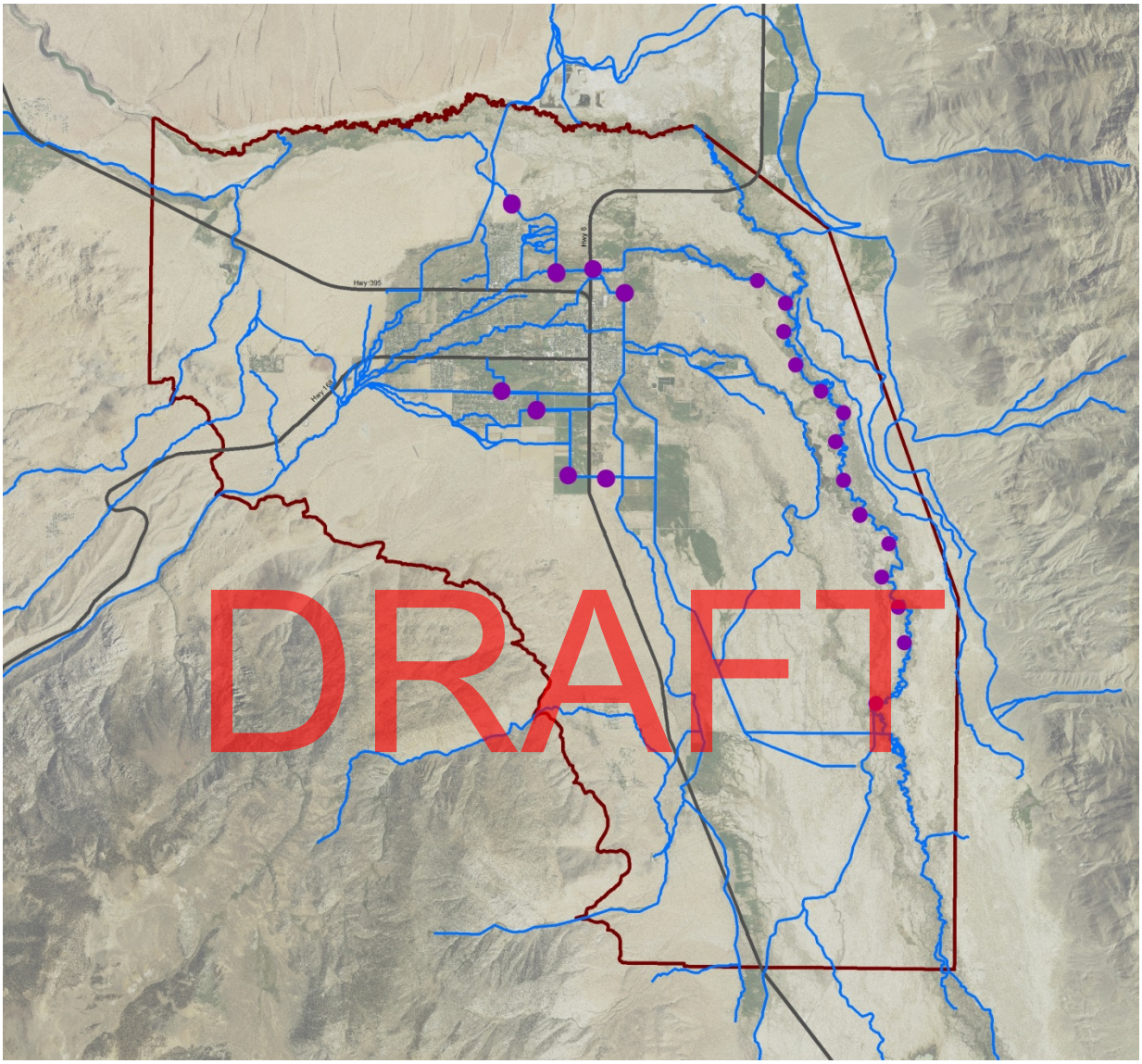
THE BISHOP CONE AUDIT
FOR THE 2018-19 RUNOFF YEAR



Inyo County Water Department
Report 2018-19
July 2019

THE BISHOP CONE AUDIT
FOR THE 2018-19 RUNOFF YEAR

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THE BISHOP CONE AUDIT
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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 2017-18 and 2018-19. 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 a decrease in total water use on the Bishop Cone of 19,448 AF from 2017-18 (Use: 46,440) to 2018-19 (Use: 26,992). Due to the exceptional 2017-18 runoff year which was 200% of the long-term average, LADWP conducted extensive operational spreading on the Bishop Cone and other areas. This resulted in many accounts receiving substantially more water than normal years. The 2018-19 runoff year was close to average and water use reverted to more normal amounts.

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

LADWP ACCOUNT NUMBER *2	RUNOFF YEAR*1 2017-2018 (AF)	RUNOFF YEAR*1 2018-2019 (AF)
BC502B (BA354B or BA362B)	781	620
BC302A	174	133
BC302B	2011	1236
BC311	5097	3303
BC313	1358	918
BC324	1660	1437
BC1478 (BAICR) *2	385	505
BC387A	1708	529
BCRECF	837	453
BC339	1111	394
BC393	160	94
BC362D	(No Credit) *3	(No Credit) *3
BC304	210	238
BC500	2175	1071
BC397 (BA387B) *2	6991	2839
BC361A	1921	1634
BC361B	2563	2047
BC502A (BA354A or 362A) *2	1193	1000
BCRECA	1830	943
BCRECC	223	151
BCRECD	3546	2351
BC338	5594	3083
BCOPRB	2301	162
BCLAEMH	1125	440
BC353	16	351
BC005A	41	36
BC005B	412	77
BC006A	99	97
BC1479 (BA342) *2	15	48
BC392	(No Credit) *3	(No Credit) *3
BC301	592	541
BC335	311	261
BCRVRECA	(No Credit) *3	(No Credit) *3
TOTAL	**46,440**	**26,992**

*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 were: 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. ICWD staff visited BCA accounts in 2018-19 and no additional flow monitoring devices have been installed at these accounts. Therefore, BC362D, BC392, and BCRVRECA were not granted credit in the current year.

