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May 22, 2018

Mr. Mauricio Guardado
General Manager
United Water Conservation District
106 North 8th Street
Santa Paula, CA 93060

Subject: **FY 2018-19 Cost-of-Service Analysis Report**

Dear Mr. Guardado:

HF&H Consultants, LLC prepared a cost-of-service analysis for FY 2018-19 groundwater extraction charges for United Water Conservation District's Zones A and B. The cost-of-service analysis estimates the differential between the unit costs of serving municipal and industrial (M&I) and agricultural (Ag) pumpers. The purpose of this report is to document our findings. Our report describes the background and overall methodology before presenting a step-by-step description of the cost-of-service analysis.

I. BACKGROUND AND METHODOLOGY

Water Code §75594 requires the District to charge M&I pumpers at least three times but no more than five times the charge to Ag pumpers. It has been the District's practice in recent years to set the M&I charge at three times the Ag charge. In response to litigation,[1] the District has conducted annual cost-of-service analyses beginning with FY 2013-14. The present analysis for FY 2018-19 is the sixth such cost-of-service analysis.

In setting the multiple of M&I to Ag charges at 3-to-1, the District has chosen the minimum differential. §75594 does not require the District to conduct cost-of-service analyses in setting the differential nor does §75594 prescribe any formula, methodology, or approach for setting a higher differential up to the 5-to-1 maximum allowed. In conducting the cost-of-service analyses for each of the years beginning with FY 2013-14, we developed a methodology that conforms to the rate-making standards and industry

[1] *City of San Buenaventura v. United Water Conservation District.*, California Supreme Court, Case No. S226036.

practices as promulgated in the American Water Works Association's *Principles and Practices of Water Rates, Fees, and Charges* (also known as the M1 Manual or Manual M1. The M1 Manual's "Overview of the Key Technical Analyses Associated With Cost-Based Rate Making" provides the following guidance:

> In establishing cost-based water rates, it is important to understand that a cost-of-service methodology does not prescribe a single approach. Rather, as the first edition of AWWA's Manual M1 noted, "the [M1 manual] is aimed at outlining the basic elements involved in water rates and suggesting alternative rules of procedure for formulating rates, thus permitting the exercise of judgment and preference to meet local conditions and requirements" (AWWA 1954).[2] This manual, like those before it, provides the reader with an understanding of the options that make up the generally accepted methodologies and principles used to establish cost-based rates. From the application of these options within the principles and methodologies, a utility may create cost-based rates that reflect the distinct and unique characteristics of that utility and the values of the community.[3]

From its earliest days, the AWWA has recognized the need to exercise judgment in deriving reasonable rates. Reasonable rates are not arbitrary, capricious, or discriminatory. Arbitrary rates reflect choices in classifying and allocating costs for which there is no rationale. Capricious rates contain data and assumptions for which there is no factual basis. Discriminatory rates are disproportionate to the cost of providing service, favoring one class of customers to the detriment of another class. The analyst must exercise judgment to ensure that rates are reasonable in each case.

A review of the literature finds that there is no reference to agricultural rates in the classic rate-making texts.[4] There is no practice (e.g., formula, quantitative framework) that is considered the industry-standard economic analysis or the rate-making practice. The closest to a practice for setting agricultural rates that could be considered an industry practice is the M1 Manual's principles to apply judgment appropriate to the District in conducting a cost-of-service analysis that establishes a reasonable rate differential.

In addition to conforming to rate-making standards and industry practices, our

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[2] AWWA M1 Manual, *Water Rates Manual,* First Edition, 1954, p. 1.

[3] AWWA M1 Manual of Water Supply Practices, *Principles of Water Rates, Fees, and Charges,* Seventh Edition, 2017, page 5. The M1 Manual is a useful reference for retail and wholesale water suppliers, although as a water conservation district, United differs from a conventional water utility.

[4] In this group we include the M1 Manual; *Principles of Public Utility Rates*, James C. Bonbright; *The Process of Rate Making,* Leonard S. Goodman; *The Regulation of Public Utilities*, Charles F. Phillips, Jr.; and *The Economics of Regulation,* Alfred E. Kahn. *Water and Wastewater Finance and Pricing,* by George A. Raftelis, the founder of the City's consulting rates firm, makes no reference to agricultural rates.

increased familiarity with the District's financial and engineering data has led to refinements that improve the stability of the calculation. Stability is an important consideration in view of the fact that §75594 calls for a rate differential for an indefinite period.

This report describes our cost-of-service analysis, which follows the steps prescribed by the AWWA. The methodology first requires the classification of costs by service or function provided. The units of service provided to customers, which are associated with each function, are then determined. Each class is then allocated its share of the services based on the number of units of service that it requires of each service. The total cost allocated to each class is used to determine the differential in the cost of service. Note that the cost-of-service analysis did not calculate separate Zone A and Zone B rates, which is how the District charges its water users. Instead, the analysis was applied to Zones A and B to determine the differential between the Ag and M&I cost of service.

