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# Water Financial Plan and System Development Charge Study

*Final Report*

Prepared for:  
**Rivergrove Water District**



Prepared by:  
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# 1.0 Introduction

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## 1.1 Authorization and Purpose

The Rivergrove Water District (the District) authorized Galardi Rothstein Group to conduct a Financial Plan and System Development Charge (SDC) Study (Study) in July 2014. The purpose of the study was to assist the District in developing a new water system financial plan and SDC methodology to fund the capital improvements identified in the recently adopted Water System Master Plan (Murray, Smith & Associates, April 2014).

This report presents the results of the Study.

## 1.2 Report Organization

The purpose of this report is to document the technical methodology used to develop projected annual revenue adjustments and a revised SDC methodology for the water system.

The following additional sections are included in this report:

- Section 2, Financial Plan, presents the projected costs and revenue requirements from rates for the 10-year period fiscal year (FY) 2014/15 through FY2023/24.
- Section 3, System Development Charges, presents the legal environment and methodology for developing SDCs, and the updated SDCs based on the Master Plan project list.
- Section 4, Conclusions, summarizes the key findings and recommendations related to the water rates and SDCs, and provides comparisons with other communities.

## 2.0 Financial Plan

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### 2.1 Introduction

This section presents the water system financial plan. The financial plan provides the framework within which to analyze the overall impact on water rates of implementing the near-term capital improvements recommended in the Water System Master Plan (Master Plan), along with continued operation and maintenance of the system. The building blocks of the financial plan are the projections of costs or “revenue requirements” that the District will incur during the planning period and the revenues, under existing rates, that the District expects to generate during the same period.

In order to develop adequate revenues from water rates, the annual revenue requirements of the system must be determined. The basic revenue requirements are composed of the following:

- Operation and maintenance (O&M) costs;
- Annual capital improvement projects funded by rates and reserves (cash outlays or pay as you go capital), and;
- Debt service expenditures (principal and interest on State loans).

Revenue requirements are presented for the current fiscal year (FY2014/15) through FY2023/24. A water system financial forecast model was also prepared for the District to allow for future monitoring and updating of financial projections over a 10-year period.

### 2.2 Key Forecast Assumptions

The financial plan is based on a set of overall assumptions related to customer growth, inflation, and other factors, as well as the phasing of the District’s Capital Improvement Plan (CIP). The following is a list of key assumptions used in the forecast:

- The residential customer growth rate is estimated to average 8 new customers (1 inch meter) per year throughout the study period. Growth rates for customers with larger meters are set at 0.0% to reflect the lack of historical growth in these accounts.
- O&M costs are based on the current (FY2014/15) budget, adjusted for one-time expenses and cost escalation (a combination of inflation and system growth). Specific escalation factors used are:
  - Personnel costs – Salaries, 4.0%; Benefits, 6.0%
  - Material and service costs – 3.0%
  - General cost escalation rate (for non-specified categories)– 3.0%
- The District will spend 95% of budgeted Personnel and Materials and Services costs (Capital Outlay is assumed to be fully spent as budgeted).

- Future capital costs are increased at an annual rate of 3.0%.
- Non-rate revenues are escalated at 1.5% annually.
- An elasticity of demand factor equal to -1.50 is assumed for all rate increases and applied to water use per account for all meter sizes (i.e. for every 10% increase in rates, consumption will decrease 1.5%)
- Billed service (rate) revenues are reduced by 1.0% annually to account for bad debts.
- Revenues from revised SDCs are projected to average – based on the projected number of new customers and the updated system development charge-- about \$70,000 to \$100,000 per year during the study period, based on new connections.
- The SDC charged by the District is expected to increase 3.0% per annum.
- Interest earnings on fund balances and reserves are estimated to accrue at a rate of 0.75% annually.
- The District will target to maintain a minimum operating fund balance of at least 30 days of operating expense (the minimum industry standard).

Each component of the baseline financial projection is discussed in more detail below.

## 2.3 Operations and Maintenance Costs

Operation and maintenance costs include all costs associated with operating and maintaining the system, including personnel, materials and services, and routine capital outlay. Water system O&M costs are projected for the study period based on the District's FY2014/15 budget and the assumed escalation rates presented previously, as well as adjustments to the baseline operating budget.

**Table 2-1** provides a summary of projected O&M costs for the water system for FY2014/15 through FY 2023/24. Water O&M costs are about \$0.68 million currently<sup>1</sup>; future O&M costs are projected to increase to about \$0.88 million in FY2023/24. Forecasted O&M costs are based on the current operating budget (FY 2014/15), with adjustments to cost categories to recognize one-time expenses that will not continue in the forecast period or – in some cases – to increase the baseline budget for an expense item to improve consistency with historical expenditures. These adjustments include:

- Increasing the Postage and Shipping line item from \$1,500 to \$4,000 for the subsequent operating year to be more consistent with previous historical expense levels for this category;
- Reducing the Contracted Services-Administration line item from \$23,000 to \$15,000 to recognize a more typical expense level for this cost category;

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<sup>1</sup> Excludes budgeted operating cost contingency

- Decreasing the Contracted Services-Operations line item from \$25,000 to \$20,000 for the following fiscal year;
- Eliminating \$27,000 of currently budgeted costs for the Source Water Protection Program, which was identified as a one-time expense;
- Decreasing the Consultants expense line item from \$20,000 to \$5,000 for the subsequent fiscal year to ensure consistency with historical expense levels.

Together, these adjustments reduce the forecasting basis for FY 2015/16 by \$52,500. However, application of the previously-identified escalation factors results in a net decrease from FY 2014/15 to FY 2015/16 of approximately \$28,000, or 4.1 percent (see **Table 2-1**).