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 winter (appx. 200% of long-term average). As noted previously, LADWP actively spread surface water throughout the Owens Valley; and a significant amount of surface water was spread throughout the Bishop Cone.

4.0 TOTAL LADWP GROUNDWATER EXTRACTION ON LADWP-OWNED LAND ON THE BISHOP CONE FOR RUNOFF YEARS 2017-18 AND 2018-19

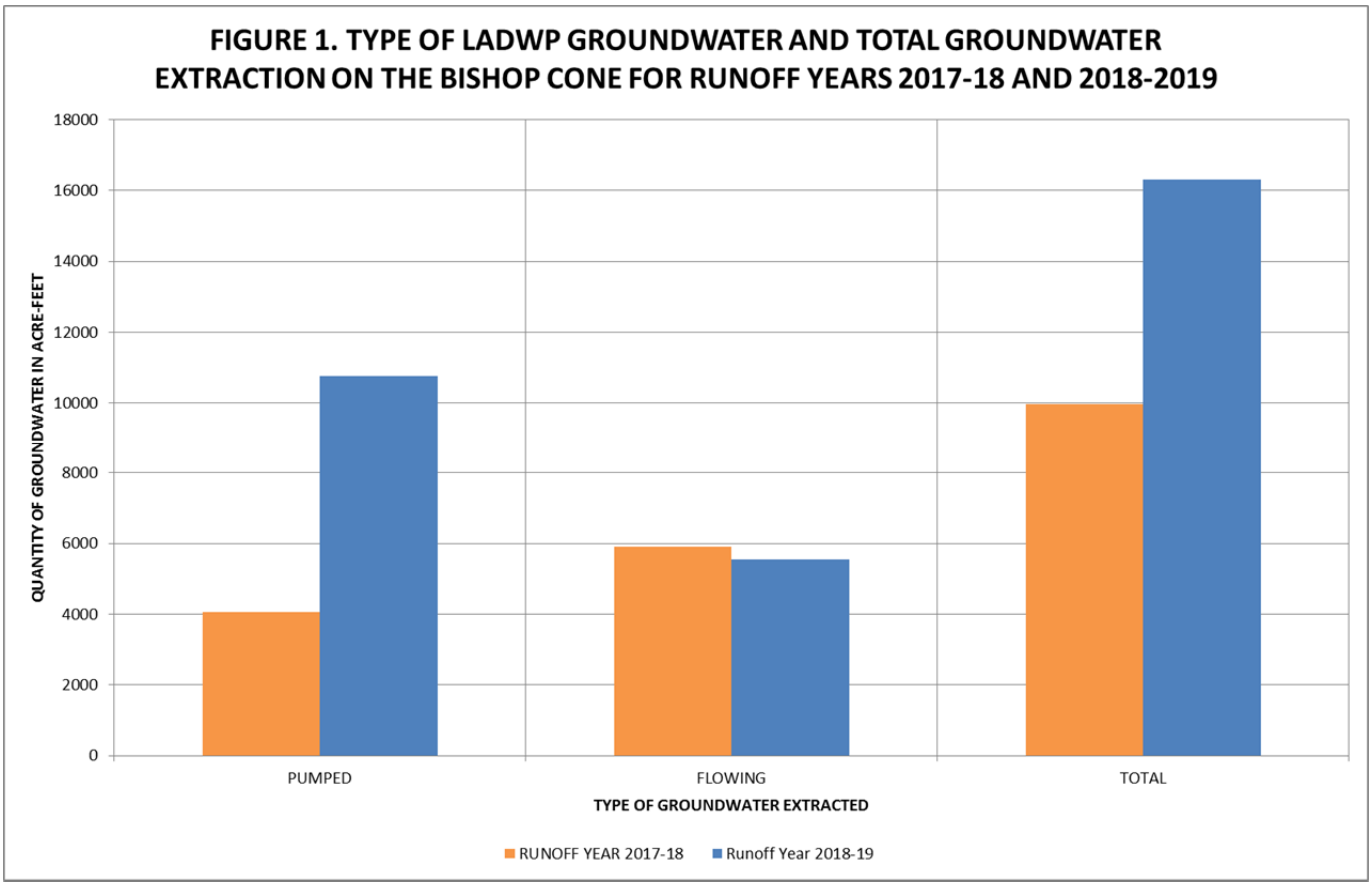
Section IV.D.1.d of the Green Book states: "*Total groundwater extraction by LADWP will be compared with corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out 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 2017-18 and 2018-19.

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). For runoff year 2018-19, LADWP extracted 16,297 AF of groundwater (10,751 AF from pumped wells and 5,546 AF from flowing wells).

LADWP groundwater extractions on the Bishop Cone for the 2018-19 runoff year increased by 6,325 AF compared to the previous year due to a return to more typical pumping amounts.

