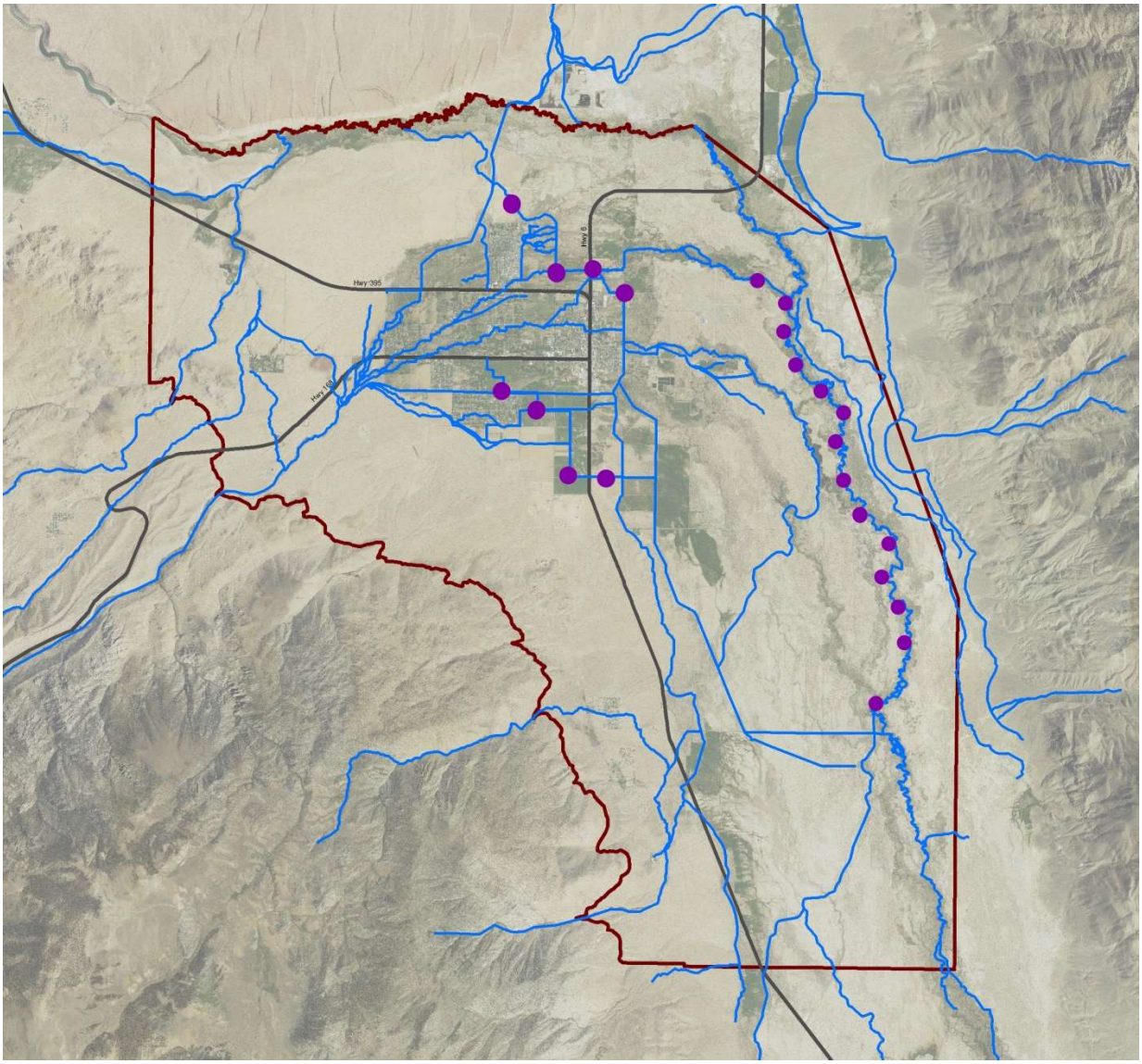
THE BISHOP CONE AUDIT
FOR THE 2019-20 RUNOFF YEAR



Inyo County Water Department
Report 2019-20
June 2020

THE BISHOP CONE AUDIT
FOR THE 2019-20 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 and/or downstream uses in the Owens Valley. 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 2018-19 and 2019-20. 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 16,548 AF from 2018-19 (Use: 26,992) to 2019-20 (Use: 43,540). The 2018-19 runoff year was close to average and water use was in the range of long-term average. Runoff in 2019-20 was 155% of average, and LADWP conducted notable operational spreading on the Bishop Cone and other areas. This resulted in many 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 2018-2019 (AF)	RUNOFF YEAR*1 2019-2020 (AF)
BC502B (BA354B or BA362B)	620	589
BC302A	133	216
BC302B	1236	1923
BC311	3303	5238
BC313	918	1512
BC324	1437	1631
BC1478 (BAICR) *2	505	373
BC387A	529	740
BCRECF	453	665
BC339	394	558
BC393	94	272
BC362D	(No Credit) *3	(No Credit) *3
BC304	238	160
BC500	1071	1732
BC397 (BA387B) *2	2839	5934
BC361A	1634	3901
BC361B	2047	2231
BC502A (BA354A or 362A) *2	1000	1107
BCRECA	943	2105
BCRECC	151	250
BCRECD	2351	2587
BC338	3083	5103
BCOPRB	162	2389
BCLAEMH	440	769
BC353	351	193
BC005A	36	33
BC005B	77	248
BC006A	97	112
BC1479 (BA342) *2	48	47
BC392	(No Credit) *3	(No Credit) *3
BC301	541	639
BC335	261	283
BCRVRECA	(No Credit) *3	(No Credit) *3
TOTAL	**26,992**	**43,540**

*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 2019-20 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 2018-19 AND 2019-20

