



NEVADA DIVISION OF  
**WATER RESOURCES**



Nevada Department of  
**CONSERVATION &  
NATURAL RESOURCES**

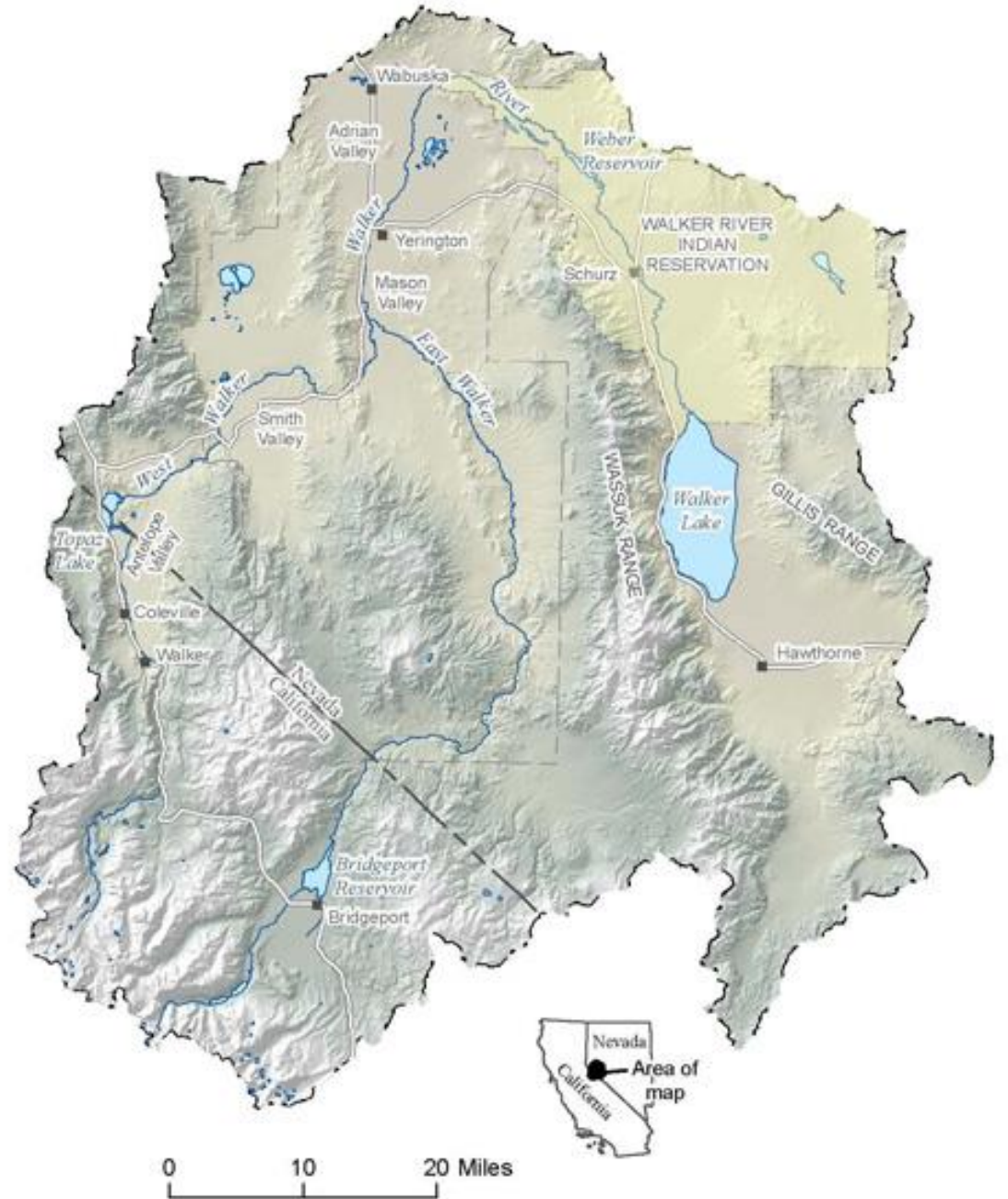
# Groundwater Management for Mason Valley: 2023 Review and 2024 Goals

April 18, 2024

Presented by:

**Lauren Bartels and Kip Allander**

Nevada Division of Water Resources



## OVERVIEW

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

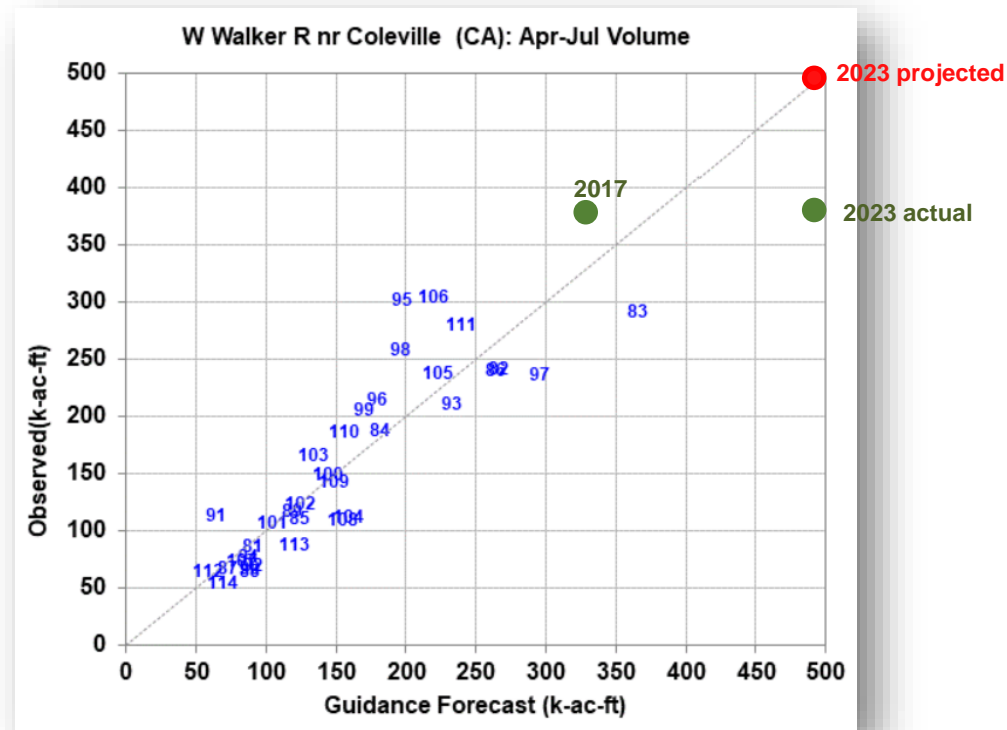


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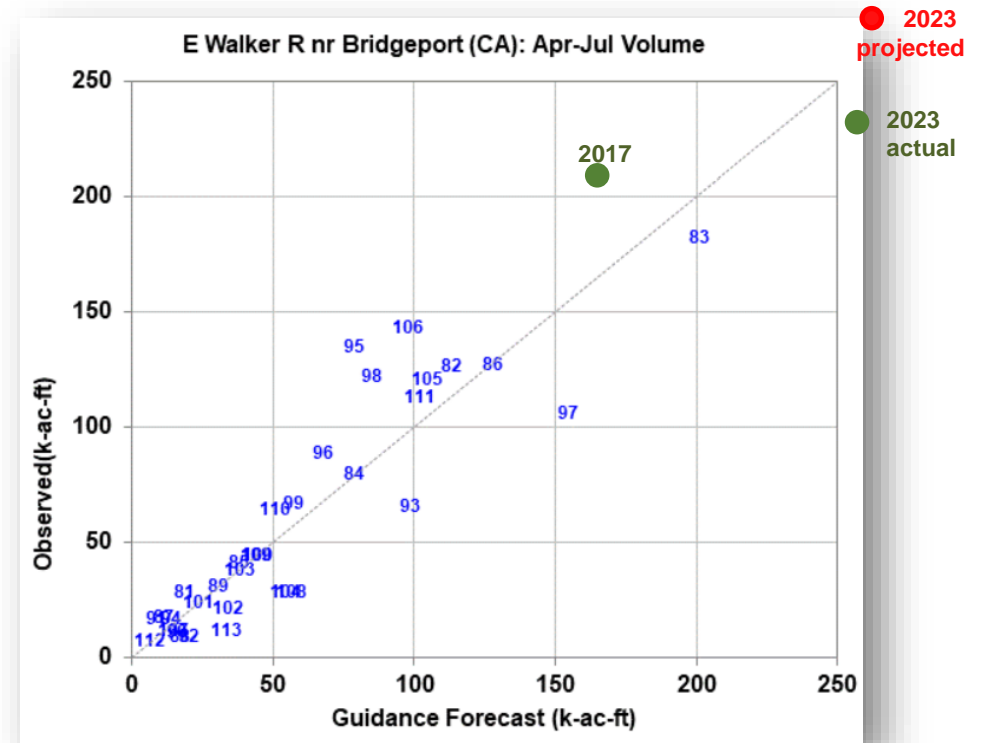
# RECAP OF 2023 RUNOFF SEASON

