RANCHO MURIETA CSD TOWN HALL

2023 INTEGRATED WATER MASTER PLAN UPDATE: SUPPLY & DEMAND

November 2, 2023

ADKINS ENGINEERING & SURVEYING

Maddaus Water Management Inc.

Agenda

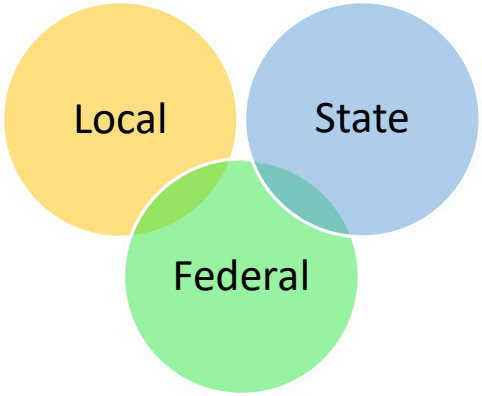
- Introductions
- Water Laws: Local, State and Federal
- Water Rights per District Permits
- Water System StoryMaps
  - Purpose of the 2023 Integrated Water Master Plan
  - Rancho Murieta Water Supply
  - Rancho Murieta Water Demand
  - Modeling Tools Being Used
- Community Questions

Next Meeting/Phase

- Testing Scenarios
- Addressing Potential Impacts from Climate Change
- Optimizing the Community's Water Future

Key Current Water Laws: Local, State and Federal

- LOCAL
  - **District Water Code & Recycled Water Code** – Ordinance Adopted by CSD Board
  - County Land Development Requirements - Landscape Ordinances, Stormwater
- STATE
  - California Water Code
    - Water Rights Permits & Licenses (Beneficial Use Doctrine)
    - SB 552 Small System Water Shortage Contingency Planning
    - SB 221/610 Water Supply Assessment for developments with more than 500 homes demand
    - Title 22 – Recycled Water Uses – District Waste Discharge Requirements Permit
    - 2018 Groundwater Sustainability Act
    - Urban Water Management Planning Act (future)



Key Current Water Laws (continued)

- FEDERAL
  - Safe Drinking Water Act Requirements
  - passes through CA Division of Drinking Water - DDW)
  - EPA – Water Quality – MS4 NPDES
  - Army Core of Engineers – Protect Waters of the US

Pending State Laws applicable when District reaches 3,000+ connections

- STATE
  - District at 2,822 accounts as of October 2023
  - It is estimated that the District could be defined as an “urban water supplier” under Water Code as soon as 2025
  - For systems larger than 3,000 connections, Water Code includes:
    - **Urban Water Management Planning Act (evolved since 1983)**
      - Supply, Demands, Drought Reliability, Climate Change
    - SB 606 and AB 1668 – Conservation as a California Way of Life laws calculates a systems Urban Water Use Objective
    - Water Shortage Contingency Planning
    - SB 555 Validated Water System Loss Reporting

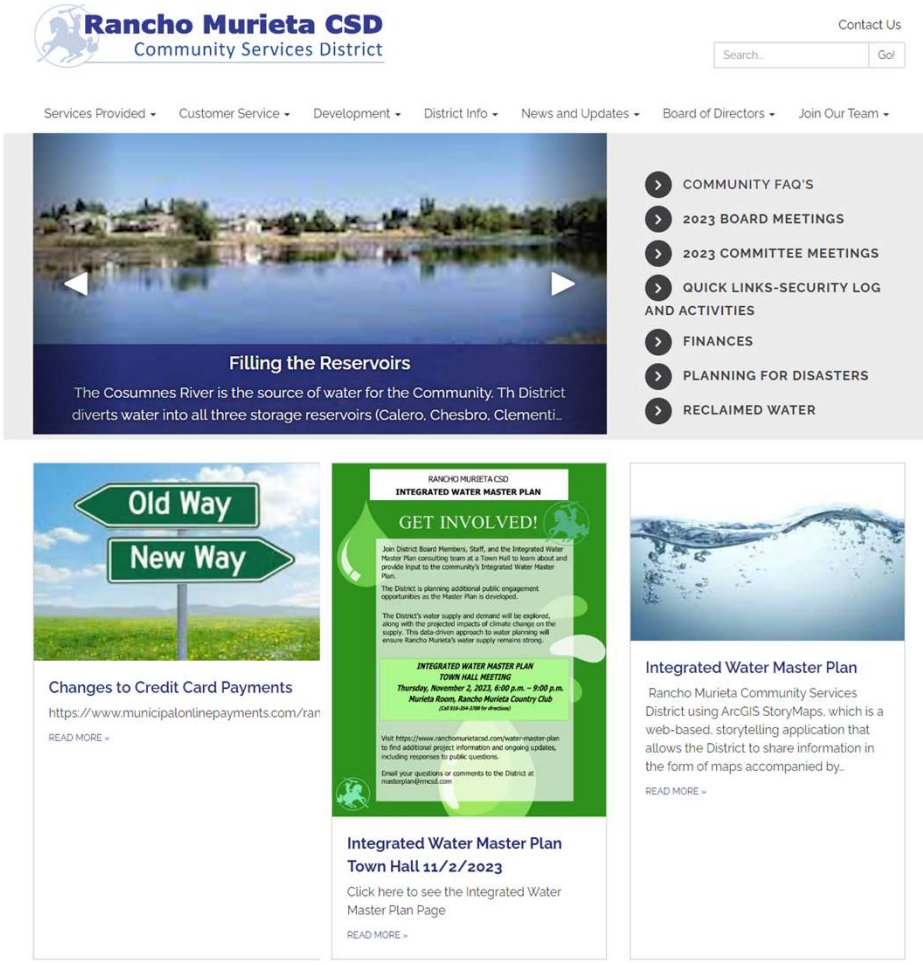
Community Input/Review Via StoryMaps

A StoryMap is a dynamic, online webpage that tells the story of the region's water history. It is a new technology that allows the inclusion of interactive charts and graphs and the underlying data for all of those.

A StoryMap uses a Geographic Information System (GIS), which displays data related to positions on Earth's surface. A GIS can show many kinds of data on one map, such as streets, buildings, and plants.

