# Integrated One Water Framework for Water Master Plan – Unincorporated Solano County

## Summary of Needs and Challenges Goals and Objectives

July 26, 2023

Kennedy Jenks

# Meeting Agenda

## 1

### INTRODUCTIONS

Purpose of the Solano One Water Framework

## 2

### MEETING PURPOSE AND OUTCOMES

Solano One Water Recap

Meeting Purpose and Outcomes

## 3

### GOALS AND OBJECTIVES

Summary of County Challenges

Key Data Gaps

Framework Goals and Objectives

## 4

### SUMMARY

Summary

Next Steps

# Purpose of the Solano One Water Framework

- One Water Framework Objective
  - Focus on water resources in unincorporated County
  - Support and align with implementation of Solano County General Plan
  - Identify water-related challenges and opportunities through a stakeholder process
  - Develop One Water concepts and guiding principles collaboratively with goals, objectives, and strategies
  - Establish a process to develop regional, multi-benefit projects that leverage regional cooperation and coordination
- One Water Framework Outcome:
  - Vision, goals, and strategies as a roadmap to future Solano County Utilities Master Plan

# Introductions

**Steering Committee Participants**

- Solano County*
  - Misty Kaltreider
  - Dick Tzou
  - James Bezek
  - Department of Resource Management
- Cal Water – Dixon*
- City of Benicia
- City of Dixon*
- City of Fairfield
- City of Rio Vista*
- City of Suisun City
- City of Vacaville/Vacaville GSA
- City of Vallejo Water Department
- Dixon RCD*
- Fairfield Suisun Sewer District
- Maine Prairie Water District*
- RD 2068*
- Rural North Vacaville Water District
- Solano County Agricultural Commissioner*
- Solano County Farm Bureau*
- Solano County Water Agency*
- Solano Irrigation District/SID GSA
- Solano RCD*
- Suisun RCD
- Vallejo Flood and Wastewater District

*Solano GSA Member

**Kennedy Jenks & LSCE**

Kennedy Jenks

**Sachi Itagaki**
Project Manager

**Meredith Clement**
Deputy Project Manager

**Jennifer Larsen**
Technical Lead

Luhdorff & Scalmanini Consulting Engineers

**Nick Watterson,** Hydrogeologist/ Groundwater Sustainability Planning

# Meeting Agenda

**1**

**INTRODUCTIONS**

Purpose of the Solano One Water Framework

**2**

**MEETING PURPOSE AND OUTCOMES**

Solano One Water Recap

Meeting Purpose and Outcomes

**3**

**GOALS AND OBJECTIVES**

Summary of County Challenges

Key Data Gaps

Framework Goals and Objectives

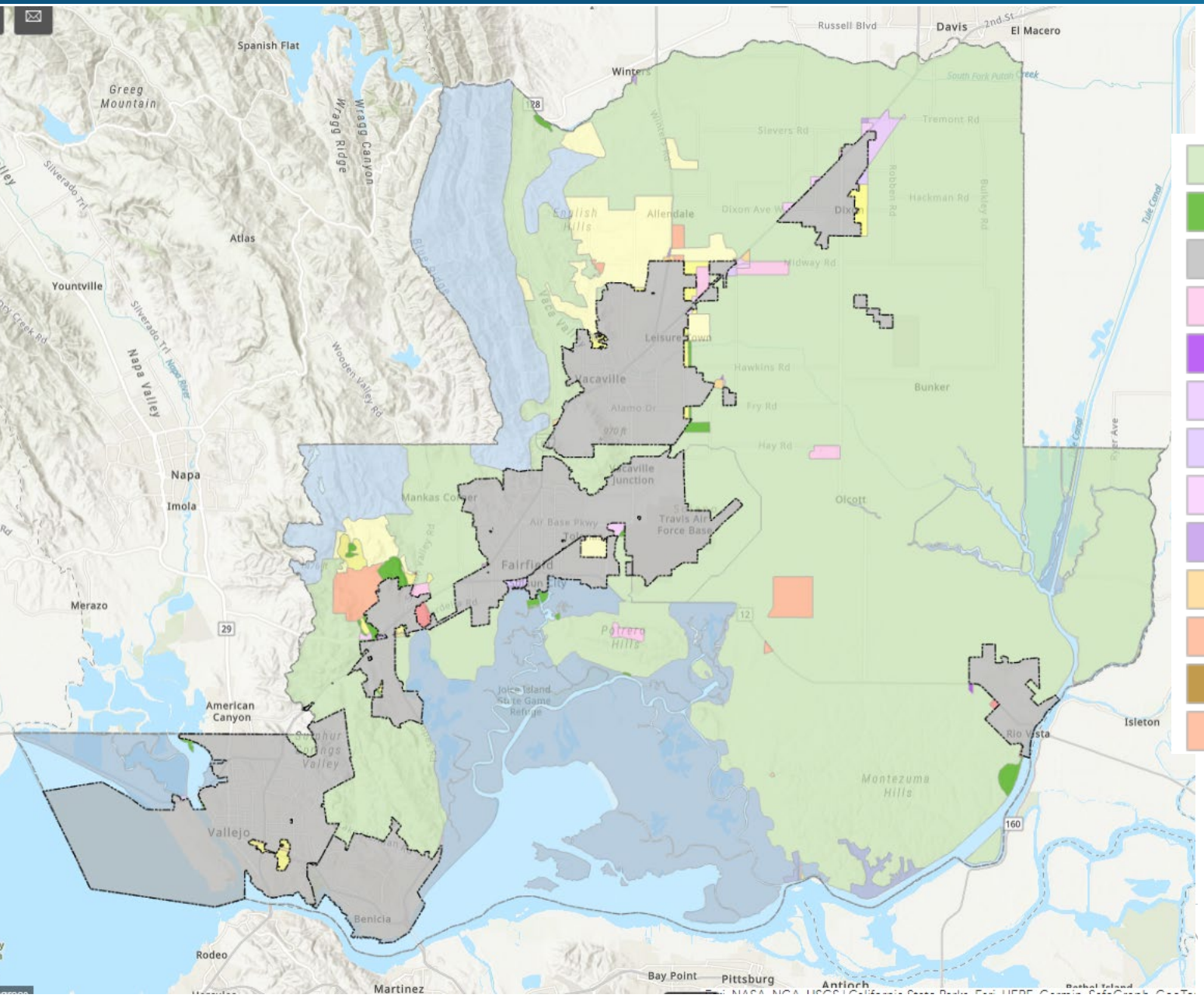
**4**

**SUMMARY**

Summary

Next Steps

# Solano One Water – Supporting General Plan Implementation




## GENERAL PLAN LAND USE DESIGNATIONS – UNINCORPORATED COUNTY

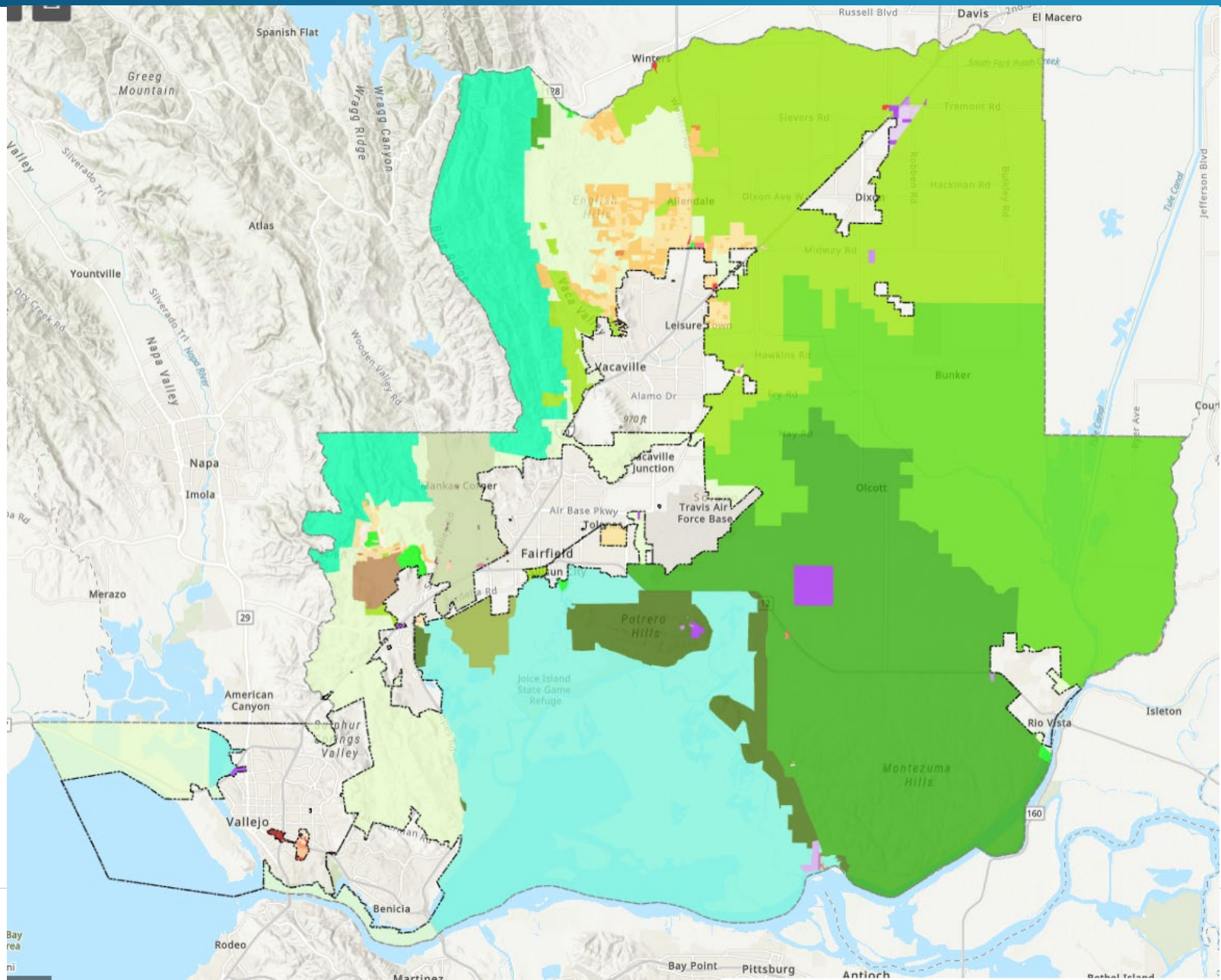
- Agriculture
- Park and Recreation
- Incorporated Area
- Public/Quasi-Public
- General Industrial
- Limited Industrial
- Urban Industrial
- Urban Commercial
- Service Commercial
- Highway Commercial
- Commercial Recreation
- Neighborhood Commercial
- Specific Project Area
- Urban Project Area
- Urban Residential
- Rural Residential
- Traditional Community - Residential
- Traditional Community - Mixed Use
- Marsh
- Water Bodies and Courses
- Water Dependent Industrial
- Watershed

Source: Solano County Resource Management Viewer.
"Solano_County_Unincorporated_General_Plan_2008_Updated"

