Diablo Water District

2018 Facility Reserve Charge & MERA Update

This technical memorandum describes the 2018 update of the existing funding mechanisms used by Diablo Water District (DWD) to finance capital improvements to serve new development. These mechanisms are DWD's Facility Reserve Charge (FRC) and Main Extension Reimbursement Assessment (MERA). This memorandum documents the updated FRC schedule based on year 2018 values, using the existing methodologies developed in DWD's 2006 Facilities Plan and the 2010 Facility Reserve Charge Update, performed in 2011. The technical analysis supporting the update is provided in the tables attached to this memo, which describes the assumptions, findings and recommended update of charges. A list of acronyms used in the study is also included in the Table of Contents for the calculations tables at the end of this memo.

Summary

The historic and updated FRC schedule is presented in Table ES 1 below:

Table ES 1: Historical and Proposed FRC

Current vs Updated Facilities Reserve Charge (FRC)								
	West of Jersey Is. Rd.		East of Jersey Is. Rd.		Bethel Is. (b)		Delta Coves	
Year	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011
Pre-2011	$9,251	--	$13,456	--	$6,607	--	$6,607	--
2011	$5,366	42%	$9,296	31%	$5,366	19%	$5,366	19%
2013	$5,113	45%	$8,929	34%	$5,113	23%	$5,113	23%
2015	$6,548	29%	$8,918	34%	$4,816	27%	$4,816	27%
2016	$6,865	26%	$9,316	31%	$5,072	23%	$5,072	23%
2018	**$8,248**	**11%**	**$10,864**	**19%**	**$5,920**	**10%**	**$5,920**	**10%**

The FRC values have all increased between 2016 and 2018 as a result of the escalation of CIP costs, updating connections based on April 2018 data, and usage based on 2017 data. Still, the FRC for West of Jersey Island Road service area is 11 percent lower than the pre-2011 FRC; the FRC for East of Jersey Island Road is 19 percent below the pre-2011 FRC; the FRC for Bethel Island (not including Delta Coves) is 10 percent below the pre-2011 FRC; and the FRC for Delta Coves on Bethel Island is 10 percent below the pre-2011 FRC.

Calculation of the FRCs is based on DWD's future costs associated with funding for system capacity that is or will be available for new services. The unit FRC value is based on the number of anticipated future developer connections (Equivalent Meters) that will support the expansion-related future costs. An Equivalent Meter (EM) represents a Single Family Dwelling (SFD) 5/8" meter service demand (or 1" meter for home with fire sprinkler system). The updated FRCs are based on cost values, existing

DWD customer demand as of the year 2017 and reduced overall build out water demands as a result of water conservation and should be annually escalated for equity under inflationary impact using the Engineering News Report (ENR) Construction Cost Index (CCI) for the San Francisco region. Note that Bethel Island FRCs must be determined on a case-by-case basis depending on requests for service, so the FRC value shown for that DWD service area reflects solely the system wide (Base) FRC.

Purpose of Charge

The FRC is a funding mechanism for capital improvements constructed by DWD to serve new development. The funds collected from the program are used to finance new construction and retirement of bonded debt for capital facilities required to serve growth. This program ensures that growth is responsible for its fair share of the capital improvements needed within DWD's service area.

DWD's policy is that existing customers should not have to pay higher water rates attributable to the increased water supply, treatment and distribution facility costs required to serve growth. Through the FRC, DWD collects revenue from new water connections to finance the contractually related debt service on existing but unused water treatment plant capacity, and the financing of construction costs for new water facilities required to serve the new development within the DWD service area. The FRC uses a meter capacity-based schedule of charges to equitably share in the costs of new capacity.

All FRC proceeds, as well as interest earned on the balance of funds, are accounted for in a Facility Reserve Fund, which is used solely for growth-related capital project and financing costs as authorized by state law. DWD's Regulation No. 3 specifies that these uses include "…planning, designing, and construction of facilities that increase the District's water supply or the capacity of its water treatment, storage and distribution system; for payment of principal and interest on indebtedness incurred for said facilities; and for payment of expenses of enlarging or relocating facilities to accommodate growth…".

DWD Service Areas

The FRC schedule is based on the division of the DWD sphere of influence into the following four service areas: West of Jersey Island Road, East of Jersey Island Road, Bethel Island (not including Delta Coves), and Delta Coves. The 2018 current and ultimate maximum water demands and facilities required to serve each of the four areas are identified in the attached FRC calculations tables.

Each service area will pay a Base FRC for system-wide projects benefiting the entire system of water supply, transmission and storage capacities. In addition to the Base FRC, each area will pay a supplemental FRC for the specific distribution storage and pumping facilities to serve that particular area. However, the specific facilities and financing requirements of future Bethel Island water services are not known or identified in the FRC for that area, and will be determined on a case-by-case basis depending on the specific service requested.

Basis for the Facilities Reserve Charge

The FRC is based on the general methodology provided in state law as applicable to county water districts and the current capital improvement plan costs for projects developed by DWD. The expansion-related project costs, the annual payments for unused water treatment plant capacity, and the projected future development requirements establish the link between the FRC and the DWD facility costs.

Table 1 of this memorandum tabulates the capital improvement plan (CIP) expansion-related water supply costs and projects required for DWD's ultimate service area, based on 2010 cost values escalated to May 2018 using the ENR CCI for San Francisco. These new facilities and capacity-related projects include: major transmission pipeline projects that provide system wide transmission capacity; reservoirs for meeting system storage, fire protection, and peak demand requirements; Supervisory Control and Data Acquisition (SCADA) system expansion; updating of facilities plan, data and distribution maps; and management of growth-related projects. The total CIP project costs of $81.4 million are divided between system-wide projects of $55.5 million, West of Jersey Island Road Area project of $10.2 million, and the East of Jersey Island Road Area project of $15.6 million. As noted above, the Bethel Island and Dove Coves facilities will be evaluated on a case-by-case basis. Additional information on each of the CIP projects and basis for costs is included in Appendix A of the calculations tables.

The CIP projects in Table 1 are based on facility capacities required to serve customer demands at buildout in each of the DWD service areas. The calculations of these capacity requirements are described below:

- **Current DWD service customers.** The number of future growth-related capacity requests by developers is estimated from the difference between the numbers of water customers at buildout versus the number of current customers. The water use conditions of DWD service customers in 2017 is assumed to be representative of the water use conditions of customers in 2018. Table 2 tabulates that as of 2018 there were 11,812 active service connections with a maximum daily demand (MDD) of 8.2 million gallons per day (MGD) of system wide services. Moreover, DWD has reserved 1.1 MGD MDD of capacity for future industrial use, for a total current demand of 9.3 MGD. The current maximum daily water use of a single-family dwelling is 608 gallons per day (gpd), which represents 1.0 equivalent meters (EMs) of DWD capacity demand. As such, DWD's current 2018 water demand is assumed to be 15,304 EMs, with 95 percent attributed to the West of Jersey Island Road service area.

- **DWD buildout (ultimate) water supply requirements**. DWD's buildout water supply requirements are based on the ultimate number of customers multiplied by their projected unit water demand. The projected buildout average day demand (ADD) is 163 gallons per capita per day (gpcd), as established in DWD's 2015 Urban Water Management Plan. Based on the 2006 Facilities Plan, which projects a buildout population of 75,000 people within DWD's sphere of influence, the projected ultimate ADD is 12.3 million gallons per day (MGD). When multiplied by 2.0, DWD's system wide future maximum to average day water demand ratio, the DWD buildout maximum day demand (MDD) is 24.1 MGD (reduced from the 34.8 MGD buildout max day demand used in the 2006 study due to conservation).

