

# GROVELAND COMMUNITY SERVICES DISTRICT



## WATER RATE ANALYSIS

October 2015

Prepared by:



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## **SECTION 1 - INTRODUCTION**

### **1.1. Purpose of this Report**

The purpose of this rate study is to evaluate the self-financing capacity of the Groveland Community Services District (GCSD) water utility fund and to determine revenue increases that are required in that utility fund to maintain adequate service and meet future financial obligations.

The new rates developed herein are intended to fund GCSD's operation and maintenance expenses, debt service requirements, and capital improvement reserves (CIR). Any significant deviation from the cost estimates and funding requirements, major operating changes, or other financial policy changes that were not foreseen, may result in the need for lower or higher revenue than anticipated. It is suggested that GCSD conduct an update to the rate study at least every three years for prudent rate planning.

### **1.2. Why an Increase is Needed**

GCSD water rates have not been increased to meet rising expenses, inflation, and regulatory changes. Significant segments of GCSD's water infrastructure are in need of repair or replacement.

GCSD's water rate structure contains a fixed rate and a variable rate based on actual metered consumption. Except for a rate increase implemented in 2013 to mitigate the drought impacts on revenues, GCSD has not had a rate increase since FY 2010-11 which was a modest 0.8% to the fixed rate and a 1.06% to the variable rate. The last significant rate increase the District had was in fiscal year 2007/2008 which was based on a rate study that did not address the need to budget for repair and replacement of the water system infrastructure. This rate analysis calculates the estimated revenue requirements and the rate increases that are necessary to sustain revenues in the water utility fund.

#### **1.2.1. Water Sources**

GCSD's water supply comes from the watershed within Yosemite National Park. The water is collected behind O'Shaughnessy Dam (Hetch Hetchy Reservoir) that is owned by the City of San Francisco. While the watershed is provided with excellent protection being within a National Park, it is still continuously monitored to keep it safe from possible pollution or contamination.

Water leaves O'Shaughnessy Dam through the Canyon Power tunnel where it is used to generate electrical power at the Kirkwood Powerhouse. The water then enters the Mountain tunnel on its way to GCSD and ultimately to San Francisco.

The Mountain tunnel was constructed in the early 1920's through solid rock several hundreds of feet below the surface. Eleven airshafts were constructed during the tunneling, which also provided for debris and rock removal. GCSD draws water from two of the airshafts known as Big Creek Shaft and Second Garrotte Shaft.

Big Creek Shaft is upstream of Second Garrotte Shaft. A 300 horsepower pump is used at Big Creek to draw water from a depth of 570 feet below ground, at a rate of 1,650 gallons per minute or 2,376,000 gallons per day. A 200 horsepower pump is used at Second Garrotte to draw water from a depth of 720 feet below ground, at a rate of 680 gallons per minute or 892,800 gallons per day.

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Table 1-1 shows a list of GCSD’s water sources and their capacity.

**Table 1-1 GCSD’s water sources**

Source Name	Capacity	Water Source
Big Creek	1,600 gpm	Hetch-Hetchy
Second Garrote	680 gpm	Hetch-Hetchy
AWS	500 gpm	Pine Mountain Lake

### 1.2.2. Water Treatment

GCSD’s water supply from Big Creek and Second Garrote has historically been unfiltered. Water from the tunnel is pumped to the surface and chlorinated using sodium hypochlorite. Due to the current drought, water from Cherry Lake has been introduced into the Mountain Tunnel and GCSD is obligated to filter the water. A new water filtration system was recently installed at the SGWTP; the addition of the Filtration process has increased the cost of producing water for the system during delivery of Cherry Lake Water

In 2007, the District was mandated to construct a new packaged water treatment plant (WTP) that uses water from PML. The PML WTP, also referred to as the Alternative Water Supply (AWS) WTP, was constructed to increase reliability of the water supply. Prior to the PML WTP (AWS) being constructed, the District relied on a single-source of supply, the Hetch Hetchy Aqueduct. Since 2007, the PML WTP (AWS) has operated only during times when the Hetch-Hetchy Aqueduct is out of service, usually during the winter months.

