INTEGRATED WATER MASTER PLAN

TOWN HALL MEETING

MARCH 18, 2023

RANCHO MURIETA COMMUNITY SERVICES DISTRICT
INTEGRATED WATER MASTER PLAN

Speakers, Purpose & Format

Purpose

- Develop an Integrated Water Master Plan that meets **best practices** for the strongest water supply reliability, **reflects community priorities** and CSD **obligations** and is **supported** by the Board, customers, stakeholders and staff.
- Introduce consulting team, explain project, identify milestones & schedule, obtain your input, discuss next steps.

Speakers

- **Michael Fritschi,** Interim General Manager, CSD
- **Lucy Crocker,** Meeting Facilitator, Lucy & Company
- **Dan Scalas,** Adkins Engineering, Project Manager
- **Lisa Maddaus,** Maddaus Water Management, Co-owner & Principal Engineer
- **Travis Bohannon,** Interim Director of Operations, CSD

Speakers, Purpose & Format

Format & Guidelines

- Presentation, panel discussion, open Q&A, 1x1 discussions
- Ensure everyone has an equal opportunity to speak and be heard
- One speaker at a time
- No personal attacks, talking over other speakers, speaking past allotted time
- Write questions on comment cards

Background & Perspective

Integrated Water Master Plan Purpose

Data-based approach

- Stability and reliability of water supply
- Ability to store water
- Adequacy of infrastructure associated with treatment
- Adequacy of infrastructure associated with distribution
- Alternative water supply sources including use of recycled water

Key Drivers to Timing

- Recent surveys show Calero and Chesbro reservoirs have 10% and 7% less respective storage than previously known
- Increased climate change data available since last IWMP
- Expectation for additional residential development has intensified recently
- State has begun curtailing appropriative water rights
- Over 10 years since CSD last updated its IWMP
- CSD nearing threshold of becoming an Urban Water Supplier

District Challenges & Opportunities

Challenges

- Climate change effects and ability to work within curtailment trends
- Increased operating costs
- Aging storage and distribution infrastructure
- Inefficient or undersized infrastructure to treat and deliver to meet existing and future water demands

Opportunities

- Evaluate potential water augmentation programs:
- Expand recycled water program to domestic and commercial uses
- ·mprove storm water capture
- Water bank implemented
- Use of real-time water meters and early warning leak sensors
- Identify water grants currently available for augmentation