FIGURE 1. TYPE OF LADWP GROUNDWATER AND TOTAL GROUNDWATER EXTRACTION ON THE BISHOP CONE FOR RUNOFF YEARS 2017-18 AND 2018-2019



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 2018-19

WELL	FLOWING GROUNDWATER (AF)	PUMPED GROUNDWATER (AF)
F121	54	NA
F122	74	NA
F123	340	NA
F125	1210	NA
F126	380	NA
F127	443	NA
F128	302	NA
F129	128	NA
F130	428	NA
F131	640	NA
F132	401	NA
F133	350	NA
F134	675	NA
F136	122	NA
W140	NA	1406
W371	NA	970
W406	NA	1183
W407	NA	977
W408	NA	1093
W410	NA	2424
W411	NA	1361
W412	NA	1338
TOTAL	**5,546**	**10,751**

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

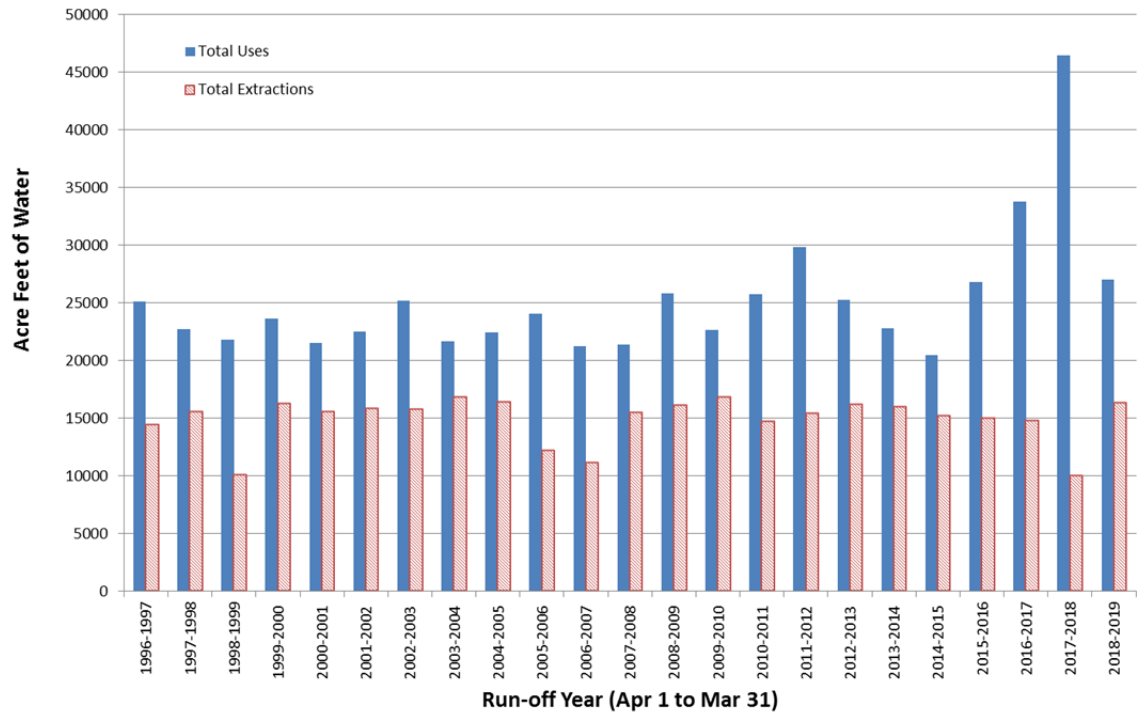
The Water Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. Table 3, below, shows that LADWP was in compliance with the above provision for runoff years 2017-18 and 2018-19 as the 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 2017-18 (AF)	RUNOFF YEAR 2018-19 (AF)
TOTAL USES	46,440	26,992
TOTAL GROUNDWATER EXTRACTION	9,972	16,297
USES MINUS EXTRACTIONS	36,468	10,695
IN COMPLIANCE?	YES	YES

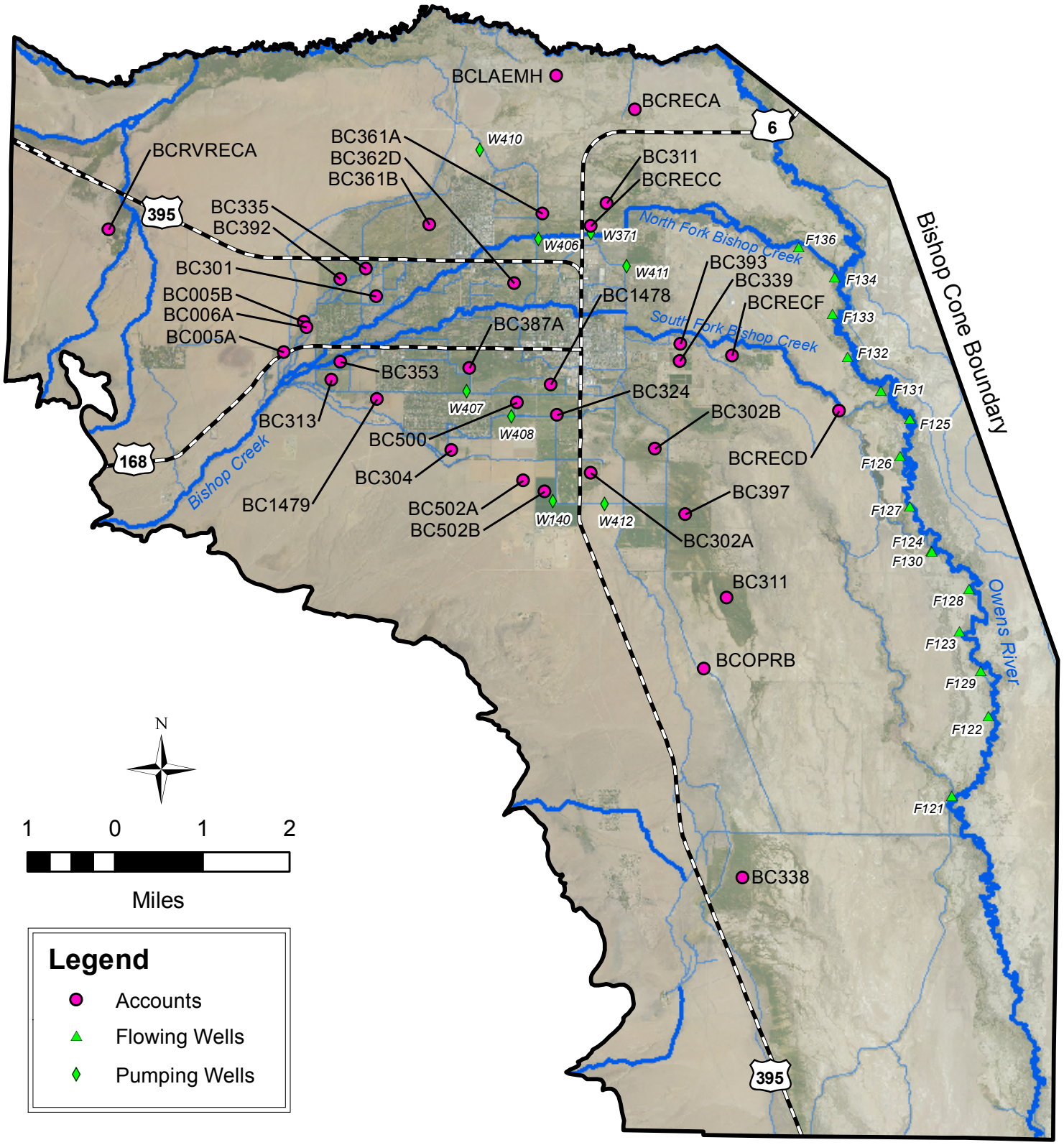
Figure 2 presents LADWP's water uses versus extractions since runoff year 1996-97. Uses have exceeded extractions throughout the data period; therefore, LADWP has been in compliance with Section IV.D.1.a. of the Green Book and the Water Agreement.

