Interested Party Project Submissions
For Prop 68 Grant Submission
Borrego Valley Sub Basin

Project #	Interested Party		Project	Total Cost	Grant Cost	Page #
1	Borrego Water District	BWD	Advanced Metering Infrastructure	$1,338,750	$1,275,000	2
2	Borrego Water District	BWD	Solar Project	$3,316,950	$3,159,000	19
3	Borrego Water District	BWD	WWTP Monitoring Wells	$281,500	$206,500	49
4	Borrego Springs Watermaster	BSWM	Biological Restoration of Fallowed Lands	$755,340	$755,340	62
5	Borrego Springs Watermaster	BSWM	GDE Monitoring Program	$585,000	$585,000	90
6	Borrego Springs Watermaster	BSWM	Monitoring, Reporting and GMP Update	$3,859,500	$3,684,000	105
7	Borrego Springs Watermaster	BSWM	Water Supply Augmentation	$536,000	$536,000	137
8	Borrego Springs Watermaster	BSWM	Eval of GW Augmentation Import	$742,000	$742,000	153
9	Borrego Unified School District	BUSD	Education Project	$401,500	$369,000	168
10	Borrego Unified School District	BUSD	Turf Conversion Project (w/Softball Field)	$2,408,052-$3,399,552	$2,286,552-$3,196,552	188
11	Borrego Valley Endowment Fund	BVEF	Air Quality Monitoring	$629,200	$629,200	202
12	Borrego Valley Stewardship Council	BVSC	Resiliency Strategy	$260,000	$200,000	216
13	Christmas Circle	CC	Water Reduction Program	$161,399	$161,399	232
14	De Anza Desert Club	DADC	Water Conservation Plan	$3,341,463	$2,990,085	244
15	Tubb Canyon Desert Conservancy	TCDC	GDE Identificaiton, Assessment & Monitoring	$3,362,220	$3,362,220	291
				$21,978,874-$22,970,374	$20,941,296-$21,851,296	

Project Information Submittal Form

Project Submitter/Owner: Borrego Water District

Project Name: Advanced metering infrastructure (AMI) including customer leak detection for water conservation/ efficiency

Contact Information

Name: Geoff Poole
Phone: (760) 767-5806
Email: geoff@borregowd.org
Address: 806 Palm Canyon Drive, Borrego Springs, CA 92004

Project Summary

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

The project is to replace all of BWD's manual water meters with an Advanced Metering Infrastructure (AMI) system, and to evaluate the usefulness of remotely-controlled automatic valves as add-ons to the system. The Project is needed to address demand-side reductions in order to achieve the Basin's sustainability goal to reduce Basin Pumping. As a Basin that is entirely reliant on groundwater – there is no feasible means of importing water from elsewhere -- demand-side reductions are the only means to achieve sustainability.

AMI meters measure water usage like manual meters and then transmit that information near real-time using a low cost cellular connection to BWD servers. Customers can securely access their water usage information through a website or from their phone. All customer information is private and only accessible by the customer. BWD uses the water usage information for billing like it does with manual water meter read information.

In addition, as part of the Project, a pilot program has been designed to achieve two goals:

1. evaluate and adjust AMI meter-reading system performance on a small scale, prior to implementing the Project on the larger scale; and
2. evaluate whether BWD should also offer automatic shutoff valves as part of this program.

This estimate includes software and hardware cost to implement AMI meter-reading for both the pilot program and all of BWD's 2,059 residential and commercial meters.

The Pilot program is designed to provide new or retrofitted well meters, automated valves, and system installation for 100 of the BWD's customers, chosento provide data for the most representative range of users in the service area (e.g., golf courses, agricultural, commercial, residential). For the pilot program, the 100 existing meters would be replaced with new meters as well as AMI software and hardware. In addition, the Pilot study budget includes costs to install automated valves with the meters that allow for BWD and customers to remotely shut-off service without the need to physically turn valves at the meter. BWD anticipates the automated valves will be popular with many of its "snowbird" and other part-time residents, who will have added confidence that not only are they not wasting water, but will also be protected from the potential for damaging leaks in the home because they will be able to receive leak alerts and quickly shut off service themselves.

The AMI project has many benefits regardless of the effectiveness and popularity of automated values. The automatic meter-reading enables BWD to provide alerts, tips and other communications directly to customer smartphones and computers, such as leak mitigation and mid-cycle 'high bill' notifications. Real time data can also be used to identify leaks, improve overall water use, and encourage water conservation throughout the BWD water system service area.

BWD anticipates completely replacing all residential and commercial meters as part of this Project. The larger scale Project build out phase would take place over a 2.5-year period and would involve installing AMI based meters .

The costs to install the automated valves for the remaining 1,959 connections (those remaining after the Pilot study) during the large scale Project build out were not included in the AMI budget table presented in this document. However, this service can be offered as an optional item on a case-by-case basis by the BWD, if the customer desires to implement the automated valve installation at their own cost at that time.

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.

The Project location is entirely located within the Borrego Springs Subbasin (Basin) and within the service area of the BWD (Figure 1). The Project will benefit all ratepayers of the BWD and all pumpers within the Basin by achieving reductions in water loss caused by unrecognized leaks in the Customer water system. BWD has a mix of ¾-inch and 1-inch residential meters. All new residential meters installed moving forward will likely be 1-inch residential meters due to Local Fire Department regulations for fire sprinkler requirements.

What is the nexus of the Project to the Sustainability Goals 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 Project is needed to address demand-side reductions to achieve the Basin's sustainability goal to reduce Basin Pumping. As a Basin that is entirely reliant on groundwater – there is no feasible means of importing water from elsewhere -- demand-side reductions are the only means to achieve sustainability.

The Project helps achieve the goals of the GMP by increasing water use efficiency in the Basin. It is directly related to achieving the Basin's SGMA sustainability goals to operate the Basin within its sustainable yield without causing an undesirable result, by managing demand-side water use through maximizing water use efficiency for the commercial and residential sectors. The Project is contemplated in the GMP as described in Section 4.2 Project and Management Action No. 2 – Water Conservation. The Project will result in reduced pumping by 1) preventing residential and commercial leaks and 2) by providing end users real time information on their water use to optimize indoor and outdoor system performance. The BWD will provide outreach and education to its customers on how to use the software to track water use, and offer tips to improve indoor and outdoor water use efficiency.

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

The specific goals for the Project are to reduce Basin Pumping, reduce BWD water system loss through enhanced meter accuracy and improve overall efficiency of the BWD municipal water system.

The BWD will also reduce water system loss by improving the accuracy of meter reads through replacing existing meters. As meters age they lose accuracy and they measure less water than actually flows through the meter. BWD tests old meters and on average they measure 95% of the water that passes through them. The remaining 5% is unaccounted for and lost in the system. New AMI meters have near 100% water read accuracy eliminating this loss.

Methods used to improve municipal efficiency include improving leak detection, providing ratepayers proactive methods and measures to reduce water loss from leaks and in most cases avoiding leaks altogether by providing the customer a means to quickly shut-off service remotely, and encourage water conservation.

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?

The quantifiable benefits include reduction in Basin pumping through early recognition and correction of major and minor water leaks for residential and commercial customers, improvement in BWD water system loss as a result of improved metering accuracy, and water conservation through education and display of real time data to customers. Accuracy of the early detection of water leaks will be evaluated through setting up alerts using the AMI system and following up on all alerts to determine if the alert was appropriate. If so, BWD will resolve the leak with the customer and if not, will adjust the AMR system to improve alerts. BWD will publish the results of alert investigations.

BWD forgives/refunds on a case-by-case basis the cost of some significant water loss leaks. BWD has refunded over $100,000 in the past 3 years -- this will be greatly reduced with the Project. BWD tracks water system loss using the following formulas: Water Loss (AF) = Total Water Pumped (AF) – Water Sales (AF) – System Flushing (AF) – Emergency Leak Estimates (AF). The % Water Loss = Total Water Loss (AF) / Total Water Pumped (AF). The BWD system loss is approximately 8%. BWD will compare pre-Project and post-Project water system loss to document how the Project has improved BWD water system loss.

BWD will also evaluate pre-Project and post-Project billing data and ratepayer correspondence to quantify the number of reported leak incidents pre-Project versus post-Project. BWD will use the real time data provided by the AMI system to document water conservation savings for commercial and residential customers.

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.