II. CLASSIFICATION OF COSTS

The process of classifying costs begins with the District's total budgeted operating and capital expenses for FY 2018-19, which are being presented to the Board for approval at its May 22, 2018 Board meeting. Certain expenses were deducted that are not related to Zones A and B, namely, the State Water Fund, other pipelines, and recreation, as shown in **Figure 1**. These items were excluded from the cost allocations to Zones A and B. The remaining budget was classified among the three services required by Ag and M&I water users.

Figure 1. FY 2018-19 Budget

	FY 2017-18	FY 2018-19	Variance	
Total District Budget	**$30,270,786**	**$32,193,974**	**$1,923,188**	**6.4%**
Less:				
State Water Fund Expenses	($1,600,970)	($1,846,571)	($245,601)	15.3%
O/H Pipeline Fund Expenses	($4,760,289)	($8,360,056)	($3,599,767)	75.6%
PV Pipeline Fund Expenses	($442,845)	($340,678)	$102,167	-23.1%
PT Pipeline Fund Expenses	($3,030,472)	($2,840,133)	$190,339	-6.3%
Recreation-related Costs	($2,379,706)	($1,875,395)	$504,310	-21.2%
Subtotal Non-Zone A/B Expenses	**($12,214,282)**	**($15,262,834)**	**($3,048,552)**	**25.0%**
Total Zone A/B Budget	**$18,056,504**	**$16,931,140**	**($1,125,364)**	**-6.2%**

We note that although the District's overall budget is increases $1.9 million, the Zone A/B portion of the budget is decreasing $1.1 million.

IIA. Cost Categories

The District performs three functions for Ag and M&I pumpers: replenishment, reliability, and regulatory compliance, which are summarized in **Figure 2**.

Figure 2. Functions and Costs Associated with Cost Categories

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
Services	Zone A/B management and administration	Facilities constructed to improve groundwater reliability (Santa Felicia and Freeman Diversion Dams)	Regulatory compliance for facilities that improve groundwater reliability
Costs - O&M	Administration, management, and overhead	Operating personnel for storage and diversion facilities	Studies for ESA compliance, Dam Safety
- Capital	Equipment used for management and administration	Storage and diversion facilities	Facilities that are needed to comply with regulation of reliability facilities

Replenishment Cost Category. Replenishment costs are the costs associated with the District's core function, which is to manage and administer groundwater replenishment activities in the District. Most of this cost is personnel costs associated with managers, administrators, and planners who oversee the District's replenishment programs. A portion of overhead is allocated to the replenishment cost category based on its pro rata share of personnel costs. These costs would be incurred regardless of the advent of urban development.

Reliability Cost Category. Reliability costs are the costs associated with the District's storage and diversion facilities (i.e., Santa Felicia Dam and Freeman Diversion Dam). These facilities were constructed following the formation of the District to improve the reliability of groundwater supply for anticipated growth in M&I water users. The construction of these dams enabled the District to accommodate urbanization through improved conjunctive use operations. These facilities helped firm up the District-wide safe yield and enable the District to manage the impacts of meeting the higher reliability needs of M&I water users.

Absent these facilities, M&I reliability would be subject to the same interruptions that agriculture is exposed to and which agriculture is in a far better position to tolerate through land fallowing. The personnel and program costs of operations and maintenance staff associated with the District's storage and diversion facilities are included in the reliability cost category. The capital costs of these facilities (i.e., pay-as-you-go capital projects, debt service, and transfers to capital reserves) are also included in this category.

Regulatory Compliance Cost Category. Regulatory compliance costs are a consequence of constructing facilities that were required to improve reliability for growth in the basin, which for the most part is attributable to urbanization. The costs are related to complying with regulations such as the Endangered Species Act (ESA) and Dam Safety requirements. These costs are in addition to the cost of construction of dams but do not improve reliability. These costs are distinct from reliability costs, which are directly related to the facilities and the reliability that they provide.

The term "Regulatory Compliance" replaces "Overdraft Mitigation," which was used in previous years for this cost category. The term "Overdraft Mitigation" was chosen because it reflects how these costs are allocated. Experience has shown, however, that the costs in this category are largely related to regulatory compliance, which is a more descriptive term for this cost category and will be used henceforth.

IIB. Cost Classification

Figure 3 summarizes the costs related to providing service to Zones A and B. The costs are shown for each of the three cost categories. Costs for the FY 2018-19 draft budget are compared with the FY 2017-18 budget. The significant variances are noted below.

Replenishment Cost Category. Of the three cost categories replenishment costs are the smallest category. The classification of replenishment costs for FY 2018-19 is consistent with prior years. In other words, there were no existing costs that the District determined should be reclassified nor were there new costs for which there was no classification precedent. Overall, there is a $1,186,000 increase in costs in this category.