# Solano One Water – Unincorporated County Zoning

## UNINCORPORATED COUNTY ZONING

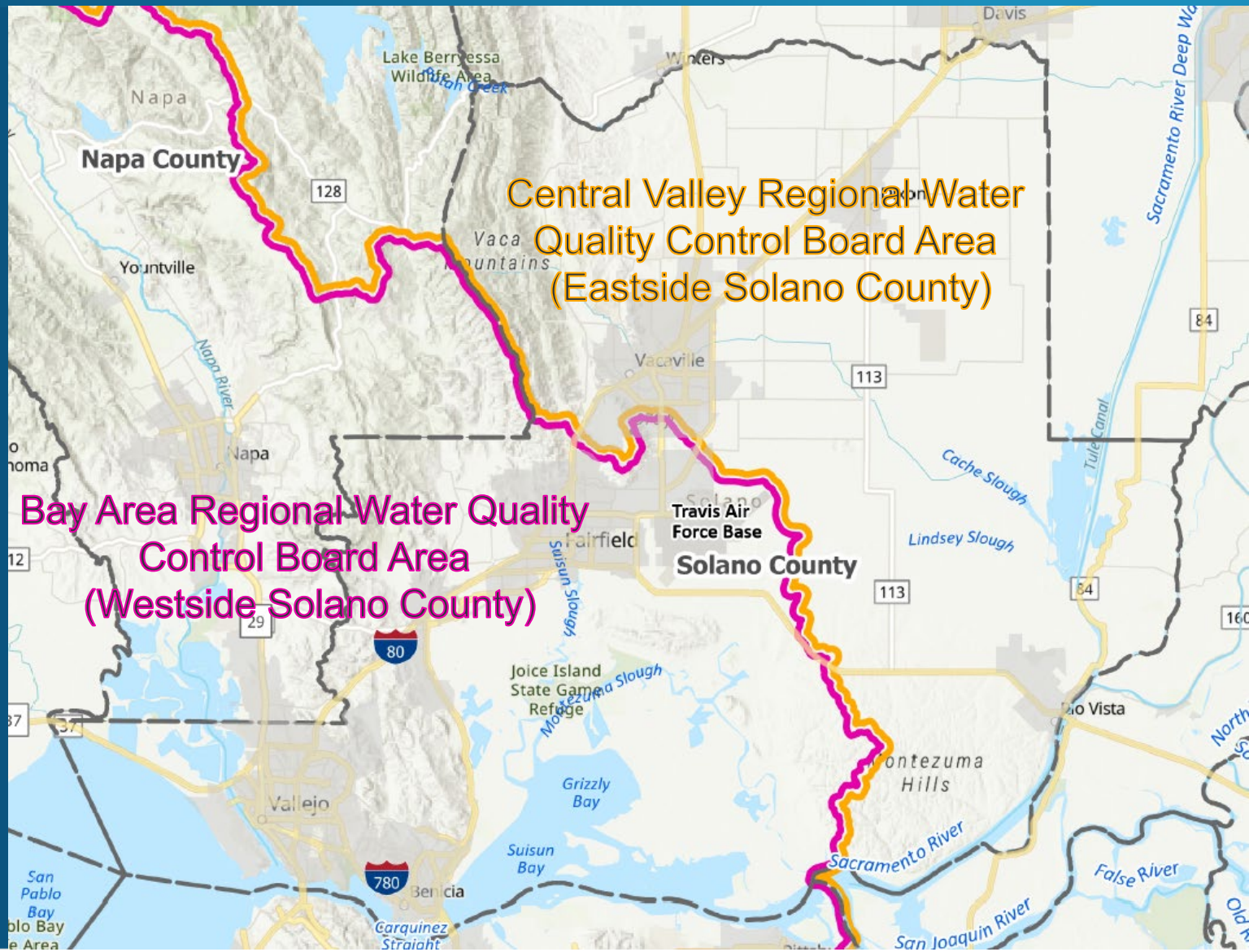
| | | |
|---|---|---|
| A-20 | RTC-20 | CS |
| A-40 | RTC-15 | I-AS |
| A-80 | RTC-10 | IWD |
| A-160 | RTC-6 | MG-1/2 |
| ASM-80 | RTC-4 | MG-3 |
| ASM-160 | RTC-D6 | MP |
| ASV-20 | RTC-D4 | W-160 |
| ATC | RTC-MF | P |
| ATC-NC | RTC-MU | MGV-SP |
| RR-2.5 | CH | |
| RR-5 | CN | |
| RR-10 | CR | |
| RTC-1AC | CRL | |




Source: Solano County Resource Management Viewer. "Solano County Unincorporated Zoning."

# PURPOSE AND OUTCOMES OF TODAY'S MEETING

- Recap challenges IDed at previous meetings
  - Eastside County
  - Westside County
  - Countywide
- Identify data gaps
- Discuss One Water Framework Goals and Objectives