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

## West Walker River



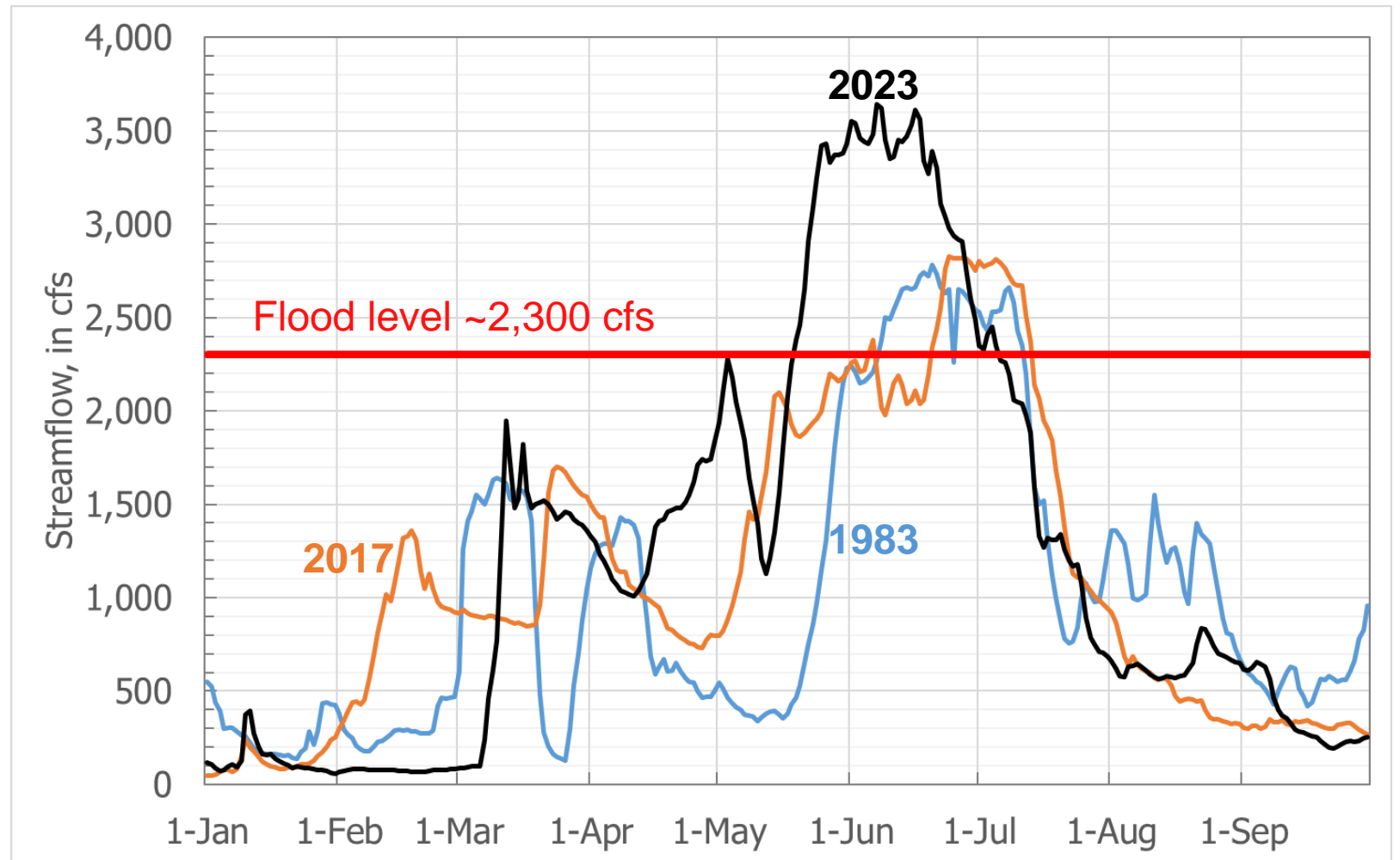
## East Walker River



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

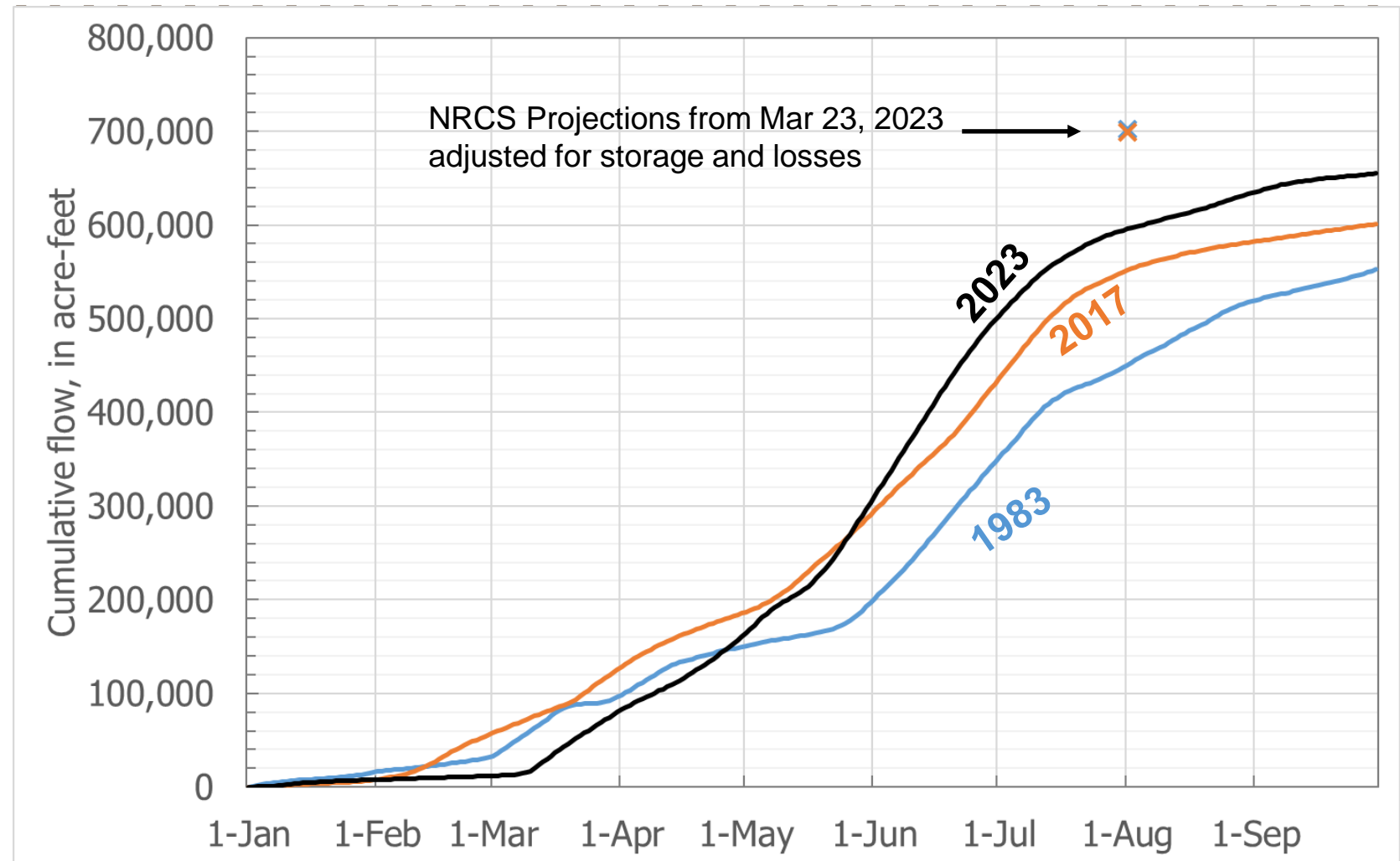
# HYDROGRAPHS FOR WALKER RIVER AT SNYDER LANE NR MASON – WHAT ACTUALLY HAPPENED LAST YEAR

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.



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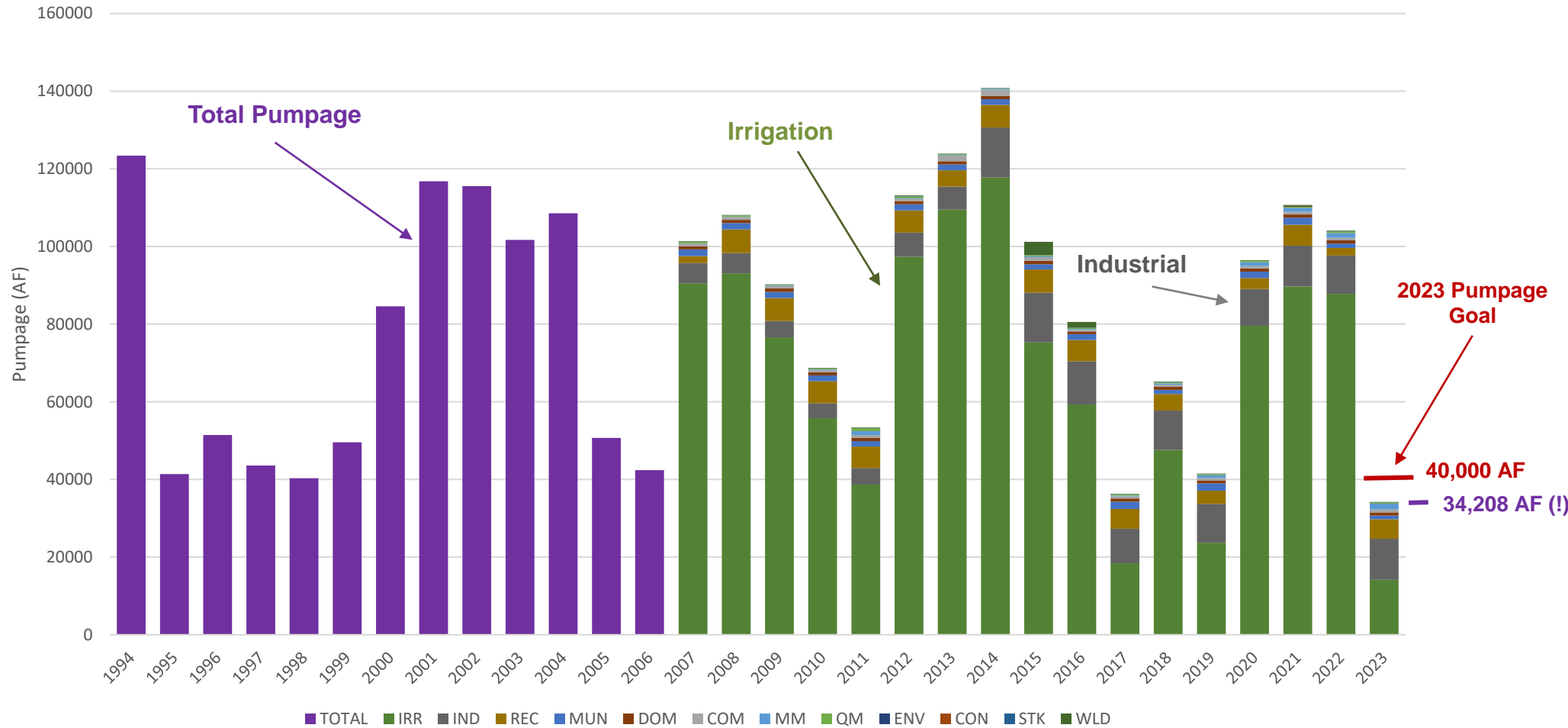
# **2023 PUMPING AND WATER LEVEL REVIEW**

