

REGULAR MEETING OF THE BOARD OF DIRECTORS

IDYLLWILD WATER DISTRICT
25945 Highway 243
Idyllwild, CA 92549

July 18, 2018 - 6:30 P.M.

>>Please Note the Later Start Time<<

AGENDA

CALL TO ORDER:

ROLL CALL:

PUBLIC COMMENTS:

Any person may address the Board at this time upon any subject not identified on this Agenda but within the jurisdiction of the District. Please note that for items not listed on the agenda, the Brown Act imposes limitations on what the Board may do at this time. The Board may not take action on the item at this meeting. As to matters on the Agenda, persons will be given an opportunity to address the Board when the matter is considered. If you wish to speak during public comment, please fill out a "Speaker Request Form" and give it to the Board Secretary. When the Board President calls your name, please immediately step to the podium and begin by giving your name and address for the record. Each speaker will be given four (4) minutes to address the Board.

1. CONSENT CALENDAR:

Consent Calendar items are expected to be routine and non-controversial, to be acted upon by the Board at one time without discussion. If any Board member, staff member, or interested person requests that an item be removed from the Consent Calendar, it shall be removed so that it may be acted upon separately.

A. MINUTES – June 20, 2018 Regular Meeting Minutes

B. FINANCIAL REPORTS JUNE 2018

1. Income statement for the Twelfth month ending June 2018
2. District warrants for June 2018.

Check #	14840-14887	= \$	121,198.81
Gross Payroll		= \$	56,873.19
Federal/State PR taxes		= \$	12,965.60
LAIF Transfers		= \$	0.00
Transfers/charges		= \$	0.00

C. OPERATIONS REPORT FOR THE TWELFTH MONTH – JUNE 2018

2. WATER SHORTAGE CONTINGENCY PLAN AND DROUGHT RATES – The Board of Directors will consider the draft Water Shortage Contingency Plan and proposed drought water rates and

may adopt Resolution # 756 set a public hearing to consider adoption of the WSC Plan.

3. **CONSOLIDATION SUB-COMMITTEE** – The Board of Directors will hear a report from the Consolidation Sub-committee and determine if and how to proceed.
4. **RECENT WATER QUALITY ISSUES – Information Only** - Staff will make a presentation to the Board of Directors regarding the recent public water quality notifications and discuss the options being investigated by staff for remediation.

DIRECTORS COMMENTS:

GENERAL MANAGER'S COMMENTS:

ADJOURNMENT:

To the next Board meeting is a Regular Meeting scheduled for August 15, 2018 at 6:00 p.m., to be held at the Idyllwild Water District Boardroom, 25945 Hwy. 243, Idyllwild, CA 92549.

Please remember during Public Comments:

- Comments should be limited to 4 minutes or less
- Comments should be directed to the Board as a whole and not directed to individual Board members.

Americans with Disabilities Act: In compliance with the ADA, if you need special assistance to participate in a District meeting or other services offered by this District, please contact the District office @ 951-659-2143 or email: admin@idyllwildwater.com. Upon request, the agenda and documents in the agenda packet can be made available in appropriate alternative formats to persons with a disability. Notification of at least 48 hours prior to the meeting or time when services are needed will assist the District staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting.

**IDYLLWILD WATER DISTRICT
WATER FUND CONDENSED INCOME STATEMENT
FOR FISCAL MONTH ENDING JUNE 30, 2018**

CONDENSED CATEGORY	FOR THE MONTH OF			MAY		2018
	ACTUAL	BUDGET	VARIANCE		%	
OPERATING REVENUES:						
BASE-RESIDENTIAL/COMMERCIAL	52,368	52,368	-1		0.00%	
SALES-RESIDENTIAL/COMMERCIAL	66,670	55,000	11,670		21.22%	
OTHER OPERATING REVENUE	604	71	533		750.70%	
OTHER NON- OPERATING REVENUE*	0	0				
TOTAL OPERATING REVENUES	119,642	107,439	12,203		11.36%	
OPERATING REVENUE BY CATEGORY	FOR THE MONTH OF			MAY		2018
	ACTUAL	BUDGET	VARIANCE	F (U)		
BASE RATE - RESIDENTIAL	44,854	44,021	833		1.89%	
BASE RATE - COMMERCIAL	7,514	7,346	167		2.28%	
SALES-RESIDENTIAL	34,056	25,000	9,056		36.22%	
SALES-COMMERCIAL	32,614	30,000	2,614		8.71%	
SALES-SEWER	0	0	0		0.00%	
SALES-CONSTRUCTION/OTHER	140	500	-360		0.00%	
TRANSFER FEES	175	100	75		75.00%	
TURN ON/OFF FEES	50	150	-100		-66.67%	
LIEN & LIEN RELEASE FEES	10	22	-12		-54.55%	
DELINQUENCY FEES	230	300	-70		-23.47%	
WILL SERVE LETTER FEES	0	0	0		0.00%	
OTHER MISCELLANEOUS	0	0	0		0.00%	
INSTALLATION FEES	0	0	0		0.00%	
CAPACITY FEES	0	0	0		0.00%	
TOTAL OPERATING REVENUES	119,642	107,439	12,203		11.36%	

IDYLLWILD WATER DISTRICT
WATER FUND CONDENSED INCOME STATEMENT
FOR FISCAL MONTH ENDING JUNE 30, 2018

FOR THE MONTH OF

BY CATEGORY
WATER OPERATING EXPENSES:

	ACTUAL	BUDGET	MAY F (U) VARIANCE	2018 %
1- WAGES AND SALARIES EXPENSES	46,250	50,000	3,750	7.50%
2- RETIREMENT PLAN AND LIFE INSURANCE	3,932	8,000	4,068	50.85%
3- MEDICAL INSURANCE	12,500	14,000	1,500	10.71%
4- UNIFORM EXPENSES	243	438	195	44.46%
5- WORKER'S COMP INSURANCE	0	500	500	100.00%
6- RETIREMENT MEDICAL INSURANCE	6,228	2,000	-4,228	-211.40%
7- BOARD REIMBURSEMENT	0	500	500	100.00%
8- OFFICE SUPPLIES	3,371	2,000	-1,371	-68.55%
9- OFFICE CLEANING SERVICE	397	280	-117	-41.79%
10- POSTAGE AND MAILING FEE	1,425	1,200	-225	-18.74%
11- TRAINING AND EDUCATION	0	604	604	100.00%
12- TRAVELING , MILEAGE, MEALS REIMBURSEMENT	110	629	520	82.58%
13- DUES ,FEES , SUBSCRIPTIONS	416	5,000	4,584	91.68%
14- COMPUTER SERVICES	1,555	1,000	-555	-55.50%
15- LEGAL SERVICES	1,752	7,000	5,248	74.97%
16- UTILITIES - ELECTRICITY	3,288	7,292	4,004	54.91%
17- UTILITIES - GAS& FUEL	720	725	5	0.69%
18- UTILITIES - PROPANE	0	325	325	100.00%
19- UTILITIES - TELEPHONE INTERNET	717	761	44	5.74%
20- UTILITIES - WASTE MANAGEMENT FEE	182	184	2	1.02%
32- AUTO AND PROPERTY INSURANCE	0	1,712	1,712	100.00%
21- STATE-COUNTY WATER SYSTEM FEES	0	4,000	4,000	100.00%
22- GENERAL PLANT & TREATMENT SERVICES	6,930	18,000	11,070	61.50%
23 - VEHICLES REPAIRS AND MAINTENANCE	2,020	1,500	-520	-34.67%
24- WATER ENGINEERING AND CONSULTING	9,303	875	-8,428	-963.20%
25- LABORATORY SERVICES	2,068	1,042	-1,026	-98.53%
26- WATER SECURITY SYSTEM	0	771	771	100.00%
27- ADVERTISING AND PUBLISHING	668	542	-126	-23.32%
28- PROPERTY TAX EXPENSES	0	233	233	100.00%
29- COMPENSATED TIME	0	1,833	1,833	100.00%
30- BANK FEE CHARGE	274	200	-74	-37.00%
31- WATER MAINTENANCE AND SUPPLIES	3,733	1,042	-2,691	-258.37%
33- ACCOUNTING AND AUDITING FEE	0	7,500	7,500	100.00%
TOTAL OPERATING EXPENSES:	108,082	141,687	33,605	23.72%
TOTAL INCOME AND (LOSS)	11,560	(34,248)		

**IDYLLWILD WATER DISTRICT
WATER FUND CONDENSED INCOME STATEMENT
FOR FISCAL MONTH ENDING JUNE 30, 2018**

FOR THE MONTH OF					
			MAY	2018	
CUBIC FEET OF SALES:	ACTUAL	BUDGET	VARIANCE	%	
R1	733,000	700,000	33,000	4.71%	
R2	31,550	46,000	-14,450	-31.41%	
R3	104,505	82,000	22,505	27.45%	
R4	85,900	85,000	900	1.06%	
R5	18,700	22,000	-3,300	-15.00%	
R6	154,690	155,000	-310	-0.20%	
NC-WWTP	3,160	5,000			
TOTAL CUBIC FEET OF SALES	1,131,505	1,095,000	38,345	3.50%	
NUMBER OF CUSTOMER BILLS:					
R1	1,540	1,537	3	0.20%	
R2	30	30	0	0.00%	
R3	55	51	4	7.84%	
R4	13	13	0	0.00%	
R5	4	4	0	0.00%	
R6	2	2	0	0.00%	
NC-WWTP	1	1	0	0.00%	
S	10	10	0	0.00%	
TOTAL NUMBER OF CUSTOMER BILLS	1,654	1,648	7	0.42%	

* s : Sewer Only Account

**IDYLLWILD WATER DISTRICT
SEWER FUND CONDENSED INCOME STATEMENT
FOR FISCAL MONTH ENDING June 30, 2018**

FOR THE MONTH OF MAY 2018

CONDENSED BY CATEGORY	F (U)				
	ACTUAL	BUDGET	VARIANCE	%	
OPERATING REVENUES:					
BASE-RESIDENTIAL/COMMERCIAL	52,766	52,575	191		0.36%
OTHER OPERATING	100	25	75		300.00%
TOTAL OPERATING REVENUES	52,866	52,600	266		0.51%
OPERATING EXPENSES:					
1- WAGES AND SALARIES	13,200	15,000	1,800		12.00%
2- RETIREMENT AND LIFE INSURANCE	1,510	2,000	490		24.52%
3- MEDICAL INSURANCE	5,250	5,000	-250		-5.00%
4- UNIFORM EXPENSE	81	300	219		73.00%
5-WORKER'S COMPENSATION INSURANCE	0	145	145		100.00%
6- RETIREMENT MEDICAL INSURANCE	1,330	917	-413		-45.10%
7- BOARD REIMBURSEMENT	25	200	175		87.50%
8- OFFICE SUPPLIES	113	400	287		71.63%
9- OFFICE CLEANING SERVICES	133	150	18		11.67%
10- POSTAGE AND MAIL FEE	0	100	100		100.00%
11- EDUCATION AND TRAINING	0	200	200		100.00%
12- TRAVELING, MILAGE, MEAL REIMBURSEMENT	0	292	292		100.00%
13- DUE AND SUBSCRIPTION FEE	113	542	429		79.14%
14- COMPUTER SERVICES	451	1,000	549		54.90%
15- LEGAL SERVICES	585	500	-85		-17.00%
16- UTILITIES - ELECTRICITY	0	4,000	4,000		100.00%
17- UTILITIES - GAS & FUEL	0	437	437		100.00%
18- UTILITIES - PROPANE	0	25	25		100.00%
19- UTILITIES - TELEPHONE&INTERNET	232	292	59		20.37%
20- UTILITIES - WASTE MANAGEMENT FEE	61	125	64		51.39%
21- VEHICLES REPAIRS AND MAINTENANCE	98	500	402		80.45%
22- ENGINEERING SERVICES	2,632	5,000	2,368		47.36%
22- MAINTENANCE AND SUPPLIES	0	200	200		100.00%
23- GENERAL PLANT SERVICES	316	500	184		36.80%
24- SEWER PERMIT AND LICENSE(State Fee)	0	500	500		100.00%
25- MINOR EQUIPMENT AND SUPPLIES	0	42	42		100.00%
26- SEWER LEASE	0	250	250		100.00%
27- ADVERTISING AND PUBLISHING	0	125	125		100.00%
28- LABORATORY SERVICES	755	500	-255		-51.00%
29- GENERAL AUTO AND LIABILITY INSURANCE	0	570	570		100.00%
30- SECURITY SYSTEM (ADT)	0	208	208		100.00%
31- ACCOUNTING & AUDITING FEE	0	2,000	2,000		100.00%
32- LINE CLEANING	0	0	0		0.00%
Total Expenses	26,884	42,018	15,133		36.02%
Total INCOME OR (LOSS)	25,982	10,582			

**IDYLLWILD WATER DISTRICT
SEWER FUND CONDENSED INCOME STATEMENT
FOR FISCAL MONTH ENDING June 30, 2018**

	FOR THE MONTH OF MAY 2018			
	SEWER FUND OPERATING REVENUES			
	ACTUAL	BUDGET	F (U) VARIANCE	%
BASE RATE-COMMERCIAL	36,051	35,860	191	0.53%
BASE RATE- RESIDENTIAL	16,715	16,715	0	0.00%
TRANSFER FEE	100	25	75	300.00%
FACILITY CHARGE FROM IAF	0	0	0	0.00%
INSPECTION FEE	0	0	0	0.00%
OTHER MISCE	0	0	0	0.00%
TOTAL OPERATING REVENUE	52,866	52,600	266	0.51%
EQUIVALENT DWELLING UNITS (E.D.U'S)				
RESIDENTIAL	456	456	0.0	0.00%
COMMERCIAL	937	937	0.0	0.00%
TOTAL E.D.U'S	1,393	1,393	0.0	0.00%

**IDYLLWILD WATER DISTRICT
DISTRICT WARRANTS AND OTHER DISBURSEMENTS
FOR THE MONTH ENDED JUNE 30, 2018**

DATE	CHECK NUMBER	PAYEE	DESCRIPTION	AMOUNT
6/1/2018	14840	California Computer Options	Monthly IT support	695.00
6/1/2018	14841	Chase Credit Card Services	Supplies for water \$360.40, Office Supplies \$817.02	1,196.99
6/1/2018	14842	Forest Lumber	Supplies for Water and Sewer	710.29
6/1/2018	14843	Frontier	Phone and Internet for Foster Lake and WWTP	403.50
6/1/2018	14844	SCE	Monthly Electricity Charge	3,153.92
6/1/2018	14845	Terry Lyons	Reimbursement for Retiree Healthcare	2,191.23
6/1/2018	14846	Verizon Wireless	GM and On Call Cell Phones	160.99
6/1/2018	14847	Wicker Water Well Pump Service	Repair Well #4	2,921.35
6/1/2018	14848	Pine Cove Water District	Our Share of Winterizing Tip Pamphlets	456.69
6/1/2018	14849	Home Depot Credit	Tools and Supplies for Water and Credit	26.63
6/6/2018	14850	Acorn Pest Control	Pest Control Services	250.00
6/6/2018	14851	California Computer Options	Miscellaneous Service Tickets	1,112.00
6/6/2018	14852	Hemet Valley Pipe & Supply	PVC Pipes for Sewer Sprinklers	132.51
6/6/2018	14853	Idyllwild Town Crier	3 ads in Paper	688.00
6/6/2018	14854	NAPA Auto Parts	Parts for Fleet Vehicle Maintenance	336.27
6/6/2018	14855	NBS Financial	Third payment on Rate Study	10,528.75
6/6/2018	14856	Peter Szabadi	Reimbursement for Travel Expense for Water Seminar	98.81
6/6/2018	14857	Village Hardware	Supplies for Water	15.39
6/13/2018	14858	Aleshire & Wynder. LLP	Legal Fees	2,336.70
6/13/2018	14859	Bill Whitener	Reimbursement for Retiree Healthcare	1,085.97
6/13/2018	14860	Central Communications	Monthly Charge for Answering Service	110.50
6/13/2018	14861	CR&R Inc	Monthly Charge for Trash Service	243.05
6/13/2018	14862	Four Seasons Cleaning Service	Monthly Cleaning Charge for the office	280.00
6/13/2018	14863	Idyllwild Heating & Cooling, Inc.	Maintenace on filters for office	188.82
6/13/2018	14864	Idyllwild Water District	To be Deposited at Hemet Bank for Payroll	40,000.00
6/13/2018	14865	Kelly Clark	Reimbursement for Retiree Healthcare	2,043.26
6/13/2018	14866	Mission Linen & Uniform Service	Monthly Charge for Laundering and Uniforms	324.46
6/13/2018	14867	Bluetarp Financial	Renew Account with Northern Tools	39.99
6/13/2018	14868	PJU Telecom, Inc.	Install a new ohne and Program the lines	95.00
6/13/2018	14869	SCE	Monthly Charge for Electricity	452.28
6/13/2018	14870	Streamline	Monthly Charge for Website	200.00
6/13/2018	14871	DigAlert	18 net tickets and monthly database fee	39.70
6/20/2018	14872	AllState Benefits	Monthly Life Insurance	473.77
6/20/2018	14873	Babcock Lab	Lab Test Analysis	2,823.75
6/20/2018	14874	Engineering Resources of California	Engineering Services	1,721.52
6/20/2018	14875	Herb Bergstorm	Medical Insurance for retiree	2,238.00
6/20/2018	14876	Idyllwild Water District	To be Deposited at Hemet Bank for Payroll	29,000.00
6/20/2018	14877	Jeannine Olsen	Reimbursement for Office expenses	30.44
6/20/2018	14878	Void	Void	0.00
6/20/2018	14879	Mountain Mechanical Services	Installing Heater at shop and A/C Office	6,895.00
6/20/2018	14880	T-Mobile	Data Plan for Solar	20.00
6/20/2018	14881	Time Warner Cable	Monthly Phone and Internet Charge office	369.36
6/20/2018	14882	USA Bluebook	Supplies for Water	580.17
6/20/2018	14883	John Carratello	Claim Reimbursement	329.95
6/20/2018	14884	ADT Security	Security System Expenses Qyarterly	253.22
6/20/2018	14885	Staples	Office Supplies	453.95
6/20/2018	14886	Zenner performance, inc	Purchasing Meters	1,733.92
6/20/2018	14887	Arrow Printing , inc	CCR Printing Report Notice	1,757.51
TOTAL DISTRICT WARRANTS				121,198.61
OTHER DISBURSEMENTS:				
GROSS PAYROLL				55,636.00
NET PAYROLL CHECKS-DIRECT DEPOSIT				40,828.00
FEDERAL PAYROLL TAXES-ELECTRONIC TRANSFERS				9,862.00
STATE PAYROLL TAXES-ELECTRONIC TRANSFERS				4,946.00
L.A.I.F. ELECTRONIC TRANSFERS				0.00
BANK SERVICE CHARGES AND FEES				0.00
TOTAL DISTRICT WARRANTS & OTHER DISBURSEMENTS				176,834.61

IDYLLWILD WATER DISTRICT
 MONTHLY WATER RE-CAP SUMMARY
 FOR THE MONTH OF:

DATE 7/1/82018

IN DISTRICT STORAGE SUPPLY	185,273 C.F.	}	446,138
FOSTER LAKE STORAGE SUPPLY	260,865 C.F.		
			TOTAL STORAGE SUPPLY
INCREASE	_____ C.F.		
DECREASE	_____ C.F.		
SUPPLIES TO SYSTEM	1,337,028 C.F.		
I.W.D. FLUSHING	_____ C.F.		
FOSTER LAKE LEVEL	_____ MAXIMUM OF 18'		

STATIC GROUND WATER LEVELS:

F.L. AREA	20 FEET	
F.V. AREA:		
F.V.1A	370 FEET	
F.V.#2	320 FEET	
CREEK AREA	23 FEET	
WELL #26	41 FEET	
WELL #27	41 FEET	
STORAGE SUPPLIES(MAXIMUM OF 3.702 MILLION GALLONS)	90 %	
MAINLINE LEAK REPAIRS	0	
STRAWBERRY CREEK DIVERSION	4100 C.F.	0.09 A.F.
FERN VALLEY 1A WELL	254,430 C.F.	5.84 A.F.
STRATTON WELL #23 DRAW		4.8 A.F.
OAKWOOD WELL DRAW(PRIVATE)		A.F.
WELL #26 (COUNTY OF RIVERSIDE)		A.F.
WELL #27 (COUNTY OF RIVERSIDE)		A.F.

COMMENTS:

	LEVEL	VOLUME
SOUTHRIDGE TANKS (3,509 CF/FOOT)	19.3	67,723
GOLDEN ROD TANK (891 CF/FOOT)	21.3	18,711
WILDWOOD TANK (919 CF/FOOT)	12.9	11,855
ROCKDALE TANK (2,718 CF/FOOT)	23.1	62,785
FOSTER LAKE TANKS (11,698 CF/FOOT)	22.3	260,865
SEWER PLANT USAGE		
DELANO TANK (1,337 CF/FOOT)	18.1	24,199
HYDRANT SALES IN CUBIC FEET		

Idyllwild Water District Well Production Data

Month: June Year: 2018

Date: 7/2/2018

	Well Name	#	Acre Feet	Cubic Feet	PT/FT	Status	GPM
1	Horizontal	1	0				
2	Foster Lake	2	13.23	576,360	PT	ON	96.7
3	Foster Lake	4	.49	21,460	PT	ON	37.1
4	Foster Lake	5					
5	Foster Lake	8					
6	Foster Lake	9					
7	Foster Lake	10	.90	39,257	PT	OFF	6.8
8	Foster Lake	11					
9	Foster Lake	12					
10	Foster Lake	13	1.05	46,170	PT	OFF	40.5
11	Foster Lake	15					
12	Foster Lake	16					
13	Nature Ctr	26	0				
14	Nature Ctr	27					
15	Stratton	23	4.80	209,130	PT	ON	41.4
16	Curtis	24	2.65	115,760	PT	ON	43.2
17	Donahoo	25					
18	Golden Rod		.70	30,510	PT	OFF	17.5
19	Fern Valley	1A	5.84	254,430	PT	ON	42.1
20	Fern Valley	2	4.02	175,158	PT	ON	37.6
21	Rockdale	28	0				
22	Dutch Flats	1					
23	Dutch Flats	2					
24	Dutch Flats	3					

Total Cubic Feet: 1,468,235

Cedar Glen 4" Meter 552,040 CF 12.67 AF

1,337,028 CF

Supplies to System

In District Production 784,988 CF 18 AF

Wells 13-19 30,67 AF total AF

Production Days 31

Minutes 44,640 224 GPM

Memo

To: Board of Directors

From: General Manager

Date: July 18, 2018

Subject: ITEM #2 – Adopt Resolution # 756 to set a Public Hearing for Adoption of a Water Shortage Contingency Plan and Drought Rates

Recommendation: That the Idyllwild Water District Board of Directors consider the draft Water Shortage Contingency Plan (WSCP) and proposed drought rates and Adopt Resolution # 756 setting a public hearing for September 19, 2018, to adopt the WSCP and drought rates.

Background: The District's current Drought Plan, Ordinance 64, is no longer viable beyond Stage 1 due to the significant changes to the water rate structure in both FY 2017-18 and for FY 2018-19.

Sub-committees over the last year have made progress, but due to unfortunate circumstances that resulted in several changes in committee membership, a draft plan has only now been developed and is attached for the Board's review.

The plan struggles with significant activities to reduce water use since most water use is already "indoor" use. However, the plan, as reviewed by general counsel, is consistent with WSCP that have been developed across the State.

The proposed concept is that once adopted as an ordinance by the Board of Directors the Plan would automatically move to the appropriate stage based on the Basic Capacity

Ratio as described in Appendix A of the WSCP. Since this ratio will be calculated at the beginning of each month, notice to customers can be sent with the water bills which are mailed around the 5th of each month.

The strength of this program is that the stage determination is based on the objective data of the District's actual water resources as determined each month.

As part of the Rate Study performed by NBS, Drought Rates were developed consistent with the study that keep the District financially sound in the face of reduced usage by customers during drought reduction stages. The completed study is attached for reference. See particularly Section 2G (page 21) and Appendix C. The Drought Rates increase the commodity charge only in order to compensate for the particular stage reduction less the savings from variable costs that are also reduced.

A Resolution is attached to set a public hearing for September 19, 2018 to consider the drought rates and the WSCP. The Proposition 218 protocol will be followed in considering the proposed Drought Rates.

Attachments: Draft Water Shortage Contingency Plan

 Resolution #756

 NBS Rate Study

Idyllwild Water District **Water Shortage Contingency Plan**

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Section 1: Purpose and Principles of Plan

1.1 Water Code Sections 1063

The Idyllwild Water District (IWD/District) has developed a Water Shortage Contingency Plan (WSC Plan) in accordance with California Water Code Section 10632. Section 10632 sets forth the contents of an urban water shortage contingency plan in the event of drought, water supply reductions, failure of a water distribution system, other emergencies, or regulatory statutes, rules, regulations or policies reducing water supplies by state and federal agencies with jurisdiction over the District. The contingency plan must demonstrate the ability of an agency to meet demands under a supply shortage of up to 50 percent. Emphasis is placed on protection of public health, sanitation, fire protection, and the general public welfare.

As such, this WSC Plan adopts regulations and restrictions on outdoor water use through Water Shortage Stage 4 and on indoor water use in Water Shortage Stage 5, including residential, commercial, and institutional customers.

1.2 Principles of District's Water Shortage Contingency Plan

The overall principle of the District's WSC Plan is to reliably meet water demands during shortages caused by droughts, supply reductions, and emergency conditions. The WSC Plan recognizes the following priorities for potable water:

- Public safety, health and welfare
- Economic sustainability
- Quality of life for the District's customers
- Statutory and regulatory requirements

The potable water use regulated and/or prohibited under this WSC Plan is considered non-essential use. Continued use of such water during times of water shortage or other emergency supply conditions are deemed to constitute a waste of water and will be subject to appropriate monetary assessments and fines as described in Section 4 of this WSC Plan.

To compensate for the reduction in water sales and revenue as a result of implementation of the WSC Plan, the District will implement WSC Plan rates to offset any such revenue losses (see Section 5 of this WSC Plan).

1.3 Public Notice and Coordination with Other Water Agencies

The District will periodically provide the public with information about the WSC Plan, including its implementation. Such information will include, but not be limited to, stages of action, restrictions on water use, water use reductions, water-saving tips, and potential Allocation Surcharges, monetary assessments and fines for noncompliance of prohibited activities for water conservation, water use efficiency, and failure to achieve water use reductions defined in the WSC Plan and the Water Conservation Policy. The District may use the local newspaper, the Town Crier, the District website and direct mail notice to provide the information.

Section 2: Authorization and Application of WSC Plan

2.1 Authorization of WSC Plan

The water shortage contingency measures of this WSC Plan shall apply to all persons, customers, and property using water provided by the District. The terms “persons” and “customers” used in this WSC Plan include individuals, home and property owners, corporations, businesses, agencies, associations, and all other legal entities

A declaration of a water shortage condition as outlined below shall become effective immediately, and shall be made by public announcement and published in a newspaper of general circulation.

While Stage 1 “Water Supply Watch” measures remain in effect at all times, three basic conditions can trigger the declaration of further Water Shortage Stages of the WSC Plan. At the time a water shortage condition is identified, the General Manager shall recommend the appropriate Shortage Stage and corresponding water usage decrease based on an analysis of current and available water supplies and anticipated demands. Except as provided below, the Board shall consider and adopt a resolution declaring the appropriate Shortage Stage and measures to be implemented thereto.

Condition No. 1: Long- and Short-Term Water Supply Deficiencies

The District’s General Manager shall request the Board of Directors (Board) to authorize and implement provisions of the WSC Plan when the demand for District water is anticipated to be in excess of the District’s established ratios for the available water supply. The determination shall be made based on the Board adopted criteria shown in Appendix A and will dictate the necessity, if any, to implement the additional measures of the WSC Plan. The Board will have the authority to adopt a resolution to initiate or terminate the appropriate shortage stage and any of the measures described in the WSC Plan based on the criteria without holding additional meetings or hearings, consistent with the criteria in Appendix A.

Condition No. 2: Immediate Emergency Water Shortage Response

An immediate emergency water shortage is defined as an unexpected or catastrophic event including, but not limited to, a regional power outage, earthquake or other disaster, or major other event that prevents or interrupts adequate water to be delivered to customers. By adopting this WSC Plan, the Board authorizes the General Manager to declare the extent of the immediate water shortage emergency and to indicate which measures of the WSC Plan are needed.

Condition No. 3: Emergency Declaration of State or Federal Agency

Upon the declaration of a water shortage emergency by resolution or other appropriate authoritative process of a state or federal agency with jurisdiction over the District, the District shall respond to the requirements set forth in the governing statutes, rules, regulations, or documents.

2.2 Criteria for Water Shortage Stages

The District staff will continue to monitor water demands and supplies on a regular basis, including but not limited to, availability and reliability of supply production facilities, and daily demand, and shall determine, based on the criteria in Appendix A, when conditions warrant an

Section 2: Authorization and Application of WSC Plan

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2.2 Criteria for Water Shortage Stages

The District staff will continue to monitor water demands and supplies on a regular basis, including but not limited to, availability and reliability of supply production facilities, and daily demand, and shall determine, based on the criteria in Appendix A, when conditions warrant an

initiation or termination of each shortage stage and water conservation measures to be implemented thereto of the WSC Plan as follows:

Stage 1 – Water Supply Watch Criteria: The term Water Watch acknowledges that while near term supply and storage conditions may from time to time improve due to wet weather, there are continued long-term challenges that warrant continued wise and efficient use of water. In addition, our alpine climate, average rainfall of 26-inches in our service area, the uncertain characteristics of the fractured granite mountainous groundwater supply and the absence of any potential supplemental water supply sources, make ongoing efficient water use imperative. Under Stage 1 conditions, i.e., the Basic Capacity Ratio (BCR) is 0-50%, customers are requested to continue to use water efficiently and practice sensible voluntary water conservation. It should also be noted that water waste is in violation of California Law and District's Water Conservation Policy at any Stage.

Stage 2 – Water Supply Alert Criteria: There is a possibility that the District may not be able to reliably meet all of the water demands of its customers and the BCR is 51-60%. This may mean local groundwater levels are lower than normal, or the District is mandated by a state or federal regulatory agency with jurisdiction over the District to reduce water use. Additional voluntary water use reduction measures will be called upon during this stage. To reduce the financial impact to the District of the designated 10% reduction in water use, Stage 2 Water rates as described in Appendix C will be implemented for the commodity (variable) portion of water bills.

Stage 3 – Water Supply Warning Criteria: Water supply shortages for the District are evident through a BCR of 61-70%, expected to continue and possibly worsen, or the District is mandated by a state or federal regulatory agency with jurisdiction over the District to reduce water use by 20% - 35%. Some restrictions on certain non-essential outdoor Residential, Commercial, and Institutional water use will be implemented, and drought rates described in Stage 3 of Appendix C will be passed through to customers. Monetary assessments and/or fines for non-compliance with restrictions will be imposed as described in Section 4 of this WSC Plan.

Stage 4 – Extreme Water Supply Warning Criteria: Water supply shortages exist and are expected to worsen as indicated by a BCR of 71% - 85%, or the District is mandated by a state or federal regulatory agency with jurisdiction over the District to reduce water use by 36% - 50%. Complete restriction of non-essential outdoor water use will be implemented. The District will work to achieve an appropriate balance of water use decreases to all customer classes including residential, institutional, and commercial. The District will implement drought rates described in Stage 4 of Appendix C. Significant monetary assessments and/or fines for non-compliance of such restrictions will be imposed as described in Section 4 of this WSC Plan.

Stage 5 – Water Supply Emergency Criteria: Water supply shortages are expected to worsen as indicated by a BCR of more than 86%, or the District is mandated by a state or federal regulatory agency with jurisdiction over the District to reduce water use by more than 50%. This may be because of an emergency resulting in the inability of the District's water distribution system to deliver all of the District's supply. Restrictions on all non-essential outdoor and indoor water use will be implemented. The District will implement drought rates described in Stage 5 of Appendix C.. Monetary assessments and/or fines for non-compliance of such restrictions will be imposed as described in Section 4 of this WSC Plan.

Section 3: Supply Shortage Contingency Measures

Section 3 presents the shortage contingency measures the District may impose during each Shortage Stage for its residential, commercial and institutional customers.

Through timely communication, using various local media outlets and the monthly bill, the District will provide updates regarding supply conditions and WSC Plan Stages. The District is not responsible for any customer issues that may arise from the implementation of the WSC Plan or adjustment in timing of the WSC Plan's Stages.

3.1 Stage 1: Water Supply Watch – Basic Capacity Ratio = 0 – 50%

Under Stage 1 conditions, customers are requested to continue to use water efficiently and practice sensible voluntary water conservation. Water waste violates California Law and the District's Water Conservation Policy at this and any other Shortage Stage.

In order to comply with requirements of state legislation and Water Conservation Best Management Practices, it shall be a violation of the District's Water Conservation Policy at any time to make, cause, or permit the use of water for residential, commercial, institutional or any other purpose in a manner constituting water waste.

All Customer Classes

Customers shall abide by the following **water conservation requirements at all times** in all water Shortage Stages:

1. Refrain from hosing down driveways and other hard surfaces, except for health or sanitary reasons.
2. Repair faucets, toilets, pipes and other potential sources of water leaks as soon as practical.
3. Irrigate landscape between 6 p.m. and 9 a.m. This provision does not apply when:
 - a. Manually watering during the establishment period of a new landscape;
 - b. Manual spot watering is done to address landscape issues;
 - c. Temperatures are predicted to fall below freezing;
 - d. Testing/repairing an irrigation system;
 - e. Using drip irrigation systems; and
 - f. A longer watering window is needed due to system constraints.
4. Adjust and operate all landscape irrigation systems in a manner that will maximize irrigation efficiency and avoid over watering or watering of hardscape and resulting runoff.
5. Prevent excessively irrigating any lawn or landscape area that would cause the sheeting of water to flow; eliminate water runoff from lawns or landscape areas into any drainage courses, streets, or streams.
6. Do not use decorative fountains unless they are equipped with a re-circulating water system.
7. When installing plumbing fixtures, use low-flow devices, except for those that require high-flow fixtures for health and/or sanitary reasons. Where possible, install pool and spa covers to minimize water loss due to evaporation during non-operating days.
8. Do not allow water to run while washing vehicles, including autos, trucks, trailers, motor homes, boats or others. Use a hose with an automatic shutoff valve to avoid runoff into drainage courses, streets or streams. Use a hose equipped with an automatic shutoff valve or other device that causes it to cease dispensing water immediately when not in use.

9. When installing new landscaping, refer to the Water Use Classification of Landscape Species (WUCOLS) or the Idyllwild Garden Club list of local and drought tolerant plants suitable for the area. Plant low water California Friendly® Native Landscapes. Non-functional turf areas are not recommended. Turf lined channels are only permitted when justified by environmental regulations.
10. Refrain from watering during rain, or high winds by turning off irrigation timers.
11. Refrain from irrigation for two (2) days following a measurable rainfall.
12. No irrigation of turf or high water use plants within public street medians and parkways.

All existing and future District customers in violation of these water conservation requirements, or with excessive runoff that would cause water to flow from property into any drainage courses, streets, or streams are subject to fines. Fines are detailed in Section 4 and in the Water Conservation Policy in Appendix B.

3.2 Stage 2: Water Supply Alert – Basic Capacity Ratio 51% - 60%

- Stage 1 water conservation requirements remain in effect for all customer classes
- Additional 10 % voluntary water use reduction measures for all customer classes
- Water use rates described in Stage 2 of Appendix C are implemented

All Customer Classes

Additional **voluntary water use reduction measures** are requested of **all customer classes** to reduce water use by an additional 10% as follows:

Outdoor Voluntary Water Use Reduction Measures

1. Eliminate sprinkler overspray from driveways and sidewalks. Divide irrigation runtimes into multiple cycles to eliminate runoff water that leaves the landscaped area.
3. Tune-up your irrigation system by checking for and repairing leaks and damaged sprinklers.
4. Use a broom instead of a hose to clean driveways, sidewalks and other hardscape surfaces, except for California Department of Health Services prescribed health or sanitary reasons.
5. Install pool and spa covers to minimize evaporative water loss.
6. Customers, including but not limited to, parks, school grounds, and commercial landscaping are restricted to irrigation applications between 6 p.m. and 9 a.m. These irrigators are advised to adjust automatic irrigation timers according to changing weather patterns and landscape requirements.

Indoor Voluntary Water Use Reduction Measures

7. Wash only full loads of laundry and/or dishes.
8. Shorten showers and turn off faucets while brushing teeth or shaving.

No monetary assessments (see Section 4) or mandatory restrictions will be imposed during Stage 2. However, The District will implement drought rates described in Stage 2 of Appendix C. All existing and future District customers in violation of the Stage 1 water conservation requirements in effect at all times, or with excessive runoff that would cause water to flow from property into any drainage courses, streets, or streams are subject to fines. Fines are detailed in Section 4 and in the Water Conservation Policy in Appendix B.

3.3 Stage 3: Water Supply Warning – Mandatory Water Waste Reduction – Basic Capacity Ratio 61% - 70%

- Stage 1 water conservation requirements remain in effect for all customer classes.
- Stage 2 indoor voluntary water use reduction measures remain in effect

- Mandatory outdoor water use reduction measures for all customer classes
- The District will implement drought rates described in Stage 3 of Appendix C.
- Fines for non-compliance are imposed

Stage 3: The District will implement drought rates described in Stage 3 of Appendix C.

All Customer Classes

Stage 3 mandatory outdoor water use reduction measures for all customer classes are as follows:

Outdoor Mandatory Water Use Reduction Measures

1. Irrigate lawns and landscape only between 6:00 p.m. and 9:00 a.m.
2. No application of potable water to outdoor landscapes (turf and ornamental landscapes) during a rainfall event and up to 48 hours after measurable rainfall. Measureable rainfall for the region is defined as greater than or equal to 0.5 inches.
3. Do not allow irrigation water to leave the landscaped area.
4. No significant landscaping shall be installed or renovated.
5. Use a broom instead of a hose to clean driveways, sidewalks and other hardscape surfaces, except for California Department of Health Services prescribed health or sanitary reasons.
6. Eliminate sprinkler overspray from driveways and sidewalks. Divide irrigation runtimes into multiple cycles to eliminate runoff water that leaves the landscaped area.
7. Tune-up irrigation system by checking for and repairing leaks and damaged sprinklers.
8. Do not allow hoses to run while washing motor vehicles (including autos, trucks, trailers, motor homes, boats or others). Use a hose equipped with an automatic shutoff valve or other device that causes it to cease dispensing water immediately when not in use.

Commercial and Institutional Customers

Stage 3 mandatory water use reduction measures for all C&I customers are as follows:

9. C&I are advised to adjust automatic irrigation timers according to changing weather patterns and landscape requirements.
10. Drinking water shall not be served other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food and drink are served and/or purchased.
11. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each bathroom using clear and easily understood language.

Fines for non-compliance will be imposed for flagrant or repeat violations, in addition to other monetary assessments for excessive use (see Section 4). All existing and future District customers in violation of the Stage 1 water conservation requirements in effect at all times, consistent with Section 2 General Provisions of the District's Water Conservation Policy, or with excessive runoff that would cause water to flow from property into any drainage courses, streets, or streams, are subject to fines. Fines are detailed in Section 4 and in the Water Conservation Policy in Appendix B.

3.4 Stage 4: Extreme Water Supply Warning – Mandatory Outdoor Water Elimination

- Stage 1 water conservation requirements remain in effect for all customer classes
- Stage 2 and 3 mandatory water use reduction measures remain in effect for all customer classes

- Stage 2 Indoor voluntary water use reduction measures remain in effect
- Outdoor watering and/or irrigation is prohibited
- The District will implement drought rates described in Stage 4 of Appendix C
- Variances for health and safety only
- No new water meters allowed, except for health and safety.
- Fines for non-compliance are imposed, in addition to other monetary assessments for excessive use

Stage 4: The District will implement drought rates described in Stage 4 of Appendix C.

All Customer Classes

Stage 4 additional mandatory water use reduction measures for all customer classes are as follows:

Outdoor Mandatory Water Use Elimination

1. Washing of personal vehicles at home (including autos, trucks, trailers, motor homes, boats or others) is prohibited.
2. Outdoor watering and/or irrigation is prohibited at all times
3. No water for decorative fountains may be used, even if it has a recirculating system.
4. No filling or water level maintenance of outdoor pools.
5. Upon the declaration of a water shortage emergency, no new water meters allowed, except for health and safety.

Commercial and Institutional

Stage 4 additional mandatory water use reduction measures for all C&I are as follows:

6. No new hydrant-construction or temporary construction meter permits will be issued by the District.

Fines for non-compliance will be imposed for flagrant or repeat violations, in addition to other monetary assessments for excessive use (see Section 4). All existing and future District customers in violation of the water conservation requirements in effect at all times, consistent with Section 2 General Provisions of the District's Water Conservation Policy are subject to fines. Fines are detailed in Section 4 and in the Water Conservation Policy in Appendix B.

3.5 Stage 5: Water Supply Emergency – Mandatory Outdoor Water Elimination and Indoor Water Reduction

- Stage 1 water conservation requirements remain in effect for all customer classes.
- Stages 2, 3 and mandatory water use reduction measures remain in effect for all customer classes
- Additional mandatory water use reduction measures for all customer classes
- The District will implement drought rates described in Stage 5 of Appendix C
- Variances for health and safety only
- The District recommends the installation of pool and spa covers to minimize evaporative water loss.
- No new water meters allowed, except for health and safety
- Fines for non-compliance are imposed

All Customer Classes

Stage 5 additional mandatory measures for all customers are as follows:

Outdoor Mandatory Water Use Reduction Measures

1. No irrigation of lawns, landscapes and/or ornamental gardens.
3. Water for refilling recreational swimming pools and spas is prohibited.
4. No replacement water may be provided for ponds or lakes. Aeration equipment should be managed in such a way as to eliminate evaporative loss of water.
5. Turn off all decorative fountains, even if it has a recycling (recirculating) system, and consider using any remaining water to irrigate landscape. Make sure to empty completely so standing water does not attract insects.
6. Eliminate use of misting devices.

Indoor Mandatory Water Use Reduction Measures

7. Wash only full loads of laundry and/or dishes.
8. Fix leaky faucets, toilets, showerheads, pipes and other water plumbing immediately.
9. Shorten showers and turn off faucets while brushing teeth or shaving.

Commercial & Institutional Customers

Stage 5 **additional mandatory water use reduction measures for all C&I customers** are as follows:

10. No water for commercial car washes.
11. All hydrant construction and temporary construction meter permits will be rescinded by the District.
12. No planting of new landscaping (seed, sod, or other plant materials).

Fines for non-compliance will be imposed for flagrant or repeat violations, in addition to other monetary assessments for excessive use (see Section 4). All existing and future District customers in violation of the water conservation requirements in effect at all times, consistent with Section 2 General Provisions of the District's Water Conservation Policy are subject to fines. Fines are detailed in Section 4 and in the Water Conservation Policy in Appendix B.

Section 4: Enforcement and Variances

Measures called for in the stages of the District's WSC Plan will be primarily enforced through fines and monetary assessments. In extreme cases, certain types of outdoor water service may be discontinued until the emergency situation is over.

4.1 Fines

The District's Water Conservation Policy (Policy) (Appendix B) declares that because of the prevailing conditions in the State, it is necessary and appropriate for the District to adopt, implement and enforce a water conservation program to ensure sufficient water for human consumption, sanitation, and fire protection. The District further finds that waste or unreasonable use or unreasonable method of use of water shall be prevented and that water conservation practices shall be encouraged at all times.

Water Waste Provisions

The Policy establishes general provisions of conservation and water use efficiency that are in effect at all times. These general provisions are consistent with the WSC Plan and include the following:

1. Refrain from hosing down driveways and other hard surfaces, except for health and sanitary reasons.
2. Repair faucets, toilets, pipes and other potential sources of water leaks.
3. Irrigate landscape only between 6 p.m. and 9 a.m.
4. Adjust and operate all landscape irrigation systems in a manner that will maximize irrigation efficiency and avoid over watering or watering of hardscape and resulting runoff.
5. Prevent excessively irrigating any lawn or landscape area that would cause the sheeting of water to flow; eliminate water runoff from lawns or landscape areas into any drainage courses, streets, or streams.
6. Do not use decorative fountains unless they are equipped with a recirculating system.
7. When installing plumbing fixtures, use low-flow devices, except for those that require high-flow fixtures for health and/or sanitary reasons.
8. Where possible, install pool and spa covers to minimize water loss due to evaporation during non-operating days.
9. Do not allow water to run while washing vehicles. Use a hose with an automatic shutoff valve to avoid runoff into drainage courses, streets or streams.

It is important to note that conservation measures in addition to these general provisions are required to be taken by customers as part of higher WSC Plan Stages.

Enforcement

Water users who violate of any of the general provisions or additional measures required as part of the applicable WSC Plan Stage are subject to the enforcement of this Water Conservation Policy.

Violations which are related to the malfunction of water conveying hardware or devices are subject to the following enforcement:

- a. For a first violation, the District shall issue a written notice of fact of such violation to the customer. The customer shall then be allowed a period of 10 days following issuance of the written notice to correct the violation described

therein before a second violation will be issued, and the customer will be provided a copy of this Section of the Water Shortage Contingency Plan.

