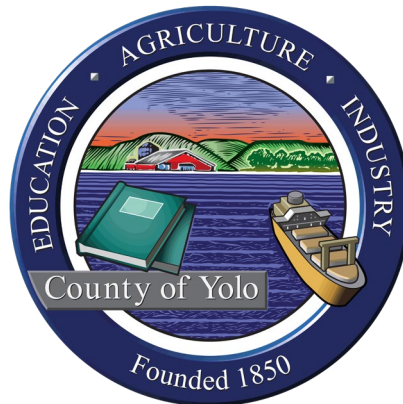




Muller Ranch 2021

# RURAL INFRASTRUCTURE INVESTMENT PLAN

FY 2022 - 2023



*Not Reviewed or Approved by the Board of Supervisors  
June 30, 2022*

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## Introduction

### Purpose

The Rural Infrastructure Investment Plan assesses and categorizes infrastructure investments in the County's rural communities in support of the Board's Strategic Plan goals. According to the American Society of Civil Engineers, the United States "infrastructure gap," which refers to the amount of money required to meet our nation's infrastructure needs, is estimated to be above \$2 trillion. This gap is even more exaggerated in rural areas, like Northern California, where funding is much more difficult to secure. Most state and federal infrastructure initiatives are focused on urban and suburban areas and do not adequately address the unique needs of rural communities. Deteriorating or inadequate infrastructure can impact the lives of our rural residents in many ways: jeopardizing or limiting employment opportunities, decreasing quality of life and public safety, and reducing economic competitiveness.

Infrastructure is generally defined<sup>1</sup> as "the system of public works of a country, state, or region including the resources (such as personnel, buildings, or equipment) that form the underlying foundation or basic framework to support an economy". Typically, infrastructure includes roads, railways, bridges, tunnels, water supply/distribution, sewer/wastewater, electrical grids, and telecommunications, including internet/broadband.

This report serves a repository for locally derived and supported infrastructure projects as the County explores new funding models and builds public/private/non-profit relationships to leverage investments and braid financial resources.

Though local funding may be currently inadequate to fully implement these rural infrastructure projects, opportunities exist to incrementally invest in projects, thereby positioning projects to be competitive when funding becomes available.

A local agency could develop a rough project cost estimate for an identified rural infrastructure need, for example, secure local funding for preliminary design and engineering or CEQA review, and then apply for a state or federal grant. Or, the local agency could combine multiple similar projects into a larger single project, increasing the number of beneficiaries and also the (now larger) project's overall funding competitiveness.

### Methodology

To better understand the needs of rural communities within Yolo County, many sources of information were reviewed, researched, and analyzed, including:

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<sup>1</sup> Merriam-Webster dictionary, 2022

- 
- Municipal Service Reviews and special studies undertaken by the [Yolo Local Agency Formation Commission](#) (LAFCo)
  - [Community Action Plans](#) (developed by rural community advisory committees)
  - Community revitalization studies
  - Special district engineer's reports in support of fee/assessment modifications
  - Deficiencies documented by local/state regulatory agencies
  - Results from 2020 Strategic Plan community engagement surveys and meetings
  - Results from stakeholder engagement efforts, including public opinion surveys completed in June 2021
  - Staff conversations with rural community advocates
  - Robust outreach to local stakeholders (See Appendix E for engagement plan and stakeholder roster)

Infrastructure improvements and recommended projects are organized first by each rural community and then categorized by Strategic Plan goal. Many projects align with multiple Strategic Plan goals. In those cases, projects are categorized under the goal with which they are most closely related.

# Executive Summary

## Relationship to Yolo County Strategic Plan

This report, prepared for fiscal year 2022-2023, is the fourth annual rural infrastructure investment report. These annual reports are a companion to the Yolo County Strategic Plan (“Strategic Plan”). The County’s Strategic Plan is a multi-year plan that presents a meaningful vision of the future and long-term strategic goals, indicating where resources are to be concentrated to accomplish strategic outcomes. Following Board adoption of the Strategic Plan’s goals and high-level objectives, departments develop operational plans in concert with the County Administrator to support the Strategic Plan goals, which are, in turn, aligned with the County budget. The adopted 2020 -2024 Strategic Plan goals are:

### Thriving Residents



*Social, economic and physical environments are created and supported which promote good health and protect vulnerable populations so that community members and future generation have the opportunity to learn and grow to their full potential.*

### Safe Communities



*Safe communities are maintained through cross-system collaborations that focus on prevention, utilize evidence-based strategies for treatment and intervention, provide legal representation and ensure code enforcement of unsafe conditions.*

### Sustainable Environment



*Efficient utilization of natural resources to provide recreational opportunities and ensure availability for generations to come, protect and improve water quality and quantity, lower greenhouse gas emissions, and maximize the use of renewable energy.*

### Flourishing Agriculture



*Support a vibrant and resilient agricultural economy that concurrently preserves sufficient farmland to maintain regional food security in perpetuity.*

### Robust Economy



*Promote a balanced economy that offers job opportunities and ample services for every resident as well as avenues for business growth and development.*



## Rural Infrastructure Investment Plan Accomplishments

Accomplishments and progress from the first (FY 2019-20) Rural Infrastructure Investment Plan include:

<p><b>Progress Report</b> FY 2019 – FY 2021 Accomplishments</p>
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### THRIVING RESIDENTS

<i>Community</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Capay Valley</b>	New community center and comprehensive health clinic in the Valley region	\$20 M	Est. completion date Spring 2023
<b>Capay Valley</b>	Installation of restroom facilities in Guinda	\$65,000	Completed June 2021
<b>County-wide</b>	Projects to be developed by Rural Health Coordinator	Funded	Ongoing
<b>County-wide</b>	Install/upgrade broadband at migrant housing centers to facilitate distance learning	Funded	Madison Migrant Camp completed 2019; Davis Migrant Camp completed 2020
<b>Knights Landing</b>	New community park with sports fields	\$4.7M	Site plan completed, Phases 1 & 2 funded, Construction docs underway
<b>Knights Landing</b>	Promenade and trails along Sacramento River	TBD	Concept to be evaluated through Knights Landing Flood Management project
<b>Yolo</b>	Replace Yolo Branch Library	\$4M	Construction underway; opening anticipated in Fall 2022

## SAFE COMMUNITIES

<i>Community</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Capay Valley</b>	Replace CR 40 bridge to improve emergency service access	\$3.75M	Construction underway
<b>Capay Valley</b>	Improve law enforcement response time via implementation of “resident deputy”	\$200,000 / yr	Complete
<b>Clarksburg</b>	Installation of bollards on Poplar Street alley	\$5,000	Complete; funded by FY 19/20 RCIP
<b>County-wide</b>	Create Capital Improvement Plans for fire districts, building on “Yolo County Fire Protection Districts” study from July 2019	Staff time	In progress (7 of 15 completed)
<b>Esparto</b>	Installation of street print, flashing pedestrian beacons, and other safety improvements along SR-16 in downtown Esparto	\$50,000	Complete; funded by FY 19/20 RCIP
<b>Madison</b>	Complete preliminary design and engineer’s opinion for replacement of community drinking water system	\$50,000	Complete; funded by FY 19/20 RCIP
<b>Knights Landing</b>	Improve pedestrian safety near Sci-Tech Academy	\$45,000	Traffic calming measures installed on Railroad Street
<b>Knights Landing</b>	Reduce localized flooding by constructing new drainage infrastructure	\$600,000	Funded via DWR, construction in Fall 2022
<b>Knights Landing</b>	Levee repairs on Sacramento River	\$9M	Funded via DWR, construction in Fall 2022
<b>Knights Landing</b>	Levee repairs on Knights Landing Ridge Cut	\$2M	Funded via DWR, construction in Fall 2022
<b>Knights Landing</b>	Design and permitting of new cross levee to provide 100-year flood protection	Est. \$40M	Evaluation in progress through DWR grant
<b>Madison</b>	154 KV generator for Madison CSD to power drinking water and wastewater systems during power outages	\$90,000	Complete
<b>Madison</b>	Implement flood risk reduction projects to increase flood protection	\$600,000 expended to date	CalOES funding secured, in progress
<b>Yolo</b>	Generator to power community drinking water system during power outages	\$100,000	Funding secured

<b>Esparto/Madison/Yolo</b>	Obtain specialized off-road equipment to be able to respond to OHV emergencies in Cache Creek	\$130,000	Complete
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## SUSTAINABLE ENVIRONMENT

<i>Community</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>County-wide</b>	Ensure sustainable water supply through responsible groundwater management	\$1,000,000	In progress through Yolo Sustainable Groundwater Agency
<b>Capay Valley</b>	Development of small off-stream storage / detention to slow water down and allow for greater infiltration	\$100,000	In progress through Flood Safe Yolo 2.0; environmental evaluation of primary alternative underway

## FLOURISHING AGRICULTURE

<i>Community</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>County-wide</b>	Reduce regulatory hurdles for agricultural housing on agriculturally zoned properties	Est. \$150,000 (staff time)	In progress, Zoning Code Update 2022/23
<b>County-wide</b>	Work with local community colleges to develop a farm apprenticeship and training program on local farms	Funded	Complete

## ROBUST ECONOMY

<i>Community</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Clarksburg</b>	Connect Clarksburg area to high-speed broadband	\$1M	Contract awarded to ATT – construction estimated to be complete in mid-2023
<b>Clarksburg</b>	Relocation of 1883 Clarksburg School House	\$1.8M	Relocation completed summer 2021; improvements underway
<b>County-wide</b>	Streamline County permitting processes	Staff time	In progress, Zoning Code Update 2022/23
<b>County-wide</b>	Reduce cost and burdens of FEMA regulations and flood insurance within agricultural zones	Staff time	In progress through FloodSAFE Yolo 2.0 and Agricultural Floodplain Task Force

## Health Equity

In conjunction with the 2020 Strategic Planning process, the Board of Supervisors adopted a new approach to policy development, “Health in All Policies.” This new, collaborative approach will improve the health of all people by incorporating health, equity, and sustainability considerations into decision-making across sectors and policy areas.

Healthy People 2020 defines health equity as the “attainment of the highest level of health for all people.” According to the Yolo County Health Council’s 2019 annual report to the Board of Supervisors, poverty and geography play major roles in health outcomes. The 25 voting members which make up the Yolo Health Council include appointees by the Board of Supervisors; representatives of nine county health systems, including CommuniCare Health Systems, Kaiser Permanente, Sutter Davis Hospital and UC Davis; and members of county health advisory boards, including the Local Mental Health Board, First 5 Yolo, the Commission on Aging and Adult Services, and many others.

To further the desired outcome of health equity across Yolo County, the Board approved place-based rural health investments. These investments include a \$200,000 per fiscal year “Wellness and Prevention Fund” designed to support health equity projects in high priority areas (including rural communities), as well as a full-time health program coordinator who is responsible for identifying health needs and developing programs to address those needs in the County’s unincorporated areas and rural communities.

## Universal Themes

Throughout the information gathering process, several reoccurring themes were identified in nearly all of the rural communities: Road improvements, increased law enforcement presence, and access to high speed internet (broadband).

## Road Improvements

Each rural community has strong opinions about investments in their local transportation infrastructure. Unfortunately, state and federal funding for road improvements dictates that roads are repaired/upgraded based on certain criteria, including public safety, and there are frequently road repair emergencies that take priority over all other projects.

One methodology for capturing each communities’ desired improvements is to incorporate them into the rural community “area plan” for each unincorporated community. The Esparto Community Plan was adopted in 2019 and includes robust discussion and documentation of the communities’ desired circulation and transportation improvements. An “area plan” can serve as

a formal, adopted, community driven planning document to guide future investments. Existing adopted community area plans can be found [here](#).

### **Increased Law Enforcement Presence**

Several rural communities have articulated a desire to reinstate a “resident deputy” program, which currently exists in the communities of the Capay Valley, Clarksburg, Knights Landing/Zamora, and Yolo. Generally, a resident deputy program calls on deputies involved to patrol the communities where they live, routinely attend events, and visit schools in their assigned areas. Resident Deputies cover other areas during their routine patrol but focus their efforts in crime prevention by collaborating on community issues with residents, businesses, homeowners’ associations, schools, and other local and state agencies. Resident deputies’ duties also include overseeing some Neighborhood and Business Watch groups, as well as keeping department administration abreast of town halls and other events relevant to community engagement or crime prevention.

