthly Fixed Meter Charge		
Annual Debt Service for \$11.7M Expansion Project (Table 6)	\$617,000	\$617,000
<u>Total Number of Wastewater Customers</u>	<u>708</u>	<u>708</u>
Annual Meter Charge	\$871.47	\$871.47
Monthly Meter Charge	\$72.62	\$72.62
Monthly Fixed System Replacement Charge		
Depreciation/Annual Replacement Cost (2)	\$15,730	\$15,730
<u>Total Number of Recycled Water Customers</u>	<u>8</u>	<u>8</u>
Annual System Replacement Charge	\$1,966.25	\$1,966
Monthly System Replacement Charge	\$163.85	\$163.85
Total Monthly Fixed Charge	\$236	\$236
Consumption Charge		
Average Annual Recycled Water Pumping Costs (Table 7)	\$54,100	-
<u>Current Average Annual Effluent Produced (AF)</u>	<u>336</u>	-
Consumption Charge per AF	\$161.01	-
50% of Tier 1 Consumption Charge (per AF)		\$80.51
<i>Consumption Charge per 1,000 gallons</i>	<i>\$0.49</i>	<i>\$0.25</i>
<i>Consumption Charge per HCF</i>	<i>\$0.37</i>	<i>\$0.18</i>
1 - Assumes project is financed with a 25% USBR grant and 75% SRF loan		
2 - Based on 10% of depreciation included in 2011/12 Wastewater/Recycled Water Budget		

Table 13. Recycled Water Rate Calculation - Alternative 4: \$1.4M (1)		
	Tier 1 Customers	Tier 2 Customers
Monthly Fixed Meter Charge		
Annual Debt Service for \$1.4M Expansion Project (Table 6)	\$75,000	\$75,000
<u>Total Number of Wastewater Customers</u>	<u>708</u>	<u>708</u>
Annual Meter Charge	\$105.93	\$105.93
Monthly Meter Charge	\$8.83	\$8.83
Monthly Fixed System Replacement Charge		
Depreciation/Annual Replacement Cost (2)	\$15,730	\$15,730
<u>Total Number of Recycled Water Customers</u>	<u>6</u>	<u>6</u>
Annual System Replacement Charge	\$2,621.67	\$2,622
Monthly System Replacement Charge	\$218.47	\$218.47
Total Monthly Fixed Charge	\$227	\$227
Consumption Charge		
Average Annual Recycled Water Pumping Costs (Table 7)	\$54,100	-
<u>Current Average Annual Effluent Produced (AF)</u>	<u>336</u>	-
Consumption Charge per AF	\$161.01	-
50% of Tier 1 Consumption Charge (per AF)		\$80.51
<i>Consumption Charge per 1,000 gallons</i>	<i>\$0.49</i>	<i>\$0.25</i>
<i>Consumption Charge per HCF</i>	<i>\$0.37</i>	<i>\$0.18</i>
1 - Assumes project is financed with a 25% USBR grant and 75% SRF loan		
2 - Based on 10% of depreciation included in 2011/12 Wastewater/Recycled Water Budget		

Annual Rate Increases

The consumption charges for recycled water rates are currently escalated by 5 percent each year. BWA recommends escalating both the fixed and consumption charges yearly by the change in the Engineering News Record Construction Cost Index (ENR CCI). The ENR CCI index is commonly used by utilities to adjust rates to account for inflation on an annual basis. The Town currently uses the ENR CCI to increase development impact fees each year. To ease administration for Town staff, rates should be increased at the same time each year for all recycled customers. BWA recommends conducting another recycled rate study in five years to update the assumptions used in this study.

Survey

BWA conducted a recycled water rates survey comparing rates for a variety of regional agencies. The survey is for general informational purposes only; each agency's recycled water system is unique and rates are structured and set accordingly to meet each individual system's operating and capital needs. As shown on Table 10, recycled water rates vary widely throughout the State. The conversion from acre-feet (AF) to hundred cubic feet (HCF) is 43.56 HCF per AF, so \$161.01 per AF is equal to \$0.37 per HCF.

Table 9. Survey of Recycled Water Rates						
	Monthly Charge - 1" meter	Tier 1 (HCF)	Tier 2 (HCF)	Tier 3 (HCF)	Tier 4 (HCF)	Notes
City of Santa Rosa	\$16.15	\$0.67	-	-	-	Commercial/Industrial Irrigation
	\$16.15	\$0.61	\$0.87	\$1.31	-	
City of Milpitas	-	\$2.16	-	-	-	Industrial/Sanitary Irrigation City Accounts
		\$3.79	-	-	-	
		\$1.29	-	-	-	
City of Santa Clara	\$14.70	\$1.75	-	-	-	Irrigation
		\$1.40	-	-	-	Industrial
Town of Windsor	-	\$1.49	-	-	-	Commercial Low Strength
		\$2.01	-	-	-	Commercial Medium Strength
		\$3.50	-	-	-	Commercial High Strength
City of Sunnyvale	-	\$1.76	-	-	-	Agriculture and Industrial Landscaping
		\$3.69	-	-	-	
City of Milpitas	-	\$3.79	-	-	-	Irrigation
		\$2.16	-	-	-	Industrial
		\$3.79	-	-	-	Agriculture
City of San Jose - Municipal Water	\$16.94	\$1.70	-	-	-	Irrigation
		\$1.21	-	-	-	Industrial
		\$1.17	-	-	-	Agriculture
City of Redwood City	-	\$4.27	-	-	-	Irrigation
Irvine Ranch Water District	-	\$0.74	\$1.51	\$2.59	\$5.69	Commercial & Industrial
City of Calistoga	\$49.46	-	-	-	-	Irrigation
Town of Yountville	\$392	\$0.25				(Meter charge is based on the average of the current Tier 1 charges)
Napa Sanitation District	-	\$0.0012				Irrigation The District is currently in the process of conducting a recycled water rate study

