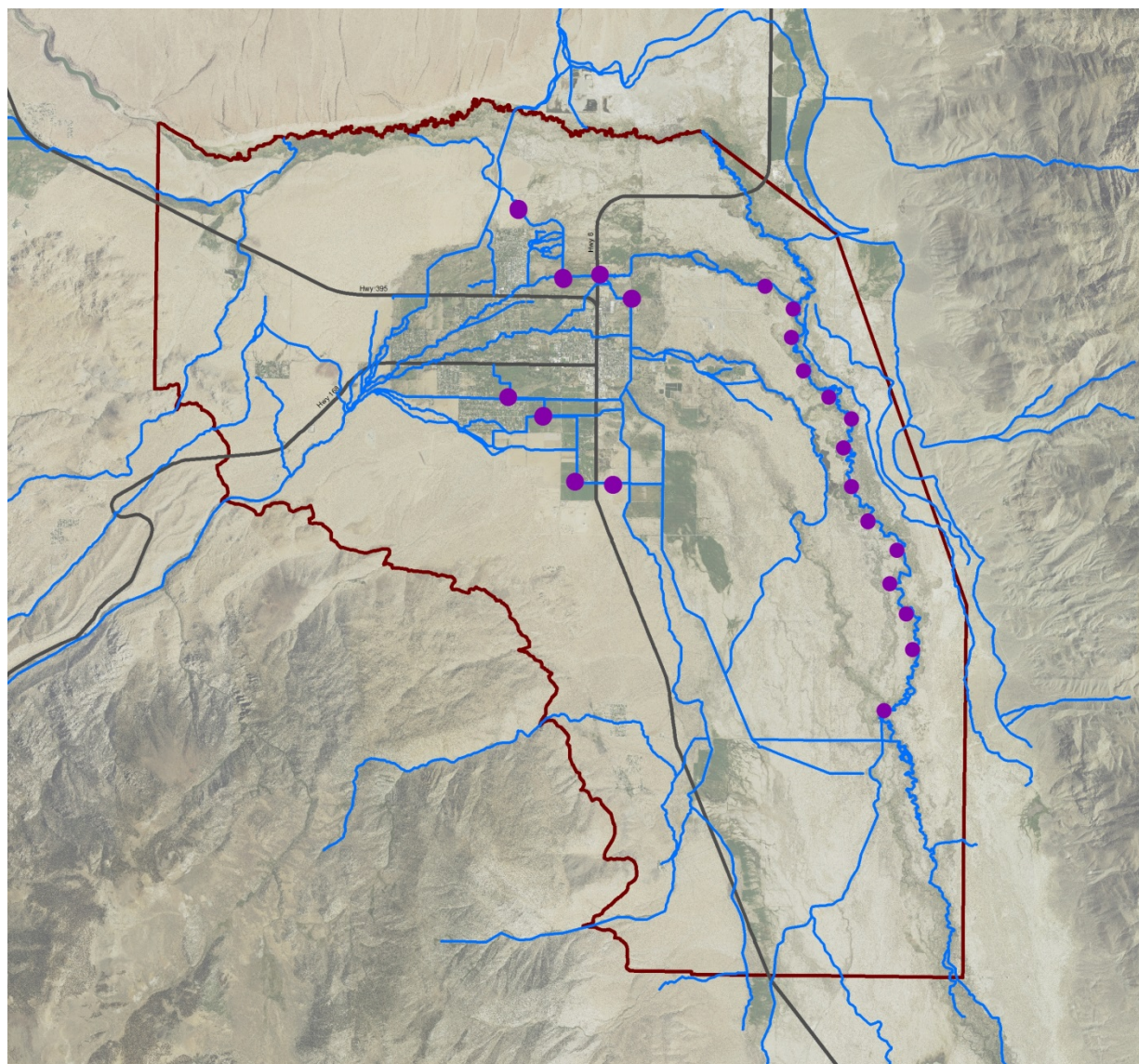


THE BISHOP CONE AUDIT FOR THE 2017-18 RUNOFF YEAR



**Inyo County Water Department
Report 2017-18
July, 2018**

THE BISHOP CONE AUDIT FOR THE 2017-18 RUNOFF YEAR

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THE BISHOP CONE AUDIT FOR THE 2017-18 RUNOFF YEAR

1.0 INTRODUCTION

The Bishop Cone Audit (Audit) is an annual comparison between Los Angeles Department of Water and Power's (LADWP) water usage on Los Angeles-owned lands on the Bishop Cone and its amount of groundwater extraction from wells on the Bishop Cone. The Bishop Cone Audit is required by the Inyo County/Los Angeles Long-term Groundwater Management Agreement (Water Agreement). The "Bishop Cone" is a reference to the legally defined area in the 1940 Hillside Decree which incorporates most of the Bishop Creek alluvial fan along with a portion of the northern Owens Valley from Bishop south towards Big Pine (Map 1). The Water Agreement and the Green Book (the technical appendix to the Water Agreement) define the terms, conditions, and procedures of the Bishop Cone Audit. Inyo County Water Department (ICWD) staff compiles the Bishop Cone Audit from data provided by LADWP. The Audit sums pumping and flowing well amounts and compares those totals to water use on Los Angeles-owned land during a given runoff year (April 1 to March 31) to determine whether LADWP's groundwater extractions exceed its surface water uses on the Bishop Cone.

2.0 BACKGROUND

The City of Los Angeles owns prior appropriative surface water rights in the Bishop area. Los Angeles also owns groundwater rights on the Bishop Cone as a consequence of its ownership of overlying land. A system of ditches and canals exist to convey both surface water from Bishop Creek and the Owens River and also groundwater pumped from LADWP wells to irrigated land throughout the Bishop Cone with some water exiting the Cone. In 1930 and 1931, Los Angeles extracted groundwater from wells on the Bishop Cone for the purpose of export to Los Angeles. This export of groundwater was challenged by local residents, and in the 1940 Hillside Decree, Los Angeles agreed not to pump groundwater for the purpose of export off the Bishop Cone.

Relevant language of the 1940 Hillside Decree is presented below (a link to the entire decree can be found at the ICWD's website at www.inyowater.org/documents/hillside-decree-1940/):

XI

That the defendants [LADWP], their servants, agents, employees, and assigns, and each of them, be, and they are hereby, enjoined, prohibited, and restrained from in any manner whatsoever pumping, extracting, taking, or transporting out of the Bishop Cone area any subterranean waters from beneath said area: provided, however, that nothing in this judgment contained shall in any manner enjoin, prohibit, or restrain the defendants, their servants, agents, employees, assigns, or any of them, from maintaining or operating their presently-existing drainage ditches to the full extent of their present normal capacity, or from taking artesian water that may arise to the surface of said area outside the casings of any of defendants' capped wells, or from pumping, extracting, taking, or using any such water as may be reasonably necessary for beneficial use upon any lands belonging to the defendants,

In 1972, Inyo County filed a California Environmental Quality Act suit claiming that increased groundwater pumping by LADWP was harming the environment of the Owens Valley and demanding that an Environmental Impact Report (EIR) be completed to analyze the effects of this increased pumping. After numerous legal challenges and negotiations, in 1991 an EIR was approved for LADWP's groundwater pumping and a long term groundwater management plan was agreed upon by Inyo County and LADWP. Section VII.A of the 1991 Water Agreement addresses the Bishop Cone and Hillside Decree with relevant language quoted below (full text of the 1991 EIR, the Water Agreement and the Greenbook can be found at the ICWD's website at <http://www.inyowater.org/documents/governing-documents/>):

"Before the Department [LADWP] may increase groundwater pumping above present levels, or construct any new wells on the [Bishop] Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses. The Department's annual groundwater extractions from the Cone shall be limited to an amount not greater than the total amount of water used on Los Angeles-owned lands on the cone during that year." (Water Agreement Section VII.A, Appendix A)

At its October 17, 1995 meeting, the Technical Group agreed to recommend to the Inyo County/Los Angeles Standing Committee the description of a Bishop Cone Audit procedure to be incorporated into the Green Book. The Standing Committee adopted the agreed-upon Bishop Cone Audit procedure on November 7, 1996 as Section IV.D of the Green Book.