Forecasted O&M expense also includes the 95 budget-to-actual expense ratio previously identified. All forecasted costs for the Personnel and Materials & Services categories are reduced to recognize that actual operating expense in these categories is slightly lower than budgeted levels.

**Table 2-1**

Rivergrove Water District  
 Water System Financial Plan  
 Summary of Forecasted Operations and Maintenance Costs

Item	Estimate FY 2014-15	Forecast FY 2015-16	Forecast FY 2016-17	Forecast FY 2017-18	Forecast FY 2018-19	Forecast FY 2019-20	Forecast FY 2020-21	Forecast FY 2021-22	Forecast FY 2022-23	Forecast FY 2023-24
Personnel Services	\$286,299	\$299,251	\$312,812	\$327,011	\$341,879	\$357,449	\$373,756	\$390,835	\$408,725	\$427,466
Materials & Services: Admin	94,288	91,193	93,929	96,747	99,649	102,638	105,718	108,889	112,156	115,520
Materials & Services: Operations	195,944	169,940	175,039	180,290	185,699	191,270	197,008	202,918	209,005	215,276
Materials & Services: Professional Svcs	56,715	43,596	44,904	46,251	47,639	49,068	50,540	52,056	53,618	55,227
Capital Outlay	45,000	46,350	47,741	49,173	50,648	52,167	53,732	55,344	57,005	58,715
Transfers to Other Funds	3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914
<b>Total O&amp;M Costs</b>	<b>\$681,245</b>	<b>\$653,421</b>	<b>\$677,607</b>	<b>\$702,750</b>	<b>\$728,890</b>	<b>\$756,070</b>	<b>\$784,335</b>	<b>\$813,732</b>	<b>\$844,309</b>	<b>\$876,118</b>
<i>Percent Change</i>		-4.1%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.8%	3.8%



## 2.4 Capital Costs

Future capital expenditures for the water system are based on the Master Plan, which identifies \$6.4 million (2014 dollars) in system improvements, of which about \$2.9 million is projected for the next 10 years. A detailed list of the projects contained in the 10-year CIP is provided in **Table 2-2**. This table **excludes** installation of additional fire hydrants, the cross-connection program, and ongoing water and SDC rate study updates – all of which are included in the District’s operating budget (included as Capital Outlay and Materials & Services in Table 2-1). The CIP projects are necessary to comply with state and federal mandates, to conduct repair and maintenance of existing system components, and to meet the needs of projected growth.

**Table 2-2**  
**Rivergrove Water District**  
**Water System Financial Plan**  
*Projected Capital Improvement Plan (FY2015 to FY 2024)*  
(In 2014 dollars)

<b>Project Category</b>	<b>Total</b>
Pipe replacement	\$374,000
Fire flow improvements	116,375
<b>Subtotal, Distribution Piping</b>	<b>\$490,375</b>
Landslide Remediation at Reservoir No. 3	\$190,000
Seismic Upgrade of Reservoir No. 3	365,000
Reservoir Maintenance and Coating	575,000
<b>Subtotal, Storage Facilities</b>	<b>\$1,130,000</b>
New Standby Power at Well No. 1	\$175,000
New Standby Power at Olson Well	105,000
Emergency Intertie Improvements	15,000
Pressure Reducing Valve Bypass at Reservoir No. 3	45,000
Pressure Reducing Valve Vault on Childs Road	110,000
Add Back-up Pump in Transfer Pump Station	50,000
<b>Subtotal, Reliability</b>	<b>\$500,000</b>
Emergency Action Plan Update	\$25,000
Future System Studies	50,000
<b>Subtotal, Other</b>	<b>\$75,000</b>
<b>Total CIP</b>	<b>\$2,195,375</b>

Capital expenditure estimates are allocated to 5-year time increments consistent with the District’s updated Master Plan. To develop annual CIP requirements, this financial analysis assumes a level expenditure of each project estimate over the 5-year period. Exceptions include the two projects that are assumed to be funded by State Revolving Fund (SRF) loans: the Seismic Upgrade of Reservoir No. 3 and the Reservoir Maintenance and Coating project. Based on the anticipated project schedules and an estimated annual capital cost escalation rate of 3.0%, the total, inflation-adjusted CIP over the planning period is \$2.51 million. As shown in **Table 2-3**, a combination of existing fund balances, projected annual revenue from rates and SDCs, and SRF loans are assumed to fund the 10-year CIP. The financial plan assumes that all post-FY2024 capital projects will be cash funded through rates and SDCs.

**Table 2-3**  
 Rivergrove Water District  
 Water System Financial Plan  
*Capital Funding Sources (FY2015 - FY2024)*

<b>Category</b>	<b>Total</b>
<b>Sources of Funds</b>	
Beginning Fund Balance <sup>1</sup>	\$30,109
SRF Proceeds	1,000,000
Rate Revenue	1,315,000
SDC Revenue	1,247,386
Interest Revenues, CI Fund	6,587
<b>Sources of Funds</b>	<b>\$3,599,082</b>
<b>Uses of Funds</b>	
Capital Projects <sup>1</sup>	\$2,512,386
Existing SRF Debt Service	534,143
New SRF Debt Service	327,026
Other CI Fund Requirements	370
Ending Capital Fund Balance	225,158
<b>Uses of Funds</b>	<b>\$3,599,082</b>

<sup>1</sup> Adjusted for inflation

## 2.5 Revenues

Service (rate) revenues are generally the main source of funding for water system revenue requirements. Under state law, SDCs may not be used to fund O&M costs, and the portion of capital costs eligible for SDC funding is also limited<sup>2</sup>. Other revenue sources available to fund a portion of the annual revenue requirements for the water system include water deposits, engineering fees, interest income, other fees and charges, and miscellaneous revenue.

