

VINA SUBBASIN

SGM Grant Program: Submitted Application Package

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For information on the grant program, visit:

<https://water.ca.gov/work-with-us/grants-and-loans/sustainable-groundwater>

Resolution No.

**RESOLUTION BY THE VINA GROUNDWATER SUSTAINABILITY AGENCY THAT AN APPLICATION BE MADE TO THE
DEPARTMENT OF WATER RESOURCES TO OBTAIN A GRANT UNDER THE 2021 SUSTAINABLE GROUNDWATER
MANAGEMENT GRANT PROGRAM SGMA IMPLEMENTATION GRANT.**

WHEREAS, the Vina Groundwater Sustainability Agency ("Vina GSA") is a GSA in the Vina Groundwater Subbasin ("Vina Subbasin"); and

WHEREAS, there are three Member Agencies that comprise the Vina GSA - City of Chico, Durham Irrigation District, and County of Butte; and

WHEREAS, there are two GSAs in the Vina Subbasin - Vina GSA and Rock Creek Reclamation District GSA ("RCRD GSA"); and

WHEREAS, the two GSAs have adopted one Groundwater Sustainability Plan for the subbasin pursuant to the Sustainable Groundwater Management Act ("SGMA") and pursuant to a Joint Powers Agreement agreed to and executed by the Vina GSA Member Agencies; and

WHEREAS, the Vina GSA is preparing an application to the California Department of Water Resources ("DWR") to obtain a grant under the Sustainable Groundwater Management (SGM) Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022; and

WHEREAS, DWR will accept one application per subbasin during the SGM Grant Program's SGMA Implementation Round 2; and

WHEREAS, the Vina GSA desires to work cooperatively with the RCRD GSA in the submission of one application to DWR and in developing and undertaking projects and other activities pursuant to the Vina Subbasin's application to DWR; and

WHEREAS, it is the intention of the Vina GSA to submit one grant application on behalf of the entire Vina Subbasin for the SGM Grant Program SGMA Implementation Grant Round 2 solicitation; and

WHEREAS, the Vina GSA is preparing an application that includes proposed projects submitted by the GSA's Member Agencies, RCRD GSA and other eligible entities consistent with the Vina Subbasin Groundwater Sustainability Plan for the SGM Grant Program's SGMA Implementation Grant Round 2; and

WHEREAS, the Vina GSA's application includes projects that are of interest and of benefit to the Vina Subbasin; and

WHEREAS, the SGM Grant Program SGMA Implementation Grant Proposal Solicitation Package requires that the Vina GSA, as the entity acting as the applicant, must adopt a resolution that designates an authorized representative to submit the application and execute an agreement with the State of California for the SGMA Implementation Grant application.

NOW, THEREFORE BE IT RESOLVED by the Vina GSA, that an application be made to the Department of Water Resources to obtain a grant under the 2021 Sustainable Groundwater Management (SGM) Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022.

BE IT FURTHER RESOLVED that the Vina GSA has the authority and shall enter into a funding agreement with the Department of Water Resources to receive a grant for the: Vina Subbasin GSP Projects and Management Actions Implementation – Round 2 Grant Application.

BE IT FURTHER RESOLVED that the Butte County Director of Water and Resource Conservation, administrator of the Vina GSA, or designee, is hereby authorized and directed to prepare the necessary data, conduct investigations, file such application, execute a funding agreement and any future amendments thereto, submit invoices, and submit any reporting requirements with the Department of Water Resources.

PASSED AND ADOPTED by the Vina Board of Directors, the governing body for the Vina GSA this 9th day of November 2022, by the following vote:

AYES: Reynolds, Cooper, Kimmelshue, Rohwer, Tuchinsky

NOES:

ABSENT:

ABSTAIN:



Evan Tuchinsky, Chair
Vina GSA Board of Directors

CERTIFICATION

I do hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the Vina GSA held on the 9th day of November, 2022.

ATTEST:

By: 

Kamie Loeser, Administrator, Vina GSA

RESOLUTION NO. 71-22

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CHICO SUPPORTING
THE VINA GROUNDWATER SUSTAINABILITY AGENCY'S APPLICATION
FOR A SUSTAINABLE GROUNDWATER MANAGEMENT GRANT

WHEREAS, City of Chico ("City") is a Member Agency with Butte County and Durham
Irrigation District of the Vina Groundwater Sustainability Agency ("Vina GSA"); and

WHEREAS, the Vina GSA and the Rock Creek Reclamation District GSA are two GSAs
in the Vina Subbasin; and

WHEREAS, the two GSAs in the Vina Subbasin have adopted one Groundwater
Sustainability Plan ("GSP") for the subbasin pursuant to the Sustainable Groundwater
Management Act ("SGMA") and pursuant to a Cooperation Agreement agreed to and executed
by the Vina Subbasin GSAs; and

WHEREAS, the Vina GSAs are preparing an application to the California Department of
Water Resources ("DWR") to obtain a grant under the Sustainable Groundwater Management
(SGM) Grant Program SGMA Implementation Grant pursuant to the California Drought, Water,
Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018 (Pub. Resources
Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022; and

WHEREAS, DWR will only accept one application per subbasin during the SGM Grant
Program's SGMA Implementation Round 2; and

WHEREAS, it is the intention of the Vina GSAs that one grant application be submitted
on behalf of the entire Vina Subbasin for the Round 2 Solicitation; and

WHEREAS, City desires to work cooperatively with the Vina GSA Member Agencies,
the Rock Creek Reclamation District GSA, and other project proponents in the submission of an
application to DWR, and in developing and undertaking sustainable groundwater projects and
other activities pursuant to the Vina GSA's application to DWR; and

1 WHEREAS, the Vina GSAs application includes consideration of the several potential
2 projects and activities of interest and of benefit to the City.

3 NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Chico as
4 follows:

- 5 1. The City Council supports the Vina GSA application to DWR to obtain a grant under the
6 SGM Grant Program SGMA Implementation Grant pursuant to the California Drought,
7 Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub.
8 Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022; and
- 9 2. The City of Chico acknowledges that the Vina GSA has the authority and shall enter into a
10 funding agreement with DWR to receive a grant benefitting one or more SGMA projects in
11 the Vina Subbasin, including the City's potential project(s); and
- 12 3. That the Butte County Director of Water and Resource Conservation, or designee, is
13 authorized to administer the SGM Grant Project on the City's behalf and for its benefit,
14 including preparing the necessary data, conducting investigations, filing such application,
15 executing a funding agreement and any future amendments thereto, submitting invoices,
16 and any reporting requirements with DWR.

17 **THE FOREGOING RESOLUTION WAS ADOPTED** by the Council of the City of
18 Chico at its meeting held on November 15, 2022, by the following vote:

19 AYES: Bennett, Brown, Morgan, O'Brien, Tandon, Reynolds, Coolidge

20 NOES: None

21 ABSENT: None

22 ABSTAINED: None

23 DISQUALIFIED: None

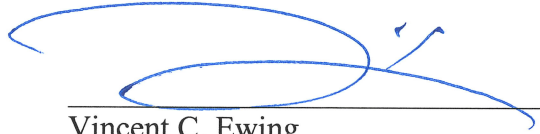
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1 ATTEST:

APPROVED AS TO FORM

2
3 *Daughter Presson on behalf of*

4 Deborah R. Presson
City Clerk



Vincent C. Ewing
City Attorney*

5 *Approved pursuant to The Charter of the City
6 of Chico § 906(E)
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RESOLUTION NO. 2022-09

A RESOLUTION OF THE BOARD OF DIRECTORS OF ROCK CREEK RECLAMATION DISTRICT IN SUPPORT OF THE VINA GSA'S APPLICATION FOR A SUSTAINABLE GROUNDWATER MANAGEMENT GRANT

WHEREAS, Rock Creek Reclamation District ("District") is a Groundwater Sustainability Agency ("GSA") in the Vina Subbasin; and

WHEREAS, the two GSAs in the Vina Subbasin have adopted one Groundwater Sustainability Plan for the subbasin pursuant to the Sustainable Groundwater Management Act ("SGMA") and pursuant to a Cooperation Agreement agreed to and executed by the Vina Subbasin GSAs; and

WHEREAS, the Vina Groundwater Sustainability Agency ("Vina GSA") is a GSA in the Vina Subbasin; and

WHEREAS, the Vina GSA is preparing an application to the California Department of Water Resources ("DWR") to obtain a grant under the Sustainable Groundwater Management (SGM) Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022; and

WHEREAS, DWR will accept one application per subbasin during the SGM Grant Program's SGMA Implementation Round 2; and

WHEREAS, it is the intention of the District that one grant application be submitted on behalf of the entire Vina Subbasin for the Round 2 Solicitation; and

WHEREAS, the District desires to work cooperatively with the Vina GSA in the submission of an application to DWR and in developing and undertaking projects and other activities pursuant to the Vina GSA's application to DWR; and

WHEREAS, the Vina GSA's application includes consideration of the potential projects of interest and of benefit to the District.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Rock Creek Reclamation District that the District supports the Vina GSA's application to DWR to obtain a grant under the SGM Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022.

BE IT FURTHER RESOLVED that the District acknowledges that the Vina GSA has the authority and shall enter into a funding agreement with DWR to receive a grant benefitting one or more SGMA projects in the Vina Subbasin, including District's potential projects.

BE IT FURTHER RESOLVED that the District acknowledges that the Director of Water and Resource Conservation of the County of Butte, or designee, is authorized to administer the SGM Grant Project on District's behalf and for its benefit, including preparing the necessary data,

conducting investigations, filing such application, executing a funding agreement and any future amendments thereto, submitting invoices, and any reporting requirements with DWR.

PASSED AND ADOPTED this 9th day of November, 2022 at Chico, California, the following Directors voting thereon:

Ayes: Trustee Bentz, Trustee Lavy, Vice-Chair Rice, Chair Crain

Noes: 

Abstain: 

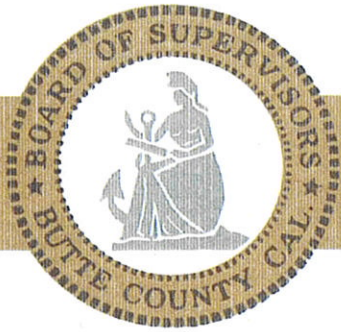
Absent: Trustee McGowan, Trustee Paiva, Trustee Payne

BY 

Hal Crain, Chair of the Board

ATTEST: 

Joanne Parsley, Secretary to the Board



BOARD OF SUPERVISORS

COUNTY OF BUTTE, STATE OF CALIFORNIA

Resolution No. 22-166

A RESOLUTION IN SUPPORT OF THE VINA GROUNDWATER SUSTAINABILITY AGENCY'S APPLICATION FOR A SUSTAINABLE GROUNDWATER MANAGEMENT GRANT ROUND 2 APPLICATION

WHEREAS, Butte County is a Member Agency of the Vina Groundwater Sustainability Agency ("Vina GSA"); and

WHEREAS, the Vina Groundwater Sustainability Agency ("Vina GSA") is a GSA in the Vina Subbasin; and

WHEREAS, the two GSAs in the Vina Subbasin have adopted one Groundwater Sustainability Plan for the subbasin pursuant to the Sustainable Groundwater Management Act ("SGMA") and pursuant to a Cooperation Agreement agreed to and executed by the Vina Subbasin GSAs; and

WHEREAS, the Vina GSA is preparing an application to the California Department of Water Resources ("DWR") to obtain a grant under the Sustainable Groundwater Management (SGM) Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022; and

WHEREAS, DWR will accept one application per subbasin during the SGM Grant Program's SGMA Implementation Round 2; and

WHEREAS, it is the intention of Butte County that one grant application be submitted on behalf of the entire Vina Subbasin for the Round 2 Solicitation; and

WHEREAS, Butte County desires to work cooperatively with the Vina GSA Member Agencies, the Rock Creek Reclamation District GSA, and other project proponents in the submission of an application to DWR and in developing and undertaking projects and other activities pursuant to the Vina GSA's application to DWR; and

WHEREAS, the Vina GSA's application includes projects and management actions that are consistent with the Vina Subbasin Groundwater Sustainability Plan; these projects are of interest and of benefit to Butte County.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Butte that the County supports the Vina GSA's application to DWR to obtain a grant under the SGM Grant Program SGMA Implementation Grant pursuant to the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Pub. Resources Code, § 80000, et seq.) and the Budget Acts of 2021 and 2022.

BE IT FURTHER RESOLVED that Butte County, a Member Agency of the Vina GSA, acknowledges that the Vina GSA has the authority and shall enter into a funding agreement with DWR to receive a grant benefitting one or more SGMA projects in the Vina Subbasin.

PASSED AND ADOPTED by the Butte County Board of Supervisors this 8th day of November, 2022 by the following vote:

AYES: Supervisors Ritter, Kimmelshue, Teeter and Chair Connelly

NOES: None

ABSENT: None

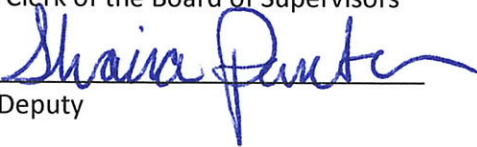
ABSTAIN: None



Bill Connelly, Chair
Butte County Board of Supervisors

ATTEST:

Andy Pickett, Chief Administrative Officer
and Clerk of the Board of Supervisors

By: 

Deputy

Eligibility Criteria Self-Certification

Attachment 2: Eligibility Criteria Self-Certification Form

As a Grantee of General Funds and/or Proposition 68 grant funds with the Department of Water Resources' (DWRs) Financial Assistance Branch, you must complete this self-certification form to enter into a Grant Agreement with DWR to receive grant funds. Failure to meet and maintain these conditions and requirements may result in DWR revoking the grant award, withholding grant funding, stopping invoice payment, and/or terminating the Grant Agreement. Answers must be provided for the primary Awardee and all member agencies within the Groundwater Sustainability Agency (GSA) or adjudicated basin. An answer of No to some questions below may make you ineligible to enter a contract with DWR.

A. Grantee Name: Vina GSA

Member Agencies

City of Chico
County of Butte
Durham Irrigation District

The Grantee, Vina GSA, is a GSA, a member agency of a GSA, an agency with an Alternative to a Groundwater Sustainability Plan (GSP), or located within an adjudicated basin.

☒ Yes ☐ No If no, DWR cannot enter into a Grant Agreement.

2. **Agricultural Water Management Compliance:** Is the Grantee or any member agency required to submit an Agricultural Water Management Plan (AWMP) to DWR? ☐ Yes ☒ No

If yes, list all member agencies required to submit the most recent AWMP (2015, 2020) and the date the AWMP was submitted to DWR. If yes and not submitted, DWR cannot enter into a Grant Agreement.

A.

Member Agency	Date AWMP Submitted to DWR
N/A	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date

Eligibility Criteria Self-Certification

3. **CASGEM / SGMA Portal:** Has the Grantee and all member agencies met the requirements of DWR's CASGEM Program and is current with all data reporting requirements for CASGEM and the SGMA Portal?

☒ Yes ☐ No ☐ N/A

A. List all member agencies required to meet CASGEM requirements. If not current, DWR cannot entry into an agreement.

Member Agency	Date
Butte County (monitoring current as of 11/1/22)	11/1/2022
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date
	enter date

4. **Consistency with the Delta Plan:** Is the Project, in whole or in part, within the Sacramento-San Joaquin Delta (Delta) or Suisun Marsh (Marsh)?

☐ Yes, the Grantee and member agencies have engaged with the Delta Stewardship Council (Council) regarding the Council's regulatory policies that may be potentially applicable to the project and the consistency of the Project with the Delta Plan. (If yes and inconsistent, DWR cannot enter into an agreement.

☐ No, the Project is within the Delta or Marsh, but the Awardee and member agencies have not engaged with the Council.

☒ N/A

5. **Open and Transparent Water Data:** The Grantee and member agencies will adhere to the protocols developed pursuant to subdivision (a) for data sharing, transparency, documentation, and quality control (Water Code §12406(b)).

☒ Yes, the Grantee and member agencies have systems in place that will adhere to the required protocols.

☐ No, the Grantee and member agencies do not have systems in place to adhere to the required protocols; however, those systems will be in-place within 90-days of an executed Grant Agreement.

☐ No, the Grantee and member agencies do not have systems in place to adhere to the required protocols and do not intend to have them in place. If so, DWR cannot enter into an agreement.

6. **Public Utilities and Mutual Water Companies:** A Project(s) proposed by a public utility regulated by the Public Utilities Commission or a mutual water company shall have a clear and definite public purpose and shall benefit the customers of the water system and not the investors (Water Code §79712(b)(1)).

☐ Yes, the Grantee and/or member agencies are a public utility regulated by the Public Utilities Commission or a mutual water company and the proposed Project will solely benefit the customers.

Eligibility Criteria Self-Certification

☐ No, the Grantee and/or member agencies are a public utility, but the investors will benefit from the proposed Project. If so, DWR cannot enter into an agreement.

☒ N/A

7. **Stormwater Resource Plan (SWRP) Compliance:** Is the proposed Project a stormwater, surface water, or dry weather capture project as defined by the State Water Resources Control Board (capture for reuse, treatment, and/or infiltration) and is required to be listed within a SWRP or functionally equivalent SWRP (FE-SWRP)?

☐ Yes ☒ No ☐ N/A

If yes, is the Project listed within a SWRP or FE-SWRP? ☐ Yes ☐ No
If no, DWR cannot enter into a Grant Agreement.

If yes, provide the name of the SWRP or FE-SWRP, a copy of the SWRP/FE-SWRP Self-Certification form, and proof that the SWRP or FE-SWRP is included in the local Integrated Regional Water Management Plan (IRWMP) as an attachment to this form.

Name of SWRP or FE-SWRP:

Page number(s) where Project(s) is listed:

Contact person and contact information for SWRP or FE-SWRP:

8. **Surface Water Diverter Compliance:** Is the Grantee or member agency a surface water diverter?

☐ Yes ☒ No

A. If yes, please list the name of the agency(-ies) that are surface water diverters.

Agency Name

N/A

- B. Has the agency(-ies) submitted the surface water diversion reports to the State Water Resources Control Board in compliance with the requirements outlined in Part 5.1 (commencing with § 5100)?

☐ Yes ☐ No

Eligibility Criteria Self-Certification

- C. If not, please explain and provide the anticipated date for meeting the requirements. DWR may not be able to enter into an agreement.

N/A

9. **Sustainable Water Use and Demand Reduction:** SBx7-7 (Water Code §10608 et seq.) conditions the receipt of a water management grant or loan for urban water suppliers on gallons per capita per day reduction targets with the end goal of a 20% reduction by 2020. Is the Grantee and/or member agency an urban water supplier?

☐ Yes ☒ No ☐ N/A

- A. If yes, list the member agency(-ies) that are urban water suppliers.

N/A

- B. Is the agency(-ies) on track for meeting the SBx7-7 per capita water use targets? If not, DWR cannot enter into an agreement.

☐ Yes ☐ No ☒ N/A

10. **Urban Water Management Plan (UWMP):** An urban water supplier shall adopt and submit to DWR an UWMP in accordance with Water Code § 10610 et seq. to be eligible to receive SGM Grant Program funding. Eligible Urban Water Suppliers must have the most recent UWMP (2015, 2020) that has been verified as complete by DWR before a grant agreement will be executed. Per Executive Order B29-15, Urban Water Suppliers must provide the State Water Resources Control Board with monthly information on water usage, conservation, and enforcement on a permanent basis.

Does the Grantee and/or member agency that are Urban Water Suppliers submit an UWMP to DWR?

☐ Yes ☐ No ☒ N/A

Does the Grantee and/or member agency that are Urban Water Suppliers been submitting monthly information on water usage, conservation, and enforcement to the State Water Resources Control Board?

☐ Yes ☐ No ☒ N/A

If no to either question, DWR cannot sign an agreement with the Grantee.

Eligibility Criteria Self-Certification

11. **Water Metering Compliance:** Any Urban Water Supplier applying for State grant funds for wastewater treatment projects, water use efficiency projects, drinking water treatment projects, or for a permit for a new or expanded water supply, shall demonstrate that they meet the water meter requirements in Water Code § 525 et seq.

Is the Project a wastewater treatment projects, water use efficiency projects, drinking water treatment projects, or for a permit for a new or expanded water supply?

☐ Yes ☒ No

If so, does the Grantee and/or member agency that are Urban Water Suppliers meet the water meter requirements in Water Code § 525 et seq.?

☐ Yes ☐ No ☒ N/A

12. **Groundwater Sustainability Plan (GSP):** Does the Project(s) or Component(s) include activities associated with the implementation of an adopted GSP or approved Alternative and listed within an adopted GSP or approved Alternative?

☒ Yes ☐ No ☐ N/A (Only for adjudicated basin)

If no, DWR cannot enter into an agreement.

I, Kamela Loeser, understand that the Department of Water Resources will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Self-Certification may result in loss of all funds awarded to the Grantee and that reimbursement of any grant funds is reliant upon the Grantee and all member agencies within the Groundwater Sustainability Agency (-ies) continuing to meet all eligibility requirements outlined within this Self-Certification form, the 2021 Sustainable Groundwater Management Grant Program Guidelines, and the Grant Agreement terms and conditions. Additionally, for the aforementioned reasons, the Department of Water Resources may withhold disbursement of project funds and/or pursue any other applicable legal remedy.

Kamela Loeser

Name of Authorized Representative
(Please print)



Signature

Director, Water and Resource Conservation
Title

12/12/2022
Date

ATTACHMENT 3
APPLICATION WORK PLAN, BUDGET, AND SCHEDULE

Grant Proposal Title: Vina Subbasin GSP Projects and Management Actions Implementation

Applicant: Vina Groundwater Sustainability Agency

A. General

COMPONENT 1: Grant Administration

This component consists of overall grant administration, including contract management, communications with DWR, invoicing, development of quarterly status reports and final project completion report to DWR. This component will also oversee subcontractor management and subrecipient agreements. This component is necessary to allow the Vina GSA to adequately manage the implementation of the different components under this grant. For this grant application, the Vina GSA would serve as the Grantee and administer funds received through the SGM Grant Program.

The Work Plan includes activities associated with implementation and continued planning, development, and updates to the Groundwater Sustainability Plan (GSP) for the Vina Groundwater Subbasin (subbasin) (**Figure 1**; Attachment 4, page 1). The implementation projects will put into action Best Management Practices (BMPs) as developed by DWR and included in the GSP, and will result in a more complete understanding of the subbasin to support long-term sustainable groundwater management. The proposed implementation projects include a portfolio-based approach by diversifying the components for the grant application and implementing the GSP and to achieving sustainable groundwater management. Among the identified projects are activities that increase data for decision-making, including: installation of monitoring wells for identifying and filling data gaps related to shallow groundwater level monitoring; addressing the interface between groundwater and interconnected streams through monitoring; evaluating groundwater dependent ecosystems (GDEs); and monitoring of domestic wells to minimize impacts to underrepresented communities (URC), disadvantaged communities (DAC), and severely disadvantaged communities (SDAC); guaranteeing the Human Right to Water. The Work Plan includes 10 components:

- Component 1: Grant Administration
- Component 2: Monitoring Network Enhancements
- Component 3: Community Monitoring: Domestic Well Survey
- Component 4: GSP Implementation and Compliance Activities
- Component 5: Inter-basin Coordination Activities
- Component 6: Extend Orchard Replacement Program
- Component 7: Lindo Channel Surface Water Recharge Implementation
- Component 8: Agricultural Surface Water Supplies Feasibility Analysis
- Component 9: Agricultural Irrigation Efficiency Pilot Program and Education
- Component 10: Groundwater Recharge Feasibility Analysis and Site Evaluation

There are two GSAs within the Vina Subbasin, Vina GSA and Rock Creek Reclamation District GSA (RCRD GSA) which are shown in **Figure 1** (Attachment 4, page 1). In addition, the Vina GSA was established through a Joint Powers Agreement (JPA) comprised of three member agencies, the County of Butte, City of Chico, and Durham Irrigation District. The subbasin's land uses consist of approximately 50 percent agricultural lands located to the west of Highway 99; the City of Chico, a large urban area in the center of the subbasin; and predominantly undeveloped lands to the east of Highway 99 towards the Sierra foothills (**Figure 2**; Attachment 4, page 2). Agricultural lands are dominated by orchards, with some rice grown in the southern portion of the subbasin. The agricultural land uses in the subbasin have prompted the development of components that favor best practices in agricultural irrigation efficiency and water use for groundwater sustainability. Underrepresented communities located in the subbasin are shown in **Figure 3** (Attachment 4, page 3). The DAC/SDAC areas are mapped consistent with the layers for census tracts, places, and block groups for 2016-2020 provided on the DWR DAC Mapping Tool. Groundwater use for domestic purposes and small water systems are shown in **Figure 4** (Attachment 4, page 4).

The components are a combination of methods that work toward achieving sustainability and meeting the interim milestones, MOs and MTs identified in the GSP. In addition, these components are consistent with the Butte County (member agency) General Plan Water Element in that they work to: ensure an abundant and sustainable water supply for all uses (Goal W-2); plan and manage water resources that uses science, data and public participation (Policy W-P2.3); promotes partnerships in water resource planning (Policy W-P2.7) and coordination between GSAs (Goal W-4); works to protect and manage groundwater resources (Goal W-3); and promotes water conservation and sustainable water supplies (Goal W-5). These projects are also consistent with the City of Chico (member agency) General Plan and work to preserve agricultural resources (Goal OS-5), conserve water resources and monitor groundwater water quality (Goal OS-3), and increase community participation in addressing local issues and needs (Goal SUS-1).

These components also further the state's *2020 Water Resilience Portfolio* actions and *California's Water Supply Strategy, Adapting to a Hotter, Drier Future* strategies. These plans prioritize conservation, and groundwater management, thereby building resilience of local water systems and groundwater basins throughout the state. In addition, components six through ten (i.e., recharge feasibility study), implement the intent of Governor Newsom's Executive Order N-7-22 that facilitates water conservation practices and construction of groundwater recharge and flood-MAR projects. Stakeholder support for the Project is included in Attachment 4. This includes letters of support from the Chico Certified Farmers Market, the Mechoopda Indian Tribe of Chico Rancheria, the Agricultural Groundwater Users of Butte County, the Northern California Water Association, and Butte Environmental Council (Attachment 4, pages 19-24).

COMPONENT 2: Monitoring Network Enhancements

Component Description

This component is a planning project that will enhance the monitoring network and fill data gaps identified in the Vina Subbasin GSP. This component consists of the installation of monitoring wells (both multi-completion and single completion) and installation of surface water stream gages. The single completion monitoring wells will be shallow and proximal to the surface water gages in order to improve the understanding of the connection and flow between the surface water and groundwater systems. The stream gages and shallow wells will be equipped with dataloggers to compare the stream stage with shallow groundwater levels at comparable times. Each stream gage will have three proximal shallow monitoring wells following the framework discussed in Section 3.8 of the GSP.

There will be one (1) to two (2) multi-completion monitoring wells, three (3) to four (4) stream gages and nine (9) to twelve (12) shallow monitoring wells installed in total, dependent on funding. The shallow wells and surface water gages are needed to fill data gaps related to interconnected surface waters and associated impacts on groundwater dependent ecosystems (GDEs), as described in Section 4.10 of the GSP. The **goals** of this component are to fill data gaps and improve the understanding of the hydrogeology and hydrology of the subbasin. The **objectives** are to install new wells and stream gages which will supplement the existing monitoring for both groundwater and surface water conditions. The **needs** for this component, in addition to funding, are dedicated GSA staff time and participation by the Vina Subbasin community. The goals, objectives and needs of this component will be met by implementing the scope of work, providing there is sufficient funding, based on the budget request, herein.

The entire Vina Subbasin will be served by this component as enhanced data collection will help the GSAs and stakeholders better understand the subbasin conditions as a whole. The subbasin's current land uses show about 50 percent agricultural lands located to the west of Highway 99, the City of Chico in the central portion of the subbasin, and remaining predominantly undeveloped lands to the east of Highway 99 towards the Sierra foothills (**Figure 2**; Attachment 4, page 2). Within the Vina Subbasin, agricultural lands are generally groundwater dependent and are dominated by orchards, with some rice grown in the southern portion of the subbasin. Communities served by enhancing the monitoring network includes agricultural and environmental interests as well as disadvantaged communities (DAC), severely disadvantaged communities (SDAC), and the Mechoopda Tribe (**Figure 3**; Attachment 4, page 3).

This component does not affect measurable objectives (MOs) and minimum thresholds (MTs) conditions. Rather, it provides a more representative and robust monitoring network that will help track related sustainability indicators at the basin scale, beyond representative monitoring sites (RMS). These new monitoring sites may be added to the RMS network, as needed, to enhance MO and MT analysis as part of the GSP's 5-year updates. The water quantity and water quality information gathered will also be used to track and manage the groundwater level, groundwater storage, and groundwater quality sustainability indicators, as applicable.

This component's **implementation timeline** is to be completed before April 2026 and is **feasible** as the typical timeframe for installation of monitoring wells and stream gages (based on professional experience with similar projects) from planning to completion is within 4 years. The component **benefits** will include enhanced well, groundwater, and surface water information so the GSAs can better manage the subbasin by providing data to support future development and refinement of the sustainable management criteria (SMC) for groundwater levels, groundwater storage, and interconnected surface water, as appropriate. Lastly, the component will assist in the **feasibility of GSP implementation**, as it will improve characterization of water bearing zones, and groundwater/surface water interactions, supplement the existing groundwater level and quality monitoring network, and potentially support future recharge projects.