### 1.2.3. Water Distribution System

Water from each of the water pumping stations is pumped into the distribution system. Big Creek uses a 150 horsepower booster pump to put 1,500 gallons per minute into its distribution system. Second Garrote uses a 100 horsepower booster pump to put 720 gallons per minute into its distribution system. There are two pumps at each station for backup, as well as Standby Emergency Generators at each facility.

The main pipeline leaving the Big Creek Pump station is about 4-¼ miles long between it and the primary distribution storage tank within PML, known as Tank No. 3. Tank No. 4, which is located in Unit 12, can either draw water from Tank No. 3 or from the main line if the pump station is operating. Tank No. 2 can only draw water from Tank No. 3.

The main pipeline leaving the Second Garrote Pump Station is approximately two miles long between it and the primary distribution storage tank known as Tank No. 1. It services the townships of Groveland and Big Oak Flat. Distribution storage Tank No. 5 draws water from the main water line feeding the township of Big Oak Flat. Tank No. 5 supplies fire protection and water service for the upper parts of Merrell Road.

The District has a pipeline between the two water distribution systems for use during times when one of the pump stations is unable to provide water to its own system. During those times, the pipeline is used to transfer water from the operational water system to both water distribution systems, from just one pump station. This pipeline adds security for both water systems that neither will run out of water as long as one pump station is operational.

### 1.3. Goals and Objectives

Basic objectives of this analysis include:

- ❖ Determine revenue requirements to meet the O&M and capital expenditures of GCSD's water utility;
- ❖ Recommend water rate increase needed to recover the cost of providing service and maintain the water fund's long-term financial health;
- ❖ Maintain good financial ratings by providing for a stable and reliable financial position so that debt issuance can be achieved at the lowest cost and that GCSD maintains eligibility for grants and loans;
- ❖ Provide an introduction to the Proposition 218 rate-increase process and rate implementation.

### 1.4. Methodology

The methodology used in this study follows the cost causative allocation practice endorsed by American Water Works Association (AWWA) and the Water Environment Federation (WEF). This allocation methodology produces cost of service allocations recognizing the projected customer service requirements. The basic methodology consists of three major components: Revenue Requirements, Cost of Service, and Rate Design.

The following is a brief description of the three components:

- ❖ **Revenue Requirements:** Revenue requirements are determined by developing a multi-year financial plan for the enterprises. The financial plan projects revenue and expenditures based on anticipated changes in the systems. Revenue incorporates revenue under the existing rate structure, anticipated growth in customer classes, and unique customer characteristics. Expenditures incorporate operation & maintenance, debt service, and capital expenditures.
  - ❖ **Cost of Service:** Cost of service is the process of allocating the revenue requirements to functional cost components which are then assigned to specific customer classes. The cost of service is designed to assign costs associated with each customer class based on the demands they put on the system, in compliance with Proposition 218
  - ❖ **Rate Design:** Rate design consists of developing a rate structure that adequately recovers the revenue requirements through fixed and variable components yet remains equitable among the specific customer classes.
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## SECTION 2 - GCSD's DEMOGRAPHIC INFORMATION

### 2.1. GCSD's Service Area Demographics

GCSD provides water service to the communities of Groveland, Big Oak Flat and Pine Mountain Lake. In the 2010 Census, the communities of Groveland and Big Oak Flat were combined into a Census Designated Place (CDP) and the community of Pine Mountain Lake was a separate CDP. Table 2-1 provides the 2010 US Census Population and the 2009-2013 Median Household Income by the most recent American community survey.