Reliability Cost Category. Reliability costs are the second largest cost category. The classification of existing reliability costs for FY 2018-19 is consistent with prior years; no existing operations and maintenance costs were reclassified. Overall, there is a $1,545,000 decrease in costs in this category.

Figure 3. FY 2018-19 Zone A/B Budget

Zone A/B Budget	FY 2017-18	FY 2018-19	Variance	
Replenishment Costs				
Personnel Costs	$582,572	$1,085,107	$502,535	86.3%
Program Costs	$1,014,262	$1,425,890	$411,628	40.6%
Overhead Allocation	$310,762	$558,599	$247,838	79.8%
Capital Equipment Costs	$16,634	$7,733	($8,901)	-53.5%
Debt Service	$0	$0	$0	
Transfer to Capital Reserves	$69,558	$102,500	$32,942	47.4%
Subotal - Replenishment	**$1,993,788**	**$3,179,830**	$1,186,042	59.5%
Reliability Costs				
Personnel Costs	$1,374,885	$1,369,550	($5,336)	-0.4%
Program Costs	$845,161	$715,682	($129,478)	-15.3%
Overhead Allocation	$733,405	$705,027	($28,379)	-3.9%
Capital Equipment Costs	$13,861	$3,881	($9,979)	-72.0%
Debt Service	$1,363,543	$1,365,200	$1,657	0.1%
Transfer to Capital Reserves	$2,368,514	$995,387	($1,373,127)	-58.0%
Subotal - Reliability	**$6,699,369**	**$5,154,727**	($1,544,641)	-23.1%
Regulatory Compliance Costs				
ESA & Dam Safety - Personnel Costs	$1,956,859	$1,647,046	($309,813)	-15.8%
ESA & Dam Safety - Program Costs	$2,096,198	$2,435,150	$338,952	16.2%
Other Personnel Costs	$471,863	$426,573	($45,290)	-9.6%
Other Program Costs	$200,500	$44,000	($156,500)	-78.1%
Overhead Allocation	$1,295,553	$1,067,473	($228,081)	-17.6%
Capital Equipment Costs	$37,666	$13,445	($24,220)	-64.3%
Debt Service	$0	$0	$0	
Transfer to Capital Reserves	$3,304,708	$2,962,895	($341,813)	-10.3%
Subotal - Regulatory Compliance	**$9,363,348**	**$8,596,583**	($766,765)	-8.2%
Total	**$18,056,504**	**$16,931,140**	($1,125,364)	-6.2%

Regulatory Compliance Cost Category. Regulatory Compliance costs constitute the largest cost category and amount to nearly half the Zone A/B costs. The classification of regulatory compliance costs for FY 2018-19 is consistent with prior years. Costs are decreasing by $767,000.

Figure 4 lists the budgeted capital improvement projects for Zones A and B categorized accordingly that are summarized in **Figure 3**. In some cases, the projects are classified into a single category corresponding their function. Some projects are related to more than one cost category. The basis for the allocations was established by District staff when the projects were originally budgeted. We note that **Figure 3** also includes a cost for capital replacement, which is an allowance that is not specific to individual facilities.

Figure 4. FY 2018-19 Budgeted Capital Expenses

		Zone A/Zone B Capital Projects	Replenishment	Reliability	Regulatory Compliance	Total
8001	421	Freeman Diversion Rehab		$93,862	$688,323	$782,185
8002	051	SFD Outlet Works Rehab		$35,586	$438,898	$474,484
8003	051	SFD PMF Containment			$495,645	$495,645
8005	051	SFD Sediment Management		$0		$0
8006	052	Lower River Invasive Species Control Project			$51,526	$51,526
8008	051	Quagga Decontamination Station			$149,868	$149,868
8014	052	Solar Project - Piru		$756		$756
8018	051	Ferro-Rose Recharge		$159,606		$159,606
8019	051	Brackish Water Treatment Plant			$40,153	$40,153
8020	052	Recycled Water		$108,979		$108,979
8025	051	State Water State Interconnection Project		$212,078		$212,078
8026	051	Lower Piru Creek Habitat			$202,985	$202,985
8029	052	El Rio Asphalt Repairs		$0		$0
8030	051	SFD Fish Passage			$300,000	$300,000
8031	052	Replace El Rio Trailer			$82,516	$82,516
8024		New Headquarters (allocated based on personnel costs)	89,861	$113,416	$171,723	$375,000
		Total	$89,861	$724,284	$2,621,637	$3,435,782

III. COST ALLOCATION FACTORS

Costs could be allocated simply by dividing the total cost by the total Ag and M&I pumpage without regard to the nature of the costs and the impact of the pumping. However, as previously noted, the District's costs vary according to the associated service. For that reason, allocation factors are tailored to each service to determine the pumpers' proportionate shares of each service. The basis for allocating costs to the Ag and M&I classes for each cost category is summarized in **Figure 5**.

