



NEVADA DIVISION OF
WATER RESOURCES



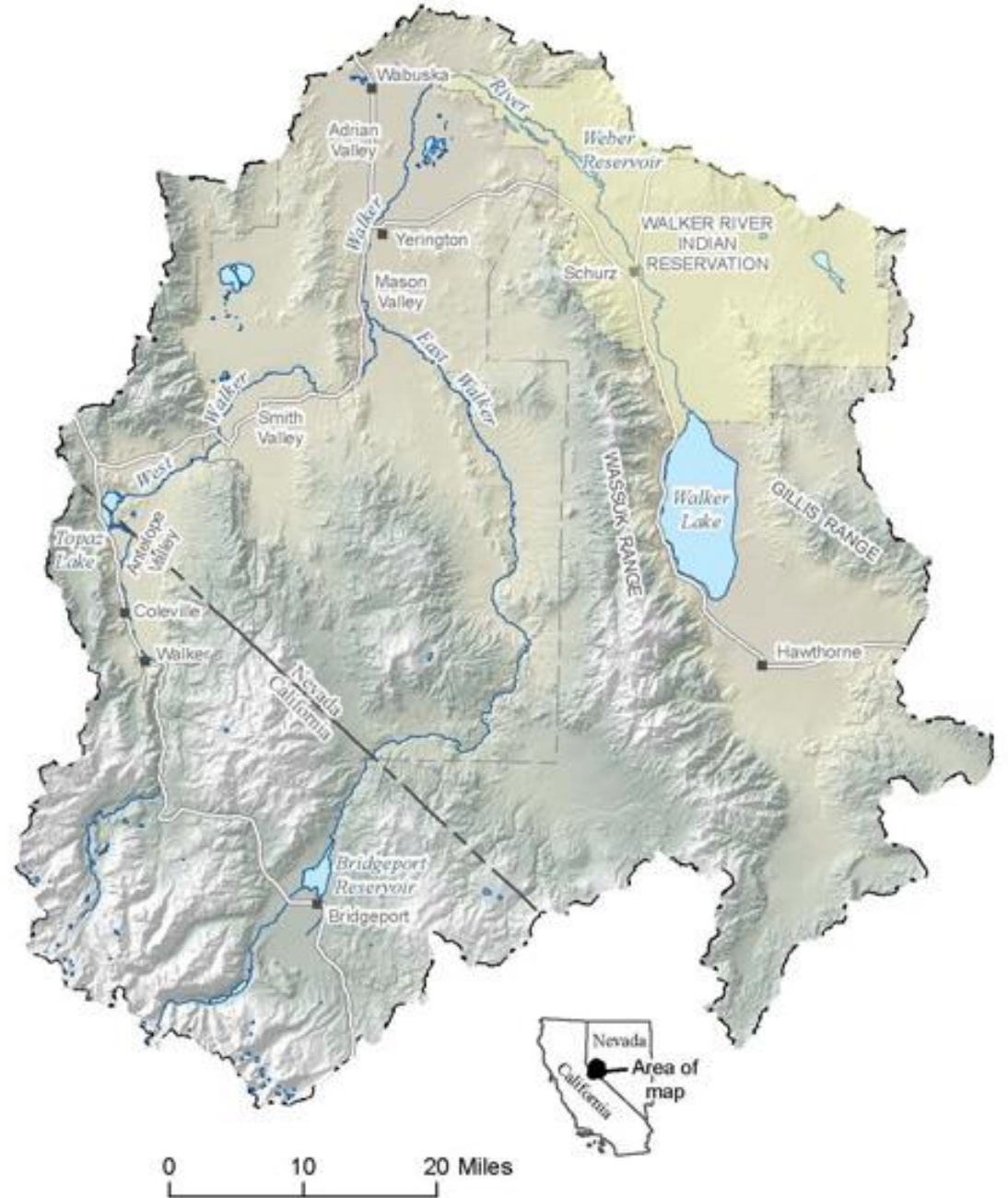
Groundwater Management for Mason Valley: 2023 Review and 2024 Goals

April 18, 2024

Presented by:

Lauren Bartels and Kip Allander

Nevada Division of Water Resources



OVERVIEW

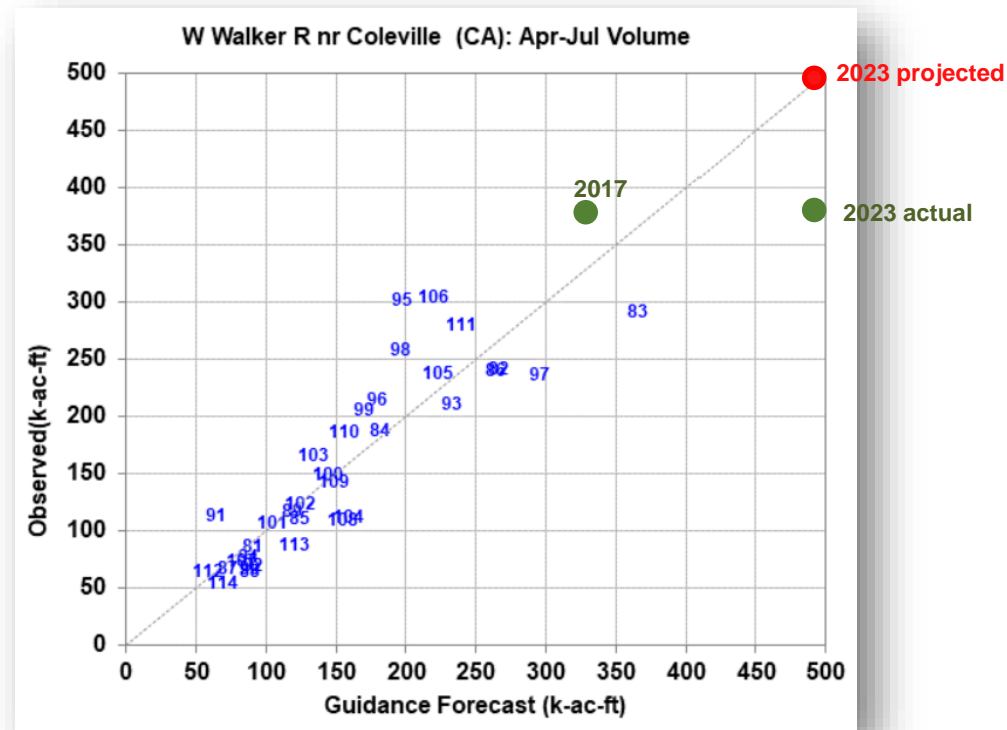
- Recap of 2023 runoff
- Pumping and water levels for 2023
- Current water supply conditions
- Sustainable pumping goals
- Pumping goals for 2024
- Summary and Outlook