- **Future development requirements.** The effect of DWD's ongoing and future conservation practices will be limit maximum daily water use to 768 gpd per EM, with the number of DWD customers at buildout projected to be 31,379 EMs. As provided in Table 3, the difference between current and buildout customers is approximately 16,075 EMs, with most of the future customers to occur in the West of Jersey Island Road area. Table 4 identifies the DWD capacity requirements at system buildout. These capacity requirements will first be served by existing but unused system capacities, as associated with each service area, and second by new capacity built from the projects identified in the CIP listed in Table 1. As shown, the total buildout capacity requirement from DWD centralized sources of supply and District-wide distribution

facilities is 25.6 MGD, which provides for some standby water supply in the event of disruption during high demand periods at build out. As provided previously in Table 3, this total buildout capacity will serve 31,379 EMs, including 16,075 future EMs to be connected.

- **Future water supplies.** DWD's historical maximum day demand (from 2017) of the Randall-Bold Water Treatment Plant (RBWTP) is 7.8 MGD MDD of the current net capacity of 14.6 MGD (54 percent). In addition, DWD currently uses up to 1.5 MGD from groundwater production wells capable of supplying up to 4 MGD. Therefore, DWD has determined that its additional water supply requirements for buildout are 5 MGD of RBWTP capacity and 2 MGD of groundwater supply well capacity. The costs of the 7 MGD of future capacity, plus the contractual payments on the debt service for the existing but unused capacity at the RBWTP, will be funded from future FRC proceeds.

- **Costs of financing capacity for future development.** To provide DWD with flexibility in implementing projects as required for development, the FRC is based on the financing of expansion-related capital projects provided in Table 1. This is in contrast to a pay-as-you-go approach, where it would be necessary to wait until all required funds were accumulated to construct development projects, which would inhibit DWD's ability to serve new development.

Table 5 tabulates these cash flows based on a projected 25 year financing term for the future CIP projects with a 4 percent level payment bond at a 3 percent cost of issuance; the net total debt service is $87.4 million for the system-wide projects, $16.1 million for the West of Jersey Island Road Area project, and $24.6 million for the East of Jersey Island Road Area projects. These costs, net of interest earnings, are recovered from FRC proceeds based on the calculations of unit FRC rates.

As shown in Table 6, in addition to the financing costs of future expansion-related projects described above, the FRC also covers the debt service on the existing but unused capacity of the RBWTP, which is 36 percent of DWD's future contractual payments to Contra Costa Water District. Also tabulated in Table 6 are the debt service payments on DWD's refinanced 2005 $7.5 Million COP; 2010 $4.2 Million COP; BNSF 24" Relocation bond, which funded expansion-related projects; and a $2.7 million loan for the 2014 Projects.

Update of Charges

The net value of the Base and Supplemental FRCs for each service area in Table 7 is calculated by dividing the financing costs of DWD system capacity for future customers by the number of future customers. Offsetting the unit cost of the Base FRC are the unspent proceeds of past FRC payments in the Facilities Reserve Fund, which totals $3.1 million as of April 30, 2018, less $1 million that is reserved to help pay for the 2014 Projects. The components are described as follows:

- **Base FRC**: The Base FRC for system wide costs includes the facility capacity costs that equally benefit all new development. The Base FRC includes new projects and the remaining debt service of the expansion-related financing of existing but unused facilities. The Base FRC is net of the Facilities Reserve Fund balance, for a net Base FRC of $95.2 million. Dividing the net Base FRC by 16,075 EMs of future development, equals $5,920. On a non-net basis, the Base FRC on a per EM basis is $6,054 as shown in Table 7.

- **Supplemental FRC:** In addition to the Base FRC, each area pays a Supplemental FRC for the specific distribution storage and pumping facilities that are required to serve the area. The

Supplemental FRC charges are developed by dividing the total cost of required improvements by the number of projected EMs due to the future growth in demands within the applicable area. An EM represents an equivalent single-family connection based on equivalent 5/8-inch meters, the size of the standard residential meter. Larger meter sizes allow higher water use and represent a larger number of EMs per connection. (Note: All single family residences are assumed to equal 1.0 EM regardless of the actual meter size required for fire sprinkler purposes, but larger meters required for landscape irrigation are charged based on size.) As shown, the West of Jersey Island Road Supplemental FRC is $16.1 million divided by 6,918 EMs of future development, equaling $2,328 per future West of Jersey Road customer. The supplemental FRC for East of Jersey Island Road is $24.6 million divided by 4,978 EMs of future development, equaling $4,944 per future East of Jersey Island Road customer. The Bethel Island (not including Delta Coves) Supplemental FRC is currently unknown and will be determined on a case-by-case basis depending on the specific service requested. There is currently no Supplemental FRC for the Delta Coves Subdivision because all of its potable water-supporting infrastructure will be constructed and paid for by the developer.

- **Combined FRCs.** In the bottom of Table 7, the Base and Supplemental FRCs are summed by area and adjusted by the reserve fund contribution, to derive the net FRC for each area.

Tables 8 – 11 summarize the 2011, 2013, 2015, 2016 and updated 2018 FRC schedules by service area, as specified in DWD's Regulation No. 3. The tables also provide the FRCs for all water connections with meter sizes from 5/8-inch to 8-inches, based on meter capacity ratio factors defined by the American Water Works Association (AWWA) Manual M1 "Water Rates". CDM Smith recommends that on an annual basis, DWD increase the FRC charges to reflect inflation, based on the increase in the ENR CCI for San Francisco. The proposed FRCs in this memorandum are based on the ENR CCI for May 2018.

MERA Update

The Main Extension Reimbursement Assessment (MERA) obligations are meant to estimate the reimbursement owed to developers because DWD requires a pipe to be sized larger than is strictly needed to serve a particular new development. Table ES 2 summarizes the historic and updated MERA.

Table ES 2: Historical and Proposed MERA

Current vs Updated MERA Charge	
Year	**MERA Incremental Unit Payments, $/EM (Based on 5/8" Meter on SFD)**
Pre-2011	$488
2011	$488
2015	$488
2016	$488
2018	$562

Tables 12 – 14 summarize the outstanding DWD obligation at the end of FY 17-18, the MERA projects, and the calculation of the updated 2018 MERA. DWD has $1.1 million in outstanding MERA related obligations at the end of FY 17-18.