The Basin has been identified as a Disadvantaged Community (DAC) and Severely Disadvantaged Community (SDAC) (Figure 2). As documented by the BWD, affordability of water is already a challenge for many of the District’s ratepayers because Borrego Springs median household income is approximately $36,583 (Rafetelis 2018). Ratepayers at the median income pay 2% of their household income for essential water use, 2.5% for efficient water use, and 3% for target average water use in fiscal year 2018 (Rafetelis 2018). Those at the 20th percentile and those at the poverty level spend between 3.2% and 3.8% of their income solely for essential water needs. An affordability standard of 2.5% and 2% of national median household income for water and sewer bills respectively was selected based on U.S. Environmental Protection Agency guidelines for water quality standards and Combined Sewer Overflow (CSO) compliance. This analysis supports the conclusion that the SDAC community should be insulated from cost increases due to SGMA compliance. The Project components for AMI will likely will not be funded by BWD without financial support because of the need to keep water rates low.

Describe the plan for outreaching and engaging interested parties (e.g., residents, local leaders, non-profitsrepresenting Underrepresented Communities, etc.) located within Underrepresented Communities, and include interested parties during all phases of the Project or Component?

At the very beginning of the grant Proposal process, email and then telephone contact was made with all the known, possibly-relevant non-profit organizations in Borrego Springs. (This was made possible by using the membership list of the Borrego Valley Stewardship Council, an umbrella group of over 50 local groups both formal and informal.) Notices were also put in the local newspaper, and notices were posted at very visible bulletin boards around town. Several of these groups decided to submit project proposals, and each entity doing that has a seat on the Project Review Committee (if several groups submit components of a Project, only one representative is seated.) Letters of Support from three organizations are included in the application package (OLAX, Organizacion de LatinX de Borrego Springs; the Borrego Ministers Association, and the Borrego Springs Unified School District).

To publicize the new system, BWD will use the many avenues of public outreach that it has already developed during the GSP creation and adjudication Judgment processes. These include regular articles in the local newspaper, communications to an email list, community meetings in English with simultaneous translation to Spanish, articles in English and Spanish included with water bills, and English and Spanish pages on the BWD website. In addition, *promotoras* (well-known and respected members of the local LatinX community) are hired to leave notices on doors in certain neighborhoods, and discuss questions brought to them.

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.

The Project will result in less pumping by BWD, which will consequently preserve groundwater in storage and help maintain groundwater levels near BWD wells and reduce Basin wide pumping quantities. There are several shallow private domestic wells in the Basin and one small water system that will benefit from implementation of the Project by preserving water for the Basin's beneficial users.

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 for AMI does not address the needs of the State Water Board's SAFER Program.

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?

The California Legislature has set several relevant priorities specific to beneficial use of water in the Basin: These priorities include: (1) domestic use is the highest use of water, followed by irrigation use (Water Code, section 106), (2) "It is hereby declared to be the established policy of this State that the right of a municipality to acquire and hold rights to the use of water should be protected to the fullest extent necessary for existing and future uses" (Water Code Section 106.5) and (3), the Legislature has formally established a human right to water. (Water Code Section 106.3). Assembly Bill (AB) 685 (2012) creates an ongoing obligation for state agencies to explicitly consider the human right to water in every relevant agency decision and activity. This Project is consistent with the provisions of Water Code Section 106.3 in that the project elements are deigned to improve water efficiency in the Basin that will assist with achieving the Basin's sustainability goal thereby protective of domestic water use within the Basin. The Project will benefit all BWD customers including the SDAC community.

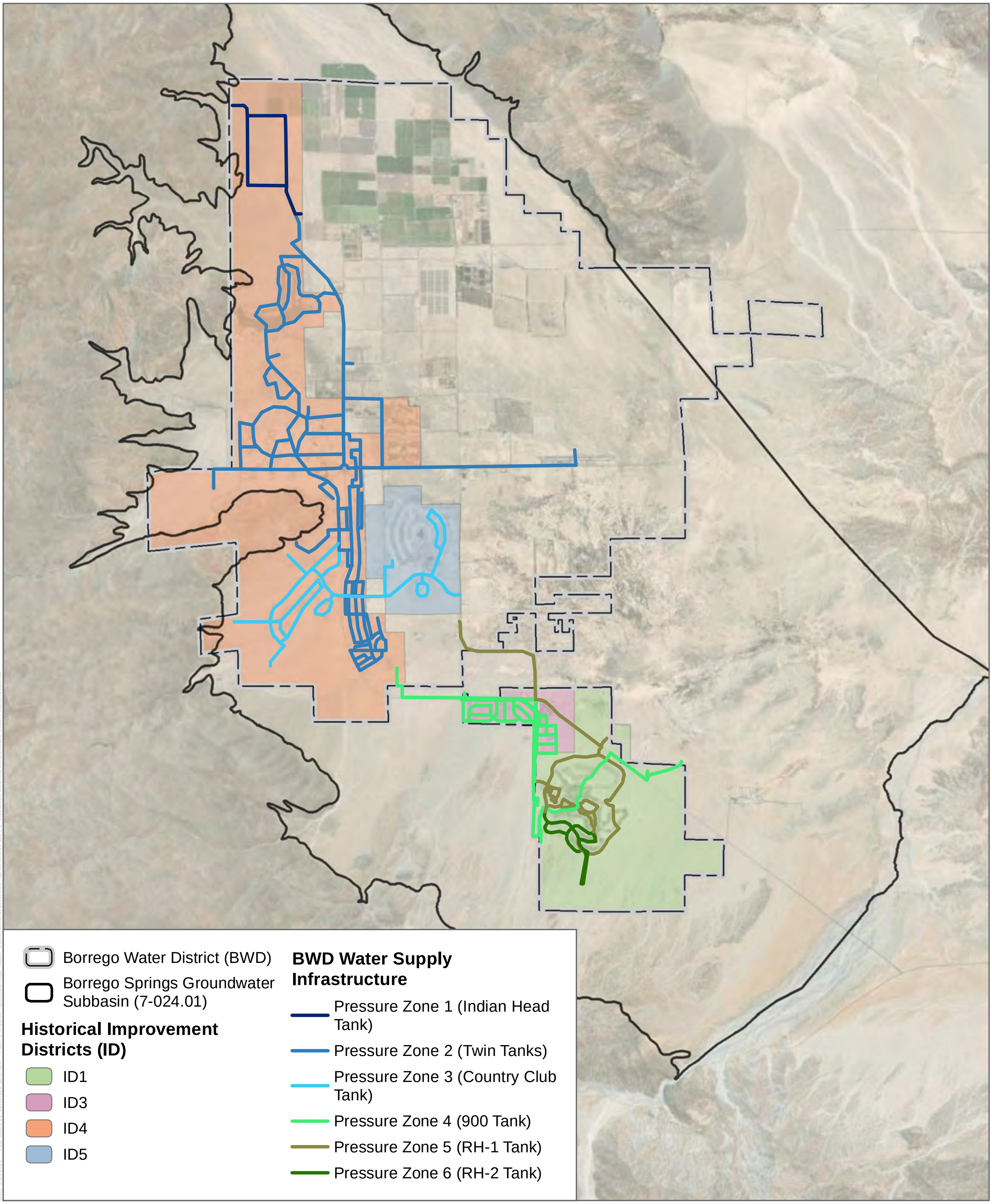
Unexpectedly excessive water bills can create significant financial and emotional stress on the consumer. BWD Customer Service Staff must often calm the nerves of customers who are faced with a bill that is often in the hundreds of dollars and in one case in the thousands. BWD does offer relief once every 5 years for high water bills and payment plans in other cases. Recognizing and correcting the leaks quickly after they occur will dramatically reduce/virtually eliminate these situations.

In addition, a common accusation is "BWD is not reading my meter because the box is full of sand". Our staff is great at reassuring the customer that we do read each meter every month and we move enough sand to read it. Having the capabilities of AMI will also eliminate this common false accusation.

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 Basin is 100% groundwater dependent with no currently economically viable alternative sources of supply. Climate change is expected to bring greater variability of rainfall to the Basin and contributing watershed, and increased temperatures that will result in increased reference evapotranspiration resulting in increased water demand for irrigation. The Project improves demand-side management through increased water use efficiency.