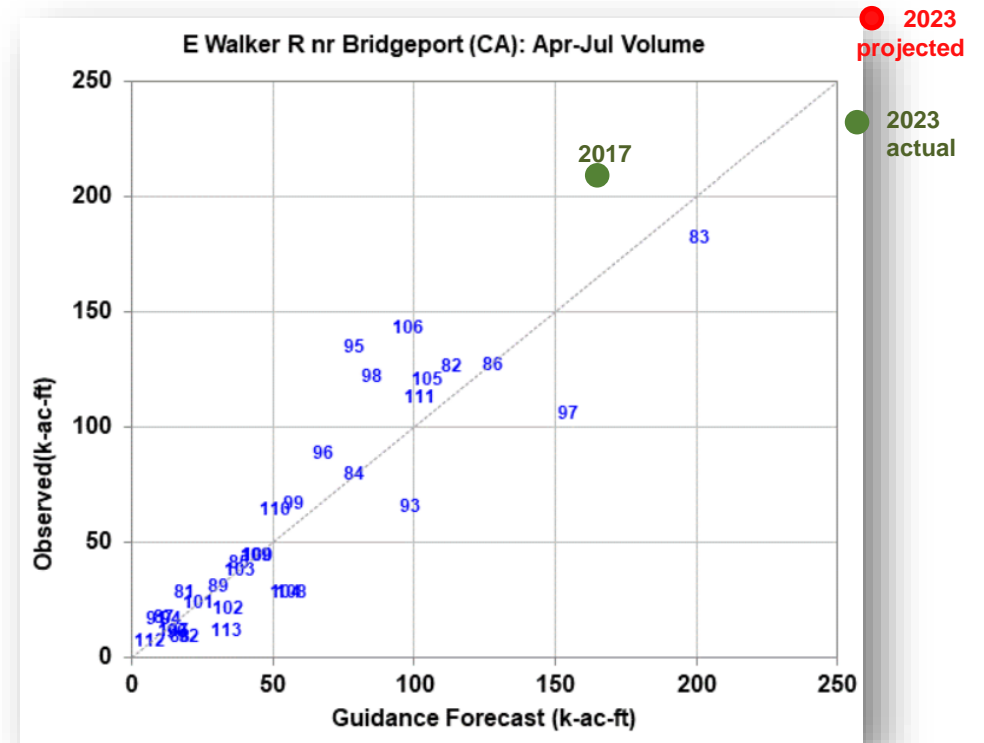
RECAP OF 2023 RUNOFF SEASON

NRCS **PROJECTED** RUNOFF FOR APRIL THROUGH JULY (AS OF MAR 23, 2023) COMPARED WITH **ACTUAL**

West Walker River



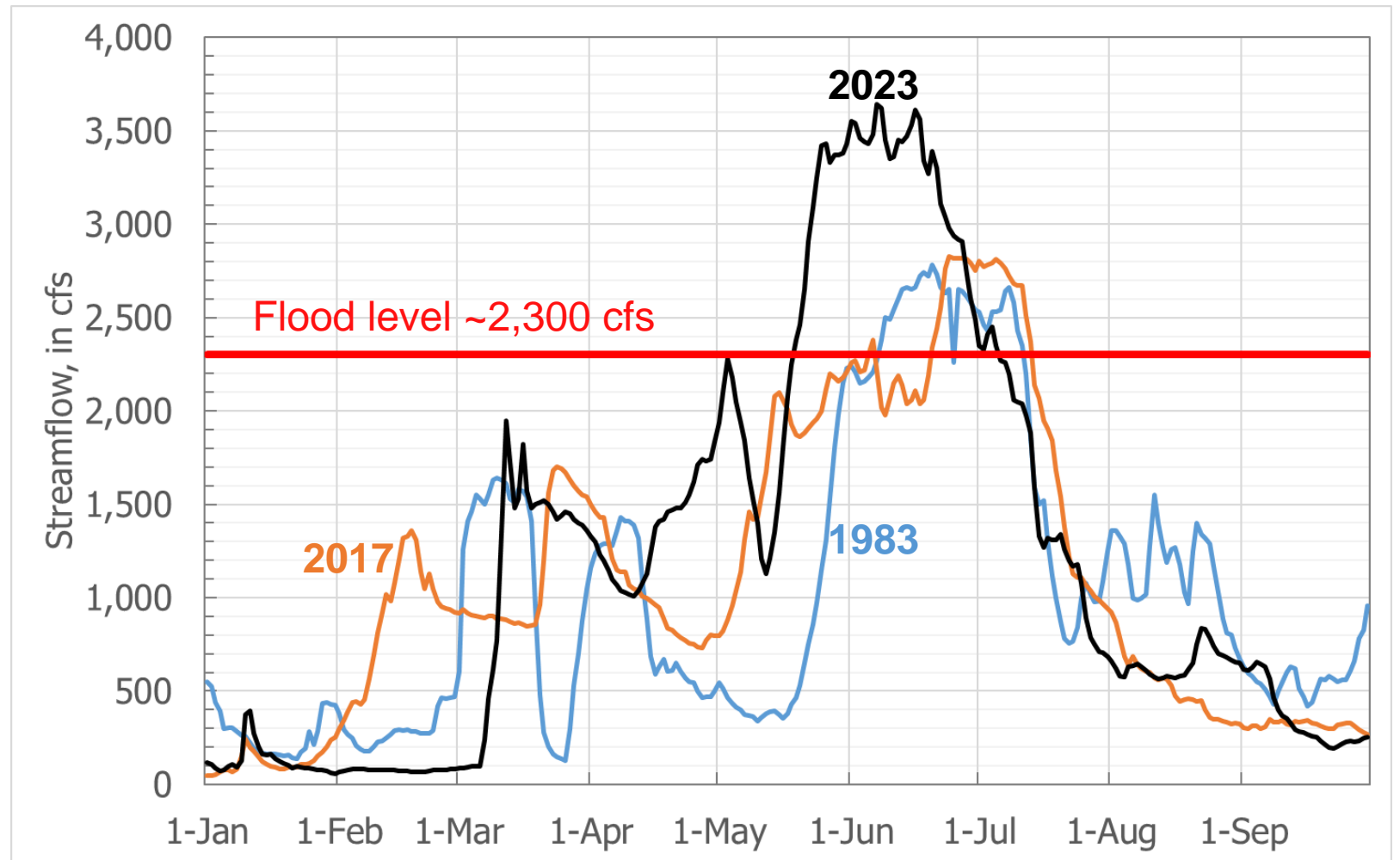
East Walker River



2023 runoff came off substantially less than projected - but was still one for the record books.

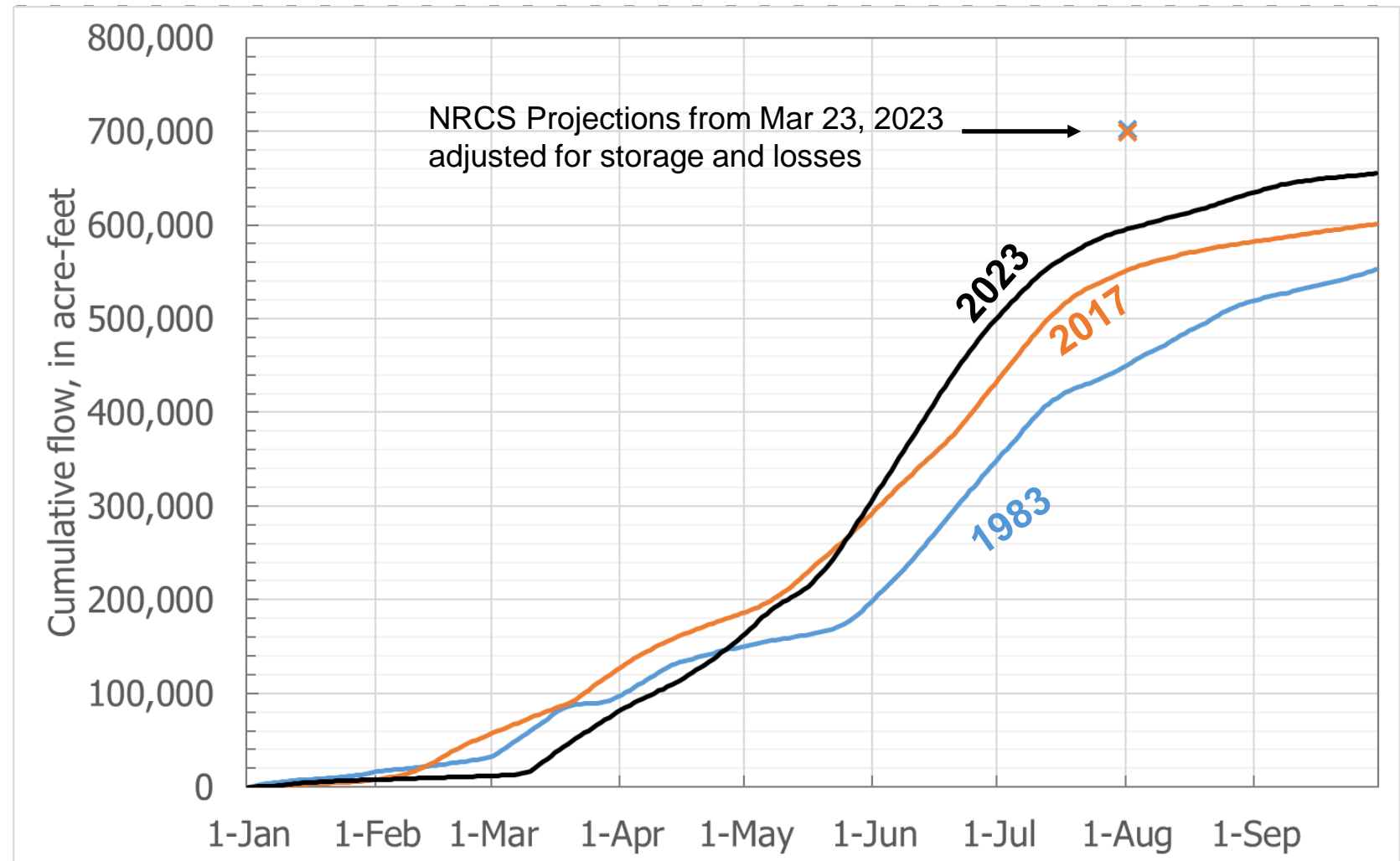
HYDROGRAPHS FOR WALKER RIVER AT SNYDER LANE NR MASON – WHAT ACTUALLY HAPPENED LAST YEAR

There were 48 days of consecutive flooding of Walker River.
May 19 – July 5



CUMULATIVE FLOW FOR WALKER RIVER AT SNYDER LANE NR MASON – WHAT ACTUALLY HAPPENED LAST YEAR

Even though 2023 runoff undershot projections, it was still largest runoff on record.