Section IV.D.1.a. of the Green Book states: *"For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system. Water usage is documented on a runoff-year basis and is compiled by LADWP each May in the Bishop Area Water Use Report [Bishop Cone Audit Uses Report]."* (Appendix B)

In theory compliance with the Water Agreement and the Green Book is simple: LADWP can only extract groundwater to be used on its lands and leases on the Bishop Cone with no flow leaving the system. In a simplified, hypothetical situation, LADWP would have groundwater extraction wells at the "top" of the cone which would provide surface water to ditches running downhill to its lands and leases. Upon reaching the "lowest" land, no surface water would leave. However, there are many practical factors that dictate and complicate how the Bishop Cone Audit accounts for LADWP extractions and uses. Some of these factors are: the Bishop Cone topography (generally sloping west to east in the Bishop area, and north to south from Bishop towards Big Pine), the location of LADWP-owned lands throughout the Bishop Cone area, the location of LADWP's groundwater extraction wells (in central Bishop), the location of LADWP's flowing wells (east of Bishop adjacent to the Owens River), the location of the various ditch and canal systems used to convey water in the Bishop Cone, and operational necessities for conveying surface water both on and off the Bishop Cone.

To illustrate further, the primary source of water available for use on LADWP lands in the topographically higher west Bishop area of the cone is LADWP surface water from Bishop Creek that is diverted into various ditches for irrigation (use) on LADWP-owned land. Groundwater pumped from LADWP wells in central Bishop supplements the remaining Bishop

Creek surface water. The now combined surface and groundwater flows east and south and is used on LADWP land in the central and southern portions of the Cone. Groundwater extracted from flowing wells provides water to the Owens River for export. Some mixture of surface and groundwater also leaves the Bishop Cone either in canals or the Owens River.

Prior to the adoption of the Water Agreement, several methods were researched to determine the best procedure for tracking LADWP's uses and extractions on the Bishop Cone. A final method was selected which compares the sum of pumped groundwater from production wells and flowing groundwater from artesian wells (extractions) to surface water applied to LADWP-owned lands on the Cone (uses). To determine the total uses, a lease-wise approach was selected which tracks the difference between water coming onto a given LADWP lease and the water (if any) that exits that lease to return to the conveyance system (ditch, canal, creek or river). LADWP supplies a listing of surface water uses by each individual lease account in its annual Bishop Cone Audit Uses Report (Use Report). Credit for a use is granted on accounts that have been agreed to and inspected by ICWD staff. A combination of monitoring devices are used to track extractions and uses on the Bishop Cone, including flumes, weirs, and propeller meters. Flow measurements are taken either manually or continuously using data-logging devices at these devices.

It is important to note that the Bishop Cone Audit does not attempt to compute a complete surface or groundwater budget. Its purpose is to monitor compliance with the dictates of the Water Agreement, the Green Book, and the legal interpretations of the Hillside Decree. The Audit compares LADWP's total water uses to groundwater extractions during a given runoff year. ICWD staff gave a presentation on the Bishop Cone Audit to the Inyo County Water Commission on December 7, 2016, explaining the principles of the BCA in detail. A copy of the PowerPoint presented at the ICWC meeting can be found on the ICWD website: http://www.inyowater.org/wp-content/uploads/2016/12/Bishop-Cone-Audit-12_7_16.pdf

3.0 WATER USES ON LADWP-OWNED LAND ON THE BISHOP CONE

The location of the Bishop Cone and the pumping and flowing wells on the Bishop Cone are shown in Map 1. Also shown on Map 1 are the general locations of the LADWP-owned lease accounts used in the Bishop Cone Audit Uses Report (Appendix C).

Table 1 (below) is a compilation of water usage by account number in acre-feet (AF) on LADWP-owned land on the Bishop Cone for the runoff years of 2016-17 and 2017-18. These water-usage amounts are a yearly total of the surface water coming onto a given lease minus the surface water leaving the lease. Overall, there was an increase in total water use on the Bishop Cone of 13,017 AF from 2016-17 (Use: 33,423) to 2017-18 (Use: 46,440). The majority of this change was due to increased surface water availability due to the exceptional 2017 runoff year which was 200% of the long-term average, and LADWP's operational spreading of as much runoff as possible in order to control water amounts flowing onto the Owens Dry Lake. This resulted in several accounts receiving substantially more water than normal years.

TABLE 1
WATER USES ON LOS ANGELES-OWNED LAND ON THE BISHOP CONE

LADWP ACCOUNT NUMBER ^{*2}	RUNOFF YEAR^{*1} 2016-2017 (AF)	RUNOFF YEAR^{*1} 2017-2018 (AF)
BC502B (BA354B or BA362B)	805	781
BC302A	178	174
BC302B	1455	2011
BC311	4405	5097
BC313	1217	1358
BC324	1357	1660
BC1478 (BAICR) ^{*2}	482	385
BC387A	703	1708
BCRECF	579	837
BC339	659	1111
BC393	144	160
BC362D	(No Credit) ^{*3}	(No Credit) ^{*3}
BC304	93	210
BC500	1274	2175
BC397 (BA387B) ^{*2}	4118	6991
BC361A	1057	1921
BC361B	3026	2563
BC502A (BA354A or 362A) ^{*2}	295	1193
BCRECA	1160	1830
BCRECC	236	223
BCRECD	3106	3546
BC338	3908	5594
BCOPRB	128	2301
BCLAEMH	1547	1125
BC353	410	16
BC005A	43	41
BC005B	36	412
BC006A	89	99
BC1479 (BA342) ^{*2}	5	15
BC392	(No Credit) ^{*3}	(No Credit) ^{*3}
BC301	646	592
BC335	269	311
BCRVRECA	(No Credit) ^{*3}	(No Credit) ^{*3}
TOTAL	33,423	46,440

*1 - A runoff year is defined as starting April 1st and ending March 31st of the following year.

*2 – Former account names listed in parenthesis; in 2015/16 “BA” prefix was changed to “BC”

*3 - Accounts need additional monitoring or diversion infrastructure to establish credit.

During fall 2016 through winter 2017, joint field visits to the active BCA accounts were conducted by ICWD and LADWP staff. Based on these visits and as a result of observations and discussion of past infrastructure workings, several accounts were either granted or denied credit for the 2016/17 Audit. The accounts denied credit for 2016/17 are: BC362D, BC392, and BCRVRECA. At these three sites, ICWD staff deemed there to be insufficient flow monitoring, potentially allowing unmetered water to affect the accounts without proper quantification.