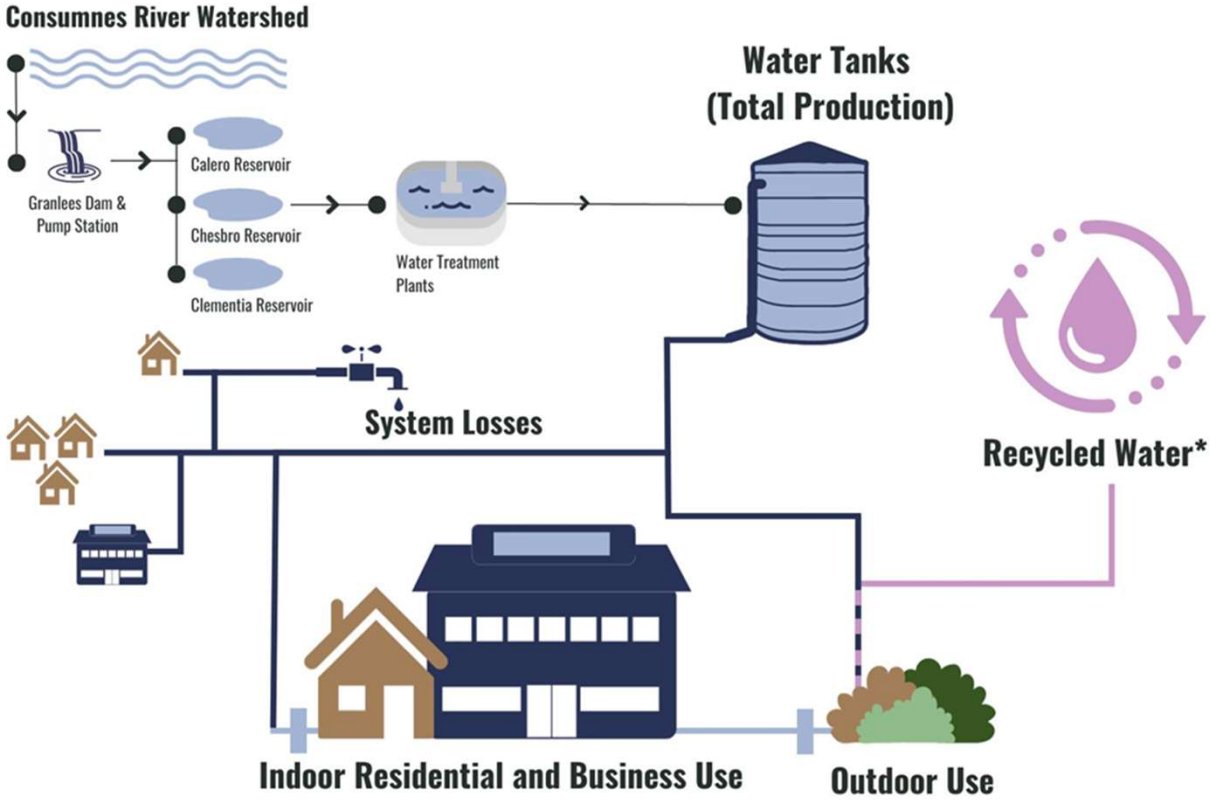
Supply StoryMap

- [Rancho Murieta Community Water System StoryMap]



Demand StoryMap

- Rancho Murieta Community Water Demands



IWMP "One Water" Approach – 3 Assessment Phases

Supply

- Review water rights
- Download latest USGS data on historical river flows
- Review quantified Pumping Volumes and Storage Levels
- Research recent Climate Change studies

Demand

- Historical development by lot type
- Recent demand trends on existing demands
- Past and future conservation efforts
- Latest information on projected future lots proposed for development

Scenarios/ Options

- Models combine Supplies and Demands Scenarios
- Run SVM "what if" reductions in supply or demand
- Run SVM "what if" supplemental supplies
- Develop Capital Projects utilizing hydraulic model
- Run Capital Planning and Cost Alternatives on Recommended Key Options
- Present findings
- Community Discussion/Board Decisions

Modeling Tools:
Water engineers use two main tools to assess water systems

- Shared Vision Model (acre feet per month)
- Hydraulic Model (gallons per minute)

- **Shared Vision Model (acre feet per month)** – Monthly checking overall system balance based on water rights permits, storage, evaporation, seepage, system demands and alternative scenarios to determine what works overall under both normal and drought conditions. Test many “What if?” scenarios.

- **Hydraulic Model (gallons per minute)** – Daily/hourly timeframe of infrastructure for water distribution system – reservoirs, treatment plant, tanks, pumps and pipes, check system pressure and improvements to infrastructure for capital cost planning for rehabilitation (repairs and upgrades) and new system expansion

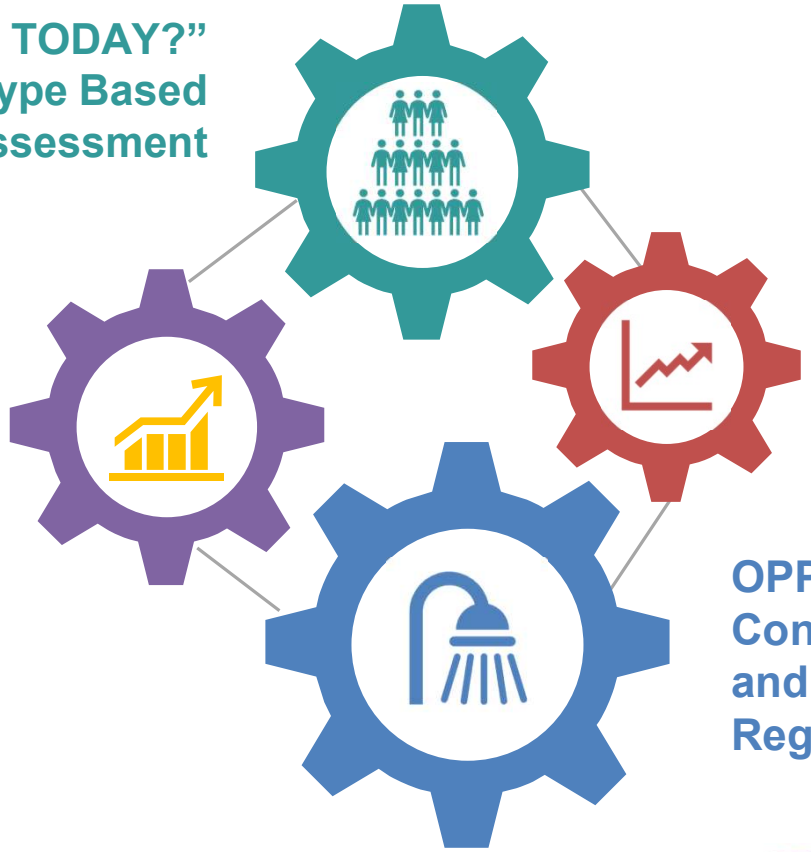
Supply, Demand and Conservation Analysis Purpose

- Presents the best available new information for understanding existing, and future conditions
- Demands based on analysis of recent billing data and parcel-level development data
- Worked carefully with CSD staff
  - Existing system maps and daily CSD data
  - Billing system data on existing metered water use
  - New development plans by parcel level maps
- Additional refinement using GIS-based parcel level analysis of anticipated future demands
- Long-range planning document to identify and project reliable water supplies

CSD Water Demand Analysis Approach

"WHERE ARE WE TODAY?"
Existing Lot-Type Based Demands Assessment

"WHERE HAVE WE BEEN?"
Historical Water Use Base Post-Drought and COVID Demands



"WHAT DOES THE ROAD AHEAD LOOK LIKE?"
Future Lot-Type Parcel-Level Demand Projections

