# RANCHO MURIETA CSD BOARD MEETING

## 2024 INTEGRATED WATER MASTER PLAN UPDATE

April 17, 2024

ADKINS ENGINEERING & SURVEYING

Maddaus Water Management Inc.

# Following IWMP Engineering Assessment Phases

**Supply**

- OneWater Portfolio
- Water Rights
- Historic USGS data river flows
- Pumping Volumes and Storage Levels
- Climate Change

**Demand**

- Development by Lot Type
- Demand Trends
- Past Conservation
- Proposed Development

**Scenarios/ Options**

- Interactive Tool Modeled Scenarios
- Run Shared Vision Model (SVM) “what if” reductions
- Run SVM “what if” supplemental supplies
- Capital Projects utilizing hydraulic model
- Key Options
- Findings
- Community Discussion/Board Decisions

# Supply Recap

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# Supply StoryMap

- [Rancho Murieta Community Water System StoryMap]

https://tinyurl.com/ywduwyc3




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# Supply Recap

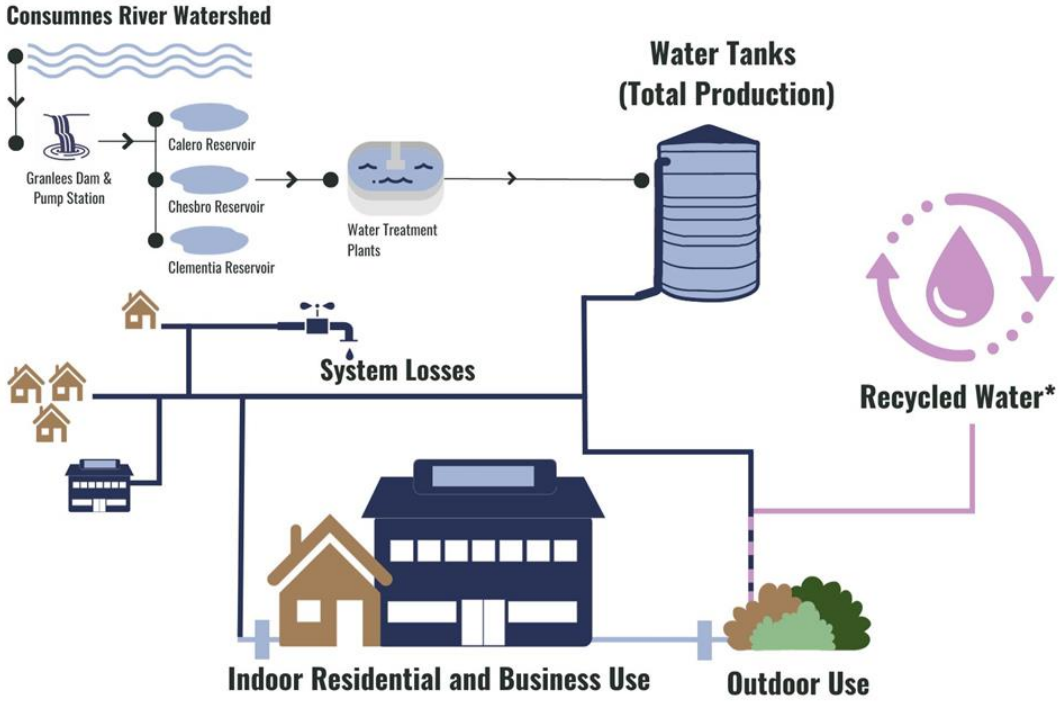
- Of the 4,400 AF of "Usable" Storage Capacity with Flashboards (rounded to nearest 10 AF)
  - Calero – 2,330 AF
  - Chesbro – 1,110 AF
  - Clementia – 960 AF
- Primary Surface Water Permit (copy on Supply StoryMap)
  - The maximum rate of direct diversion (directly to the water treatment plant) is six (6) cubic feet per second (cfs) and the maximum rate of diversion to offstream storage shall not exceed forty-six (46) cfs.
  - The amount diverted to storage shall not exceed four thousand and fifty (4,050) acre feet, with 3,900 acre feet per year (AFY) from the Cosumnes River
- Recycled Water (rounded to nearest AF)
  - Current system supply – 437 AF
  - Future system supply – 955 AF (average precipitation years)

# Demand Recap

# Demand StoryMap

- Rancho Murieta Community Water Demands

https://tinyurl.com/3v5c5wvx



# Demand Recap

| | System Demands (acre-feet per year) |
|---|---|
| **Baseline Potable Water Existing Demands**<br>(based on 12/31/22 Connections) | 1,716 |
| **Projected Future Demands at Buildout**<br>* Note: Based on planned uses and known values | 1,574* |
| **Total Community Demands at Buildout**<br>**(with system losses)** | **3,290** |