Figure 5. Allocation Basis for Determining Units of Service

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
Ag	Total Ag pumpage minus return flow and natural recharge	Ag is interruptible. Pumpage is reduced so that sum of Ag and M&I does not exceed basin safe yield	Only pumpage in excess of 140,000 AF basin safe yield
M&I	Total M&I pumpage minus return flow and natural recharge	All pumpage	All pumpage
Pumpage Period	Most recent eleven years of historic pumpage	Same as Replenishment period	Same as Replenishment period

Each of the cost allocation factors relies on average historic pumpage (both direct pumpage as well as in-lieu pumpage for pipeline deliveries). To help reduce fluctuations from year to year, we have used the running average pumpage for an eleven-year period. This long-term average adds stability to the calculation, which is commensurate with the District's programs that are not confined to individual years but, rather, span many years. An eleven-year period was used because it was the most number of years that were available for the first year we analyzed, FY 2013-14.

Figure 6 summarizes the historic Ag and M&I pumpage for Zones A and B and for the pipeline service areas. We note that M&I pumpage in FY 2017-18 was 1% higher than the prior year and Ag pumpage was about 13% lower. No pumping continued to occur on the PVP pipeline.

Figure 6. Historic Ag and M&I Pumpage

M&I Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2007	15,092	18,495	-	-	14,957	48,543
2008	15,254	14,336	-	-	19,026	48,616
2009	12,645	15,967	-	-	16,029	44,642
2010	11,192	16,504	-	-	15,524	43,220
2011	10,600	18,384	-	-	10,982	39,966
2012	11,285	15,301	-	-	11,424	38,011
2013	12,550	16,230	-	-	11,329	40,108
2014	13,133	17,316	-	-	10,967	41,416
2015	11,905	14,714	-	-	10,130	36,749
2016	11,796	13,101	-	-	9,255	34,152
2017	11,784	13,575	-	-	9,079	34,438
Subtotal M&I	137,237	173,924	-	-	138,702	449,863
Average	*12,476*	*15,811*	*-*	*-*	*12,609*	***40,897***
Ag Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2007	84,206	58,515	13,083	9,295	1,102	166,201
2008	83,112	60,134	8,808	9,465	1,341	162,859
2009	79,658	54,877	14,529	10,040	1,566	160,670
2010	75,446	50,809	13,077	9,174	1,282	149,788
2011	71,122	48,461	10,482	7,847	1,109	139,022
2012	73,719	51,054	12,858	8,762	1,182	147,574
2013	78,053	63,554	7,088	8,447	1,244	158,386
2014	84,971	74,214	339	8,400	1,327	169,251
2015	76,531	62,974	5	5,140	836	145,485
2016	77,988	70,428	-	5,032	1,295	154,743
2017	71,824	56,557	-	5,357	1,340	135,078
Subtotal Ag	856,630	651,576	80,269	86,959	13,624	1,689,057
Average	*77,875*	*59,234*	*7,297*	*7,905*	*1,239*	***153,551***
Total Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2007	99,298	77,009	13,083	9,295	16,058	214,744
2008	98,366	74,470	8,808	9,465	20,367	211,476
2009	92,303	70,844	14,529	10,040	17,596	205,312
2010	86,638	67,313	13,077	9,174	16,806	193,008
2011	81,722	66,846	10,482	7,847	12,091	178,988
2012	85,004	66,355	12,858	8,762	12,606	185,585
2013	90,603	79,784	7,088	8,447	12,573	198,495
2014	98,104	91,530	339	8,400	12,294	210,667
2015	88,436	77,688	5	5,140	10,966	182,234
2016	89,784	83,529	-	5,032	10,550	188,895
2017	83,608	70,132	-	5,357	10,419	169,517
District Total	993,867	825,499	80,269	86,959	152,326	2,138,920
Average	*90,352*	*75,045*	*7,297*	*7,905*	*13,848*	***194,447***

* Includes direct pumping and surface water deliveries in lieu of pumping (all subject to 3:1 ratio)
** To Figures 7, 9, 11 & 16

IIIA. Replenishment Cost Allocation Factors

Replenishment costs are allocated between Ag and M&I based on the amount of replenishment that their respective groundwater pumpage causes. The amount of replenishment is the amount of their pumpage net of return flows and natural recharge from precipitation. Return flows and precipitation reduce the impact of pumpage because they reduce the amount of replenishment that is needed to offset pumpage. **Figure 7** shows how return flows and precipitation are netted out of gross pumpage to yield "adjusted consumptive use," which is a more accurate representation of the amount of replenishment that is needed to offset Ag and M&I pumpage.

