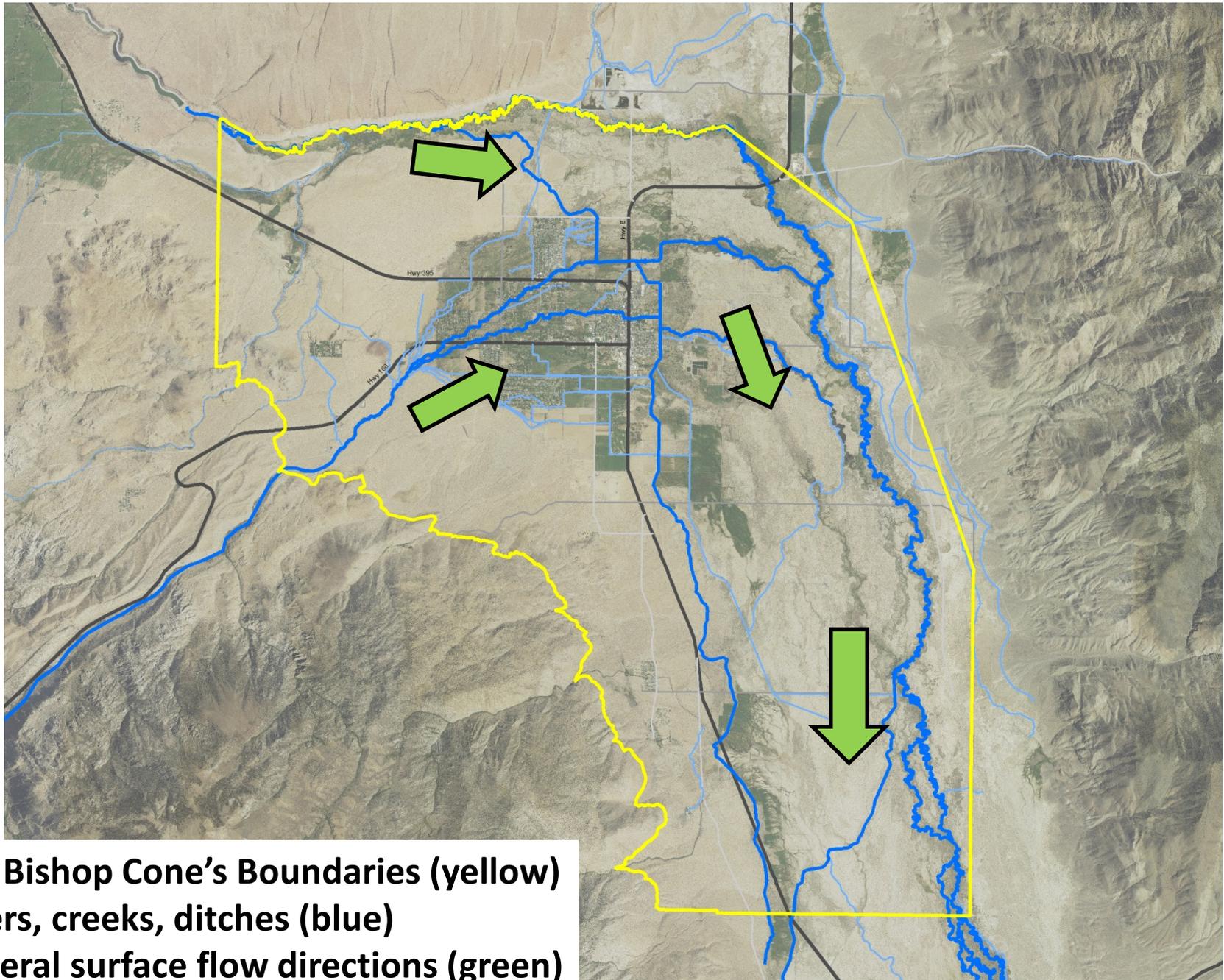


# The Bishop Cone Audit

An annual accounting which compares water use on LA land on the Bishop Cone to LA groundwater extraction from the Bishop Cone to confirm LADWP compliance with the 1940 Hillside Decree



