Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Watermaster, Technical Advisory Committee

Project Name: Evaluate feasibility of groundwater augmentation by importing supply from wells near Clark Dry Lake basin.

Contact Information

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Project Summary

Please provide a summary of the Project description. Use as much space as you need.

The objective of the Project is to evaluate the feasibility of extracting groundwater from Clark Dry Lake to augment the groundwater available in the Borrego Springs Groundwater Subbasin (Subbasin). The Project will evaluate the feasibility of this alternative by estimating available groundwater in storage, provide a preliminary estimate of sustainable yield from well field(s), investigate and measure water quality conditions, and develop an estimate for the cost per acre-foot of water imported into the Subbasin. Previous studies developed preliminary data and a feasibility estimate, however these studies also yielded incomplete results and contained data gaps which yielded the study inconclusive. The Borrego Water District (BWD) did not pursue the additional studies necessary to investigate or quantify these unknowns due to lack of funds .

According to the Borrego Valley Integrated Water Resources Management Plan (IWMP) prepared by BWD in 2009, a preliminary study indicated that groundwater extractions from Clark Dry Lake basin could produce about 2,000 acre-feet per year. The proposed Project will evaluate the feasibility of extracting groundwater from the Clark Dry Lake Subbasin by completing the data gaps identified following the completion of the prior study. Measurable objectives from this Project include determining available yield from well field(s), evaluate water quality and estimate the cost per acrefoot of water.

The first component of the Project includes completing a hydrogeologic/geotechnical study to evaluate the hydrogeologic conditions in the basin and to examine the appropriate locations for construction and installation of initial production test and observation wells. These wells will be used to assess hydrologic (yield, transmissivity, groundwater in storage) and water quality features of the Subbasin. Following components of the Project include the drilling of the test and monitoring wells, performing the tests and gathering data, and analysis and development of conclusions regarding the cost and viability of the groundwater extraction programs.

Clark Dry Lake - Project background

In 1998, BWD completed an initial groundwater study which included drilling a test hole on a 240acre parcel owned by BWD. Results from this study indicated that groundwater in the lower portions of the well contained high salinities. However, water quality data from other wells in the area suggest that the upper portions of the aquifer may provide better water qualities and might be considered in the range of potable water. A memorandum to the Board of Directors from L.R. Burzell dated October 12, 2006 suggests that additional possible well sites located in the north and westerly portions of Clark Dry Lake could produce water of good quality from the shallower depths of the aquifer.

According to a 2015 report by the United States Bureau of Reclamation (USBR), BWD completed the preliminary engineering design of an 8-mile conveyance pipeline and well field for the importation of water to Borrego Springs from the Clark Dry Lake area. However, no information is available regarding the aquifer's capacity, recharge rate or water quality to facilitate the development of a cost-benefit analysis of the proposed project.

Describe the project location, current conditions, and the benefitting areas. Please attach, separately, a regional and Project map depicting the site(s) location, current conditions, and benefitting areas.

Clark Dry Lake is a depressional lake approximately 10 miles northeast of Borrego Springs. The watershed contributing to the lake basin drains storm flows only in wet years; the lake lies over a confined aquifer system. The Clark Lake and Borrego Valley basins are separated by the northwest-southeast trending Coyote Creek fault. This fault is a hydrologic barrier between the basins.

Existing water production from the Clark Lake basin is minimal. A few water wells have been constructed to supply an existing residence and a sand and gravel operation. A large portion of the Clark Lake basin is overlain by the Anza Borrego State Park.

The Borrego Springs Subbasin is currently considered by DWR as critically over drafted, The annual groundwater extraction from the basin has exceeded the annual natural recharge, resulting in overdraft of the groundwater available.

Water extracted from the Clark Dry Lake groundwater basin will increase water supply for the community of Borrego Springs located about 10-miles away. The Project is being proposed by the Agricultural Alliance for Water and Resource Education ("AAWARE"), an unincorporated Center of the San Diego County Farm Bureau for the Borrego area, a non-profit organization.

Exhibit A1 shows the regional and Project map, and the benefitting areas.

What is the nexus of the Project to the Sustainability Goal of the Borrego Springs Subbasin Groundwater Management Plan (GMP)? Is the Project listed in the GMP? How does the Project help achieve the goals of the GMP?