Diablo Water District Facilities Reserve Charge 2018
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List of Acronyms

20x2020: Refers to the conservation goal in DWD's 2015 Urban Water Management Plan
ADD: Average Day Demand
AWWA: American Water Works Association
BSNF: Burlington Northern Santa Fe
CCI: Construction Cost Index
CCWD: Contra Costa Water District
CIP: Capital Improvement Plan
COI: Bond Cost of Issuance (%)
COM: Commercial, Business & Light Industrial
COP: Certificate of Participation
CY: Calendar Year
DU: dwelling unit
DWD: Diablo Water District
DWR: Department of Water Resources
EDU: Equivalent Dwelling Unit
EM: Equivalent Meter (⅝ Inch connected to SFD)
ENR: Engineering News Report
FRC: Facility Reserve Charge
FY: Fiscal Year
gpcd: gallons per capita per day
gpd: gallons per day
ID: inside diameter
IND: industrial accounts
INS: institutional accounts: schools, public service
IRR: irrigation accounts
JIR: Jersey Island Road
LF: linear foot
MDD: Maximum Day Demand
MERA: Main Extension Reimbursement Assessment
MFD: Multiple-Family Dwelling
MG: million gallon
MGD: million gallons per day
RBWTP: Randall-Bold Water Treatment Plant
SCADA: Supervisory Control and Data Acquisition
SF: San Francisco
SFD: Single Family Dwelling
SOI: Sphere of Influence
TIC: True Interest Cost
WTP: Water Treatment Plant

Executive Summary

2018 Facilities Reserve Charge (FRC) and Main Extension Reimbursement Assessment (MERA) Comparison

Current vs Updated Facilities Reserve Charge (FRC)								
	West of Jersey Is. Rd.		East of Jersey Is. Rd.		Bethel Island (b)		Delta Coves	
Year	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011
Pre-2011	$9,251	--	$13,456	--	$6,607	--	$6,607	--
2011	$5,366	42%	$9,296	31%	$5,366	19%	$5,366	19%
2013	$5,113	45%	$8,929	34%	$5,113	23%	$5,113	23%
2015	$6,548	29%	$8,918	34%	$4,816	27%	$4,816	27%
2016	$6,865	26%	$9,316	31%	$5,072	23%	$5,072	23%
2018	**$8,248**	11%	**$10,864**	19%	**$5,920**	10%	**$5,920**	10%

These FRCs are based on the May 2018 ENR CCI for San Francisco (CCI = 12,015), and should be escalated annually.
a. An Equivalent Meter (EM) represents a Single Family Dwelling (SFD) ⅝" meter service demand.
b. For Bethel Island, specific requirements and funding arrangements are not included and will be determined on a case-by-case basis depending on requests for service. The FRC for Delta Coves subdivision is calculated and shown separately.
Costs shown above reflect the following CIP estimating factors:

35% Capital Construction Contingency
35% Implementation Allowance (RBWTP)
25% Implementation Allowance (other)
4% Interest Rate Assumed for Future Bonds
0.5% Interest Rate Assumed on Fund Balances
3% Cost of Issuance

Current vs Updated MERA Charge	
Year	MERA Incremental Unit Payments, $/EM (Based on 5/8" Meter on SFD)
Pre-2011	$488
2011	$488
2015 (a)	$488
2016	$488
2018	**$562**

a. While the calculated rate is slightly less than the current MERA rate, pricing uncertainty may result in a significantly higher MERA. Therefore. the current MERA value is being maintained at the pre-2011 value.
MERA: Main Extension Reimbursement Assessment
The MERA value is a repayment to Developers for Oversizing installed Pipelines.

Table 1
FRC Funded CIP Expansion Projects

Future CIP Expansion Projects	Burdened Project Costs (2018 Values) (a)
Systemwide Projects (Including Delta Coves)	
Additional Randall-Bold WTP Contract Capacity of 5 MGD	$33,147,600
Future Groundwater Supply Well (1 well @ 2 MGD Capacity)	$1,936,700
Future Well Supply Pipeline (From Well to Blending Facility Pipeline)	$2,049,200
Future Well #4	$2,279,600
Transmission Capacity: 24" Pipeline in Neroly/ Delta Roads and Sellers Road to Cypress Road	$11,131,100
Transmission Capacity: 24" Pipeline in Neroly Road between Laurel and Carpenter Roads	$1,676,900
SCADA System Expansion (main control systems)	$322,900
Facilities Plan Updates and Distribution System Map and Facilities Database Updates (c)	$1,620,100
Growth Related Project Management	$1,375,000
Subtotal - Systemwide Facilities (Including Delta Coves)	$55,539,100
West of Jersey Island Road Expansion Facilities	
New 5 MG R-4 Reservoir at R-2 site	$10,231,400
Subtotal - West of Jersey Island Road Expansion Facilities	$10,231,400
East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)	
Cypress Reservoir & Pump Station - first 2.5 MG reservoir all site work, pump station building and initial pumps	$10,058,000
Cypress Reservoir & Pump Station - second 2.5 MG reservoir add one pump	$5,576,400
Subtotal - East of Jersey Island Road Expansion Facilities	$15,634,400
Project Cost Summary by Area	
Systemwide Projects (Including Delta Coves)	**$55,539,100**
West of JIR	**$10,231,400**
East of JIR (Not Including Bethel Island & Delta Coves)	**$15,634,400**
Bethel Island (b)	**$0**
Delta Coves	**$0**
Grand Total	**$81,404,900**

Burdened Project Costs include: 35% capital construction contingency, and implementation allowance of 35% (RBWTP) and 25% (other projects). See Appendix A.

a. July 2010 CIP values escalated to May 2018 per ENR CCI for San Francisco, CA. (July 2010 = 9,909; May 2018 = 12,015)

b. For Bethel Island, specific requirements and funding arrangements are not included and will be determined on a case-by-case basis depending on requests for service.

c. Assumes the following documents would be produced prior to District system buildout, anticipated to be 2040: Facilities Plan updates (6 updates x $70k) = $420k; System Mapping updates (5 updates x $100k) = $500k; Urban Water Management Plan updates (7 updates x about $40k [developer's share]) = $300k; FRC Model updates (12 updates x $15k) = $180k. Total of all items = $1.4M (2013$).

Table 2
Current Water Use

Description	Customer Classifications SFD	MFD	COM/ Other	IRR	IND	Total
Ratio of Maximum to Average Water Demand						
Average Day Demands (MGD, per DWR Report)	4.0	0.1	0.2	0.3	0.0	4.7
Max. Month (MGD)	5.7	0.1	0.3	0.6	0.0	6.8
Ratio of Max. Month to Average Day Demand	1.4	1.2	1.7	1.9	1.0	1.5
Estimated Ratio of Max. Day to Max. Month	1.2	1.1	1.0	1.3		1.2
Ratio of Maximum Day to Average Day Demand	1.7	1.2	1.7	2.4	1.0	**1.8**
Active Service Connections (DWD 2018 Systemwide Supplies)(a)						
West of JIR	10,761	20	228	147	1	11,157
East of JIR (excludes 215 accounts on local wells)	626	0	13	16	0	655
Bethel Island (excludes unmetered local wells)(b)	0	0	0	0	0	0
Total Active Service Connections	11,387	20	241	163	1	11,812
Average Use per SFD Dwelling Unit (gpd/DU, ADD)	353					
Current Maximum Daily Use per DU (gpd/DU, MDD)	608					
Total Current Uses (Equivalent Meters, MDD)	**11,387**	**244**	**570**	**1,293**	**1,810**	**15,304**
Estimated Demands on DWD System						
West of JIR (MGD, ADD)	3.8	0.1	0.2	0.3	0.0	4.4
East of JIR (MGD, ADD)	0.2	0.0	0.0	0.0	0.0	0.3
Bethel Island (MGD, ADD)(b)	0.0	0.0	0.0	0.0	0.0	0.0
Total Average Day Demands (MGD)	4.0	0.1	0.2	0.3	0.0	4.7
Ratio of Maximum Day to Average Day Demand	1.7	1.2	1.7	2.4	1.0	1.8
Maximum Day Demands (MGD, MDD)	6.9	0.1	0.3	0.8	0.0	8.2
Industrial Reserve Capacity (MGD, MDD)(c)					1.1	1.1
Estimated Total Current Maximum Day Demand (MGD, MDD)						9.3