Benefits and Location

The existing groundwater monitoring network is limited in its distribution and the extent to which it represents subbasin conditions. Section 4.2 of the GSP identifies 59 monitoring sites (78 wells) dedicated to the groundwater levels sustainability indicator. Of these 78 wells, only two are completed deeper than 1,000 feet below ground surface (ft bgs) and 20 are between 400 ft bgs and 1,000 ft bgs. The bottom of the Vina Subbasin (base of freshwater) ranges from 800 ft bgs to 1200 ft bgs meaning only 28% of the wells in the Vina monitoring network are within the lower half of the subbasin. Additionally, only eight of the 59 monitoring sites (14%) consist of multi-completion monitoring wells. Multi-completion wells are valuable for characterizing groundwater conditions in the subbasin as they provide information about groundwater levels from different hydrogeologic zones at different depths at a single point in the subbasin. They are also valuable to help define vertical flow of groundwater, an identified data gap in the GSP.

Making enhancements to the monitoring network will improve groundwater level and groundwater quality monitoring and help assess the interconnection between groundwater and surface water. Implementation of this component will further characterize the hydrogeology and expand the groundwater monitoring network within the basin. This component will provide additional information needed to update and modify the hydrogeologic conceptual model (HCM) and the groundwater model, since installation of the multi-completion monitoring wells includes lithologic logging and geophysical logging.

The multi-completion monitoring wells will be designed to obtain vertical information within different hydrogeologic zones. Once installed, water quality and water level data collected from the wells will be representative of subbasin conditions and beneficial uses and users in the vicinity. These wells will help address vertical and horizontal data gaps discussed in the GSP (Section 2.2.2.2, Section 4.9.1); higher density data means shorter distances to interpolate geology and water conditions. It will improve estimates of change in storage based on equipotential lines and storage coefficients.

Installation of shallow monitoring wells and stream gages will further characterize the hydrogeology and hydrology in the subbasin. Monitoring of wells and streams will enhance the understanding of conditions and the relationship between the groundwater and surface water systems which was identified as a data gap in Section 4.10 of the GSP. Additionally, this component will help the grantee collect data to ensure accurate and informed decision-making within the basin to ultimately reach and maintain sustainability and provide equitable management for interested parties and groundwater users. The enhanced monitoring network supports implementation and future updates to the GSP and understanding subbasin conditions.

Specifically, the GSAs will install one (1) to two (2) multi-completion monitoring wells in the subbasin at locations that lack deeper monitoring sites. Five preliminary locations where deeper wells are needed are shown on **Figure 5** (Attachment 4, page 5) but the final one to two locations of these monitoring wells will be based on further evaluation of the existing network during the planning phases of the component and finalized based on secured access agreements. The final construction of these monitoring wells will be based on the known geology, groundwater conditions, the HCM, and field conditions encountered during drilling.

The budget and schedule described in this application are based on the preliminary design that each multi-completion well will consist of up to four discrete wells at varying depths with the deepest being completed to approximately 1,000 ft bgs. Each monitoring well will have pressure transducers, data loggers, and telemetry equipment installed as applicable and set to record groundwater levels at least hourly. This will result in a potential 110% increase in groundwater level measurement sites and a potential 300% increase in groundwater level measurement sites in the lower aquifer zones. The monitoring wells will be incorporated into the GSP monitoring network and monitored by the GSAs on a regular basis following the same protocols for monitoring the current network.

The interconnected surface water (ISW) monitoring network is limited in its distribution and significant data gaps exist as described in the Vina Subbasin GSP. Section 3.8 of the GSP outlines the requirements needed for creating an integrated assessment of surface water and groundwater. Requirements outlined in Section 3.8 include measurement of groundwater levels directly adjacent to the stream channel in the adjacent riparian zone or floodplain, wells, or piezometers at three different depths across the water table, and simultaneous measurements of groundwater levels and stream stage. Section 4.10 of the GSP acknowledges there is a lack of sufficient data to analyze interaction of surface water and groundwater and the impact to groundwater dependent ecosystems (GDEs). Updates to the monitoring network to fill this data gap are proposed in the GSP by installing additional wells and other monitoring networks, as appropriate. The current ISW monitoring network consists of the entire groundwater level monitoring network and six (6) active stream gages. Only two of the 78 wells in the groundwater level monitoring network, are within a mile radius of any stream gages (**Figure 6**; Attachment 4, page 6). At least three wells or piezometers at varying depths (ranging from 10 to 150 feet bgs) are needed directly adjacent to the stream gages in order to more fully characterize the surface water / groundwater interaction.

To help address this data gap, the GSAs will install nine (9) to twelve (12) monitoring wells or piezometers in total and three (3) to four (4) new stream gages. The monitoring wells or piezometers will be installed adjacent to and in conjunction with new stream gages. Each stream gage will have three shallow wells or piezometers installed at varying depths to be finalized based on a review of the HCM. For planning purposes, the wells are expected to be approximately 15 ft bgs, 20-100 ft bgs, and 100-150 ft bgs as outlined in Section 3.8 of the GSP. A pumping test will be performed in these deeper wells while monitoring of groundwater levels in the shallow wells/piezometers is conducted to establish the degree of hydraulic connectivity between shallow and deeper aquifer zones. A review of current stream gages will be completed first in order to identify if any of the current stream gages need to be updated or replaced to fulfill data collection requirements. Currently only three stream gages in the subbasin record on an hourly basis, while the others record daily or during a flood event. New stream gages will record hourly and the proximal wells and piezometers will be equipped with pressure

transducers and data loggers so that measurements are synchronized. The proposed stream gages will be installed in new locations based on information gathered as part of the planning phase. Ten preliminary locations where new surface water/groundwater monitoring sites are needed are shown on **Figure 7** (Attachment 4, page 7) however, the final three to four locations of these monitoring sites will be based on a review of groundwater dependent ecosystems, available hydrogeologic and hydraulic information, and finalized based on secured access agreements.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

Both the installation of multi-completion monitoring wells and expansion of ISW monitoring portions of this component furthers DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical Assistance Program, this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by:

- Enhancing monitoring efforts and filling data gaps to give the GSAs a more complete understanding of subbasin conditions to help inform the GSAs when mitigation strategies may be needed. Higher resolution data can lead to faster and more targeted mitigation strategies. By increasing monitoring efforts (i.e., nested monitoring wells and stream gages) near URCs, these communities will **benefit** from a more complete picture of current groundwater conditions and faster mitigation if their supply of clean water is compromised. More data collection points near the URCs will result in a more accurate assessment of the groundwater and surface water supplies available to them. A review of monitoring network enhancement locations in relation to SDAC, DAC, and the Mechoopda Tribe will ensure that new monitoring will be representative of conditions relevant to those communities. Potential monitoring locations in relation to SDAC and DAC are presented on **Figures 5 and 7** (Attachment 4, pages 5 and 7).
- GSP implementation will serve to minimize risks to **shallow wells** and will protect the Human Right to Water as considered in the GSP. The majority of domestic wells in the subbasin are less than 200 ft bgs (**Figure 8**; Attachment 4, page 8). **Private shallow domestic wells** are susceptible to dewatering from depressed water levels, which could create a barrier to the Human Right to Water. Domestic well users, particularly those who are economically disadvantaged (SDAC and DAC), are more vulnerable as the cost for well deepening/replacement and alternative supplies may be prohibitive. The potential for dry wells directly relates to sustainability indicators (MOs and MTs) since the well owners are the beneficial users of groundwater and MOs and MTs were established after considering domestic well depths. Enhanced monitoring efforts will give the GSAs more data points that will help track when these domestic wells could be at-risk for adverse effects of lowering groundwater levels. If more data is known, faster and more targeted mitigation strategies can be employed by the GSAs. The State Water Resources Control Board's (SWRCB) SAFER program is responsible for identifying at-risk public water systems, domestic wells, and state small water systems. This objective is met for shallow domestic wells and small water systems by focusing on mapping of aquifers that are used as a source of drinking water. This component will aid in this effort as increased data will help map the subbasin's aquifer through ongoing monitoring of water levels, water quality, and ISW as well as with lithology information gained from drilling. Proposed monitoring enhancement locations in relation to at-risk water systems are shown on **Figure 9** (Attachment 4, page 9).

The **Human Right to Water** was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of GSP implementation through this component. Human Right to Water, states that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” Private domestic well groundwater pumper representation on the Vina GSA Board and on the Vina Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. By expanding and enhancing the monitoring network through this component, the GSAs will be able to provide additional data to the County to help assess and monitor the water supply available to these users.

COMPONENT 3: Community Monitoring: Domestic Well Survey

Component Description

This component consists of two phases: (1) Domestic Well Survey Program and (2) Community Monitoring Program. The Domestic Well Survey Program efforts will consist of outreach to the domestic well owner community within the subbasin. Domestic well counts per section and small water systems in the subbasin are shown on **Figure 4** (Attachment 4, page 4). The Community Monitoring Program will provide an opportunity for domestic well owners to participate in a well monitoring program and, thus, allow the public to be involved with GSP implementation. These efforts will generate information about domestic wells and water levels that enhance the Data Management System (DMS) dataset for the subbasin. The **goals** of this component are to fill data gaps identified in Section 4.10 of the GSP relating to domestic well depths and engage and educate stakeholders by developing a community monitoring program. The **objectives** are 1) verify domestic well use/status, 2) investigate domestic well construction by performing video surveys on wells with poor construction data, 3) engage the public to create a community monitoring program, 4) equip participating domestic wells with monitoring equipment, and 5) create and maintain a database to track (over the implementation period) both groundwater levels and wells that go dry or are at risk of going dry. The **needs** for this component consist of 1) identifying potentially vulnerable and at risk domestic wells, including those within designated as DAC or SDAC that are dependent on domestic wells for clean drinking water and 2) encouraging public participation in implementation of the GSP and monitoring of groundwater levels.

The component objectives will be accomplished by implementation of the scope of work in this application. This component monitors groundwater levels and its relationship to the identified measurable objectives (MOs), and minimum thresholds (MTs) in the GSP. Therefore, it will provide critical groundwater level information and well data that are both relevant to MOs and MTs set for the groundwater level sustainable management criteria (SMC) as domestic well depths were used to establish SMC. This component's **implementation timeline** is to complete phase 1 and implement phase 2 before April 2026. This timeline is **feasible** as the component does not consist of large infrastructure installations. A well survey and creation of a monitoring program (including transducer order and installation) will take less than 4 years based on professional experience with similar projects. The component **benefits** include enhanced well and water information so the GSAs can better manage the subbasin, better characterize potential undesirable results as they relate to declining groundwater levels and potential impacts to domestic wells, and will result in a more informed and engaged community of domestic well owners. Lastly, the component will assist in GSP implementation and the 5-year update, since it will improve the dataset of wells, track dry domestic wells, and have a strong focus on stakeholder engagement. As a beneficial user of groundwater in the subbasin, the Chico Certified Farmers Market specifically supports this component and recognizes its importance because domestic wells (i.e. small diameter wells) are vital to support small farms (see Attachment 4, page 19).

Benefits and Location

Phase 1. Domestic Well Survey. is needed to have a more complete picture of active wells in the subbasin, better understand the distribution of groundwater use, and better characterize potential impacts of declining water levels on domestic wells. The Domestic Well Survey program is an inventory process to refine the domestic well dataset available to the GSAs. The program will also support future fee studies required for assessing revenue through Prop. 218 or other funding mechanisms. It will better define how well conditions and construction relate to beneficial uses and users.

The Domestic Well Survey program is designed to fill data gaps described in the GSP regarding well use and well depth. The well depth data gap is relevant to the groundwater level MTs (outlined in GSP Section 3.3.2) since they were developed to protect beneficial users from undesirable results. Potential negative impacts to domestic wells as described in the GSP include wells going dry, reduced pumping capacity of existing wells, and a need for deeper well installations and/or lowering of pumps. To establish the MT levels in the Vina GSP protective of the domestic wells, the DWR domestic well database was used to investigate the construction of domestic wells in proximity to RMS wells. MTs for the RMS wells were established based on analysis and consideration of total depths of domestic wells within the vicinity (a defined polygon) of each RMS well. Domestic well count per section from the DWR domestic well database with SDAC and DAC areas are shown on **Figure 10** (Attachment 4, page 10). There are a significant number of domestic wells within SDAC and DAC areas. The domestic well database contains information on characteristics of wells including total well depth. The information housed in this database is not always accurate or precise and it is not known whether the wells in the database are still in use or have been abandoned or replaced. During the 1976-1977 drought, new wells likely replaced old shallower wells. For GSP development, the dataset was filtered to remove wells installed before 1980, as they were deemed likely to be abandoned or replaced. The remaining wells are more likely to be consistent with current well construction standards and currently serving domestic needs. It is noted, however, (GSP Section 3.3.2) that information remains to be gathered to further refine the dataset. It is possible wells eliminated are in fact still in use and it is possible

that wells included in the analysis are not in use. Therefore, an improved database of domestic wells is needed to support future GSP updates and potentially refine the groundwater level SMC. To resolve this data gap, the GSP describes (Section 4.10) that surveys of active domestic wells would be conducted to assess the actual total depth and use of domestic wells in the Vina Subbasin. Phase 1, Domestic Well Survey, will address and attempt to resolve this data gap.

Phase 1 of this component will begin with a desktop study investigating the current domestic well dataset to identify wells that are likely out of use, dry, or have poor construction information. Once these target wells are identified, the owners will be contacted with a mailed letter or other means to coordinate a voluntary site visit. Next, a field survey will be conducted of these wells to verify location, use status, and construction specifications. As discussed in Section 5.4.3 of the GSP, selected wells may be video logged to obtain additional information as domestic well construction information may currently be limited or unavailable. This phase will assist in the feasibility of implementation of the GSP as data collected from the field will be used to update the current well dataset and may be used for GSP updates such as to modify MOs and MTs over the implementation period.

Phase 2, Community Monitoring Program, is intended to enhance subbasin monitoring to better characterize and monitor groundwater level conditions in domestic wells. The GSP notes in Section 3.3.2 that many domestic wells have been reported dry in recent years throughout Butte County. In the critically dry year of 2021, during GSP development, 44 wells throughout Butte County were reported dry through the State's online reporting system. As a result, protecting domestic well reliability was a focus of how the groundwater level SMC was established in the subbasin as described above. It is the intent of the GSAs through this component to monitor water levels at domestic wells to better evaluate how the MOs and MTs relate to conditions at domestic wells. The GSAs will also track the quantity, location, and construction details of sustainably constructed wells that become dry over the implementation period. Sustainably constructed wells refer to wells that have been installed following the relevant County Well standards and meet the following criteria: 1) wells are within permeable aquifer material and 2) wells have been appropriately maintained; where well problems are not due to clogging of well screens or silting of well. Phase 2, Community Monitoring Program, will aim to meet these goals.

Phase 2 will build on the ongoing GSP related monitoring program. This component will expand the network of wells and add volunteer groundwater level monitoring which will assist in the feasibility of implementation of the GSP by ensuring SMC are protecting domestic groundwater users. Phase 2 will start with a desktop study to identify potential wells and volunteers to be incorporated into the program. Potential community monitoring volunteers will be contacted via registration forms mailed to landowners. Outreach will be conducted to provide information on accessing online registration. Registration will include information, such as well construction, date of construction, well and landowner contact information, well completion report, uses and status. These data will be non-public information, to be used at the discretion of the GSAs, including use for reports, maps, and other analyses. The GSAs will equip eight (8) initial volunteer wells with monitoring equipment that will be provided to the volunteers at no cost. Monitoring equipment will include pressure transducers and dataloggers with potential for telemetry systems as applicable. The volunteers will also receive education on how to collect data and upload water levels to the GSA's existing DMS. Front-end visualization software that interfaces with the DMS will be created or modified for communication and ease of use for community members. The public will have the ability to track water levels and report domestic wells that go dry over the implementation period as described in Section 4.10 of the GSP. This will have the added advantage that the GSAs will be able to investigate and verify wells that go dry. Verifiably tracking domestic wells that go dry will allow the GSAs to evaluate the MOs and MTs to ensure they are protecting sustainably constructed wells and are set appropriately to characterize when undesirable results occur in the subbasin.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

The two phases of this component will benefit the entire subbasin and all its beneficial users by addressing a critical data gap in domestic well depths as identified in the GSP (Section 4.10) and described previously. This is especially important to address vulnerabilities of domestic well users within DAC/SDACs and underrepresented communities within the Vina Subbasin as shown in **Figure 10** (Attachment 4, page 10). As shown on this map, there are two areas in the subbasin overlain by a tribe: the Mechoopda Indian Tribe of Chico Rancheria lands, located immediately south of Chico and further south near Durham. The entire Chico area is designated as disadvantaged, with portions identified as severely disadvantaged. The majority of the grant funding for this component will benefit underrepresented communities, as this is a subbasin-wide component that seeks to better reach out to, gather information and incorporate the needs of underrepresented communities.

The component will positively impact issues associated with small water systems or private shallow domestic wells. Domestic well depths from the DWR domestic well database, SDAC, and DAC are shown on **Figure 11** (Attachment 4, page 11). Completion of this component will result in updated relevant data and outreach to domestic well users. There are 10 small water systems in the Vina Subbasin, with 2 of them at risk or potentially at risk relative to the SAFER risk assessment, and 6 not at risk (**Figure 12**; Attachment 4, page 12). Durham Irrigation District, a member agency of the Vina GSA, is a small water system considered not at risk.

Both the Domestic Well Survey and Community Monitoring Program phases of this component furthers DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical Assistance Program, this component (Community Monitoring: Domestic Well Survey) would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by:

- The Domestic Well Survey phase will fill data gaps in the domestic well dataset to give the GSAs a more complete understanding of subbasin conditions. Having a more complete understanding of the domestic wells currently in use within the subbasin will help by informing the GSAs if the MO and MT in RMS wells are representative enough and if they need to be updated. By verifying and refining MO and MT, underrepresented communities will **benefit** from groundwater management improvements that result from a more refined dataset. Data collection points near the underrepresented communities will result in a more accurate assessment of the groundwater and surface water supplies available to them. A review of domestic well counts per section in relation to SDAC, DAC, and the Mechoopda Tribe are visible on **Figure 10** (Attachment 4, page 10).
- The Community Monitoring Program phase will serve to minimize risks to **shallow wells** and will protect the Human Right to Water as considered in the GSP. The majority of domestic wells in the subbasin are less than 200 ft bgs (**Figure 11**; Attachment 4, page 11). **Private shallow domestic wells** are susceptible to dewatering from depressed water levels, which could create a barrier to the human right to water. Domestic well users, particularly those who are economically disadvantaged (SDAC and DAC), are more vulnerable as the cost for well deepening/replacement and alternative supplies may be prohibitive. The potential for dry wells directly relates to sustainability indicators (MOs and MTs) since the well owners are the beneficial users of groundwater and MOs and MTs were established after considering domestic well depths. Enhanced monitoring efforts will give the GSAs more data points that will help track when these domestic wells could be at-risk for adverse effects of lowering groundwater levels. Additionally, the domestic well owners will have real time data of water levels in their own wells. If more data is known, faster and more targeted mitigation strategies can be employed by the GSAs.
- The State Water Resources Control Board's (SWRCB) SAFER program is responsible for identifying at-risk public water systems, domestic wells, and state small water systems. This component will aid in this effort as shallow domestic wells will be equipped with monitoring equipment, streamlining the SWRCBs identification process for at-risk domestic wells. Average domestic well depth per section in relation to URCs is shown on **Figure 11** (Attachment 4, page 11) and at-risk water systems are shown on **Figure 12** (Attachment 4, page 12). Domestic wells within these URCs and at-risk water systems will be given priority for inclusion in the program.

Shallow domestic wells are susceptible to depressed water levels and when they become dry this creates a barrier to the **Human Right To Water**. Domestic well users, particularly those who are economically disadvantaged (SDAC and DAC), are more vulnerable as the cost for well deepening/replacement and alternative supplies may be prohibitive. The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and on the Vina Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially

most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. This component will support this collaboration.

COMPONENT 4 – GSP Implementation and Compliance Activities

Component Description

SGMA requires key activities and reporting that need to be submitted to DWR at specific times to maintain compliance with the GSP regulations. The two GSAs in the Vina Subbasin (**Figure 1**; Attachment 4, page 1), Vina GSA and Rock Creek Reclamation District GSA, worked collaboratively to develop and adopt a single GSP for the Vina Subbasin that was submitted to DWR in January 2022. The two GSAs are now coordinating implementation tasks to fulfill the goals and objectives of the GSP.

Component 4 – GSP Implementation and Compliance Activities, includes four distinct tasks to fulfill general reporting requirements for GSP implementation. These activities are described in the Vina Subbasin GSP Section 6 – Plan Implementation. These four tasks will help fulfill the sustainability goals of the subbasin while maintaining SGMA compliance, enhancing the objective of subbasin-wide agreement to sustainability, and fulfilling immediate funding needs for longer-term strategic and technical support.

The first task consists of conducting a fee study for long-term financing of the Vina GSA. The scope of this task is to build on previous efforts and conduct all work necessary to evaluate, develop options, select, and implement a new funding mechanism to support the operations of the Vina GSA and implement the Vina Subbasin GSP.

Activities under this task would include:

- Review of the GSP and initial budget and implementation plan
- Review of meeting presentations related to previous discussions on proposed fee mechanisms
- Evaluation of potential fee alternatives
- Recommendations on selecting an appropriate mechanism and process to implement a fee
- Development of a fee study or Engineers Report, as appropriate
- Development of outreach materials
- Presentations to the GSA Boards, advisory committee, and public
- Updating parcel information, as applicable
- Related tasks, as needed

The second task consists of developing the Annual Report, due each year to DWR on April 1. Annual Reports summarize basin conditions and GSP implementation activities for the previous water year (October 1 through September 30) and follow requirements outlined in the GSP regulations. Key subtasks for developing these reports include collecting and analyzing data for the previous water year, developing maps to illustrate basin conditions, calculating water use and change in storage, reviewing the collected data with respect to the sustainable management criteria outlined in the GSP, summarizing project and management actions implementation progress, writing the full report, presenting the outcome of the analysis at GSA public meetings, uploading the data to the SGMA portal, and submitted to DWR. During the grant administration timeframe, four (4) annual reports can be developed and submitted, for water years 2022, 2023, 2024, and 2025.

The third task is to review, understand, and act upon the DWR GSP evaluation letter. The DWR evaluation letter will be reviewed to identify areas in the GSP that need to be revised. The GSAs will meet to review and discuss DWR comments and identify revisions to be incorporated into the 5-year evaluation report. Public meetings will be conducted as needed, to address and explain DWR comments to the subbasin stakeholders. DWR recommended corrective actions will be implemented. Based on other GSP reviews, the Vina GSA anticipates DWR comments will be related to developing a robust plan and taking action to fill data gaps, strengthening justifications for the SMC and potentially revising SMC, strengthening the domestic well analysis and developing a mitigation approach, as needed, and better defining GDEs and potential impacts from the SMC. A number of related comments were received during the public comment period, and the GSAs recognize that some revisions will be needed.

If the GSP is deemed incomplete by DWR, this task will include DWR consultations, GSP revisions and modifications during the 180-day resubmittal period, and adoption of the revised GSP by the GSA Boards.

The fourth task is to initiate the preparation of the five-year GSP Update report. The GSP Regulations call out a periodic evaluation of their GSP implementation by the implementing GSAs. The assessment will describe whether the GSP implementation, including implementation of projects and management actions, are meeting the sustainability goal in the basin. Given the timing of the available grant funds, development of the Draft five-year GSP Update report (Draft Report) will be feasible. The Draft Report will be considered by the GSA Boards and available for public comment. This can be accomplished by the April 30, 2026 project completion date established by the grant, leaving the finalization and

submission of the report to occur after close out of the grant which can be accomplished by the GSAs. This task will consist of the following activities:

- Review any new information (monitoring data and hydrogeologic investigations) and whether the information warrants changes to the basin setting, MO, MT, and SIs, including completed or planned GSP amendments
- Summarize current groundwater conditions relating to each MO, MT, and IMs
- Summarize status and implementation of any project and management actions and the resulting effects on groundwater conditions
- Evaluation of updated water budgets and overdraft conditions to include changes in water use, along with overdraft mitigation measures (if applicable)
- Evaluation of updated climate change information
- Assessment of the monitoring network with analysis of data collected to date, including how data gaps were filled
- Relevant actions taken by the GSAs, including a summary of regulations, ordinances, legal enforcement or action related to the implementation of the GSP and sustainability goals
- Summary of inter-basin coordination
- Updated cost of GSP implementation
- Outreach activities and GSA meetings

In light of DWR evaluations of the 2020 submitted GSPs and the significant data gaps identified in this subbasin, this GSP evaluation and update will be a substantial effort to complete. The GSP Update Draft Report will also be used to evaluate and revise SMC, as needed.

Benefits and Location

This planning component allows the GSA to maintain compliance with the GSP regulations, and benefits all stakeholders and groundwater users in the Vina Subbasin, as the four tasks consist of subbasin-wide activities. The subbasin's current conditions show about 50 percent agricultural lands located to the west of Highway 99, the City of Chico (a large urban area in the center of the subbasin) and a large portion of undeveloped lands to the east of Highway 99 towards the Sierra foothills (**Figure 2**; Attachment 4, page 2). Agricultural lands are dominated by orchards, with some rice grown in the southern portion of the subbasin. The tasks of this component are crucial for the continued success of GSP implementation to reach sustainability in the Vina Subbasin by 1) establishing a funding mechanism to allow for independent financing of GSA administration and GSP implementation activities, 2) developing annual reports to track progress towards achieving sustainability goals by reviewing monitoring data with respect to sustainability criteria, 3) reviewing and resolving DWR comments on the submitted GSP to improve upon the initial analysis, and 4) developing a robust 5-year GSP Update Report to verify if the subbasin is on-track to reach sustainability by 2042 and further enhance the understanding of the basin conditions and projects needed to achieve sustainability goals. This will benefit the agricultural, urban, rural residential, and environmental needs and interests within the subbasin (**Figures 2 and 4**; Attachment 4, pages 2 and 4).

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

The four (4) tasks of this component further DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical

Assistance Program, this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by:

- Ensuring the Vina Subbasin GSAs remain in compliance with SGMA legislation and advance towards groundwater sustainability for all beneficial users. These four (4) tasks will benefit the entire subbasin and all its beneficial users by ensuring a thorough review and implementation of the GSP's sustainability goals, developing a fair funding mechanism, and continued outreach to beneficial groundwater users, DACs, underrepresented communities, and Mechoopda Indian Tribe of Chico Rancheria. The majority of the grant funding for this component will benefit underrepresented communities, as this is a subbasin-wide component that seeks to better reach out to, gather information and incorporate the needs of underrepresented communities.

The component will positively impact issues associated with small water systems or private shallow domestic wells (**Figure 4**; Attachment 4, page 4) insofar as it will continue to gather relevant data and provide outreach to domestic well users. There are 10 small water systems in the Vina Subbasin, with two (2) of them at risk or potentially at risk relative to the SAFER risk assessment, and six (6) not at risk (**Figure 4**; Attachment 4, page 4). Durham Irrigation District, a member agency of the Vina GSA, is a small water system considered not at risk.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component, by ensuring overall subbasin sustainability goals are met for all beneficial users of groundwater. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and on the Vina Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. This component will further and support these efforts.

COMPONENT 5 – Inter-basin Coordination Activities

Component Description

The GSAs in the Vina Subbasin understand that inter-basin coordination is critical as each Sacramento Valley subbasin prepares and implements its GSP due to the interconnectedness of groundwater between subbasins. The Vina Subbasin participated with the surrounding 10 subbasins in the northern Sacramento Valley (Antelope, Bowman, Butte, Colusa, Corning, Los Molinos, Red Bluff, Sutter, Wyandotte Creek, and Yolo) on inter-basin coordination efforts during GSP development (**Figure 13**; Attachment 4, page 13). Activities were focused on establishing a foundation and guidelines for sustained inter-basin coordination by identifying priorities and resources. The main objective of the coordination effort outlined by this component is to identify any significant discrepancies in the GSPs, understand why those differences exist, and evaluate them to the extent they need to be reconciled. Butte County and the Vina Subbasin GSAs provided leadership in the region along these lines during GSP development and intend to continue to do so in coordination and collaboration with neighboring GSAs.

Component 5 – Inter-basin Coordination Activities, includes three distinct tasks to help implement the Vina Subbasin GSP while collaborating and coordinating on various appropriate tasks with neighboring subbasin GSAs. The goal of this component is to ensure continued northern Sacramento Valley-wide coordination and consistency in certain GSP implementation tasks by keeping lines of communication between neighboring GSAs open. The objective of this component is to leverage the coordination efforts that started under GSP development and culminated in the *Northern Sacramento Valley Inter-basin Coordination Report* (GSP Appendix 6-A) and continue coordinated efforts throughout GSP implementation, specifically related to the three tasks described below. The needs of this component, in addition to funding and dedicated staff time, relate to the willingness of neighboring GSAs to continue to participate in long-term coordination and collaboration activities to ensure Sacramento Valley-wide groundwater sustainability by 2042. To this end, GSA managers throughout the region continue to share information and collaborate on potential future approaches. The component goals, objectives and needs will be met by implementing the tasks below. This work has support of neighboring GSAs and the Northern California Water Association (letter of support included in Attachment 4, page 23).