### 2.5.1 Existing Water Rates

The District last modified rates with a 15 percent increase on June 10, 2014. The resulting rate schedule, effective as of the first billing cycle in FY 2014/15, is shown in **Table 2-4**. The adopted rates include a monthly service charge for all customers based on meter size. A separate volume charge is assessed based on actual water usage, and is \$2.14 per hundred cubic feet (hcf) for all inside District customers. The bi-monthly bill for an inside District customer with a ¾ inch meter who uses 10 ccf is \$48.09.

<sup>2</sup> The improvement fee portion of SDC revenue may only be used to fund growth-related capital expenditures.

**Table 2-4**  
 Rivergrove Water District  
 Water System Financial Plan  
 Existing Rate Schedule (as of June 10, 2014)

Meter Size	Monthly Base Charge	Volume Charge
Inside District		
3/4"	\$26.69	\$2.14
1"	57.44	2.14
1-1/2"	108.64	2.14
2"	170.09	2.14
3"	333.94	2.14
Outside District		
3/4"	\$34.71	\$2.77

## 2.5.2 Other Revenues

Other operating revenues, including interest income and rental charges, have also been projected for the study period. SDCs are projected to range between approximately \$70,000 and \$100,000 per year depending on the projected number of new customers and an assumed increase in the SDC over time<sup>3</sup>. SDC revenues may only be spent on capital-related costs, including debt service. This financial plan assumes that \$1.25 million will be used to fund future capital improvement requirements or pay debt service over the 10-year period.

## 2.6 Projected Operating Results

The accompanying financial forecast (Table 2-5 at the end of this section) presents the expected revenues, operating expense, debt service, debt service coverage, and changes in fund balance for the District's operating fund for the 10-year period ending June 30, 2024.

### 2.6.1 Projected Water Rate Increases

A series of rate increases will be necessary to generate the revenues required to support proposed capital financing and ongoing operating costs. As shown in Table 2-5, the proposed rate schedule includes a 15.0 percent rate increase next fiscal year (FY 2015/16), followed by four years of 8.0 percent increases, and subsequent increases of 3.0 percent per year. The financial analysis assumes that rate increases will be adopted and implemented prior to the beginning of each corresponding fiscal year.

To the extent that operating expenditures or other revenue requirements differ from those forecasted in this financial plan, it may be necessary to modify the rate increase schedule.

### 2.6.2 Debt Service and Coverage

The District's existing subordinate debt service (including principal and interest) is \$53,414 per year through the study period. Additional subordinate debt service is anticipated beginning in FY 2019/20 when a second SRF loan is anticipated. At the end of the forecast period, subordinate debt service is expected to total approximately \$122,500.

<sup>3</sup> Oregon SDC Statutes allow jurisdictions to increase SDCs annually based on a published cost index.

In the District's contractual agreement with the Business Oregon Infrastructure Finance Authority, subordinate debt service requires a coverage ratio of 1.2 times annual average subordinate debt (after paying any senior lien debt service). Net revenues available to pay debt service are calculated as Operating Revenues minus Operating Expenses. For purposes of calculating coverage, the portion of the SDCs used to fund debt service may be included.<sup>4</sup> Other adjustments include excluding routing capital outlay costs and other capital expenditures that are embedded in the operating budget. As shown in Table 2-5, the District's subordinate debt service coverage is expected to range between 1.60x and 5.48x over the forecast period.

### 2.6.3 Fund Balances

The proposed rate schedule has been established, among other things, to generate sufficient revenue to cash fund a portion of the capital improvements. As shown in Table 2-5, the beginning operating fund balance in FY2014/15 was approximately \$181,000. After accounting for cash transfers that total \$1.3 million over the study period, the ending balance of the operating fund is projected to be almost \$250,000 on June 30, 2024, including a \$72,000 reserve on new SRF debt. Capital transfers include available revenues over and above annual O&M, and are enabled by proposed service rate increases. The forecasted operating results demonstrate that the projected ending operating fund balance remains generally consistent with current levels and is within the industry recommended range of 30-90 days of O&M expenses.

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<sup>4</sup> Based on feedback provided by Dennis Knight, Finance Officer for Business Oregon, any revenues that may be used to pay debt service can be included in the coverage calculation..