**Table 2-1 Median Household Income**

CDP	Population	MHI
Groveland-Big Oak Flat	601	\$32,229
Pine Mountain Lake	2,796	\$49,893
<b>Total</b>	3,397	\$46,768*
*: Weighted Average		

According to the MHI in Table 201, Groveland and Big Oak Flat are Severely Disadvantaged Communities (SDACs). The weighted average of the MHI also classifies the entire GCSD area as a DAC.

The population (and number of connections) in the GCSD's service area have remained stable in the recent years. Growth in the number of connections is affected by economic conditions and the uncertainty in sustainable water supply created by the drought. For purposes of this analysis, it is assumed that the number of connections and population will remain stable during the next 5-year horizon.

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## **SECTION 3 - REVENUE REQUIREMENTS**

### **3.1. Introduction**

The first step in calculating revenue requirements for the water utilities is to establish a time frame for the revenue requirements analysis. For this study, the revenue requirements were developed for a five-year projected time period (FY 2015/16 – FY 2019/20). Fiscal year 2015/16 was a budgeted period, while FY 2016/17 and beyond were projected from this budgeted period.

Reviewing a multi-year time period is generally recommended in an attempt to identify any major expenses that may be on the horizon. By anticipating future financial requirements, GCSD can begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates.

### **3.2. Water Fund Budget**

This Section provides the projected revenue requirements (Costs) for the water enterprise fund through fiscal year 2019/2020. Revenue requirements include benefits and salaries, operations and maintenance (O&M) expenses, debt service costs, reserve requirements, etc. These expenses represent the cost of operating and maintaining water supply, treatment, storage, and distribution facilities, as well as the costs of providing technical services such as laboratory services and other administrative costs of the water system. The District engaged the services of the Rural Community Assistance Corporation (RCAC) through a grant to assist in the development of the District's future rate requirements. Through the RCAC's assessment to fully fund Capital Improvement Replacement, approximately \$1.8 million dollars a year would need to be set aside. This rate analysis uses funding 25% annually of the Capital Improvement Replacement fund to enable the District to pursue grant funding for the remaining 75%.\*

Revenue projections use GCSD's budgeted amount for FY 2015/16 and, an inflationary factor of 3 percent beyond that year. Long-term debt is forecasted separately using the existing debt service schedules. Table 3-1 shows projected revenue requirements of the water fund.

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**Table 3-1 Projected Revenue Requirements**

Expense	Fiscal Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Admin	\$610,647	\$628,966	\$647,835	\$667,270	\$687,288
Board	\$13,672	\$14,082	\$14,504	\$14,939	\$15,387
Operations					
Fixed	\$552,129	\$568,693	\$585,754	\$603,326	\$621,426
Variable	\$167,877	\$172,913	\$178,101	\$183,444	\$188,947
Maintenance	\$567,929	\$584,967	\$602,516	\$620,591	\$639,209
CIP Reserves	\$450,000	\$463,500	\$477,405	\$491,727	\$506,479
<b>Subtotal O&amp;M</b>	<b>\$2,362,254</b>	<b>\$2,433,121</b>	<b>\$2,506,115</b>	<b>\$2,581,297</b>	<b>\$2,658,737</b>
Debt Service					
1996-98 Bond	\$306,159	\$306,159	\$306,159	\$306,159	\$306,159
2007 Bond	\$378,224	\$375,224	\$375,224	\$375,224	\$375,224
Other Debt	\$9,350	\$9,350	\$9,350	\$9,350	\$9,350
<b>Subtotal Debt Service</b>	<b>\$693,733</b>	<b>\$690,733</b>	<b>\$690,733</b>	<b>\$690,733</b>	<b>\$690,733</b>
<b>Total</b>	<b>\$3,055,987</b>	<b>\$3,123,854</b>	<b>\$3,196,847</b>	<b>\$3,272,031</b>	<b>\$3,349,470</b>

Furthermore, the O&M revenue requirements can be broken down into expenses associated with operating the Second Garrote Water Treatment Plant (SGWTP) to meet baseline supply needs, and expenses associated with operating the Big Creek Water Treatment Plant (BCWTP) used to meet peak usage demands. The SGWTP is the lead facility to produce water at GCSD. Administrative, board and maintenance expenses are assigned to the SGWTP. The costs to operate the BCWTP are exclusively variable costs associated with providing water to meet peak water demand.