The Capay Valley was assigned a resident deputy during FY 2019-20. The communities of Clarksburg and Knights Landing have expressed interest in also hosting a resident deputy. It is estimated that each resident deputy would cost approximately \$200,000 per deputy, per fiscal year.

### **High Speed Internet / Broadband**

Broadband is a vital element of Yolo’s economic sustainability that will keep rural communities competitive, locally and globally. Where our road systems provide the infrastructure necessary to connect our communities physically, broadband provides the digital infrastructure necessary to connect our communities virtually to the rest of the world. As more of our everyday lives are lived online, broadband has become a fundamental need for our homes, businesses, and communities. Broadband reaches many facets of everyday life by improving the delivery of healthcare services, enriching the educational experiences of children and adults, aiding in the management and conservation of energy resources, assisting public safety personnel in the performance of their duties, and facilitating citizen interaction with our government agencies. Broadband is a driving force behind the competitiveness of our businesses, fostering innovation, productivity, and access to the global economy. Affordable, available access to broadband means the difference between thriving in the new economy and becoming obsolete.

Yolo County LAFCo commissioned the “Yolo Broadband Strategic Plan” in 2015. The study can be found [here](#). The Yolo Broadband Strategic Plan provides a roadmap to understand our local broadband environment and forge strategies that will ensure our communities are prepared to

thrive in the digital economy. In 2012, about 70% of Yolo households maintained some type of broadband connection, 6% lower than California’s statewide average of 76%.

One broadband success story has been realized thus far: In FY 17/18 Yolo County partnered with WAVE Broadband to bring high speed internet to the unincorporated community of Knights Landing. The County, in partnership with Yolo LAFCo, convenes a “Broadband Committee” that is committed to implementing the Broadband Strategic Plan.

Current efforts include expanding broadband access into Clarksburg, Binning Tract, and North Davis Meadows. The Yolo County Library applied for grant funding from the California State Library in July 2020 to fund a one (1) gigabyte fiber connection to the Clarksburg Branch Library. As of June 2021, the state has awarded a contract to AT&T and the project is undergoing design and engineering.

In addition, the County has installed fiber to connect the decommissioned 180’ tower at the Yolo County landfill. Yolo County Housing then obtained funding (one time cost of \$10,000, and approximately \$20,000 per year thereafter) to use this connection to increase broadband capacity at the Davis Migrant Center.

## **Infrastructure Provided by Other Entities**

### **Migrant Housing Centers**

There are two migrant housing communities within Yolo County: the Davis/Dixon Migrant Center and the Madison Migrant Center. Both are owned and operated by the Yolo County Housing Authority, with financial assistance from the state and federal government. Several project suggestions for the migrant housing communities surfaced during the data gathering phase of this project. A short profile for each migrant housing community and a summary of recommended improvements are provided in [Appendix A](#).

### **Community Services Districts (CSDs)**

Small rural communities in unincorporated areas need basic services like water, wastewater management, security, fire protection, street lighting, vector control, and recreation. Since counties often consist of large and diverse geographical areas, it is difficult to provide tailored community services to any one community. Small rural communities usually do not have the tax base necessary to incorporate services into their own city. Consequently, the Community Services District Law (Gov. Code §61000-61850) was created to provide an alternate method of providing services in unincorporated areas. Community services districts are governed by residents who live with the serve area boundary through local elections. Community service

districts localize the costs and benefits of public services: CSDs let local residents get the services they desire at the price that they are willing to pay.

Yolo County currently has four (4) community services districts (CSDs):

- [Cacheville Community Services District](#)
- [Esparto Community Services District](#)
- [Knights Landing Community Services District](#)
- [Madison Community Services District](#)

While these CSDs are independent legal districts, they are subject to review by Yolo LAFCO. LAFCO has the authority to review and make determinations on the following:

- (1) Growth and population projections for the affected area.
- (2) Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies.
- (3) Financial ability of agencies to provide services.
- (4) Status of, and opportunities for, shared facilities.
- (5) Accountability for community service needs, including governmental structure and operational efficiencies.
- (6) Any other matter related to effective or efficient service delivery, as required by commission policy.

Further, LAFCO has the power to approve or deny consolidation or reorganization of special districts, jurisdictional and service area boundaries, add or remove legal powers/services provided by districts, and conduct periodic Municipal Services Reviews to ensure adequate provision of services.

[Appendix B](#) to this report provides an overview of each CSD and a summary of recommended improvements. The improvements are further organized by 1) immediate improvements required for service delivery and 2) improvements anticipated to be needed by 2030 to allow for anticipated growth.

### **Rural Community Profiles and Needs Assessments**

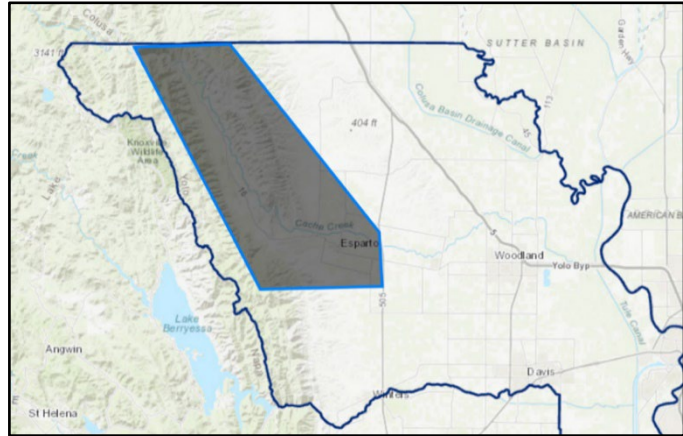
The remainder of this report consists of a rural community profile and community-based needs assessment for each of the following rural communities: Clarksburg, Dunnigan, Esparto, Knights Landing, Madison, and the town of Yolo. A separate profile and needs assessment were created for the Capay Valley Region (the rural communities of Brooks, Capay, Esparto, Guinda, and

Rumsey, as well as the surrounding areas). The town of Esparto is the County's largest rural community and, therefore, has its own community profile and needs assessment.



## Capay Valley Regional Profile

The Capay Valley comprises approximately 200 square miles in the north western portion of Yolo County. Generally, the Capay Valley is the area of the valley floor west of I-505 to the County line. This area includes the communities of Rumsey, Brooks, Guinda, Capay, Esparto, and Madison. The region lies within the 5<sup>th</sup> Supervisorial District of the County.



Though inexact, the general demographic profile (below) is extracted from Census Tract 115 in the 2000 Census. The census-based demographics in the “Regional Demographics” table below include the rural communities of Madison and Esparto, which, for the purposes of this report, have their own rural community profiles (see pages 20 and 26).

### Regional Demographics, 2022

Capay Valley Region	
<b>Total population</b>	4,826
<b>Median age (years)</b>	35.2
<b>Estimated MHI</b>	
Brooks	\$51,389
Capay	\$68,990
Guinda	\$79,448
Rumsey	\$76,905
<b>Race</b>	
White	64.4%
Latino	40.1%
American Indian	2.9%
African American	1.2%
<b>Occupied Housing Units</b>	1,471
<b>Owner-occupied Units</b>	73.2%



### Capay Valley Demographics, 2020

	Pop.	Poverty	Medi-Cal	CalFresh
<b>Brooks</b>	240	-	14%	1%
<b>Capay</b>	431	-	20%	5%
<b>Guinda</b>	237	51%	28%	4%
<b>Rumsey</b>	66	-	35%	14%

## Capay Valley Region Needs Assessment

### THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Community Identity</b>	Guinda Town Hall improvements (grading, painting and repairs, septic work, and new overhang with ADA access)	\$50,000	In progress
<b>Health Equity</b>	New community center and comprehensive health clinic in the Valley region	TBD	In progress
<b>Health Equity</b>	Revitalization of Guinda (Nichols) park	TBD	Concept

### SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	Additional roads into Capay Valley for adequate residential evacuation; improve condition of existing roads	New roads: \$3M / mile	Concept
<b>Transportation</b>	Fix and maintain CR 41	TBD	In progress
<b>Transportation</b>	Install passing lanes on HWY 16	TBD	Concept
<b>Transportation</b>	Install Park & Ride lots at key locations for casino patrons	TBD	Concept
<b>Infrastructure</b>	Replace portable public restrooms with permanent restrooms in Guinda	TBD	Concept
<b>Infrastructure</b>	Improve cellular service/ communications networks for emergencies	TBD	Concept
<b>Water</b>	Install a municipal well and community septic and hook ups for residents of Guinda and Rumsey	\$3-9M	Concept
<b>Public Safety</b>	Provide Automated External Defibrillators (AEDs) at community buildings, such as community halls	\$2,500 ea.	Concept
<b>Public Safety</b>	Create Capital Improvement Plans for fire districts, building on "Yolo County Fire Protection Districts" study from July 2019	TBD	In progress
<b>Public Safety</b>	Create program to "fire harden" residences and businesses	TBD	Concept
<b>Public Safety</b>	Replace two speed notification signs on SR-16	\$20,000	In progress

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Water</b>	Ensure sustainable water supply through responsible groundwater management <i>(Note: this will be addressed in the Yolo Groundwater Sustainability Agency's "Groundwater Sustainability Plan", due in 2022)</i>	\$1M	In progress through Yolo Groundwater Sustainability Agency (YGSA)
<b>Water</b>	Develop small off-stream storage to slow water down and allow for greater infiltration; streamline permitting or eliminate permit for small water storage projects of less than two acres	\$100,000	In progress through FloodSafe Yolo 2.0
<b>Climate Action</b>	Energy independence pilot projects	TBD	In progress through CAP

## FLOURISHING AGRICULTURE

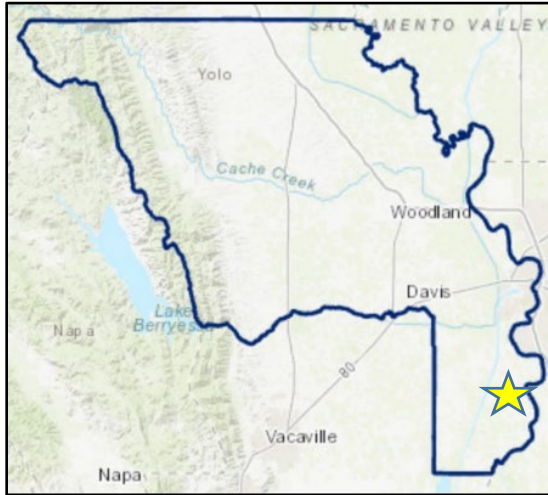
<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Agricultural Workforce</b>	Create shuttle service to allow agricultural workers from Woodland/Esparto to reach the Valley	TBD	Concept
<b>Housing</b>	Reduce regulatory hurdles for agricultural housing on agriculturally zoned properties	Staff time	In progress, Zoning Code Update 2021
<b>Housing</b>	Create affordable housing for local workers with families	TBD	Concept
<b>Housing</b>	Keep migrant housing centers open year-round to ensure adequate labor supply <i>(Note: will require Federal advocacy efforts)</i>	TBD	Concept

## ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Economy</b>	Streamline County permitting processes	Staff time	In progress, Zoning Code Update 2021
<b>Economy</b>	Create and implement "Capay Grown" branding/appellation	TBD	Concept
<b>Tourism</b>	Installation of way-finding signage throughout the Capay Valley region	\$60,000	Shovel Ready
<b>Tourism</b>	Install public restrooms in Capay Valley for rafters/hikers/cyclists	\$200,000 – \$500,000	Funding identified; in progress

<b>Tourism</b>	Develop bicycling and hiking trails throughout the region; expand access to state/federal lands in West; improve facilities at existing County parks; create more campgrounds	TBD	Concept
<b>Tourism</b>	Modify regulations to allow private entities to host camping (i.e. Hip Camp, glamping)	TBD	Concept
<b>Broadband</b>	Extend broadband service to Capay Valley	TBD	Concept
<b>Utilities</b>	Conduct assessment of necessary infrastructure and essential services needed to make Valley attractive to new businesses	\$150,000	Concept
<b>Utilities</b>	Conduct Guinda wastewater treatment facility feasibility study; public utilities needed to attract commercial businesses	\$70,000	Concept

## Clarksburg Community Profile



The rural community of Clarksburg comprises about two (2) square miles and is located in the extreme southeastern corner of the County, on the west bank of the Sacramento River. Clarksburg lies within the primary zone of the Sacramento-San Joaquin Delta and is subject to regulation by the Delta Stewardship Council and the Delta Protection Commission. Clarksburg is within the 1<sup>st</sup> Supervisorial District.