- b. For a second violation within the prior 12 month period, including but not limited to a failure to correct an initial violation within the time stated in the notice, the District shall issue a fine in the amount of \$50.00, which shall be added to the customer's water bill. The customer shall be allowed a period of 5 days following delivery of the written notice to correct the third violation before a fourth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- d. For a third violation in the prior 12 month period, the District shall issue a written notice of fact of such violation to the customer when a third violation has not been corrected within a period of 5 days following delivery of the third violation notice. A fine in the amount of \$100.00 shall be added to the customer's water bill upon issuance of a fourth violation. The customer shall be allowed 5 days following issuance of the written notice to correct the fourth violation before a fifth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- e. For a fourth violation in the prior 12 month period, the District shall issue a written notice of fact of such violation to the customer when a fourth violation has not been corrected within a period of 5 days following delivery of the fourth violation notice. A fine in the amount of \$250.00 shall be added to the customer's water bill upon issuance of a fourth violation. The customer shall be allowed 5 days following issuance of the written notice to correct the fifth violation before a sixth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- f. For a fifth violation, the District shall issue a written notice of fact of such violation to the customer when the fifth violation has not been corrected within a period of 5 days following issuance of the fifth violation notice. A fine of \$500.00 shall be added to the customer's water bill following the issuance of the sixth violation notice until the violation is corrected. In addition, the District may install a flow-restricting device at such meter with a one-inch orifice for services up to one and one-half inch size, and comparatively sized restrictors for larger services, on the service of the customer at the premises in which the violation occurred for a period of not less than 48 hours. The charge to the customer for installing a flow-restricting device shall be based on the size of the meter and actual cost of installation. The charge for installation and removal shall be as set forth in the District's rules. It may be reinstalled for repeated violations.

Violations that are **not** related to the malfunction of water conveying hardware or devices, but are related to actions taken by a water user including, but not limited to, (a) applying (e.g., hosing or spraying) potable water to outdoor landscapes in a manner that causes runoff that flows onto adjacent property, non-irrigated areas, private and public walkways, roadways,

parking lots or structures; (b) using a hose to wash an automobile with potable water, except where the hose has a shut-off nozzle or device attached to it that causes it to immediately cease dispensing water when not in use; (c) applying potable water to driveways and sidewalks; and (d) using potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system. are subject to the same enforcement procedures outlined above with the exception that the expected timeframe for correction of the violation is immediate, and a violation of such types ((a), (b), (c) or (d)) on a subsequent day may be considered a separate violation.

Customers shall pay all water bills and fines in accordance with the due dates stated on their bills. An Appeals Process is offered to customers that disagree with the fines assessed. If the appeal is upheld in favor of the customer, appropriate monies will be refunded. Details of the Appeals Process are included in the Policy (Appendix B).

4.2 Variances

The District may, in writing, grant a temporary variance from any fines, Allocation Surcharges and monetary assessments, or restrictions imposed by the WSC Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance, and under the following conditions, which are consistent with Section 5 of the District's Water Conservation Policy (see Appendix B):.

1. Compliance with the WSC Plan cannot be technically accomplished during the duration of a water supply shortage or other condition for which the WSC Plan Shortage Stage is in effect.
2. Alternative methods or technology used as part of a District-sanctioned trial or test study can be implemented which will achieve the same level of reduction in water use.
3. Doctor-approved health circumstances, illness or injury will be considered on a case-by- case basis.
4. No variances will be issued, beginning in Shortage Stage 3 of the WSC Plan, for filling swimming pools, establishing or expanding a landscape area, or leaks not repaired within 48 hours.
5. During Shortage Stages 4 and 5, variances requests must be due to health and safety issues only.

A written variance shall be accepted by the District, and may be denied at the sole discretion of the District.

All variances must be requested in writing any time after WSC Plan's staged implementation. The following information must be provided:

1. Name, contact phone number, service address and customer account number of petitioner;
2. Purpose of water use (e.g., domestic, commercial, institutional);
3. Specific provision(s) of the WSC Plan from which the petitioner is requesting relief;
4. Detailed statement as to how the provision of the WSC Plan adversely affects the petitioner or what damage or harm will occur;
5. Description of the relief requested;
6. Period of time for which the variance is sought; and

7. Any alternative water use restrictions (e.g., indoor use) that the petitioner is taking or proposes to take to meet the intent of the WSC Plan.

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Section 5: Revenue and Rate Impacts

The District has an Emergency Cash Reserve Policy to deal with catastrophic events. Short of a catastrophic event, Appendix C establishes rates to be implemented concurrently with a determination of any drought Stage greater than 1 which will increase the various commodity rates inversely to the predicted reduction percentage of water use in the designated stage to maintain the District's financial stability and sustainability.

Section 6: District's Emergency Actions

The Water Code Section 10632 requires actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

The District operates in an area where the probability of an earthquake is high. Depending on the severity, an earthquake may damage the water system. The District's Emergency Response Plan provides a framework for an organized response to an earthquake emergency. The primary objectives of the WSC Plan are to maintain the functionality of the water distribution system, assess the system and if necessary make rapid repair to any damage, and prevent any further damage. The District's response to an earthquake will be directed by the General Manager.

The following are the District Response Phases in the event of an Earthquake:

- Phase I – Inspection: A rapid inspection to determine injuries and any damage which might affect the distribution system.
- Phase II – Report Back: Emergency communications flow: additional inspection procedures.
- Phase III – Repair: Coordination of maintenance forces.
- Phase IV – Management Procedures: Key Management responsibilities for the emergency.
- Phase V – Operating/Maintenance/Engineering: Outlines procedures for division staff.

Prior to Phase I inspections, system operators and inspectors report to the Emergency Operations Center to receive assigned inspection routes. The Emergency Operations Center creates a communications hub for the District to efficiently manage their available resources. For example, personnel inspecting Foster Lake Dam, wastewater treatment facilities, and wells receive their assignments from and report their findings to the Emergency Operations Center. The Emergency Response Plan contains the areas that are inspected with driving directions for specific inspection routes. If inspections reveal damage to any of the areas, the necessary repairs are made. Communications are ongoing at all phases of the response to an earthquake. The District has a radio system to insure communications will be available during an emergency. The Emergency Response Plan also includes an analysis of the potential of an electrical power outage. The District depends on electricity to boost water to higher elevations via pumping stations. In an emergency involving a power outage, the District will utilize emergency generators to provide customers with a reliable source of water.

Appendix

A

Stage Criteria

$$\text{Basic Capacity Ratio} = \frac{(\text{Monthly Demand})}{(\text{Monthly Production Capacity})} \times 100 = \% \text{ of used production}$$

<u>Stage</u>	<u>Criteria</u>	<u>Reduction</u>
Stage 1	0-50%	Normal Efficient Use
Stage 2	51-60%	Voluntary 10% Reduction
Stage 3	61-70%	Mandatory 20% Reduction
Stage 4	71-85%	Mandatory 30% reduction
Stage 5	86+%	Mandatory 50% Reduction

Would move to a higher stage when the Basic Ratio:

- 1) Has exceeded the lower threshold for a stage for the fourth (4th) consecutive month;
 - 2) Exceeds the lower threshold for a stage by at least 8% for two consecutive months;
- or
- 3) Exceeds the lower threshold for a stage by at least 13% for one month.

Examples

- A. Four (4) months at 52%, 54%, 53% and 52% would go to Stage 2 in the 5th month
- B. Two (2) months at 59% and 58% would go to Stage 2 in the 3rd month
- C. One (1) month at 63% would go to Stage 2 in the second month

Would move to a lower stage when the Basic Ratio:

- 1) Has been 5% or more below the threshold for the Stage for two consecutive months

Example

- A. In Stage 2; Month 1 at 44%, Month 2 at 43%, go to Stage 1 in the 3rd month

Idyllwild Water District
Appendix B
WATER CONSERVATION POLICY
Adopted September 19, 2018

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Section 1. Findings and Declaration of Policy

The Idyllwild Water District (District) finds and determines that because of the prevailing conditions in the State it is necessary and appropriate for the District to adopt, implement, and enforce a Water Conservation Policy to ensure sufficient water for human consumption, sanitation, and fire protection. The District further finds the waste or unreasonable use, or unreasonable method of use of water shall be prevented and that water conservation practices shall be encouraged at all times.

In times of drought or water supply cutbacks, provisions of this Policy may be modified in accordance with State of California Regulations, as well as Idyllwild Water District's Water Shortage Contingency Plan (WSC Plan). This Policy is in effect at all times and defers updates and implementation strategies, regarding water conditions and supplies to the WSC Plan for timely communications and media outreach when stage alerts are executed.

Section 2. General Provisions

In order to comply with requirements of state legislation and Best Management Practices, it shall be a violation of this Policy at any time to make, cause, or permit the use of water for residential, commercial, industrial, agricultural, institutional, or any other purpose in a manner constituting waste. Customers shall abide by all requirements outlined in the applicable Shortage Stage of the WSC Plan including, but not limited to the following requirements at all times:

1. Refrain from hosing down driveways and other hard surfaces, except for health or sanitary reasons.
2. Repair faucets, toilets, pipes and other potential sources of water leaks.
3. Irrigate landscape only between 6 p.m. and 9 a.m. This provision does not apply when:
 - a. Manually watering during the establishment period of a new landscape;
 - b. Supervised spot watering is done to address landscape issues;
 - c. Temperatures are predicted to fall below freezing;
 - d. Testing/repairing an irrigation system;
 - e. Using drip and point-to-point irrigation systems; and
 - f. A longer watering window is needed due to system constants.
4. Adjust and operate all landscape irrigation systems in a manner that will maximize irrigation efficiency and avoid over watering or watering of hardscape and the resulting runoff.
5. Prevent excessively irrigating any lawn or landscape area that would cause the sheeting of water to flow; eliminate water runoff from lawns or landscape areas into any drainage courses, streets, or streams.
6. Do not use decorative fountains unless they are equipped with a re-circulating system.
7. When installing plumbing fixtures, use low-flow devices, except for those that require high-flow fixtures for health and/or sanitary reasons.
8. Where possible, install pool and spa covers to minimize water loss due to evaporation during non-operating days.
9. Do not allow water to run while washing vehicles. Use a hose with an automatic shutoff valve to avoid runoff into drainage courses, streets or streams.
10. When installing new landscaping, refer to the Water Use Classification of Landscape Species (WUCOLS). Plant low-water California Friendly® Landscapes and/or the Idyllwild Garden Club list of local and drought tolerant plants suitable for the area. Non-functional turf areas are not recommended. Turf lined channels are only permitted when justified by environmental regulations.
11. Refrain from watering during rain, or high winds by turning off irrigation timer.

Section 3. Administrative Fines

All persons in violation of Section 2 General Provisions of this Policy or with excessive runoff that causes water to flow from property into any drainage courses, streets, or streams are subject to the following:

- a. For a first violation, the District shall issue a written notice of fact of such violation to the customer. The customer shall then be allowed a period of 10 days following issuance of the written notice to correct the violation described therein before a second violation will be issued, and the customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- b. For a second violation within the prior 12 month period, including but not limited to a failure to correct an initial violation within the time stated in the notice, the District shall issue a fine in the amount of \$50.00, which shall be added to the customer's water bill. The customer shall be allowed a period of 5 days following delivery of the written notice to correct the third violation before a fourth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- d. For a third violation in the prior 12 month period, the District shall issue a written notice of fact of such violation to the customer when a third violation has not been corrected within a period of 5 days following delivery of the third violation notice. A fine in the amount of \$100.00 shall be added to the customer's water bill upon issuance of a fourth violation. The customer shall be allowed 5 days following issuance of the written notice to correct the fourth violation before a fifth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- e. For a fourth violation in the prior 12 month period, the District shall issue a written notice of fact of such violation to the customer when a fourth violation has not been corrected within a period of 5 days following delivery of the fourth violation notice. A fine in the amount of \$250.00 shall be added to the customer's water bill upon issuance of a fourth violation. The customer shall be allowed 5 days following issuance of the written notice to correct the fifth violation before a sixth violation will be issued. The customer will be provided a copy of this Section of the Water Shortage Contingency Plan.
- f. For a fifth violation, the District shall issue a written notice of fact of such violation to the customer when the fifth violation has not been corrected within a period of 5 days following issuance of the fifth violation notice. A fine of \$500.00 shall be added to the customer's water bill following the issuance of the sixth violation notice until the violation is corrected. In addition, the District may install a flow-restricting device at such meter with a one-inch orifice for services up to one and one-half inch size, and comparatively sized restrictors

for larger services, on the service of the customer at the premises in which the violation occurred for a period of not less than 48 hours. The charge to the customer for installing a flow-restricting device shall be based on the size of the meter and actual cost of installation. The charge for installation and removal shall be as set forth in the District's rules. It may be reinstalled for repeated violations.

Customers shall pay all water bills and fines in accordance with the due dates on their water bills. An Appeals Process is offered to customers that disagree with fines outlined in this section of the Policy. If the appeal is upheld in favor of the customer, appropriate monies will be refunded. Details of the appeals process are included in Section of this Policy.

The District shall use the revenues derived from the implementation of this section of the Policy for water use efficiency programs.

Section 4. Appeals Process

Any customer may appeal the imposition of fines of this Policy, by filing a written request with the District Planning Department for an appeals hearing. The District must receive the request within 30 days of the fine notice. A request for a hearing shall set forth, in detail, all facts supporting the request.

The District shall, within 15 days of receiving a request for an appeal hearing provide written notice to the customer of the hearing date, time, and place. The hearing date shall not be more than 30 days from the mailing of such notice by certified mail, unless a later date is agreed to by the customer.

At the hearing, a District staff member will represent the District. The customer will have the opportunity to present information supporting his or her position concerning the required irrigation evaluation or penalty charges. After the hearing, the District staff shall deliver a written report to the General Manager setting forth findings of fact, conclusions, and a recommendation on whether to uphold, modify, or reverse the original fines. Upon receipt of the written report, the General Manager shall issue his decision within 15 calendar days of the hearing. The written decision of the General Manager shall be sent to the customer by certified mail. The General Manager's decision shall be final on the 16th day after it is mailed, unless a request for a hearing is filed with the Board of Directors no later than 5:00 p.m. on the 15th day following such mailing.

Any customer may appeal a decision made by the General Manager, prior to the date that the General Manager's order becomes final, by filing a written request for a hearing with the Board of Directors. The request for the Board of Directors' hearing shall set forth in detail all the issues in dispute and all facts supporting the request. No later than 30 days after receipt of the request for a hearing, the Board of Directors shall either set the matter for a hearing, or deny the request for the hearing. Whether to grant or deny a request for a hearing on an appeal to the General Manager's decision shall be within the sole discretion of the Board of Directors.

If required, a hearing shall be held by the Board of Directors within 30 days of the date the request for a hearing was granted, unless a later date is agreed to by the customer and the Board of Directors. The Board of Directors shall make a determination whether to uphold, modify, or reverse the General Manager's decision. The order of the Board of Directors shall be final upon its adoption. The written decision and order of the Board of Directors shall be sent to the customer by certified mail within 15 days after the close of the hearing.

If the matter is not heard within the required time, due to actions or inactions of the customer or the Board of Director's decision to deny the request for the hearing, the General Manager's decision shall be final.

Section 5. Variance Conditions

A variance may be issued by the District, in writing, to grant a temporary variance for water uses otherwise prohibited under this Policy if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance, and under the following conditions:

1. Compliance with this Policy cannot be technically accomplished during the duration of a water supply shortage or other condition for which the Policy is in effect.
2. Alternative methods or technology used as part of District sanctioned trial or test study can be implemented which will achieve the same level of reduction in water use.
3. Doctor-approved health circumstances, illness or injury will be considered on a case-by-case basis.
4. No variances will be issued, beginning in Stage 4 of the WSCP, for filling swimming pools, establishing or expanding a landscape area, leaks not repaired within 48 hours, and existing outdoor water budgets.
5. During Shortage States 4 and 5, variances will be considered for health and safety issues only.

A written variance shall be accepted by the Planning Department, and may be denied at the sole discretion of the District.

Section 6. Definitions of Terms

Appellant - means the customer appealing a decision of the District for relief from the requirements of this Policy.

Appeal Process - refers to a set of procedures allowing an appellant the opportunity to present facts and details, supporting his or her position concerning fines of this policy.

Best Management Practices – defines the best and most proven water conservation methods for urban water users in California.

Board of Directors - means the Board of Directors of the Idyllwild Water District.

California Friendly® Landscapes – refers to landscape that features low-water using plants, state-of-the-art irrigation and controllers, sustainable landscaping techniques/ maintenance plan.

Customer - means any person, firm, partnership, association, corporation, or local political entity using water obtained from the water system of Idyllwild Water District.

District – refers to Idyllwild Water District.

Excessive Runoff - over irrigation of landscaped areas, leaks, or any other type of action that would cause water to flow into any drainage courses, streets, or streams.

Non-Functional Turf Areas – (not recommended) a landscape turf area used for aesthetic purposes.

Variance Conditions – refers to a conflict requesting a temporary variation for water use.

Waste - means any unreasonable or non-beneficial use of water, or any unreasonable method of use of water, including, but not limited to, the specific uses prohibited and restricted by this policy as hereinafter set forth.

Water Use Classification of Landscape Species (WUCOLS) – is a guide to help landscape professionals identify irrigation water needs of landscape species. It can be used either for the selection of species or to assist in developing irrigation schedules. It is not intended to be used as a required or approved list by IWD for selection of plant.

In times of drought or water supply cutbacks, provisions of this Policy may be modified in accordance with the Idyllwild Water District's Water Shortage Contingency Plan, or action taken by the Board of Directors.

APPENDIX C

Water Shortage Contingency Plan

Drought Rates

Proposed Rates - Transition 50% Fixed to 60% Fixed					
Water Shortage Rate Schedule		Proposed Rates			
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
Stage 2 - 10% Conservation					
Uniform Potable Rate (Commercial Customers)		\$0.0829	\$0.0826	\$0.0820	\$0.0811
Tiered Rate (SFR Customers)					
<u>Proposed</u>					
Tier 1	450 cf	\$0.0200	\$0.0210	\$0.0220	\$0.0231
Tier 2	900 cf	\$0.1559	\$0.1539	\$0.1514	\$0.1482
Tier 3	900+ cf	\$0.2005	\$0.1976	\$0.1938	\$0.1893
Stage 3 - 20% Conservation					
Uniform Potable Rate (Commercial Customers)		\$0.0917	\$0.0912	\$0.0904	\$0.0894
Tiered Rate (SFR Customers)					
<u>Proposed</u>					
Tier 1	450 cf	\$0.0209	\$0.0219	\$0.0230	\$0.0241
Tier 2	900 cf	\$0.1930	\$0.1903	\$0.1869	\$0.1826
Tier 3	900+ cf	\$0.2606	\$0.2564	\$0.2512	\$0.2448
Stage 4 - 35% Conservation					
Uniform Potable Rate (Commercial Customers)		\$0.1099	\$0.1092	\$0.1081	\$0.1066
Tiered Rate (SFR Customers)					
<u>Proposed</u>					
Tier 1	450 cf	\$0.0227	\$0.0239	\$0.0251	\$0.0263
Tier 2	900 cf	\$0.2904	\$0.2857	\$0.2799	\$0.2727
Tier 3	900+ cf	\$0.4204	\$0.4129	\$0.4036	\$0.3923
Stage 5 - 50% Conservation					
Uniform Potable Rate (Commercial Customers)		\$0.1391	\$0.1379	\$0.1362	\$0.1341
Tiered Rate (SFR Customers)					
<u>Proposed</u>					
Tier 1	450 cf	\$0.0257	\$0.0270	\$0.0283	\$0.0298
Tier 2	900 cf	\$0.5107	\$0.5015	\$0.4900	\$0.4762
Tier 3	900+ cf	\$0.7805	\$0.7654	\$0.7468	\$0.7245

RESOLUTION NO. 756

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE
IDYLLWILD WATER DISTRICT
ANNOUNCING ITS INTENT TO ADOPT A WATER SHORTAGE CONTINGENCY PLAN AND A
DROUGHT RATE SCHEDULE FOR FISCAL YEARS 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023 AND
NOTICING A PUBLIC HEARING

WHEREAS, California Water Code Section 30000 et seq. authorizes the Idyllwild Water District to fix and collect water and sewer rates for water and sewer service provided to property owners and residents within the District; and

WHEREAS, there has been presented to the Board of Directors (Board) a proposed Water Shortage Contingency Plan for the District and a Drought Rate schedule for Fiscal Years 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023; and

WHEREAS, the proposed Water Shortage Contingency Plan for the District and a Drought Rate schedule for Fiscal Years 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023 have been reviewed and considered by the Board, and it has been determined to be in the best interest of the District to adopt a Water Shortage Contingency Plan for the District and a Drought Rate schedule for Fiscal Years 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023 for the sound financial and sustainable operation of the District; and

WHEREAS, the Board intends to hold a public hearing on September 19, 2018 at 6:00 p.m. at the office of the District at which date, time, and place, this District will consider an Ordinance adopting the Water Shortage Contingency Plan for the District and a Drought Rate schedule for Fiscal Years 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023 and will hear all persons who wish to comment on the subject and will consider final adoption of the Water Shortage Contingency Plan and Drought Rates.

NOW, THEREFORE, be it hereby resolved, determined, and ordered by the Board of Directors of the Idyllwild Water District as follows:

Section 1. The matters set forth in the recitals to this Resolution are true and correct statements.

Section 2. The District Secretary is authorized and directed to give public notice, including mailed notice to any person who has so requested, of the hearing to be held on September 19, 2018 at 6:00 p.m. at the office of this District, located at 25945 Highway 243, Idyllwild, California, at which date, time, and place this Board will consider the adoption of an Ordinance adopting the Water Shortage Contingency Plan for the District and a Drought Rate schedule for Fiscal Years 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023 and will hear all persons who wish to comment on the subject and will consider final adoption of the Water Shortage Contingency Plan and Drought Rates.

Section 3. The District Secretary is authorized and directed to give notice of the public hearing with respect to the consideration of increases to the water charges by mailing said notice to record owners of all property within the District at least forty-five (45) days before the public hearing on September 19, 2018.

Adopted this 18th day of July 2018.

IDYLLWILD WATER DISTRICT

By: _____
CHARLES SCHELLY, President
Board of Directors

ATTEST:

I, JEANNINE OLSEN, Secretary of the IDYLLWILD WATER DISTRICT, hereby certify that the foregoing Resolution was duly and regularly introduced and adopted by the Board of Directors of the IDYLLWILD WATER DISTRICT at its meeting of July 18, 2018, by the following vote:

AYES:

NAYS:

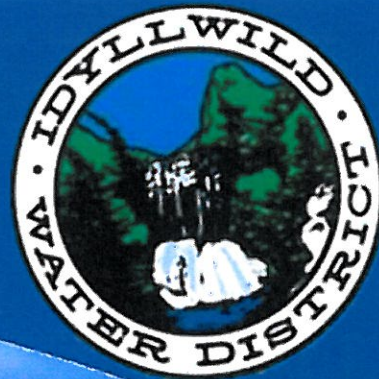
ABSTAIN:

ABSENT:

In witness whereof, I have executed by statement and affix the official seal of the IDYLLWILD WATER DISTRICT this 18th day of July, 2018.

IDYLLWILD WATER DISTRICT

JEANNINE OLSEN, Secretary



IDYLLWILD WATER DISTRICT

Final Report

Water and Sewer Rate Study

July 2018

OFFICE LOCATIONS:

Temecula – Corporate Headquarters
32605 Temecula Parkway, Suite 100
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California Satellite Offices
Atascadero, Davis
Huntington Beach,
Joshua Tree, Riverside
Sacramento, San Jose

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Section 1. PURPOSE AND OVERVIEW OF THE STUDY

A. Purpose

The Idyllwild Water District (District) retained NBS to conduct a comprehensive water and sewer rate study for a number of reasons, including meeting revenue requirements, providing greater financial stability for the water enterprise in particular, and complying with certain legal requirements (such as California Constitution article XIII D, section 6, which is commonly referred to as Proposition 218 [Prop 218]). The rates resulting from this study were developed in a manner that is consistent with industry standard cost of service principles. In addition to documenting the rate study methodology, this report is provided with the intent of assisting the District to maintain transparent communications with its residents and businesses.

In developing new water and sewer rates, NBS worked cooperatively with District staff and the District's Board of Directors (Board), in selecting appropriate rate alternatives. Based on input from District staff and the Board, the proposed rates are summarized in this report.

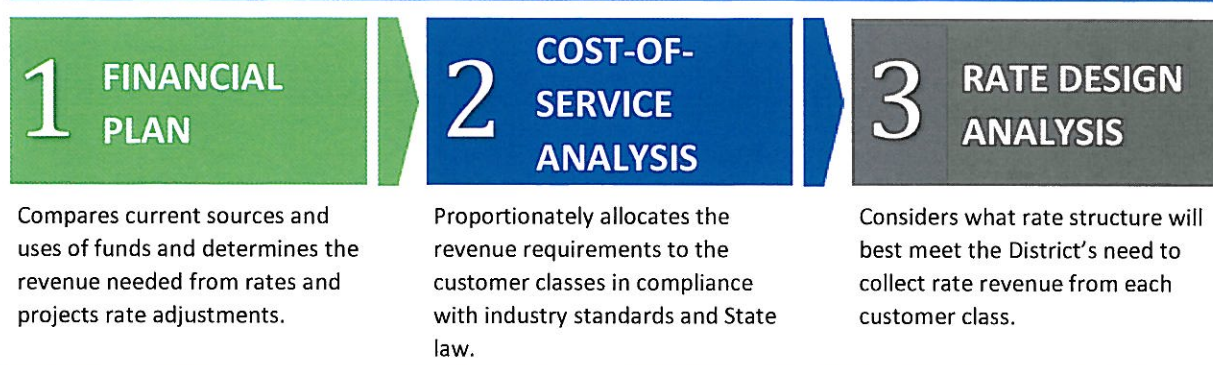
Rate increases are needed for both the water and sewer utilities in order to fund necessary capital improvements. The District also needs cash available to take advantage of capital improvement opportunities. For example, CalTrans is currently planning to do road work in the service area, and the District is using this opportunity to replace part of the water main beneath the road. Doing this project at this time allows the District to avoid paying for street resurfacing later.

B. Overview of the Study

Comprehensive rate studies such as this one typically include the following three components, as outlined in **Figure 1**:

1. Preparation of a **Financial Plan**, which identifies the net revenue requirements for the utility.
2. **Cost of Service Analysis** determines the cost of providing service to each customer class.
3. **Rate Design Analysis** evaluates various rate design alternatives.

Figure 1. Primary Components of a Rate Study



These steps are intended to follow industry standards and reflect the fundamental principles of cost-of-service ratemaking embodied in the American Water Works Association (AWWA) Principles of Water Rates,

Fees, and Charges¹, also referred to as the M1 Manual. They also address requirements under Proposition 218 that rates not exceed the cost of providing the service, and that they be proportionate to the cost of providing service to all customers. In terms of the chronology of the study, these three steps represent the order they were performed in this Study. Detailed tables and figures documenting the development of the proposed rates are provided in the Appendices.

FINANCIAL PLAN

As a part of this rate study, NBS projected revenues and expenditures on a cash flow basis for the next twenty years. The amount of rate revenue required, that will allow reserves to be maintained at the recommended levels, is known as the **net revenue requirement**. As current rate revenue falls short of the net revenue requirement, rate adjustments - or more accurately, adjustments in the total revenue collected from rates for both utilities - are recommended. This report presents an overview of the methodologies, assumptions, and data used, along with the financial plans and proposed rates developed in this study².

For the Sewer utility, staff determined that the current cost allocations and rate design were adequate; therefore, only completed the Financial Plan analysis for this utility.

WATER COST OF SERVICE ANALYSIS

Once the net revenue requirements are determined, the cost of service analysis proportionately distributes those revenue requirements to each of the customer classes. The cost of service analysis consists of two major components: (1) the classification of expenses, and (2) the allocation of costs to customer classes. Costs were classified, using the commodity-demand method which is found in the AWWA M1 Manual, corresponding to the function they serve. All costs in the District's budget are allocated to each component of the rates in proportion to the level of service required by customers. The levels of service are related to volumes of peak and non-peak demand, infrastructure capacity, and customer service. These are based on allocation factors, such as water consumption, peaking factors, and number of accounts by meter size. Ultimately, a cost-of-service analysis is intended to result in rates that are proportional to the cost of providing service to each customer.

WATER RATE DESIGN ANALYSIS

Rate Design is typically the stage in the study where NBS, staff and the Board must work closely together, to develop rate alternatives that will meet the District's objectives. It is important for the water utility to send proper price signals to its customers about the actual cost of their water usage. This objective is typically addressed through both the magnitude of the rates, and the rate structure design. In other words, both the amount of revenue collected, and the way in which the revenue is collected from customers are important.

Several criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in a number of rate-setting manuals, such as the AWWA Manual M1. The foundation for evaluating rate structures is generally credited to James C. Bonbright in the *Principles of Public Utility Rates*³, which outlines pricing policies, theories, and economic

¹ *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, M1, AWWA, seventh edition, 2017.*

² *The complete financial plan for each utility is set forth in the Appendices.*

³ *James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.*

concepts along with various rate designs. The following is a simplified list of the attributes of a sound structure:

- Rates should be easy to understand from the customer's perspective.
- Rates should be easy to administer from the utility's perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (that is, cost based).
- There should be continuity in the ratemaking philosophy over time.
- Rates should address other utility policies (for example, encouraging conservation & economic development).
- Rates should provide month-to-month and year-to-year revenue stability.

The following are the basic rate design criteria that were considered in this study:

Rate Structure Basics –The vast majority of rate structures contain a fixed or minimum charge in combination with a volumetric charge. The revenue requirements for each customer class are collected from both fixed monthly meter charges and variable commodity charges. Based on direction from the Board, the rates proposed in this study are designed to collect 50 percent of rate revenue from the fixed meter charges in the first year, and escalate to 60 percent of rate revenue in the fifth year. Variable commodity charges will collect the difference, and will transition from being 50 percent of rate revenue in the first year to 40 percent of rate revenue in the fifth year.

Fixed Charges – Fixed charges can be called base charges, minimum monthly charges, customer charges, fixed meter charges, etc. The fixed meter charges recognize that the Water utility incurs fixed costs regardless of whether customers actually use water. The charges typically have two components, one that reflects capacity costs that are scaled based on hydraulic capacity of each size meter connected to the water system, and a second component that represents customer related costs that does not vary by meter size and is based on the number of bills sent to customers.

Variable Commodity (Consumption-Based) Charges – In contrast to fixed charges, variable costs such as water supply, the cost of electricity used in pumping water, and the cost of chemicals for treatment tend to change with the quantity of water produced. For a water utility, variable charges are generally based on metered consumption and charged on a dollar-per-unit cost (for example, per 100 cubic feet, or hcf).

Uniform (Single-Tier) Water Charges – There are significant variations in the basic philosophy of variable charge rate structure alternatives. Under a uniform (single tier) rate structure, the cost per unit does not change with consumption, and provides a simple and straightforward approach from the perspective of customers regarding their understanding of the rates, and for the utility's administration and billing of the rates.

Multi-Tiered Water Rates – In contrast to a uniform tier, an inclining block rate structure attempts to send a price signal to customers that their consumption costs more as more water is consumed, and is generally considered to be a more conservation-oriented rate structure. Tiered water rates are encouraged by state law and regulatory mandates, but are also intended to represent the higher costs for customers that

contribute more to peak summertime usage and place greater demands on the system. The San Juan Capistrano ruling⁴ placed requirements and guidelines on how Tired Rates must be developed.

DROUGHT AND WATER CONSERVATION

On January 17, 2014, Governor Jerry Brown declared a State of Emergency throughout California due to severe drought conditions. On April 1, 2015, the Governor issued Executive Order B-29-15 mandating statewide water conservation of 25 percent. The specific conservation mandate for each community in California varied from 4 to 36 percent. Due to the District's small customer base, the District was excluded from the conservation requirement, however the District suffers from a source of supply that is susceptible to drought and has no external resources. Thus, conservation is necessary for the District to maintain adequate supply.

Water consumption has an impact on both revenue and expenses. For this analysis, consumption from calendar year 2017 is used as the baseline⁵ as it is assumed to be the "new normal," with approximately 9,344,193 cubic feet (cf) or nearly seventy million gallons of billable water consumed. No increase in consumption beyond expected customer growth is assumed for the five-year rate period.

⁴ *Capistrano Taxpayers Association, Inc. vs City of San Juan Capistrano (Superior Court of California, County of Orange, 2015.)*

⁵ *Consumption for Idyllwild Arts Academy adjusted given recent leak fixes.*

Section 2. WATER RATE STUDY

A. Key Water Rate Study Issues

The District's water rate analysis was undertaken with a few specific objectives, including:

- Avoiding operational deficits and further depletion of reserves.
- Improving revenue stability.
- Generating additional revenue needed to meet projected funding requirements, including capital improvement program costs.
- Continuing to encourage water conservation with a tiered rate structure.

NBS developed various water rate alternatives as requested by District staff and the Board over the course of this Study. All rate structure alternatives relied on industry standards and cost-of-service principles. The rate alternative that will be implemented, is ultimately the decision of the Board. The fixed and volumetric charges were calculated based on the net revenue requirements, number of customer accounts (by customer class and meter size), water consumption, and other District-provided information.

B. Financial Plan

It is important for municipal utilities to maintain reasonable reserves in order to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. Rate adjustments are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and build reasonable reserve funds. The current state of the District, with regard to these objectives, is as follows.

Net Revenue Requirements: For FY 2017/18 through FY 2021/22, the projected net revenue requirement (that is, total annual expenses plus debt service and rate-funded capital costs, less non-rate revenues) for the District is approximately \$1.5 million, annually. If no rate adjustments are implemented, the District is projected to average a \$170,000 deficit each year.

Building and Maintaining Reserve Funds: Reserve funds provide a basis for a utility to cope with fiscal emergencies such as revenue shortfalls, asset failure, natural disasters, among other events. Reserve policies provide guidelines for sound financial management, with an overall long-range perspective to maintain financial solvency and mitigate financial risks associated with revenue instability, volatile capital costs, and emergencies. The District plans to reach the proposed reserve target by the end of FY 2022/23, one year following the end of the proposed rate plan developed in this Study. The reserve funds for the Water utility are considered unrestricted reserves and consist of the following:

- **The Operating Reserve** has been set by the Board to be \$500,000, which is approximately 35 to 42 percent of annual operating expenses for the next five years. An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations in revenue can be caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (such as volumetric charges), and – particularly in periods of economic distress – changes or trends in age of receivables.

- **The Emergency Reserve** has been set by the Board to be \$350,000, which is approximately 25 to 30 percent of annual operating expenses for the next five years. This reserve is set aside to address unexpected revenue shortfalls.
- **The Capital Rehabilitation and Replacement Reserve** has been set by the Board to be \$1,000,000, which is approximately 24 percent of net asset value for the water utility. This reserve is set aside to address long-term capital system replacement and rehabilitation needs.
- **The Vehicle and Equipment Replacement Reserve** has been set by the Board to be \$500,000, which is approximately 12 percent of net asset value for the water utility. This reserve is set aside to address vehicle and equipment needs.
- **The Vacation/Sick/Annual Leave Reserve** has been set by the Board to be \$75,000, which is set aside to address the accumulated leave liability.
- **The OPEB Liability Reserve** has been set by the Board to be \$675,000, which is set aside to address future other employment benefits, namely healthcare costs of retirees.

Funding Capital Improvement Projects: The District must also be able to fund necessary capital improvements in order to maintain current service levels. District staff has identified \$700,000 in capital expenditures in FY 2018/19 and \$400,000 annually for FY 2019/20 through 2022/23.

Inflation and Growth Projections – Assumptions regarding cost inflation were made in order to project future revenues and expenses for the study period. The following inflation factors were used in the analysis:

- Customer growth is expected to be 0.5 percent annually.
- General cost inflation is 2.5 percent annually.
- Salary cost inflation is 5 percent annually.
- Benefits cost inflation is 5 percent annually.
- Energy cost inflation is 2.5 percent annually.
- Chemicals cost inflation is 2.5 percent annually.
- Fuel cost inflation is 2.5 percent annually.
- Tax inflation is 1.5 percent annually.
- Standby Revenue is reduced at 3 percent annually.

Effective Date of Rate Adjustments: The financial plan modelling assumes that rate adjustments occur on the July bill⁶ of each year.

Rate revenue adjustments of 5 percent from FY 2018/19 through 2022/23, will be needed in order to fully fund all operating expenses, planned capital projects, and build reserves to the recommended targets by FY 2022/23. **Figure 2** summarizes the sources and uses of funds, net revenue requirements, and the recommended annual percent adjustments in total rate revenue recommended for the next five-years for the District.

⁶ The first rate adjustment is scheduled for July 1, 2018 followed by each July 1st thereafter.

Figure 2. Summary of Water Revenue Requirements

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget	Projected				
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Sources of Water Funds						
Rate Revenue Under Prevailing Rates	\$ 1,272,297	\$ 1,278,658	\$ 1,285,052	\$ 1,291,477	\$ 1,297,934	\$ 1,304,424
Non-Rate Revenues	314,712	318,322	322,012	325,783	329,635	333,569
Interest Earnings	3,000	8,185	10,708	13,972	14,711	20,980
Total Sources of Funds	\$ 1,590,009	\$ 1,605,165	\$ 1,617,771	\$ 1,631,232	\$ 1,642,281	\$ 1,658,972
Uses of Water Funds						
Operating Expenses	\$ 1,150,562	\$ 1,196,558	\$ 1,246,743	\$ 1,299,196	\$ 1,354,025	\$ 1,411,343
Rate-Funded Capital Expenses	577,000	721,000	424,360	437,091	450,204	463,710
Total Use of Funds	\$ 1,727,562	\$ 1,917,558	\$ 1,671,103	\$ 1,736,287	\$ 1,804,229	\$ 1,875,052
Additional Revenue from Rate Increases	-	63,933	131,718	203,569	279,713	360,388
Surplus (Deficiency) after Rate Increase	\$ (137,553)	\$ (248,459)	\$ 78,386	\$ 98,514	\$ 117,765	\$ 144,308
Projected Annual Rate Revenue Increase	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Cumulative Increases	0.00%	5.00%	10.25%	15.76%	21.55%	27.63%
Net Revenue Requirement (2)	\$ 1,056,336	\$ 1,093,861	\$ 1,135,143	\$ 1,177,997	\$ 1,222,499	\$ 1,268,726

1. Assumes new rates are implemented July 1, 2018 and July 1 each year thereafter.

2. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from water rates.

Figure 3 summarizes the projected reserve fund balances and reserve targets. A summary of the utility's proposed five-year financial plan is included in Tables 1 and 2 of Appendix A. The appendix tables include revenue requirements, reserve funds, revenue sources, proposed rate adjustments, and the District's capital improvement program. As can be seen in Figure 3, given proposed rate adjustments, reserves do not quite meet the minimum target by the end of the five-year rate period; however, it is expected that the District will be well positioned to achieve the reserve targets in the following year. It should be noted that Vacation/Sick/Annual Leave and OPEB Liability Reserves are maintained at their current levels (below the target) over the five year rate period. Those reserves are not expected to achieve the target level without additional rate increases beyond the rate period.

Figure 3. Summary of Reserve Funds

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget	Projected				
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Operating Reserve						
Ending Balance	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
<i>Recommended Minimum Target</i>	<i>500,000</i>	<i>500,000</i>	<i>500,000</i>	<i>500,000</i>	<i>500,000</i>	<i>500,000</i>
Emergency Reserve						
Ending Balance	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
<i>Recommended Minimum Target</i>	<i>350,000</i>	<i>350,000</i>	<i>350,000</i>	<i>350,000</i>	<i>350,000</i>	<i>350,000</i>
Capital Rehabilitation and Replacement Reserve & Vehicle Replacement Reserve						
Ending Balance	\$ 1,183,045	\$ 934,586	\$ 1,012,972	\$ 1,111,486	\$ 1,229,251	\$ 1,373,559
<i>Recommended Minimum Target</i>	<i>1,500,000</i>	<i>1,500,000</i>	<i>1,500,000</i>	<i>1,500,000</i>	<i>1,500,000</i>	<i>1,500,000</i>
Total Ending Unrestricted Balance	\$ 2,033,045	\$ 1,784,586	\$ 1,862,972	\$ 1,961,486	\$ 2,079,251	\$ 2,223,559
Vacation/Sick/Annual Leave Liability Reserve						
Ending Balance	\$ 16,878	\$ 16,946	\$ 17,047	\$ 17,175	\$ 17,304	\$ 17,479
<i>Recommended Minimum Target</i>	<i>75,000</i>	<i>75,000</i>	<i>75,000</i>	<i>75,000</i>	<i>75,000</i>	<i>75,000</i>
OPEB Reserve						
Ending Balance	\$ 488,840	\$ 490,808	\$ 493,753	\$ 497,456	\$ 501,187	\$ 506,244
<i>Recommended Minimum Target</i>	<i>675,000</i>	<i>675,000</i>	<i>675,000</i>	<i>675,000</i>	<i>675,000</i>	<i>675,000</i>
Total Ending Balance	\$ 2,538,763	\$ 2,292,340	\$ 2,373,772	\$ 2,476,118	\$ 2,597,742	\$ 2,747,282
Total Recommended Minimum Target	\$ 3,100,000	\$ 3,100,000	\$ 3,100,000	\$ 3,100,000	\$ 3,100,000	\$ 3,100,000

C. Cost of Service Analysis

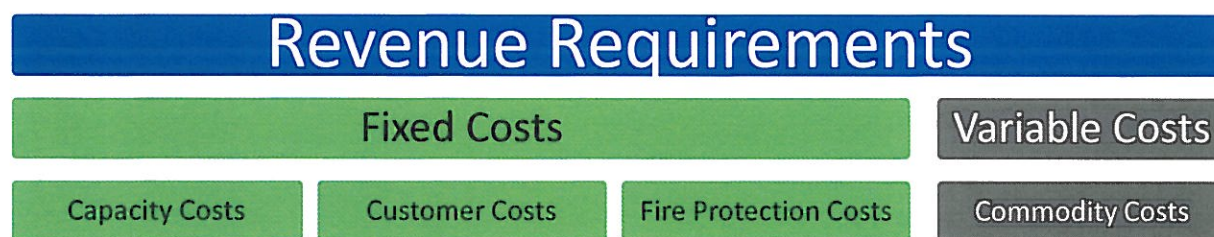
CLASSIFICATION OF COSTS

Most costs are not typically allocated 100 percent to fixed or variable categories and, therefore, are allocated to multiple functions of water service. Costs were classified using the commodity-demand method which is found in the AWWA M1 Manual⁷. In accordance with this method, budgeted costs were “classified” into four categories: commodity, capacity, customer and fire protection. The classification process provides the basis for allocating costs to various customer classes based on the cost causation (classification) components described below:

- **Capacity related costs** are associated with sizing facilities to meet the maximum, or peak demand. This includes both operating costs and capital infrastructure costs incurred to accommodate peak system capacity events.
- **Customer related costs** are associated with having a customer on the water system, such as meter reading, postage and billing.
- **Fire Protection related costs** are associated with providing sufficient capacity in the system for fire meters and other operations and maintenance costs of providing water to properties for private fire service protection.
- **Commodity related costs** are those that change as the volume of water produced and delivered changes. These commonly include the costs of chemicals used in the treatment process, energy related to pumping for transmission and distribution, and source of supply.

The District’s budgeted costs were reviewed and allocated to these cost causation components which are used as the basis for establishing new water rates and translate to fixed and variable charges. Tables 16 through 19 in Appendix A show how the District’s expenses were classified and allocated to these cost causation components. Additionally, each cost causation component is considered fixed or variable, as summarized in **Figure 4**.

Figure 4. Cost Classification Summary



Ideally (from a financial stability perspective), utilities should recover all of their fixed costs from fixed charges and all of their variable costs from volumetric charges. When this is the case, fluctuations in water sales revenues would be directly offset by reductions or increases in variable costs. When rates are set in this manner, they provide greater revenue stability for the utility. However, other factors are often

⁷ *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, M1, AWWA, seventh edition, 2017, p. 83.*

considered when designing water rates such as community values, water conservation goals, ease of understanding, and ease of administration.

Based on the District's projected costs, the Cost of Service Analysis (COSA) resulted in a distribution that is approximately 87 percent fixed and 13 percent variable. The District's current rate structure collects approximately 40 percent of revenue from fixed charges and 60 percent from variable charges. The Board of Directors tried to meet the dual goals of both revenue stability and easing the impact of rate changes to customers by selecting a rate structure that will collect 50 percent of revenue from fixed charges and 50 percent from volumetric rates for the first year. The rate structure then will transition over the five-year period to collect 60 percent of rate revenue from fixed charges and 40 percent from volumetric rates, in the final year. This is closer to the COSA results and will provide more financial stability for the District. However, a share of the District's capacity costs will need to be collected from the volumetric rates. Thus, capacity related costs (which are normally considered fixed) will be collected from both fixed and volumetric rates.

Figure 5 summarizes the allocation of the net revenue requirements to each cost causation component for the first and fifth years in the rate adjustment plan.