**Table 3-2 Second Garrote WTP and Big Creek Projected WTP expenses**

Expense	Fiscal Year 2015/16	
	SGWTP	BCWTP
Admin	\$610,647	-
Board	\$13,672	-
Operations		
Fixed	\$413,379	\$138,750
Variable	\$65,175	\$102,702
Maintenance	\$503,556	\$64,373
CIP Reserves	\$247,500	\$202,500
<b>Subtotal O&amp;M</b>	<b>\$1,853,929</b>	<b>\$508,325</b>



Table 3-3 shows the projected O&M expenses associated with the SGWTP and BCWTP.

**Table 3-3 Projected Revenue Requirements for SGWTP and BCWTP**

Expense	Fiscal Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
SGWTP	\$1,853,929	\$1,909,547	\$1,966,833	\$2,025,838	\$2,086,613
BCWTP	\$508,325	\$523,575	\$539,282	\$555,460	\$572,124
<b>Total</b>	<b>\$2,362,254</b>	<b>\$2,433,122</b>	<b>\$2,506,115</b>	<b>\$2,581,298</b>	<b>\$2,658,737</b>

- CIP Reserve analysis available at [gcsd.org](http://gcsd.org)
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## SECTION 4 - COST OF SERVICE

### 4.1. Introduction

This Section describes how the revenue requirements are allocated to specific customer classes. The cost of service is designed to assign costs associated with each customer class based on the demands they put on the system.

### 4.2. Water Demand

Water consumption has gradually increased over time. However, in 2014, due to water conservation efforts, demand was reduced significantly. Table 4-1 shows the total annual demand during years 2012, 2013, and 2014.

**Table 4-1 Annual Water Demands**

	2012	2013	2014
Water Demand (MG)	144.69	155.65	106.26

Water demand forecasts within the next 5-years indicate that the water demand will remain at current levels due to a greater effort in water conservation.

The current number of connections is approximately 3,227. Some of those are commercial connections with larger meters and larger consumption. This analysis uses the total number of Equivalent Dwelling Units (EDUs) instead of the actual number of connections. Table 4-2 shows the number of EDUs that currently receive water service.

**Table 4-2 Number of EDUs**

Meter Size	EDUs/connection	# of Connections	EDUs
5/8" x 3/4"	1.00	3,109	3,109
3/4" x 3/4"	1.00	74	74
1"	1.60	31	50
1 1/2"	2.60	3	8
2"	3.50	5	18
3"	5.50	3	17
4"	7.80	2	16
	<b>Total</b>	3,227	3,290

As indicated earlier in this analysis, it is assumed that the number of connections and EDUs will remain stable at 3,290 EDUs for the next 5-year period.

### 4.3. Cost Allocation

This rate study reflects that the true cost of delivering water depends on the volume usage demand. The proposed new rate structure will allow customers who are water conscientious and who stay within the baseline consumption to not share in the additional cost associated with those who exceed the baseline consumption. Customers who exceed the baseline consumption tier will bear the full cost of

providing the additional water. The new rate structure will consist of a flat monthly rate plus a usage rate based on metered consumption. The flat rate will cover GCSD's fixed utility expenses, and debt service. Metered consumption will be billed at a Tier 1 usage rate up to a maximum allowance and at a higher Tier 2 rate beyond the allowance. The flat monthly rates as well as Tier 1 and Tier 2 usage rates are shown in Tables 5-1 and 5-2.

The following sections provide justification of how the various elements of the new rates are developed.