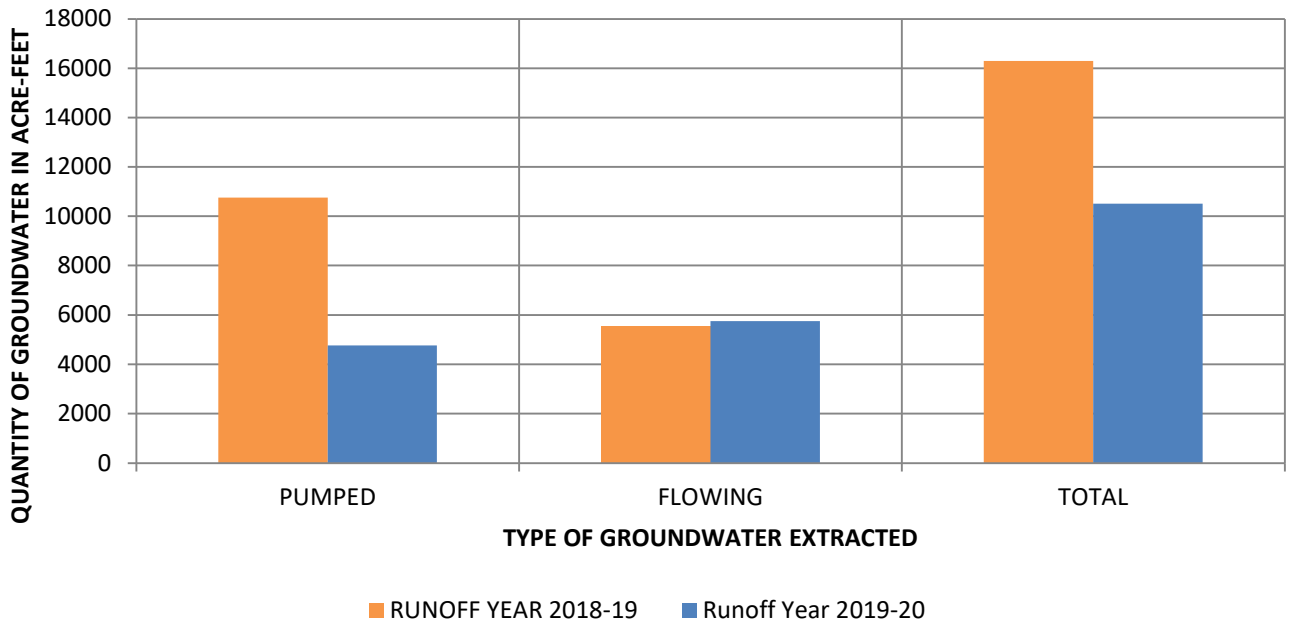
Section IV.D.1.d of the Green Book states: "*Total groundwater extraction by LADWP will be compared with corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out 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 2018-19 and 2019-20.

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). For runoff year 2019-20, LADWP extracted 10,514 AF of groundwater (4,763 AF from pumped wells and 5,751 AF from flowing wells).

LADWP groundwater extractions on the Bishop Cone for the 2019-20 decreased by 5,783 AF compared to the previous year due to less pumping in the high runoff year of 2019-20.

FIGURE 1. TYPE OF LADWP GROUNDWATER AND TOTAL GROUNDWATER EXTRACTION ON THE BISHOP CONE FOR RUNOFF YEARS 2018-19 AND 2019-2020



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 2019-20

WELL	FLOWING GROUNDWATER (AF)	PUMPED GROUNDWATER (AF)
F121	63	NA
F122	76	NA
F123	177	NA
F125	1223	NA
F126	407	NA
F127	454	NA
F128	345	NA
F129	106	NA
F130	453	NA
F131	671	NA
F132	401	NA
F133	389	NA
F134	784	NA
F136	201	NA
W140	NA	1294
W371	NA	329
W406	NA	180
W407	NA	892
W408	NA	1002
W410	NA	769
W411	NA	84
W412	NA	214
TOTAL	**5,751**	**4,763**

