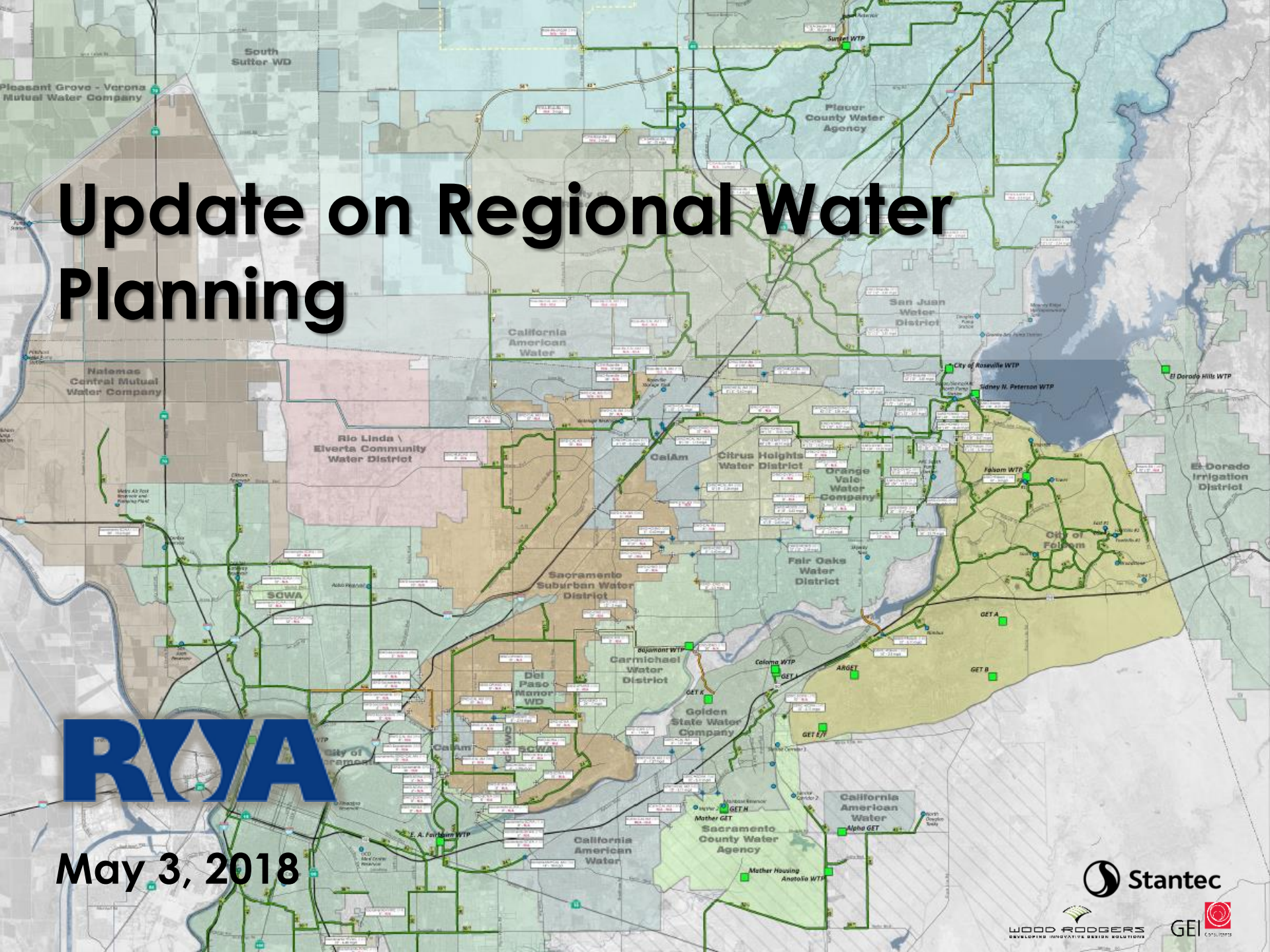
# Update on Regional Water Planning

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May 3, 2018

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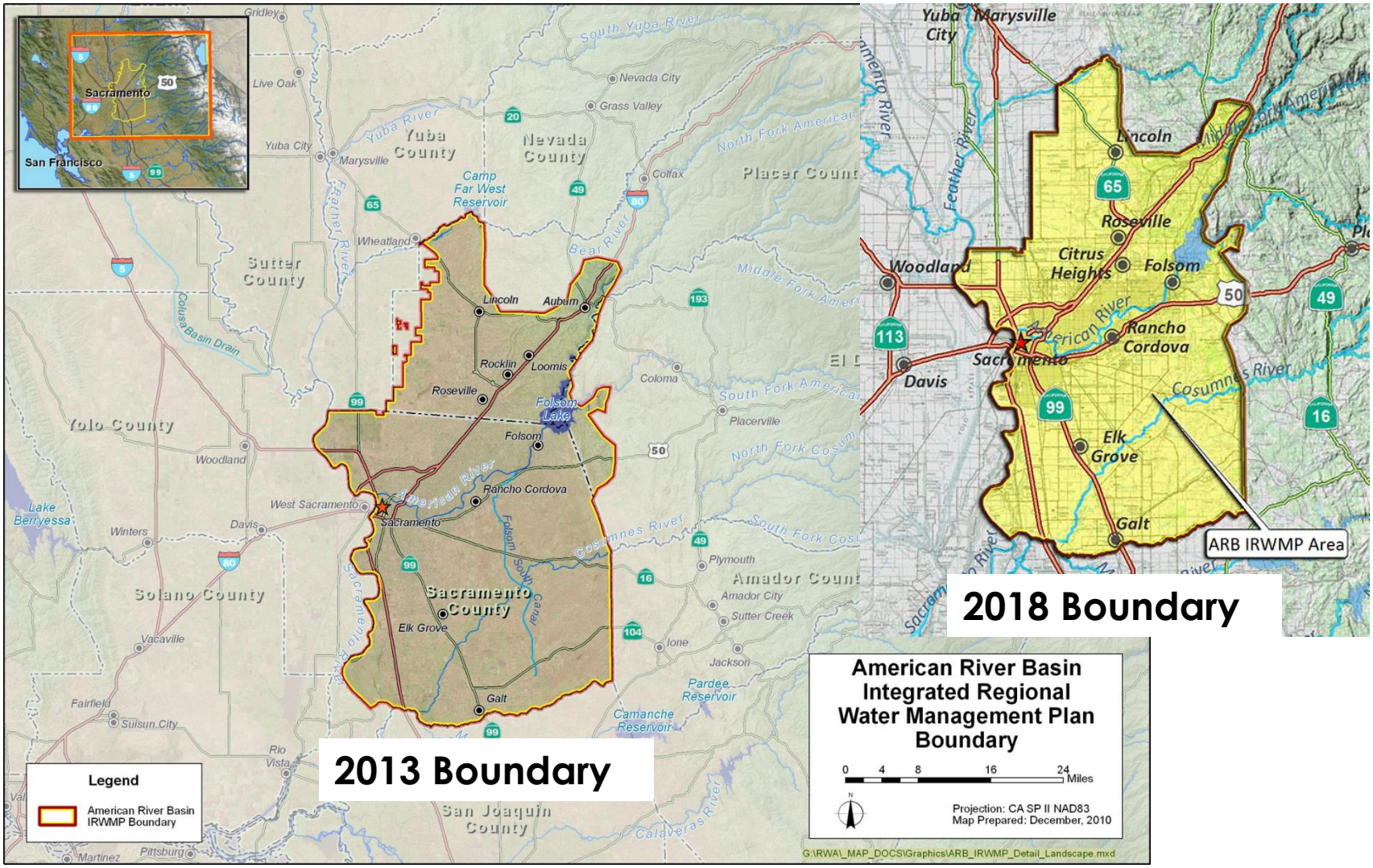
# Presentation Outline

- American River Basin Integrated Regional Water Management Plan (ARB IRWM Plan) Update
- What is conjunctive use?
- How do we recharge the basin?
- Overview of Regional Water Reliability Plan (RWRP)
- RWRP conjunctive use analysis
- Regional summary of recharge and recovery potential
- Next steps

# ARB IRWM Plan Update

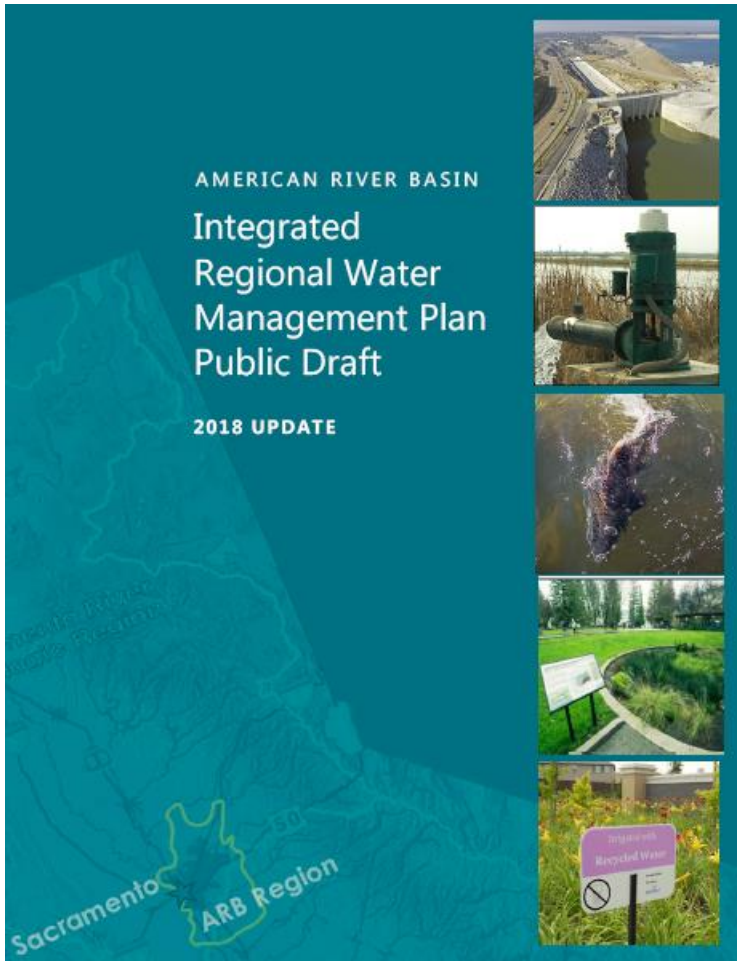
- ARB IRWM Plan most recently adopted in July 2013
- Department of Water Resources released new guidelines associated with Prop 1 in 2016
- Current update is fairly limited
- Supported by $250K grant from DWR
- Key updates include:
  - Water supply climate change vulnerabilities and mitigation measures
  - Updates associated with Sustainable Groundwater Management Act and Stormwater Resources Planning Act
- Minor boundary modification