# Meeting Agenda

**1**

## INTRODUCTIONS

Purpose of the Solano One Water Framework

**2**

## MEETING PURPOSE AND OUTCOMES

Solano One Water Recap

Meeting Purpose and Outcomes

**3**

## GOALS AND OBJECTIVES

Summary of County Challenges

Key Data Gaps

Framework Goals and Objectives

**4**

## SUMMARY

Summary

Next Steps

# Solano One Water – Summary of Challenges

Small Water Systems

Drainage/Flooding

Wastewater

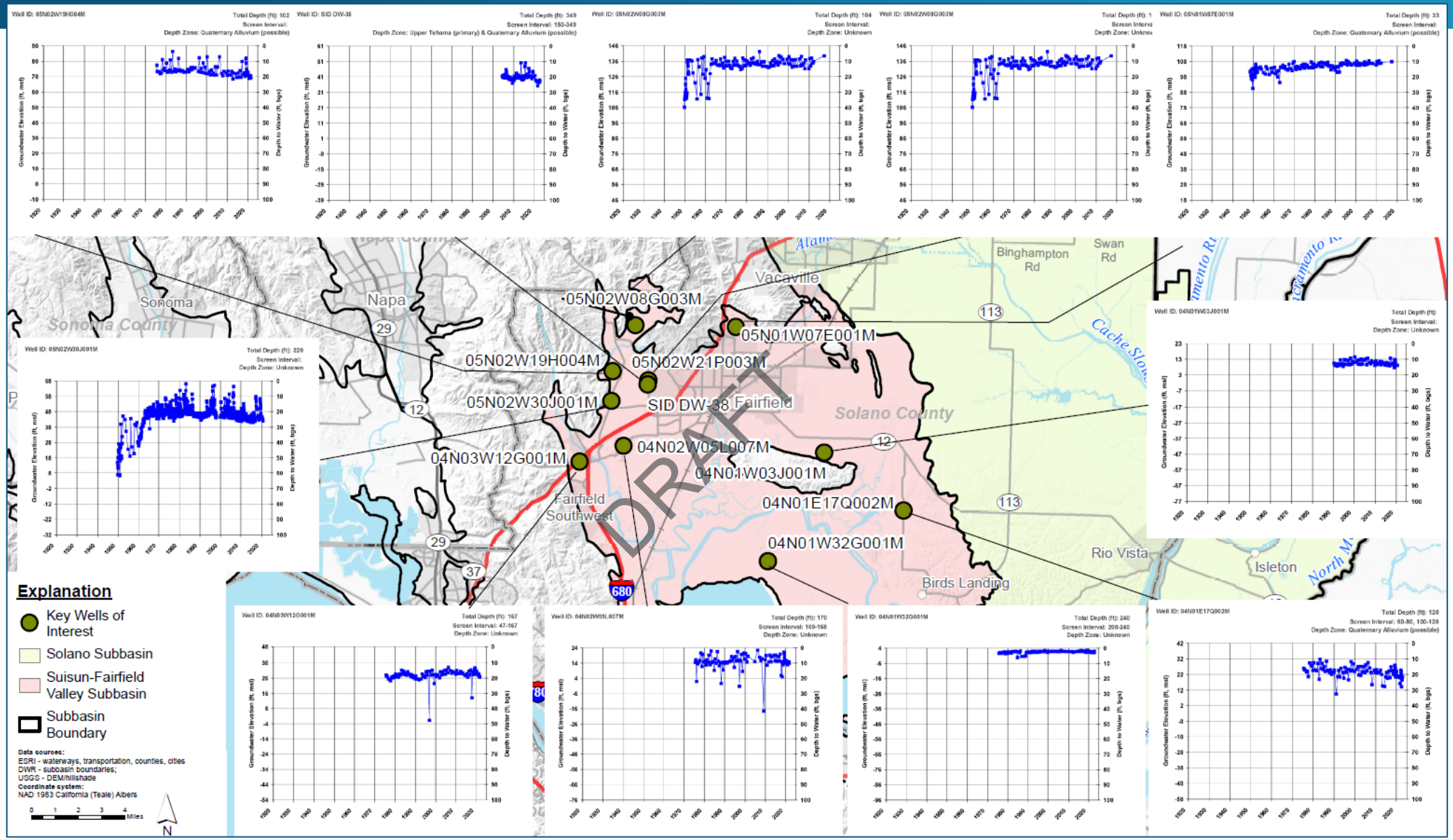
Agricultural Support

# Small Water Systens

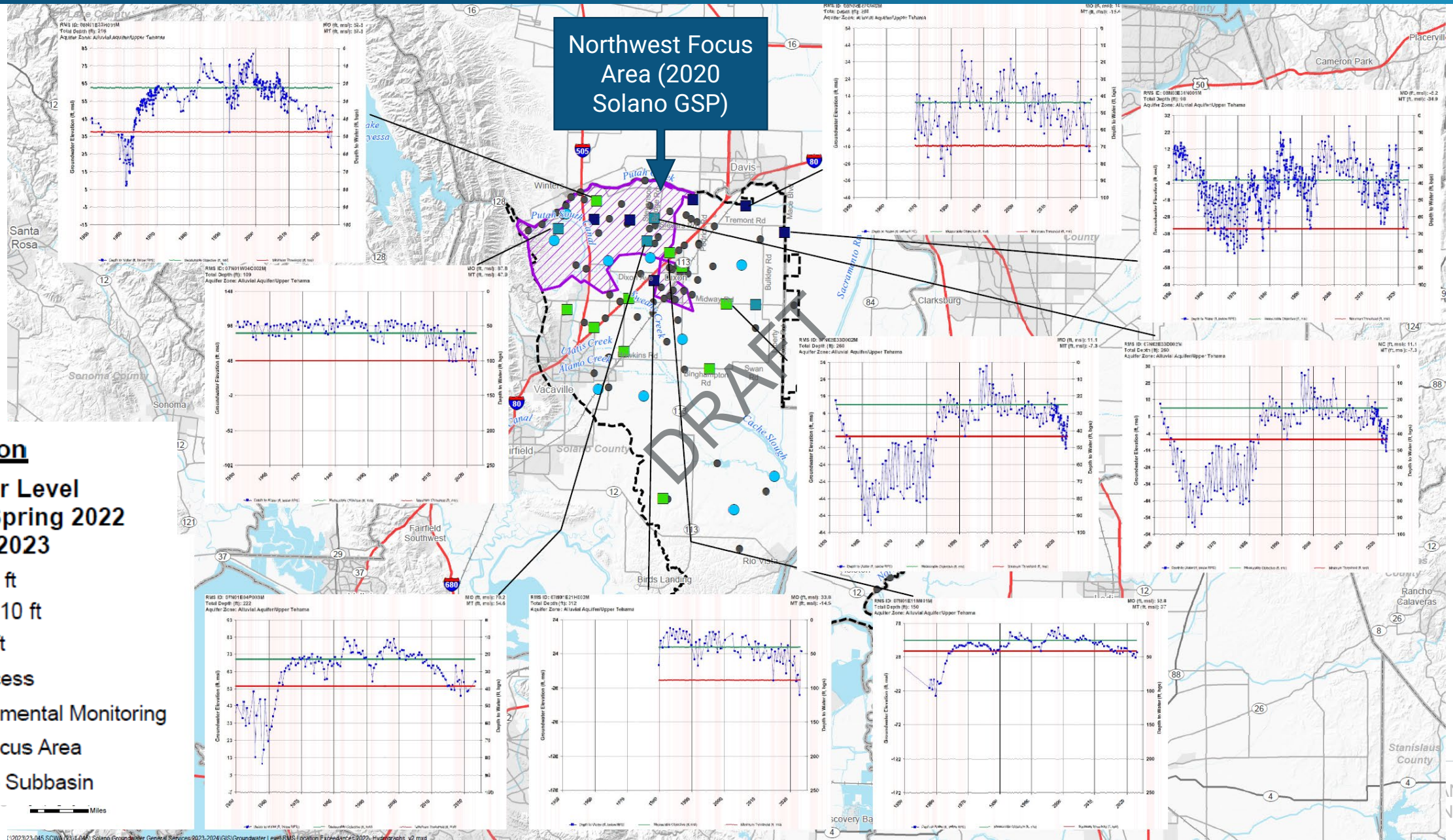
## Summary of County Challenges

# Westside Groundwater Conditions

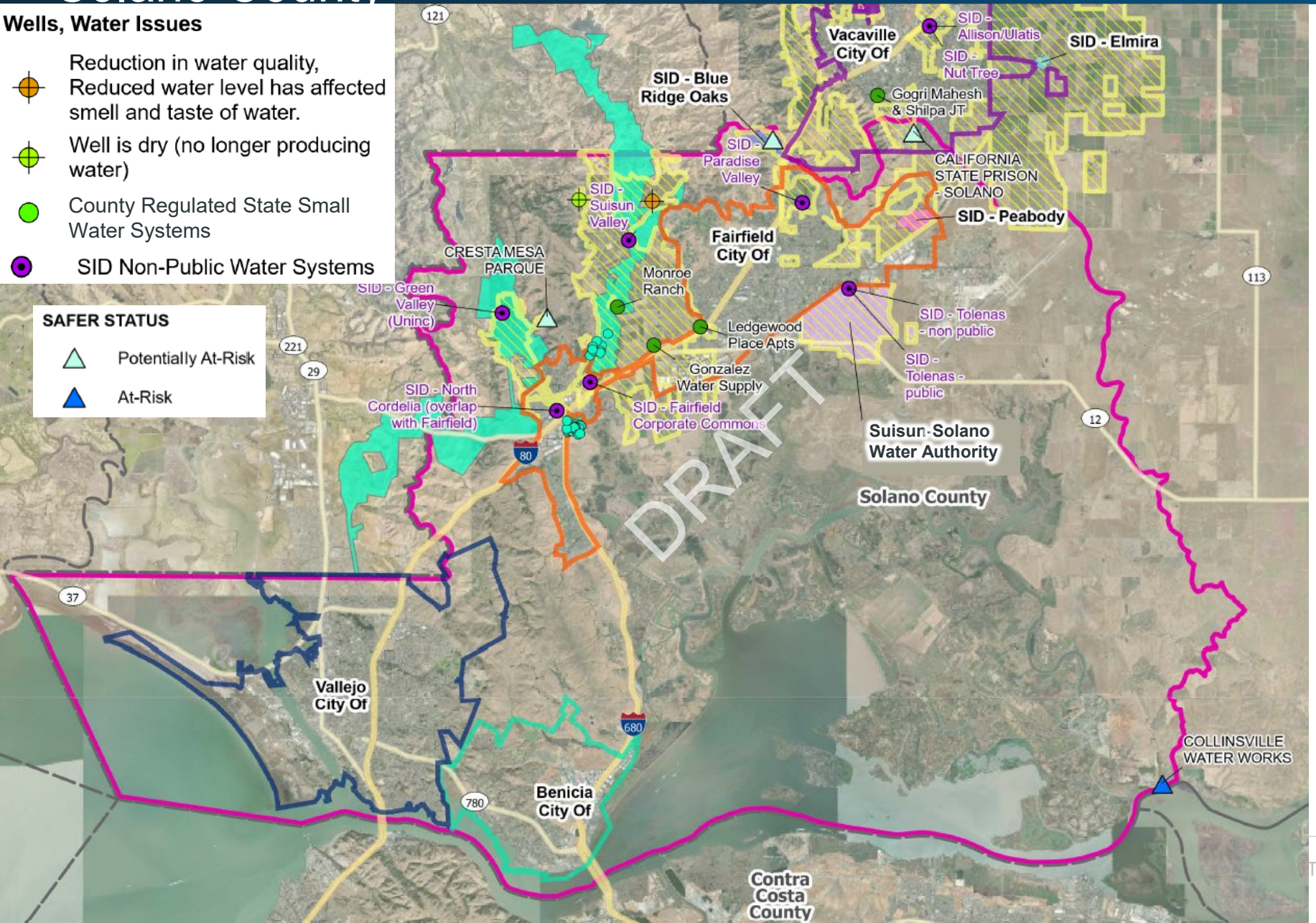
- Stable levels
- Higher salinity
- Limited public water supply wells



# 2023 Eastside Groundwater Conditions Update



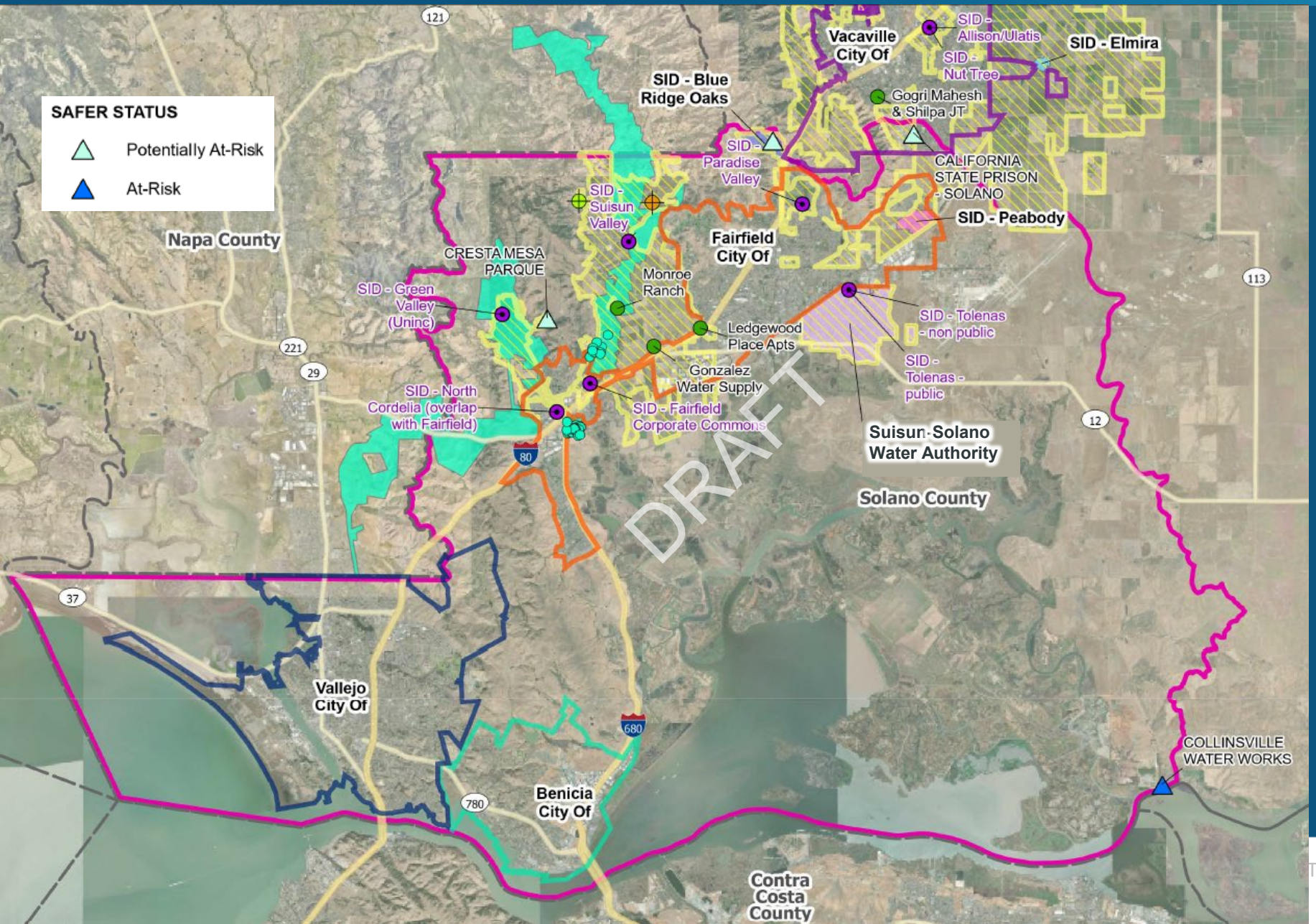
# Rural PWS, Domestic Wells, and Non-Public Water Systems in Westside Solano County




- 4 “Larger” PWS in and adjacent to the urbanized areas, including the Suisun Solano Water Authority
- Rural(ish) PWS include
  - SID Peabody System (Fairfield)
  - SID Blue Ridge Oaks (adjacent to Fairfield and Vacaville
  - Vallejo Lakes Water System
- SID Non-Public Water Systems (8)
- Solano Co regulates 3 State Small Water Systems

Private wells – some of which have identified issues

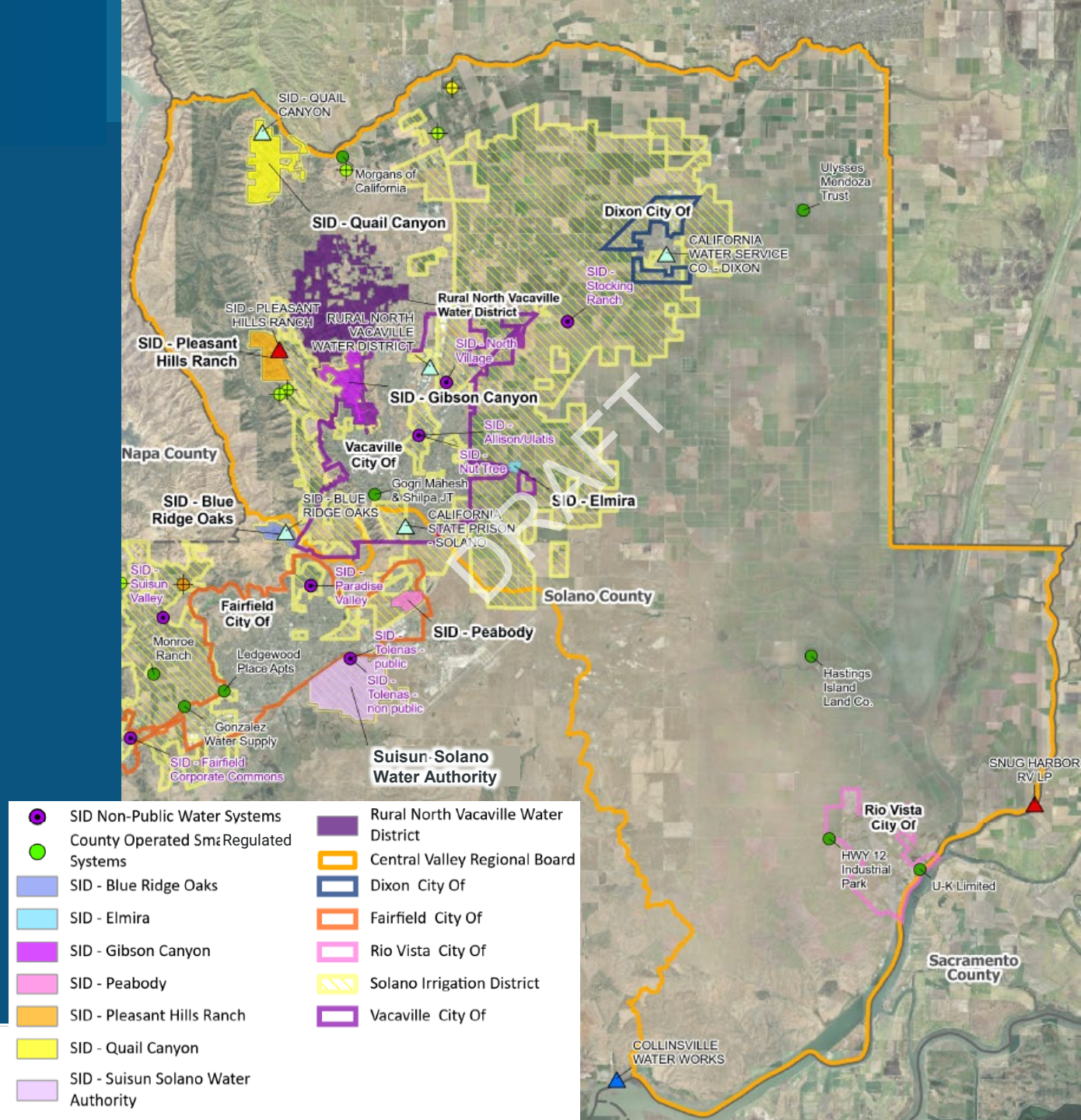
# SAFER 2023 Drinking Water Needs Assessment – Westside County