# MASON VALLEY TOTAL PUMPAGE

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

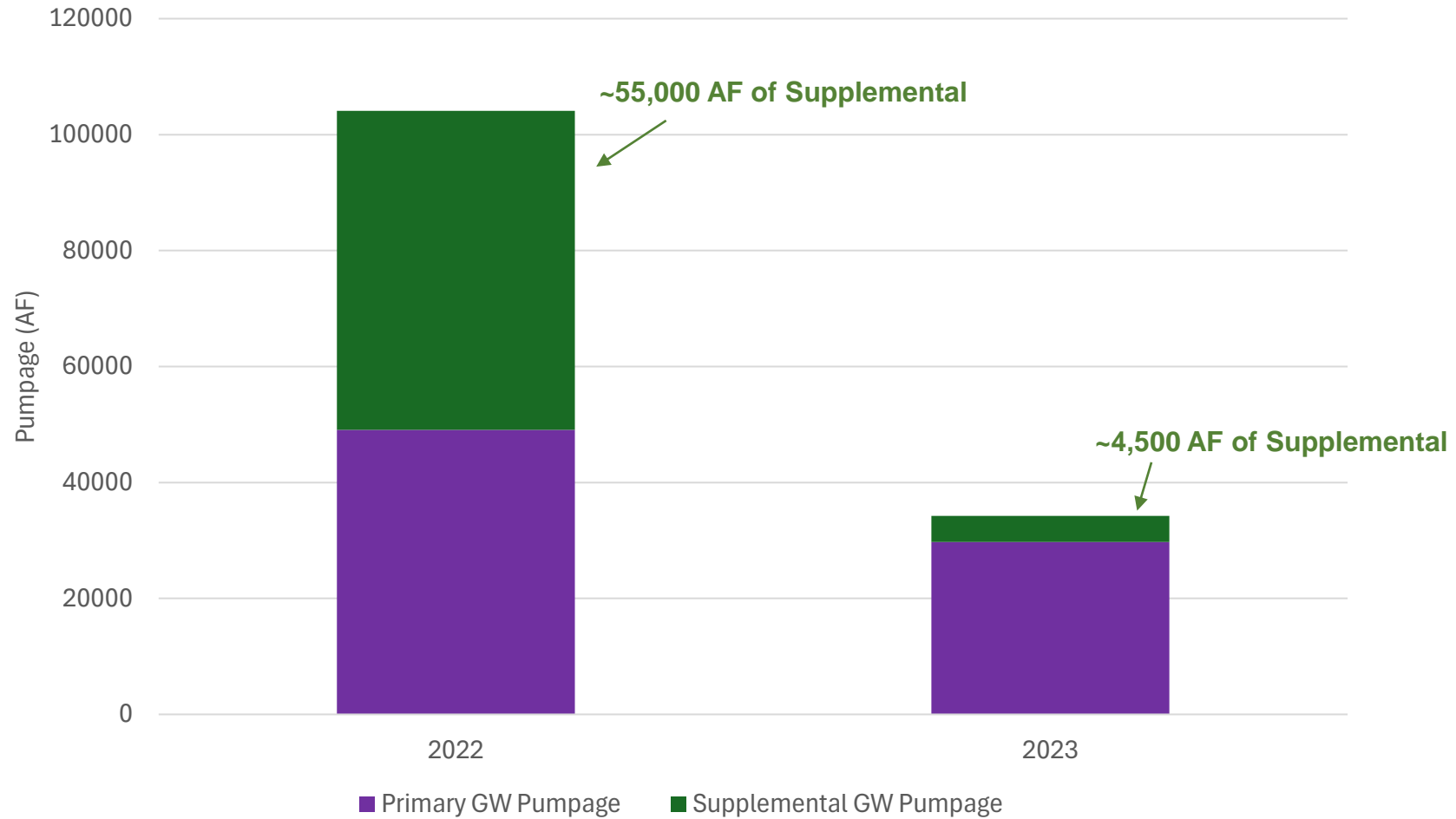
2022 & 2023 pumpage data are provisional and subject to revision.

Mason Valley Pumpage by Year



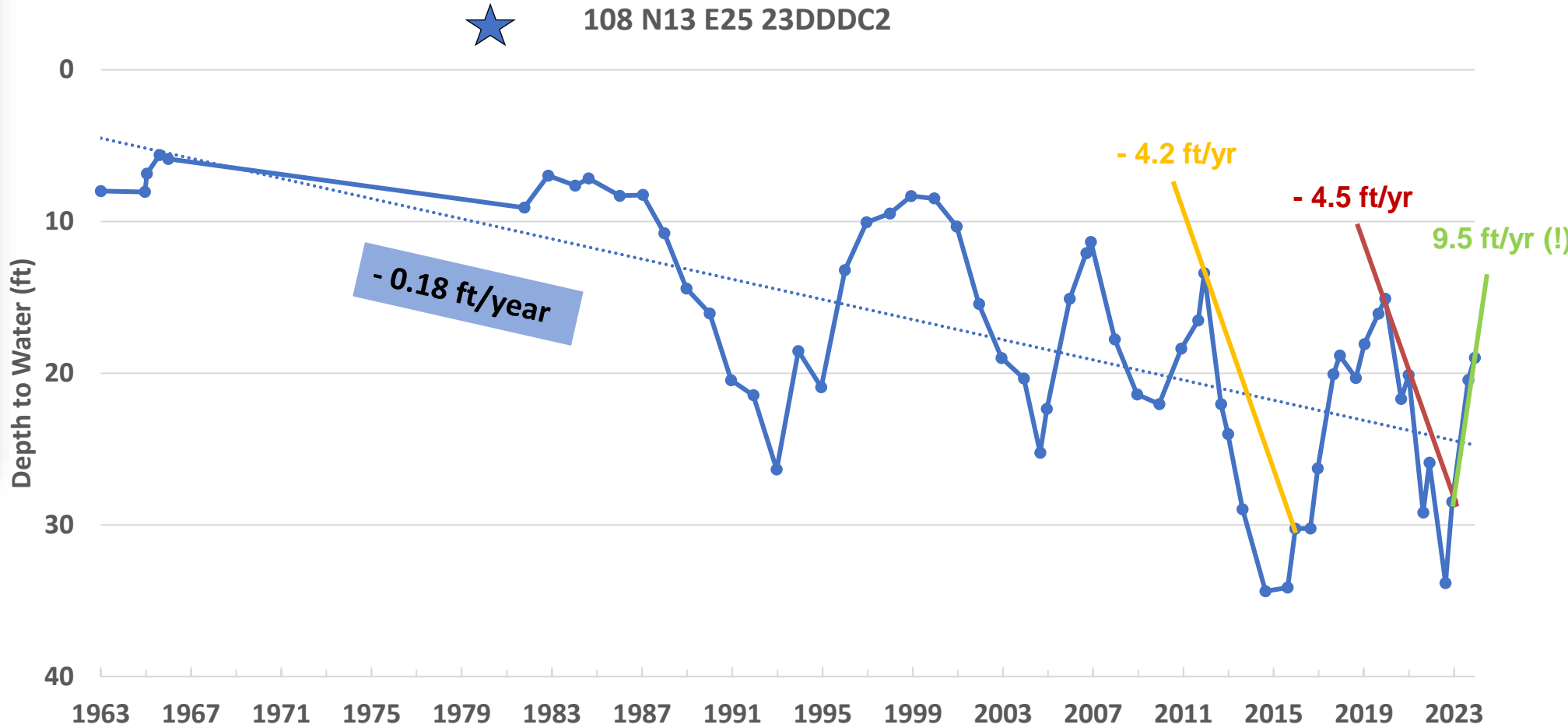
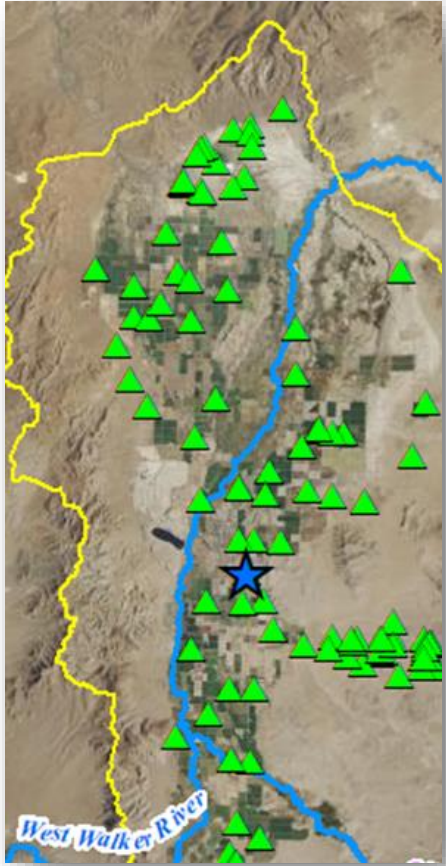