Overview of Project Phases

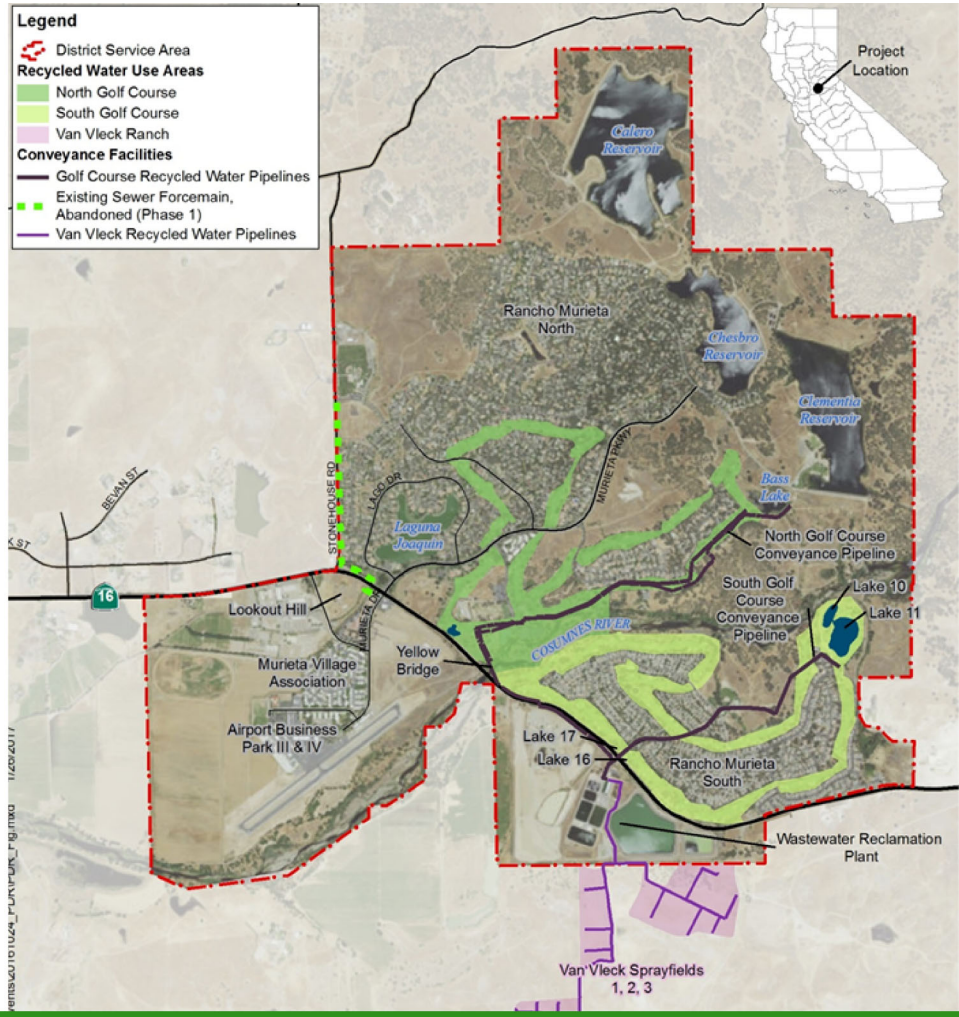
- **Data Collection**
  - Where we are now in the project
- **Engineering Data Analysis**
- **Modeling**
  - SVM – test a plethora of factors into board array of scenarios at monthly volumes for demands and supply balance
  - EPA-Net – test time-step for top 3 scenarios to test functionality of infrastructure
- **Form Suggested Key Scenarios**
  - Existing, Critical Case and Check on Worst Case(s)
- **Review Findings with CSD**
- **Refine as needed** based on CSD and community feedback
- **Prepare draft document**
- **Community and CSD review and comment** on draft document
- **Develop final document**
- **Board adopts Master Plan and Capital Improvement Plan** to guide future investments

Potable Water System Major Components

- Granless Dam and Pump Station
- 33-inch Raw Water Transfer Pipeline
- Calero Reservoir Storage
- 30-inch Transfer Pipeline
- Chesbro Reservoir Storage
- Potable Water Treatment Plant
- Potable Water Pump Station
- Distribution Pipe to Rio Oso and Van Vleck Tanks
- Recycled Water System (Next Slide)

Major Recycled Water System Components

- Wastewater Reclamation Plant
- Conveyance to:
  - Bass Lake
  - Lake 10
  - Lake 11
  - Murieta Gardens
- Irrigate golf courses and Van Vleck Spray Fields