Additional details on the Demands StoryMap

# Shared Vision Model
# Scenarios for System Resilience

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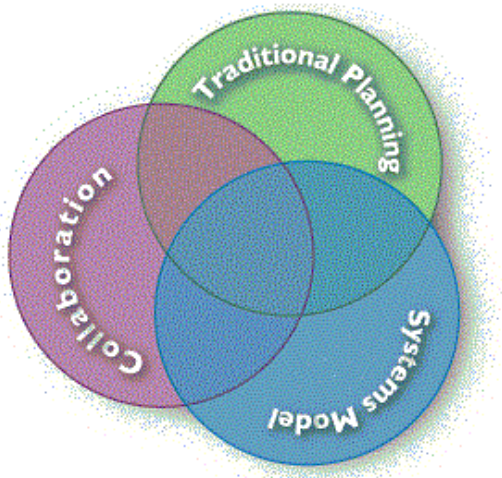
# Phase 3 – In-Process Scenario Planning

- **Engineering Perspective: Least Cost Planning for Robust System Resilience for the Whole Service Area**
  - Use a model to build scenarios
  - Analyze options
  - Discuss key alternatives
  - Additional public townhall discussion
  - Refine alternatives
  - Finish the documentation




Source: US Army Corps of Engineers Institute for Water Resources

# Key Choices Add More System Resiliency

- **Average Day with Climate Change**
  - Meet current and buildout demands
  - Option to Conserve More Water (Demand Reduction)
    - Further maximize recycled water
    - Meet future "Making Conservation Way of Life Laws"
    - Not accounted for in this analysis
- **Under "Worst Case" Drought Conditions**
  - Consider Clementia – original design of RMCSD Master Plan
  - Groundwater Well(s) – SB 552 Back-up Supply Law
  - Setting the 30% curtailment in planning effort could go lower
    (e.g., 40-50% cutback - note Water Code 10632 requires to plan for 50% cutback)

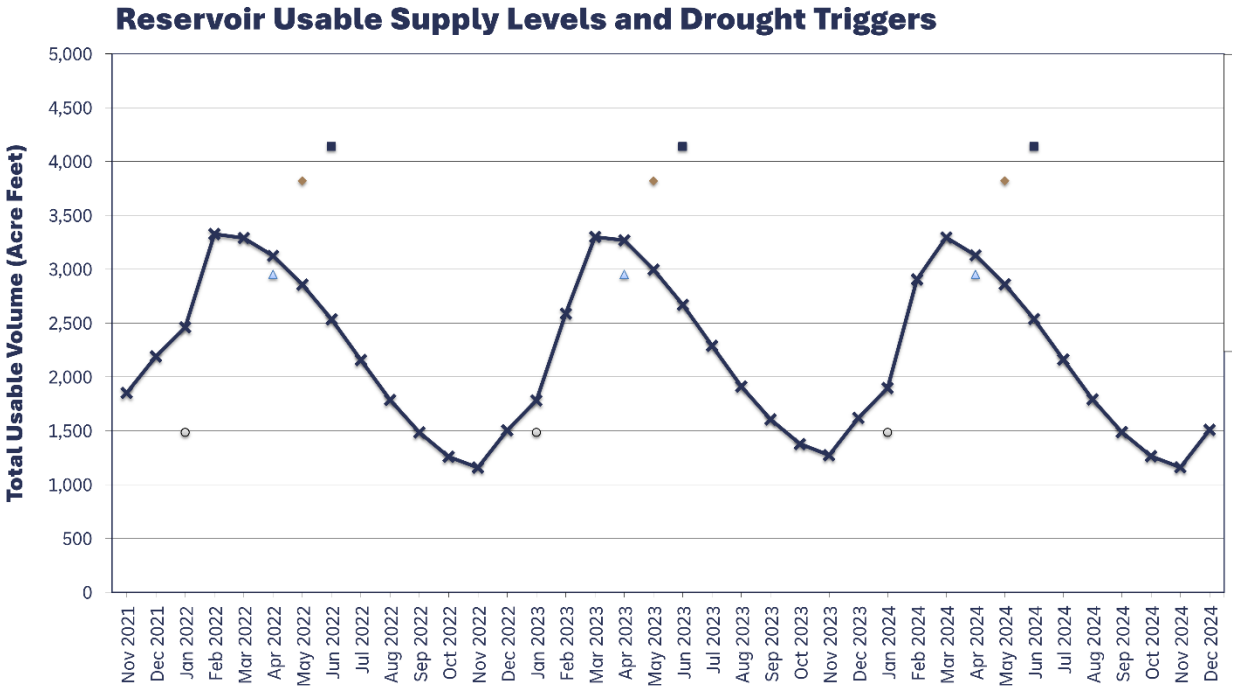
# Scenarios Summary

- **Scenario 1** – Average Recent Year with Climate Change
  - Have supply to meet Current Demand and Buildout Demand
    - Permitted water right, not permitted drinking water standards for Clementia
- **Scenario 2** – Historic "Worst-Case" Drought with Climate Change
  - Supply cannot sustain Current or Buildout Demand without augmentation