Also based on the 2016/17 field inspections, the method for calculating Use on a given account for the purpose of the BCA was changed. Prior to 2015/16, LADWP used Stockwater and Ditch Loss as credits to its lessees to distinguish between surface water used for irrigation and not used for irrigation. However, the Audit's water balance is to determine the total amount of water used on the Bishop Cone between metering devices. The Audit is not specifically concerned with how the water is used (stockwater or irrigation). Stockwater is simply water supplied to a parcel during the year for the purpose of providing surface water to stock instead of irrigation to grow plants; it is a distinction made by LADWP for the lessees but is a "Use" for the purpose of the Audit with properly metered water flowing through diversions onto an account and not exiting the account. Ditch Loss is a similar accounting distinction made by LADWP and its lessees; it is an estimation of the water that seeps into the ground from the Account's metering device prior to arriving at the actual surface water diversion point on the lease (these are sometimes large distances apart). The Ditch Losses are credited to the lessee to reflect water that cannot be used for irrigation. This water, however, is a Use for purposes of the BCA. The Stockwater and Ditch Loss estimates from previous BCA's (prior to 2015/16) have been replaced with the more rigorous and accurate calculation of subtracting flow onto each account from flow off of that account.

The data reporting format used by LADWP for the BCA has also been updated with approval from ICWD staff. The updated Use Report contained in Appendix C has been simplified by removing LADWP's internal, lessee-related notations. The new Use Report now contains totals of water entering and leaving a lease (the pertinent information for conducting the Audit). All flow monitoring stations were inspected during the 2016/17 field campaign.

Finally, ICWD staff continues to receive the previous LADWP version of the Use Report to check for historic consistency. The changes in adding Stockwater and Ditch Loss credits for BCA reporting are the primary reason 2015-16 Uses were substantially greater than 2014-15 Uses. The additional increase in Use between 2015-16 and 2016-17 is primarily due to increased surface water availability due to a moderately wet runoff year combined with operational spreading in early 2017. The increase in use from 2016-17 to 2017-18 is due to heavy runoff following the historic 2016-17 winter (appx. 200% of long-term average). LADWP actively spread surface water throughout the Owens Valley to avoid damaging flows onto the Owens Dry Lake; and a significant amount of surface water was spread throughout the Bishop Cone. Also due to large runoff volumes, pumping on the cone was well below average in 2016-17. In some cases, due to the anomalously high surface flows, it is possible that some surface water overflow may have returned to a conveyance without being quantified on a given parcel. However, this unquantified amount would be inconsequential compared to the extremely large total usage on the Cone in 2017-18.

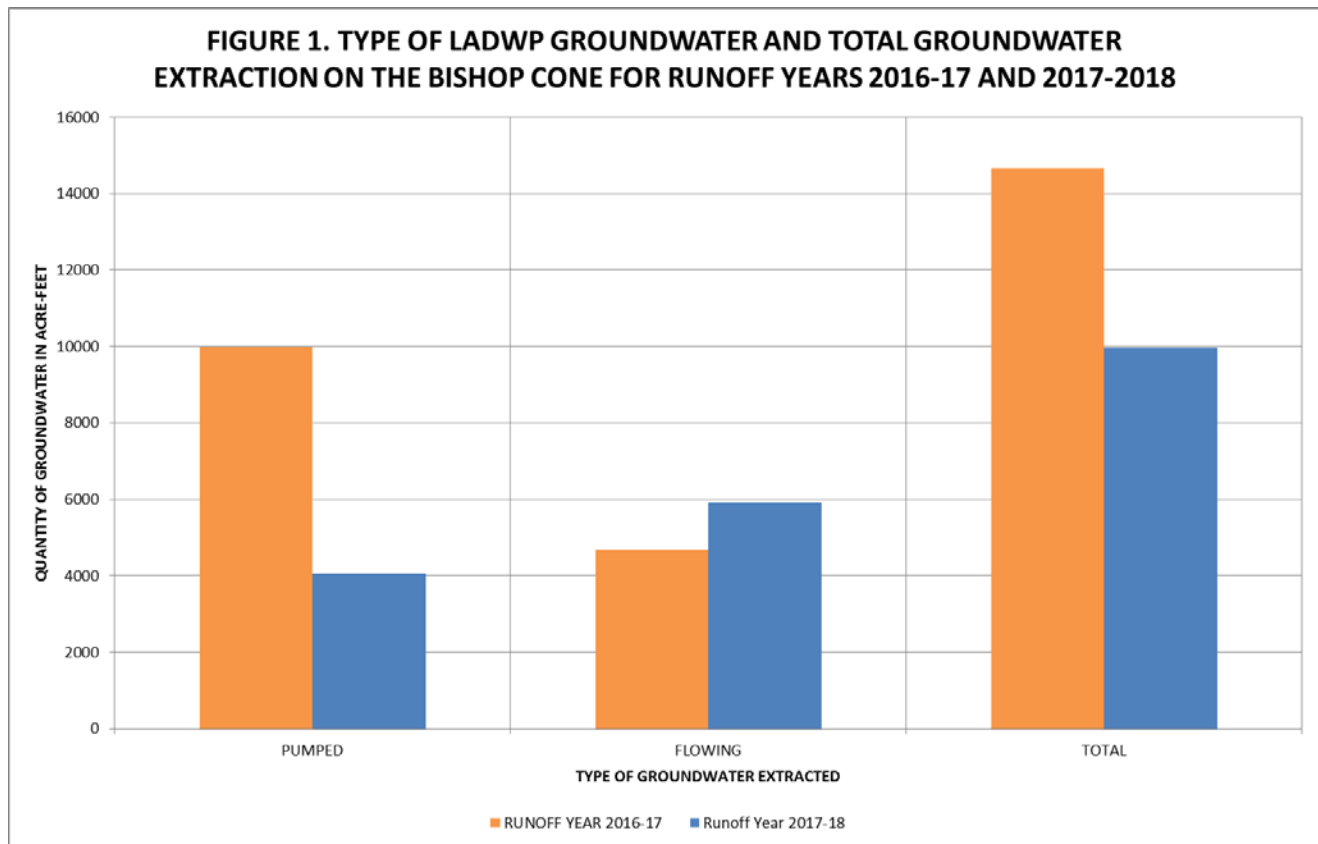
4.0 TOTAL LADWP GROUNDWATER EXTRACTION ON LADWP-OWNED LAND ON THE BISHOP CONE FOR RUNOFF YEARS 2016-17 AND 2017-18

Section IV.D.1.d of the Green Book states: “Total groundwater extraction by LADWP will be compared with corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of LADWP uncapped wells on the Bishop Cone during the runoff year.” (Appendix B)

Figure 1 (below) presents the total amount LADWP groundwater extraction and the groundwater extraction classified as flowing and pumped groundwater on the Bishop Cone in acre-feet for runoff years of 2016-17 and 2017-18.

For runoff year 2016-17, LADWP extracted 14,674 AF of groundwater (9,989 AF from pumped wells and 4,685 AF from flowing wells). For runoff year 2017-18, LADWP extracted 9,972 AF of groundwater (4,061 AF from pumped wells and 5,911 AF from flowing wells).