FIGURE 2
WATER USES VERSUS EXTRACTIONS ON THE BISHOP CONE



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

Map 1. Bishop Cone Audit Features



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

COPY FOR YOUR INFORMATION

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.

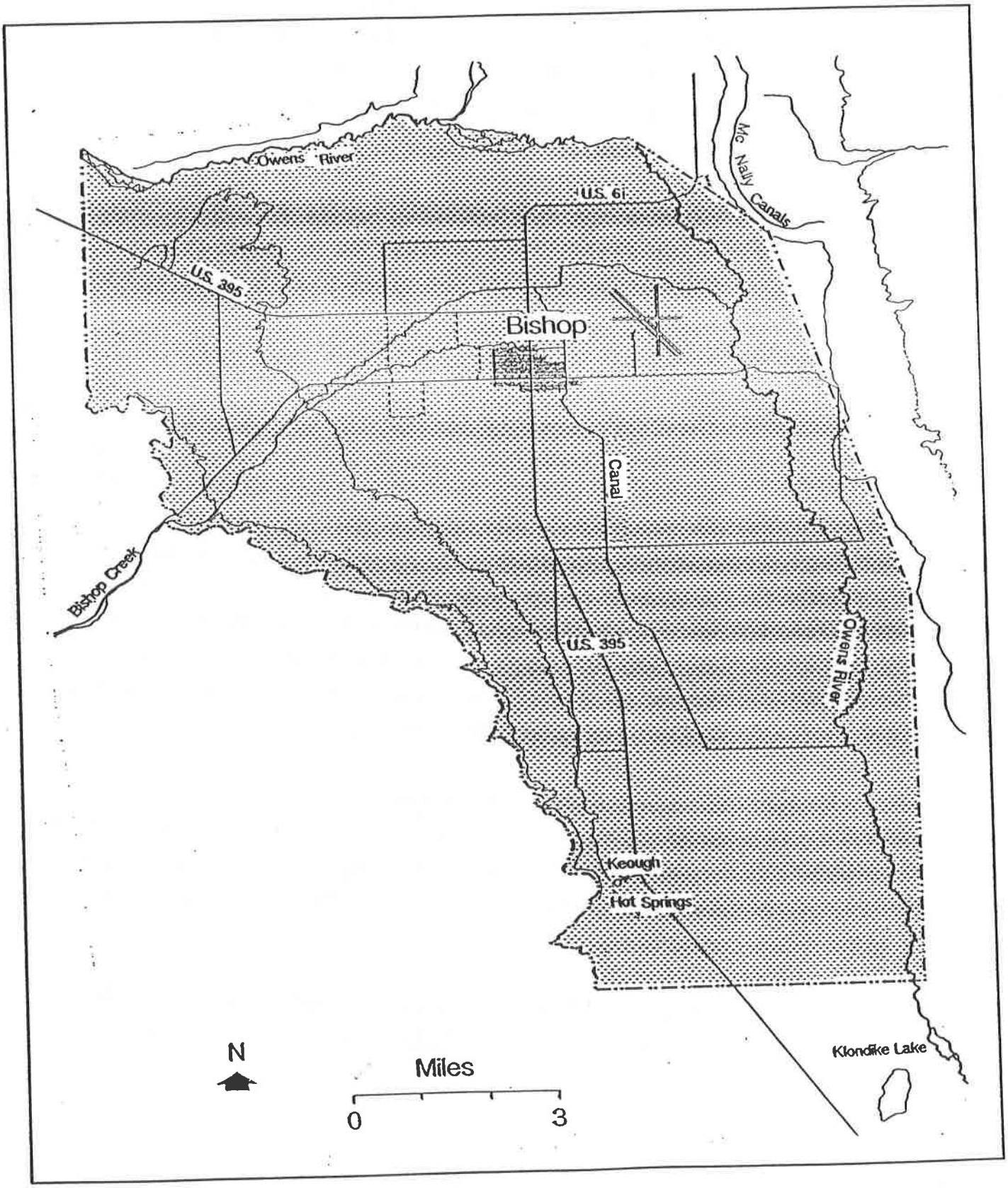
1. Procedures for Conducting the Bishop Cone Audit

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)

2018/19 RUNOFF YEAR BISHOP CONE PUMPING WELL TOTALS

(ACRE-FEET)