# MASON VALLEY SUPPLEMENTAL GROUNDWATER USE



\*Total pumpage includes pumpage by domestic wells

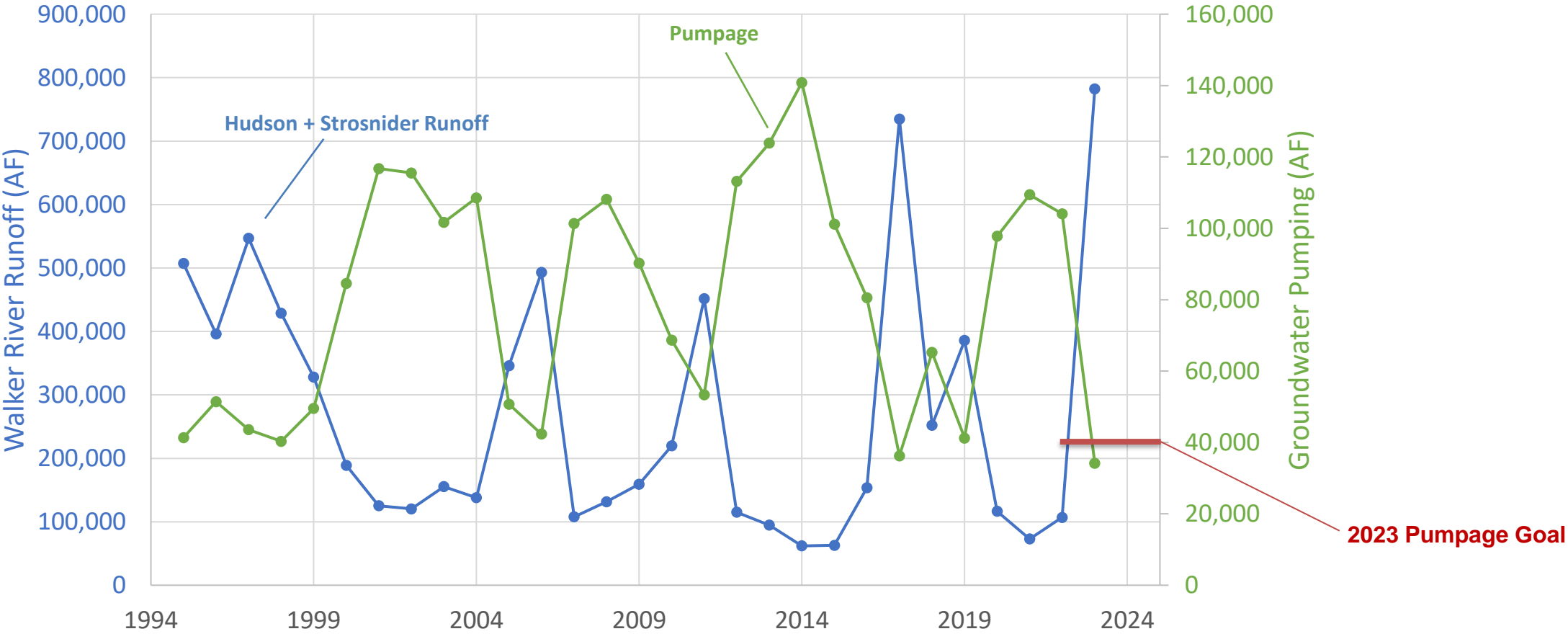
# MASON VALLEY WATER LEVELS



## Average Mason Valley Water Level Changes (ft/yr)

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