The AMI Project will likely result in nominal reductions of greenhouse gas emissions by reducing the amount of energy the BWD is required to use for pumping of groundwater. This value may be quantified by multiplying the documented quantity of water conserved from the Project by the BWD's average electrical use per unit of water. The BWD's average greenhouse gas emissions per unit of energy consumed would be multiplied by the total power savings to quantify reductions of greenhouse gas emissions. In addition, use of AMI will obviate the need to measure meters manually on a monthly basis. The annual vehicle miles traveled by BWD to complete monthly meters reads will be documented to determine the fuel savings and reduction of greenhouse gas emissions resulting from implementation of this Project.



SOURCE: ESRI; BWD; DWR

0 1 2 Miles

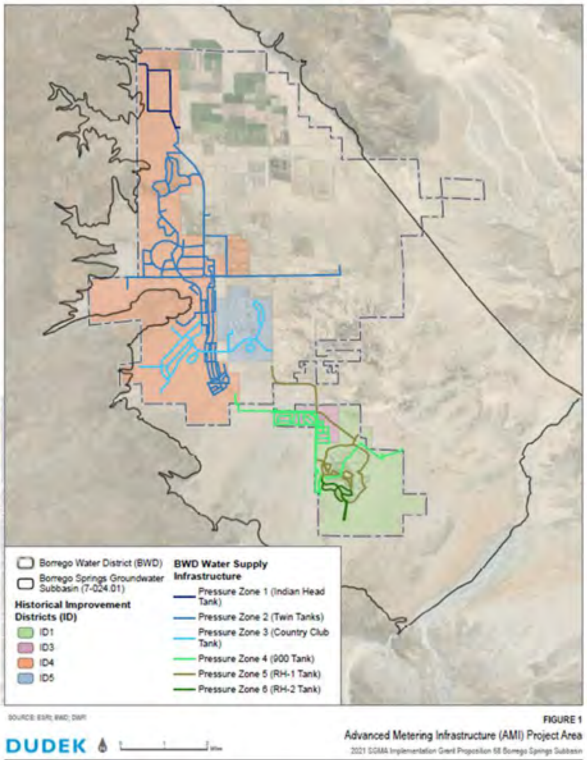
FIGURE 1

Advanced Metering Infrastructure (AMI) Project Area

2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

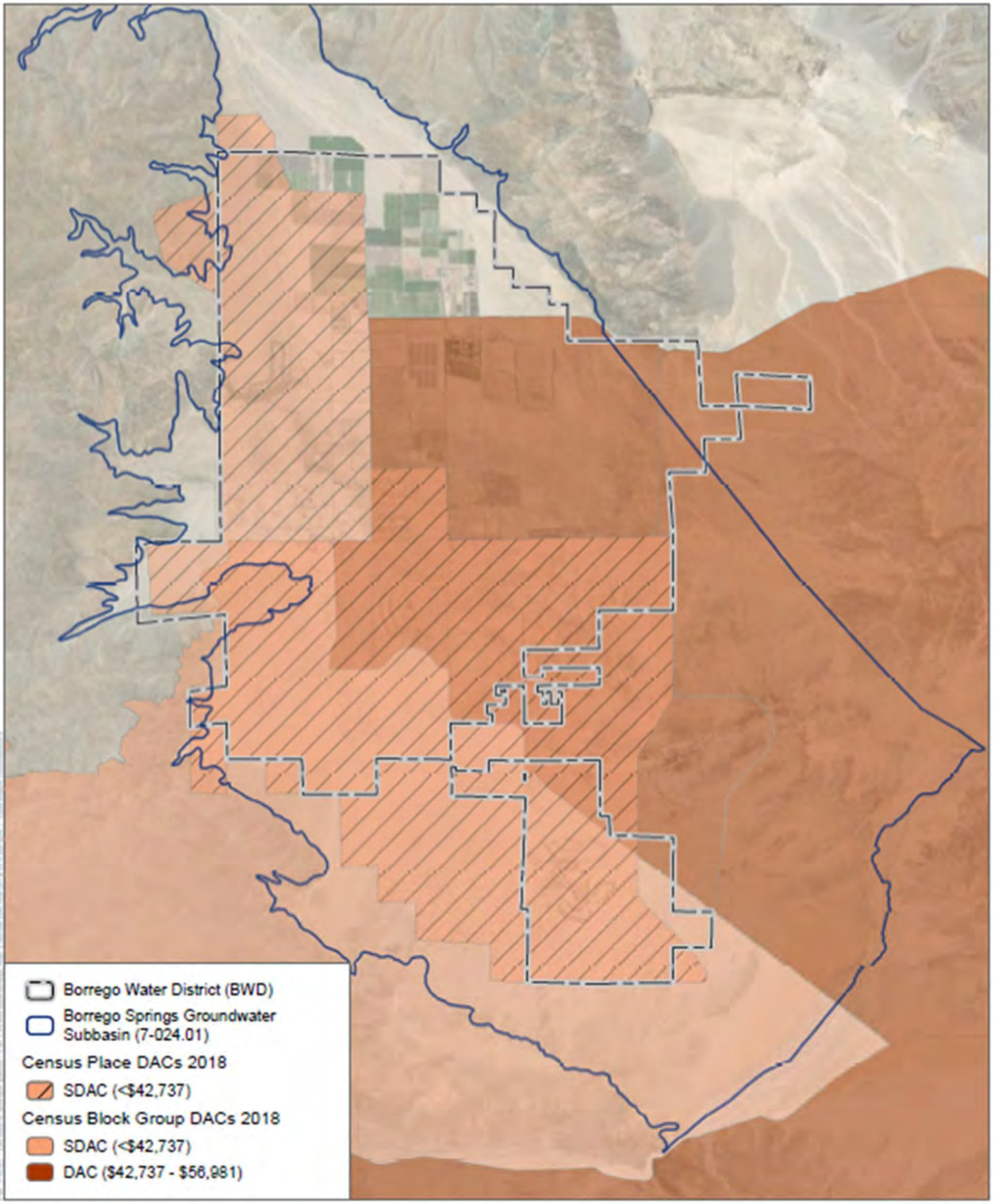
Figure 1. Advanced metering infrastructure (AMI) Project Location and Area of Benefit

The map depicts Borrego Springs Subbasin, BWD Service Area and Improvement Zones, and Main Distribution Laterals.



The current conditions are shown in the photo below of a typical residential water meter in BWD. Sandy soils and high winds create a condition where a meter can easily be covered in sand inside the meter box. The same conditions also contribute to scratching the surface glass lens over the meter which makes reading more difficult.

Figure 2. Underrepresented Community, a Disadvantaged Community (DAC), and/or a Severely Disadvantaged Community (SDAC)



SOURCE: ESRI; BWD; DWR

DUDEK 0 1 2 Miles

FIGURE 2
Disadvantaged / Severely Disadvantaged Communities (DACs / SDACs)
2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

Work Plan

Budget Category (a): Project Administration

Task 1 – Project Management

This Task includes managing the grant agreement, including compliance with grant requirements, and preparation and submission of all supporting grant documents. In addition, providing updated schedule and progress reports as well as all required meetings or teleconference calls with BWD to ensure Project success and completion. This task also includes administrative responsibilities associated with the project, such as coordinating with consultants/contractors, and preparation/submittal of invoices, including relevant supporting documentation for submittal to DWR.

> **Deliverables:** Project schedule and progress reports. Invoices and necessary grant documentation.

Budget Category (b): Planning/Design/Environmental

Task 2. – Planning

Activities necessary to secure a contractor and award the contract including: developing two separate bid documents for the Pilot study and for the larger scale Project for the remaining connections, preparing advertisement and contract documents for construction contract bidding, conducting a pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed. BWD has an in-house engineer and operations staff that will oversee procurement and construction management of the Project. Replacement of meters and installation of automated valves involves temporary water shut-off to individual connections, therefore, public outreach will need to be incorporated into the planning process prior to commencement of work. A more detailed discussion of public outreach programs is included in Budget Category (e).

> **Deliverables:** Procurement documents for Pilot and full scale Project.

Task 3. – Design

The AMI project involves replacement of meters, and installation of hardware and software to remotely read meters. The Project has been designed with an initial pilot study of 100 meters in order to efficiently evaluate and adjust system performance prior to implementing it on the larger scale, for the remaining 1,959 connections within the BWD's service area. This Task involves preparation and submittal of all design plans and specifications for the AMI hardware and software to be installed during the Project.