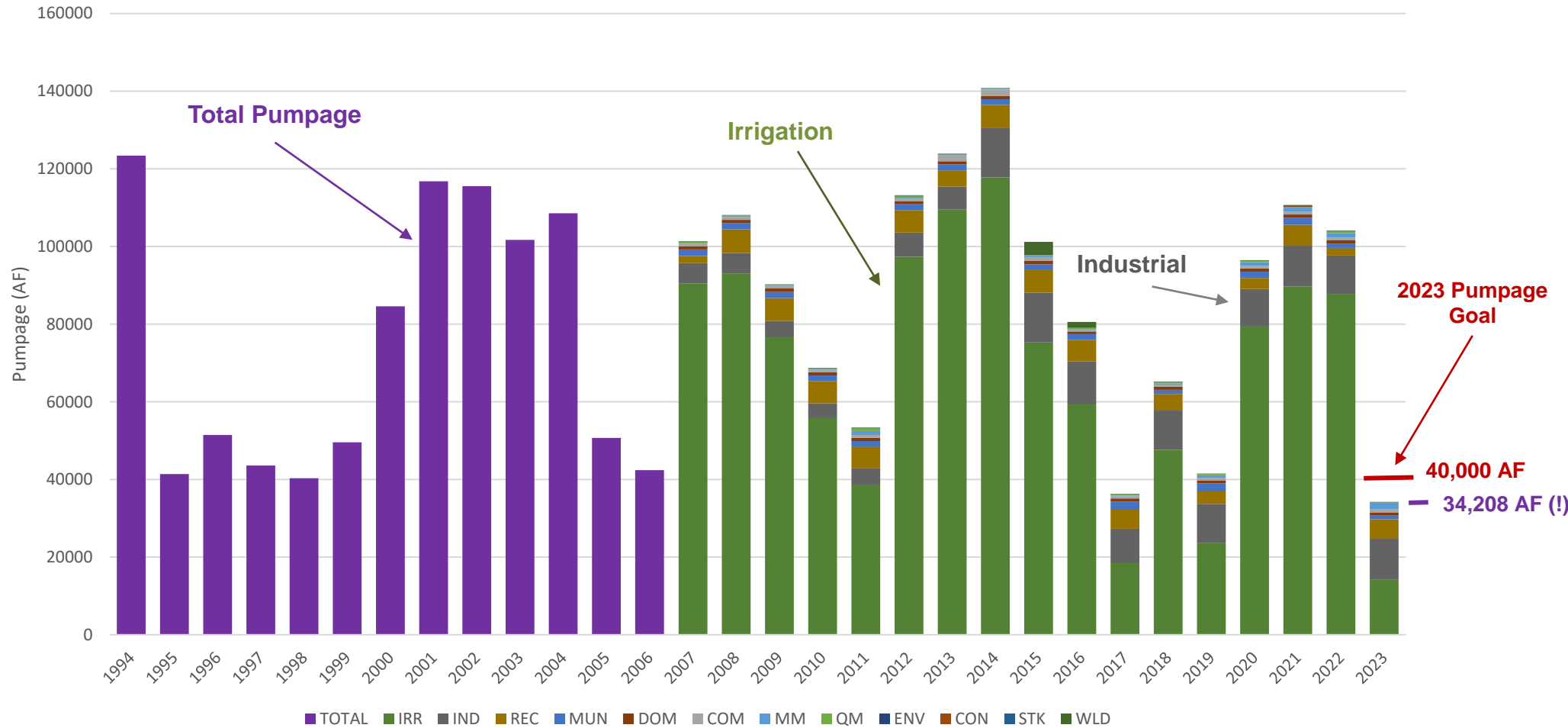
2023 PUMPING AND WATER LEVEL REVIEW

MASON VALLEY TOTAL PUMPAGE

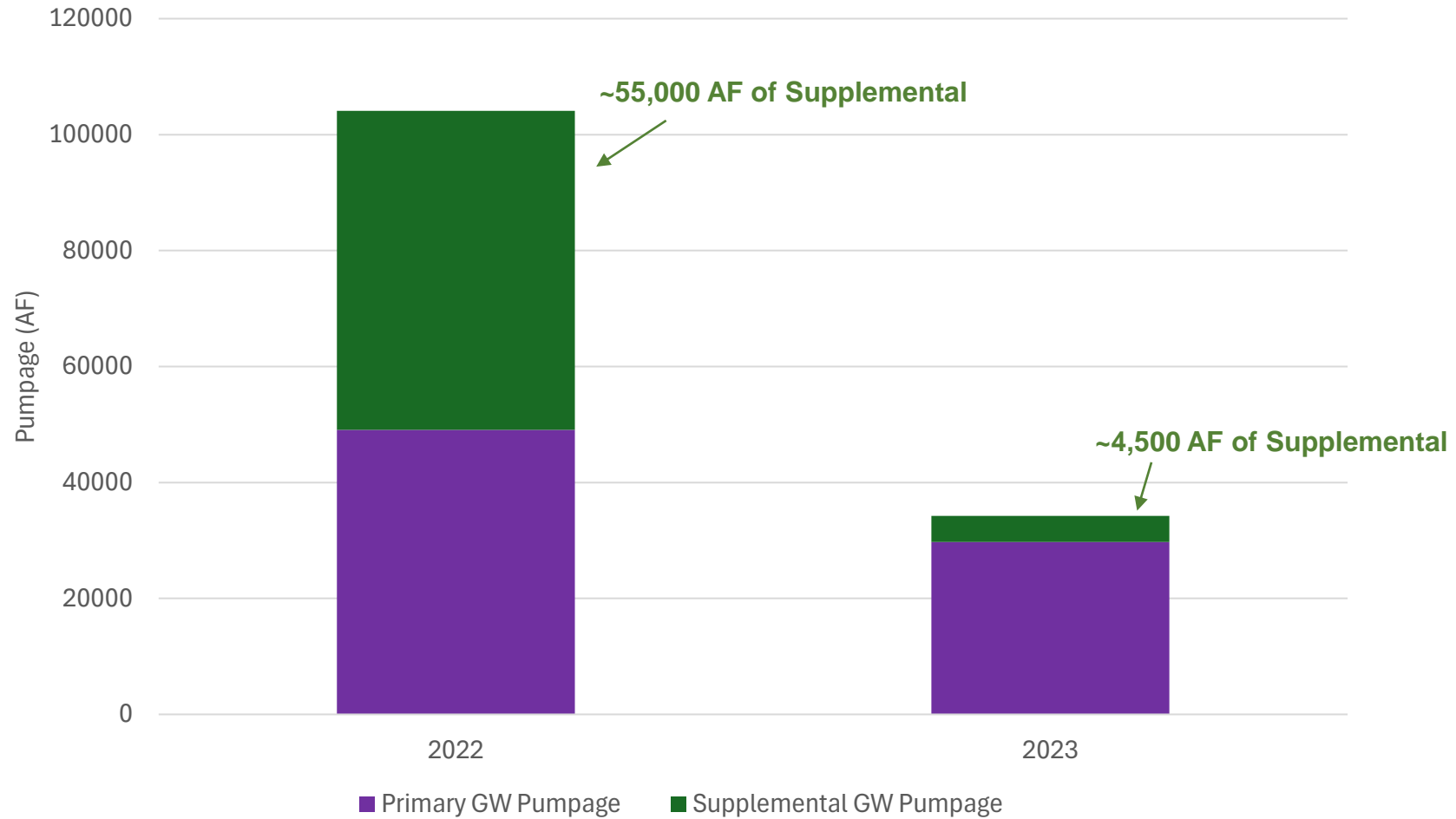
2015 – 2021 Pumpage data had revisions. Goal is to always work towards the most accurate numbers.

2022 & 2023 pumpage data are provisional and subject to revision.

Mason Valley Pumpage by Year

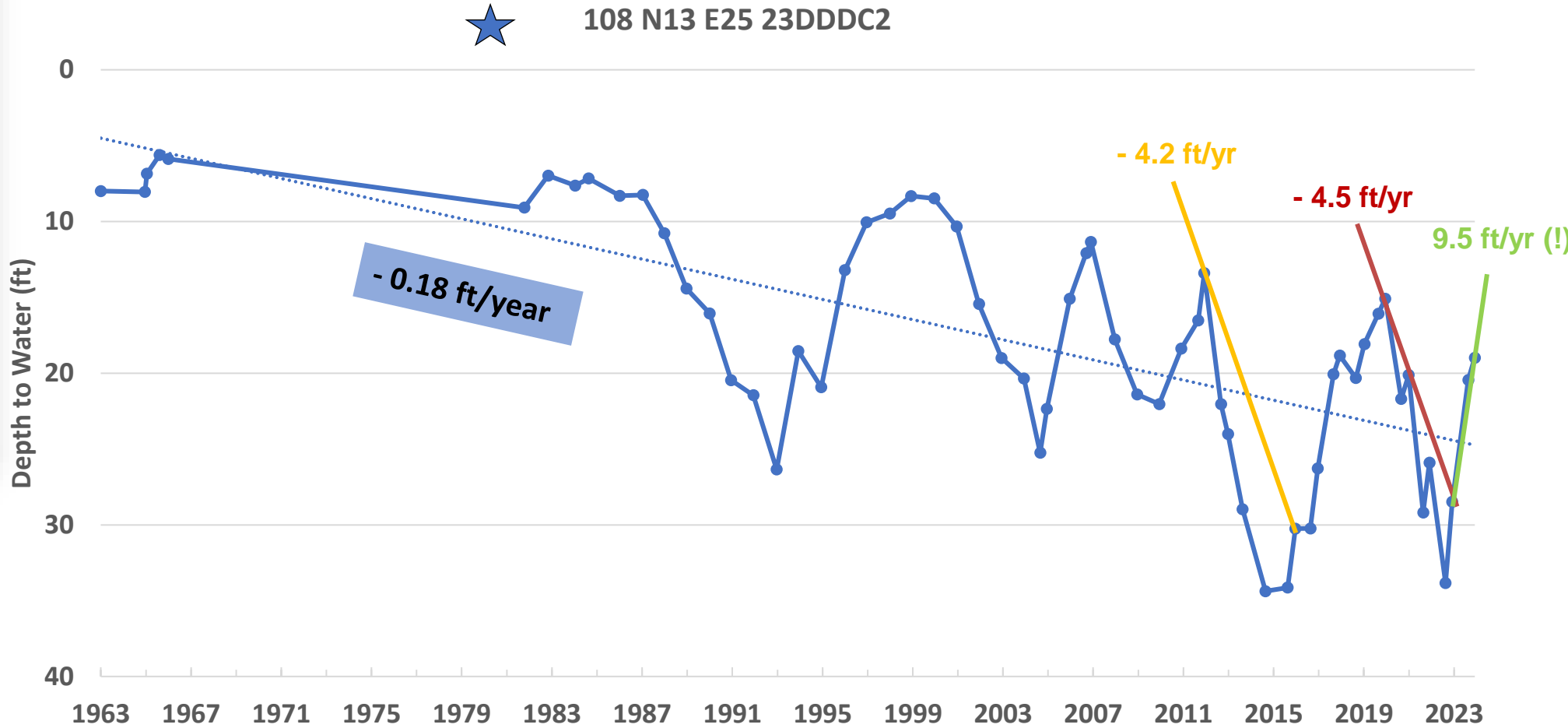
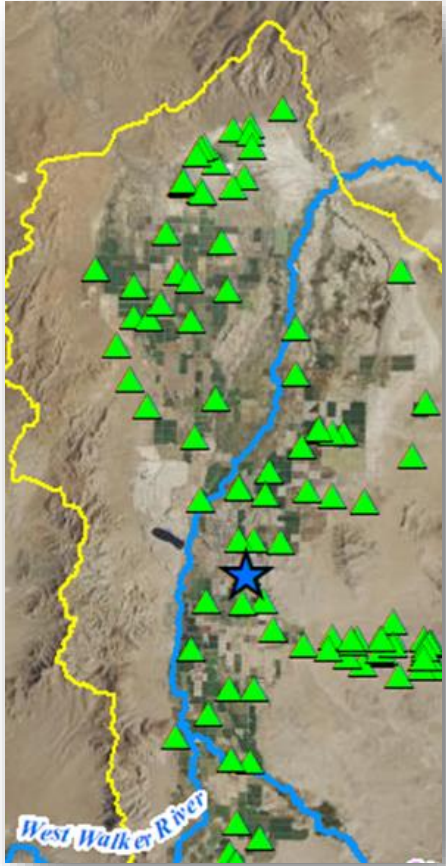


MASON VALLEY SUPPLEMENTAL GROUNDWATER USE



*Total pumpage includes pumpage by domestic wells

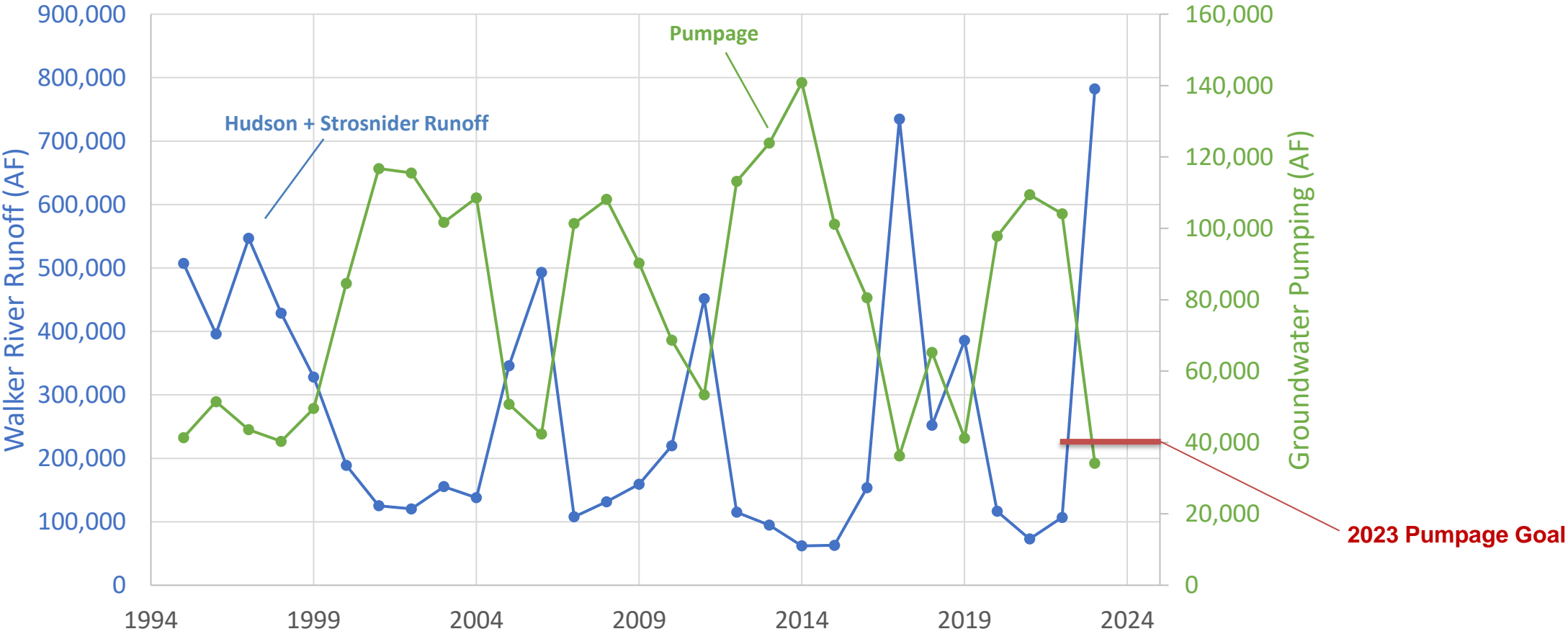
MASON VALLEY WATER LEVELS



Average Mason Valley Water Level Changes (ft/yr)