- Vulnerability status based on:
  - # of system connections
  - # of sources
  - Lack of intertie
  - Cost of Service
  - Fractured rock
  - Water quality
- Of the 26 PWS regulated by DDW in the County:
  - At-Risk: 1 on Westside (population 25)
  - Potentially At-Risk: 3 on Westside (population 5,188)
  - None have received state funding since 2017
- SAFER Drinking Water: https://www.waterboards.ca.gov/safer/

# Rural PWS and Domestic Wells in Eastside County

- Eastside Solano County has
  - 4 “Larger” PWS in the urbanized areas
  - Rural PWS include
    - SID operates 5 PWS serving potable
    - Rural North Vacaville WD operates a PWS
  - Solano Co regulates 6 State Small Water Systems
  - Private wells – some of which have identified issues



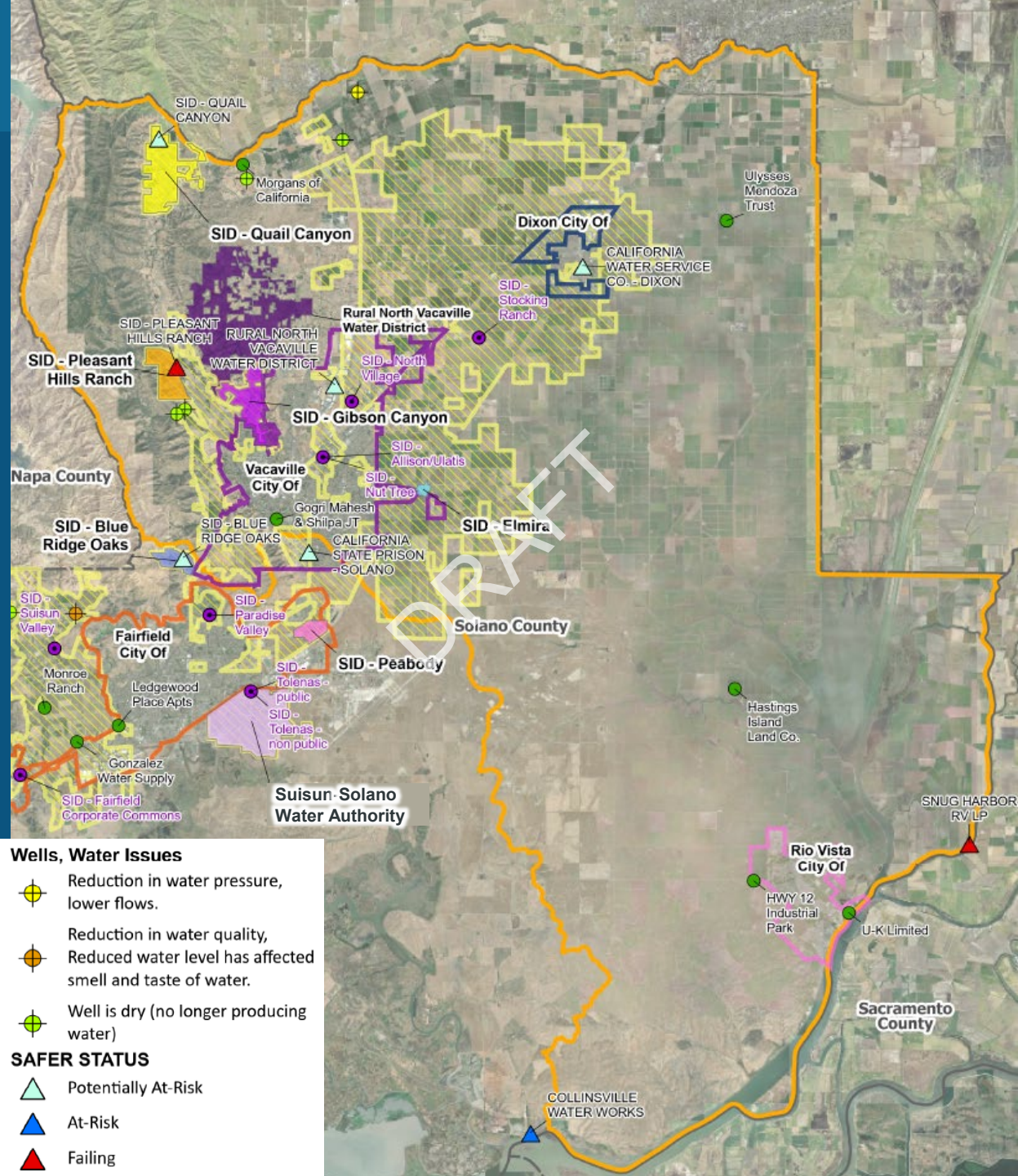
# SAFER 2023 Drinking Water Needs Assessment – Eastside County

Vulnerability Assessment Status based on:

- # of system connections
- # of sources
- Lack of intertie
- Fractured rock
- Water quality

Of the 26 PWS regulated by DDW in the County:

- Failing: 2 on Eastside (population 214)
- Potentially At-Risk: 3 on Eastside (population 12,058)
- None have received state funding since 2017)



# Small Water Systems – Summary of Challenges

| Challenge/Issue | Westside | Eastside |
|---|---|---|
| Documented groundwater decline | | ● |
| Groundwater under direct influence of surface water | ● | ● |
| Poor well construction, risk of contamination | | ● |
| Lack of regional groundwater assessment to verify demand vs. capacity and other potential limiting factors | ● | ● |
| Groundwater very shallow, hindering recharge | ● | |
| Brackish water quality limiting the use of groundwater | ● | |
| Per State's SAFER database: failing, at-risk, and/or potentially at-risk system(s) | ● | ● |
| Lack of redundancy in water systems | | ● |
| Cost of running sophisticated water system w/small customer base | ● | ● |
| Potential conflict between domestic wells and septic systems | ● | ● |
| Lack of septic system maintenance by property owners | ● | ● |

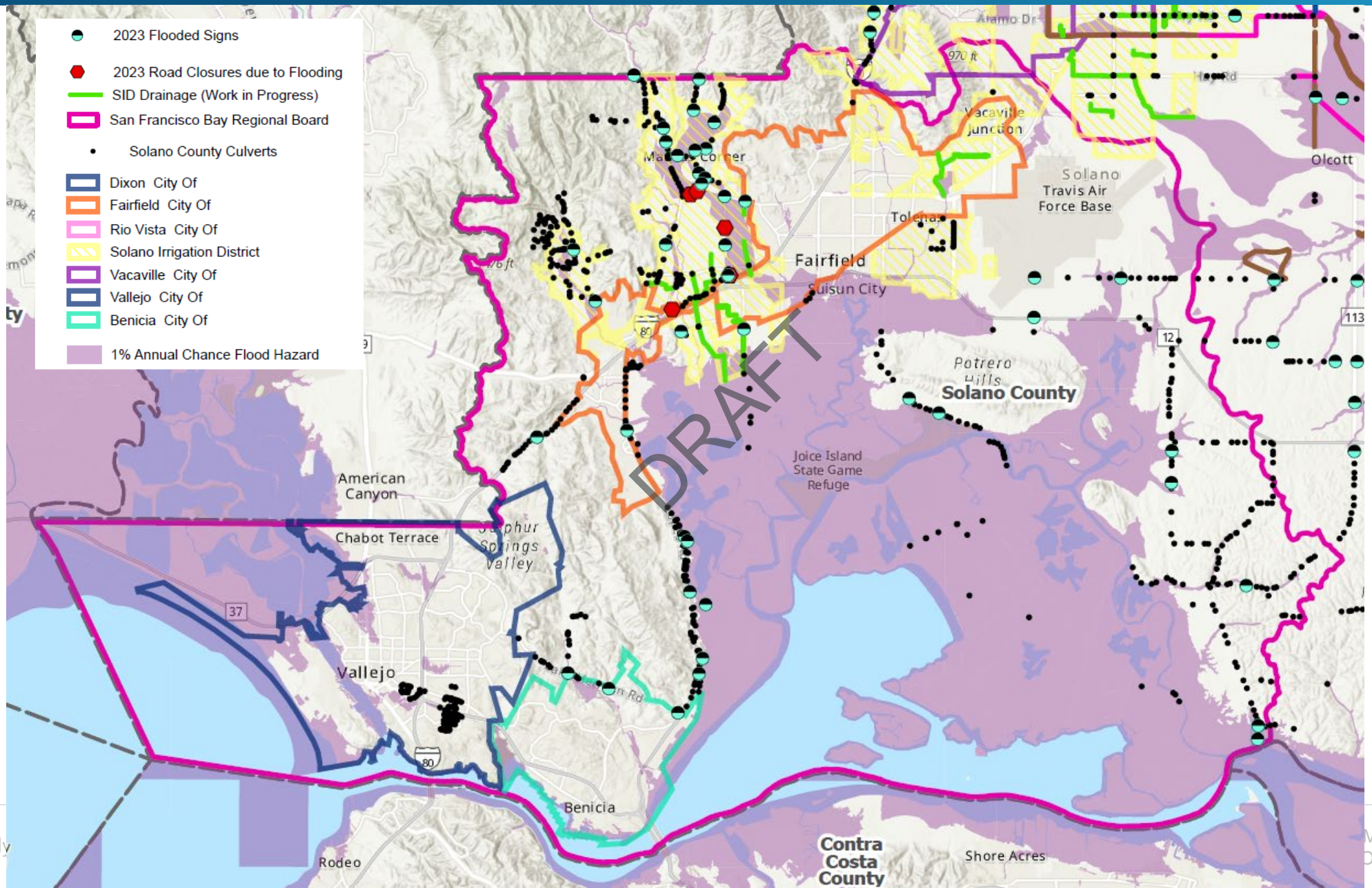
# Key Data Gaps

- Information on some rural water systems
- Information on State Small Systems (County Regulated)
- Rural domestic and agricultural water supplies and demands
- Comprehensive database on domestic wells (e.g., location, construction info, water quality, demand, water levels, etc.)
- Comprehensive database on septic systems (e.g., locations, engineered systems, etc.)