Figure 5. Allocation of Water Revenue Requirements

Classification Categories	COSA Results		Revenue Target FY 2018/19		Revenue Target FY 2021/22	
	Unadjusted Net Revenue Requirements (2018-19) 87% Fixed / 13% Variable		Adjusted Net Revenue Requirements (2018-19) 50% Fixed / 50% Variable		Adjusted Net Revenue Requirements (2018-19) 60% Fixed / 40% Variable	
Variable Costs:						
Commodity - Related Costs	\$ 179,810	13.4%	\$ 179,810	13.4%	\$ 179,810	13.4%
Capacity - Related Costs (volumetric allocation)	-	0.0%	491,486	36.6%	357,227	26.6%
Sub-Total Variable Costs	\$ 179,810	13.4%	\$ 671,296	50.0%	\$ 537,037	40.0%
Fixed Costs:						
Capacity - Related Costs (fixed allocation)	\$ 1,124,732	83.8%	\$ 633,246	47.2%	\$ 767,506	57.2%
Customer - Related Costs	37,495	2.8%	37,495	2.8%	37,495	2.8%
Fire Protection - Related Costs	554	0.0%	554	0.0%	554	0.0%
Sub-Total Fixed Costs	\$ 1,162,782	86.6%	\$ 671,296	50.0%	\$ 805,555	60.0%
Net Revenue Requirement	\$ 1,342,591	100%	\$ 1,342,591	100%	\$ 1,342,591	100%

CUSTOMER CLASSES

Customer classes are determined by combining customers with similar demand characteristics, types of use and, in this case, a single large customer into categories that reflect the cost differentials to serve each type of customer. This process is limited by the desire to not overcomplicate the District's rate structure.

For the District, four customer classes were created: single-family residential, non-single family residential, Idyllwild Arts Academy and private fire protection. Single-family residential customers are separated from other customers for the sake of the rate calculation because non-single family residential customers exhibit the following characteristics:

1. Water usage on average per account is greater than single-family residential customers.
2. Water usage varies greatly among these customers based on the specific type of customer and meter size.

Idyllwild Arts Academy was separated into its own class because it represents a significant portion of the District's system demands, and is unlike any other customer in the service area.

Customer classes are further subdivided by meter size. For single-family residential customers, setting the same fixed rate for all meter sizes was considered in the study; however, as shown in **Figure 6**, consumption for single-family residential customers with different meter sizes (5/8 inch to 1 inch) are sufficiently different. In terms of average consumption and peaking factors, these meters will continue to be charged different fixed rates (based upon meter size), as non-single family residential customers are.

Figure 6. Single Family Residential Meter Characteristics

Meter Size	Number of Meters	Average Monthly Consumption (cf) CY 2017	Peak Monthly Consumption (cf) CY 2017	Peaking Factor
5/8 inch	1,428	654	851	1.30
3/4 inch	12	1,182	2,808	2.38
1 inch	24	1,481	3,750	2.53
Total	1,464			

The amount of consumption, peaking factors and the number of meters by size are used in the cost-of-service analysis to allocate costs to customer classes and determine the appropriate rate structures for each. The District's most recent consumption is summarized in **Figure 7**, peaking factors are shown in **Figure 8** and **Figure 9**, and number of customers by customer class is shown in **Figure 10**.

Commodity related costs are costs associated with the annual water consumption by customer class, as shown in Figure 7. Consumption from Calendar Year 2017 was used as the basis for this analysis, because staff believes it best estimates the expected consumption for FY 2017/18, since customers have increased consumption following recent drought restrictions.

Figure 7. Water Consumption by Customer Class

Customer Class	Volume (cf) ¹	Percent of Total Volume
Residential	5,236,816	56.0%
Idyllwild Arts Academy ²	1,132,136	12.1%
All Other Standard Meters	2,975,241	31.8%
Fire Service	0	0.0%
Total	9,344,193	100.0%

1. Consumption and Meters from source files:
Billed Consumption Excel Export 2015, 2016, 2017.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy adjusted given recent leak fixes.

Peaking factors for each customer class are shown in Figure 8. A “peaking factor” is the relationship of each customer class’ average use to peak (which is generally, summer) use.

Figure 8. Peaking Factors by Customer Class

Customer Class	Average Monthly Use (cf)	Peak Monthly Use (cf) ¹	Monthly Peaking Factor	Peak Capacity Factor
Residential	436,401	653,548	1.50	52.6%
Idyllwild Arts Academy ²	94,345	127,088	1.35	10.2%
All Other Standard Meters	247,937	461,004	1.86	37.1%
Fire Service	0	0		0.0%
Total	778,683	1,241,640		100.0%

1. Based on 2017 monthly billing data (peak day data not available).
2. Per client phone call March 26, 2018, Idyllwild Arts Academy adjusted given recent leak fixes.

Additional capacity factors within the single-family residential class are shown in Figure 9. The “additional capacity factor” represents the cumulative peak consumption in each tier. No additional capacity factor is assigned to Tier 1 water use, as this represents a base level of consumption by customers in the lowest tier, therefore no additional capacity costs would be incurred if all customers stayed within the Tier 1 threshold. The additional capacity factors are shown in the fourth column of Figure 9, as the “Percentage of Total SFR Consumption.” These percentages are used to allocate capacity costs to the Tier 2 and Tier 3 volumetric rates.

Figure 9. Single-Family Residential Peak Capacity Allocation Factors

Consumption by Tier			
Tier	Monthly Breakpoint	Expected Consumption CY2017 (cf)	Percentage of Total SFR Consumption
Tier 1	450 cf	3,145,764	60.1%
Tier 2	900 cf	1,207,314	23.1%
Tier 3	--	883,738	16.9%
Total		5,236,816	100%

1. Tier 1 break point set to 450 cf per district staff on phone call March 23, 2018.

(55 gallons per day per 2 people.) Tier 2 break point set to 900 cf.

2. Consumption for all SFR customers (including 1.5" meters)

Source files: Rate Study Billing Info Jan to June 2014, 2015, 2016, 2017.xlsx

(data combined and summarized in pivotTables.xlsx)

The number of customers for each customer class (also known as customer allocation factors) is shown in Figure 10.

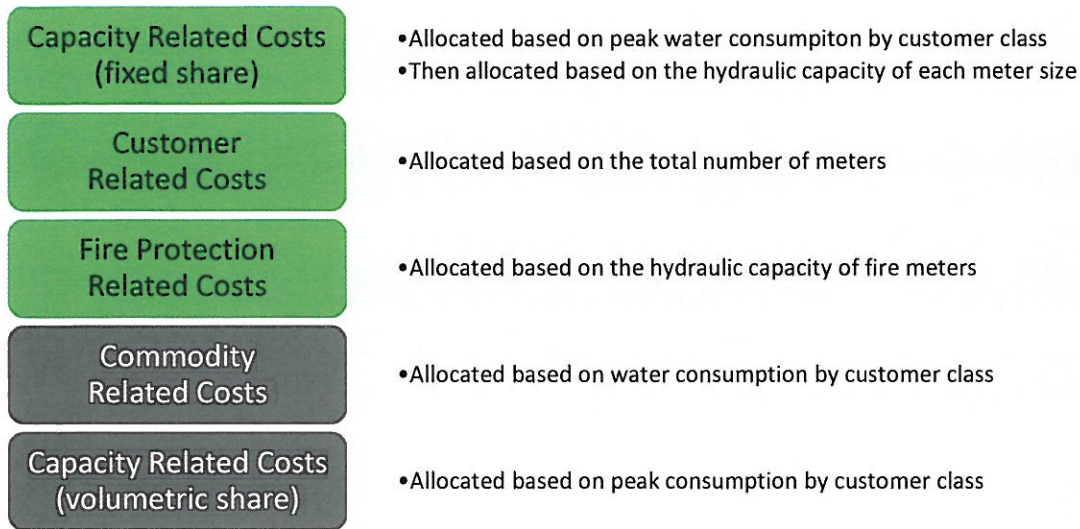
Figure 10. Number of Meters by Customer Class

Customer Class	Number of Meters (1)	Percent of Total
Residential	1,464	89.0%
Idyllwild Arts Academy	1	0.1%
All Other Standard Meters	178	10.8%
Fire Service	2	0.1%
Total	1,645	100%

COSTS ALLOCATED TO CUSTOMER CLASSES

Costs are allocated to each customer class based on the customer characteristics of each class in order to reflect the cost differentials to serve each type of customer. **Figure 11** summarizes how the costs for each cost causation component from Figure 5 are allocated to each customer class.

Figure 11. Cost Allocation Methodology



The costs allocated to each causation component are assigned to each customer class using the cost allocation methodology described in Figure 11. This process is shown in the following sections, in Figure 12 through Figure 16.

Capacity Related Costs (fixed share)

The capacity related costs (fixed share) allocation is summarized in **Figure 12**. Capacity related costs are those costs associated with constructing and operating the water system to ensure there is sufficient capacity in the system to meet the demand of each meter connected. These costs are first allocated to customer classes and then by hydraulic capacity. For all standard and fire service customers, costs are allocated based on meter size. Because the Idyllwild Arts Academy represents a significant portion of the District's consumption and peaking, capacity related costs have been allocated directly.

Larger meters have the potential to use more of the system's capacity, compared to smaller meters. The potential capacity demanded is proportional to the maximum safe meter operating capacity as established by the AWWA⁸. The meter capacity factors used in this study are shown in the third column of Figure 12.

A "Hydraulic Capacity Factor" (column *a* in Figure 12) is calculated by dividing the maximum capacity or flow of large meters by the capacity of the base meter size, which is typically the most common residential meter size (in this case a 5/8-inch meter). For example, Figure 12 shows the hydraulic capacity of a two-inch meter is 8 times that of a 5/8-inch meter and therefore, the capacity component of the fixed meter charge is 8 times that of the 5/8 inch meter.

The actual number of meters by size (column *b* in Figure 12) is multiplied by the corresponding capacity ratios to calculate the total number of equivalent meters (column *c* in Figure 12). The number of equivalent meters is used as a proxy for the potential demand that each customer can place on the water system and

⁸ *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, M1, AWWA, seventh edition, 2017, p. 338.*

the percentage of capacity related costs (fixed share) distributed to each meter size by the Percent of Total Hydraulic Capacity.

Figure 12. Capacity Related Costs (fixed share) Allocation

Number of Meters by Class and Size (1)	Percentage of Peak Capacity	Meter Capacity (gpm)	Hydraulic Capacity Factor	Number of Meters	Total Equivalent Meters	Percent of Total	Allocated Costs
			<i>a</i>	<i>b</i>	<i>c = a * b</i>		
Basic Meters	88%						\$ 582,289
5/8 inch		20	1	1536	1536	83%	483,588
3/4 inch		30	1.5	30	45	2%	14,168
1 inch		50	2.5	59	148	8%	46,438
1 1/2 inch		100	5	13	65	4%	20,464
2 inch		160	8	5	40	2%	12,593
3 inch		320	16	1	16	1%	5,037
Subtotal Basic Meters				1644	1850	100%	\$ 582,289
Idyllwild Arts Academy	12%			1			\$ 50,957
Fire Service Meters	0%						\$ -
4 inch		700	35	2	70	0%	-
Total	100%			1647			\$ 633,246

Customer Related Costs

The customer related cost allocation is summarized in **Figure 13**. Customer related costs are comprised of those costs relating to reading and maintaining meters, customer billing and collection, and other customer service related costs. The customer service costs do not differ among the various meter sizes, therefore, these costs are spread equally among all meters. Each customer class is allocated customer related costs based upon the percentage of total meters that are in that class.

Figure 13. Customer Related Cost Allocation

Number of Meters by Class and Size (1)	Number of Meters	Percent of Total	Allocated Costs
Basic Meters			
5/8 inch	1,536	93%	34,968
3/4 inch	30	2%	683
1 inch	59	4%	1,343
1 1/2 inch	13	1%	296
2 inch	5	0%	114
3 inch	1	0%	23
Subtotal Basic Meters	1,644		\$ 37,427
Idyllwild Arts Academy	1	0%	\$ 23
Fire Service Meters			
4 inch	2	0%	\$ 46
Total	1,647		\$ 37,495

Fire Protection Related Costs

The fire protection cost allocation is summarized in **Figure 14**. Only Fire Protection meters are allocated this cost component. A direct allocation is made in the functionalization and classification step in the cost of service analysis to represent their share of system capacity and other related operations and maintenance costs. This cost is allocated to the two fire meters using the same methodology as used in Figure 12.

Figure 14. Fire Protection Cost Allocation

Number of Meters by Class and Size (1)	Meter Capacity (gpm)	Hydraulic Capacity Factor	Number of Meters	Total Equivalent Meters	Percent of Total	Allocated Costs
Fire Service Meters 4 inch	700	35	2	70	100%	554
Total			2	70	100%	\$ 554

Commodity Related Costs

The District currently has a four-tiered volumetric rate for all customers with meters 1 inch or smaller. NBS' second recommendation in the Study, was to adjust the tiered rate structure by reducing the number of tiers to three, setting new breakpoints and imposing a charge for all water consumed. In addition to these changes, the proposed tiered volumetric will only apply to single-family residential customers because they are a homogenous customer class, with similar consumption patterns that are used to establish appropriate tier breakpoints.

Tier breakpoints were established and expected consumption in each tier was determined. The goals when setting the tier breakpoints were twofold:

1. The breakpoint for the first tier was set to the 450 cfd⁹, which is approximately 55 gallons per day for two people per month.
2. The breakpoint for the second tier was set to 900 hcf, which is approximately 55 gallons per day for four people per month.

The commodity related cost allocation is summarized in **Figure 15**. Commodity related costs are those costs related to the amount of water sold and commonly include the costs of chemicals used in the treatment process, energy related to pumping for transmission and distribution, and source of supply. Each customer class is allocated commodity related costs based upon the percentage of total consumption by that class.

⁹ HCF is one hundred cubic feet of water.

Figure 15. Commodity Related Costs Allocation

Customer Class	Volume (hcf) ¹	Percent of Total	Allocated Costs
Single Family Residential			
Tier 1	3,145,764	33.7%	\$ 60,534
Tier 2	1,207,314	12.9%	23,232
Tier 3	883,738	9.5%	17,006
Subtotal SFR	5,236,816	56.0%	\$ 100,772
Non-SFR			
Commercial Consumption	2,975,241	31.8%	29,065
Idyllwild Arts Academy	1,132,136	12.1%	21,047
Total	9,344,193	100.0%	\$ 150,884

Capacity Related Costs (variable share)

The capacity related costs allocated to the variable rates for each customer class are shown in **Figure 16**. Capacity related costs collected from the variable rate are allocated to each customer class based upon the percentage of peak monthly use.

Figure 16. Capacity Related Costs (variable share)

Customer Class	Peak Use (hcf)	Percent of Total	Allocated Costs
Single Family Residential	653,548	52.6%	\$ 258,698
Non-SFR Customers			
Commercial Consumption	461,004	37.1%	182,482
Idyllwild Arts Academy	127,088	10.2%	50,306
Total	1,241,640	100%	\$ 491,486

The Capacity Related Costs (variable share) (from Figure 16) within the single-family residential class are further allocated to expected consumption by tier as shown in **Figure 17**. The “additional capacity required” represents the cumulative peak consumption in each tier. No additional capacity factor is assigned to Tier 1 water use, as this represents a base level of consumption by customers in the lowest tier, therefore no additional capacity costs would be incurred if all customers stayed within the Tier 1 threshold.

Figure 17. Single Family Residential Capacity Related Costs (variable share)

Customer Class	Peak Monthly Use (hcf)	Additional Capacity Required (hcf) ²	Percent of Total	Allocated Costs
Single Family Residential				
Tier 1	330,030	0	0.0%	\$ -
Tier 2	498,250	168,220	52.0%	134,515
Tier 3	653,548	155,298	48.0%	124,182
Total		323,518	100%	\$ 258,698

D. Rate Design Analysis

The process of evaluating the water rate structure provides the opportunity to incorporate a number of rate-design objectives and policies, including revenue stability, equity among customer classes, and water conservation. NBS discussed several water rate alternatives and methodologies with District Staff over the course of this study, such as the percentage of revenue collected from fixed vs. volumetric rates and differentiating rates by customer class. Based on input provided by District staff and the Board of Directors, the proposed rates were developed. The following sections describe this process.

NBS recommends that the District make the following modifications to the water rate structure:

1. Update the volumetric rates for Single Family Residential customers as follows:
 - a. Eliminate the 300 units of Tier 1 water that is provided at no charge
 - b. Reduce the number of tiers from four to three
 - c. Establish new tier breakpoints based on recent consumption statistics
2. Move all other customers to a uniform volumetric rate, and impose a charge for all water consumed

FIXED CHARGES

The fixed meter charge recognizes that the water utility incurs fixed costs regardless of whether customers actually use water. There are two components that comprise the fixed meter charge: the customer component and the capacity component, as described in the previous section. Using the costs allocated to each meter size from Figure 12 through Figure 14; **Figure 18** calculates the monthly charge for each meter size.

Figure 18. Fixed Meter Charges FY 2017/18

Number of Meters by Class and Size (1)	Number of Meters	Allocated Capacity Costs	Allocated Customers Costs	Allocated Fire Protection Costs	Total Costs	Monthly Charge
	<i>a</i>	<i>b</i>		<i>d</i>	<i>e = b + c + d</i>	<i>f = e / a / 12</i>
Basic Meters						
5/8 inch	1,536	\$ 483,588	\$ 34,968		\$ 518,556	\$28.12
3/4 inch	30	14,168	682.97		14,851	\$41.25
1 inch	59	46,438	1,343.17		47,781	\$67.49
1 1/2 inch	13	20,464	295.95		20,760	\$133.08
2 inch	5	12,593	113.83		12,707	\$211.79
3 inch	1	5,037	22.77		5,060	\$421.68
Subtotal Basic Meters	1,644	\$ 582,289	\$ 37,427	\$ -	\$ 619,716	
Idyllwild Arts Academy	1	50,957	22.77		50,980	\$4,248.35
Fire Service Meters						
4 inch	2	-	45.53	\$ 554	600	\$25.00
Total	\$ 1,645	\$ 633,246	\$ 37,449	\$ 554	\$ 670,696	

VARIABLE CHARGES

NBS' recommendation regarding rate structure is to maintain non-SFR customers on a uniform volumetric rate. This is due to the varying consumption characteristics of these customers; a uniform volumetric rate better represents their cost-of-service and includes non-SFR customers who's meters are 1 inch and smaller who were previously under a tiered rate.

Using the costs allocated to each customer class in Figure 15 – Figure 17, **Figure 19** calculates the per unit volumetric charge for each customer class and tier.

Figure 19. Calculated Variable Charges for FY 2018/19

Customer Class and Tier	Volume (cf)	Allocated Commodity Costs	Allocated Capacity Costs	Total Costs	Charge per Unit Sold (\$/cf)
Single Family Residential					
Tier 1	3,145,764	\$ 60,534	\$ -	\$ 60,534	\$0.0192
Tier 2	1,207,314	23,232	134,515	157,747.675	\$0.1307
Tier 3	883,738	17,006	124,182	141,188.172	\$0.1598
Subtotal SFR	5,236,816	\$ 100,772	\$ 258,698	\$ 359,470	
Commerical Consumption	2,975,241	57,252	182,482	239,734	\$0.0759
Idyllwild Arts Academy	1,132,136	21,786	50,306	72,092	
Total	9,344,193	\$ 179,810	\$ 491,486	\$ 671,296	

TRANSITION OF FIXED AND VARIABLE RATE REVENUE

In order to transition to collecting a greater percentage of revenue from the fixed rate, an incremental transition is applied to the rate calculations in order to collect a greater percentage of revenue from the fixed rate, as shown in the right two columns of Figure 5. Over the five-year rate period, rates are transitioned from collecting 50 percent of rate revenue from fixed charges, to collection 60 percent of rate revenue from fixed charges. For the details on how these rates were calculated, please see Tables 22 – 36 in Appendix A.

E. Current and Proposed Water Rates

The Cost of Service analysis is used to establish the rates for FY 2018/19. In the subsequent four years of the rate study, proposed charges are adjusted by the proposed adjustment in total rate revenue needed, to meet projected revenue requirements and to transition to collecting a greater percentage of revenue from the fixed charge. **Figure 20** provides a comparison of the current and proposed rates for FY 2018/19 through FY 2022/23. More detailed tables on the developed of the proposed charges are documented in Appendix A.

Figure 20. Current and Proposed Water Rates

Proposed Rates - Transition 50% Fixed to 60% Fixed							
Water Rate Schedule	Number of Customers	Current Rates	Proposed Rates				
			FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Monthly Fixed Service Charges:							
Single Family Residential							
5/8 inch	1,427	\$29.70	\$28.13	\$30.92	\$33.91	\$37.13	\$40.59
3/4 inch	12	\$40.35	\$41.25	\$45.38	\$49.83	\$54.60	\$59.73
1 inch	24	\$61.25	\$67.49	\$74.31	\$81.65	\$89.54	\$98.01
All Other Customers:							
5/8 inch	109	\$20.90	\$28.13	\$30.92	\$33.91	\$37.13	\$40.59
3/4 inch	30	\$31.35	\$41.25	\$45.38	\$49.83	\$54.60	\$59.73
1 inch	59	\$52.25	\$67.49	\$74.31	\$81.65	\$89.54	\$98.01
1.5 inch	13	\$104.50	\$133.08	\$146.64	\$161.22	\$176.89	\$193.72
2 inch	5	\$167.20	\$211.79	\$233.42	\$256.69	\$281.70	\$308.57
3 inch	1	\$313.50	\$421.68	\$464.85	\$511.29	\$561.21	\$614.84
Idyllwild Arts Academy							
3 inch	1	\$313.50	\$4,248.35	\$4,844.19	\$5,488.99	\$6,186.16	\$6,939.33
Fire Service Charges:							
2 inch	0	--	\$7.18	\$7.54	\$7.92	\$8.31	\$8.73
3 inch	0	--	\$13.45	\$14.12	\$14.83	\$15.57	\$16.35
4 inch	2	--	\$25.00	\$26.25	\$27.56	\$28.94	\$30.39
Monthly Commodity Charges per cf of water consumed							
<u>Current</u>		<u>Proposed</u>					
Tiered Rate (Commercial Customers)							
Tier 1	1000 cf	\$0.0333	--	--	--	--	--
Tier 2	4000 cf	\$0.0633	--	--	--	--	--
Tier 3	8000 cf	\$0.1000	--	--	--	--	--
Tier 4	8001+ cf	\$0.1000	--	--	--	--	--
Uniform Potable Rate (Commercial Customers)			\$0.0759	\$0.0757	\$0.0752	\$0.0744	\$0.0735
Tiered Rate (SFR Customers)							
Tier 1	300 cf	450 cf	\$0.0000	\$0.0192	\$0.0202	\$0.0212	\$0.0223
Tier 2	600 cf	900 cf	\$0.0633	\$0.1307	\$0.1292	\$0.1273	\$0.1248
Tier 3	1500 cf	900+ cf	\$0.1000	\$0.1598	\$0.1577	\$0.1550	\$0.1516
Tier 4	1500+ cf	--	\$0.1000	N/A	N/A	N/A	N/A

F. Comparison of Current and Proposed Water Bills

Figure 21 and Figure 22 compare a range of monthly water bills for the current and proposed water rates as a result of the initial rate adjustment for single-family residential customers (with a 5/8-inch meter) and non-single family residential customers (with a 1-inch meter). These bills are based on typical meter sizes, and the average consumption levels for each customer class are highlighted.

Figure 21. Monthly Bill Comparison for Single Family Customers

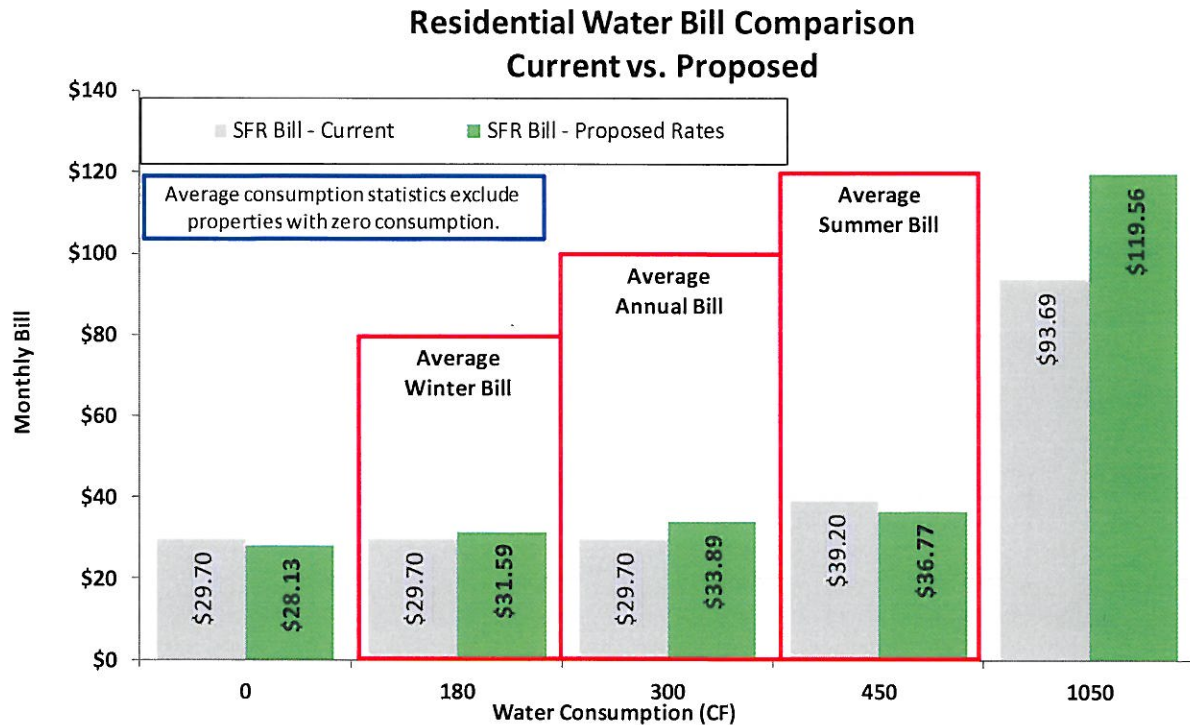
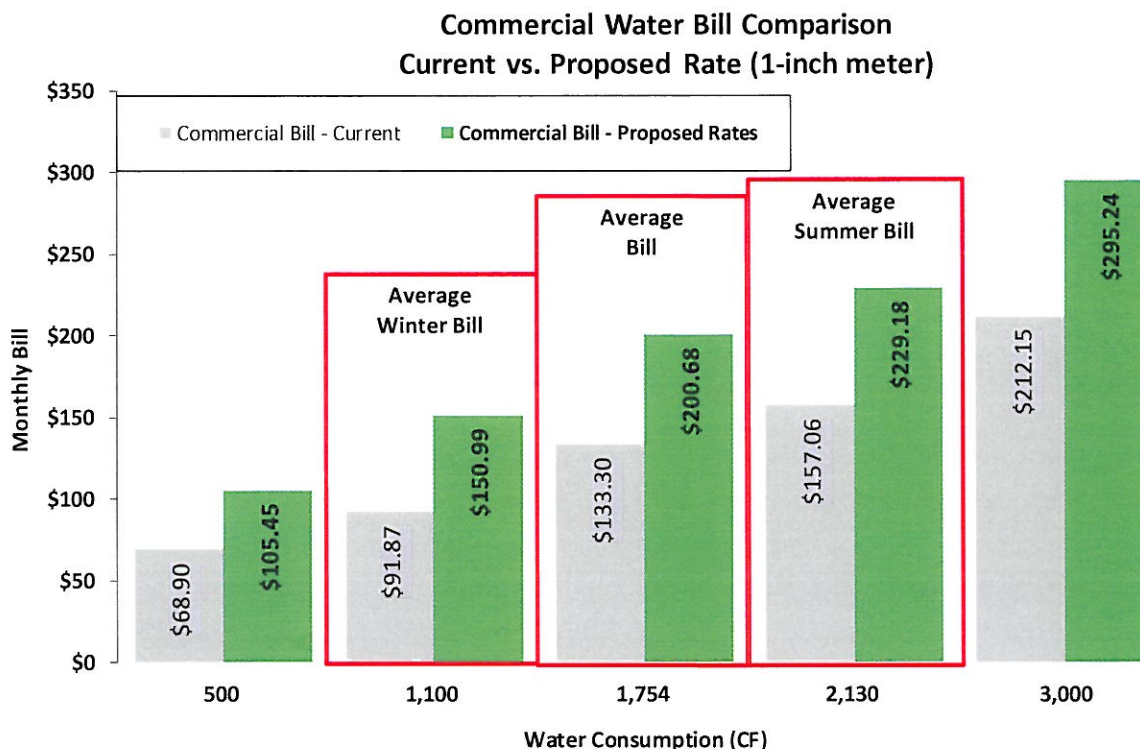


Figure 22. Monthly Water Bill Comparison for Commercial Customers



G. Water Shortage Drought Stage Rates

Should conservation be needed, the District is still obligated to meet its annual net revenue requirements. To this end, drought rates were developed, which can be implemented if total consumption decreases further due to a water supply shortage, an increase in conservation required by the state or another regulatory agency, or if the Board of Directors declares that it is in more severe drought stages. If implemented, the drought rates would allow the District to be kept whole financially, in the event that water sales are less than planned. The District's Water Shortage Drought Stages require the following levels of conservation:

1. Stage 1 – No Conservation (current stage)
2. Stage 2 – 10% Conservation
3. Stage 3 – 20% Conservation
4. Stage 4 – 35% Conservation
5. Stage 5 – 50% Conservation

In the event that the consumption decreases, some costs will also decrease and the proposed rates have

taken this reduced revenue need into consideration¹⁰. Utility expenses (electricity, gas, fuel and propane), as well as laboratory services have had their budgets adjusted in accordance with the target conservation assigned to each Water Shortage Drought Stage.

To develop the new variable rates for each Water Shortage Drought Stage, expected conservation was adjusted to match the target and the revenue requirement was adjusted to account for expected cost savings. New rates were then calculated using the same methodology as the base volumetric rates. The volumetric rate increases, as the Water Shortage Drought Stage is increased.

It should be noted that the conservation impact on consumption in the three tiers for SFR customers is the most difficult to predict. To develop drought rates, the monthly consumption for each SFR customer was reduced by the target conservation, and consumption by tier was recalculated. It is expected that water conservation in the upper tiers (namely Tier 3) will be far more dramatic than the overall target conservation. The result of this is that the rates for the upper tiers will increase dramatically as the Water Shortage Drought Stage is increased.

Figure 23 shows baseline consumption and consumption at each declared drought stage. For FY 2018/19, **Figure 24** calculates expected savings due to conservation. **Figure 25** shows how drought rates were developed for FY 2018/19 at 10% conservation. The rates for each increased Water Shortage Drought Stage (20% through 50%) were developed in the same manner.

Figure 23. Expected Consumption by Water Shortage Drought Stage

Water Shortage Drought Stage	Percent Conservation	Single Family Residential			Commercial	Total
		Tier 1	Tier 2	Tier 3		
Stage 1	0%	3,145,764	1,207,314	883,738	4,107,377	9,344,193
Stage 2	10%	3,035,614	989,608	687,913	3,696,639	8,409,774
Stage 3	20%	2,890,121	781,297	518,034	3,285,902	7,475,354
Stage 4	35%	2,589,158	502,495	312,278	2,669,795	6,073,725
Stage 5	50%	2,176,539	277,340	164,529	2,053,689	4,672,097

Figure 24. Budget Adjustments - Stage 2 - 10% Conservation

Adjusted Expenses	Budget	Reduction
Water Utilities - Electricity	\$ 87,125	\$ 8,713
Water Utilities - Gas and Fuel	9,430	943
Water Utilities - Propane	3,848	385
Water Laboratory Services	18,963	1,896
Total		\$ 11,937

¹⁰ Details regarding the calculation of the drought rates can be found in Appendix C, Tables 1-25.

Figure 25. Calculated Stage 1 Water Shortage Drought Charges for FY 2018/19

Customer Class and Tier	Volume (cf)	Allocated Commodity Costs	Allocated Capacity Costs	Total Cost	Charge per Unit Sold (\$ / cf)
Single Family Residential					
Tier 1	3,035,614	\$ 60,596	\$ -	\$ 60,596	\$0.0200
Tier 2	989,608	19,754	134,515	154,270	\$0.1559
Tier 3	687,913	13,732	124,182	137,914	\$0.2005
Subtotal SFR	4,713,134	\$ 94,082	\$ 258,698	\$ 352,780	
Commercial Consumption	2,677,717	53,452	182,482	\$ 235,934	\$0.0829
Idyllwild Arts Academy	1,018,922	20,339	50,306	70,645	
Total	8,409,774	\$ 167,873	\$ 491,486	\$ 659,359	

Figure 26 shows the drought rates for Fiscal Year 2018/19 through 2022/23.

Figure 26. Water Shortage Rates

Proposed Rates - Transition 50% Fixed to 60% Fixed							
Water Shortage Rate Schedule			Proposed Rates				
			FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
			5.00%	5.00%	5.00%	5.00%	5.00%
Stage 2 - 10% Conservation							
Uniform Potable Rate (Commercial Customers)			\$0.0829	\$0.0826	\$0.0820	\$0.0811	\$0.0799
Tiered Rate (SFR Customers)							
	<u>Current</u>	<u>Proposed</u>					
Tier 1	300 cf	450 cf	\$0.0200	\$0.0210	\$0.0220	\$0.0231	\$0.0243
Tier 2	600 cf	900 cf	\$0.1559	\$0.1539	\$0.1514	\$0.1482	\$0.1444
Tier 3	1500 cf	900+ cf	\$0.2005	\$0.1976	\$0.1938	\$0.1893	\$0.1837
Stage 3 - 20% Conservation							
Uniform Potable Rate (Commercial Customers)			\$0.0917	\$0.0912	\$0.0904	\$0.0894	\$0.0879
Tiered Rate (SFR Customers)							
	<u>Current</u>	<u>Proposed</u>					
Tier 1	300 cf	450 cf	\$0.0209	\$0.0219	\$0.0230	\$0.0241	\$0.0254
Tier 2	600 cf	900 cf	\$0.1930	\$0.1903	\$0.1869	\$0.1826	\$0.1775
Tier 3	1500 cf	900+ cf	\$0.2606	\$0.2564	\$0.2512	\$0.2448	\$0.2371
Stage 4 - 35% Conservation							
Uniform Potable Rate (Commercial Customers)			\$0.1099	\$0.1092	\$0.1081	\$0.1066	\$0.1047
Tiered Rate (SFR Customers)							
	<u>Current</u>	<u>Proposed</u>					
Tier 1	300 cf	450 cf	\$0.0227	\$0.0239	\$0.0251	\$0.0263	\$0.0276
Tier 2	600 cf	900 cf	\$0.2904	\$0.2857	\$0.2799	\$0.2727	\$0.2641
Tier 3	1500 cf	900+ cf	\$0.4204	\$0.4129	\$0.4036	\$0.3923	\$0.3789
Stage 5 - 50% Conservation							
Uniform Potable Rate (Commercial Customers)			\$0.1391	\$0.1379	\$0.1362	\$0.1341	\$0.1314
Tiered Rate (SFR Customers)							
	<u>Current</u>	<u>Proposed</u>					
Tier 1	300 cf	450 cf	\$0.0257	\$0.0270	\$0.0283	\$0.0298	\$0.0313
Tier 2	600 cf	900 cf	\$0.5107	\$0.5015	\$0.4900	\$0.4762	\$0.4598
Tier 3	1500 cf	900+ cf	\$0.7805	\$0.7654	\$0.7468	\$0.7245	\$0.6981

Section 3. SEWER RATES

A. Key Sewer Rate Study Issues

The District's sewer rate analysis was undertaken with a few specific objectives, including:

- Avoiding operational deficits and depletion of reserves beyond the target minimum reserve level.
- Generating additional revenue needed to meet projected funding requirements.

NBS developed various sewer rate alternatives as requested by District staff and the Board over the course of this Study. All rate structure alternatives relied on industry standards and cost-of-service principles. The rate alternative that will be implemented, is ultimately the decision of the Board. The fixed and volume-based charges were calculated based on the net revenue requirements, number of customer accounts, estimated sewer flow, and other District-provided information.

B. Financial Plan

It is important for municipal utilities to maintain reasonable reserves in order to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. Rate increases are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and build reasonable reserve funds. The current state of the District's Sewer utility, with regard to these objectives, is as follows:

Net Revenue Requirements: For FY 2018/19 through FY 2022/23, the projected net revenue requirement (that is, total annual expenses plus debt service and rate-funded capital costs, less non-rate revenues) grows from, \$410,000 to \$480,000 annually.

Building and Maintaining Reserve Funds: The District plans to reach the proposed reserve targets by the end of FY 2022/23, one year following the end of the proposed rate increases. The reserve funds for the Utility are considered unrestricted reserves and consist of the following:

- **The Operating Reserve** has been set by the Board to be \$250,000, which is equal to between 40 and 50 percent of annual operating expenses for the next five years. As with the Water Utility, this reserve is primarily intended to provide a short-term cash resource for unexpected financial viability.
- **The Emergency Reserve** has been set by the Board to be \$150,000, which is equal to between 20 and 30 percent of annual operating expenses for the next five years. This reserve is set aside to address unexpected revenue difficulties.
- **The Capital Rehabilitation and Replacement Reserve** has been set by the Board to be \$750,000 and represents the general cost of an unexpected capital project.
- **The Vehicle and Equipment Replacement Reserve** has been set by the Board to be \$250,000, which represents 20 percent of the net asset value for the sewer utility. This reserve is set aside to address vehicle and equipment needs.
- **The Vacation/Sick/Annual Leave Reserve** has been set by the Board to be \$25,000, which is set aside to address the accumulated leave liability.
- **The OPEB Liability Reserve** has been set by the Board to be \$225,000, which is set aside to address future other employment benefits, namely healthcare costs of retirees.

Funding Capital Improvement Projects: The District must also be able to fund necessary capital improvements in order to maintain current service levels. District staff has identified roughly \$250,000 annually in expected capital expenditures for FY 2018/19 through 2022/23. With the recommended rate increases, these expenditures can be accomplished while increasing reserves to the minimum recommended target.

Inflation and Growth Projections – Assumptions regarding cost inflation were made in order to project future revenues and expenses for the study period. The following inflation factors were used in the analysis (the same factors were used for the water utility):

- Customer growth is expected to be 0.3 percent annually.
- General cost inflation is 2.5 percent annually.
- Salary cost inflation is 5 percent annually.
- Benefits cost inflation is 5 percent annually.
- Energy cost inflation is 2.5 percent annually.
- Chemicals cost inflation is 2.5 percent annually.
- Fuel cost inflation is 2.5 percent annually.
- Tax inflation is 1.5 percent annually.
- Standby Revenue is reduced at 3 percent annually.

Effective Date of Rate Adjustments: As with the water utility, the financial plan modelling assumes that rate adjustments occur on the July bill¹¹ of each year.

An initial increase to \$40 per EDU followed by increases of 2.5 percent annually from FY 2019/20 through 2022/23 will be needed in order to fully fund all operating expenses, planned capital projects and maintain reserves to the recommended targets by FY 2022/23¹². **Figure 27** summarizes the sources and uses of funds, net revenue requirements, and the recommended annual percent increases in total rate revenue recommended for the next five-years for the District's sewer utility.

¹¹ The first rate adjustment is scheduled for July 1st, 2018 followed by each July 1st thereafter.

Figure 27. Summary of Sewer Revenue Requirements

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budgeted	Projected				
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Sources of Sewer Funds						
Rate Revenue Under Prevailing Rates	\$ 630,006	\$ 631,896	\$ 633,792	\$ 635,693	\$ 637,600	\$ 639,513
Additional Revenue from Rate Increases ¹	-	36,744	53,620	71,018	88,952	107,437
Non-Rate Revenues	115,775	117,502	119,256	121,035	122,841	124,674
Interest Earnings	1,500	6,561	9,781	12,195	12,117	16,103
Other Non-Operating Income	10,450	10,316	10,186	10,061	9,940	9,823
Total Sources of Funds	\$ 757,731	\$ 803,019	\$ 826,635	\$ 850,002	\$ 871,450	\$ 897,550
Uses of Sewer Funds						
Salaries and Benefits	\$ 264,865	\$ 278,108	\$ 292,014	\$ 306,614	\$ 321,945	\$ 338,042
Sewer Utilities	\$ 91,655	\$ 93,946	\$ 96,295	\$ 98,702	\$ 101,170	\$ 103,699
Sewer Operating Expenses	\$ 168,462	\$ 172,829	\$ 177,310	\$ 181,908	\$ 186,628	\$ 191,472
Total Use of Funds	\$ 524,982	\$ 544,883	\$ 565,618	\$ 587,225	\$ 609,743	\$ 633,213
Surplus (Deficiency) before Rate Increase	\$ 232,749	\$ 258,135	\$ 261,016	\$ 262,776	\$ 261,707	\$ 264,337
Surplus (Deficiency) after Rate Increase	\$ 232,749	\$ 294,879	\$ 314,637	\$ 333,795	\$ 350,659	\$ 371,774
Projected Annual Rate Revenue Increase	0.00%	5.81%	2.50%	2.50%	2.50%	2.50%
Cumulative Increases	0.00%	5.81%	8.46%	11.17%	13.95%	16.80%
Net Revenue Requirement²	\$ 397,257	\$ 410,505	\$ 426,396	\$ 443,935	\$ 464,845	\$ 482,613

1. Assumes new rates are implemented July 1, 2018

2. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from rates.

Figure 28 summarizes the projected reserve fund balances and reserve targets. A summary of the utility's proposed five-year financial plan is included in Tables 1 and 2 of Appendix B. The appendix tables include revenue requirements, reserve funds, revenue sources, proposed rate increases, and the District's capital improvement program. As can be seen in Figure 28, given proposed rate increases, the total reserve balance exceeds the target at the end of the five-year period. This will allow the District to lessen future impacts as it prepares to replace the treatment plant. As with water, it should be noted that Vacation/Sick/Annual Leave and OPEB Liability Reserves are maintained at their current levels (below the target) over the five year rate period. Additional rate increases would be needed, in order to meet these reserve targets.

Figure 28. Summary of Reserve Funds

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budgeted	Projected				
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Operating Reserve						
Ending Balance	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
<i>Recommended Minimum Target</i>	<i>250,000</i>	<i>250,000</i>	<i>250,000</i>	<i>250,000</i>	<i>250,000</i>	<i>250,000</i>
Emergency Reserve						
Ending Balance	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
<i>Recommended Minimum Target</i>	<i>150,000</i>	<i>150,000</i>	<i>150,000</i>	<i>150,000</i>	<i>150,000</i>	<i>150,000</i>
Capital Rehabilitation and Replacement Reserve & Vehicle Replacement Reserve						
Ending Balance	\$ 1,229,544	\$ 1,230,179	\$ 1,225,971	\$ 1,215,566	\$ 1,195,895	\$ 1,170,413
<i>Recommended Minimum Target</i>	<i>750,000</i>	<i>750,000</i>	<i>750,000</i>	<i>750,000</i>	<i>750,000</i>	<i>750,000</i>
Total Ending Unrestricted Balance	\$ 1,629,544	\$ 1,630,179	\$ 1,625,971	\$ 1,615,566	\$ 1,595,895	\$ 1,570,413
Vacation/Sick/Annual Leave Liability Reserve						
Ending Balance	\$ 5,626	\$ 5,648	\$ 5,682	\$ 5,725	\$ 5,768	\$ 5,826
<i>Recommended Minimum Target</i>	<i>25,000</i>	<i>25,000</i>	<i>25,000</i>	<i>25,000</i>	<i>25,000</i>	<i>25,000</i>
OPEB Reserve						
Ending Balance	\$ 162,945	\$ 163,601	\$ 164,583	\$ 165,817	\$ 167,061	\$ 168,747
<i>Recommended Minimum Target</i>	<i>225,000</i>	<i>225,000</i>	<i>225,000</i>	<i>225,000</i>	<i>225,000</i>	<i>225,000</i>
Total Ending Balance	\$ 1,798,115	\$ 1,799,429	\$ 1,796,236	\$ 1,787,108	\$ 1,768,724	\$ 1,744,986
Total Recommended Minimum Target	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000

C. Current and Proposed Sewer Rates

For the Sewer utility, the District determined that the current cost allocations and rate design were adequate; therefore, there was no change to the rate structure. Existing Sewer rates are simply increased by the percentage increase in total rate revenue needed, to meet projected revenue requirements. **Figure 29** provides a comparison of the current and proposed rates for FY 2018/19 through FY 2022/23.

Figure 29. Current and Proposed Sewer Rates

Sewer Rate Schedule	Current Monthly Rates ¹	Proposed Monthly Sewer Rates				
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Rate Per EDU	\$38.25	\$40.00	\$41.00	\$42.03	\$43.08	\$44.15

1. Sewer customers are charged on the basis of their number of assigned Equivalent Dwelling Units (EDUs).

D. Comparison of Current and Proposed Sewer Bills

Figure 30 and **Figure 31** compare monthly sewer bills under current and proposed sewer rates for single-family residential customers and commercial customers. These bills are based on typical assigned EDUs for each customer type.