Gather, Evaluate Data, and Develop Approach for Interconnected Surface Water Sustainable Management Criteria (ISW SMC)

The first task is to gather and evaluate data, and develop a refined approach for the ISW SMC. Given the identified data gaps associated with this sustainability indicator, this is anticipated to be a significant effort, but will be important for sustainably managing groundwater in the subbasin and avoiding undesirable results associated with depletion of surface water (also known in the Sacramento Valley as Undesirable Result #6 or UR 6). This task involves regional coordination and technical work toward further refining the SMC for UR 6. These efforts will address expected DWR comments on Sacramento Valley GSPs related to the technical approach for the use of groundwater levels as proxies for MOs and MTs in GSPs, specifically this task will support the development of revised MO's and MTs for UR 6. This regional coordination is critical for UR 6 because the effects on interconnected surface water do not stop at groundwater subbasin boundaries, major surface water features are often also subbasin boundary lines, and because of the unique technical challenges associated with stream-aquifer interaction.

In particular, this task relates to the Vina Subbasin GSP in the following ways:

- GSP looked at initial data and modeling to assess stream/aquifer interactions
- GSP stated there is a lack of sufficient data to analyze the interaction of streams and groundwater pumping within the primary aquifer system, and develop adequate SMC
- GSP outlined an Interconnected Surface Water SMC framework to guide future data collection efforts to fill data gaps and set SMC
- Information collected will be used to define which surface water reaches are connected to shallow aquifer zones and where those shallow aquifer zones are influenced by groundwater pumping
- The next step will be to determine the depletion of interconnected stream reaches due to pumping – calculate volume and timing
- Comparing this information to likely GDEs identified in the GSP will help assess if GDEs and other beneficial users are affected by groundwater pumping and if an undesirable result is occurring

Based on the GSP evaluation, a detailed plan to fill data gaps will be developed that identifies the number of stream gages and shallow monitoring wells required to assess stream interconnectivity and monitor interconnected surface water at key locations. The installation of the monitoring network to fill data gaps will be conducted through Component 2 - Monitoring Network Enhancements, and therefore the efforts will be closely coordinated. Data collected from the

enhanced monitoring network will be assessed to identify where streams are interconnected and identify seasonality of ephemeral streams. This will help to refine the understanding of interconnected surface water initially developed in the GSP. Other previous reports and field assessments will be reviewed and evaluated concurrently, such as the stream-aquifer monitoring on Butte Creek in summer 2021 by Chico State students and staff, and the Big Chico Creek flow monitoring for three years, by Chico State students and staff. This information will be added to the Butte Basin Groundwater Model (BBGM), or other appropriate modeling tool, and revised simulations could be run to show an updated map of interconnected streams and where these streams are gaining and losing during different times of the year.

An assessment of the effects of pumping near interconnected streams will be undertaken, by updating and reviewing maps and data of pumping wells near interconnected streams to evaluate potential effects of groundwater pumping on stream depletion. The BBGM can be used to develop scenarios with and without pumping to identify how pumping is currently affecting stream depletion. Only stream depletion due to pumping since 2015 will be evaluated, in line with the GSP regulations. Potentially affected GDEs will be identified as well. Coordination and information sharing with GSAs in the Sacramento Valley and DWR will be conducted to define a recommended technical approach and methodology for establishing SMC for interconnected surface water. To meet GSP regulations and requirements stated by DWR: "By 2025, provide the specific methodology to quantify stream depletion, including the location, quantity, and timing of depletion of interconnected surface water."

This effort will be coordinated with other Sacramento Valley subbasins to ensure a consistent approach throughout the Sacramento Valley. This effort started during GSP development, with the Northern California Water Association coordinating and facilitating technical team discussions and inviting Environmental Defense Fund and The Nature Conservancy to provide input on general assumptions and approach. This task includes stakeholder outreach and GSA meetings with the Vina GSA Stakeholder Advisory Committee (SHAC) and both GSA Boards. It would also include separate working group meetings with key stakeholders and meetings with DWR to vet the approach.

Once the approach is developed, a similar process as during GSP development will be undertaken, to refine the interconnected surface water SMC, with input from the SHAC and vetting by the GSA Boards.

Inter-basin Coordination - Conducting Joint Analysis and Evaluation of GSPs

The second task is to conduct a joint analysis and evaluation of GSPs with neighboring subbasins within the northern Sacramento Valley area. After an initial attempt to compile technical information during GSP development, GSA staff in the region realized the broad aspirations were not feasible during the initial stages of GSP development. The process of compiling and comparing modeling outputs from the diverse regional hydrological models required a significant amount of time, resources, and varying levels of data. Further, subbasins were at different stages of GSP development and GSAs were facing tight timelines, competing priorities, and capacity limitations to meet the regulatory deadline. While communication on a neighbor-to-neighbor basis on technical components was encouraged through GSP development, subbasin staff representatives realized more robust technical analysis and coordination between and among subbasins was not possible until initial plans (including water budgets) were more fully developed or after adoption of the initial GSPs. Therefore, this component will conduct the Joint Analysis and Evaluation of GSPs that was a pillar of the framework described in the inter-basin coordination report.

This task will start with subbasin information sharing to ensure water managers and GSAs have a venue to provide important updates on water management activities and data collection that may be of interest to others, and how to access the data and information. This will become ever more important with drought and climate change challenges. In addition, the joint analysis and evaluation of the GSPs is a necessary step in ensuring northern Sacramento Valley-wide successful GSP implementation and developing a path for regional groundwater sustainability. Subtasks to implement joint evaluation of the GSPs include:

- Evaluation and comparison of contents of GSPs with a focus on establishing a common understanding of basin conditions at boundaries
- Identification of significant differences, uncertainties, and potential issues of concern related to groundwater interaction at the boundaries; primarily using modeling tools
- Engaging in analysis and evaluation of SMCs between GSPs to assess impacts and identify significant differences and possible impacts between subbasins that could potentially lead to undesirable results

The North Sacramento River Corridor, shown in **Figure 13** (Attachment 4, page 13), is the appropriate scale of coordination for these activities due to the shared boundary of the Sacramento River, shared data gaps, and the

interconnectedness of the subbasins. Coordinated communication and outreach will also be part of this task, such as participating in regular regional collaboration meetings with other North Sacramento River Corridor GSAs.

Update the Butte Basin Groundwater Model

The third task is to update the Butte Basin Groundwater Model (BBGM), as described in the GSP Section 2.3.2. The BBGM is built on DWR's Integrated Water Flow Model (IWFM) platform and was used for GSP development to compute the water budgets including the projected future water budget with estimated climate change effects from DWR-provided datasets. This model will be used in the future to assess project feasibility and quantify project benefits, as well as update water budgets for the five-year GSP assessment.

The existing BBGM covers the Vina, Butte, and Wyandotte Creek subbasins. This task will help fill identified data gaps by 1) updating the BBGM with newly acquired data and 2) using the updated version of the model to run simulations to support evaluation of projects or GSP updates as appropriate and warranted. Some of the new data to be incorporated is the Airborne Electromagnetic Method (AEM) data and data on the different hydraulic conductivities of each layer of the aquifer. The AEM data may be used, among other things, to adjust the various surfaces in the model to better represent the aquifer's hydrogeologic layers. As part of this task, AEM data will be reviewed and evaluated for input into the model. Once the model has been updated with the new data, it will be better suited for running simulations of different water or land use management scenarios as well as predictions for climate and precipitation fluctuations. Lateral and vertical connectivity between aquifer layers and connections to surface water features will be more accurate and help identify areas of the basin where groundwater recharge may be needed. Overall, this will help shape management actions by focusing efforts on those particular areas. Ongoing future updates to the model will emphasize the importance of accurate and up-to-date data and help continue monitoring efforts such as measuring water levels and stream flows. An updated groundwater model is vital for running accurate simulations that may be used to guide important decisions regarding groundwater pumping, recharge, and other activities. This task will provide the first phase of the model update, based on the availability of data and ease-of-use. Additional model updates will occur in the future with additional funding.

As part of the overall inter-basin coordination and GSP evaluation activity, the model will also be reviewed in tandem with neighboring subbasin models to assess discrepancies. A plan to update the model based on this review will be developed.

Subbasin stakeholders will be updated regularly on inter-basin coordination efforts and will be engaged during GSP evaluations and ISW SMC development to receive consensus on approach.

Benefits and Location

This planning component fills data gaps, supports inter-basin coordination with neighboring GSAs, and benefits all stakeholders and groundwater users in the Vina Subbasin, since the three tasks consist of subbasin-wide activities. These tasks are crucial for the continued success of GSP implementation to reach sustainability in the Vina Subbasin and throughout the Sacramento Groundwater Basin, by 1) developing an approach to fill ISW SMC data gaps and setting revised SMC in coordination with other Sacramento Valley GSAs, 2) conducting a joint analysis and evaluation of GSPs across subbasins to ensure consistency across boundary lines to avoid undesirable results across neighboring subbasins, and 3) updating the groundwater model to ensure up-to-date data are included for GSP implementation.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938. As shown on **Figure 3** (Attachment 4, page 3), there is one area in the subbasin overlain by a tribe: the Mechoopda Tribal Designated Statistical Areas, located immediately south of Chico, however the tribe has additional non-federally recognized lands throughout the subbasin that will also be served by this component. The entire Chico area and the southern half of the subbasin are designated as disadvantaged.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in

the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

The three tasks of this component further DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical Assistance Program, this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by supporting GSAs' implementation of SGMA throughout the Sacramento Valley.

This component will ensure that the Vina Subbasin GSAs remain in compliance with SGMA legislation and advance towards groundwater sustainability for all beneficial users. These three tasks will benefit the entire subbasin and all its beneficial users by ensuring continued outreach to beneficial groundwater users, DACs, underrepresented communities, and the Mechoopda Tribe, as well as inter-basin coordination and outreach to ensure regional groundwater sustainability within the North Sacramento River Corridor. The majority of the grant funding for this component will benefit underrepresented communities, as this is a subbasin-wide component that seeks to better reach out to, gather information and incorporate the needs of underrepresented communities through technical work and updates to the GSP. This component also seeks to better understand GDEs by refining the UR 6 SMC.

The component will positively impact issues associated with small water systems or private shallow domestic wells (**Figure 4**; Attachment 4, page 4) insofar as it will continue to gather relevant data and provide outreach to domestic well users. There are 10 small water systems in the Vina Subbasin, with 2 of them at risk or potentially at risk relative to the SAFER risk assessment, and 6 not at risk (**Figure 4**; Attachment 4, page 4). Durham Irrigation District, a member agency of the Vina GSA, is a small water system considered not at risk.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component, by ensuring overall subbasin sustainability goals are met for all beneficial users of groundwater. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and Vina Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSA can address issues as they arise." Continued coordination between GSAs in the region, refined SMC, and improved modeling tools will help to provide decision makers with data and information to support policies protective of these beneficial users of groundwater.

COMPONENT 6: Extend Orchard Replacement Program

Component Description

Component 6, Extend Orchard Replacement Program, is an implementation project and demand-side intervention aimed at conserving groundwater by extending the fallowing period an additional year depending on orchard management practices during orchard replacement (i.e., one to two years). This practice will reduce the average annual consumptive use (i.e., evapotranspiration or ET) of groundwater by extending the fallowing cycle and reducing the total water use of the orchard over one extra year. This fallowing extension causes the average annual ET over the life of the orchard to be commensurately reduced. The reduction in ET is equivalent to the difference in average baseline orchard ET to average extended orchard replacement ET over the full life of the orchard. The reductions in ET are obtained by having one or two additional low ET years at the beginning of the orchard life cycle.

Given that the Vina Subbasin is primarily dependent on groundwater as its water supply source, the Extend Orchard Replacement Program will directly support **MOs** and **MTs** related to groundwater levels, storage, and the depletion of interconnected surface waters. The **goal** of this component is to reduce overall groundwater pumping demand from the Vina Subbasin through increased land fallowing. The **objective** of the Extend Orchard Replacement Program is to implement a demand-side intervention aimed at extending the fallowing period an additional year (i.e., from one to two years) during orchard replacement, thereby reducing the average annual ET of groundwater. In order to realize these benefits, the following **needs** must be met:

1. First, this component will quantify the potential water savings and required incentivization costs for implementing the Extend Orchard Replacement Program.
2. Once costs (\$/acre) and benefits (AF/acre) are known, a pilot project plan will be developed.
3. This will be followed by implementation of a two-year pilot project involving as many acres as possible. The number of acres involved in the pilot project will depend on the magnitude of the required incentives.
4. Finally, based on the results of the pilot project, a final long-term extend orchard replacement action plan will be developed, including exploration of sustainable funding options.

The **goal**, **objective**, and **needs** of the component will be met by implementing the scope of work, based on the requested budget and planned schedule. The Mechoopda Indian Tribe of Chico Rancheria specifically supports this component recognizing its role in providing multiple benefits to improve and support local management of groundwater supply and quality (Attachment 4, page 20).

Benefits and Location

This is an implementation project consistent with section 5.2.5.1 of the Vina GSP. The subbasin's current conditions show about 50 percent agricultural lands to the west of Highway 99, the City of Chico and urban land uses in the central portion of the subbasin, and a large portion of undeveloped lands to the east of Highway 99 towards the Sierra foothills (**Figure 2**; Attachment 4, page 2). Agricultural lands are dominated by orchards, with some rice grown in the southern portion of the subbasin. Because the Vina Subbasin is in a state of overdraft, the subbasin must either: 1) identify means to reduce discharge (i.e., demand) from the aquifer system (e.g., ET of groundwater) or 2) increase recharge (i.e., supply) via either in-lieu or direct recharge activities. Because orchard crop water demands in the subbasin are substantially met by groundwater supplies, reductions in ET of orchard crops translate directly to reductions in groundwater demands. The net reduction in groundwater demand from this component will help move the subbasin towards sustainability. The **quantifiable benefits** of the project will be computed as the difference in ET from fallowed orchards participating in the Program compared to ET from first-leaf (i.e., first year recently planted orchards). This difference in ET from first-leaf and fallowed orchards (i.e., consumptive use) will be scaled by the number of participating acres to determine a subbasin-wide **benefit** from the project. ET will be estimated on a monthly timestep at a 30-meter by 30-meter pixel scale. Cumulative annual benefits for the entire subbasin will be computed by summing individual ET volumes from each pixel within the subbasin.

As shown in **Figure 14** (Attachment 4, page 14), almond and walnut orchards (shown in orange and blue colors, respectively) comprise a substantial portion of the irrigated areas within the Vina Subbasin. Almond and walnut orchards are concentrated on the western side of the Vina Subbasin, both to the north and south of the Chico area, which is roughly coincident with State Highway 32. These are the potential participating areas of the program.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938. Out of the 184,900 total acres in the Vina Subbasin, approximately 40,720 acres (or 22%) are classified as DACs at either the block group, tract, or place spatial scales. Of these DAC-classified areas, 20,900 (or 11% of the subbasin) are classified as SDACs.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

Similar to other efforts led by DWR to minimize impacts to URCs, *i.e.*, URC Technical Assistance Program, this component will minimize risks and improve groundwater resources for URCs and other beneficial uses and users by the following mechanisms:

- Reduced average annual agricultural ET associated with almond and walnut production due to extended orchard replacement times will reduce demand on the groundwater system.
 - o As shown on **Figure 14** (Attachment 4, page 14), almond and walnut orchards (shown in orange and blue colors, respectively) comprise a substantial portion of the irrigated areas within the Vina subbasin.
 - o Almond and walnut orchards specifically targeted by this component will be either within or nearby all of the DAC and SDAC identified areas in the Vina Subbasin.
- Reduced groundwater demand will reduce the likelihood of negative impacts for URCs, DACs, and SDACs.
- Reductions in agricultural ET will also decrease the likelihood of negative domestic well impacts for small water systems and private domestic wells. This is especially true in and around the Durham and Dayton areas that are heavily dependent on shallow groundwater wells for domestic needs (**see Figure 4**; Attachment 4, page 4) and largely surrounded by walnut and almond orchards which cover most of the subbasin.
- Specifically, undesirable results associated with reductions in groundwater levels, groundwater storage, and the depletion of interconnected surface waters will be mitigated by this component.

The entire Vina Subbasin would benefit from the component and, thus incremental benefits would occur within the DACs, SDACs, and Mechoopda Tribal areas. We estimate that approximately 50% of the DACs, SDACs, and Tribal lands within the Vina Subbasin would incrementally benefit from the implementation of this component.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina Stakeholder Advisory Committee and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. Implementation of this component and design of the Extend Orchard Replacement Program will prioritize areas with declining groundwater levels coincident with domestic wells and/or small water systems to mitigate barriers to the Human Right to Water resulting from these conditions.

COMPONENT 7: Lindo Channel Surface Water Recharge Implementation

Component Description

The City of Chico lies along the eastern edge of the Sacramento Valley within Butte County (**Figure 1**; Attachment 4, page 1). Various creeks and streams drain west from the Sierra Nevada foothills through the city, the largest of which is Big Chico Creek, a perennial stream. Lindo Channel is an existing flood control channel that runs through Chico to the north of Big Chico Creek; when the flow in Big Chico Creek increases during periods of heavy rainfall and runoff, water is diverted into Lindo Channel to prevent Big Chico Creek from overtopping its banks. There is also a flood control channel connecting Big Chico Creek and Lindo Channel to Sycamore Creek and Mud Creek, ephemeral streams farther north. A map of Chico showing these waterways is included as **Figure 15** (Attachment 4, page 15).

The project proposed in this component is to utilize the existing flood control infrastructure in Chico to divert excess flow out of Big Chico Creek into Lindo Channel in order to use the channel for increasing groundwater recharge. Historically this diversion has only been used for flood control purposes, but after completing a study to identify the minimum flow required in Big Chico Creek to meet community needs (e.g. health, safety, environmental, and recreation), any flow available above the minimum flow could be diverted into the flood control channel and allowed to percolate into the groundwater system and recharge the aquifer. An initial conceptual project was developed in 2015 and received wide acceptance by stakeholders in the area. This component will provide multiple benefits to the area in the City of Chico that is experiencing groundwater level declines by supporting increased groundwater recharge while reducing potential flooding within the City. Recharging excess flows from Big Chico Creek via the unlined Lindo Channel will help improve groundwater levels for domestic well users and support groundwater dependent ecosystems within and near Big Chico Creek. Monitoring wells will be installed to assess changes in water levels during and after a stormwater recharge event including areas near the Lindo Channel. The Mechoopda Indian Tribe of Chico Rancheria specifically supports this component, recognizing its role in providing multiple benefits to improve and support local management of groundwater supply and quality (Attachment 4, page 20).

The goal of this component is to increase recharge in an area of the subbasin that has experienced groundwater level declines, thereby increasing groundwater levels, minimize potential flood impacts, support groundwater dependent ecosystems, and improve the interface between groundwater and streams. The objectives are 1) to better assess the minimum required flow in Big Chico Creek and resulting potential volumes of water available for diversion into Lindo Channel and to better assess the volume of groundwater recharge that could be achieved, and 2) implement the recharge project with shallow water level monitoring to assess its effects on groundwater. The project is needed in order to address groundwater level declines in the vicinity of the City of Chico. The component goals, objectives, and needs will be met by implementing the tasks described below in a phased-approach for best success. In addition, the component includes stakeholder involvement and requires coordination with DWR on infrastructure operations.

The goal of the component will be achieved through completion of two main phases:

- Phase 1: Scope Refinement and Design
 - Develop the flow threshold for diversion, based on water rights, habitat, and downstream beneficial users
 - Compute expected recharge yield
 - Evaluate if there are any infrastructure or stream improvements needs in addition to the current diversion off of Big Chico Creek
- Phase 2: Implement the Project
 - Coordinate with DWR and the CA Department of Fish and Wildlife
 - Perform any maintenance needed on Lindo Channel such as sediment removal on the north side of the channel, to allow for better flow – initial channel rehabilitation scope and budget was developed with DWR

Detailed tasks for Phase 1 Scope Refinement and Design, include:

- 1) Conduct Outreach. The investigation would involve and be guided by outreach to stakeholders and interested parties, including Chico area residents, the City of Chico, Cal Water, selected state and federal resource agency representatives and downstream water users. For example, there is evidence that Lindo Channel may be a source of flooding in some Chico neighborhoods. This effect will be reviewed before final project scoping.
- 2) Determine Big Chico Creek's minimum required flow. Analysis to determine what the minimum required flow for Big Chico Creek is throughout the year to avoid impacts to aquatic and biological resources.

- Quantify current demands on and use of water in Big Chico Creek.
- Assess downstream effects of reduced streamflow.

Currently, the CA Department of Fish and Wildlife restricts flow diversions below 75 cfs to maintain fish habitat in Big Chico Creek. In addition, diversions may be restricted to only occur in late-spring or early-summer.

3) Quantify water available for diversion into Lindo Channel. Analysis of stream gage records from DWR dating back to 1975 will indicate the volumes of water available for diversion into Lindo Channel over a range of hydrologic conditions. In addition, analysis of potential flows under climate change scenarios will be performed to assess any changes to projected hydrology.

4) Test percolation rates in Lindo Channel. The rate of percolation from Lindo Channel into the ground would be estimated through a combination of surficial and subsurface soil investigations, geologic borings and infiltration and possibly other tests.

5) Assess Legal and Institutional Issues and Requirements. Review potential legal and institutional issues. And review needs for CEQA and NEPA environmental review processes.

6) Develop Project Monitoring Plan. Design an implementation monitoring plan to ensure the project is working as intended and is not producing any unwanted effects on neighboring stakeholders and downstream users. Project monitoring will include stream gages on the channel, and shallow monitoring wells at regular intervals on each side of the channel.

Phase 2 activities will include any needed channel rehabilitation such as removal of sediment on the north side of the channel to allow better flow. It will also include installation of monitoring wells and stream gages to quantify project benefits and assess potential impacts.

Benefits and Location

This component has the potential to provide various benefits to subbasin groundwater users, including domestic users, the city of Chico, and California Water Service Company (Cal Water, the water supplier for the city of Chico). These benefits include:

- Increased recharge to the aquifer to support sustainable groundwater management in the city of Chico and the Vina Subbasin,
- Reducing or reversing the rate at which the cone of depression around the City of Chico and surrounding areas is forming,
- Reducing and potentially reversing the adverse effects of declining groundwater levels on stream dynamics,
- Reduced pumping costs for residential and municipal well users due to reducing the rate of groundwater level decline, and
- Ensuring shallow domestic wells maintain access to safe, clean drinking water.

Therefore, this component helps meet the overall subbasin sustainability goal and the chronic lowering of groundwater level MO. Quantifiable benefits will be realized by percolating surface waters into the aquifer and increasing groundwater levels, and will be evaluated and quantified through data collected from a shallow well monitoring network to assess the amount of groundwater level rise under the Lindo Channel vicinity after a recharge event.

The public and interested parties will be informed of this project development and progress through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders near and around the project site.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The project area includes Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs) (**Figure 16**; Attachment 4, page 16), therefore this component would benefit SDACs within and surrounding the Chico area as it will help raise groundwater levels to avoid impacting domestic wells during future droughts. The majority of the grant funding for this component will benefit DACs and SDACs in the Chico area. This component will also benefit GDEs and potentially the urban forest in the City of Chico. The exact footprint of the benefit will be assessed during Phase 1 of the work.

The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe. The Tribe submitted a letter of support for this grant application that specifically expresses support for this component (Attachment 4, page 20).

The four tasks of this component further DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical Assistance Program, this component would minimize risks and improve groundwater resources for URCs, specifically domestic well owners dependent on relatively shallow wells. This component will positively impact issues associated with small water systems and private shallow domestic wells (**Figure 4**; Attachment 4, page 4) as its goal is to reduce further drawdown in the Chico area by increasing recharge of surface water flows in the unlined Lindo Channel. Although the City of Chico is serviced by Cal Water for drinking water supplies, many parcels are still on private domestic wells that are more vulnerable to excessive drawdown due to pumping, and contamination. **Figure 10** (Attachment 4, page 10) shows the density of domestic wells in the area of the project. Cal Water Chico Service Area Small Water System has not been assessed for its risk potential, by the SAFER program.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component, by implementing groundwater recharge and raising groundwater levels in areas affected by drawdown that are putting domestic wells at risk of failing. Dry wells have been reported in 2021 and 2022 north and west of Chico. The Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation. Since this component is helping raise water levels in SDAC and DAC areas, it is in line with the goal of the Human Right to Water legislation.

COMPONENT 8: Agricultural Surface Water Supplies Feasibility Analysis

Component Description

Component 8, Agricultural Surface Water Supplies Feasibility Analysis, is an implementation project that focuses on assessing the feasibility of increasing use of surface water supplies for irrigated agriculture in the Vina Subbasin that would identify two projects with reconnaissance-level project designs. Presently, the Vina Subbasin is almost entirely dependent on groundwater to meet crop water demands. To achieve long-term sustainability, the Vina GSP suggests the need to address a 10,000 AF per year groundwater budget deficit. Moreover, if water managers and stakeholders within the subbasin desire to recover some of the 300,000 to 400,000 AF cumulative reduction in storage that has occurred over the last 20 years, a change greater than 10,000 AF per year is required. This can be achieved by either reducing groundwater demands or increasing availability of surface water supplies. Using surface water in-lieu of (*i.e.*, in place of) groundwater when and where it is available is an essential component of groundwater sustainability. All else being equal, every unit of increased surface water translates to a net benefit to the Vina Subbasin.

This component aims to identify and refine future surface water supply projects that will address **MOs** and **MTs** related to groundwater levels, storage, and the depletion of interconnected surface waters. The **goal** of this component is to increase surface water supplies available to meet both agricultural and urban water demands. The **objectives** are to identify and refine, in preparation for future implementation efforts, the two most promising agricultural surface water supply projects for the Vina Subbasin. The **need** for this project is to address 10,000 AF per year groundwater budget deficit and the cumulative reduction in storage that has occurred over the last 20 years. Implementation of this component involves the following:

1. Developing an initial list of projects,
2. Performing an initial screening of projects,
3. Performing and documenting feasibility analyses for the two most promising projects, and
4. Engaging and providing education and outreach to stakeholders and local community members.

The **goal**, **objective**, and **needs** of the component will be met by implementing the scope of work based on the requested budget and planned schedule.

The first step in this component is to develop conceptual projects that pair together logical combinations of the following elements: (1) available surface water supplies, (2) existing/proposed surface water conveyance facilities, and (3) surface water uses. The following summarizes starting points for each of these three categories:

- Available surface water supplies
 - PG&E (Miocene)
 - Table A water (Butte County State Water Project Contractor)
 - Feather River
 - Sacramento River
 - Butte Creek
 - Other tributary drainages
 - Recycled water
- Existing/Proposed surface water conveyance facilities
 - Existing conveyance (e.g., Durham Mutual Water Company Ditch)
 - New conveyance
 - Miocene Canal
 - Comanche Creek
 - Other ditch and stormwater conveyance facilities
 - Butte Creek (PG&E)
- Surface water uses
 - In-lieu of groundwater pumping for agricultural demands
 - In-lieu of groundwater pumping for urban demands

Butte County completed the *Evaluation of Restoration and Recharge within the Butte County Groundwater Basins* in 2018 which identified potential water sources for recharge, including in lieu recharge, and initial project alternatives. This component will build from these prior efforts, with the goal of developing the most promising projects to as close to “shovel

ready” as possible. For example, PG&E’s Miocene water rights could be conveyed via the Miocene Canal together with the construction of new conveyance facilities to supplement agricultural water requirements in the South Vina region. Additionally, the Durham Mutual Water Company Ditch (**Figure 17**; Attachment 4, page 17) could be used to convey surface water from Butte Creek to additional agricultural water users in the Durham area. An initial screening or fatal flaws analysis will be performed to identify the two most promising project concepts. The fatal flaws analysis will include a reconnaissance level review of water rights, surface water reliability, approximate conveyance costs, and willingness of end users to incorporate surface water into their water supply portfolio. Finally, detailed feasibility studies will be performed on the two project concepts. The goal of the feasibility studies will be to produce reconnaissance-level project designs, so that subsequent designs can be rapidly developed and construction can be initiated when funding arrangements (and permits) are finalized.

While not a comprehensive list, the following project concepts will likely be included in the initial screening of fatal flaws analysis:

Likely agricultural surface water supplies conceptual projects.

Surface Water Supplies	Surface Water Conveyance	Surface Water Use
Miocene Canal (PG&E)	Miocene Canal; new conveyance	Southeast Vina Subbasin near the intersections of Highways 70, 99, and 149
Table A	Butte Creek; TBD	South Vina
Feather River	Butte Creek; TBD	South Vina
Sacramento River	TBD	North or South Vina
Recycled (e.g., City of Chico wastewater)	Existing conveyance	South Vina
Paradise Irrigation District	Butte Creek; TBD	South Vina
Durham Mutual Water Company (DMWC)	Existing DMWC conveyance; new conveyance	DMWC service area; Rancho Esquon

Benefits and Location

This is an implementation project and consistent with section 5.2.4.8 of the Vina GSP. Increasing surface water supplies to meet agricultural water requirements will have a direct benefit to the Vina Subbasin GSP implementation. Every AF of additional surface water used in the subbasin will help to offset the approximately 10,000 AF annual groundwater budget deficit identified in the GSP. Because the Vina Subbasin is in a state of overdraft, the subbasin must either: 1) identify means to reduce discharge (*i.e.*, demand) from the aquifer system (*e.g.*, consumptive use of groundwater) or 2) increase recharge (*i.e.*, supply) via either in-lieu or direct recharge activities. This component involves both: 1) a reduction in groundwater pumping while at the same time and 2) an increase in recharge from surface water applications. The net reduction in groundwater demand plus the increase in surface water recharge from this component will help move the subbasin towards sustainability.

