



October 5, 2016

Ms. Hilary Chumpitazi
Accounting Manager/Treasurer
Municipal Water District of Orange County
P.O. Box 20895
Fountain Valley, CA 92728-0895

Re: Municipal Water District of Orange County ("District") GASB 45 Valuation

Dear Ms. Chumpitazi:

This report sets forth the results of our GASB 45 actuarial valuation of the District's retiree health insurance program as of July 1, 2016.

In June, 2004 the Governmental Accounting Standards Board (GASB) issued accrual accounting standards for retiree healthcare benefits, GASB 43 and GASB 45. GASB 43/45 require public employers such as the District to perform periodic actuarial valuations to measure and disclose their retiree healthcare liabilities for the financial statements of both the employer and the trust, if any, set aside to pre-fund these liabilities. The District must obtain actuarial valuations of its retiree health insurance program under GASB 43/45 not less frequently than once every three years.

To accomplish these objectives the District selected Demsey, Filliger and Associates (DF&A) to perform an actuarial valuation of the retiree health insurance program as of July 1, 2016. This report may be compared with the valuation performed by DF&A as of July 1, 2014, to see how the liabilities have changed since the last valuation. We are available to answer any questions the District may have concerning the report.

Financial Results

We have determined that the amount of actuarial liability for District-paid retiree benefits is \$2,293,846 as of July 1, 2016. This represents the present value of all benefits expected to be paid by the District for its current and future retirees. If the District were to place this amount in a fund earning interest at the rate of 6.0% per year, and all other actuarial assumptions were exactly met, the fund would have exactly enough to pay all expected benefits.

This includes benefits for 8 retirees as well as 18 active employees who may become eligible to retire and receive benefits in the future. It excludes employees hired after the cutoff date for eligibility for benefits, July 1, 2012.

When we apportion the \$2,293,846 into past service and future service components under the Entry Age, Level Percent of Pay Cost Method, the past service liability (or Accrued Liability) component is \$2,002,333 as of July 1, 2016. This represents the present value of all benefits accrued through the valuation date assuming that each employee's liability is expensed from hire date until retirement date as a level percentage of pay. The \$2,002,333 is comprised of liabilities of \$1,588,665 for active employees and \$413,668 for retirees.

The District has established an irrevocable Section 115 Trust through Public Agency Retirement Services (PARS), trusted by Union Bank, for the pre-funding of retiree healthcare benefits. As of July 1, 2016, the PARS Trust had a value of \$1,393,327. Therefore, the Unfunded Accrued Liability (called the UAL, equal to the AL less assets) is \$609,006.

We have determined that Municipal Water District of Orange County's "Annual Required Contributions", or "ARC", for the fiscal year 2016-17, is \$71,249. The \$71,249 is comprised of the present value of benefits accruing in the current year, called the "Service Cost", and a 30-year amortization of the UAL. We estimate that the District will pay approximately \$34,500 for the 2016-17 fiscal year in healthcare costs for its retirees and covered spouses, so the difference between the accrual accounting expense (ARC) and pay-as-you-go is an increase of \$36,749.

There are two adjustments to the ARC that are required in order to determine the District's Annual OPEB Cost (AOC) for the 2016-17 fiscal year. We have calculated these adjustments based on an estimated Net OPEB (Asset) of (\$117,090) as of June 30, 2016, resulting in an AOC for 2016-17 of \$70,308.

We show these numbers in the table on the next page and in Exhibit I. All amounts are net of expected future retiree contributions, if any.

Municipal Water District of Orange County
Annual Liabilities and Expense under
GASB 45 Accrual Accounting Standard
Entry Age, Level Percent of Pay Cost Method

Item	Amounts for Fiscal 2016-17
Present Value of Future Benefits (PVFB)	
Active	\$1,880,178
Retired	<u>413,668</u>
Total: PVFB	\$2,293,846
Accrued Liability (AL)	
Actives	\$1,588,665
Retired	<u>413,668</u>
Total: AL	\$2,002,333
Assets	<u>(1,393,327)</u>
Total: Unfunded AL	\$609,006
Annual Required Contributions (ARC)	
Service Cost At Year-End	\$39,606
30-year Amortization of Unfunded AL	<u>31,643</u>
Total: ARC	\$71,249
Adjustments to ARC	
Interest on Net OPEB (Asset)*	(7,025)
Adjustment to ARC*	<u>6,084</u>
Total: Annual OPEB Cost (AOC) for 2016-17	\$70,308

*Amounts based on estimated June 30, 2016 Net OPEB (Asset) of (\$117,090).