Figure 30. Monthly Sewer Bill Comparison for Single Family Customers

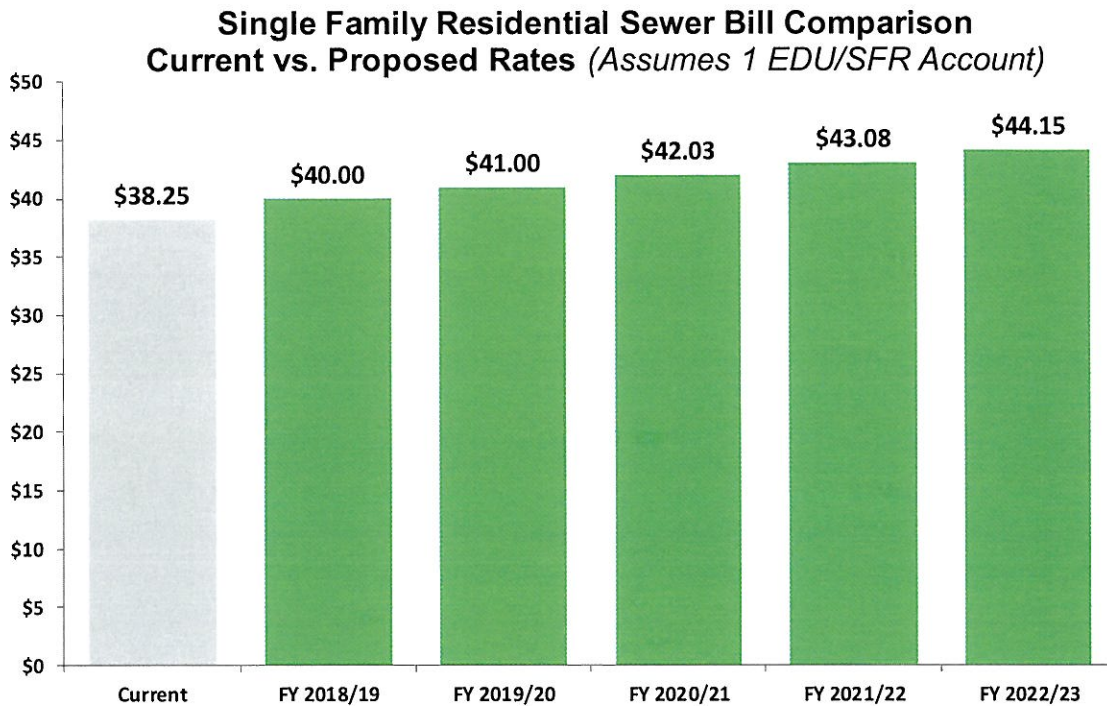
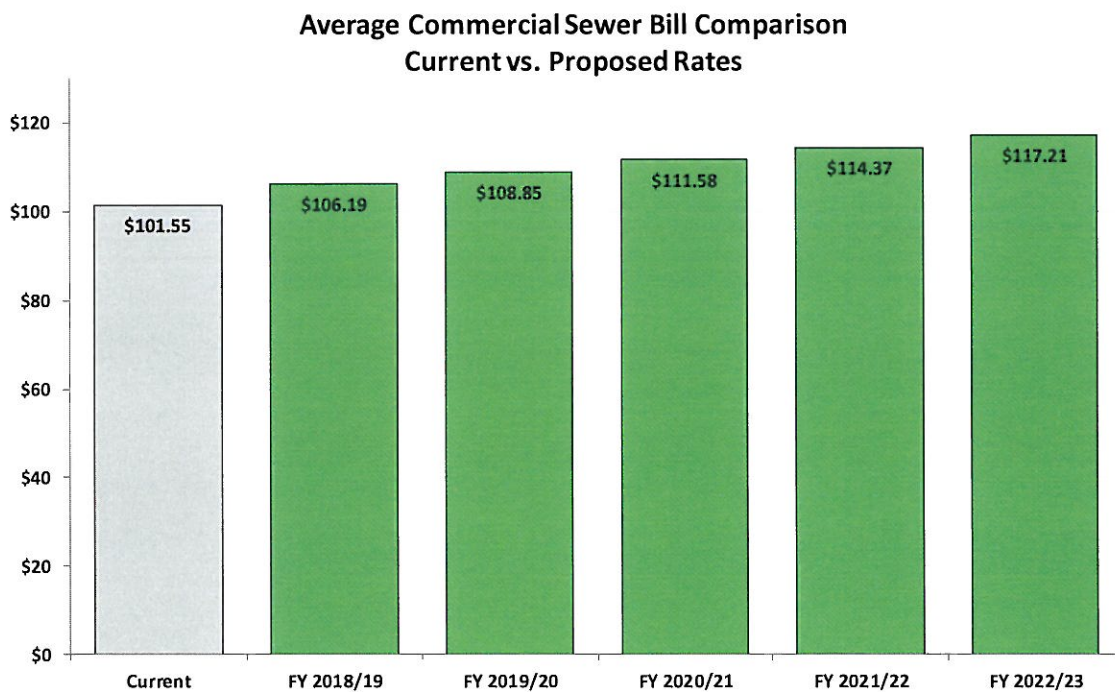


Figure 31. Monthly Sewer Bill Comparison for Commercial Customers



Section 4. RECOMMENDATIONS AND NEXT STEPS

A. Consultant Recommendations

NBS recommends District take the following actions:

Approve and accept this Study: NBS recommends the District Board formally approve and adopt this Study and its recommendations, and proceed with the steps required to implement the proposed water and sewer rates. This will provide documentation of the rate study analyses and the basis for analyzing potential changes to future rates.

Implement Recommended Levels of Rate Adjustments and Proposed Rates: Based on successfully meeting the Proposition 218 procedural requirements, the District Board should proceed with implementing the five-year schedule of proposed rates and rate adjustments previously shown in Figure 20, Figure 26 and Figure 29. This will help ensure the continued financial health of District's water and sewer utilities.

B. Next Steps

Annually Review Rates and Revenue – Any time an agency adopts new utility rates or rate structures, those new rates should be closely monitored over the next several years to ensure the revenue generated is sufficient to meet the annual revenue requirements. Changing economic and water consumption patterns underscore the need for this review, as well as potential and unseen changing revenue requirements—particularly those related to environmental regulations that can significantly affect capital improvements and repair and replacement costs.

Note: The attached Appendices provides more detailed information on the analysis of the revenue requirements, cost-of-service analysis and cost allocations, and the rate design analyses that have been summarized in this Study.

C. NBS' Principal Assumptions and Considerations

In preparing this report and the opinions and recommendations included herein, NBS has relied on a number of principal assumptions and considerations with regard to financial matters, conditions, and events that may occur in the future. This information and these assumptions, including District's budgets, capital improvement costs, and information from District staff were provided by sources we believe to be reliable, although NBS has not independently verified this data.

While we believe NBS' use of such information and assumptions is reasonable for the purpose of this report and its recommendations, some assumptions will invariably not materialize as stated herein and may vary significantly due to unanticipated events and circumstances. Therefore, the actual results can be expected to vary from those projected to the extent that future conditions differ from those assumed by us or provided to us by others.

Appendix A: Detailed Water Study Tables and Figures

TABLE 1 - FINANCIAL PLAN AND SUMMARY OF REVENUE REQUIREMENTS

TABLE 1 - FINANCIAL STATEMENT SUMMARY OF REVENUE REQUIREMENTS												
RATE REVENUE REQUIREMENTS SUMMARY (1)		Budget		Projected								
		FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28
Sources of Water Funds												
Potable Rate Revenue:												
Water Sales Revenue Under Current Rates	\$ 1,272,297	\$ 1,278,658	\$ 1,285,052	\$ 1,291,477	\$ 1,297,934	\$ 1,304,424	\$ 1,310,946	\$ 1,317,501	\$ 1,324,088	\$ 1,330,709	\$ 1,337,362	
Revenue from Rate Increases (2)	-	63,933	131,718	203,569	279,713	360,388	395,653	431,934	469,257	507,650	547,139	
Subtotal: Rate Revenue After Rate Increases	1,272,297	1,342,591	1,416,770	1,495,046	1,577,647	1,664,812	1,706,599	1,749,435	1,793,346	1,838,359	1,884,501	
Non-Rate Revenue:												
Tax Revenue	\$ 275,000	\$ 279,125	\$ 283,312	\$ 287,562	\$ 291,875	\$ 296,253	\$ 300,697	\$ 305,207	\$ 309,785	\$ 314,432	\$ 319,149	
Charges for Other Services	39,712	39,197	38,700	38,222	37,760	37,316	36,887	36,475	36,078	35,697	35,329	
Interest Income	3,000	8,185	10,708	13,972	14,711	20,980	22,436	23,624	24,520	25,101	25,341	
Subtotal: Non-Rate Revenue	317,712	326,507	332,720	339,755	344,346	354,548	360,020	365,306	370,384	375,230	379,819	
Total Sources of Funds	\$ 1,590,009	\$ 1,669,098	\$ 1,749,489	\$ 1,834,801	\$ 1,921,994	\$ 2,019,361	\$ 2,066,619	\$ 2,114,741	\$ 2,163,730	\$ 2,213,589	\$ 2,264,320	
Uses of Water Funds												
Operating Expenses (3):												
Water Operating Expenses	\$ 1,150,562	\$ 1,196,558	\$ 1,246,743	\$ 1,299,196	\$ 1,354,025	\$ 1,411,343	\$ 1,471,266	\$ 1,533,920	\$ 1,599,433	\$ 1,667,943	\$ 1,739,591	
Subtotal: Operating Expenses:	\$ 1,150,562	\$ 1,196,558	\$ 1,246,743	\$ 1,299,196	\$ 1,354,025	\$ 1,411,343	\$ 1,471,266	\$ 1,533,920	\$ 1,599,433	\$ 1,667,943	\$ 1,739,591	
Other Expenditures:												
Existing Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
New Debt Service (4)	-	-	-	-	-	-	-	-	-	-	-	
Rate-Funded Capital Expenses	577,000	721,000	424,360	437,091	450,204	463,710	477,621	491,950	426,545	384,157	376,078	
Subtotal: Other Expenditures	\$ 577,000	\$ 721,000	\$ 424,360	\$ 437,091	\$ 450,204	\$ 463,710	\$ 477,621	\$ 491,950	\$ 426,545	\$ 384,157	\$ 376,078	
Total Uses of Water Funds	\$ 1,727,562	\$ 1,917,558	\$ 1,671,103	\$ 1,736,287	\$ 1,804,229	\$ 1,875,052	\$ 1,948,887	\$ 2,025,869	\$ 2,025,978	\$ 2,052,100	\$ 2,115,670	
Annual Surplus/(Deficit)	\$ (137,553)	\$ (248,459)	\$ 78,386	\$ 98,514	\$ 117,765	\$ 144,308	\$ 117,732	\$ 88,872	\$ 137,752	\$ 161,488	\$ 148,651	
Net Revenue Req't. (Total Uses less Non-Rate Revenue)	\$ 1,409,850	\$ 1,591,051	\$ 1,338,383	\$ 1,396,532	\$ 1,459,883	\$ 1,520,504	\$ 1,588,867	\$ 1,660,563	\$ 1,655,594	\$ 1,676,870	\$ 1,735,851	
Projected Annual Rate Revenue Adjustment												
Cumulative Increase from Annual Revenue Increases	0.00%	5.00%	10.25%	15.76%	21.55%	27.63%	30.18%	32.78%	35.44%	38.15%	40.91%	
Debt Coverage After Rate Increase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

1. Revenue and expenses for FY 2017/18 are from Source file: 2017-2018 Budget.pdf, Pages 6-7.
2. Budget values have been adjusted as part of the analysis, as detailed in Exhibit 1 (O&M).
3. Revenue from rate increases assumes an implementation date of July 1, 2018 and July 1 each year thereafter.
4. The FY 2017/18 operating expenses are from the budget. Inflationary factors are applied to these expenses to project costs in FY 2018/19 and beyond.
5. Financial Statements. Source File: 2016-2017 Financial Statements.pdf; Note 6, Net position reserves, Page 26

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Financial Plan and Reserve Projections

TABLE 2 - RESERVE FUND SUMMARY

SUMMARY OF CASH ACTIVITY		Budget		Projected												
		FY 2017/18		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28			
UN-RESTRICTED RESERVES																
Total Beginning Cash (1, 2)		\$ 2,674,288														
Working Capital Reserve Fund																
Beginning Cash Reserve Balance (2)		\$ 1,795,598	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Net: Operating Cash Flow (After Rate Increases)		(137,553)	(248,459)	78,386	98,514	117,765	144,308	117,732	88,872	137,752	161,488	148,651				
Plus: Transfer of Debt Reserve Surplus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net: Transfer Out / In to Emergency Fund Reserve		(1,158,045)	248,459	(78,386)	(98,514)	(117,765)	(144,308)	(117,732)	(88,872)	(137,752)	(161,488)	(148,651)				
Ending Working Capital Reserve Fund Balance		\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Target Ending Balance (\$500K) (3)		\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Emergency Reserve Fund																
Beginning Reserve Balance (2)		\$ 150,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
Net: Transfer of Operating Reserve Surplus		1,158,045	(248,459)	78,386	98,514	117,765	144,308	117,732	88,872	137,752	161,488	148,651				
Less: Use of Reserves for Capital Projects		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net: Transfer Out / In to Capital R&R Reserve		(958,045)	248,459	(78,386)	(98,514)	(117,765)	(144,308)	(117,732)	(88,872)	(137,752)	(161,488)	(148,651)				
Ending Emergency Reserve Fund Balance		\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
Target Emergency Reserve Fund (\$350K) (3)		\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
Capital Rehabilitation & Replacement Reserve																
Beginning Reserve Balance (2,4)		\$ 225,000	\$ 1,183,045	\$ 934,586	\$ 1,012,972	\$ 1,111,486	\$ 1,229,251	\$ 1,373,559	\$ 1,491,292	\$ 1,580,163	\$ 1,637,752	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488
Net: Transfer of Emergency Reserve Surplus		958,045	(248,459)	78,386	98,514	117,765	144,308	117,732	88,872	137,752	161,488	148,651				
Less: Use of Reserves for Capital Projects		-	-	-	-	-	-	-	-	-	(80,163)	(137,752)				
Ending Capital Rehab & Replacement Reserve Balance		\$ 1,183,045	\$ 934,586	\$ 1,012,972	\$ 1,111,486	\$ 1,229,251	\$ 1,373,559	\$ 1,491,292	\$ 1,580,163	\$ 1,637,752	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488	\$ 1,661,488
Target Capital R&R Reserve (\$1.5M) (3,4)		\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000
Ending Balance		\$ 2,033,045	\$ 1,784,586	\$ 1,862,972	\$ 1,961,486	\$ 2,079,251	\$ 2,223,559	\$ 2,341,292	\$ 2,430,163	\$ 2,487,752	\$ 2,511,488	\$ 2,511,488	\$ 2,511,488	\$ 2,511,488	\$ 2,511,488	\$ 2,511,488
Minimum Target Ending Balance		\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000	\$ 2,350,000
Ending Surplus/(Deficit) Compared to Targets		\$ (316,955)	\$ (565,414)	\$ (487,028)	\$ (388,514)	\$ (270,749)	\$ (126,441)	\$ (8,708)	\$ 80,163	\$ 137,752	\$ 161,488	\$ 161,488	\$ 161,488	\$ 161,488	\$ 161,488	\$ 161,488
Semi-Restricted Reserves (5):																
Vacation/Sick/Annual Leave Liability																
Beginning Reserve Balance (2)		\$ 16,810	\$ 16,878	\$ 16,946	\$ 17,047	\$ 17,175	\$ 17,304	\$ 17,479	\$ 17,655	\$ 17,833	\$ 18,013	\$ 18,013	\$ 18,013	\$ 18,013	\$ 18,195	\$ 18,195
Interest Earnings		68	68	102	128	129	175	176	178	180	182	180	182	184	184	184
Ending Vacation/Sick/Annual Leave Liability		\$ 16,878	\$ 16,946	\$ 17,047	\$ 17,175	\$ 17,304	\$ 17,479	\$ 17,655	\$ 17,833	\$ 18,013	\$ 18,013	\$ 18,195	\$ 18,195	\$ 18,378	\$ 18,378	\$ 18,378
Target Vacation/Sick/Annual Leave Liability (\$75K) (3)		\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000
OPEB																
Beginning Reserve Balance (2)		\$ 486,880	\$ 488,840	\$ 490,808	\$ 493,753	\$ 497,456	\$ 501,187	\$ 506,244	\$ 511,352	\$ 516,512	\$ 521,723	\$ 526,987	\$ 526,987	\$ 526,987	\$ 526,987	\$ 526,987
Interest Earnings		1,960	1,968	2,945	3,703	3,731	5,057	5,108	5,160	5,212	5,264	5,317	5,317	5,317	5,317	5,317
Ending OPEB Liability		\$ 488,840	\$ 490,808	\$ 493,753	\$ 497,456	\$ 501,187	\$ 506,244	\$ 511,352	\$ 516,512	\$ 521,723	\$ 526,987	\$ 532,305	\$ 532,305	\$ 532,305	\$ 532,305	\$ 532,305
Target OPEB Liability (\$675K) (3)		\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000	\$ 675,000
Restricted Reserves (6):																
Capacity Charge Reserve																
Beginning Reserve Balance (2)		\$ -	\$ 3,186	\$ 6,401	\$ 9,657	\$ 12,964	\$ 16,311	\$ 19,742	\$ 23,224	\$ 26,758	\$ 30,343	\$ 33,982	\$ 33,982	\$ 33,982	\$ 33,982	\$ 33,982
Plus: Capacity Charge Revenue		3,186	3,202	3,218	3,234	3,250	3,266	3,283	3,299	3,316	3,332	3,349	3,349	3,349	3,349	3,349
Less: Use of Reserves for Capital Projects		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest Earnings		-	13	38	72	97	165	199	234	270	306	343	343	343	343	343
Ending Capacity Charges Reserves		\$ 3,186	\$ 6,401	\$ 9,657	\$ 12,964	\$ 16,311	\$ 19,742	\$ 23,224	\$ 26,758	\$ 30,343	\$ 33,982	\$ 37,673	\$ 37,673	\$ 37,673	\$ 37,673	\$ 37,673
Annual Interest Earnings Rate (7)		0.40%	0.40%	0.60%	0.75%	0.75%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%

1. Source file: 2016-2017 Financial Statements.pdf; Note 3, Total Cash and Cash Equivalents, Page 22.

2. Financial Statements, Source File: 2016-2017 Financial Statements.pdf; Note 6, Net position reserves, Page 26.

3. Reserve Policy Targets: Source File: Target Reserve Fund.pdf. Capital R&R reduced to \$1.0m following a discussion with staff on 4.02.18.

4. Capital Rehab and Replacement Reserve Fund includes Funds from "Vehicle & Equipment Replacement Reserve Fund"

5. Vacation/Sick/Annual Leave Liability and OPEB reserve funds are not restricted, but are held in reserve which should not be used for standard operations.

6. Water and Sewer Capacity Charge revenue must be maintained in a restricted reserve in accordance with CA Code 66013.

7. Interest earnings in FY 2018/19 equal to 5-year LAIF average (2012/13-2016/17). Interest earnings increase to 10-year LAIF average by FY 2022/23.

CHART 1

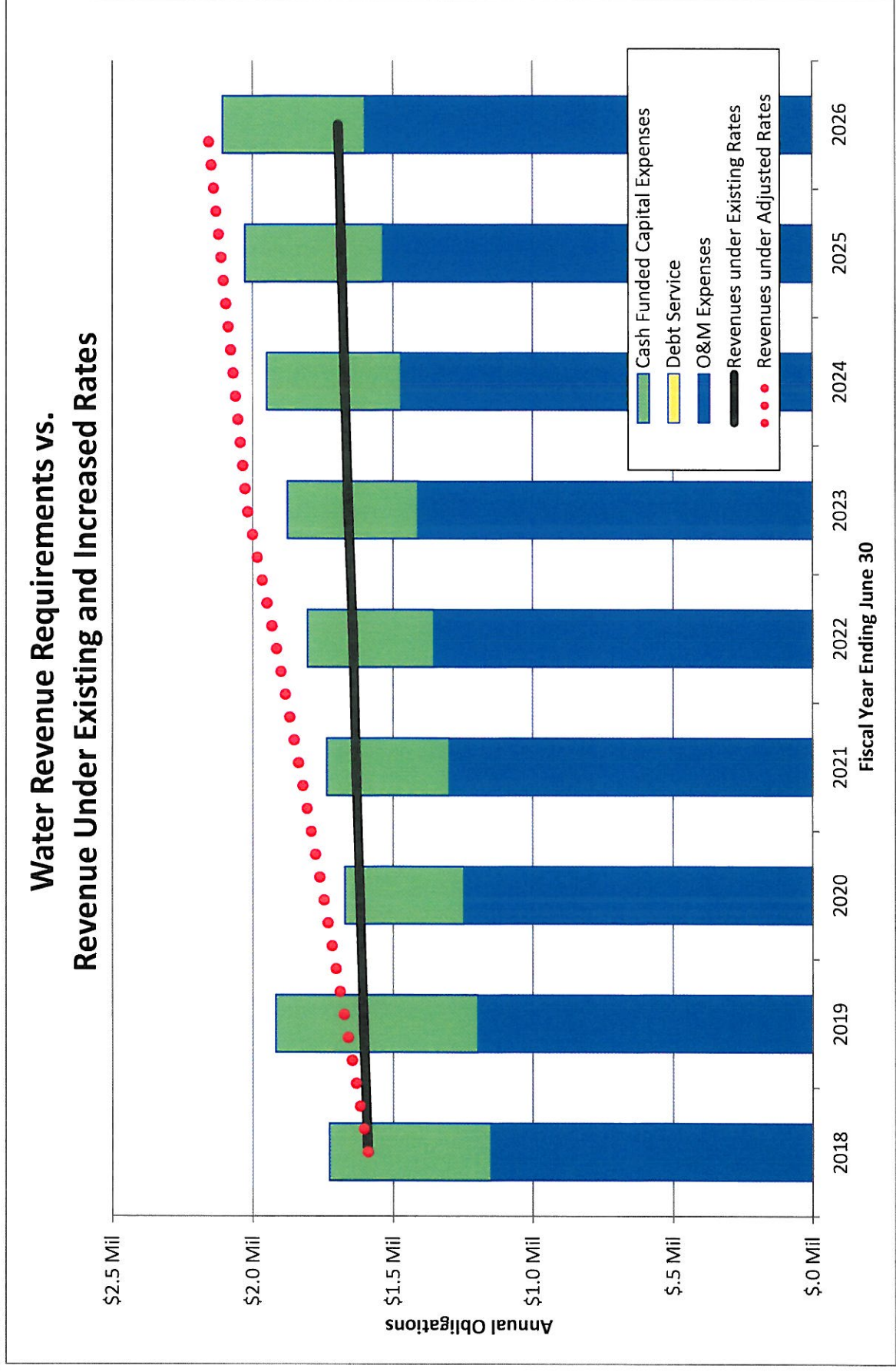


CHART 2

Cash Balances vs. Recommended Reserve Targets

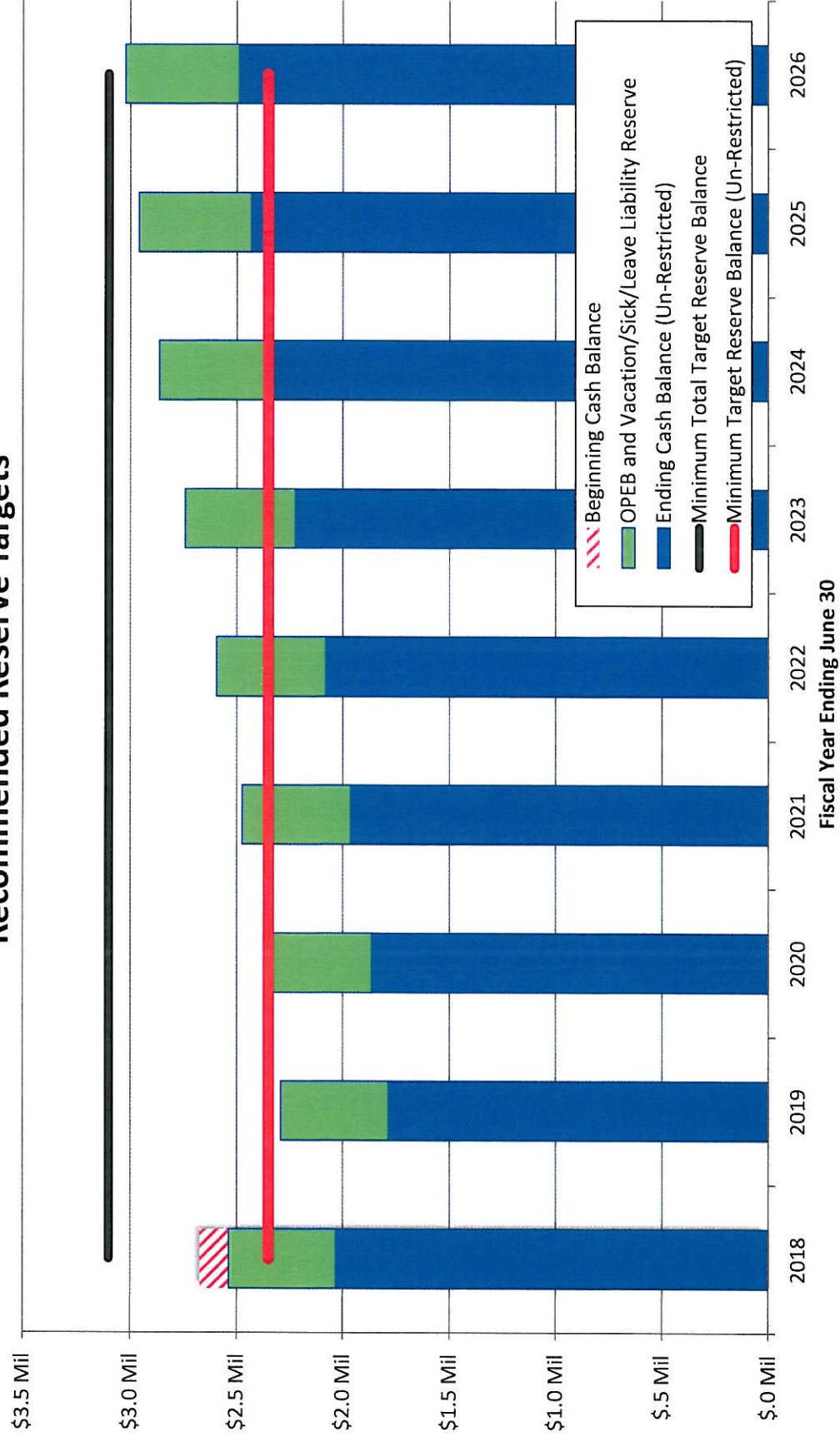
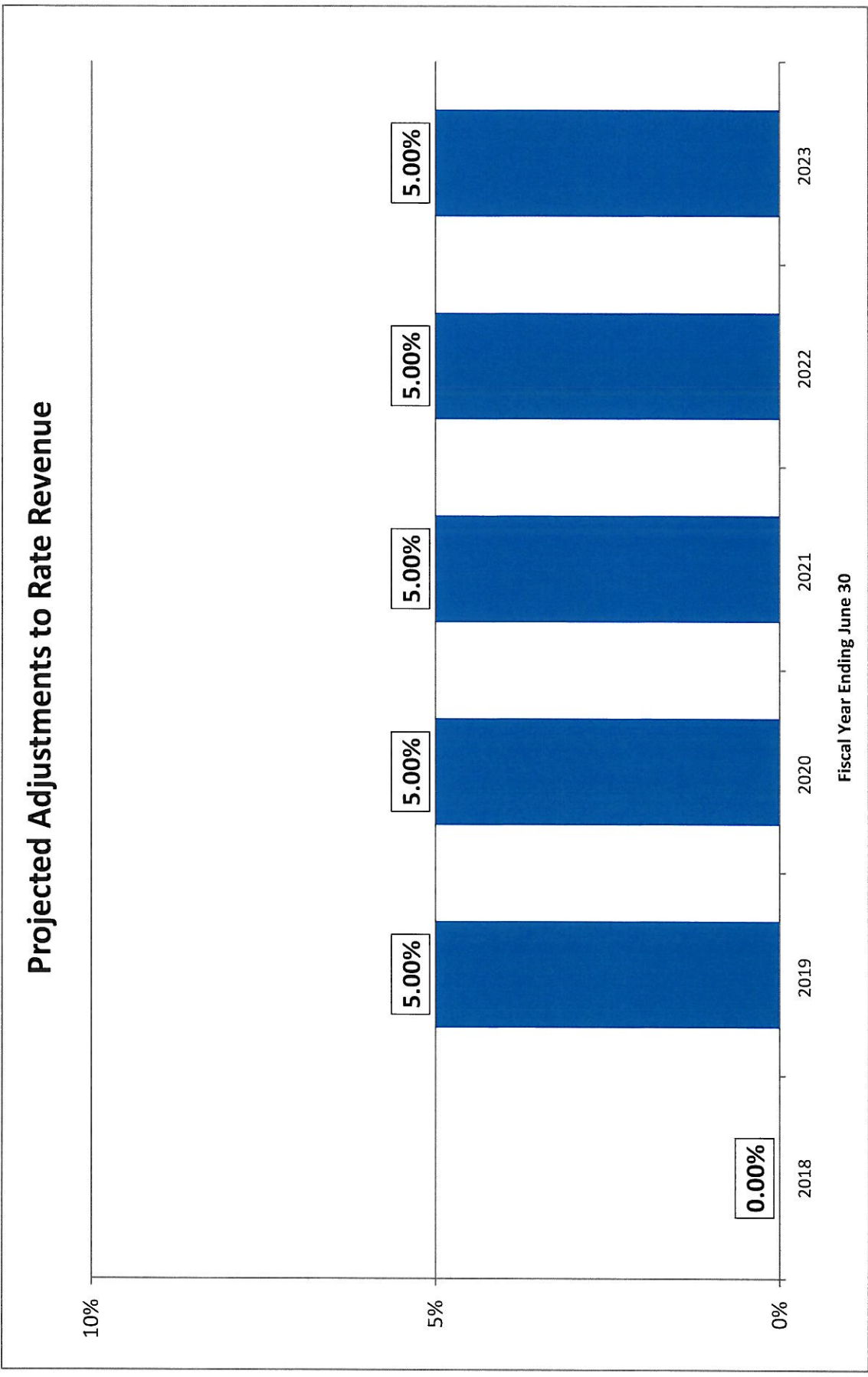


CHART 3



IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 3 - REVENUE FORECAST (1)

DESCRIPTION	Inflation Basis	Budget									
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Water Operating Revenue											
Water Base Rate - Commercial	1	\$ 158,169	\$ 158,960	\$ 159,755	\$ 160,553	\$ 161,356	\$ 162,163	\$ 162,974	\$ 163,789	\$ 164,608	\$ 165,431
Water Base Rate - Residential	1	512,699	515,262	517,839	520,428	523,030	525,645	528,274	530,915	533,569	536,237
Subtotal: Water Base Rate		\$ 670,868	\$ 674,222	\$ 677,593	\$ 680,981	\$ 684,386	\$ 687,808	\$ 691,247	\$ 694,704	\$ 698,177	\$ 701,668
Water Sales - Commercial	1	\$ 375,557	\$ 377,435	\$ 379,322	\$ 381,219	\$ 383,125	\$ 385,040	\$ 386,965	\$ 388,900	\$ 390,845	\$ 392,799
Water Sales - Residential	1	224,972	226,097	227,227	228,363	229,505	230,653	231,806	232,965	234,130	235,301
Water Sales - Construction	1	700	704	707	711	714	718	721	725	728	732
Water Sales - Other	1	200	201	202	203	204	205	206	207	208	209
Subtotal: Water Sales		\$ 601,429	\$ 604,436	\$ 607,458	\$ 610,496	\$ 613,548	\$ 616,616	\$ 619,699	\$ 622,797	\$ 625,911	\$ 629,041
Water Transfer Fees	1	\$ 3,075	\$ 3,090	\$ 3,106	\$ 3,121	\$ 3,137	\$ 3,153	\$ 3,168	\$ 3,184	\$ 3,200	\$ 3,216
Water Turn On/Off Fees	1	900	905	909	914	918	923	927	932	937	941
Water Will Serve Letter Fees	1	500	503	505	508	510	513	515	518	520	523
Water Delinquency Fees	1	7,037	7,072	7,108	7,143	7,179	7,215	7,251	7,287	7,323	7,360
Water Installation Fees	1	3,186	3,202	3,218	3,234	3,250	3,266	3,283	3,299	3,316	3,332
Water Lien Fees	1	800	804	808	812	816	820	824	828	833	837
Water Other Fees and Charges	1	4,675	4,698	4,722	4,745	4,769	4,793	4,817	4,841	4,865	4,890
Water Renewable Energy Costs	1	-	-	-	-	-	-	-	-	-	-
Subtotal: Water Operating Revenue		\$ 1,292,470	\$ 1,298,932	\$ 1,305,427	\$ 1,311,954	\$ 1,318,514	\$ 1,325,106	\$ 1,331,732	\$ 1,338,391	\$ 1,345,083	\$ 1,351,808
Water Non-Operating Revenue											
Water Taxes and Assessments	8	\$ 275,000	\$ 279,125	\$ 283,312	\$ 287,562	\$ 291,875	\$ 296,253	\$ 300,697	\$ 305,207	\$ 309,785	\$ 314,432
Water Investment Income	10	-	-	-	-	-	-	-	-	-	-
Water Stand By Assessments	9	20,000	19,400	18,818	18,253	17,706	17,175	16,659	16,160	15,675	15,205
Water Interest Earned	See FP	3,000	-	-	-	-	-	-	-	-	-
Water Other Non-Operating Revenue	10	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725
Subtotal: Water Non-Operating Revenue		\$ 300,725	\$ 301,250	\$ 304,855	\$ 308,540	\$ 312,306	\$ 316,153	\$ 320,081	\$ 324,092	\$ 328,185	\$ 332,362
TOTAL: REVENUE		\$ 1,593,195	\$ 1,600,182	\$ 1,610,282	\$ 1,620,494	\$ 1,630,820	\$ 1,641,259	\$ 1,651,813	\$ 1,662,483	\$ 1,673,268	\$ 1,684,170

TABLE 4 - REVENUE SUMMARY

OPERATING FUND:											
Rate Revenue		\$ 1,272,297	\$ 1,278,658	\$ 1,285,052	\$ 1,291,477	\$ 1,297,934	\$ 1,304,424	\$ 1,310,946	\$ 1,317,501	\$ 1,324,088	\$ 1,330,709
Tax Revenue		275,000	279,125	283,312	287,562	291,875	296,253	300,697	305,207	309,785	314,432
Interest Income		3,000	-	-	-	-	-	-	-	-	-
Other Fees		39,712	39,197	38,700	38,222	37,760	37,316	36,887	36,475	36,078	35,697
Capacity Charges		3,186	3,202	3,218	3,234	3,250	3,266	3,283	3,299	3,316	3,332
TOTAL: REVENUE		\$ 1,593,195	\$ 1,600,182	\$ 1,610,282	\$ 1,620,494	\$ 1,630,820	\$ 1,641,259	\$ 1,651,813	\$ 1,662,483	\$ 1,673,268	\$ 1,684,170

1. Revenue and expenses for FY 2017-18 are from source file: 2017-2018 Budget pdf, Pages 6-7.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 5 - OPERATING EXPENSE FORECAST (1)

DESCRIPTION	Inflation Basis	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
WATER OPERATING EXPENSES											
Water Payroll	3	\$ 472,000	\$ 495,600	\$ 520,380	\$ 546,399	\$ 573,719	\$ 602,405	\$ 632,525	\$ 664,151	\$ 697,359	\$ 732,227
Water Retirement and Life Insurance	4	49,000	51,450	54,023	56,724	59,560	62,538	65,665	68,948	72,395	76,015
Water Medical Insurance	4	130,000	136,500	143,325	150,491	158,016	165,917	174,212	182,923	192,069	201,673
Water Worker's Comp Insurance	4	12,000	12,600	13,230	13,892	14,586	15,315	16,081	16,885	17,729	18,616
Water Non-Employee Health Insurance	4	26,265	27,578	28,957	30,405	31,925	33,522	35,198	36,957	38,805	40,746
Salaries and Benefits - TOTAL		\$ 689,265	\$ 723,728	\$ 759,915	\$ 797,910	\$ 837,806	\$ 879,696	\$ 923,681	\$ 969,865	\$ 1,018,358	\$ 1,069,276
Water Engineering Services	2	\$ 6,000	\$ 6,150	\$ 6,304	\$ 6,461	\$ 6,623	\$ 6,788	\$ 6,958	\$ 7,132	\$ 7,310	\$ 7,493
Water Legal Services	2	4,979	5,103	5,231	5,362	5,496	5,633	5,774	5,918	6,066	6,218
State-County Water System Fees	2	30,845	31,616	32,407	33,217	34,047	34,898	35,771	36,665	37,582	38,521
Water General Plant Expense	2	118,020	120,971	123,995	127,095	130,272	133,529	136,867	140,289	143,796	147,391
Water Minor Equipment/Parts	2	600	615	630	646	662	679	696	713	731	749
Water Vehicle Repairs and Main.	2	9,160	9,389	9,624	9,864	10,111	10,364	10,623	10,888	11,161	11,440
Water Utilities - Electricity	5	85,000	87,125	91,481	96,055	100,858	105,901	111,196	116,756	122,594	128,723
Water Utilities - Gas and Fuel	7	9,200	9,430	9,666	9,907	10,155	10,409	10,669	10,936	11,209	11,490
Water Utilities - Propane	7	3,754	3,848	3,944	4,043	4,144	4,247	4,353	4,462	4,574	4,688
Water Telephone and Internet	2	8,361	8,570	8,784	9,004	9,229	9,460	9,696	9,939	10,187	10,442
Water Computer Services	2	18,774	19,243	19,724	20,218	20,723	21,241	21,772	22,316	22,874	23,446
Water Board Reimbursement	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493
Water Other Operating Expenses	2	450	461	473	485	497	509	522	535	548	562
Water Accounting and Auditing	2	9,000	9,225	9,456	9,692	9,934	10,183	10,437	10,698	10,966	11,240
Water Postage and Postage Fees	2	12,000	12,300	12,608	12,923	13,246	13,577	13,916	14,264	14,621	14,986
Water Office Supplies	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493
Water Traveling	2	3,537	3,625	3,716	3,809	3,904	4,002	4,102	4,204	4,309	4,417
Water Office Cleaning Services	2	2,940	3,014	3,089	3,166	3,245	3,326	3,409	3,495	3,582	3,672
Water Maintenance	2	13,500	13,838	14,183	14,538	14,901	15,274	15,656	16,047	16,448	16,860
Water Due, Fees and Subscriptions	2	14,000	14,350	14,709	15,076	15,453	15,840	16,236	16,642	17,058	17,484
Water Advertising and Publishing	2	5,000	5,125	5,253	5,384	5,519	5,657	5,798	5,943	6,092	6,244
Water Leasing Equipment	2	500	513	525	538	552	566	580	594	609	624
Water Utilities Trash Fee	2	2,145	2,199	2,254	2,310	2,368	2,427	2,488	2,550	2,613	2,679
Water Bank Fee Charge	2	972	996	1,021	1,047	1,073	1,100	1,127	1,155	1,184	1,214
Water Auto and General Insurance	2	26,000	26,650	27,316	27,999	28,699	29,417	30,152	30,906	31,678	32,470
Water Laboratory Services	2	18,500	18,963	19,437	19,922	20,421	20,931	21,454	21,991	22,540	23,104
Water Donation	2	-	-	-	-	-	-	-	-	-	-
Water Compensated Time	2	18,900	19,373	19,857	20,353	20,862	21,384	21,918	22,466	23,028	23,604
Water Uniform Expenses	2	7,000	7,175	7,354	7,538	7,727	7,920	8,118	8,321	8,529	8,742
Water Property Tax Expenses	2	1,800	1,845	1,891	1,938	1,987	2,037	2,087	2,140	2,193	2,248
Water Consulting	2	3,000	3,075	3,152	3,231	3,311	3,394	3,479	3,566	3,655	3,747
Water Leak (IWD Site)	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493
Water Security System	2	2,000	2,050	2,101	2,154	2,208	2,263	2,319	2,377	2,437	2,498
Training and Seminars	2	7,360	7,544	7,733	7,926	8,124	8,327	8,535	8,749	8,967	9,192
<i>Materials and Operations- Utilities- Water- Leases</i>											
Materials and Operations- TOTAL		\$ 461,297	\$ 472,829	\$ 486,828	\$ 501,286	\$ 516,220	\$ 531,646	\$ 547,585	\$ 564,055	\$ 581,075	\$ 598,667
GRAND TOTAL: WATER OPERATING EXPENSES		\$ 1,150,562	\$ 1,196,558	\$ 1,246,743	\$ 1,299,196	\$ 1,354,025	\$ 1,411,343	\$ 1,471,266	\$ 1,533,920	\$ 1,599,433	\$ 1,667,943

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 6 - FORECASTING ASSUMPTIONS

INFLATION FACTORS	Inflation Basis	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Customer Growth (3)	1	--	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
General Cost Inflation (4)	2	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Salary Inflation (5)	3	--	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Benefits Inflation (5)	4	--	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Energy (4)	5	--	2.50%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Chemicals (4)	6	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Fuel (4)	7	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Tax Inflation (6)	8	--	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Standby Deflation (7)	9	--	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%
No Escalation	10	--	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

1. Revenue and expenses for FY 2017/18 are from source files: 2017-2018 Budget.pdf; Page 6-7.
2. Direct O&M Expenses for water are expected to increase 1% for the coming year of 2017/2018. Also General Expenses are expected to increase by 1%. From source file: 2017-2018 Budget.pdf; Page 14.
3. Customer Growth rate given in Source file: idyllwild response to data request 1.5.18.pdf.
4. Projected growth rates for General Inflation, Chemicals, Etc. given in Source File: idyllwild response to data request 1.5.18.pdf.
5. Projected growth rates for Labor given in Source File: idyllwild response to data request 1.5.18.pdf.
6. Tax inflation set to 1.5% per phone call with IWD on March 23, 2018.
7. Standby Deflation is set at 3% annually per IWD phone call, March 23, 2018.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Capital Improvement Plan Expenditures

TABLE 7 - CAPITAL FUNDING SUMMARY

CAPITAL FUNDING FORECAST	Budget	Projected										
		FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28
Funding Sources:												
Grants (1)	\$ 155,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Use of Capacity Charge Revenue	-	-	-	-	-	-	-	-	-	-	-	-
Use of SRF Loan Proceeds	-	-	-	-	-	-	-	-	-	-	-	-
Use of New Revenue Bond Proceeds	-	-	-	-	-	-	-	-	-	-	-	-
Use of Capital Rehabilitation and Replacement Reserve	-	-	-	-	-	-	-	-	-	-	-	-
Rate Revenue	577,000	721,000	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	537,567	537,567
Total Sources of Capital Funds	\$ 732,000	\$ 721,000	\$ 424,360	\$ 437,091	\$ 450,204	\$ 463,710	\$ 477,621	\$ 491,950	\$ 506,708	\$ 521,909	\$ 537,567	\$ 537,567
Uses of Capital Funds:												
Total Project Costs	\$ 732,000	\$ 721,000	\$ 424,360	\$ 437,091	\$ 450,204	\$ 463,710	\$ 477,621	\$ 491,950	\$ 506,708	\$ 521,909	\$ 537,567	\$ 537,567
Capital Funding Surplus (Deficiency)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New SRF Loan Proceeds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New Revenue Bond Proceeds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

1. Grant funds are from Riverside County. From Source file: 2017-2018 Budget.pdf, Page 3.

CAPITAL IMPROVEMENT PROGRAM

TABLE 8 - Capital Improvement Program Costs (in Current-Year Dollars) (2):

Project Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Source of Supply (G/L #1321)											
Well Rehabilitation - #8, 9 and 11 including road improvements	\$ 75,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Well Drilling (New well carry over from last year)	100,000	-	-	-	-	-	-	-	-	-	-
Storage Tanks: (G/L #1324)											
Storage Tank Repairs	50,000	-	-	-	-	-	-	-	-	-	-
Transmission and Distributing: (G/L #1324)											
Water Line Piping Replacement	465,000	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant (G/L #1325)											
pH Monitoring Sensors for Well and Aeration Plant	7,000	-	-	-	-	-	-	-	-	-	-
General Plant Structures, Power and Other Equipment											
Various Fire Hydrant Improvements	15,000	-	-	-	-	-	-	-	-	-	-
Skid Steer Tractor with Attachments (50% Water)	20,000	-	-	-	-	-	-	-	-	-	-
Future Year Capital Projects, Estimated (3)											
Total: CIP Program Costs (Current-Year Dollars)	\$ 732,000	\$ 700,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000

TABLE 9 - Capital Improvement Program Costs (in Future-Year Dollars) (2):

Project Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Source of Supply (G/L #1321)											
Well Rehabilitation - #8, 9 and 11 including road improvements	\$ 75,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Well Drilling (New well carry over from last year)	100,000	-	-	-	-	-	-	-	-	-	-
Storage Tanks: (G/L #1324)											
Storage Tank Repairs	50,000	-	-	-	-	-	-	-	-	-	-
Transmission and Distributing: (G/L #1324)											
Water Line Piping Replacement	465,000	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant (G/L #1325)											
pH Monitoring Sensors for Well and Aeration Plant	7,000	-	-	-	-	-	-	-	-	-	-
General Plant Structures, Power and Other Equipment											
Various Fire Hydrant Improvements	15,000	-	-	-	-	-	-	-	-	-	-
Skid Steer Tractor with Attachments (50% Water)	20,000	-	-	-	-	-	-	-	-	-	-
Future Year Capital Projects, Estimated											
	-	721,000	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	537,567
Total: CIP Program Costs (Future-Year Dollars)	732,000	721,000	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	537,567

TABLE 10 - FORECASTING ASSUMPTIONS:

Economic Variables (4)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual Construction Cost Inflation, Per Engineering News-Record	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Construction Cost Multiplier from 2019	1.00	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30	1.34

1. Grant funds are from Riverside County. From Source file: 2017-2018 Budget.pdf, Page 3.
2. CIP plans found in Source File: 2017-2018 Budget.pdf, Page 3.
3. Additional Projects represent unknown capital projects funded through rates. Per district staff on phone call March, 23, 2018, future CIP set at \$400K.
4. Construction Inflation is based on the most current 10 year average of the Engineering News-Record Construction Cost Index. Source: www.enr.com/economics

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Current Rate Schedule

EXHIBIT 3

TABLE 11 - Current Water Rate Schedule:

Current Residential Water Rates					
Rate Code	Meter Size	Monthly Base Rate	Water Consumption Charge (1,2)	Monthly Use (cf)	
R1	5/8"	\$29.70	Tier 1	1-300	\$0.0000
R2	3/4"	\$40.35	Tier 2	301-600	\$0.0633
R3	1"	\$61.25	Tier 3	601-1500	\$0.1000
R4	1 1/2"	\$113.50	Tier 4	1501+	\$0.1000
Meters 1-1/2" & Larger Uniform Block Rate					
Construction Meters Uniform Block Rate					
Current Commercial Water Rates					
Rate Code	Meter Size	Base Rate	Water Consumption Charge (1,2)	Monthly Use (cf)	
R1	5/8"	\$20.90	Tier 1	1-1000	\$0.0333
R2	3/4"	\$31.35	Tier 2	1001-4000	\$0.0633
R3	1"	\$52.25	Tier 3	4001-8000	\$0.1000
R4	1 1/2"	\$104.50	Tier 4	8001+	\$0.1000
R5	2"	\$167.20			
IA	3"	\$313.50			

1. Proposed Monthly Water Rates Effective July 1, 2017: File Source: Current Residential Water Rates.pdf and Current Commercial Water Rates.