#### **4.3.1. Baseline Consumption**

A baseline allowance of 3,300 gallons per connection is being proposed. The baseline consumption uses a 55 gallons per capita per day and 2 people in a household. According to US Census information, most households in Groveland, Big Oak Flat and Pine Mountain Lake fit within that household size. The per capita allowance is considered to be adequate to sustain household water use.

In order to estimate the total annual baseline consumption (in MG) this analysis uses population estimates instead of actual number of connections. The population estimates are expected to yield a more accurate baseline consumption because a large number of the connections in GCSD's service area are second residences and are not occupied year round.

Using the 2010 US Census population of 3,397, the annual baseline consumption would be 68,194,775 gallons or approximately 68.2 MG.

#### **4.3.2. Fixed Rate Component**

A fixed rate component is being proposed to recover fixed utility expenses and debt service associated with providing the baseline water consumption. Baseline water demands are provided by the SGWTP only. Therefore only the O&M costs assigned to the SGWTP (Table 3-3) are used to calculate the fixed rate.

The fixed rate consists of a fixed monthly amount. The fixed costs are calculated as 75 percent of the total revenue requirements assigned to the SGWTP on Table 3-3 divided by the total number of connections plus debt service requirements. The Debt service charges will remain at \$9.83 for the 1996-98 Capital Facilities Bond and \$10.75 for the 2007 Water Debt Service.

The cost of providing the 3,300 gallons of allowance per connection (approximately 68.2 MG based on population estimates) is calculated as 25 percent of the total revenue requirements assigned to the SGWTP on Table 3-3 divided by 68.2 MG.

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**Table 4-3 Fixed Rate Calculations**

	Fiscal Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Number of EDUs	3,290	3,290	3,290	3,290	3,290
Fixed Costs	2,084,180	2,122,893	2,165,857	2,210,111	2,255,693
75% of O&M	1,390,447	1,432,160	1,475,124	1,519,378	1,564,960
Debt Service	693,733	690,733	690,733	690,733	690,733
Baseline Rates (up to 3,300 gal)					
Fixed Rate	\$35.22	\$36.28	\$37.36	\$38.48	\$39.64
Debt Service	\$20.58	\$20.58	\$20.58	\$20.58	\$20.58
<b>Total Fixed Rate</b>	<b>\$55.80</b>	<b>\$56.86</b>	<b>\$57.94</b>	<b>\$59.06</b>	<b>\$60.22</b>
<b>Baseline Usage Rate (up to 3,300 gal)</b>	<b>\$0.00680</b>	<b>\$0.00700</b>	<b>\$0.00721</b>	<b>\$0.00743</b>	<b>\$0.00765</b>

The current rate structure charges a fixed fee of \$50.64 for a typical residential connection plus a usage rate of \$0.00190 per gallon. Therefore, the current rate for a connection that uses 3,300 gallons of water per month is \$56.91. The new rate for an equivalent connection at \$0.00680 per gallon will be \$78.24. See Table 4-3. The new rate supposes an increase of approximately 37.5 percent.

#### 4.3.3. Peak Demand Rate

The Peak Demand usage rate is intended to cover any additional water system costs associated with providing water demand above the baseline of 3,300 gal per month. As described earlier in this analysis, the baseline consumption is provided by the SGWTP while any consumption beyond the baseline requires the use of the BCWTP.

The Peak demand usage rate is calculated using the projected Revenue requirements associated with the BCWTP as presented in Table 3-3 divided by the demand volume (in gallons) beyond the baseline volume. Using an annual total water demand of 106 MG and a baseline of 68.2 MG, the excess water demand to be produced by the BCWTP is 37.8 MG. Table 4-4 shows the resulting usage rates as described herein.