OPPORTUNITIES
Conservation Measures and New Building Codes & Regulations

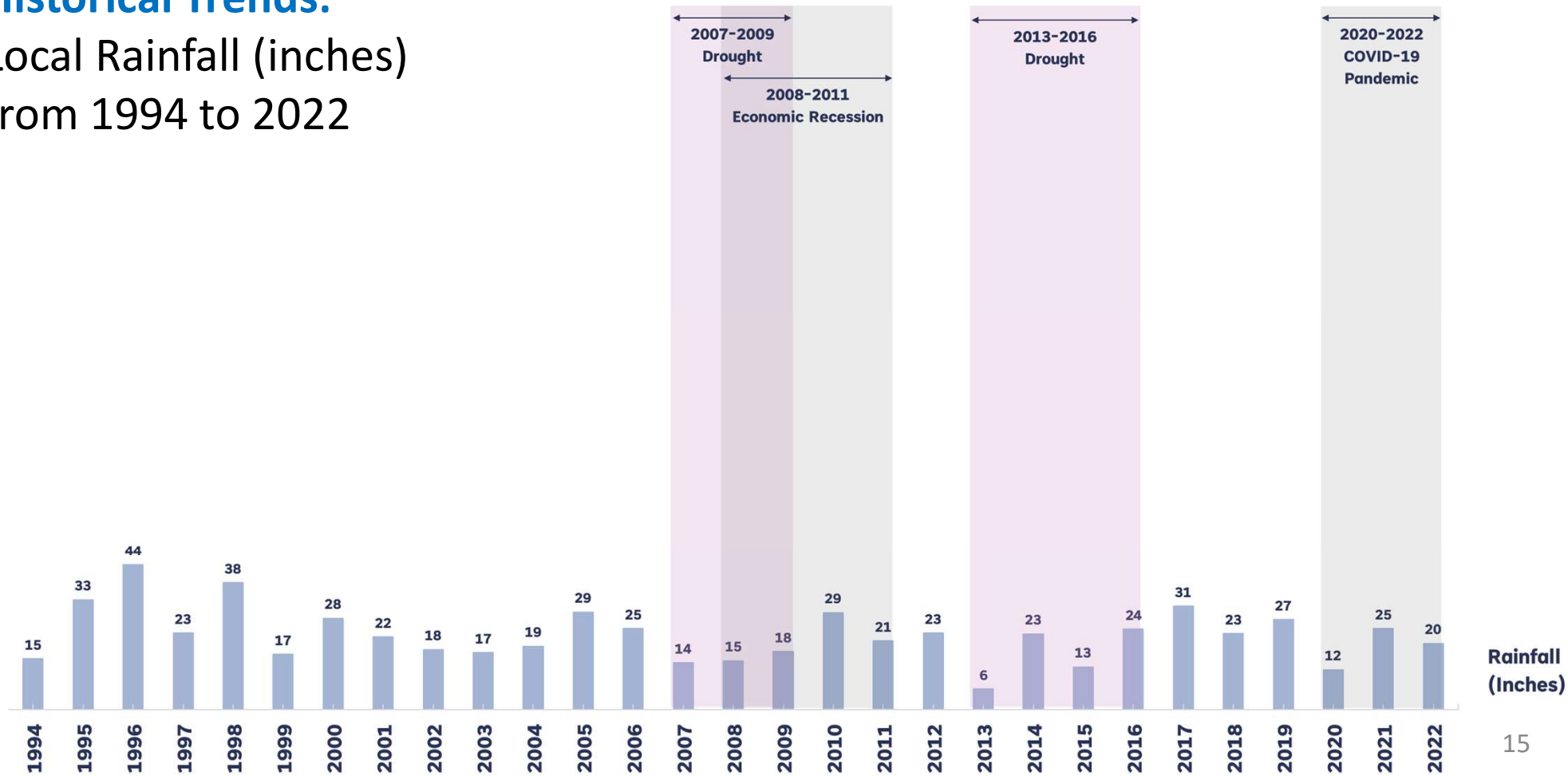
Where Have We Been?

Recent water use trends, including historical, post-drought, base demands

Water Use, Accounts, and Rainfall for Rancho Murieta Community Services District 1994 - 2022

Historical Trends:

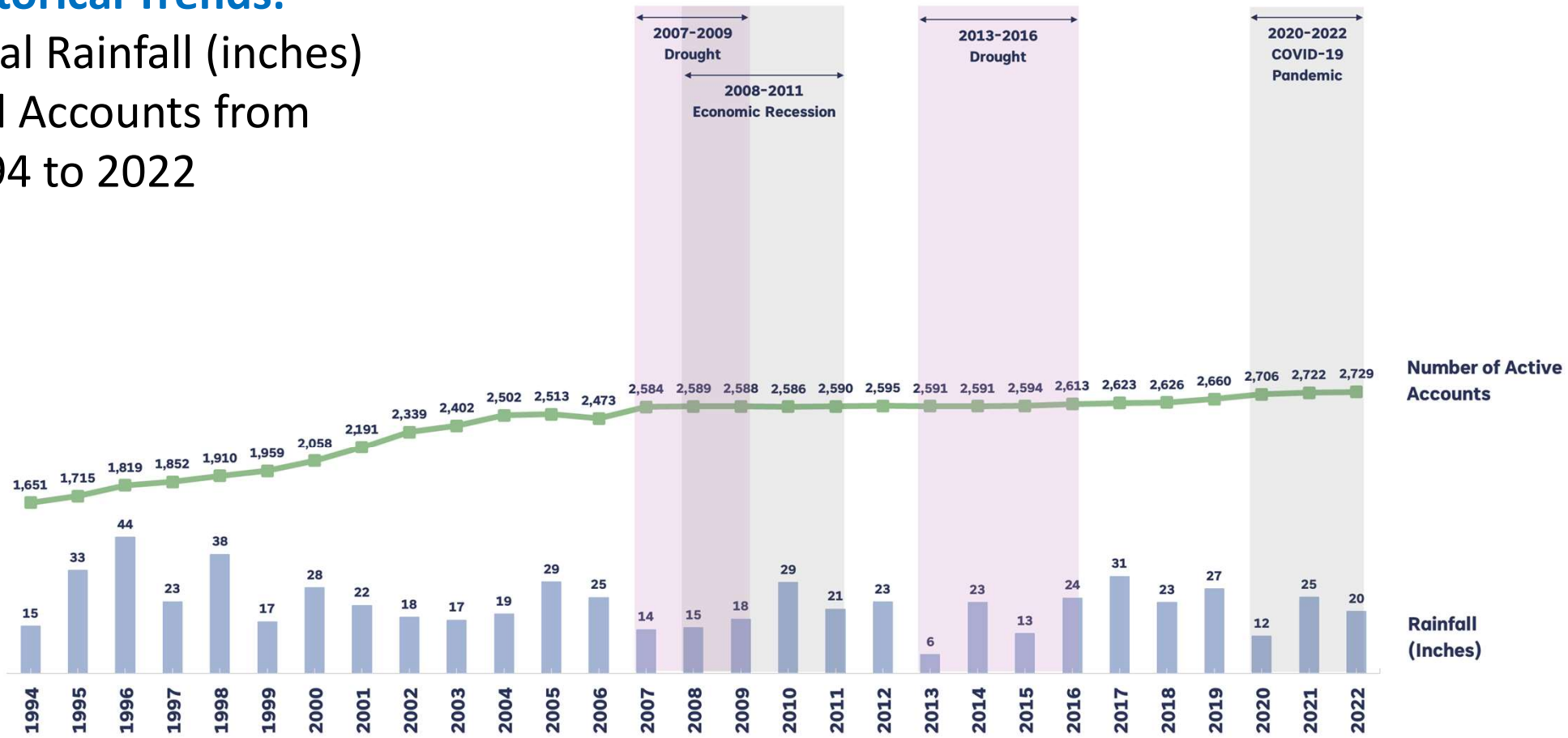
Local Rainfall (inches) from 1994 to 2022