**Table 2-5**  
 Rivergrove Water District  
 Water System Financial Plan  
 Projected Operating Results

	Estimate FY 2014-15	Forecast FY 2015-16	Forecast FY 2016-17	Forecast FY 2017-18	Forecast FY 2018-19	Forecast FY 2019-20	Forecast FY 2020-21	Forecast FY 2021-22	Forecast FY 2022-23	Forecast FY 2023-24
<i>Beginning Balance, Operating Fund</i>	\$181,274	\$131,297	\$149,415	\$154,969	\$161,436	\$159,124	\$192,870	\$226,131	\$238,619	\$260,063
Proposed Water Rate Increases	15.00%	15.00%	8.00%	8.00%	8.00%	8.00%	3.00%	3.00%	3.00%	3.00%
Water Service Revenues, Existing Rate	562,419	561,153	563,594	565,317	567,614	569,836	574,758	579,673	584,582	589,469
Additional Revenues Attributed to Rate	0	86,516	139,965	198,602	262,989	333,216	365,141	397,988	431,783	468,030
<b>Total Water Service Revenue</b>	<b>\$562,419</b>	<b>\$647,669</b>	<b>\$703,559</b>	<b>\$763,919</b>	<b>\$830,603</b>	<b>\$903,052</b>	<b>\$939,899</b>	<b>\$977,661</b>	<b>\$1,016,364</b>	<b>\$1,057,499</b>
Other Operating Revenue										
Non-Rate Revenue	68,050	42,822	43,464	44,116	44,778	45,450	46,131	46,823	47,526	48,239
SDC Revenue for Debt	40,061	40,061	40,061	40,061	40,061	40,061	40,061	40,061	40,061	40,061
Operating Fund Interest	800	1,049	1,137	1,182	1,198	1,315	1,565	1,736	1,863	1,874
Interest (Other Funds)	3,750	3,223	2,638	2,334	2,373	2,319	2,225	2,475	2,833	3,374
<b>Total Operating Revenue</b>	<b>\$675,080</b>	<b>\$734,823</b>	<b>\$790,860</b>	<b>\$851,612</b>	<b>\$919,013</b>	<b>\$992,197</b>	<b>\$1,029,882</b>	<b>\$1,068,757</b>	<b>\$1,108,647</b>	<b>\$1,151,047</b>
Operations & Maintenance	678,245	650,331	674,425	699,472	725,514	752,593	780,753	810,042	840,509	872,203
Unemployment Cost	3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914
Adjustment Out: Capital Outlay	(45,000)	(46,350)	(47,741)	(49,173)	(50,648)	(52,167)	(53,732)	(55,344)	(57,005)	(58,715)
Adjustment Out: Other CIP in O&M	(51,000)	(52,530)	(54,106)	(55,729)	(57,401)	(59,123)	(60,897)	(62,724)	(64,605)	(66,543)
<b>Total Operating Expenses</b>	<b>\$585,245</b>	<b>\$554,541</b>	<b>\$575,761</b>	<b>\$597,848</b>	<b>\$620,841</b>	<b>\$644,780</b>	<b>\$669,706</b>	<b>\$695,664</b>	<b>\$722,699</b>	<b>\$750,860</b>
<b>Net Revenue Available for Debt</b>	<b>\$89,834</b>	<b>\$180,282</b>	<b>\$215,099</b>	<b>\$253,764</b>	<b>\$298,172</b>	<b>\$347,417</b>	<b>\$360,175</b>	<b>\$373,093</b>	<b>\$385,948</b>	<b>\$400,187</b>
Existing Subordinate Debt	53,414	53,414	53,414	53,414	53,414	53,414	53,414	53,414	53,414	53,414
New Subordinate Debt	0	0	0	0	0	36,336	72,672	72,672	72,672	72,672
Total Subordinate Debt Service	\$53,414	\$53,414	\$53,414	\$53,414	\$53,414	\$89,750	\$126,087	\$126,087	\$126,087	\$126,087
<b>Subordinate Debt Service Coverage</b>	<b>1.68</b>	<b>3.37</b>	<b>4.02</b>	<b>4.75</b>	<b>5.58</b>	<b>3.87</b>	<b>2.85</b>	<b>2.95</b>	<b>3.06</b>	<b>3.17</b>
Transfer to Capital Imp Fund	\$0	\$20,000	\$65,000	\$100,000	\$150,000	\$160,000	\$170,000	\$200,000	\$200,000	\$250,000
<i>Ending Balance, Operating Fund</i> <sup>1</sup>	\$131,297	\$149,415	\$154,969	\$161,436	\$159,124	\$192,870	\$226,131	\$238,619	\$260,063	\$241,557
Minimum Fund Balance Requirement	\$48,102	\$45,579	\$47,323	\$49,138	\$51,028	\$52,996	\$55,044	\$57,178	\$59,400	\$61,714
Debt Service Reserve (new SRF Loan)	\$0	\$0	\$0	\$0	\$0	\$36,336	\$72,672	\$72,672	\$72,672	\$72,672

1 - Excludes SDC Revenue, Interest in Other Funds, Subordinate Debt Service; Includes cash transfers to the Capital Improvement Fund from the Operating Fund and Debt Reserve

## 3.0 System Development Charges

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Oregon legislation establishes guidelines for the calculation of system development charges (SDCs). Within these guidelines, local governments have some latitude in selecting technical approaches and establishing policies related to the development and administration of SDCs. A discussion of this legislation follows, along with the recommended methodology for calculating updated water SDCs for the District, in accordance with state law and the Water System Master Plan.

### 3.1 SDC Legislation in Oregon

In the 1989 Oregon state legislative session, a bill was passed that created a uniform framework for the imposition of SDCs statewide. This legislation (Oregon Revised Statute [ORS] 223.297-223.314), which became effective on July 1, 1991, (with subsequent amendments), authorizes local governments to assess SDCs for the following types of capital improvements:

- Drainage and flood control
- Water supply, treatment, and distribution
- Wastewater collection, transmission, treatment, and disposal
- Transportation
- Parks and recreation

The legislation provides guidelines on the calculation and modification of SDCs, accounting requirements to track SDC revenues, and the adoption of administrative review procedures.

#### 3.1.1 SDC Structure

SDCs can be developed around two concepts: (1) a reimbursement fee, and (2) an improvement fee, or a combination of the two. The **reimbursement fee** is based on the costs of capital improvements *already constructed or under construction*. The legislation requires the reimbursement fee to be established or modified by an ordinance or resolution setting forth the methodology used to calculate the charge. This methodology must consider the cost of existing facilities, prior contributions by existing users, gifts or grants from federal or state government or private persons, the value of unused capacity available for future system users, rate-making principles employed to finance the capital improvements, and other relevant factors. The objective of the methodology must be that future system users contribute no more than an equitable share of the capital costs of *existing* facilities. Reimbursement fee revenues are restricted only to capital expenditures for the specific system which they are assessed, including debt service.

The methodology for establishing or modifying an **improvement fee** must be specified in an ordinance or resolution that demonstrates consideration of the *projected costs of capital improvements identified in an adopted plan and list*, that are needed to increase capacity in the system to meet the demands of new development. Revenues generated through improvement fees are dedicated to capacity-increasing capital improvements or the repayment of

debt on such improvements. An increase in capacity is established if an improvement increases the level of service provided by existing facilities or provides new facilities.

In many systems, growth needs will be met through a combination of existing available capacity and future capacity-enhancing improvements. Therefore, the law provides for a **combined fee** (reimbursement plus improvement component). However, when such a fee is developed, the methodology must demonstrate that the charge is not based on providing the same system capacity.