# ARB IRWM Plan Update (cont.)



# ARB IRWM Plan Update (cont.)

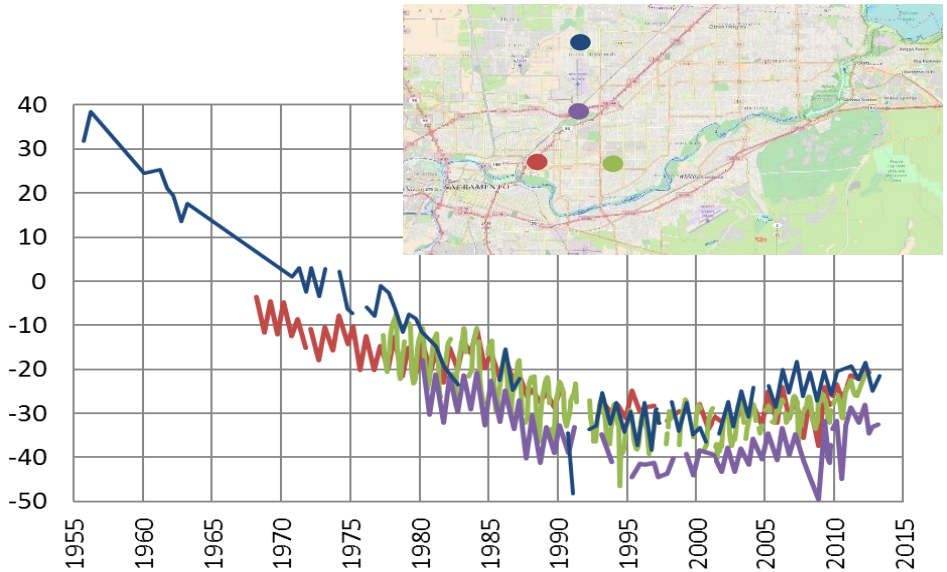
- Draft released April 23rd
- Comments due May 25
- RWA Board to consider adoption on July 12
- Will also incorporate the ARB Stormwater Resources Plan (SWRP) and the West Slope SWRP on July 12 as required by Senate Bill 985
- DWR Prop 1 IRWM Implementation Grant applications expected in mid-2018



# What is Conjunctive Use?

- Coordinated management of both surface water and groundwater to ensure supply reliability through variable hydrologic conditions
  - Maximize surface water during wet periods
  - Maximize groundwater during dry periods
- Requires availability of both sources of supply
- Requires suitable infrastructure to move different sources of water throughout region (e.g., Cooperative Transmission Pipeline, Freeport Pipeline)

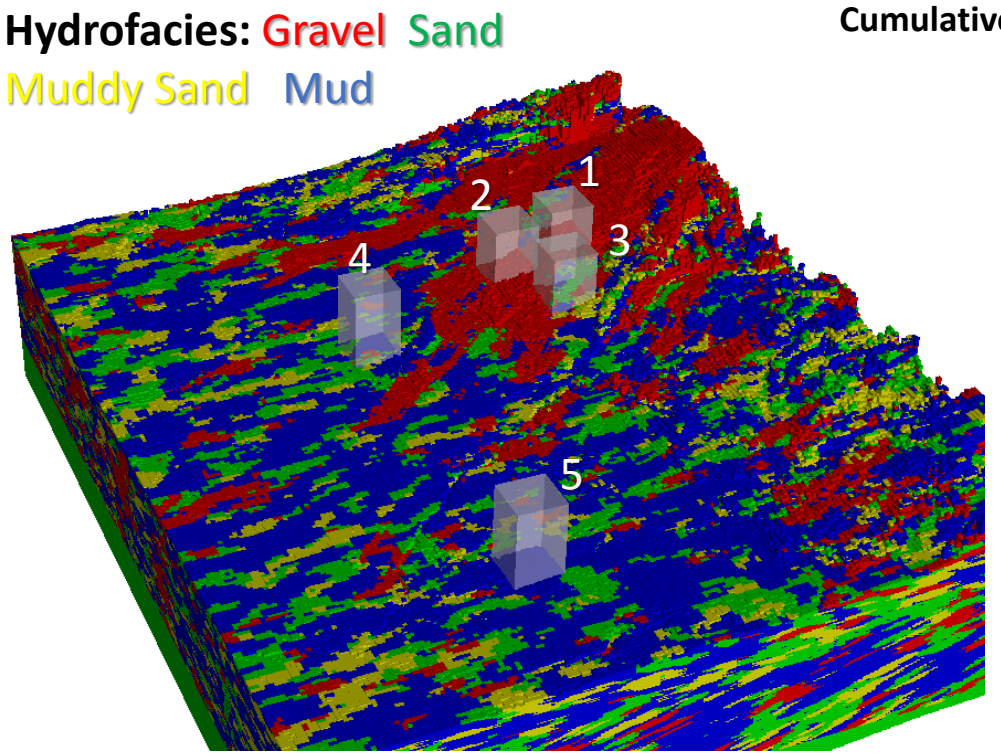
# How Do We Recharge Basin?

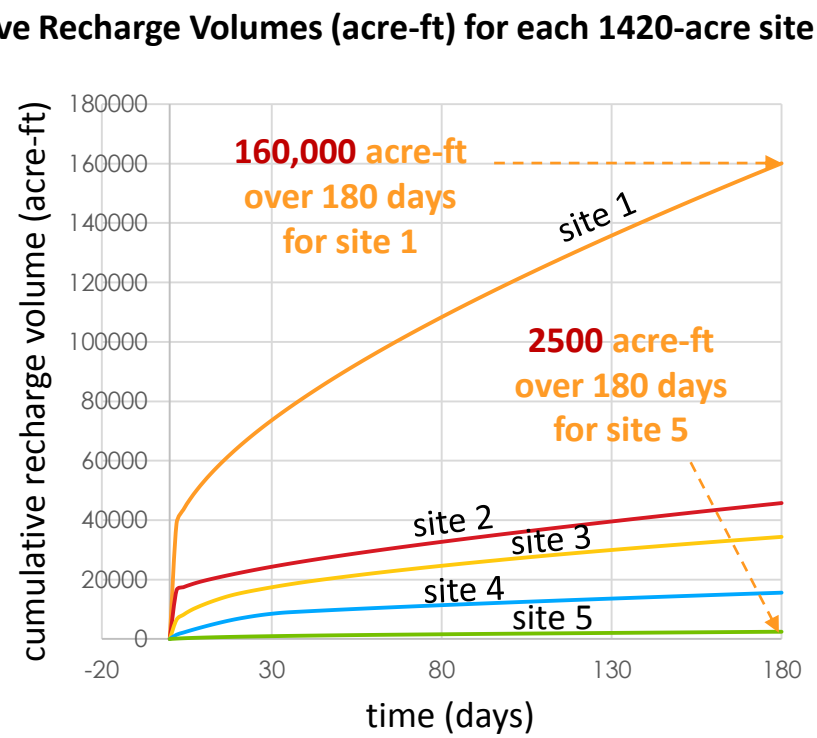



- In-lieu
  - Provide surface water to an existing groundwater user
- Direct
  - Surface recharge (impoundments/spreading)
  - Wells
    - Dry wells
    - Aquifer storage and recovery (ASR) wells

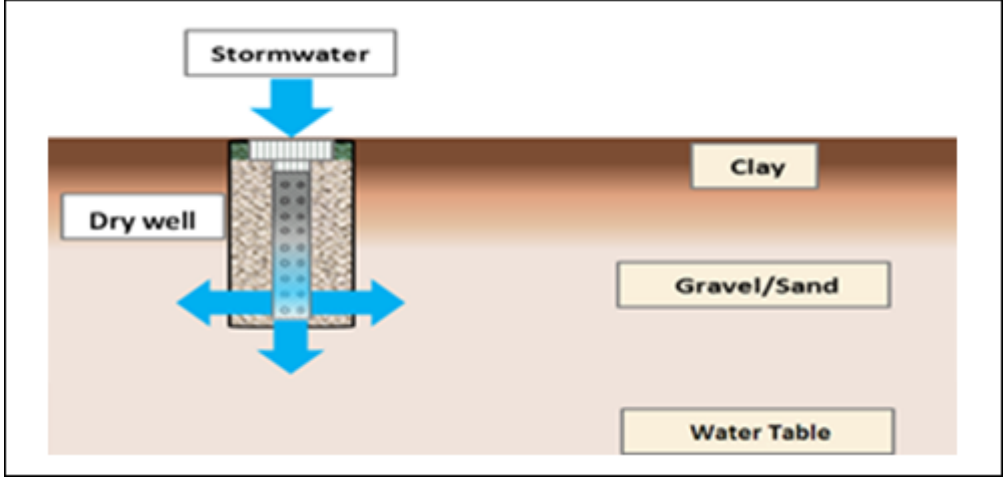
# Surface Recharge

- Much of area not conducive to direct recharge
- West Placer GSA recharge evaluation
- UC Davis work in central and south Sacramento County



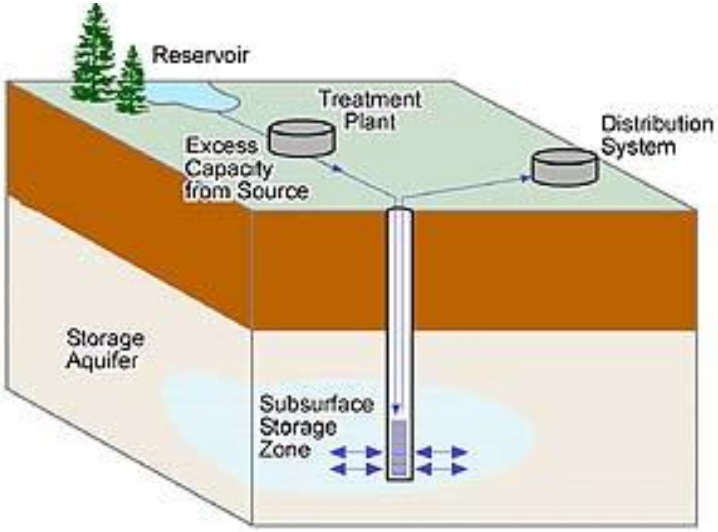
# Dry Wells




- Used mostly for stormwater capture
- Used often to get through hardpan or other shallow clay
- Local stormwater stakeholders have been looking at ways to streamline permit process
- Biggest concern over water quality
- Expect to see expansion in future