Clarksburg is best known for its grapes and viticulture, though other crops grown include grass (seed and sod) and tomatoes.

*Demographics, 2010 Census  
Safety Net Data, Yolo County HHSA, June 2022*

<i>Clarksburg</i>	
<b>Total population</b>	402
<b>Median age (years)</b>	48.7
<b>Estimated MHI</b>	\$69,482
<b>Race</b>	
White	81.1%
Latino	26.1%
American Indian	0.5%
African American	0.5%
<b>Occupied Housing Units</b>	182
<b>Owner-occupied Units</b>	68.5%
<b>Poverty</b>	-
<b>Medi-CAL</b>	76%
<b>CalFresh</b>	10%



# Clarksburg Needs Assessment

## THRIVING RESIDENTS

Subject	Description	Cost	Status
Health	Establish bicycle routes to/through the community, possibly using old railroad right-of-way	\$150,000*	Concept
Health Equity	Food distribution events are held on same day within short timeframe. Hours should be adjusted to allow those in need to access services outside of working hours	TBD	Concept
Health Equity	Provide medical services to migrant/farm workers	TBD	Concept
Health Equity	New outdoor public recreational facility	TBD	Concept

*\*Potential SACOG funding for transportation study*

## SAFE COMMUNITIES

Subject	Description	Cost	Status
Transportation	<ul style="list-style-type: none"> <li>Realign and install safety improvements on Jefferson Blvd</li> <li>Install additional guardrails on South River Road</li> <li>Install crosswalks on Clarksburg Rd and School St</li> <li>Improve street lighting, install fog lights, and widen key intersections</li> </ul>	\$100,000*	Concept
Transportation	Ensure trees and shrubs do not inhibit traffic visibility	\$10,000 / yr	Concept
Transportation	Separate cyclists from traffic	TBD	Concept
Public Safety	Improve law enforcement response time	TBD	Concept
Public Safety	Install additional cameras to prevent/enforce illegal dumping	TBD	Concept
Infrastructure	Work with PG&E to establish redundancy in electric system	TBD	Concept

*\*Potential SACOG funding for transportation study*

## SUSTAINABLE ENVIRONMENT

Subject	Description	Cost	Status
Waste	Develop and implement strategies to reduce illegal dumping of refuse and animals	\$100,000	Concept
Water	Create public utilities to ensure quality of water	TBD	Concept

**FLOURISHING AGRICULTURE**

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Agriculture</b>	Modify zoning to allow for new processing facilities	TBD	Concept
<b>Housing</b>	Reduce regulatory hurdles for agricultural housing on agriculturally zoned properties	Est. \$150,000 (staff time)	In progress, Zoning Code Update 2021

**ROBUST ECONOMY**

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Economy</b>	Connect Clarksburg area to high-speed broadband	\$1M	In progress, construction contract awarded; est. 2023
<b>Tourism</b>	Install public dock / marina on Sacramento River	\$3.0M	Concept
<b>Tourism</b>	Create hotels/lodging for tourists	TBD	Concept
<b>Flood</b>	Bring levees up to current Army Corps standards	\$187M	Flood Risk Reduction study completed
<b>Flood</b>	Reduce cost and burdens of FEMA regulations and flood insurance within agricultural zones	N/A	In progress through Flood Safe Yolo 2.0

## Dunnigan Community Profile



The rural community of Dunnigan is located in the northeastern portion of Yolo County, bisected by Interstate 5, just north of the interchange between Interstate 505 and I-5. The City of Woodland is located approximately 14 miles to the south, and the town of Arbuckle in Colusa County is located approximately 8 miles to the north. Dunnigan is located within Supervisorial District 5 of the County.

The town has no public sewer and one small community water system (Cal-American), primarily relying on groundwater wells, septic systems and small wastewater treatment

facilities with ponds.

*Demographics, 2010 Census  
Safety Net data, Yolo County HHSA, June 2022*

<i>Dunnigan</i>	
<b>Total population</b>	1,459
<b>Median age (years)</b>	41.7
<b>Estimated MHI</b>	\$28,833
<b>Race</b>	
White	59 %
Latino	41.2 %
American Indian	1.3 %
African American	1.8 %
<b>Occupied Housing Units</b>	558
<b>Owner-occupied Units</b>	81 %
<b>Poverty</b>	15 %
<b>Medi-CAL</b>	55 %
<b>CalFresh</b>	10 %





# Dunnigan Needs Assessment

## THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health</b>	Establish bicycle routes to/through the community, possibly by replacing culverts with underground drainage	\$25,000*	Concept
<b>Health Equity</b>	Projects to be developed by Rural Health Coordinator	Funded	In progress

*\*Potential funding from SACOG for active transportation study*

## SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	Improve street lighting <i>(Note: could be folded into bike route study, above)</i>	TBD	Concept
<b>Transportation</b>	Widen public roadways and ensure adequate shoulders	TBD	Concept
<b>Public Safety</b>	Improve law enforcement response time	TBD	Concept

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Water</b>	Reduce reliance on groundwater to ensure water supply reliability and address subsidence	GSP funded by \$1M DWR grant	In progress through YGSA

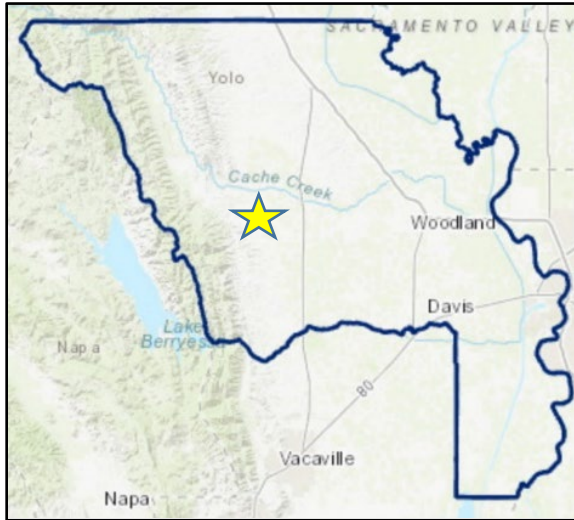
## FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Business/Workforce Development</b>	Install broadband for community	TBD	Concept

## Esparto Community Profile



Esparto is the most populous rural community and is located in the central portion of Yolo County, bisected by Highway 16, roughly halfway between Woodland and the town of Brooks. Located within Supervisorial District 5, Esparto is considered the “gateway” to the Capay Valley region.

Public water and sewer are provided by the Esparto Community Services District.

*Demographics, 2010 Census  
Safety Net data, Yolo County HHSA, June 2022*

<b>Esparto</b>	
<b>Total population</b>	3,272
<b>Median age (years)</b>	33
<b>Estimated MHI</b>	\$69,343
<b>Race</b>	
White	60 %
Latino	44 %
American Indian	4.2 %
African American	1.4 %
<b>Occupied Housing Units</b>	1,055
<b>Owner-occupied Units</b>	71 %
<b>Poverty</b>	10 %
<b>Medi-CAL</b>	42 %
<b>CalFresh</b>	1 %



## Esparto Needs Assessment

### THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Projects to be developed by Rural Health Coordinator	Funded	In progress
<b>Health</b>	Install playing field lights and shade structures at Tuli Mem Park	\$200,000	Shovel ready
<b>Education</b>	Keep Esparto Library open full time and year round	\$10,000 / yr	Concept
<b>Community Identity</b>	Construct a community center	\$8M	Concept

### SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>• Install multi-use path around/throughout town to link school routes and provide recreation</li> <li>• Install sidewalks throughout the community</li> <li>• Replace Yolo Ave and Fremont St bridges with ones that can withstand 100-year flood events</li> <li>• Add crosswalks on HWY 16 to facilitate safe crossing</li> </ul>	\$50,000* for feasibility study	Concept

*\*Potential SACOG funding for active transportation study*

### SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Utilities</b>	Long-term CIP needed for water and wastewater services	\$80,000	Concept
<b>Water</b>	Upgrade WWTP to allow use of recycled water for irrigation; results in 20% reduction in potable water use	\$6.6M	Shovel ready
<b>Utilities</b>	Install solar system at Tuli Mem Park	TBD	Concept
<b>Waste</b>	Expand hours of Esparto Transfer Station to reduce illegal dumping	\$150,000 / yr, each add'l day	Concept

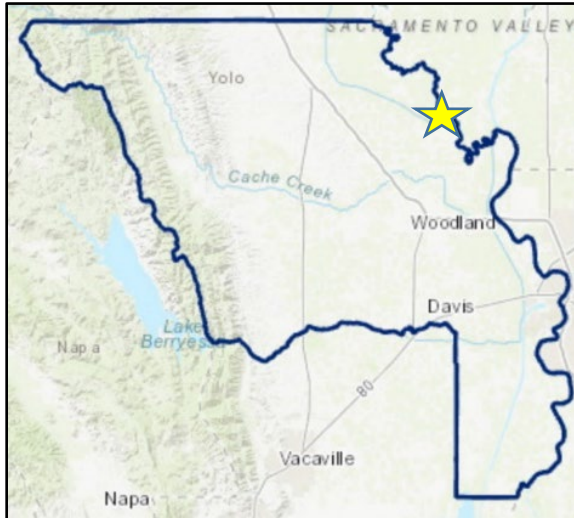
### FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Housing</b>	Provide affordable housing for elderly/seniors	TBD	Concept
<b>Housing</b>	Adequate affordable housing needed to reduce competition between farm workers and casino employees	TBD	Concept

## ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Broadband</b>	Expand Library's Wi-Fi to cover businesses on the length of Yolo Ave	TBD	Concept
<b>Rural Community Support</b>	Replace dead trees at Tuli Mem Park with drought tolerant native landscaping	TBD	Concept
<b>Business Development</b>	Recruit agricultural processing facility to town	Staff time	Concept
<b>Business Development</b>	Facilitate addition of gas station to Esparto	Staff time	Concept

## Knights Landing Community Profile



Knights Landing is located in the northeastern portion of Yolo County on the west bank of the Sacramento River and lies within Supervisorial District 5. Knights Landing is designated as a “disadvantaged community” and an “economically distressed area” by state and federal standards.

Public water and wastewater services are provided by the Knights Landing Community Services District.

*Demographics, 2010 Census  
Safety Net data, Yolo County HHSA, June 2020*

<b>Knights Landing</b>	
<b>Total population</b>	1,036
<b>Median age (years)</b>	34
<b>Estimated MHI</b>	\$38,068
<b>Race</b>	
White	56 %
Latino	42 %
American Indian	0.7 %
African American	0.4 %
<b>Occupied Housing Units</b>	343
<b>Owner-occupied Units</b>	66 %
<b>Poverty</b>	15 %
<b>Medi-CAL</b>	55 %
<b>CalFresh</b>	12 %



## Knights Landing Needs Assessment

### THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Community park with sports fields	\$4.7M	Construction est. to begin spring 2023
<b>Health Equity</b>	Promenade and trails along Sacramento River	\$250,000 per mile for dirt / \$1M per mile for paved	In progress via DWR grant
<b>Health Equity</b>	System-wide upgrades and repairs to community drinking water system	\$26M	Concept

### SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Infrastructure</b>	Backup generator for Knights Landing Ridge Cut well	\$250,000	In progress, add'l funding needed
<b>Transportation</b>	Improve pedestrian safety near Sci-Tech Academy	TBD	Concept on HW 113; speed humps installed on Rail Road St.
<b>Transportation</b>	Reduce localized flooding by constructing new drainage detention basin (Drainage improvements undergoing design and engineering)	TBD	D&E underway
<b>Public Safety</b>	Improved street lighting, particularly on highly traveled streets	TBD	Concept
<b>Public Safety / Transportation</b>	Construct sidewalks on streets that are frequently used by pedestrians	TBD	Concept
<b>Public Safety</b>	Repairs to KL Fire Station	\$40,000	Need funding
<b>Public Safety</b>	Levee repairs – Sac River	\$12M	In progress, SCFRR grant
<b>Public Safety</b>	Levee repairs – Knights Landing Ridge Cut	\$16M	In progress, SCFRR grant
<b>Public Safety</b>	New cross levee – provide 100-year flood protection	\$40M	Evaluation underway through SCFRR grant

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Utilities</b>	Long-term CIP needed for water and wastewater services	\$80,000	Water CIP completed WWTP CIP still needed
<b>Waste</b>	Provide recycling and green waste services (Note: Waste management services provided by Waste Management)	TBD	Concept

## FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Agricultural Workforce</b>	Provide farmworker housing and/or low-income housing for those that qualify		

## ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Economy</b>	100-year flood protection needed	\$90M	In progress
<b>Economy</b>	Ensure broadband access to low income residents	TBD	Concept

## Madison Community Profile



Madison is located in the central portion of Yolo County, just west of the intersection of I-505 and HWY 16 and lies within Supervisorial District 5. Madison is designated as a “disadvantaged community” and “Low/Moderate Income” area by some state standards.