The **quantifiable benefits** of the proposed projects will be computed as the sum of the estimated reduction in ET from groundwater plus the increase in surface water recharge. The sum of the **quantifiable benefits** from all proposed projects will determine the potential subbasin-wide **benefits** that could be realized from component implementation. Crop ET from groundwater pumping (*i.e.*, the first part of quantifiable benefits) will be estimated on a monthly timestep at a 30-meter by 30-meter pixel scale. Cumulative annual benefits for each project in this component will be computed by summing individual ET volumes from each pixel within each proposed project area.

Figure 17 (Attachment 4, page 17) depicts key surface water conveyance facilities (*e.g.*, Butte Creek, Comanche Creek, Crough Ditch, Dry Creek, and Durham Mutual Ditch) in relation to agricultural production (*i.e.*, almonds, rice, and walnuts), DACs, SDACs, and key groundwater dependent rural water systems (*i.e.*, Dayton and Durham areas). This is a subbasin-wide project. Implementation of in-lieu recharge projects can provide substantial benefits to groundwater level and groundwater storage proportional to the amount of imported surface water.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin’s Chico Management Area. Using the DWR Mapping Tools ACS

2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938. Out of the 184,900 total acres in the Vina Subbasin, approximately 40,720 acres (or 22%) are classified as DACs at either the block group, tract, or place spatial scales. Of these DAC-classified areas, 20,900 (or 11% of the subbasin) are classified as SDACs. Increasing surface water supplies to meet agricultural water requirements, especially near domestic wells in SDAC and DAC areas, will reduce demand on the groundwater system, thereby reducing the likelihood of negative impacts to small groundwater dependent water systems in the west Chico, Dayton, and Durham areas, together with URCs, DACs, and SDACs (see **Figure 17**, Attachment 4, page 17, for details).

The four tasks of this component furthers DWR's goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, *i.e.*, URC Technical Assistance Program, implementing the projects developed by this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by the following mechanisms:

- Reduced reliance on groundwater to meet crop water demands within the Vina Subbasin.
 - o The three primary crops grown in the Vina Subbasin are: (1) almonds, (2) walnuts, and (3) rice (shown in orange, blue, and green colors, respectively on **Figure 17** (Attachment 4, page 17).
- Reduced groundwater demand will reduce the likelihood of negative impacts for URCs, DACs, and SDACs dependent on domestic wells for drinking water.
- Increased surface water supplies will also decrease the likelihood of negative domestic well impacts for small water systems and private domestic wells. This is especially true in and around the Durham and Dayton areas that are heavily dependent on shallow groundwater wells for domestic needs and largely surrounded by walnut and almond orchards (see **Figure 4**; Attachment 4, page 4).
- Specifically, undesirable results associated with reductions in groundwater levels, groundwater storage, and the depletion of interconnected surface waters will be mitigated by the implementation of the projects developed by this component.
- Completing the tasks of this component is the critical first step toward implementing a surface water supply project in the Vina subbasin to reduce groundwater demand.
- The entire Vina Subbasin would benefit from the component and, thus incremental benefits would occur within the DACs, SDACs, and Mechoopda Tribal areas. We estimate that approximately 20% of the DACs, SDACs, and Tribal lands within the Vina subbasin would incrementally benefit from the implementation of the projects developed in this component.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. Specific attention will be given towards introducing surface water supplies in-lieu of agricultural groundwater pumping nearby small water systems dependent on wells, and areas with higher concentration of domestic wells particularly in URCs, DACs, and SDACs (**Figure 10**; Attachment 4, page 10).

COMPONENT 9: Agricultural Irrigation Efficiency Pilot Program and Education

Component Description

The concept and interpretation of irrigation efficiency depends on the spatial scale and view of what constitutes beneficial use. In common use, irrigation efficiency generally focuses on field-scale water use, relating the amount of water that is consumptively used (plus salinity leaching requirements) to the amount of water that is applied through irrigation. This localized, field-scale viewpoint does not adequately account for the many other beneficial uses of water within the larger hydrologic system, or the important role of non-consumptive use at the subbasin scale. Although crops do not consume all of the water that is applied through irrigation, much of the remaining balance of water is still beneficially used in the larger, subbasin-scale system, as it is recycled back to the groundwater system and/or downstream waterways.

Non-consumptive surface water uses, especially for groundwater recharge, are important components of sustainable groundwater management. Unexpected problems and drawbacks can arise when seeking higher irrigation efficiency as a means to support groundwater sustainability. This is especially the case if groundwater sustainability requires a decrease in consumptively used water, which is often more strongly correlated with the area of land being irrigated, and not the irrigation efficiency at the field scale. “Jevons’ Paradox” describes a technology or policy that (1) enhances the efficiency of using a natural resource but (2) does not necessarily lead to less consumption of that resource.

Technologies and policies that support adoption of higher-efficiency irrigation systems are well-intentioned, but there may be unintended consequences that impede water conservation and sustainable groundwater management. This is highlighted by the following:

- Applying less surface water to an area as a result of improvements to irrigation efficiency can also reduce deep percolation and seepage to the groundwater system and surface outflows to surface water features.
- Increased irrigation efficiency often leads to an increase in consumptive use of water (i.e., evaporation and transpiration), so while gross volumes of groundwater extraction may be less, net volumes of consumptive groundwater use may increase.
- Behavioral responses and changes in irrigation resulting from improvement to irrigation efficiency can lead to increased consumptive use. If less water can be used to produce the same amount of a crop product, growers may be inclined to use the same amount of water and produce more or use the “conserved” water to irrigate additional land. This highlights the importance of properly coupling land use management together with sustainable water management.

Figure 18 (Attachment 4, page 18) provides a conceptual depiction of an agricultural system transitioning from flood irrigation (scenario 1, left) to micro sprinklers (scenario 2, right). The irrigation efficiency, or more precisely the consumptive use fraction or CUF, increases from 60 % to 87.5 %. However, the total amount of consumptive use (i.e., sum of evaporation and transpiration) increases from 60 (10 + 50) units to 70 (15 + 55) units from scenario 1 to scenario 2. All else being equal, this increase in consumptive use will drive the subbasin farther away from sustainability by increasing the net outflow of groundwater from the system.

Component 9, Agricultural Irrigation Efficiency Pilot Program and Education, focuses on identifying and implementing irrigation interventions that can reduce non-beneficial ET from the Vina Subbasin. Presently, the Vina Subbasin is almost entirely dependent on groundwater to meet crop water demands. To achieve long-term sustainability, the Vina GSP suggests the need to address a 10,000 AF per year groundwater budget deficit. Moreover, if water managers and stakeholders within the subbasin desire to recover some of the 300,000 to 400,000 AF cumulative reduction in storage that has occurred over the last 20 years, a change greater than 10,000 AF per year is required. This can be achieved by either reducing groundwater demands or increasing availability of surface water supplies. Reducing non-beneficial ET is an essential component of groundwater sustainability.

With this in mind, the overall goal of this component is to improve subbasin sustainability related to groundwater levels and groundwater storage by decreasing consumptive use (i.e., evaporation and transpiration or ET) by applying ET-based water management principles of precision irrigation and ET monitoring. This component will leverage education and outreach, conduct a feasibility study involving piloting innovative technologies, and develop a precision irrigation implementation plan to improve ET-based water management at a broader scale in the Vina Subbasin.

This component aims to reduce non-beneficial ET and will address **MOs** and **MTs** related to groundwater levels, storage, and the depletion of interconnected surface waters. The **goal** of this component is to identify precision irrigation techniques that can be used to decrease non-beneficial ET. The **objectives** are to identify, pilot test, and provide recommendations for precision irrigation monitoring tools like micro-tensiometers and remote sensing. The **need** for this

project is to address 10,000 AF per year groundwater budget deficit and the cumulative reduction in storage that has occurred over the last 20 years. Implementation of this component involves the following:

1. Develop Precision Irrigation Piloting Program
2. Implement the program with agricultural and academic partners
3. Analyze results of pilot program to quantify potential benefits of expanding the program throughout the subbasin
4. Engage and provide education and outreach to stakeholders and local community members, targeting growers, URCs, DACs, SDACs, and youth.

The **goal**, **objective**, and **needs** of the component will be met by implementing the scope of work, provided there is sufficient funding, based on the requested budget.

Benefits and Location

This component will complete the planning phase of an implementation project and is consistent with section 5.2.3.1 of the Vina GSP. This component focuses on realizing important water quantity and water quality benefits from investments in precision irrigation and improvements to irrigation efficiency. Improving irrigation efficiency can have a positive impact on water quantity, water quality, and energy use. For addressing sustainability indicators related to declines in groundwater levels and/or groundwater storage, it is essential to target reductions in the following flow paths:

- Reducing non-beneficial evaporation (E):
 - Evaporation losses from sprinklers (*i.e.*, drift)
 - Evaporation losses from unnecessarily wet soils and plant surfaces
- Reducing transpiration (T):
 - Non-beneficial transpiration from weeds or other unintended vegetation
 - Transpiration from crops that does not negatively impact yields (*i.e.*, regulated deficit irrigation)

In some parts of the world, water management that targets reductions in these flow paths is referred to as ET-based water management. The United Nations Food and Agriculture Organization (UN-FAO) is actively promoting ET-based water management in a number of different water scarce regions. The almond and walnut orchards in the Vina Subbasin would be the primary target areas for this component (**Figure 14**; Attachment 4, page 14).

The **quantifiable benefits** of the component will be computed as the sum of the reduction in non-beneficial evaporation and reduced transpiration. Benefits will be quantified using a variety of techniques, potentially including remote sensing, eddy covariance, and soil water balances. The sum of the **quantifiable benefits** from the pilot program, together with the ability to scale implementation throughout sufficiently similar areas in the subbasin will determine the potential subbasin-wide **benefits** that could be realized from full-scale component implementation. Crop ET from groundwater pumping (*i.e.*, the first part of quantifiable benefits) will be estimated on a monthly timestep at a 30 meter by 30-meter pixel scale. Cumulative annual ET for the pilot program and potential future subbasin-wide implementation will be computed by summing individual ET volumes from each pixel within the participating area.

Figure 14 (Attachment 4, page 14) depicts agricultural production with pressurized irrigation systems (*i.e.*, almonds and walnuts) in relation to DACs, SDACs, and key groundwater dependent rural water systems (*i.e.*, Dayton and Durham areas). This is a subbasin-wide project. Implementation of precision irrigation projects can provide substantial benefits to groundwater level and groundwater storage proportional to the amount of reduced non-beneficial evaporation and transpiration.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP.

The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938. Out of the 184,900 total acres in the Vina Subbasin, approximately 40,720 acres (or 22%) are classified as DACs at either the

block group, tract, or place spatial scales. Of these DAC-classified areas, 20,900 (or 11% of the subbasin) are classified as SDACs. Reducing non-beneficial evaporation and transpiration associated with agricultural production will reduce demand on the groundwater system, thereby reducing the likelihood of negative impacts to small groundwater dependent water systems in the west Chico, Dayton, and Durham areas, together with URCs, DACs, and SDACs (see **Figure 4** and **Figure 14**; Attachment 4, pages 4 and 14).

The four primary tasks of this component furthers DWR's goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, *i.e.*, URC Technical Assistance Program, implementing the pilot program developed by this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by the following mechanisms:

- Reduced reliance on groundwater to meet crop water demands within the Vina Subbasin.
 - o The two primary crops grown with pressurized irrigation in the Vina Subbasin are: (1) almonds and (2) walnuts (shown in orange and blue colors, respectively on **Figure 14**; Attachment 4, page 14).
- Precision irrigation can lead to reductions in non-beneficial evaporation and transpiration from agricultural irrigation water.
- Reduced non-beneficial evaporation and transpiration translates to decreased groundwater demand and will reduce the likelihood of negative impacts for URCs, DACs, and SDACs, especially where agricultural pumping occurs near these communities (**Figure 14**; Attachment 4, page 14)
- Reduced groundwater demands will also decrease the likelihood of negative domestic well impacts for small water systems and private domestic wells. This is especially true in and around the Durham and Dayton areas that are heavily dependent on shallow groundwater wells for domestic needs and largely surrounded by walnut and almond orchards (**Figure 4**; Attachment 4, page 4).
- Specifically, undesirable results associated with reductions in groundwater levels, groundwater storage, and the depletion of interconnected surface waters will be mitigated by the implementation of the projects developed by this component.

The entire Vina Subbasin would benefit from the component and, thus incremental benefits would occur within the DACs, SDACs, and Mechoopda Tribal areas. We estimate that approximately 30 % of the DACs, SDACs, and Tribal lands within the Vina subbasin would incrementally benefit from the implementation of the program developed in this component.

The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. Specific attention will be given towards reducing ET and therefore groundwater demand through adoption of precision irrigation methods nearby small water systems dependent on wells, and areas with higher concentration of domestic wells particularly in URCs, DACs, and SDACs.

COMPONENT 10: Groundwater Recharge Feasibility Analysis and Site Evaluation

Component Description

This component consists of a feasibility analysis to identify potential groundwater recharge implementation projects for the GSAs to implement within the Vina Subbasin. This project builds upon previous studies for groundwater recharge in the area including the 2018 Evaluation of Restoration and Recharge within Butte County (ERR Project) and the 2022 Rock and Sand Creek Flood Mitigation Project (Sand Creek Project). The ERR project provided a preliminary assessment of groundwater recharge opportunities and potential projects throughout Butte County including areas within the Vina Subbasin. The Sand Creek Project assessed the potential hydrologic benefits of alternative detention strategies including the possible creation of seasonal wetland habitats and the potential for groundwater recharge from the Rock Creek watershed within the North Vina Management area (**Figure 1**; Attachment 4, page 1).

Key considerations for groundwater recharge projects will include site feasibility, multi-benefits, water and land availability, water rights, water supply cost and certainty, opportunities for partnership, funding sources, optimal methods of recharge, and consistency with achieving the sustainability goals for the subbasin. The component would also address the legal implications associated with actively managing recharge water in the subbasin. Legal implications that would be addressed include identifying: the beneficial use(s) of the water, limitations of subsequent recovery and use, "leave behind" requirements, appropriate water right permit, terms of recharge or storage, water availability for overlying groundwater users, in-lieu recharge assumptions, CEQA requirements, and monitoring and reporting requirements.

The data evaluation will help interested parties throughout the subbasin to determine the feasibility for groundwater recharge in different areas of the subbasin. The results of this analysis will be used to identify potential areas for recharge and/or recharge projects for implementation and to conduct one (1) groundwater recharge investigation of an anticipated 80-acre facility for use in developing preliminary design plans and preliminary design specifications for one project to be implemented.

The preliminary design report will include:

- Potential benefits of the project.
- Ability to address sustainable management criteria including minimum thresholds and measurable objectives.
- Suitability to recharge applied water in terms of feet per day over the site and an estimate of the annual quantity of water capable of being recharged to the underlying groundwater basin.
- Potential for groundwater recovery in terms of millions of gallons per day or acre-feet per year.
- Recommendation for monitoring groundwater movement to determine the volume of water recharged and available for recovery without negatively impacting the groundwater basin and/or nearby private (or public) wells.
- Potential Impacts to groundwater quality related to recharge operations.
- Preliminary basin layout that considers the water delivery locations and how water is best distributed and managed across the site
- Environmental clearance requirements
- Permitting requirements
- Operation and maintenance recommendations
- Estimate of probable design and construction cost

Communities served by this project include all those within the Vina Subbasin (**Figures 1 and 3**; Attachment 4, pages 1 and 3) in addition to other communities in the adjacent groundwater subbasins. The results from this project will also provide valuable information for developing projects that will enhance the ability for the GSAs to maintain the MOs and MTs for groundwater levels, storage, and potentially groundwater quality and subsidence developed in the GSP. The project will also provide valuable information for evaluating these criteria in future updates to the GSP. In addition, recharge projects will be prioritized based on the ability for contributing to meeting the implementation schedule for achieving sustainability established in the GSP.

The **goal** of this component is to develop a prioritization list of groundwater recharge projects that can be timely implemented and optimize beneficial uses throughout the subbasin including URCs, SDACs, Tribes, habitats, domestic wells, and GDEs and supports the Human Right to Water policy of the State by reducing groundwater level declines and increasing groundwater storage. A primary **objective** of the component is to identify at least one (1) site to conduct a groundwater recharge investigation and develop a preliminary design for a groundwater recharge project to be implemented in the future. Based on previous work in the ERR, this component is **needed** to refine the locations of potential groundwater recharge projects within the basin and will provide critical data to assess the types of groundwater

recharge methods that will be successful in the basin based on the unique hydrogeological characteristics. The project will also take into account the potential users and uses that would directly benefit from recharge, including, but not limited to, GDEs, domestic well users, and small community water systems.

The feasibility study will meet the goals, objectives, and needs stated above through an integrated approach to implementation including discussions with identified stakeholders, review of proposed projects documented in previous studies; conducting site visits and outreach with project proponents including willing landowners and relevant water purveyors; conducting cost-benefit analysis; and developing a prioritization list of types of recharge projects and locations. Key components of development of the prioritization list include projects that will optimize benefits to URCs, SDAC, Tribes (**Figure 3**; Attachment 4, page 3), habitats, domestic well users (**Figure 4**; Attachment 4, page 4), and GDEs and support the state's Human Right to Water policy and State Water Boards SAFER program. The need for data to assess the types of groundwater recharge methods that will be successful within the subbasin will be met by conducting a groundwater recharge investigation on at least one property.

Benefits and Location

This component will complete the planning and preliminary design phase of an implementation project consistent with section 5 of the Vina GSP. As stated in the GSP, data gaps identified in the subbasin include limited understanding of groundwater recharge mechanisms and the shallow groundwater aquifer system. This project will help fill these data gaps through completion of the groundwater recharge investigation that will include conducting surface geophysical analysis and drilling soil boring samples. This data will be used to assess groundwater migration pathways from the surface to the shallow groundwater. In addition, groundwater and soil samples will be collected and analyzed for physical and chemical parameters that will provide needed data such as permeability and water quality for the shallow groundwater system. These data will also provide information needed to assess relationships between the shallow groundwater system and GDEs (another identified data gap in the GSP). The results of this project will be used to develop a prioritization list of groundwater recharge projects that will greatly assist in implementing the GSP for the subbasin.

The project will be located within the Vina Subbasin (**Figure 1**; Attachment 4, page 1) with the overall feasibility analysis covering the entire subbasin and will then identify a more specific implementation project location for site evaluation.

Communities and Human Right to Water

The GSAs are committed to addressing the needs, risks, and vulnerabilities of Underrepresented Communities (URCs) with the implementation of SGMA and subsequently the GSP. The Vina Subbasin includes Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), and the Mechoopda Indian Tribe of Chico Rancheria (Mechoopda Tribe) (**Figure 3**; Attachment 4, page 3). DAC and SDAC communities are primarily located within the subbasin's Chico Management Area. Using the DWR Mapping Tools ACS 2016-2020 datasets, the Median Household Income for the Vina Subbasin's DAC and SDAC communities ranges from as low as \$18,514 to \$57,357. Based on the ACS data in 2016-2020, 80% of the California Statewide MHI is \$62,938. The Mechoopda Tribe is a federally recognized Tribe in the subbasin, comprised of 560 Tribal Members. The Tribe's ancestral village was located on Little Butte Creek, south of the City of Chico. The Mechoopda Tribe's land is located in the Chico Management Area in the Vina Subbasin. On February 1, 1998, the qualified voting members of the Mechoopda Tribe approved and adopted the Constitution of the Mechoopda Indian Tribe of Chico Rancheria, which serves as the foundation for implementing the Tribe's status as a federally recognized Indian Tribe.

This component furthers DWRs' goals for addressing the needs, risks, and vulnerabilities for URCs in medium and high priority basins. Similar to other efforts led by DWR to minimize impacts to URCs, i.e., URC Technical Assistance Program, this component would minimize risks and improve groundwater resources for URCs and other beneficial uses and users by identifying groundwater recharge projects that would reduce declining groundwater levels, increase groundwater storage, and potentially improve groundwater quality in these areas. Data collected from this project will also include shallow groundwater level monitoring, water quality testing, and assessment of shallow aquifer and vadose zone parameters that will allow further assessment of long-term yield and supply for shallow domestic wells and potential impacts to GDEs.

The entire Vina Subbasin would benefit from the component and, thus incremental benefits would occur within the DACs, SDACs, and Mechoopda Tribe areas. The Human Right to Water was addressed in the Vina Subbasin GSP (Section 1.9) and will continue to be an important part of the GSP implementation through this component. Human Right to Water, states that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Private domestic well groundwater pumper representation on the Vina GSA Board and Stakeholder Advisory Committee, and community engagement via public workshops and outreach are venues through which those potentially most vulnerable to loss of clean drinking water are able to share information and

concerns throughout the GSP implementation so that the GSAs can address issues as they arise. The GSA will continue to work collaboratively with Butte County Department of Water and Resources Conservation and Division of Environmental Health to obtain grants and assess and monitor potentially failing water systems, including domestic well users, small community water systems, and non-community water systems to ensure that these systems meet clean water criteria. The identification of groundwater recharge projects that can be implemented in the subbasin will help address the Human Right to Water by maintaining groundwater levels in the aquifers that are used throughout the subbasin for human consumption, cooking and sanitary conditions.

This project will positively impact issues associated with small water systems and private domestic wells (**Figure 4**; Attachment 4, page 4) by identifying groundwater recharge projects that will reduce aquifer drawdown and increase aquifer storage in these areas. This project will also address the needs of the State Water Board's SAFER program by providing data that can be used to assess appropriate actions that are needed to rehabilitate or replace shallow domestic wells that are identified to be funded by this program.

PROJECT/COMPONENT DETAILS

B. Scope of Work and Deliverables

COMPONENT 1: Grant Administration

Category (a): Component Administration

Prepare reports detailing work completed during reporting period as outlined in the grant agreement. Progress Reports will include sufficient information for the DWR Grant Manager to understand and review backup documentation submitted with invoices. Quarterly invoices will accompany the Quarterly Progress Reports and will be submitted to the DWR Grant Manager for review to receive reimbursement of Eligible Project Costs. Collect and organize backup documentation by component, budget category, and task and prepare a summary Excel document detailing contents of the backup documentation organized by component, budget category, and task.

Develop all necessary documents to secure a contractor for one or more components (i.e. request for proposals). Facilitate selection committee to review proposals, select a contractor and award the contract(s).

Prepare and submit the Draft Component Completion Report and a Final Component Completion Report. The reports shall be prepared and presented in accordance with the provisions of the grant agreement. All deliverables listed within the Work Plan shall be submitted with each Final Component Completion Report unless a new deliverable due date was approved by the DWR Grant Manager. Prepare and submit the Draft Grant Completion Report and Final Completion Report.

Deliverables:

- Quarterly Progress Reports, Quarterly Invoices, and all required backup documentation
- Bid document(s)
- Executed contract
- Draft and Final Component Completion Reports

COMPONENT 2: Monitoring Network Enhancements

Component 2 consists of the installation of monitoring sites and dedicated monitoring equipment, to expand the understanding of basin conditions in the Vina subbasin and address data gaps as identified in the Groundwater Sustainability Plan (GSP). This component will be implemented as five tasks: 1) landowner access agreement/site access, 2) planning of multi-completion monitoring wells, 3) planning of shallow wells and stream gages, 4) Installation of multi-completion wells, 5) Installation of shallow wells and stream gages. In aggregate, these tasks will help expand the understanding of the hydrogeology and hydrology in the Subbasin to support updates to the GSP and successful management of the subbasin.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders near and around the monitoring sites. This project is not yet started (0% complete).

Category (a): Component Administration

Not applicable to this component

Category (b): Environmental / Engineering / Design

Task 1. Landowner Access Agreement/Site Access

Acquire landowner access agreement(s) required to install monitoring wells, piezometers, and stream gages if applicable. Any access agreements obtained pursuant to this Agreement shall allow for adequate long-term, access for construction and maintenance of the well, piezometer, or stream gage.

Deliverables:

- Landowner access agreement(s)

Task 2. Multi-Completion Monitoring Wells Planning

Conduct planning and design activities associated with the multi-completion monitoring well installation within the Subbasin. Perform a technical assessment of potential monitoring well locations, associated costs, and landowner participation to determine the final number and location of monitoring wells to be installed, and the final number of completions to be included in each monitoring well. Acquire necessary permits required for the installation of the wells. Prepare the required CEQA documentation and any other required permitting.

Deliverables:

- Map of approved locations for monitoring wells
- 100% Design, plans and specifications, if applicable
- Awarded contracts, if applicable
- Required environmental documentation for CEQA compliance, if applicable
- Copies of required permits, if applicable

Task 3. Shallow Wells and Stream Gages Planning

Conduct planning and design activities associated with the shallow well or piezometer and stream gage installation/maintenance within the Subbasin. Perform a technical assessment of potential monitoring locations, associated costs, and landowner participation to determine the final number and location of sites to be installed, as well as the final number of stream gages to be installed. Acquire necessary permits required for the installation of the wells, piezometers and gages. Prepare the required CEQA documentation.

Deliverables:

- Map of approved locations for shallow wells, piezometers, and stream gages
- 100% Design, plans and specifications, if applicable

- Awarded contracts, if applicable
- Required environmental documentation for CEQA compliance, if applicable
- Copies of required permits, if applicable

Category (c): Implementation / Construction

Task 4. Multi-Completion Monitoring Wells Installation

Install one (1) to two (2) multi-completion monitoring wells. Two (2) to four (4) vertical zones will be installed per well. The final well design including the number of screen intervals, will be based on the HCM, water conditions and available budget. Well location will also be based on an assessment of the HCM, water trends and conditions, and access agreements; however, five (5) possible locations have been identified from a cursory review of available data.

Deliverables:

- Well completion reports
- Bid documents, if applicable
- Notice of award, if applicable
- Notice to proceed, if applicable
- Photos of completed wells
- Well installation report outlining all installation activities and acquired data during installation

Task 5. Shallow Wells and Stream Gages Installation

Install three (3) to four (4) new surface water flow monitoring sites. Each stream gage installed will be paired with three (3) new shallow monitoring wells. The final well design including the depth and the distance of the wells from the stream gages will be based on the HCM, water conditions and available budget. Monitoring site locations will also be based on an assessment of the HCM, data gaps, water trends and conditions, and access agreements; ten (10) possible locations have been selected from a cursory review of data gaps.

Deliverables:

- Well completion reports
- Bid documents, if applicable
- Notice of award, if applicable
- Notice to proceed, if applicable
- Photos of completed wells and stream gages
- Well permits, if applicable
- Surface and groundwater monitoring site summary report outlining all equipment installation activities and data acquired during installation

Category (d): Monitoring / Assessment

Not applicable to this component

Category (e): Engagement / Outreach

Not applicable to this component

COMPONENT 3: Community Monitoring: Domestic Well Survey

Component 3 focuses on improving the understanding of the domestic well conditions in the Subbasin by performing an in-depth review of the domestic wells in the Subbasin and by creating a Community Monitoring Program with dry well tracking. The actions contained in this component consist of four separate tasks, (1) complete a Domestic Well Survey, (2) create a Community Monitoring Program and equip volunteer wells with monitoring equipment, (3) community monitoring and dry well visualization, and (4) community monitoring program engagement and education. In aggregate, these tasks will help expand the understanding of the domestic well conditions in the Subbasin.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders as appropriate. This project is not yet started (0% complete).

Category (a): Component Administration

Not applicable to this component

Category (b): Environmental / Engineering / Design

Not applicable to this component

Category (c): Implementation / Construction

Not applicable to this component

Category (d): Monitoring / Assessment

Task 1. Domestic Well Survey

Perform a desktop survey of existing domestic well dataset to identify wells with poor construction information and wells with a high potential to go dry. Conduct a field visit to the wells identified and confirm use status. Perform well video surveys on wells in-use with poor construction information. Update current dataset of domestic wells with results of the survey including active domestic wells and their construction information.

Deliverables:

- Domestic Well Survey technical memorandum outlining the activities conducted and results of the survey

Task 2. Create Community Monitoring Plan and Equip Volunteer Wells with Monitoring Equipment

Create a monitoring program plan for domestic well owners. The plan will include methods for outreach and engagement, identifying and meeting education needs, identifying methods for data management, and how the plan will be implemented. Purchase necessary monitoring equipment to track water levels in 8 domestic wells. Engage with domestic well owners who have volunteered to participate and install equipment necessary for monitoring.

Deliverables:

- Community Monitoring Plan
- Well monitoring equipment invoices

Task 3. Community Monitoring and Dry Well Data and Visualization

Enhance the existing DMS to house the water levels collected as part of the community monitoring program and to track dry wells. Include the capability for the DMS to report on the status of subbasin sustainability for interested parties. Develop a system for verifiably reporting and tracking dry wells. Create a user interface with new or existing front-end software needed to visually communicate the water levels and dry wells.