Figure 7. Cost Allocation Factors – Replenishment Cost Category

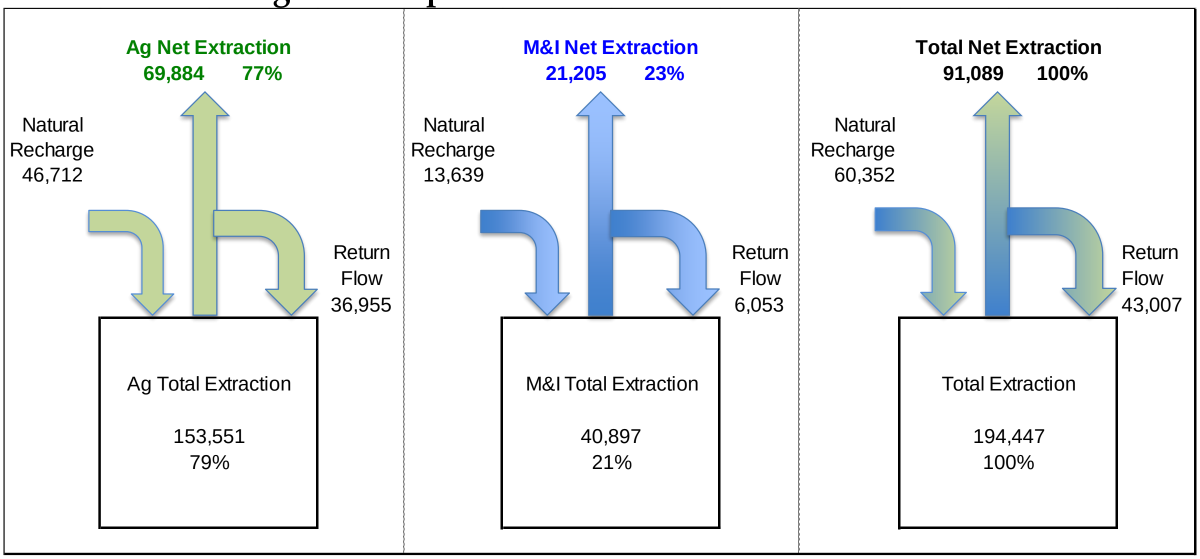
		Total	Ag	M&I
a	**I. Consumptive Use**			
b	Pumpage (AF)	194,447	153,551	40,897
c	Consumptive use factor		75.9%	85.2%
d	Consumptive use (AF)	151,440	116,596	34,844
e	Return flow (AF)	43,007	36,955	6,053
f	**II. Precipitation Contribution to Overlying Land**			
g	District-Wide (Acres)	120,996	80,078	40,918
h	Average precipitation (Inches)		7.00	4.00
i	Precipitation contribution (AF)	60,352	46,712	13,639
j	**III. Consumptive Use**			
k	Consumptive use (AF)	151,440	116,596	34,844
l	Precipitation contribution (AF)	60,352	46,712	13,639
m	Adjusted consumptive use (AF)	91,089	69,884	21,205
n	Share of replenishment costs	100%	77%	23%

Different consumptive use factors were developed by District staff to adjust the gross pumpage to consumptive use, which is the amount of pumpage that does not return to the basin after it is applied to crops or used in urban areas. Ag's 75.9% consumptive use is lower than M&I's 85.2% because more of Ag's pumpage returns to the basin.

Natural recharge was also accounted for because precipitation that recharges a basin reduces the need for replenishment water that would otherwise be needed. With Ag's larger surface area and greater permeability, Ag receives a greater benefit from precipitation recharge than M&I.

When return flows and natural recharge are accounted for, the resulting adjusted consumptive uses indicate the net impact of Ag and M&I pumpage on the basin. For purposes of allocating the Zone A and B replenishment costs, adjusted consumptive use is used because it reflects that actual burden that Ag and M&I pumpage places on the basin. **Figure 8** is a graphical depiction of the derivation of the replenishment allocation factors.

Figure 8. Replenishment Cost Allocation Factors



IIIB. Reliability Cost Allocation Factors

Reliability costs are allocated between Ag and M&I to reflect the fact that M&I requires higher reliability than Ag. M&I is a higher beneficial use than Ag use.[5] By definition, reliability is threatened when basin pumpage exceeds the safe yield because overdrafting is unsustainable. Pumpage in excess of the safe yield is therefore at risk of being interrupted. Because of M&I's higher beneficial use, M&I pumpage is given first priority to the basin safe yield. Ag receives the remaining basin safe yield. Any Ag pumpage that exceeds the basin safe yield is considered interruptible and is not included in calculating the allocation factors.[6]

Figure 9 shows the cost allocation factors that result when Ag pumpage is reduced so that the combined pumpage of Ag and M&I water users does not exceed 140,000 AF, which is the District-wide safe yield.[7] The Ag interruption amounts to 54,447 AF. As with the derivation of the replenishment cost allocation factors, the calculation was stabilized by using an eleven-year running average of actual pumpage for the period from FY 2006-07 to FY 2016-17.