## Next Steps

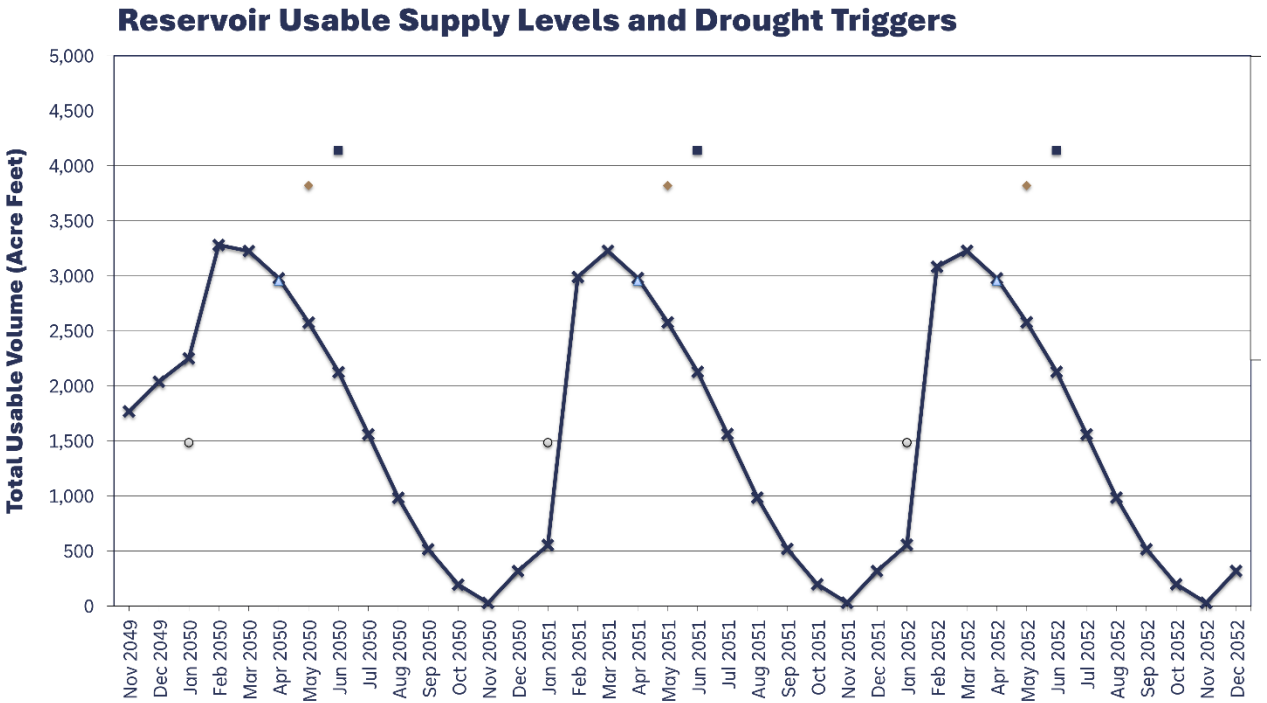
- **Scenario 3** – Historic "Worst-Case" Drought with Climate Change Augmentation Alternatives
  - Current Demand
  - Buildout Demand
  - Other supply augmentation alternatives