Deliverables:

- Electronic-link to the updated DMS and visualizations hosted on the Vina GSA website

Category (e): Engagement / Outreach

Task 4. Community Monitoring Program Engagement and Education

Perform public engagement through workshops designed to educate participants in the community monitoring program and how to use the installed monitoring equipment including how to upload the data to the DMS. Inform interested parties about implementation progress through continued GSP-related outreach, relevant reports, and data. Develop public information materials to be distributed informing the public of the program and how they can participate. Hold workshops to discuss the program and hear the suggestions, questions, and concerns of the community.

Deliverables:

- Workshop agenda and information materials

COMPONENT 4 – GSP Implementation and Compliance Activities

Component 4 includes continued stakeholder engagement and community outreach activities, the development of a funding plan, the preparation of annual reports, modifying the GSP to respond to the anticipated DWR determination letter, and initial preparation of the five-year GSP evaluation and update. The public and interested parties will be informed of this project development and progress through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. Efforts have begun on Task 1 for Long-term financing and Task 2 for the 2022 Annual Report. This project is in its initial stages (<1% complete).

Category (a): Component Administration

Not applicable to this component

Category (b): Environmental / Engineering / Design

Task 1: Conduct a Fee Study for Long-term Financing of the Vina GSA

Conduct long term financing options study for funding the Vina GSA for GSP implementation activities. This will include an Engineers Report and/or Fee Study resulting in a selected funding mechanism for the Vina GSA. Vina GSA will evaluate a variety of funding mechanisms, including Proposition 218 or Proposition 26, to support ongoing operational costs and to fund agency operations.

Deliverables:

- Fee Study or Engineers Report, as appropriate

Category (c): Implementation / Construction

Not applicable to this component

Category (d): Monitoring / Assessment

Task 2: Prepare Annual Reports

Prepare four (4) annual reports, as required by DWR, during the life of the grant, consisting of the following sections: Executive Summary, Introduction, Updated Groundwater Conditions, Water Supply and Use, and Plan Implementation Status.

Deliverables:

- Annual Reports for Water Years 2022, 2023, 2024, and 2025

Task 3: Response to DWR GSP Determination

Modify the GSP, as required, in response to DWR's determination letter, expected to be received by late 2023. Include coordination and technical support to respond to DWR's requests in a timely, organized, and adequate manner, including coordination calls with DWR representatives and developing written responses to comments on the GSP provided by DWR.

Deliverables:

- Amended GSP submitted to DWR

Task 4: Five-Year GSP Evaluation Report

Develop an updated version of the GSP for submittal to DWR in January 2027, as part of the required 5-year update. This task will culminate in an initial draft of the GSP update by the end of the grant agreement.

Deliverables:

- Initial draft GSP Update report
- Board meeting presentations on GSP evaluation and update progress and findings

Category (e): Engagement / Outreach

Task 5: Stakeholder Outreach

Perform stakeholder outreach and engagement for fee study and during development of GSP evaluation report through meetings of the Vina Stakeholder Advisory Committee, the Vina GSA Board, public workshops and dissemination of information electronically or in hard copy form, as appropriate.

Deliverables:

- Meeting agenda and presentation materials

COMPONENT 5 – Inter-basin Coordination Activities

Component 5 includes inter-basin coordination activities that will assist in the feasibility of GSP implementation to achieve regional groundwater sustainability. In particular, this component will gather and evaluate data, and develop an approach for interconnected surface water SMC by coordinating with neighboring GSAs, as well as jointly evaluating GSPs in the North Sacramento River Corridor for discrepancies and areas of better information sharing and collaboration to improve future GSP updates. In addition, the Butte Basin Groundwater Model will be updated and used for Vina Subbasin and inter-basin coordination analysis as well.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. Subbasin stakeholders will be updated regularly on inter-basin coordination efforts and will be engaged during GSP evaluations and ISW SMC development to receive consensus on the approach. This project is not yet started (0% complete).

Category (a): Component Administration

Not applicable to this component

Category (b): Environmental / Engineering / Design

Not applicable to this component

Category (c): Implementation / Construction

Not applicable to this component

Category (d): Monitoring / Assessment

Task 1: Gather, Evaluate Data, and Develop Approach for Interconnected Surface Water Sustainable Management Criteria (ISW SMC)

Activities will include regional coordination and technical work toward refining the SMC for Interconnected Surface Water to address expected DWR comments on the Vina GSP related to the technical approach for the use of groundwater levels as proxies for measurable objectives and minimum thresholds in GSP. This task will use new data to fill initial data gaps (as expanded by Component 2) and develop a refined approach to set the Interconnected Surface Water SMC for the updated GSP.

Deliverables:

- Technical Memorandum summarizing the data evaluation and including updated interconnected surface water maps and analysis, and detailing the approach used to set ISW SMC in the Vina GSP

Task 2: Inter-basin Coordination - Conducting Joint Analysis and Evaluation of GSPs

Evaluate and compare contents of GSPs in the North Sacramento River Corridor region with a focus on establishing a common understanding of basin conditions at boundaries. Identify significant differences, uncertainties, and potential issues of concern related to groundwater interaction at the boundaries. Engage in analysis and evaluation of SMCs between GSPs to identify significant differences and possible impacts between subbasins that could potentially lead to undesirable results.

Deliverables:

- Technical Memorandum summarizing similarities and discrepancies identified during GSP analysis and evaluation, with tables and maps to showcase information and recommendations for revisions in the five-year GSP evaluation.

Task 3: Update Butte Basin Groundwater Model (BBGM)

Update the BBGM aquifer parameter values and refine the calibration using new data to better represent the aquifer's water budget, to improve understanding of the hydrogeology, inform future refinements to the hydrogeologic conceptual model, help identify potential areas for recharge, or quantify benefits of potential implementation projects. Plan to incorporate data from DWR's Airborne Electromagnetic surveys to integrate basin-specific and cross-basin geophysical

data. Improve model boundary conditions. Address potential model limitations identified in the GSP and by analysis conducted in Task 2, including the need for additional hydrogeological conceptualization and incorporating future data into model calibration.

Deliverables:

- Updated Model Documentation Report

Category (e): Engagement / Outreach

Task 4: Stakeholder Outreach

Update Subbasin stakeholders regularly on inter-basin coordination efforts and engage stakeholders during GSP evaluations and ISW SMC development to receive input and pursue a consensus on approach.

Deliverables:

- Meeting agendas and presentation materials

COMPONENT 6: Extend Orchard Replacement Program

This component is a demand-side intervention aimed at extending the fallowing period of an orchard from one to two years during orchard replacement. This practice will reduce consumptive use (*i.e.*, evapotranspiration or ET) of groundwater. The reductions in ET are obtained by having one or two additional low ET years at the beginning of the orchard life cycle. First, this component will involve the quantification of potential water savings and required incentive costs for implementing the Extend Orchard Replacement Program. Once costs (\$/acre) and benefits (AF/acre) are known, a pilot project plan will be developed. This will be followed by a two-year pilot project implementation involving as many acres as possible. The number of acres involved in the pilot project will depend on the magnitude of the required incentives. Finally, based on the results of the pilot project, a final long-term action plan for the program will be developed, including exploration of sustainable funding options.

The public and interested parties will be informed of this project development and progress through regular Stakeholder Advisory Committee Meetings, special project workgroup meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. Targeted outreach will be conducted as needed. This project has not yet begun (0% complete).

Category (a): Component Administration

Task 1. Component Administration and Management

- Perform component administration tasks
- Facilitate component coordination meetings
- Develop component quarterly progress reports

Deliverables:

- Quarterly component progress reports

Category (b): Environmental / Engineering / Design

Task 2. Develop Extend Orchard Replacement Pilot Program

- Quantify required incentive amounts (\$ / acre)
- Quantify potential water savings (acre-feet (AF) / acre)
- Develop extend orchard replacement pilot program

Deliverables:

- Extend orchard replacement pilot program technical memorandum (TM) for the Vina Subbasin

Category (c): Implementation / Construction

Task 3: Implement Extend Orchard Replacement Pilot Program

- Identify willing growers and lands for pilot implementation
- Apply incentive process developed in the pilot program TM

Deliverables:

- TM summarizing results and recommendations of extend orchard replacement pilot program

Category (d): Monitoring / Assessment

Task 4: Monitoring and Assessment

- Monitor fallowed fields to quantify reductions in ET
- Analyze results of extend orchard replacement pilot program (i.e. estimate of reduced ET)
- Quantify subbasin-wide opportunities for reductions in ET from extend orchard replacement program
- Monitoring data will be added to the DMS and summarized in the annual reports.

Deliverables:

- TM quantifying subbasin-wide opportunities for reductions in ET from extend orchard replacement program

Category (e): Engagement / Outreach**Task 5: Stakeholder Engagement, Education, and Outreach**

- Facilitate stakeholder kick-off meeting to describe the program
- Develop education and outreach materials including videos on the Extend Orchard Replacement Program
- Plan and implement education and outreach events related to Extend Orchard Replacement Program targeting growers, URCs, SDACs, and youth

Deliverables:

- Outreach materials such as online videos about the Extend Orchard Replacement Program and the relationship between growing crops (biomass) and water consumption (ET)
- Kick-off, and regular outreach meeting agendas, notes, and action items

COMPONENT 7 – Lindo Channel Surface Water Recharge Implementation

Component 7 will provide multiple benefits to the area in the City of Chico that is experiencing groundwater level declines by supporting increased groundwater recharge while reducing potential flooding within the City. Recharging excess flows from Big Chico Creek via the unlined, natural Lindo Channel will help improve groundwater levels for domestic well users and support Big Chico Creek groundwater dependent ecosystems. Monitoring wells will be installed near the Lindo Channel to assess changes in water levels during and after a stormwater recharge event.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders as needed. This project is not yet started (0% complete).

Category (a): Component Administration

Not applicable to this component

Category (b): Environmental / Engineering / Design

Task 1: Refine Scope and Design Project

Develop the flow threshold for diversion, based on water rights, habitat, and downstream beneficial users, compute expected recharge yield, and evaluate if there are any infrastructure or stream improvement needs related to the current diversion or channel. Test percolation rates. Design the project implementation plan. Assess environmental permitting needs.

Deliverables:

- Report summarizing the project feasibility investigation, refined scope and initial design
- Environmental permitting documentation, as necessary

Category (c): Implementation / Construction

Task 2: Implement the Lindo Channel Recharge Project

Coordinate with DWR and Department of Fish and Wildlife. Perform any maintenance needed on Lindo Channel such as sediment removal on the north side of the channel, to allow for better flow. Implement stormwater flow diversions into Lindo Channel per initial design requirements.

Deliverables:

- Final design of project including channel rehabilitation and maintenance plan, and diversion structure needs

Task 3: Install Monitoring Network

Install shallow well and stream gage monitoring network to quantify project benefits and assess potential impacts.

Deliverables:

- Monitoring network installation report, attached to final design report

Category (d): Monitoring / Assessment

Not applicable to this component. Monitoring for the project will be conducted with other funds.

Category (e): Engagement / Outreach

Task 4: Stakeholder Outreach

Conduct public meetings and prepare documentation for outreach to stakeholders and interested parties, including Chico area residents, the City of Chico, Butte County, Cal Water, selected State and federal resource agency representatives and downstream water users.

Deliverables:

- Meeting agenda and presentation materials

COMPONENT 8: Agricultural Surface Water Supplies Feasibility Analysis

Component 8, Agricultural Surface Water Supplies Feasibility Analysis, focuses on assessing the feasibility of increasing surface water supplies for agriculture in the Vina Subbasin.

This component will be implemented through the completion of four tasks: 1) component administration will support the project, 2) Project development and initial screening to identify fatal flaws, 3) feasibility analysis on two projects with reconnaissance-level project designs, 4) stakeholder engagement, education, and outreach

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, project workgroup meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders and partner agencies as needed. This project is not yet started (0% complete).

Category (a): Component Administration

Task 1. Component administration and management

- Perform component administration tasks
- Facilitate component coordination meetings
- Develop component quarterly progress reports

Deliverables:

- Quarterly component progress reports

Category (b): Environmental / Engineering / Design

Task 2. Develop projects and perform initial screening

- Develop conceptual projects list
- Perform initial screening (*i.e.*, fatal flaws analysis)
- Select two most promising projects in consultation with stakeholders and GSAs

Deliverables:

- Presentation and meeting materials for GSA Boards/Advisory Committee on initial project screening and project selection

Task 3. Perform and document two project feasibility analyses

- Identify and evaluate water conveyance and place of use options
- Identify and evaluate environmental concerns
- Identify and evaluate financing options
- Identify and evaluate water rights concerns
- Develop reconnaissance-level project designs and cost estimates
- Quantify cost-benefit ratio of projects in terms of \$ / AF
- Develop feasibility report for two projects analyzed

Deliverables:

- Feasibility report summarizing results for two projects (including cost-benefit results) with reconnaissance-level project designs and cost estimates for two project feasibility analyses

Category (c): Implementation / Construction

Not applicable to this component.

Category (d): Monitoring / Assessment

Not applicable to this component.

Category (e): Engagement / Outreach

Task 4. Stakeholder engagement, education, and outreach

- Plan and facilitate project feasibility meetings for two selected projects
- Develop education and outreach materials for two selected projects

Deliverables:

- Outreach materials such as written materials and online videos about two project concepts
- Project stakeholder meeting agendas and meeting summaries

COMPONENT 9: Agricultural Irrigation Efficiency Pilot Program and Education

The overall goal of this component is to improve subbasin sustainability related to groundwater levels and groundwater storage by decreasing consumptive use (*i.e.*, evaporation and transpiration or ET) by applying ET-based water management principles of precision irrigation and ET monitoring. This component will leverage education and outreach, a feasibility study involving piloting of innovative technologies, and development of a precision irrigation implementation plan to improve ET-based water management at a broader scale in the Vina Subbasin.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, project workgroup meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders and potential participants as needed. This project is not yet started (0% complete).

Category (a): Component Administration

Task 1. Component Administration and Management

- Perform component administration tasks
- Facilitate component coordination meetings
- Develop component quarterly progress reports

Deliverables:

- Quarterly component progress reports

Category (b): Environmental / Engineering / Design

Task 2. Develop Precision Irrigation Piloting Program

- Perform comprehensive field-scale ground-based inventory of irrigation methods, crops, and water sources in the Vina Subbasin
- Review state of the art precision irrigation technology
- In consultation with stakeholders and researchers, select the most appropriate precision irrigation technology
- Develop precision irrigation piloting program for the Vina Subbasin, including summary of ground-based inventory

Deliverables:

- Precision irrigation pilot program technical memorandum (TM) for the Vina Subbasin, including summary of ground-based inventory

Category (c): Implementation / Construction

Task 3. Implement Precision Irrigation Pilot Program

- Implement precision irrigation pilot program together with agricultural and academic partners
- Disseminate remotely sensed ET to Vina Subbasin agricultural stakeholders within the Vina Subbasin

Deliverables:

- TM summarizing implementation of precision irrigation pilot program in the Vina Subbasin

Category (d): Monitoring / Assessment

Task 4. Analyze Results of Precision Irrigation Pilot Program

- Analyze results of precision irrigation pilot programs from both a technical and stakeholder perspective

- Quantify subbasin-wide opportunities for reductions in ET from precision irrigation
- Make recommendations for future applications

Deliverables:

- TM summarizing results and recommendations of precision irrigation pilot program
- TM quantifying subbasin-wide opportunities for reductions in ET from precision irrigation

Category (e): Engagement / Outreach

Task 5: Stakeholder Engagement, Education, and Outreach

- Facilitate meetings
- Develop education and outreach materials including videos and podcasts on precision irrigation
- Plan and implement education and outreach events targeting growers, URCs, DACs, SDACs, and youth
- Plan and implement precision irrigation event in partnership with stakeholders and academics

Deliverables:

- Outreach materials such as fliers, online videos
- Outreach meeting agendas and materials

COMPONENT 10: Groundwater Recharge Feasibility Analysis and Site Evaluation

Component 10 consists of performance of a feasibility analysis to design and implement a phased groundwater recharge plan that considers previous studies and efforts to determine the most efficient and effective path forward to increase recharge in the Vina subbasin. This component will build upon previous studies and pilot projects for groundwater recharge in the area. Key considerations for groundwater recharge projects will include site feasibility, water availability, water rights, water supply cost and certainty, legal implications of recharge, opportunities for partnership, funding sources, optimal methods of recharge, multi-benefits, and consistency with achieving the sustainability goals for the Subbasin. The data collected will help interested parties throughout the subbasin to determine the feasibility for groundwater recharge and support future project design. The results of this analysis will be used to identify potential areas for recharge and/or recharge projects for implementation. The project also includes one (1) groundwater recharge investigation of an anticipated 80-acre facility for use in developing preliminary design plans and specifications for one project to be implemented.

The public and interested parties will be informed of the activities associated with this component through regular Stakeholder Advisory Committee Meetings, project workgroup meetings, meetings of the GSA Boards, public workshops, and regular email correspondence to the interested parties list, similar to the approach taken during GSP development. In addition, targeted outreach will be conducted to stakeholders and landowners as needed. This project is not yet started (0% complete).

Category (a): Component Administration

Task 1: Component Administration and Management

Prepare reports detailing work completed during reporting period. Quarterly invoices will accompany the Quarterly Progress Reports and will be submitted to the DWR Grant Manager for review to receive reimbursement of Eligible Project Costs. Develop all necessary documents to secure a contractor for one or more components (i.e. request for proposals). Facilitate selection committee to review proposals, select a contractor and award the contract(s).

Prepare the Draft Component Completion Report and submit to the DWR Grant Manager for comment and review 90 days before the end date of the Component. Prepare a Final Component Completion Report addressing the DWR Grant Manager's comments within 30 days before the Component end date. All deliverables listed within the Work Plan shall be submitted with each Final Component Completion Report unless a new deliverable due date was approved by the DWR Grant Manager.

Deliverables:

- Quarterly Progress Reports, Quarterly Invoices, and all required backup documentation
- Bid documents, as appropriate
- Executed contract, as appropriate
- Draft and Final Component Completion Reports

Category (b): Environmental / Engineering / Design

Task 2: Feasibility Analysis and Project Identification

This task includes the following:

- Obtain information from stakeholders regarding potential recharge projects that could be completed within the short term. Review proposed projects within the Vina Subbasin GSP and existing studies including the 2018 Evaluation of Restoration and Recharge within Butte County Groundwater Basins, 2022 Rock Creek Reclamation District Sand Creek Flood Mitigation and Recharge Project, and other relevant studies. Review the results of the airborne electromagnetic (AEM) survey conducted in the Subbasin
- Conduct site visits and outreach with project proponents, landowners, and relevant water purveyors to gather additional details, discuss feasibility for conducting recharge during the 2023/2024 water year, and assess potential fatal flaws.
- Conduct a cost-benefit analysis that assesses access to water supplies, water rights, conveyance, costs, reliability, average recharge potential (acre-feet), geographical zones of benefit, and beneficiaries of groundwater recharge, monitoring costs, and operation and maintenance costs.

The results of these assessments will be documented in a Report that will include at least one site for a groundwater recharge investigation and descriptions of projects analyzed, results of cost benefit analysis, outreach conducted, project

benefits, consistency with subbasin minimum thresholds and measurable objectives, steps for implementation, and funding for the project.

Deliverables:

- Feasibility Report with Project Prioritization List

Task 2: Legal Implications of Recharge Analysis

This task will assess and address the legal implications associated with actively managing recharge water in the Vina subbasin. Legal implications that would be addressed include identifying: the beneficial use(s) of the water, limitations of subsequent recovery and use, “leave behind” requirements, appropriate water right permit, terms of recharge or storage, water availability for overlying groundwater users, in-lieu recharge assumptions, CEQA requirements, and monitoring and reporting requirements.

Deliverables:

- Legal Implications of Recharge Analysis Report
- Recharge project review and approval process
- Prepare Memorandum of Understanding, Policy Document, and/or Ordinance for recharge project, as applicable

Task 3: Groundwater Recharge Investigation and Preliminary Design

This task includes performance of a groundwater recharge investigation to identify the groundwater recharge potential at selected site from Task 1. The selected site is anticipated to be up to 80 acres in size with the investigation to include a towed electromagnetic system (tTEM) or equivalent geophysical method survey, approximately 15 cone penetrating tests (CPT), 4 exploratory borings, and collection of groundwater and soil samples for physical and chemical testing.

The data collected from the investigation will be used to help stakeholders determine if the selected site is feasible for groundwater recharge and provide the data needed for development of the preliminary design document.

Deliverables:

- Groundwater Recharge Investigation Report
- Preliminary Design Report

Category (c): Implementation / Construction

Not applicable to this Component

Category (d): Monitoring / Assessment

Not applicable to this Component

Category (e): Engagement / Outreach

Task 4: Stakeholder Engagement, Education, and Outreach

The purpose of the public outreach task is to educate regional and county decision makers and the public about the objectives, progress, and results of the groundwater recharge assessments and designs. The task will include 2 public meetings, 3 meetings with an advisory group, and 3 meetings with the Vina Subbasin GSAs.

Deliverables

- Meeting presentations and handouts

C. Budget

Upon initiating the SGM Grant Program application process, the Vina GSA Stakeholder Advisory Committee (SHAC) in coordination with the management committee compiled the data needs and projects identified in the GSP that would be further developed for potential inclusion in the grant application. That process resulted in the refinement of 12 projects that were scoped and ranked with an original estimated budget of \$18,906,250. During a joint session of the Vina GSA and RCRD GSA Board of Directors, the GSAs reduced the scope of the projects and narrowed the focus to specific tasks for each component, thereby incrementally reducing the budgets for each project. The overall number of components and budget was reduced to ten (1) and \$5,535,000, respectively.

It was important to the GSAs that the application include a diverse portfolio of projects that would allow the GSAs to work toward sustainability through projects that filled data gaps and focused on conservation, water supply, recharge, and land management. In addition, the GSAs anticipate that they will pursue additional funding opportunities for the other aspects of these projects that have not been included in this application. Other funding sources may include drought relief grant programs and the long-term funding mechanism being developed by the Vina GSA.

Provided below is a justification for proposed budgets for each component.

Component 1: Grant Administration

The total Grant Amount requested is \$200,000. Assuming that all of the proposed components are funded, this budget estimate is less than 5% of the total budget and would be specific to administering the grant over the course of three years, as described in the Work Plan. It should be noted that four other components 6, 8, 9, 10 also include Grant Agreement Administration budgets; these projects are implementation projects that will require additional oversight and management by the grantee.

Component 2: Monitoring Network Enhancements

The total Grant Amount requested is \$400,000. It was determined during the joint GSA Boards meeting that enhancing the monitoring network would provide the much needed data to fill data gaps and improve the understanding of the hydrogeology and hydrology of the subbasin. The Implementation/Construction Budget Amount addresses the component objective, which is to install new wells and stream gages that will supplement the existing monitoring for both groundwater and surface water conditions.

Component 3: Community Monitoring: Domestic Well Survey

The total Grant Amount requested is \$100,000. The goals of this component are to fill data gaps identified in Section 4.10 of the GSP relating to domestic well depths and engage and educate stakeholders by developing a community monitoring program. The proposed Monitoring / Assessment Budget addresses the component objectives, which are 1) verify domestic well use/status, 2) investigate domestic well construction by performing video surveys on wells with poor construction data, 3) engage the public to create a community monitoring program, 4) equip participating domestic wells with monitoring equipment, and 5) create and maintain a database to track (over the implementation period) both groundwater levels and wells that go dry or are at risk of going dry.

Component 4: GSP Implementation and Compliance Activities

The total Grant Amount requested is \$660,000. The five component tasks will help fulfill the sustainability goals of the subbasin while maintaining SGMA compliance, enhancing the objective of subbasin-wide agreement to sustainability, and fulfilling immediate funding needs for longer-term strategic and technical support. The Environmental / Engineering / Design Budget Amount includes conducting a Fee Study for Long-term Financing, which will require the services of an engineering consultant to prepare the Engineer's Report as well as extensive Engagement/Outreach. The Monitoring / Assessment Budget, the largest cost of this component includes utilizing consultant services to assist the GSAs with the preparation of annual reports, responding to DWR comments on the GSP, and initiation of the 5-year GSP Update Report.

Component 5: Inter-basin Coordination Activities

The total Grant Amount requested is \$450,000. This planning component analyzes information to fill data gaps, supports inter-basin coordination with neighboring GSAs, and benefits all stakeholders and groundwater users in the Vina Subbasin, since the three tasks consist of subbasin-wide activities. The Monitoring / Assessment and Engagement / Outreach tasks are crucial for the continued success of GSP implementation to reach sustainability in the Vina Subbasin and throughout the Sacramento Groundwater Basin, by 1) developing an approach to fill ISW SMC data gaps and setting revised SMC in coordination with other Sacramento Valley GSAs, 2) conducting a joint analysis and evaluation of GSPs

across subbasins to ensure consistency across boundary lines to avoid undesirable results across neighboring subbasins, and 3) updating the groundwater model to ensure up-to-date data are included for GSP implementation.

Component 6: Extend Orchard Replacement

The total Grant Amount requested is \$1,500,000. The goal of this component is to reduce overall groundwater pumping demand from the Vina Subbasin through increased land fallowing. The Implementation / Construction Budget Amount, the largest cost for this component, would allow the GSAs to implement a pilot program by identifying and engaging willing growers to fallow land for an additional year.

Component 7: Lindo Channel Surface Water Recharge Implementation

The total Grant Amount requested is \$350,000. The goal of this component is to increase recharge in an area of the subbasin that has experienced groundwater level declines, thereby increasing groundwater levels, minimize potential flood impacts, support groundwater dependent ecosystems, and improve the interface between groundwater and streams. The overall budget reflects the project objectives, which are 1) to better assess the minimum required flow in Big Chico Creek and resulting potential volumes of water available for diversion into Lindo Channel and to better assess the volume of groundwater recharge that could be achieved, and 2) implement the recharge project with shallow water level monitoring to assess its effects on groundwater.

Component 8: Agricultural Surface Water Supplies Feasibility Analysis

The total Grant Amount requested is \$275,000. The goal of this component is to increase surface water supplies available to meet both agricultural and urban water demands. The Environmental / Engineering / Design budget category reflects the objectives of the project, which is to identify and refine the feasibility of two agricultural surface water supply projects for the Vina Subbasin. The need for this project is to address 10,000 AF per year groundwater budget deficit and the cumulative reduction in storage that has occurred over the last 20 years.

Component 9: Agricultural Irrigation Efficiency Pilot Program and Education

The total Grant Amount requested is \$1,000,000. This component aims to reduce non-beneficial ET and will address MOs and MTs related to groundwater levels, storage, and the depletion of interconnected surface waters. The Budget Categories and corresponding Grant Amounts reflect the goal of this component, which is to identify precision irrigation techniques that can be used to decrease non-beneficial ET. The objectives are to identify, pilot test, and provide recommendations for precision irrigation monitoring tools like micro-tensiometers and remote sensing.

Component 10: Groundwater Recharge Feasibility Analysis and Site Evaluation

The total Grant Amount requested is \$600,000. The goal of this component is to develop a prioritization list of groundwater recharge projects that can be timely implemented and optimize beneficial uses throughout the subbasin by reducing groundwater level declines and increasing groundwater storage. The Environmental / Engineering / Design Budget Amount implements the primary objective of the component, which is to identify at least one (1) site to conduct a groundwater recharge investigation (geophysical survey) and develop a preliminary design for a groundwater recharge project to be implemented in the future. This component is needed to refine the locations of potential groundwater recharge projects within the basin and will provide critical data to assess the types of groundwater recharge methods that will be successful in the basin based on the unique hydrogeological characteristics. Engagement / Outreach will also take into account the potential users and uses that would directly benefit from recharge, including, but not limited to, GDEs, domestic well users, and small community water systems.