Figure 9. Cost Allocation Factors – Reliability Cost Category

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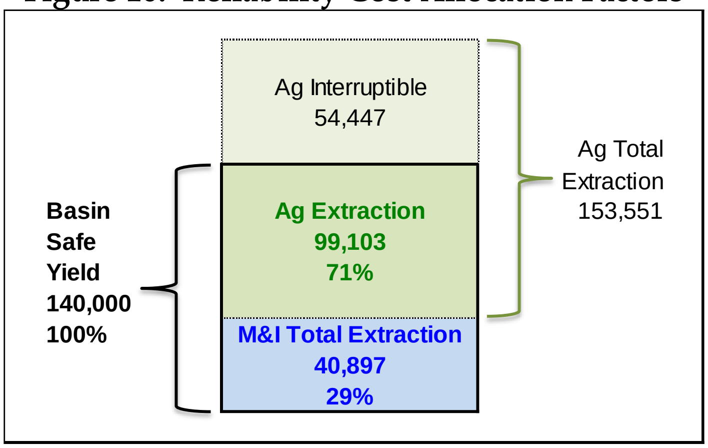
[5] Water Code Section 106.
[6] Evidence of the lower reliability of Ag supplies is shown in Figure 6 for PVP Ag deliveries. After peaking in FYE 2009, the District completely reduced PVP pipeline deliveries by FYE 2016.
[7] Conversations with District staff.

		Total	Ag	M&I	Source Notes
a	Pumpage (AF)	194,447	153,551	40,897	FY2007 - FY2017 Average AF per Year (Fig. 6)
b	Pumpage reduction to basin safe yield	(54,447)	(54,447)	0	Excess interruptible pumpage
c	Pumpage within basin safe yield	140,000	99,103	40,897	a - b
d	Share of reliability costs	100%	71%	29%	c

It can be seen that the allocation of reliability costs to M&I (29% in **Figure 9**) is greater than the allocation of replenishment costs (23% in **Figure 7**), which is the premium that M&I is allocated in return for a higher level of reliability. **Figure 10** is a graphical depiction of the derivation of the reliability allocation factors.

Figure 10. Reliability Cost Allocation Factors



M&I is allocated a higher percentage of reliability costs than replenishment costs in return for improved reliability. Although Ag's percentage share of reliability costs is lower than its share of replenishment costs, Ag is still allocated the majority of reliability costs. However, Ag's allocation of reliability costs does not include the interruptible portion of Ag's demand. In this way, Ag is not allocated costs of reliability that it does not receive.

IIIC. Regulatory Compliance Cost Allocation Factors

The construction of facilities that provide reliability has resulted in subsequent regulatory compliance costs that do not improve reliability. Regulatory compliance costs in effect represent additional costs of reliability for which there is no corresponding improvement in basin safe yield. Existing regulatory compliance costs, which have been related to ESA and Dam Safety regulation, are projected by the District to continue to increase. Future regulatory compliance costs, as yet unknown, pose considerable uncertainty to the District.

Because current and future regulatory compliance costs are not providing additional basin safe yield (and may even result in reduced basin safe yield), they should not be allocated based on basin safe yield as are reliability costs. The reliability facilities (which have led to regulatory compliance costs) improved reliability for M&I but did not eliminate overdraft. Because overdraft is mostly attributable to the advent of M&I pumpage, the allocation of regulatory compliance costs should reflect Ag's and M&I's contributions to overdraft.

The District's regulatory compliance costs are allocated based on the portion of pumpage that is attributable to overdraft. Overdraft represents the impact that urban development has on the basin and for which dams were constructed to increase the basin's yield. The presence of dams has led to regulatory actions to mitigate for the dams.

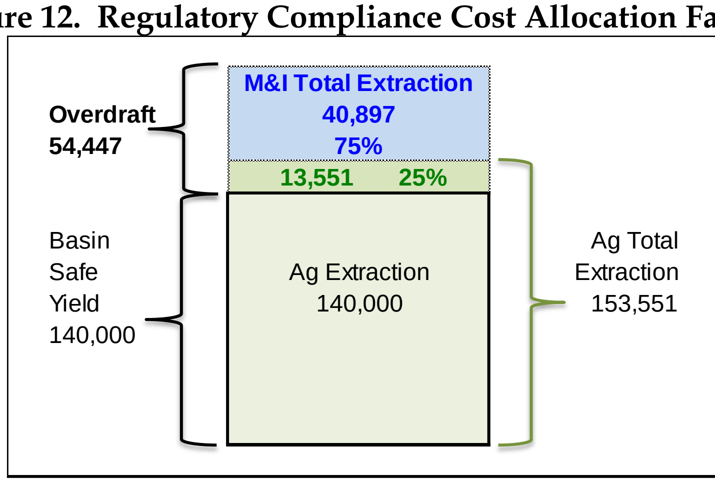
As the predecessor pumper to M&I, Ag is given preference to pumping the safe yield. Ag's pumpage currently exceeds the basin safe yield, which means that all of the M&I pumpage contributes to overdraft. **Figure 11** shows the resulting allocation.