> **Deliverables:** Pilot Program 90% Design Plans and Specifications. Finalize 100% Design Plans and Specifications based on results of Pilot Program

Task 4. – CEQA

As this Project will be conducted on residential and commercial existing meters, this Project component is categorically exempt from CEQA as per Section 15301. Existing Facilities. During Project planning, additional components of the Project such as installation of the Long Range Wide Area Network (LoRaWAN) for AMI communications will be evaluated to determine if an additional CEQA evaluation is required. BWD will be responsible for CEQA review and costs for CEQA as part of its 5% match for the overall Project if additional expense is required for CEQA review.

Deliverables: CEQA review and reporting

Budget Category (c): Construction/Implementation

Task 5. – AMI Pilot Study for 100 Commercial and Residential Meters

The AMI Pilot Study will involve installation of new AMI equipped water meters and automated shut-off vales for 100 commercial and residential connections. The pilot study will be implemented to provide data for the most representative range of users in the service area (e.g., golf courses, agricultural, commercial, residential). For the pilot program, 100 existing meters will be replaced with new meters as well as AMI software and hardware. For the Pilot study, this Task includes costs to install automated valves with the meters that allow for BWD and customers to remotely shut-off service without the need to physically turn vales at the meter. This Project component will also involve the installation, testing and evaluation of LoRaWAN or other similar technology to communicate with the AMI meters and automated valves. Based on the results of the Pilot study, a recommendation will be made by the BWD's Engineer to proceed with the evaluated technology or potentially reevaluate technology options. It is anticipated the Pilot System will be tested for a period up to 6 months prior to completing a Pilot Study Report. BWD will supervise inspections of all installations and document AMI meters and automated valves are functioning properly. It is anticipated that construction management services by BWD staff may serve as part or all of the 5% cost share for this Project.

Deliverables: Pilot Study Report and Meter Inspection Reports

Task 6. – AMI Implementation for Remaining 1,959 Commercial and Residential Connections

Based on the results of the Pilot study, a recommendation will be made by the BWD's Engineer to proceed with the larger scale Project and implementation of AMI software and hardware on the remaining 1,959 service connections. In addition, this Task will include replacement of approximately 300 meters owned and operated by the BWD. As an optional cost, automated valves may be installed during this Task, at the discretion of BWD and/or the customer (costs not included in Budget table). It is anticipated that construction management services by BWD staff may serve as part or all of the 5% cost share for this Project.

Deliverables: Full Scale Project Implementation Report and Meter Installation Inspection Reports

Budget Category (d): Monitoring/Assessment

Task 7. – AMI Monitoring and Assessment

Monitoring and assessment of the AMI Project will occur during both the pilot and full-scale implementation phase. First, during the pilot phase, the AMI technology will be evaluated to determine performance to meet Project goals of 1) automating monthly meter reads, 2) water end-use efficiency improvements through leak detection, 3) water end-use efficiency improvements through customer self-review of indoor and outdoor use, and 4) improvement of BWD water system loss through more accurate metering. Based on monitoring and assessment of the pilot program, adjustments may be made to the full-scale implementation in order to maximize project goals and water use efficiency. Project performance will be quantified through documentation of improve commercial and residential end use efficiency.

Deliverables: Pilot Project Monitoring and Assessment Report and Full-scale Project Monitoring and Assessment Report

Budget Category (e): Interested Parties Outreach/Education

Task 8. – AMI Outreach and Education

As the project involves use of new technology and requires temporary shut-off of water service to install new meters and automated valves, an important component of the Project is bi-lingual outreach to BWD ratepayers to explain the benefits of the Project and educate them how to use online tools to shut-off water service when leaks are detected. In addition, the online tools will allow users to perform indoor and outdoor self-evaluation of commercial and residential water use efficiency. Education and outreach on the use of these tools to improve efficiency will also be included. The Project will be advertised to the BWD ratepayers through the BWD website and likely through information material provided in monthly billing statements.

Deliverables: AMI Customer Informational Flyer. Vendor Provided User Video.

Budget

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**	**$50,000**	**$2,500**	**$52,500**	**5%**
	Task 1. Project Management	$50,000	$2,500	$52,500	
(b)	**Planning/Design/Environmental**	**$75,000**	**$3,750**	**$78,750**	**5%**
	Task 2. Planning	$30,000	$1,500	$31,500	
	Task 3. Design	$25,000	$1,250	$26,250	
	Task 4. CEQA	$20,000	$1,000	$21,000	
(c)	**Construction/Implementation**	**$1,100,000**	**$55,000**	**$1,155,000**	**5%**
	Task 5. **AMI Pilot Study for 100 Commercial and Residential Meters**	$100,00	$5,000	$105,000	
	Task 6. **AMI Implementation for Remaining 1,959 Commercial and Residential Connections**	$1,000,000	$50,000	$1,050,000	
(d)	**Monitoring/Assessment**	**$45,000**	**$2,250**	**$47,250**	**5%**
	Task 7. AMI Monitoring and Assessment	$45,000	$2,250	$47,250	
(e)	**Interested Parties Outreach/Public Education**	**$30,000**	**$1,500**	**$31,500**	**5%**
	Task 8. AMI Outreach and Education	$30,000	$1,500	$31,500	
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	**$1,275,000**	**$63,750**	**$1,338,750**	**5%**

*** List sources of Local Cost Share funding:**

Note: The BWD Board voted unanimously on January 18, 2022 to provide a 5% cost share for all funding obtained for the AMI Project. The source of the local cost share is revenue generated from BWD water rates.

Schedule

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**01/01/2022**	**12/31/2024**
	Task 1. Project Management	01/01/2022	12/31/2024
(b)	**Planning/Design/Environmental**	**01/01/2022**	**01/31/2023**
	Task 2. Planning	01/01/2022	12/31/2022
	Task 3. Design	01/01/2022	01/31/2023
	Task 4. CEQA	01/01/2022	3/31/2022
(c)	**Construction/Implementation**	**06/01/2022**	**09/30/2024**
	Task 5. **AMI Pilot Study for 100 Commercial and Residential Meters**	06/01/2022	12/31/2022
	Task 6. **AMI Implementation for Remaining 1,959 Commercial and Residential Connections**	12/31/2022	09/30/2024
(d)	**Monitoring/Assessment**	**06/01/2022**	**09/30/2024**
	Task 7. AMI Monitoring and Assessment	06/01/2022	09/30/2024
(e)	**Interested Parties Outreach/Public Education**	**03/31/2022**	**09/30/2024**
	Task 8. AMI Outreach and Education	03/31/2022	09/30/2024

BORREGO MINISTERS' ASSOCIATION
P.O. Box 2183 • Borrego Springs, California 92004

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding: the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water.

As the only social service "agency" in town, the Borrego Ministers' Association (BMA) has offered aid to many families and individuals in our community over the last 10 years, and especially during these past "covid" months. The BMA does not give cash to individuals, instead we talk with them and hear their personal appeals for financial help, and take copies of their unpaid bills. Then we assess the need, and DIRECTLY pay a portion of these approved expenses requested by families. These bills include: water, electric, rent shortfalls, temporary auto expenses, cell phone bills, medical emergencies, food vouchers, gasoline cards, etc. The BMA meets weekly, and privately, to consider all weekly emergency requests.

The BMA supports the following proposed projects to help the Borrego Water District obtain grant funds to aid the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.

- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping water that is then wasted from the Basin, and will prevent customers from receiving unexpectedly high water bills.

Sincerely yours,

The Rev. Michael Plekon, Ph.D.

Michael Plekon, Chairperson, Borrego Ministers' Association

Borrego Springs Unified School District

1315 Palm Canyon Drive, Borrego Springs, CA 92004 P: (760) 767-5357 F: (760) 767-0494

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water. We see our SDAC status clearly in our schools, where 90% of students qualify for the free lunch program.

The Borrego Springs Unified School District supports the following proposed projects to help the Borrego Water District obtain grant funds to support the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.
- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping unused water from the Basin, and prevent customers from receiving unexpectedly high water bills.

Sincerely,

Mark Stevens
Superintendent, Borrego Springs Unified School District

~ OLAX ~

Organización de LatinX de Borrego Springs

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water.

The Organización de LatinX de Borrego Springs was formed a year ago to foster closer ties between members of the LatinX community in Borrego Springs, and to speak for our community in public forums. OLAX supports the following proposed projects to help the Borrego Water District obtain grant funds to aid the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.

- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping water that is then wasted from the Basin, and will prevent customers from receiving unexpectedly high water bills.