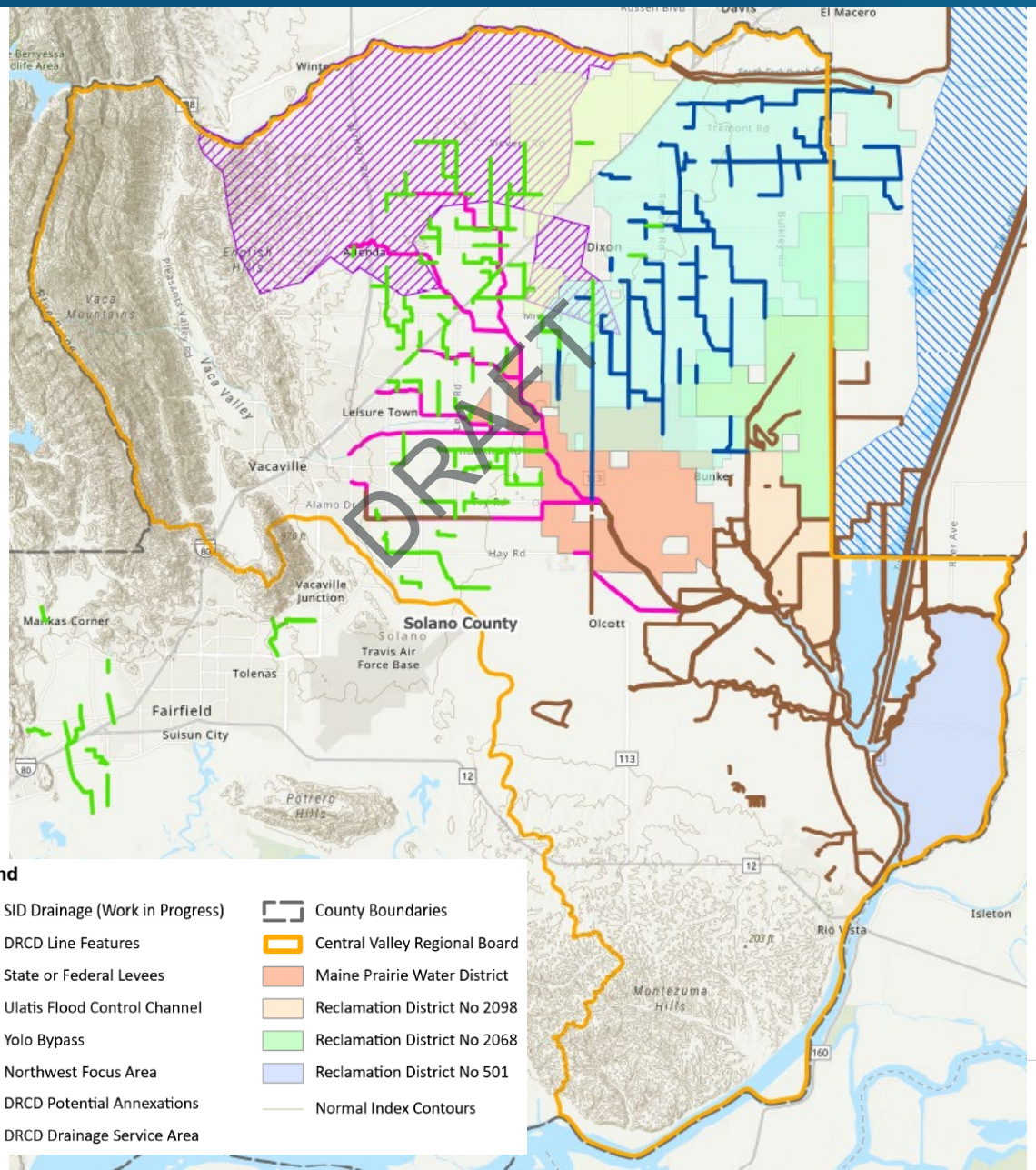
# Drainage and Flooding

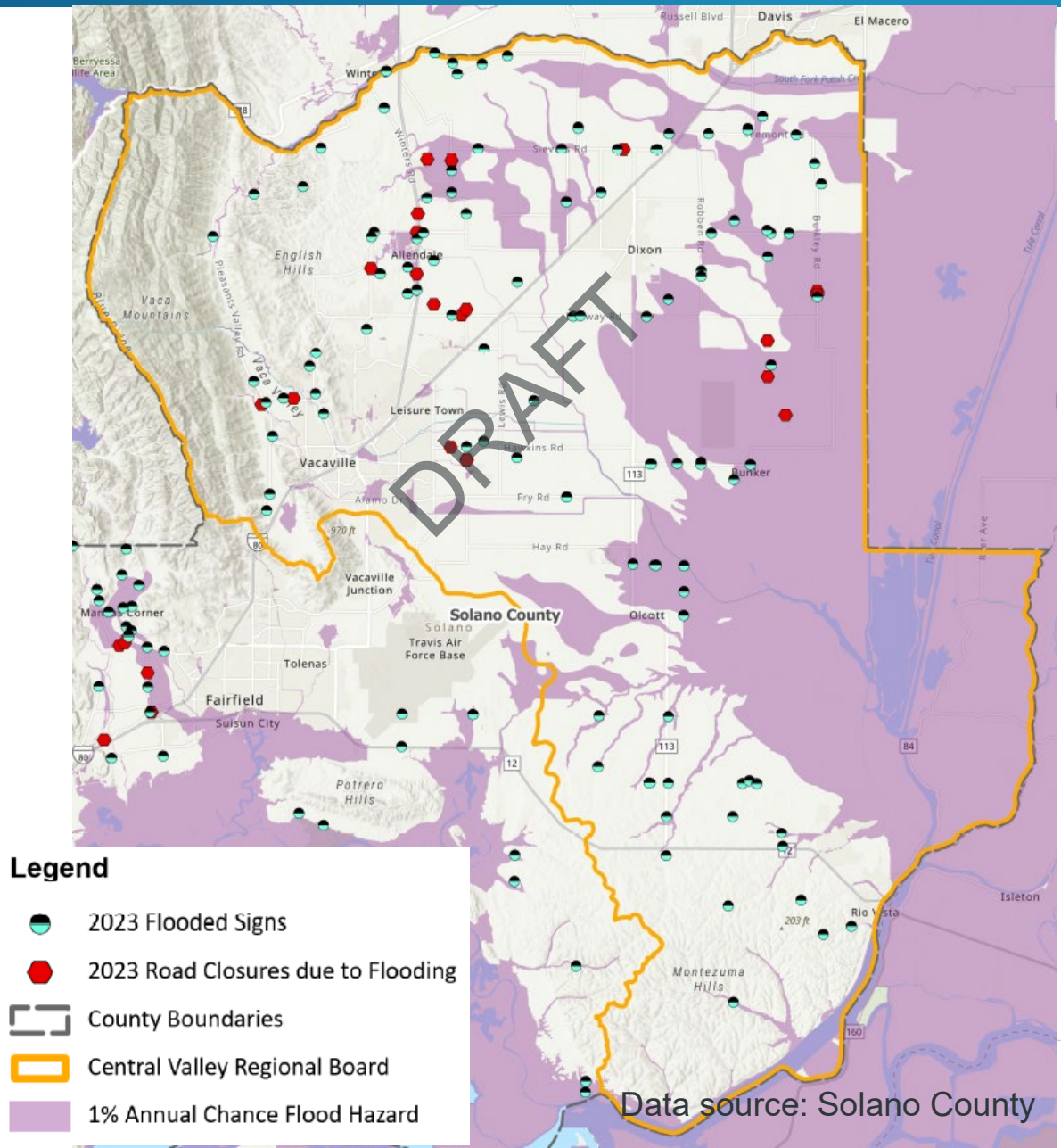
## Summary of County Challenges

# Existing Drainage Facilities and Areas Prone to Flooding – Westside County



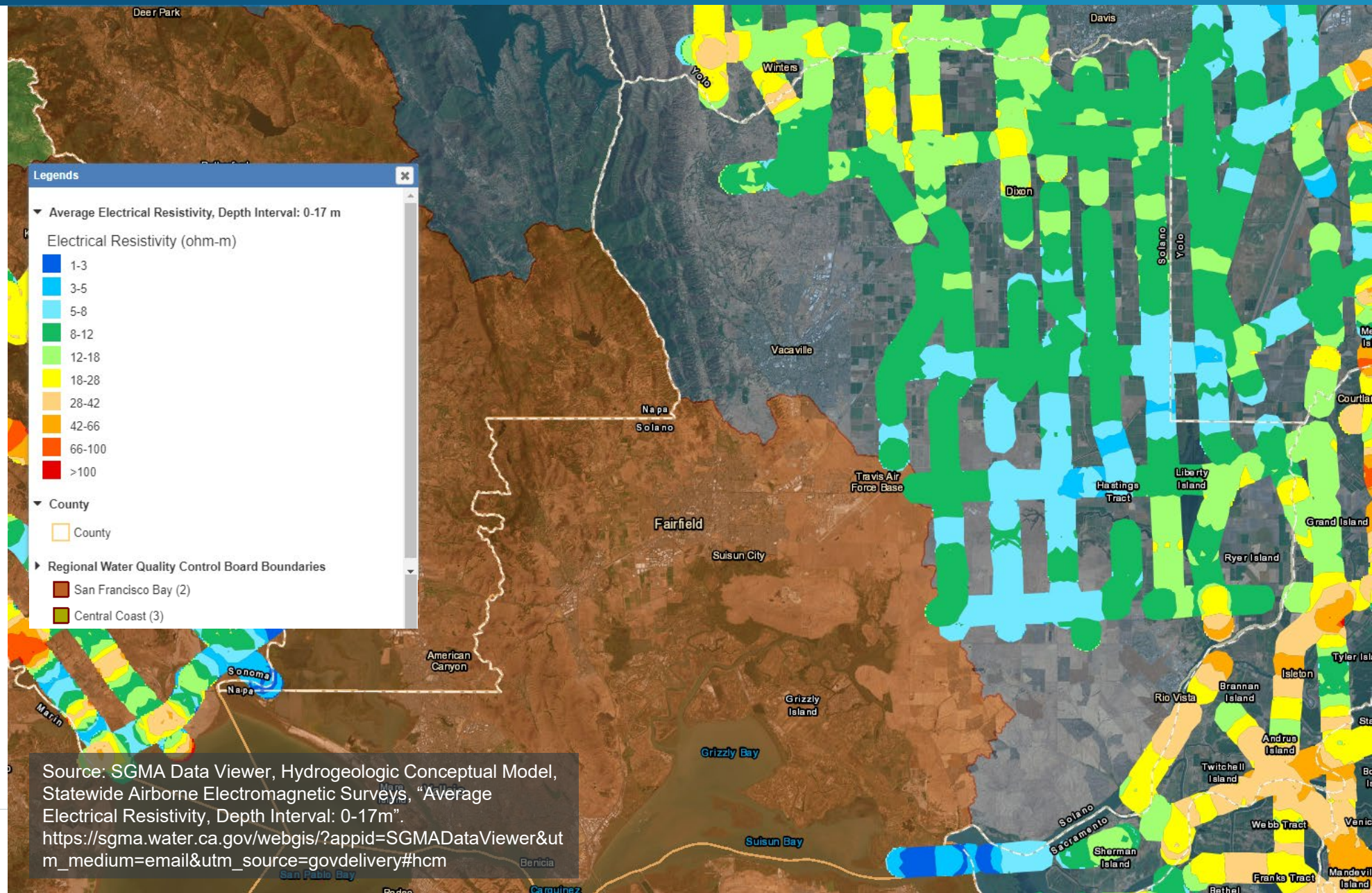
# Existing Drainage Facilities and Areas Prone to Flooding – Eastside County



# Areas Conducive to Recharge

- Existing efforts to develop multi-benefit recharge projects and locations:
  - High GW recharge potential
  - Environmental benefits
  - Practical recharge methods depending on individual site conditions
- GSAs/SCWA coordinating to build upon proposed recharge opportunities




Source: SGMA Data Viewer, Hydrogeologic Conceptual Model, Statewide Airborne Electromagnetic Surveys, "Average Electrical Resistivity, Depth Interval: 0-17m". https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer&utm_medium=email&utm_source=govdelivery#hcm

# Drainage and Flooding – Summary of Challenges

| Challenge/Issue | Westside | Eastside |
|---|---|---|
| Issue with flooding when Yolo Bypass full or high tide/sea level rise | | ● |
| Poorly draining soils/groundwater levels unsuitable for groundwater recharge | ● | ● |
| Upstream development/urbanization increases flooding | ● | ● |
| Lack of infrastructure for retaining flood waters | ● | ● |
| Opportunities to put in retention ponds conflicts with preserving ag/environmental land uses | ● | ● |
| Getting permits/access locations to do creek cleaning daunting | ● | ● |
| Getting funding to do creek cleaning daunting | ● | ● |
| Streams/creeks are flashy, which complicates modeling | ● | ● |
| Unclear flood/drainage responsibilities (multiple agencies/private landowners) | ● | ● |
| Outdated studies on flooding/drainage need to be updated | ● | ● |

# Key Data Gaps

- GIS/modeling of non-federal/non-State flood control/drainage infrastructure
- Comprehensive database: documentation of flood events, location/extent, date and duration, cause, impact, costs, infrastructure condition assessment
- Understanding on agency flooding/drainage jurisdictions/responsibilities
- Property owners willing to store/recharge runoff
- Lack of clarity on institutional jurisdictions for drainage and flood control
  - Multiple jurisdictions that overlap in some areas
- Field verification to verify recharge rate of soils