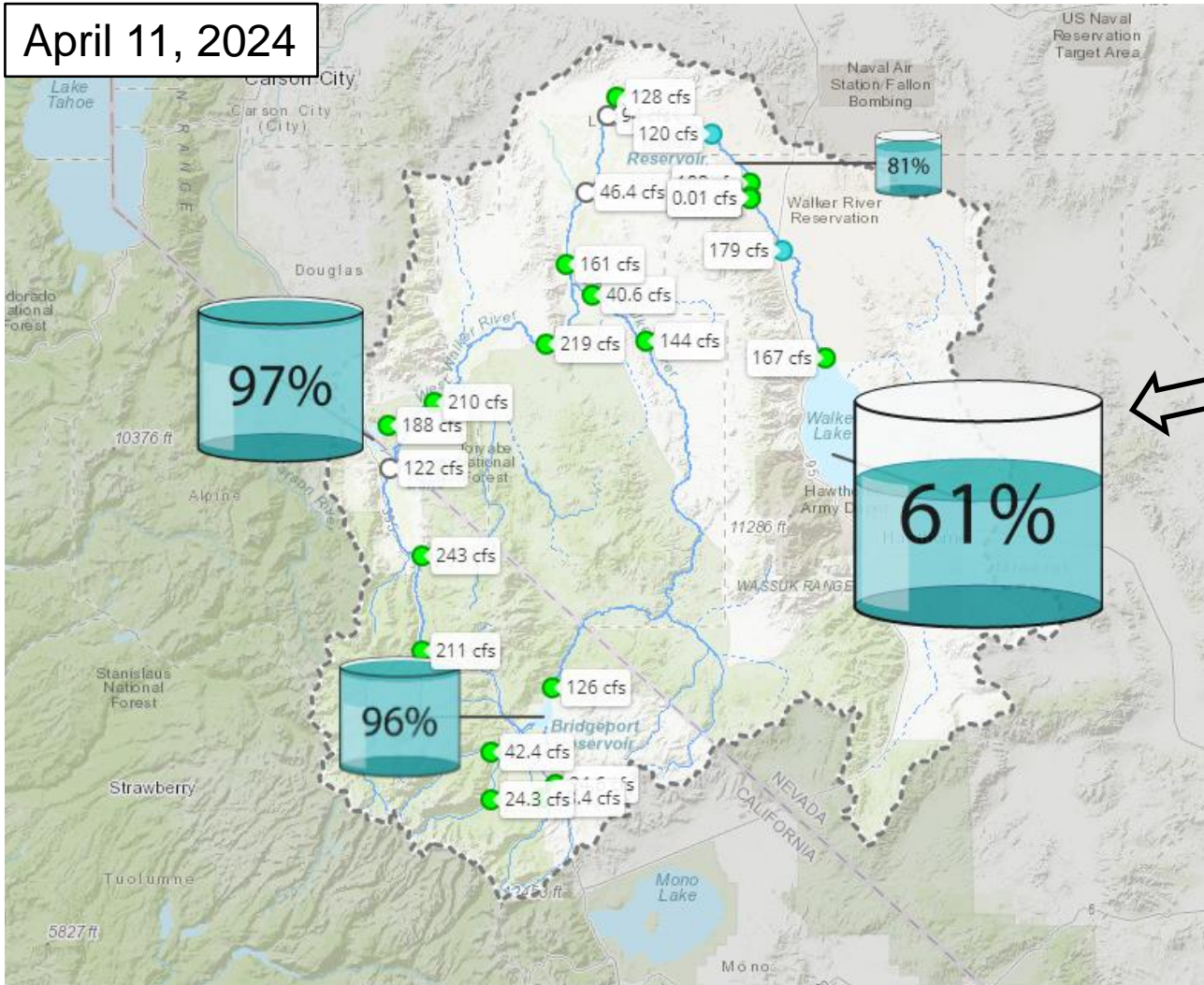
# WALKER RIVER STREAMFLOW VS. MASON VALLEY PUMPING



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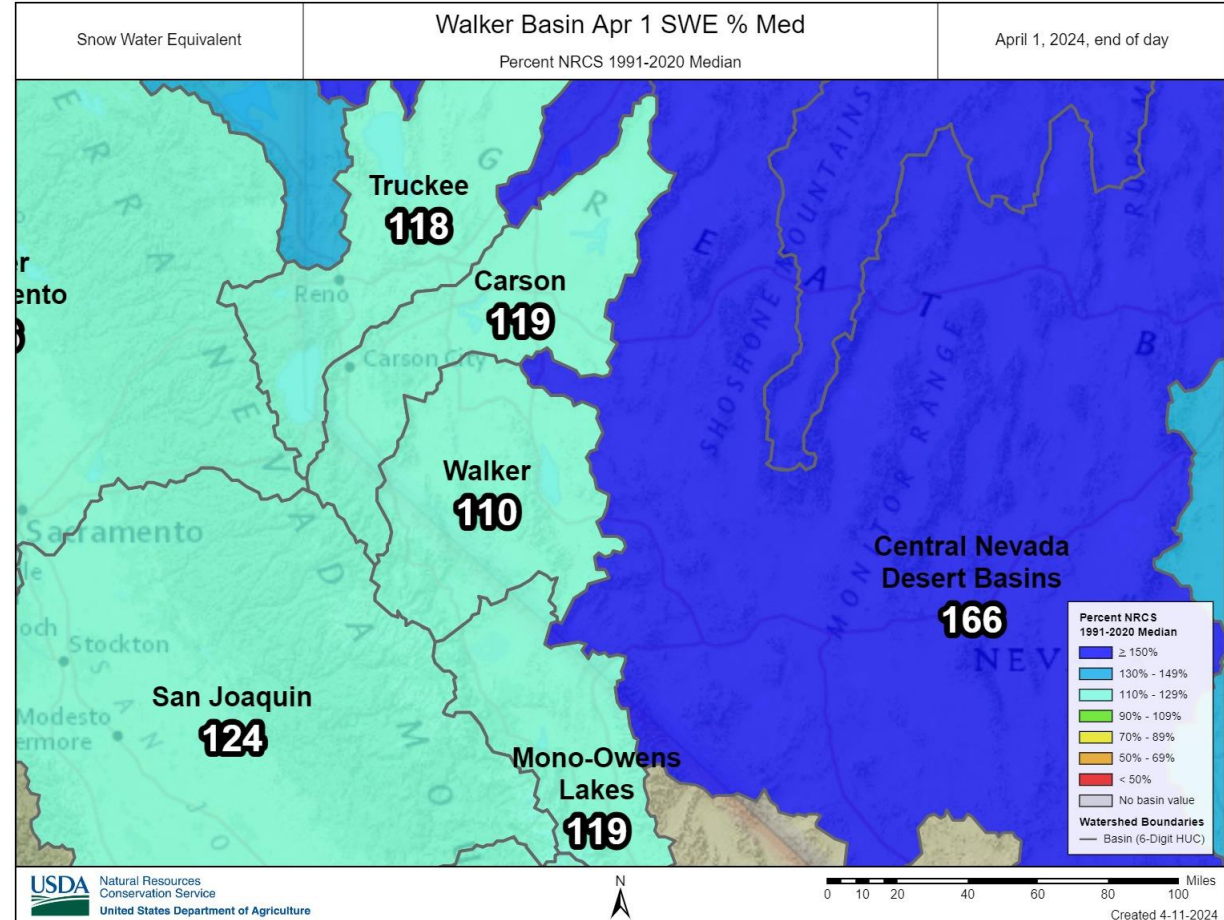
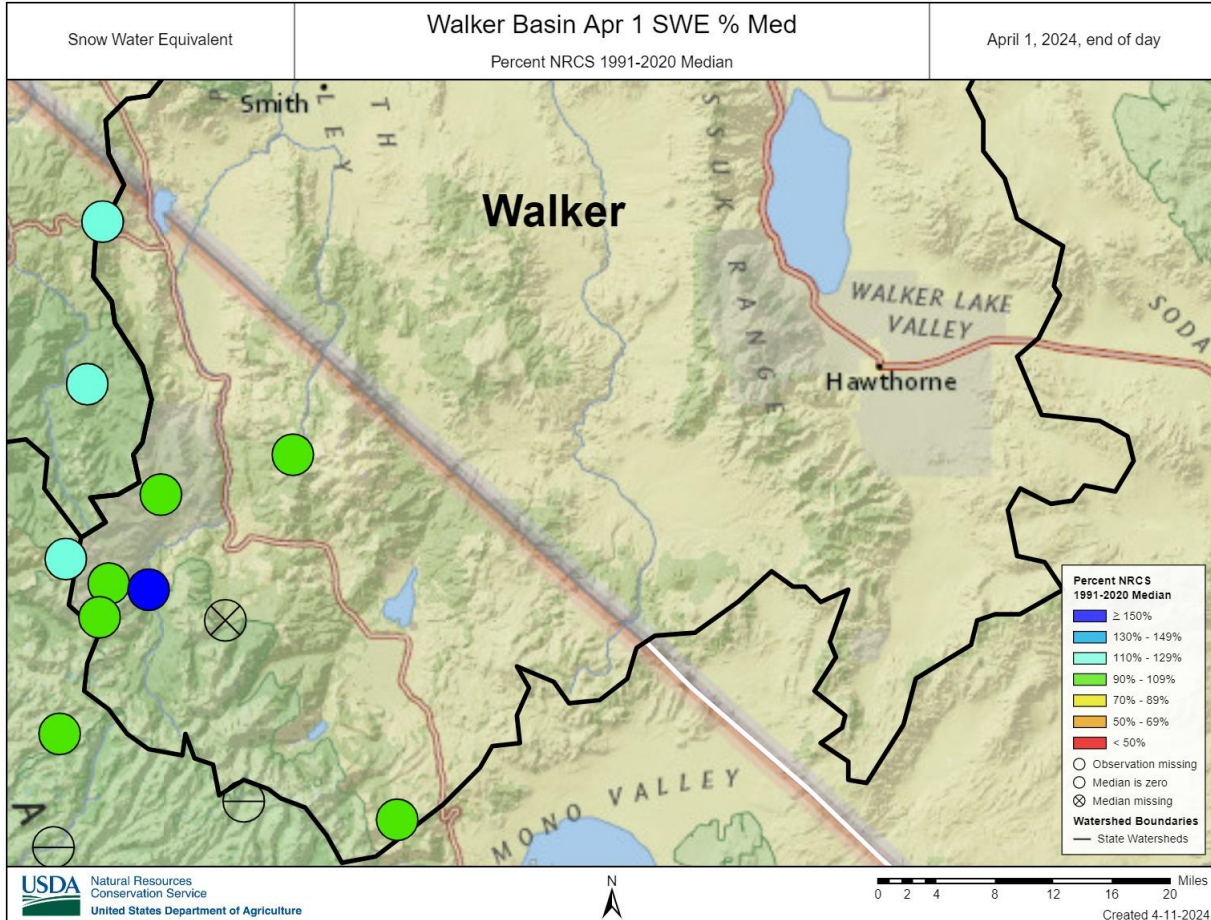
# **WATER SUPPLY OUTLOOK**