# ASR Wells


- Groundwater wells that can both inject and extract groundwater
- Typically inject at half rate of extraction
- Used in Roseville, Woodland
- Permit process has improved
- Local agencies interested in technical/financial feasibility



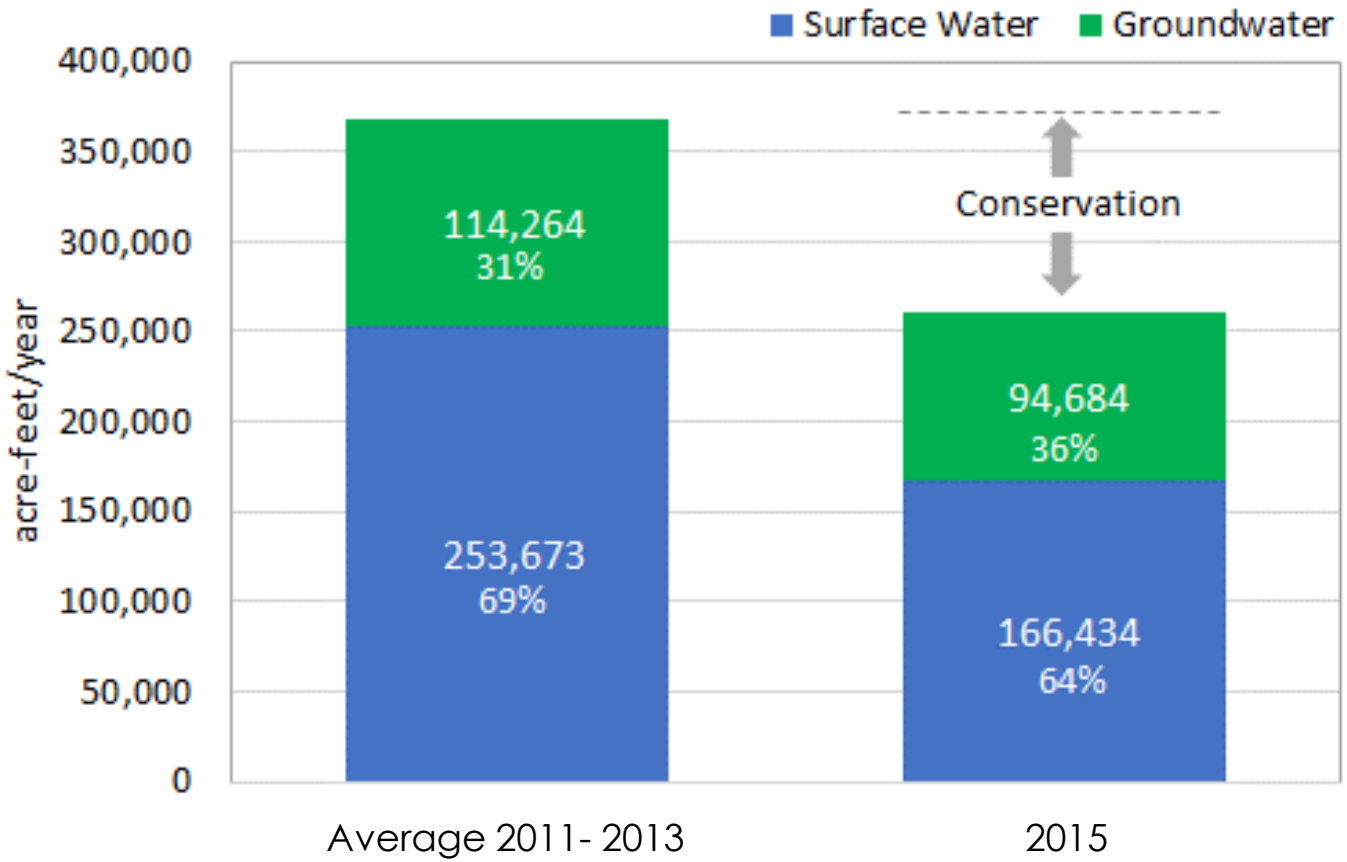
# Regional Water Reliability Plan

- Plan to improve water supply reliability by assessing:
  - Vulnerabilities of each agency
  - Mitigation measures to help overcome vulnerabilities
- Intent is to have "basic levels of service" as defined by each water agency under varying conditions
- Look at expanding conjunctive use as a key strategy to help mitigate threats faced by region
- Begin exploring interest in a Regional Groundwater Bank

# RWRP Conjunctive Use Analysis

- **What is the conjunctive use potential of adjacent public water systems in the region through the increased coordinated use of surface water and groundwater?**
  - **Recharge:** Store surface water in groundwater basin in wet years (i.e., increase surface water use)
  - **Recovery:** Withdraw stored water in dry years (i.e., increase groundwater use)
- Considered physical, operational, and water rights/contract constraints.
- Looked at current and near-term (<10 year) opportunities

# Current Average vs. Dry Year Use




**Historical Regional**
**Surface Water vs. Groundwater Use**

- Larger percentage of demand met by groundwater in dry years
- Lower reliance on surface water in dry years

# Recharge Assumptions

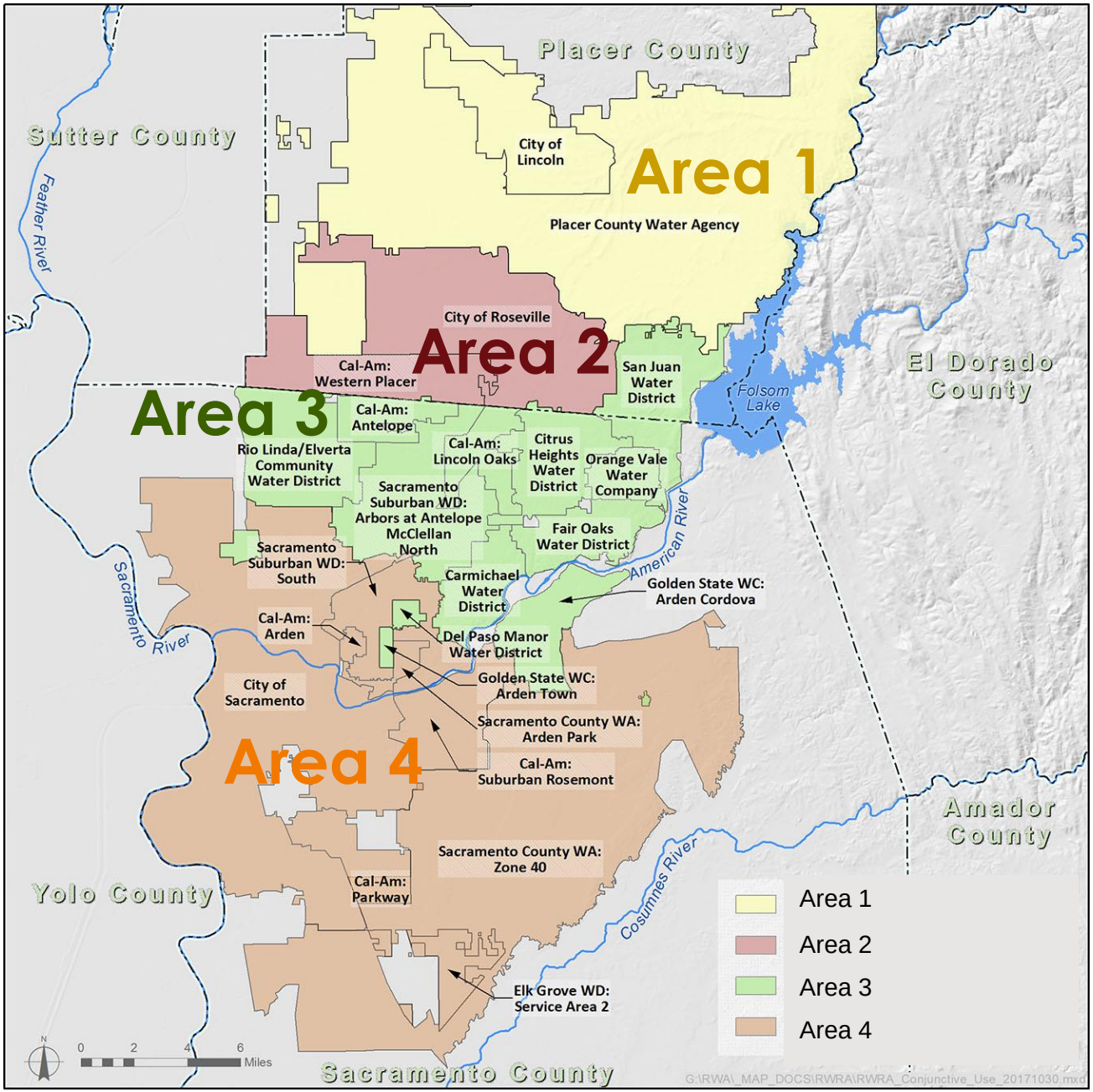
- **Two Methods for Recharge Considered:**
  - In-lieu
  - Direct recharge (ASR)