The ARC of \$71,249, shown above, should be used for the 2016-17 fiscal year, but the Annual OPEB Cost must include adjustments based on the ending Net OPEB Obligation/(Asset) for the immediately preceding fiscal year, which are not known precisely in advance.

When the District begins preparation of the June 30, 2017 government-wide financial statements, DF&A will provide the District and its auditors with complimentary assistance in preparation of footnotes and required supplemental information for compliance with GASB 45 (and GASB 43, if applicable).

Differences from Prior Valuation

The most recent prior valuation was completed as of July 1, 2014 by DF&A. The AL (Accrued Liability) as of that date was \$1,740,686, compared to \$2,002,333 as of July 1, 2016. In this section, we provide a reconciliation between the two numbers so that it is possible to trace the AL from one actuarial report to the next.

Several factors have caused the AL to change since 2014. The passage of time increases the AL as the employees accrue more service and get closer to receiving benefits. There are actuarial gains/losses from one valuation to the next, and changes in actuarial assumptions and methodology for the current valuation. To summarize, the most important changes were as follows:

1. There was a gain of \$145,065 (a decrease in the AL) due to increases in healthcare premiums less than expected.
2. We increased the initial healthcare trend rate from 6% to 8% to better reflect our expectations for increases in healthcare premiums over the next several years. This change caused an increase in the AL of \$78,161.
3. We changed to more up-to-date mortality tables. This change caused an increase in the AL of \$112,622.
4. We changed the actuarial cost method from Projected Unit Credit to Entry Age, Level Percent of Pay, in anticipation of GASB 75. This change increased the AL by \$263,984.
5. There was a net census gain (a decrease in the AL) of \$270,663, primarily due to fewer retirements and higher turnover than expected.

The estimated changes to the AL from July 1, 2014 to July 1, 2016 are summarized below:

Changes to AL	Amount
AL as of 7/1/14	\$1,740,686
Passage of time	222,608
Increase in premiums < expected	(145,065)
Change in trend rates	78,161
Change in mortality tables	112,622
Change in cost method	263,984
Census (gain)	<u>(270,663)</u>
AL as of 7/1/16	\$2,002,333

Funding Schedules

There are many ways to approach the pre-funding of retiree healthcare benefits. In the *Financial Results* section, we determined the annual expense for all District-paid benefits. The expense is an orderly methodology, developed by the GASB, to account for retiree healthcare benefits. However, the GASB 45 expense has no direct relation to amounts the District may set aside to pre-fund healthcare benefits.

The table on the next page provides the District with three alternative schedules for funding (as contrasted with expensing) retiree healthcare benefits. The schedules all assume that the retiree trust fund earns 6.0% per annum on its investments, a starting trust value of \$1,393,327 as of July 1, 2016, and that contributions and benefits are paid mid-year.

The schedules are:

1. A level contribution amount for the next 20 years.
2. A level contribution amount for the next 10 years.
3. A constant percentage (3%) increase for the next 20 years.

We provide these funding schedules to give the District a sense of the various alternatives available to it to pre-fund its retiree healthcare obligation. The three funding schedules are simply three different examples of how the District may choose to spread its costs.

By comparing the schedules, you can see the effect that early pre-funding has on the total amount the District will eventually have to pay. Because of investment earnings on fund assets, the earlier contributions are made, the less the District will have to pay in the long run. Of course, the advantages of pre-funding will have to be weighed against other uses of the money.