### 3.1.2 Credits

The legislation requires that a credit be provided against the improvement fee for the construction of “qualified public improvements.” Qualified public improvements are improvements that are required as a condition of development approval, identified in the system’s capital improvement program, and either (1) not located on or contiguous to the property being developed, or (2) located in whole or in part, on or contiguous to, property that is the subject of development approval and required to be built larger or with greater capacity than is necessary for the particular development project to which the improvement fee is related.

### 3.1.3 Update and Review

The methodology for establishing or modifying improvement or reimbursement fees shall be available for public inspection. The local government must maintain a list of persons who have made a written request for notification prior to the adoption or amendment of such fees. The legislation includes provisions regarding notification of hearings and filing for reviews. “Periodic application of an adopted specific cost index or... modification to any of the factors related to rate that are incorporated in the established methodology” are not considered “modifications” to the SDC. As such, the local government is not required to adhere to the notification provisions. The criteria for making adjustments to the SDC rate, which do not constitute a change in the methodology, are further defined as follows:

- “Factors related to the rate” are limited to changes to costs in materials, labor, or real property as applied to projects in the required project list.
- The cost index must consider average change in costs in materials, labor, or real property and must be an index published for purposes other than SDC rate setting.

The notification requirements for changes to the fees that *do* represent a modification to the methodology are 90-day written notice prior to first public hearing, with the SDC methodology available for review 60 days prior to public hearing.

### 3.1.4 Other Provisions

Other provisions of the legislation require:

- Preparation of a capital improvement program or comparable plan (prior to the establishment of a SDC), that includes a list of the improvements that the jurisdiction intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.

- Deposit of SDC revenues into dedicated accounts and annual accounting of revenues and expenditures, including a list of the amount spent on each project funded, in whole or in part, by SDC revenues.
- Creation of an administrative appeals procedure, in accordance with the legislation, whereby a citizen or other interested party may challenge an expenditure of SDC revenues.

The provisions of the legislation are invalidated if they are construed to impair the local government's bond obligations or the ability of the local government to issue new bonds or other financing.

## 3.2 SDC Methodology

The general methodology used to calculate water SDCs begins with an analysis of system planning and design criteria to determine growth's capacity needs, and how they will be met through existing system available capacity and capacity expansion. Then, the capacity to serve growth is valued to determine the "cost basis" for the SDCs, which is then divided by the total growth capacity units to determine the system wide unit costs of capacity. The final step is to determine the SDC schedule, which identifies how different developments will be charged, based on their estimated capacity requirements.

### 3.2.1 Determine Capacity Needs

**Table 3-1** shows the planning assumptions for the water system contained in the Master Plan. The primary relevant design criteria for the water system include the following:

- Maximum Day Demand (MDD) - The highest daily recorded rate of water production in a year. MDD is the primary factor in evaluating capacity for water supply and mains.
- Storage Requirements - Storage facilities provide three functions: operational (or equalization) storage, and storage for emergency and fire protection needs.

As shown in Table 3-1, the Master Plan estimated current MDD to be 1.11 million gallons per day (mgd), and projected MDD conditions are 1.24 mgd. The MDD capacity required by growth are estimated to be 0.13 mgd at build-out.

Table 3-1 also shows that storage requirements are 1.36 million gallons (mg) currently, and they are expected to be about 1.42 mg at the end of the planning period.



**Table 3-1**  
Rivergrove Water District  
*Water System Planning Assumptions*

Capacity Parameter	Current	Build-out	Growth	Growth % of Build-out
<b>Water System Demand (mgd)</b>				
Average Day Demand	0.37	0.41	0.04	9.8%
Maximum Day Demand	1.11	1.24	0.13	10.5%
<b>Storage Requirements (mg)</b>	1.36	1.42	0.06	4.2%

Source: Water System Master Plan

**Table 3-2** provides a summary of the existing supply and storage capacities. Existing firm supply capacity (1.08 mgd) is generally sufficient to meet current MDD (1.11 mgd); however, based on the Master Plan projections, future growth in MDD will require an additional supply source. Current storage capacity (1.87 mg) is sufficient to meet existing and growth needs through build-out (1.42 mg), though upgrades to the system are needed to enhance reliability.

**Table 3-2**  
Rivergrove Water District  
*Existing Capacity Assumptions*

	mgd	mg
<b>Supply</b>		
Nominal	1.83	
<i>Firm</i>	<b>1.08</b>	
<b>Storage Capacity</b>		
Effective		1.870

Transmission and distribution mains are typically sized for build-out conditions, though some mains will require replacement to meet fire flow and other requirements.

### 3.2.2 Develop Cost Basis

The reimbursement fee is intended to recover the costs associated with the growth-related (or available) capacity in the existing system; the improvement fee is based on the costs of capacity-increasing future improvements needed to meet the demands of growth. The value of capacity needed to serve growth in aggregate within the planning period, is referred to as the “cost basis”.

## Improvement Fee Cost Basis

The cost of future capacity-increasing improvements (the improvement fee cost basis) is presented in **Table 3-3**. The improvements are based on project costs identified in the Master Plan. Each improvement was reviewed to determine the portion of costs that expand capacity for growth vs. remedy an existing deficiency or replace existing capacity. Specifically, improvement costs are allocated to the SDC cost basis in proportion to growth's projected share of the planned capacity expansion. An increase in system capacity may be established if a capital improvement increases the level of performance or service provided by existing facilities or provides new facilities.

As shown in Tables 3-1 and 3-2, the existing firm production capacity of the District's water sources is slightly less than current MDD (0.03 mgd deficit). A new water source is planned to expand capacity by 0.16 mgd to meet build-out firm capacity needs. A small portion (19 percent) of the new source costs are allocated to existing customers, equal to the current capacity deficit share (0.03 mgd/0.16 mgd). Growth is allocated the remaining 0.13 mgd, or 81 percent of future source costs.