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

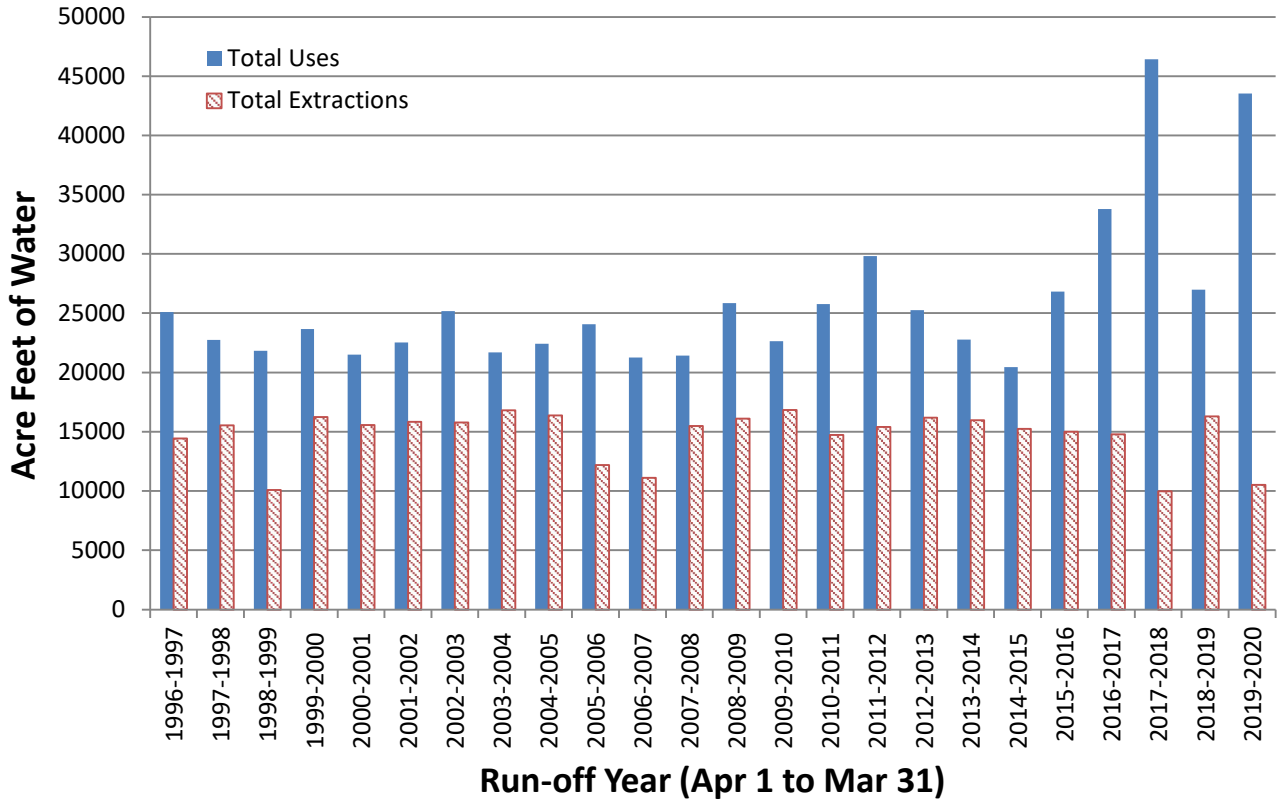
The Water Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. Table 3, below, shows that LADWP was in compliance with the above provision for runoff years 2018-19 and 2019-20 as the 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 2018-19 (AF)	RUNOFF YEAR 2018-19 (AF)
TOTAL USES	26,992	43,540
TOTAL GROUNDWATER EXTRACTION	16,297	10,514
USES MINUS EXTRACTIONS	10,695	33,026
IN COMPLIANCE?	YES	YES

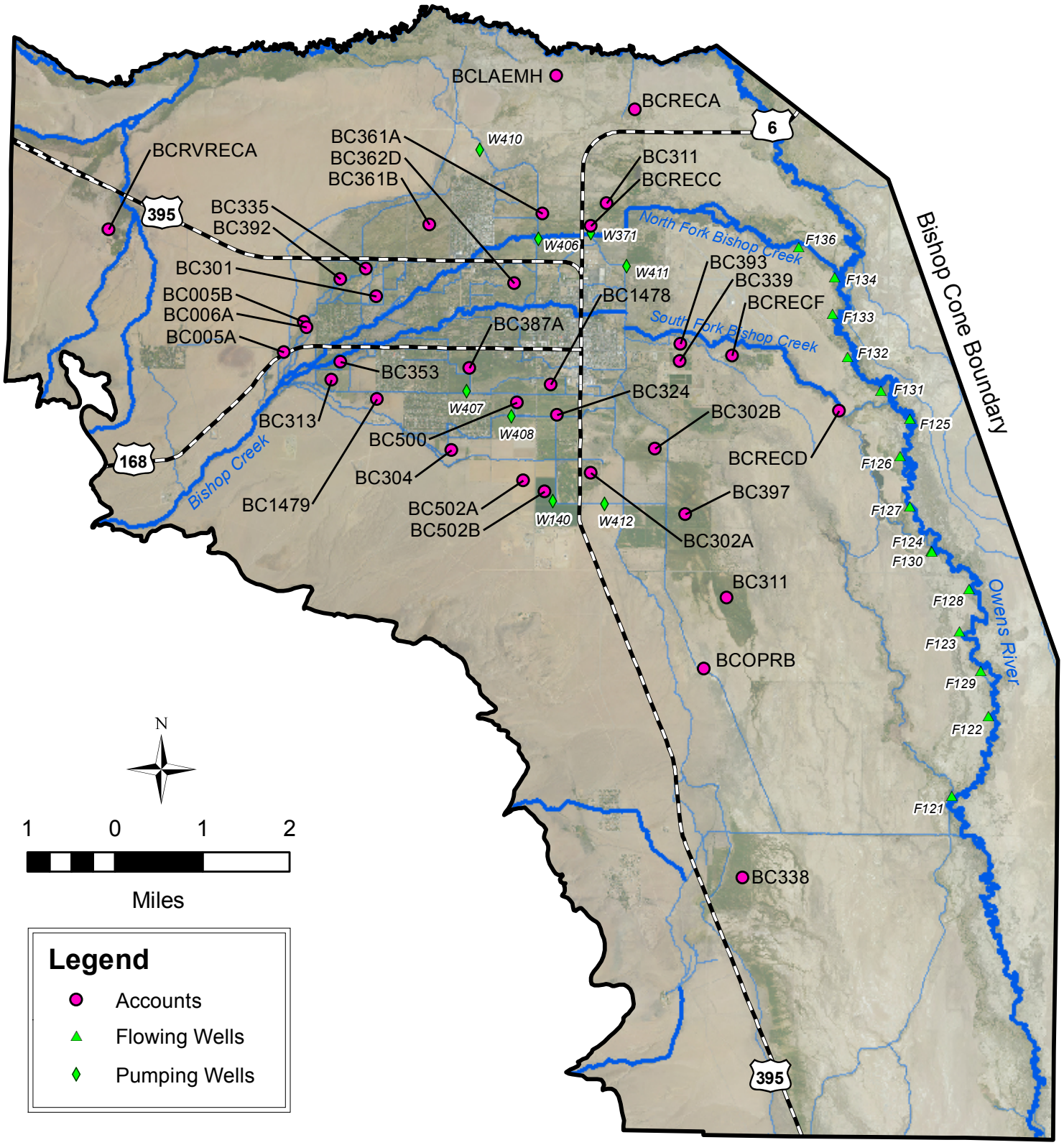
Figure 2 presents LADWP's water uses versus extractions since runoff year 1996-97. Uses have exceeded extractions throughout the data period; therefore, LADWP has been in compliance with Section IV.D.1.a. of the Green Book and the Water Agreement.