2. HCF = Hundred Cubic Feet or 748 gallons.

IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
 Cost of Service Analysis

TABLE 12

Classification of Expenses		Total Revenue Requirements FY 2018/19	Commodity (COM)	Capacity (CAP)	Customer (CA)	Fire Protection (FP)	Basis of Classification			
Budget Categories							(COM)	(CAP)	(CA)	(FP)
WATER OPERATING EXPENSES										
5436	Water Payroll	\$ 495,600	\$ 49,560	\$ 421,031	\$ 24,780	\$ 229	10%	85%	5%	0.05%
5415	Water Retirement and Life Insurance	51,450	5,145	43,709	2,573	24	10%	85%	5%	0.05%
5426	Water Medical Insurance	136,500	13,650	115,962	6,825	63	10%	85%	5%	0.05%
5427	Water Worker's Comp Insurance	12,600	1,260	10,704	630	6	10%	85%	5%	0.05%
5428	Water Non-Employee Health Insurance	27,578	2,758	23,429	1,379	13	10%	85%	5%	0.05%
5403	Water Engineering Services	6,150	615	5,225	308	3	10%	85%	5%	0.05%
5404	Water Legal Services	5,103	510	4,336	255	2	10%	85%	5%	0.05%
5405	State-County Water System Fees	31,616	3,162	26,859	1,581	15	10%	85%	5%	0.05%
5406	Water General Plant Expense	120,971	36,291	78,575	6,049	56	30%	65%	5%	0.05%
5407	Water Minor Equipment/Parts	615	62	522	31	0	10%	85%	5%	0.05%
5408	Water Vehicle Repairs and Main.	9,389	939	7,976	469	4	10%	85%	5%	0.05%
5410	Water Utilities - Electricity	87,125	8,712	-	-	-	100%	0%	0%	0.00%
5411	Water Utilities - Gas and Fuel	9,430	9,430	-	-	-	100%	0%	0%	0.00%
5412	Water Utilities - Propane	3,848	3,848	-	-	-	100%	0%	0%	0.00%
5414	Water Telephone and Internet	8,570	857	7,281	429	4	10%	85%	5%	0.05%
5417	Water Computer Services	19,243	1,924	16,348	962	9	10%	85%	5%	0.05%
5418	Water Board Reimbursement	6,150	615	5,225	308	3	10%	85%	5%	0.05%
5419	Water Other Operating Expenses	461	46	392	23	0	10%	85%	5%	0.05%
5420	Water Accounting and Auditing	9,225	923	7,837	461	4	10%	85%	5%	0.05%
5421	Water Postage and Postage Fees	12,300	1,230	10,449	615	6	10%	85%	5%	0.05%
5422	Water Office Supplies	6,150	615	5,225	308	3	10%	85%	5%	0.05%
5423	Water Traveling	3,625	363	3,080	181	2	10%	85%	5%	0.05%
5025	Water Office Cleaning Services	3,014	301	2,560	151	1	10%	85%	5%	0.05%
5425	Water Maintenance	13,838	1,384	11,755	692	6	10%	85%	5%	0.05%
5429	Water Due, Fees and Subscriptions	14,350	1,435	12,191	718	7	10%	85%	5%	0.05%
5430	Water Advertising and Publishing	5,125	513	4,354	256	2	10%	85%	5%	0.05%
5431	Water Leasing Equipment	513	51	435	26	0	10%	85%	5%	0.05%
5432	Water Utilities Trash Fee	2,199	220	1,868	110	1	10%	85%	5%	0.05%
5433	Water Bank Fee Charge	996	100	845	50	0	10%	85%	5%	0.05%
5435	Water Auto and General Insurance	26,650	2,665	22,640	1,333	12	10%	85%	5%	0.05%
5438	Water Laboratory Services	18,963	18,963	-	-	-	100%	0%	0%	0.00%
5439	Water Donation	-	-	-	-	-	100%	0%	0%	0.00%
5440	Water Compensated Time	19,373	1,937	16,458	969	9	10%	85%	5%	0.05%
5441	Water Uniform Expenses	7,175	718	6,095	359	3	10%	85%	5%	0.05%
5442	Water Property Tax Expenses	1,845	185	1,567	92	1	10%	85%	5%	0.05%
5443	Water Consulting	3,075	308	2,612	154	1	10%	85%	5%	0.05%
5444	Water Leak (IWD Site)	6,150	615	-	-	-	100%	0%	0%	0.00%
5445	Water Security System	2,050	205	1,742	103	1	10%	85%	5%	0.05%
5446	Training and Seminars	7,544	754	6,409	377	3	10%	85%	5%	0.05%
Total Operating Expense		\$ 1,196,558	\$ 256,814	\$ 885,698	\$ 53,552	494	21%	74%	4%	0.04%

Funct. & Classification, 12 of 30
6/12/2018

IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
 Cost of Service Analysis

TABLE 13

Classification of Expenses, continued														
Budget Categories	Total Revenue Requirements		Commodity (COM)	Capacity (CAP)	Customer (CA)	Fire Protection (FP)	Basis of Classification							
	FY 2018/19						(COM)	(CAP)	(CA)	(COM)	(CAP)	(CA)	(FP)	
Capital Expenditures														
Rate Funded Capital Expenses	\$	721,000	\$	-	\$	720,702	\$	-	\$	298	0%	100%	0%	0%
TOTAL REVENUE REQUIREMENTS														
	\$	1,917,558	\$	256,814	\$	1,606,400	\$	53,552	\$	792	13%	84%	3%	0%
Less: Non-Rate Revenues														
Rate Revenue														
4201 Water Base Rate - Commercial	\$	(3,090)	\$	(414)	\$	(2,589)	\$	(86)	\$	(1)	13%	84%	3%	0%
4202 Water Base Rate - Residential	(905)	(121)	(758)	(25)	(0)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4203 Water Sales - Commercial	(503)	(67)	(421)	(14)	(0)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4204 Water Sales - Residential	(7,072)	(947)	(5,925)	(198)	(3)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4205 Water Sales - Construction														
4206 Water Sales - Other														
4208 Water Transfer Fees														
4209 Water Turn On/Off Fees														
4210 Water Will Serve Letter Fees														
4211 Water Delinquency Fees														
4212 Water Installation Fees														
4213 Water Lien Fees	(804)	(108)	(674)	(22)	(0)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4214 Water Other Fees and Charges	(4,698)	(629)	(3,936)	(131)	(2)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4215 Water Renewable Energy Costs	-	-	-	-	-	13%	84%	3%	0%	0%	0%	0%	0%	0%
4901 Water Taxes and Assessments	(279,125)	(37,383)	(233,832)	(7,795)	(115)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4902 Water Investment Income	-	-	-	-	-	13%	84%	3%	0%	0%	0%	0%	0%	0%
4903 Water Stand By Assessments	(19,400)	(2,598)	(16,252)	(542)	(8)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4904 Water Interest Earned	(8,185)	(1,096)	(6,857)	(229)	(3)	13%	84%	3%	0%	0%	0%	0%	0%	0%
4919 Water Other Non-Operating Revenue	(2,725)	(365)	(2,283)	(76)	(1)	13%	84%	3%	0%	0%	0%	0%	0%	0%
NET REVENUE REQUIREMENTS														
	\$	1,591,051	\$	213,085	\$	1,332,875	\$	44,434	\$	657	13%	84%	3%	0%
Allocation of Revenue Requirements														
Net Revenue Req't. Check from Financial Plan														
	\$	100.0%		13%		84%		3%		0%				

TABLE 14

Classification of Expenses, continued					
Adjustments to Classification of Expenses					
Adjustment for Current Rate Level:					
	Total	(COM)	(CAP)	(CA)	(FP)
FY 2017/18 Target Rate Rev. After Rate Increases	\$ 1,342,591				
Projected Rate Revenue at Current Rates	\$ 1,278,658				
FY 2017/18 Projected Rate Increase	5.0%				
Adjusted Net Revenue Req't	\$ 1,342,591	\$ 179,810	\$ 1,124,732	\$ 37,495	\$ 554
<i>Percent of Revenue</i>	100.0%	13.4%	83.8%	2.8%	0.0%

IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
 Water Cost of Service Analysis

TABLE 15 - Single Family Residential Meter Characteristics:

Meter Size	Number of Meters	Average Monthly Consumption (cf) CY 2017	Peak Monthly Consumption (cf) CY 2017	Peaking Factor
5/8 inch	1,428	654	851	1.30
3/4 inch	12	1,182	2,808	2.38
1 inch	24	1,481	3,750	2.53
Total	1,464			

TABLE 16

Development of the COMMODITY Allocation Factor				
Customer Class	Volume CY 2015 (cf) (1)	Volume CY 2016 (cf) (1)	Volume CY 2017 (cf) (1)	Percent of Total Volume
Residential	4,339,440	4,807,474	5,236,816	56.0%
Apartment	90,130	122,880	126,910	1.4%
Trailer Park	472,130	420,930	225,250	2.4%
Business	776,440	794,838	940,521	10.1%
Motel	527,290	529,260	522,850	5.6%
Restaurant	509,580	577,538	531,580	5.7%
School	35,880	37,500	39,340	0.4%
Camp	229,780	166,727	344,640	3.7%
Church	55,760	59,480	76,890	0.8%
Park	165,250	178,740	167,260	1.8%
Idyllwild Arts Academy (2)	1,415,170	1,252,240	1,132,136	12.1%
Fire Service	0	0	0	0.0%
Total	8,616,850	8,947,607	9,763,547	100.0%

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).

Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx. Consumption based on 2017 consumption.

2. Per client phone call March 26, 2018, Idyllwild Arts Academy consumption adjusted given recent leak fixes.

Commodity Related Costs: These costs are associated with the total consumption (flow) of water over a specified period of time (e.g. annual).

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis

TABLE 17

Development of the CAPACITY (MAX MONTH) Allocation Factor							
Customer Class	Peak Monthly 2015 (cf) (1)	Peak Monthly 2016 (cf) (1)	Peak Monthly 2017 (cf) (1)	Average Monthly Use (cf)	Peak Monthly Use (cf) (1)	Monthly Peaking Factor	Monthly Max Capacity Factor
Residential	510,690	622,375	653,548	436,401	653,548	1.50	52.6%
Apartment	12,030	13,860	12,770	10,576	12,770	1.21	1.0%
Trailer Park	49,020	57,440	41,320	18,771	41,320	2.20	3.3%
Business	77,990	92,160	99,730	78,377	99,730	1.27	8.0%
Motel	57,060	78,700	59,940	43,571	59,940	1.38	4.8%
Restaurant	60,190	59,240	56,690	44,298	56,690	1.28	4.6%
School	4,790	9,600	8,660	3,278	8,660	2.64	0.7%
Camp	41,000	32,460	149,336	28,720	149,336	5.20	12.0%
Church	8,540	8,910	9,348	6,408	9,348	1.46	0.8%
Park	23,390	28,150	23,210	13,938	23,210	1.67	1.9%
Idyllwild Arts Academy (2)	164,700	158,860	228,500	94,345	127,088	1.35	10.2%
Fire Service	0	0	0	0	0	0.00	0.0%
Total	1,009,400	1,161,755	1,343,052	778,683	1,241,640	1.59	100%

1. Based on 2017 monthly billing data (peak day data not available).

2. Per client phone call March 26, 2018, Idyllwild Arts Academy peaking adjusted given recent leak fixes.

Capacity Related Costs: Costs associated with the maximum demand required at one point in time or the maximum size of facilities required to meet this demand.

TABLE 18

Development of the CUSTOMER Allocation Factor		
Customer Class	Number of Meters (1)	Percent of Total
Residential	1,464	89.0%
Apartment	9	0.5%
Trailer Park	3	0.2%
Business	98	6.0%
Motel	27	1.6%
Restaurant	16	1.0%
School	4	0.2%
Camp	6	0.4%
Church	12	0.7%
Park	3	0.2%
Idyllwild Arts Academy	1	0.1%
Fire Service	2	0.1%
Total	1,645	100%

1. Meter Count for Dec 2017. Idyllwild bills monthly.

Source files: Billed Consumption Excel Export for Water 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables)

Customer Related Costs: Costs associated with having a customer on the water system. These costs vary with the addition or deletion of customers on the system. Examples: Meter-reading, Postage and billing.

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IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 19

Consumption by Tier			
Tier	Monthly Breakpoint	Expected Consumption CY2017 (cf)	Percentage of Total SFR Consumption
Tier 1	450 cf	3,145,764	60.1%
Tier 2	900 cf	1,207,314	23.1%
Tier 3	--	883,738	16.9%
Total		5,236,816	100%

1. Tier 1 break point set to 450 cf per district staff on phone call March 23, 2018. (55 gallons per day per 2 people.)
Tier 2 break point set to 900 cf.

2. Consumption for all SFR customers (including 1.5" meters)

Source files: Rate Study Billing Info Jan to June 2014, 2015, 2016, 2017.xlsx (data combined and summarized in pivotTables.xlsx)

TABLE 20 - DEVELOPMENT OF ADDITIONAL CAPACITY FACTORS FOR SINGLE FAMILY RESIDENTIAL CUSTOMERS FY 2017/18

Development of the Single Family Residential PEAK CAPACITY (MAX BI-MONTHLY) Allocation Factors				
Tier	Description	Peak Consumption CY2017 (cf) (1)	Additional Capacity Required (cf) (4)	Additional Capacity Factor
Tier 1	Max Tier 1 Capacity (2)	330,030	0	0.0%
Tier 2	Peak up to Tier 2 (3)	498,250	168,220	52.0%
Tier 3	Peak up to Tier 3 (3)	653,548	155,298	48.0%
Total			323,518	100.0%

1. Source files: Rate Study Billing Info Jan to June 2014, 2015, 2016, 2017.xlsx (data combined and summarized in pivotTables.xlsx)

2. Capacity allocated to the first tier represents the tier break multiplied by the number of customers.

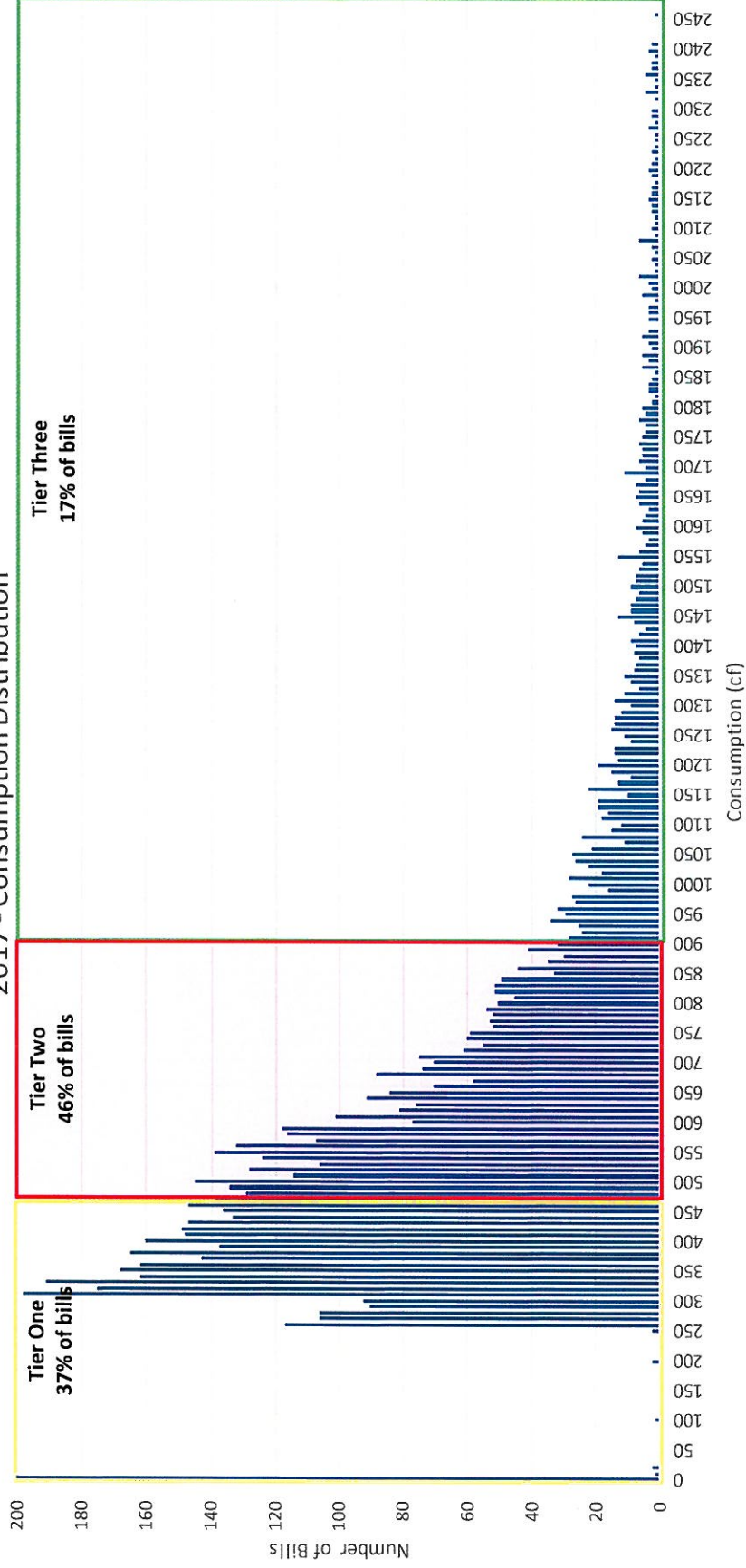
3. This is the cumulative peak consumption up to the tier break; it represents capacity required to provide service to a given tier.

4. This is the additional cumulative capacity to meet peak consumption at each tier.

IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
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Single Family Residential Consumption Distribution Curve:

Idllywild Water District Single Family
 2017 - Consumption Distribution



IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
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TABLE 21

Meter Size	Standard Meters (1)		Fire Service Meters	
	Meter Capacity (gpm)	Equivalency to 5/8- inch	Meter Capacity (gpm)	Equivalency to 5/8- inch
	Displacement Meters	Displacement Meters	Displacement Meters	Displacement Meters
5/8 inch	20	1.00	20	1.00
3/4 inch	30	1.50	30	1.50
1 inch	50	2.50	50	2.50
1.5 inch	100	5.00	100	5.00
2 inch	160	8.00	160	8.00
	<u>Compound Class I Meters</u>		<u>Fire Service Type I & II (2)</u>	
3 inch	320	16.00	350	17.50
4 inch	500	25.00	700	35.00
6 inch	1,000	50.00	1,600	80.00
	<u>Turbine Class II Meters</u>		<u>Turbine Class I Meters</u>	
8 inch	2,800	140.00	2,800	140.00
10 inch	4,200	210.00	4,200	210.00

1. Meter flow rates are from AWWA M-1 (Seventh Edition) Table B-2.

2. Fire Service meter flow rates are from AWWA M-6 Table 5-3.

TABLE 22 - ALLOCATION OF WATER REVENUE REQUIREMENTS:

Classification Categories	COSA Results		Revenue Target FY 2018/19		Revenue Target FY 2021/22	
	Unadjusted Net Revenue Requirements (2018-19)	87% Fixed / 13% Variable	Adjusted Net Revenue Requirements (2018-19)	50% Fixed / 50% Variable	Adjusted Net Revenue Requirements (2018-19)	60% Fixed / 40% Variable
Variable Costs:						
Commodity - Related Costs	\$ 179,810	13.4%	\$ 179,810	13.4%	\$ 179,810	13.4%
Capacity - Related Costs (volumetric allocation)	-	0.0%	491,486	36.6%	357,227	26.6%
Sub-Total Variable Costs	\$ 179,810	13.4%	\$ 671,296	50.0%	\$ 537,037	40.0%
Fixed Costs:						
Capacity - Related Costs (fixed allocation)	\$ 1,124,732	83.8%	\$ 633,246	47.2%	\$ 767,506	57.2%
Customer - Related Costs	37,495	2.8%	37,495	2.8%	37,495	2.8%
Fire Protection - Related Costs	554	0.0%	554	0.0%	554	0.0%
Sub-Total Fixed Costs	\$ 1,162,782	86.6%	\$ 671,296	50.0%	\$ 805,555	60.0%
Net Revenue Requirement	\$ 1,342,591	100%	\$ 1,342,591	100%	\$ 1,342,591	100%
			<u>Unadjusted Net Rev. Req't.</u>		<u>Adjusted Net Rev. Req't.</u>	
			50% total variable		40% total variable	
			50% total fixed		60% total fixed	
			100%		100%	

IDYLLWILD WATER DISTRICT
 WATER RATE STUDY
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TABLE 23 - Allocation of Adjusted Net Revenue Requirements - FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)								
Customer Classes	Classification Components					Fire Service Costs	Cost of Service Net Rev. Req't	% of COS Net Revenue Req't
	Commodity-Related Costs	Capacity-Related Costs Volumetric Allocation	Capacity-Related Costs Fixed Allocation	Customer-Related Costs				
Residential	\$ 100,772	\$ 258,698	\$ 333,315	\$ 33,369	\$ -	-	\$ 726,154	54.1%
Apartment	2,442	5,055	6,513	205	-	-	14,215	1.1%
Trailer Park	4,334	16,356	21,074	68	-	-	41,832	3.1%
Business	18,098	39,477	50,863	2,234	-	-	110,672	8.2%
Motel	10,061	23,726	30,570	615	-	-	64,973	4.8%
Restaurant	10,229	22,440	28,912	365	-	-	61,946	4.6%
School	757	3,428	4,417	91	-	-	8,693	0.6%
Camp	6,632	59,113	76,163	137	-	-	142,044	10.6%
Church	1,480	3,700	4,768	274	-	-	10,221	0.8%
Park	3,219	9,187	11,837	68	-	-	24,312	1.8%
Idyllwild Arts Academy	21,786	50,306	64,816	23	-	-	136,930	10.2%
Fire Service	-	-	-	46	554	554	600	0.0%
Total Net Revenue Requirement	\$ 179,810	\$ 491,486	\$ 633,246	\$ 37,495	\$ 554	\$ 1,342,591	100%	
	13%	37%	47%	3%	0%	100.00%		

TABLE 24 - Allocation of Adjusted Net Revenue Requirements - FY 2018/19:

Net Revenue Requirements (60% Fixed / 40% Variable)								
Customer Classes	Classification Components					Fire Service Costs	Cost of Service Net Rev. Req't	% of COS Net Revenue Req't
	Commodity-Related Costs	Capacity-Related Costs Volumetric Allocation	Capacity-Related Costs Fixed Allocation	Customer-Related Costs				
Residential	\$ 100,772	\$ 188,029	\$ 403,983	\$ 33,369	\$ -	-	\$ 726,154	54.1%
Apartment	2,442	3,674	7,894	205	-	-	14,215	1.1%
Trailer Park	4,334	11,888	25,541	68	-	-	41,832	3.1%
Business	18,098	28,693	61,647	2,234	-	-	110,672	8.2%
Motel	10,061	17,245	37,051	615	-	-	64,973	4.8%
Restaurant	10,229	16,310	35,042	365	-	-	61,946	4.6%
School	757	2,492	5,353	91	-	-	8,693	0.6%
Camp	6,632	42,965	92,310	137	-	-	142,044	10.6%
Church	1,480	2,689	5,778	274	-	-	10,221	0.8%
Park	3,219	6,678	14,347	68	-	-	24,312	1.8%
Idyllwild Arts Academy	21,786	36,564	78,558	23	-	-	136,930	10.2%
Fire Service	-	-	-	46	554	554	600	0.0%
Total Net Revenue Requirement	\$ 179,810	\$ 357,227	\$ 767,506	\$ 37,495	\$ 554	\$ 1,342,591	100%	
	13%	27%	57%	3%	0%	100.00%		

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 25 - Cost-of-Service Summary of Revenue Requirements:

Customer Class	CY2017		Net Revenue Requirements (50% Fixed / 50% Variable)			Net Revenue Requirements (60% Fixed / 40% Variable)		
	Rate Revenue	% of Revenue	COS Rev. Req't	% of COS Rev. Req't.	% Change	COS Rev. Req't	% of COS Rev. Req't.	% Change
Residential	\$ 758,859	63.3%	\$ 726,154	54.1%	-9.2%	\$ 726,154	54.1%	-9.2%
Apartment	10,405	0.9%	14,215	1.1%	0.2%	14,215	1.1%	0.2%
Trailer Park	22,657	1.9%	41,832	3.1%	1.2%	41,832	3.1%	1.2%
Business	103,020	8.6%	110,672	8.2%	-0.4%	110,672	8.2%	-0.4%
Motel	45,974	3.8%	64,973	4.8%	1.0%	64,973	4.8%	1.0%
Restaurant	44,241	3.7%	61,946	4.6%	0.9%	61,946	4.6%	0.9%
School	4,500	0.4%	8,693	0.6%	0.3%	8,693	0.6%	0.3%
Camp	35,695	3.0%	142,044	10.6%	7.6%	142,044	10.6%	7.6%
Church	9,108	0.8%	10,221	0.8%	0.0%	10,221	0.8%	0.0%
Park	18,642	1.6%	24,312	1.8%	0.3%	24,312	1.8%	0.3%
Idyllwild Arts Academy	145,267	12.1%	136,930	10.2%	-1.9%	136,930	10.2%	-1.9%
Fire Service	-	0.0%	600	0.0%	0.0%	600	0.0%	0.0%
Total	\$ 1,198,368	100.0%	\$ 1,342,591	100.0%	0.0%	\$ 1,342,591	100.0%	0.0%

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 26 - CALCULATION OF IDYLLWILD ARTS ACADEMY FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)					
Class (1)	Meters	Allocated Capacity Costs (2)	Allocated Customer Costs	Total Allocated Costs	Monthly Charge
	a	b	c	d = b+c	e=d/a/12
Idyllwild Arts Academy	1	50,957	\$	23	\$ 50,980
					\$4,248.35

TABLE 27 - CALCULATION OF MONTHLY FIXED METER SERVICE CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)	Number of Meters by Class and Size (1)	FY 2017/18										Total
		5/8 inch	3/4 inch	1 inch	1 1/2 inch	2 inch	3 inch	4 inch	6 inch			
Residential	1,427	12	24	1	1	-	-	-	-			1,464
Apartment	6	-	2	2	1	-	-	-	-			9
Trailer Park	2	-	2	-	-	1	-	-	-			5
Business	69	12	12	3	3	2	-	-	-			98
Motel	15	2	6	2	2	2	-	-	-			27
Restaurant	6	2	7	1	1	-	-	-	-			16
School	2	-	1	1	1	-	-	-	-			4
Camp	1	-	3	2	2	-	-	-	-			6
Church	8	2	1	1	1	-	-	-	-			12
Park	-	-	1	1	1	-	1	-	-			3
Total Meters/Accounts	1,536	30	59	13	5	1	1	-	-			1,644
Hydraulic Capacity Factor (3)	1.00	1.50	2.50	5.00	8.00	16.00	25.00	50.00	-			
Total Equivalent Meters	1,536	45	148	65	40	16	-	-	-			1,850
Monthly Fixed Service Charges												
Customer Costs (\$/Acct/month) (4)	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90			
Capacity Costs (\$/Acct/month) (5)	\$26.24	\$39.35	\$65.59	\$131.18	\$209.89	\$419.78	\$655.91	\$1,311.82	-			
Total Monthly Meter Charge	\$28.13	\$41.25	\$67.49	\$133.08	\$211.79	\$421.68	\$657.81	\$1,313.71	-			
Annual Fixed Costs Allocated to Monthly Meter Charges												
Customer Costs	\$ 37,427											
Capacity Costs	582,289											
Total Fixed Meter Costs	\$ 619,715											
Annual Revenue from Monthly Meter Charges												
Customer Charges	\$ 34,968	\$ 683	\$ 1,343	\$ 296	\$ 114	\$ 23	\$ -	\$ -	\$ -			\$ 37,427
Capacity Charges	483,588	14,168	46,438	20,464	12,593	5,037	-	-	-			\$ 582,289
Total Revenue	\$ 518,556	\$ 14,851	\$ 47,781	\$ 20,760	\$ 12,707	\$ 5,060	\$ -	\$ -	\$ -			\$ 619,715

1. Consumption and Meters from source files: Billied Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
2. Pivot Tables found in Source File: Pivot Tables - Billied Consumption Excel Export 2015-2017 Water.xlsx
3. Capacity Costs allocated to the Arts Academy are total Cost of Service net of other expected rate revenue.
4. Meter flow rates & hydraulic capacity ratio are from AWWA M-1 (Seventh Edition) Table B-2.
5. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
6. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 28 - CALCULATION OF IDYLLWILD ARTS ACADEMY FOR FY 2018/19:

Net Revenue Requirements (60% Fixed / 40% Variable)					
Class (1)	Meters	Allocated Capacity Costs (2)	Allocated Customer Costs	Total Allocated Costs	Monthly Charge
	a	b	c	d = b+c	e=d/a/12
Idyllwild Arts Academy	1	\$ 68,485	\$ 23	\$ 68,508	\$5,709.00

TABLE 29 - CALCULATION OF MONTHLY FIXED METER SERVICE CHARGES FOR FY 2018/19:

Net Revenue Requirements (60% Fixed / 40% Variable)	Number of Meters by Class and Size (1)	FY 2018/19										Total
		5/8 inch	3/4 inch	1 inch	1 1/2 inch	2 inch	3 inch	4 inch	6 inch			
Residential	1,427		12	24	1	-	-	-	-			1,464
Apartment	6	-	-	2	1	-	-	-	-			9
Trailer Park	2	-	-	2	-	1	-	-	-			5
Business	69	12	12	12	3	2	-	-	-			98
Motel	15	2	2	6	2	2	-	-	-			27
Restaurant	6	2	2	7	1	-	-	-	-			16
School	2	-	-	1	1	-	-	-	-			4
Camp	1	-	-	3	2	-	-	-	-			6
Church	8	2	2	1	1	-	-	-	-			12
Park	-	-	-	1	1	-	1	-	-			3
Total Meters/Accounts	1,536	30	59	13	5	1	1	-	-			1,644
Hydraulic Capacity Factor (3)	1.00	1.50	2.50	5.00	8.00	16.00	25.00	50.00				1,850
Total Equivalent Meters	1,536	45	148	65	40	16	-	-				
Monthly Fixed Service Charges												
Customer Costs (\$/Acct/month) (4)	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90	\$1.90			
Capacity Costs (\$/Acct/month) (5)	\$31.50	\$47.24	\$78.74	\$157.48	\$251.97	\$503.93	\$787.40	\$1,574.80				
Total Monthly Meter Charge	\$33.39	\$49.14	\$80.64	\$159.38	\$253.86	\$505.83	\$789.29	\$1,576.69				
Annual Fixed Costs Allocated to Monthly Meter Charges												
Customer Costs	\$ 37,427											
Capacity Costs	699,020											
Total Fixed Meter Costs	\$ 736,447											
Annual Revenue from Monthly Meter Charges												
Customer Charges	\$ 34,968	\$ 683	\$ 1,343	\$ 296	\$ 114	\$ 23	\$ -	\$ -	\$ -			\$ 37,427
Capacity Charges	580,533	17,008	55,748	24,567	15,118	6,047	-	-	-			\$ 699,020
Total Revenue	\$ 615,501	\$ 17,691	\$ 57,091	\$ 24,863	\$ 15,232	\$ 6,070	\$ -	\$ -	\$ -			\$ 736,447

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
2. Capacity Costs allocated to the Arts Academy are total Cost of Service net of other expected rate revenue.
3. Meter flow rates & hydraulic capacity ratio are from AWWA M-1 (Seventh Edition) Table B-2.
4. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
5. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

WATER COST OF SERVICE ANALYSIS/RATE DESIGN

TABLE 30 - CALCULATION OF MONTHLY FIXED METER SERVICE CHARGES FOR FY 2021/22:

Net Revenue Requirements (60% Fixed / 40% Variable)									
FY 2022/23									
	5/8 inch	3/4 inch	1 inch	1 1/2 inch	2 inch	3 inch	4 inch	6 inch	Idylwild Arts Academy
Total Monthly Meter Charge	\$40.59	\$59.73	\$98.01	\$193.72	\$308.57	\$614.84	\$959.39	\$1,916.48	\$6,939.33

TABLE 31 - CALCULATION OF MONTHLY FIXED FIRE METER SERVICE CHARGES FOR FY 2018/19:

Number of Meters by Class and Size (1)	FY 2018/19			Total
	2 inch	3 inch	4 inch	
Fire Service	-	-	2	2
Total Meters/Accounts	-	-	2	2
Hydraulic Capacity Factor (2)	8.00	17.50	35.00	
Total Equivalent Meters	-	-	70	70
Bi-Monthly Fixed Service Charges				
Customer Costs (\$/Acct/month) (3)	\$1.90	\$1.90	\$1.90	
Capacity Costs (\$/Acct/month) (4)	\$5.28	\$11.55	\$23.10	
Total Monthly Meter Charge	\$7.18	\$13.45	\$25.00	
Annual Fixed Costs Allocated to Monthly Meter Charges				
Customer Costs	\$ 46			
Fire Protection Costs	554			
Total Fixed Meter Costs	\$ 600			
Annual Revenue from Monthly Meter Charges				
Customer Charges	\$ -	- \$	46	\$ 46
Capacity Charges	-	-	554	554
Total Revenue	\$ -	- \$	600	\$ 600

1. Fire Service Meter numbers provided by district staff on phone call April 2, 2018.
2. Meter flow rates & hydraulic capacity ratio are from *AWWA M-1 (Seventh Edition)* Table B-2.
3. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
4. Fire Protection costs are allocated by meter size and the hydraulic capacity of the meter.

IDYLLWILD WATER DISTRICT
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PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)

TABLE 32

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	5,236,816	\$ 100,772	\$ 258,698	\$ 359,470	27%	N/A	Tiered
Apartment	9	126,910	2,442	5,055	7,497	1%		Uniform
Trailer Park	3	225,250	4,334	16,356	20,690	2%		Uniform
Business	98	940,521	18,098	39,477	57,575	4%		Uniform
Motel	27	522,850	10,061	23,726	33,788	3%		Uniform
Restaurant	16	531,580	10,229	22,440	32,669	2%		Uniform
School	4	39,340	757	3,428	4,185	0%	\$0.0759	Uniform
Camp	6	344,640	6,632	59,113	65,744	5%		Uniform
Church	12	76,890	1,480	3,700	5,180	0%		Uniform
Park	3	167,260	3,219	9,187	12,406	1%		Uniform
Idyllwild Arts Academy	1	1,132,136	21,786	50,306	72,092	5%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	9,344,193	\$ 179,810	\$ 491,486	\$ 671,296	50%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).

Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx

2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

TABLE 33

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr)	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	3,145,764	\$ 60,534	\$ -	\$ 60,534	16.8%	\$0.0192
Tier 2	900	1,207,314	23,232	134,515	157,748	43.9%	\$0.1307
Tier 3	--	883,738	17,006	124,182	141,188	39.3%	\$0.1598
Total		5,236,816	\$ 100,772	\$ 258,698	\$ 359,470	100%	

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (60% Fixed / 40% Variable)

TABLE 34								
Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	5,236,816	\$ 100,772	\$ 188,029	\$ 288,801	22%	N/A	Tiered
Apartment	9	126,910	2,442	3,674	6,116	0%		Uniform
Trailer Park	3	225,250	4,334	11,888	16,222	1%		Uniform
Business	98	940,521	18,098	28,693	46,791	3%		Uniform
Motel	27	522,850	10,061	17,245	27,306	2%		Uniform
Restaurant	16	531,580	10,229	16,310	26,539	2%		Uniform
School	4	39,340	757	2,492	3,249	0%	\$0.0604	Uniform
Camp	6	344,640	6,632	42,965	49,597	4%		Uniform
Church	12	76,890	1,480	2,689	4,169	0%		Uniform
Park	3	167,260	3,219	6,678	9,896	1%		Uniform
Idyllwild Arts Academy	1	1,132,136	21,786	36,564	58,350	4%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	9,344,193	\$ 179,810	\$ 357,227	\$ 537,037	40%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables); Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

TABLE 35								
Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)	
Tier 1	450	3,145,764	\$ 60,534	\$ -	\$ 60,534	21%	\$0.0192	
Tier 2	900	1,207,314	23,232	97,770	121,002	42%	\$0.1002	
Tier 3	--	883,738	17,006	90,260	107,265	37%	\$0.1214	
Total		5,236,816	\$ 100,772	\$ 188,029	\$ 288,801	100%		

TABLE 36		
FY 2022/23 Rates	Tier Break	Rate
Uniform Commercial Break	N/A	\$0.0735
Single-Family Residential		
Tier 1	450	\$0.0234
Tier 2	900	\$0.1218
Tier 3	--	\$0.1475

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

CURRENT VS. PROPOSED WATER RATES:

TABLE 37

TABLE 37 Proposed Rates - Transition 50% Fixed to 60% Fixed							
Water Rate Schedule	Number of Customers	Current Rates	Proposed Rates				
			FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Monthly Fixed Service Charges:							
Single Family Residential							
5/8 inch	1,427	\$29.70	\$28.13	\$30.92	\$33.91	\$37.13	\$40.59
3/4 inch	12	\$40.35	\$41.25	\$45.38	\$49.83	\$54.60	\$59.73
1 inch	24	\$61.25	\$67.49	\$74.31	\$81.65	\$89.54	\$98.01
All Other Customers:							
5/8 inch	109	\$20.90	\$28.13	\$30.92	\$33.91	\$37.13	\$40.59
3/4 inch	30	\$31.35	\$41.25	\$45.38	\$49.83	\$54.60	\$59.73
1 inch	59	\$52.25	\$67.49	\$74.31	\$81.65	\$89.54	\$98.01
1.5 inch	13	\$104.50	\$133.08	\$146.64	\$161.22	\$176.89	\$193.72
2 inch	5	\$167.20	\$211.79	\$233.42	\$256.69	\$281.70	\$308.57
3 inch	1	\$313.50	\$421.68	\$464.85	\$511.29	\$561.21	\$614.84
Idyllwild Arts Academy							
3 inch	1	\$313.50	\$4,248.35	\$4,844.19	\$5,488.99	\$6,186.16	\$6,939.33
Fire Service Charges:							
2 inch	0	--	\$7.18	\$7.54	\$7.92	\$8.31	\$8.73
3 inch	0	--	\$13.45	\$14.12	\$14.83	\$15.57	\$16.35
4 inch	2	--	\$25.00	\$26.25	\$27.56	\$28.94	\$30.39
Monthly Commodity Charges per cf of water consumed							
Current Proposed							
Tiered Rate (Commercial Customers)							
Tier 1	1000 cf	\$0.0333	--	--	--	--	--
Tier 2	4000 cf	\$0.0633	--	--	--	--	--
Tier 3	8000 cf	\$0.1000	--	--	--	--	--
Tier 4	8001+ cf	\$0.1000	--	--	--	--	--
Uniform Potable Rate (Commercial Customers)			\$0.0759	\$0.0757	\$0.0752	\$0.0744	\$0.0735
Tiered Rate (SFR Customers)							
Tier 1	300 cf	\$0.0000	\$0.0192	\$0.0202	\$0.0212	\$0.0223	\$0.0234
Tier 2	600 cf	\$0.0633	\$0.1307	\$0.1292	\$0.1273	\$0.1248	\$0.1218
Tier 3	1500 cf	\$0.1000	\$0.1598	\$0.1577	\$0.1550	\$0.1516	\$0.1475
Tier 4	1500+ cf	--	N/A	N/A	N/A	N/A	N/A

Water Consumption (CF)	SFR Bill - Current	SFR Bill - Proposed Rates
0	\$29.70	\$28.13
180	\$29.70	\$31.59
300	\$29.70	\$33.89
450	\$39.20	\$36.77
1050	\$93.69	\$119.56

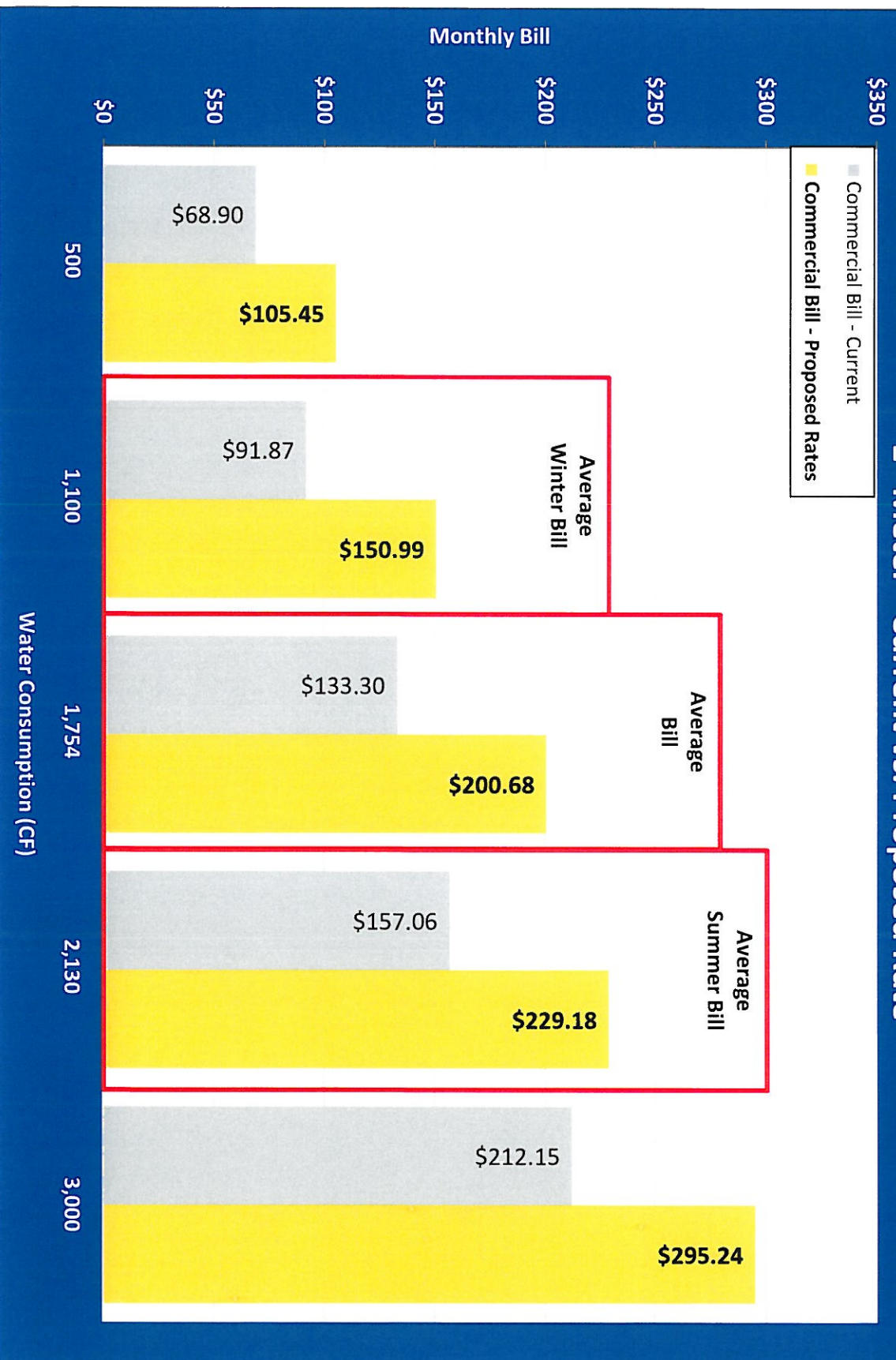
Average consumption statistics exclude properties with zero consumption.