Sincerely yours,

Esmeralda Garcia
Co-Director, Organización de LatinX de Borrego Springs

BWD Well Field Solar Conversion Project

Project Submitter/Owner: Geoff Poole, BWD

Project Name: BWD Well Field Solar Conversion

Contact Information

Name: Geoff Poole
Phone: 760-767-5806
Email: geoff@borregowd.org
Address: 806 Palm Canyon Drive, Borrego Springs, CA 92004

Project Summary

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

The Borrego Water District (BWD) is the sole supplier of potable water for Borrego Springs' 3,000 full-time and up to 10,000 seasonal residents. In addition, BWD provides water for the Administrative Services and Visitors' Centers of the largest State Park in California, Anza-Borrego Desert State Park (ABDSP), with an estimated 400,000 visitors per year. BWD operates 9 potable production wells to deliver water to its customers and is currently 100% dependent upon SDG&E to provide the required electricity for pumping with annual expenses of approximately $350,000 per year.

A detailed cost/benefit evaluation of all 9 wells was completed by BWD and SDG&E. The conclusion of the analysis was to convert 6 of the 9 wells to be supplied power by a solar photovoltaic (PV) systems distributed at each of the selected well sites. The 3 wells eliminated are used for pressure regulation and do not produce higher flows that require large amounts of electricity like the 6 proposed sites. The specific Project locations are tied to the physical location of the wells. The Project consists of all the tasks and subtasks necessary to design, permit, construct and monitor production of a series of distributed PV systems at the 6 well sites.

The specific sub tasks for the Project are as follows:

Design

Project design will commence upon approval of the Grant in which each well site's utility data will be further analyzed to determine system sizing. Each of the 6 well sites will be visited to determine PV panel layout, point of interconnection with the grid and potential location for electrical equipment such as inverters. The existing electrical infrastructure will also be evaluated at each site and a site walk will occur with a BWD representative with knowledge of the site. All Plans, Specification and Bid Documents will be developed in the design phase.

Deliverables: Full set of Electrical Single Line Diagrams, Solar PV System Layouts and Specifications, Connections to BWD Infrastructure, and PV Calculations for each site. Major electrical components (inverters, PV modules, etc.) will be selected and located. Bid Documents, As-built drawings following construction.

Permitting: BWD owns the property on which each well is located. Prior to beginning construction, a biological/cultural survey will be needed as part of the Environmental Review process sub tasks. The intent of the biology survey is to identify biological resources on the project site, determine impacts, and recommend suitable mitigation measures, if necessary. A cultural survey includes background research and on-site analysis with the specific purpose of identifying traditional cultural activities including gathering and cultivation of plants, animals and other resources. Surveys shall be performed by a biologist who possesses current survey permit(s) for certain species, as required by state or federal regulatory agencies.

Deliverables: Site Assessments, Report Writing, Permit Narrative, Permit Acquisition

Construction: SDG&E will utilize its contacts in the industry to notify Contractors of the opportunity and administer the bidding process including bid review. Once a qualified low bidder is determined, SDG&E will process all the required bonds and related contractual requirements. After the legal requirements have been met, Contracts will be signed and notice-to-proceed provided to the lowest responsive bidder. SDG&E will manage the Construction process to ensure the Project is being constructed as designed. All Project close out responsibilities will be performed by SDG&E.

Deliverables: Contract, Bid Results, Construction Management, Project Close Out

Production Monitoring: Monitoring and assessing the performance of the distributed PV systems is vital to ensuring the Project meets its objectives. The Project includes protocols to ensure sustained performance and achievement of projected energy savings including information and templates to support responsible project management and oversight, aligned with best practices and conditions for annual scoring provided by the Federal Office of Management and Budget. Training of BWD staff is also included.

This Project was selected over others due to its immediate and direct impact on water rates to serve the SDAC Community. The overall timeline and feasibility is consistent with the Grant requirements.

Deliverables: Develop processes, related documents and employee training.

<u>SCORING CRITERIA OVERVIEW</u>

Criteria #1:Tasks and subtasks have been clearly justified.

2. 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.

Project Locations: The location of BWD wells is determined by history (who originally constructed the well), geology (areas conducive to producing the required water quality and quantity) as well as geographic distribution (spread the wells out to be closer to the areas served). The list of specific wells to be converted to solar are: ID 1-12, ID 1-16, ID 4-9, ID 4-

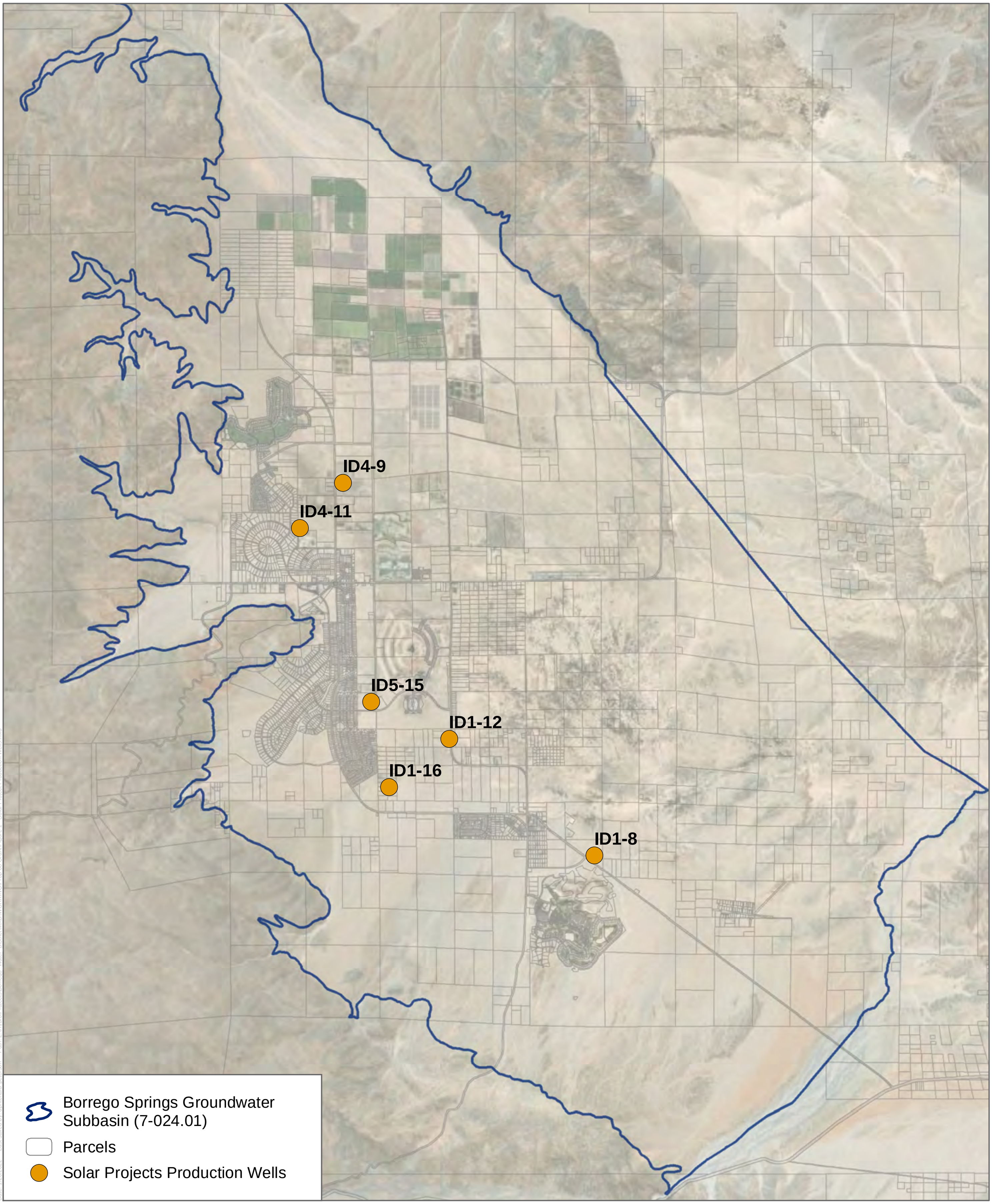
11, ID 5-5 & ID 5-15. Exact Project address was not used for security purposes and is available, if required. The general locations of the wells are shown in Figure 1.

Current Conditions: The current conditions at each site are shown in the following photos. Each site is a fully functioning potable production well with perimeter security fencing and above ground structures to protect pump/motors/electrical. The Project well sites are located on disturbed land with sparce vegetation.