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.

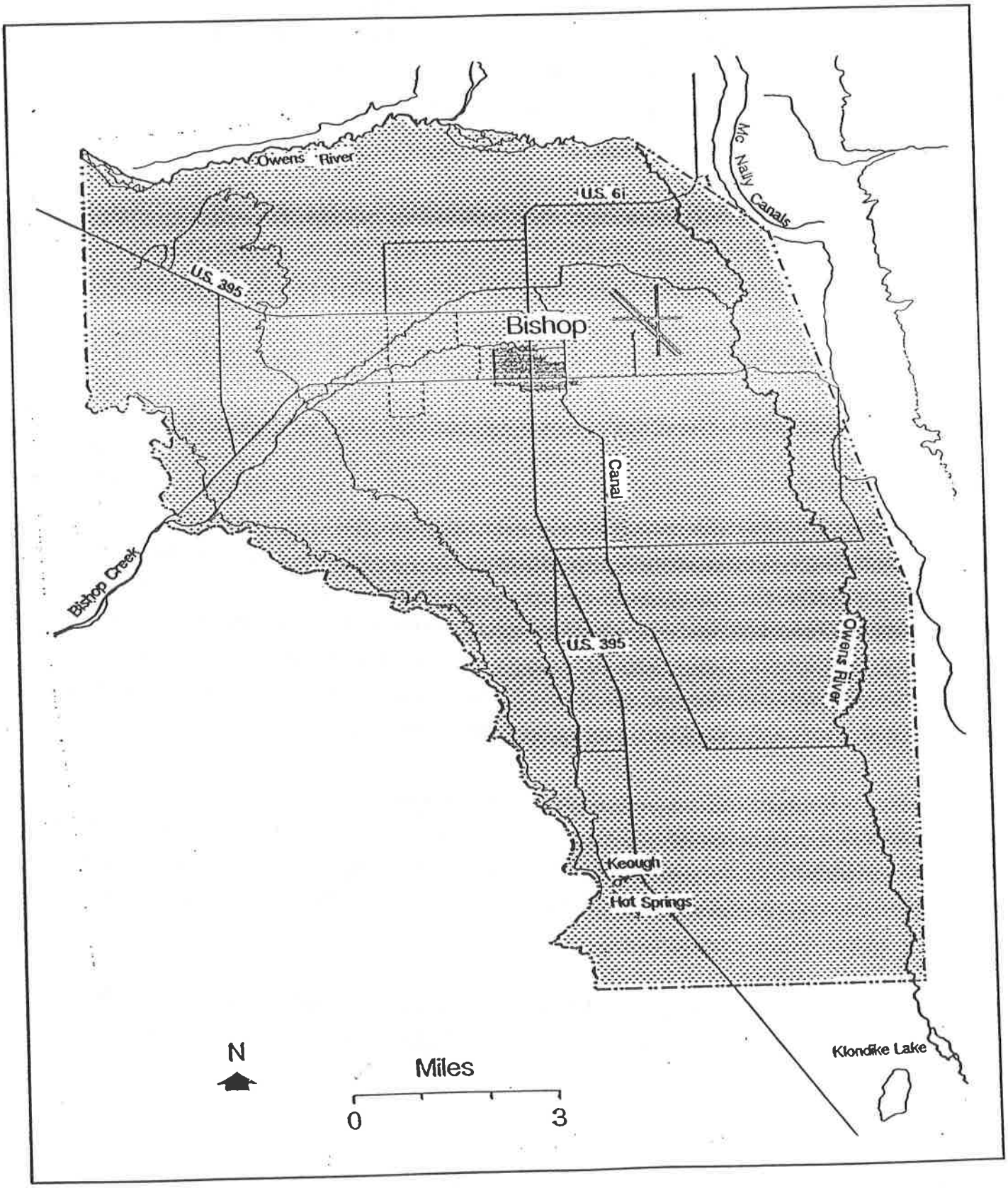
1. Procedures for Conducting the Bishop Cone Audit

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)

2019/20 RUNOFF YEAR BISHOP CONE FLOWING WELL TOTALS

(ACRE-FEET)

	2019									2020			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
F121	1	2	6	6	6	6	6	6	6	6	6	6	63
F122	6	7	6	7	8	7	7	7	6	5	5	5	76
F123	23	18	14	16	14	13	13	13	13	13	13	14	177
F124	0	0	0	0	0	0	0	0	0	0	0	0	0
F125	111	126	106	104	102	100	98	88	96	104	96	92	1223
F126	30	33	32	34	34	34	35	34	36	37	33	34	407
F127	41	42	36	34	34	36	38	39	38	41	38	38	454
F128	27	34	26	29	31	37	31	26	25	26	26	27	345
F129	8	9	11	13	9	7	9	8	8	9	8	8	106
F130	38	40	37	39	38	37	42	42	38	37	32	34	453
F131	40	57	43	63	70	50	63	58	45	63	60	59	671
F132	34	36	31	34	33	34	36	36	34	34	30	31	401
F133	30	32	31	34	34	32	31	33	34	33	32	32	389
F134	64	70	69	68	68	62	65	69	70	64	58	57	784
F136	17	20	19	18	17	12	13	17	18	18	17	16	201
TOTAL	469	526	467	499	498	467	486	475	468	489	452	454	5751