	2018									2019			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
W140	205	209	200	203	202	194	194	0	0	0	0	0	1406
W371	91	93	55	70	95	90	95	92	95	94	85	13	970
W406	208	214	168	208	203	182	0	0	0	0	0	0	1183
W407	163	171	164	152	167	159	0	0	0	0	0	0	977
W408	187	193	178	179	185	172	0	0	0	0	0	0	1093
W410	243	260	4	183	250	241	248	240	247	249	224	35	2424
W411	245	255	151	219	254	237	0	0	0	0	0	0	1361
W412	240	251	148	216	248	235	0	0	0	0	0	0	1338
TOTAL	1582	1645	1069	1430	1604	1511	537	332	342	343	309	48	10751

2018/19 RUNOFF YEAR BISHOP CONE FLOWING WELL TOTALS

(ACRE-FEET)

	2018									2019			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
F121	3	3	3	4	6	6	6	6	6	6	5	1	54
F122	6	8	9	7	6	6	5	5	5	6	6	5	74
F123	16	17	19	21	27	30	37	42	44	42	33	13	340
F124	0	0	0	0	0	0	0	0	0	0	0	0	0
F125	107	93	90	98	104	107	113	108	102	97	88	103	1210
F126	33	39	32	31	33	31	31	30	31	31	28	31	380
F127	35	37	35	39	35	33	34	33	34	39	46	42	443
F128	26	26	25	27	25	25	25	28	24	24	21	26	302
F129	6	8	15	10	9	8	14	11	16	14	9	9	128
F130	36	36	35	37	35	33	37	36	36	35	34	39	428
F131	64	64	68	57	53	51	52	51	56	51	33	39	640
F132	37	37	37	35	37	36	32	27	29	31	30	32	401
F133	33	33	31	30	28	26	27	26	28	30	27	31	350
F134	60	64	61	55	54	53	52	52	54	55	52	63	675
F136	15	15	11	7	6	5	8	9	9	11	11	16	122
TOTAL	479	482	471	458	456	449	472	463	475	471	422	448	5546

LOS ANGELES DEPARTMENT OF WATER AND POWER
NORTHERN AQUEDUCT OPERATIONS
RUNOFF YEAR 2018-19

BISHOP CONE AUDIT RUNOFF SUMMARY
IN ACRE-FEET

STAID	STATION NAME	+/-	2018 APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2019 JAN	FEB	MAR	TOTAL APR-MAR
3049	#161 OTEY		60	98	80	72	77	36	36	48	58	43	50	52	710
3377	OTEY DITCH RETURN AT MATLICK DITCH	(-)	56	97	73	66	61	32	35	45	57	45	51	57	675
BC005A			**4**	**2**	**7**	**6**	**16**	**4**	**2**	**3**	**1**	**-2**	**-2**	**-5**	**36**
3378	OTEY DITCH DIV. ABOVE MATLICK DITCH		17	7	6	18	20	9	0	0	0	0	0	0	77
BC005B			**17**	**7**	**6**	**18**	**20**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**77**
3048	#61-A FRANK ROUFF		53	83	102	101	57	39	27	26	25	22	20	39	594
3063	DUGGAN DITCH FLOW THROUGH	(-)	46	71	89	88	46	31	21	20	19	16	15	33	495
BC006A			**6**	**12**	**13**	**12**	**10**	**8**	**6**	**6**	**6**	**6**	**6**	**6**	**97**
3002	GEORGE DITCH W. OF SUNLAND AVENUE		78	67	81	57	87	63	47	22	43	26	22	34	627
3264	NORTH INDIAN DITCH BELOW A-1 DRAIN B3A		66	191	206	181	304	239	92	61	39	23	37	16	1455
3068	GEORGE DITCH C-3	(-)	53	50	43	38	54	44	39	17	35	22	18	28	441
3370	NORTH INDIAN DIVERSION W/O SUNLAND	(-)	1	26	3	11	6	0	0	0	0	0	0	0	47
3364	NORTH INDIAN DITCH W/O HWY 395	(-)	31	145	153	133	262	176	59	42	28	13	36	11	1089
BC1478			**60**	**37**	**88**	**56**	**69**	**82**	**41**	**24**	**19**	**14**	**5**	**10**	**505**
3025	SOUTH INDIAN DITCH DIVERSION #3		7	6	9	9	9	7	1	0	0	0	0	0	48
BC1479			**7**	**6**	**9**	**9**	**9**	**7**	**1**	**0**	**0**	**0**	**0**	**0**	**48**
3396	NELLIGAN DIV. #1		90	121	238	123	74	51	35	52	60	102	68	121	1135
3397	NELLIGAN BELOW DIV. #1		90	118	152	134	117	120	86	51	73	55	42	109	1147
3401	YOUNG DITCH #2		118	96	112	122	105	87	45	47	51	45	48	49	925
3421	TOM KEY DITCH ABOVE DIVERSION		28	78	63	56	81	69	30	35	29	29	21	20	539
3050	HOLLAND #63-B	(-)	30	33	38	38	31	35	32	24	27	29	19	38	374
3404	NELLIGAN DITCH #2	(-)	112	144	252	192	117	96	89	81	91	142	101	185	1602
3402	YOUNG DITCH #3	(-)	72	56	90	91	61	57	39	54	52	48	48	55	723
3407	YOUNG DITCH #4	(-)	0	6	6	5	1	0	0	0	0	0	0	0	18
3422	TOM KEY DITCH BELOW DIVERSION	(-)	23	73	57	42	74	63	29	32	27	28	21	18	487
BC301			**89**	**102**	**123**	**66**	**94**	**75**	**7**	**-5**	**16**	**-17**	**-11**	**2**	**541**
3006	HALL DITCH @ GOLF COURSE RETURN		0	27	12	23	52	19	0	0	0	0	0	0	133
BC302A			**0**	**27**	**12**	**23**	**52**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**133**