- **Baseline Conditions:** average 2011 to 2013

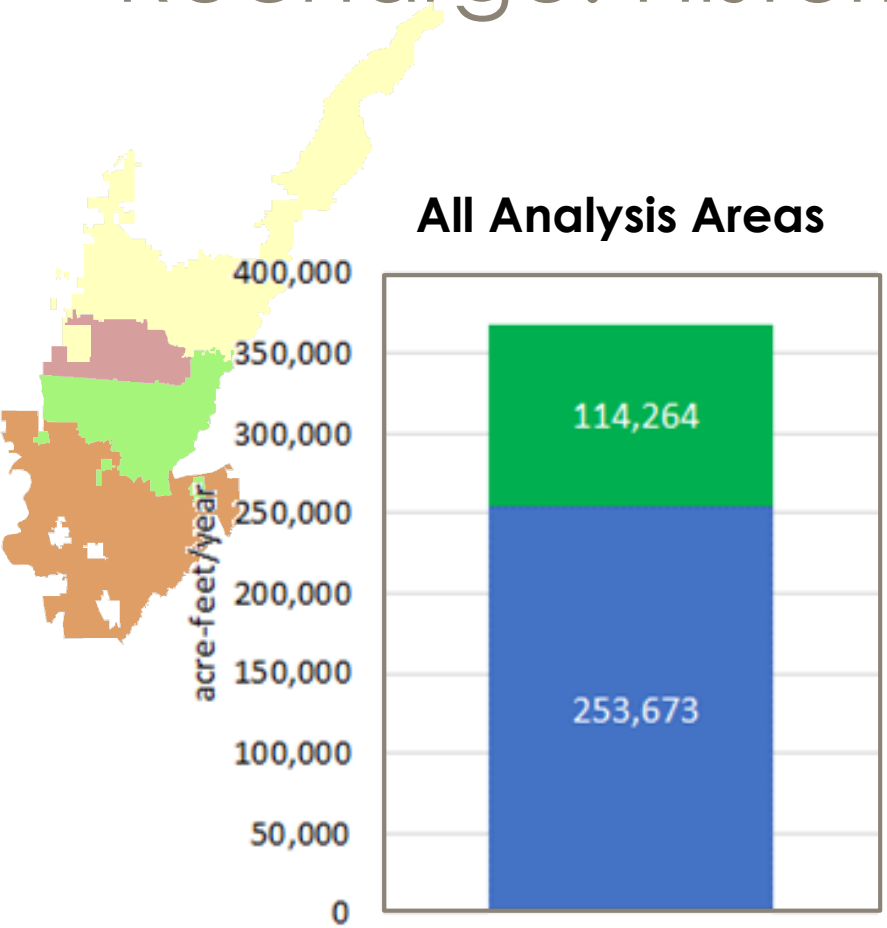
- **Constraints Considered:**
  - Existing water rights/contract terms
  - Water treatment plant capacity
  - Conveyance/intertie capacity
  - Whether or not systems use fluoridation

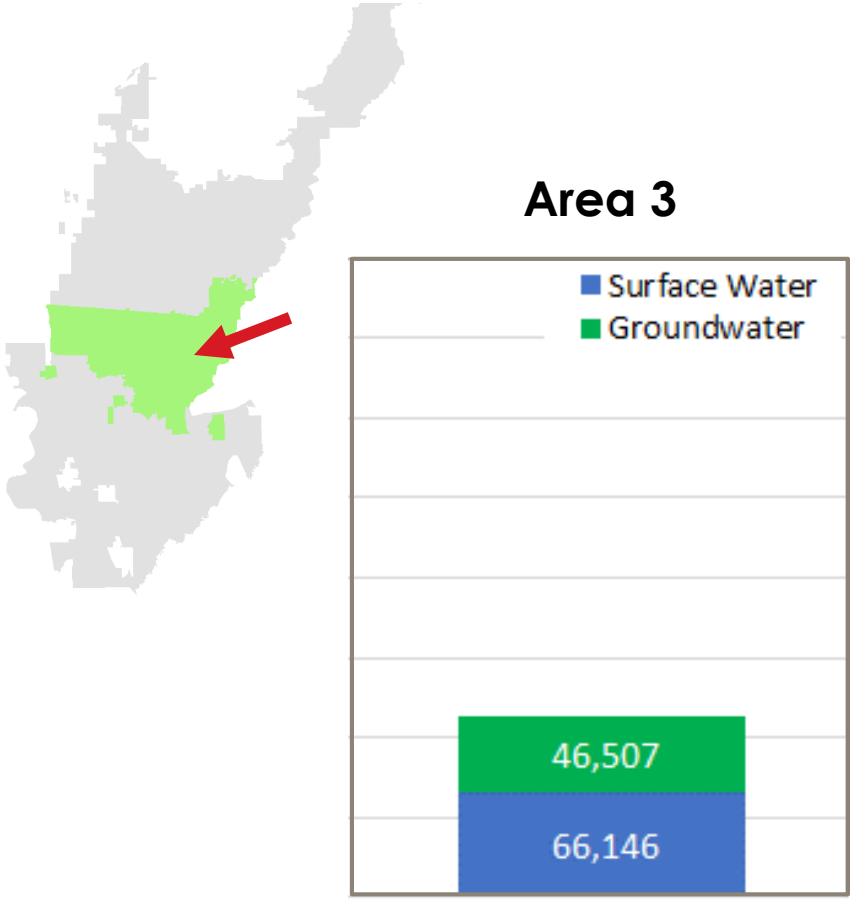
- **Constraints Not Considered:**
  - Cost of water
  - Existing individual agreements