Current Sources of Supply	Capacity in Use	Existing System Net Capacity (MGD)	Max Day Demand (MGD)(d)		Average Day Demand (MGD)	(MG/yr)
RBWTP Surface Water	54%	14.6	7.8		4.0	1,455
Groundwater	37%	4.0	1.5		0.7	267
Total	50%	18.6	9.3		4.7	1,722
Unaccounted for Water				1%	(0.0)	
Total Metered Water Use					4.7	

Demand values used for FRC and MERA are Maximum Day Demands (MDD).
Calendar Year (CY) 2017 Data is from the annual year-end report to DWR.
The maximum day use in 2017 was 8.2 MGD on 7/26/17 (6.710 MGD from RBWTP and 1.488 MGD from wells).
Future industrial maximum to average month ratios are projected to be 1.0.
a. Metered hydrants are proportionally distributed to the areas based on the number of SFD and are included in COM/Other.
b. Bethel Island data on this tab includes Delta Coves current uses.
c. In West of JIR, the DuPont equivalent industrial reserve capacity is 1.1 MGD MDD (assigned to RBWTP supply).
d. Source: Daily water delivery records for 2017, plus 1.1 MGD in reserved industrial capacity (assigned to RBWTP supply).

Table 3
Buildout Water Demands & Equivalent Meters

Description	Customer Classes SFD	MFD	COM/ Other	IRR	IND	Total
Customer Demands at Buildout (MGD)						
West of JIR (MGD @ ADD)	4.6	0.5	1.9	0.2	1.1	8.4
East of JIR (MGD @ ADD)	1.2	0.7	0.3	0.1	0.0	2.3
Bethel Island (MGD @ ADD) (includes Delta Coves)	1.0	0.2	0.4	0.0	0.0	1.6
Total DWD (MGD @ ADD) (a)	6.9	1.3	2.7	0.3	1.1	12.3
Est. Avg. Use per DU Based on 163 gpcd 20x2020 Requirements (gpd/DU @ ADD) (equal to gpd/EM @ ADD)	**384**					
Future Ratio of Max to Avg Daily Demand	2.0	1.2	1.7	3.3	1.0	2.0
Maximum Day Demands (MGD)	15.9	1.5	4.5	1.0	1.1	**24.1**
System Demand at Buildout (EM) (b)	20,750	1,993	5,856	1,293	1,486	31,379
Est Avg. Use per DU (gpd/DU @ MDD) (equal to gpd/EM @ MDD)	**768**					
Maximum Day Demands at Buildout (MGD)						
West of JIR	10.7	0.6	3.2	0.8	1.1	16.5
East of JIR	2.9	0.8	0.6	0.2	0.0	4.4
Bethel Island (includes Delta Coves)	2.3	0.2	0.7	0.0	0.0	3.2
Total System	15.9	1.5	4.5	1.0	1.1	24.1
Current System Demand	6.9	0.1	0.3	0.8	0.0	9.3
New System Demand (MGD @ MDD)	9.0	1.4	4.2	0.2	1.1	**14.8**
Maximum Day Demands at Buildout (Equivalent Meters (EM))						
West of JIR	13,959	747	4,211	1,035	1,486	21,438
East of JIR	3,773	996	734	259	0	5,761
Bethel Island	2,524	185	856	0	0	3,565
Delta Coves (b)(c)(d)	494	64	56	0	0	614
Total System EM at Buildout (b)	20,750	1,993	5,856	1,293	1,486	31,379
Current System EM	11,387	244	570	1,293	1,810	15,304
New (Future) Demands	9,363	1,749	5,286	0	(324)	16,075
New (Future) Equivalent Meters by Area (EM) (a)						
West of JIR	3,850	567	3,697	(258)	(324)	**6,918**
East of JIR	2,989	996	734	259	0	**4,978**
Bethel Island	2,524	185	856	0	0	**3,565**
Delta Coves	494	64	56	0	0	**614**
Total	9,363	1,749	5,286	0	(324)	**16,075**

a. Future (new) demand in DWD service areas is based on 2015 Facilities Plan assumptions and current usage. The 12.3 MGD ADD at buildout is based on a CY 2020 use target of 163 gpcd for total DWD demands.
b. DWD total dwelling units at buildout is based on the 2006 Facilities Plan.
MFD customers have an average of 8 dwelling units (DU) per account at buildout. Buildout MFD accounts are 590 total, or 4,720 DU. One MFD DU equals 0.667 EDUs based on the water demands in 2006. Therefore, 96 MFD units equates to 64 EM.
c. Delta Coves EM values are based on the following information provided by Yousra Tilden (BKF) on October 18, 201
Single family residential = 494 units,
Condominiums = 96 units,
Commercial establishments = 6 units over 7 acres, plus 5.8 acres for the Yacht Club, totals 13 acres.
d. Per 2006 Facilities Plan, Table 6-4, the conversion factor between Commercial and SFD is 4.3 EM/acre. Therefore, 13 acres of Commercial equates to 56 EM.

Source: 2010 UWMP
Note: Due to little growth, assumptions for buildout capacity and demand remain the same.

Table 4
Future Development

Description	Planned Buildout Capacity	FY 2017 Total System Capacity	Existing System Capacity (2017)	Future Development (New EM Customers)
Total System Water Sources of Supply				
Current RBWTP Capacity (MGD) (a)	15		15	
Future RBWTP Capacity (MGD) (a)	5			
Total RBWTP Capacity (MGD) (a)	20			
Less current in-plant water uses of 3% (a)	(0.45)		(0.45)	
Net Capacity (MGD)	19.6			
WTP at Maximum Day (MGD) (b)	19.6	7.8	14.6	11.8
Groundwater Supply at Max Day (MGD) (c)	6.0	1.5	4.0	4.5
Total Capacity (MGD with standby and blending reserves)	25.6	9.3	18.6	16.3

Customer Buildout Demands (EM)	Planned Buildout Demands (EM)	Existing Active Demands (EM)	Existing Capacity of Distribution System	Future Development (New EM Customers)
West of JIR (b)	21,438	14,520	21,438	6,918
East of JIR	5,761	784	775	4,978
Bethel Island	3,565	0	0	3,565
Delta Coves	614	0	0	614
Total (EM)	31,379	15,304	22,213	16,075
Water Use per EM (gpd/EM, MDD)	768			
Total Demand (MDD, MGD)	24.1			

Total Capacity (Percentage)	Planned Buildout Demands	Existing Active Demands
West of JIR	100%	68%
East of JIR	100%	14%
Bethel Island	100%	0%
Delta Coves	100%	0%
Total	100%	49%

Equivalent Meter (EM) provides water service to one single-family dwelling.
a. Current net DWD capacity at Randall-Bold WTP is less in-plant water uses of 3%. Table assumes future 5 MGD increase will be as net capacity.
b. Includes 1.1 MGD in reserved industrial capacity, in West of JIR area, assigned to RBWTP.
c. Total groundwater supply as of 2017 includes 2 MGD from the Stonecreek Well, and presumes the Bethel Island residential wells will be retired before buildout.