Overview of Shared Vision Modeling

Concept from US Army Corps of Engineers Institute for Water Resources

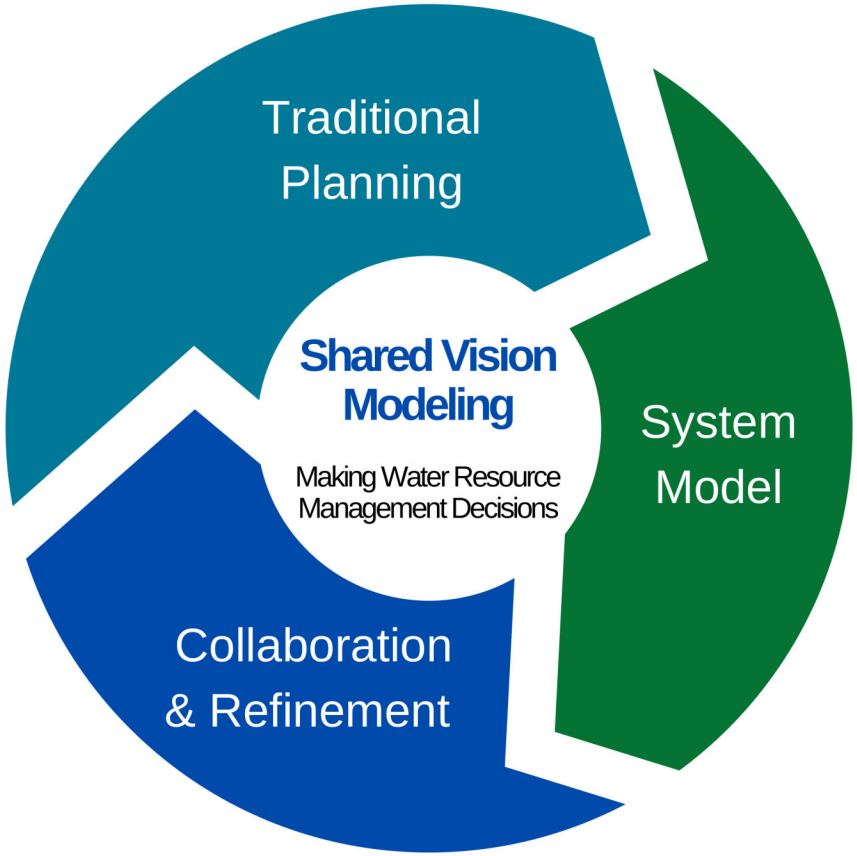
Combines 3 practices

- Traditional water resources planning
- Public participation and involvement
- Collaborative computer modeling

Goals

- Build a mutual understanding of the facts
- Collaboratively develop integrated, transparent model

Foster dialog about opportunities and challenges



Source: https://www.iwr.usace.army.mil/Missions/Collaboration-and-Conflict-Resolution/Shared-Vision-Planning/

Shared Vision Model Elements

Planned Inputs

- Current system supplies and operations
- Existing demands
- CSD-provided future service connections

Scenario Modeling

- Baseline scenario
- Challenges
- Opportunities

Outputs

- Custom simulations of water system infrastructure
- “What if” scenarios modeled under variety of possible conditions
- Water balance checked at monthly time step