The Borrego Springs Watermaster (Watermaster) is implementing a Physical Solution for the Subbasin consisting of the court Judgment entered April 8, 2021 and the Groundwater Management Plan (GMP) attached as Exhibit 1 to the Judgment. The GMP stated that supply augmentation through local and/or imported surface water is not a feasible option at that time, the only way to achieve groundwater sustainability is through demand reduction. The Judgment recently entered in the adjudication of the Basin under SGMA acknowledges that there likely exists in the Basin a substantial amount of available groundwater storage capacity that can be utilized for storage and conjunctive use of water that may in the future be imported to the Basin (see Page 29 of the Judgment). The Judgment assigns to Watermaster the authority to control and regulate use of the Basin's storage capacity to protect the integrity of the Basin, its groundwater and any water imported to the Basin. Therefore, investigating the proposed alternative for groundwater recharge, and evaluating its feasibility within the Borrego Springs Subbasin by 2040 as required by SGMA.

As described in the GMP, undesirable results within the Borrego Springs Subbasin are occurring with respect to chronic lowering of groundwater levels and significant and unreasonable reduction of groundwater storage. Groundwater levels have been declining for decades as a result of overdraft condition. A community-wide groundwater use reduction program has been established to address these undesirable results.

The Project will be another step to support the sustainability goals described in the GMP. In the longterm, this groundwater augmentation alternative will support the Subbasin to meet the following goals:

- The rate of groundwater level change within the Subbasin, averaged across indicator wells in the previous reporting period, is generally stable or increasing when compared to the contemporary groundwater level trend.
- Groundwater levels are maintained at elevations necessary to avoid undesirable results.
- Groundwater quality, as measured in municipal and domestic water wells, generally exhibits a stable and/or improving trend for identified contaminants of concern
- Groundwater quality is suitable for existing and future beneficial uses

The Physical Solution's sustainability goal is to ensure that by 2040, and thereafter within the planning and implementation horizon of the GMP (50 years), the Subbasin is operated within its sustainable yield and does not exhibit undesirable results.¹ The Judgment contemplates importation and storage of groundwater in the Subbasin under the direction of the Watermaster to protect the integrity of the Basin. Therefore, the Project is included in the Physical Solution (see page 34 of Stipulated Judgment) and it is discussed in the GMP (Sections 2.1.6 and 2.2.3.8)

¹ Undesirable results include chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply, significant and unreasonable reduction of groundwater storage, significant and unreasonable degraded water quality, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water (CWC Section 10721(x)).

According to the GMP, "there is currently no program to actively replenish the aquifer" this due to the previous studies conducted by BWD that determined that importing water to recharge the basin was infeasible at that time.

The GMP document states that evaluation of alternatives and costs for augmenting water resources by importing non-local supplies has been considered in the past, however the BWD did not receive funding for these projects.

What are the specific goals and needs for the Project, and how will the project achieve the goals and meet the needs?

The main goal of the Project is to fill data gaps identified in previous reports as information needed to determine the feasibility of the Clark Dry Lake groundwater extraction alternative that could have the potential to supplement the water supply of the Borrego Springs community.

There is missing and incomplete information regarding the Clark Dry Lake groundwater Subbasin's capacity, recharge rate or water quality. To obtain reliable hydraulic and water quality information, the Project proposes the construction and operation of initial production test well(s).

The evaluation of the feasibility for the Clark Dry Lake recharge alternative will be achieved by data gap analysis. The project will provide reliable and updated information regarding the following points:

- Characterization of the water quality in the aquifer
- Available yield of the production test well(s)
- Aquifer features and properties
- Cost estimate per acre-foot of water being extracted and transferred to Borrego Springs

What are the quantifiable benefits of the Project (e.g., protect or enhance water quality, water conservation, enhanced understanding of the groundwater basin, etc.)? How will those benefits be quantified and evaluated?