**Table 4-4 Peak Demand Usage Rates**

	Fiscal Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Fixed Costs	\$508,325	\$523,575	\$539,282	\$555,460	\$572,124
Consumption Forecast (MG)	37.8	37.8	37.8	37.8	37.8
<b>Peak Demand Usage Rate (\$/gal)</b>	<b>0.01345</b>	<b>0.01385</b>	<b>0.01427</b>	<b>0.01469</b>	<b>0.01514</b>

## SECTION 5 - PROPOSED RATE SCHEDULE

### 5.1. Proposed Rates

This analysis recommends that the existing water rate structure be modified to include a fixed fee plus a usage fee based on a per gallon use above a baseline allowance. Table 5-1 shows the proposed new rates and monthly allowances by meter size.

The proposed water rates are proportional to the usage of each user.

**Table 5-1 Proposed new rates for FY 2015/16**

Meter Size	Flat Rate	Debt Service	Usage Rate	
			Baseline Usage	Peak Demand Usage
5/8" x 3/4"	\$35.22	\$20.58	\$0.00680	\$0.01345
3/4" x 3/4"	\$35.22	\$20.58	\$0.00680	\$0.01345
1"	\$56.36	\$32.93	\$0.00680	\$0.01345
1 1/2"	\$91.57	\$53.51	\$0.00680	\$0.01345
2"	\$123.27	\$72.03	\$0.00680	\$0.01345
3"	\$193.70	\$113.19	\$0.00680	\$0.01345
4"	\$274.71	\$160.53	\$0.00680	\$0.01345

The proposed new rates in Table 5-1 are for FY 2015/16. Table 5-2 lists the proposed rate increases in subsequent years through FY 2019/20. Proposition 218 allows a utility to adopt rate increases for five consecutive years. If rates are adopted in FY 2015/16 then the last rate increase would be in FY 2019/20.

Baseline Usage Allocation will be determined by the EDU calculation times 3300 gallons- example a 1" meter would be allocated 3300 gallons x EDU multiplier of 1.6 equaling 5280 gallons of consumption before the Peak Demand Usage rate would apply.

**Table 5-2 Proposed new rates through FY 2019/20**

Meter Size	FY 2016/17			FY 2017/18			FY 2018/19			FY 2019/20		
	Fixed Rate	Usage Baseline Usage	Peak demand usage	Fixed Rate	Baseline Usage	Peak demand usage	Fixed Rate	Baseline Usage	Peak demand usage	Fixed Rate	Baseline Usage	Peak demand usage
5/8" x 3/4"	\$36.28	\$0.00700	\$0.01385	\$37.36	\$0.00721	\$0.01427	\$38.48	\$0.00743	\$0.01469	\$39.64	\$0.00765	\$0.01514
3/4" x 3/4"	\$36.28	\$0.00700	\$0.01385	\$37.36	\$0.00721	\$0.01427	\$38.48	\$0.00743	\$0.01469	\$39.64	\$0.00765	\$0.01514
1"	\$58.05	\$0.00700	\$0.01385	\$59.79	\$0.00721	\$0.01427	\$61.58	\$0.00743	\$0.01469	\$63.43	\$0.00765	\$0.01514
1 1/2"	\$94.32	\$0.00700	\$0.01385	\$97.15	\$0.00721	\$0.01427	\$100.07	\$0.00743	\$0.01469	\$103.07	\$0.00765	\$0.01514
2"	\$126.96	\$0.00700	\$0.01385	\$130.77	\$0.00721	\$0.01427	\$134.70	\$0.00743	\$0.01469	\$138.74	\$0.00765	\$0.01514
3"	\$199.52	\$0.00700	\$0.01385	\$205.50	\$0.00721	\$0.01427	\$211.67	\$0.00743	\$0.01469	\$218.02	\$0.00765	\$0.01514
4"	\$282.95	\$0.00700	\$0.01385	\$291.44	\$0.00721	\$0.01427	\$300.18	\$0.00743	\$0.01469	\$309.19	\$0.00765	\$0.01514



## **SECTION 6 - Appendix**

**6.1. RCAC Report**

**6.2. Current GCSD Rate Structure**

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