Benefitting Areas: The entire BWD service area will benefit from the direct water rate reduction. The BWD service area covers the vast majority of the Borrego Springs Subbasin. The Project also provides an overall benefit to the region through GHG reductions.

The well locations and benefitting areas are shown in Figure 1.

Figure 1. Solar Project Location and Area of Benefit



SOURCE: ESRI; BWD; DWR

DUDEK

0 1 2 Miles

FIGURE 1

Solar Projects Production Wells

2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

Current Conditions: Photos of current conditions (as of 1-20-22) are also shown as follows:

PROJECT: CURRENT CONDITIONS

ID 1-16

ID 1-16

ID 1-12

ID 1-12

ID 5-5

ID 5-5

ID 5-15

ID 5-15


ID 4-11

ID 4-11


ID 4-9

ID 4-9


SCORING CRITERIA OVERVIEW:

#4: Regional Maps were Provided depicting locations, benefitting areas and photos of current conditions.

3. 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?

Nexus:

Potable Water Rate Affordability: Ensuring future potable water quality and rate affordability are key concepts covered in the GMP. Rate affordability if often overlooked but was important enough for the Settling Parties to include a reference to its importance in the Final Borrego GMP.

Need for Affordability is mentioned in the GMP, as stated in excerpts from Section 4.4.6:

> *"Concerns regarding this PMA specific to the SDAC community include water affordability (BWD rate impacts), loss of jobs/local economy, impacts to infrastructure, and/or quality of life."*
>
> *"SGMA- and SDAC-related grants and other publicly funded support is expected to continue to be available and pursued by BWD to assist in subsidizing future water costs. Borrego Springs is a key part of the utilization experience for the ABDSP."*

The immediate and long term benefit from the Project will be realized in an immediate water rate reduction, following completion of the Project, as well as insulation in the future from escalating electrical rates to support the objective of water rate affordability. The Project is expected to save approximately $280,000 per year of fixed cost to the BWD, which is approximately 7% of fiscal year 2022 expenses. An exact rate reduction has not yet been calculated but is expected to be in the between $0.24 and $1.40 a unit for Tier I water users[1]. The actual water rate reduction will be determined based on an updated rate analysis that will take into multiple factors including actual energy savings to BWD and other legal and accounting requirements. The PV project is expected to insulate ratepayers from future water rate increases due to escalating energy cost. This will result in a direct annual savings to the SDAC.

The GMP "…recognizes that climate change enhances the probability, magnitude, and periodicity of extreme precipitation events and recharge over the 20-year [SGMA] implementation period." Furthermore, the GMP states, "In May 2018, Governor Brown signed Senate Bill 606 and Assembly Bill 1668, which stem from the Governor's Executive Order and report to implement it. The legislation establishes a foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts." The distributed PV systems will result in direct reduction of GHG by producing distributed energy at the point of use thereby eliminating transmission losses and providing grid stability. Based on BWD's current power usage, SDG&E estimates GHG reduction at 1.2 million tons of carbon dioxide (CO2).

[1] Tier 1 usage is intended to provide enough water for essential indoor water use needs and to be provided at the most affordable rate that reflects actual cost of service.15 Tier 2 usage is intended to provide for reasonable outdoor usage and represents the peak summer use characteristics, on average, of the District's SFR customers. Tier 3 usage is designed to capture all large volume, inefficient, and/or excessive usage and is defined as all water use greater than Tier 2. The 7 hcf. Tier 1 allotment is based on an assumed 55 gallons per capita per day (GPCD) for essential water use needs and an average of 3 people per household, rounded up to the nearest whole hcf.

Scoring Criteria Overview

The Project is consistent with statements directly from the GMP

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

GOALS:

*Obtain Grant Funding for Immediate Water Commodity Rate Reduction: The primary Goal for the Project is to reduce BWD water rates by taking steps as specifically stated in Section 4.4.6 of the GMP:

> *SGMA- and SDAC-related grants and other publicly funded support is expected to continue to be available and pursued by BWD to assist in subsidizing future water costs. Borrego Springs is a key part of the utilization experience for the ABDSP.*

* Operate and Maintain Solar System to Ensure Optimal Performance and Insulation from future rate increases: By operating and maintaining the solar system at optimal levels, the Project will provide the cost saving that have been estimated as well as provide insulation from future electrical rate increases over time.

*Climate Change Strategy/GHG Reduction: Solar conversion is a universally accepted alternative to non-renewable energy sources and help to offset the impacts of Climate Change.

NEEDS:

*Lower Water Rates for BWD Consumers: A direct benefit of lower water rates will be a major outcome from the Project and enjoyed by BWD customers. Rates are expected to decrease by $0.24 to $1.40 a unit for Tier I water users as previously described following completion of the Project.

*Take steps to Reduce Future Water Rates when Possible: Electrical costs are expected to increase over the life of the PV system, and BWD Ratepayers would be insulated from higher future rates. Over the next 20 years (@5% increase/year) BWD will expend $11.5 M on electricity for pumping. Without the Project, BWD ratepayers would need to fund the entire expense.

*Complete Project to Achieve GHG Reduction: Obtaining the expertise to complete the project on-time and within budget is critical to meeting the needs of the community and Basin. BWD and the community need to be assured that the Parties involved in this process have the technical expertise and other resources necessary to complete the Project on time and within budget. BWD is fully confident in the use of SDG&E and independent design consultants selected for Project design. The Project will be public bid and awarded to the lowest responsive bidder.

SCORING CRITERIA OVERVIEW:

Goals and Needs have been identified and are consistent with statements in the GMP

5. 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?

The quantifiable benefits provided by this Project includes direct and immediate water rate relief for BWD customers and insulation from future rate hikes and GHG reduction.

Quantifying the benefits from rate reduction has been done taking estimated annual saving and removing that expense from the water rate. Current estimated annual saving is $280,000 per year. The actual rate adjustment will be subject to future legal and accounting review as previously described. The rate reduction benefit will be quantified through public disclosure of the SDG&E expenses before and after the installation of the solar panels. Currently, it is estimated that the water rates are expected to decrease by $0.24 to $1.40 a unit for Tier I water users.

* Operate and Maintain Solar System to Ensure Optimal Performance and Insulation from future rate increases: By operating and maintaining the solar system at optimal levels, the Project will provide the cost saving that have been estimated as well as provide insulation from future electrical rate increases over time. Actual solar production numbers will be used to quantify the benefit. If less than optimal performance is occurring, qualified experts with SDG&E will assist in identifying the issues and corrective measures.

Quantifying the Benefit of GHG Reduction: Based on current power usage, SDG&E has estimated the GHG reduction at 1.2 million tons of CO_2 for a system of this type/size. Borrego Springs unique renewable power supplies may lead to less CO_2 reduction that what is estimated above.