# Scenario 1a – Average Recent Year with Climate Change Current Demand Outcome



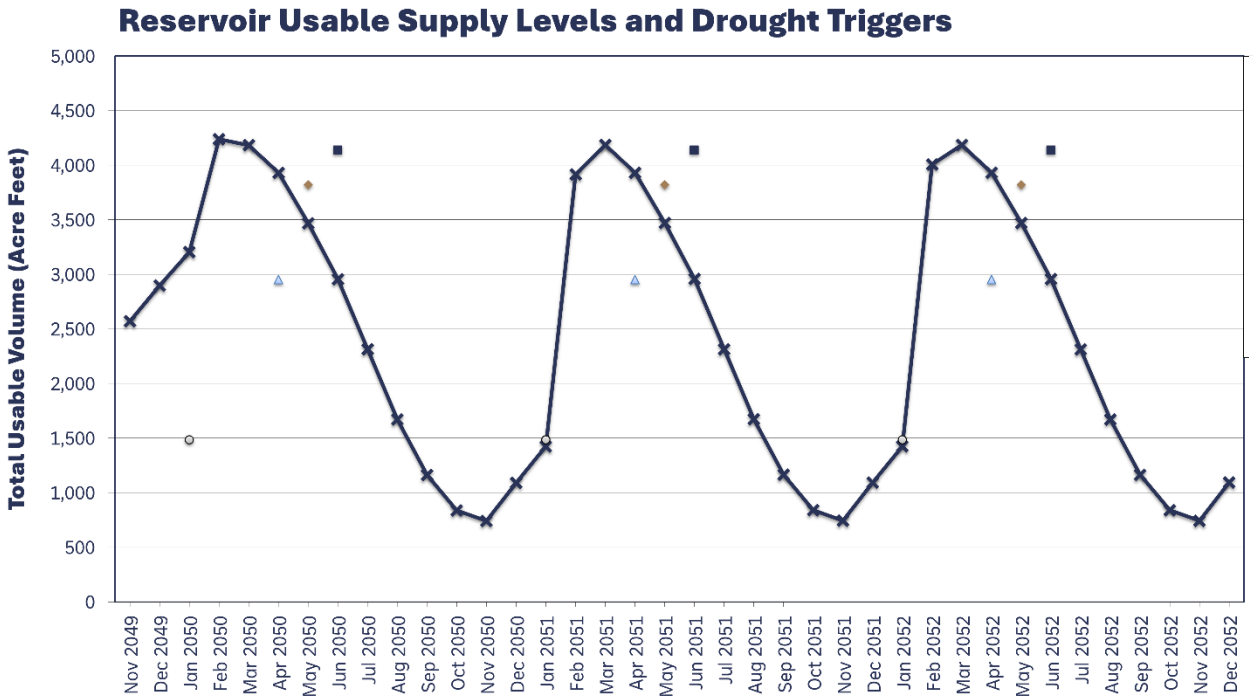

- Clementia **Offline**
- Using recycled water for new and existing connections
- Golf course served by raw water
- No drought cutbacks
- No augmentation

# Scenario 1b – Average Recent Year with Climate Change Buildout Demand Outcome




- Clementia **Offline**
- Using recycled water for new and existing connections
- Golf course served by raw water
- No drought cutbacks
- No augmentation

# Scenario 1c – Average Recent Year with Climate Change Buildout Demand Outcome

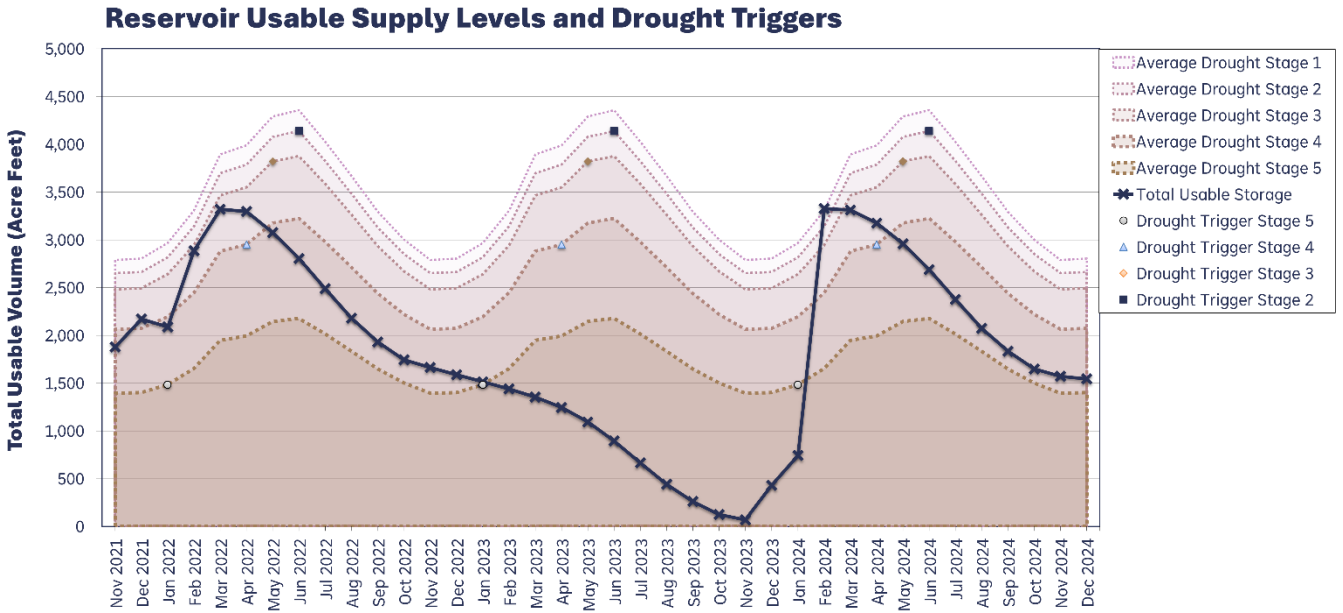



- Clementia **Online**
- Using recycled water for new and existing connections
- Golf course served by raw water
- No drought cutbacks
- No augmentation