Water Use, Accounts, and Rainfall for Rancho Murieta Community Services District 1994 - 2022

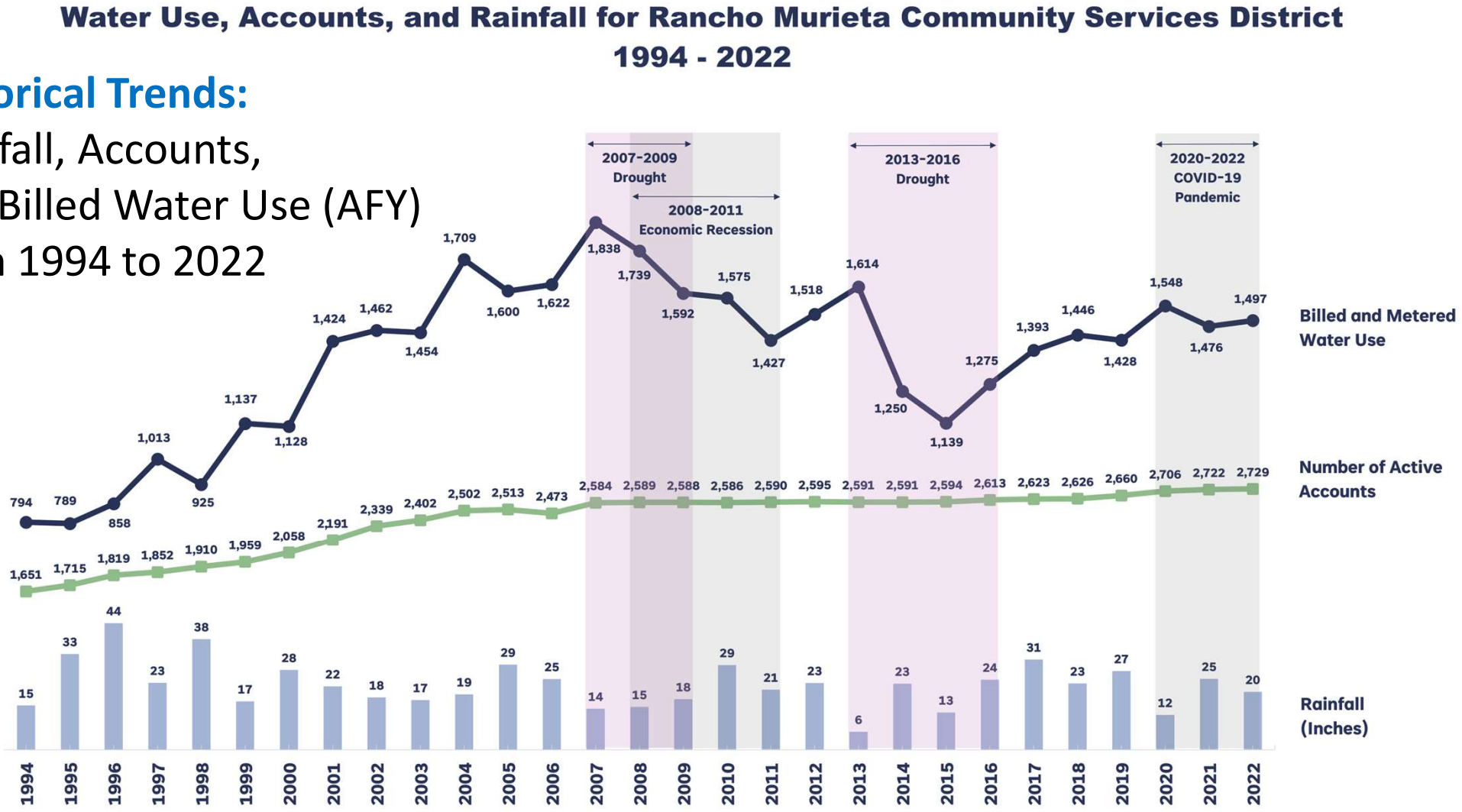
Historical Trends:

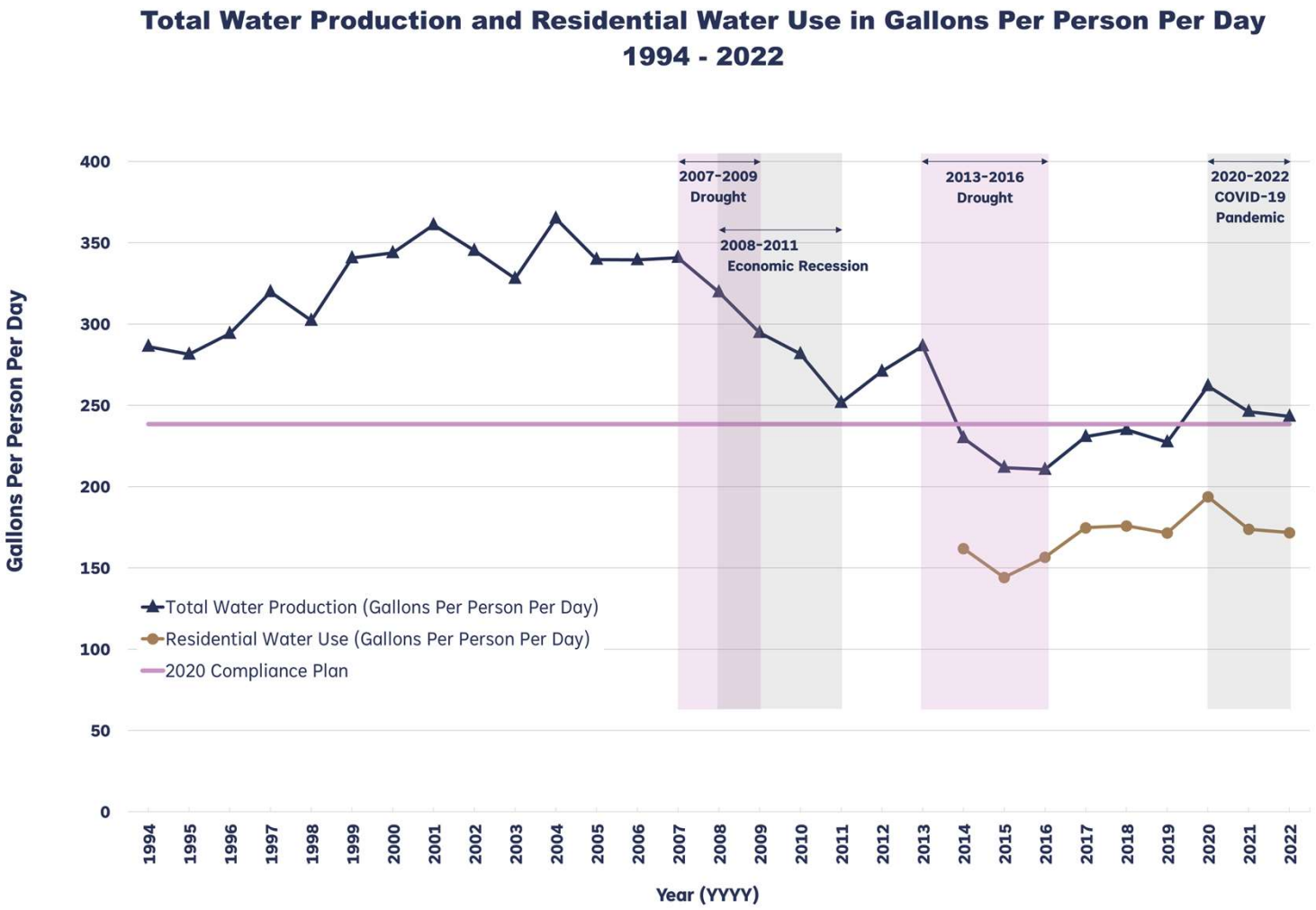
Local Rainfall (inches) and Accounts from 1994 to 2022