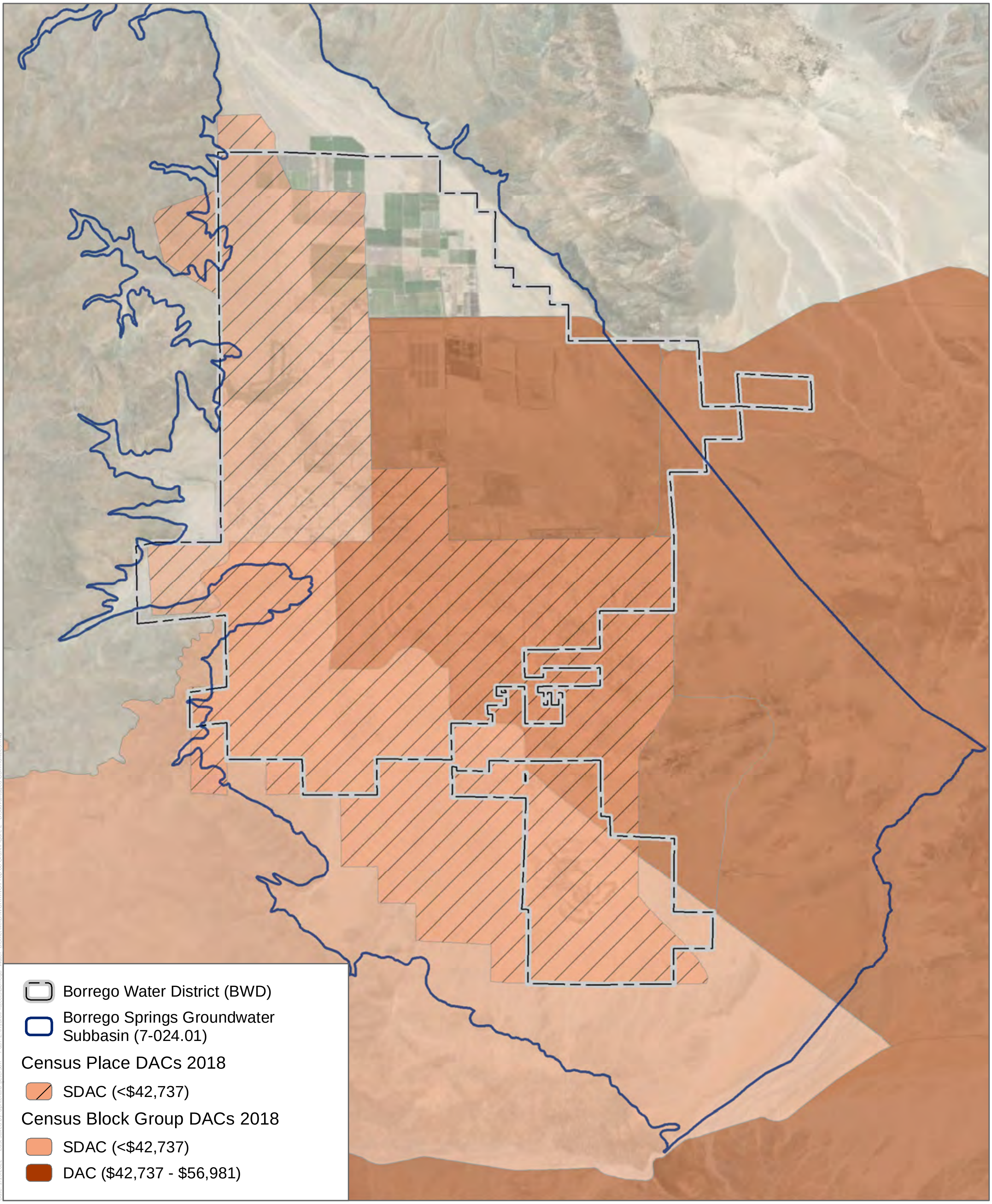
SCORING CRITERIA OVERVIEW

3 Benefits identified: The quantifiable benefits are an estimated at a minimum $0.24 per unit immediate rate reduction at Tier I (following construction of the Project), an estimated $11 million in total energy costs over the next 20 years and 1.2 million tons of CO_2 reduction will occur with the Project.

6. 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.

The Borrego Water District service area is classified as an SDAC by the State of California, which is defined as an area with an average household income (AHI) of <60% the state average. Currently the AHI for the state of California is $63,783, which means a SDAC has an average household income of $38,270 or less. The tier one rate reduction directly associated with the Project will be realized throughout BWD service area. The full Grant amount will benefit the SDAC community as shown in Figure 2.

Figure 2. Underrepresented Community, a Disadvantaged Community (DAC), and/or a Severely Disadvantaged Community (SDAC)



SOURCE: ESRI; BWD; DWR

0 1 2 Miles

FIGURE 2

Disadvantaged / Severely Disadvantaged Communities (DACs / SDACs)

2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

Comment letters have been signed by Borrego Springs residents and local organizations in support of the Project.

SCORING CRITERIA OVERVIEW

SDAC Map is provided and the entire Grant amount of $2.91M will benefit the SDAC

6b. Does the Project or Component fully describe their plan for outreaching and engaging interested parties (e.g., residents, local leaders, non-profit representing Underrepresented

Communities, etc.) located within Underrepresented Communities? Does the outreach and engagement include interested parties during all phases of the Project or Component (e.g., planning, design, and implementation)? Can interested parties provide input and be involved in the decision-making processes?

BWD will include input from interested parties (including the local residents and leaders, and non-profits representing underrepresented communities) in all phases of the project development outreach including providing input into the decision-making process. Spanish and English information will be developed.

Planning: As part of the planning phase, BWD will provide and open for discussion a detailed project plan that includes the schedule with milestones that include further community input, project bid process, bid approval process, construction oversight process and project completion signoff.

Design: Often, s community concern about solar panels is their placement and the potential for blocking views. To incorporate community input during the design for panel placement, BWD will put up “story poles,” temporary scaffolding using orange construction netting, to visually show where the panels will be. BWD will inform the community when the scaffolding is up and allow a 3-week period for community members to see the proposed panel placement. BWD will collect comments throughout the inspection period and at a public meeting. BWD will use the input to redesign or reorient the panels. If there are significant visual changes BWD will adjust the temporary scaffolding and have another review period to collect community input on the changes and potentially make further modifications.

Implementation: The implementation of solar panels is relatively straightforward and predictable, should something come up during this phase that noticeably impacts the visual design, BWD will share the design change with the public and offer an opportunity to help solve the implementation problem in an aesthetically acceptable way.

Supporting comment letters have been signed and are attached

- Letter from the Borrego Ministers’ Association
- Letter from the Borrego Springs Unified School District
- Letter from OLAX, the Organization de LatinX de Borrego Springs
- A letter signed by seventy-four (74) local Food Bank clients

SCORING CRITERIA OVERVIEW

Outreach is described and more than 3 Comment Letters received

7. 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.

The Project does not address directly address small water systems or private shallow domestic wells.

8. 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?

As documented by the BWD Affordability of Water Study, affordability is already a challenge for many of the District’s ratepayers because Borrego Springs median household income is approximately

$36,583 (Rafetelis 2018). Ratepayers at the median income pay 2% of their household income for essential water use, 2.5% for efficient water use, and 3% for target average water use in fiscal year 2018 (Rafetelis 2018). Those at the 20th percentile and those at the poverty level spend between 3.2% and 3.8% of their income solely for essential water needs. An affordability standard of 2.5% and 2% of national median household income for water and sewer bills respectively was selected based on U.S. Environmental Protection Agency guidelines for water quality standards and Combined Sewer Overflow (CSO) compliance. Obtaining Grant funding for this and other future BWD activities is critical to water rate affordability in the future. This Project is a step in the right direction to help address the needs of water affordability and will directly create short-term lowering of rates and long-term rate stabilization.

SCORING CRITERIA OVERVIEW

Taking steps that can reduce water rates is a cornerstone of the principles behind SAFER program

9. 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?

The Basin has been identified as a Disadvantaged Community (DAC) and Severely Disadvantaged Community (SDAC). As documented by the BWD Affordability of Water Study, affordability is already a challenge for many of the District's ratepayers because Borrego Springs median household income is approximately $36,583 (Rafetelis 2018). Ratepayers at the median income pay 2% of their household income for essential water use, 2.5% for efficient water use, and 3% for target average water use in fiscal year 2018 (Rafetelis 2018). Those at the 20th percentile and those at the poverty level spend between 3.2% and 3.8% of their income solely for essential water needs. An affordability standard of 2.5% and 2% of national median household income for water and sewer bills respectively was selected based on U.S. Environmental Protection Agency guidelines for water quality standards and Combined Sewer Overflow (CSO) compliance. Obtaining Grant funding for this and other future BWD activities is critical to water rate affordability in the future. This Project is a step in the right direction and will directly create short term lowering of rates, insulation from future energy cost increases and achieving affordability for BWD consumers.

SCORING CRITERIA OVERVIEW

The Projects impact on existing and future rates is in concert with the affordability goals of the HRW Legislation

10. 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 Basin is 100% groundwater dependent with no currently economically viable alternative sources of supply. Climate change is expected to bring greater variability of rainfall to the Basin and contributing watershed and increasing temperatures that will result in increased reference evapotranspiration resulting in increased water demand for irrigation. The Project improves BWDs ability to insulate its customers from additional power expenses associated with the pumping needed to meet the increased demands over time caused by climate change.

Well field solar has a direct impact upon GHG emission. For the Project, an estimated reduction of 1.2 million pounds of Co2 emissions is estimated by SDG&E. These estimates are for the typical installation and does not reflect the unique power supply of Borrego Springs.

SCORING CRITERIA OVERVIEW

Climate change will likely lead to increased pumping for all outside water uses and having the ability to insulate BWD customers from ever increasing electricity prices (7% for next year alone) addresses this important risk.