Shared Vision Model: Inputs

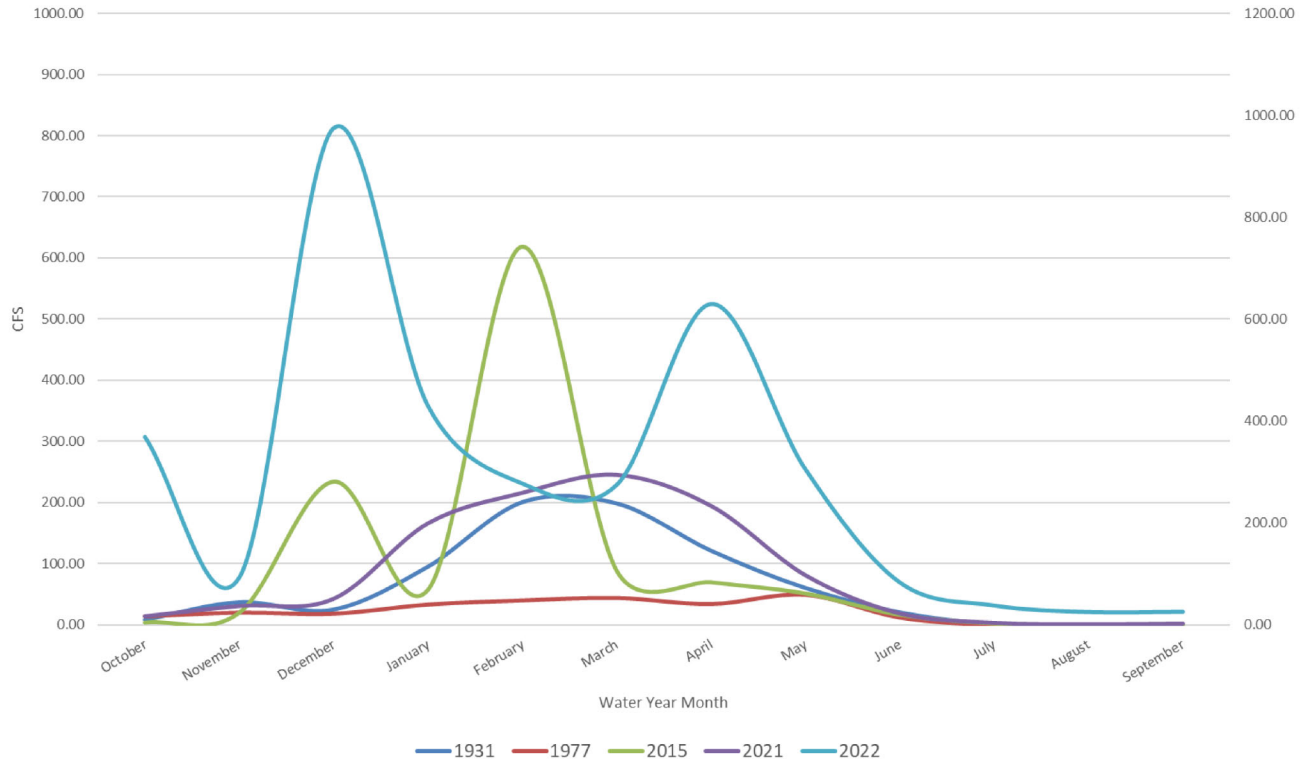
Supply Conditions

- Cosumnes River flows
- Reservoir volumes and losses
- Updates to infrastructure
- Climate Change studies

Demands

- CSD Historic Production
- Water usage from actual CSD Billing Data
- Current lot types/sizes and service population
- CSD-provided future lot types/sizes

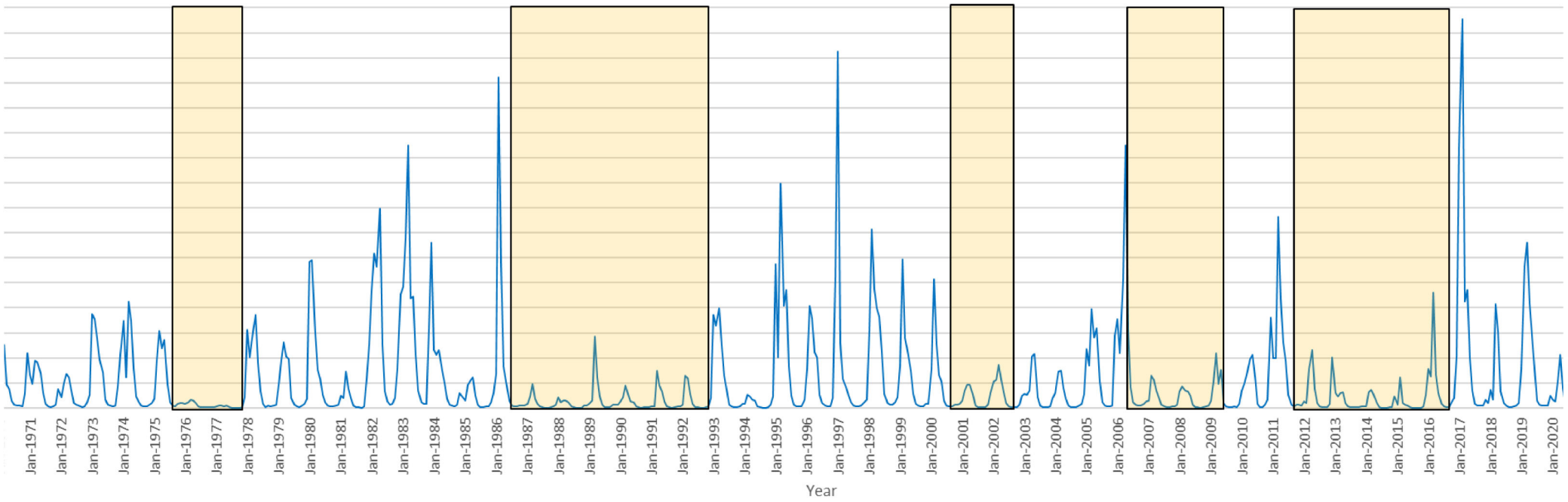
Cosumnes River Monthly Mean Daily Flows Comparisons
Water Years 1931, 1977, 2021, 2022



Flows from Michigan Bar Guage

SOURCE: USGS, MICHIGAN BAR GAUGE: HTTPS://WATERDATA.USGS.GOV/MONITORING-LOCATION/11335000/#PARAMETERCODE=00065&PERIOD=P365D

COSUMES RIVER
JAN 1970 - DEC 2022 MONTHLY MEAN DAILY FLOW (CFS)