Evaluating the feasibility of the Clark Dry Lake recharge alternative for groundwater extraction to the Borrego aquifer will initially provide information that was previously unknown about the amount and quality of water available within the Clark Dry Lake subbasin and if it can be extracted from the well(s) and transferred to the Borrego Springs subbasin without causing undesirable results. Quantifiable benefits to the basin include but are not limited to (1) increased groundwater levels within the Subbasin, (2) increased groundwater storage and recharge rate, (3) support to achieve sustainable yield of the Subbasin (currently estimated as 5,700 AFY in the absence of groundwater augmentation). These benefits will be quantified via existing monitoring tasks performed by the Watermaster, and evaluated via the annual reports.

The cost per acre-foot of water that can be extracted and conveyed to Borrego Springs will be estimated based on the available yield from the well field.

Please describe the communities served by the Project. Will the Project benefit an Underrepresented Community, a Disadvantaged Community (DAC), and/or a Severely Disadvantaged Community (SDAC)? If so, please provide a map.

Borrego Springs is a small unincorporated community located on the western edge of the Sonoran Desert. The Borrego Springs community relies on local groundwater resources as the sole source of municipal drinking water, domestic supply, and agricultural irrigation. Recreational water use in the Subbasin is entirely supported by groundwater. According to the GMP, the continued overdraft of the basin at its then-present rate of pumping could cause severe economic hardship for the community. Accordingly, a community-wide groundwater use reduction program has been established.

This Project will aim to increase the Basin's water supply and thereby reduce the pumping cutbacks necessary to achieve sustainability. The Project is proposed by the Agricultural Alliance for Water and Resource Education ("AAWARE"), an unincorporated Center of the San Diego County Farm Bureau for the Borrego area, a non-profit organization.

The SDAC Impact/Vulnerability Analysis prepared for the BWD in 2019 indicated that the community of Borrego Springs is considered a SDAC.² The community is particularly susceptible and vulnerable to the changes that will occur as a result of severe water use reductions under SGMA. The Project will also benefit the Underrepresented Communities (e.g., farmers and agricultural community) in Borrego Springs by providing the opportunity to increase water availability within the Subbasin. The amount of funding that will benefit the SDAC and Underrepresented Communities is estimated to be about \$742,000 (see Budget).

A map showing the location of the Borrego Springs community is given in Exhibit A2. Outreach to these communities will be done via the Watermaster³ during their regular monthly board meetings. During these meetings, the Watermaster will provide update and status of the Project to the Parties, other stakeholders, and the interested public. The Watermaster will engage the community (e.g., residents, farmers, agricultural community) and any interested Party in the developing of the Project (during the planning, construction and implementation phases), as described in Task 6 of the Scope of Work.

Will the Project or Component positively impact issues associated with small water systems or private shallow domestic wells (e.g., groundwater contamination vulnerability, drawdown, etc.)? If so, please provide justification such as water system maps or domestic well census results.

As mentioned earlier herein, the Project will support the goal of the GMP to achieve and maintain sustainability within the Subbasin without undesirable results as required by SGMA. The Project will reduce risks for groundwater depletion and decrease community-wide pumping cutbacks necessary to achieve sustainability.

The 5-year groundwater production summary prepared by Dudek in 2019 indicated a total of 49 domestic wells in the Subbasin. Besides BWD's public water system, there is one private water

² As defined by SGM Grant Program 2021 Guidelines, a DAC is defined as an area with an average household income (AHI) of <80% the state average. A Severely Disadvantaged Community (SDAC) is defined as an area with an AHI of <60% the state average.

³ The Watermaster is a committee of representatives of the parties to the Judgment.

system in Borrego and its service area map is included as the last page of Exhibit 4 of the Judgment (and included herein for reference).

The Project will have a positive impact on private domestic wells within the Borrego Springs subbasin and the small water system. This positive impact is attributed to generally increased rate of groundwater recharge due to importation of water from Clark Dry Lake subbasin area and overall greater water supply and yield over the long-term. The feasibility of increasing water supply will support the sustainable goals described in the GMP.

Does the Project address the needs of the State Water Board's SAFER Program, designed to ensure Californians who lack safe, adequate, and affordable drinking water receive it as quickly as possible, and that the water systems serving them establish sustainable solutions?

The Project will study the possibility of enhancing groundwater supply via importing water from nonlocal sources. If the Project is determined to be a viable, cost-effective solution, the Borrego Springs community will be ensured with a safer, more diverse, and more sustainable water supply.