	3161 BISHOP CK DITCH #16		73	55	51	60	74	54	29	26	30	34	18	21	525
	3162 BISHOP CK DITCH #17		66	33	45	37	39	71	0	0	0	0	0	0	291
	3164 BISHOP CK DITCH #20		10	54	70	59	62	46	22	16	13	17	19	34	422
	3165 BISHOP CK DITCH #21		0	0	0	0	0	0	0	0	0	0	0	0	0
BC302B			**148**	**143**	**165**	**156**	**175**	**171**	**50**	**42**	**43**	**50**	**38**	**55**	**1236**
	3026 NEWLON DITCH BOYD PUMP PLANT		45	27	36	44	42	27	13	4	0	0	0	0	238
BC304			**45**	**27**	**36**	**44**	**42**	**27**	**13**	**4**	**0**	**0**	**0**	**0**	**238**
	3166 BISHOP CK DITCH #5		37	74	65	69	72	58	0	0	0	0	0	20	395
	3022 BISHOP CK DITCH #5-A		66	173	87	61	68	70	0	0	0	0	0	0	525
	3167 BISHOP CK DITCH #9		84	19	76	81	54	53	0	0	0	0	0	12	379
	3168 BISHOP CK DITCH #30		318	217	261	254	270	275	84	80	71	60	39	59	1988
	3392 FORD RAWSON-DIV 1A		2	2	2	5	7	1	0	0	0	0	0	0	19
BC311			**506**	**485**	**490**	**470**	**471**	**456**	**84**	**80**	**71**	**60**	**39**	**91**	**3303**
	3016 NORTH INDIAN DITCH ABOVE MUMY LANE #58-E		528	703	705	778	855	457	297	187	175	264	267	304	5520
	3017 WONACOTT A-2		50	53	71	65	87	62	29	22	39	24	22	30	554
	3015 WONACOTT A-1	(-)	72	98	108	94	119	91	41	32	44	36	38	44	817
	3054 WONACOTT A-3 RETURN	(-)	15	19	19	19	95	58	13	19	21	16	10	13	317
	3051 WONACOTT #58-F	(-)	34	37	58	35	34	47	24	14	11	7	8	13	322
	3018 NORTH INDIAN B-2	(-)	359	549	417	501	587	266	206	114	96	183	201	226	3705
BC313			**99**	**54**	**174**	**194**	**107**	**57**	**43**	**30**	**43**	**46**	**33**	**38**	**918**
	3370 NORTH INDIAN DIVERSION W/O SUNLAND		1	26	3	11	6	0	0	0	0	0	0	0	47
	3270 SOUTH INDIAN D-3		324	384	409	419	405	333	161	222	67	121	73	146	3064
	3005 SOUTH INDIAN DITCH D-4	(-)	173	175	181	132	208	217	127	179	54	86	45	101	1678
BC324			**153**	**236**	**232**	**299**	**204**	**116**	**34**	**43**	**13**	**35**	**28**	**44**	**1437**
	3402 YOUNG DITCH #3		72	56	90	91	61	57	39	54	52	48	48	55	723
	3407 YOUNG DITCH #4		0	6	6	5	1	0	0	0	0	0	0	0	18
	3403 YOUNG DITCH RETURN TO NELLIGAN	(-)	17	20	40	66	41	37	26	36	50	48	48	50	479
BC335			**55**	**41**	**55**	**30**	**20**	**21**	**13**	**17**	**2**	**0**	**1**	**6**	**261**
	2026 FORD RAWSON CANAL BELOW BISHOP CK CANAL		561	594	620	753	965	216	0	0	0	0	0	0	3709
	3368 RAWSON & KEOUGH DITCH E/O HWY 395		44	28	21	19	18	21	28	30	31	30	31	42	343
	2004 FORD RAWSON CANAL DIV. #7	(-)	135	142	167	251	256	0	0	0	0	0	0	0	951
	2043 YRIBARREN RETURN #2	(-)	--	--	--	--	--	--	--	--	--	--	--	--	--	
	3369 RAWSON & KEOUGH DITCH RETURN AT A-DRAIN	(-)	0	1	0	0	0	0	0	0	0	6	2	8	17
BC338			**470**	**480**	**474**	**521**	**726**	**237**	**28**	**30**	**31**	**23**	**29**	**34**	**3083**