LADWP groundwater extractions on the Bishop Cone for the 2017-18 runoff year decreased by 4,702 AF compared to the previous year.



Flowing and pumped groundwater on the Bishop Cone are broken into detail by each well in Table 2.

TABLE 2
FLOWING AND PUMPED GROUNDWATER BY WELL ON THE BISHOP CONE
IN RUNOFF YEAR 2017-18

WELL	FLOWING GROUNDWATER (AF)	PUMPED GROUNDWATER (AF)
F121	36	NA
F122	67	NA
F123	166	NA
F125	1227	NA
F126	372	NA
F127	441	NA
F128	324	NA
F129	83	NA
F130	435	NA
F131	772	NA
F132	501	NA
F133	415	NA
F134	842	NA
F136	230	NA
W410	NA	92
W406	NA	411
W371	NA	216
W411	NA	0
W407	NA	1014
W408	NA	1163
W140	NA	1165
W412	NA	0
TOTAL	5,911	4,061

5.0 COMPLIANCE WITH THE INYO COUNTY/LOS ANGELES LONG-TERM GROUNDWATER MANAGEMENT AGREEMENT

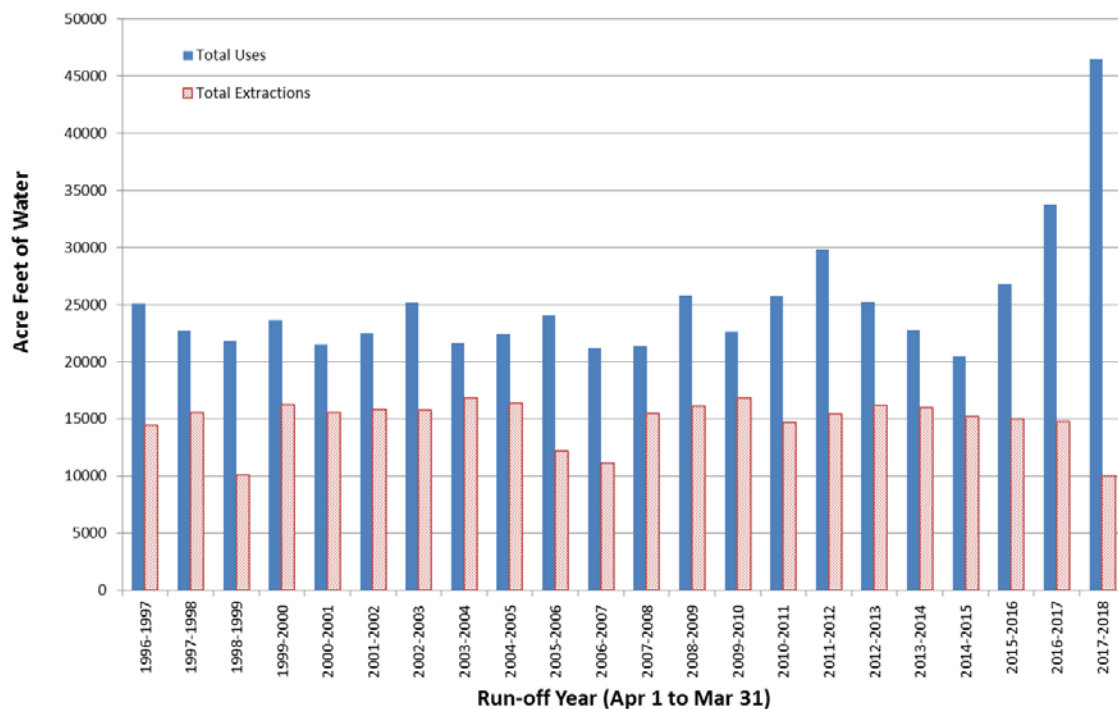
The Water Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. Table 3, below, shows that LADWP was in compliance with the above provision for runoff years 2016-17 and 2017-18 as the total uses on the Bishop Cone exceeded the total groundwater extractions for each year.

TABLE 3
LADWP USES IN COMPARISON TO LADWP GROUNDWATER
EXTRACTION ON THE BISHOP CONE

	RUNOFF YEAR 2016-17 (AF)	RUNOFF YEAR 2017-18 (AF)
TOTAL USES	33,423	46,440
TOTAL GROUNDWATER EXTRACTION	14,674	9,972
USES MINUS EXTRACTIONS	18,749	36,468
IN COMPLIANCE?	YES	YES

Figure 2 presents LADWP's water uses versus extractions since runoff year 1996-97. Uses have exceeded extractions throughout the data period; therefore, LADWP has been in compliance with Section IV.D.1.a. of the Green Book and the Water Agreement.

FIGURE 2
WATER USES VERSUS EXTRACTIONS ON THE BISHOP CONE



Note: starting in 2015-16, Total Use computation was clarified and simplified (see full explanation in Section 3) and some Uses that were denied credit in previous Bishop Cone Audits were effectively granted credit

[illegible]

APPENDIX A

Section VII.A of the Inyo County/Los Angeles Long-Term
Groundwater Management Agreement

Section VII of the Agreement

VII. GROUNDWATER PUMPING ON THE BISHOP CONE

- A. Any groundwater pumping by the Department on the "Bishop Cone" (Cone) shall be in strict adherence to the provisions of the Stipulation and Order filed on the 26th day of August, 1940, in Inyo County Superior Court in the case of Hillside Water Company, a corporation, et al. vs. The City of Los Angeles, a Municipal Corporation, et al., ("Hillside Decree").

Before the Department may increase groundwater pumping above present levels, or construct any new wells on the Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses.

The Department's annual groundwater extractions from the Cone shall be limited to an amount not greater than the total amount of water used on Los Angeles-owned lands on the Cone during that year. Annual groundwater extractions by the Department shall be the total of all groundwater pumped by the Department on the Cone, plus the amount of artesian water that flowed out of the casing of uncapped wells on the Cone during the year. Water used on Los Angeles-owned lands on the Cone, shall be the quantity of water supplied to such lands, including conveyance losses, less any return flow to the aqueduct system.

- B. The overall management goals and principles and the specific goals and principles for each vegetation classification of this Stipulation and Order apply to vegetation on the Cone.

APPENDIX B

Section IV.D of the Green Book

AGENDA ITEM 4

MEMORANDUM

7 November 1996

TO: Inyo County/Los Angeles Standing Committee
FROM: Inyo County/Los Angeles Technical Group

**CONSIDERATION OF GREEN BOOK SECTION
DESCRIBING THE BISHOP CONE AUDIT**

Background

Section VII.A of the Inyo County/Los Angeles long-term water management agreement provides that "before the Department may increase groundwater pumping above present levels, or construct any new wells on the [Bishop] Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses."

At its 17 October 1995 meeting, the Technical Group agreed to recommend to the Inyo County/Los Angeles Standing Committee the attached description of a Bishop Cone audit to be incorporated into the Green Book (the technical appendix to the long-term agreement).

Request

The Technical Group requests that the Standing Committee adopt the attached description as section IV.D of the Green Book.