According to the Judgment, the Physical Solution charges the Watermaster with establishing and implementing groundwater monitoring which is critical to achieve the sustainable goal and to avoid undesirable results. The Watermaster will determine if changes in the water levels or water quality of the Basin are significant and unreasonable.

How does the Project address the Human Right to Water (AB 685 Section 106.3) which states that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes?

As of 2019, BWD calculated Borrego Springs's total human right to water (AB 685, section 106.3) at under 400 afy (see ENSI draft 4/15/19 SDAC Impact/Vulnerability Analysis, and BWD's 7/9/19 Board agenda package). The community-wide ramp down program would maintain BWD's water supplies in excess of the municipal Human Right to Water amount. Additionally, domestic well owners are De Minimis Pumpers exempt from the ramp down.⁴ The Project would supplement the native groundwater resources further protecting the Human Right to Water.

Please describe how the project contributes to addressing the risks in the region to water supply and water infrastructure arising from climate change. If possible, please provide the amount of greenhouse gas emissions reduced and carbon sequestered resulting from the project.

The Project contributes to addressing the risks in the region to water supply arising from climate change by further studying incomplete information for an alternative that could increase water supply available for use in Borrego Springs.

The Physical Solution recognizes that climate change enhances the probability, magnitude, and periodicity of extreme precipitation events (floods and droughts) and that recharge over the 20-year GMP implementation period is an estimation (see Section 3.4.1 of the GMP).

The Project will complete data gaps and provide information of water available near the Clark Dry Lake that could be used for potential recharge of the Borrego Springs Subbasin. If the outcome of

⁴ De Minimis Pumper is defined by the Judgment as any Party who pumps two acre-feet or less per year for use on real property underlying the Basin.

the Project suggests that this alternative is feasible, it will provide opportunity for the Subbasin to increase its amount of annual recharge (a preliminary study indicated a possible production of about 2,000 AFY from Clark Dry Lake). Thus, the Project will support the implementation of the Physical Solution in regards to reducing groundwater overdraft, reducing community-wide cutbacks, reducing the need to fallow agricultural crops and will also support the Subbasin in the water supply challenges associated with climate change.

Budget Category (a): Project Administration

Task 1 - Project Management

Manage grant agreement including compliance with grant requirements, preparation and submission of supporting grant documents, and coordination with the Grantee, Borrego Water District. Preparation of invoices for progress payments, including relevant supporting documentation, for submittal to DWR via Borrego Water District. This task also includes administrative responsibilities associated with the Project such as coordinating with partnering agencies and managing consultants/contractors.

Deliverables:

- Grant Agreement
- Grant Progress Reports and other grant requirements,
- Invoices for Progress Payments with supporting documentation
- Final payment summary of grant expenditures.

Budget Category (b): Planning/Design/Environmental

Task 2. - Planning

2.1 Conduct a hydrological/geotechnical investigation of the subsurface geologic aspects of the project area to determine the most appropriate locations for installation of test and observation wells, in the Clark Dry Lake subbasin area. Tasks will include review of available published and unpublished geologic, geophysical and groundwater studies for the Clark Dry Lake Subbasin, as well as available well drillers reports. Where sufficient data is available, prepare geologic sections through the subbasin to assess type and extent of potential aquifer units.

2.2 Develop and prepare groundwater extraction testing plan. Based on the findings from Task 2.1, assess locations and target depths for new well(s). Define feasible alternatives for disposal/or use of water extracted during well testing.

2.3 Negotiate and prepare and Access Agreements and/or permission to access public and private lands which overlie subbasin areas proposed for study and installation of wells.

2.4 Identify biological assessment requirements for proposed test locations and complete assessments as required.

2.5 Complete and file application(s) to obtain required permit(s) for the drilling and installation of proposed test and observation wells.

Deliverables:

• Report showing the results from the hydrogeologic/geotechnical study

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- Map showing the location of the proposed test and observation wells.
- Well testing plan
- Access Agreements
- Biological Assessment Report (as required)
- Well drilling Permit(s)

Budget Category (c): Construction/Implementation

Task 3. - Construction Management

The Watermaster's consultant will implement construction management activities including: preparing and updating the project work schedule, progress payments, preparation and review of project submittals, and contract administration services.