Historical Trends:

Rainfall, Accounts,
and Billed Water Use (AFY)
from 1994 to 2022





Achieved 20% Reduction by 2020

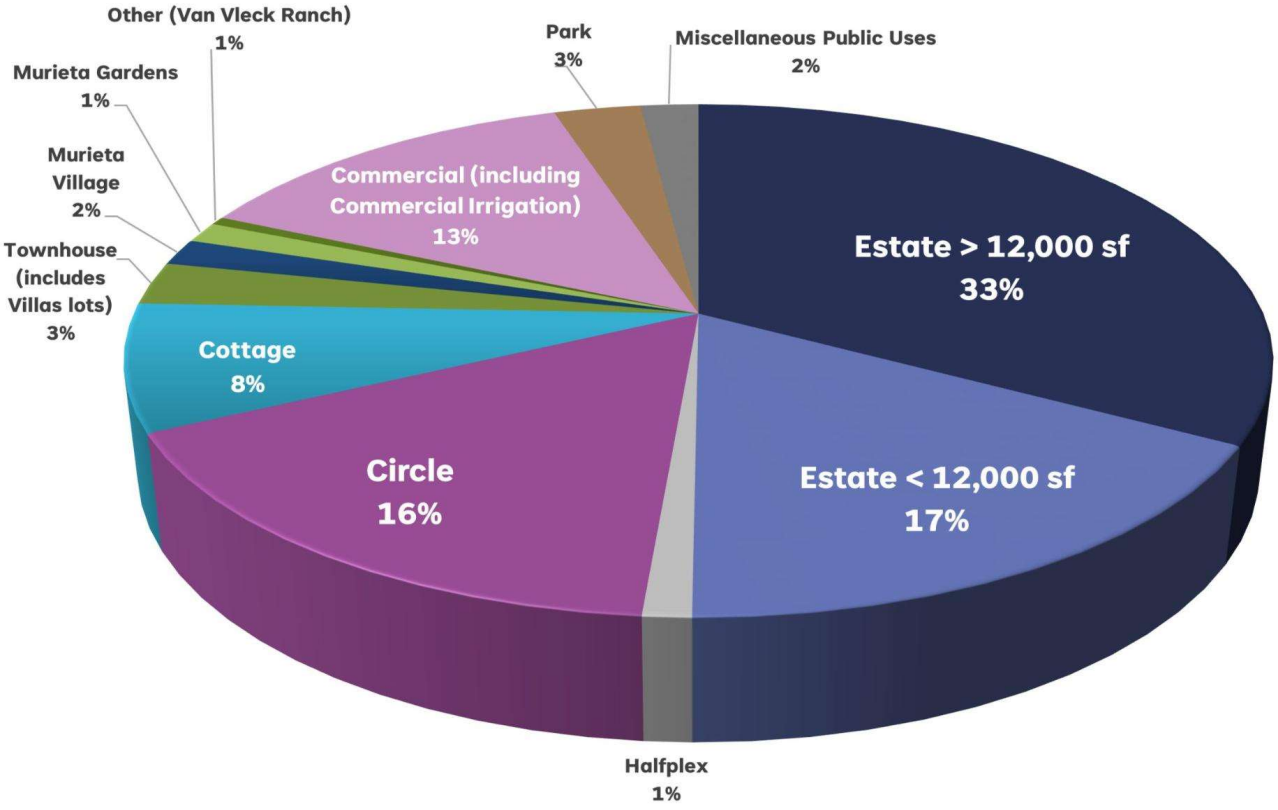
Voluntary Compliance with SB X7-7 that District committed to with 2020 Compliance Plan

Where Are We Today?

Existing Lot-Type and Current/Historic Demands
Most Robust Approach Available

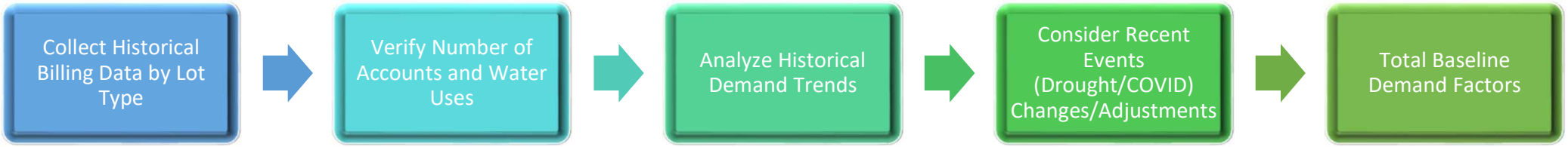
Drinking Water (Potable) Use By Lot-Type (2022)