Table 5
CIP Expansion Project Financing

Systemwide Projects to be Funded (from Table 1)		$55,539,100	West of Jersey Island Road CIP Projects to be Funded (from Table 1)		$10,231,400	East of Jersey Island Road CIP Projects to be Funded (from Table 1)		$15,634,400
	Year	**Payments (a)**		**Year**	**Payments (a)**		**Year**	**Payments (a)**
Total Payments	2018	$3,661,822	**Total Payments**	2018	$674,580	**Total Payments**	2018	$1,030,812
	2019	$3,661,822		2019	$674,580		2019	$1,030,812
	2020	$3,661,822		2020	$674,580		2020	$1,030,812
	2021	$3,661,822		2021	$674,580		2021	$1,030,812
	2022	$3,661,822		2022	$674,580		2022	$1,030,812
	2023	$3,661,822		2023	$674,580		2023	$1,030,812
	2024	$3,661,822		2024	$674,580		2024	$1,030,812
	2025	$3,661,822		2025	$674,580		2025	$1,030,812
	2026	$3,661,822		2026	$674,580		2026	$1,030,812
	2027	$3,661,822		2027	$674,580		2027	$1,030,812
	2028	$3,661,822		2028	$674,580		2028	$1,030,812
	2029	$3,661,822		2029	$674,580		2029	$1,030,812
	2030	$3,661,822		2030	$674,580		2030	$1,030,812
	2031	$3,661,822		2031	$674,580		2031	$1,030,812
	2032	$3,661,822		2032	$674,580		2032	$1,030,812
	2033	$3,661,822		2033	$674,580		2033	$1,030,812
	2034	$3,661,822		2034	$674,580		2034	$1,030,812
	2035	$3,661,822		2035	$674,580		2035	$1,030,812
	2036	$3,661,822		2036	$674,580		2036	$1,030,812
	2037	$3,661,822		2037	$674,580		2037	$1,030,812
	2038	$3,661,822		2038	$674,580		2038	$1,030,812
	2039	$3,661,822		2039	$674,580		2039	$1,030,812
	2040	$3,661,822		2040	$674,580		2040	$1,030,812
	2041	$3,661,822		2041	$674,580		2041	$1,030,812
	2042	$3,661,822		2042	$674,580		2042	$1,030,812
Total Debt Service		$91,545,545	Total Debt Service		$16,864,499	Total Debt Service		$25,770,307
Minus Interest from Reserve Fund @ 0.5%		($457,728)	Minus Interest from Reserve Fund @ 0.5%		($84,322)	Minus Interest from Reserve Fund @ 0.5%		($128,852)
Minus Last Payment from Reserve Fund		($3,661,822)	Minus Last Payment from Reserve Fund		($674,580)	Minus Last Payment from Reserve Fund		($1,030,812)
Net DWD Debt Service on Systemwide Projects		**$87,425,996**	**Net DWD Debt Service on Systemwide Projects**		**$16,105,596**	**Net Debt Service on East of Jersey Island Road Projects**		**$24,610,643**

a. DWD Debt Service for 2010 CIP Projects (escalated to 2018 $) is based on 25 year Bonds, Level Payments at 4% TIC and 3% COI.

Table 6
Debt Service Payments

Randall-Bold WTP Capacity Contract Payments (Bonded Debt Service, 2012A), (a)			Refinanced DWD 2005 $7.5 Million COP Debt Service for Groundwater Supply (b)			DWD Debt Service for 2010 COP: $4.2 Million 25 year term Level Payments at 4.4976% TIC (c)			BNSF 24" Relocation (d) Debt Service Share			2014 Projects Installment Payments (e)		
	Date	Payments		Date	Payments		Year	Payments		Year	Payments		Year	Payments
Payments Made	10/1/2012	$2,666,720		7/1/2013	$28,480	**Payments Made**	1/1/2011	$224,363	**Payments**	7/1/2013	$2,275	**Payments Made**	12/31/2014	$92,515
	4/1/2013	$138,693	**Payments Made**	1/1/2014	$84,039		7/1/2011	$86,497	**Made**	1/1/2014	$86,713		6/30/2015	$92,515
	10/1/2013	$223,200		7/1/2014	$84,039		1/1/2012	$201,497		7/1/2014	$5,913		12/31/2015	$92,515
	4/1/2014	$223,200		1/1/2015	$84,039		7/1/2012	$85,347		1/1/2015	$85,913		6/30/2016	$92,515
	10/1/2014	$2,123,200		7/1/2015	$84,039		1/1/2013	$200,347		7/1/2015	$5,113		12/31/2016	$92,515
	4/1/2015	$213,700		1/1/2016	$259,039		7/1/2013	$84,197		1/1/2016	$85,113		6/30/2017	$92,515
	10/1/2015	$3,573,700		7/1/2016	$82,289		1/1/2014	$199,197		7/1/2016	$4,313		12/31/2017	$92,515
	4/1/2016	$196,900		1/1/2017	$452,289		7/1/2014	$82,759		1/1/2017	$84,313	**Remaining**	6/30/2018	$92,515
	10/1/2016	$3,591,900		7/1/2017	$78,589		1/1/2015	$202,759		7/1/2017	$3,513	**Payments**	12/31/2018	$92,515
	4/1/2017	$179,925		1/1/2018	$453,589		7/1/2015	$80,959		1/1/2018	$83,513		6/30/2019	$92,515
	10/1/2017	$3,614,925	**Remaining**	7/1/2018	$74,839		1/1/2016	$205,959	**Remaining**	7/1/2018	$2,713		12/31/2019	$92,515
	4/1/2018	$162,750	**Payments**	1/1/2019	$449,839		7/1/2016	$78,459	**Payments**	1/1/2019	$87,713		6/30/2020	$92,515
Remaining Payments	10/1/2018	$3,667,750		7/1/2019	$71,089		1/1/2017	$203,459		7/1/2019	$1,863		12/31/2020	$92,515
	4/1/2019	$110,175		1/1/2020	$451,089		7/1/2017	$75,959		1/1/2020	$86,863		6/30/2021	$92,515
	10/1/2019	$3,730,175		7/1/2020	$67,289		1/1/2018	$205,959		7/1/2020	$1,013		12/31/2021	$2,025,876
	4/1/2020	$55,875		1/1/2021	$457,289	**Remaining**	7/1/2018	$73,359		1/1/2021	$91,013			
	10/1/2020	$3,780,875		7/1/2021	$62,901	**Payments**	1/1/2019	$208,359						
				1/1/2022	$452,901		7/1/2019	$70,659						
				7/1/2022	$58,026		1/1/2020	$210,659						
				1/1/2023	$458,026		7/1/2020	$67,859						
				7/1/2023	$52,526		1/1/2021	$212,859						
				1/1/2024	$462,526		7/1/2021	$64,959						
				7/1/2024	$46,376		1/1/2022	$214,959						
				1/1/2025	$466,376		7/1/2022	$61,959						
				7/1/2025	$40,076		1/1/2023	$216,959						
				1/1/2026	$475,076		7/1/2023	$58,859						
				7/1/2026	$33,008		1/1/2024	$223,859						
				1/1/2027	$483,008		7/1/2024	$55,456						
				7/1/2027	$25,695		1/1/2025	$225,456						
				1/1/2028	$490,695		7/1/2025	$51,844						
				7/1/2028	$17,558		1/1/2026	$226,844						
				1/1/2029	$497,558		7/1/2026	$48,016						
				7/1/2029	$9,158		1/1/2027	$233,016						
				1/1/2030	$504,158		7/1/2027	$43,969						
							1/1/2028	$238,969						
							7/1/2028	$39,581						
							1/1/2029	$239,581						
							7/1/2029	$35,081						
							1/1/2030	$245,081						
							7/1/2030	$30,225						
							1/1/2031	$250,225						
							7/1/2031	$25,000						
							1/1/2032	$255,000						
							7/1/2032	$19,250						
							1/1/2033	$264,250						
							7/1/2033	$13,125						
							1/1/2034	$268,125						
							7/1/2034	$6,750						
							1/1/2035	$276,750						
CCWD Debt Service on RBWTP														
Remaining CCWD Debt Service for RBWTP		$11,344,850	Total Remaining Payments (as of 5/18)		$6,207,080	Total Remaining Payments (as of 5/18)		$4,776,902	Total Remaining Payments (as of 5/18)		$271,175	Total Remaining Payments (as of 5/18)		$2,673,481
Minus Last Payment from Reserve Fund		($2,436,047)	Minus Last Payment from Reserve Fund		($504,158)	Minus Last Payment from Reserve Fund		($276,750)						
Minus Interest from Reserve Fund @ 0.5%		($48,721)	Minus Interest from Reserve Fund @ 0.5%		($35,291)	Minus Interest from Reserve Fund @ 0.5%		($26,291)						
Total Remaining CCWD Debt Service for RBWT		$8,860,082	DWD Net Remaining Payments		$5,667,631	DWD Net Remaining Payments		$4,473,861	DWD Net Remaining Payments		$271,175	DWD Net Remaining Payments		$2,673,481
DWD Development Share of Debt Service														
Total Remaining CCWD Debt Service for RBWTP		$8,860,082										DWD Net Remaining Payments		$2,673,481
DWD Share of RBWTP Capacity (15 of 40 MGD, Capped)		35.5%										Unused Capacity		50%
DWD Share of Remaining Payments		$3,145,329	DWD Net Remaining Payments		$5,667,631	DWD Net Remaining Payments		$4,473,861	DWD Net Remaining Payments		$271,175	Facilities Fund Related		$1,336,740
Existing but Unused Capacity		46%	Existing but Unused Capacity		60%	Unused Capacity		100%	Unused Capacity		80%	FRC Reserves (f)		($1,000,000)
Future Growth Share of DWD Capacity in RBWTP		**$1,456,579**	**Net DWD Debt Service Payments for Refinanced 2005 COP**		**$3,400,579**	**Net DWD Debt Service for 2010 COP**		**$4,473,861**	**Net DWD Debt Service for BNSF 24" Relocation**		**$216,940**	**Net DWD Debt Service for 2014 Projects**		**$336,740**