Public water and wastewater services are provided by the Madison Community Services District. Madison lies within the 100-year flood zone and is subject to localized flooding during moderate precipitation events.

*Demographics, 2010 Census  
Safety Net Data, Yolo County HHS, June 2022*

<b>Madison</b>	
<b>Total population</b>	581
<b>Median age (years)</b>	28.6
<b>Estimated MHI</b>	\$64,904
<b>Race</b>	
White	44.5 %
Latino	52 %
American Indian	0.6 %
African American	1.8 %
<b>Occupied Housing Units</b>	141
<b>Owner-occupied Units</b>	63 %
<b>Poverty</b>	16 %
<b>Medi-CAL</b>	64 %
<b>CalFresh</b>	9 %





# Madison Needs Assessment

## THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Benches and shade structures at soccer fields	\$30,000	Funded via Per Capita Parks program; In progress
<b>Transportation</b>	Add additional Yolo Bus shelter close to migrant housing	\$300,000	Concept
<b>Health Equity</b>	Projects to be developed by Rural Health Coordinator	Funded	In progress

## SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Infrastructure</b>	Install irrigation at Madison park/soccer field	TBD	Concept
<b>Infrastructure</b>	Create “bulky pick-up” days for removal of large trash items; prevent illegal dumping	TBD	Concept
<b>Public Safety</b>	Replace fire station	\$1.3M	Concept
<b>Public Safety</b>	22KW generator needed for emergency backup power for Madison Fire Dist.	\$50,000	Concept
<b>Public Safety</b>	Implement flood risk reduction projects to divert flood waters from Madison <i>(Note: \$348,000 awarded to County from CALOES in FY19/20 for purpose of flood project(s) design)</i>	TBD	Approx. \$600,000,000 spent in FY 19/20 & 20/21; add'l projects under evaluation

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Utilities</b>	Repair/replace water system, add storage tank, meet fire flow requirements (Project cost: \$7.1; assume 10% cost share)	\$7.1M	\$3.8M obtained; seeking add'l funding
<b>Utilities</b>	Investigate odor from wastewater treatment ponds <i>(Note: Could refer to YSAQMD)</i>	TBD	N/A

**FLOURISHING AGRICULTURE**

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Housing</b>	Adequate (non-farm labor) affordable housing needed	TBD	Concept
<b>Housing</b>	Keep migrant housing open year round <i>(Note: Would require federal advocacy)</i>	TBD	Concept

**ROBUST ECONOMY**

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Economy</b>	100-year flood protection needed	\$345,000	25-yr flood protection attained in FY 19/20; add'l project designs under development with CalOES grant

## Town of Yolo Community Profile



Yolo is located five miles north of Woodland along I-5 and lies within Supervisorial District 5. Cache Creek runs immediately south of the town. Yolo is considered a “Low/Moderate Income” area by some state standards.

Public water is provided by the Cacheville Community Services District.

*Demographics, 2010 Census  
Safety Net Data, Yolo County HHS, July 2020*

<b>Town of Yolo</b>	
<b>Total population</b>	193
<b>Median age (years)</b>	36
<b>Estimated MHI</b>	\$61,563
<b>Race</b>	
White	62 %
Latino	34 %
American Indian	0 %
African American	2 %
<b>Occupied Housing Units</b>	165
<b>Owner-occupied Units</b>	48 %
<b>Poverty</b>	5 %
<b>Medi-CAL</b>	77 %
<b>CalFresh</b>	22 %



# Town of Yolo Needs Assessment

## THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Basketball court and associated small park infrastructure	\$20,000	Concept
<b>Utilities</b>	Infrastructure assessment & CIP for Cacheville CSD	\$60,000	Concept
<b>Education</b>	Replace Yolo Branch Library	\$4M	In progress; est. opening Fall 2022

## SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Public Safety</b>	Replace well and provide adequate water storage and treatment for community drinking water supply	\$1.5M	Concept
<b>Public Safety</b>	Implement flood risk reduction projects to reduce flood risk to Yolo	\$15M	Flood Risk Reduction study completed in 2019

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## ROBUST ECONOMY

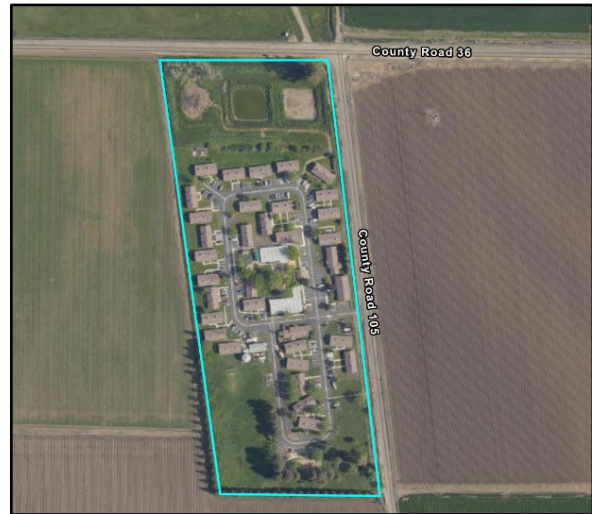
<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## Appendix A – Migrant Housing Community Needs

There are two migrant housing communities within Yolo County: The Davis/Dixon Migrant Center and the Madison Migrant Center. Both are owned and operated by the Yolo County Housing Authority, with financial assistance from the state and federal government. Several project suggestions for the migrant housing communities surfaced during the data gathering phase of this project. A short profile for each migrant housing community is provided below. Migrant housing project suggestions are compiled on the following pages.

### Davis Migrant Center

31150 County Road 105, Dixon



9 Two Bedroom Units, 44 Three Bedroom Units, 11 Four Bedroom Units

### Madison Migrant Center

28285 HWY 16, Madison



14 Two Bedroom Units, 61 Three Bedroom Units, 13 Four Bedroom Units

# Davis Migrant Center Needs Assessment

## THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Install gym/recreation space with exercise bikes and weight machines	TBD	Concept
<b>Education</b>	Provide computer(s), printer(s), and Wi-Fi at the migrant center	\$50,000	Concept

## SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	Install bus stop at the migrant center	\$350,000	Concept
<b>Infrastructure</b>	Create hotline for migrant center residents to report crime, housing issues, transportation help, connection to services	TBD	Concept
<b>Infrastructure</b>	Upgrades to existing radio tower at County Landfill to increase broadband capacity at Davis Migrant Camp	\$10,000 onetime; \$20,000/yr ongoing	Concept

## SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
	Projects not yet identified		

## Madison Migrant Center Needs Assessment

### THRIVING RESIDENTS

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Health Equity</b>	Install gym/recreation space with exercise bikes and weight machines	TBD	Concept
<b>Health Equity</b>	Freezers are undersized for number of residents per unit. Residents cannot take advantage of bulk purchases or large batch cooking of healthy meals.	\$500 per unit	Concept
<b>Education</b>	Provide computer(s), printer(s), and Wi-Fi at the migrant center	TBD	Concept

### SAFE COMMUNITIES

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	Install bus stop at the migrant center, it is dangerous for residents to walk along HWY 16	\$300,000	Concept
<b>Infrastructure</b>	Create hotline for migrant center residents to report crime, housing issues, transportation help, connection to services	TBD	Concept

### SUSTAINABLE ENVIRONMENT

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Transportation</b>	Residents must travel to Esparto for laundry machine change. Installation of change machine or reloadable "credit" card would reduce VMTs	\$4,000-10,000	Concept

### FLOURISHING AGRICULTURE

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	<i>Status</i>
<b>Housing</b>	Address labor shortages/affordable housing shortage by keeping the Madison Migrant Center open year round	TBD	Concept

### ROBUST ECONOMY

<i>Subject</i>	<i>Description</i>	<i>Cost</i>	
	Projects not yet identified		

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## Appendix B – Community Services District Needs

Small rural communities in unincorporated areas need basic services like water, wastewater management, security, fire protection, street lighting, vector control, and recreation. Since counties often consist of large and diverse geographical areas, it is difficult to provide tailored community services to any one community. Small rural communities usually do not have the tax base to necessary to incorporate services into their own city. Consequently, the Community Services District Law (Gov. Code §61000-61850) was created to provide an alternate method of providing services in unincorporated areas. Community services districts are governed by residents who live with the serve area boundary through local elections. Community service districts localize the costs and benefits of public services: CSDs let local residents get the services they desire at the price that they are willing to pay.

Yolo County currently has four (4) community services districts (CSDs):

- [Cacheville Community Services District](#)
- [Esparto Community Services District](#)
- [Knights Landing Community Services District](#)
- [Madison Community Services District](#)

While these CSDs are independent legal districts, they are subject to review by Yolo LAFCo. LAFCo has the authority to review and make determinations on the following:

- (1) Growth and population projections for the affected area.
- (2) Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies.
- (3) Financial ability of agencies to provide services.
- (4) Status of, and opportunities for, shared facilities.
- (5) Accountability for community service needs, including governmental structure and operational efficiencies.
- (6) Any other matter related to effective or efficient service delivery, as required by commission policy.

Further, LAFCo has the power to approve or deny consolidation or reorganization of special districts, as well as jurisdictional and service area boundaries, add or remove legal powers/services provided by districts, and conduct periodic Municipal Services Reviews to ensure adequate provision of services.

This appendix provides an overview of each community services district within Yolo County and a summary of known deferred maintenance and/or recommended improvements. The improvements are further organized by 1) immediate improvements required for service delivery and 2) improvements anticipated to be needed by 2030 to allow for anticipated growth. A summary of estimated near and long-term costs is provided on the following page.



## **Estimated Community Services District Infrastructure Improvement Costs\***

### **Cacheville Community Services District**

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Total Recommended Near-Term Improvements	\$ 1,300,000
Total Recommended Long-Term Improvements	\$ 5,500,000

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### **Esparto Community Services District**

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Total Recommended Near-Term Improvements	\$12,550,000
Total Recommended Long-Term Improvements	\$15,130,000

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### **Knights Landing Community Services District**

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Total Recommended Near-Term Improvements	\$ 7,805,000
Total Recommended Long-Term Improvements	\$ 10,210,000

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### **Madison Community Services District**

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Total Recommended Near-Term Improvements	\$ 7,310,000
Total Recommended Long-Term Improvements	\$ 17,250,000

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*\*Additional detail and information pertaining to recommended improvements for each CSD is found in the following pages of this Appendix.*

## Cacheville Community Services District

PO Box 268, Yolo, CA 95697

[www.cacheville.specialdistrict.org](http://www.cacheville.specialdistrict.org)



The Cacheville Community Services District (CSD) is located four miles north of the City of Woodland and provides domestic water and street lighting services to the town of Yolo, which is approximately 89 acres in size. The town of Yolo is located along County Road 99W and the Union Pacific Railroad, south of County Road 17 and Washington Street, west of Cache Creek and County Road 98, and north of County Road 97B and Interstate 5.

The Cacheville CSD was formed on September 8, 1970 and was originally given the ability to provide water and wastewater services to the town of Yolo. The District never utilized its power to provide wastewater services, however, as the community uses private septic tanks for wastewater disposal in the area. The District added street lighting services in 1978 and acts as a pass-through agency with Pacific Gas and Electric Company (PG&E) for street lighting. Currently, the District provides street lighting services as well as domestic water supply for 165 housing units (US Census, 2010).