Capital projects related to water system reliability (e.g., standby power and pumps, pressure reducing valves, and emergency intertie improvements) increase the level of service provided by the system through system redundancy and enhanced performance, and therefore benefit both existing customers and future growth. Reliability project costs are allocated to growth in proportion to future MDD (10.5 percent from Table 3-1.)

As mentioned previously, existing storage capacity is sufficient to meet build-out needs; however, upgrades are needed to increase the level of service of existing facilities. Projected landslide remediation and seismic upgrade improvements are allocated to growth in proportion to build-out storage requirements (4.2 percent from Table 3-1).

Water mains and other distribution system improvements (e.g., fire hydrants) are assumed to provide capacity through build-out and therefore, are allocated between existing development and growth, in proportion to future MDD capacity requirements. Based on the information provided in Table 3-1, growth's share of future distribution system improvements is 10.5 percent.

The total improvement fee cost basis is almost \$1.0 million, including a portion of system planning studies (equal to growth's share of future MDD), and 100 percent of SDC study costs. Non-capacity improvements and improvements (cross connection control, reservoir maintenance and coating, and water rate study) are excluded from the SDC costs basis

**Table 3-3**  
 Rivergrove Water District  
 Water System Development Charge  
 CAPITAL IMPROVEMENT PROGRAM

PROJECT	Total Cost	SDC Portion	
		%	\$
New Groundwater Production well with disinfection	\$715,000	81%	\$580,938
<b>Subtotal Source</b>	<b>\$715,000</b>		<b>\$580,938</b>
New Standby Power at Well #1	\$175,000	10.5%	\$18,347
New Standby Power at Olson Well	\$105,000	10.5%	\$11,008
Emergency Intertie Improvements	\$15,000	10.5%	\$1,573
Pressure Reducing Valve Bypass (Reservoir #3)	\$45,000	10.5%	\$4,718
Pressure Reducing Valve Vault (Childs Rd at Bryant Rd)	\$110,000	10.5%	\$11,532
Back-up Pump in Transfer Pump Station	\$50,000	10.5%	\$5,242
Cross-connection Program	\$1,220,000	0%	\$0
<b>Subtotal Reliability</b>	<b>\$1,720,000</b>		<b>\$52,419</b>
Landslide Remediation (Reservoir #3)	\$190,000	4.2%	\$8,028
Seismic Upgrade (Reservoir #3)	\$365,000	4.2%	\$15,423
Reservoir Maintenance & Coating	\$575,000	0%	\$0
<b>Subtotal Storage</b>	<b>\$1,130,000</b>		<b>\$23,451</b>
Pipe Replace - Reservoir #3 to Bryant Rd	\$666,500	10.5%	\$69,875
Pipe Replace - Old Gate Rd at Bryant to SW Dawn St at SW Indian Creek	\$495,000	10.5%	\$51,895
Pipe Replace - Childs Rd from canal to SW Indian Creek	\$374,000	10.5%	\$39,210
Pipe Replace - SW Indian Creek from Childs Rd to SW Dawn	\$147,400	10.5%	\$15,453
Fire Flow Improvements - Deemar Way	\$55,125	10.5%	\$5,779
Fire Flow Improvements - Tualata Ln	\$87,500	10.5%	\$9,173
Fire Flow Improvements - SW Timbergrove St	\$85,750	10.5%	\$8,990
Fire Flow Improvements - SW Tamara Ave	\$61,250	10.5%	\$6,421
Fire Flow Improvements - Benfield Ave	\$52,500	10.5%	\$5,504
Additional fire hydrants	\$381,000	10.5%	\$39,944
Fire Hydrant Coverage Improvements - pipe replacement	\$200,000	10.5%	\$20,968
<b>Subtotal Distribution Piping</b>	<b>\$2,606,025</b>		<b>\$273,212</b>
Emergency Action Plan	\$50,000	10.5%	\$5,242
SDC Study	\$7,000	100.0%	\$7,000
Master Plan	\$90,000	10.5%	\$9,435
Water Management & Conservation Plan & Reporting	\$60,000	10.5%	\$6,290
Water Rate Study	\$9,500	0%	\$0
<b>Subtotal Other</b>	<b>\$216,500</b>		<b>\$27,968</b>
<b>Total Water CIP</b>	<b>\$6,387,525</b>		<b>\$957,988</b>

## Reimbursement Fee Cost Basis

As mentioned previously, the reimbursement fee cost basis is limited to the value of current capacity available for future growth. Given slight deficiency in current source capacity (compared to planning standards), the reimbursement fee does not include the costs of existing wells, as shown in Table 3-4.

**Table 3-4**  
Rivergrove Water District  
*Reimbursement Fee Cost Basis*

Description	Construction	Growth Share CC	
	Cost	%	\$
<b>Source</b>			
Subtotal	\$0	0%	\$0
<b>Storage</b>			
Reservoir #1	\$180,000	4.2%	\$7,606
Reservoir #2	\$500,000	4.2%	\$21,127
Reservoir #3	\$1,125,000	4.2%	\$47,535
Subtotal	\$1,805,000		\$76,268
<b>Water Mains</b>			
6"	\$2,363,189	10.5%	\$247,754
8"	\$1,326,488	10.5%	\$139,067
10"	\$616,841	10.5%	\$64,669
14"	\$0	10.5%	\$0
Fire Hydrants	\$313,448	10.5%	\$32,861
Subtotal	\$4,619,966		\$484,351
<b>Total</b>	<b>\$6,424,966</b>		<b>\$560,619</b>

Source: Memorandum (MSA, August 20, 2014)

Existing storage and distribution facilities do provide capacity for growth, and the growth share is based on system planning data shown in Table 3-1. The growth share of existing distribution system facilities was calculated in the same manner as the improvements contained in Table 3-3 and described previously. For storage improvements, the existing reservoirs will provide capacity for growth. Therefore, 4.2 percent (growth requirement of 0.06 mg divided by total capacity of 1.42 mg) of existing storage value is included.