Task 4. - Implementation and Data Collection

The selected Watermaster consultant/contractor will complete the well drilling and monitoring well installations, install required water extraction and monitoring equipment, operate test production wells, monitor well field and record test data in accordance with testing plan. Water quality tests will be performed at different depths below ground level during drilling of the well(s) and during active testing operations to analyze various water quality constituents including total dissolved solids (TDS), sulfate, chloride, nitrate-nitrogen, fluoride and arsenic. Testing shall be conducted in the fall and spring to study seasonal changes in groundwater storage, levels and quality.

Deliverables:

- Well drilling logs
- Well test data report
- Material and equipment data sheet
- Test well operations and well field monitoring data report.
- Water quality data report

Budget Category (d): Monitoring/Assessment

Task 5. - Data Analysis and Estimate of Available Yield

The selected Watermaster consultant/contractor will perform groundwater level and water quality analysis based on the obtained data and representative samples obtained in Task 4. Data obtained from the observation well(s) will be used for calculation of aquifer properties, including but not limited to the average permeability, transmissibility, coefficient of storage, in addition to the potential lateral extent of pumping interference from the production well, for subsequent well field design. The Watermaster consultant/contractor will prepare a technical memorandum to document the results from the well installation and testing. The technical memorandum shall include at the minimum introduction, background, field procedures and equipment, sampling and testing methods, data analysis and calculations, recommendations and conclusions. Results shall be displayed in tables and/or figures as appropriate.

2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin The study will also provide recommendations regarding the feasibility of constructing full-scale production wells for groundwater extraction. Prepare a preliminary estimate of the sustainable yield of the aquifer and the total amount of groundwater in storage that is potentially available for extraction.

Deliverables:

Technical memorandum that will include, but not limited to, descriptions of:

- Available groundwater quantity and water quality characterization
- Seasonal variations in groundwater quality, levels and quantity
- Preliminary sustainable yield of the proposed well field for groundwater extraction and export
- Total amount of groundwater that is available for extraction and transport without causing undesirable results in the Borrego Springs Subbasin

Budget Category (e): Interested Parties Outreach/Education

Task 6. - Outreach with Interested Parties and Stakeholders

The Watermaster will provide updates of project analysis to any interested party and not only limited to the pumpers, but the broader community. The Watermaster will also provide the opportunity to engaged interested parties in their regular public meetings and also through the community representative that is part of the five Watermaster board members (during up to five meetings per year).

The public outreach will be based on the findings and progress of the technical study obtained in Task 5. The public outreach will inform interested parties of recommendations for future decisions and opportunities for groundwater management.