2019/20 RUNOFF YEAR BISHOP CONE PUMPING WELL TOTALS

(ACRE-FEET)

	2019									2020			
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
W140	183	193	187	189	194	187	152	8	0	0	0	0	1294
W371	0	0	0	0	0	76	94	52	3	0	1	103	329
W406	0	0	0	0	0	169	11	0	0	0	0	0	180
W407	145	158	165	111	158	155	0	0	0	0	0	0	892
W408	181	184	148	185	193	111	0	0	0	0	0	0	1002
W410	0	0	0	0	0	201	251	241	76	0	0	0	769
W411	0	0	0	0	0	83	0	0	0	0	0	0	84
W412	0	0	0	0	0	202	12	0	0	0	0	0	214
TOTAL	509	535	499	485	545	1185	520	302	79	0	1	103	4763

LOS ANGELES DEPARTMENT OF WATER AND POWER
NORTHERN AQUEDUCT OPERATIONS
RUNOFF YEAR 2019-20

BISHOP CONE AUDIT RUNOFF SUMMARY
IN ACRE-FEET

STAID	STATION NAME	+/-	2019 APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2020 JAN	FEB	MAR	TOTAL APR-MAR
3049	#161 OTEY		41	46	80	104	71	41	40	47	36	50	43	51	650
3377	OTEY DITCH RETURN AT MATLICK DITCH	(-)	42	47	56	84	68	38	42	50	42	51	44	52	616
BC005A			**-1**	**-1**	**24**	**20**	**3**	**3**	**-3**	**-3**	**-6**	**-1**	**-1**	**-1**	**33**
3378	OTEY DITCH DIV. ABOVE MATLICK DITCH		7	24	43	83	69	22	0	0	0	0	0	0	248
BC005B			**7**	**24**	**43**	**83**	**69**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**248**
3048	#61-A FRANK ROUFF		80	130	160	154	103	69	50	45	51	54	46	47	989
3063	DUGGAN DITCH FLOW THROUGH	(-)	74	114	144	138	91	59	44	39	45	48	40	41	877
BC006A			**6**	**16**	**16**	**16**	**12**	**10**	**6**	**6**	**6**	**6**	**6**	**6**	**112**
3002	GEORGE DITCH W. OF SUNLAND AVENUE		74	70	81	80	100	76	39	24	26	30	32	27	659
3264	NORTH INDIAN DITCH BELOW A-1 DRAIN B3A		165	264	250	168	243	235	186	79	21	26	43	44	1724
3068	GEORGE DITCH C-3	(-)	45	56	55	60	57	50	28	19	25	29	28	24	476
3370	NORTH INDIAN DIVERSION W/O SUNLAND	(-)	19	43	19	21	15	3	0	0	0	0	0	0	120
3364	NORTH INDIAN DITCH W/O HWY 395	(-)	81	199	204	146	237	200	162	79	16	24	34	33	1415
BC1478			**94**	**36**	**52**	**22**	**34**	**59**	**35**	**5**	**6**	**3**	**13**	**14**	**373**
3025	SOUTH INDIAN DITCH DIVERSION #3		4	6	10	11	9	6	1	0	0	0	0	0	47
BC1479			**4**	**6**	**10**	**11**	**9**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**47**
3396	NELLIGAN DIV. #1		128	168	119	231	121	96	90	95	129	106	98	147	1528
3397	NELLIGAN BELOW DIV. #1		150	122	159	173	163	100	101	91	84	77	96	77	1393
3401	YOUNG DITCH #2		108	119	100	120	101	64	51	63	36	44	52	62	920
3421	TOM KEY DITCH ABOVE DIVERSION		39	38	76	85	99	42	50	46	31	23	36	30	595
3050	HOLLAND #63-B	(-)	34	45	41	48	48	30	31	25	24	21	22	23	392
3404	NELLIGAN DITCH #2	(-)	168	224	174	248	178	134	152	154	159	162	163	187	2103
3402	YOUNG DITCH #3	(-)	50	97	48	80	61	44	51	63	42	46	50	69	701
3407	YOUNG DITCH #4	(-)	9	11	12	13	9	4	0	0	0	0	0	0	58
3422	TOM KEY DITCH BELOW DIVERSION	(-)	33	32	63	77	89	38	48	46	29	22	37	31	545
BC301			**131**	**38**	**116**	**144**	**100**	**54**	**10**	**7**	**25**	**-2**	**11**	**5**	**639**
3006	HALL DITCH @ GOLF COURSE RETURN		34	0	60	69	22	31	0	0	0	0	0	0	216
BC302A			**34**	**0**	**60**	**69**	**22**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**216**