# Wastewater and Water Reuse

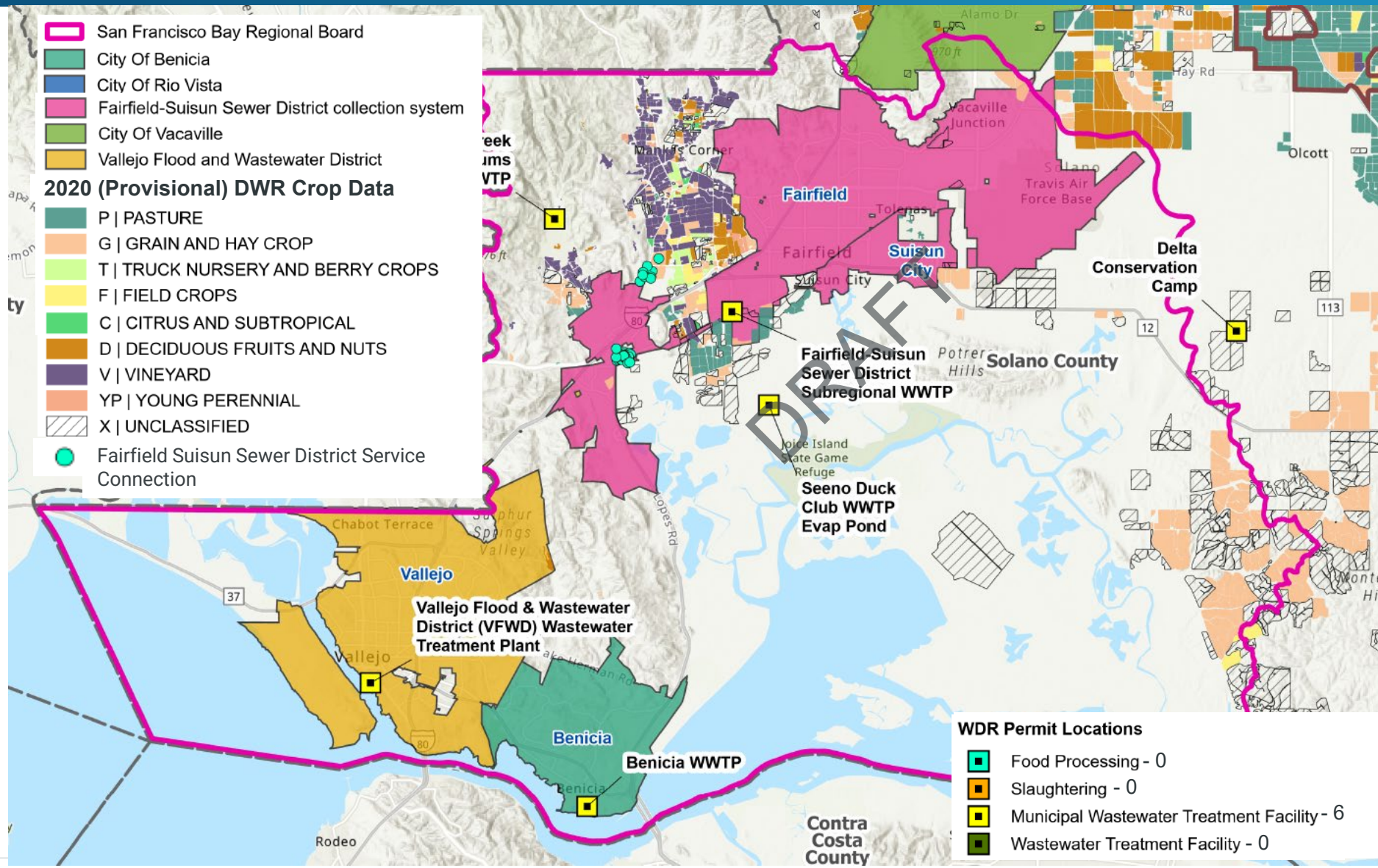
## Summary of County Challenges

# Wastewater Treatment/Water Reuse – Westside County

16 Other Regulated Facilities – Industrial Stormwater (14) and Waivers for WDR (2) (not mapped):

- Cannabis Sites – 2
- Industrial Food Preparations and others – 7
- Industrial Malt Beverages – 3
- Wineries – 4

-WDR Waivers are issued for discharges of <1,000,000 gallons/year to land
-WDRs are issued for disposal to land



# Wastewater Treatment/Water Reuse – Eastside County

13 Other Regulated Facilities – Industrial Stormwater (4) and Waivers for WDR (9) (not mapped):

- Cannabis Sites – 5
- Food Processing – 4
- Industrial Food Preparations and others – 3
- Industrial Malt Beverages – 1

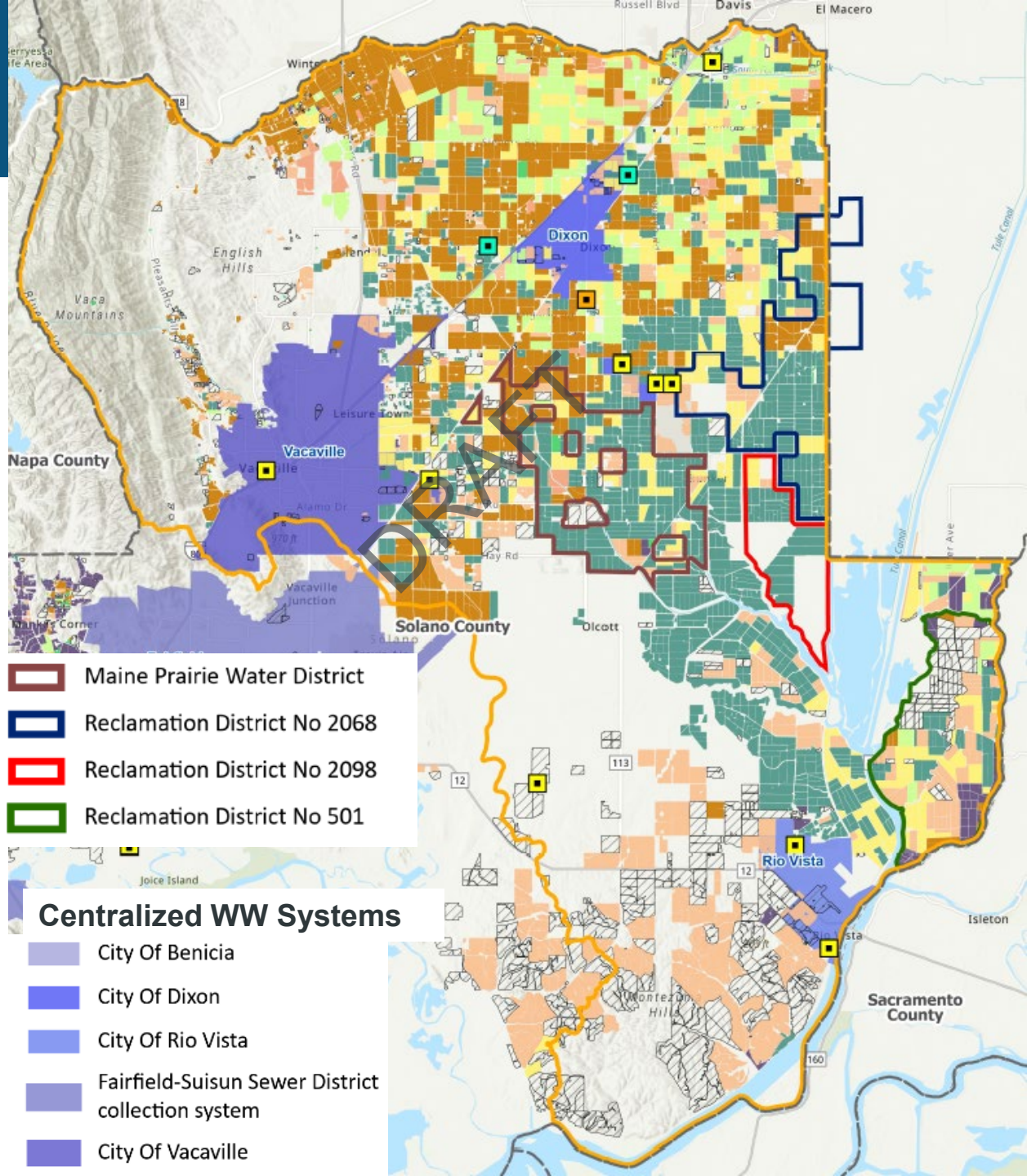
-WDR Waivers are issued for discharges of <1,000,000 gallons/year to land
-WDRs are issued for disposal to land

**WDR Permit Locations**

- Food Processing – 2
- Slaughtering – 1
- Municipal Wastewater Treatment Facility – 11

**2020 (Provisional) DWR Crop Data**

- R | RICE
- P | PASTURE
- G | GRAIN AND HAY CROP
- T | TRUCK NURSERY AND BERRY CROPS
- F | FIELD CROPS
- C | CITRUS AND SUBTROPICAL
- D | DECIDUOUS FRUITS AND NUTS
- V | VINEYARD
- YP | YOUNG PERENNIAL
- U | URBAN UNSPECIFIED
- X | UNCLASSIFIED



# Wastewater and Water Reuse – Summary of Challenges

| Challenge/Issue | Westside | Eastside |
|---|---|---|
| FSSD is limited by State legislation from serving parcels outside of Fairfield or Suisun City boundaries unless there has been an immediate health and safety need | ● | |
| Recycled water demand is too far to justify the infrastructure/treatment cost | ● | ● |
| Public perception can discourage farmers from accepting recycled water | ● | ● |
| Pending SFRWQCB nitrogen regulations may impact whether sewer district(s) expands high-strength waste service | ● | ● |
| High strength waste shipped out of Solano County to EBMUD; to limit nitrogen discharge EBMUD may stop accepting food waste | | ● |
| Impacts to groundwater due to ongoing discharge of high-strength wastes from processors/others | ● | ● |
| Septic systems are vulnerable to stream meandering, high water tables, and changing rules related to setbacks | ● | ● |
| Areas where soils unsuitable for septic systems | ● | ● |

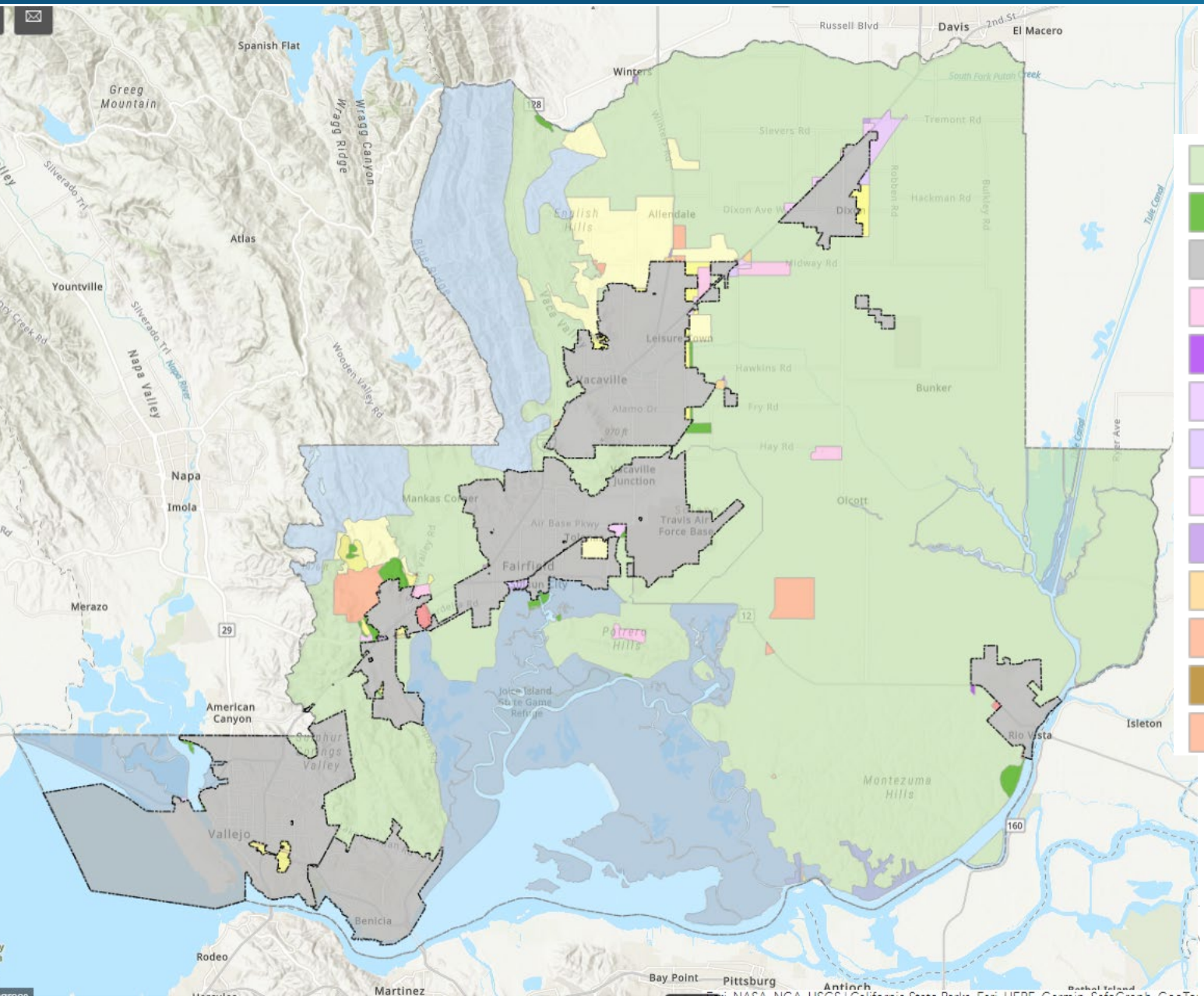
# Key Data Gaps

- Information on failing septic systems including GIS
- Comprehensive, regional soil/groundwater capacity information related to septic systems
- Comprehensive database on septic systems (e.g., locations, engineered systems, etc.)
- Information related to groundwater contamination due to septic systems
- Potential agricultural/industrial recycled water users or concerns why they would accept/use recycled water