- **The Bishop Cone's Boundaries (yellow)**
- **Rivers, creeks, ditches (blue)**
- **General surface flow directions (green)**

## Background and Timeline

- During a drought in the late 1920s and early 1930s LADWP pumped and exported a significant amount of groundwater from wells on the Bishop Cone to LA
- Local property owners challenged this export and a multi-year legal battle ensued
- 1940 Hillside Decree settled this protracted legal challenge
- Extraction declined after 1940 but has gradually increased to an average of 15,000 Acre-feet/year
- 1991 Long Term Water Agreement Section VIIA recognizes the Hillside Decree and incorporates stipulations into Bishop area water management
- 1996 Green Book Section IV.D adds the specific Bishop Cone Audit procedures

## **1940 Hillside Decree, Section 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, .....*

## **1991 Water Agreement Section VII.A**

*“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.”*

## **1996 Green Book Section IV, D.1.a and D1.d**

*“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.”*

*“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 shall not exceed water usage on Los Angeles-owned land on the Cone.”*

## **Additional Legal Opinions**

- In 1991 prior to finalizing LTWA, Inyo County sought the legal opinions of attorneys Antonio Rossman and noted California water-law expert Dr. Joseph Sax
- The two lawyers reviewed the Hillside Decree and its pleadings, relevant case law, Bishop Cone system, etc.
- Concluded that LTWA would not violate the Hillside Decree