# Analysis Areas

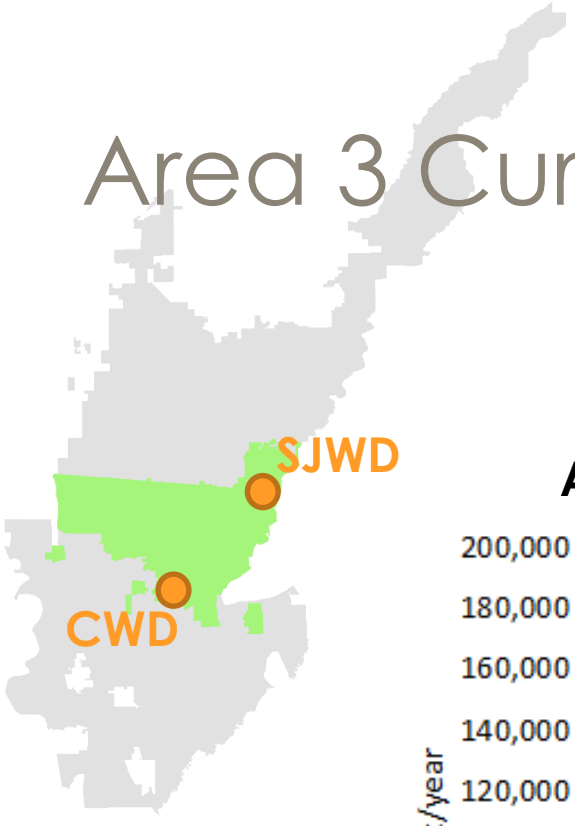


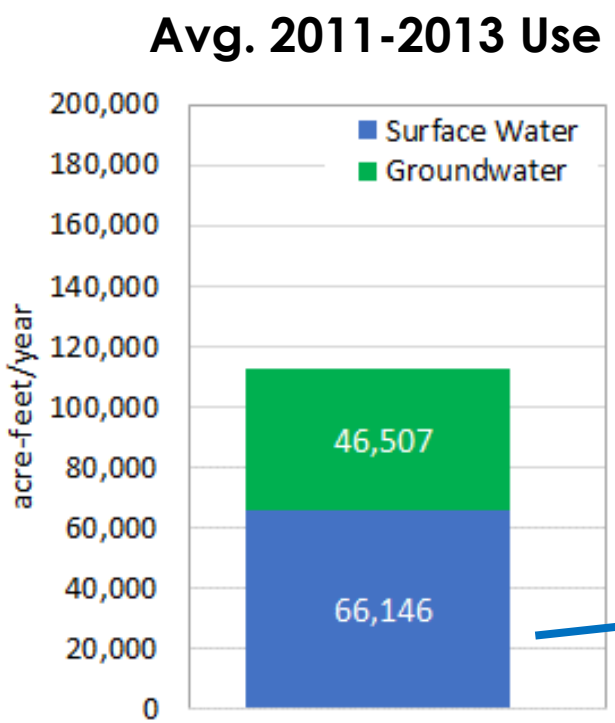
# Recharge: Historical 2011-2013 Use

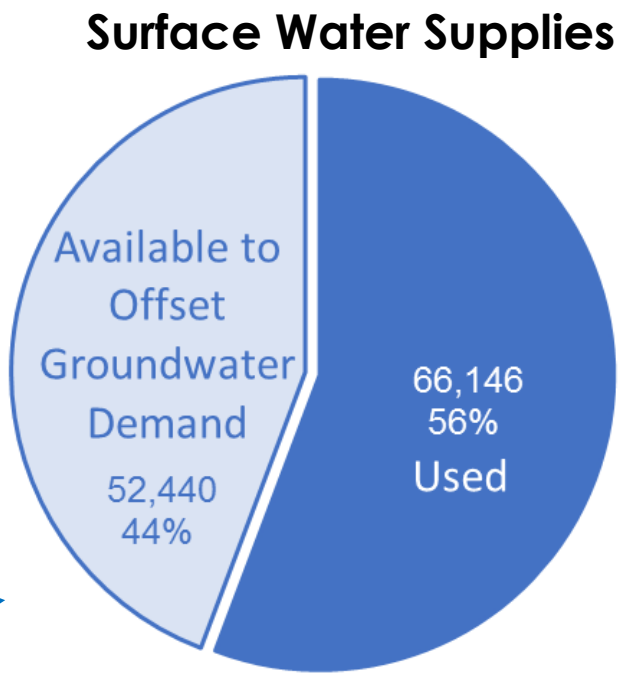


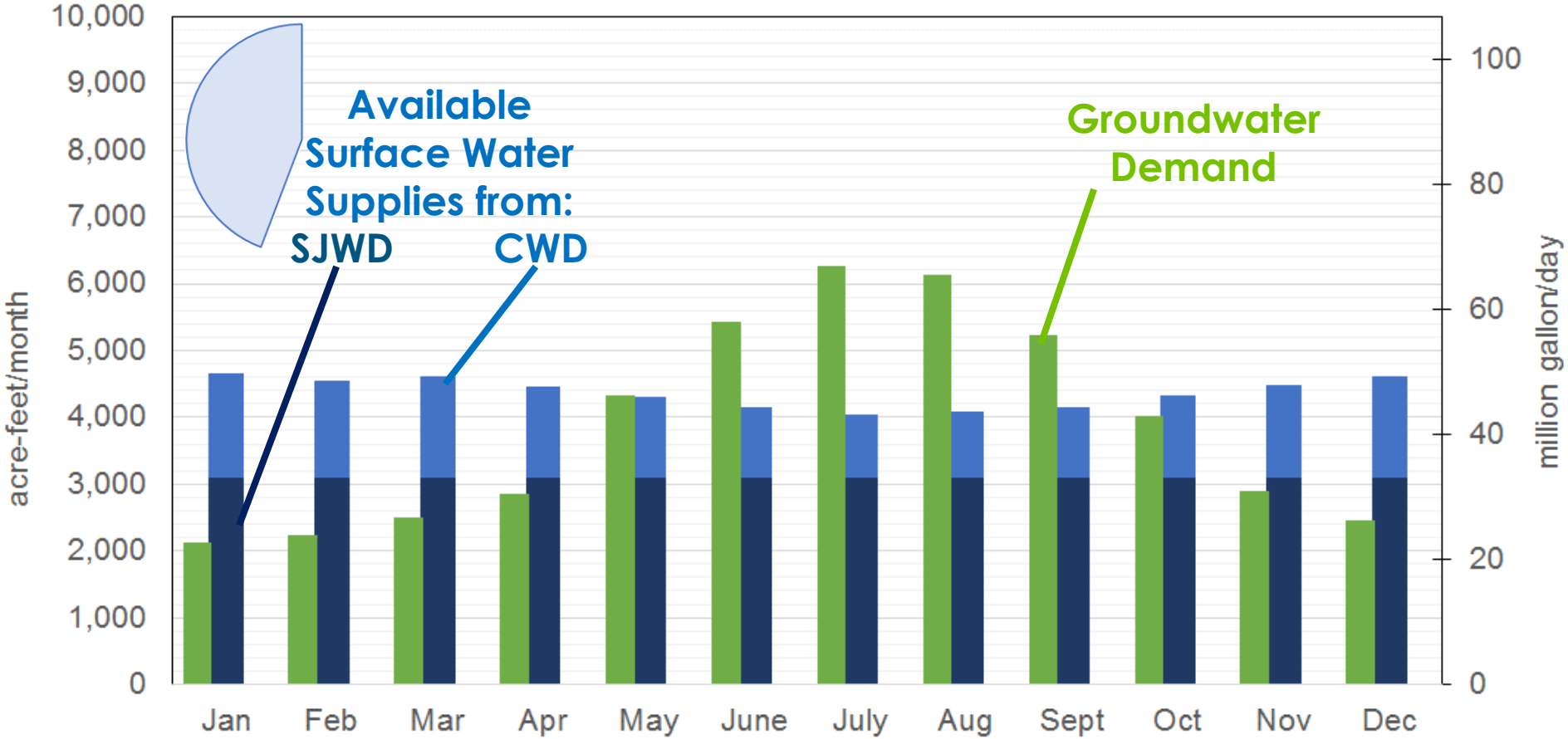
# Area 3 Current Baseline



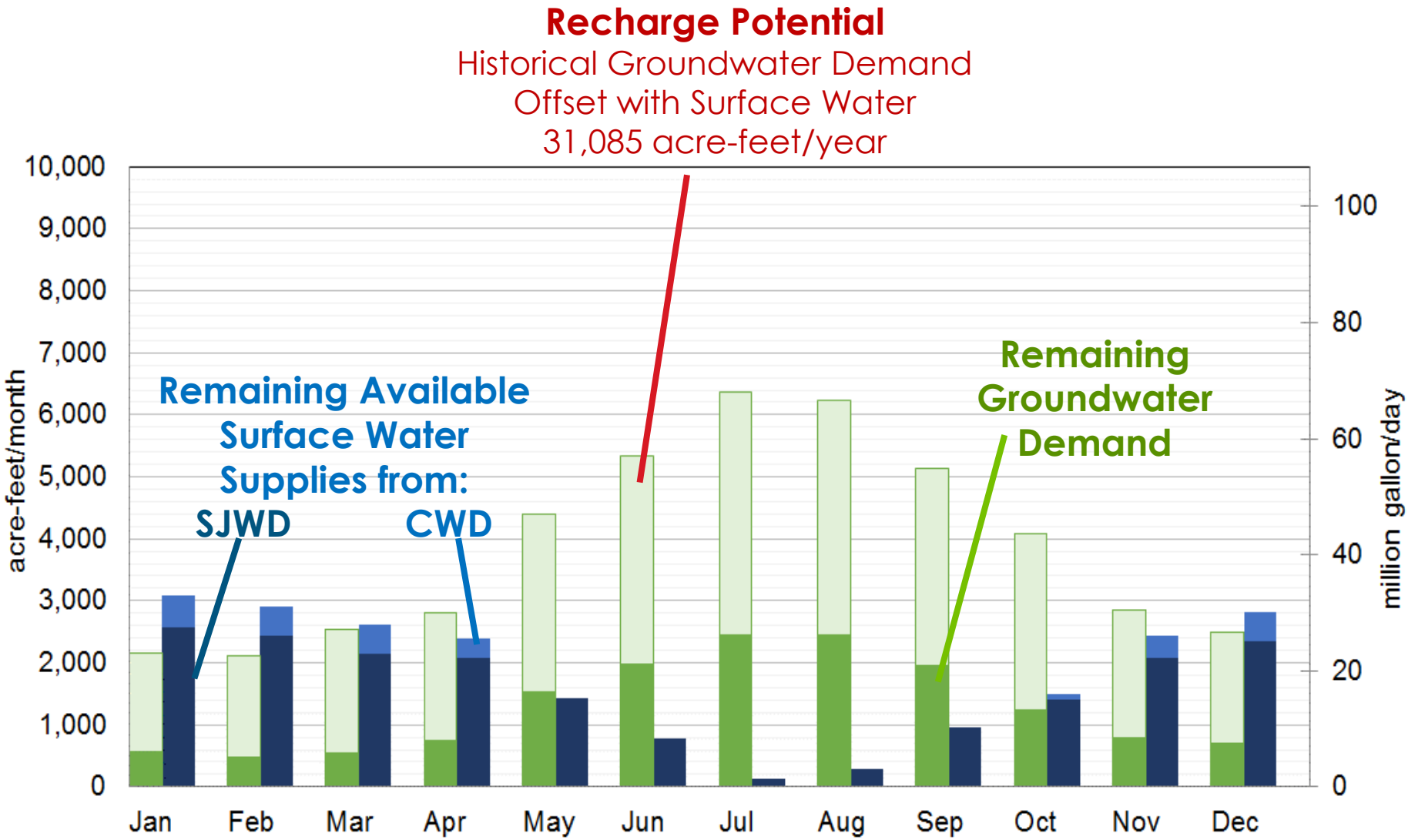



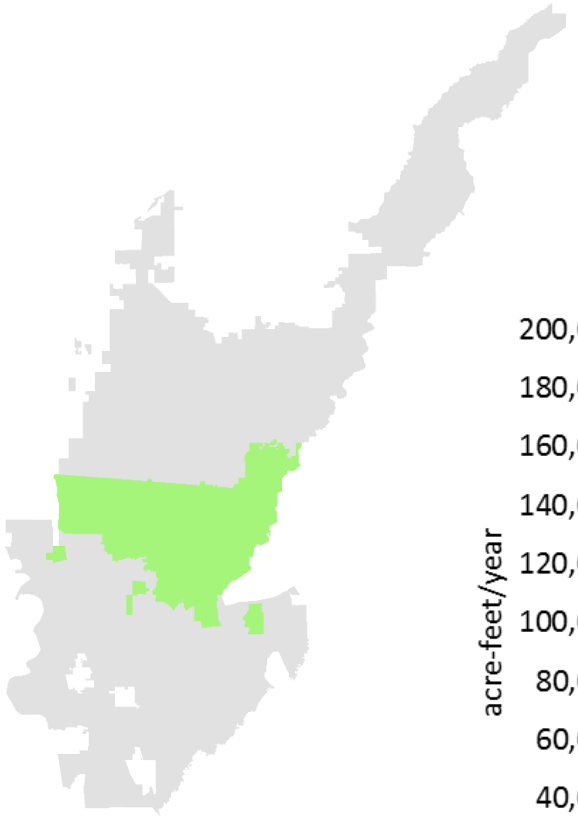
# Area 3 Current Baseline (Avg. 2011-2013)



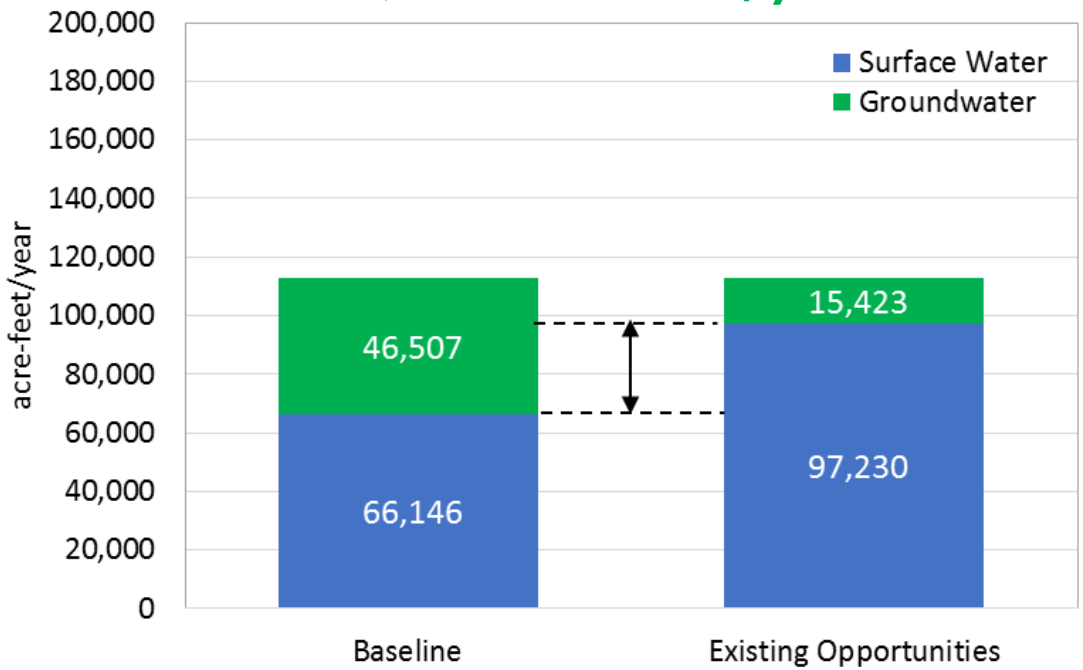
# Area 3 Current Recharge Potential



# Area 3 Current Recharge Potential



**Potential to replace groundwater use with surface water by**
**31,085 acre-feet/year**




(Average 2011-2013)