# Scenario 1 – Conclusion

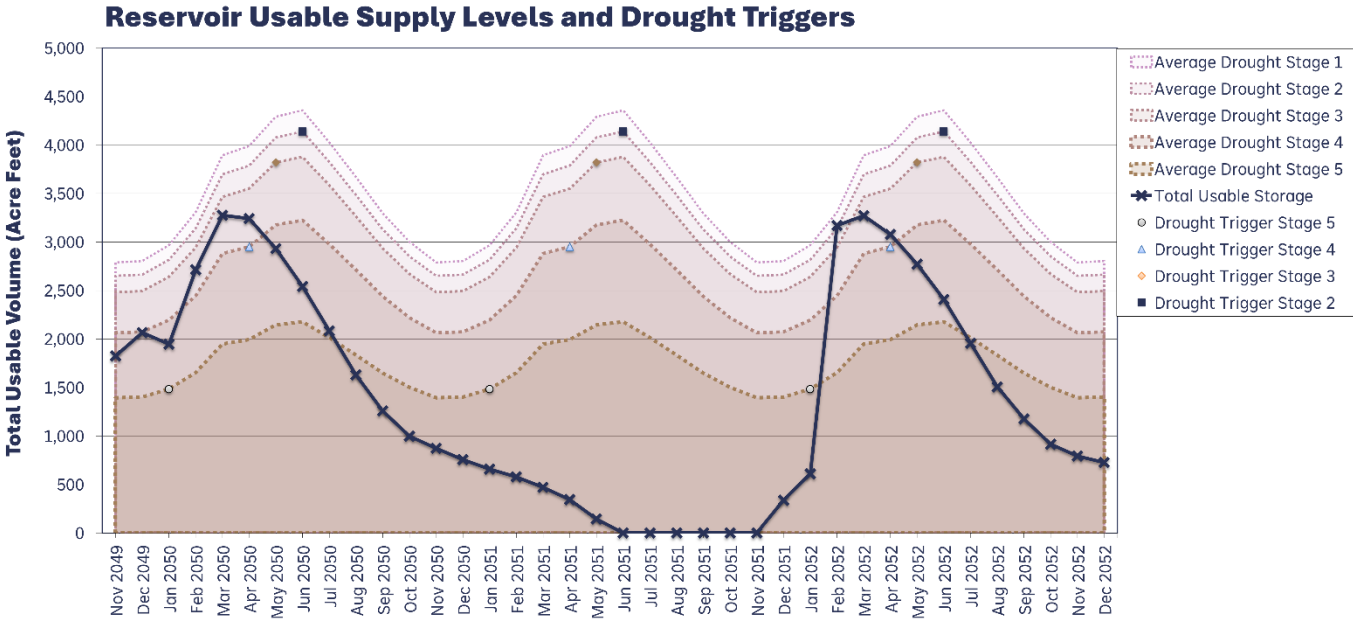
- In an average hydrology year with no demand cutbacks, including climate change, using recycled water
  - Enough water for existing demand
  - Enough water for buildout demand (with Clementia online)

# Scenario 2a – "Worst-Case" Drought with Climate Change Current Demand Outcome



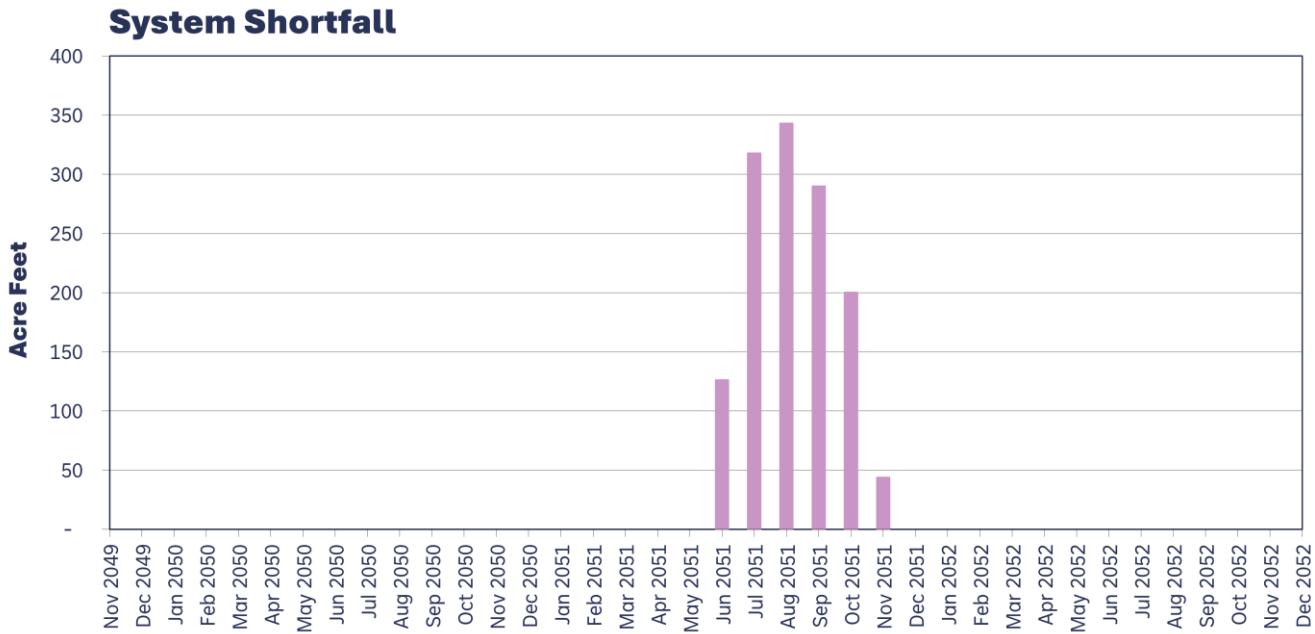

- Clementia **Offline**
- Use drought plan (30% cutback in stage 4 and 5)
- Using recycled water for new and existing connections
- Golf course served by raw water
- No augmentation (no well)