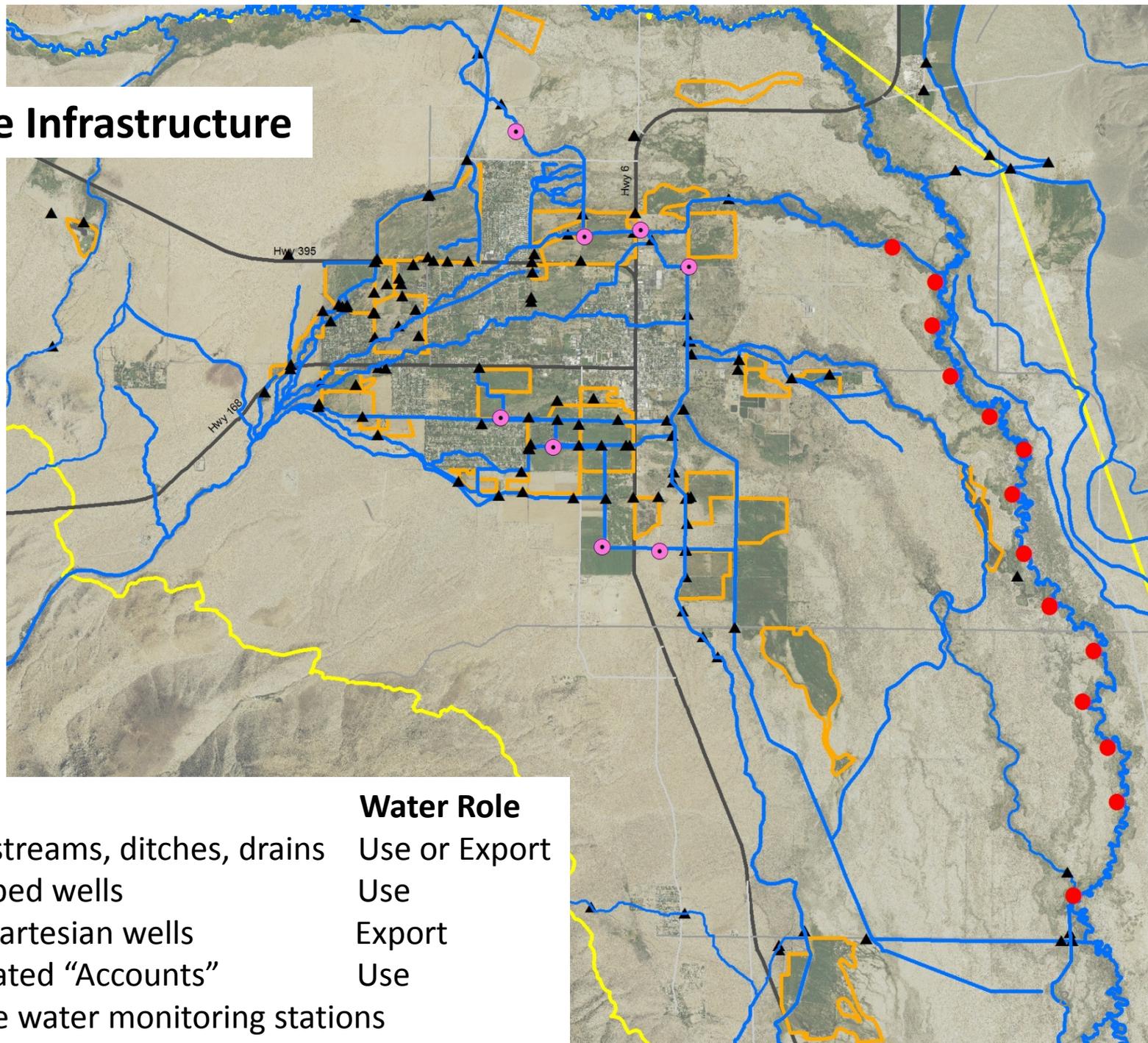
## **Legal Challenge**

- In 1998 LADWP's Bishop Cone use and extraction practices withstand legal challenge in Matlick v. City of Los Angeles
- Judge Young's Memorandum of Judgement notes "ambiguous" nature of Hillside Decree

## Key Concepts

- Bishop Cone Audit is conducted to comply with the strictures of the Hillside Decree, the LTWA, and the Green Book
- BCA uses the existing LADWP lease, ditch and monitoring systems that were in place in 1990s
- LADWP's data is based on leased "Accounts" for irrigated land and recreation areas (Millpond, Buckley Ponds, etc.)
- Geographical realities of LADWP infrastructure play a role in water management on the Bishop Cone
- BCA is not a water budget; it isn't a total of Bishop area exported water; it isn't a groundwater modeling tool

## Bishop Cone Infrastructure



### Feature

Blue are rivers, streams, ditches, drains

Purple are pumped wells

Red are flowing artesian wells

Orange are irrigated "Accounts"

Black are surface water monitoring stations

### Water Role

Use or Export

Use

Export

Use

# Key Components

## Extractions include:

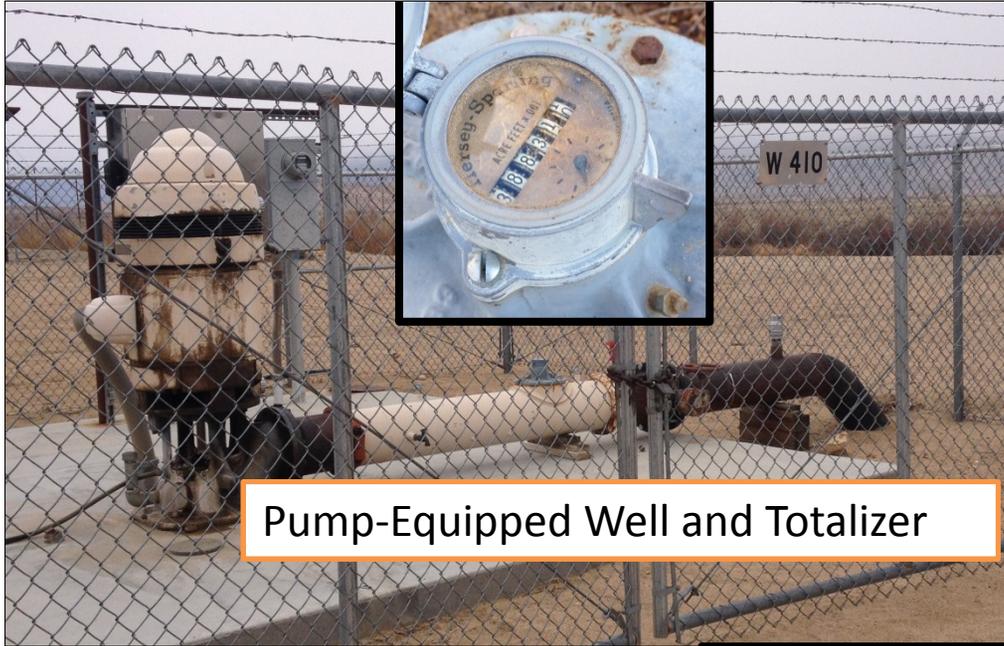
- Pumped groundwater from 8 existing LADWP wells on the Cone
- Flowing water from 15 artesian wells near Owens River
- These extractions are relatively easy to quantify