STAID	STATION NAME	+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
3161	BISHOP CK DITCH #16		56	64	164	221	101	41	32	32	32	31	22	23	819
3162	BISHOP CK DITCH #17		75	31	40	75	43	54	0	0	0	0	0	0	318
3164	BISHOP CK DITCH #20		27	61	130	128	33	50	21	23	22	24	20	32	571
3165	BISHOP CK DITCH #21		0	0	154	42	19	0	0	0	0	0	0	0	215
BC302B			**159**	**156**	**488**	**466**	**196**	**145**	**53**	**55**	**54**	**55**	**41**	**55**	**1923**
3026	NEWLON DITCH BOYD PUMP PLANT		7	37	46	37	17	13	3	0	0	0	0	0	160
BC304			**7**	**37**	**46**	**37**	**17**	**13**	**3**	**0**	**0**	**0**	**0**	**0**	**160**
3166	BISHOP CK DITCH #5		115	94	132	242	84	117	0	0	0	0	0	0	784
3022	BISHOP CK DITCH #5-A		65	106	193	197	94	98	6	14	23	18	0	0	814
3167	BISHOP CK DITCH #9		85	54	208	409	198	64	0	0	0	10	29	30	1087
3168	BISHOP CK DITCH #30		318	320	328	672	265	249	58	64	68	72	65	58	2537
3392	FORD RAWSON-DIV 1A		5	3	0	2	2	2	0	0	0	0	0	0	14
BC311			**587**	**578**	**862**	**1522**	**643**	**530**	**64**	**78**	**91**	**99**	**95**	**89**	**5238**
3016	NORTH INDIAN DITCH ABOVE MUMY LANE #58-E		586	772	802	913	734	599	348	429	272	181	158	203	5997
3017	WONACOTT A-2		41	60	115	170	91	100	31	27	21	24	22	22	724
3015	WONACOTT A-1	(-)	71	93	97	71	104	70	43	42	34	35	32	31	723
3054	WONACOTT A-3 RETURN	(-)	20	36	77	133	50	89	12	18	13	11	2	0	461
3051	WONACOTT #58-F	(-)	22	20	29	33	45	26	22	11	11	16	18	19	272
3018	NORTH INDIAN B-2	(-)	395	461	458	620	438	285	239	323	195	115	96	124	3749
BC313			**118**	**221**	**255**	**226**	**188**	**229**	**62**	**63**	**40**	**28**	**31**	**51**	**1512**
3370	NORTH INDIAN DIVERSION W/O SUNLAND		19	43	19	21	15	3	0	0	0	0	0	0	120
3270	SOUTH INDIAN D-3		384	436	376	430	446	351	217	152	169	186	178	175	3500
3005	SOUTH INDIAN DITCH D-4	(-)	185	237	197	238	209	229	150	90	98	100	131	125	1989
BC324			**219**	**241**	**199**	**213**	**251**	**125**	**67**	**61**	**71**	**87**	**47**	**50**	**1631**
3402	YOUNG DITCH #3		50	97	48	80	61	44	51	63	42	46	50	69	701
3407	YOUNG DITCH #4		9	11	12	13	9	4	0	0	0	0	0	0	58
3403	YOUNG DITCH RETURN TO NELLIGAN	(-)	22	71	16	34	25	18	49	57	40	43	44	56	475
BC335			**37**	**37**	**44**	**59**	**44**	**29**	**2**	**6**	**2**	**4**	**6**	**13**	**283**
2026	FORD RAWSON CANAL BELOW BISHOP CK CANAL		605	552	1304	1683	1028	242	0	0	514	520	0	0	6448
3368	RAWSON & KEOUGH DITCH E/O HWY 395		36	34	25	34	13	21	27	21	32	18	14	21	296
2004	FORD RAWSON CANAL DIV. #7	(-)	135	151	391	542	404	0	0	0	0	0	0	0	1623
2043	YRIBARREN RETURN #2	(-)	--	--	--	--	--	--	--	--	--	--	--	--	--
3369	RAWSON & KEOUGH DITCH RETURN AT A-DRAIN	(-)	4	3	0	1	9	1	0	0	0	0	0	3	21
BC338			**503**	**432**	**938**	**1174**	**628**	**263**	**27**	**21**	**546**	**539**	**14**	**18**	**5103**
3170	KINGSLEY C-1		66	65	37	113	153	39	21	17	10	11	9	17	558
BC339			**66**	**65**	**37**	**113**	**153**	**39**	**21**	**17**	**10**	**11**	**9**	**17**	**558**

STAID	STATION NAME	+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
3015	WONACOTT A-1		71	93	97	71	104	70	43	42	34	35	32	31	723
3053	TOMMY SMITH DITCH #162-A		11	11	48	69	43	10	0	0	0	0	0	0	192
3017	WONACOTT A-2	(-)	41	60	115	170	91	100	31	27	21	24	22	22	724
BC353			**42**	**44**	**30**	**-30**	**56**	**-20**	**13**	**14**	**13**	**11**	**11**	**9**	**193**
3036	NORTH FORK BISHOP CREEK I-1(#155 STANLEY MATLICK)		98	117	146	191	135	76	34	78	223	232	437	384	2151
3004	BISHOP CK N. FORK I-2		348	235	381	562	504	4	0	0	0	0	0	0	2034
3316	IRRIGATION FROM WELL #406		0	0	0	0	0	0	0	0	0	0	0	0	0
3042	TATUM RETURN AT HIGHWAY 6	(-)	4	3	5	34	8	0	0	0	0	0	0	0	54
3039	TATUM RETURN AT BISHOP CK CANAL	(-)	41	44	21	18	13	12	11	10	10	15	16	17	228
BC361A			**400**	**305**	**500**	**701**	**619**	**68**	**23**	**67**	**213**	**217**	**421**	**367**	**3901**
3009	MATLICK DITCH F-10		182	185	286	261	276	80	44	43	57	45	32	51	1542
3040	MATLICK DITCH F-13 N		127	241	150	198	119	114	176	186	198	173	185	232	2099
3008	MATLICK DITCH F-13 E		44	40	31	57	70	32	50	5	0	15	44	29	417
3007	MATLICK DITCH F-14		24	23	25	47	44	24	17	16	7	11	26	22	286
3035	MATLICK DITCH #154		97	101	80	117	78	83	58	23	0	4	23	21	685
3154	SCHILDER RETURN G-2	(-)	30	61	58	54	67	14	9	12	47	56	31	40	479
3037	MATLICK DITCH #63-A	(-)	59	54	47	60	76	49	72	29	16	40	71	75	648
3038	TATUM RETURN H-1	(-)	92	114	10	0	31	53	7	20	18	6	11	10	372
3003	MATLICK DITCH RETURN @ B-1 DRAIN	(-)	1	1	1	4	0	4	37	13	0	4	11	4	80
3010	MATLICK RETURN TO "C" DRAIN	(-)	39	100	39	7	11	35	128	154	167	158	174	206	1218
BC361B			**254**	**260**	**417**	**554**	**402**	**177**	**92**	**46**	**13**	**-17**	**12**	**21**	**2231**
3388	INDIAN S. RETURN ON SEE-VEE LANE		62	113	132	96	28	61	32	4	1	3	4	29	565
3389	INDIAN MIDDLE RETURN ON SEE-VEE LANE		5	2	1	0	0	2	1	0	0	0	0	0	11
3390	INDIAN N. RETURN ON SEE-VEE LANE		57	57	102	37	28	12	22	14	7	6	43	53	438
BC362D			**124**	**172**	**235**	**134**	**56**	**75**	**55**	**18**	**8**	**9**	**47**	**81**	**1014**
3043	NORTH INDIAN DITCH B-3		74	69	55	107	74	84	0	0	0	0	0	119	582
3011	WEST LINE L-2		35	31	17	23	18	12	12	10	0	0	0	0	158
BC387A			**109**	**99**	**72**	**130**	**92**	**97**	**12**	**10**	**0**	**0**	**0**	**119**	**740**
3387	MATLICK DITCH TO THE N.		141	173	199	219	171	133	87	73	81	81	70	99	1527
3398	MATLICK DITCH #1		249	334	416	530	411	229	177	139	187	217	183	205	3277
3399	REINHACKLE #1		129	140	176	224	235	161	231	125	128	118	97	103	1867
3400	YOUNG DITCH #1		107	101	85	77	110	72	2	1	0	0	0	4	559
3424	MCLAREN TAILWATER		62	56	70	74	56	60	49	62	46	50	52	58	695
3401	YOUNG DITCH #2	(-)	108	119	100	120	101	64	51	63	36	44	52	62	920
3406	C-DRAIN AT INTAKE	(-)	259	401	412	630	509	452	492	323	343	373	306	347	4847
3009	MATLICK DITCH F-10	(-)	182	185	286	261	276	80	44	43	57	45	32	51	1542
BC392			**137**	**98**	**148**	**111**	**97**	**60**	**-41**	**-28**	**5**	**3**	**11**	**7**	**608**