Table 1a: Budget Summary**Grant Title: Vina Subbasin GSP Projects and Management Actions Implementation****Grantee: Vina Groundwater Sustainability Agency**

Components	Grant Amount
Component 1: Grant Administration	\$ 200,000.00
Component 2: Monitoring Network Enhancements	\$ 400,000.00
Component 3: Community Monitoring: Domestic Well Survey	\$ 100,000.00
Component 4 : GSP Implementation and Compliance Activities	\$ 660,000.00
Component 5 : Inter-basin Coordination Activities	\$ 450,000.00
Component 6 : Extend Orchard Replacement Program	\$ 1,500,000.00
Component 7 : Lindo Channel Surface Water Recharge Implementation	\$ 350,000.00
Component 8 : Agricultural Surface Water Supplies Feasibility Analysis	\$ 275,000.00
Component 9 : Agricultural Irrigation Efficiency Pilot Program and Education	\$ 1,000,000.00
Component 10 : Groundwater Recharge Feasibility Analysis and Site Evaluation	\$ 600,000.00
Total:	\$ 5,535,000.00

Table 1b: Component Budget Summaries

Component 1: Grant Agreement Administration

Component serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Grant Agreement Administration	\$ 200,000.00
(b) Environmental / Engineering / Design	
(c) Implementation / Construction	
(d) Monitoring / Assessment	
(e) Engagement / Outreach	
Total:	\$ 200,000.00

Component 2: Monitoring Network Enhancements

Component 2 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	
(b) Environmental / Engineering / Design	\$ 50,000.00
(c) Implementation / Construction	\$ 350,000.00
(d) Monitoring / Assessment	
(e) Engagement / Outreach	
Total:	\$ 400,000.00

Component 3: Community Monitoring: Domestic Well Survey

Component 3 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	
(b) Environmental / Engineering / Design	
(c) Implementation / Construction	
(d) Monitoring / Assessment	\$ 92,500.00
(e) Engagement / Outreach	\$ 7,500.00
Total:	\$ 100,000.00

Component 4: GSP Implementation and Compliance Activities

Component 4 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	
(b) Environmental / Engineering / Design	\$ 80,000.00
(c) Implementation / Construction	
(d) Monitoring / Assessment	\$ 530,000.00
(e) Engagement / Outreach	\$ 50,000.00
Total:	\$ 660,000.00

Component 5: Inter-basin Coordination Activities

Component 5 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	
(b) Environmental / Engineering / Design	
(c) Implementation / Construction	
(d) Monitoring / Assessment	\$ 410,000.00
(e) Engagement / Outreach	\$ 40,000.00
Total:	\$ 450,000.00

Component 6: Extend Orchard Replacement Program

Component 6 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	\$ 50,000.00
(b) Environmental / Engineering / Design	\$ 150,000.00
(c) Implementation / Construction	\$ 1,100,000.00
(d) Monitoring / Assessment	\$ 100,000.00
(e) Engagement / Outreach	\$ 100,000.00
Total:	\$ 1,500,000.00

Component 7: Lindo Channel Surface Water Recharge Implementation

Component 7 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	
(b) Environmental / Engineering / Design	\$ 200,000.00
(c) Implementation / Construction	\$ 100,000.00
(d) Monitoring / Assessment	
(e) Engagement / Outreach	\$ 50,000.00
Total:	\$ 350,000.00

Component 8: Agricultural Surface Water Supplies Feasibility Analysis

Component 8 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	\$ 25,000.00
(b) Environmental / Engineering / Design	\$ 225,000.00
(c) Implementation / Construction	
(d) Monitoring / Assessment	
(e) Engagement / Outreach	\$ 25,000.00
Total:	\$ 275,000.00

Component 9: Agricultural Irrigation Efficiency Pilot Program and Education

Component 9 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	\$ 50,000.00
(b) Environmental / Engineering / Design	\$ 150,000.00
(c) Implementation / Construction	\$ 500,000.00
(d) Monitoring / Assessment	\$ 200,000.00
(e) Engagement / Outreach	\$ 100,000.00
Total:	\$ 1,000,000.00

Component 10: Groundwater Recharge Feasibility Analysis and Site Evaluation

Component 10 serves a need of a DAC, SDAC, Tribe and/or Underrepresented Community?

(check all that apply): ☒DAC, ☒SDAC, ☒Tribe, and/or ☒Underrepresented Community

Budget Categories	Grant Amount
(a) Component Administration	\$ 15,000.00
(b) Environmental / Engineering / Design	\$ 540,000.00
(c) Implementation / Construction	
(d) Monitoring / Assessment	
(e) Engagement / Outreach	\$ 45,000.00
Total:	\$ 600,000.00

Table 2 – Ranking of Proposed Components

Rank	Name	SJV Funds Component Requirement	Readiness	Partnerships with Non-Profits, Non-Governmental Organizations (NROs), and/or Colleges/Universities	Benefactors	Cost
<i>Rank in order of importance with 1 being most important. Do not use rank # more than once each.</i>	<i>Provide a name for each proposed component.</i>	<i>Please check box if the component is eligible for SJV-funds</i>	<i>Please check if the component will be under construction by the end of 2023</i>	<i>Please list all partnering agencies that are collaborating on a component with the estimate amount of funding being provided to the nonprofit(s), NGO(s), and/or college(s)/ university (-ies)</i>	<i>Does this component benefit any of the following communities ? (Check all that apply)</i>	<i>Provide a cost estimate for the total component cost. Round to nearest hundred.</i>
1	Grant Administration	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 200,000
2	Monitoring Network Enhancements	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 400,000
3	Community Monitoring: Domestic Well Survey	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 100,000
4	GSP Implementation and Compliance Activities	<input type="checkbox"/>	<input type="checkbox"/>	Butte County	<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 660,000
5	Inter-basin Coordination Activities	<input type="checkbox"/>	<input type="checkbox"/>	Neighboring GSAs, Butte County	<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 450,000
6	Extend Orchard Replacement Program	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 1,500,000
7	Lindo Channel Surface Water Recharge Implementation	<input type="checkbox"/>	<input type="checkbox"/>	City of Chico	<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 350,000
8	Agricultural Surface Water Supplies Feasibility Analysis	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 275,000
9	Agricultural Irrigation Efficiency Pilot Program and Education	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 1,000,000

10	Groundwater Recharge Feasibility Analysis and Site Evaluation	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> Tribe(s) <input checked="" type="checkbox"/> URC(s) <input checked="" type="checkbox"/> SDAC(s)	\$ 600,000
					Total Cost:	\$ 5,535,000

D. Schedule

The following components are likely to have required environmental compliance and permitting:

Component 2: Monitoring Network Enhancements. This component identifies the installation of monitoring wells and stream gages. Typically the installation of equipment for information/data collection is exempt from the California Environmental Quality Act (CEQA). The CEQA Guidelines will be reviewed to determine the appropriate environmental documentation, likely a Notice of Exemption, which would be filed prior to the initiation of construction activities. The project proponent will work with the Butte County Division of Environmental Health to obtain the appropriate permit and notifications for monitoring well installation. Depending on the location of monitoring infrastructure, landowner access agreements may be necessary.

Component 7: Lindo Channel Surface Water Recharge Implementation. As part of Task 1 would be an assessment of environmental analysis and regulatory permitting that would be needed for implementation of the component. However, it is anticipated that CEQA environmental documentation would be required, likely resulting in a Mitigated Negative Declaration. Other potential regulatory permits that may be needed include: Streambed Alteration Agreement, Clean Water Act Section 404 Nationwide Permit and 401 Water Quality Certification, and Central Valley Flood Protection Board Encroachment Permit. Depending on the location of monitoring infrastructure, landowner access agreements may be necessary.

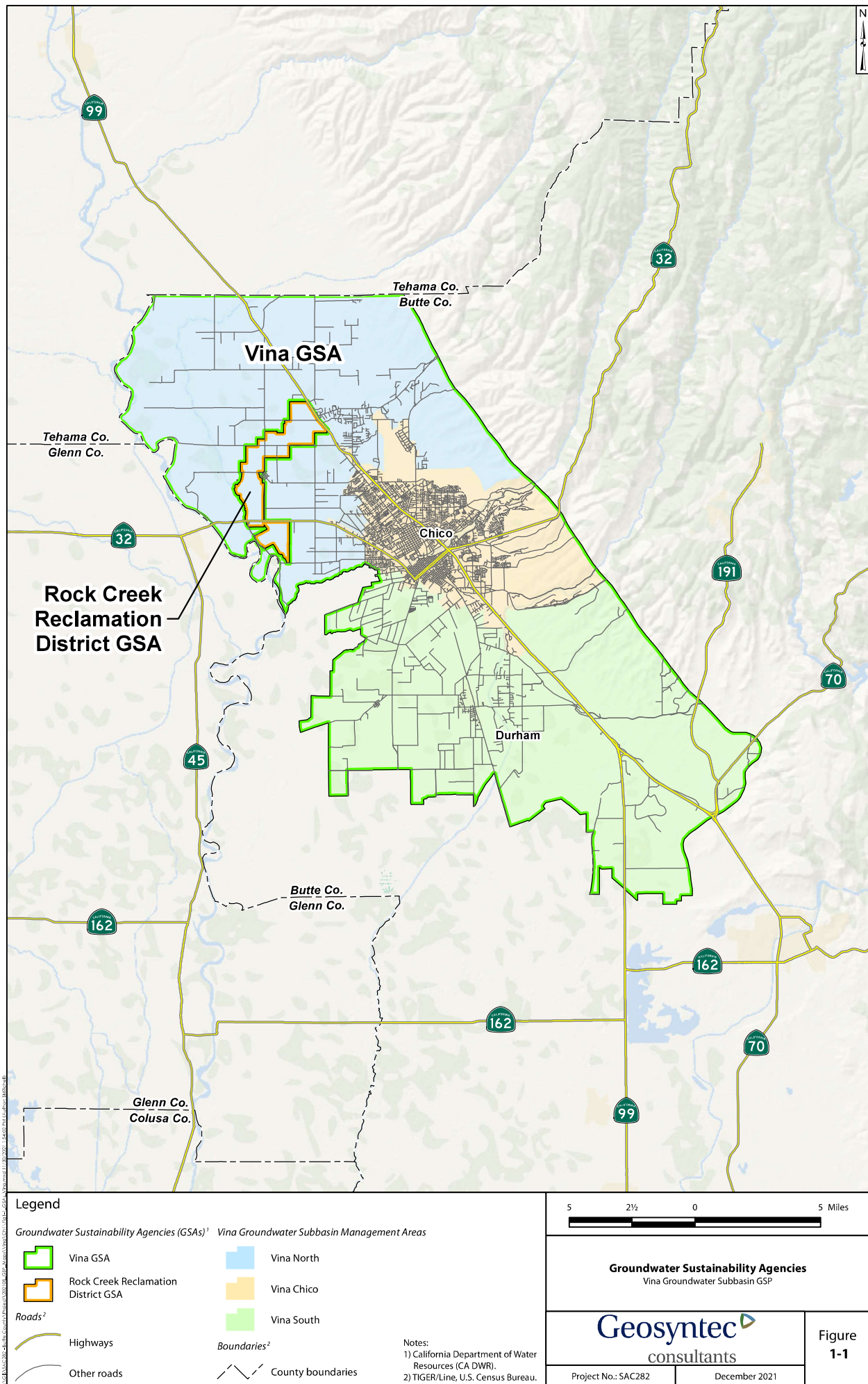
Component 10: Groundwater Recharge Feasibility Analysis and Site Evaluation. Depending on the type of pilot program that would result from the feasibility analysis, and the location of preliminary study activities (i.e., exploratory boring) the project could result in ground disturbing activities and thus would be subject to CEQA and would likely result in the preparation of a Mitigated Negative Declaration. Other entitlements are not anticipated. Landowner access agreements would likely be necessary.

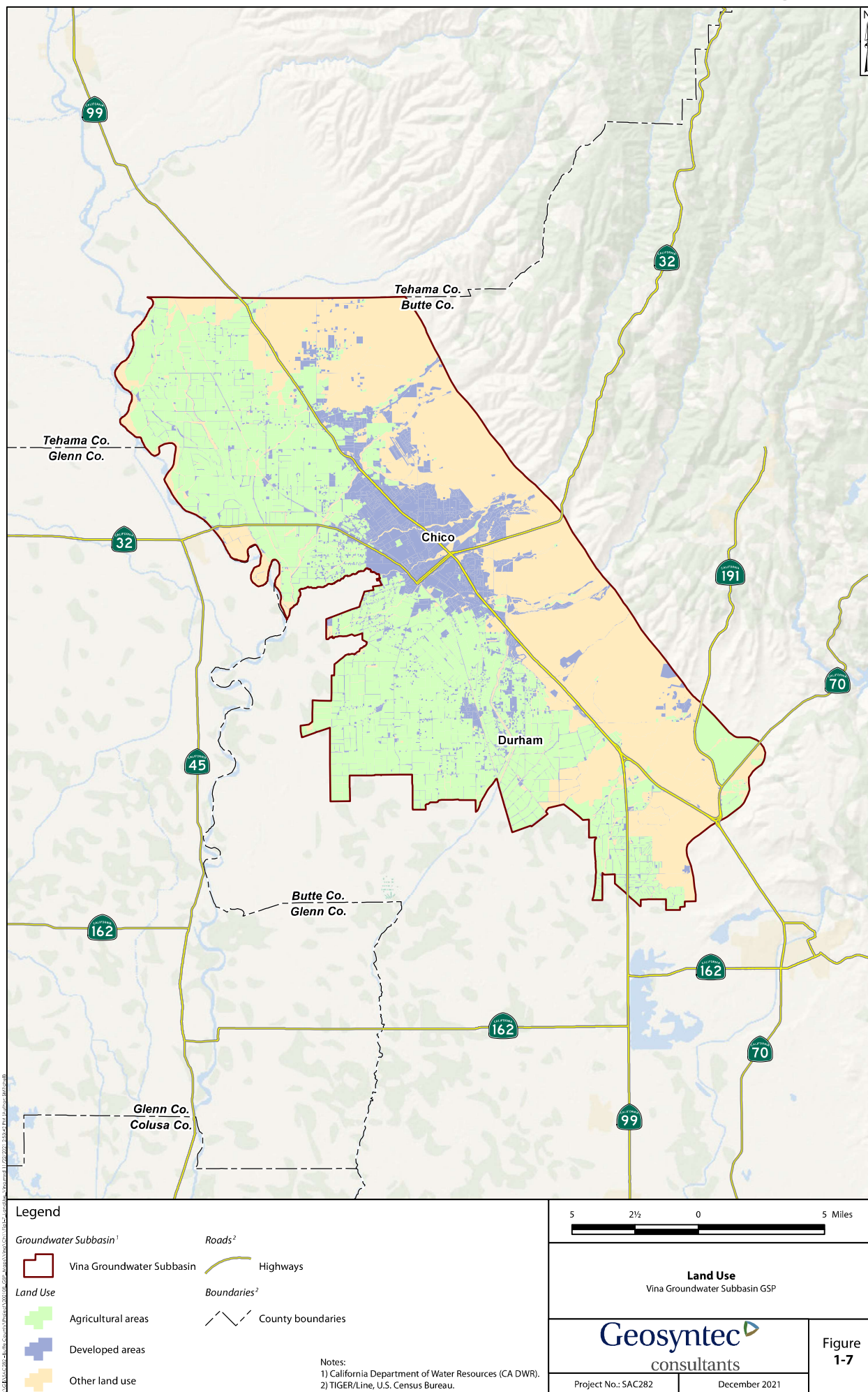
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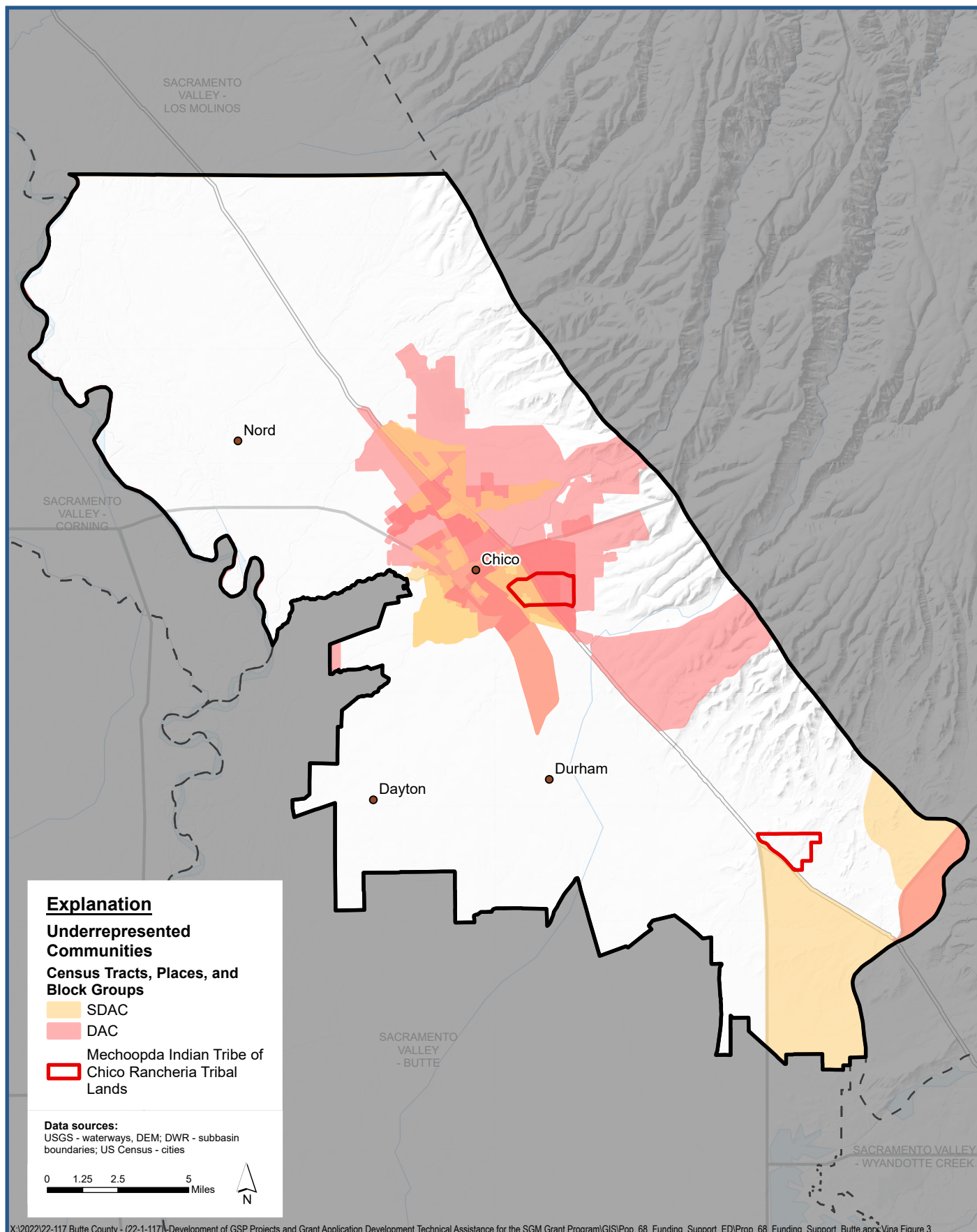
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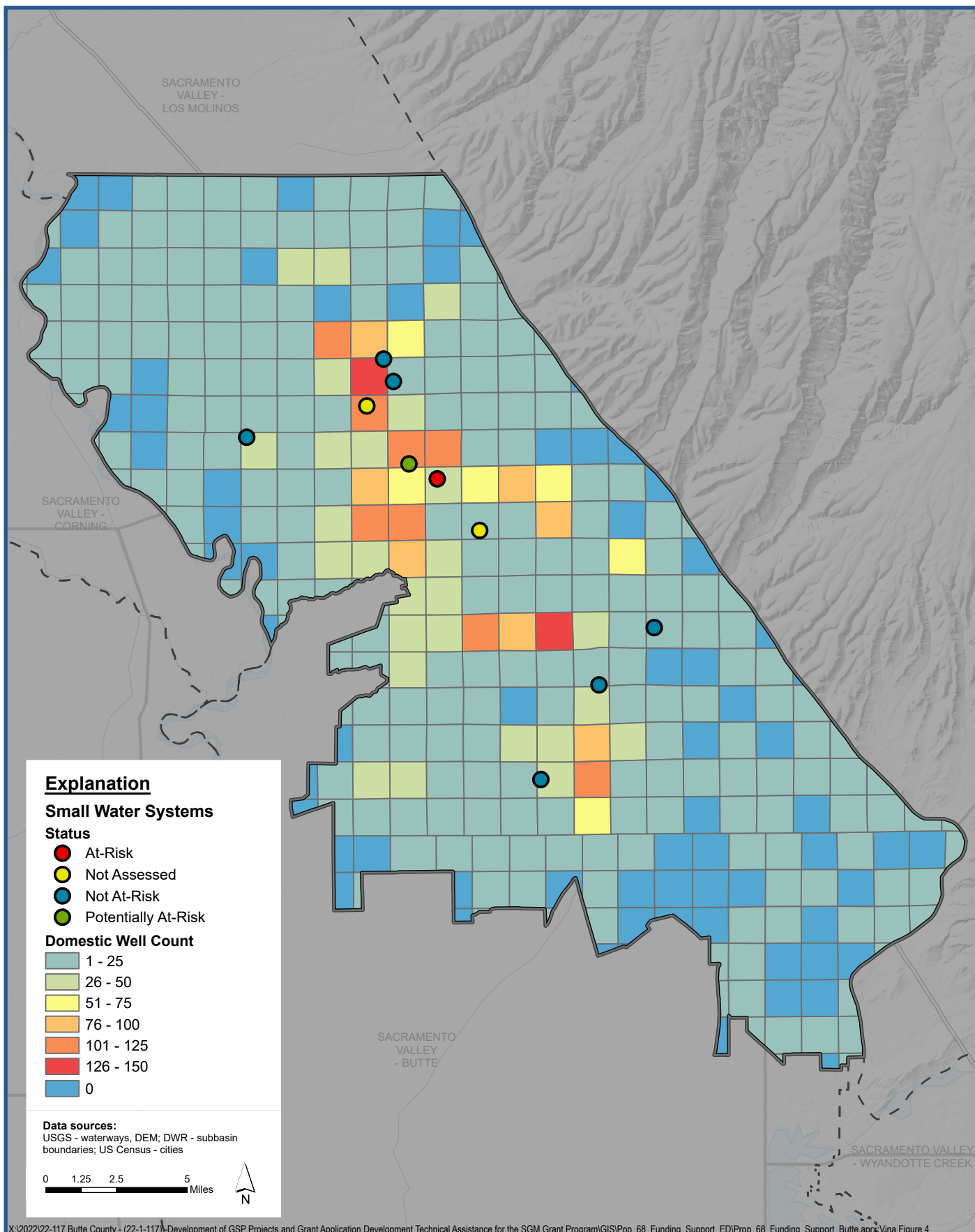
Categories	Start Date	End Date
Component 1: Grant Administration	September 1, 2023	June 30, 2026
(a) Component Administration	09/01/2023	06/30/2026
(b) Environmental / Engineering / Design		
(c) Implementation / Construction		
(d) Monitoring / Assessment		
(e) Engagement / Outreach		
Component 2: Monitoring Network Enhancements	January 1, 2023	December 30, 2025
(a) Component Administration		
(b) Environmental / Engineering / Design	01/01/2023	10/30/2025
(c) Implementation / Construction	06/01/2023	10/30/2025
(d) Monitoring / Assessment		
(e) Engagement / Outreach		
Component 3: Community Monitoring: Domestic Well Survey	October 4, 2022	December 30, 2025
(a) Component Administration		
(b) Environmental / Engineering / Design		
(c) Implementation / Construction		
(d) Monitoring / Assessment	10/04/2022	10/30/2025
(e) Engagement / Outreach	10/04/2022	10/30/2025
Component 4: GSP Implementation and Compliance Activities	October 4, 2022	June 30, 2026
(a) Component Administration		
(b) Environmental / Engineering / Design	10/04/2022	8/31/2023
(c) Implementation / Construction		
(d) Monitoring / Assessment	10/04/2022	4/30/2026
(e) Engagement / Outreach	10/04/2022	4/30/2026
Component 5: Inter-basin Coordination Activities	May 1, 2023	April 30, 2026
(a) Component Administration		
(b) Environmental / Engineering / Design		
(c) Implementation / Construction		
(d) Monitoring / Assessment	05/01/2023	6/30/2025
(e) Engagement / Outreach	5/01/2023	4/30/2026
Component 6: Extend Orchard Replacement Program	August 1, 2023	April 30, 2026
(a) Component Administration	08/01/2023	04/30/2026
(b) Environmental / Engineering / Design	08/01/2023	04/30/2026
(c) Implementation / Construction	08/01/2023	04/30/2026
(d) Monitoring / Assessment	08/01/2023	04/30/2026
(e) Engagement / Outreach	08/01/2023	04/30/2026
Component 7: Lindo Channel Surface Water Recharge Implementation	January 1, 2024	April 30, 2026
(a) Component Administration		
(b) Environmental / Engineering / Design	01/01/2024	03/01/2025

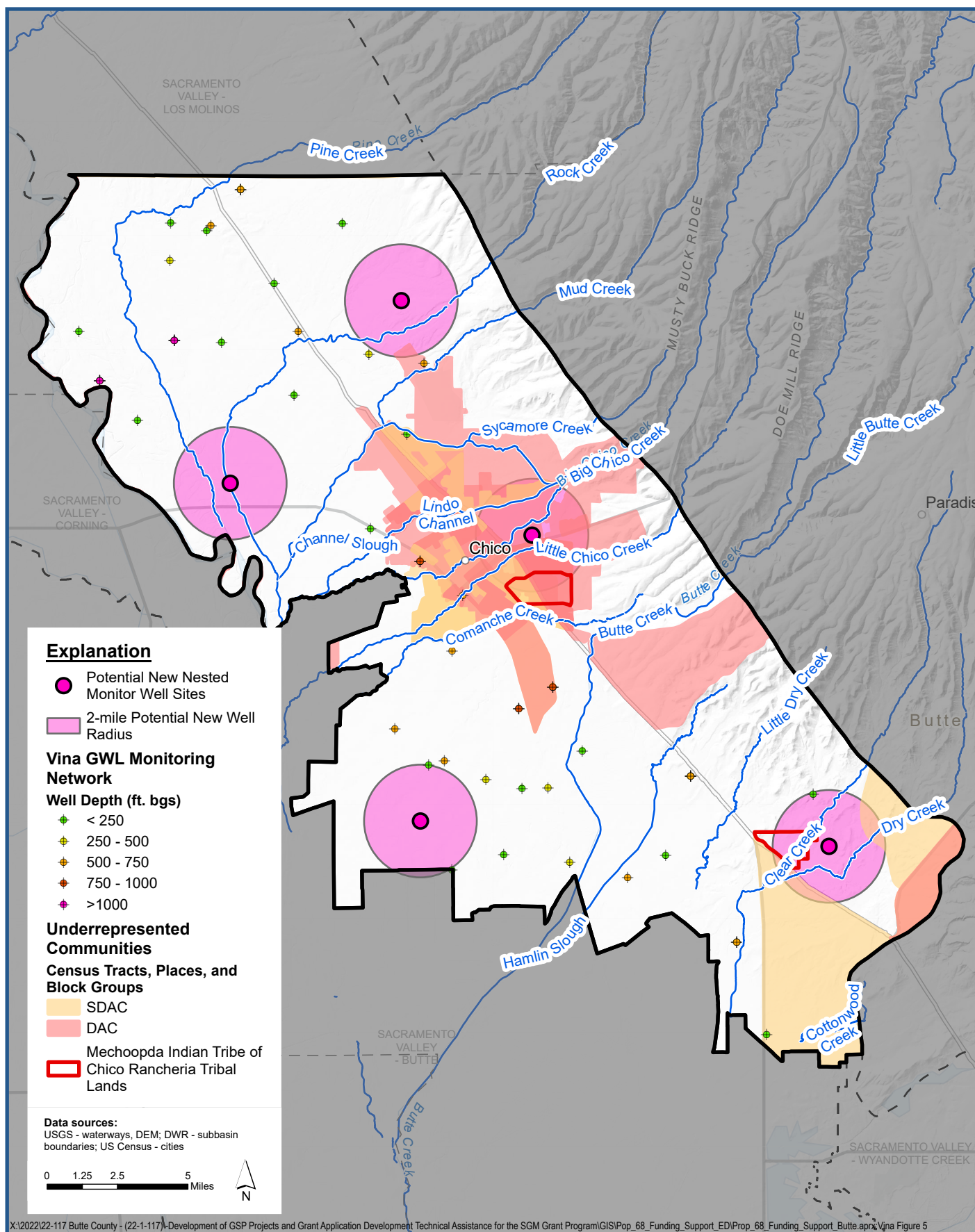
Categories	Start Date	End Date
(c) Implementation / Construction	04/01/2025	4/30/2026
(d) Monitoring / Assessment		
(e) Engagement / Outreach	01/01/2024	4/30/2026
Component 8: Agricultural Surface Water Supplies Feasibility Analysis	September 1, 2023	April 30, 2026
(a) Component Administration	9/01/2023	04/30/2026
(b) Environmental / Engineering / Design	10/01/2023	04/30/2026
(c) Implementation / Construction		
(d) Monitoring / Assessment		
(e) Engagement / Outreach	9/01/2023	04/30/2026
Component 9: Agricultural Irrigation Efficiency Pilot Program and Education	September 1, 2023	April 30, 2026
(a) Component Administration	09/01/2023	04/30/2026
(b) Environmental / Engineering / Design	10/01/2023	04/30/2024
(c) Implementation / Construction	03/01/2024	04/30/2026
(d) Monitoring / Assessment	03/01/2024	04/30/2026
(e) Engagement / Outreach	09/01/2023	04/30/2026
Component 10: Groundwater Recharge Feasibility Analysis and Site Evaluation	January 1, 2024	June 30, 2025
(a) Component Administration	01/01/2024	06/30/2025
(b) Environmental / Engineering / Design	03/01/2024	04/30/2025
(c) Implementation / Construction		
(d) Monitoring / Assessment		
(e) Engagement / Outreach	01/01/2024	06/30/2025