a. For the existing Randall-Bold WTP Bonds, DWD pays a 35.5% share and CCWD pays the remaining 64.5% share. DWD's 35.5% share of the existing capacity is divided between existing and future users.
b. The original 2005 COP of $7.5 million funded the $1.4 million Glen Park Well and Pump Station, a $2.5 million pipeline and a $3 million Blending Facility.
The capacity of the Blending Facility and pipeline is 7 MGD, and 2 MGD for the well and pump station. As of 2010, all facilities are operating at 1.85 MGD.
The 2010 weighted average use of the facilites is 40 percent.
c. Projects are the Stonecreek Well at 2 MGD and pipeline at 7 MGD, with no 2010 usage.
d. New BNSF 24" pipeline is estimated to have 80 percent of its total capacity available for future growth. The BNSF 24" Relocation Debt Service is combined with the DWD 2005 Debt Service, which will be responsible for the last payment.
e. New administrative facility and Reservoir No. 1 interior recoating. Fifty percent is attributed to growth and is the responsibility of the Facilities Fund.
f. DWD has earmarked $1 million of the FRC Reserves for the final 2014 Projects payment. Coordinate with fee reduction in Table 7.

Table 7
2018 FRC Update

Description	Facilities Reserve Fund for Fee Reduction (b)	FRC Financing of Expansion Projects	Remaining Debt Service for Expansion-Related Systemwide Facilities: RBWTP Facility	Groundwater Supply Facilities	2010 COP $4.2 Million	BNSF 24" Relocation	2014 Projects	Total
DWD Assets, Costs & Contractual Obligations								
Base Systemwide	($2,144,969)	$87,425,996	$1,456,579	$3,400,579	$4,473,861	$216,940	$336,740	$95,165,726
West of JIR (a)		$16,105,596						$16,105,596
East of JIR (a)		$24,610,643						$24,610,643
Bethel Island		$0						$0
Delta Coves		$0						$0
Total		$128,142,235	$1,456,579	$3,400,579	$4,473,861	$216,940	$336,740	$135,881,965
Future Development Customers Paying FRCs (EM)								
Base Systemwide				16,075				
West of JIR				6,918				
East of JIR				4,978				
Bethel Island				3,565				
Delta Coves				614				
Incremental Unit Payments ($/EM, Future Customers)		**FRC Projects ($ per EM)**	**FRC Debt Service Payments ($ per EM)**					**Subtotal FRC ($ per EM)**
Systemwide Base FRC	($133)	$5,439	$91	$212	$278	$13	$21	$6,054
Supplemental FRCs								
West of JIR		$2,328						$2,328
East of JIR		$4,944						$4,944
Bethel Island (a)		$0						$0
Delta Coves		$0						$0

Total FRCs Including Allocated Systemwide Costs ($/EM)	Facilities Reserve Fund for Fee Reduction (b)	Combined Systemwide & Area FRC	Total FRC
West of JIR	($133)	$8,382	**$8,248**
East of JIR	($133)	$10,998	**$10,864**
Bethel Island (a)	($133)	$6,054	**$5,920**
Delta Coves	($133)	$6,054	**$5,920**

The 2018 FRC Update is based on Future Cashflows Associated with Facility Expansion.

a. The Bethel Island Supplemental FRC for Distribution Storage & Pumping Facilities will be determined on a case-by-case basis depending on requests for service. The Total FRC for Bethel Island will be the Base Fee plus the Supplemental Fee identified on a case-by-case basis.

b. Facilities Reserve Fund balance of $3,144,969, as of April 30, 2018, reduced by $1 million that is earmarked for the final 2014 Projects payment.

Table 8
West of Jersey Island Rd 2018 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges
5/8" (EM)	1.0	$5,366	$5,113	$6,548	$6,865
1"	1.4	$7,512	$7,159	$9,167	$9,611
1.5"	1.8	$9,658	$9,204	$11,786	$12,357
2"	2.9	$15,560	$14,828	$18,989	$19,909
3"	11.0	$59,021	$56,246	$72,025	$75,516
4"	14.0	$75,118	$71,585	$91,669	$96,112
6"	21.0	$112,677	$107,378	$137,503	$144,168
8"	29.0	$155,602	$148,284	$189,885	$199,088

a. All meter capacity ratio factors are from AWWA Manual M1.
Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.
The charge for a 1" meter for residential services, which is made necessary for the installation of a f
system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table 9
East of Jersey Island Rd 2018 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges
⅝" (EM)	**1.0**	**$9,296**	**$8,929**	**$8,918**	**$9,316**	**$10,864**
1"	1.4	$13,014	$12,500	$12,485	$13,043	$15,210
1.5"	1.8	$16,733	$16,072	$16,052	$16,769	$19,556
2"	2.9	$26,958	$25,893	$25,861	$27,017	$31,507
3"	11.0	$102,256	$98,215	$98,095	$102,478	$119,507
4"	14.0	$130,144	$125,001	$124,848	$130,427	$152,100
6"	21.0	$195,216	$187,502	$187,273	$195,640	$228,151
8"	29.0	$269,584	$258,931	$258,614	$270,170	$315,065