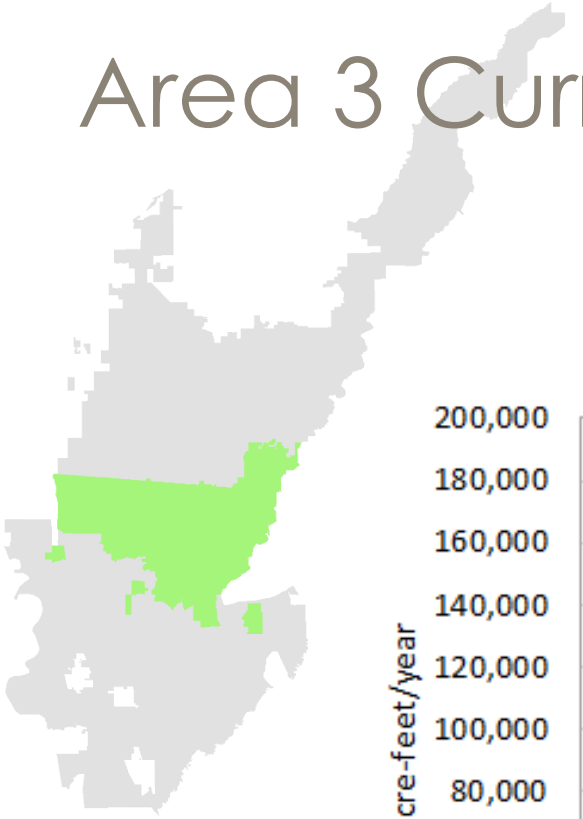
# Current Recharge Opportunities (Region-Wide)

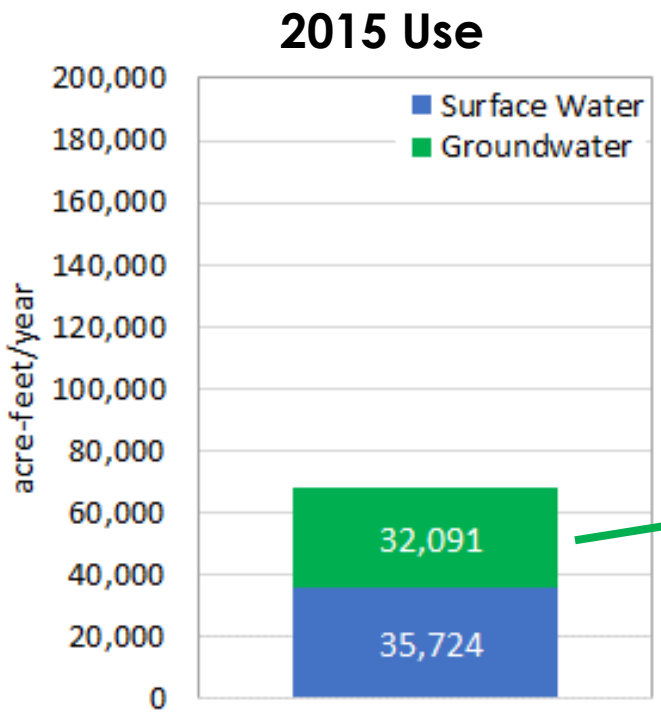
| Basin Area | Existing Groundwater Demand (AF/year) | Recharge Potential (AF/year) | Key Limitations |
|---|---|---|---|
| Area 1  | 2,025 | 1,012 | • Limited existing M&I groundwater use |
| Area 2  | 0 | 5,823 (ASR) | • Limited existing M&I groundwater use |
| Area 3  | 46,507 | 31,085 | • Interties limitations<br>• Need to maintain some groundwater production |
| Area 4  | 65,732 | 25,302 | • Interties limitations<br>• Limited intra-district infrastructure<br>• Uncertainty of future availability of surface water from Fairbairn WTP. |
| **TOTAL** | **120,087** | **63,221** | |

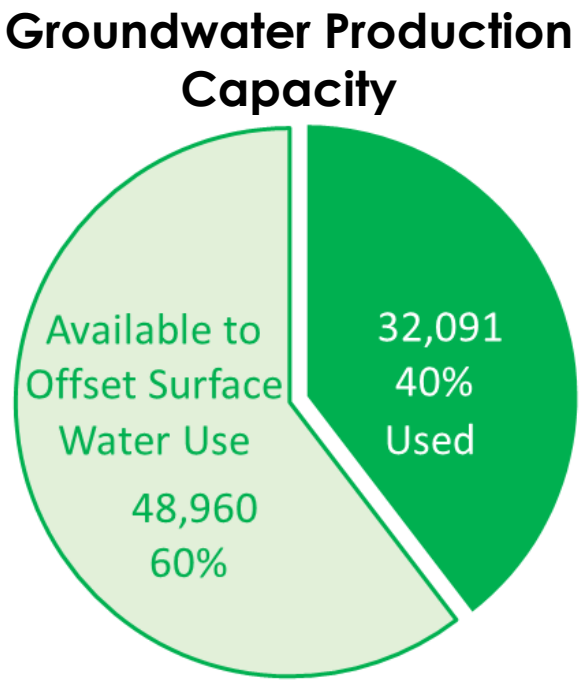
# Recovery Assumptions

- **Recovery Capacity:** correlated to groundwater production in dry years
- **Baseline Conditions:** Year 2015
- **Constraints Considered:** Conveyance capacity, groundwater production

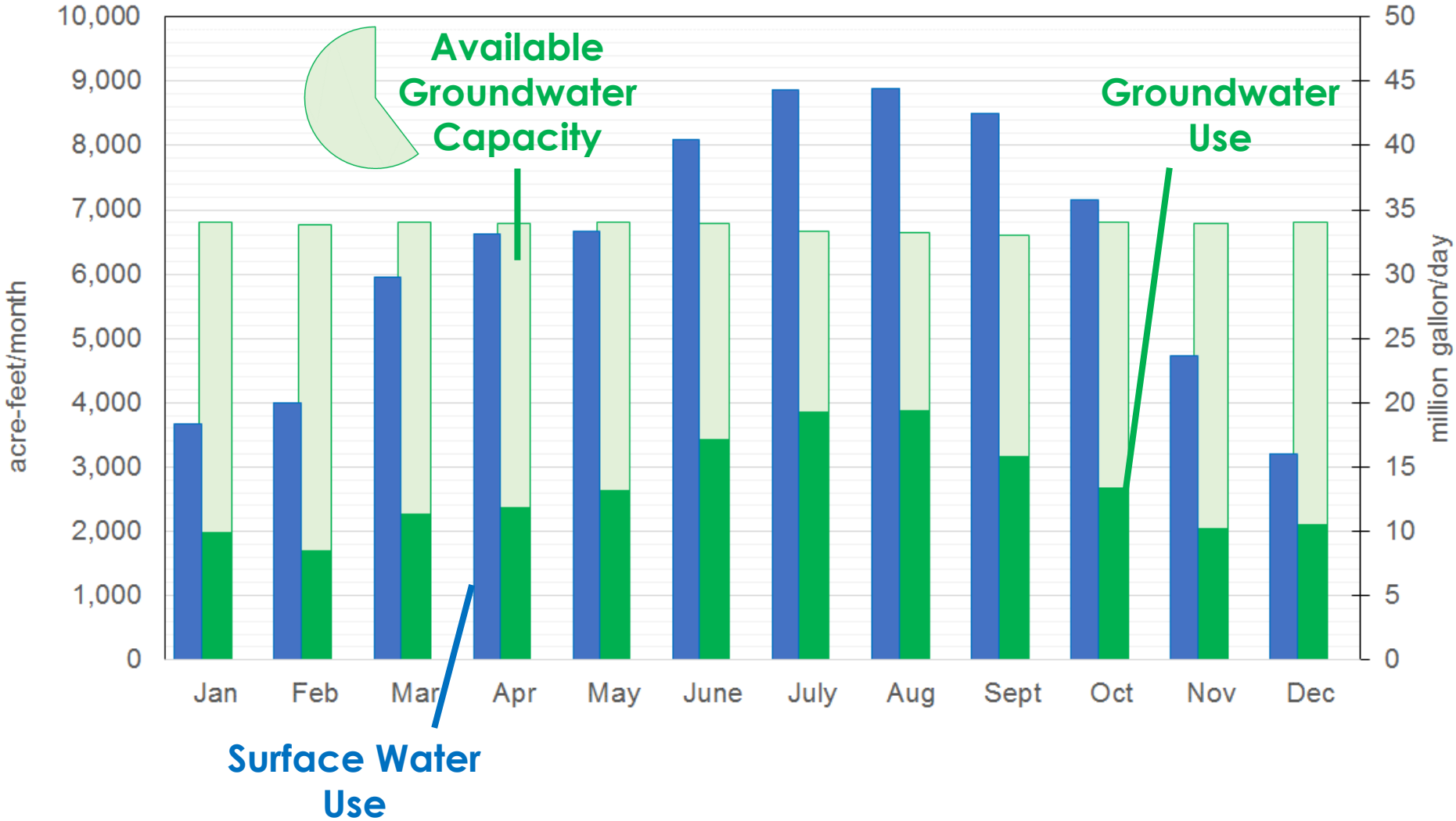
# Area 3 Current Baseline (Dry Year)