Figure 11. Cost Allocation Factors – Regulatory Compliance Cost Category

		Total	Ag	M&I	Source Notes
a	Pumpage (AF)	194,447	153,551	40,897	FY2007 - FY2017 Average AF per Year (Fig. 6)
b	Basin safe yield (AF)	140,000	140,000	0	UWCD Staff
c	Overdraft contribution (AF)	54,447	13,551	40,897	a - b
d	Share of regulatory compliance costs	100%	25%	75%	c

Figure 12 is a graphical depiction of the derivation of the regulatory compliance allocation factors.

Figure 12. Regulatory Compliance Cost Allocation Factors



IIID. Summary of Cost Allocation Factors

The cost allocation factors for replenishment, reliability, and regulatory compliance are summarized in **Figure 13.** Ag's highest allocation is for the District's basic replenishment activities. With the growth in M&I pumpage, the cost of reliability shifts somewhat away from Ag to M&I because M&I requires a more reliable supply. The facilities that were constructed to improve reliability bring regulatory compliance costs with them.

Figure 13. Summary of Cost Allocation Factors

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
	(from Figure 7)	*(from Figure 9)*	*(from Figure 11)*
Allocation Factors			
- Ag	77%	71%	25%
- M&I	23%	29%	75%
	100%	100%	100%

It can be seen that M&I is allocated a much greater share of regulatory compliance costs, which is commensurate with M&I's contribution to overdraft.

IV. UNIT COSTS OF SERVICE

The units of service from **Figure 7** (Total Adjusted Consumptive Use), **Figure 9** (Total Pumpage Within Basin Safe Yield), and **Figure 11** (Total Overdraft Contribution) are combined with the costs in **Figure 2** to yield the unit costs of service shown in **Figure 14**.

Figure 14. Unit Costs of Service

		Total	Source Notes
a	**I. Replenishment Unit Costs**		
b	Replenishment costs	$3,179,830	Fig. 2 line o
c	Adjusted consumptive use (AF)	91,089	Fig. 7 line m
d	Unit cost of service ($/AF)	$34.91	b / c
e	**II. Reliability Unit Costs**		
f	Reliability Costs	$5,154,727	Fig. 2 line w
g	Pumpage within basin safe yield	140,000	Fig. 9 line c
h	Unit cost of service ($/AF)	$36.82	f / g
i	**III. Regulatory Compliance Unit Costs**		
j	Regulatory Compliance costs	$8,596,583	Fig. 2 line ag
k	Overdraft contribution (AF)	54,447	Fig. 11 line c
l	Unit cost of service ($/AF)	$157.89	j / k

Each unit cost has its respective costs and units of service. Overdraft has the highest cost allocation and the lowest units of service, namely, the pumpage in excess of the basin safe yield, which results in the highest cost per unit ($157.89 per AF).

V. COST-OF-SERVICE ALLOCATIONS

The unit costs in **Figure 14** are applied to the Ag and M&I units of service in **Figure 15** to yield the following cost-of-service allocations. Ag and M&I are both subject to the same unit costs for each service.

Figure 15. Cost-of-Service Allocations

		Total	Ag	M&I	Source Notes
a	**I. Replenishment Cost of Service**				
b	Unit cost of service ($/AF)	$34.91	$34.91	$34.91	Fig. 14 line d
c	Adjusted consumptive use (AF)	91,089	69,884	21,205	Fig. 7 line m
d	Cost-of-service allocation	$3,179,830	$2,439,594	$740,236	b * c
e	**II. Reliability Cost of Service**				
f	Unit cost of service ($/AF)	$36.82	$36.82	$36.82	Fig. 14 line h
g	Pumpage within basin safe yield	140,000	99,103	40,897	Fig. 9 line c
h	Cost-of-service allocation	$5,154,727	$3,648,935	$1,505,792	f * g
i	**III. Regulatory Compliance Cost of Service**				
j	Unit cost of service ($/AF)	$157.89	$157.89	$157.89	Fig. 14 line l
k	Overdraft contribution (AF)	54,447	13,551	40,897	Fig. 11 line c
l	Cost-of-service allocation	$8,596,583	$2,139,485	$6,457,097	j * k
m	**IV. Total Cost of Service**	$16,931,140	$8,228,015	$8,703,125	d + h + l

VI. COMPOSITE UNIT COST RATIOS

The total costs of service for Ag and M&I shown in **Figure 15** are then used to calculate their respective composite unit costs in **Figure 16**. As previously mentioned, these amounts are not the same as the District's extraction charges, which are calculated separately for Zones A and B. These composite unit costs of $212.81 for M&I and $53.59 for agriculture are a blend of the Zone charges and stand in a ratio of 3.97 to 1.00.