# Attracting and Maintaining Agriculture Supporting Businesses

## Summary of County Challenges

# General Plan Land Use - Unincorporated County




Source: Solano County Resource Management Viewer.
"Solano_County_Unincorporated_General_Plan_2008_Updated"

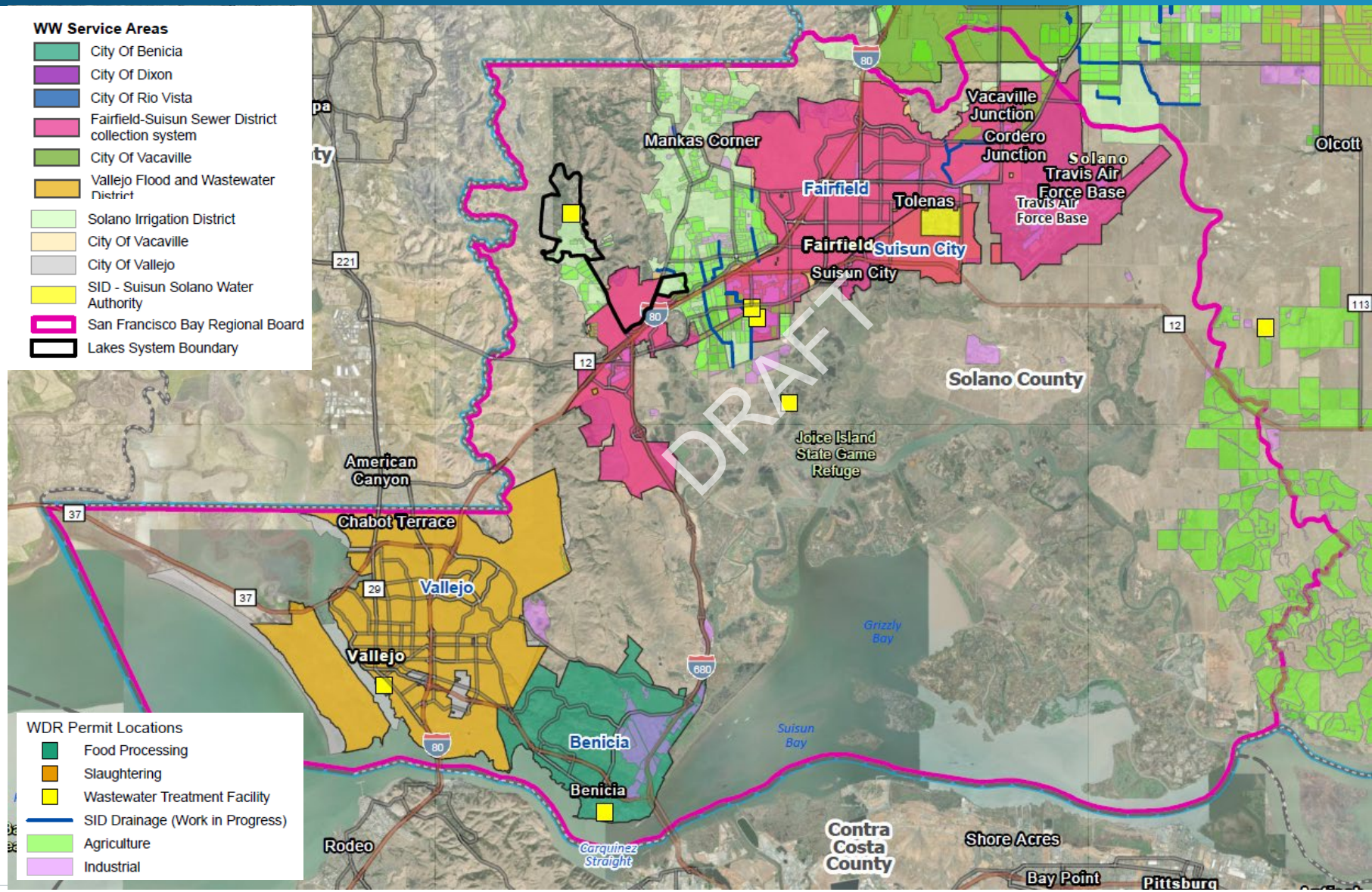
# Ag-Support Areas – Westside County

**Lake System Boundary to be updated**

16 Other Regulated Facilities – Industrial Stormwater (14) and Waivers for WDR (2) (not mapped):

- Cannabis Sites – 2
- Industrial Food Preparations and others – 7
- Industrial Malt Beverages – 3
- Wineries – 4

-WDR Waivers are issued for discharges of <1,000,000 gallons/year to land
-WDRs are issued for disposal to land



# Ag-Support Areas – Eastside County

13 Other Regulated Facilities – Industrial Stormwater (4) and Waivers for WDR (9) (not mapped):

- Cannabis Sites – 5
- Food Processing – 4
- Industrial Food Preparations and others – 3
- Industrial Malt Beverages – 1

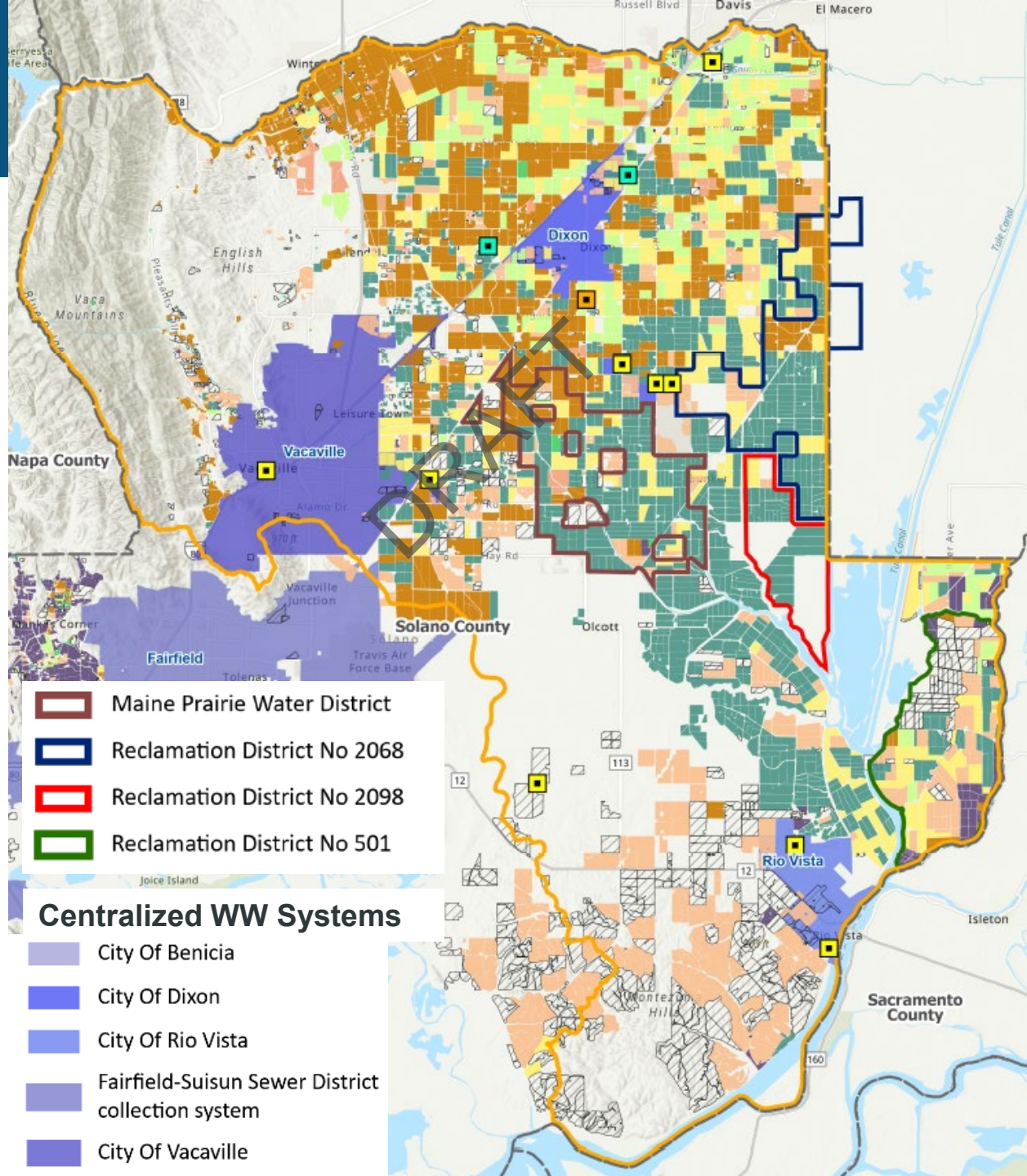
-WDR Waivers are issued for discharges of <1,000,000 gallons/year to land
-WDRs are issued for disposal to land

**WDR Permit Locations**

- Food Processing – 2
- Slaughtering – 1
- Municipal Wastewater Treatment Facility – 11