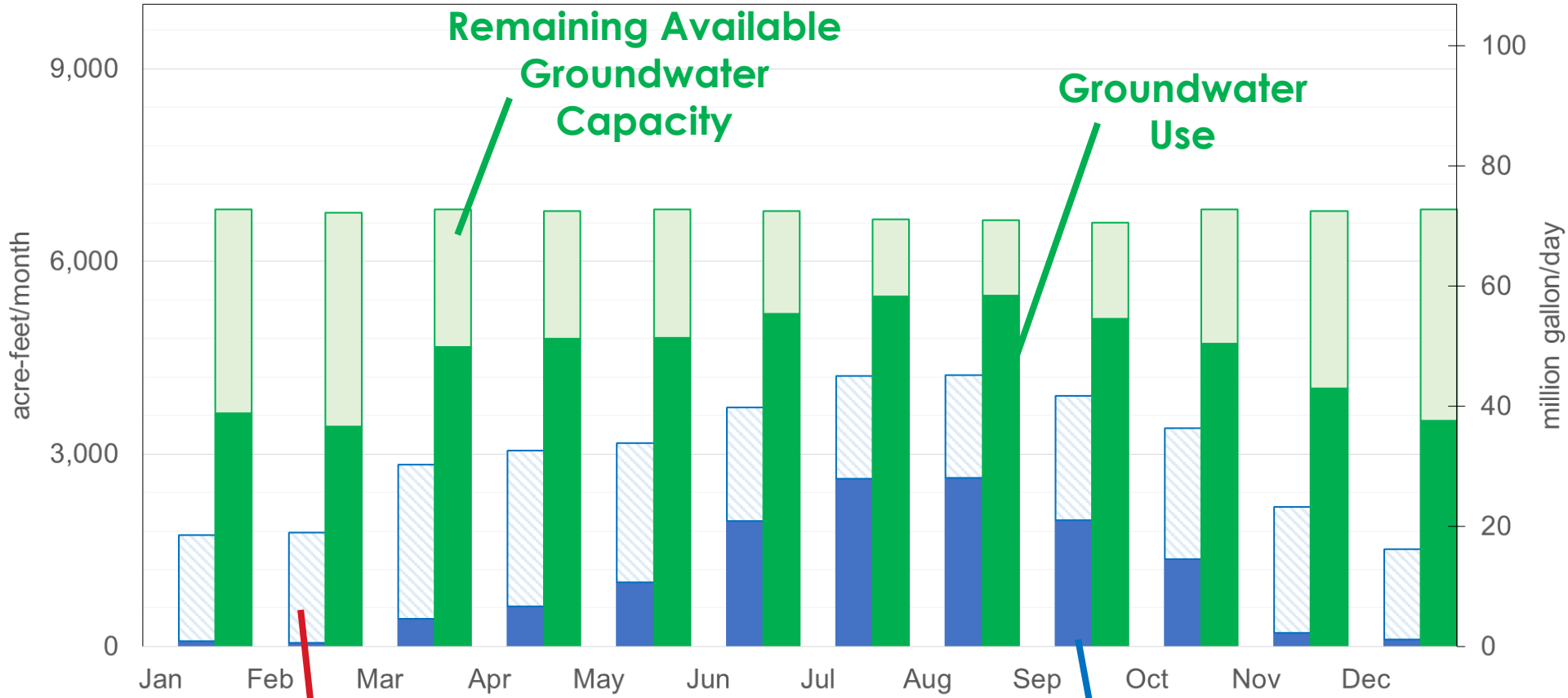


# Area 3 Current Baseline (Dry-Year)



# Area 3 Current Recovery Potential (Dry-Year)




**Recovery Potential**

Historical Surface Water Use Offset with Groundwater

22,682 acre-feet/year

**Remaining Surface Water Use**

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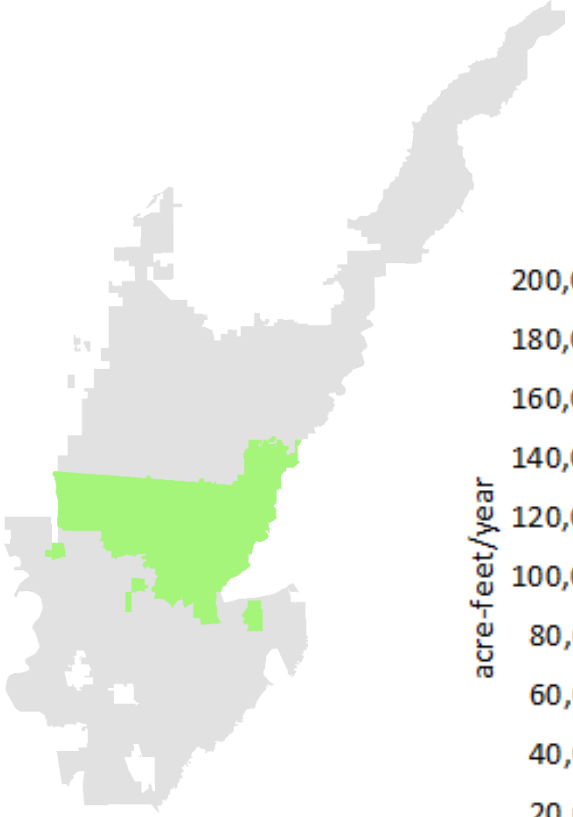
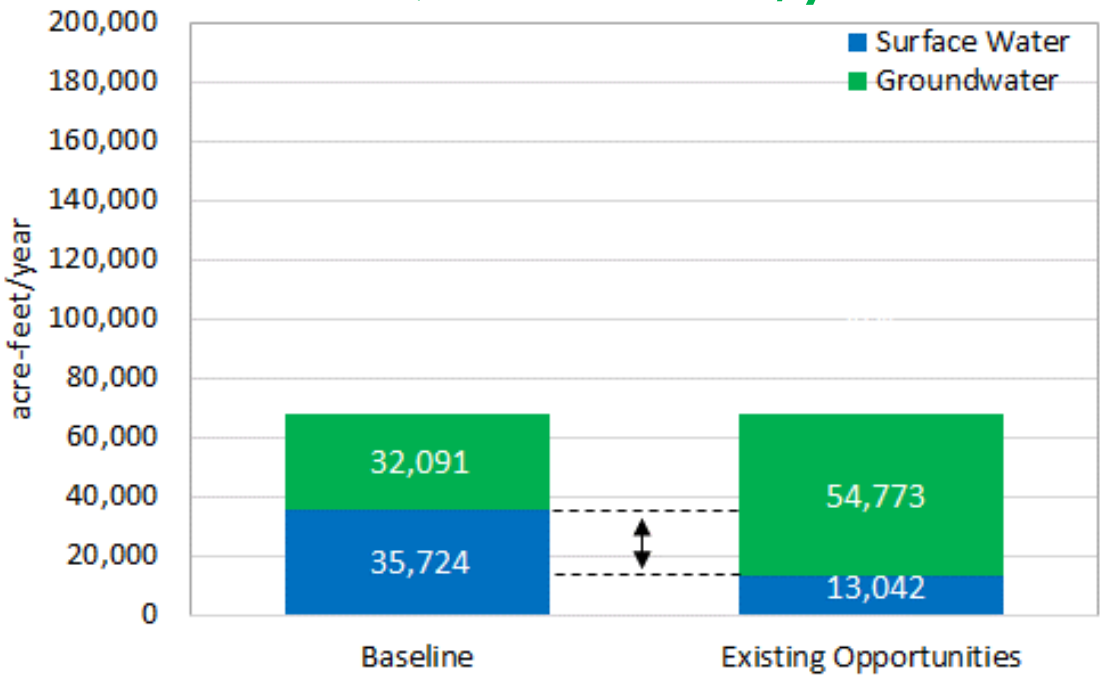
# Area 3 Current Recovery Potential (Dry-Year)



**Potential to replace surface water use with groundwater by**
**22,682 acre-feet/year**



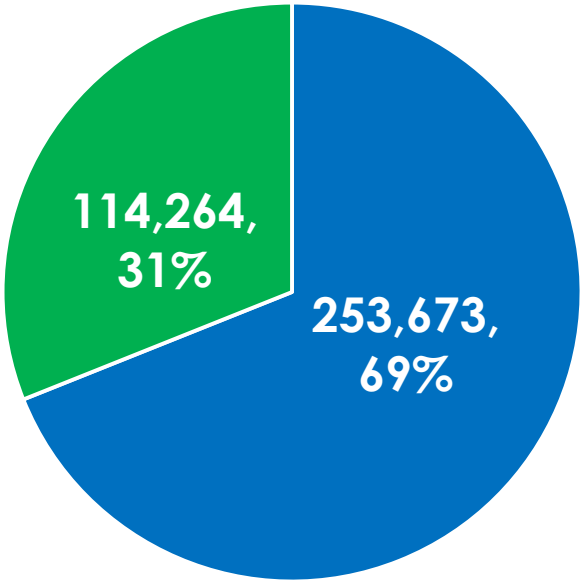

(Year 2015)

# Current Recovery Opportunities

| Basin Area | Existing Surface Water Use (AF/year) | Reduction in Surface Water Use (AF/year) | Key Limitations |
|---|---|---|---|
| Area 1  | 29,279 | 4,215 | • Limited groundwater production capacity |
| Area 2  | 23,646 | 3,504 | • Policies and customer preferences limiting M&I groundwater use. |
| Area 3  | 37,724 | 22,682 | • Regional intertie limitations |
| Area 4  | 77,785 | 27,433 | • Regional intertie limitations |
| **TOTAL** | **166,434** | **57,835** | |

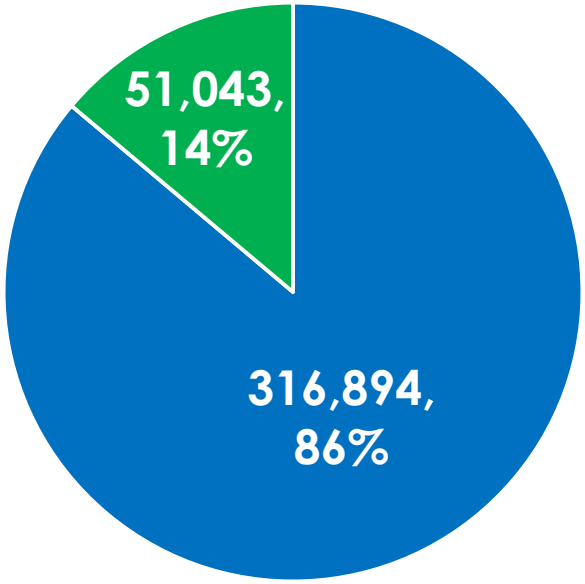
# Regional Summary – Recharge Opportunity

Actual
(2011-13 Average)




Surface Water Groundwater

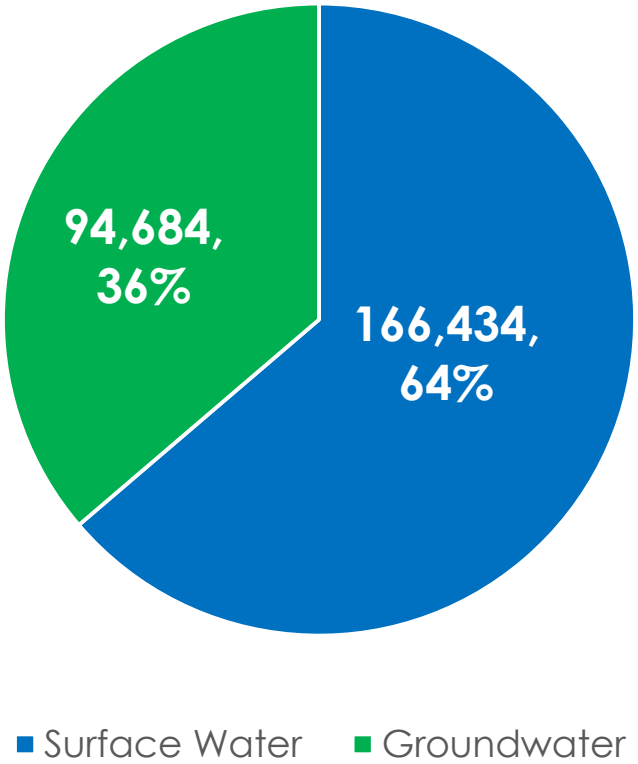
Potential
(2011-13 Average)