STAID	STATION NAME	+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
3061	KINGSLEY DITCH PUMP DIV. AT DIV. #2		6	4	7	9	8	6	0	0	0	0	0	0	40
3171	BISHOP CK DITCH #11		0	26	114	44	32	11	4	1	0	0	0	0	232
BC393			**6**	**30**	**121**	**53**	**40**	**17**	**4**	**1**	**0**	**0**	**0**	**0**	**272**
3163	BISHOP CK DITCH #19		126	65	247	447	191	60	0	0	0	0	0	0	1136
3174	BISHOP CK DITCH #22		77	124	116	246	95	0	0	0	0	0	0	0	658
3019	BISHOP CK CANAL DIV. #24		53	137	285	461	222	15	28	31	37	28	26	29	1352
3020	BISHOP CK CANAL DIV. #25		0	13	97	105	57	0	0	0	0	0	0	0	272
3177	BISHOP CK DITCH #26		102	96	269	496	197	0	0	0	0	0	0	0	1160
3178	BISHOP CK DITCH #27		9	15	15	18	10	0	0	0	0	0	0	0	67
3179	BISHOP CK DITCH #28		19	22	37	48	27	0	0	0	0	0	0	0	153
3024	BISHOP CK CANAL DIV. #29		79	50	250	367	147	40	37	38	40	39	30	17	1134
BC397			**465**	**522**	**1316**	**2190**	**945**	**115**	**64**	**69**	**77**	**68**	**56**	**47**	**5934**
3012	GEORGE DITCH C-1		124	92	148	183	212	105	30	20	22	38	35	28	1037
3365	PARK W. RETURN S/O A-DRAIN		60	114	102	129	146	54	3	0	0	0	0	5	613
3047	4 X - 58D		273	355	348	403	427	399	598	496	230	209	192	292	4222
3366	SOUTH INDIAN DITCH DIVERSION #1 N/O SCHOBER LANE		3	11	9	14	15	9	4	0	0	0	0	0	65
3367	SOUTH INDIAN DITCH DIVERSION #2 N/O SCHOBER LANE		79	87	92	140	223	72	24	0	0	0	0	0	717
W408	WELL 408		181	184	148	185	193	111	0	0	0	0	0	0	1002
3002	GEORGE DITCH W. OF SUNLAND AVENUE	(-)	74	70	81	80	100	76	39	24	26	30	32	27	659
3046	SOUTH INDIAN RETURN AT A-1 DRAIN	(-)	82	188	120	82	94	174	386	353	79	56	39	114	1767
3270	SOUTH INDIAN D-3	(-)	384	436	376	430	446	351	217	152	169	186	178	175	3500
BC500			**179**	**149**	**272**	**463**	**577**	**148**	**17**	**-12**	**-21**	**-26**	**-23**	**9**	**1732**
3027	HALL DITCH PUMP PLANT #2@DON TATUM LEASE(KOCH)		29	23	24	37	31	21	4	0	0	0	0	0	169
3028	HALL DITCH PUMP PLANT #4 AT DON TATUM LEASE		176	125	129	197	165	119	27	0	0	0	0	0	938
BC502A			**206**	**148**	**153**	**233**	**196**	**140**	**31**	**0**	**0**	**0**	**0**	**0**	**1107**
3031	A-1 DRAIN PUMP PLANT #1 S/O HALL DITCH		--	--	--	--	--	--	--	--	--	--	--	--	--	
3032	A-1 DRAIN PUMP PLANT #3 AT WELL #140		112	65	120	49	92	91	51	9	0	0	0	0	589
BC502B			**112**	**65**	**120**	**49**	**92**	**91**	**51**	**9**	**0**	**0**	**0**	**0**	**589**
2086	A-DRAIN DIV. TO ARKANSAS FLATS		341	3	437	922	114	0	0	0	149	383	40	0	2389
BCOPRB			**341**	**3**	**437**	**922**	**114**	**0**	**0**	**0**	**149**	**383**	**40**	**0**	**2389**
3155	BISHOP CK DITCH #5-B		433	38	408	466	120	0	122	118	138	157	98	7	2105
BCRECA			**433**	**38**	**408**	**466**	**120**	**0**	**122**	**118**	**138**	**157**	**98**	**7**	**2105**
3021	BISHOP CK CANAL DIV. #67		117	15	41	30	0	0	0	0	39	8	0	0	250
BCRECC			**117**	**15**	**41**	**30**	**0**	**0**	**0**	**0**	**39**	**8**	**0**	**0**	**250**
3194	SOUTH FORK BISHOP CREEK BELOW BISHOP CREEK CANAL		288	357	800	1165	985	864	433	336	396	326	327	438	6715
3193	SANDERS POND RETURN AT OWENS RIVER	(-)	131	170	238	239	363	418	205	117	136	149	144	230	2540
3066	RAWSON POND #3 RETURN TO OWENS RIVER	(-)	33	43	176	257	189	173	119	133	184	106	68	105	1586
BCRECD			**125**	**144**	**386**	**668**	**432**	**273**	**109**	**86**	**75**	**72**	**114**	**103**	**2587**