### Service area

- 89 acres
- 452 population (2010)
- 165 housing units
- 13 commercial units

### Services provided

- Water, street lighting
- \*all connections are metered*

### District Staff

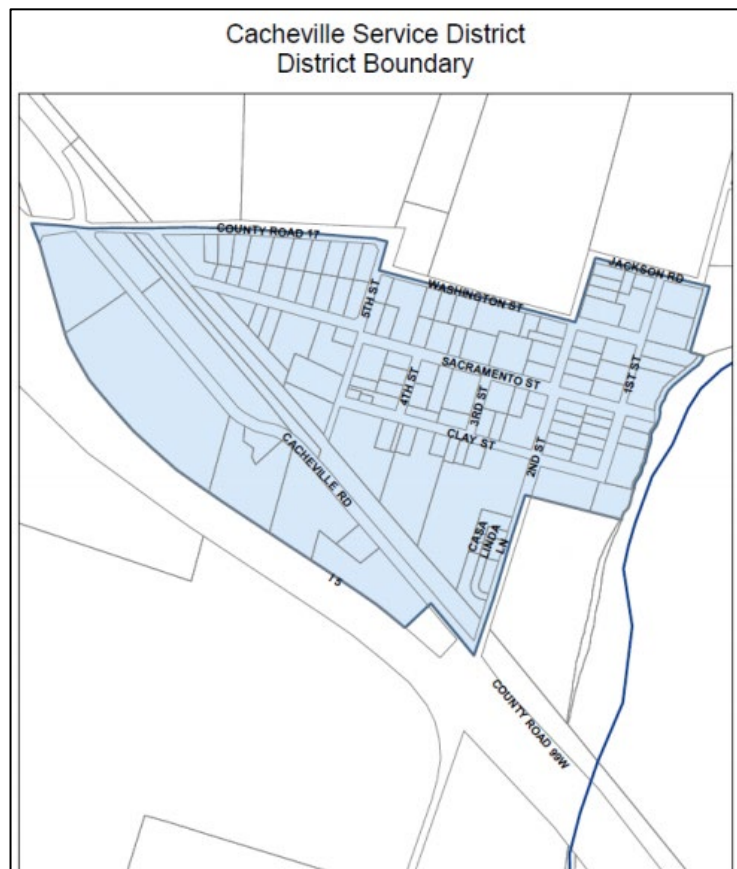
- Clerk, part-time
- Water Distribution Operator, part time

### Municipal Service Review

- July 2014
- October 2006

### Special Studies

- 2011 Final Facility Master Plan, Yolo County



**Near-Term Improvements to Existing System**

The water system was constructed in the 1970s and consists primarily of 4-inch diameter and 6-inch diameter pipes, many of which are undersized. Existing non-residential fire flows do not meet current requirements and the pipes are in need of expansion to provide adequate pressures for fire flows. The calculated current average day use based on standard demand rates and known land uses is 122 gpm.

There are two wells that are a part of the system (see Figure 1, page 35) – Washington Street Well (Well 1) and Sacramento Street Well (Well 2). Well 2 serves as a backup well. Well 1 has a reported capacity of 1,000 gpm. Well 2 capacity is reported at 100 gpm. Well 1 is equipped with a 100 hp pump and is connected to two 5,000-gallon hydropneumatic tanks. Both Well 1 and Well 2 receive chlorination treatment at the well head. Cacheville CSD staff indicate that the water system performs satisfactorily under current domestic water demands, but additional facilities would be required to handle all but a nominal amount of additional development. Back-up power is not available at the wells.

**The combined pumping capacity from the wells (1000 gpm) is not adequate to meet either residential or commercial fire flow requirements (1,500 gpm residential and 2,500 commercial, respectively).**






In summary, the current system has the ability to meet the existing domestic supply needs of the community but does not appear to have the ability to meet fire flow requirements without improvements. Additionally, upsizing the pumps would not resolve the fire flow deficiencies: inadequate pipeline diameter sizing throughout water distribution system constrains the delivery of these flows. The existing developed area would benefit from the upsize or replacement of some pipes and a storage tank, possibly in combination with a booster pump for fire flow and increased system reliability in the event wells are out of service.

<b>Recommended Improvements</b>	
Water Main Upsizing	Est. Cost: \$ 1,000,000
Upsize Water Pump and Provide Backup Power	Est. Cost: \$ 300,000
<b>Total Recommended Near-Term Improvements</b>	<b>\$ 1,300,000</b>

Figure 1. Proposed Water System Configuration – 2030 Buildout



**LEGEND**

-  EXISTING SYSTEM WATER MAIN
-  PROPOSED WATER MAIN TO SERVE 2030 BUILDOUT & PROVIDE BACKBONE LOOP
-  EXISTING WELL
-  PROPOSED WELL
-  PROPOSED STORAGE TANK

**Long-Term Improvements to Existing System**

A significant increase in the size of Cacheville is envisioned by the 2030 General Plan. The land use areas and their percentage of the total 2030 build-out area are summarized in Table 1 to provide an understanding of the scope of the 2030 growth compared to the existing CSD area. It should be noted that the areas designated as developed and served may not necessarily be fully developed and/or could be redeveloped in such a way that water demands could increase. From Table 1, the areas projected for future development make up a significant fraction of the currently served area, which indicates that facility upgrades will be needed to meet water demand needs associated with the projected growth.

**Table. 1 Existing and Future Development Acreages**

<b>Development Category</b>	<b>Acreage</b>	<b>Percent of 2030 Build-out</b>
Developed and Served	78 acres	61.9 %
Future Development	48 acres	38.1 %
Total	126 acres	100 %

The 2030 growth area build-out envisioned in the General Plan expands the developed area of Cacheville from 78 acres to approximately 126 acres (an increase in service area of approximately 62%). This increase will require upsizing some of the existing water mains and the addition of system looping to increase the reliability of the current water distribution and supply system. Average day demand for the existing condition based on land use is calculated as 118 gpm and is expected to increase to 266 gpm under 2030 build-out conditions – an increase by a factor of about 2.3. The water system that would be required to serve the build-out area will depend on phasing, actual land use, and actual land use patterns, but the following recommendations include the major elements that will be required.

**Recommended Improvements**

Upgrade to 12” Transmission Main	Est. Cost: \$ 1,500,000
New Backup Well (>500 gpm)	Est. Cost: \$ 750,000
New Primary Well (>1,500 gpm)	Est. Cost: \$ 1,750,000
New Water Storage Tank (0.4 MG)	Est. Cost: \$ 1,500,000
<b>Total Recommended Long-Term Improvements</b>	<b>\$ 5,500,000</b>

## Esparto Community Services District

26490 Woodland Ave, Esparto, CA 95627

[www.ecsd-ca.org](http://www.ecsd-ca.org)



The Esparto Community Services District was founded in 1969, replacing the Esparto Sanitary District, and is authorized to provide water, wastewater, and street lighting services to the approximately 3,108 residents of the unincorporated community of Esparto (US Census Bureau, 2010).

The Esparto CSD is located on Highway 16 between the communities of Madison and Capay. See the map below for greater detail.

### Service area

- 531 acres
- 3,108 residents (2010)
- 1,025 water connections
- 1,107 sewer connections

### Services provided

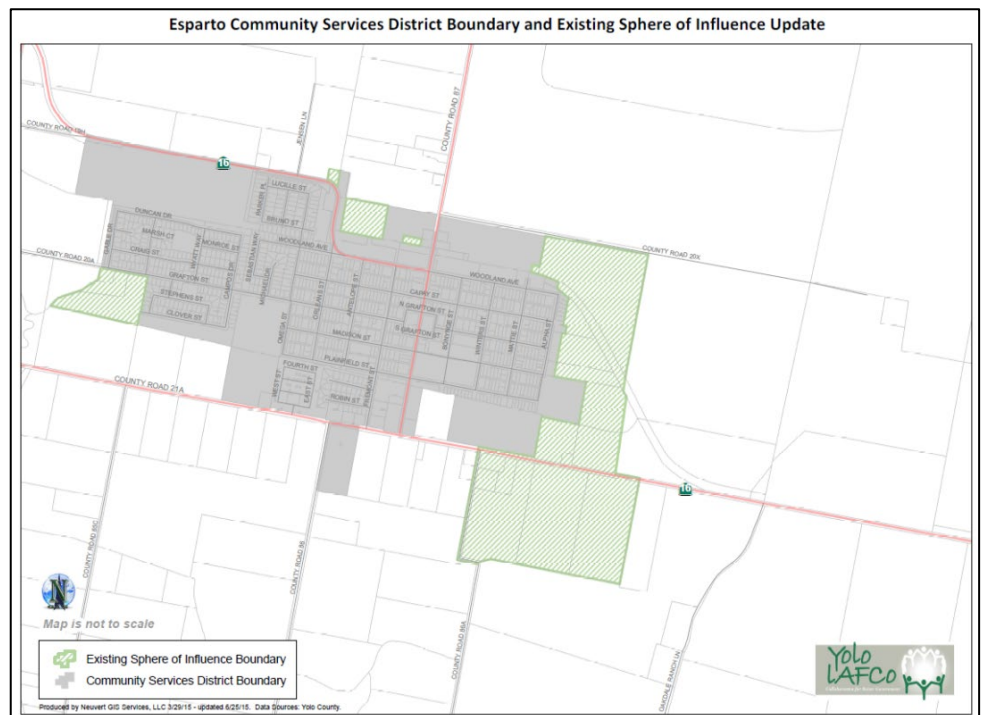
- Water, wastewater, street lighting, parks and recreation
- \*Connections are not metered*

### District Staff

- General Manager
- Fiscal Officer
- 4 water/sewer staff
- 1 parks maint. staff
- Total: 7 FTEs

### Municipal Service Review

July 2015



### Special Studies

- 2011 Final Facility Master Plan, Wood Rogers (Yolo County)
- 2003 Esparto CSD Facilities Update Plan, Psomas, (Esparto CSD)

## **Near-Term Improvements to Existing System**

### Water Supply and Distribution

The Esparto CSD owns, operates and maintains the water system servicing the community of Esparto, which serves a total of 1,025 water connections. According to the District's Facility Master Plan (2011), the system's infrastructure includes:

- Five (5) wells- Well 1A, Well 5, Well 5B and Well 6 (Well 5B depth is 1,200 ft; all other wells have depth of 400 feet)
- Emergency well- The Well 4 is not currently in use due to adequacy issues, but still connected to the system for emergency use
- 500,000-gallon storage tank
- Booster pump station
- Two (2) hydropneumatic tanks- connected to the distribution system in order to maintain system pressure and reliability

In total, the four in-service wells have a capacity of 2,100 gpm. Water from the wells is treated with chlorine for disinfection before entering the distribution system. Individual water service connections are not metered, but when a service is repaired or replaced a meter box is installed with a spacer to allow for future placement of a water meter.

The primary concern of the CSD with the existing system at this time is improving the flow capacity in older sections of the town by either upsizing or additional water main looping.

### Wastewater Collection and Treatment

The existing wastewater collection system consists primarily of vitrified clay pipe with diameters ranging from 4-inch through 12-inch. The collection system flows by gravity to a treatment pond system on the easterly side of Esparto. A pump station is located at the headworks to the treatment ponds and is pumped into ponds by a submersible pump lift station equipped with two 500 gpm submersible Chicago pumps. Operators indicate that the collection system has both maintenance and repair problems at various locations around town, including:

- Inverted siphon passing under Lamb Valley Slough
- Sewer trunk on Omega Street located between the cross streets of Grafton Street and Capay Street
- Inadequate capacities in three sewer trunks flowing west to east between Madison Street and Woodland Avenue
- Infiltration of groundwater into sewer lines and inflow of surface water into the treatment ponds

The CSD owns 90 acres of land, which are intended to be used for treatment ponds or other treatment and disposal facilities. However, the actual useable property is approximately 75-acres, containing 10 ponds totaling 42.7 acres. A portion of the 90 acres is impaired by the South Fork

Willow Slough, Lamb Valley Slough, and Oakdale Ranch Lane, which reduces the usable property to approximately 75 acres. This property currently contains 10 ponds totaling approximately 42.7 acres. Wastewater drains by gravity to a pump station located at the headworks to the treatment ponds and is pumped into the ponds by means of a submersible pump lift station equipped with two 500 gpm submersible Chicago pumps. The existing 42.7 acres of ponds are divided by Oakdale Ranch Lane, which progresses in a northerly direction from Highway 16. The existing system is configured with Ponds 1-6 totaling 12.7-acres on the west side of Oakdale Ranch Lane and four ponds totaling a measured 30-acres to the east of the Lane. Ponds 1 and 2 are treatment ponds, and the remaining ponds are disposal ponds. Currently, the remainder of the CSD property is used as an emergency overflow area. Levees around the ponds provide a barrier between the ponds and the adjacent Lamb Valley Slough and South Fork Willow Slough.