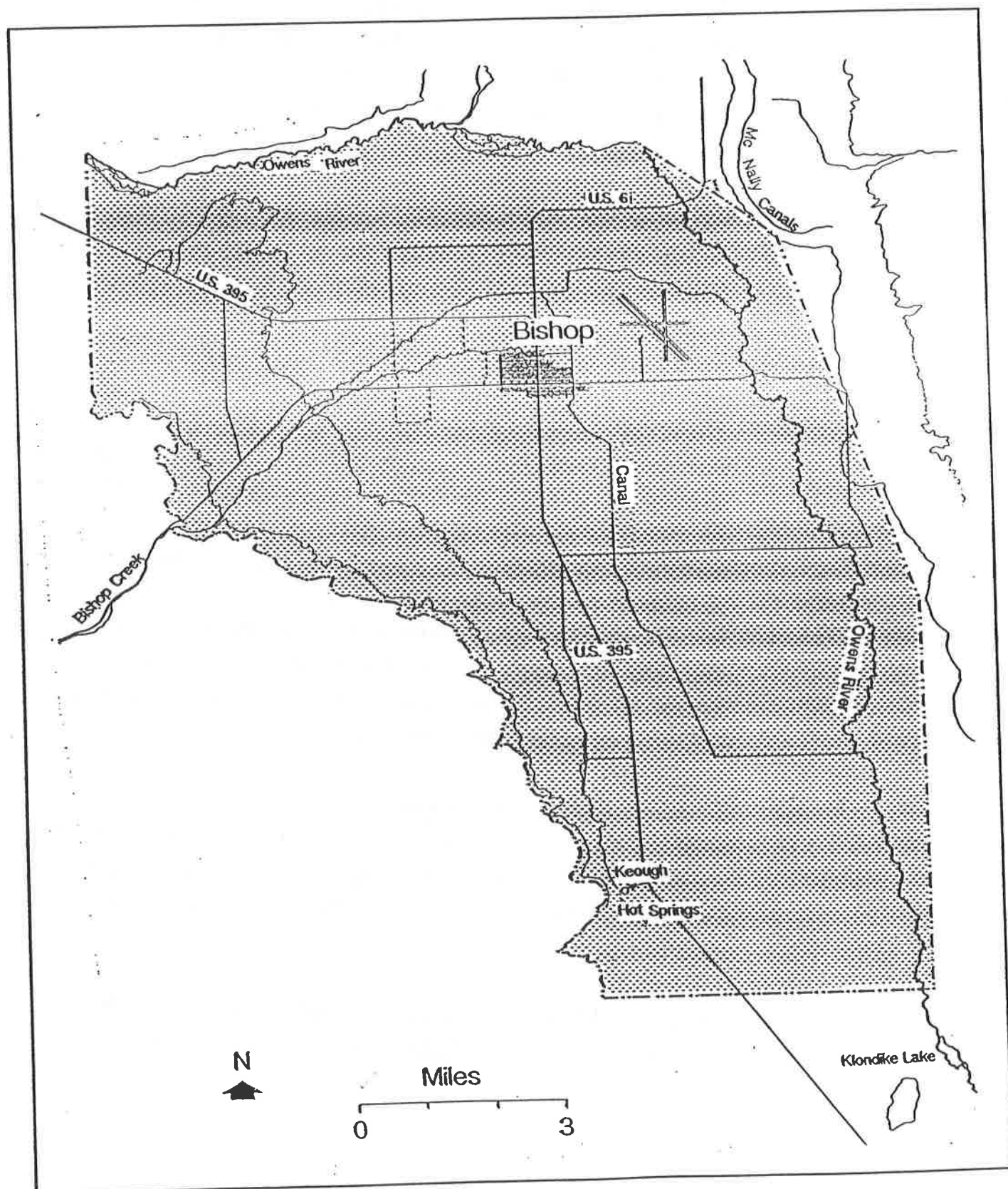
D. Bishop Cone Audit

This sub-section describes the procedures for conducting the Bishop Cone audit in accordance with Section VII.A of the Agreement. The Bishop Cone audit is an annual accounting of LADWP groundwater extraction and water usage on Los Angeles-owned land on the Bishop Cone. The Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. The area defined as the Bishop Cone is shown as Figure IV.D.1.

1. Procedures for Conducting the Bishop Cone Audit
 - a. For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system. Water usage is documented on a runoff-year basis and is compiled by LADWP each May in the Bishop Area Water Use Report. At the conclusion of each runoff year, LADWP will forward the final water use report for the runoff year to Inyo County.
 - b. The final water use report will be compared for consistency with the previous year's report. If measuring stations have been added or removed from the water-use report during the year, or if a significant change in the pattern of water usage occurs (for example, an account that has not received water for one year receives a

FIGURE IV.D.1

Bishop Cone Boundary



considerable amount the next year), the location will be field-checked. The field-check will evaluate whether changes in water usage warrant the changes noted in the report. If a change is made in the method of delivery to or return from an account that results in an overestimation of uses on the Bishop Cone, water usage for that account will not be credited to the total uses for the audit.

- c. Water usage for accounts BAIND (Bishop Indian Reservation), BA391 (outside of Bishop Cone boundary), and BAWEST (West Bishop private uses) will be subtracted from the total reported water usage.
- d. Total groundwater extraction by LADWP will be compared with the corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of uncapped wells on the Bishop Cone during the runoff year. During any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone.
- e. A draft report summarizing the results of the Bishop Cone audit will be prepared annually as an Inyo County Water Department report and will be submitted to the Technical Group in June for a 30-day review.
- f. A final Bishop Cone audit report will be submitted in July to the Technical Group, the Standing

Committee, the Inyo County Board of Supervisors,
and the Inyo County Water Commission.

LADWP will notify Inyo County of any changes in the status, location, or operation of any measuring station used to conduct the Bishop Cone audit at the time the final Bishop Area Water Use Report is submitted to the County. LADWP will also notify the County of any changes in the boundaries of the accounts included in the audit.

Upon request by Inyo County, LADWP will provide measuring station data for accounts included in the audit to assist the County in verifying water usage for individual accounts.

APPENDIX C

Data on Uses and Total Groundwater Extracted on the Bishop Cone
(Supplied by LADWP)

2017/18 RUNOFF YEAR BISHOP CONE PUMPING WELL TOTALS
(ACRE-FEET)

	2017									2018			
<u>WELL</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>TOTAL</u>
W140	181	209	174	186	193	193	29	0	0	0	0	0	1165
W371	0	0	0	0	0	0	0	0	0	41	81	94	216
W406	0	0	0	0	0	0	0	0	0	5	188	218	411
W407	168	174	166	173	169	164	0	0	0	0	0	0	1014
W408	197	201	192	196	194	182	0	0	0	0	0	0	1163
W410	0	0	0	0	0	0	0	0	0	92	0	0	92
W411	0	0	0	0	0	0	0	0	0	0	0	0	0
W412	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	546	585	532	554	557	540	29	0	0	137	269	312	4061

2017/18 RUNOFF YEAR BISHOP CONE FLOWING WELL TOTALS
(ACRE-FEET)