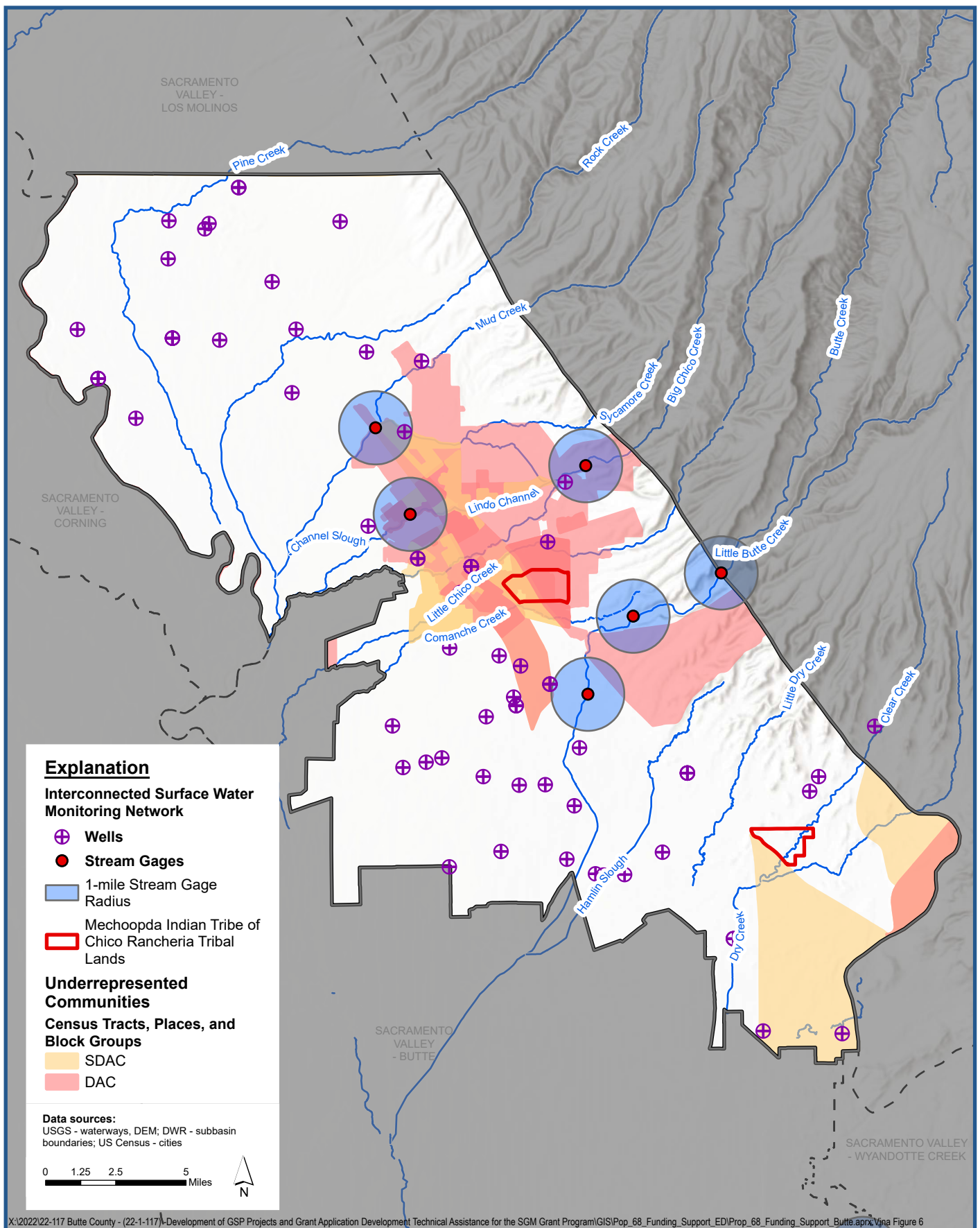


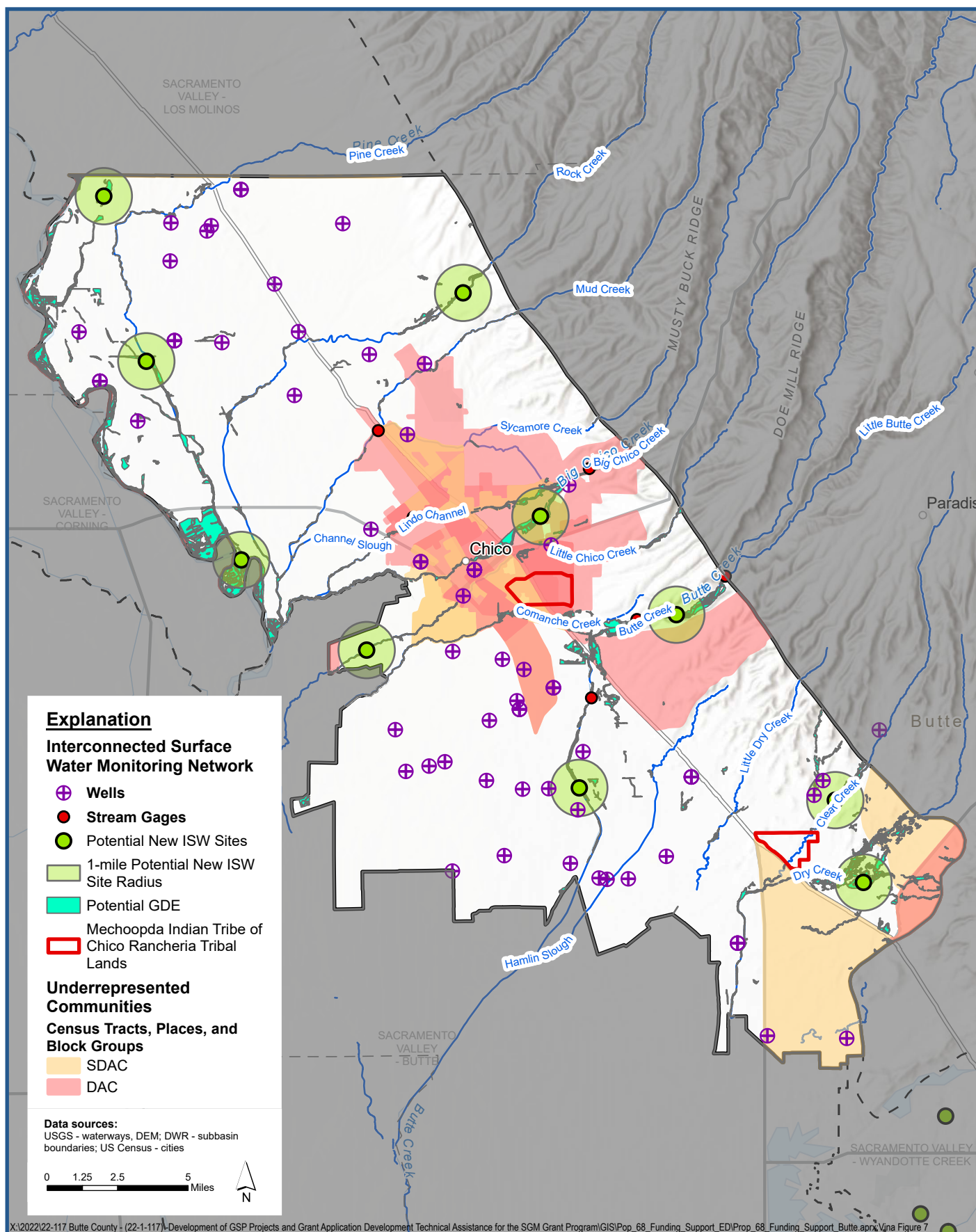


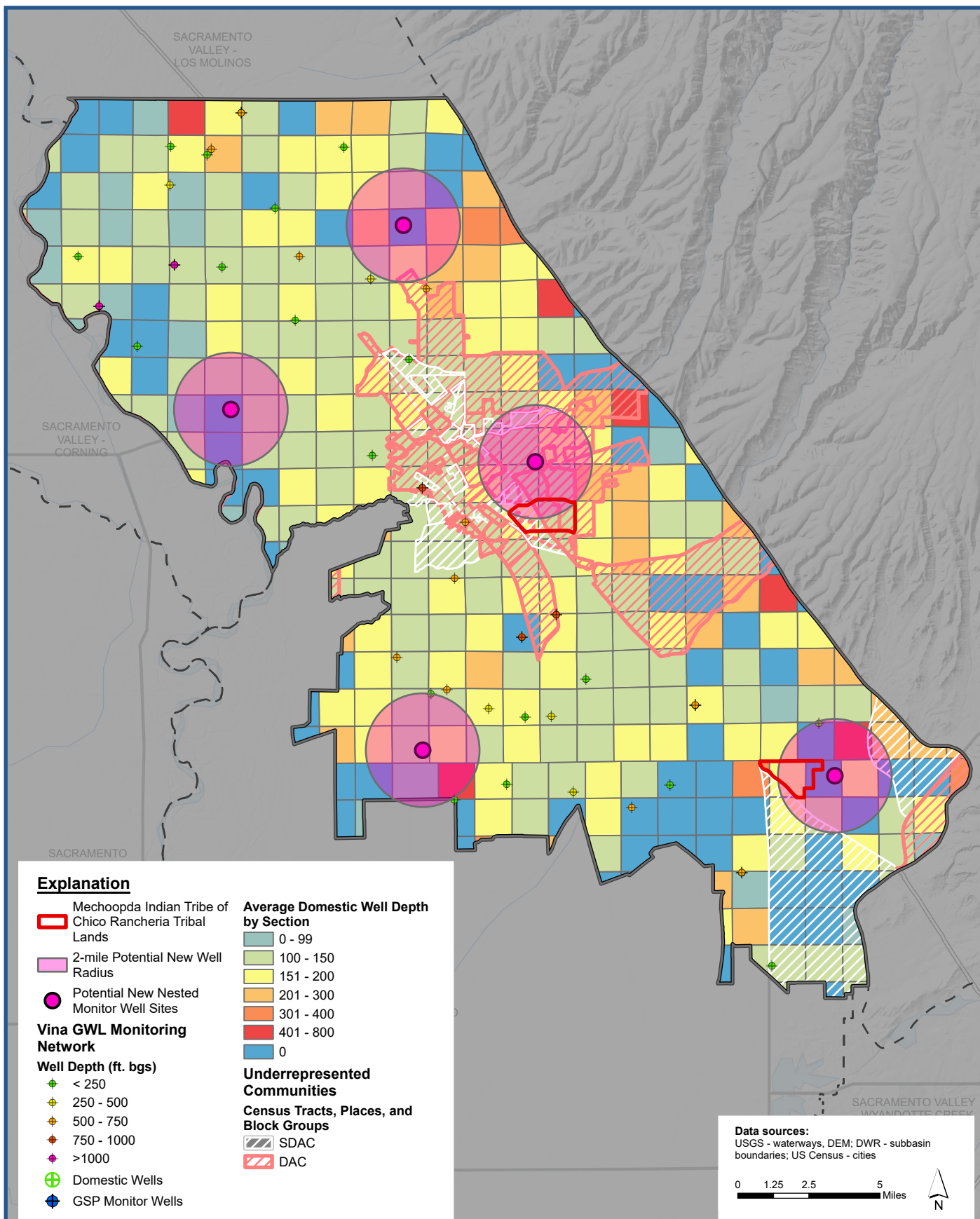




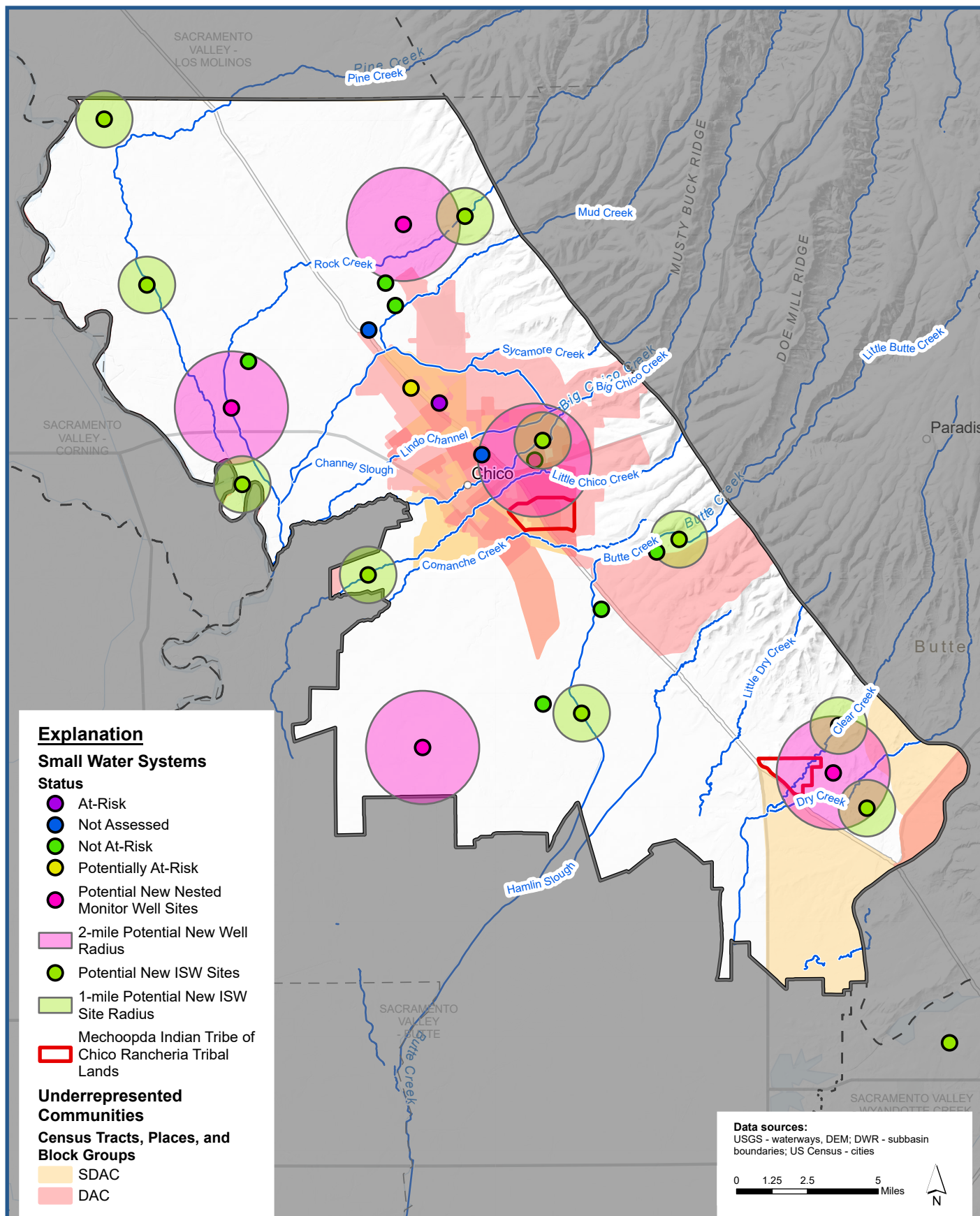
X:\2022\22-117 Butte County - (22-1-117)-Development of GSP Projects and Grant Application Development Technical Assistance for the SGM Grant Program\GIS\Pop_68_Funding_Support_ED\Prop_68_Funding_Support_Butte.aprx Vina Figure 5



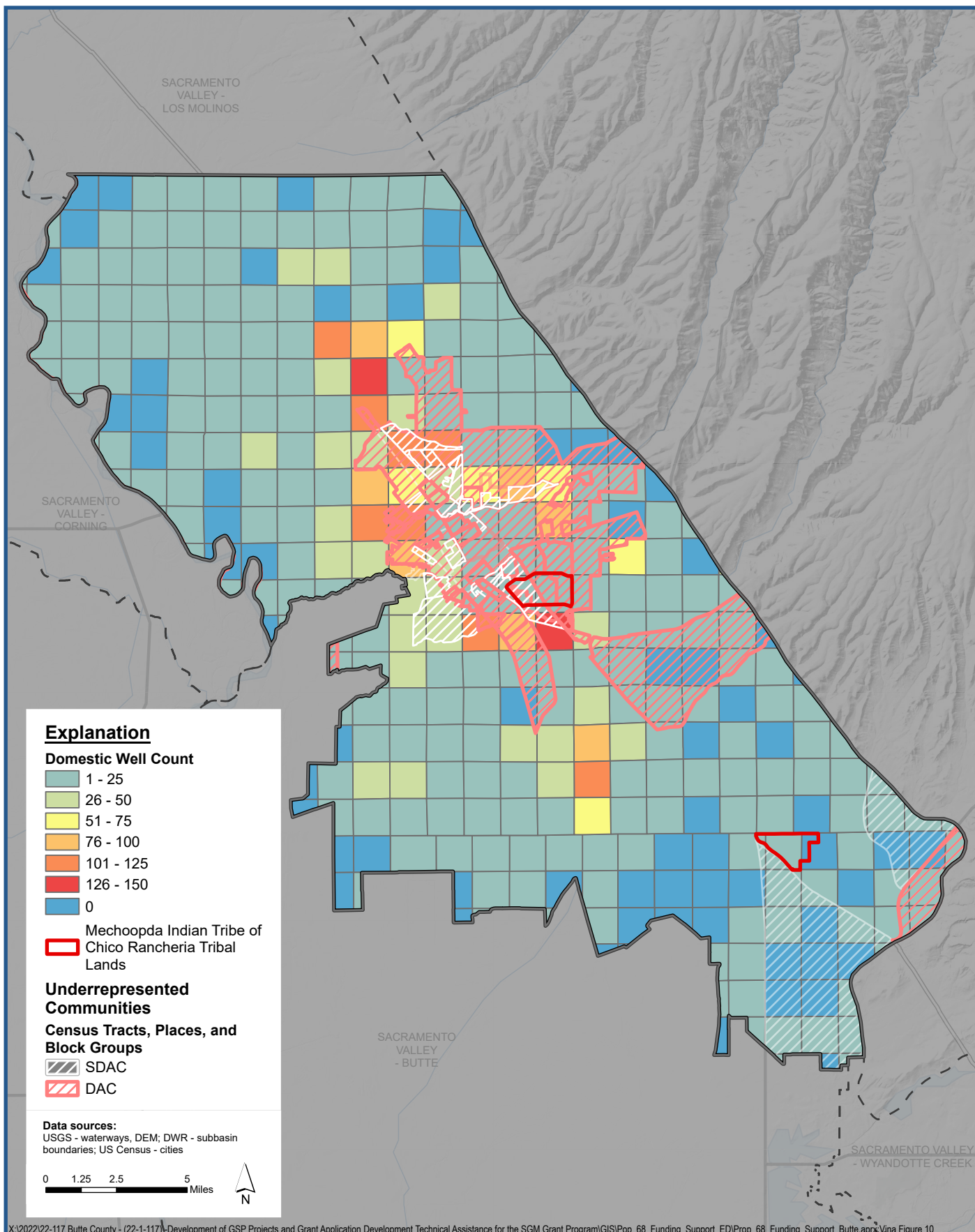


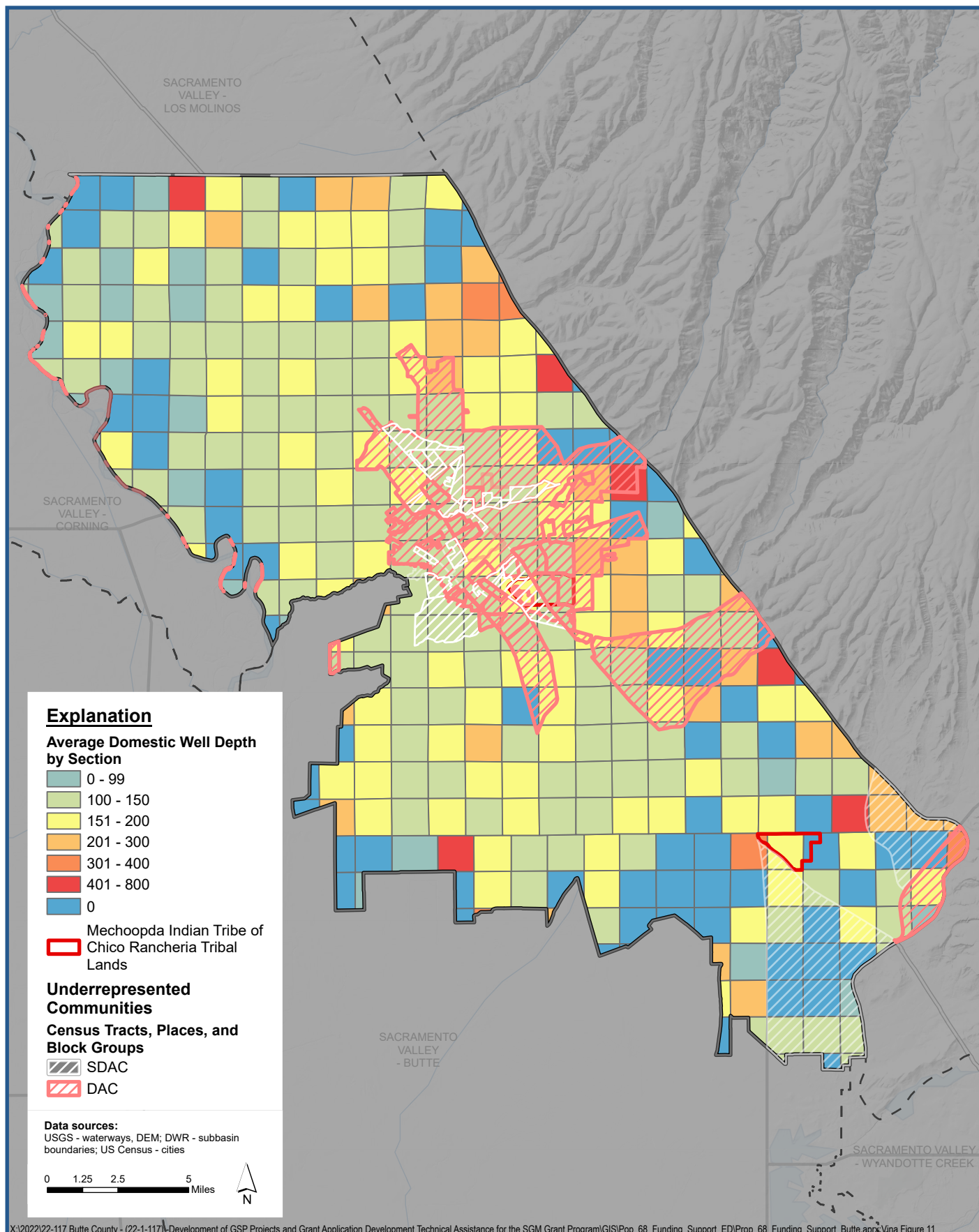


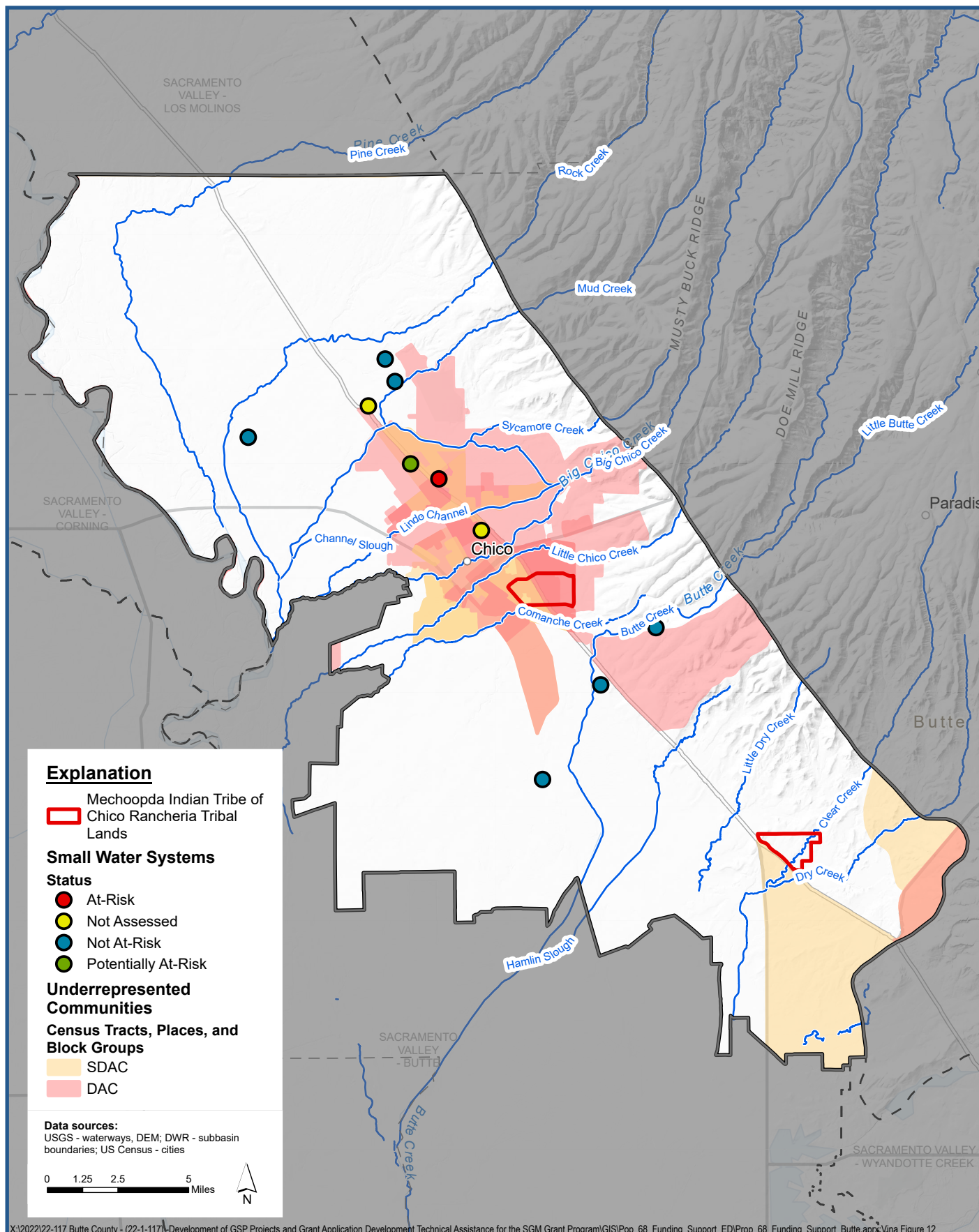
X:\2022\22-117 Butte County - (22-1-117) -Development of GSP Projects and Grant Application Development Technical Assistance for the SGM Grant Program\GIS\Pop_68_Funding_Support_ED\Prop_68_Funding_Support_Butte.aprx:Vina Figure 8



X:\2022\22-117 Butte County - (22-1-117) -Development of GSP Projects and Grant Application Development Technical Assistance for the SGM Grant Program\GIS\Pop_68_Funding_Support_ED\Prop_68_Funding_Support_Butte.aprx:Vina Figure 9







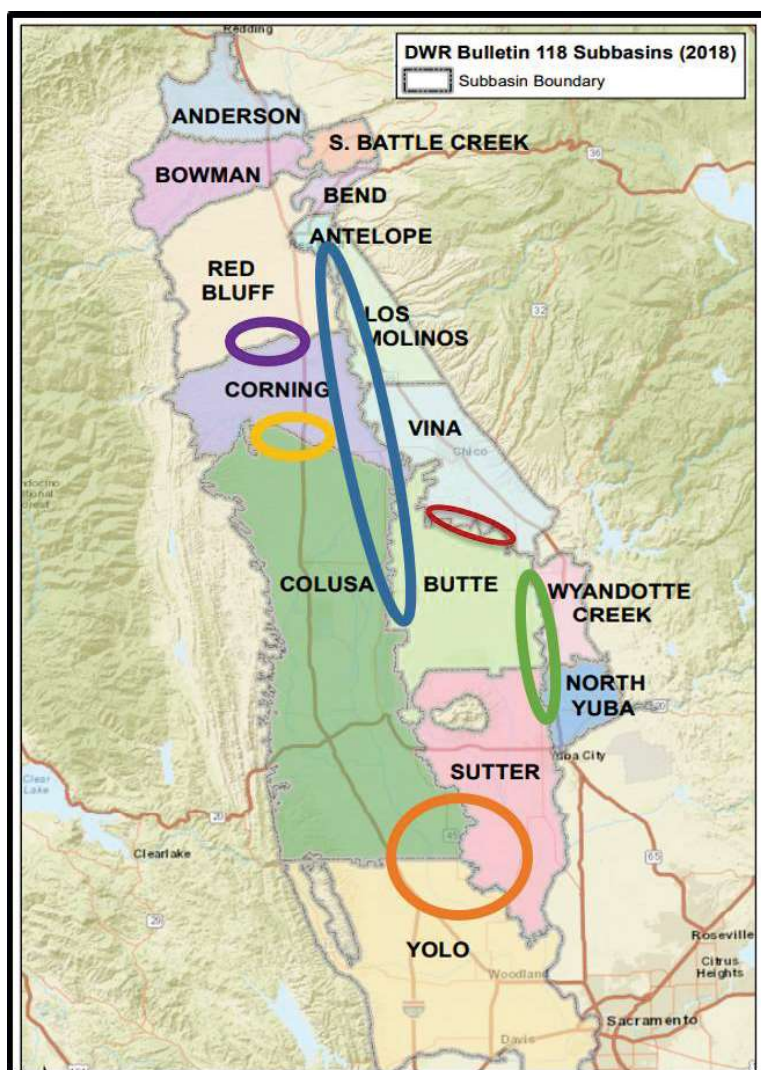
4.1. Inter-basin Coordination Groups

Inter-basin coordination efforts, as outlined in the pillars above, would require resources and technical support. Subbasin staff recommend organizing inter-basin coordination priorities by specific subbasin boundaries. One suggested approach identifies specific “Coordination Groups” (see Figure 3 and list below). Some of these groups are pairs and others include multiple subbasins around a river boundary.