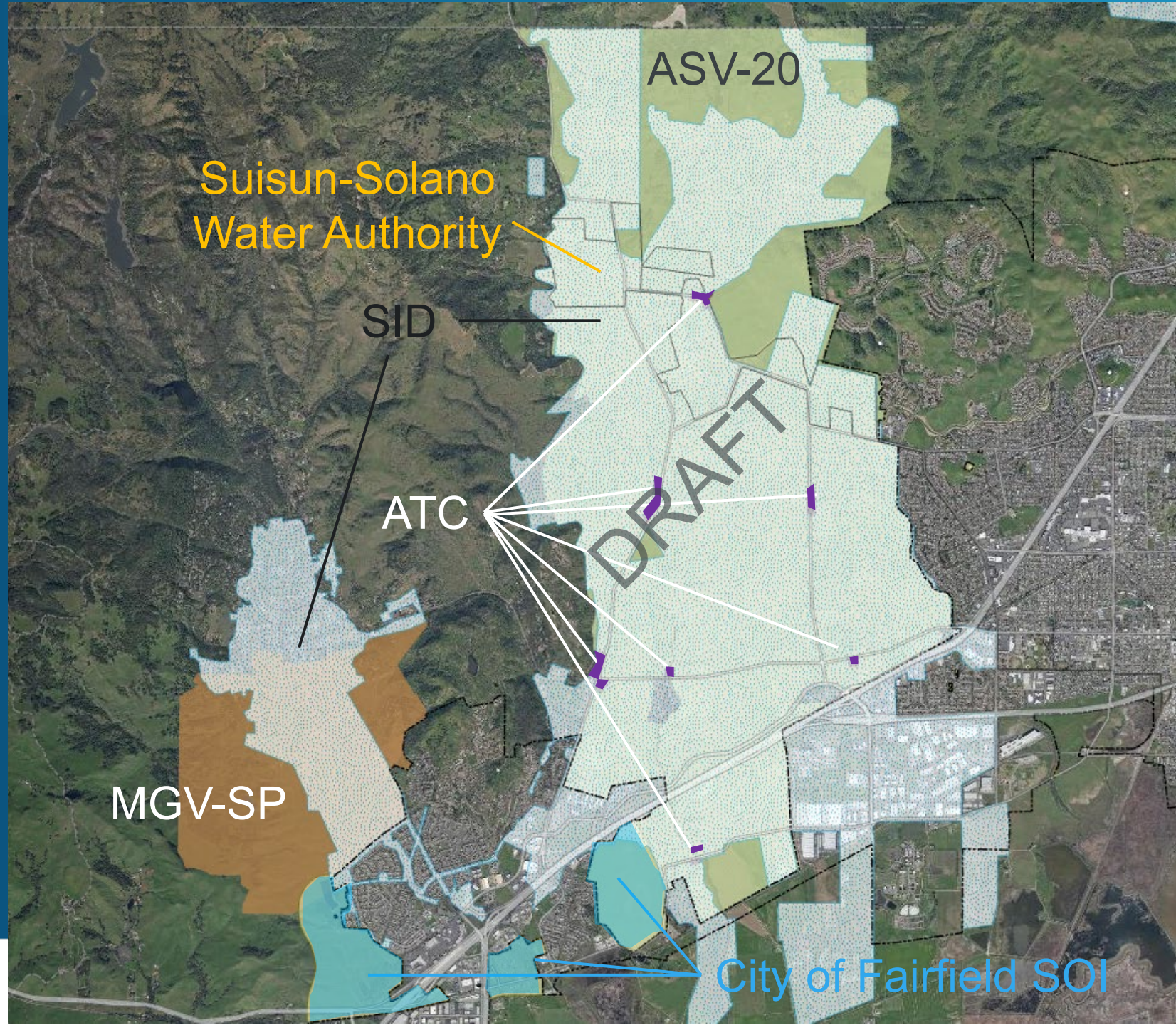
**2020 (Provisional) DWR Crop Data**

- R | RICE
- P | PASTURE
- G | GRAIN AND HAY CROP
- T | TRUCK NURSERY AND BERRY CROPS
- F | FIELD CROPS
- C | CITRUS AND SUBTROPICAL
- D | DECIDUOUS FRUITS AND NUTS
- V | VINEYARD
- YP | YOUNG PERENNIAL
- U | URBAN UNSPECIFIED
- X | UNCLASSIFIED



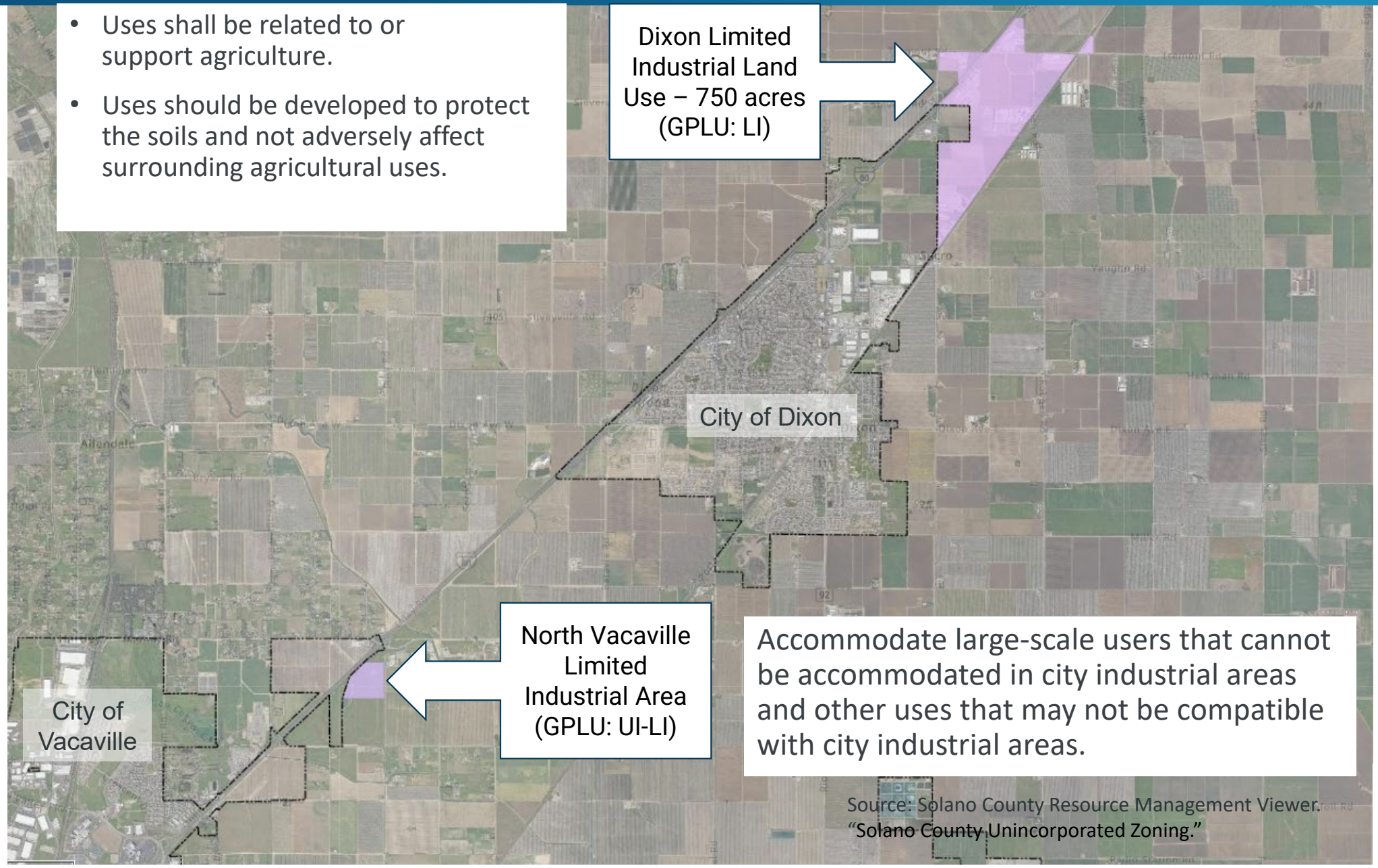
# Ag Tourism Areas and Combined Water Boundaries

- ASV-20: Suisun Valley Agriculture
- ATC: Agricultural Tourist Center
- MGV-SP: Middle Green Valley Specific Plan



# Limited Industrial Land Use Areas for Ag Support

- Uses shall be related to or support agriculture.
- Uses should be developed to protect the soils and not adversely affect surrounding agricultural uses.




Accommodate large-scale users that cannot be accommodated in city industrial areas and other uses that may not be compatible with city industrial areas.

Source: Solano County Resource Management Viewer. "Solano County Unincorporated Zoning."

# Attracting and Maintaining Ag Supporting Businesses – Summary of Challenges

| Challenge/Issue | Westside | Eastside |
|---|---|---|
| Unclear if need to provide on-site wastewater disposal discouraging businesses | ● | ● |
| Uncertainty in water rights discourages some businesses including ag | ● | ● |
| Drainage issues concern for ag supporting businesses | ● | ● |
| Lack of information related to groundwater protection from contamination due to onsite wastewater treatment systems | ● | ● |
| High cost of connecting large producers/processors to consolidated wastewater system | ● | ● |

# Key Data Gaps

- Whether lack of water/wastewater services has limited businesses in Solano County
- Regional feasibility evaluation to verify capacity of onsite wastewater treatment to provide groundwater protection to support Ag industry and tourism & process areas (hotels, restaurants, processors)
- Processor/producer costs/benefits to treat wastewater/high-strength wastes onsite
- What is needed for existing consolidated wastewater collection systems to extend or accept material from processors/producers? (e.g., agreements, studies, funding, permits)

# Framework Goals and Objectives

Initial Discussion

# Purpose of the Solano One Water Framework

- One Water Framework Objective
  - Focus on water resources in unincorporated County
  - Support and align with implementation of Solano County General Plan
  - Identify water-related challenges and opportunities through a stakeholder process
  - Develop One Water concepts and guiding principles collaboratively with goals, objectives, and strategies
  - Establish a process to develop regional, multi-benefit projects that leverage regional cooperation and coordination
- One Water Framework Outcome:
  - Vision, goals, and strategies as a roadmap to future Solano County Utilities Master Plan

# Framework Goals

- Desired outcomes of the Solano One Water Framework:
  - **Set the vision, goals, and strategies as a roadmap to future Solano County Utilities Master Plan**
  - Support implementation of Solano County General Plan from a water/wastewater perspective
  - Evaluate wide range of supplies to meet demands and identify means to expand water supply portfolio while reducing risks and impacts to water systems (e.g., flooding, supply contamination, etc.)
  - Recommend policy updates to support the General Plan without impacting agricultural lands and functions
  - Identify opportunities for institutional collaboration

# Framework Objectives

- Identify water/wastewater needs and challenges of unincorporated portions of Solano County related to **small water systems, drainage, wastewater, and agriculture business support**
- Identify data gaps and identify project concepts and opportunities to fill data gaps
- Create multi-benefit screening approaches
- Develop One Water concepts and guiding principles collaboratively with goals, objectives, and strategies
- Establish a process to develop regional, multi-benefit projects that leverage regional cooperation and coordination
- Identify project concepts and opportunities to meet needs and challenges

# Example Project Concept Themes

- Projects that address:
  - Water Supply/Demand
  - Flood Reduction
  - Groundwater Recharge
  - Water/Wastewater Infrastructure
  - Other needs to support water systems

# Example Master Plan Goals and Objectives

- Framework to serve as a basis for the future Solano County Utilities Master Plan goals and objectives
- Example Goals:
  - Support existing small water systems to serve existing and future customers in unincorporated Solano County
  - Prepare small systems to support General Plan and Specific Plan future land uses
  - Support ag and ag supporting businesses and industries without impacts to groundwater and land uses
- Example Objectives:
  - Evaluate projects using multi-benefit screening matrix
  - Evaluate unincorporated county build-out water demand/wastewater treatment demand
  - Conduct study on County drainages that identifies gaps in agency jurisdictions, inventories streams and creeks, and supports development of County-wide model

# Example Multi-Benefit Evaluation Criteria

- Project Benefits:
  - ❑ Improve flood protection
  - ❑ Improve local water supply reliability
  - ❑ Improve groundwater quality/protection
  - ❑ Address data gap
  - ❑ Other
- Project type:
  - ❑ New/Improved Infrastructure/Consolidation
  - ❑ Study
  - ❑ Partnering Agreement
  - ❑ Policy Update
  - ❑ Other
- Project Beneficiary(ies):
  - ❑ One or more DAC/Small Water System(s)
  - ❑ Countywide
  - ❑ One or more individual property(ies)
  - ❑ Other
- CEQA
- Project Champion(s)
- Project Cost/Funding
- Project Location/Extent
- These and others to be identified/refined during Master Plan development

# Meeting Agenda

**1**

**INTRODUCTIONS**

Purpose of the Solano One Water Framework

**2**

**MEETING PURPOSE AND OUTCOMES**

Solano One Water Recap

Meeting Purpose and Outcomes

**3**

**GOALS AND OBJECTIVES**

Summary of County Challenges

Key Data Gaps

Framework Goals and Objectives

**4**

**SUMMARY**

Summary

Next Steps

# Summary

# Next Steps

- Draft Framework Section: Summary of findings of Needs and Challenges – Under Preparation – late summer
- Draft Bulletin: Fall 2023
- Steering Committee Meeting #5: Revisit Goals/Objectives of Framework and Master Plan and start Opportunities discussion – September