a. All meter capacity ratio factors are from AWWA Manual M1.
Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.
The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table 10
Bethel Island 2018 Base FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges
5/8" (EM)	1.0	$5,366	$5,113	$4,816	$5,072	$5,920
1"	1.4	$7,512	$7,159	$6,742	$7,100	$8,288
1.5"	1.8	$9,658	$9,204	$8,669	$9,129	$10,656
2"	2.9	$15,560	$14,828	$13,966	$14,708	$17,169
3"	11.0	$59,021	$56,246	$52,975	$55,789	$65,122
4"	14.0	$75,118	$71,585	$67,422	$71,004	$82,883
6"	21.0	$112,677	$107,378	$101,133	$106,506	$124,324
8"	29.0	$155,602	$148,284	$139,660	$147,080	$171,685

a. All meter capacity ratio factors are from AWWA Manual M1.
Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.
The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

b. The Bethel Island Supplemental FRC for Distribution Storage & Pumping Facilities will be determined on a case-by-case basis depending on requests for service. The Total FRC for Bethel Island will be the Base Fee plus the Supplemental Fee.

Table 11
Delta Coves 2018 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges
5/8" (EM)	1.0	NA	NA	$4,816	$5,072	$5,920
1"	1.4	NA	NA	$6,742	$7,100	$8,288
1.5"	1.8	NA	NA	$8,669	$9,129	$10,656
2"	2.9	NA	NA	$13,966	$14,708	$17,169
3"	11.0	NA	NA	$52,975	$55,789	$65,122
4"	14.0	NA	NA	$67,422	$71,004	$82,883
6"	21.0	NA	NA	$101,133	$106,506	$124,324
8"	29.0	NA	NA	$139,660	$147,080	$171,685

a. All meter capacity ratio factors are from AWWA Manual M1.
Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.
The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Appendix A

Summary of Recommended Capital Improvement Projects for Ultimate DWD System

Type of Project and Area Served	Project	Estimated Cost (July 2010 $) (1)					Total Capital Cost (May 2018 dollars)
		Base Construction Cost	Total Construction Cost (2)	Project Implementation Allowance (3)	Land Cost	Total Capital Cost (July 2010 dollars) (1)	
Systemwide Projects (Including Delta Coves)							
Treated Water Supply (4)	Future expansion of Randall-Bold WTP for additional 5 mgd capacity. WTP expansion cost includes replacement of Randall-Bold high lift pumps for additional pumping capacity, additional clearwell capacity, and treatment upgrades and associated documentation.	$15,000,000	$20,250,000	$7,087,500	$0	$27,337,500	$33,147,600
Groundwater Supply (5)	Additional groundwater supply wells - 1 more well at 1.5 mgd average capacity per well. Well and pump station costs based on Stonecreek Well and Pump Station. Land cost for 0.25 acre per site at up to $157,000 per acre for developable land.	$900,000	$1,215,000	$303,750	$78,500	$1,597,250	$1,936,700
	Pipeline to connect new High School well to Blending Facility pipeline. Pipeline anticipated to consist of installation of 18-inch pipe w/ 2,000 ft unpaved construction, and 3,500 ft paved construction. Pipe unit cost of $115 per LF in unpaved roads, and $220 per LF along Sellers Rd.	$1,000,000	$1,350,000	$337,500	$0	$1,690,000	$2,049,200
	Groundwater Well #4. Presumed same size as Stonecreek & will need 2,000 ft of pipe to connect to Well #3. Assumes 50% increase from Base to Total Construction Cost due to additonal planning required.	**$1,000,000**	**$1,500,000**	**$375,000**	**$0**	**$1,880,000**	**$2,279,600**
Transmission Capacity (6)	Transmission pipeline in Neroly/Delta Roads and Sellers Avenue to Cypress Road (18,100 LF of 24-inch pipe at $280 per LF assuming paved unit costs; plus 400 LF total for two cased crossings at Marsh Creek and Railroad at $935 per LF)	$5,440,000	$7,344,000	$1,836,000	$0	$9,180,000	$11,131,100
Transmission Capacity (6)	Transmission pipeline in Neroly Road south of Laurel Road to approximately Carpenter Road (2,614 LF of 24-inch pipe at $280 per LF assuming paved unit costs). Does not include 310 LF installed under MERA for CIP 92. Does not include 1,566 LF installed under MERA for Riata project.	$819,000	$1,106,000	$277,000	$0	$1,383,000	$1,676,900
SCADA System Expansion (7)	Upgrade main SCADA control system (PLC's and HMI workstations) for future expansion to serve ultimate system facilities	NA	NA	NA	$0	NA	$322,900
Facilities Plan Updates; Distribution System Map Updates (10)	Periodic updates of DWD's facilities plan to reflect actual growth and adjust facilities requirements for future growth; and periodic updates of the distribution system maps and facilities database to add new facilities as growth occurs.	NA	NA	NA	NA	$2,100,000	$1,620,100
Growth Related Project Management	Pre-planning, planning and related staff labor for growth projects. Assumed to be constant for five years. Budgeted based on FY 14-15 staff costs of $275,000. (5 x $275,000 = $1,375,000)						$1,375,000
Subtotal for Systemwide Projects (Including Delta Coves)						*$45,167,750*	*$55,539,100*
West of Jersey Island Road Expansion Facilities							
Storage Facilities (8)	Reservoir R-4: 5 MG tank at R-2 site	$5,000,000	$6,750,000	$1,688,000	$0	$8,438,000	$10,231,400
Subtotal for West of Jersey Island Road Expansion Facilities						*$8,438,000*	*$10,231,400*
East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)							
Storage and Pumping Facilities (8) (9)	Cypress Reservoir & Pump Station: First phase including all site work, 2.5 MG tank, and pump station building with capacity for 5x150 HP pumps. Also assumes chemical storage @ $200k, tank mixer @ $60k, and generator @ $250k. Land cost for 3.7 acres at $40,000 per acre.	$4,810,000	$6,494,000	$1,624,000	$177,000	$8,295,000	$10,058,000
	Cypress Reservoir & Pump Station: Second phase with second 2.5 MG tank, add pumps at pump station	$2,725,000	$3,679,000	$920,000	$0	$4,599,000	$5,576,400
Subtotal for East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)						*$12,894,000*	*$15,634,400*
Bethel Island and Delta Coves							
Specific requirements and financing arrangements for storage and pumping facilities for new development on Bethel Island are addressed on a case-by-case basis. For example, the Delta Coves development is financing and constructing the required storage and pumping facilities for its development. Future service to other parts of the island would be addressed in a similar manner.							
GRAND TOTAL FOR ALL RECOMMENDED PROJECTS						***$66,499,750***	***$81,404,900***

(1) All costs in these columns as marked are in July 2010 dollars, ENR CCI for San Francisco of 9,909.

(2) Unless noted otherwise, Total Construction Cost equals the base construction cost plus a 35% construction contingency to cover required work not yet identified at the planning level, unforeseen conditions, bid climate, and change orders during construction.