# Scenario 2b – "Worst-Case" Drought with Climate Change Buildout Demand Outcome




- Clementia **Offline**
- Use drought plan (30% cutback in stage 4 and 5)
- Using recycled water for new and existing connections
- Golf course served by raw water
- No augmentation (no well)

# Scenario 2 – "Worst-Case" Drought with Climate Change Buildout Demand Outcome

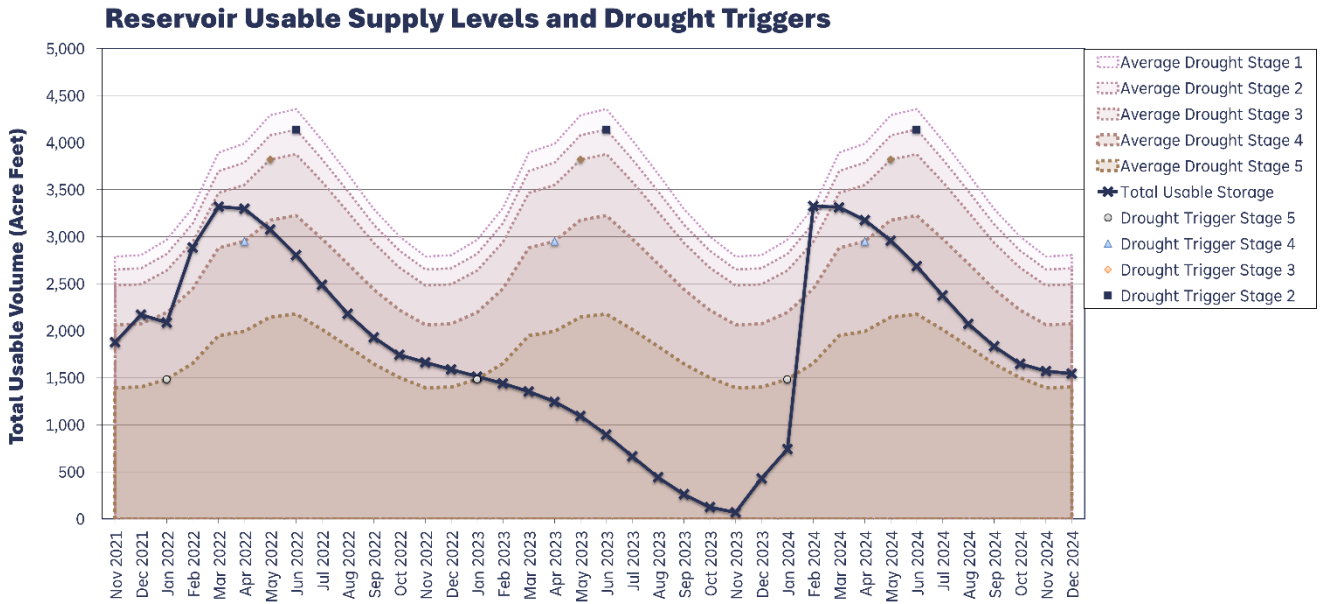



- Clementia **Offline**
- Use drought plan (30% cutback in stage 4 and 5)
- Using recycled water for new and existing connections
- Golf course served by raw water
- No augmentation