## Uses include:

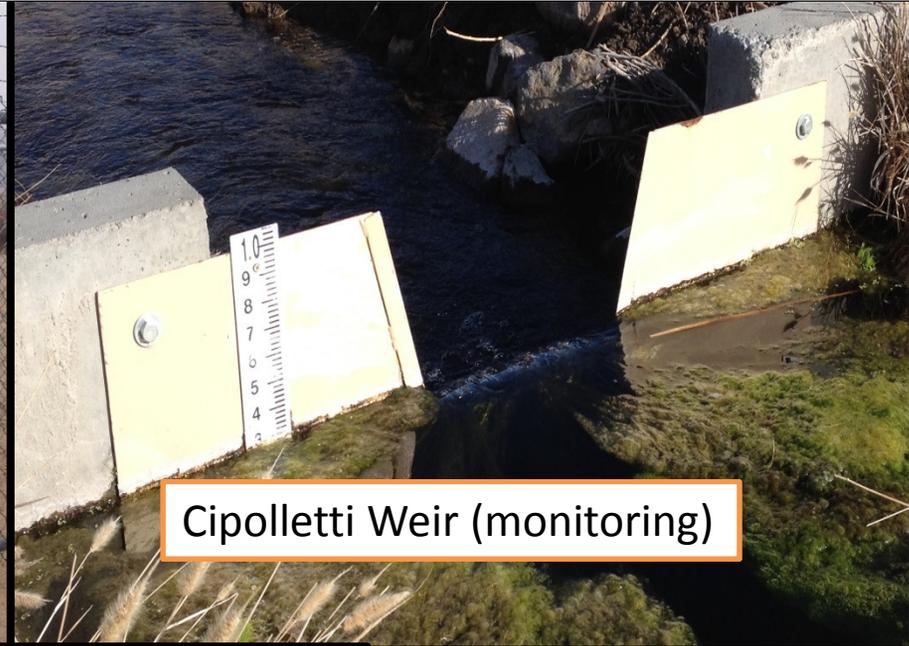
- Surface or groundwater applied to Bishop Cone “Accounts” (irrigation to leases, ponds and recreation areas)
- Return flows subtracted from Uses
- Conveyances losses (surface water seepage)
- More complicated system to quantify

## Monitoring Apparatus include:

- Totalizers measure outflow from pumped wells
- Artesian wells flow into pools; and weirs monitor outflow
- Flumes and weirs with data-logging devices measure surface flows onto and off-of leases



Pump-Equipped Well and Totalizer



Cipolletti Weir (monitoring)



Parshall Flume (monitoring)