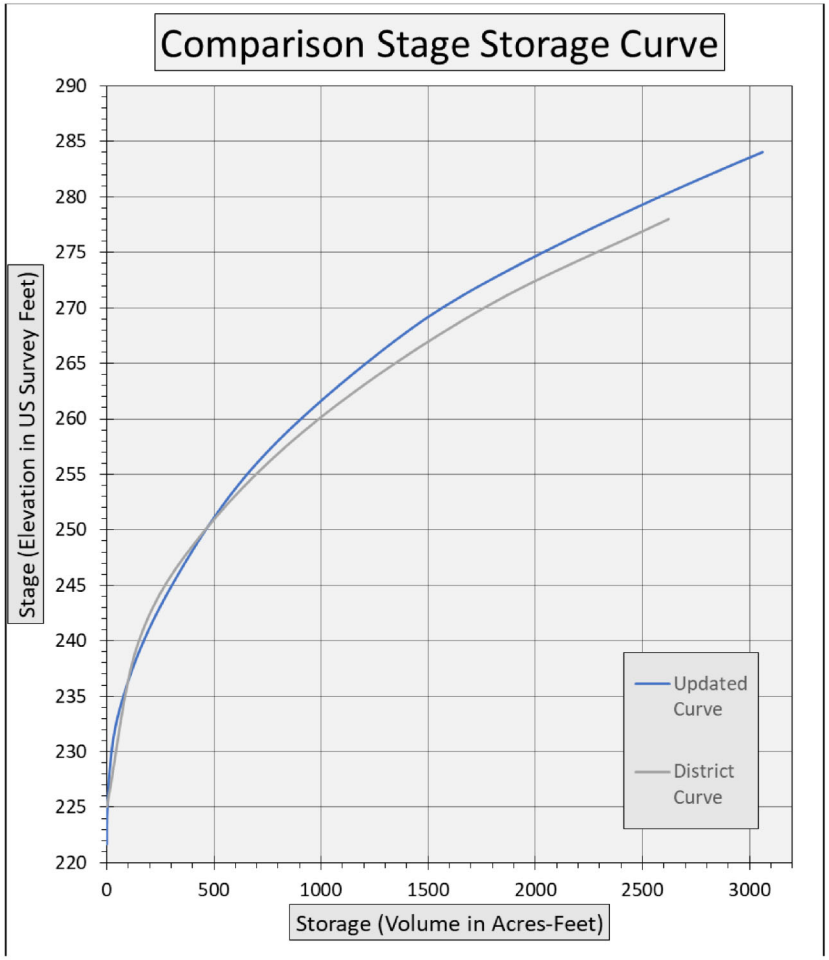
CA Drought

Flows from Michigan Bar Guage

SOURCE: USGS, MICHIGAN BAR GAUGE: HTTPS://WATERDATA.USGS.GOV/MONITORING-LOCATION/11335000/#PARAMETERCODE=00065&PERIOD=P365D

Calero Reservoir Volume

- New sonar survey completed in 2022
- Not quite as much storage as we thought
- About 10% less



Shared Vision Model: Building Scenarios

Challenges

- Possible Curtailments
- Climate Change Impacts
- Drought Response and Demand Mitigation

Opportunities

- Expanded Recycled Water
- Groundwater
- Stormwater
- Raw Water

Shared Vision Model: Next Steps

- Continue data gathering and model set-up
- Develop draft scenarios
- Seek input on draft scenarios from community and CSD
- Decide on 3 Key Scenarios for Adkins team to run through detailed EPA-NET Infrastructure Modeling
- Support for future project tasks