# RESERVOIR STORAGE

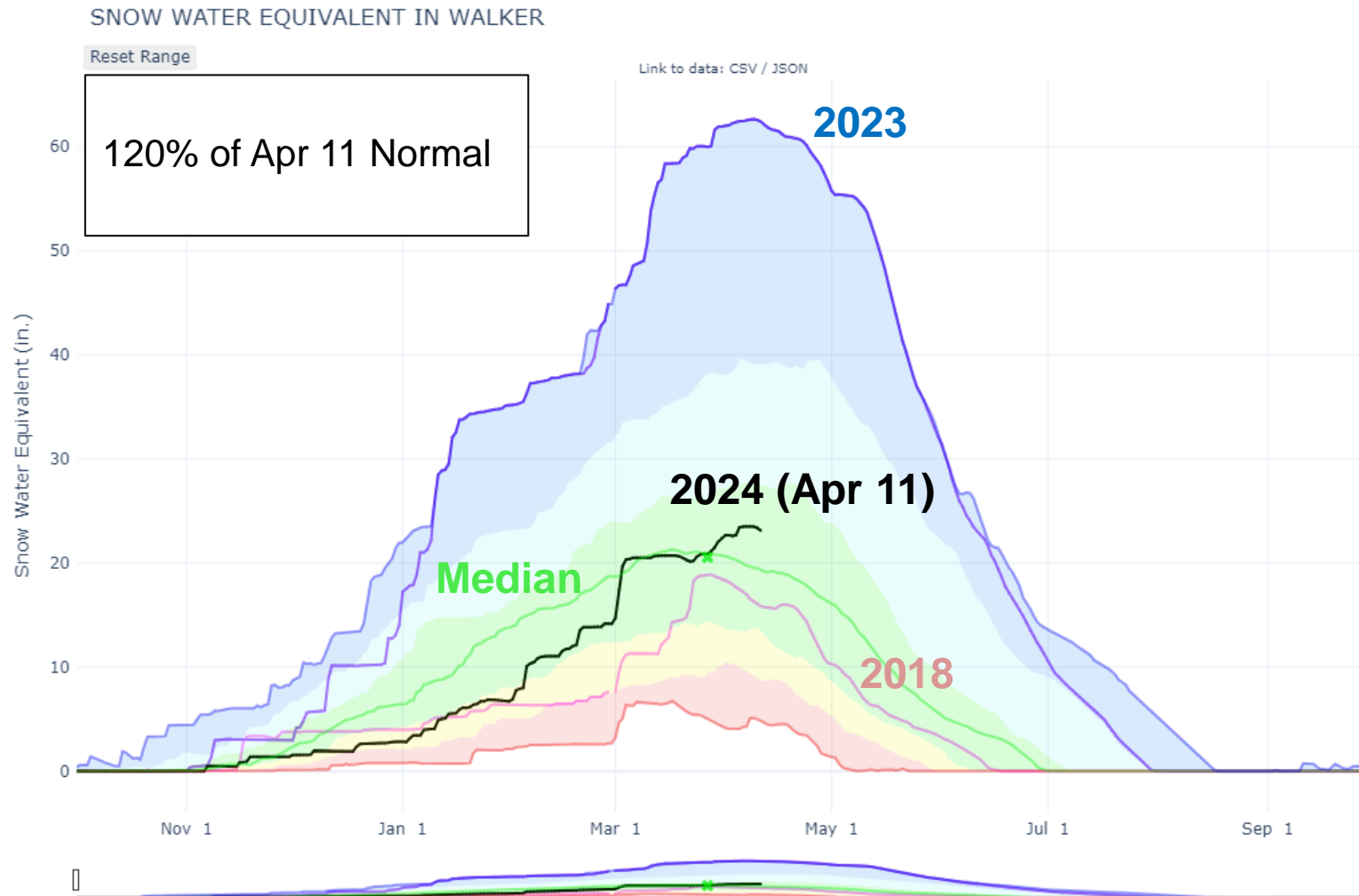


Up 17%

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

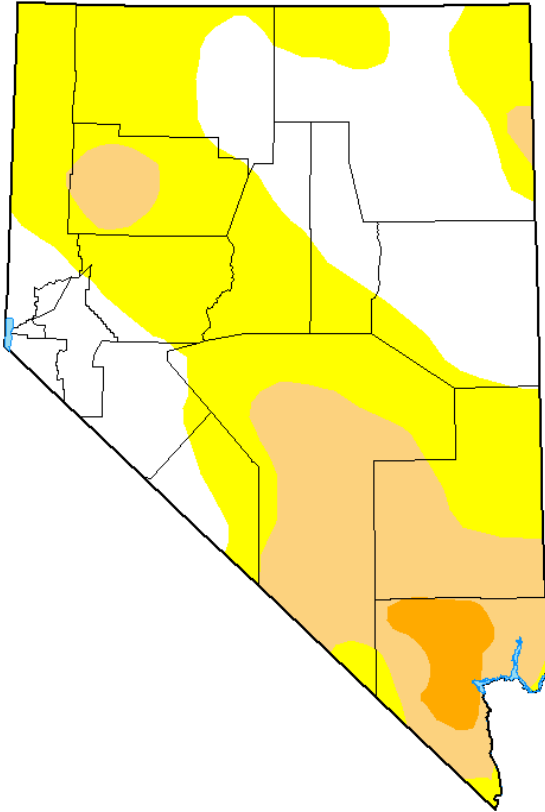


# 2024 WALKER SNOWPACK (SWE)









# U.S. DROUGHT MONITOR

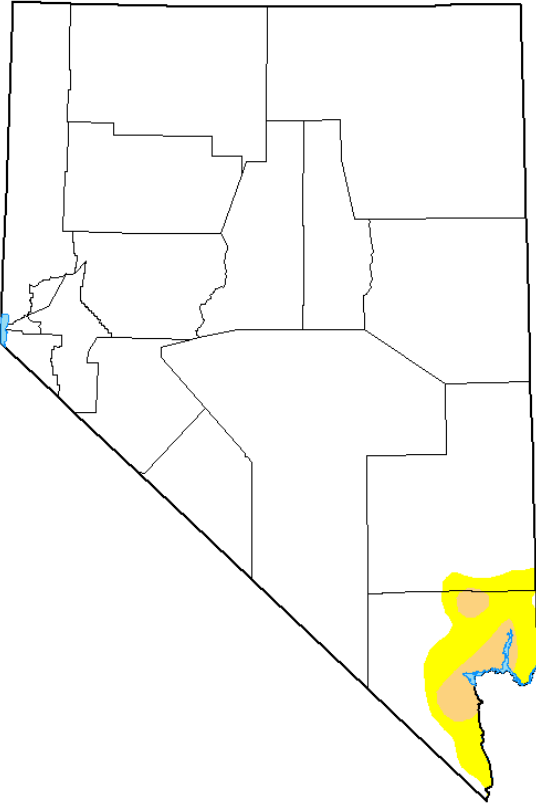
April 11, 2023



***Intensity:***

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

April 11, 2024

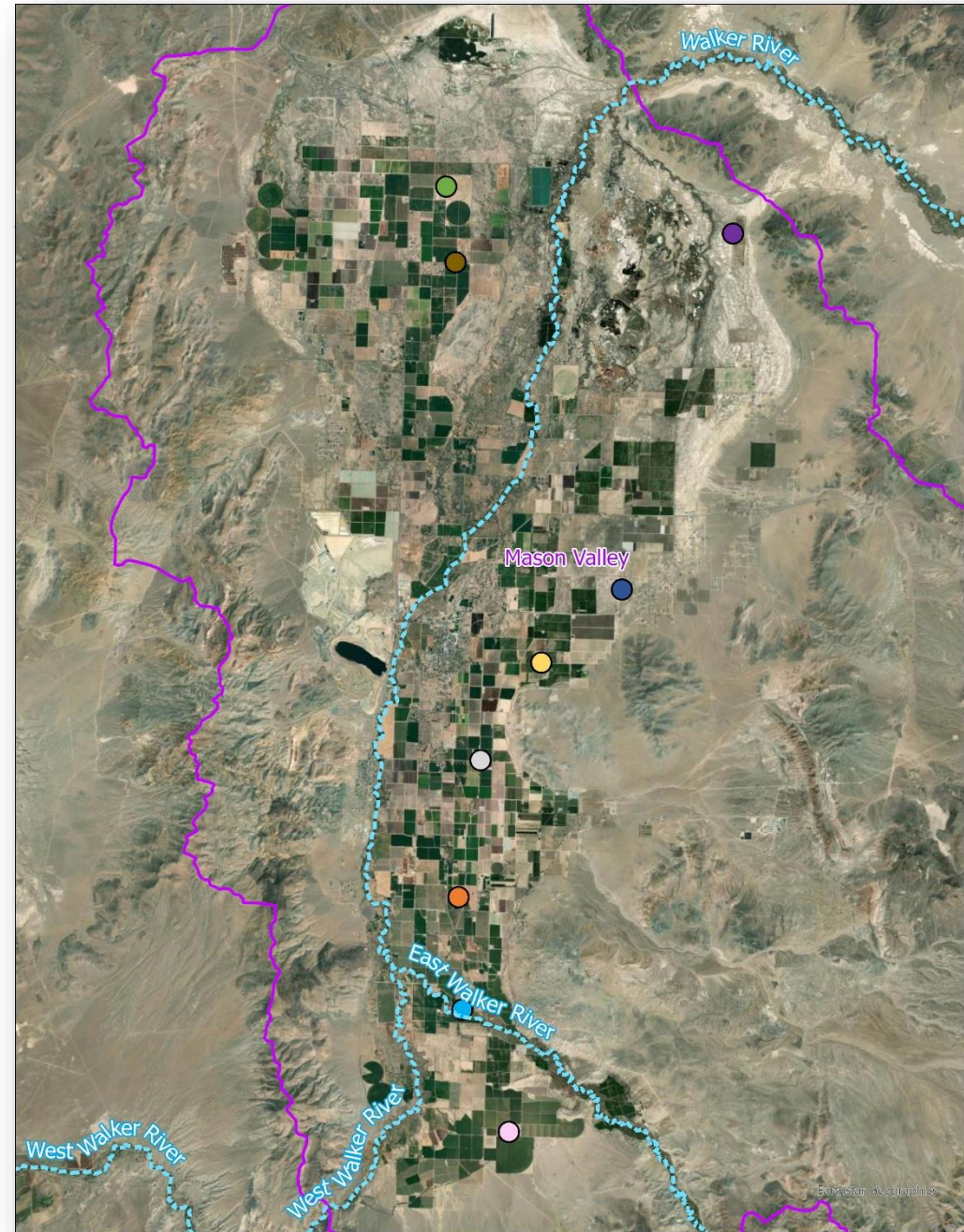
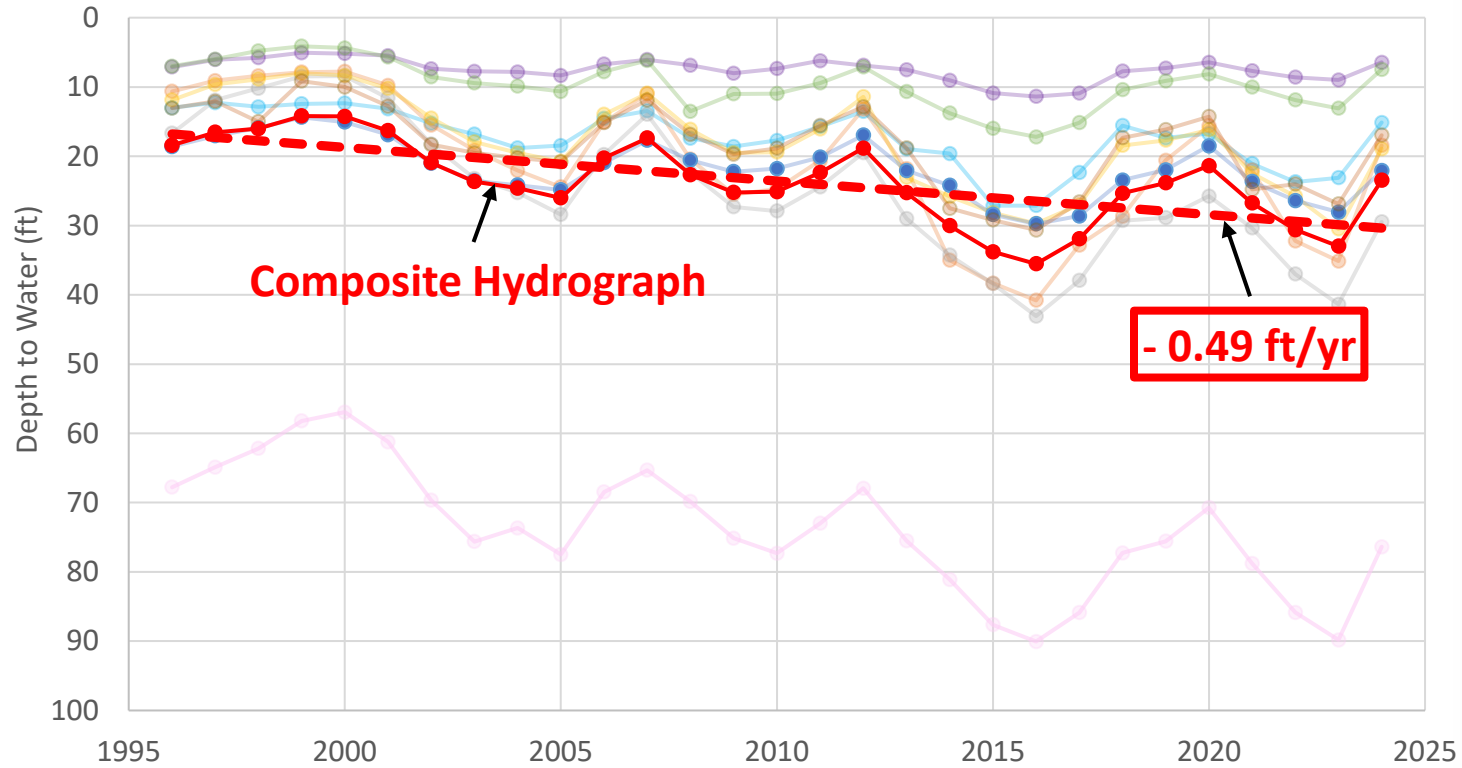