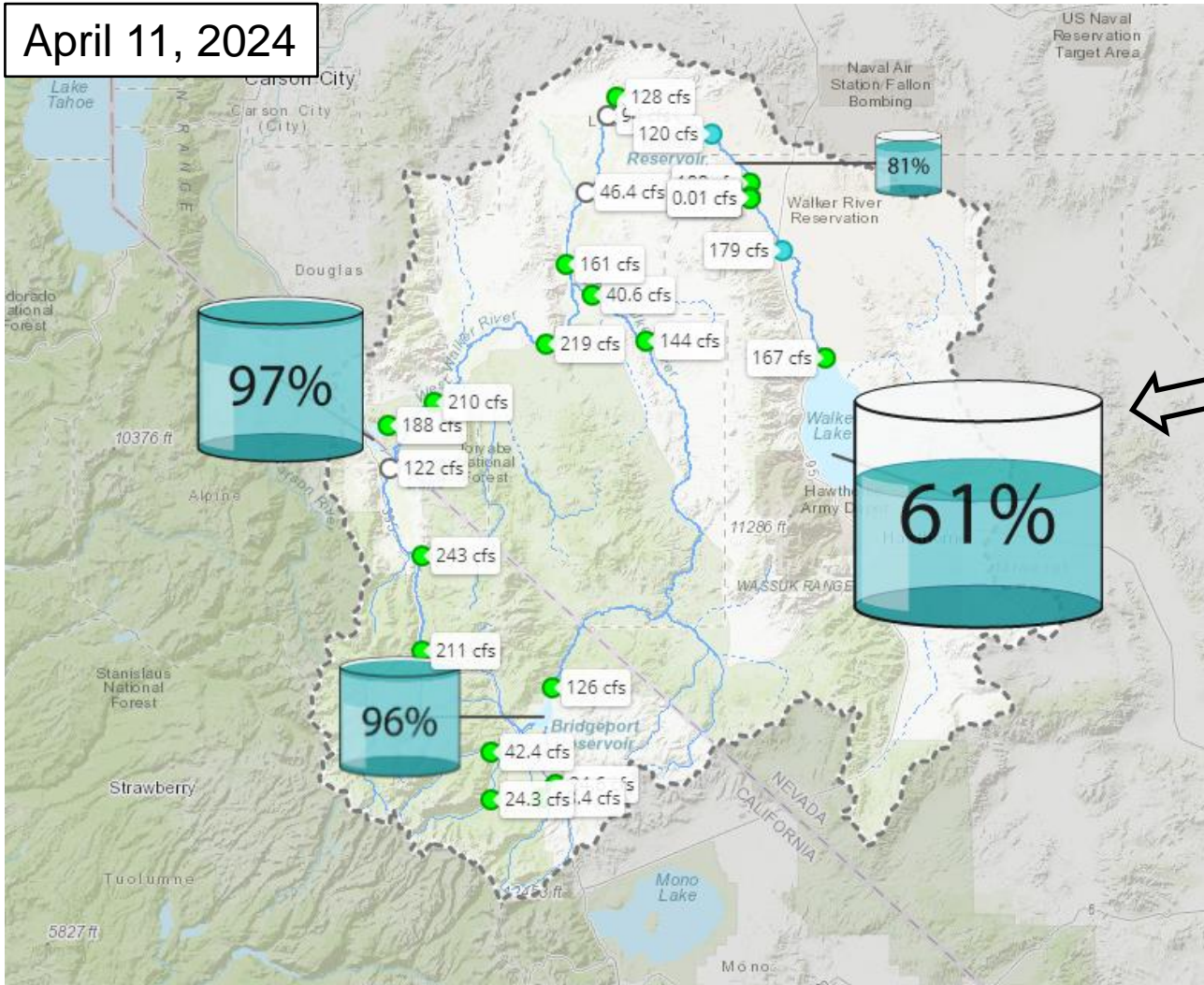
2012-16	-3.4	☹️
2020-23	-3.5	☹️
2023-24	7.9	😄

WALKER RIVER STREAMFLOW VS. MASON VALLEY PUMPING



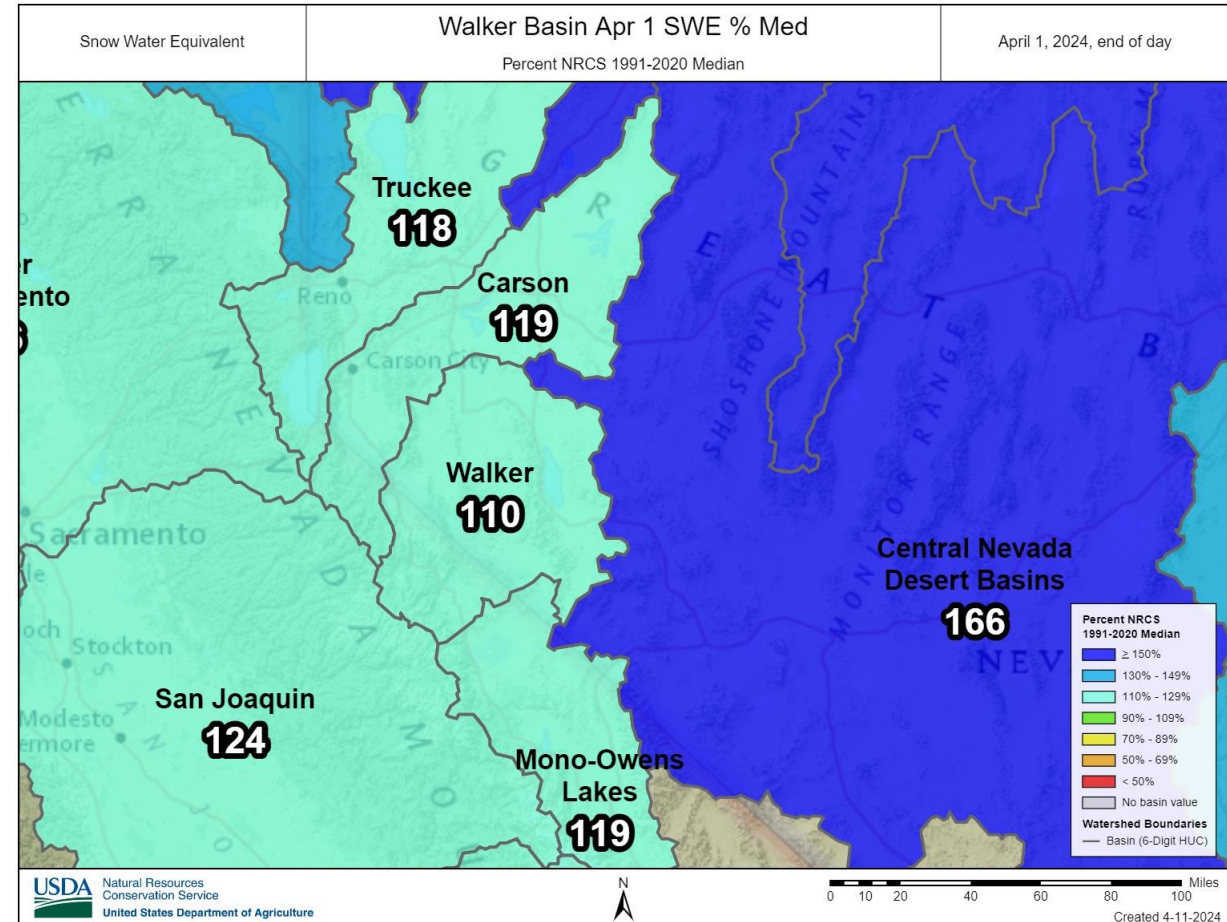
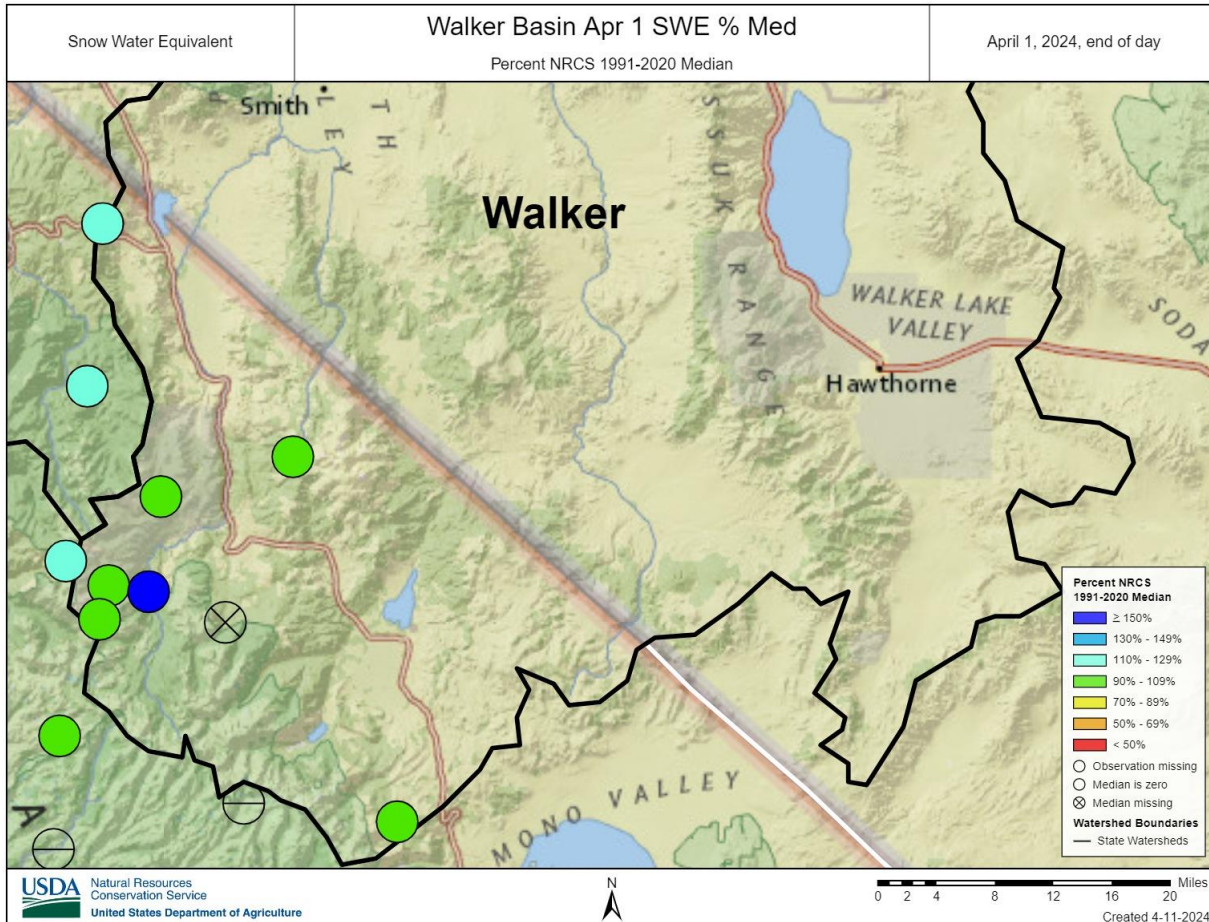
WATER SUPPLY OUTLOOK