Infrastructure Modeling for Capital Planning

Shared Vision Model >>> Infrastructure Model >>> Capital Improvements

Develop time-step water system model utilizing EPANET

Integrate Shared Vision Model outputs

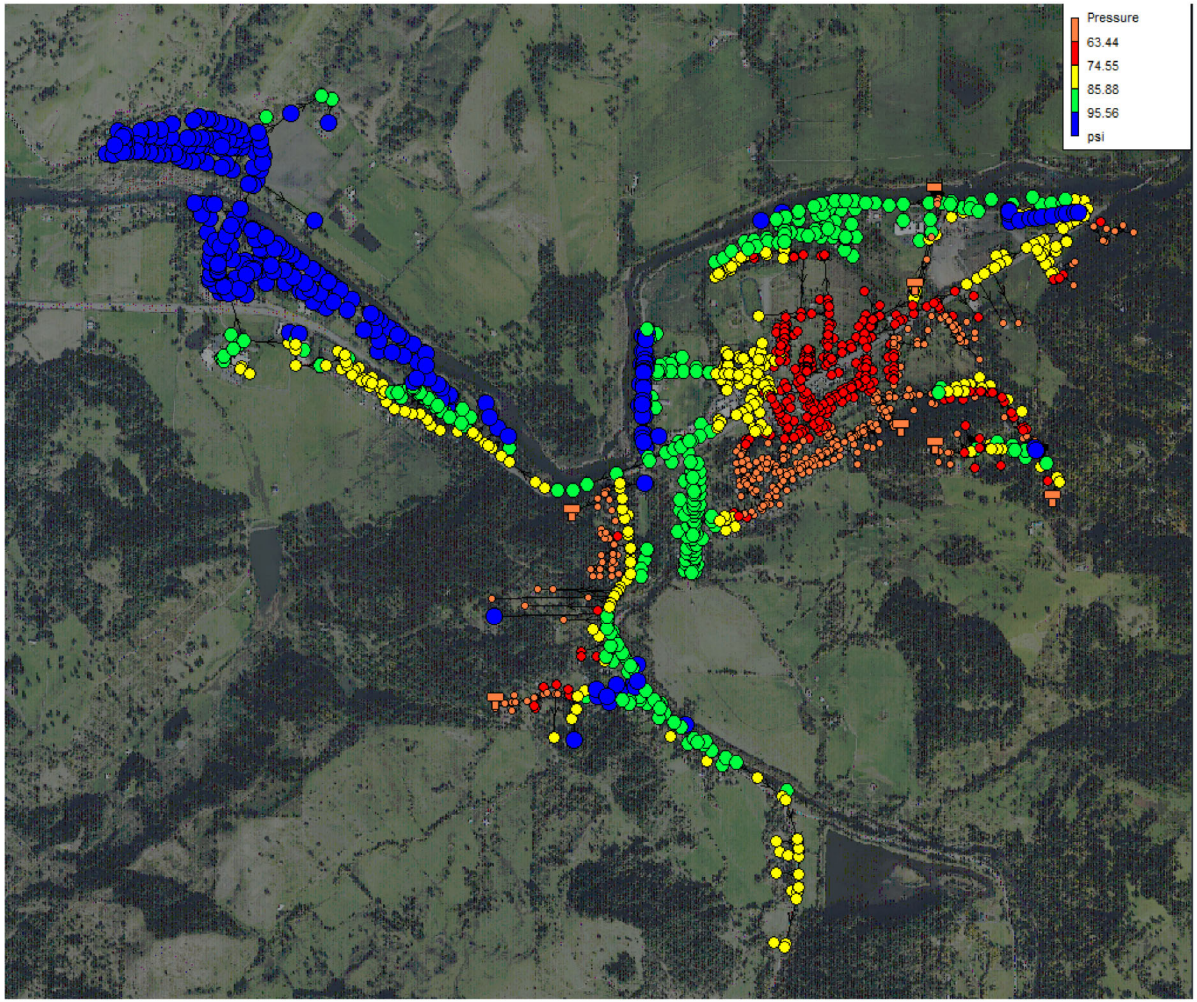
Identify deficiencies in infrastructure (potable and recycled)

- Supply
- Storage (raw and finished water)
- Distribution

Develop capital improvements to meet current or future deficiencies

Example EPANET Model

- Populate with demand from SVM and calibrate
- Determine capacity of supply, storage and distribution systems
- Identify deficiencies
- Model and recommend solutions to deficiencies



Where do we go from here?

- Ask your “what if” questions
- Help us understand your viewpoints
- Explain nuances you think the technical team needs to know during scenario development

Thank You!

RANCHO MURIETA COMMUNITY SERVICES DISTRICT
INTEGRATED WATER MASTER PLAN

ADKINS
ENGINEERING & SURVEYING

Services

» Master Planning
» Civil Engineering
» Structural Engineering
» Municipal Water and Wastewater
» Land Development
» Surveying
» Materials Testing
» Construction Administration
» Water Rights

Since 1983

ADKINS
ENGINEERING & SURVEYING

Since 1983

Making a Difference in the World of Water

Maddaus Water Management Inc.