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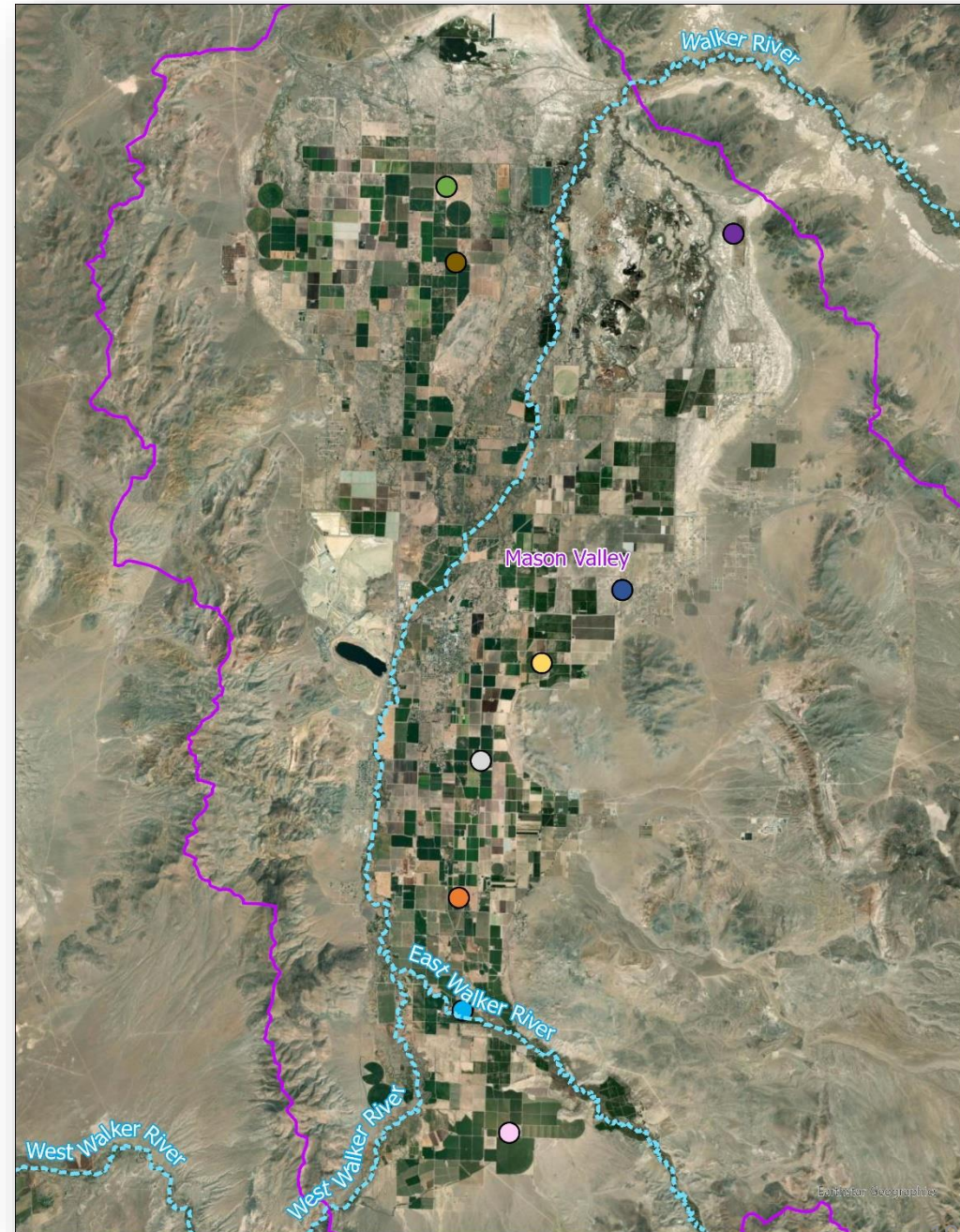
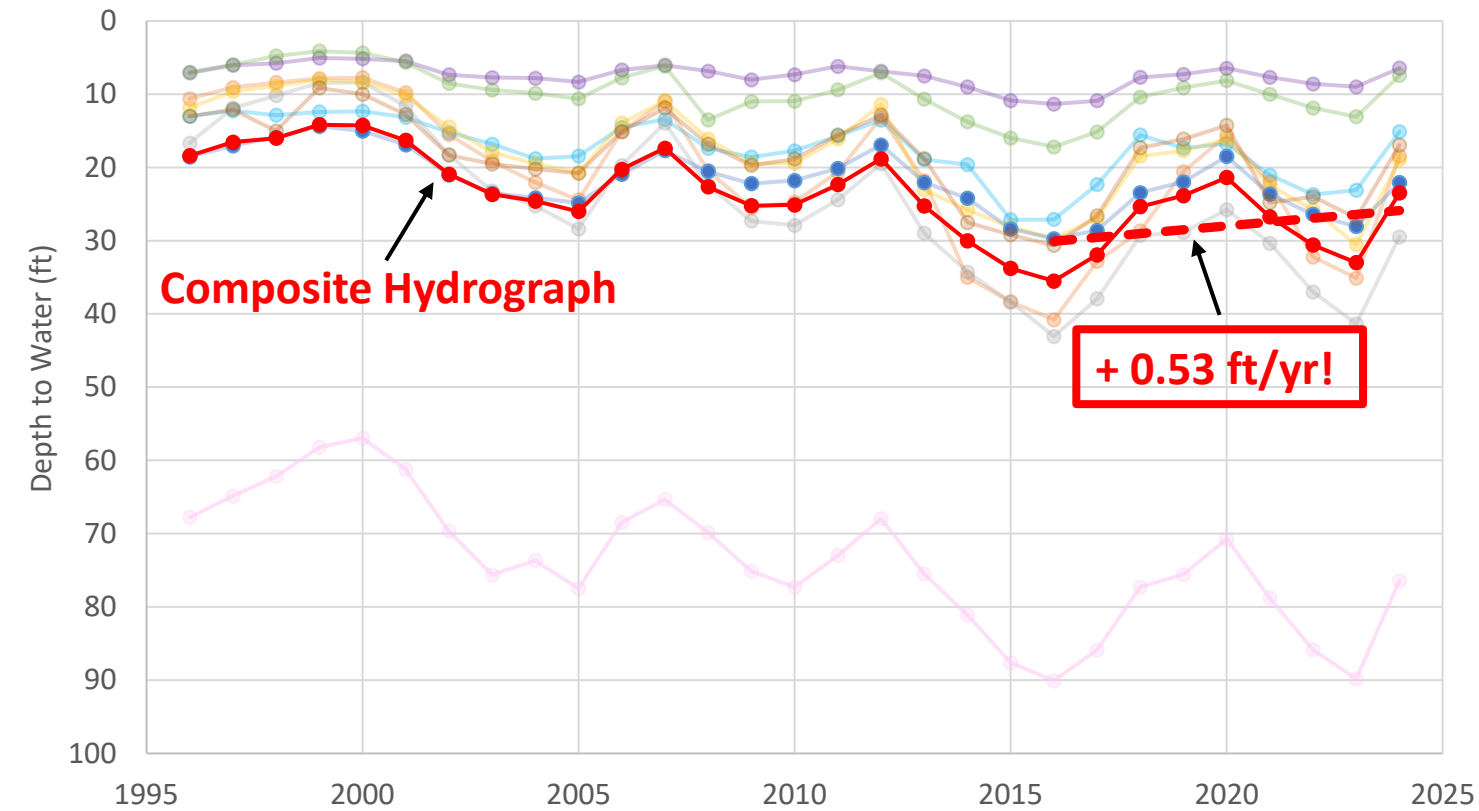
# **SUSTAINABLE PUMPING GOALS**

# MASON VALLEY WATER LEVELS SPRING 1996-2024



# MASON VALLEY WATER LEVELS

## SPRING 2016-2024

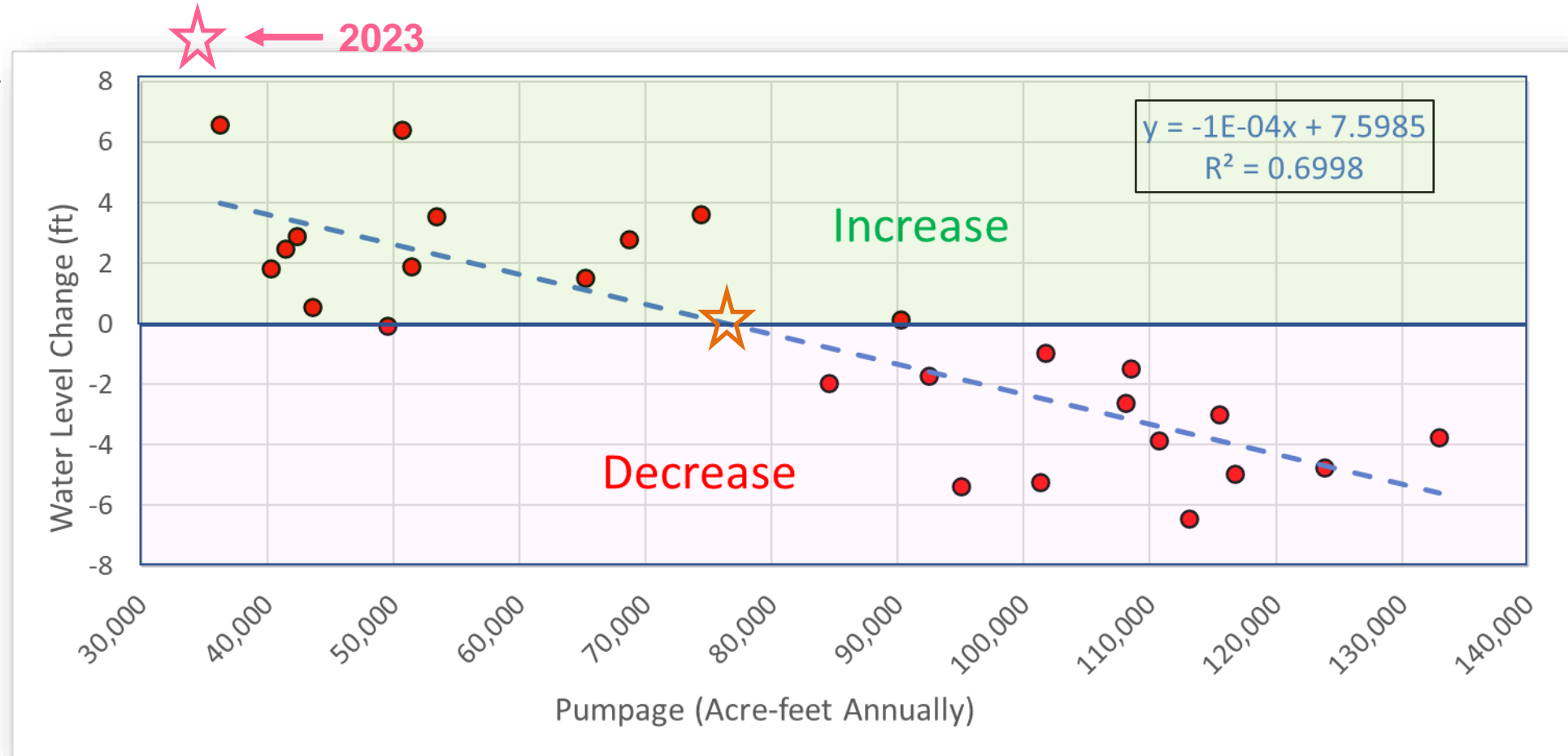


# MASON VALLEY PUMPING VS. WATER LEVEL CHANGE

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)