Appendix

Appendix 1. 25% USBR Grant / 75% SRF Loan - Debt Service Estimates

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total Project Cost	\$3,200,000	\$4,300,000	\$11,700,000	\$1,429,000
USBR Grant - 25% of Project Cost	<u>\$800,000</u>	<u>\$1,075,000</u>	<u>\$2,925,000</u>	<u>\$357,000</u>
SRF Loan Proceeds	\$2,400,000	\$3,225,000	\$8,775,000	\$1,072,000

ESTIMATED ANNUAL SRF LOAN PAYMENT				
SRF Loan Amount				
SRF Project Funding (1)	2,400,000	3,225,000	8,775,000	1,072,000
Accrued Interest During Construction (2)	36,000	48,000	132,000	16,000
Accrued Interest for One Year After Project Completion (3)	<u>73,000</u>	<u>98,000</u>	<u>267,000</u>	<u>33,000</u>
Total SRF Loan Amount	2,509,000	3,371,000	9,174,000	1,121,000
Loan Terms				
Term (years)	20	20	20	20
Interest Rate (4)	3.00%	3.00%	3.00%	3.00%
<i>Imputed Interest Rate</i>				
Annual SRF Loan Payment (5)	\$169,000	\$227,000	\$617,000	\$75,000
<i>Debt Service Reserve Fund Requirement = Annual Debt Service</i>				

- 1 - Some costs may not be eligible for SRF Loan funding & would require another funding source.
- 2 - Assumes steady gradual drawdown of loan funds over one year.
- 3 - First debt service payment due one year following completion of project.
- 4 - Interest rate estimated for financial planning purposes; actual rate may vary.
- 5 - Estimates for are long-term planning; current interest rates may be lower

Appendix 2. 100% SRF Loan - Debt Service Estimates

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
SRF Loan Proceeds	\$3,200,000	\$4,300,000	\$11,700,000	\$1,429,000
ESTIMATED ANNUAL SRF LOAN PAYMENT				
SRF Loan Amount				
SRF Project Funding (1)	3,200,000	4,300,000	11,700,000	1,429,000
Accrued Interest During Construction (2)	48,000	65,000	176,000	21,000
Accrued Interest for One Year After Project Completion (3)	<u>97,000</u>	<u>131,000</u>	<u>356,000</u>	<u>44,000</u>
Total SRF Loan Amount	3,345,000	4,496,000	12,232,000	1,494,000
Loan Terms				
Term (years)	20	20	20	20
Interest Rate (4)	3.00%	3.00%	3.00%	3.00%
<i>Imputed Interest Rate</i>				
Annual SRF Loan Payment (5)	\$225,000	\$302,000	\$822,000	\$100,000
<i>Debt Service Reserve Fund Requirement = Annual Debt Service</i>				

- 1 - Some costs may not be eligible for SRF Loan funding & would require another funding source.
 2 - Assumes steady gradual drawdown of loan funds over one year.
 3 - First debt service payment due one year following completion of project.
 4 - Interest rate estimated for financial planning purposes; actual rate may vary.
 5 - Estimates for are long-term planning; current interest rates may be lower

Appendix 3. Bond/COP Financing - Debt Service Estimates

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Funding Target	\$3,200,000	\$4,300,000	\$11,700,000	\$1,429,000
Total Debt Issue	3,676,000	4,882,000	13,100,900	1,787,400
Project Funding	\$3,200,000	\$4,300,000	\$11,700,000	\$1,429,000
Issuance Costs & Reserve Requirement				
Underwriter Discount 0.75%	\$27,600	\$36,600	\$98,300	\$13,400
Issuance Costs	150,000	150,000	200,000	200,000
Debt Service Reserve Fund	295,000	391,700	1,096,300	143,400
Bond Insurance	-	-	-	-
Reserve Surety Bond	-	-	-	-
Rounding	<u>3,400</u>	<u>3,700</u>	<u>6,300</u>	<u>1,600</u>
Total	476,000	582,000	1,400,900	358,400
Financing Terms				
Term (Years)	20	20	20	20
Est. Future Interest Rate	5.00%	5.00%	5.50%	5.00%
Annual Debt Service				
Gross Annual Debt Service	295,000	391,700	1,096,300	143,400
Less Interest on Reserve Fund 3.00%	<u>(8,900)</u>	<u>(11,800)</u>	<u>(32,900)</u>	<u>(4,300)</u>
Net Annual Debt Service	\$286,100	\$379,900	\$1,063,400	\$139,100

Financing costs and interest rates estimated for financial planning purposes.