# Scenario 2 – Conclusion

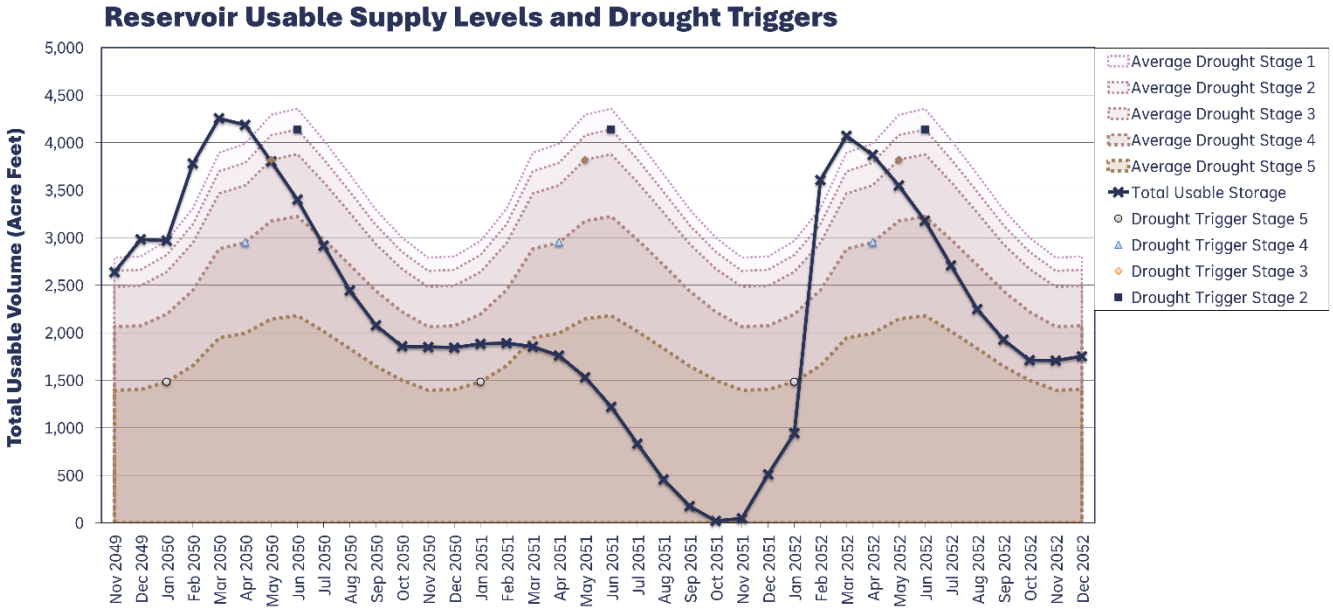
- With a “worst-case” drought and climate change
  - Enough water for current demand (minor shortfall – need to consider Clementia or well)
  - Not enough water for buildout demand (more significant shortfall – need to consider wells and/or Clementia)
- **Must augment supply**
  - **Shortfall projected under climate change scenarios**
  - **SB 552 – Back-up supply required**
  - **Consider Clementia as a drought solution (need to meet drinking water standards, have water right permit)**

# Scenario 3a – "Worst-Case" Drought with Climate Change Current Demand Augmentation Outcome



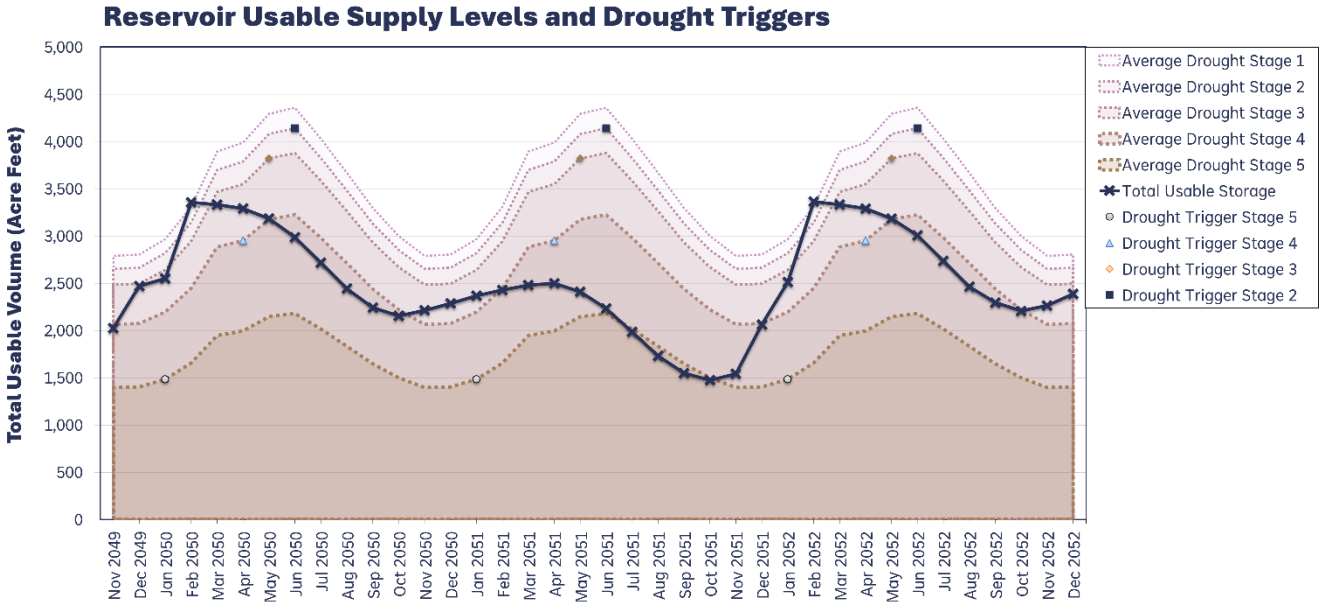

- Clementia **Offline**
- Use drought plan (30% cutback in stage 4 and 5)
- **With back-up 1,200 GPM well**
- Using recycled water for new and existing connections
- Golf course served by raw water