■ SFR Bill - Current
■ SFR Bill - Proposed Rates

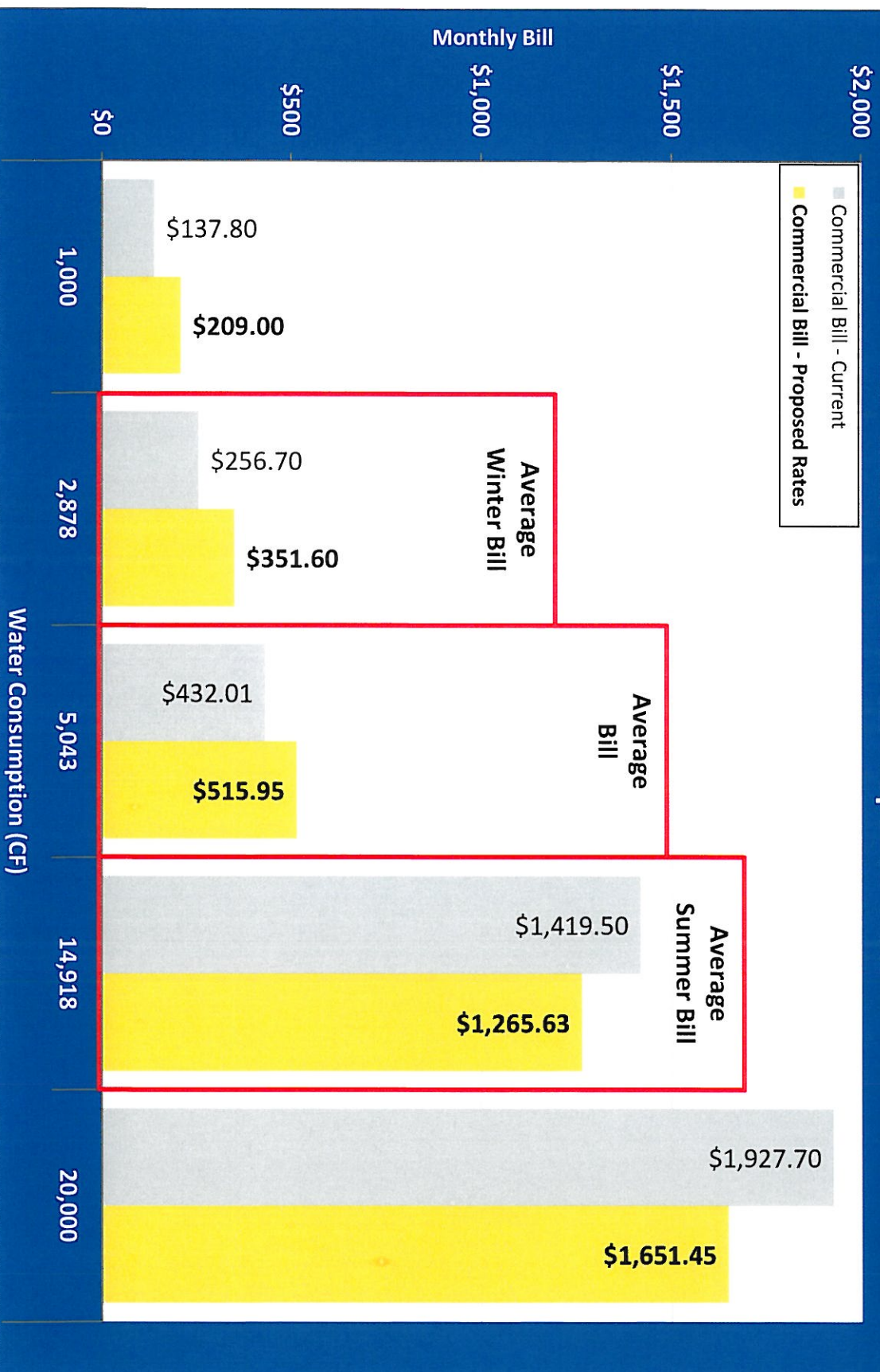
Monthly Bill

Water Consumption (CF)

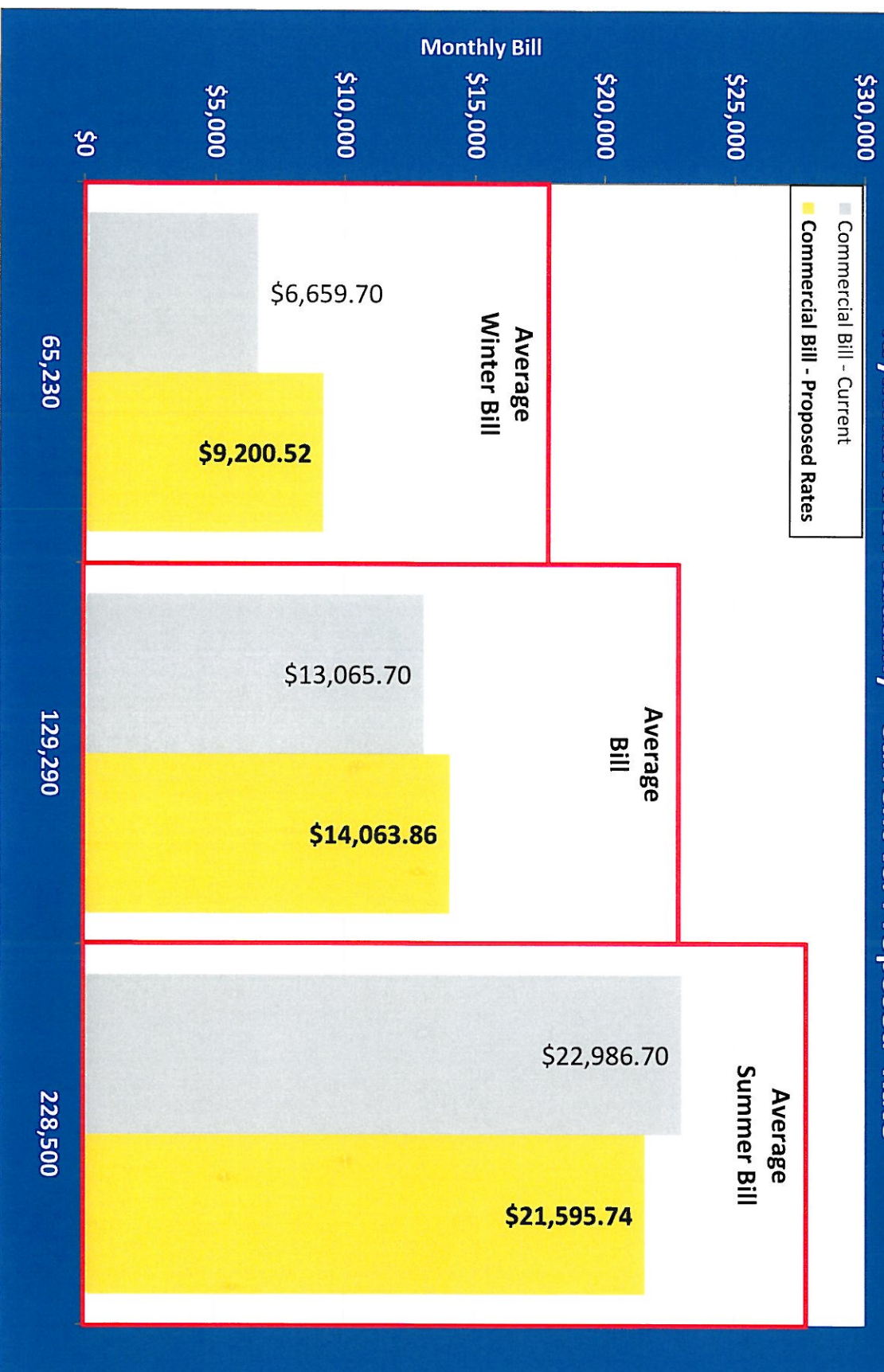
Commercial Water Bill Comparison 1" Meter - Current vs. Proposed Rate



Commercial Water Bill Comparison 1.5" Meter - Current vs. Proposed Rate



Commercial Water Bill Comparison Idyllwild Arts Academy - Current vs. Proposed Rate



Appendix B: Detailed Sewer Study Tables and Figures



Idyllwild Water District
Water and Sewer Rate Study

IDYLLWILD WATER DISTRICT
 SEWER RATE STUDY
 Financial Plan and Reserve Projections

Financial Plan & Reserve Summary

TABLE 1
 FINANCIAL PLAN AND SUMMARY OF REVENUE REQUIREMENTS

RATE REVENUE REQUIREMENTS SUMMARY (1, 2, 3)											
Sources of Sewer Funds	Budgeted		Projected								
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28
Rate Revenue:	\$ 630,006	\$ 631,896	\$ 633,792	\$ 635,693	\$ 637,600	\$ 639,513	\$ 641,431	\$ 643,356	\$ 645,286	\$ 647,222	\$ 649,163
Revenue Under Current Rates	-	36,744	53,620	71,018	88,952	107,437	130,235	153,845	178,295	203,611	229,823
Revenue from Rate Increases (2)	-	668,640	687,412	706,711	726,552	746,950	771,667	797,201	823,580	850,833	878,987
Subtotal: Rate Revenue After Rate Increases	630,006	668,640	687,412	706,711	726,552	746,950	771,667	797,201	823,580	850,833	878,987
Non-Rate Revenue:											
Sewer Transfer Fees	\$ 775	\$ 777	\$ 780	\$ 782	\$ 784	\$ 787	\$ 789	\$ 791	\$ 794	\$ 796	\$ 799
Sewer Other Fees, Refunds	-	-	-	-	-	-	-	-	-	-	-
Sewer Taxes	115,000	116,725	118,476	120,253	122,057	123,888	125,746	127,632	129,547	131,490	133,462
Interest Income	1,500	6,561	9,781	12,195	12,117	16,103	15,845	15,518	15,116	14,632	14,061
Other Non-operating Income	10,450	10,316	10,186	10,061	9,940	9,823	9,710	9,601	9,496	9,395	9,297
Subtotal: Non-Rate Revenue	127,725	134,379	139,223	143,291	144,898	150,600	152,091	153,543	154,952	156,312	157,619
Total Sources of Funds	\$ 757,731	\$ 803,019	\$ 826,635	\$ 850,002	\$ 871,450	\$ 897,550	\$ 923,757	\$ 950,744	\$ 978,532	\$ 1,007,145	\$ 1,036,605
Uses of Sewer Funds											
Operating Expenses:											
Sewer Operating Expenses	\$ 524,982	\$ 544,883	\$ 565,618	\$ 587,225	\$ 609,743	\$ 633,213	\$ 657,679	\$ 683,185	\$ 709,779	\$ 737,511	\$ 766,432
Sewer Non-Operating Expenses	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Operating Expenses	\$ 524,982	\$ 544,883	\$ 565,618	\$ 587,225	\$ 609,743	\$ 633,213	\$ 657,679	\$ 683,185	\$ 709,779	\$ 737,511	\$ 766,432
Other Expenditures:											
Existing Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New Debt Service	-	-	-	-	-	-	-	-	-	-	-
Rate-Funded Capital Expenses	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Other Expenditures	-	-	-	-	-	-	-	-	-	-	-
Total Uses of Funds	\$ 524,982	\$ 544,883	\$ 565,618	\$ 587,225	\$ 609,743	\$ 633,213	\$ 657,679	\$ 683,185	\$ 709,779	\$ 737,511	\$ 766,432
Annual Surplus/(Deficit)	\$ 232,749	\$ 258,135	\$ 261,016	\$ 265,776	\$ 261,707	\$ 264,337	\$ 266,079	\$ 267,559	\$ 268,754	\$ 269,572	\$ 270,166
Net Revenue Req'd: (Total Uses less Non-Rate Revenue)	\$ 397,257	\$ 410,505	\$ 426,396	\$ 443,935	\$ 464,845	\$ 482,613	\$ 505,588	\$ 529,642	\$ 554,827	\$ 607,261	\$ 701,220
Projected Annual Rate Revenue Adjustment	0.00%	5.81%	2.50%	2.50%	2.50%	2.50%	3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Increase from Annual Revenue Increases	0.00%	5.81%	8.46%	11.17%	13.95%	16.80%	20.30%	23.91%	27.63%	31.46%	35.40%
Debt Coverage After Rate Increase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. Revenue and expenses for FY 2017-18 are from source file: 2017-2018 Budget.pdf, Pages 10-11. Budget values have been adjusted as part of the analysis, as detailed in Exhibit 1 (O&M).
2. Revenue from rate increases assumes an implementation date of July 1, 2018 and July 1 each year thereafter.
3. The FY 2017/18 revenue and operating expenses are from the budget. Inflationary factors are applied to these expenses to project costs in FY 2018/19 and beyond.

IDDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Financial Plan and Reserve Projections

Financial Plan & Reserve Summary

TABLE 2
RESERVE FUND SUMMARY

SUMMARY OF CASH ACTIVITY UN-RESTRICTED RESERVES	Budgeted		Projected											
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28			
Total Beginning Cash (1, 2)	\$ 1,734,690													
Operating Reserve Fund														
Beginning Reserve Balance (2)	\$ 1,441,795	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Plus: Net Cash Flow (After Rate Increases)	232,749	258,135	261,016	262,776	261,707	264,337	266,079	267,559	268,754	243,572	177,766			
Less: Transfer Out to Emergency Reserve	(1,424,544)	(258,135)	(261,016)	(262,776)	(261,707)	(264,337)	(266,079)	(267,559)	(268,754)	(243,572)	(177,766)			
Ending Working Capital Reserve Balance	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Target Ending Balance (\$250K) (3)	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Emergency Reserve Fund														
Beginning Reserve Balance (2)	\$ 50,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Net: Transfer of Working Capital Reserve Surplus	1,424,544	258,135	261,016	262,776	261,707	264,337	266,079	267,559	268,754	243,572	177,766			
Less: Use of Reserves for Capital Projects	-	-	-	-	-	-	-	-	-	-	-			
Net: Transfer Out / In to Capital R&R Reserve	(1,324,544)	(258,135)	(261,016)	(262,776)	(261,707)	(264,337)	(266,079)	(267,559)	(268,754)	(243,572)	(177,766)			
Ending Emergency Reserve Fund Balance	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Target Emergency Reserve Fund (\$150K) (3)	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Capital Rehabilitation & Replacement Reserve														
Beginning Reserve Balance (2,4)	\$ 75,000	\$ 1,229,544	\$ 1,230,179	\$ 1,225,971	\$ 1,215,566	\$ 1,195,895	\$ 1,170,413	\$ 1,137,979	\$ 1,098,069	\$ 1,050,131	\$ 993,572			
Plus: Transfer of Emergency Reserve Surplus	1,324,544	258,135	261,016	262,776	261,707	264,337	266,079	267,559	268,754	243,572	177,766			
Less: Use of Reserves for Capital Projects	(170,000)	(257,500)	(265,225)	(273,182)	(281,377)	(289,819)	(298,513)	(307,468)	(316,693)	(300,131)	(243,572)			
Ending Capital Rehab & Replacement Reserve Balance	\$ 1,229,544	\$ 1,230,179	\$ 1,225,971	\$ 1,215,566	\$ 1,195,895	\$ 1,170,413	\$ 1,137,979	\$ 1,098,069	\$ 1,050,131	\$ 993,572	\$ 927,766			
Target Capital R&R Reserve (\$750K) (3,4)	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000			
Ending Balance	\$ 1,629,544	\$ 1,630,179	\$ 1,625,971	\$ 1,615,566	\$ 1,595,895	\$ 1,570,413	\$ 1,537,979	\$ 1,498,069	\$ 1,450,131	\$ 1,393,572	\$ 1,327,766			
Minimum Target Ending Balance	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000	\$ 1,150,000			
Ending Surplus/(Deficit) Compared to Reserve Targets	\$ 479,544	\$ 480,179	\$ 475,971	\$ 465,566	\$ 445,895	\$ 420,413	\$ 387,979	\$ 348,069	\$ 300,131	\$ 243,572	\$ 177,766			
Semi-Restricted Reserves (5):														
Vacation/Sick/Annual Leave Liability														
Beginning Reserve Balance (2)	\$ 5,603	\$ 5,626	\$ 5,648	\$ 5,682	\$ 5,725	\$ 5,768	\$ 5,826	\$ 5,885	\$ 5,944	\$ 6,004	\$ 6,065			
Interest Earnings	23	23	34	43	43	58	59	59	60	61	61			
Ending Vacation/Sick/Annual Leave Liability	\$ 5,626	\$ 5,648	\$ 5,682	\$ 5,725	\$ 5,768	\$ 5,826	\$ 5,885	\$ 5,944	\$ 6,004	\$ 6,065	\$ 6,126			
Target Vacation/Sick/Annual Leave Reserve (\$25K) (3)	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000			
OP&B														
Beginning Reserve Balance (2)	\$ 162,292	\$ 162,945	\$ 163,601	\$ 164,583	\$ 165,817	\$ 167,061	\$ 168,747	\$ 170,449	\$ 172,169	\$ 173,906	\$ 175,661			
Interest Earnings	653	656	982	1,234	1,244	1,686	1,703	1,720	1,737	1,755	1,772			
Ending Vacation/Sick/Annual Leave Liability	\$ 162,945	\$ 163,601	\$ 164,583	\$ 165,817	\$ 167,061	\$ 168,747	\$ 170,449	\$ 172,169	\$ 173,906	\$ 175,661	\$ 177,433			
Target OP&B Reserve (\$225K) (3)	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000	\$ 225,000			
Restricted Reserves (6):														
Capacity Charge Reserve														
Beginning Reserve Balance (2)	\$ -	\$ 5,250	\$ 10,537	\$ 15,882	\$ 21,298	\$ 26,771	\$ 32,371	\$ 38,042	\$ 43,787	\$ 49,607	\$ 55,501			
Plus: Capacity Charge Revenue	5,250	5,266	5,282	5,297	5,313	5,329	5,345	5,361	5,377	5,393	5,410			
Less: Use of Reserves for Capital Projects	-	-	-	-	-	-	-	-	-	-	-			
Interest Earnings	-	21	63	119	160	270	327	384	442	501	560			
Ending Capacity Charges Reserves	\$ 5,250	\$ 10,537	\$ 15,882	\$ 21,298	\$ 26,771	\$ 32,371	\$ 38,042	\$ 43,787	\$ 49,607	\$ 55,501	\$ 61,470			
Annual Interest Earnings Rate (7)	0.40%	0.40%	0.60%	0.75%	0.75%	1.01%	1.01%	1.01%	1.01%	1.01%	1.01%			

1. Found from Statement of Cash Flows, Source file: 2016-2017 Financial Statements.pdf, Note 3, Total Cash and Cash Equivalents, Page 22.
2. Financial Statements, Source file: 2016-2017 Financial Statements.pdf, Note 6, Net position reserves, Page 26.
3. Found from Reserve Policy Targets, Source Files: Target Reserve Fund.pdf.
4. Capital Rehab and Replacement Reserve Fund includes Funds from "Vehicle & Equipment Replacement Reserve Fund"
5. Vacation/Sick/Annual Leave Liability and OP&B reserve funds are not restricted, but are held in reserve which should not be used for standard operations.
6. Water and Sewer Capacity Charge revenue must be maintained in a restricted reserve in accordance with CA Code 66013.
7. Interest earnings in FY 2018/19 equal to 5-year LAIF average (2012/13-2016/17). Interest earnings increase to 10-year LAIF average by FY 2022/23.

CHART 1

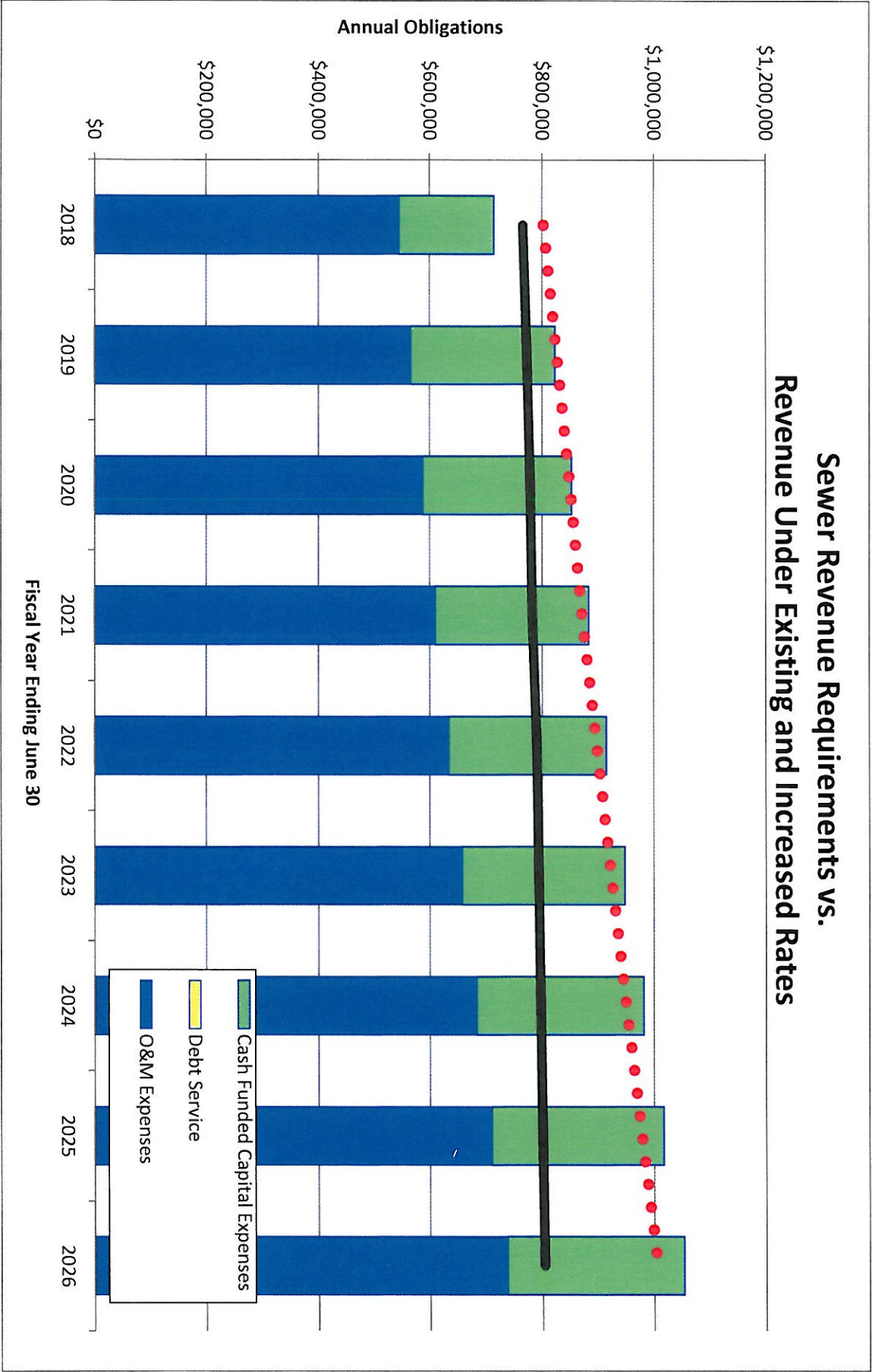


CHART 2

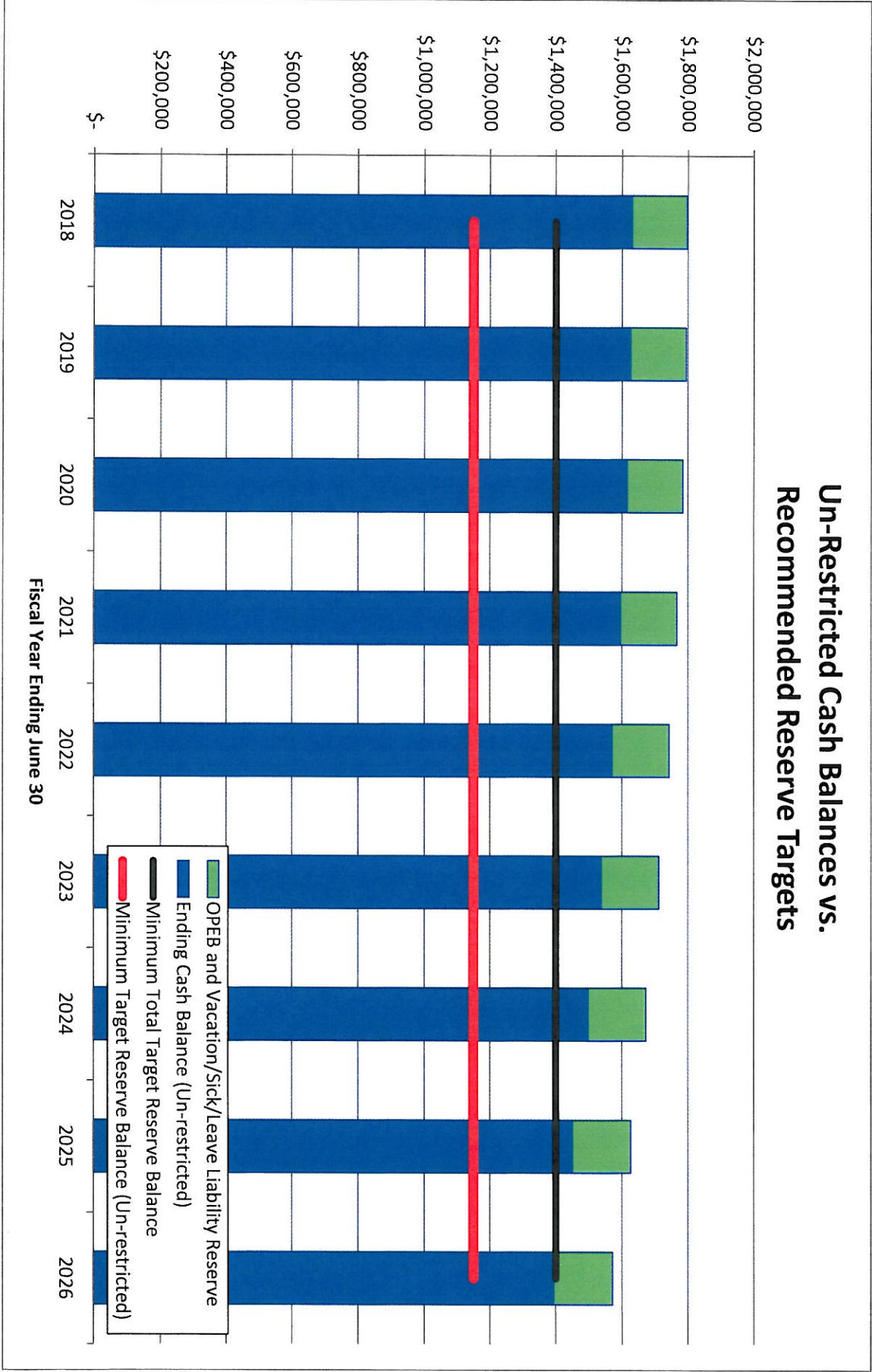
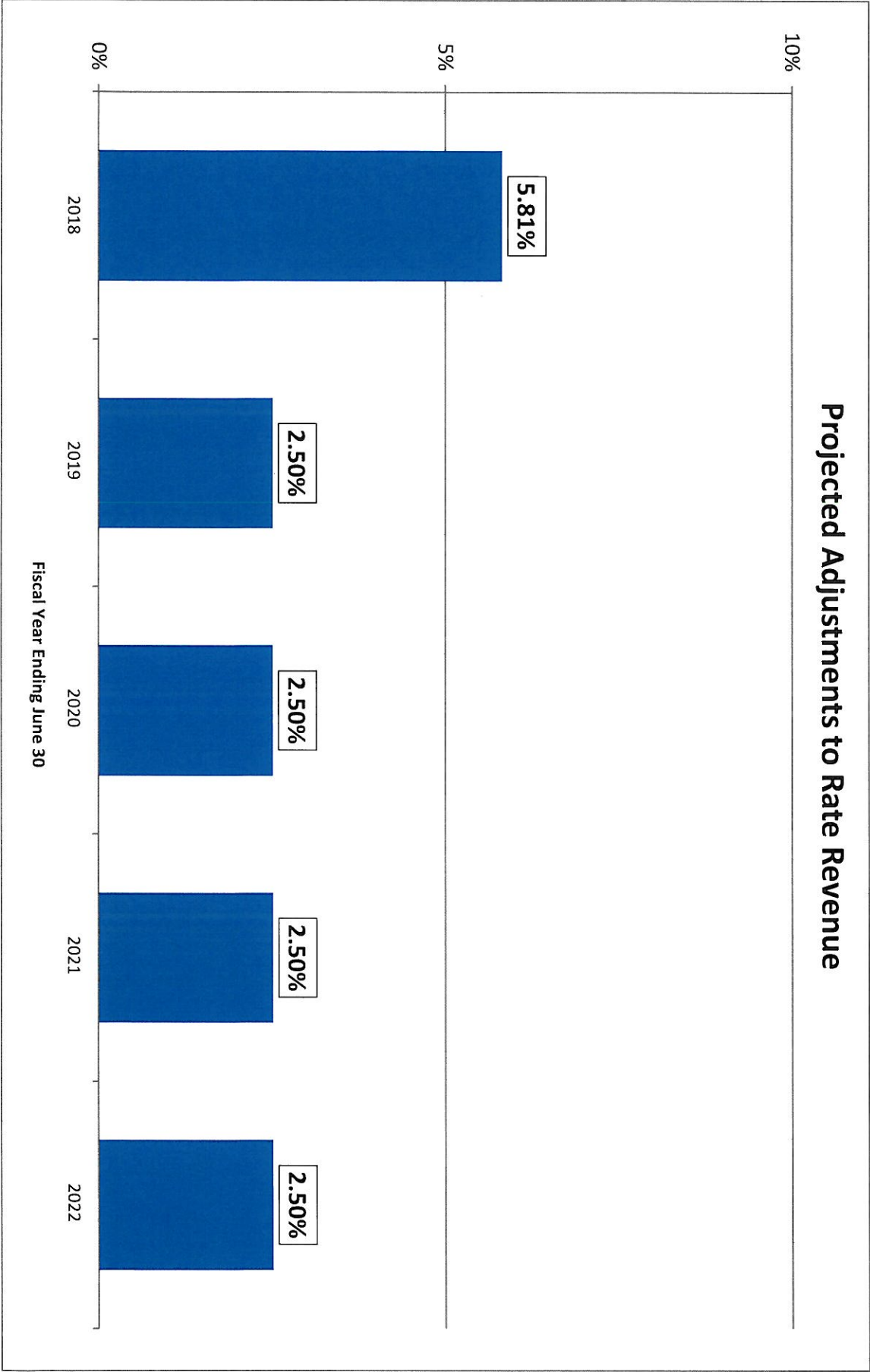


CHART 3



IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 3 - REVENUE FORECAST (1):

DESCRIPTION	Inflation Basis	Budget										
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
SEWER OPERATING REVENUE												
Sewer Base Fees - Commercial	1	\$ 423,456	\$ 424,726	\$ 426,001	\$ 427,279	\$ 428,560	\$ 429,846	\$ 431,136	\$ 432,429	\$ 433,726	\$ 435,027	\$ 436,333
Sewer Base Fees - Residential	1	206,550	207,170	207,791	208,415	209,040	209,667	210,296	210,927	211,560	212,194	212,831
Sewer Transfer Fees	1	775	777	780	782	784	787	789	791	794	796	799
Sewer Other Fees, Refunds	1	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Sewer Operating Revenue		\$ 630,781	\$ 632,673	\$ 634,571	\$ 636,475	\$ 638,385	\$ 640,300	\$ 642,221	\$ 644,147	\$ 646,080	\$ 648,018	\$ 649,962
SEWER NON-OPERATING REVENUE												
Sewer Taxes and Assessments	9	\$ 115,000	\$ 116,725	\$ 118,476	\$ 120,253	\$ 122,057	\$ 123,888	\$ 125,746	\$ 127,632	\$ 129,547	\$ 131,490	\$ 133,462
Sewer Stand By Assessments	7	5,000	4,850	4,705	4,563	4,426	4,294	4,165	4,040	3,919	3,801	3,687
Sewer Interest Earned	See FP	1,500	-	-	-	-	-	-	-	-	-	-
Sewer Facilities Charges	1	5,250	5,266	5,282	5,297	5,313	5,329	5,345	5,361	5,377	5,393	5,410
Sewer Other Non-Operating Revenue	10	200	200	200	200	200	200	200	200	200	200	200
Subtotal: Sewer Non-Operating Revenue		\$ 126,950	\$ 127,041	\$ 128,662	\$ 130,314	\$ 131,997	\$ 133,711	\$ 135,456	\$ 137,233	\$ 139,043	\$ 140,884	\$ 142,759
TOTAL: SEWER REVENUE		\$ 757,731	\$ 759,714	\$ 763,233	\$ 766,789	\$ 770,381	\$ 774,010	\$ 777,677	\$ 781,381	\$ 785,122	\$ 788,902	\$ 792,721

TABLE 4 - REVENUE SUMMARY:

OPERATING REVENUE:												
Sewer Billing		\$ 630,006	\$ 631,896	\$ 633,792	\$ 635,693	\$ 637,600	\$ 639,513	\$ 641,431	\$ 643,356	\$ 645,286	\$ 647,222	\$ 649,163
Other Charges for Services	775	775	777	780	782	784	787	789	791	794	796	799
Interest Income	1,500	-	-	-	-	-	-	-	-	-	-	-
OTHER REVENUE:												
Sewer Non-Operating Revenue		120,200	121,775	123,380	125,016	126,683	128,381	130,111	131,872	133,665	135,491	137,349
Capacity Charge Revenue		5,250	5,266	5,282	5,297	5,313	5,329	5,345	5,361	5,377	5,393	5,410
TOTAL: SEWER REVENUE		\$ 752,481	\$ 754,448	\$ 757,952	\$ 761,491	\$ 765,068	\$ 768,681	\$ 772,331	\$ 776,019	\$ 779,745	\$ 783,509	\$ 787,311

IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 5 - OPERATING EXPENSE FORECAST (1):

DESCRIPTION	Inflation Basis	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
SEWER OPERATING EXPENSES												
Sewer Payroll	3	\$ 190,000	\$ 199,500	\$ 209,475	\$ 219,949	\$ 230,946	\$ 242,493	\$ 254,618	\$ 267,349	\$ 280,717	\$ 294,752	\$ 309,490
Sewer Retirement and Life Insurance	4	22,500	23,625	24,806	26,047	27,349	28,716	30,152	31,660	33,243	34,905	36,650
Sewer Medical Insurance	4	38,032	39,934	41,930	44,027	46,228	48,540	50,967	53,515	56,191	59,000	61,950
Sewer Worker's Comp Insurance	4	1,736	1,823	1,914	2,010	2,110	2,216	2,326	2,443	2,565	2,693	2,828
Sewer Non-Employee Insurance	4	12,597	13,227	13,888	14,583	15,312	16,077	16,881	17,725	18,612	19,542	20,519
Subtotal: Salaries and Benefits		\$ 264,865	\$ 278,108	\$ 292,014	\$ 306,614	\$ 321,945	\$ 338,042	\$ 354,944	\$ 372,692	\$ 391,326	\$ 410,893	\$ 431,437
Sewer Treatment Fees	2	\$ 12,000	\$ 12,300	\$ 12,608	\$ 12,923	\$ 13,246	\$ 13,577	\$ 13,916	\$ 14,264	\$ 14,621	\$ 14,986	\$ 15,361
Sewer General Plant Expense	2	37,382	38,317	39,274	40,256	41,263	42,294	43,352	44,435	45,546	46,685	47,852
Sewer Minor Equipment/Parts	2	600	615	630	646	662	679	696	713	731	749	768
Sewer Vehicle Repairs and Maintenance	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493	7,681
Sewer Utilities - Electricity	5	30,000	30,750	31,519	32,307	33,114	33,942	34,791	35,661	36,552	37,466	38,403
Sewer Utilities - Gas and Fuel	5	2,091	2,143	2,197	2,252	2,308	2,366	2,425	2,486	2,548	2,611	2,677
Sewer Utilities - Propane	5	200	205	210	215	221	226	232	238	244	250	256
Sewer Utilities - Telephone	2	2,667	2,734	2,802	2,872	2,944	3,017	3,093	3,170	3,249	3,331	3,414
Sewer Utilities - Trash Fee	2	715	733	751	770	789	809	829	850	871	893	915
Subtotal: Sewer Utilities		\$ 91,655	\$ 93,946	\$ 96,295	\$ 98,702	\$ 101,170	\$ 103,699	\$ 106,292	\$ 108,949	\$ 111,673	\$ 114,465	\$ 117,326
Sewer Legal Services	8	\$ 9,000	\$ 9,315	\$ 9,641	\$ 9,978	\$ 10,328	\$ 10,689	\$ 11,063	\$ 11,451	\$ 11,851	\$ 12,266	\$ 12,695
Sewer Computer Services	8	5,000	5,175	5,356	5,544	5,738	5,938	6,146	6,361	6,584	6,814	7,053
Sewer Cleaning Expense	8	1,500	1,553	1,607	1,663	1,721	1,782	1,844	1,908	1,975	2,044	2,116
Sewer Accounting and Audit Service	2	5,000	5,125	5,253	5,384	5,519	5,657	5,798	5,943	6,092	6,244	6,400
Sewer Postage and Mail Fee	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493	7,681
Sewer Office Supplies	2	3,000	3,075	3,152	3,231	3,311	3,394	3,479	3,566	3,655	3,747	3,840
Sewer Maintenance	2	19,265	19,747	20,240	20,748	21,265	21,797	22,341	22,900	23,473	24,059	24,661
Sewer Dues, Fees and Subscriptions	2	7,009	7,184	7,364	7,548	7,737	7,930	8,128	8,331	8,540	8,753	8,972
Sewer Advertising and Publishing	2	1,500	1,538	1,576	1,615	1,656	1,697	1,740	1,783	1,828	1,873	1,920
Sewer Leasing Equipment	2	600	615	630	646	662	679	696	713	731	749	768
Sewer Bank Fee Charge	2	500	513	525	538	552	566	580	594	609	624	640
Sewer Auto And General Insurance	2	11,134	11,412	11,698	11,990	12,290	12,597	12,912	13,235	13,566	13,905	14,252
Sewer Laboratory Service	2	9,982	10,232	10,487	10,750	11,018	11,294	11,576	11,865	12,162	12,466	12,778
Sewer Removal Disposal Fee	2	3,972	4,071	4,173	4,277	4,384	4,494	4,606	4,721	4,839	4,960	5,084
Sewer Consulting	2	75,000	76,875	78,797	80,767	82,786	84,856	86,977	89,151	91,380	93,665	96,006
Traveling and Entertainment	2	2,500	2,563	2,627	2,692	2,760	2,829	2,899	2,972	3,046	3,122	3,200
Training and Seminar Expenses	2	6,000	6,150	6,304	6,461	6,623	6,788	6,958	7,132	7,310	7,493	7,681
Sewer Security System	2	1,500	1,538	1,576	1,615	1,656	1,697	1,740	1,783	1,828	1,873	1,920
Subtotal: Sewer Operating Expenses		\$ 168,462	\$ 172,829	\$ 177,310	\$ 181,908	\$ 186,628	\$ 191,472	\$ 196,442	\$ 201,544	\$ 206,780	\$ 212,153	\$ 217,669
TOTAL: SEWER EXPENSES		\$ 524,982	\$ 544,883	\$ 565,618	\$ 587,225	\$ 609,743	\$ 633,213	\$ 657,679	\$ 683,185	\$ 709,779	\$ 737,511	\$ 766,432

**IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Operating Revenue and Expenses**

EXHIBIT 1

TABLE 6 - FORECASTING ASSUMPTIONS

INFLATION FACTORS	Inflation Basis	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Customer Growth (3)	1	--	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
General Cost Inflation (4)	2	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Salary Inflation (5)	3	--	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Benefits Inflation (5)	4	--	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Energy (4)	5	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Fuel (4)	6	--	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Standby Deflation (6)	7	--	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%
Contractor Inflation (6)	8	--	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Tax Inflation (6)	9	--	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
No Escalation	10	--	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

1. Revenue and expenses for FY 2017-18 are from source file: *2017-2018 Budget.pdf, Pages 10-11.*
2. Sewer depreciation from FY 2017-18 budget are \$65,000. Leaving out of this analysis as it is not cash.
3. Annual Growth from Source File: Idyllwild response to data request 1.5, 18.pdf, Page 1, Paragraph 7.
4. CPI projected at 2.5% for general inflation, chemicals, etc. Source File: Idyllwild response to data request 1.5, 18.pdf, Page 1, Paragraph 7.
5. Labor Growth Rates projected to increase 5%. Source file: Idyllwild response to data request 1.5, 18.pdf, Page 1, Paragraph 7.
6. Standby Deflation set to -3%, Contractor Inflation set to 3.5%, and Tax inflation set to 1.5% per phone call with IWD on March 23, 2018.

IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

TABLE 7 - CAPITAL FUNDING SUMMARY

CAPITAL FUNDING FORECAST												
Funding Sources:	Budgeted	Projected										
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27		
Grants	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Use of Capacity Fee Reserves	-	-	-	-	-	-	-	-	-	-	-	-
Use of SFR Proceeds	-	-	-	-	-	-	-	-	-	-	-	-
Use of New Revenue Bond Proceeds	-	-	-	-	-	-	-	-	-	-	-	-
Use of Capital Rehabilitation and Replacement Reserve	170,000	257,500	265,225	273,182	281,377	289,819	298,513	307,468	316,693	300,131		
Rate Revenue	-	-	-	-	-	-	-	-	-	-	26,063	
Total Sources of Capital Funds	\$ 170,000	\$ 257,500	\$ 265,225	\$ 273,182	\$ 281,377	\$ 289,819	\$ 298,513	\$ 307,468	\$ 316,693	\$ 326,193		
Uses of Capital Funds:												
Total Project Costs	\$ 170,000	\$ 257,500	\$ 265,225	\$ 273,182	\$ 281,377	\$ 289,819	\$ 298,513	\$ 307,468	\$ 316,693	\$ 326,193		
Capital Funding Surplus (Deficiency)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
SFR revenue Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New Revenue Bond Proceeds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

CAPITAL IMPROVEMENT PROGRAM

TABLE 8 - Capital Improvement Program Costs (in Current-Year Dollars) (1):

Project Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Wastewater Treatment Plant (G/L #1316)										
Manual Bar Screen to Headworks	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Surface Lines (G/L #1315)	135,000	-	-	-	-	-	-	-	-	-
Clean and Video collection System	20,000	-	-	-	-	-	-	-	-	-
General Plant - Structures, Power and Other Equipment	-	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Skid Steer Tractor with attachments (50% sewer)	-	-	-	-	-	-	-	-	-	-
Future Projects (2)	-	-	-	-	-	-	-	-	-	-
Total: CIP Program Costs (Current-Year Dollars)	\$ 170,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000

IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

TABLE 9 - Capital Improvement Program Costs (in Future-Year Dollars):

Project Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Wastewater Treatment Plant (G/L #1316)										
Manual Bar Screen to Headworks	\$ 15,000	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
Sub-Surface Lines (G/L #1315)										
Clean and Video collection System	135,000	-	-	-	-	-	-	-	-	-
General Plant - Structures, Power and Other Equipment										
Skid Steer Tractor with attachments (50% sewer)	20,000	-	-	-	-	-	-	-	-	-
Future Projects (2)										
Total: CIP Program Costs (Future-Year Dollars)	\$ 170,000	\$ 257,500	\$ 265,225	\$ 273,182	\$ 281,377	\$ 289,819	\$ 298,513	\$ 307,468	\$ 316,693	\$ 326,193

TABLE 10 - FORECASTING ASSUMPTIONS:

Economic Variables	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Annual Construction Cost Inflation, Per Engineering News Record (3)	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Construction Cost Multiplier from 2018	1.00	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30

1. CIP projected project costs from File Source: 2017-2018 Budget.pdf, Page 4.
2. Future projects, beyond the initial 5-year rate period are estimated to be 250K per district staff phone call on March 23, 2018.
3. Construction inflation values used from Engineering News Record website: www.enr.com

**IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Projected Water Rates Under Existing Rate Schedule**

EXHIBIT 3

TABLE 11 Current Sewer Rate Schedule:

Current Sewer Rates per EDU		
Code	EDU	Rate
All	1.0	\$38.25

File Source: Current Sewer Rate Structure.pdf

IDYLLWILD WATER DISTRICT
SEWER RATE STUDY
Cost of Service Analysis

TABLE 16 - Development of the EDU Allocation Factor

Customer Class	Number of Accounts (1)	Number of EDUs (1)	Percentage of Assigned EDUs	Average EDUs per Account
Apartment	9	35.5	2.5%	3.9
Business	93	246.9	17.7%	2.7
Camp	3	50.0	3.6%	16.7
Church	11	19.5	1.4%	1.8
Motel	25	82.0	5.9%	3.3
Park	2	30.0	2.2%	15.0
Residential	419	445.0	31.9%	1
Restaurant	17	120.7	8.7%	7.1
School	5	227.4	16.3%	45.5
Trailer Park	2	136.0	9.8%	68.0
Total	586	1,393.0	100.0%	2.4

1. Source: Commercial Sewer EDUs.xlsx and Income Statement 02-14-18.pdf (residential EDUs).

TABLE 17 - FY 2018/19 Rate Calculation

	Total Rate Revenue a	Number of EDUs (2) b	Monthly Charge c = a/b/12
Monthly Charge Per Current EDU	\$668,640	1,393	\$40.00

IDYLLWILD WATER DISTRICT
 SEWER RATE STUDY
 Sewer Rate Development

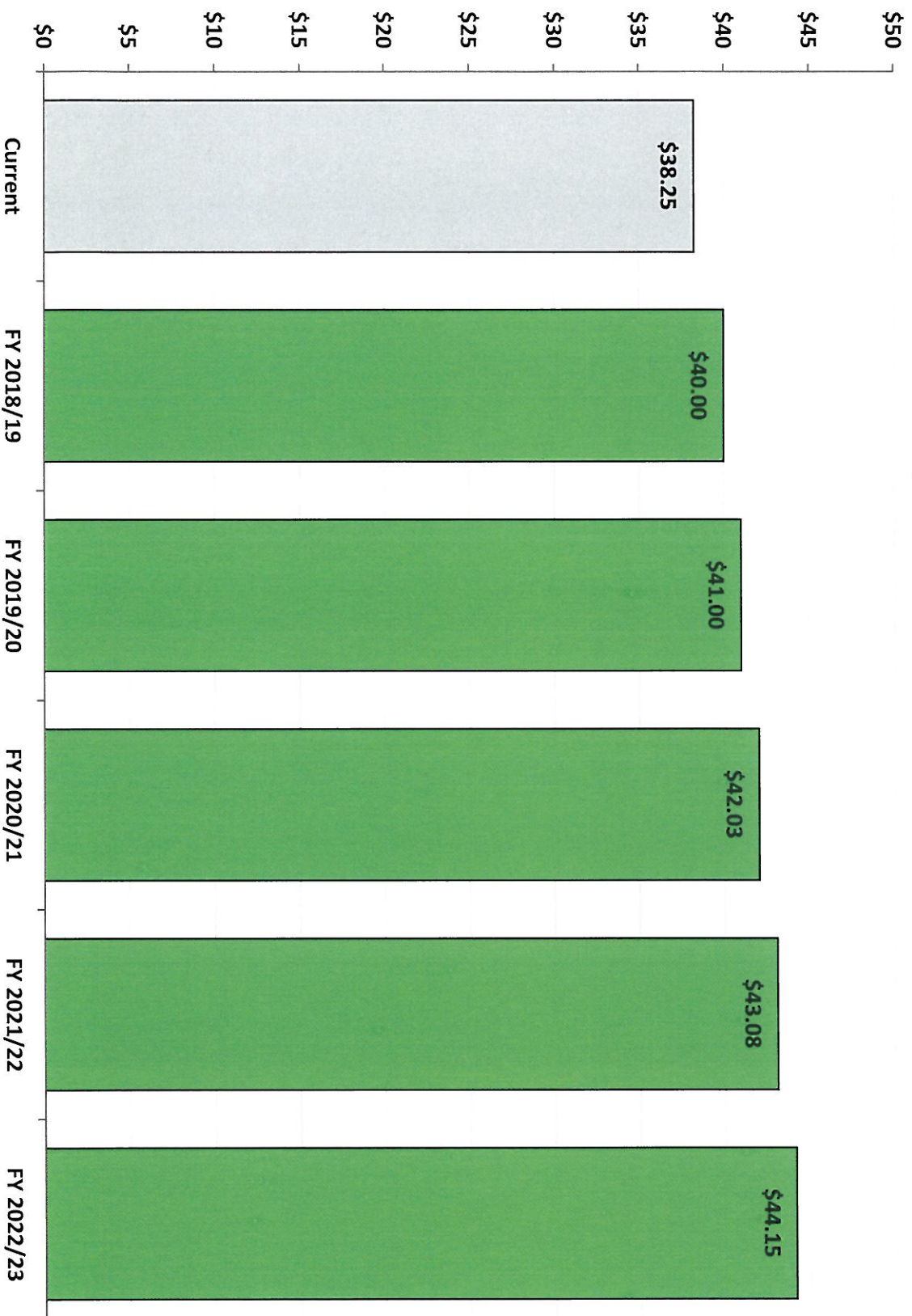
TABLE 18 Current vs. Proposed Sewer Rates (Monthly)

Sewer Rate Schedule	Current Monthly Rates (1)	Proposed Monthly Sewer Rates				
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
Rate Per EDU	\$38.25	\$40.00	\$41.00	\$42.03	\$43.08	\$44.15

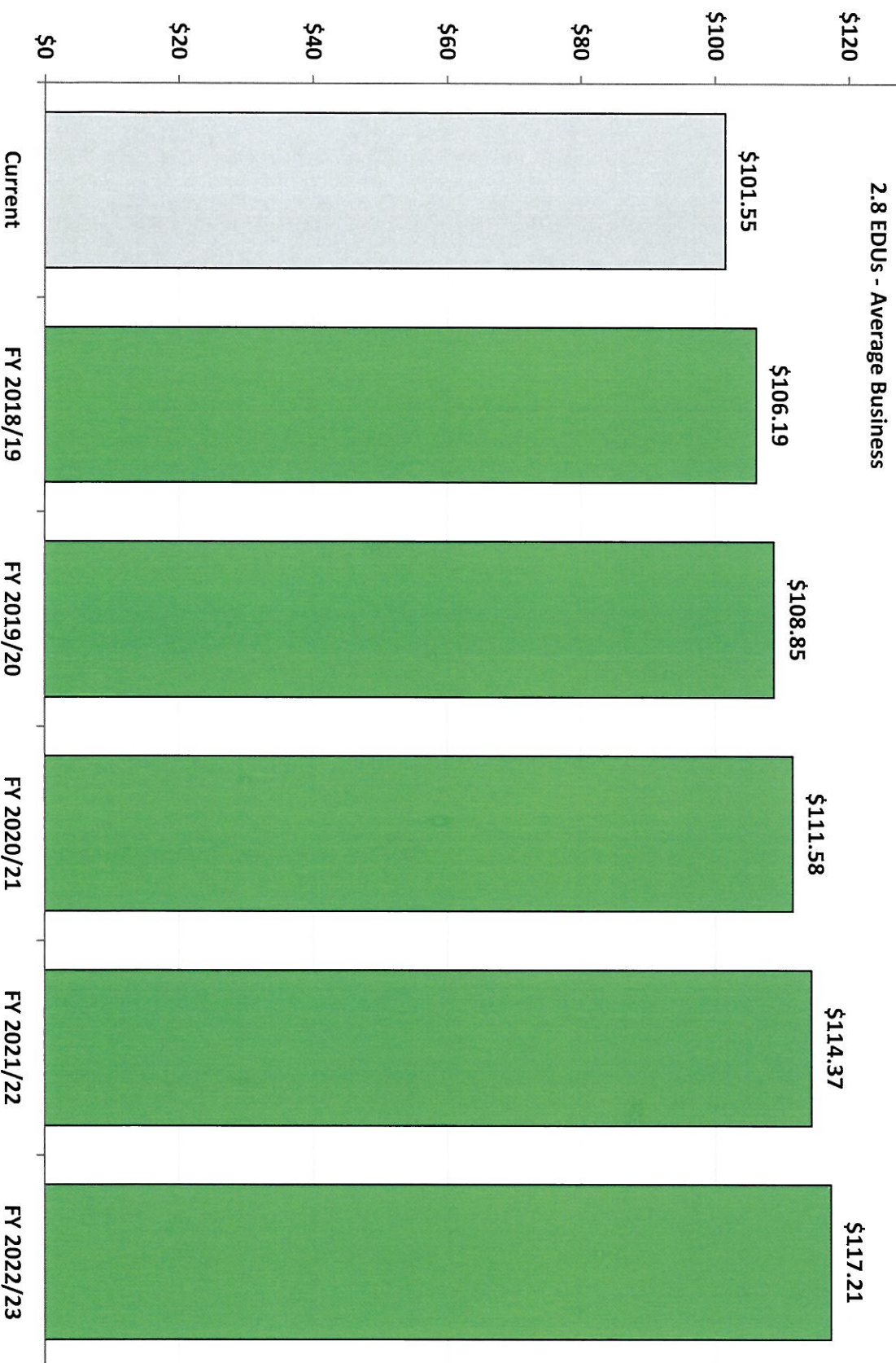
1. Sewer customers are charged on the basis of their number of assigned Equivalent Dwelling Units (EDUs).

Single Family Residential Sewer Bill Comparison

Current vs. Proposed Rates (Assumes 1 EDU/SFR Account)



Average Commercial Sewer Bill Comparison Current vs. Proposed



Appendix C: Detailed Water Shortage Drought Stage Rates Tables and Figures

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 2 - Conservation of 10%

TABLE 1

Adjusted Expenses	Budget	Reduction
Water Utilities - Electricity	\$ 87,125	\$ 8,713
Water Utilities - Gas and Fuel	9,430	943
Water Utilities - Propane	3,848	385
Water Laboratory Services	18,963	1,896
Total		\$ 11,937

PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)

TABLE 2

Customer Classes	Number of Meters ¹	Water Consumption (cf/vr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	4,713,134	\$ 94,082	\$ 258,698	\$ 352,780	26%	N/A	Tiered
Apartment	9	114,219	2,280	5,055	7,335	1%		Uniform
Trailer Park	3	202,725	4,047	16,356	20,403	2%		Uniform
Business	98	846,469	16,897	39,477	56,374	4%		Uniform
Motel	27	470,565	9,393	23,726	33,120	2%		Uniform
Restaurant	16	478,422	9,550	22,440	31,990	2%		Uniform
School	4	35,406	707	3,428	4,135	0%	\$0.0829	Uniform
Camp	6	310,176	6,192	59,113	65,304	5%		Uniform
Church	12	69,201	1,381	3,700	5,082	0%		Uniform
Park	3	150,534	3,005	9,187	12,192	1%		Uniform
Idyllwild Arts Academy	1	1,018,922	20,339	50,306	70,645	5%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	8,409,774	\$ 167,873	\$ 491,486	\$ 659,359	49%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 2 - Conservation of 10%

TABLE 3

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr)	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	3,035,614	\$ 60,596	\$ -	\$ 60,596	17.2%	\$0.0200
Tier 2	900	989,608	19,754	134,515	154,270	43.7%	\$0.1559
Tier 3	--	687,913	13,732	124,182	137,914	39.1%	\$0.2005
Total		4,713,134	\$ 94,082	\$ 258,698	\$ 352,780	100%	

Net Revenue Requirements (60% Fixed / 40% Variable)

TABLE 4

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	4,713,134	\$ 94,082	\$ 188,029	\$ 282,112	21%	N/A	Tiered
Apartment	9	114,219	2,280	3,674	5,954	0%		Uniform
Trailer Park	3	202,725	4,047	11,888	15,935	1%		Uniform
Business	98	846,469	16,897	28,693	45,590	3%		Uniform
Motel	27	470,565	9,393	17,245	26,638	2%		Uniform
Restaurant	16	478,422	9,550	16,310	25,860	2%		Uniform
School	4	35,406	707	2,492	3,198	0%	\$0.0657	Uniform
Camp	6	310,176	6,192	42,965	49,156	4%		Uniform
Church	12	69,201	1,381	2,689	4,071	0%		Uniform
Park	3	150,534	3,005	6,678	9,683	1%		Uniform
Idyllwild Arts Academy	1	1,018,922	20,339	36,564	56,903	4%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	8,409,774	\$ 167,873	\$ 357,227	\$ 525,100	39%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 2 - Conservation of 10%

TABLE 5

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req'd from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	3,035,614	\$ 60,596	\$ -	\$ 60,596	21%	\$0.0200
Tier 2	900	989,608	19,754	97,770	117,524	42%	\$0.1188
Tier 3	...	687,913	13,732	90,260	103,991	37%	\$0.1512
Total		4,713,134	\$ 94,082	\$ 188,029	\$ 282,112	100%	

TABLE 6

FY 2022/23 Rates	Tier Break	Rate
Uniform Commercial Break	N/A	\$0.0799
Single-Family Residential		
Tier 1	450	\$0.0243
Tier 2	900	\$0.1444
Tier 3	...	\$0.1837

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 3 - Conservation of 20%

TABLE 7

Adjusted Expenses	Budget	Reduction
Water Utilities - Electricity	\$ 87,125	\$ 17,425
Water Utilities - Gas and Fuel	9,430	1,886
Water Utilities - Propane	3,848	770
Water Laboratory Services	18,963	3,793
Total		\$ 23,873

PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)

TABLE 8

Customer Classes	Number of Meters ¹	Water Consumption (cf/vr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	4,189,453	\$ 87,393	\$ 258,698	\$ 346,090	26%		<i>Tiered</i>
Apartment	9	101,528	2,118	5,055	7,173	1%	N/A	<i>Uniform</i>
Trailer Park	3	180,200	3,759	16,356	20,115	1%		<i>Uniform</i>
Business	98	752,417	15,696	39,477	55,172	4%		<i>Uniform</i>
Motel	27	418,280	8,725	23,726	32,452	2%		<i>Uniform</i>
Restaurant	16	425,264	8,871	22,440	31,311	2%		<i>Uniform</i>
School	4	31,472	657	3,428	4,084	0%	\$0.0917	<i>Uniform</i>
Camp	6	275,712	5,751	59,113	64,864	5%		<i>Uniform</i>
Church	12	61,512	1,283	3,700	4,983	0%		<i>Uniform</i>
Park	3	133,808	2,791	9,187	11,979	1%		<i>Uniform</i>
Idyllwild Arts Academy	1	905,709	18,893	50,306	69,199	5%		<i>Uniform</i>
Fire Service	2	0	-	-	-	0%		<i>Uniform</i>
Total	1,645	7,475,354	\$ 155,937	\$ 491,486	\$ 647,423	48%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).

Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx

2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 3 - Conservation of 20%

TABLE 9

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr)	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,890,121	\$ 60,288	\$ -	\$ 60,288	17.4%	\$0.0209
Tier 2	900	781,297	16,298	134,515	150,813	43.6%	\$0.1930
Tier 3	--	518,034	10,806	124,182	134,989	39.0%	\$0.2606
Total		4,189,453	\$ 87,393	\$ 258,698	\$ 346,090	100%	

Net Revenue Requirements (60% Fixed / 40% Variable)

TABLE 10

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	4,189,453	\$ 87,393	\$ 188,029	\$ 275,422	21%	N/A	Tiered
Apartment	9	101,528	2,118	3,674	5,792	0%		Uniform
Trailer Park	3	180,200	3,759	11,888	15,647	1%		Uniform
Business	98	752,417	15,696	28,693	44,388	3%		Uniform
Motel	27	418,280	8,725	17,245	25,970	2%		Uniform
Restaurant	16	425,264	8,871	16,310	25,181	2%		Uniform
School	4	31,472	657	2,492	3,148	0%	\$0.0724	Uniform
Camp	6	275,712	5,751	42,965	48,716	4%		Uniform
Church	12	61,512	1,283	2,689	3,973	0%		Uniform
Park	3	133,808	2,791	6,678	9,469	1%		Uniform
Idyllwild Arts Academy	1	905,709	18,893	36,564	55,457	4%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	7,475,354	\$ 155,937	\$ 357,227	\$ 513,163	38%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx

2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 3 - Conservation of 20%

TABLE 11

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,890,121	\$ 60,288	\$ -	\$ 60,288	22%	\$0.0209
Tier 2	900	781,297	16,298	97,770	114,068	41%	\$0.1460
Tier 3	--	518,034	10,806	90,260	101,066	37%	\$0.1951
Total		4,189,453	\$ 87,393	\$ 188,029	\$ 275,422	100%	

TABLE 12

FY 2022/23 Rates	Tier Break	Rate
Uniform Commercial Break	N/A	\$0.0879
Single-Family Residential		
Tier 1	450	\$0.0254
Tier 2	900	\$0.1775
Tier 3	--	\$0.2371

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 4 - Conservation of 35%

TABLE 13

Adjusted Expenses	Budget	Reduction
Water Utilities - Electricity	\$ 87,125	\$ 30,494
Water Utilities - Gas and Fuel	9,430	3,301
Water Utilities - Propane	3,848	1,347
Water Laboratory Services	18,963	6,637
Total		\$ 41,778

PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)

TABLE 14

Customer Classes	Number of Meters ¹	Water Consumption (cf/vr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	3,403,930	\$ 77,358	\$ 258,698	\$ 336,056	25%		<i>Tiered</i>
Apartment	9	82,492	1,875	5,055	6,930	1%	N/A	<i>Uniform</i>
Trailer Park	3	146,413	3,327	16,356	19,683	1%		<i>Uniform</i>
Business	98	611,339	13,893	39,477	53,370	4%		<i>Uniform</i>
Motel	27	339,853	7,724	23,726	31,450	2%		<i>Uniform</i>
Restaurant	16	345,527	7,852	22,440	30,292	2%		<i>Uniform</i>
School	4	25,571	581	3,428	4,009	0%	\$0.1099	<i>Uniform</i>
Camp	6	224,016	5,091	59,113	64,204	5%		<i>Uniform</i>
Church	12	49,979	1,136	3,700	4,836	0%		<i>Uniform</i>
Park	3	108,719	2,471	9,187	11,658	1%		<i>Uniform</i>
Idyllwild Arts Academy	1	735,888	16,724	50,306	67,030	5%		<i>Uniform</i>
Fire Service	2	0	-	-	-	0%		<i>Uniform</i>
Total	1,645	6,073,725	\$ 138,032	\$ 491,486	\$ 629,518	47%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).

Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx

2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 4 - Conservation of 35%

TABLE 15

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr)	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,589,158	\$ 58,841	\$ -	\$ 58,841	17.5%	\$0.0227
Tier 2	900	502,495	11,420	134,515	145,935	43.4%	\$0.2904
Tier 3	...	312,278	7,097	124,182	131,279	39.1%	\$0.4204
Total		3,403,930	\$ 77,358	\$ 258,698	\$ 336,056	100%	

Net Revenue Requirements (60% Fixed / 40% Variable)

TABLE 16

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	3,403,930	\$ 77,358	\$ 188,029	\$ 265,387	20%	N/A	Tiered
Apartment	9	82,492	1,875	3,674	5,549	0%		Uniform
Trailer Park	3	146,413	3,327	11,888	15,215	1%		Uniform
Business	98	611,339	13,893	28,693	42,586	3%		Uniform
Motel	27	339,853	7,724	17,245	24,969	2%		Uniform
Restaurant	16	345,527	7,852	16,310	24,163	2%		Uniform
School	4	25,571	581	2,492	3,073	0%	\$0.0861	Uniform
Camp	6	224,016	5,091	42,965	48,056	4%		Uniform
Church	12	49,979	1,136	2,689	3,825	0%		Uniform
Park	3	108,719	2,471	6,678	9,148	1%		Uniform
Idyllwild Arts Academy	1	735,888	16,724	36,564	53,288	4%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	6,073,725	\$ 138,032	\$ 357,227	\$ 495,259	37%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
Pivot Tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 4 - Conservation of 35%

TABLE 17

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,589,158	\$ 58,841	\$ -	\$ 58,841	22%	\$0.0227
Tier 2	900	502,495	11,420	97,770	109,190	41%	\$0.2173
Tier 3	--	312,278	7,097	90,260	97,356	37%	\$0.3118
Total		3,403,930	\$ 77,358	\$ 188,029	\$ 265,387	100%	

TABLE 18

FY 2022/23 Rates	Tier Break	Rate
Uniform Commercial Break	N/A	\$0.1047
Single-Family Residential		
Tier 1	450	\$0.0276
Tier 2	900	\$0.2641
Tier 3	--	\$0.3789

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 5 - Conservation of 50%

TABLE 19

Adjusted Expenses	Budget	Reduction
Water Utilities - Electricity	\$ 87,125	\$ 43,563
Water Utilities - Gas and Fuel	9,430	4,715
Water Utilities - Propane	3,848	1,924
Water Laboratory Services	18,963	9,481
Total		\$ 59,683

PROPOSED VOLUMETRIC CHARGES FOR FY 2018/19:

Net Revenue Requirements (50% Fixed / 50% Variable)

TABLE 20

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	2,618,408	\$ 67,324	\$ 258,698	\$ 326,021	24%	N/A	<i>Tiered</i>
Apartment	9	63,455	1,632	5,055	6,686	0%		<i>Uniform</i>
Trailer Park	3	112,625	2,896	16,356	19,252	1%		<i>Uniform</i>
Business	98	470,261	12,091	39,477	51,568	4%		<i>Uniform</i>
Motel	27	261,425	6,722	23,726	30,448	2%		<i>Uniform</i>
Restaurant	16	265,790	6,834	22,440	29,274	2%		<i>Uniform</i>
School	4	19,670	506	3,428	3,934	0%	\$0.1391	<i>Uniform</i>
Camp	6	172,320	4,431	59,113	63,543	5%		<i>Uniform</i>
Church	12	38,445	988	3,700	4,689	0%		<i>Uniform</i>
Park	3	83,630	2,150	9,187	11,338	1%		<i>Uniform</i>
Idyllwild Arts Academy	1	566,068	14,555	50,306	64,861	5%		<i>Uniform</i>
Fire Service	2	0	-	-	-	0%		<i>Uniform</i>
Total	1,645	4,672,097	\$ 120,127	\$ 491,486	\$ 611,613	46%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).

Pivot tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx

2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 5 - Conservation of 50%

TABLE 21

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr)	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,176,539	\$ 55,962	\$ -	\$ 55,962	17.2%	\$0.0257
Tier 2	900	277,340	7,131	134,515	141,646	43.4%	\$0.5107
Tier 3	--	164,529	4,230	124,182	128,413	39.4%	\$0.7805
Total		2,618,408	\$ 67,324	\$ 258,698	\$ 326,021	100%	

Net Revenue Requirements (60% Fixed / 40% Variable)

TABLE 22

Customer Classes	Number of Meters ¹	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/cf)	Proposed Rate Structure
Residential	1,464	2,618,408	\$ 67,324	\$ 188,029	\$ 255,353	19%	N/A	Tiered
Apartment	9	63,455	1,632	3,674	5,306	0%		Uniform
Trailer Park	3	112,625	2,896	11,888	14,784	1%		Uniform
Business	98	470,261	12,091	28,693	40,784	3%		Uniform
Motel	27	261,425	6,722	17,245	23,967	2%		Uniform
Restaurant	16	265,790	6,834	16,310	23,144	2%		Uniform
School	4	19,670	506	2,492	2,997	0%	\$0.1081	Uniform
Camp	6	172,320	4,431	42,965	47,395	4%		Uniform
Church	12	38,445	988	2,689	3,678	0%		Uniform
Park	3	83,630	2,150	6,678	8,828	1%		Uniform
Idyllwild Arts Academy	1	566,068	14,555	36,564	51,118	4%		Uniform
Fire Service	2	0	-	-	-	0%		Uniform
Total	1,645	4,672,097	\$ 120,127	\$ 357,227	\$ 477,354	36%		

1. Consumption and Meters from source files: Billed Consumption Excel Export 2015, 2016, 2017.xlsx (data combined and summarized in pivot Tables).
Pivot Tables found in Source File: Pivot Tables - Billed Consumption Excel Export 2015-2017 Water.xlsx
2. Per client phone call March 26, 2018, Idyllwild Arts Academy accounts for 80% of 2016 consumption.

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design
Water Shortage Drought Stage 5 - Conservation of 50%

TABLE 23

Single-Family Residential Tiered Rates	Tier Break	Water Consumption (cf/yr) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Total Target Rev. Req't from Vol. Charges	% of Residential Volumetric Rate Revenue	Tiered Rates (\$/cf)
Tier 1	450	2,176,539	\$ 55,962	\$ -	\$ 55,962	22%	\$0.0257
Tier 2	900	277,340	7,131	97,770	104,901	41%	\$0.3782
Tier 3	--	164,529	4,230	90,260	94,490	37%	\$0.5743
Total		2,618,408	\$ 67,324	\$ 188,029	\$ 255,353	100%	

TABLE 24

FY 2022/23 Rates	Tier Break	Rate
Uniform Commercial Break	N/A	\$0.1314
Single-Family Residential		
Tier 1	450	\$0.0313
Tier 2	900	\$0.4598
Tier 3	--	\$0.6981

IDYLLWILD WATER DISTRICT
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

CURRENT VS. PROPOSED WATER RATES:

TABLE 25

Table 2.3 Proposed Rates - Transition 50% Fixed to 60% Fixed						
Water Shortage Rate Schedule	Proposed Rates					
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	
	5.00%	5.00%	5.00%	5.00%	5.00%	
Stage 2 - 10% Conservation						
Uniform Potable Rate (Commercial Customers)	\$0.0829	\$0.0826	\$0.0820	\$0.0811	\$0.0799	
Tiered Rate (SFR Customers)						
Current						
Proposed						
Tier 1	300 cf \$0.0200	450 cf \$0.0210	\$0.0220	\$0.0231	\$0.0243	
Tier 2	600 cf \$0.1559	900 cf \$0.1539	\$0.1514	\$0.1482	\$0.1444	
Tier 3	1500 cf \$0.2005	900+ cf \$0.1976	\$0.1938	\$0.1893	\$0.1837	
Stage 3 - 20% Conservation						
Uniform Potable Rate (Commercial Customers)	\$0.0917	\$0.0912	\$0.0904	\$0.0894	\$0.0879	
Tiered Rate (SFR Customers)						
Current						
Proposed						
Tier 1	300 cf \$0.0209	450 cf \$0.0219	\$0.0230	\$0.0241	\$0.0254	
Tier 2	600 cf \$0.1930	900 cf \$0.1903	\$0.1869	\$0.1826	\$0.1775	
Tier 3	1500 cf \$0.2606	900+ cf \$0.2564	\$0.2512	\$0.2448	\$0.2371	
Stage 4 - 35% Conservation						
Uniform Potable Rate (Commercial Customers)	\$0.1099	\$0.1092	\$0.1081	\$0.1066	\$0.1047	
Tiered Rate (SFR Customers)						
Current						
Proposed						
Tier 1	300 cf \$0.0227	450 cf \$0.0239	\$0.0251	\$0.0263	\$0.0276	
Tier 2	600 cf \$0.2904	900 cf \$0.2857	\$0.2799	\$0.2727	\$0.2641	
Tier 3	1500 cf \$0.4204	900+ cf \$0.4129	\$0.4036	\$0.3923	\$0.3789	
Stage 5 - 50% Conservation						
Uniform Potable Rate (Commercial Customers)	\$0.1391	\$0.1379	\$0.1362	\$0.1341	\$0.1314	
Tiered Rate (SFR Customers)						
Current						
Proposed						
Tier 1	300 cf \$0.0257	450 cf \$0.0270	\$0.0283	\$0.0298	\$0.0313	
Tier 2	600 cf \$0.5107	900 cf \$0.5015	\$0.4900	\$0.4762	\$0.4598	
Tier 3	1500 cf \$0.7805	900+ cf \$0.7654	\$0.7468	\$0.7245	\$0.6981	

Memo

To: Board of Directors

From: General Manager

Date: July 18, 2018

Subject: ITEM #3 – CONSOLIDATION SUB-COMMITTEE REPORT AND STATUS

Recommendation: That the Idyllwild Water District Board of Directors receive a report from the Consolidation Sub-committee regarding their Meeting of July 16 and offer direction to the sub-committee in light of communications from both Fern Valley Water District and Pine Cove Water District.

Background: At its June 20, 2018 meeting the Idyllwild Water District Board of Directors formed a Consolidation Sub-committee. The sub-committee held its first meeting July 16, 2018. Since the June 20, 2018 meeting both Pine Cove and Fern Valley Water Districts have indicated they have no interest in discussing consolidation. (Note that the Districts continue to work together to look for opportunities to increase efficiency or achieve economies of scale.)

Memo

To: Board of Directors

From: General Manager

Date: July 18, 2018

Subject: ITEM #4 – RECENT WATER QUALITY ISSUES – INFORMATION ITEM

Recommendation: Staff will report to the Board of Directors regarding the recent notice of exceedance of the trihalomethane (TTHM) and haloacetic acid (HAA5) (disinfection by-products) standards at one of the District sampling sites.

Background: The District samples each quarter for disinfection by-products at two sites in the District, one on Lower Pine Crest and one on Double View. The regulated value is the average of the last four quarterly samples. This is known as a running annual average. Each sample location keeps its own average (locational running annual average-LRAA).

The results for the samples taken June 1, 2018 were received by the District on June 15, 2018. On July 2, 2018, the Division of Drinking Water (DDW) of the State Water Resources Control board (SWRCB) contacted me that they had reviewed the sampling results and had identified that we were in exceedance of the TTHM and HAA5 LRAA at one of our sites STA 5.

<u>Site</u>	<u>TTHM(LRAA)</u>	<u>HAA5(LRAA)</u>
STA 5	87	64
STA 7	39	25
MCL	80	60

Although not all the Idyllwild Water District water system had exceeded the MCL, the exceedance protocol requires notification of all customers. A mailed notice was prepared and sent to the DDW for review and approval. The notice and mailing list was submitted to our regular print house and prepared for the reopening of our mailing house on July 11, 2018. As a result of mis-communication notices were mailed on July 13, 2018.

Staff have engaged Water Quality and Treatment Solutions, Inc., a process engineering firm to assist the District with additional data development and in evaluating the District's options and cost of options to achieve long-term compliance with the Disinfection By-products regulations for the entire distribution system.

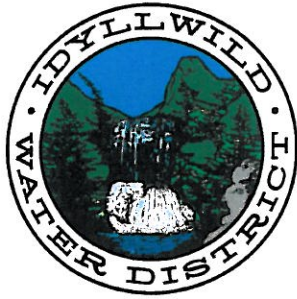
Based on the Q1 sample results staff tried several process changes consistent with recommendations from the DDW Sanitary Engineer. The staff also maximized production from the "City Wells" which have lower TOC concentrations and do not have the long contact time in the Foster Lake storage tanks.

There are many factors that impact the formation of Disinfection By-products, staff will discuss the process at the Meeting as well as some of the implications for mitigation.

The current exceedance in a portion of the distribution system is definitely a problem that has become a top priority for the District. However, the perspective is that even the Division of Drinking Water does not view this exceedance as an "emergency" nor does it create the need for the use of bottled water.

This is a rapidly developing issue and more information will be provided at the Board meeting,

Attachment: Customer Notice



IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este aviso contiene información muy importante sobre su agua potable, por favor lea el aviso en español si va aquí incluido. Si el aviso en español no va incluido aquí, contacte al sistema de agua para pedir una copia.

Idyllwild Water District has levels of Total Trihalomethanes and Haloacetic Acids Above Drinking Water Standards

Our water system recently exceeded a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what you should do, what happened, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water constituents. Testing results we received on June 15, 2018, show that our system exceeds the standard, or maximum contaminant level (MCL), for Total Trihalomethanes (THMs) and Haloacetic Acids (HAAs). The MCL standards for THMs and HAAs are 80 parts per billion (ppb) and 60 ppb, respectively. The average level of Total Trihalomethanes over the last year was 87 ppb. The average level of Haloacetic Acids over the last year was 64 ppb.

What should I do?

- **You do not need to use an alternative (e.g. , bottled) water supply.**
- This is not an immediate risk. If it had been, you would have been notified immediately. However, *some people who drink water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney, or central nervous system problems, and may have an increased risk of getting cancer. Some people who drink water containing haloacetic acids in excess of the MCL over many years have an increased risk of getting cancer.*
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.

What happened? What was done?

We add chlorine to the well water for disinfection. Chlorine is a disinfectant used for drinking water treatment throughout the country, and its addition is required by the State. However, the added chlorine also reacts with natural organic matter that is present in all water supplies and forms low levels of THMs and HAAs. If the levels of the natural organic matter increase, the levels of THMs and HAAs formed increase. The persistent drought and water supply conditions caused an increase in the level of the natural organic matter in some of our wells, which then increased the levels of THMs and HAAs in the drinking water served to part of our service area.

In response to this finding, we have reached out to engineering professionals to help us implement changes to the system to reduce the levels of THMs and HAAs formed. These may include the construction of a filtration system at the impacted wells to remove some of the natural organic matter from the water and thus form less THMs and HAAs. We will keep our customers posted on the progress of this effort.

We anticipate resolving the problem within 6 to 12 months depending on the type of solution to be implemented. In the meantime, we are minimizing the use of the impacted wells and relying more on wells that form lower levels of THMs and HAAs.

For more information, please contact Jack Hoagland at 951-659-2143 or at the following mailing address: PO Box 397, Idyllwild, CA 92549.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

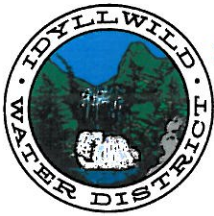
Secondary Notification Requirements

Upon receipt of notification from a person operating a public water system, the following notification must be given within 10 days [Health and Safety Code Section 116450(g)]:

- SCHOOLS: Must notify school employees, students, and parents (if the students are minors).
- RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS (including nursing homes and care facilities): Must notify tenants.
- BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS: Must notify employees of businesses located on the property.

This notice is being sent to you by the Idyllwild Water District.

State Water System ID#: 3310019 Date distributed: July 13, 2018.



**IDYLLWILD
WATER
DISTRICT**
25945 HIGHWAY 243
P.O. BOX 397
IDYLLWILD, CA 92549-0397

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**IMPORTANT INFORMATION
ABOUT YOU
DRINKING WATER**



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

Division of Drinking Water

July 9, 2018

System No. 3310019

Jack Hoagland, General Manager
Idyllwild Water District
P.O. Box 397
25945 Highway 243
Idyllwild, CA 92549

**CITATION NO. 05-20-18C-003
TOTAL TRIHALOMETHANES (TTHM) AND HALOACETIC ACIDS (HAA5) MAXIMUM
CONTAMINANT LEVEL (MCL) VIOLATION
FOR JULY 1, 2017 – JUNE 30, 2018**

Enclosed is Citation No. 05-20-18C-003 (hereinafter "Citation"), issued to the Idyllwild Water District (hereinafter "IWD"), public water system. Please note that there are legally enforceable deadlines associated with this Citation.

IWD will be billed at the State Water Resources Control Board's (hereinafter "State Water Board"), hourly rate for the time spent on issuing this Citation. California Health and Safety Code (hereinafter "CHSC"), Section 116577, provides that a public water system must reimburse the State Water Board for actual costs incurred by the State Water Board for specified enforcement actions, including but not limited to, preparing, issuing and monitoring compliance with a citation.

IWD will receive a bill sent from the State Water Board in August of the next fiscal year. This bill will contain fees for any enforcement time spent on IWD for the current fiscal year.

Any person who is aggrieved by a citation, order or decision issued under authority delegated to an officer or employee of the State Water Board under Article 8 (commencing with CHSC, Section 116625) or Article 9 (commencing with CHSC, Section 116650), of the Safe Drinking Water Act (CHSC, Division 104, Part 12, Chapter 4), may file a petition with the State Water Board for reconsideration of the citation, order or decision. Appendix 1 to the enclosed Citation contains the relevant statutory provisions for filing a petition for reconsideration (CHSC, Section 116701).

FELICIA MARCUS, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

1350 Front Street, Room 2050, San Diego, CA 92101 | www.waterboards.ca.gov



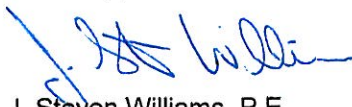
Petitions must be received by the State Water Board within 30 days of the issuance of the citation, order or decision by the officer or employee of the State Water Board. The date of issuance is the date when the Division of Drinking Water mails a copy of the citation, order or decision. If the 30th day falls on a Saturday, Sunday, or state holiday, the petition is due the following business day by 5:00 p.m.

Information regarding filing petitions may be found at:

http://www.waterboards.ca.gov/drinking_water/programs/petitions/index.shtml

If you have any questions regarding this matter, please contact Chun Huang of my staff at 619-525-4775 or me at 619-525-4580.

Sincerely,



J. Steven Williams, P.E.
District Engineer

Enclosure: Citation No. 05-20-18C-003

Certified Mail No. 7017 0530 0001 0174 8837

cc: County of Riverside, Department of Environmental Health (via email w/o encl)

ENCLOSURE

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF DRINKING WATER

Name of Public Water System: Idyllwild Water District

Water System No: 3310019

Attention: Jack Hoagland, General Manager

P.O. Box 397
25945 Highway 243
Idyllwild, CA 92549

Issued: July 9, 2018

CITATION FOR NONCOMPLIANCE
CALIFORNIA HEALTH AND SAFETY CODE, SECTION 116555(a)(1) AND
CALIFORNIA CODE OF REGULATIONS, TITLE 22, SECTION 64533(a)

TOTAL TRIHALOMETHANES AND HALOACETIC ACIDS
MAXIMUM CONTAMINANT LEVEL VIOLATION
JULY 1, 2017 – JUNE 30, 2018

The California Health and Safety Code (hereinafter "CHSC"), Section 116650 authorizes the State Water Resources Control Board (hereinafter "State Water Board"), to issue a citation to a public water system when the State Water Board determines that the public water system has violated or is violating the

1 California Safe Drinking Water Act (hereinafter "California SDWA"), (CHSC,
2 Division 104, Part 12, Chapter 4, commencing with Section 116270), or any
3 regulation, standard, permit, or order issued or adopted thereunder.

4
5 The State Water Board, acting by and through its Division of Drinking Water
6 (hereinafter "Division"), and the Deputy Director for the Division, hereby
7 issues Citation No. 05-20-18C-003 (hereinafter "Citation"), pursuant to
8 Section 116650 of the CHSC to the Idyllwild Water District (hereinafter "IWD"),
9 for violation of CHSC, Section 116555(a)(1) and Section 64533(a).

10
11 A copy of the applicable statutes and regulations are included in Appendix 1,
12 which is attached hereto and incorporated by reference.

13
14 **STATEMENT OF FACTS**

15 The Idyllwild Water District is classified as a Community public water system
16 with a permanent population of 2,500, serving 1,649 connections. IWD
17 operates under Domestic Water Supply Permit No. 05-20-08P-003 issued by
18 the State Water Board on January 30, 2008.

19
20 IWD conducts monitoring for Disinfection Byproducts (hereinafter "DBPs") in
21 accordance with it's Division-approved Stage 2 Disinfectants/Disinfection
22 Byproduct Rule (DBPR) Monitoring Plan (hereinafter, "DBPR Monitoring
23 Plan"), dated January 16, 2015. The DBPR Monitoring Plan identifies two
24 sample locations (STA 5 and STA 7) from where annual samples are collected
25 for analysis of total trihalomethanes (hereinafter "TTHM") and haloacetic acids
26 (hereinafter "HAA5").

1 Following the detection of HAA5 above the Maximum Contaminant Level
2 (hereinafter "MCL") of 60 ug/L in an annual sample collected at the STA 5
3 sample site on September 28, 2017, IWD was required to increase the
4 monitoring frequency to quarterly in accordance with CCR, Title 22, Section
5 64535.2(e)(2).

6
7 CHSC, Section 116555(a)(1) requires all public water systems to comply with
8 primary drinking water standards as defined in CHSC, Section 116275(c).
9 Primary drinking water standards include maximum levels of contaminants
10 and the monitoring and reporting requirements as specified in regulations
11 adopted by the State Water Board that pertain to maximum contaminant
12 levels.

13
14 CCR, Title 22, Section 64533, Maximum Contaminant Levels for DBPs,
15 subsection (a) states that a public water system is in violation of the primary
16 MCL for TTHM if monitoring quarterly, each locational running annual average
17 (hereinafter "LRAA"), computed quarterly, exceeds the MCL of 0.080 mg/L
18 (80 µg/L) for TTHM, consisting of chloroform, bromochloromethane,
19 dibromochloromethane, and bromoform. A public water system is in violation
20 of the primary MCL for haloacetic acids HAA5 if monitoring quarterly, each
21 LRAA, computed quarterly, exceeds the MCL of 0.060 mg/L (60 µg/L) for
22 HAA5, consisting of monochloroacetic acid, dichloroacetic acid,
23 trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid.

24
25 The State Water Board received laboratory results for samples collected on
26 June 1, 2018, at STAs 5 and 7. All samples were analyzed for TTHM and
27 HAA5. The TTHM LRAA computed for each location was: 87.1 µg/L for STA

1 5, and 39 µg/L for STA 7. The HAA5 LRAA computed for each location was:
2 64.8 µg/L for STA 5, and 25.2 µg/L for STA 7.

4 **DETERMINATION**

5 Compliance with the TTHM and HAA5 MCLs is based on an average of
6 quarterly samples collected, computed quarterly, for each sample location.
7 Following June 1, 2018, DBP monitoring, the TTHM LRAA and HAA5 LRAA
8 computed for STA 5 were 87.1 µg/L, and 64.8 µg/L, respectively. Therefore,
9 the State Water Board has determined that IWD failed to comply with drinking
10 water standards pursuant to CHSC, Section 116555(a)(1) and CCR, Title 22,
11 Section 64533(a) for the four-quarter monitoring period of July 1, 2017 – June
12 30, 2018.

14 **DIRECTIVES**

15 IWD is hereby directed to take the following actions:

- 16
17 1. Comply with CCR, Title 22, Section 64533(a), in all future monitoring
18 periods.
- 19
20 2. By July 13, 2018, complete and return to the State Water Board the
21 "Notification Receipt" form provided attached to this Citation as
22 Appendix 2. Completion of this form confirms that IWD has received
23 this Citation and understands that it contains legally enforceable
24 directives with due dates.
- 25
26 3. On or before July 13, 2018, notify all affected persons served by IWD
27 of the violation of Section 64533(a), in conformance with CCR, Title 22,

1 Section 64463.4(b) and (c) and 64465. Copies of Sections 64463.4 and
2 64465 are included in Appendix 1.

3
4 4. Complete Appendix 3: Proof of Notification. Submit it together with a
5 copy of the public notification to the Division on or before July 23, 2018.

6
7 5. On or before September 10, 2018, submit to the Division for review, a
8 corrective action plan identifying improvements to the water system
9 designed to address the elevated DBP levels and ensure that IWD
10 delivers water that meets all primary drinking water standards.

11
12 6. IWD shall include information regarding this violation in the 2018
13 Consumer Confidence Report (due to customers by July 1, 2019) in
14 accordance with CCR, Title 22, Section 64481(d)(3). A draft of the
15 2018 Consumer Confidence Report shall be submitted to the Division
16 for review and approval prior to distribution.

17
18 All submittals required by this Citation shall be electronically submitted to the
19 State Water Board at the following address. The subject line for all electronic
20 submittals corresponding to this Citation shall include the following
21 information: Water System name and number, citation number and title of the
22 document being submitted.

23
24 J. Steven Williams, P.E.

25 Dwpdist20@waterboards.ca.gov

26
27 The State Water Board reserves the right to make modifications to this
28 Citation as it may deem necessary to protect public health and safety. Such

1 modifications may be issued as amendments to this Citation and shall be
2 effective upon issuance.

3
4 Nothing in this Citation relieves IWD of its obligation to meet the requirements
5 of the California SDWA (CHSC, Division 104, Part 12, Chapter 4,
6 commencing with Section 116270), or any regulation, standard, permit or
7 order issued or adopted thereunder.

8
9 **PARTIES BOUND**

10 This Citation shall apply to and be binding upon IWD, its owners,
11 shareholders, officers, directors, agents, employees, contractors, successors,
12 and assignees.

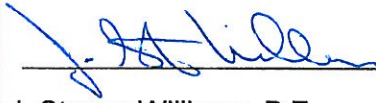
13
14 **SEVERABILITY**

15 The directives of this Citation are severable, and IWD shall comply with each
16 and every provision thereof notwithstanding the effectiveness of any
17 provision.

18
19 **FURTHER ENFORCEMENT ACTION**

20 The California SDWA authorizes the State Water Board to: issue a citation or
21 order with assessment of administrative penalties to a public water system for
22 violation or continued violation of the requirements of the California SDWA or
23 any regulation, permit, standard, citation, or order issued or adopted
24 thereunder including, but not limited to, failure to correct a violation identified
25 in a citation or compliance order. The California SDWA also authorizes the
26 State Water Board to take action to suspend or revoke a permit that has been
27 issued to a public water system if the public water system has violated
28 applicable law or regulations or has failed to comply with an order of the State

1 Water Board, and to petition the superior court to take various enforcement
2 measures against a public water system that has failed to comply with an
3 order of the State Water Board. The State Water Board does not waive any
4 further enforcement action by issuance of this Citation.

5 
6 _____

7 J. Steven Williams, P.E.

7-9-2018

8 Date

9 Appendices (3):

- 10
- 11 1. Applicable Statutes and Regulations
 - 12 2. Notification of Receipt Form
 - 13 3. Proof of Notification Form
- 14

15 Certified Mail No. 7017 0530 0001 0174 8837

**APPENDIX 1. APPLICABLE STATUTES AND REGULATIONS FOR
CITATION NO. 05-20-18C-003
TOTAL TRIHALOMETHANES (TTHM) AND HALOACETIC ACIDS (HAA5)
MAXIMUM CONTAMINANT LEVEL (MCL) VIOLATION**

NOTE: The following language is provided for the convenience of the recipient, and cannot be relied upon as the State of California's representation of the law. The published codes are the only official representation of the law. Regulations related to drinking water are in Titles 22 and 17 of the California Code of Regulations. Statutes related to drinking water are in the Health & Safety Code, the Water Code, and other codes.

California Health and Safety Code (CHSC):

Section 116271. Transition of CDPH duties to State Board states in relevant part

(a) The state board succeeds to and is vested with all of the authority, duties, powers, purposes, functions, responsibilities, and jurisdiction of the State Department of Public Health, its predecessors, and its director for purposes of all of the following:

- (1) The Environmental Laboratory Accreditation Act (Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101).
- (2) Article 3 (commencing with Section 106875) of Chapter 4 of Part 1.
- (3) Article 1 (commencing with Section 115825) of Chapter 5 of Part 10.
- (4) This chapter and the Safe Drinking Water State Revolving Fund Law of 1997 (Chapter 4.5 (commencing with Section 116760)).
- (5) Article 2 (commencing with Section 116800), Article 3 (commencing with Section 116825), and Article 4 (commencing with Section 116875) of Chapter 5.
- (6) Chapter 7 (commencing with Section 116975).
- (7) The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Division 43 (commencing with Section 75001) of the Public Resources Code).
- (8) The Water Recycling Law (Chapter 7 (commencing with Section 13500) of Division 7 of the Water Code).
- (9) Chapter 7.3 (commencing with Section 13560) of Division 7 of the Water Code.
- (10) The California Safe Drinking Water Bond Law of 1976 (Chapter 10.5 (commencing with Section 13850) of Division 7 of the Water Code).
- (11) Wholesale Regional Water System Security and Reliability Act (Division 20.5 (commencing with Section 73500) of the Water Code).
- (12) Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Division 26.5 (commencing with Section 79500) of the Water Code).

(b) The state board shall maintain a drinking water program and carry out the duties, responsibilities, and functions described in this section. Statutory reference to "department," "state department," or "director" regarding a function transferred to the state board shall refer to the state board. This section does not impair the authority of a local health officer to enforce this chapter or a county's election not to enforce this chapter, as provided in Section 116500...