RESERVOIR STORAGE

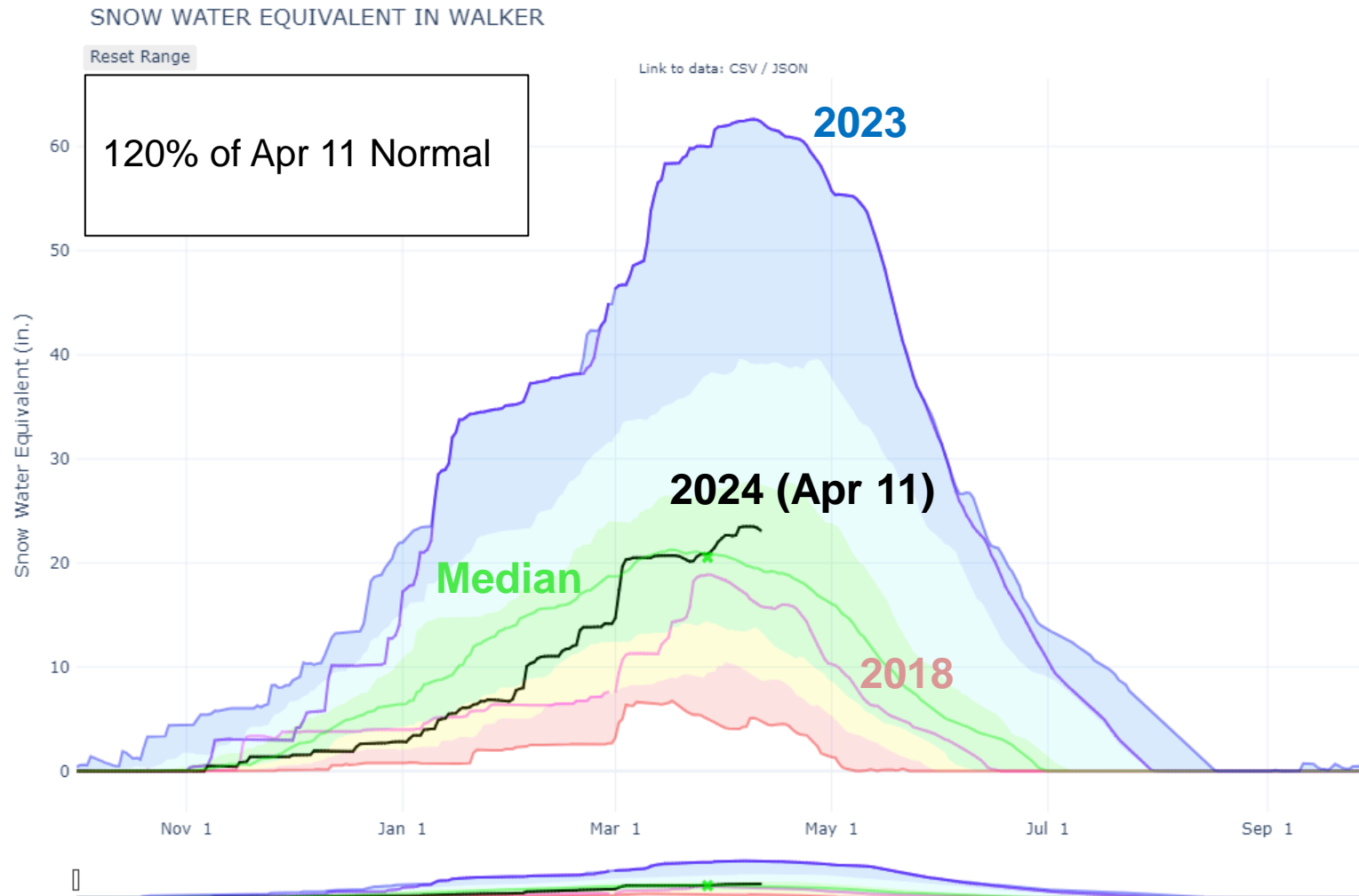


Up 17%

SNOW WATER EQUIVALENT (SWE), % OF APRIL 1 MEDIAN

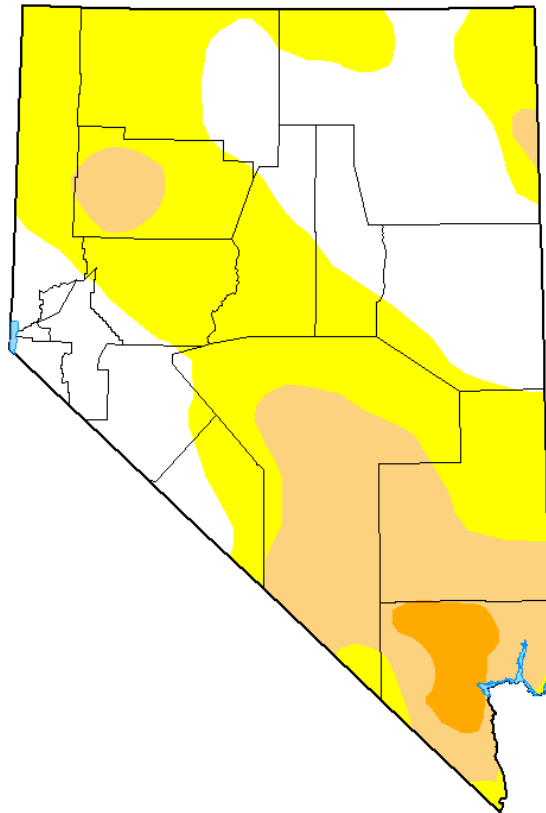


2024 WALKER SNOWPACK (SWE)









U.S. DROUGHT MONITOR

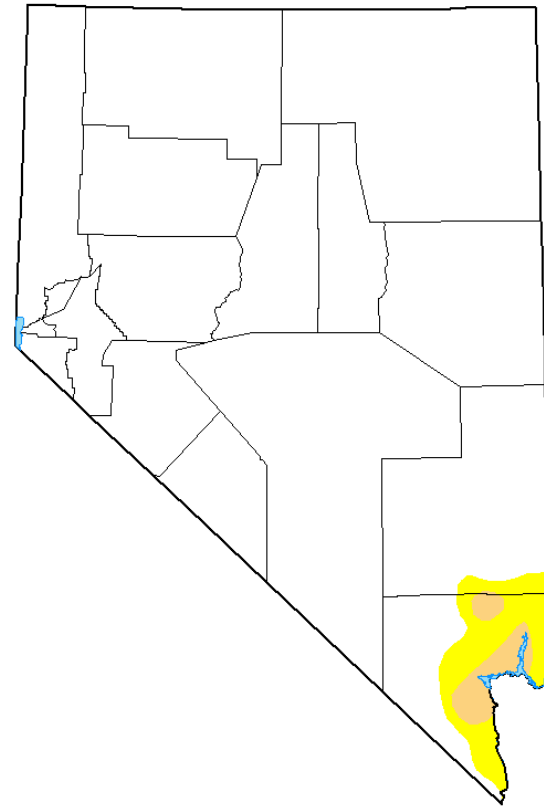
April 11, 2023



Intensity:

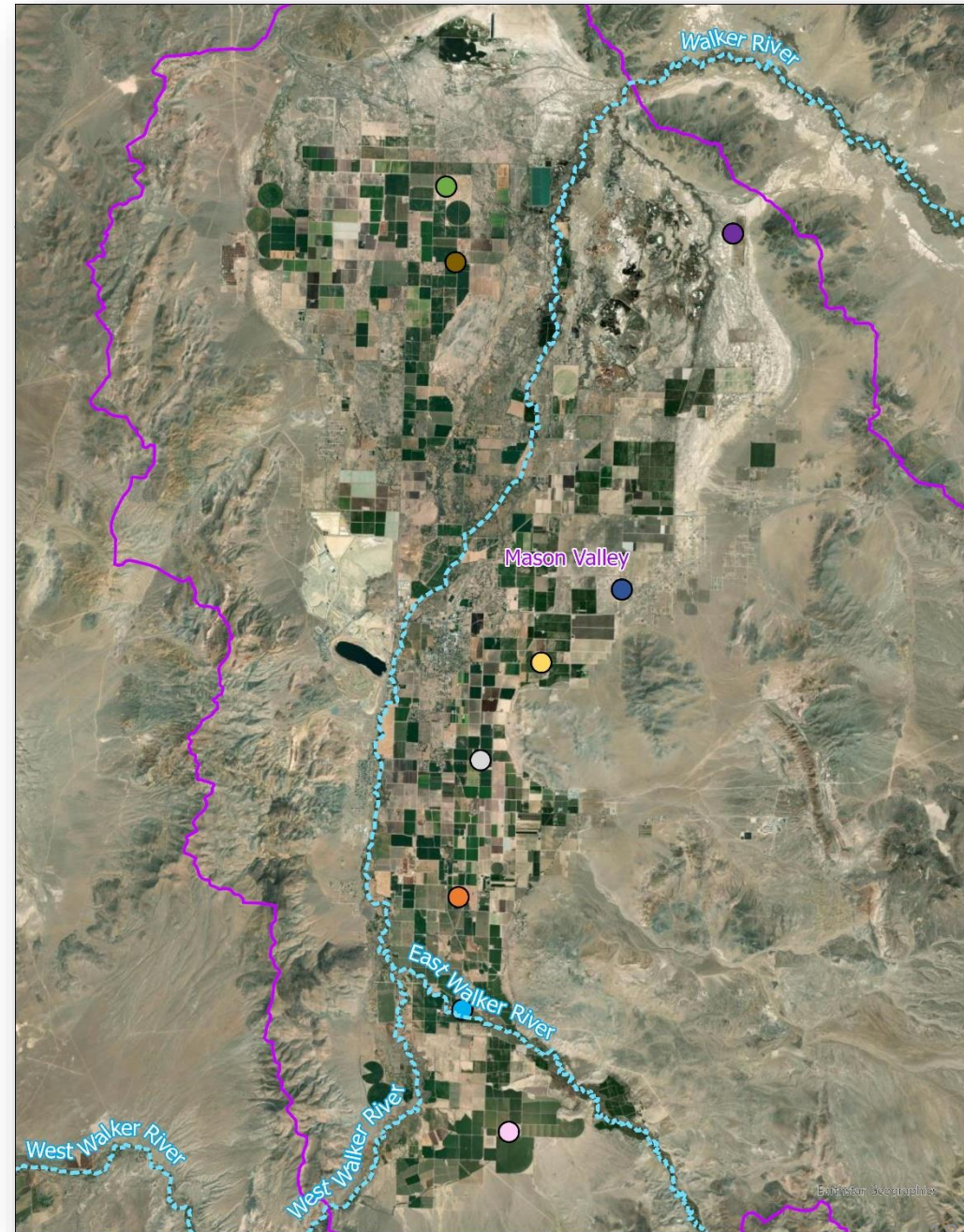
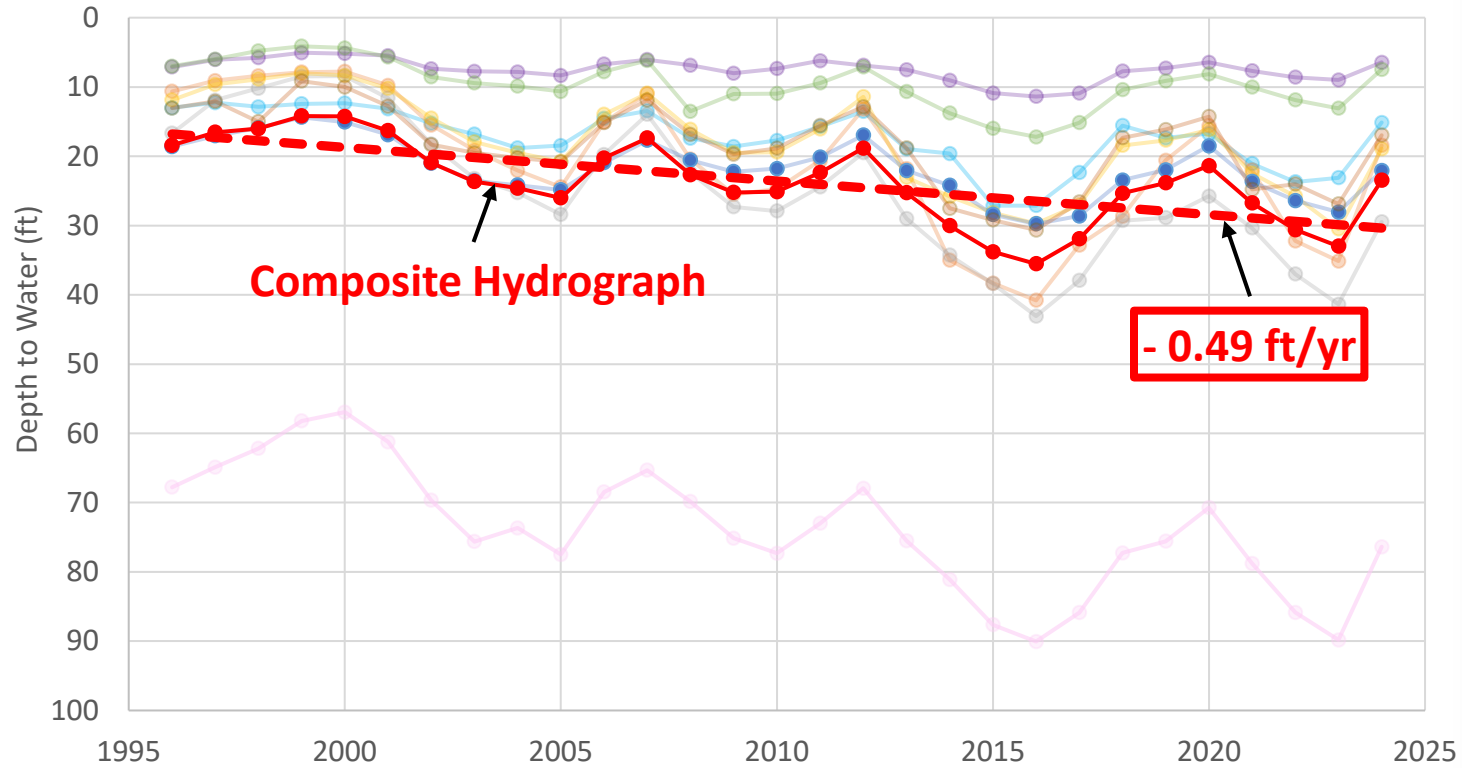
-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

April 11, 2024

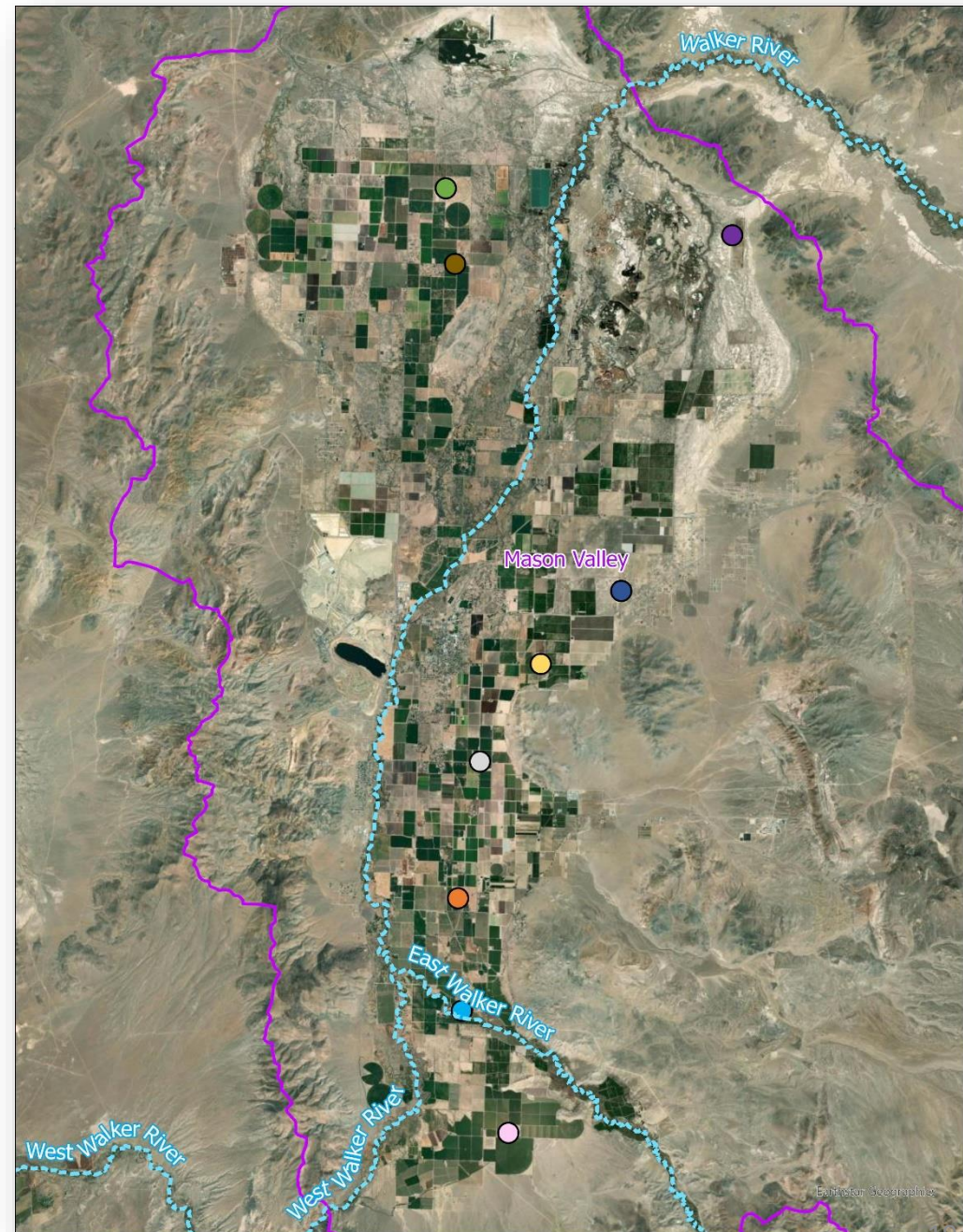
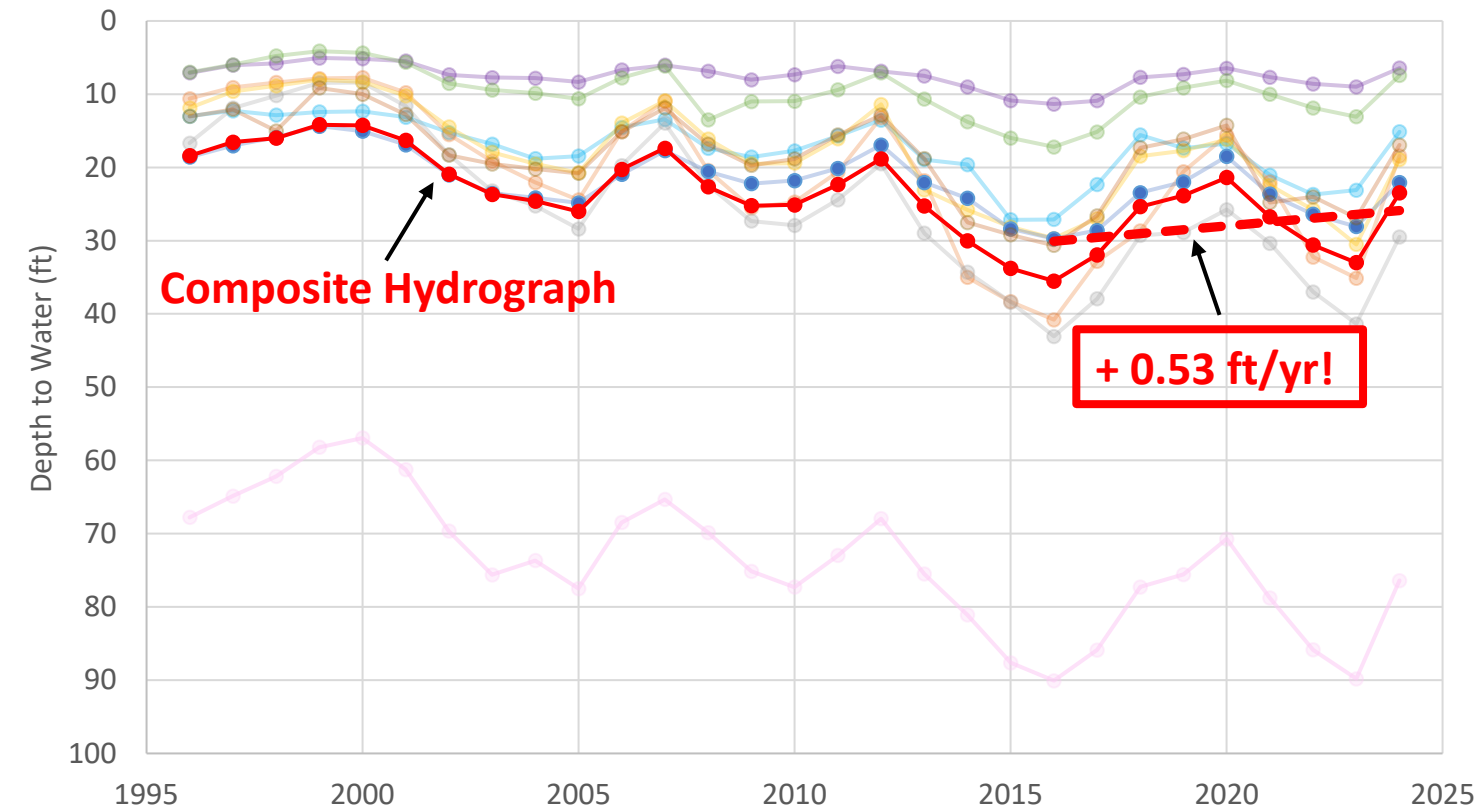