The table on the following page shows the required annual outlay under the pay-as-you-go method and each of the above schedules. **The three funding schedules include the "pay-as-you-go" costs; therefore, the amount of pre-funding is the excess over the "pay-as-you-go" amount.**

Treatment of Implicit Subsidy

We exclude the implicit subsidy from these funding schedules because we do not recommend that the District pre-fund for the full age-adjusted costs reflected in the GASB 45 liabilities shown in the first section of this report. If the District's premium structure changes in the future to explicitly charge under-age 65 retirees for the full actuarial cost of their benefits, this change will be offset by a lowering of the active employee rates (all else remaining equal), resulting in a direct reduction in District operating expenses on behalf of active employees from that point forward. For this reason among others, we believe that pre-funding of the full GASB liability would be redundant.

Municipal Water District of Orange County

Sample Funding Schedules (Closed Group)

Starting Trust Value of \$1,393,327 as of July 1, 2016

Fiscal Year	Pay-as-you-go	Level Contribution for 20 years	Level Contribution for 10 years	Constant Percentage Increase
2016	\$34,500	\$21,895	\$34,120	\$17,244
2017	48,610	21,895	34,120	17,761
2018	64,594	21,895	34,120	18,294
2019	73,324	21,895	34,120	18,843
2020	87,599	21,895	34,120	19,408
2021	98,344	21,895	34,120	19,991
2022	91,612	21,895	34,120	20,590
2023	92,681	21,895	34,120	21,208
2024	103,916	21,895	34,120	21,844
2025	115,392	21,895	34,120	22,500
2026	104,523	21,895	0	23,174
2027	114,445	21,895	0	23,870
2028	124,595	21,895	0	24,586
2029	126,869	21,895	0	25,323
2030	128,362	21,895	0	26,083
2031	121,984	21,895	0	26,866
2032	116,822	21,895	0	27,672
2033	123,144	21,895	0	28,502
2034	129,555	21,895	0	29,357
2035	136,754	21,895	0	30,237
2036	144,060	0	0	0
2037	140,525	0	0	0
2038	145,896	0	0	0
2039	133,584	0	0	0
2040	131,173	0	0	0
2041	133,259	0	0	0
2042	135,225	0	0	0
2043	136,208	0	0	0
2044	132,513	0	0	0
2045	128,318	0	0	0
2046	127,210	0	0	0
2047	125,757	0	0	0
2048	124,001	0	0	0
2049	121,979	0	0	0
2050	119,695	0	0	0
2055	103,500	0	0	0
2060	79,495	0	0	0
2065	53,522	0	0	0
2070	30,479	0	0	0

Actuarial Assumptions

In order to perform the valuation, the actuary must make certain assumptions regarding such items as rates of employee turnover, retirement, and mortality, as well as economic assumptions regarding healthcare inflation and interest rates. Our assumptions are based on a standard set of assumptions we have used for similar valuations, modified as appropriate for the District. For example, turnover rates are taken from a standard actuarial table, T-5, increased by 100% at all ages. This matches the District's historic turnover patterns. Retirement rates were also based on recent District retirement patterns. Both assumptions should be reviewed in the next valuation to see if they are tracking well with experience.

The discount rate of 6.0% is based on our best estimate of expected long-term plan experience. It is in accordance with our understanding of the guidelines for selection of this rate under GASB 45 for funded plans such as the District's. The healthcare trend rates are based on our analysis of recent District experience and our knowledge of the general healthcare environment.

In determining the cost of covering early retirees (those under the age of 65), we used an age-adjusted claims cost matrix fitted to the average premium for active employees and early retirees. A complete description of the actuarial assumptions used in the valuation is set forth in the "Actuarial Assumptions" section.