There are no improvements needed in the near-term for the wastewater treatment system, however, the Esparto CSD is pursuing a wastewater recycling project that would allow the CSD to use treated wastewater to irrigate the park/open space lands it is responsible for maintaining, resulting in a 20% reduction in use of groundwater. This wastewater recycling project is shovel ready and is estimated to cost \$6.6M.

**Recommended Improvements**

Water System Improvements

Water Main Upsizing	Est. Cost: \$ 5,600,000
<b>Total Recommended Near-Term Water Improvements</b>	<b>\$ 5,600,000</b>

Wastewater System Improvements

8-inch Sewer Trunk Diversion	Est. Cost: \$ 220,000
Sewer Lift Station and Force Main	Est. Cost: \$ 130,000
Wastewater Recycling project	Est. Cost: \$ 6,600,000
<b>Total Recommended Near-Term Wastewater Improvements</b>	<b>\$ 6,950,000</b>
<b>Cumulative Recommended Near-Term Improvements</b>	<b>\$ 12,550,000</b>



**Long-Term Improvements to Existing System**

Future Water Supply and Distribution – 2030 Expected Growth

The 2030 growth area build-out envisioned in the General Plan expands the developed area of Esparto from 235 acres to approximately 614 acres (an increase in service area of approximately 2.6 times). This increase will require increases in the size and reliability of some portions of the current water distribution and supply system. The current average daily demand is 651 gpm and is expected to increase to 1,500 gpm under 2020 build-out conditions. Current fire flow requirements are expected to increase from 2,500 gpm to 3,500 gpm.

**Table 2. Water System – Current vs. Expected Demand**

<b>Requirement</b>	<b>Current</b>	<b>2030 Build-out</b>
Average Daily Demand	651 gpm	1,500 gpm
Max. Fire Flow	2,500 gpm	3,500 gpm

Future Wastewater Collection and Treatment – 2030 Expected Growth

Similar to the water system, the growth area for 2030 build-out will require a sizable expansion of Esparto’s wastewater collection and treatment system. The peak sewer flow generation is expected to increase from the existing condition flow, estimated at 1.87 MGD, to a projected 2030 build-out flow of 4.58 MGD – an increase by a factor of approximately 2.4.

Recommended improvements to the wastewater collection and treatment system to accommodate the growth projected by the County’s 2030 General Plan are provided below.

**Recommended Long-Term Improvements**

Water System Improvements

Transmission Main Loop	Est. Cost: \$ 2,630,000
New Water Supply Well(s)	Est. Cost: \$ 1,200,000
Additional Water Storage	Est. Cost: \$ 2,600,000
<b>Total Recommended Long-Term Water Improvements</b>	<b>\$ 6,430,000</b>

Wastewater System Improvements

Gravity Collector System (New Development)	Est. Cost: \$ 2,500,000
Upsize of existing 12” Trunk Line & Relief Sewer Line	Est. Cost: \$ 1,000,000

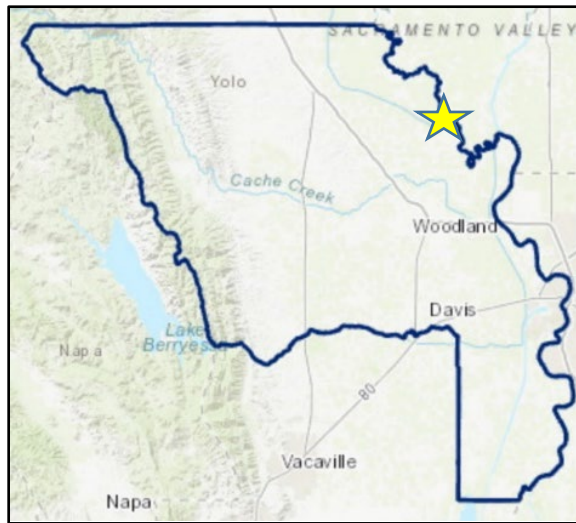
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New Lift Station at Pond Outfall	Est. Cost: \$ 900,000
Upsize Collector Sewers	Est. Cost: \$ 1,750,000
Land Acquisition (80-acres for new ponds)	Est. Cost: \$ 800,000
New Storage Pond(s)	Est. Cost: \$ 650,000
New Aeration Pond(s)	Est. Cost: \$ 500,000
Construct Effluent Irrigation System	Est. Cost: \$ 600,000
<b><u>Total Recommended Long-Term Wastewater Improvements</u></b>	<b><u>\$ 8,700,000</u></b>
<b><u>Cumulative Recommended Long-Term Improvements</u></b>	<b><u>\$15,130,000</u></b>

## Knights Landing Community Services District

PO Box 548, Knights Landing, CA 95645

[www.klcsd.specialdistrict.org](http://www.klcsd.specialdistrict.org)



The Knights Landing Community Services District (CSD) was established in May 1968 to provide water, wastewater treatment, street lighting, and parks and recreation services to the community of Knights Landing. The CSD received LAFCo approval to add storm drainage services to its list of powers in 2007. Effective July 2020, the Knights Landing CSD Board approved an agreement with the Madison CSD for Madison CSD staff to provide general operations and management services.

The community of Knights Landing is located on State Highway 113 adjacent to the Sacramento River. The current boundaries for the Knights Landing CSD roughly correspond to the perimeter of the developed areas in the community of Knights landing, with the addition of a few agricultural parcels immediately adjacent to the community.

### Service area

- 220 acres
- 995 residents (2010)
- 380 housing units
- 287 connections

### Services provided

- Water, wastewater, street lighting, parks and recreation, storm water
- \*Connections are not metered*

### District Staff

- Madison CSD staff (contract)
- Part-time bookkeeper
- Total: 2.0 FTE's

### Municipal Service Review

December 2014

### Special Studies

- 2011 Final Facility Master Plan, Wood Rogers (Yolo County)

**Knights Landing Community Services District  
Boundary and Sphere of Influence**



## Near-Term Improvements to Existing System

### Water Supply and Distribution

The Knights Landing CSD owns, operates and maintains the water distribution system serving the town of Knights Landing. The water system was constructed in the 1970s and consists primarily of 6" diameter pipes, many of which are undersized. Existing non-residential fire flows do not meet current requirements, and the pipes are in need of expansion to provide adequate pressures for fire flows. Average daily water demand is roughly 200 gpm, with a peak demand of 695 gpm. The community water supply is drawn from three (3) active wells.

Well	Capacity (gpm)	Constructed	Depth (ft)	Status
Well 3 (Railroad St.)	500	1971	332'	Active
Well 4 (Ridge Cut)	1,000	1981	342'	Active
Well 5 (Third St.)	1,500	1999	402'	Active

The combined pumping capacity of the three (3) active wells should allow the system to meet fire flow requirements (1,500 gpm residential and 2,500 gpm commercial). However, the 4-inch and 6-inch diameter piping throughout the system constrains the delivery of flows, and the pipes are in need of expansion to provide adequate pressure for fire flows. In summary, the District's water system has the capacity to meet the community's existing water supply needs but cannot meet fire flow requirements without improvements. The addition of above ground water storage is needed to ensure adequate water capacity and pressure. Above ground storage is estimated to cost \$500,000.

Well 3 is recommended for replacement because of its age and recent problems with water quality; typically wells experiencing these issues experience further degradation over time. Well 3 is also losing thousands of gallons of water per month due to leaks. Replacement valves and tank repairs to stem the leaks are estimated to cost \$5,000-10,000. The CSD reports that Well 3 occasionally pumps sand. It is recommended that the well apparatus be removed and the well be cleaned and inspected. This maintenance will cost approximately \$25,000. The system proposed for 2030 assumes a production rate of 3,000 gpm from the existing wells. Subsequently, the new well is proposed to have a capacity of 1000 gpm to address future demand as well as the replacement of existing Well 3. The CSD reports that Well 5 occasionally has water quality issues with metals.

Upsizing exiting water mains would serve to improve fire flow capacities within the distribution system and benefit the future development areas by providing additional transmission capacity through the existing area. A study to determine upsizing requirements was not part of this analysis. Water distribution system modeling is recommended to confirm the appropriate upsizing using fire flows appropriate to the existing and planned land use, as well as to plan for service to future growth areas. The approximate total length of existing 4-inch/6-inch diameter lines is about 20,985 lineal feet. All public water systems are required to meter their water deliveries by 2025. Knights Landing CSD does not have meters installed. The estimated cost for metering is \$500,000.

Wastewater Collection and Treatment

Wastewater from the collection system drains by gravity to the wastewater treatment facility located on 51.5-acres of property, southeast of town. The treatment facility is adjacent to the Knights Landing Ridge Cut, which is located on a 473-acre parcel of land under Williamson Act contract. The treatment facility consists of 10 facultative ponds plus a “spreading area” that serves as an emergency holding area to accommodate excess hydraulic flows during years of heavy flooding.

The facultative ponds were originally constructed in 1977 and have reached their current configuration in stages over the years. The latest modification was completed in 2008; improvements included the addition of two ponds to the then-current eight pond system to increase the treatment system capacity to 0.112 mgd. The lift station at the treatment pond headworks consists of a sump structure and two submersible-style pumps which transfer water into the treatment ponds through a common 6-inch diameter pipeline. The lift station pumps incoming wastewater from an elevation of 13.19 feet at the sump intake into the facultative ponds, which operate at a design water surface elevation of 28.3-feet.

Pond sludge removal should occur approximately once every 10-15 years. The last documented sludge removal occurred in 2005 in pond 8.

The current wastewater treatment system has the ability to meet the current need with some minor upgrades. The wastewater distribution system needs replacement and a new forced main to the ponds. The system also needs new pumps and a solids separator. The estimated cost for these improvements is \$1,720,000. The CSD has applied for a infrastructure planning grant (\$160,000) from the State Water Resources Control Board for the planning, design, and engineering of these improvements. There is no local match required for this funding source.

The wastewater treatment system is sized to accommodate current development. To increase system reliability, an emergency alarm system is recommended at the lift station to alert the operator if the lift station pumps fail.

**Recommended Improvements**

Water System Improvements

Water Main Upsizing	Est. Cost: \$ 3,550,000
New well	Est. Cost: \$ 1,500,000
Maintenance of Well 3	Est. Cost: \$ 35,000

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Addition of above ground storage tank	Est. Cost: \$ 500,000
Installation of water meters	Est. Cost: \$ 500,000
<b>Total Recommended Near-Term Water Improvements</b>	<b>\$ 6,085,000</b>

Wastewater System Improvements

New Lift Station at Outfall to Ponds	Est. Cost: \$ 650,000
Parallel Collector Sewer	Est. Cost: \$ 570,000
Installation of Solids Separator	Est. Cost: \$ 500,000
<b>Total Recommended Near-Term Wastewater Improvements</b>	<b>\$ 1,720,000</b>