SUSTAINABLE PUMPING GOALS

MASON VALLEY WATER LEVELS SPRING 1996-2024



MASON VALLEY WATER LEVELS SPRING 2016-2024

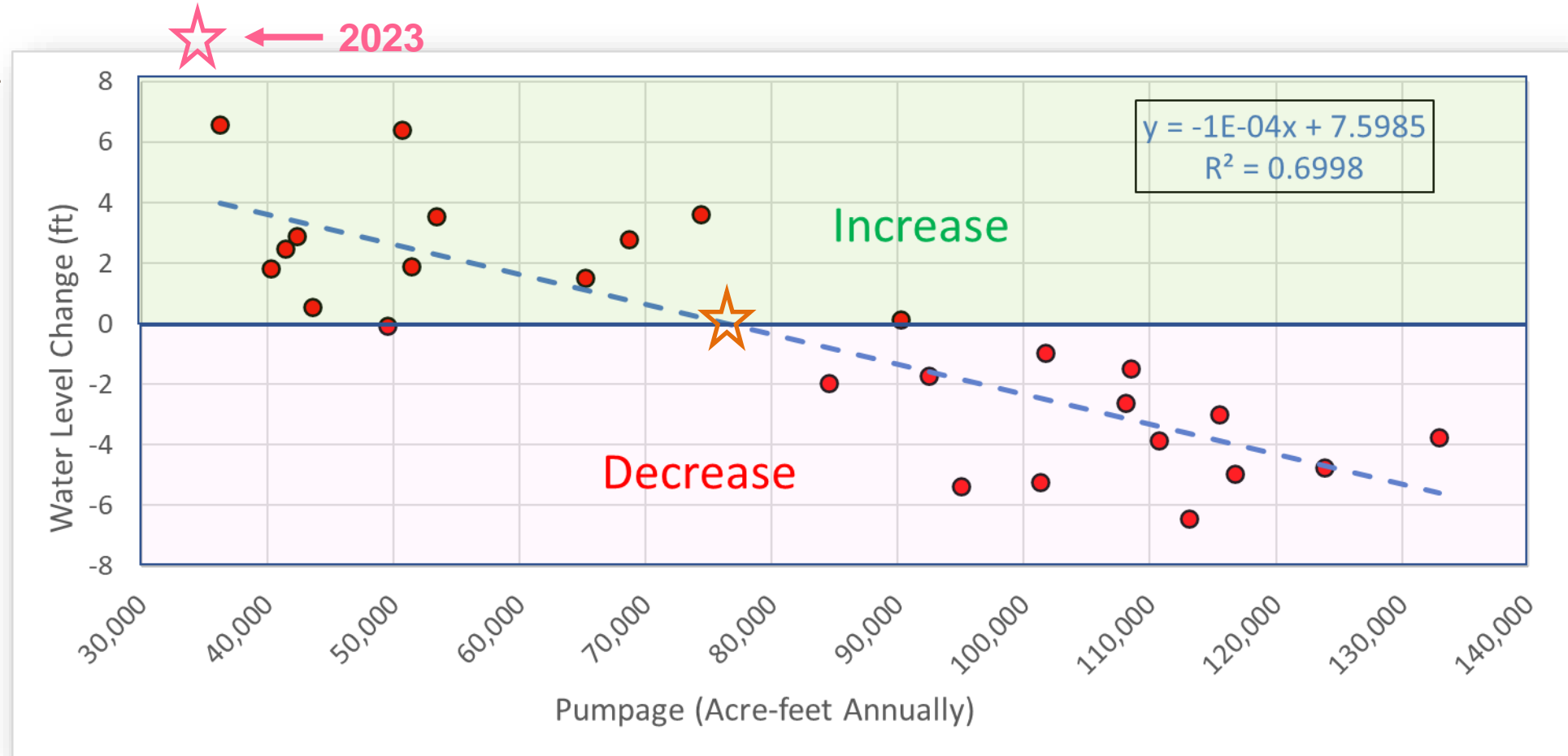


MASON VALLEY PUMPING VS. WATER LEVEL CHANGE

1996-2021 Average
Pumping: 81,256 AF

Estimated Average
Goal: <76,000 AF

Pumping Reduction
Goal is $\geq 5,250$
AF/year



No water level change @ streamflow of ~ 242,000 AF (96-22 median = 155,436 AF)

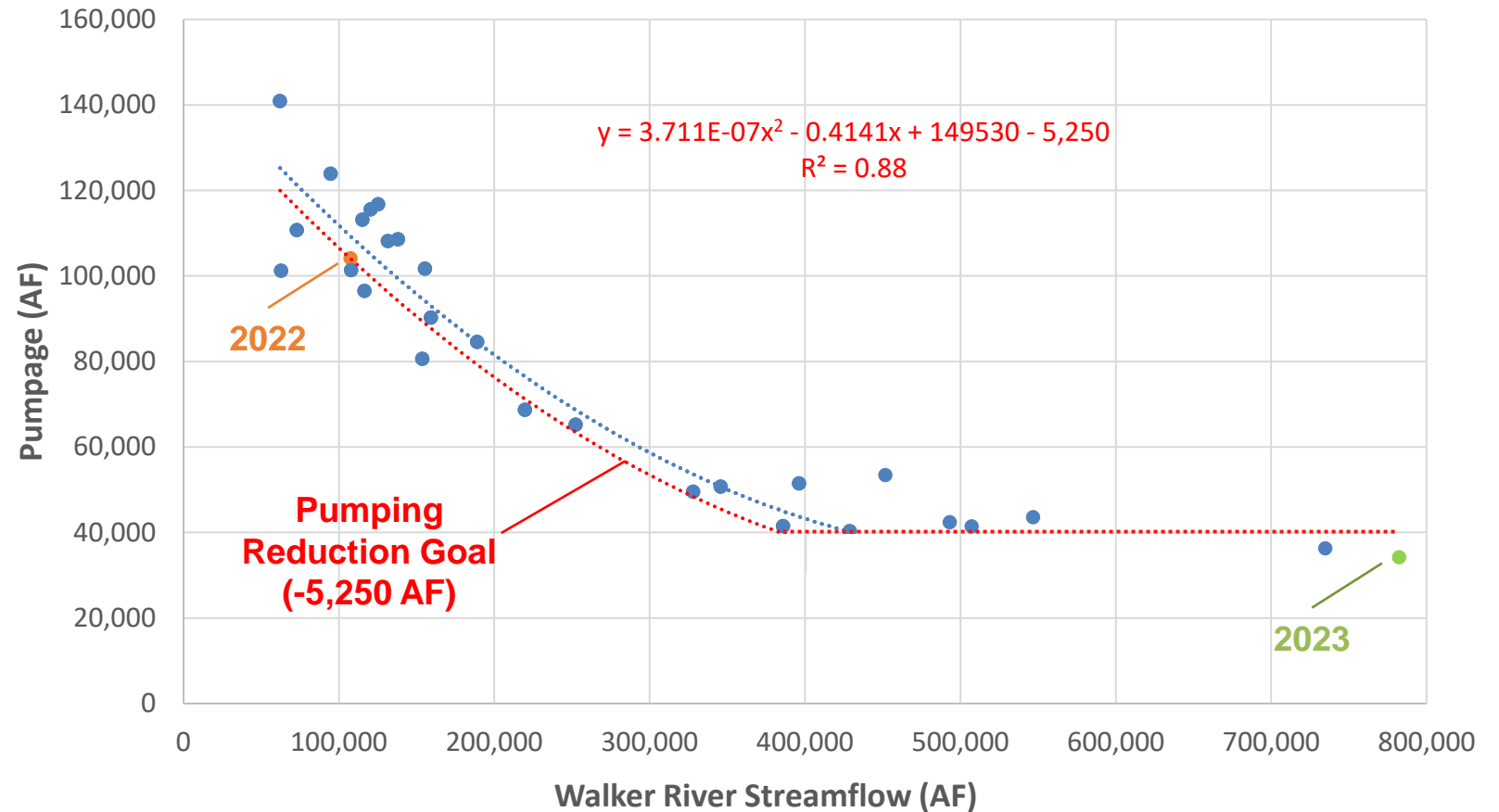
2024 PUMPING GOALS - EXPERIMENTAL

WALKER RIVER STREAMFLOW* vs. MASON VALLEY PUMPING

Regression updated.
Better fit. Allows for a
little higher pumpage
goals during droughts.