	3170 KINGSLEY C-1		60	57	61	55	61	33	15	14	11	10	8	9	394
BC339			**60**	**57**	**61**	**55**	**61**	**33**	**15**	**14**	**11**	**10**	**8**	**9**	**394**
	3015 WONACOTT A-1		72	98	108	94	119	91	41	32	44	36	38	44	817
	3053 TOMMY SMITH DITCH #162-A		9	25	10	21	19	5	0	0	0	0	0	0	89
	3017 WONACOTT A-2	(-)	50	53	71	65	87	62	29	22	39	24	22	30	554
BC353			**30**	**70**	**47**	**50**	**51**	**35**	**12**	**10**	**5**	**12**	**15**	**14**	**351**
	3036 NORTH FORK BISHOP CREEK I-1(#155 STANLEY MATLICK)		12	95	176	175	174	102	36	12	1	16	92	85	976
	3004 BISHOP CK N. FORK I-2		0	0	0	0	0	0	0	0	0	0	0	0	0
	3316 IRRIGATION FROM WELL #406		174	136	89	220	199	231	3	3	0	0	0	0	1055
	3042 TATUM RETURN AT HIGHWAY 6	(-)	19	13	16	29	15	3	0	0	0	0	0	0	95
	3039 TATUM RETURN AT BISHOP CK CANAL	(-)	34	35	38	37	16	8	8	14	18	28	30	34	300
BC361A			**132**	**183**	**211**	**329**	**342**	**320**	**31**	**1**	**-16**	**-12**	**62**	**51**	**1634**
	3009 MATLICK DITCH F-10		254	255	228	218	215	147	50	39	41	43	33	42	1565
	3040 MATLICK DITCH F-13 N		86	156	238	201	92	95	119	98	123	113	112	204	1637
	3008 MATLICK DITCH F-13 E		14	13	1	8	46	30	26	23	45	70	19	47	342
	3007 MATLICK DITCH F-14		12	27	31	22	22	21	13	6	5	6	7	9	181
	3035 MATLICK DITCH #154		60	196	144	112	95	45	42	19	9	7	15	31	775
	3154 SCHILDER RETURN G-2	(-)	17	59	33	40	28	18	8	7	7	10	14	15	256
	3037 MATLICK DITCH #63-A	(-)	23	35	37	26	36	36	9	19	43	77	53	73	467
	3038 TATUM RETURN H-1	(-)	108	128	156	90	93	60	19	3	6	19	16	20	718
	3003 MATLICK DITCH RETURN @ B-1 DRAIN	(-)	3	5	4	6	2	5	24	9	1	0	6	14	79
	3010 MATLICK RETURN TO "C" DRAIN	(-)	18	10	16	41	11	28	120	102	130	128	119	204	927
BC361B			**256**	**408**	**395**	**359**	**299**	**191**	**69**	**44**	**36**	**5**	**-20**	**5**	**2047**
	3388 INDIAN S. RETURN ON SEE-VEE LANE		34	143	127	85	38	68	22	10	5	1	0	4	537
	3389 INDIAN MIDDLE RETURN ON SEE-VEE LANE		1	0	0	1	0	1	0	0	0	0	0	0	3
	3390 INDIAN N. RETURN ON SEE-VEE LANE		38	123	71	31	16	31	40	13	18	17	11	20	429
BC362D			**74**	**266**	**199**	**116**	**54**	**100**	**62**	**22**	**23**	**18**	**11**	**24**	**969**
	3043 NORTH INDIAN DITCH B-3		75	66	79	23	43	70	0	0	0	0	0	0	356
	3011 WEST LINE L-2		17	21	33	42	37	19	4	0	0	0	0	0	173
BC387A			**92**	**87**	**111**	**65**	**81**	**89**	**4**	**0**	**0**	**0**	**0**	**0**	**529**
	3387 MATLICK DITCH TO THE N.		102	202	145	153	193	163	34	47	62	59	56	57	1273
	3398 MATLICK DITCH #1		230	365	437	412	404	311	200	128	140	125	115	146	3013
	3399 REINHACKLE #1		177	282	254	220	204	94	122	120	83	93	93	184	1926
	3400 YOUNG DITCH #1		94	48	70	102	66	82	0	0	0	0	0	0	462
	3424 MCLAREN TAILWATER		65	93	69	68	68	58	45	47	51	45	48	49	706
	3401 YOUNG DITCH #2	(-)	118	96	112	122	105	87	45	47	51	45	48	49	925
	3406 C-DRAIN AT INTAKE	(-)	256	510	594	547	480	335	327	310	285	249	227	379	4499
	3009 MATLICK DITCH F-10	(-)	254	255	228	218	215	147	50	39	41	43	33	42	1565
BC392			**41**	**129**	**40**	**69**	**136**	**137**	**-21**	**-53**	**-41**	**-14**	**4**	**-34**	**393**

3061	KINGSLEY DITCH PUMP DIV. AT DIV. #2		4	7	7	7	8	5	0	0	0	0	0	0	38
3171	BISHOP CK DITCH #11		0	0	31	0	25	0	0	0	0	0	0	0	56
BC393			**4**	**7**	**39**	**7**	**32**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**94**
3163	BISHOP CK DITCH #19		103	74	54	50	65	35	0	0	0	0	0	0	381
3174	BISHOP CK DITCH #22		84	113	65	53	66	42	0	0	0	0	0	0	423
3019	BISHOP CK CANAL DIV. #24		56	105	152	125	141	144	16	30	28	7	0	0	804
3020	BISHOP CK CANAL DIV. #25		0	35	36	45	48	42	0	0	0	0	0	0	206
3391	BISHOP CK CANAL DIV. 26A		67	43	83	124	104	0	0	0	0	0	0	0	421
3024	BISHOP CK CANAL DIV. #29		65	95	71	48	52	43	12	45	41	36	39	58	605
BC397			**375**	**466**	**461**	**444**	**476**	**306**	**28**	**74**	**69**	**43**	**39**	**58**	**2839**
3012	GEORGE DITCH C-1		102	101	140	85	151	87	37	21	32	32	26	31	845
3365	PARK W. RETURN S/O A-DRAIN		92	130	123	123	106	66	24	22	1	1	2	1	691
3047	4 X - 58D		129	319	278	311	305	214	192	330	402	363	275	294	3412
3366	SOUTH INDIAN DITCH DIVERSION #1 N/O SCHOBER LANE		3	4	11	4	12	3	0	0	0	0	0	0	37
3367	SOUTH INDIAN DITCH DIVERSION #2 N/O SCHOBER LANE		42	10	119	51	142	27	0	0	0	0	0	0	391
W408	WELL 408		187	193	178	179	185	172	0	0	0	0	0	0	1094
3002	GEORGE DITCH W. OF SUNLAND AVENUE	(-)	78	67	81	57	87	63	47	22	43	26	22	34	627
3046	SOUTH INDIAN RETURN AT A-1 DRAIN	(-)	41	168	88	144	124	63	52	115	315	233	211	152	1706
3270	SOUTH INDIAN D-3	(-)	324	384	409	419	405	333	161	222	67	121	73	146	3064
BC500			**112**	**136**	**270**	**132**	**285**	**111**	**-7**	**14**	**11**	**15**	**-2**	**-6**	**1071**
3027	HALL DITCH PUMP PLANT #2@DON TATUM LEASE(KOCH)		5	0	0	19	33	32	4	0	0	0	0	0	93
3028	HALL DITCH PUMP PLANT #4 AT DON TATUM LEASE		200	133	161	152	134	113	13	0	0	0	0	0	906
BC502A			**205**	**133**	**161**	**172**	**168**	**145**	**16**	**0**	**0**	**0**	**0**	**0**	**1000**
3031	A-1 DRAIN PUMP PLANT #1 S/O HALL DITCH		--	--	--	--	--	--	--	--	--	--	--	--	--
3032	A-1 DRAIN PUMP PLANT #3 AT WELL #140		127	74	56	79	147	107	22	8	0	0	0	0	620
BC502B			**127**	**74**	**56**	**79**	**147**	**107**	**22**	**8**	**0**	**0**	**0**	**0**	**620**
2086	A-DRAIN DIV. TO ARKANSAS FLATS		0	0	0	0	0	0	0	0	0	0	0	162	162
BCOPRB			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**162**	**162**
3155	BISHOP CK DITCH #5-B		0	0	0	0	0	0	232	132	127	2	180	270	943
BCRECA			**0**	**0**	**0**	**0**	**0**	**0**	**232**	**132**	**127**	**2**	**180**	**270**	**943**
3021	BISHOP CK CANAL DIV. #67		0	0	0	0	0	0	0	0	0	0	12	139	151
BCRECC			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**139**	**151**
3194	SOUTH FORK BISHOP CREEK BELOW BISHOP CREEK CANAL		428	453	489	597	575	463	444	332	314	259	250	302	4906
3193	SANDERS POND RETURN AT OWENS RIVER	(-)	120	90	73	118	129	80	114	106	144	132	154	185	1445
3066	RAWSON POND #3 RETURN TO OWENS RIVER	(-)	145	139	105	133	124	46	123	90	43	53	58	49	1108
BCRECD			**163**	**223**	**311**	**346**	**322**	**336**	**206**	**136**	**127**	**75**	**38**	**68**	**2351**