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<b>Cumulative Recommended Near-Term Improvements</b>	<b>\$ 7,805,000</b>
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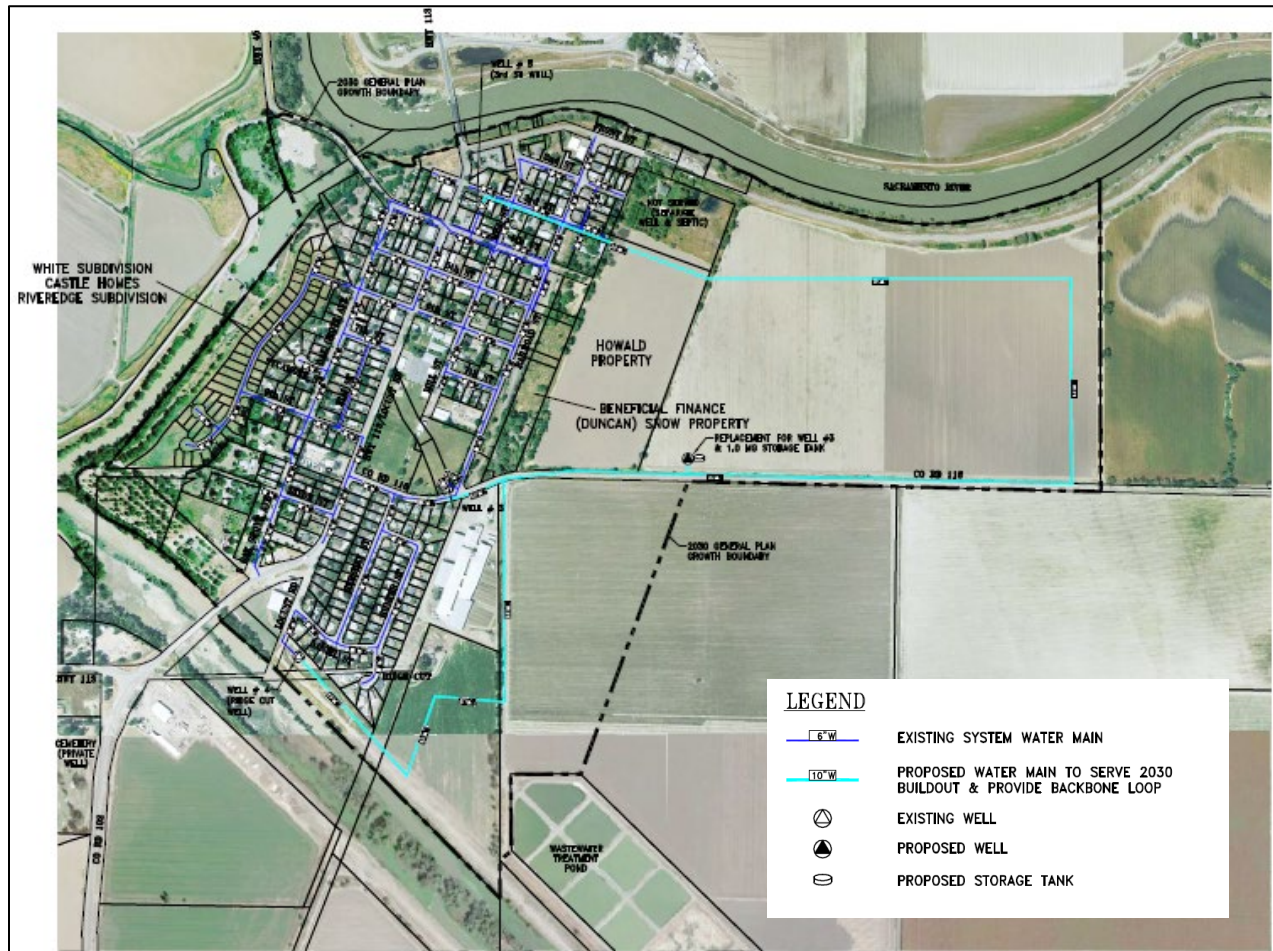
### Long-Term Improvements to Existing System

#### Future Water Supply and Distribution – 2030 Expected Growth

The 2030 growth area build-out envisioned in the General Plan expands the developed area of Knights Landing from 151 acres to approximately 407 acres (an increase in service area of approximately 2.7 times). This increase will require a significant increase in the size and reliability of the current water distribution and supply system.

Average day demand for the existing condition based on land use is calculated as 203.9 gpm and is expected to increase to 976.7 gpm under 2030 build-out conditions – an increase by a factor of almost five. The 2030 system presented assumes a fire flow requirement of 2,500 gpm. Figure 2, below, is a conceptual future build-out schematic prepared by Wood Rodgers in 2012.

**Figure 2. Water Distribution System – 2030 Buildout**



It is recommended that additional water mains which loop through the future growth areas and connect to the existing distribution system be provided for water circulation to all areas and allow fire flow to come from wells throughout the community with a minimal head loss. The loops shown in Figure 2, above, represent about 11,000 feet in new distribution trunks and would be constructed in phases. Detailed modeling of the entire pipe network would be needed to confirm the size of the pipe needed, but 10-inch and 12-inch diameter lines have been assumed for the purposes of previous study.

An additional well will be required to provide water supply for the future growth area. The 2030 system includes a new well assumed to both serve the future growth area and to replace Well 3. The new well is shown in the Specific Plan Area adjacent to the proposed storage tank (refer to Figure 2, above). The location of the well is approximate and will depend on phasing but should be located centrally to future development areas and be linked to the proposed transmission main loop.

#### Future Wastewater Collection and Treatment – 2030 Expected Growth

Similar to the water system, the growth area for 2030 build-out will require a significant expansion of Knights Landing’s wastewater collection and treatment system. Based on the proposed General Plan land uses, the peak sewer flow generation is expected to increase from the existing condition flow, estimated at 0.704 MGD, to a projected 2030 build-out flow of 1.94 MGD – an approximate 3-fold increase. The collection system required to serve the build-out area will depend on development phasing, land use type, and land use patterns.

### **Recommended Long-Term Improvements**

#### Water System Improvements

Transmission Main Loop	Est. Cost: \$ 2,800,000
New Water Supply Well(s)	Est. Cost: \$ 1,040,000
Additional Water Storage	Est. Cost: \$ 2,600,000
<b>Total Recommended Long-Term Water Improvements</b>	<b>\$ 6,440,000</b>

#### Wastewater System Improvements

Gravity Collector System (New Development)	Est. Cost: \$ 1,680,000
Upsize/replace 12” Trunk Line	Est. Cost: \$ 510,000
Treatment Pond Headworks Improvements	Est. Cost: \$ 390,000



New Lift Station at Outfall to Ponds	Est. Cost: \$ 650,000
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Parallel Collector Sewer	Est. Cost: \$ 570,000
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<b><u>Total Recommended Long-Term Wastewater Improvements</u></b>	<b><u>\$ 3,770,000</u></b>
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<b><u>Cumulative Recommended Long-Term Improvements</u></b>	<b><u>\$10,210,000</u></b>
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## Madison Community Services District

28963 Main Street, Madison, CA 95653

[www.madisoncsd.org](http://www.madisoncsd.org)



The Madison Community Services District was formed in 1966 to provide water, wastewater, street lighting, and parks and recreation services to the approximately 503 residents living in the unincorporated community of Madison (US Census, 2010). Additionally, an agreement between the Madison CSD and Yolo County Housing Authority (YCH) was established in 1968 authorizing the District to provide wastewater treatment and domestic water supply services to the Madison Migrant Center operated YCH. The Migrant Center is located at the District’s eastern boundary, and houses about 300 people during the growing season from April through November each year. Effective July 2020, the Knights Landing CSD Board approved an agreement with the

Madison CSD for Madison CSD staff to provide general operations and management services.

The Madison CSD is governed by a five-member Board of Directors. The District, which is staffed by a General Manager and a system operator, contracts with Esparto CSD for finance and administration services. The Madison CSD serves approximately 60 acres bounded by Highway 16 on the north and Interstate 505 on the east. The Madison Migrant Center is located outside the District boundaries but within the current SOI.

### Service area

- 60 acres
- 503 residents (2010)
- 239 housing units
- 248 connections

### Services provided

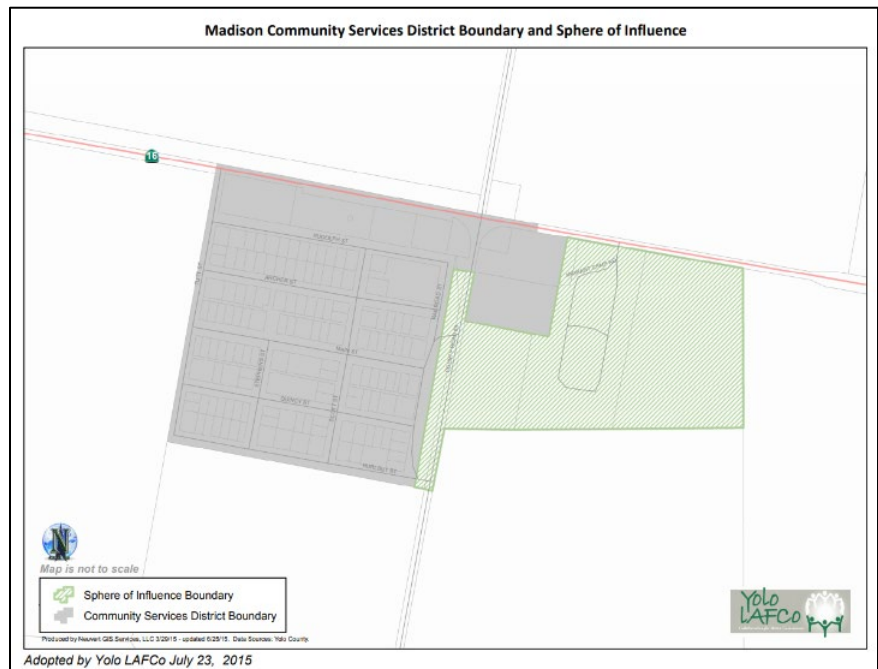
- Water, wastewater, street lighting, and parks and recreation
- \*Water not metered*

### District Staff

- Full-time manager
- Full-time operator
- Total: 2 FTE’s

### Municipal Service Review

December 2015



### Special Studies

- 2011 Final Facility Master Plan, Wood Rogers (Yolo County)
- Madison CSD Water Improvement Preliminary Engineering Report (Yolo County, 2018)

## Near-Term Improvements to Existing System

### Water Supply and Distribution

According to the Madison CSD Facility Master Plan (2011), the CSD's domestic water supply and distribution system was constructed in the 1960's and consists primarily of 6-inch diameter pipes made of transite. The system has three wells (Park Wells 1, 2, and 3). Park Well 3 is the primary well with a production rate of 500 gallons per minute (gpm). Park Well 1 is used as the back-up well, with a production rate of 450 gpm. Park Well 2 is considered an emergency backup well due to sand infiltration problems and is only capable of approximately 110 gpm.

**Table 3. Existing Well Data**

Well Name	Date Drilled	Capacity (gallons per minute)	Status
Park Well 1	Unk (1960's ?)	450 gpm	Not in use Requires submersible pump
Park Well 2	2007	110 gpm	Current backup well
Park Well 3	2010	650 gpm	Main Well

The 2011 Facility Master Plan reports that the Madison CSD water system's transite pipe distribution network is prone to water main breaks and leaks, with approximately four to six major breaks per year. The system is also unable to meet state mandated fire flow requirements, as discussed previously. The system requires several near-term improvements to address these issues, including replacement of the transite water main pipes, upsizing of the existing water mains from 6-inch to 12-inch, and the addition of a 0.25 MG storage tank. The District also hopes to add water meters to all connections in order to more accurately charge for water usage.

Madison CSD charges a flat rate of \$36 per month (2020) for residential water use, resulting in water system revenues of approximately \$217,000 per year. Its current rate structure is not sufficient to fund near-term infrastructure improvements. The 2018 Preliminary Engineering Report (Coleman Engineering, 2018) recommends that the CSD set aside approximately \$25,500 per year in a new "Asset Reserve" account. Table 4, below, describes the assets that their anticipated replacement schedule.

**Table 4. Asset Replacement Reserve Fund Recommendations**

<b>Description</b>	<b>Replacement Cost</b>	<b>Type of Reserve</b>	<b>Annual Reserve Requirement</b>
Well 1 Pump and Motor	\$60,000	15 years	\$4,000
Disinfection System	\$15,000	10 years	\$1,500
High Flow Pumps	\$150,000	20 years	\$7,500
Low Flow Pumps	\$100,000	20 years	\$5,000
Emergency Generator	\$150,000	20 years	\$7,500
		<b>Total =</b>	<b>\$25,500</b>

The District has analyzed the need to raise its rates but has concerns that even a modest increase will have a significant impact on the small ratepayer base. The median income in Madison community is \$40,221, which is only 70% of the statewide median of \$57,708, qualifying the community to apply for funding as a “Disadvantaged Community” as the median income is less than 80% of the state median. (Coleman, 2018)

#### Wastewater Collection and Treatment

The existing wastewater collection system consists of 6-inch and 8-inch vitrified clay pipe that was constructed in the 1960’s. The collection system flows by gravity to a treatment pond system on the easterly side of Madison. Operators indicate that the collection system has very few repair or maintenance requirements. However, from a downstream stream wastewater treatment standpoint, infiltration of ground water and inflow of stormwater into the collection system is a concern and a burden on the treatment system. The CSD’s wastewater permit requires that the treatment pond system have adequate capacity to hold stormwater from a 100-year storm event, plus two (2) feet of freeboard.