# Scenario 3b – "Worst-Case" Drought with Climate Change Buildout Demand Augmentation Outcome



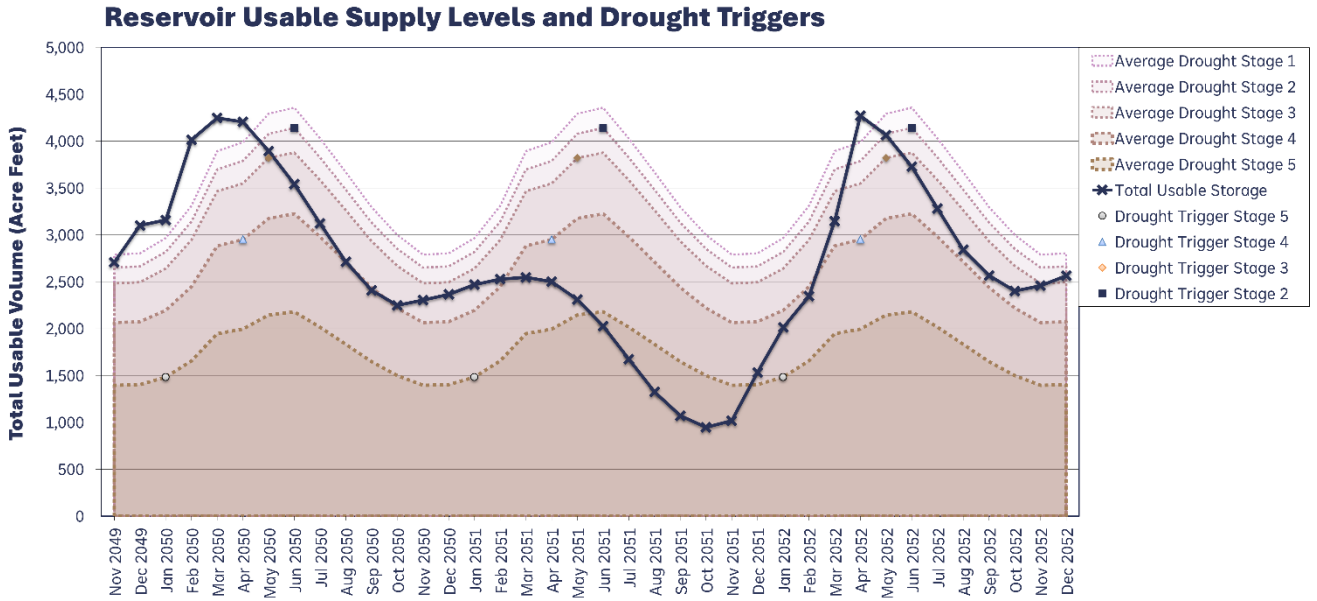

- Clementia **Online**
- Use drought plan (30% cutback in stage 4 and 5)
- **With 500 GPM well**
- Using recycled water for new and existing connections
- Golf course served by raw water

# Scenario 3c – "Worst-Case" Drought with Climate Change Buildout Demand Augmentation Outcome




- Clementia **Offline**
- Use drought plan (30% cutback in stage 4 and 5)
- **With 2,000 GPM well**
- Using recycled water for new and existing connections
- Golf course served by raw water

# Scenario 3d – "Worst-Case" Drought with Climate Change Buildout Demand Augmentation Outcome




- Clementia **Online**
- Use drought plan (30% cutback in stage 4 and 5)
- **With 1,200 GPM well**
- Using recycled water for new and existing connections
- Golf course served by raw water

# Scenario 3 – Historic Drought with Climate Change Supply Augmentation Conclusion

- With “worst-case” drought and climate change:
  - Enough water for **current** demand:
    - Considering Clementia, OR
    - Back-up supply well to support average-day demand
  - To meet buildout demand:
    - Consider Clementia and 1,200 GPM wells, OR
    - Consider 2,000 GPM wells without Clementia
  - Future wells can lead to a robust drought resilience supply

# Technical Observations – Supply Augmentation Alternatives

| Scenario | 1a | 1b | 1c | 2a | 2b | 3a | 3b | 3c | 3d |
|---|---|---|---|---|---|---|---|---|---|
| Hydrology | Average Year | Average Year | Average Year | Historic Drought | Historic Drought | Historic Drought | Historic Drought | Historic Drought | Historic Drought |
| Demand | Current | **Buildout** | **Buildout** | Current | **Buildout** | Current | **Buildout** | **Buildout** | **Buildout** |
| Utilize Clementia | NO | NO | YES | NO | NO | NO | YES | NO | YES |
| Outcome | Meet Monthly Demands, Do not meet SB552 | Minimally Meet Monthly Demands | Meet Monthly Demands | Minor Shortfall, Do not meet SB552 | Significant Shortfall | Minimally Meet Monthly Demands and SB552, potential >30% cutback needed | Minimally Meet Monthly Demands, potential >30% cutback needed | Meet Monthly Demands | Meet Monthly Demands |
| Additional Source | None, Back-up needed | None, Back-up needed | None | Back-up needed | Necessary | **1,200 gpm capacity source** | **500 gpm capacity source** | **2,000 gpm capacity source** | **1,200 gpm capacity source** |

# Thank You