based on Historical Metered Billing Data

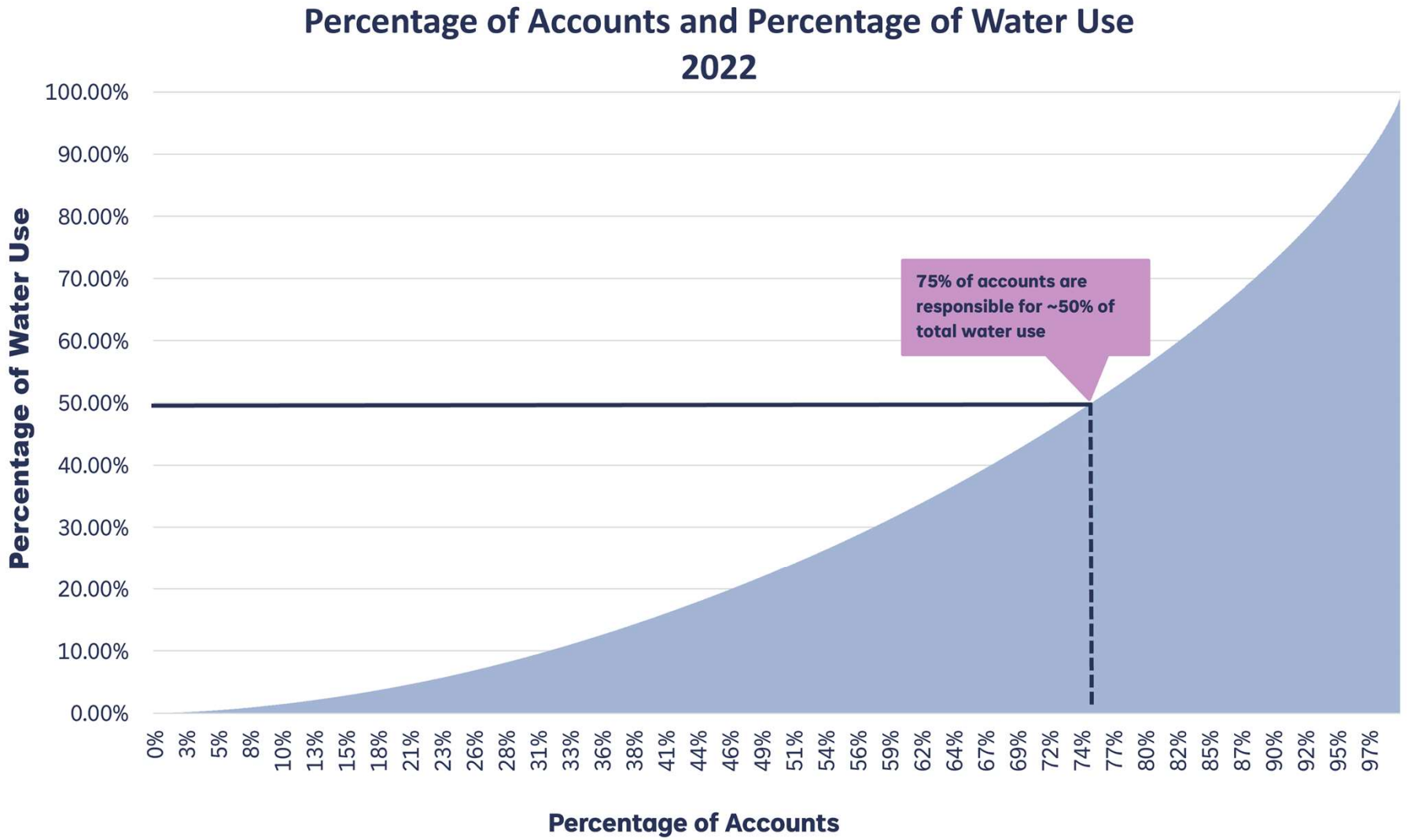


82% Residential
13% Business Uses
5% Park & Other

Overview of the Existing Demands Analysis & Prepare Baseline Demand Factors



Water Use: How Many Residential Accounts Use Supply and Why "Average Water Use" is a Conservative Assumption



Existing Demands by Lot Type

Lot Type / User Class	Number of Active Accounts (Connections) as of 12/31/22	Annual Demands (AFY)
Estate > 12,000 sf	729	500.0
Estate < 12,000 sf	577	257.4
Halfplex	59	17.6
Other	1	7.7
Circle	454	247.2
Cottage	292	120.7
Townhouse (includes Villas lots)	258	40.8
Murieta Village	181	25.2
Murieta Gardens	78	19.7
Commercial (including Commercial Irrigation)	81	200.9
Park	5	44.0
Miscellaneous Public Uses	14	29.4
Accounting for Pressurized Water System (Distribution Pipe) Losses		206
	TOTAL	**1,716**

Additional details on the Demands StoryMap

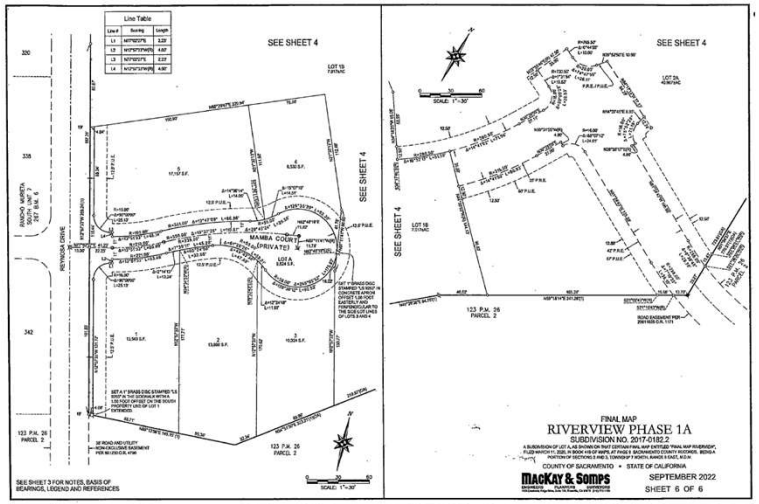
What Does the Road Ahead Look Like?