Maddaus Water Management

brings unparalleled expertise to Urban Water Management Plans

20 Years
of UWMP experience and expertise

57+ Agencies
supported with UWMP demand and conservation analysis

19+ UWMPs
completed since 2000 (full plan documents)

440+ Projects
completed across California, the United States, and internationally

"...nothing but good things to say...a consummate professional, extremely thorough and precise"

Teresa Gomez,
City of Oceanside,
CA

"MWM met our needs and exceeded our expectations"

Haley Paul,
Town of Gilbert, AZ

"honestly the best training I have ever attended."

Amy Meaut,
City of Hillsboro,
OR

Maddaus Water Management

Maddaus Water Management Inc

Groundwater Sustainability Plans

Integrated Resources Plans/ One Water

Urban Water Management Plans

Conservation and Water Shortage Contingency Plans

Water Supply Assessments/ Verifications (CA SB 610/SB 221 – CEQA compliance)

Data Analysis, and Custom Software

Innovative Conservation Pilot Projects

Implementation Planning Savings Verifications

Climate Change Analysis

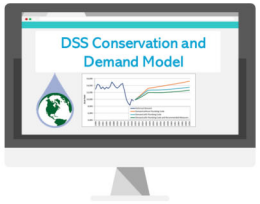
Distribution System Water Loss Analysis (CA SB 555)

What Sets Us Apart

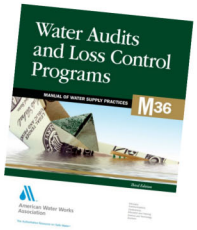
Maddaus Water Management Inc.

1995 — Maddaus Water Management (MWM) is formed

1997 — First version of DSS Model



2009



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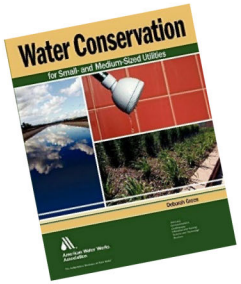
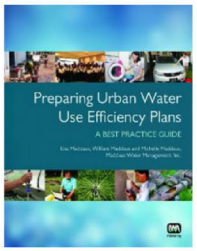
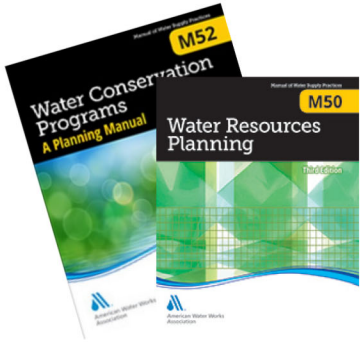


2012

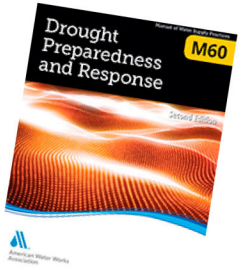
2013



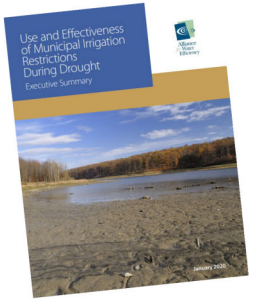
2017



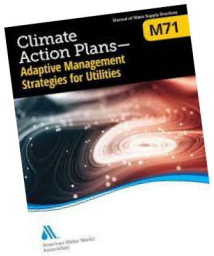
2019



2020



2021



Adkins/Maddaus Complementary Skills

Maddaus Water Management Inc.

Skill Set	MWM	Adkins
Water Demand Forecasting	✓	✓
Peak Day Demand Modeling		✓
Alternative Water Use Analysis		✓
Master Planning & Hydraulic Modeling		✓
Integrated Water Resources Planning	✓	✓
Weather and Climate Change Analysis	✓	
Water Shortage Contingency Plans	✓	
GIS Data Analysis and Review	✓	✓
Water Savings Evaluation	✓	
AMI Data Analysis	✓	
Infrastructure Analysis		✓
Professional Training	✓	
Econometric Modeling	✓	