Projected Annual Pay-as-you go Costs

As part of the valuation, we prepared a projection of the expected annual cost to the District to pay benefits on behalf of its retirees on a pay-as-you-go basis. These numbers are computed on a closed group basis, assuming no new entrants, and are net of retiree contributions:

FYB	Pay-as-you-go
2016	\$34,500
2017	48,610
2018	64,594
2019	73,324
2020	87,599
2025	115,392
2030	128,362
2035	136,754
2040	131,173
2045	128,318
2050	119,695
2055	103,500
2060	79,495
2065	53,522
2070	30,479

Net OPEB Obligation/(Asset) and Annual OPEB Cost (AOC)

Exhibit I, attached at the end of the report, shows a development of the District's Net OPEB Obligation/(Asset) as of June 30, 2010 through June 30, 2016, and the Annual OPEB Cost ("AOC") for the fiscal years 2010-11 through 2016-17. The Net OPEB (Asset) as of June 30, 2016 and the AOC for 2016-17 are estimates as of the date this report is being published.

Funded Status

Page 3 of this report shows that the District's trust account holds assets of \$1,393,327 as of July 1, 2016, against liabilities of \$2,002,333, for a funded percentage of 69.6%. The District has informed us that it contributed an additional \$400,000 to the trust in September, 2016. So if we ignore investment gains or losses between July and September, the funded percentage would be $(\$1,393,327 + \$400,000)/\$2,002,333$, or 89.6%.

We do not recommend that the District make any further contributions at this time, for the following reason: The liability calculation is a best estimate, but there is a possibility that it may need to be revised upwards or downwards by as much as 10% or more in subsequent valuations, due to actuarial experience different from assumed. If the estimate is revised upwards, the District can always contribute additional funds to make up the difference. However, if the estimate is revised downwards, the District cannot recover excess money from the trust until all benefit obligations are satisfied, which could be some time in the next century.

If the District wishes to fund 100% of its liabilities, notwithstanding, we recommend that you consider establishing an internal reserve fund dedicated to OPEB and make any contributions over and above the 90% funded threshold into the reserve fund rather than into the irrevocable trust.

Certification

The actuarial certification, including a caveat regarding limitations of scope, if any, is contained in the "Actuarial Certification" section at the end of the report.

We have enjoyed working with the District on this report, and are available to answer any questions you may have concerning any information contained herein.

Sincerely,
DEMSEY, FILLIGER AND ASSOCIATES

REVISED DRAFT

T. Louis Filliger, FSA, EA, MAAA
Partner & Actuary

Benefit Plan Provisions

MWDOC provides health benefits for employees and qualified dependents (and also for retirees and their dependents) with a choice of five medical plans through the Association of California Water Agencies (ACWA) Joint Powers Insurance Authority: Anthem Blue Cross Classic Plan (PPO), Anthem Blue Cross CaliforniaCare Plan (HMO) and Kaiser, with Consumer Driven versions of both Anthem and Kaiser. Employees attaining age 55 and completing at least 10 consecutive years of full-time service with the District may retire with District-paid health premiums until age 65. The District will pay 100% of the premium for the lowest cost plan plus 90% of the difference to the plan actually selected, for retiree-only medical coverage, plus 80% of the combined retiree and spouse's (or domestic partner's) medical premium if such coverage is elected. If a retiree in receipt of benefits dies before age 65, the surviving spouse or domestic partner will receive the coverage to which the retiree would have been entitled until age 65 only.

When a retiree reaches age 65 and/or eligibility for Medicare, the District will pay the retiree up to \$1,800 per year for reimbursement of the cost of Supplemental Medical Insurance and Medicare Prescription Drug (Part D) Insurance, upon satisfactory proof of reimbursable expenses. This benefit will continue for the further lifetime of the retiree only, with no coverage for spouse or domestic partner either before or after the retiree's death.

Retirees who had at least 25 consecutive years of full-time service with the District receive the following enhancements in addition to the benefits listed above:

- (1) District-paid coverage includes dental and vision benefits as well as medical benefits;
- (2) The post-age 65 coverage includes Medicare Part B premium reimbursements;
- (3) The \$1,800 per year limit on reimbursements does not apply; and
- (3) Surviving spouses and/or domestic partners of retirees dying after age 65 receive ongoing District coverage for their further lifetimes.

Employees hired on or after July 1, 2012 are ineligible for District-paid retiree health benefits.