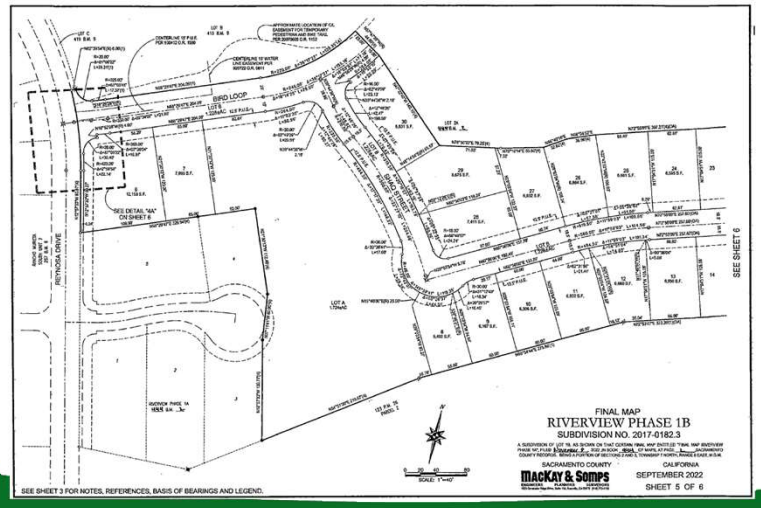
Updated Future Demands Analysis

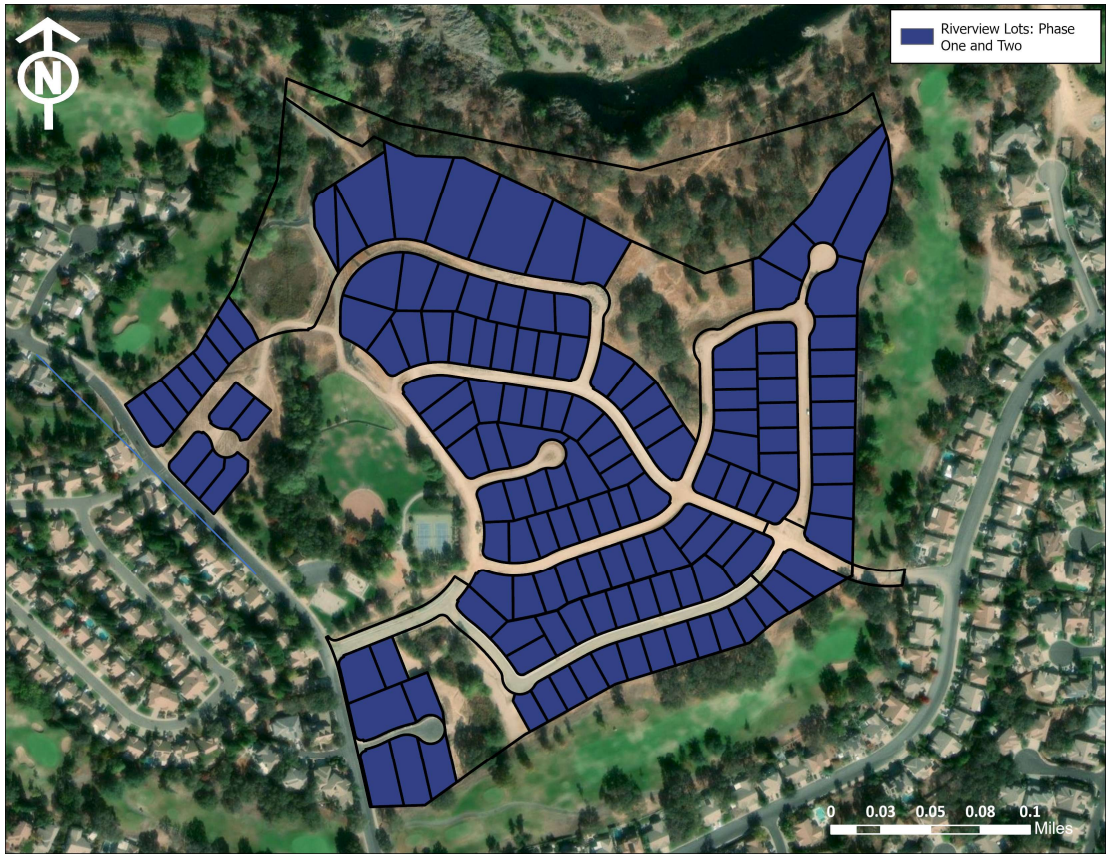
Future Lot Type
Parcel-Level Demands
Projections

Green Building Codes & Standards Conservation Measures, Pending State Regulations

Developer Parcel Maps: Example







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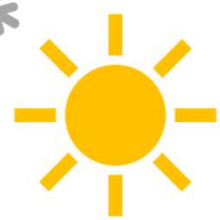
Overview of the Demand Forecast Development

Forecast Details – Making Assumptions to Increase Demands (Taking Conservative Approach)



- Weather effect on historical demands
- Drought rebound – recent adjusting
- Work from home shift – post COVID-19
- Accessory dwelling units – now allowed under state law (garage conversions/unit add-ons increase indoor water use)
- 10% higher outdoor irrigation due to higher temperatures
- Not considered any downward adjustments to demands:
  - Future conservation measures for existing customers
- Potential future non-residential demands

CSD Water Conservation & Recycling Program

- Regional Water Authority – District has been a long-time member of RWA's Water Use Efficiency Program
  - Education
  - Website
  - Rebates
- Water waste prevention
- Landscape design standards by County Ordinance
- Recycled water program – currently goes to the golf course

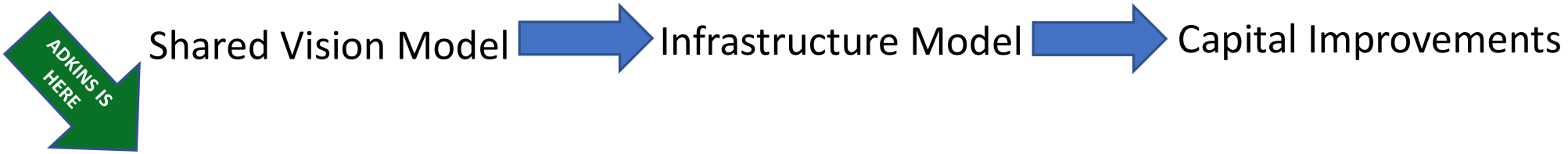
Total Water Demands Baseline to Buildout

	System Demands (acre-feet per year)
Baseline Potable Water Existing Demands (based on 12/31/22 Connections)	1,716
Projected Future Demands at Buildout * Note: Based on planned uses and known values as hydraulic model calibration in progress; future recycled water extent under review	1,574*
Total Community Demands at Buildout (with system losses)	**3,290**

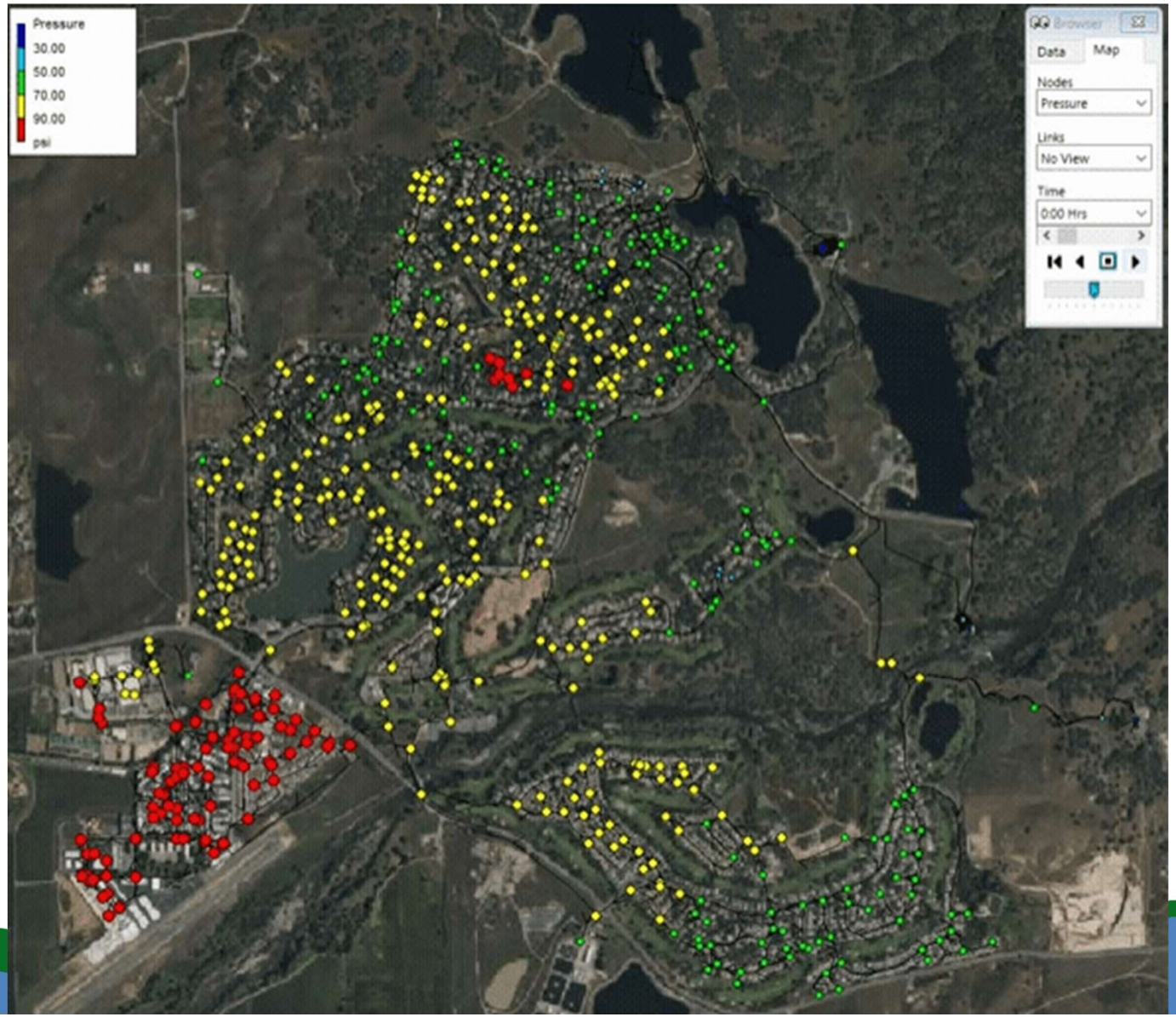
Further Effort on Refining Comprehensive Demand Outlook