Distribution system asset values exclude existing mains to be replaced by projects in the capital improvement plan. The total reimbursement fee cost basis is almost \$0.6 million.

### 3.2.3 Develop SDC Schedule

System-wide unit costs of capacity are determined by dividing the reimbursement fee and improvement fee cost bases by the aggregate growth-related capacity requirements shown in Table 3-1. The unit costs are then applied to the capacity requirements of a typical dwelling unit to determine the fee per equivalent dwelling unit (EDU). The EDU rate is then scaled up or down for each development, based on the water meter size.

#### EDU Capacity Requirements

**Table 3-5** presents the calculation of the capacity requirements per EDU based on planning data from the Master Plan. The base average demand per dwelling unit of 268 gallons per day (gpd) is equal to future average day demand of 0.41 mgd (projected in the Master Plan)

divided by future EDUs of 1,529. The number of EDUs was estimated based on the current number of meters by meter size shown in Table 6, and the hydraulic meter capacity relative to a 1-inch meter (the standard meter size for a residential dwelling). The current number of EDUs is estimated to be 1,369, and is project to grow to 1,529, based on water demand forecast assumptions from the Master Plan.

**Table 3-5**  
Rivergrove Water District  
*Capacity Requirements per Equivalent Residential Unit*

	Gpd
Average Demand per EDU (gpd)	268
Max Day Demand per EDU	811
Storage Requirements per EDU	929

To estimate maximum day demand, the average demand is adjusted for a peaking factor of 3, yielding MDD per EDU of 811 gpd. Storage requirement per EDU are estimated to be 929 gpd, slightly greater than MDD.

**Table 3-6**  
Rivergrove Water District  
*Meters in Service*

	Meters	Factor	EDUs
3/4" & 1"	1,343	1	1,343
1.5"	5	2.0	10
2"	3	3.2	10
3"	1	6.4	6
Total	1,352	13	1,369

### Unit Costs and SDC per EDU

Tables 3-7 and 3-8 shows the improvement and reimbursement fee calculations. The cost basis by major function is divided by capacity requirements of growth from Table 1 to determine the unit costs of capacity. Multiplying the per unit capacity requirements by the system-wide unit costs, yields a reimbursement fee of \$4,201 per EDU, and an improvement fee of \$6,192 per EDU.

**Table 3-7**  
 Rivergrove Water District  
 Water System Development Charge  
*Improvement Fee Calculation*

	System Component					Total
	Source	Reliability	Storage	Distribution	Studies	
<b>Growth-related CIP cost</b>	\$580,938	\$52,419	\$23,451	\$273,212	\$27,968	\$957,988
	gpd	gpd	gal	gpd	gpd	
Growth-related capacity req.	130,000	130,000	60,000	130,000	130,000	
Unit cost of capacity	\$4.47	\$0.40	\$0.39	\$2.10	\$0.22	
Capacity Requirements per EDU	811	811	929	811	811	
<b>Improvement Cost per EDU</b>	<b>\$3,623</b>	<b>\$327</b>	<b>\$363</b>	<b>\$1,704</b>	<b>\$174</b>	<b>\$6,192</b>

**Table 3-8**  
 Rivergrove Water District  
 Water System Development Charge  
*Reimbursement Fee Calculation*

	System Component				Total
	Source	Reliability	Storage	Distribution	
<b>Growth-related Asset value</b>	\$0	\$0	\$76,268	\$484,351	\$560,619
	gpd	gpd	gal	gpd	
Growth-related capacity req.	130,000	130,000	60,000	130,000	
Unit cost of capacity	\$0.00	\$0.00	\$1.27	\$3.73	
Capacity Requirements per EDU	811	811	929	811	
<b>Reimbursement Cost per EDU</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,180</b>	<b>\$3,021</b>	<b>\$4,201</b>

**Combined Fee**

The water SDCs are assessed based on meter size. **Table 3-9** shows the combined SDC by meter size, based on the hydraulic meter equivalent of each meter size to the base 1-inch meter. The District currently does not have any meters over 3 inches. The current base SDC (for a 1-inch meter) is \$7,510, compared to a revised SDC of \$10,393.

**Table 3-9**  
 Rivergrove Water District  
 Revised SDC Schedule

<b>Meter Size</b>	<b>Reimbursement SDC</b>	<b>Improvement SDC</b>	<b>Combined SDC</b>	<b>Meter Equivalent</b>
1-inch	\$4,201	\$6,192	\$10,393	1.0
1 1/2-inch	\$8,402	\$12,383	\$20,786	2.0
2-inch	\$13,444	\$19,813	\$33,257	3.2
3-inch	\$26,887	\$39,626	\$66,514	6.4
4-inch	\$42,012	\$61,916	\$103,928	10.0
6-inch	\$84,023	\$123,832	\$207,855	20.0
8-inch	\$134,437	\$198,132	\$332,569	32.0

## 4.0 Conclusions

### 4.1 Rate and Revenue Increases

In FY2014/15, revenue from existing (June 10, 2014) rates is estimated to be \$0.56 million; rate revenue requirements are projected to double by FY2023/24, increasing to almost \$1.1 million. The growth in revenue requirements is attributed to ongoing increases in O&M expenses, as well as increases in cash outlays and debt service to fund the capital expenditures identified in the Master Plan.