STAID	STATION NAME	+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
3023	KINGSLEY DITCH DIV. C-4		110	116	180	190	151	101	55	43	22	22	28	60	1078
3183	CEMETERY DITCH AT E. LINE ST.	(-)	33	61	53	58	58	57	29	20	0	0	1	42	412
BCRECF			**77**	**54**	**127**	**132**	**93**	**44**	**26**	**23**	**22**	**22**	**27**	**18**	**665**
3242	BISHOP CK CANAL DIV. TO 5 BRIDGES #2		32	24	29	57	9	0	0	0	0	0	0	0	151
3317	BISHOP CK CANAL DIV. TO 5 BRIDGES #6		96	61	123	127	55	75	12	15	19	13	11	11	618
BCLAEMH			**128**	**85**	**152**	**184**	**64**	**75**	**12**	**15**	**19**	**13**	**11**	**11**	**769**
3185	MCGEE CK AT ABERLOUR RANCH		367	503	1048	1480	407	184	213	210	227	220	203	225	5287
3235	MILL POND RETURN	(-)	260	366	635	861	358	110	122	173	189	196	157	194	3621
BCRVRECA			**106**	**137**	**413**	**619**	**49**	**73**	**91**	**37**	**38**	**24**	**46**	**31**	**1664**

			2019									2020			TOTAL
STAID	STATION NAME	+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
BC005A			-1	-1	24	20	3	3	-3	-3	-6	-1	-1	-1	33
BC005B			7	24	43	83	69	22	0	0	0	0	0	0	248
BC006A			6	16	16	16	12	10	6	6	6	6	6	6	112
BC1478			94	36	52	22	34	59	35	5	6	3	13	14	373
BC1479			4	6	10	11	9	6	1	0	0	0	0	0	47
BC301			131	38	116	144	100	54	10	7	25	-2	11	5	639
BC302A			34	0	60	69	22	31	0	0	0	0	0	0	216
BC302B			159	156	488	466	196	145	53	55	54	55	41	55	1923
BC304			7	37	46	37	17	13	3	0	0	0	0	0	160
BC311			587	578	862	1522	643	530	64	78	91	99	95	89	5238
BC313			118	221	255	226	188	229	62	63	40	28	31	51	1512
BC324			219	241	199	213	251	125	67	61	71	87	47	50	1631
BC335			37	37	44	59	44	29	2	6	2	4	6	13	283
BC338			503	432	938	1174	628	263	27	21	546	539	14	18	5103
BC339			66	65	37	113	153	39	21	17	10	11	9	17	558
BC353			42	44	30	-30	56	-20	13	14	13	11	11	9	193
BC361A			400	305	500	701	619	68	23	67	213	217	421	367	3901
BC361B			254	260	417	554	402	177	92	46	13	-17	12	21	2231
BC362D			124	172	235	134	56	75	55	18	8	9	47	81	1014
BC387A			109	99	72	130	92	97	12	10	0	0	0	119	740
BC392			137	98	148	111	97	60	-41	-28	5	3	11	7	608
BC393			6	30	121	53	40	17	4	1	0	0	0	0	272
BC397			465	522	1316	2190	945	115	64	69	77	68	56	47	5934
BC500			179	149	272	463	577	148	17	-12	-21	-26	-23	9	1732
BC502A			206	148	153	233	196	140	31	0	0	0	0	0	1107
BC502B			112	65	120	49	92	91	51	9	0	0	0	0	589
BCOPRB			341	3	437	922	114	0	0	0	149	383	40	0	2389
BCRECA			433	38	408	466	120	0	122	118	138	157	98	7	2105
BCRECC			117	15	41	30	0	0	0	0	39	8	0	0	250
BCRECD			125	144	386	668	432	273	109	86	75	72	114	103	2587
BCRECF			77	54	127	132	93	44	26	23	22	22	27	18	665
BCLAEMH			128	85	152	184	64	75	12	15	19	13	11	11	769
BCRVRECA			106	137	413	619	49	73	91	37	38	24	46	31	1664
BCAUDIT			**5332**	**4254**	**8540**	**11784**	**6415**	**2990**	**1030**	**789**	**1633**	**1772**	**1142**	**1146**	**46827**