The following tables summarize the total monthly premiums for selected healthcare coverages for the 2016 calendar year:

Employees and Early Retirees	Blue Cross HMO	Blue Cross Classic PPO	Kaiser HMO	Delta Dental PPO	Vision
Employee/Retiree	\$627.44	\$729.68	\$526.05	\$51.61	\$14.76
Emp./Ret. + 1	1,244.99	1,485.47	1,042.22	86.80	23.46
Emp./Ret. + 2+	1,669.18	1,996.53	1,470.64	131.99	45.71

Medicare-eligible Retirees	Blue Cross HMO	Blue Cross Classic PPO	Kaiser Senior Advantage	Delta Dental PPO	Vision
Retiree	\$441.14	\$465.75	\$173.88	\$51.61	\$14.76
Retiree + 1	872.44	946.81	337.87	86.80	23.46
Retiree + 2+	N/A	N/A	N/A	N/A	N/A

Valuation Data

Active and Retiree Census

Age distribution of retirees included in the valuation

Age	Count
Under 55	0
55-59	1
60-64	0
65-69	3
70-74	2
75-79	2
80+	<u>0</u>
Total	8
Average Age	69.38

Age/Years of service distribution of active employees included in the valuation

Years →	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Total
<u>Age</u>									
<25	0								0
25-29	0	0							0
30-34	0	0	0						0
35-39	0	1	1	0					2
40-44	0	3	1	0	0				4
45-49	0	0	1	0	0	0			1
50-54	0	0	1	0	0	1	1		3
55-59	0	0	2	1	1	0	0	0	4
60-64	0	1	0	0	0	0	1	0	2
65+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>2</u>
All Ages	0	5	6	1	1	3	2	0	18

Average Age: 51.50
 Average Service: 16.17

Actuarial Assumptions

The liabilities set forth in this report are based on the actuarial assumptions described in this section.

Valuation Date:	July 1, 2016
Actuarial Cost Method:	Entry Age, Level Percent of Pay
Amortization Method:	30-year level percent of pay, open period
Discount Rate:	6.0% per annum
Salary Increases:	3.0% per annum (for normal cost and amortization of UAL)
Pre-retirement Turnover:	According to Crocker-Sarason Table T-5 less mortality, increased by 100% at all ages. Sample rates are as follows:

Age	Turnover (%)
25	15.4%
30	14.4
35	12.6
40	10.3
45	8.0
50	5.1
55	1.9

Pre-retirement Mortality: RP-2014 Employee Mortality, without projection. Sample deaths per 1,000 employees are as follows:

Age	Males	Females
25	0.48	0.17
30	0.45	0.22
35	0.52	0.29
40	0.63	0.40
45	0.97	0.66
50	1.69	1.10
55	2.79	1.67
60	4.69	2.44

Post-retirement Mortality: RP-2014 Healthy Annuitant Mortality, without projection. Sample deaths per 1,000 retirees are as follows:

Age	Males	Females
55	5.74	3.62
60	7.78	5.19
65	11.01	8.05
70	16.77	12.87
75	26.83	20.94
80	44.72	34.84
85	77.50	60.50
90	135.91	107.13

Actuarial Assumptions (Continued)
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Claim Cost per Retiree or Spouse:

Age	Medical/Rx	Dental/Vision
50	\$9,077	\$746
55	10,523	746
60	12,199	746
64	13,730	746
65	4,749	746
70	5,116	746
75	5,511	746

Retirement Rates:

Age	Percent Retiring*
55	7.0%
56	8.0
57	9.0
58	10.0
59	15.0
60	20.0
61	25.0
62	30.0
63	35.0
64	40.0
65	50.0
66	60.0
67	70.0
68	80.0
69	90.0
70	100.0

*Of those having met the eligibility for District-paid benefits. The percentage refers to the probability that an active employee reaching the stated age will retire within the following year.

Trend Rate:

Healthcare costs were assumed to increase according to the following schedule:

FYB	Medical/Rx	Dental/Vision
2016	8.0%	4.0%
2017	7.0	4.0
2018	6.0	4.0
2019+	5.0	4.0

Percent Married:

Future retirees: 60%, male spouses assumed 3 years older than female spouses. Current retirees: actual dependent data used.