- Forecasts prepared with CSD staff input and best available data
- Considered Baseline Demands for post-drought “new normal” (2020-2022)
- A careful accounting of potable vs non-potable demands is being prepared for the modeling effort
- CSD continues to share more information as it becomes available
- **Next Phase: a scenario-based sensitivity analysis for balancing existing and future supplies and demands**

Infrastructure Modeling for Capital Planning

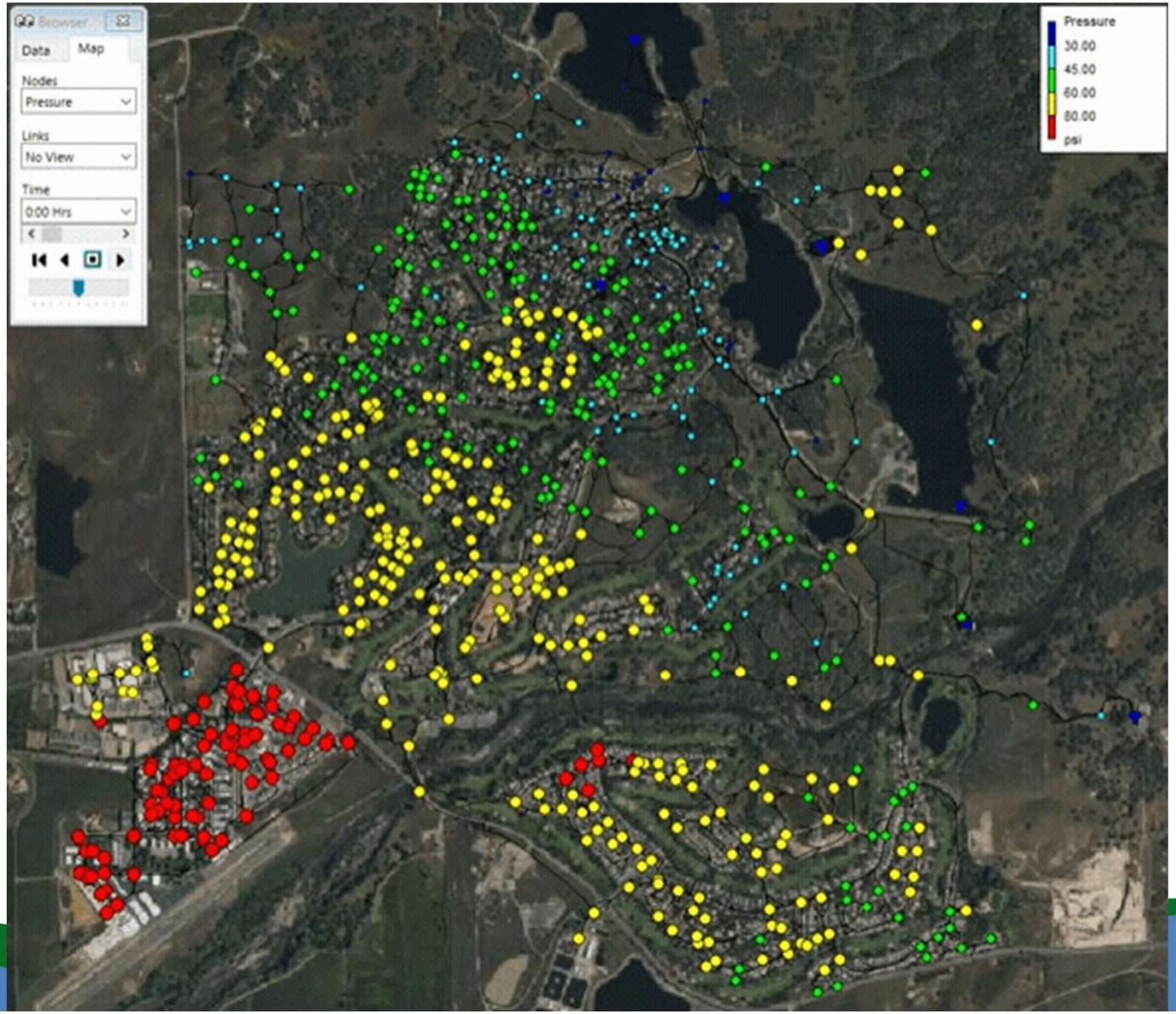


- Develop time-step water system model utilizing EPANET
- Integrate Shared Vision Model outputs
- Identify deficiencies in infrastructure (potable and recycled)
  - Supply
  - Storage (raw and finished water)
  - Distribution
- Develop capital improvements to meet current and/or future deficiencies



Hydraulic Model of Existing Conditions

Detailed Descriptions are on District Demand StoryMap



Hydraulic Model Scenario(s) of Future Conditions

Next Steps – Phase 3 Scenario Planning

- Build scenarios
- Analyze options
- Discuss key alternatives
- Additional public townhall discussion
- Refine alternatives
- Finish the documentation

Big Picture – Where do you fit in?

- Engage with the process
- Review the District's StoryMaps
- Ask "What If" questions
- Explain any nuances you think the technical team needs to know during scenario development
- Help us understand your concerns

Thank You