To fund the projected revenue requirements, and to maintain cash reserves consistent with industry standards, the following rate increases are recommended:

- FY2015/16: 15 percent
- FY2016/17 – FY2019/20: 8 percent (annually)
- Beyond FY2019/20: 3-4 percent (annually)

Figure 2 provides a comparison of bills for a customer with a ¾" meter and bi-monthly usage of 10 hundred cubic feet (ccf). The bills for other jurisdictions are based on 2014 data; Rivergrove bills are shown based on current (FY2014/15) rates and projected FY2015/16 rates. Many of the other jurisdictions will also implement rate increases over the next year; however, that information is currently not available.

### 4.2 Financial Plan Updating

The financial plan presented in this report is based on available information on revenue, expenditures, customer accounts, and water use as of August 2014. There will usually be differences between assumed and actual conditions because events and circumstances frequently do not occur as expected, and those differences may be significant. Therefore, it is important that the District continue to monitor the financial plan annually, and make adjustments as needed.

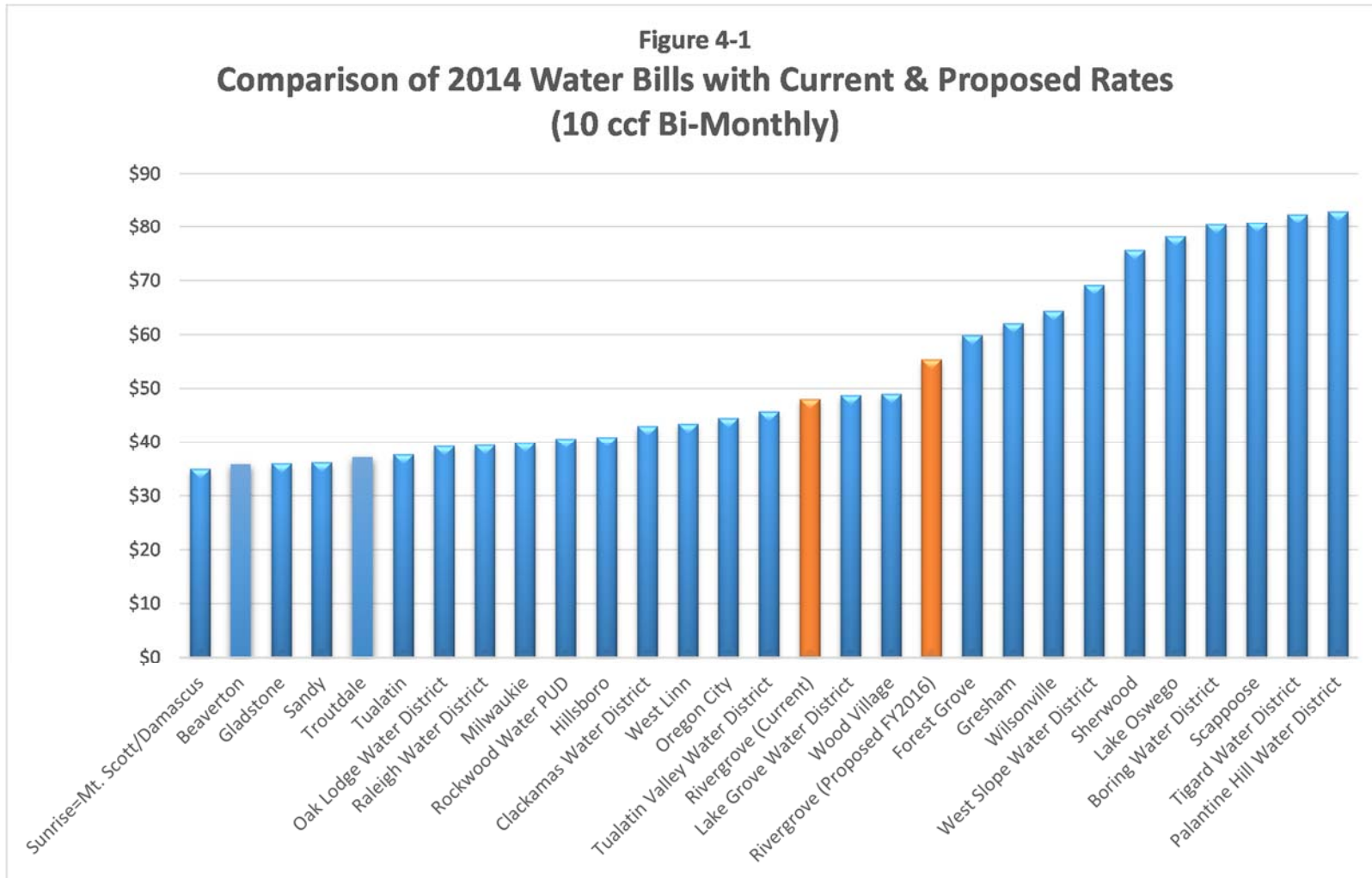
Among the variables that could impact future rate increases are changes in customer growth and water consumption patterns. Over the past several years, the District has observed fluctuating water use per account. The financial plan assumes new customer growth averaging eight (8) new customers per year over the forecast period, and reductions in water use per account as a result of water conservation and price elasticity (reductions in use, in response to increasing prices).

Key assumptions related to capital funding are:

1. The District will secure favorable borrowing terms for the State's Infrastructure Finance Authority for approximately \$1 million to fund seismic upgrades and maintenance for reservoirs.
2. The District will increase its SDC based on the updated analysis, as summarized in Section 3 in order to fund growth-related costs of the CIP.



**Figure 4-1  
Comparison of 2014 Water Bills with Current & Proposed Rates  
(10 ccf Bi-Monthly)**



### **4.3 System Development Charges**

The SDCs presented in Section 3 result in an equitable distribution of capital costs to future development. The revised SDC per EDU is just under \$10,400, which is within the range of SDCs charged in Oregon. Based on 2014 data, water SDCs generally range from \$500 to \$15,000 for an EDU.