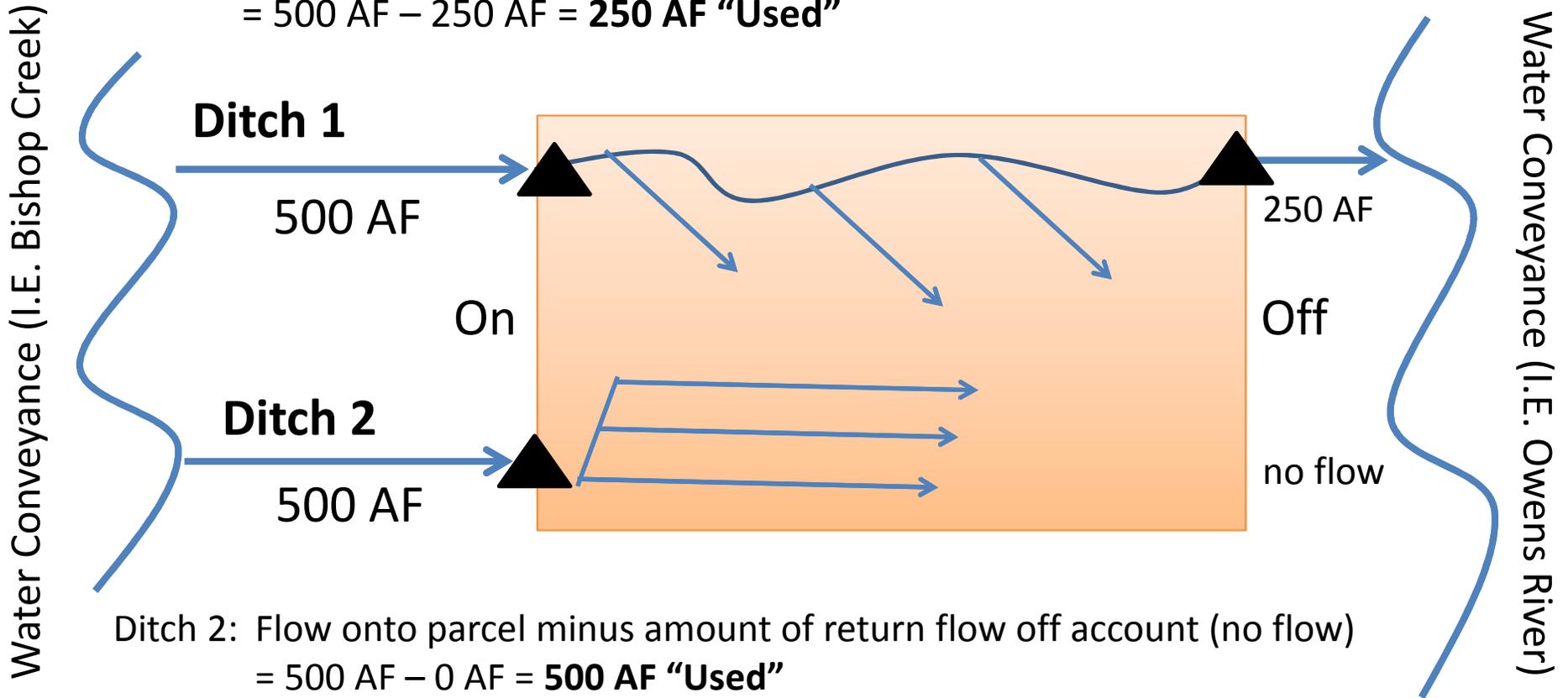
Ditch system



Artesian Well

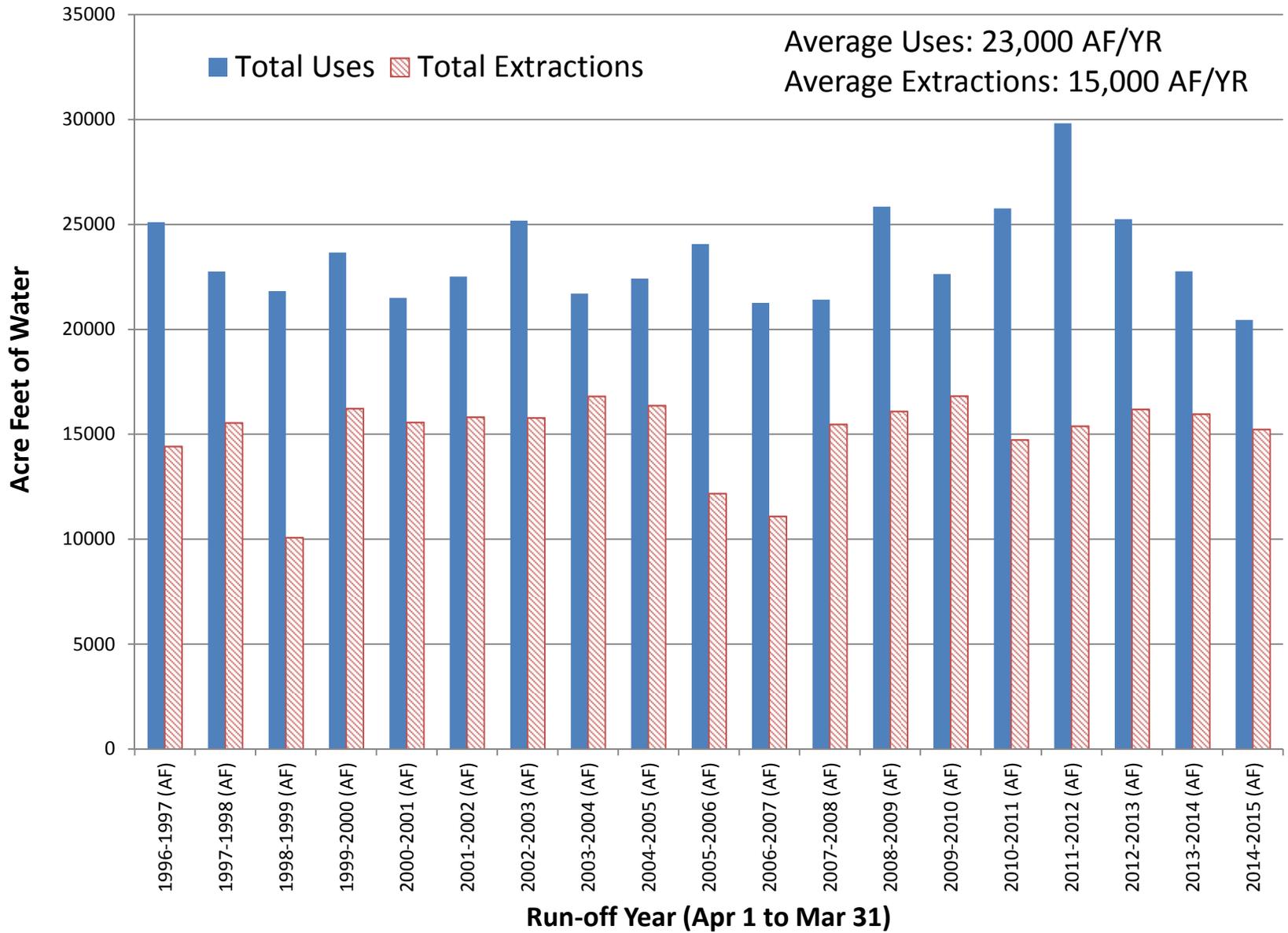
# For Account #BA1: Usage is the sum of Ditch 1 and 2 Uses

Ditch 1: Flow onto parcel minus amount of return flow off account to conveyance  
= 500 AF – 250 AF = **250 AF “Used”**