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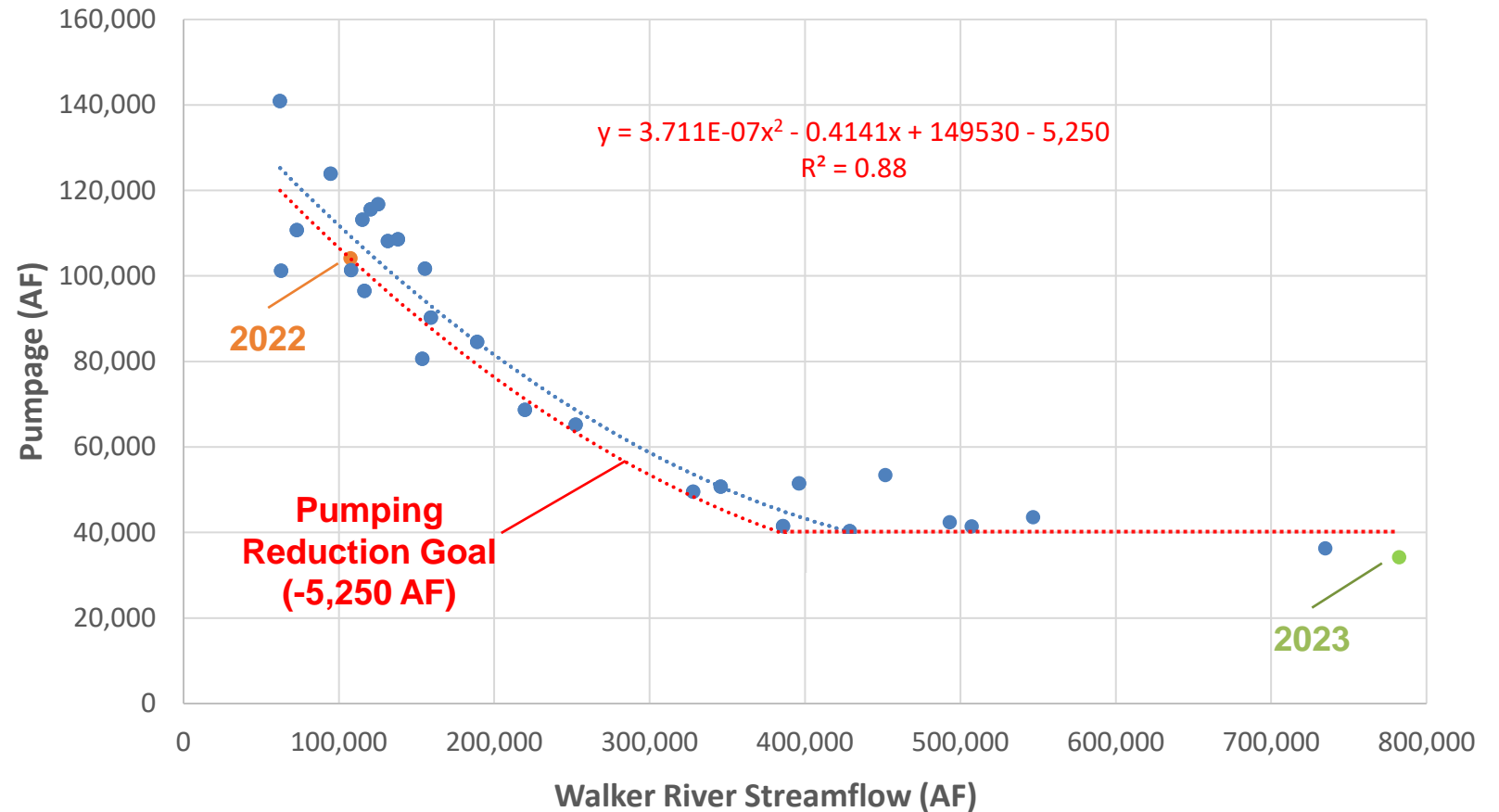
# **2024 PUMPING GOALS - EXPERIMENTAL**

# 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

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

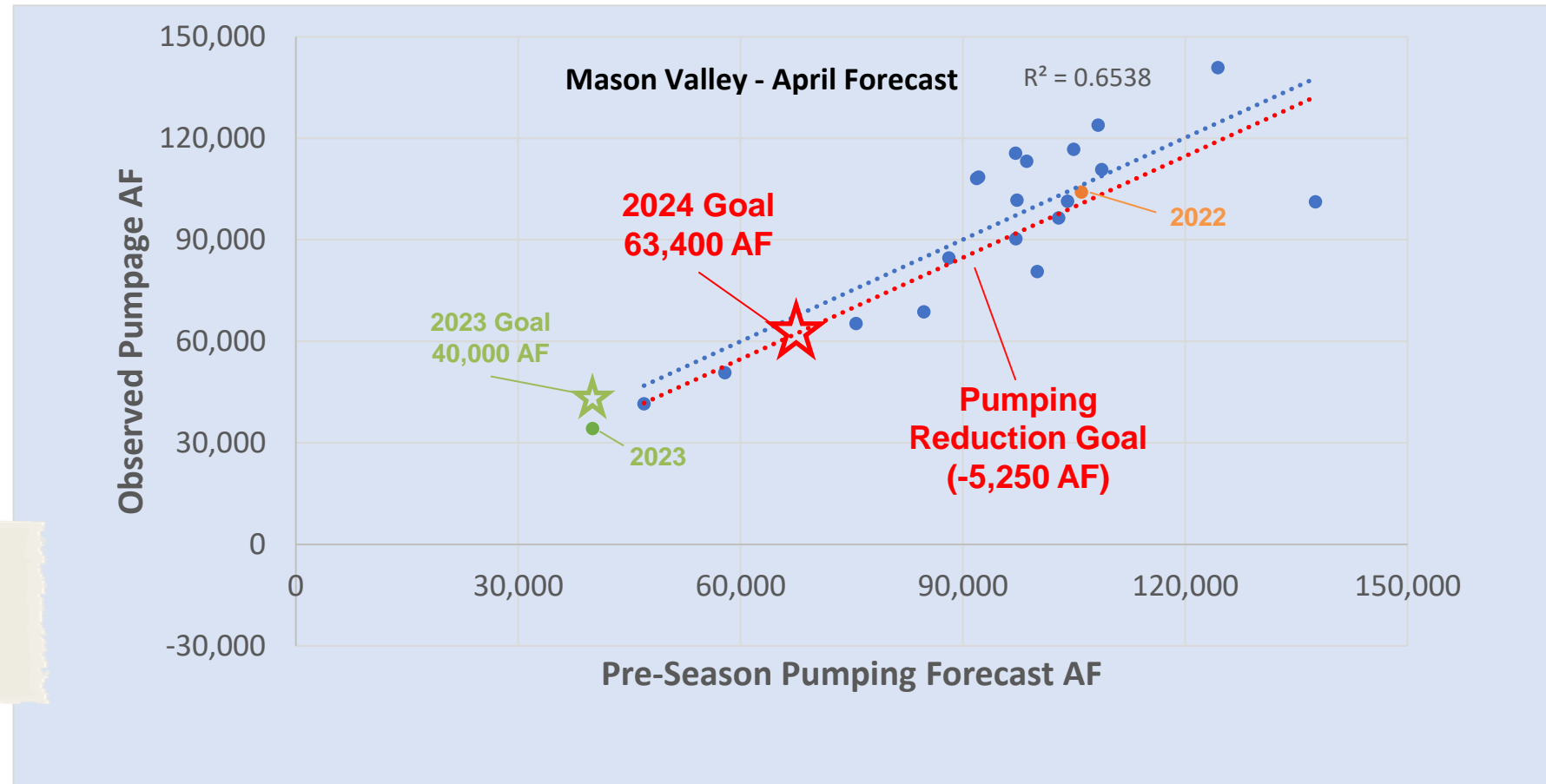
## April 1 Observations of:

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.



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# **SUMMARY AND OUTLOOK**

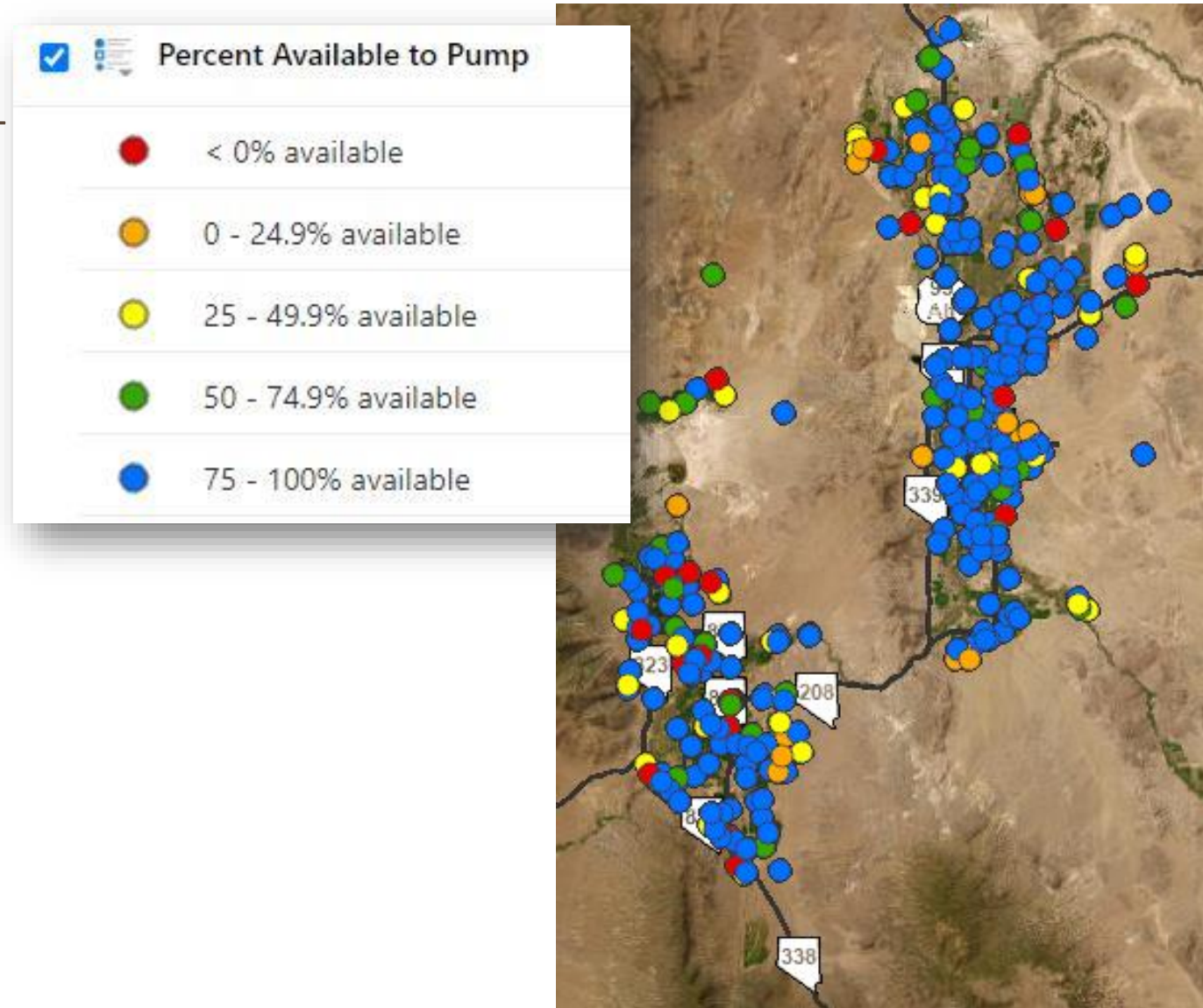


# MASON / SMITH PUMPAGE MAP

- 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](http://meters.water.nv.gov)



# FUTURE CONSIDERATION: WBC WATER RIGHT RETIREMENTS

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- 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) – mostly from Smith Valley before the end of 2024.
- Depending on success of the program and ‘wetness’ of water rights being purchased, may help Smith Valley toward achieving reduction in annual pumpage goal.

## SUMMARY FOR 2023 SEASON

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- 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?



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## Contact

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