(3) Project implementation allowance at 25% of total construction cost for all projects except the RBWTP expansion to cover engineering design, construction services, environmental, permitting and legal. The implementation allowance for the RBWTP expansion project is 35% of total construction cost to include an additional 10% for CCWD project administration.

(4) Per DWD 2015 UWMP, DWR's 20x2020 program requries that DWD's treated water use will be 163 gallons per capita per day by 2020. With a service area buildout population of 75,000 in 2040, anticipated water use will be 12.3 MGD (ADD) and 24.5 MGD (MDD). Due to existing and planned DWD groundwater wells, current financial plan anticipates DWD owned capacity of RBWTP will be 20 MGD- requiring expansion of the RBWTP by 5 MGD.

(5) Groundwater well costs include standby power capability for use as emergency storage. Costs are based on the Stonecreek Well and Pump Station construction.

(6) Pipeline unit construction costs include valves and appurtenances, pavement removal and replacement, traffic control, and an average allowance for correction of utility interferences.

(7) Costs of CIP projects for supply and distribution storage and pumping include the costs of SCADA equipment for those facilities. Work associated with this item assumed to include: new Monitoring panel PLC at the Corp Yard; new PLC at the DWD/RBWTP control panel; new PLC at the Blending Facility, new Ethernet switch at the Corp Yard, radio system upgrades/replacement, Local Operating Panel replacements at South Park PS, Glen Park Well PS, and Blending Facility. Capital cost reflects rough estimate for all work to be performed.

(8) Reservoir costs assume above-ground concrete tanks, and include site work, valve valult, telemetry, piping and appurtenances. Costs for reservoirs west of Jersey Island Road are based on average site conditions; costs for reservoirs east of Jersey Island Road include a soil/foundation allowance due to the poor soils in those areas.

(9) Distribution pump station costs assume an above-ground building, and include standby pump, standby power, and telemetry.

(10) Cost for this item revised as described in Table 1 footer.

Table 12
Main Extension Reimbursement Assessment-Related DWD Obligations

Developer	DWD Development	Date Accepted	Total MERA Value	Outstanding DWD Obligation at end of FY 17-18
DWD Outstanding Obligations for MERA Reimbursements				
Discovery Homes	8736 - Pheasant Meadows	Pending	$7,612	$7,612
City of Oakley	CIP 92	7/1/2016	$35,360	$25,360
Centex Homes	8530 /8790 Riata	8/31/2008	$158,870	$63,548
Pulte Homes	8731 - Magnolia Park	8/15/2011	$220,405	$88,159
SDC Delta Coves LLC	6013 - Delta Coves, 18" Offsite	Pending	$810,606	$810,606
Brookfield Emerson Land, LLC	9032, 9349, 9350 & 9351 Emerson Ranch	Pending	$30,250	$30,250
Albert D. Seeno Construction	8760-9027 - Carpenter Road Improvements - 18" Waterline	Pending	$90,340	$90,340
Total				**$1,115,875**

MERA: Main Extension Reimbursement Assessment

Table 13
Pipeline Projects Funded by Developers

General Location	Pipe Capacity Reqd for Build out (Inch ID)	Fully Burdened Unit Cost (2018 per LF)	Pipe Length Reqd for Buildout (LF)	Construction Contingency	Est Pipe Distribution Cost	Pipe Capacity Reqd for Current Developers (Inch ID)	Current Developer Reimbursement Unit Cost ($ per LF)	DWD Payments to Developer for Oversizing Reimbursement (10 yr payment)
West of Jersey Island Road Area								
12" pipelines	12	$71	20,475	20%	$1,747,647	8	$50	$728,186
16" pipelines	16	$114	9,000	20%	$1,229,114	8	$50	$781,000
18" pipelines	18	$128	750	20%	$115,229	8	$50	$77,887
20" pipelines	20	$142	7,500	20%	$1,280,327	8	$50	$906,899
Marsh Creek Crossing at Brownstone Rd. (casing)	12	$673	200	20%	$161,558	8	$526	$56,451
BNSF Railroad Crossing at Laurel Rd. (casing)	16	$821	200	20%	$196,988	8	$526	$91,880
Subtotal West of Jersey Island Road Area			38,125		$4,730,864			$2,642,302
East of Jersey Island Road Area								
12" pipelines	12	$71	71,000	20%	$6,060,216	8	$50	$2,525,090
16" pipelines	16	$114	2,000	20%	$273,137	8	$50	$173,555
20" pipelines	20	$142	15,500	20%	$2,646,010	8	$50	$1,874,257
Contra Costa Canal Crossing just northwest of Jersey Island Road & East Cypress Rd. (casing)	20	$992	200	20%	$238,086	8	$526	$132,978
Subtotal East of Jersey Island Road Area			88,700		$9,217,448			$4,705,881
Bethel Island (Delta Coves)								
16" pipelines in Delta Coves (PVC)	16	$161	6,571	20%	$1,272,965	12	$108	$565,762
Subtotal Bethel Island (Delta Coves)			6,571		$1,272,965			$565,762
Summary								
Subtotal West of Jersey Island Road Area			38,125		$4,730,864			$2,642,302
Subtotal East of Jersey Island Road Area			88,700		$9,217,448			$4,705,881
Subtotal Bethel Island (Delta Coves)			6,571		$1,272,965			$565,762
Total DWD Sphere of Influence			133,396		$15,221,277			**$7,913,945**

These projects represent the remaining facilities required to buildout. Distribution pipes already constructed are listed in the fixed assets.

Note: The MERA calculation is for DWD's Sphere of Influence, including service to Delta Coves on Bethel Island. Specific requirements for service to other parts of Bethel Island will be determined on a case-by-case basis.

All costs in this table are in May 2018 dollars (SF ENR CCI = 12,015). Unit costs for pipes include pipes, fittings, valves and corrosion protection. The unit costs are average values including both simple and difficult projects. Unit costs do not include any construction contingency. The estimated construction cost includes a 20 percent contingency.

Applicable costs for potential reimbursement are calculated as: 1) For SOI except Delta Coves, the estimated construction cost minus the cost for an 8-inch pipeline using unit costs of 8-inch pipeline (unpaved); and for 8-inch pipe in casing; and 2) For Bethel Island (Delta Coves) as the estimated construction cost of 16-inch PVC minus the cost for a 12-inch PVC pipeline using unit costs specifically developed by CDM Smith at May 2018 dollars (SF ENR CCI = 12,015) Unit costs by CDM Smith do not include mobilization, restoration, patching, or other ancillary items/activities. Specific reimbursement amounts are determined on a case-by-case basis for each development based on DWD's MERA policy. New development is reimbursed for the difference between the cost of the required waterline and the cost of either an 8-inch or 12-inch pipeline depending on what is required to provide adequate service, including fire flows, for the development.

Table 14
2018 Main Extension Reimbursement Assessment

Description	Value
Outstanding MERA Reimbursement Obligations	$1,115,875
Future MERA Project Reimbursements	$7,913,945
Total MERA Obligations	$9,029,820
Future Development Customers Paying FRC (EM)	16,075
Calculated 2018 MERA Incremental Unit Payments ($/EM or ⅝" Meter on SFD) (a)	**$562**
Calculated 2011 MERA Payment (⅝" Meter) (a)	$507
Pre-2011 MERA Payment (⅝" Meter)	$488

MERA: Main Extension Reimbursement Assessment
The MERA value is a repayment to Developers for Oversizing installed Pipelines.
a. DWD may not always adopt the calculated MERA Incremental Unit Payment.