	2017									2018			
<u>WELL</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>TOTAL</u>
F121	3	3	3	3	3	3	3	3	3	3	3	3	36
F122	5	6	6	5	5	6	5	5	5	6	7	6	67
F123	11	12	12	13	14	13	13	13	14	18	16	17	166
F124	0	0	0	0	0	0	0	0	0	0	0	0	0
F125	96	105	101	105	104	98	100	95	104	106	100	113	1227
F126	25	27	28	32	34	33	36	32	32	32	28	32	372
F127	38	35	35	39	39	38	40	35	37	40	33	32	441
F128	23	27	30	29	28	28	28	27	27	27	24	26	324
F129	7	8	7	7	7	6	7	8	7	7	7	7	83
F130	34	34	33	37	35	37	36	39	39	38	35	37	435
F131	59	63	63	68	65	64	66	66	67	65	60	67	772
F132	34	33	37	50	48	44	44	39	35	39	45	54	501
F133	26	28	28	34	36	34	36	37	37	38	40	41	415
F134	58	60	64	71	72	70	85	70	72	73	71	75	842
F136	13	17	15	18	20	19	21	21	22	22	20	22	230
TOTAL	432	457	463	511	511	493	520	491	501	513	487	531	5911

STAID	STATION NAME	+/-	2017										2018				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR		
BC005A																	
3049	#161 OTEY		95	136	133	122	77	58	32	21	31	27	33	45		810	
3377	OTEY DITCH RETURN AT MATLICK DITCH	(-)	90	134	123	114	65	55	33	23	31	26	29	44		767	
Total Acre-feet of Use			4	2	10	7	11	3	-1	-1	0	1	4	1		41	
BC005B																	
3378	OTEY DITCH DIV. ABOVE MATLICK DITCH		6	61	120	110	61	51	3	0	0	0	0	0		412	
Total Acre-feet of Use			6	61	120	110	61	51	3	0	0	0	0	0		412	
BC006A																	
3048	#61-A FRANK ROUFF		57	77	63	75	78	36	16	21	26	30	26	22		527	
3063	DUGGAN DITCH FLOW THROUGH	(-)	47	66	52	64	67	28	10	15	19	24	21	16		429	
Total Acre-feet of Use			10	11	11	11	11	8	6	6	7	6	6	6		99	
BC1478																	
3002	GEORGE DITCH W. OF SUNLAND AVENUE		48	68	68	64	100	109	49	28	27	21	20	32		634	
3264	NORTH INDIAN DITCH BELOW A-1 DRAIN B3A		19	172	162	201	292	248	157	49	33	33	30	44		1440	
3068	GEORGE DITCH C-3	(-)	30	38	39	47	61	79	42	25	25	19	17	27		449	
3370	NORTH INDIAN DIVERSION W/O SUNLAND	(-)	1	13	28	27	12	5	0	0	0	0	0	0		86	
3364	NORTH INDIAN DITCH W/O HWY 395	(-)	24	118	140	154	223	213	133	43	26	25	21	32		1152	
Total Acre-feet of Use			11	71	22	37	96	59	31	10	10	10	12	16		385	
BC1479																	
3025	SOUTH INDIAN DITCH DIVERSION #3		1	1	3	4	2	3	1	0	0	0	0	0		15	
Total Acre-feet of Use			1	1	3	4	2	3	1	0	0	0	0	0		15	
BC301																	
3396	NELLIGAN DIV. #1		159	197	165	159	140	110	104	200	38	62	51	50		1435	
3397	NELLIGAN BELOW DIV. #1		115	153	130	110	112	117	103	76	71	84	51	71		1193	
3401	YOUNG DITCH #2		83	94	116	151	127	120	94	72	69	79	52	77		1134	
3421	TOM KEY DITCH ABOVE DIVERSION		30	58	42	37	49	37	29	18	10	10	14	17		351	
3050	HOLLAND #63-B	(-)	29	50	46	47	42	31	27	40	29	36	31	29		437	
3404	NELLIGAN DITCH #2	(-)	203	209	172	166	171	139	161	231	82	110	87	89		1820	
3402	YOUNG DITCH #3	(-)	62	59	81	92	106	86	100	92	70	83	56	78		965	
3407	YOUNG DITCH #4	(-)	0	2	0	1	0	0	0	0	0	0	0	0		3	
3422	TOM KEY DITCH BELOW DIVERSION	(-)	26	37	36	31	41	31	29	17	10	9	13	16		296	
Total Acre-feet of Use			67	143	118	119	68	96	13	-13	-3	-2	-18	4		592	
BC302A																	
3006	HALL DITCH @ GOLF COURSE RETURN		18	4	39	61	6	46	0	0	0	0	0	0		174	
Total Acre-feet of Use			18	4	39	61	6	46	0	0	0	0	0	0		174	
BC302B																	
3161	BISHOP CK DITCH #16		78	223	177	111	63	60	32	56	19	17	14	31		881	
3162	BISHOP CK DITCH #17		52	37	66	35	40	38	0	0	0	0	0	0		268	
3164	BISHOP CK DITCH #20		35	153	57	44	126	105	27	23	17	29	28	34		678	
3165	BISHOP CK DITCH #21		6	40	136	0	0	0	0	0	0	0	0	0		182	
Total Acre-feet of Use			171	454	436	190	229	204	60	79	36	46	42	64		2011	
BC304																	
3026	NEWLON DITCH BOYD PUMP PLANT		30	27	32	36	33	32	15	5	0	0	0	0		210	
Total Acre-feet of Use			30	27	32	36	33	32	15	5	0	0	0	0		210	
BC311																	
3166	BISHOP CK DITCH #5		83	108	158	159	97	48	0	0	0	0	0	0		653	
3022	BISHOP CK DITCH #5-A		58	24	194	164	36	165	11	0	0	0	0	0		652	
3167	BISHOP CK DITCH #9		111	225	140	288	157	49	0	0	0	0	0	0		970	
3168	BISHOP CK DITCH #30		74	447	393	637	607	269	64	59	55	62	46	57		2770	
3392	FORD RAWSON-DIV 1A		3	10	9	11	11	8	0	0	0	0	0	1		53	
Total Acre-feet of Use			329	814	894	1259	907	539	75	59	55	62	46	58		5097	
BC313																	
3016	NORTH INDIAN DITCH ABOVE MUMY LANE #58-E		586	786	844	704	900	752	515	231	192	196	166	269		6141	
3017	WONACOTT A-2		42	121	163	193	115	126	29	21	13	11	23	33		890	
3015	WONACOTT A-1	(-)	62	103	111	132	141	96	40	30	21	26	28	38		828	
3054	WONACOTT A-3 RETURN	(-)	67	101	84	71	52	71	12	15	9	6	9	10		507	
3051	WONACOTT #58-F	(-)	28	36	47	45	56	56	20	7	7	8	15	27		352	
3018	NORTH INDIAN B-2	(-)	308	482	568	441	548	416	432	178	149	142	119	203		3986	
Total Acre-feet of Use			162	186	196	208	218	239	41	23	19	24	18	24		1358	