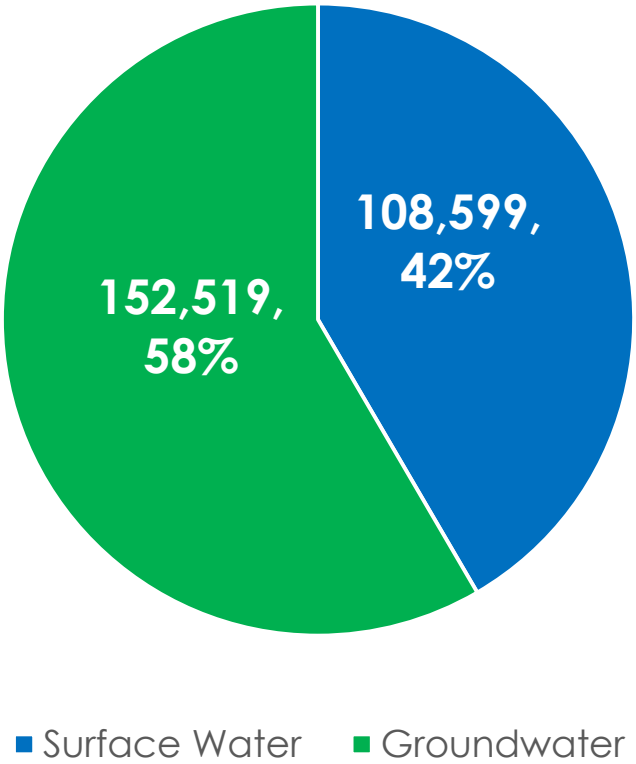

Surface Water Groundwater

# Regional Summary – Recovery Opportunity

Actual (2015)




Potential (2015)

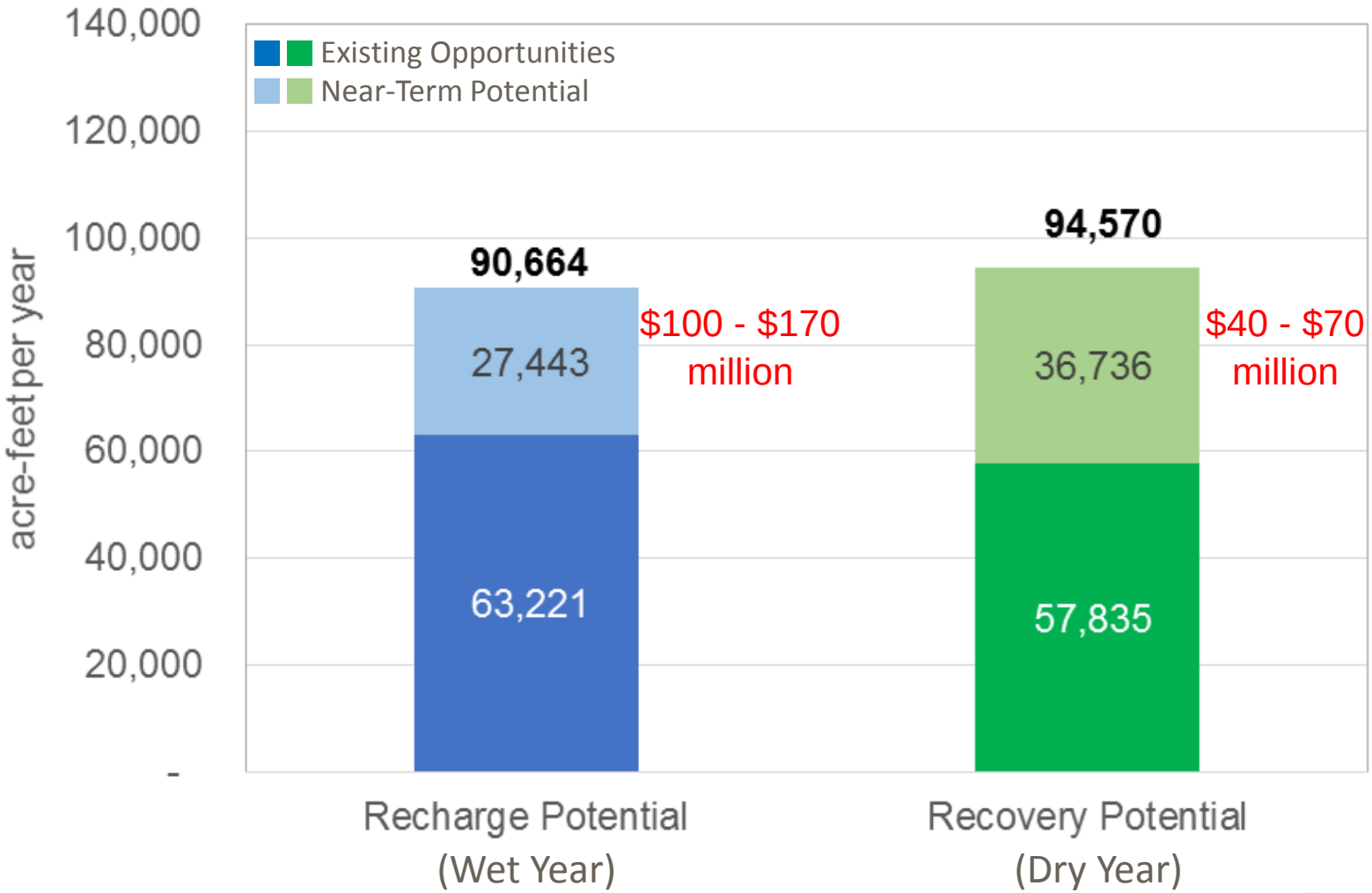


# Regional Summary – Near-Term Options to Expand Conjunctive Use

## Mitigation actions to address limitations to recharge and recovery:

- Construct 11 **interties**
- Improve **in-district infrastructure** for 3 agencies
- Address distribution **system pressure** for 4 agencies
- New/expanded **ASR** for 7 agencies
- Over 14 new **well installation/rehabilitation**
- Policy & operational changes

# Regional Summary: Current vs. Near-Term Opportunities

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# Next Steps

**Regional Water Reliability Plan**

Vulnerabilities, mitigation measures, look at current and expanded conjunctive use from near and long-term improvements, explore interest in groundwater bank

**Regional Model Development**

Technical analysis to further define yield created by expanded conjunctive use and evaluate impacts

**Regional Groundwater Bank**

Evaluate potential market, establish governance, and complete environmental analysis

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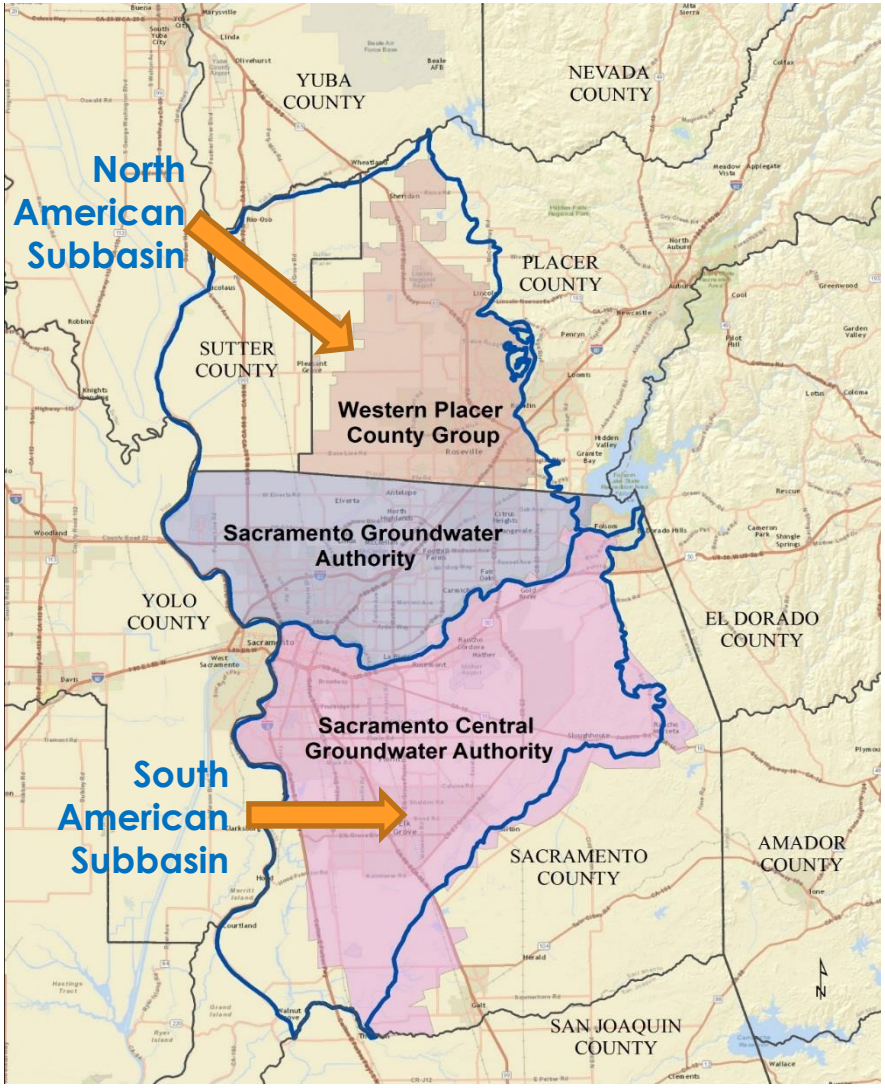
# Regional Groundwater Bank

- Increase water supply yield by using storage capacity of basin
  - Store in wet years
  - Recover in dry years
- Reduce impacts of future droughts and climate by establishing a local "reservoir" in the groundwater basin
- Promote investing in facilities and operations needed for local reliability

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