The Madison CSD is served with a facultative pond-type wastewater treatment facility. Facultative ponds are designed with an aerobic layer in the top few feet of the liquid surface, an anaerobic layer in the bottom few feet, and a facultative region between that is partly aerobic and partly anaerobic. Aeration is accomplished without the need for deep mixing by mechanical means. The upper aerobic zone of the pond serves to minimize odor resulting from off-gases produced from the lower anaerobic zones. There are no effluent requirements since the ponds do not discharge into receiving waters. Sludge levels are evaluated annually for determination of removal needs. The CSD plans to implement a semi-annual sludge cleaning program once it secures the necessary equipment (estimated at \$60,000).

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**Recommended Near-Term Improvements**

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Water System Improvements

Implement Water System Replacement project	\$ 6,600,000
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<b>Total Recommended Near-Term Water Improvements</b>	<b>\$ 6,600,000</b>
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Wastewater System Improvements

Upsize Existing Trunk System	\$ 150,000
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Sludge Removal Maintenance Equipment	\$ 60,000
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Solid Waste Removal Auger System	\$ 500,000
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<b>Total Recommended Near-Term Wastewater Improvements</b>	<b>\$ 710,000</b>
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<b>Cumulative Recommended Near-Term Improvements</b>	<b>\$ 7,310,000</b>
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### Long-Term Improvements to Existing System

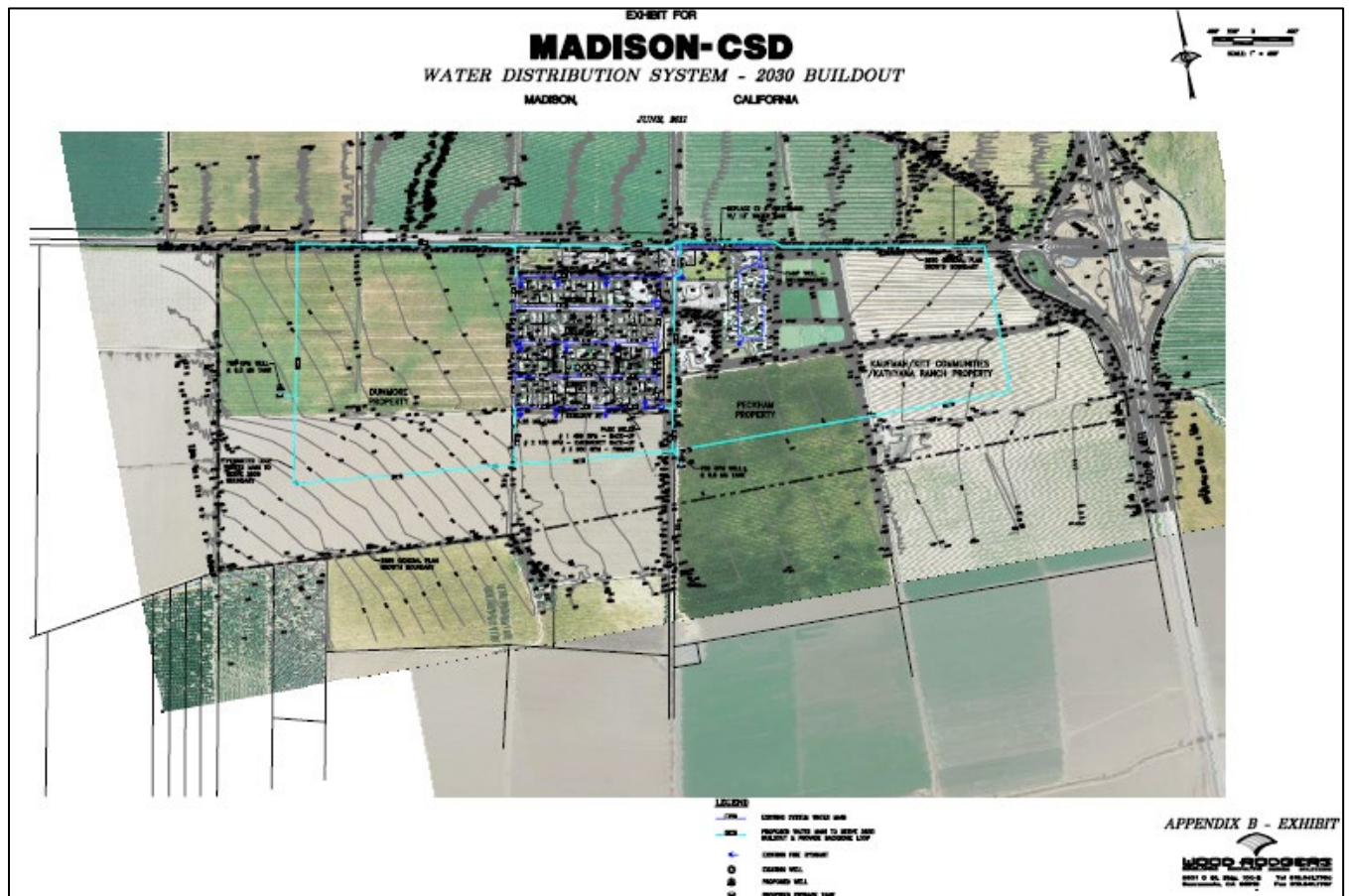
#### Future Water Supply and Distribution – 2030 Expected Growth

The 2030 growth area build-out envisioned in the General Plan expands the developed area of Madison from 94 acres to approximately 500 acres (an increase in service area of approximately 4.3 times). This increase will require a significant increase in the size and reliability of the current water distribution and supply system. Average day demand for the existing condition based on land use is calculated as 173 gpm and is expected to increase to 1,210 gpm under 2030 build-out conditions. The 2012 Wood Rogers Facility Master Plan recommends the following future improvements:

- Additional 12-inch water main loop through the community with cross connection at CR 89
- Two (2) additional community water wells (750 gpm each)
- Replacement of existing Well 1 (new 1,100 gmp well)
- New 0.25M gallon water storage tank for adequate fire flow pressure
- Two (2) new 0.5M gallon storage tanks (one at each new well)

The following schematic shows the existing and proposed 2030 water system build-out.

**Figure 3. Existing and Proposed 2030 Madison CSD Water System**

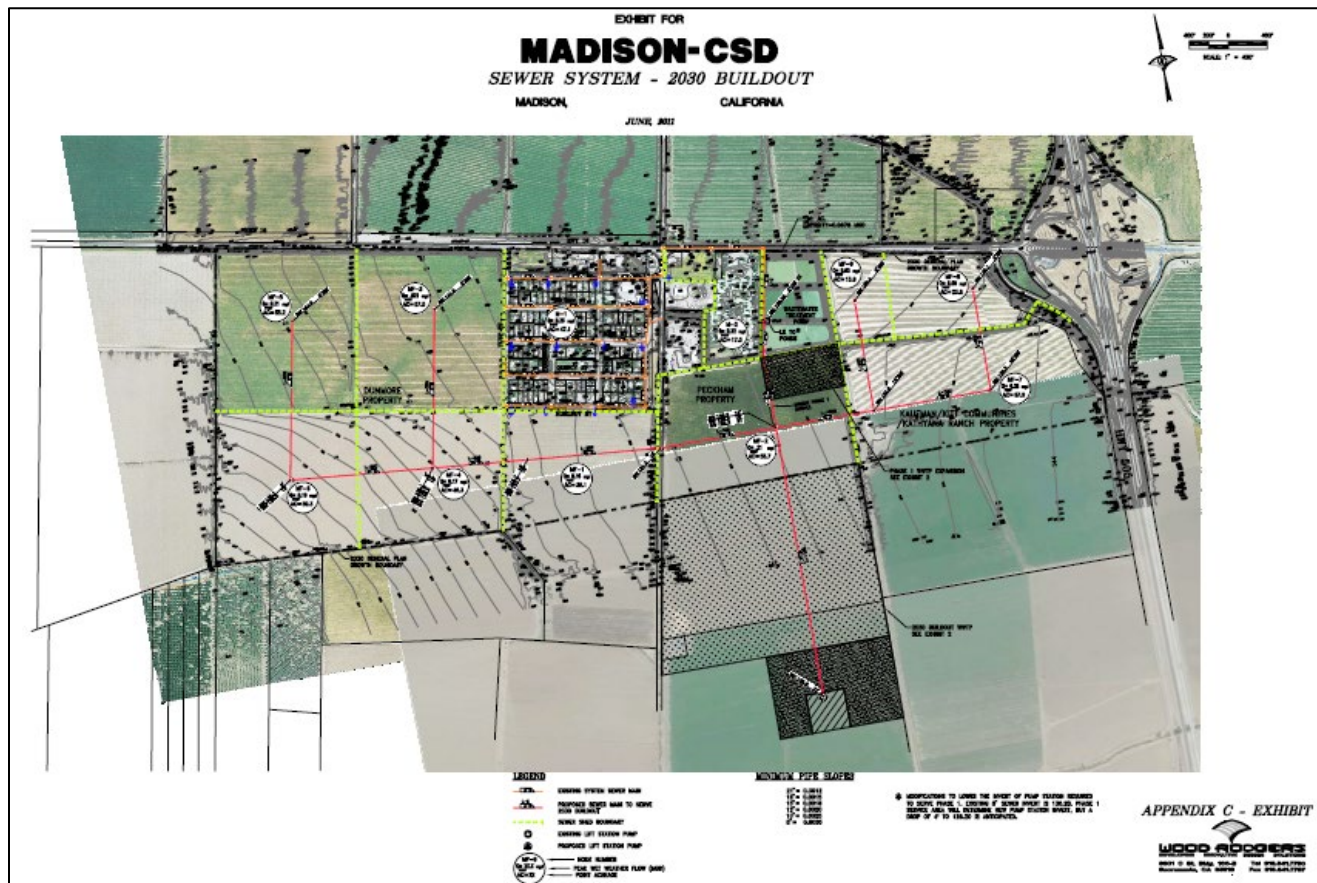


Future Wastewater Collection and Treatment – 2030 Expected Growth

Similar to the water system, the growth area for 2030 build-out will require a significant expansion of Madison’s wastewater collection and treatment system. Based on the proposed General Plan land uses, the peak sewer flow generation is expected to increase from the existing condition flow, estimated at 0.50 MGD, to a projected 2030 build-out flow of 3.69 MGD – an approximate 7-fold increase. The collection system required to serve future build-out areas is depicted in the Figure 4, below. The treatment capacity for Madison must be increased from the existing inflow capacity of 70,000 gpd to an inflow capacity of 474,000 gpd to meet projected 2030 build-out development needs. The 2012 Wood Rodgers Facilities Master Plan recommends the following future improvements:

- New gravity collector trunks system-wide
- New parallel collector sewers (~2,500 linear feet)
- Replace facultative ponds with new aerated pond area (~25 acres total)
- Create new irrigated crop treatment area (~90 acres) to spread treated wastewater

Figure 4. Existing and Proposed 2030 Madison CSD Build-out



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### Recommended Long-Term Improvements

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#### Water System Improvements

Transmission Main Loop	Est. Cost: \$ 4,160,000
New Water Supply Well(s)	Est. Cost: \$ 1,560,000
Replacement of Well 1	Est. Cost: \$ 1,140,000
Water Storage for Fire Flow (0.25MG tank)	Est. Cost: \$ 1,300,000
Water Storage for Demand (two 0.5MG tanks)	Est. Cost: \$ 1,300,000
<b><u>Total Recommended Long-Term Water Improvements</u></b>	<b><u>\$ 9,460,000</u></b>

#### Wastewater System Improvements

Land Acquisition (~115 acres)	Est. Cost: \$ 730,000
New Aerated Treatment Pond (~50 acre-feet capacity)	Est. Cost: \$ 510,000
New Facultative Pond (~180 acre-feet capacity)	Est. Cost: \$ 1,720,000
New Crop Treatment System (90 acres)	Est. Cost: \$ 640,000
New Gravity Collector Trunks	Est. Cost: \$ 3,620,000
New Parallel Collector Sewers	Est. Cost: \$ 570,000
<b><u>Total Recommended Long-Term Wastewater Improvements</u></b>	<b><u>\$ 7,790,000</u></b>

<b><u>Cumulative Recommended Long-Term Improvements</u></b>	<b><u>\$17,250,000</u></b>
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