STAID	STATION NAME	+/-	2017								2018				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
BC324															
3370	NORTH INDIAN DIVERSION W/O SUNLAND		1	13	28	27	12	5	0	0	0	0	0	0	86
3270	SOUTH INDIAN D-3		336	393	427	386	416	400	77	61	43	61	46	40	2686
3005	SOUTH INDIAN DITCH D-4	(-)	136	180	155	145	150	157	50	41	29	32	20	18	1113
Total Acre-feet of Use			201	226	300	268	278	249	27	20	15	29	25	22	1660
BC335															
3402	YOUNG DITCH #3		62	59	81	92	106	86	100	92	70	83	56	78	965
3407	YOUNG DITCH #4		0	2	0	1	0	0	0	0	0	0	0	0	3
3403	YOUNG DITCH RETURN TO NELLIGAN	(-)	36	24	26	23	52	60	101	82	62	75	51	64	656
Total Acre-feet of Use			26	38	54	70	54	26	-2	10	8	8	5	14	311
BC338															
2026	FORD RAWSON CANAL BELOW BISHOP CK CANAL		829	1215	1627	1743	914	753	0	0	0	0	0	0	7081
3368	RAWSON & KEOUGH DITCH E/O HWY 395		42	46	28	23	13	9	10	36	46	52	48	47	400
2004	FORD RAWSON CANAL DIV. #7	(-)	134	417	330	422	339	227	0	0	0	0	0	0	1869
2043	YRIBARREN RETURN #2	(-)	--	--	--	--	--	--	--	--	--	--	--	--	--
3369	RAWSON & KEOUGH DITCH RETURN AT A-DRA	(-)	3	3	1	0	9	2	2	0	0	0	0	0	20
Total Acre-feet of Use			734	842	1325	1344	579	533	8	36	46	52	48	47	5594
BC339															
3170	KINGSLEY C-1		97	204	230	201	149	98	46	39	19	10	8	10	1111
Total Acre-feet of Use			97	204	230	201	149	98	46	39	19	10	8	10	1111
BC353															
3015	WONACOTT A-1		62	103	111	132	141	96	40	30	21	26	28	38	828
3053	TOMMY SMITH DITCH #162-A		15	12	9	7	16	19	0	0	0	0	0	0	78
3017	WONACOTT A-2	(-)	42	121	163	193	115	126	29	21	13	11	23	33	890
Total Acre-feet of Use			35	-6	-42	-54	42	-12	11	9	8	15	5	5	16
BC361A															
3036	NORTH FORK BISHOP CREEK I-1(#155 STANLEY MA		38	87	136	147	129	110	42	27	21	33	54	24	848
3004	BISHOP CK N. FORK I-2		274	261	257	407	351	325	12	0	0	0	0	0	1887
3316	IRRIGATION FROM WELL #406		0	0	0	0	0	0	0	0	0	0	0	0	0
3042	TATUM RETURN AT HIGHWAY 6	(-)	24	85	31	72	25	38	0	0	0	0	0	0	275
3039	TATUM RETURN AT BISHOP CK CANAL	(-)	58	52	39	44	52	51	46	47	37	42	33	38	539
Total Acre-feet of Use			229	211	323	437	403	346	9	-20	-15	-9	21	-14	1921
BC361B															
3009	MATLICK DITCH F-10		117	336	289	300	335	339	65	51	40	75	78	51	2076
3040	MATLICK DITCH F-13 N		164	140	128	127	153	152	190	270	149	175	148	165	1961
3008	MATLICK DITCH F-13 E		48	61	62	80	63	27	45	21	4	6	6	2	425
3007	MATLICK DITCH F-14		13	20	10	9	17	16	17	14	10	9	7	9	151
3035	MATLICK DITCH #154		95	162	147	126	98	83	44	14	33	37	21	24	884
3154	SCHILDER RETURN G-2	(-)	10	95	85	70	124	147	16	12	7	17	32	20	635
3037	MATLICK DITCH #63-A	(-)	100	82	33	39	52	51	71	51	28	19	9	12	547
3038	TATUM RETURN H-1	(-)	68	67	63	48	77	98	19	19	7	11	5	13	495
3003	MATLICK DITCH RETURN @ B-1 DRAIN	(-)	1	2	2	0	0	0	8	13	13	15	9	4	67
3010	MATLICK RETURN TO "C" DRAIN	(-)	48	42	28	11	16	29	171	237	143	169	136	155	1185
Total Acre-feet of Use			211	430	423	472	398	292	77	37	37	71	67	48	2563
BC362D															
3388	INDIAN S. RETURN ON SEE-VEE LANE		98	108	95	113	122	125	72	12	18	2	0	0	765
3389	INDIAN MIDDLE RETURN ON SEE-VEE LANE		2	3	2	0	0	0	1	0	0	0	0	0	8
3390	INDIAN N. RETURN ON SEE-VEE LANE		49	64	179	119	79	64	51	72	66	27	18	30	818
Total Acre-feet of Use			148	175	276	232	200	190	125	84	83	29	18	31	1591
BC387A															
3043	NORTH INDIAN DITCH B-3		113	142	326	278	321	312	24	0	0	0	0	0	1516
3011	WEST LINE L-2		14	23	28	25	43	34	17	7	0	0	0	1	192
Total Acre-feet of Use			127	166	354	303	364	345	41	7	0	0	0	1	1708
BC392															
3387	MATLICK DITCH TO THE N.		181	226	184	250	249	240	78	35	39	49	43	68	1642
3398	MATLICK DITCH #1		381	414	326	389	341	357	304	254	221	249	240	195	3671
3399	REINHACKLE #1		125	133	104	140	144	168	119	128	104	117	102	113	1497
3400	YOUNG DITCH #1		41	60	79	64	53	1	0	0	0	0	0	2	300
3424	MCLAREN TAILWATER		67	77	79	110	102	118	93	72	69	79	52	75	993
3401	YOUNG DITCH #2	(-)	83	94	116	151	127	120	94	72	69	79	52	77	1134
3406	C-DRAIN AT INTAKE	(-)	470	321	253	374	326	372	479	432	372	386	328	325	4438
3009	MATLICK DITCH F-10	(-)	117	336	289	300	335	339	65	51	40	75	78	51	2076
Total Acre-feet of Use			125	160	116	129	102	54	-43	-65	-47	-46	-22	-1	462