(k)

(1) The state board shall appoint a deputy director who reports to the executive director to oversee the issuance and enforcement of public water system permits and other duties as appropriate. The deputy director shall have public health expertise.

(2) The deputy director is delegated the state board's authority to provide notice, approve notice content, approve emergency notification plans, and take other action pursuant to Article 5 (commencing with Section 116450), to issue, renew, reissue, revise, amend, or deny any public water system permits pursuant to Article 7 (commencing with Section 116525), to suspend or revoke any public water system permit pursuant to Article 8 (commencing with Section 116625), and to issue citations, assess penalties, or issue orders pursuant to Article 9 (commencing with Section 116650). Decisions and actions of the deputy director taken pursuant to Article 5 (commencing with Section 116450) or Article 7 (commencing with Section 116525) are deemed decisions and actions taken by the state board, but are not subject to reconsideration by the state board except as provided in Section 116540. Decisions and actions of the deputy director taken pursuant to Article 8 (commencing with Section 116625) and Article 9 (commencing with Section 116650) are deemed decisions and actions taken by the state board, but any aggrieved person may petition the state board for reconsideration of the decision or action. This subdivision is not a limitation on the state board's authority to delegate any other powers and duties.

Section 116275. Definitions states in relevant part:

(c) "Primary drinking water standards" means:

(1) Maximum levels of contaminants that, in the judgment of the state board, may have an adverse effect on the health of persons.

(2) Specific treatment techniques adopted by the state board in lieu of maximum contaminant levels pursuant to subdivision (j) of Section 116365.

(3) The monitoring and reporting requirements as specified in regulations adopted by the state board that pertain to maximum contaminant levels.

Section 116555. Operational requirements states in relevant part:

- (a) Any person who owns a public water system shall ensure that the system does all of the following:
- (1) Complies with primary and secondary drinking water standards.
 - (2) Will not be subject to backflow under normal operating conditions.
 - (3) Provides a reliable and adequate supply of pure, wholesome, healthful, and potable water.

Section 116577. Enforcement fee states:

(a) Each public water system shall reimburse the state board for actual costs incurred by the state board for any of the following enforcement activities related to that water system:

- (1) Preparing, issuing, and monitoring compliance with, an order or a citation.
- (2) Preparing and issuing public notification.
- (3) Conducting a hearing pursuant to Section 116625.

(b) The state board shall submit an invoice for these enforcement costs to the public water system that requires payment before September 1 of the fiscal year following the fiscal year in which the costs were incurred. The invoice shall indicate the total hours expended, the reasons for the expenditure, and the hourly cost rate of the state board. The costs set forth in the invoice shall not exceed the total actual costs to the state board of enforcement activities specified in this section.

(c) Notwithstanding the reimbursement of enforcement costs of the local primacy agency pursuant to subdivision (a) of Section 116595 by a public water system under the jurisdiction of the local primacy agency, a public water system shall also reimburse enforcement costs, if any, incurred by the state board pursuant to this section.

(d) "Enforcement costs," as used in this section, does not include "litigation costs" pursuant to Section 116585.

(e) The state board shall not be entitled to enforcement costs pursuant to this section if a court determines that enforcement activities were in error.

(f) Payment of the invoice shall be made within 90 days of the date of the invoice. Failure to pay the invoice within 90 days shall result in a 10-percent late penalty that shall be paid in addition to the invoiced amount.

(g) The state board may, at its sole discretion, waive payment by a public water system of all or any part of the invoice or penalty.

Section 116625. Revocation and suspension of permits states:

(a) The state board, after providing notice to the permittee and opportunity for a hearing, may suspend or revoke any permit issued pursuant to this chapter if the state board determines pursuant to the hearing that the permittee is not complying with the permit, this chapter, or any regulation, standard, or order issued or adopted thereunder, or that the permittee has made a false statement or representation on any application, record, or report maintained or submitted for purposes of compliance with this chapter. If the permittee does not request a hearing within the period specified in the notice, the state board may suspend or revoke the permit without a hearing. If the permittee submits a timely request for a hearing, the hearing shall be before the state board or a member of the state board, in accordance with Section 183 of the Water Code and the rules for adjudicative proceedings adopted under Section 185 of the Water Code. If the permit at issue has been temporarily suspended pursuant to subdivision (b), the notice shall be provided within 15 days of the effective date of the temporary suspension order. The commencement of the hearing under this subdivision shall be as soon as practicable, but no later than 60 days after the effective date of the temporary suspension order, unless the state board grants an extension of the 60 day period upon request of the permittee.

(b) The state board may temporarily suspend any permit issued pursuant to this chapter before any hearing when the action is necessary to prevent an imminent or substantial danger to health. The state board shall notify the permittee of the temporary suspension and the effective date of the temporary suspension and, at the same time, notify the permittee that a hearing has been scheduled. The hearing shall be held as soon as possible, but not later than 15 days after the effective date of the temporary suspension unless the state board grants an extension of the 15 day period upon request of the permittee, and shall deal only with the issue of whether the temporary suspension shall remain in place pending a hearing under subdivision (a). The hearing shall be conducted under the rules for adjudicative proceedings adopted by the state board under Section 185 of the Water Code. The temporary suspension shall remain in effect until the hearing under this subdivision is completed and the state board has made a final determination on the temporary suspension, which shall be made within 15 days after the completion of the hearing unless the state board grants an extension of the 15 day period upon request of the permittee. If the determination is not transmitted within 15 days after the hearing is completed, or any extension of this period requested by the permittee, the temporary suspension shall be of no further effect. Dissolution of the temporary suspension does not deprive the state board of jurisdiction to proceed with a hearing on the merits under subdivision (a).

Section 116650. Citations states:

(a) If the state board determines that a public water system is in violation of this chapter or any regulation, permit, standard, citation, or order issued or adopted thereunder, the state board may issue a citation to the public water system. The citation shall be served upon the public water system personally or by certified mail. Service shall be

deemed effective as of the date of personal service or the date of receipt of the certified mail. If a person to whom a citation is directed refuses to accept delivery of the certified mail, the date of service shall be deemed to be the date of mailing.

(b) Each citation shall be in writing and shall describe the nature of the violation or violations, including a reference to the statutory provision, standard, order, citation, permit, or regulation alleged to have been violated.

(c) A citation may specify a date for elimination or correction of the condition constituting the violation.

(d) A citation may include the assessment of a penalty as specified in subdivision (e).

(e) The state board may assess a penalty in an amount not to exceed one thousand dollars (\$1,000) per day for each day that a violation occurred, and for each day that a violation continues to occur. A separate penalty may be assessed for each violation and shall be in addition to any liability or penalty imposed under any other law.

Section 116701. Petitions to Orders and Decisions states:

(a)

(1) Within 30 days of issuance of an order or decision under authority delegated to an officer or employee of the state board under Article 8 (commencing with Section 116625) or Article 9 (commencing with Section 116650), an aggrieved person may petition the state board for reconsideration.

(2) Within 30 days of issuance of an order or decision under authority delegated to an officer or employee of the state board under Section 116540, the applicant may petition the state board for reconsideration.

(3) Within 30 days of final action by an officer or employee of the state board acting under delegated authority, the owner of a laboratory that was the subject of the final action may petition the state board for reconsideration of any of the following actions:

(A) Denial of an application for certification or accreditation under Section 100855.

(B) Issuance of an order directing compliance under Section 100875.

(C) Issuance of a citation under Section 100880.

(D) Assessment of a penalty under subdivision (e) of Section 100880.

(b) The petition shall include the name and address of the petitioner, a copy of the order or decision for which the petitioner seeks reconsideration, identification of the reason the petitioner alleges the issuance of the order was inappropriate or improper, the specific action the petitioner requests, and other information as the state board may prescribe. The petition shall be accompanied by a statement of points and authorities of the legal issues raised by the petition.

(c) The evidence before the state board shall consist of the record before the officer or employee who issued the order or decision and any other relevant evidence that, in the judgment of the state board, should be considered to implement the policies of this chapter. The state board may, in its discretion, hold a hearing for receipt of additional evidence.

(d) The state board may refuse to reconsider the order or decision if the petition fails to raise substantial issues that are appropriate for review, may deny the petition upon a determination that the issuance of the order or decision was appropriate and proper, may set aside or modify the order or decision, or take other appropriate action. The state board's action pursuant to this subdivision shall constitute the state board's completion of its reconsideration.

(e) The state board, upon notice and hearing, if a hearing is held, may stay in whole or in part the effect of the order or decision subject to the petition for reconsideration.

(f) If an order or decision is subject to reconsideration under this section, the filing of a petition for reconsideration is an administrative remedy that must be exhausted before filing a petition for writ of mandate under Section 100920.5 or 116700.

California Code of Regulations (CCR), Title 22:

Section 64533 (Maximum Contaminant Levels for Disinfection Byproducts) states in relevant part:

(a) Using the monitoring calculation methods specified in sections 64534, 64534.2, 64535, and 64535.2, the primary MCLs for the disinfection byproducts shown in table 64533-A shall not be exceeded in drinking water supplied to the public.

**Table 64533-A
Maximum Contaminant Levels and Detection Limits for Purposes of Reporting
Disinfection Byproducts**

Disinfection Byproduct	Maximum Contaminant Level (mg/L)	Detection Limit for Purposes of Reporting (mg/L)
Total trihalomethanes (TTHM)	0.080	
Bromodichloromethane		0.0010
Bromoform		0.0010
Chloroform		0.0010
Dibromochloromethane		0.0010

Haloacetic acids (five) (HAA5)	0.060	
Monochloroacetic Acid		0.0020
Dichloroacetic Acid		0.0010
Trichloroacetic Acid		0.0010
Monobromoacetic Acid		0.0010
Dibromoacetic Acid		0.0010

Section 64534.2 (Disinfection Byproducts Monitoring) states in relevant part:

(d) By the applicable date specified in section 64530(d), and in lieu of TTHM and HAA5 monitoring in subsection (a):

(1) Community and nontransient noncommunity water systems shall monitor for TTHM and HAA5 at the frequencies and location totals indicated in table 64534.2-C and in accordance with the monitoring plan developed pursuant to section 64534.8;

Table 64534.2-C
Routine Monitoring Frequency for TTHM and HAA5

		<i>Minimum monitoring frequency¹</i>	
<i>Source water type</i>	<i>Persons served</i>	<i>Number of distribution system monitoring locations</i>	<i>Monitoring period²</i>
Systems using approved surface water	≥5,000,000	20 dual sample sets	per quarter
	1,000,000 – 4,999,999	16 dual sample sets	per quarter
	250,000 – 999,999	12 dual sample sets	per quarter
	50,000 – 249,999	8 dual sample sets	per quarter
	10,000 – 49,999	4 dual sample sets	per quarter
	3,301 – 9,999	2 dual sample sets	per quarter
	500 – 3,300	1 TTHM and 1 HAA5 sample: one at the location with the highest TTHM measurement, one at the location with the highest HAA5 measurement	per quarter
	<500	1 TTHM and 1 HAA5 sample: one at the location with the highest TTHM measurement, one at the location with the highest HAA5 measurement ³	per year
Systems using ground water not under direct influence of surface water	≥500,000	8 dual sample sets	per quarter
	100,000 – 499,999	6 dual sample sets	per quarter
	10,000 – 99,999	4 dual sample sets	per quarter
	500 – 9,999	2 dual sample sets	per year
	<500	1 TTHM and 1 HAA5 sample: one at the location with the highest TTHM measurement, one at the location with the highest HAA5 measurement ³	per year

¹ All systems shall monitor during the month of highest disinfection byproduct concentrations.

² Systems on quarterly monitoring shall take dual sample sets every 90 days at each monitoring location, except for systems using approved surface water and serving 500 – 3,300 persons.

³ Only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location and month.

Section 64534.8 (Monitoring Plans) states in relevant part:

(e) The plan developed for compliance monitoring pursuant to section 64534.2(d) may be revised to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for State Board -approved reasons, after consultation with the State Board regarding the need for changes and the appropriateness of changes. Systems shall comply with the requirements of subsection (a) for the revised plan. If monitoring locations are changed, systems shall replace existing compliance monitoring locations having the lowest LRAA with new locations that reflect the current distribution system locations having expected high TTHM or HAA5 levels.

Section 64535 (General Requirements for Determining Compliance) states:

(a) All samples taken and analyzed in accordance with section 64534.8 shall be included in determining compliance, pursuant to sections 64535.2, 64535.4, and 64536.4.

(b) For violations of the MCLs in section 64533 or MRDLs in section 64533.5 that may pose an acute risk to human health, notification shall be pursuant to sections 64463, 64463.1, and 64465.

Section 64535.2 (Determining Disinfection Byproducts Compliance) states in relevant part:

(e) TTHM and HAA5 MCL compliance, as monitored pursuant to section 64534.2(d), shall be determined as follows:

- (1) For systems monitoring quarterly, each locational running annual average (LRAA), computed quarterly, shall not exceed the MCLs specified in section 64533;
- (2) For systems monitoring annually or less frequently, each sample collected shall not exceed the MCLs specified in section 64533. If no sample exceeds the MCL, the sample result for each monitoring location shall be considered the LRAA for the monitoring location. If any sample exceeds the MCL, systems shall increase monitoring pursuant to section 64534.2(d)(5). Compliance with the MCL shall then be determined by the average of the sample that triggered the quarterly monitoring and the following three quarters of monitoring, unless the result of fewer than four quarters of monitoring will cause the LRAA to exceed the MCL, in which case the system is in violation immediately. After monitoring quarterly for four consecutive quarters (including the quarter that triggered the quarterly monitoring), and until such time as monitoring returns to routine monitoring pursuant to section 64534.2(d)(5), compliance shall be determined pursuant to paragraph (1);
- (3) If a system fails to complete four consecutive quarters of monitoring, compliance with the MCL for the last four-quarter compliance period shall be based on an average of the available data. If more than one sample per quarter is taken at a monitoring location, all the samples taken in the quarter at that monitoring location shall be averaged to determine a quarterly average to be used in the LRAA calculation; and
- (4) If the LRAA exceeds the MCL, calculated based on four consecutive quarters of monitoring (or the LRAA calculated based on fewer than four quarters of data if the MCL would be exceeded regardless of the monitoring results of subsequent quarters), the system is in violation of the MCL and shall notify the public pursuant to sections 64463, 64463.4, and 64465, including the language in appendix 64465-G, in addition to reporting to the State Board pursuant to sections 64537 through 64537.6.

Section 64463.4 (Tier 2 Public Notice) states:

(a) A water system shall give public notice pursuant to this section if any of the following occurs:

- (1) Any violation of the MCL, MRDL, and treatment technique requirements, except:
 - (A) Where a Tier 1 public notice is required under section 64463.1; or
 - (B) Where the State Board determines that a Tier 1 public notice is required, based on potential health impacts and persistence of the violations;
- (2) All violations of the monitoring and testing procedure requirements in sections 64421 through 64426.1, article 3 (Primary Standards – Bacteriological Quality), for which the State Board determines that a Tier 2 rather than a Tier 3 public notice is required, based on potential health impacts and persistence of the violations;
- (3) Other violations of the monitoring and testing procedure requirements in this chapter, and chapters 15.5, 17 and 17.5, for which the State Board determines that a Tier 2 rather than a Tier 3 public notice is required, based on potential health impacts and persistence of the violations; or
- (4) Failure to comply with the terms and conditions of any variance or exemption in place.

(b) A water system shall give the notice as soon as possible within 30 days after it learns of a violation or occurrence specified in subsection (a), except that the water system may request an extension of up to 60 days for providing the notice. This extension would be subject to the State Board's written approval based on the violation or occurrence having been resolved and the State Board's determination that public health and welfare would in no way be adversely affected. In addition, the water system shall:

- (1) Maintain posted notices in place for as long as the violation or occurrence continues, but in no case less than seven days;

(2) Repeat the notice every three months as long as the violation or occurrence continues. Subject to the State Board's written approval based on its determination that public health would in no way be adversely affected, the water system may be allowed to notice less frequently but in no case less than once per year. No allowance for reduced frequency of notice shall be given in the case of a total coliform MCL violation or violation of a Chapter 17 treatment technique requirement; and

(3) For turbidity violations pursuant to sections 64652.5(c)(2) and 64653(c), (d) and (f), as applicable, a water system shall consult with the State Board as soon as possible within 24 hours after the water system learns of the violation to determine whether a Tier 1 public notice is required. If consultation does not take place within 24 hours, the water system shall give Tier 1 public notice within 48 hours after learning of the violation.

(c) A water system shall deliver the notice, in a manner designed to reach persons served, within the required time period as follows:

(1) Unless otherwise directed by the State Board in writing based on its assessment of the violation or occurrence and the potential for adverse effects on public health and welfare, community water systems shall give public notice by:

(A) Mail or direct delivery to each customer receiving a bill including those that provide their drinking water to others (e.g., schools or school systems, apartment building owners, or large private employers), and other service connections to which water is delivered by the water system; and

(B) Use of one or more of the following methods to reach persons not likely to be reached by a mailing or direct delivery (renters, university students, nursing home patients, prison inmates, etc.):

1. Publication in a local newspaper;
2. Posting in conspicuous public places served by the water system, or on the Internet; or
3. Delivery to community organizations.

(2) Unless otherwise directed by the State Board in writing based on its assessment of the violation or occurrence and the potential for adverse effects on public health and welfare, noncommunity water systems shall give the public notice by:

(A) Posting in conspicuous locations throughout the area served by the water system; and

(B) Using one or more of the following methods to reach persons not likely to be reached by a public posting:

1. Publication in a local newspaper or newsletter distributed to customers;
2. E-mail message to employees or students;
3. Posting on the Internet or intranet; or
4. Direct delivery to each customer.

Section 64465 (Public Notice Content and Format) states in relevant part:

(a) Each public notice given pursuant to this article, except Tier 3 public notices for variances and exemptions pursuant to subsection (b), shall contain the following:

(1) A description of the violation or occurrence, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);

(2) The date(s) of the violation or occurrence;

(3) Any potential adverse health effects from the violation or occurrence, including the appropriate standard health effects language from appendices 64465-A through G;

(4) The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in drinking water;

(5) Whether alternative water supplies should be used;

(6) What actions consumers should take, including when they should seek medical help, if known;

(7) What the water system is doing to correct the violation or occurrence;

(8) When the water system expects to return to compliance or resolve the occurrence;

(9) The name, business address, and phone number of the water system owner, operator, or designee of the water system as a source of additional information concerning the public notice;

(10) A statement to encourage the public notice recipient to distribute the public notice to other persons served, using the following standard language: —Please share this information with all the other people who drink this water, especially those who may not have received this public notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail; and

(11) For a water system with a monitoring and testing procedure violation, this language shall be included:

"We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period dates], we ['did not monitor or test' or 'did not complete all monitoring or testing'] for [contaminant(s)], and therefore, cannot be sure of the quality of your drinking water during that time." ...

(c) A public water system providing notice pursuant to this article shall comply with the following multilingual-related requirements:

(2) For a Tier 2 or Tier 3 public notice:

- (A) The notice shall contain information in Spanish regarding the importance of the notice, or contain a telephone number or address where Spanish-speaking residents may contact the public water system to obtain a translated copy of the notice or assistance in Spanish; and
- (B) When a non-English speaking group other than Spanish-speaking exceeds 1,000 residents or 10 percent of the residents served by the public water system, the notice shall include:
1. Information in the appropriate language(s) regarding the importance of the notice; or
 2. A telephone number or address where such residents may contact the public water system to obtain a translated copy of the notice or assistance in the appropriate language; and
- (3) For a public water system subject to the Dymally-Alatorre Bilingual Services Act, Chapter 17.5, Division 7, of the Government Code (commencing with section 7290), meeting the requirements of this Article may not ensure compliance with the Dymally-Alatorre Bilingual Services Act.
- (d) Each public notice given pursuant to this article shall:
- (1) Be displayed such that it catches people's attention when printed or posted and be formatted in such a way that the message in the public notice can be understood at the eighth-grade level;
 - (2) Not contain technical language beyond an eighth-grade level or print smaller than 12 point; and
 - (3) Not contain language that minimizes or contradicts the information being given in the public notice.

**Appendix 64465-G. Health Effects Language
Disinfection Byproducts, Byproduct Precursors, and Disinfectant Residuals**

<i>Contaminant</i>	<i>Health Effects Language</i>
TTHMs [Total Trihalomethanes]:	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney, or central nervous system problems, and may have an increased risk of getting cancer.
Haloacetic Acids	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

Section 64469 (Reporting Requirements) states in relevant part:

(d) Within 10 days of giving initial or repeat public notice pursuant to Article 18 of this Chapter, except for notice given under section 64463.7(d), each water system shall submit a certification to the State Board that it has done so, along with a representative copy of each type of public notice given.

Section 64481 (Content of the Consumer Confidence Report) states in relevant part:

(c) If any of the following are detected, information for each pursuant to subsection (d) shall be included in the Consumer Confidence Report:

- (1) Contaminants subject to an MCL, regulatory action level, MRDL, or treatment technique (regulated contaminants), as specified in sections 64426.1, 64431, 64442, 64443, 64444, 64448, 64449, 64533, 64533.5, 64536, 64536.2, 64653 and 64678;

(d) For contaminants identified in subsection (c), the water system shall include in the Consumer Confidence Report one table or several adjacent tables that have been developed pursuant to this subsection. Any additional monitoring results that a water system chooses to include in its Consumer Confidence Report shall be displayed separately.

- (3) The table(s) shall clearly identify any data indicating violations of MCLs, regulatory action levels, MRDLs, or treatment techniques and the Consumer Confidence Report shall give information on each violation including the length of the violation, potential adverse health effects (PDWS only), and actions taken by the system to address the violation. To describe the potential health effects, the system shall use the relevant language pursuant to appendices 64465-A through H;

APPENDIX 2. NOTIFICATION OF RECEIPT

Citation Number: 05-20-18C-003

Name of Water System: Idyllwild Water District

System Number: 3310019

Certification

I certify that I am an authorized representative of the Idyllwild Water District and that Citation No. 05-20-18C-003 was received on _____. Further I certify that the Citation has been reviewed by the appropriate management staff of the Idyllwild Water District and it is clearly understood that Citation No. 05-20-18C-003 contains legally enforceable directives with specific due dates.

Signature of Water System Representative

Date

**THIS FORM MUST BE COMPLETED AND RETURNED TO THE STATE WATER BOARD,
DIVISION OF DRINKING WATER, NO LATER THAN JULY 13, 2018.**

Disclosure: Be advised that the California Health and Safety Code, Sections 116725 and 116730 state that any person who knowingly makes any false statement on any report or document submitted for the purpose of compliance with the Safe Drinking Water Act may be liable for, respectively, a civil penalty not to exceed five thousand dollars (\$5,000) for each separate violation or, for continuing violations, for each day that violation continues, or be punished by a fine of not more than \$25,000 for each day of violation, or by imprisonment in the county jail not to exceed one year, or by both the fine and imprisonment.

APPENDIX 3. PROOF OF NOTIFICATION

Citation Number: 05-20-18C-003

Name of Water System: Idyllwild Water District

System Number: 3310019

Certification

I certify that the users of the water supplied by this water system were notified of the TTHM and HAA5 MCL violation of California Code of Regulations, Title 22, Section 64355(a), for the compliance period of July 1, 2017 – June 30, 2018.

Date of Notification: _____

On the date of notification set forth above, I served the above referenced document(s) on the consumers by:

_____ Sending a copy through the U.S. Mail, first class, postage prepaid, addressed to each of the resident(s) at the place where the property is situated, pursuant to the California Civil Code. Attach copy of Notice.

_____ Newspaper (if the problem has been corrected). Attach a copy of Notice.

_____ Personally hand-delivering a copy to each of the consumers. Attach a copy of Notice.

_____ Posted on a public bulletin board, that will be seen by each of the consumers (for small, non-community water systems with prior Department approval). Attach copy of Notice.

I hereby declare the forgoing to be true and correct under penalty of perjury.

Dated: _____

Signature of Person Serving Notice

Attach a copy of the public notice distributed to the water system's customers

<p>THIS FORM MUST BE COMPLETED AND RETURNED TO THE STATE WATER BOARD, DIVISION OF DRINKING WATER, NO LATER THAN JULY 23, 2018.</p>

Disclosure: Be advised that the California Health and Safety Code, Sections 116725 and 116730 state that any person who knowingly makes any false statement on any report or document submitted for the purpose of compliance with the Safe Drinking Water Act may be liable for, respectively, a civil penalty not to exceed five thousand dollars (\$5,000) for each separate violation or, for continuing violations, for each day that violation continues, or be punished by a fine of not more than \$25,000 for each day of violation, or by imprisonment in the county jail not to exceed one year, or by both the fine and imprisonment.



Disinfection By-Products

On This Page

- Introduction
- WHO Research and Guideline Values for DBPs
- USEPA Standards for DBPs
- DBPs and the Safe Water System
- References
- Additional Resources

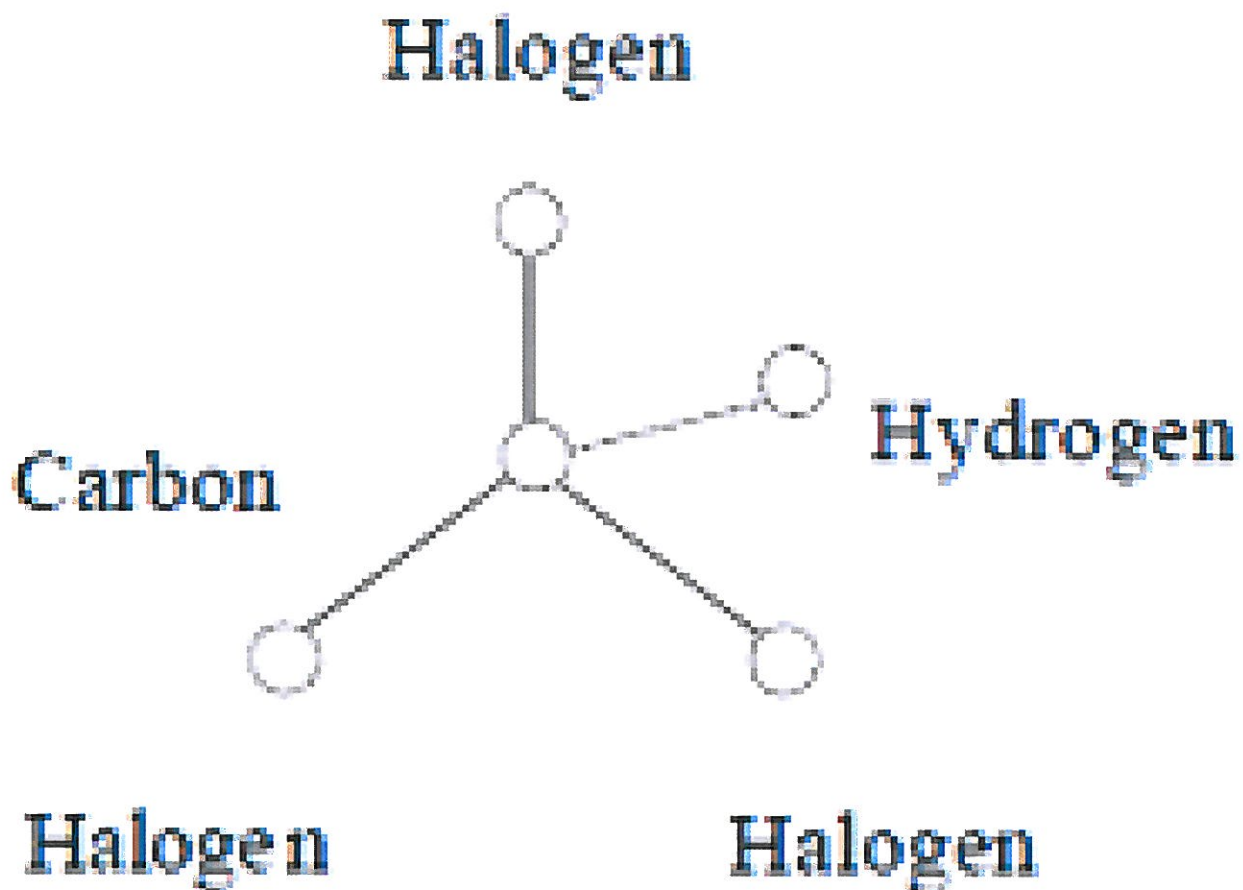
Introduction

Chlorine was discovered in 1774 by the chemist Karl Scheele¹. One of the first known uses of chlorine for disinfection was not until 1850, when Snow used it to attempt to disinfect London's water supply during that now-famous cholera epidemic. It was not until the early 1900's, however, that chlorine was widely used as a disinfectant². Chlorine revolutionized water purification, reduced the incidence of waterborne diseases across the western world, and "chlorination and/or filtration of drinking water has been hailed as the major public health achievement of the 20th century"³. Chlorine remains the most widely used chemical for water disinfection in the United States². However, close to 1 billion people in the world still lack access to safe drinking water, and new questions about health effects from chlorine by-products formed during disinfection have led to questions about the advisability of using chlorine to provide safe water for this population. This page summarizes information about the production, and health effects, of disinfection by-products (DBPs).

These guidelines must be evaluated in context of the WHO Guidelines which state: "Infectious diseases caused by pathogenic bacteria, viruses, protozoa, and helminths are the most common and widespread health risk associated with drinking-water"¹⁰ (Chapter 7, Microbiological Aspects; Section 7.1, pg 118). Additionally, a previous version of these guidelines states: "Where local circumstances require that a choice must be made between meeting either microbiological guidelines or guidelines for disinfectants or disinfectant by-

products, the microbiological quality must always take precedence, and where necessary, a chemical guideline value can be adopted corresponding to a higher level of risk. Efficient disinfection must *never* be compromised" ² (Chemical Aspects; Section 3.6.4, pg 49/65).

In disinfection, gaseous chlorine (Cl_2) or liquid sodium hypochlorite (bleach, NaOCl) is added to, and reacts with, water to form hypochlorous acid. In the presence of bromine, hypobromous acid is also formed. Both chlorine and bromine are in the "halogen" group of elements, and have similar chemical characteristics. Hypochlorous and hypobromous acid form strong oxidizing agents in water and react with a wide variety of compounds, which is why they are such effective disinfectants.



In 1974, Rook ⁴ discovered that hypochlorous acid and hypobromous acid also react with naturally occurring organic matter to create many water disinfection by-products, including the four primary trihalomethanes:

- Chloroform – CHCl_3
- Bromodichloromethane (BDCM) – CHCl_2Br
- Dibromochloromethane (DBCM) – CHClBr_2
- Bromoform – CHBr_3

At the center of each of the four trihalomethanes is a carbon atom, and it is surrounded by and bound to four atoms: one hydrogen and three halogens. These four compounds are collectively termed trihalomethanes and are abbreviated as either THM or TTHM (for total trihalomethanes).

Rook's discovery of THMs in drinking water led to research on other chemicals formed when chlorine is added to water, and to the health effects of these chemicals. Richardson⁵ identified greater than 600 water disinfection by-products in chlorinated tap water, including haloacetic acids (HAAs). THMs, and to a lesser extent HAAs, are currently used as indicator chemicals for all potentially harmful compounds formed by the addition of chlorine to water. In many countries the levels of THMs and HAAs in chlorinated water supplies are regulated based on this assumption.

Humans are exposed to DBPs through drinking-water and oral, dermal, and inhalational contact with chlorinated water⁶. In populations who take hot showers or baths, inhalation and dermal absorption in the shower accounts for more exposure to THMs than drinking water⁷.

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World Health Organization (WHO) Research and Guideline Values for DBPs

The World Health Organization (WHO) International Agency for Research on Cancer (IARC) reviews research conducted on potential carcinogens and develops monographs that summarize the research and classify the compound. Links to the monographs for BDCM, DBCM, bromoform, and chloroform are available below (see [Additional Resources](#)). As can be seen in Table 1 (below), chloroform and BDCM are classified as possible human carcinogens. The classifications of possible human carcinogens come from data that is extrapolated from research on animals that may or may not be relevant to human cancer. DBCM and bromoform are not classifiable, indicating there is no evidence supporting these two compounds as carcinogens, but there is not enough research to classify them as non-carcinogenic. There is inadequate epidemiological evidence of carcinogenicity in humans for all four compounds.

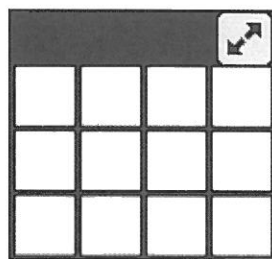


Table 1: IARC Classification of THMs

	Humans	Classification
Chloroform	Inadequate evidence for human carcinogenicity.	Possible human carcinogen (Group 2B)

Bromodichloromethane	Inadequate evidence for human carcinogenicity.	Possible human carcinogen (Group 2B)
Dibromochloromethane	Inadequate evidence for human carcinogenicity.	Not classifiable as to its carcinogenicity in humans (Group 3)
Bromoform	Inadequate evidence for human carcinogenicity.	Not classifiable as to its carcinogenicity in humans (Group 3)

WHO states that “all people, whatever their stage of development and their social and economic conditions, have the right to have access to an adequate supply of safe drinking water”⁸. To this end, WHO has developed guideline values for many contaminants in drinking water. It is important to note that these guideline values are not standards. “It must be emphasized that the guideline values recommended are not mandatory limits. In order to define such limits, it is necessary to consider the guideline values in the context of local or national environmental, social, economic, and cultural conditions and waterborne disease occurrence”².

To develop the guideline values for drinking-water, WHO reviewed the literature for well-designed and documented studies showing health effects from exposure to each of the THMs⁸. A safety factor of 1,000, an average adult human weight of 60 kilograms, and an average drinking water consumption of 2 liters per day were incorporated into the development of each guideline value. The chloroform, bromoform, and dibromochloromethane guideline values were all obtained using a total daily intake calculation. It was assumed that 50 percent of total daily intake of chloroform came from drinking water, and 20 percent of total daily intake of bromoform and dibromochloromethane came from drinking water (in areas with no showers, this assumption leads to a conservative estimate of risk). The models developed for bromodichloromethane and chloroform were based on an excess cancer risk of 10^{-5} , or one extra cancer per 100,000 people at the guideline value for 70 years².

- The *chloroform* guideline value was developed from a study showing hepatotoxicity in beagle dogs ingesting chloroform-laced toothpaste for 7.5 years. (A linearized multi-stage model based on observed increases in kidney tumors in male rats supports this total daily intake calculation).
- The *bromoform* guideline value was developed from a study showing lesions on the livers of rats exposed to bromoform for 90 days.
- The *dibromochloromethane* guideline value was developed based on the absence of histopathological effects in rats exposed for 90 days.
- The *bromodichloromethane* guideline value was developed using a linearized multi-stage model based on observed increases in kidney tumors in male mice.

The WHO Guideline Values ² for the THMs are shown in Table 2. WHO also considers potential health effects caused by exposure to the four compounds simultaneously. In addition to the individual guidelines, there is an additional guideline that states the following: the sum of each individual THM concentration divided by its guideline value cannot be greater than one. This is depicted in the following equation:

$$\frac{\text{Chloroform}}{\text{Chloroform GV}} + \frac{\text{BDCM}}{\text{BDCM GV}} + \frac{\text{DBCM}}{\text{DBCM GV}} + \frac{\text{Bromoform}}{\text{Bromoform GV}} < 1.0$$

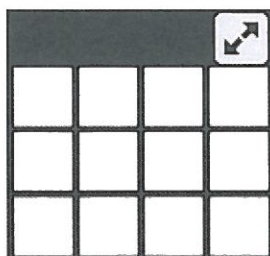


Table 2: WHO Guideline Values for Trihalomethanes in Drinking Water (WHO, 1996)

	WHO Guideline Value
Chloroform	200 µg/L
Bromodichloromethane	60 µg/L
Dibromochloromethane	100 µg/L
Bromoform	100 µg/L

These guidelines must be evaluated in context of the WHO Guidelines which state: "Infectious diseases caused by pathogenic bacteria, viruses, protozoa, and helminths are the most common and widespread health risk associated with drinking-water" ¹⁰ (Chapter 7, Microbiological Aspects; Section 7.1, pg 118).

Most importantly, the WHO specifically states in the 2nd edition of the Guidelines that: "Where local circumstances require that a choice must be made between meeting either microbiological guidelines or guidelines for disinfectants or disinfectant by-products, the microbiological quality must always take precedence, and where necessary, a chemical guideline value can be adopted corresponding to a higher level of risk. Efficient disinfection must *never* be compromised" ² (Chemical Aspects; Section 3.6.4, pg 49/65). In the 4th edition

of the Guidelines, the WHO states: "In all circumstances, disinfection efficiency should not be compromised in trying to meet guidelines for DBPs, including chlorination by-products, or in trying to reduce concentrations of these substances" ¹⁰ (Chapter 8 Chemical Aspects, Section 8.5.4, pg 188).

Thus, waterborne pathogens pose a real and more immediate threat to health; water disinfection by-products are certainly the lesser of these two evils.

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USEPA Standards for DBPs

The disinfectant/disinfection by-products (D/DBP) rule that regulates DBPs in the United States was designed to be implemented in three stages (Table 3) ^{11,12}. The US Environmental Protection Agency (USEPA) does not regulate THMs or HAAs individually – there is only a standard for total THMs and total HAAs.

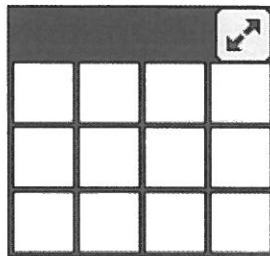
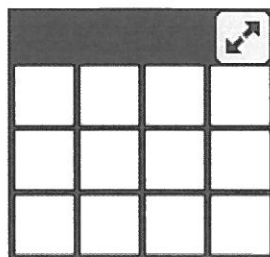


Table 3: D/DBP Rule Implementation, USEPA

Stage	TTHM Standard	HAA Standard
Initial	100 µg/L	
Stage 1	80 µg/L	60 µg/L
Stage 2	80 µg/L	60 µg/L

The USEPA has calculated cancer potency factors for the four THMs, which can be used to calculate the probability of cancer for varying exposure levels (Table 4). As can be seen, DBCM has the highest factor, and bromoform is an order of magnitude lower.

**Table 4: USEPA Cancer Potency Factors**

Compound	Cancer Potency Factor
Chloroform	insufficient data ¹³
Bromodichloromethane	0.062 mg/kg/day
Dibromochloromethane	0.084 mg/kg/day
Bromoform	0.0079 mg/kg/day

Thus, the extra cancer from chloroform was calculated to be negligible.

Other countries in the developed world, particularly in Europe, have established much stricter standards for DBPs in drinking water. These countries have the resources to follow the precautionary principle, which advocates the avoidance of chemicals until they are proven safe. These low standards are met, in part, by researching and implementing alternative disinfection methods (such as the use of ozone, UV light, and chloramines) and water treatment strategies (such as filtration before disinfection).

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DBPs and the Safe Water System

Addition of chlorine to untreated water will lead to the formation of DBPs. A significant amount of energy and time has been invested in the United States and Europe to determine the human health effects of these DBPs and how to restructure water treatment processes to prevent DBP formation in order to minimize the slight risk of cancer from long-term exposure to DBPs. However, diarrheal disease in the developing world is still a leading cause of infant and under-5 mortality and morbidity. In these populations, the risk of death or delayed development in early childhood from diarrheal disease transmitted by contaminated water is far greater than the relatively small risk of cancer in old age.

CDC has tested Safe Water System water to measure the concentration of THMs in the finished water. In that study, household chlorination of turbid and non-turbid waters did not create THM concentrations that exceeded health risk guidelines ^{14, 15}. In addition, ceramic filtration, sand filtration,

cloth filtration, and settling and decanting were not effective mitigation strategies to reduce THM formation. Since this finding may not hold for all source waters worldwide, reducing organic matter in turbid source water may reduce the potential for DBP formation¹⁵. To do this:

- Let the water settle for 12-24 hours and then decant water into a second bucket. Chlorinate this decanted water, and/or
- Filter the water through a cloth or filter before chlorination.

The Safe Water System is a proven intervention that consistently reduces diarrheal disease incidence among users in the developing world. This disease reduction leads to healthier children and adults. There is a slight risk to the ingestion of THMs at the WHO guideline value level. Although the risk from THMs is important to address, until centrally treated, piped water can be delivered to every family, the initial critical need is the provision of microbiologically safe drinking water to reduce the incidence of diarrhea and other waterborne disease.

If you have any questions or comments on this page or the Safe Water System, please email healthywater@cdc.gov (<mailto:healthywater@cdc.gov>).

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15. Lantagne DS, Cardinali F, Blount BC. Disinfection by-product formation and mitigation strategies in point-of-use chlorination with sodium dichloroisocyanurate in Tanzania. *Am J Trop Med Hyg.* 2010;83(1):135-43.

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Additional Resources

- Monographs for BDCM, DBCM, and bromoform (<http://monographs.iarc.fr/ENG/Monographs/vol52/index.php>)
- Monograph for chloroform [PDF – 52 pages] (<http://monographs.iarc.fr/ENG/Monographs/vol73/mono73-10.pdf>)

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Related Links

- CDC Healthy Water
- CDC Global Water, Sanitation, and Hygiene (WASH)
- WHO Household Water Treatment and Safe Storage (http://www.who.int/household_water)

- WHO Water Sanitation and Health (http://www.who.int/water_sanitation_health/en)
- USAID Environmental Health (<http://www.ehproject.org/default.htm>)
- PSI Center for Global Safe Water (<http://www.psi.org/about-psi/partners/other/center-global-safe-water>)
- CARE Global Water (<http://www.care.org/careswork/whatwedo/health/water.asp>)
- Centre for Affordable Water & Sanitation Technology (<http://www.cawst.org>)
- Procter & Gamble Children's Safe Drinking Water (<http://www.csdw.org/csdw/home.shtml>)
- Division of Foodborne, Waterborne, and Environmental Diseases

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How do I view different file formats (PDF, DOC, PPT, MPEG) on this site?

(<https://www.cdc.gov/Other/plugins/>)

(<https://www.cdc.gov/Other/plugins/#pdf>)

Page last reviewed: December 2, 2016

Page last updated: December 2, 2016

Content Source: Centers for Disease Control and Prevention (<http://www.cdc.gov/>)

National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (</ncezid/index.html>)

Division of Foodborne, Waterborne, and Environmental Diseases (DFWED) (</ncezid/dfwed/index.html>)

Jeannine Copelin

To: Jack Hoagland
Subject: RE: Idyllwild Water District Water Quality Press Release.

Chun Huang

Chun Huang, P.E.
Associate Sanitary Engineer
Division of Drinking Water
State Water Resources Control Board

Chun Huang,

We are customers of Idyllwild Water District who have read in the local paper that we are being sent a notice that the water coming out of our taps exceeds the MCL for both TTHM and HAA. We have several questions.

Is this notice the result of a regulatory action? If so, please email a copy? Is the water district required to correct this water quality problem in a specified amount of time? The district said it might take a year.

The water district received a citation for the TTHM and HAA5 MCL violation. A copy of the citation is attached. A violation of a drinking water standard requires public notification. Because these are classified as "chronic" (not "acute" contaminants, the water district may continue to supply water to its customers with continuous notification (updated quarterly since monitoring is required quarterly). Per EPA's definition: Acute is defined as "occurring over a short period of time; used to describe brief exposures and effects which appear promptly after exposure." Chronic is defined as "occurring over a long period of time, either continuously or intermittently; used to describe ongoing exposures and effects that develop only after a long exposure.

We are aware that the water district is actively pursuing treatment options to correct this problem. We have directed them to provide us with a plan by September 10, 2018, on how to address this issue. The water district will need to conduct some level of planning to determine an appropriate treatment method for the Idyllwild system. In general, the planning process includes evaluating treatment options, procuring funds, and applying for permits for installation of treatment; therefore, a year is not an unreasonable length of time to provide treatment. We will continue to work closely with the water district to help them return to compliance in a timely manner.

Does this notice have to be posted in restaurants and motels and coffee shops within the District.

No, not necessarily. The water district has complied with the notification requirements by providing a mailer to customers and by posting in the local newspaper. The water district may also post the notice at conspicuous public places, but is not required to do so.

The press release and newspaper article say the amounts are virtually harmless, but also indicate that we might want to switch to bottled water and consult with our doctors. What is the State's position?

The health effects information provided in the notice is mandatory language prescribed by the State; therefore, is reflective of our position that the presence of DBPs at these levels is not a water quality emergency. For your reference, I have included links to EPA's webpage and to the Center for Disease Control (CDC) for more information on the occurrence of DBPs and their health impacts:

<https://safewater.zendesk.com/hc/en-us/articles/214969387-1-What-disinfection-byproducts-does-EPA-regulate-how-are-they-formed-and-what-are-their-health-effects-in-drinking-water-at-levels-above-the-maximum-contaminant-level->

<https://safewater.zendesk.com/hc/en-us/articles/214282658-2-What-are-EPA-s-drinking-water-regulations-for-disinfection-byproducts->

<https://www.cdc.gov/safewater/chlorination-byproducts.html>

Please send us any information you have which will help us deal with this partial information we have received late. The problem was detected on June 15, but only reported to the public today.

The water district has 30 days after it learns of the violation (in this case, the date of the laboratory report, which was 6/15/2018) to provide public notice for violation of non-acute drinking water standard; therefore, the water district has complied with the notification requirements.

The 1600 plus water customers, many commercial and schools and camps for children, are at a loss how to respond and how to get the problem solved yesterday.

While this water district has violated an MCL, it is not for an acute contaminant, therefore the water district may continue to supply water to its customers with continuous notification (updated quarterly since monitoring is required quarterly).