Figure 16. Composite Unit Cost Ratio

		Total	Ag	M&I	Source Notes
a	**I. Composite Unit Costs**				
b	Cost of service	$16,931,140	$8,228,015	$8,703,125	Fig. 15 line m
c	Pumpage (AF)	194,447	153,551	40,897	Fig. 7 line b
d	Composite unit cost ($/AF)		$53.59	$212.81	b / c
e	**II. Ratio of Composite Unit Costs**		**1.00**	**3.97**	d

VII. SUMMARY AND CONCLUSION

VIIA. Compliance With Rate-Making Standards and Industry Practices

The foregoing cost-of-service analysis fully complies with relevant rate-making standards and industry practices as defined by the City of San Buenaventura's rate consultant: "Cost of Service involves identifying and apportioning annual revenue requirements to the different cost centers and defining unit costs so that costs can be allocated to the different user classes proportionate to their demand on the water system …"[8] This is a conventional definition of cost-of-service analysis. The City's consultant lists three steps in cost-of-service analysis:

1. Allocate revenue requirements to functional cost components.
2. Determine unit costs of components.
3. Determine user class costs.

Figures 1 and 3 of our report correspond to Step 1. **Figure 3** shows the allocation of United's revenue requirement to its three cost centers: for replenishment, for reliability, and for regulatory compliance. These are appropriate cost centers for a water conservation district. These allocations are a matter of cost accounting performed by the District.

Figure 14 of our report corresponds to Step 2. **Figure 14** shows unit costs per acre-foot of $34.91 for replenishment, $36.82 for reliability, and $157.89 for regulatory compliance. These amounts were derived by dividing the functionalized revenue requirements in Step 1 by the units of service. The units of service for replenishment are shown in **Figure 7**, which are the adjusted consumptive uses. The units of service for reliability are shown in **Figure 9**. The units of service for overdraft are shown in **Figure 11**. The resulting unit costs are directly proportionate to the units of service for replenishment, reliability, and regulatory compliance.

Figure 15 of our report corresponds to Step 3. **Figure 15** shows the proportionate results of multiplying unit costs times units of service for Ag and M&I, respectively. Ag is allocated $8,228,015 of the total revenue requirement and M&I is allocated $8,703,125. Our report follows the standard steps commonly accepted in the industry for cost-of-service analysis. The allocations are proportionate to the costs of providing service.

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[8] *Cost of Service and Rate Design Study Report*. Prepared by RFC for Ventura Water. March 2012. Page 15 *et seq.*. See also *Cost of Service and Rate Design Study Report*. Prepared by RFC for Ventura Water. January 2014. Page 32 *et seq.*.

VIIB. Conclusion

The analysis indicates the proportional cost of service between Ag and M&I pumpers. The analysis does so by first differentiating between replenishment, reliability, and regulatory compliance costs. Replenishment costs are then allocated in proportion to the impacts of pumping when consumptive use and natural recharge are factored in, resulting in an allocation that reflects the net impact of basin pumpage. The reliability costs represent the O&M and capital costs of the storage and diversion facilities needed to provide the safe yield. The regulatory compliance costs are allocated in proportion to contributions to overdraft. In this allocation, agriculture, as the historically predominant predecessor to M&I, is able to pump within the safe yield for the most part, with some pumpage that is overdraft. M&I pumpage, having largely developed later than agricultural pumpage, is unable to pump within the safe yield because agricultural pumpage currently exceeds the District-wide safe yield and for which Ag's allocation of regulatory compliance costs increased.

The analysis substantiates the 3-to-1 ratio called for in the District's Act by showing that the unit cost of serving M&I water users is over three times the cost of serving Ag water users. The methodology has evolved slightly by converting from using budgeted pumpage to historical averages and the inclusion of total Ag and M&I pumpage including the pipelines. The resulting composite unit costs and ratios for each of the five years are shown in **Figure 17**.

Figure 17. Ratio Summary (FY 2013-14 through FY 2018-19)

Composite Unit Costs ($/AF)	Ag	M&I	Ratio M&I:Ag
FY2013-14	$56.51	$178.43	**3.16**
FY2014-15	$50.94	$165.32	**3.25**
FY2015-16	$54.44	$171.74	**3.15**
FY2016-17	$49.64	$169.80	**3.42**
FY2017-18	$55.38	$227.80	**4.11**
FY2018-19	$53.59	$212.81	**3.97**
Average	$53.42	$187.65	**3.51**

* * *

We believe this methodology complies with industry rate-making standards because it yields cost-based rates that reflect the distinct and unique characteristics of the District that are proportionate to the cost of providing service.

We look forward to presenting the results of this analysis to the Board of Directors.

Very truly yours,

HF&H CONSULTANTS, LLC

John W. Farnkopf, P.E., Senior Vice President
Rick Simonson, C.M.C., Vice President