STAID	STATION NAME	+/-	2017											2018			TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR		
BC393																	
3061	KINGSLEY DITCH PUMP DIV. AT DIV. #2		6	7	9	13	10	6	0	0	0	0	0	0	51		
3171	BISHOP CK DITCH #11		0	22	35	2	50	0	0	0	0	0	0	0	109		
Total Acre-feet of Use			6	29	44	15	60	6	0	0	0	0	0	0	160		
BC397																	
3163	BISHOP CK DITCH #19		114	371	301	468	246	91	0	0	0	0	0	1	1592		
3174	BISHOP CK DITCH #22		54	128	221	282	170	52	0	0	0	0	0	0	907		
3019	BISHOP CK CANAL DIV. #24		81	441	386	454	320	127	18	15	21	23	19	22	1927		
3020	BISHOP CK CANAL DIV. #25		26	134	93	125	55	18	0	0	0	0	0	0	451		
3391	BISHOP CK CANAL DIV. 26A		22	3	90	159	89	55	22	0	0	0	0	0	440		
3024	BISHOP CK CANAL DIV. #29		59	429	349	306	229	67	15	36	40	49	45	53	1677		
Total Acre-feet of Use			356	1507	1438	1793	1108	410	55	51	61	72	64	76	6991		
BC500																	
3012	GEORGE DITCH C-1		79	128	146	168	150	163	40	24	21	19	19	27	984		
3365	PARK W. RETURN S/O A-DRAIN		8	17	12	89	18	0	0	0	13	1	2	5	165		
3047	4 X - 58D		268	318	501	434	431	472	357	287	295	220	162	162	3907		
3366	SOUTH INDIAN DITCH DIVERSION #1 N/O SCHOBER		16	24	17	12	12	13	0	0	0	0	0	0	94		
3367	SOUTH INDIAN DITCH DIVERSION #2 N/O SCHOBER		90	119	159	112	155	115	0	0	0	0	0	0	750		
W408	WELL 408		197	201	192	196	194	182	0	0	0	0	0	0	1162		
3002	GEORGE DITCH W. OF SUNLAND AVENUE	(-)	48	68	68	64	100	109	49	28	27	21	20	32	634		
3046	SOUTH INDIAN RETURN AT A-1 DRAIN	(-)	73	57	121	68	90	140	252	194	210	141	111	106	1563		
3270	SOUTH INDIAN D-3	(-)	336	393	427	386	416	400	77	61	43	61	46	40	2686		
Total Acre-feet of Use			202	289	410	492	355	296	19	27	48	16	5	16	2175		
BC502A																	
3027	HALL DITCH PUMP PLANT #2@DON TATUM LEASE(0	28	26	21	34	37	15	5	0	0	0	0	166		
3028	HALL DITCH PUMP PLANT #4 AT DON TATUM LEASE		91	150	151	164	193	194	69	19	0	0	0	0	1031		
Total Acre-feet of Use			91	178	177	184	226	230	84	23	0	0	0	0	1193		
BC502B																	
3031	A-1 DRAIN PUMP PLANT #1 S/O HALL DITCH		--	--	--	--	--	--	--	--	--	--	--	--	--		
3032	A-1 DRAIN PUMP PLANT #3 AT WELL #140		113	122	120	147	137	123	19	0	0	0	0	0	781		
Total Acre-feet of Use			113	122	120	147	137	123	19	0	0	0	0	0	781		
BCOPRB																	
2086	A-DRAIN DIV. TO ARKANSAS FLATS		47	234	463	1056	501	0	0	0	0	0	0	0	2301		
Total Acre-feet of Use			47	234	463	1056	501	0	0	0	0	0	0	0	2301		
BCRECA																	
3155	BISHOP CK DITCH #5-B		279	345	323	442	160	0	109	74	97	1	0	0	1830		
Total Acre-feet of Use			279	345	323	442	160	0	109	74	97	1	0	0	1830		
BCRECC																	
3021	BISHOP CK CANAL DIV. #67		68	19	51	56	29	0	0	0	0	0	0	0	223		
Total Acre-feet of Use			68	19	51	56	29	0	0	0	0	0	0	0	223		
BCRECD																	
3194	SOUTH FORK BISHOP CREEK BELOW BISHOP CREEK		441	1066	1055	1107	957	526	370	337	346	355	322	379	7261		
3193	SANDERS POND RETURN AT OWENS RIVER	(-)	65	165	258	188	199	210	93	129	83	113	87	122	1712		
3066	RAWSON POND #3 RETURN TO OWENS RIVER	(-)	171	255	259	263	219	87	134	96	147	120	110	142	2003		
Total Acre-feet of Use			205	645	538	656	538	229	143	112	116	122	126	116	3546		
BCRECF																	
3023	KINGSLEY DITCH DIV. C-4		181	217	169	207	111	65	44	37	25	20	26	44	1146		
3183	CEMETERY DITCH AT E. LINE ST.	(-)	33	33	53	58	39	38	28	22	2	0	0	2	308		
Total Acre-feet of Use			148	183	116	149	72	27	16	15	23	20	26	42	837		
BCLAEMH																	
3242	BISHOP CK CANAL DIV. TO 5 BRIDGES #2		365	5	0	0	0	0	0	0	0	0	0	0	370		
3317	BISHOP CK CANAL DIV. TO 5 BRIDGES #6		83	207	180	50	67	75	39	30	4	3	3	14	755		
Total Acre-feet of Use			448	212	180	50	67	75	39	30	4	3	3	14	1125		
BCRVRECA																	
3185	MCGEE CK AT ABERLOUR RANCH		507	705	1376	1279	814	300	242	247	250	247	210	277	6454		
3235	MILL POND RETURN	(-)	171	286	544	988	570	40	134	157	170	192	128	221	3601		
Total Acre-feet of Use			336	419	832	291	244	261	108	90	80	55	83	56	2855		

STAID	STATION NAME	+/-	2017								2018				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
Bishop Cone Account Total Uses															
BC005A			4	2	10	7	11	3	-1	-1	0	1	4	1	41
BC005B			6	61	120	110	61	51	3	0	0	0	0	0	412
BC006A			10	11	11	11	11	8	6	6	7	6	6	6	99
BC1478			11	71	22	37	96	59	31	10	10	10	12	16	385
BC1479			1	1	3	4	2	3	1	0	0	0	0	0	15
BC301			67	143	118	119	68	96	13	-13	-3	-2	-18	4	592
BC302A			18	4	39	61	6	46	0	0	0	0	0	0	174
BC302B			171	454	436	190	229	204	60	79	36	46	42	64	2011
BC304			30	27	32	36	33	32	15	5	0	0	0	0	210
BC311			329	814	894	1259	907	539	75	59	55	62	46	58	5097
BC313			162	186	196	208	218	239	41	23	19	24	18	24	1358
BC324			201	226	300	268	278	249	27	20	15	29	25	22	1660
BC335			26	38	54	70	54	26	-2	10	8	8	5	14	311
BC338			734	842	1325	1344	579	533	8	36	46	52	48	47	5594
BC339			97	204	230	201	149	98	46	39	19	10	8	10	1111
BC353			35	-6	-42	-54	42	-12	11	9	8	15	5	5	16
BC361A			229	211	323	437	403	346	9	-20	-15	-9	21	-14	1921
BC361B			211	430	423	472	398	292	77	37	37	71	67	48	2563
BC362D			148	175	276	232	200	190	125	84	83	29	18	31	1591
BC387A			127	166	354	303	364	345	41	7	0	0	0	1	1708
BC392			125	160	116	129	102	54	-43	-65	-47	-46	-22	-1	462
BC393			6	29	44	15	60	6	0	0	0	0	0	0	160
BC397			356	1507	1438	1793	1108	410	55	51	61	72	64	76	6991
BC500			202	289	410	492	355	296	19	27	48	16	5	16	2175
BC502A			91	178	177	184	226	230	84	23	0	0	0	0	1193
BC502B			113	122	120	147	137	123	19	0	0	0	0	0	781
BCOPRB			47	234	463	1056	501	0	0	0	0	0	0	0	2301
BCRECA			279	345	323	442	160	0	109	74	97	1	0	0	1830
BCRECC			68	19	51	56	29	0	0	0	0	0	0	0	223
BCRECD			205	645	538	656	538	229	143	112	116	122	126	116	3546
BCRECF			148	183	116	149	72	27	16	15	23	20	26	42	837
BCLAEMH			448	212	180	50	67	75	39	30	4	3	3	14	1125
BCRVRECA			336	419	832	291	244	261	108	90	80	55	83	56	2855
BCAUDIT (Total acre-feet)			5042	8402	9933	10778	7708	5058	1135	746	706	596	593	656	51353