Actuarial Certification

The results set forth in this report are based on our actuarial valuation of the health and welfare benefit plans of the Municipal Water District of Orange County ("District") as of July 1, 2016.

The valuation was performed in accordance with generally accepted actuarial principles and practices. We relied on census data for active employees and retirees provided to us by the District in August, 2016. We also made use of claims, premium, expense, and enrollment data, and copies of relevant sections of healthcare documents provided to us by the District, as well as trust statements provided to us through the District by Union Bank and PARS.

The assumptions used in performing the valuation, as summarized in this report, and the results based thereupon, represent our best estimate of the actuarial costs of the program under GASB 43 and GASB 45, and the existing and proposed Actuarial Standards of Practice for measuring post-retirement healthcare benefits. We have assumed no post-valuation mortality improvements, consistent with our belief that there will be no further significant, sustained increases in life expectancy in the United States over the projection period covered by the valuation.

Throughout the report, we have used unrounded numbers, because rounding and the reconciliation of the rounded results would add an additional, and in our opinion unnecessary, layer of complexity to the valuation process. By our publishing of unrounded results, no implication is made as to the degree of precision inherent in those results. Clients and their auditors should use their own judgment as to the desirability of rounding when transferring the results of this valuation report to the clients' financial statements.

The undersigned actuary meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Certified by:

REVISED DRAFT

T. Louis Filliger, FSA, EA, MAAA Date: _____
Partner & Actuary

	Amount
Net OPEB Obligation 6/30/2010	272,493
ARC for 2010-11	170,117
Interest on Net OPEB Obligation	-
Amortization adjustment to ARC	-
Annual OPEB Cost 2010-11	170,117
Employer Contribution	(34,155)
Change in Net OPEB Obligation 2010-11	135,962
Net OPEB Obligation 6/30/2010	272,493
Net OPEB Obligation 6/30/2011	408,455
ARC for 2011-12	205,390
Interest on Net OPEB Obligation	24,507
Amortization adjustment to ARC	(29,674)
Annual OPEB Cost 2011-12	200,223
Employer Contribution	(621,370)
Change in Net OPEB Obligation 2011-12	(421,147)
Net OPEB Obligation 6/30/2011	408,455
Net OPEB (Asset) 6/30/2012	(12,692)
ARC for 2012-13	205,390
Interest on Net OPEB Obligation	24,507
Amortization adjustment to ARC	(29,674)
Annual OPEB Cost 2012-13	200,223
Employer Contribution	(155,575)
Change in Net OPEB Obligation 2012-13	44,648
Net OPEB (Asset) 6/30/2012	(12,692)
Net OPEB Obligation 6/30/2013	31,956
ARC for 2013-14	205,390
Interest on Net OPEB Obligation	1,917
Amortization adjustment to ARC	(2,322)
Annual OPEB Cost 2013-14	204,985
Employer Contribution	(273,982)
Change in Net OPEB Obligation 2013-14	(68,997)
Net OPEB Obligation 6/30/2013	31,956
Net OPEB (Asset) 6/30/2014	(37,041)
ARC for 2014-15	130,117
Interest on Net OPEB (Asset)	(2,222)
Amortization adjustment to ARC	2,691
Annual OPEB Cost 2014-15	130,586
Employer Contribution	(186,351)
Change in Net OPEB (Asset) 2014-15	(55,765)
Net OPEB (Asset) 6/30/2014	(37,041)
Net OPEB (Asset) 6/30/2015	(92,806)
ARC for 2015-16	130,117
Interest on Net OPEB (Asset)	(5,568)
Amortization adjustment to ARC	6,742
Annual OPEB Cost 2015-16	131,291
Employer Contribution	(155,575)
Change in Net OPEB (Asset) 2015-16	(24,284)
Net OPEB (Asset) 6/30/2015	(92,806)
Net OPEB (Asset) 6/30/2016 estimated	(117,090)
ARC for 2016-17	71,249
Interest on Net OPEB (Asset)	(7,025)
Amortization adjustment to ARC	6,084
Annual OPEB Cost 2016-17 estimated	70,308