Looking at big water
years, pumping is nearly
constant.

For annual inflows
>383,000 acre-feet,
establish pumping goal
of 40,000 acre-feet



*Top 5 wettest years have been removed from regression

PUMPING PREDICTION (APR 1) – MASON VALLEY

$$\text{April Pre-Season Pumping Forecast} = -0.814 \cdot (0.55BP + 0.45TP) - 38,496 \cdot \text{SWE} + 149,895 - 5,250$$

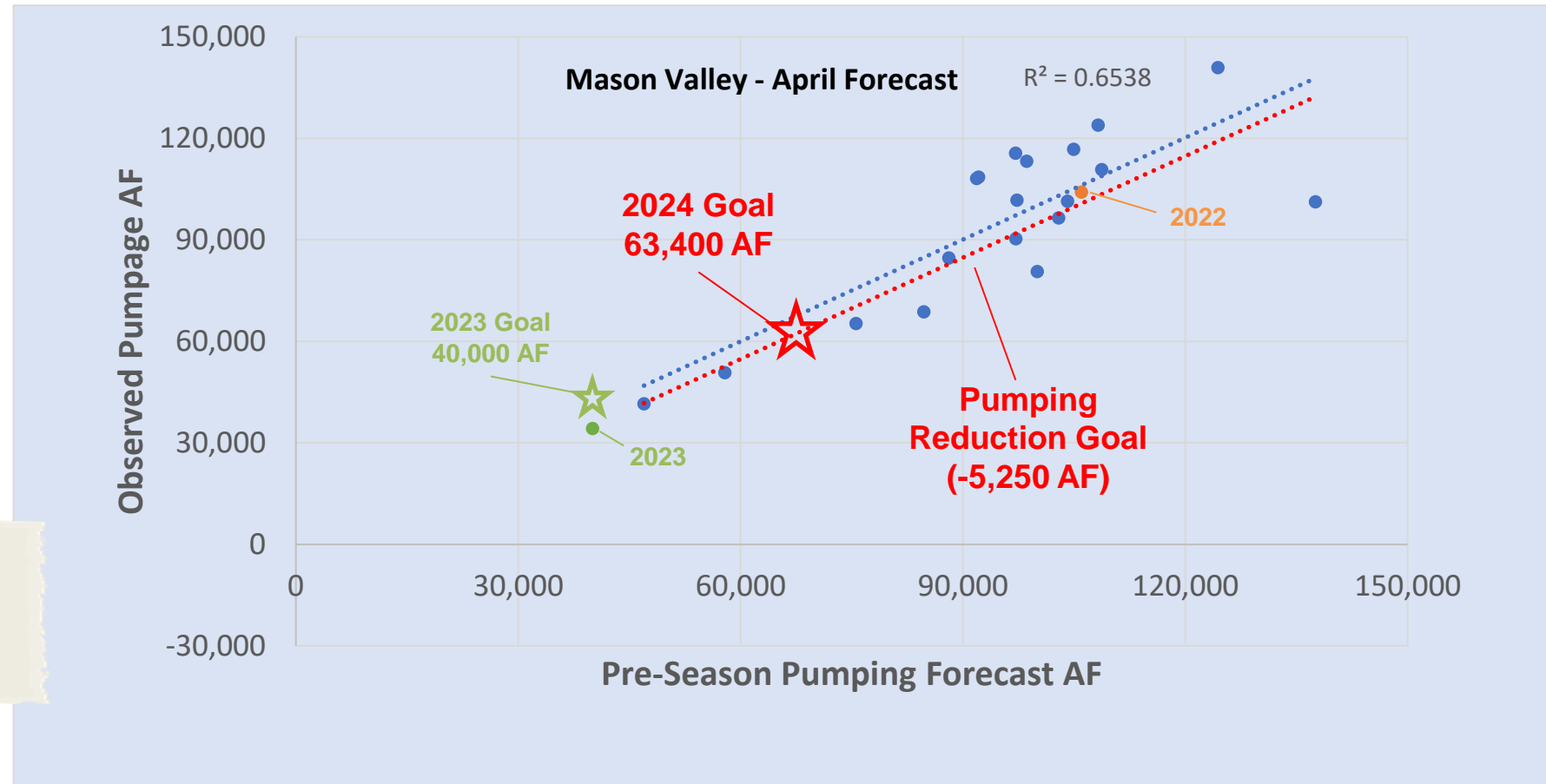
April 1 Observations of:

BP = Bridgeport Storage

TP = Topaz Storage

SWE = Walker Basin
Snow Water Equivalent

Relation does not work for years with stream inflow >383,000 acre-feet.



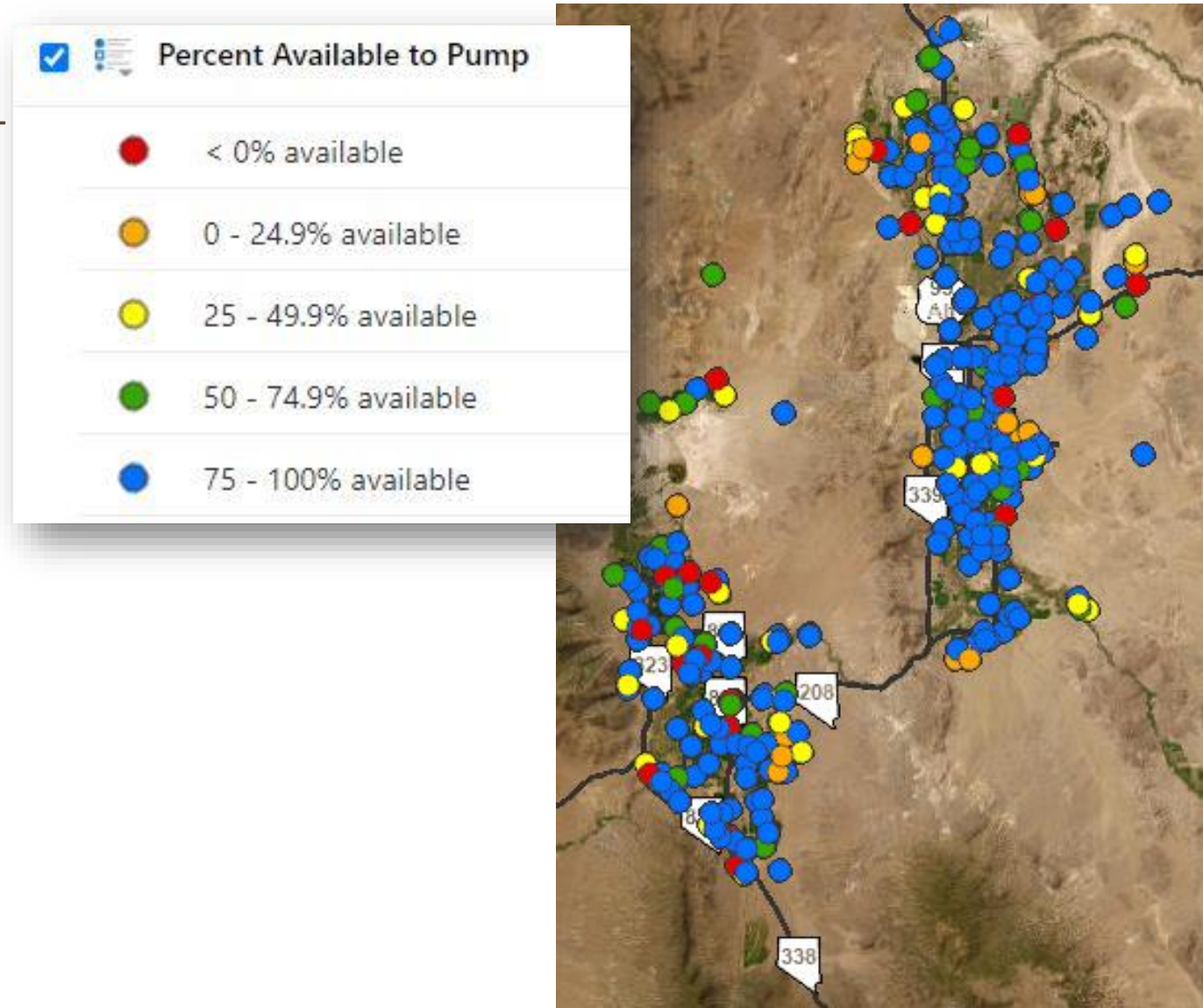
SUMMARY AND OUTLOOK

MASON / SMITH PUMPAGE MAP

- Wells color-coded by % of duty remaining to pump for the year
- Linked to the online Meters Database*

water.nv.gov -> Mapping & Data -> Mapping Application Links -> [Mason and Smith Valley Groundwater Pumping Availability](#)

*All Smith/Mason water users > 5AF must report monthly meter readings at: meters.water.nv.gov



FUTURE CONSIDERATION: WBC WATER RIGHT RETIREMENTS



- Walker Basin Conservancy (WBC) administering Ground Water Retirement program for Walker River Basin.
- The goal of the program is to fund the purchasing and permanent retirement of groundwater rights from willing sellers in over-appropriated groundwater basins.
- WBC is looking at purchasing around 1,400 – 2,500 AF of groundwater rights (primary and supplemental) before the end of 2024.
- Depending on success of the program and ‘wetness’ of water rights being purchased, may help Mason Valley toward achieving reduction in annual pumpage goal.

SUMMARY FOR 2023 SEASON

- 2023 pumping much less than 2022.
- Pumpage goals met in both Smith and Mason Valleys.
- Reduced pumping and a record-setting water year* facilitated significant basin-wide increases in groundwater levels.
- Long-term hydrographs still show declining trends, but recent period (2016 – 2023) has increasing trends.

* 2023 and 2017 were very substantial runoff years. The likelihood of recurrence for these are very low.



OUTLOOK FOR 2024 SEASON

- The 2024 water year is slightly above normal and may be similar to 2018 with respect to water deliveries.
- More supplemental pumping will be needed than last year, but should still be toward the lower end of historical data.
- Use surface water whenever it is available to you first – then can use supplemental.
- Voluntary pumping reductions are still needed to help reduce long-term average.
- **2024 pumpage goal for Mason Valley is < 64,000 AF.**



Questions?



Contact

Lauren Bartels

Water Resource Specialist II

Phone: 775-684-2828

lbartels@water.nv.gov

Division of Water Resources

901 S. Stewart Street #2002

Phone: 775-684-2800

water.nv.gov