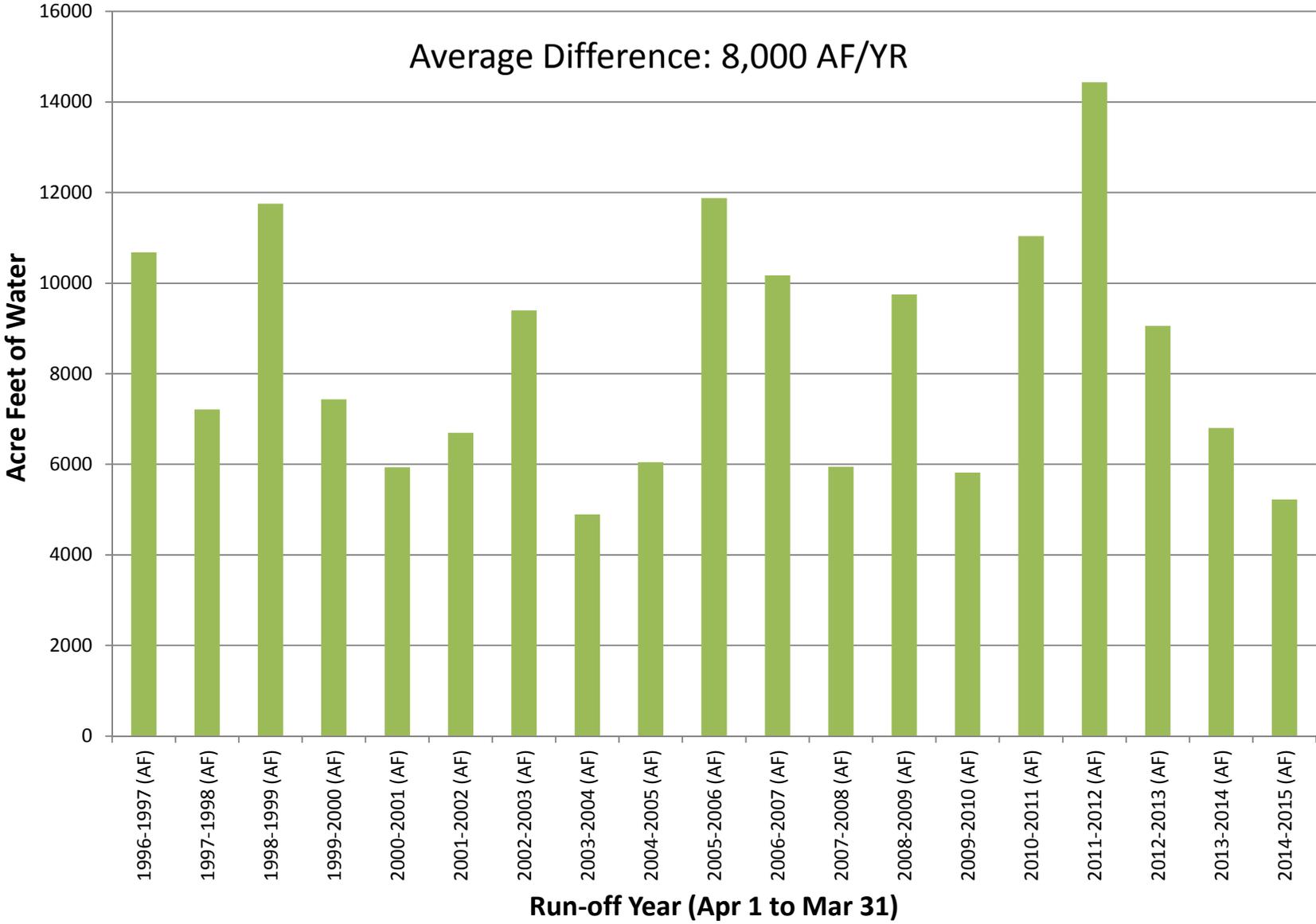


**Account BA#1 Total Usage = 250 AF + 500 AF = 750 AF**

## BISHOP CONE WATER USES AND EXTRACTIONS



### BISHOP CONE COMPLIANCE (USES - EXTRACTIONS)



# Summary

## The Bishop Cone Audit is:

An annual accounting method to confirm LADWP compliance with the 1940 Hillside Decree, which limits LADWP groundwater extractions from the Bishop Cone to uses on the Bishop Cone during a given year

## The Bishop Cone Audit isn't:

A modern hydrogeologic methodology intended for use as a sophisticated surface and groundwater management tool

# Recent Activity on Bishop Cone

- Increased monitoring by ICWD & DWP staff on Bishop Cone due to drought and ditch flows
- ICWD conducting field audit of all accounts and monitoring devices with DWP staff
- Working on clarifying and simplifying Bishop Water Use Report component of BCA
- ICWD staff conducting spot checks of BCA devices
- LADWP has consultants updating Bishop/Laws groundwater model
- DWR staff investigated West Bishop Flooding/Dry Wells