3023	KINGSLEY DITCH DIV. C-4		134	86	104	95	120	81	73	43	19	15	15	32	817
3183	CEMETERY DITCH AT E. LINE ST.	(-)	48	36	33	47	69	47	54	23	0	0	0	6	363
BCRECF			**87**	**49**	**71**	**48**	**51**	**34**	**19**	**20**	**19**	**15**	**15**	**25**	**453**

3242	BISHOP CK CANAL DIV. TO 5 BRIDGES #2		0	0	0	0	0	0	0	4	32	25	22	26	109
3317	BISHOP CK CANAL DIV. TO 5 BRIDGES #6		31	34	51	61	30	9	0	0	0	10	20	85	331
BCLAEMH			**31**	**34**	**51**	**61**	**30**	**9**	**0**	**4**	**32**	**35**	**41**	**112**	**440**

3185	MCGEE CK AT ABERLOUR RANCH		393	275	230	238	174	168	198	215	193	207	196	256	2743
3235	MILL POND RETURN	(-)	252	230	166	181	76	83	62	65	71	78	76	94	1434
BCRVRECA			**141**	**45**	**64**	**57**	**98**	**85**	**135**	**150**	**122**	**129**	**120**	**162**	**1308**

BC005A	4	2	7	6	16	4	2	3	1	-2	-2	-5	36
BC005B	17	7	6	18	20	9	0	0	0	0	0	0	77
BC006A	6	12	13	12	10	8	6	6	6	6	6	6	97
BC1478	60	37	88	56	69	82	41	24	19	14	5	10	505
BC1479	7	6	9	9	9	7	1	0	0	0	0	0	48
BC301	89	102	123	66	94	75	7	-5	16	-17	-11	2	541
BC302A	0	27	12	23	52	19	0	0	0	0	0	0	133
BC302B	148	143	165	156	175	171	50	42	43	50	38	55	1236
BC304	45	27	36	44	42	27	13	4	0	0	0	0	238
BC311	506	485	490	470	471	456	84	80	71	60	39	91	3303
BC313	99	54	174	194	107	57	43	30	43	46	33	38	918
BC324	153	236	232	299	204	116	34	43	13	35	28	44	1437
BC335	55	41	55	30	20	21	13	17	2	0	1	6	261
BC338	470	480	474	521	726	237	28	30	31	23	29	34	3083
BC339	60	57	61	55	61	33	15	14	11	10	8	9	394
BC353	30	70	47	50	51	35	12	10	5	12	15	14	351
BC361A	132	183	211	329	342	320	31	1	-16	-12	62	51	1634
BC361B	256	408	395	359	299	191	69	44	36	5	-20	5	2047
BC362D	74	266	199	116	54	100	62	22	23	18	11	24	969
BC387A	92	87	111	65	81	89	4	0	0	0	0	0	529
BC392	41	129	40	69	136	137	-21	-53	-41	-14	4	-34	393
BC393	4	7	39	7	32	5	0	0	0	0	0	0	94
BC397	375	466	461	444	476	306	28	74	69	43	39	58	2839
BC500	112	136	270	132	285	111	-7	14	11	15	-2	-6	1071
BC502A	205	133	161	172	168	145	16	0	0	0	0	0	1000
BC502B	127	74	56	79	147	107	22	8	0	0	0	0	620
BCOPRB	0	0	0	0	0	0	0	0	0	0	0	162	162
BCRECA	0	0	0	0	0	0	232	132	127	2	180	270	943
BCRECC	0	0	0	0	0	0	0	0	0	0	12	139	151
BCRECD	163	223	311	346	322	336	206	136	127	75	38	68	2351
BCRECF	87	49	71	48	51	34	19	20	19	15	15	25	453
BCLAEMH	31	34	51	61	30	9	0	4	32	35	41	112	440
BCRVRECA	141	45	64	57	98	85	135	150	122	129	120	162	1308
BCAUDIT	**3590**	**4024**	**4432**	**4295**	**4648**	**3333**	**1145**	**853**	**770**	**548**	**687**	**1342**	**29667**