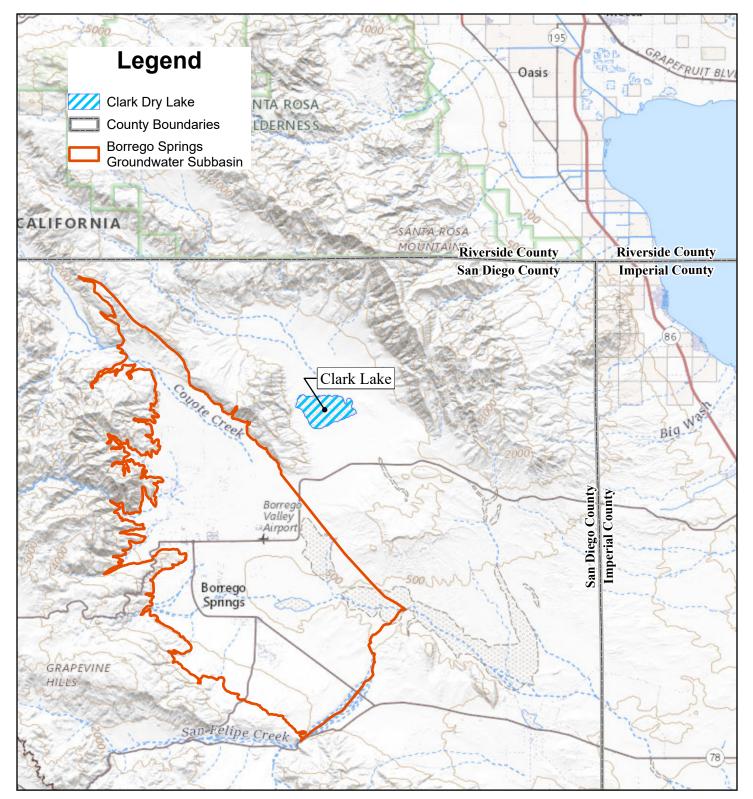
		(a)	(b)	(c)	(d)
	Category	Requested Grant Amount	Local Cost Share: Non-State Fund Source*	Total Cost	% Local Cost Share (Col(b))/(Col(c))
(a)	Project Administration				
	Task 1 – Project Management	16,000	0	16,000	N/A
(b)	Planning/Design/Environmental				
(c)	Task 2. – Planning2.1 Hydrological/geotechnical investigation2.2 Testing plan2.3 Access Agreements2.4 Biological assessment2.5 Well permit(s)Construction/Implementation	50,000 20,000 25,000 20,000 1,000	0 0 0 0 0	50,000 20,000 25,000 20,000 1,000	N/A
(0)	Task 3. – Construction Management	35,000	0	35,000	
	Task 4. – Implementation and Data Collection Construction of test wells (2) Observation wells (4) Performing well test	180,000 280,000	0	200,000 280,000	N/A
<u> </u>		40,000	0	40,000	
<u>(d)</u>	Monitoring/Assessment Task 5. – Data Analysis and Estimate of Available Yield	75,000	0	75,000	N/A
<u>(e)</u>	Interested Parties Outreach/Public Education				
	Task 6. – Outreach with Interested Parties and Stakeholders		15,000	15,000	100%
(f)	Grand Total (Sum rows (a) through (d) for each column)	742,000	15,000	742,000	

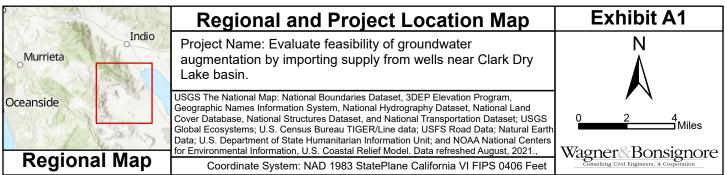
December 2021

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* List sources of Local Cost Share funding: Budget for Watermaster Regular Board meetings

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	Project Administration	01/01/2023	08/01/2024
	Task 1 – Project Management	01/01/2023	08/01/2024
(b)	Planning/Design/Environmental	01/01/2023	11/01/2023
	Task 2. – Planning		
	2.1 Hydrological/geotechnical investigation	01/01/2023	04/01/2023
	2.2 Testing plan	04/01/2023	06/01/2023
	2.3 Access Agreements	06/01/2023	11/01/2023
	2.4 Biological assessment	06/01/2023	10/01/2023
	2.5 Well permit(s)	06/01/2023	07/01/2023
(c)	Construction/Implementation	11/01/2023	08/01/2024
	Task 3. – Construction Management	11/01/2023	08/01/2024
	Task 4. – Implementation and Data Collection		
	Construction of test wells (2)	11/01/2023	12/01/2023
	Observation wells (4)	11/01/2023	12/01/2023
	Performing well test	04/01/2024	08/01/2024
	Monitoring/Assessment	01/01/2024	10/01/2024
(d)	Task 5. – Data Analysis and Estimate of Sustainable Yield	01/01/2024	10/01/2024
	Interested Parties Outreach/Public Education	01/01/2023	10/01/2024
(e)	Task 6. – Outreach with Interested Parties and Stakeholders	01/01/2023	10/01/2024







	Borrego Springs Community	Exhibit A2
Murrieta	Project Name: Evaluate feasibility of groundwater augmentation by importing supply from wells near Clark Dry Lake basin.	N
Oceanside	Earthstar Geographics, County of Riverside, California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS	0 <u>1.25 2.5</u> Miles
Regional Map	Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet	Wagner Bonsignore Consulting Civil Engineers, A Corporation