1. **Feather River Corridor**- Butte, Wyandotte Creek, North Yuba, Sutter
2. **North Sacramento River Corridor**- Antelope, Los Molinos, Red Bluff, Corning, Vina, Butte, Colusa
3. **South Sacramento Corridor**- Colusa, Sutter, Yolo

Neighbor to Neighbor, examples:

4. **Stony Creek**- Corning, Colusa
5. **Thomes Creek**- Red Bluff, Corning
6. **Butte/Vina**- Vina, Butte



Vina Subbasin C06: Extend Orchard Replacement Program

Figure 14.

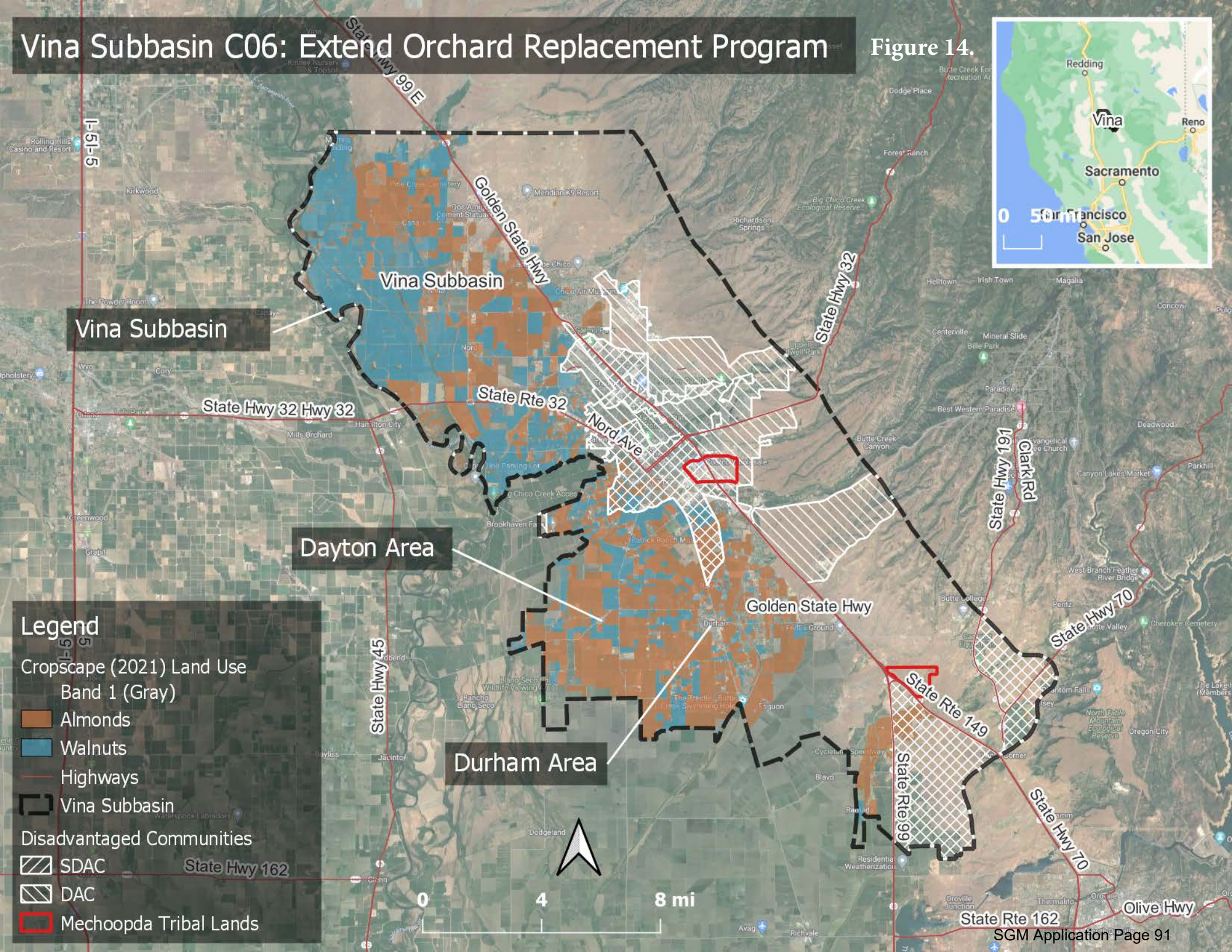
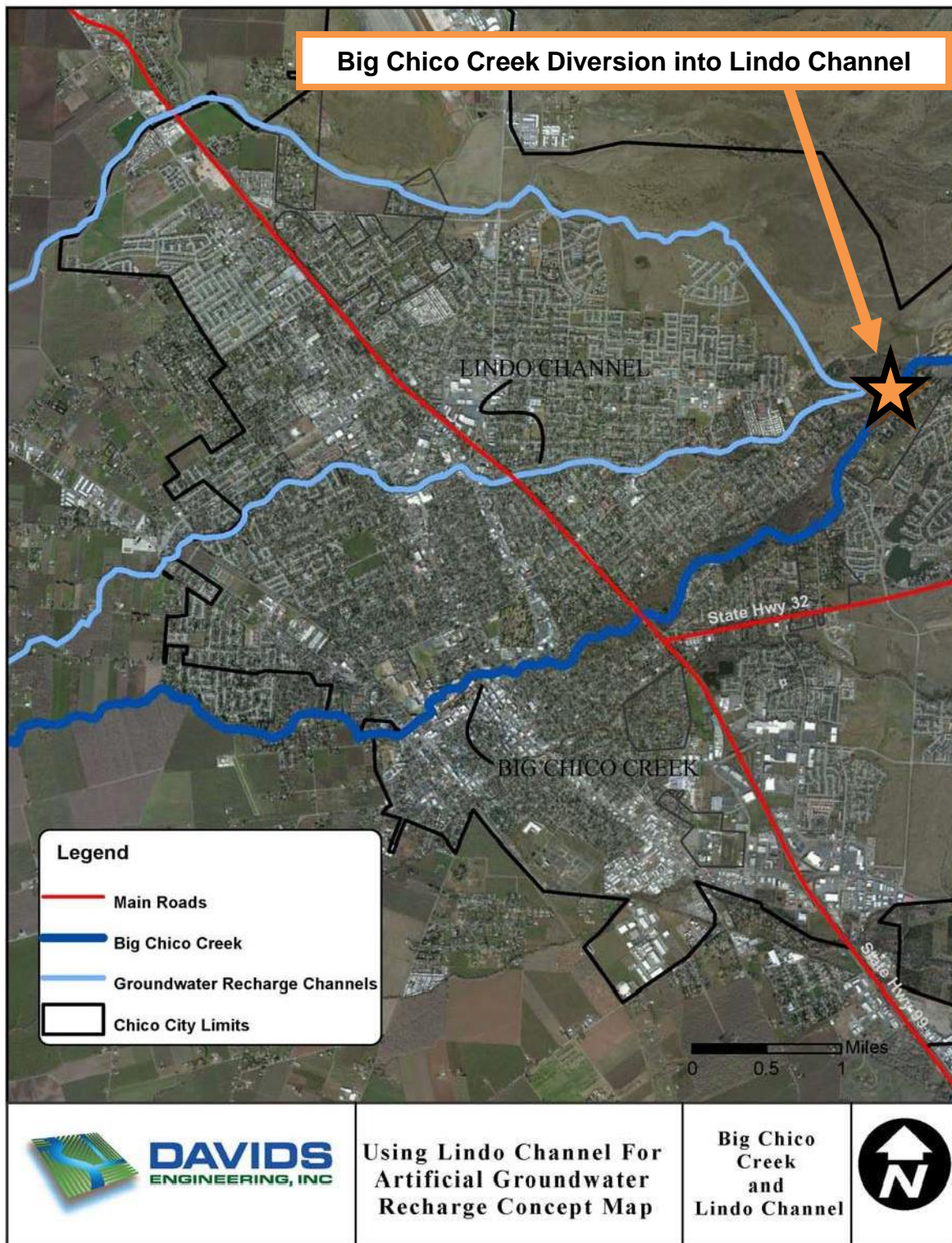
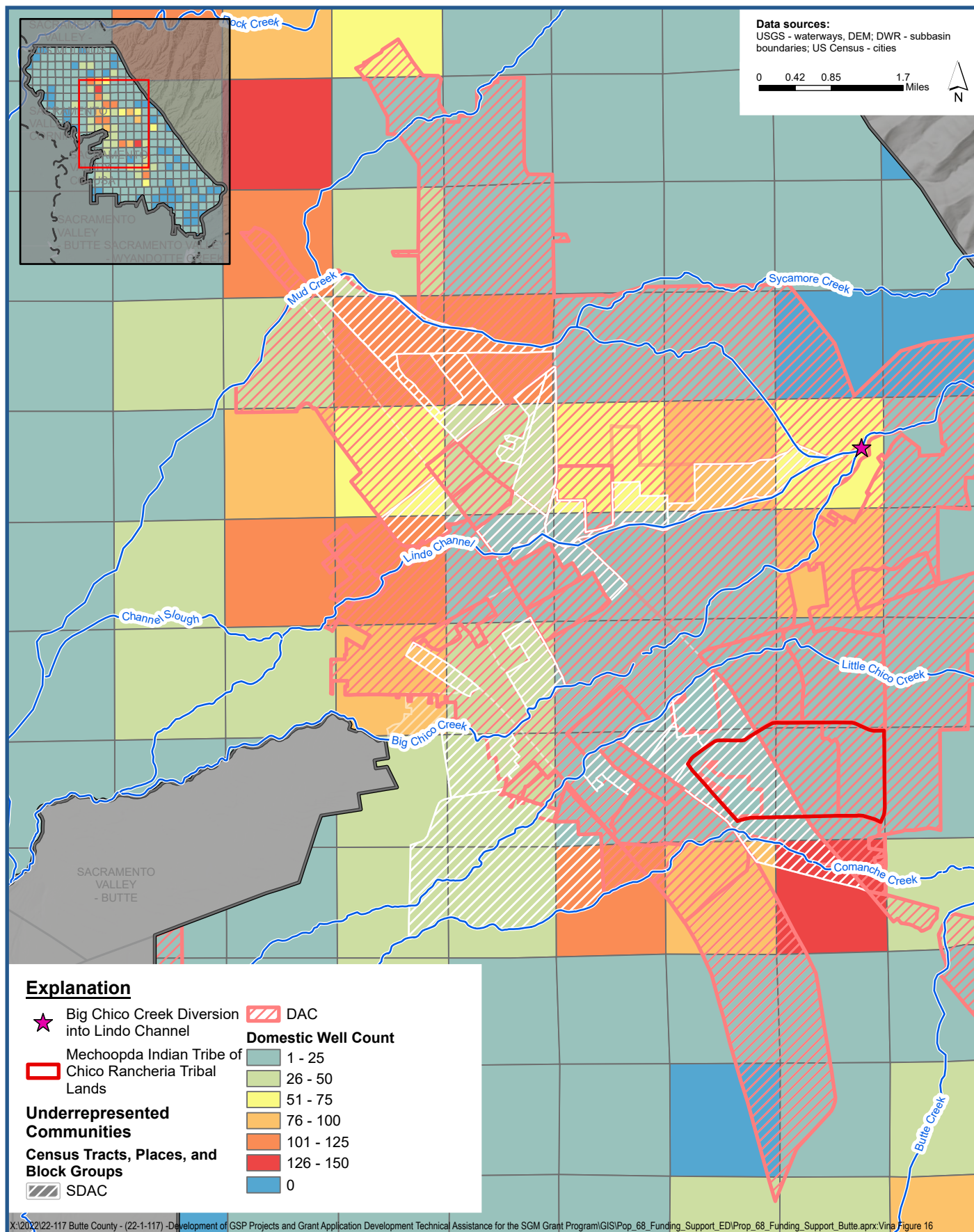


Figure 15 ☐ City of Chico, Big Chico Creek, and Lindo Channel Map





Vina Subbasin C08: Agricultural Surface Water Supplies Feasibility Analysis Figure 17.

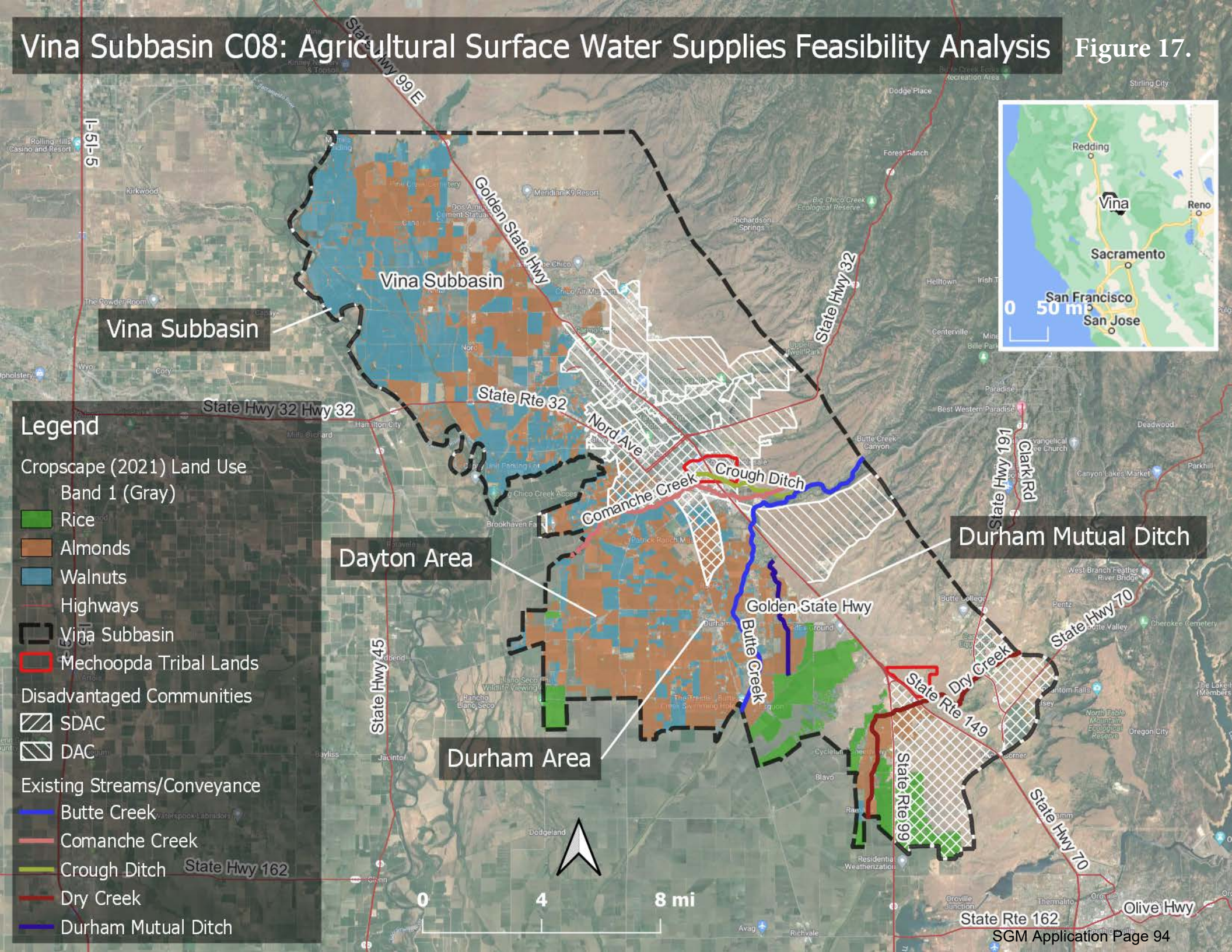
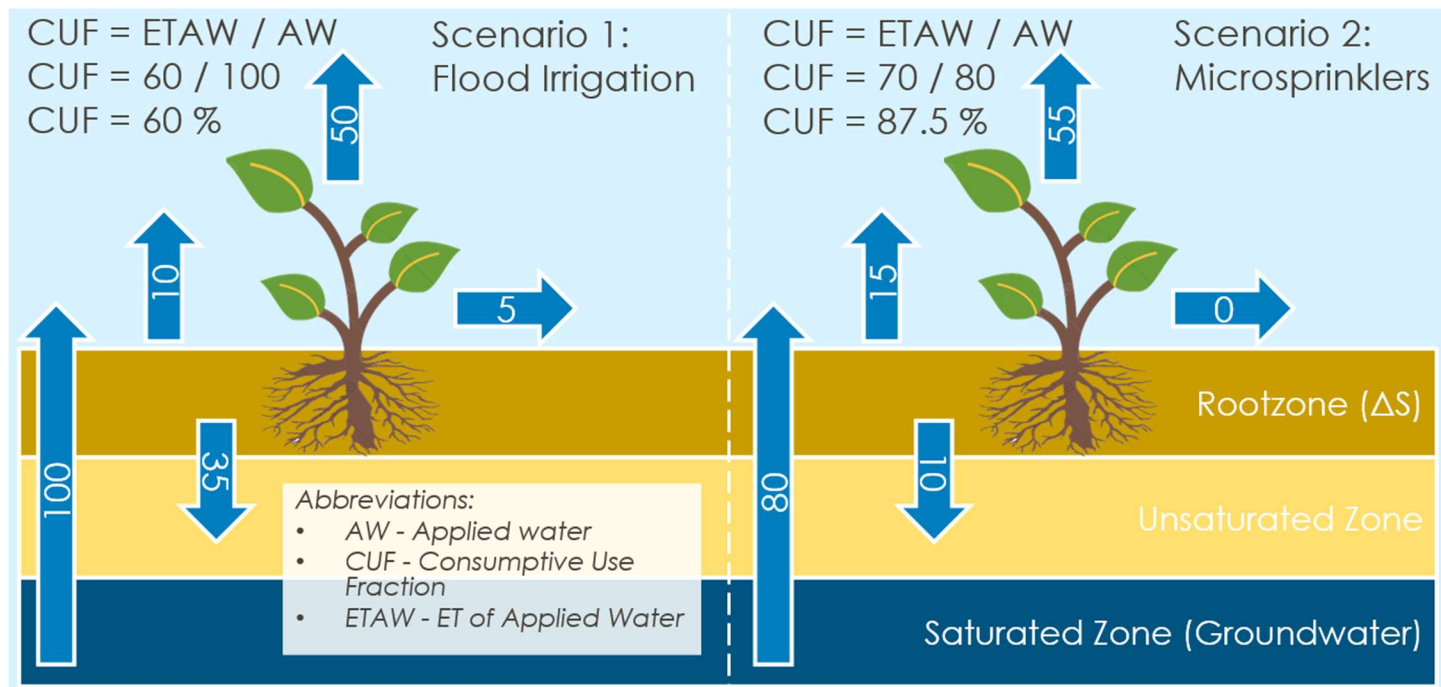


Figure 18. Conceptual depiction of an agricultural system transitioning from flood irrigation (scenario 1 on the left) to microsprinklers (scenario 2 on the right). The irrigation efficiency, or more precisely the consumptive use fraction or CUF, increases from 60 % to 87.5 %. However, the total amount of consumptive use (i.e., evaporation and transpiration) increases from 60 units to 70 units. All else being equal, this increase in consumptive use will drive the subbasin farther away from sustainability.



Chico Certified Farmers Market
Providing Local Communities with
Farm Fresh Produce and
Quality Handcrafted Products
Since 1980



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CCFM
PO Box 455
Chico, CA 95927

managereccfm@gmail.com
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530-893-FARM (3276)

Saturday Downtown Chico - Tuesday Paradise - Wednesday Chico - Thursday Paradise - Saturday Oroville

December 6, 2022

Department of Water Resources
Sustainable Groundwater Management Grant Program
P.O. Box 942836
Sacramento, CA 94236-0001

RE: Letter of Support – Sustainable Groundwater Management (SGM) Grant
Program Application for the Vina Subbasin

Dear SGM Grant Program,

Please accept this letter of support of the application of grant funds for the Vina subbasin. The two Groundwater Sustainability Agencies (GSAs) in this subbasin have worked diligently since SGMA was enacted to help protect local groundwater resources. Through cooperative efforts, the two GSAs in the Vina subbasin developed a Groundwater Sustainability Plan (GSP) that has been submitted to DWR. Implementation of the GSP will involve completing required SGMA compliance activities, addressing data gaps, and implementing projects that will ensure avoidance of undesirable results in the subbasin. The funding provided by the SMG Grant will play a critical role in the successful implementation of SGMA in the Vina subbasin.

The Chico Certified Farmers Market supports the efforts and importance of the SGM Grant Program in providing funding to the GSAs of the Vina subbasin to promote a healthy, sustainable groundwater basin through implementation of their GSP. We specifically support the project: Community Monitoring: Domestic Well Survey because groundwater pumped from domestic wells is vital to support our small farms. While the "Grant Request" for this project was submitted at \$100,000 we feel that that amount is too low and would request that the amount be raised to \$330,000 for this project. Additionally, we request that this project cover all domestic wells in the Vina Subbasin to obtain accurate data.

Sincerely,

Richard G. Coon, Chair
Chico Certified Farmers Market, Inc.



Department of Water Resources
Sustainable Groundwater Management Grant Program
P.O. Box 942836
Sacramento, CA 94236-0001

**RE: Letter of Support – Sustainable Groundwater Management (SGM) Grant
Program Application for the Vina/Butte/Wyandotte Creek Subbasin(s)**

Dear SGM Grant Program,

Please accept this letter of support, from the Mechoopda Indian Tribe of Chico Rancheria, in favor of the application of grant funds for the Vina and Butte subbasins.

Through major cooperative efforts, Groundwater Sustainability Plans (GSPs) have been developed and submitted to DWR by the GSAs in each of these subbasins. Implementation of the GSP(s) will involve completing required SGMA compliance activities, addressing data gaps, and implementing projects to ensure avoidance of undesirable results in the subbasin. This funding will play a critical role in the successful implementation of SGMA in the Vina and Butte subbasins.

We support the efforts and importance of the SGM Grant Program in providing funding to the [GSA\(s\)](#) of these two subbasins to promote healthy, sustainable groundwater basins through implementation of their GSPs. We specifically support the following projects; Lindo Channel Surface Water Recharge Implementation Project, The Nature Conservancy Multi-benefit Recharge Project, and the Extend Orchard Replacement Project.

The projects included in the GSPs and the proposals under your consideration will help continued avoidance of undesirable results while also providing multiple benefits to improve and support local management of groundwater supply and quality.

Sincerely,


DennisRamirez (Dec 6, 2022 13:37 PST)

Dennis Ramirez, Tribal Chairman

LOS Vina_Butte Subbasins

Final Audit Report

2022-12-06

Created:	2022-12-06
By:	Lisa Steele (lsteele@mechoopda-nsn.gov)
Status:	Signed
Transaction ID:	CBJCHBCAABAA3OqFujVvbhcS9KFU38G7j8BUXrjAYBGk

"LOS Vina_Butte Subbasins" History

 Document created by Lisa Steele (lsteele@mechoopda-nsn.gov)


2022-12-06 - 9:25:49 PM GMT- IP address: 12.138.106.82

 Document emailed to dramirez@mechoopda-nsn.gov for signature

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 Email viewed by dramirez@mechoopda-nsn.gov

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 Signer dramirez@mechoopda-nsn.gov entered name at signing as DennisRamirez

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 Document e-signed by DennisRamirez (dramirez@mechoopda-nsn.gov)

Signature Date: 2022-12-06 - 9:37:16 PM GMT - Time Source: server- IP address: 98.51.11.6

 Agreement completed.

2022-12-06 - 9:37:16 PM GMT



December 9, 2022

Department of Water Resources
Sustainable Groundwater Management Grant Program
P.O. Box 942836
Sacramento, CA 94236-0001

RE: Letter of Support – Sustainable Groundwater Management (SGM) Grant Program Application for the Vina Subbasin

Dear SGM Grant Program:

On behalf of the Agricultural Groundwater Users of Butte County (AGUBC), a local 501(c)(6) organization representing more than 56,000 acres of agricultural farmland within the Vina Subbasin of Butte County, please accept this letter of support for the Vina Subbasin Grant Application (Grant Application).

SGM grant funding will help the Vina Groundwater Sustainability Agency (GSA) and other responsible entities under the Sustainable Groundwater Management Act (SGMA) to promote a healthy and sustainable groundwater basin, to reduce and eliminate undesirable effects, and to promote projects that provide multiple benefits, also including the improvement of groundwater supply and quality.

The SGM grant funding requested as part of this Grant Application will help develop the necessary capacity at the local level to complete required Sustainable Groundwater Management Act compliance activities and fund activities to address data gaps and implement projects to ensure avoidance of undesirable results in the sub-basin. This funding will play a critical role in the successful implementation of SGMA in the Vina sub-basin. To that end, on behalf of the farmers and farmland that we represent, we request that the full amount of the Vina Subbasin Grant Application be awarded.

Thank you for your consideration.

Sincerely,

A row of five handwritten signatures in black ink. From left to right: Richard McGowan, Ed McLaughlin, Darren Rice, W. Todd Turley, and Steven Koehnen. Each signature is written in a cursive or semi-cursive style.

Richard McGowan, Ed McLaughlin, Darren Rice, Todd Turley, Steven Koehnen
AGUBC Board of Directors



*To advance the economic, social and environmental sustainability of Northern California
by enhancing and preserving the water rights, supplies and water quality.*

December 13, 2022

Karla Nemeth, Director
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

RE: Support for Sustainable Groundwater Management (SGM) Grant Program Applications in the Sacramento Valley

Dear Director Nemeth:

The Northern California Water Association (NCWA) strongly supports the grant funding applications by the Groundwater Sustainability Agencies (GSAs) for sustainable groundwater management within the Sacramento Valley.

The GSAs in the region have been working diligently since the Sustainable Groundwater Management Act (SGMA) was enacted to advance sustainable groundwater management as part of [ridgetop to river mouth water management](#). Through major cooperative efforts, Groundwater Sustainability Plans (GSPs) have been developed and submitted to DWR by the GSAs throughout the region. This funding will play a critical role in the successful implementation of SGMA, including completing required SGMA compliance activities, addressing data gaps, and implementing projects to ensure the avoidance of undesirable results and to better prepare for dry years.

The GSAs throughout the Sacramento Valley have been coordinating their efforts through our Groundwater Management Task Force to help ensure both policy, technical and regional consistency and to advance sustainable water management throughout the region as described in A [Pathway for the Future: Sustainable Groundwater Management in the Sacramento Valley](#). To help further these efforts, we strongly support the efforts and importance of the SGM Grant Program in providing funding to the GSAs throughout the region to promote healthy, sustainable groundwater basins through implementation of their GSPs.

We appreciate the Department of Water Resources' ongoing efforts on sustainable groundwater management. Please call if you have any questions or would like to discuss this further.

Sincerely yours,

David J. Guy
President

cc: Paul Gosselin
Kris Tjernell
Kelley List
Keith Wallace
SGWP@water.ca.gov

Butte Environmental Council



313 Walnut Street, #140

Chico, CA 95928

(530) 891-6424

www.becnet.org

Federal Tax ID

94-2309829

CA Charity Number

018005

Activities & Events

Environmental Education
Environmental Advocacy
Park and Creek Cleanups
Urban Forest Program
Recycling & Rubbish Education
Community Air Protection Education
Oak Way Community Garden
Community Composting
Endangered Earth Event
Chico Bicycle Music Festival
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Program Manager*

Britany Lovio

*Education and Outreach
Program Coordinator*

December 5, 2022

Department of Water Resources

Sustainable Groundwater Management Grant Program

P.O. Box 942836

Sacramento, CA 94236-0001

RE: Letter of Support – Sustainable Groundwater Management (SGM) Grant Program Application for the Vina Subbasin

Dear SGM Grant Program,

Butte Environmental Council (BEC) encourages you to please accept this letter of support of the application of grant funds for the Vina subbasin.

The Groundwater Sustainability Agencies (GSAs) in this subbasin have worked diligently since SGMA was enacted to help protect groundwater resources over the long-term planning horizon. Through major cooperative efforts, Groundwater Sustainability Plans (GSPs) have been developed and submitted to DWR by the GSAs in each of these subbasins. Implementation of the GSP(s) will involve completing required SGMA compliance activities, addressing data gaps, and implementing projects to ensure avoidance of undesirable results in the subbasin. This funding will play a critical role in the successful implementation of SGMA in the Vina subbasin.

We support the efforts and importance of the SGM Grant Program in providing funding to the GSA(s) of this subbasin to promote healthy, sustainable groundwater basins through implementation of their GSPs. We specifically support this project as it will protect the sustainability of important water resources for the people and environment of our region, which aligns with Butte Environmental Council's mission. will protect the sustainability of important water resources for the people and environment of our region, which aligns with Butte Environmental Council's mission.

Butte Environmental Council is a 501(c)3 nonprofit organization with a mission to protect and defend the land, air and water of Butte County and the surrounding region through action, advocacy, and education. BEC has a strong interest in sustainable management of our region's water resources, particularly in the face of the climate crisis. BEC supports regional efforts for conservation and sustainable policy of our water resources. BEC recognizes that this project is an essential factor for a water smart and sustainable future.

The projects included in the GSPs and the proposals under your consideration will help the continued avoidance of undesirable results while also providing multiple benefits to improve and support local management of groundwater supply and quality.

Kindly,

Caitlin M. Dalby, Executive Director

director@becnet.org