Work Plan

Budget Category (a): Project Administration

Task 1 – Project Management

This Task includes managing the grant agreement, including compliance with grant requirements, and preparation and submission of all supporting grant documents. In addition, providing updated schedule and progress reports as well as all required meetings or teleconference calls with BWD to ensure Project success and completion. This task also includes administrative responsibilities associated with the project, such as coordinating with SDG&E and consultants/contractors, and preparation/submittal of invoices, including relevant supporting documentation for submittal to DWR.

Deliverables: Project schedule and progress reports. Invoices and necessary grant documentation.

Budget Category (b): Planning/Design/Environmental

Task 2 – Planning, Design and Engineering Services

Activities necessary to secure a contractor and award the contract, preparing advertisement and contract documents for construction contract bidding, conducting a pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed. SDG&E and its consultants will oversee procurement and engineering design and layout of the 6 distributed PV systems.

Deliverables: 35%, 90% and 100% Design and Specifications, Procurement documents.

Task 3. – CEQA

As this Project will be conducted on property currently owned by BWD. Biological/cultural survey will be completed as part of the Environmental Review process. The intent of the biology survey is to identify biological resources on the project site, determine impacts, and recommend suitable mitigation measures, if necessary. A cultural survey includes background research and on-site analysis with the specific purpose of identifying traditional cultural activities including gathering and cultivation of plants, animals and other resources. BWD will be responsible for CEQA review including deamination of potential significant impacts and providing mitigation measures, if necessary. BWD will act as the lead agency for the Project and complete all necessary environmental review and filings

Deliverables: CEQA review and reporting

Budget Category (c): Construction/Implementation

Task 4. – Construction Management and Implementation

Construction management services and implementation of the distributed PV systems will be provided by SDG&E and its consultants. This budget item includes turn-key costs for PV panels, inverters and associated electrical equipment and installation

Deliverables: 6 distributed PV systems

Budget Category (d): Monitoring/Assessment

Task 5. – Commissioning and Performance Assurance

SDG&E and its consultants will provide all services related to commissioning of the 6 distributed PV systems, document system performance and perform necessary improvements to optimize PV system performance.

Deliverables: PV system delivery and monthly performance reports

Budget Category (e): Interested Parties Outreach/Education

Task 6. – Outreach and Education

BWD continually emphasizes education of its ratepayers through various formats including Town Hall meetings, presentations and informational flyers. As the PV Project will represent one of the BWD's largest ongoing capital infrastructure projects, the District would like to highlight the project benefits through an informational flyer and ultimately a short 3 to 5 minute video that will be posted to the BWD's website explaining the benefits and features of the Project.

Deliverables: PV Informational flyer and Video

Budget

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**	**$50,000**	**$2,500**	**$52,500**	**5%**
	Task 1. Project Management	$50,000	$2,500	$52,500	
(b)	**Planning/Design/Environmental**	**$160,000**	**$8,000**	**$168,000**	**5%**
	Task 2. Planning, Design and Engineering Services	$100,000	$5,000	$105,000	
	Task 3. CEQA	$60,000	$3,000	$63,000	
(c)	**Construction/Implementation**	**2,885,000**	**$144,250**	**$3,029,250**	**5%**
	Task 4. Construction Management and Implementation	2,885,000	$144,250	$3,029,250	
(d)	**Monitoring/Assessment**	**$49,000**	**$2,450**	**$51,450**	**5%**
	Task 5. Commissioning and Performance Assurance	$49,000	$2,450	$51,450	
(e)	**Interested Parties Outreach/Public Education**	**$15,000**	**$750**	**$15,750**	**5%**
	Task 6. Outreach and Education	$15,000	$750	$15,750	
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	**$3,159,000**	**$157,950**	**$3,316,950**	**5%**

*** List sources of Local Cost Share funding:** The BWD Board voted unanimously on January 18, 2022 to provide a 5% cost share for all funding obtained for the AMI Project. The source of the local cost share is revenue generated from BWD water rates.

Schedule

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**01/01/2022**	**12/31/2024**
	Task 1. Project Management	01/01/2022	12/31/2024
(b)	**Planning/Design/Environmental**	**01/01/2022**	**12/01/2022**
	Task 2. Planning, Design and Engineering Services	01/01/2022	12/01/2022
	Task 3. CEQA	03/01/2022	12/01/2022
(c)	**Construction/Implementation**	**01/01/2023**	**10/01/2024**
	Task 4. Construction Management and Implementation	01/01/2023	10/01/2024
(d)	**Monitoring/Assessment**	**09/01/2023**	**12/31/2024**
	Task 5. Commissioning and Performance Assurance	09/01/2023	12/31/2024
(e)	**Interested Parties Outreach/Public Education**	**01/01/2022**	**12/31/2024**
	Task 6. Outreach and Education	01/01/2022	12/31/2024

BORREGO MINISTERS' ASSOCIATION
P.O. Box 2183 • Borrego Springs, California 92004

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding: the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water.

As the only social service "agency" in town, the Borrego Ministers' Association (BMA) has offered aid to many families and individuals in our community over the last 10 years, and especially during these past "covid" months. The BMA does not give cash to individuals, instead we talk with them and hear their personal appeals for financial help, and take copies of their unpaid bills. Then we assess the need, and DIRECTLY pay a portion of these approved expenses requested by families. These bills include: water, electric, rent shortfalls, temporary auto expenses, cell phone bills, medical emergencies, food vouchers, gasoline cards, etc. The BMA meets weekly, and privately, to consider all weekly emergency requests.

The BMA supports the following proposed projects to help the Borrego Water District obtain grant funds to aid the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.

- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping water that is then wasted from the Basin, and will prevent customers from receiving unexpectedly high water bills.

Sincerely yours,

The Rev. Michael Plekon, Ph.D.

Michael Plekon, Chairperson, Borrego Ministers' Association

Borrego Springs Unified School District

1315 Palm Canyon Drive, Borrego Springs, CA 92004 P: (760) 767-5357 F: (760) 767-0494

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water. We see our SDAC status clearly in our schools, where 90% of students qualify for the free lunch program.

The Borrego Springs Unified School District supports the following proposed projects to help the Borrego Water District obtain grant funds to support the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.
- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping unused water from the Basin, and prevent customers from receiving unexpectedly high water bills.

Sincerely,

Mark Stevens
Superintendent, Borrego Springs Unified School District

~ OLAX ~

Organización de LatinX de Borrego Springs

January 20, 2022

SGM Grant Program
Division of Regional Assistance
Department of Water Resources
Regarding the SGMA Implementation Program PSP

Dear SGM Grant Program Staff,

Underrepresented communities such as Borrego Springs, which is designated by the state as a "severely disadvantaged community," are adversely impacted by cost increases for basic utilities, including potable water.

The Organización de LatinX de Borrego Springs was formed a year ago to foster closer ties between members of the LatinX community in Borrego Springs, and to speak for our community in public forums. OLAX supports the following proposed projects to help the Borrego Water District obtain grant funds to aid the Borrego Valley Subbasin in becoming sustainable in its water use while avoiding adverse economic effects on our ratepayers.

- The Water District is proposing to convert six of its production well pumps to solar power, thereby incurring cost savings which will offset SDG&E expenses, thereby keeping water rates lower for customers. This will also reduce greenhouse gases, which benefits everyone.

- BWD is also requesting funds for an Advanced Meter Reading system. By installing new meters with direct connections to a system at the BWD offices, leaks on the customer side of the meter will be quickly recognized and addressed. This system will lead to fixing leaks promptly that will forestall BWD pumping water that is then wasted from the Basin, and will prevent customers from receiving unexpectedly high water bills.

Sincerely yours,

Esmeralda Garcia
Co-Director, Organización de LatinX de Borrego Springs

Borrego Water District Application for Prop 68 Grant Funds to Install Solar Panels

Solicitud del distrito de agua de Borrego para fondos de subvención de la Proposición 68 para instalar paneles solares

I support BWD's solar panel project because it will help keep our water rates low.

Apoyo el proyecto de paneles solares de BWD porque ayudará a mantener bajas nuestras tarifas de agua.

Name/ Nombre	Signature/ Firma	Date/Fecha
Victor Mayhew	[illegible]	01/18/22
Ruthie Thompson	Ruthie Thompson	1-18-2022
Maria Arias	MARIA ARIAS	1/18/2022
William Wendt	William Wendt	1-18-22
Maria Vilchis	Ma. Vilchis	1-18-22
Veronica Reyes	Veronica Reyes	1-18-22
[illegible]	TREY DAVIS	1-18-22
Angelica Perez	[illegible]	1-18-22
Daniel Levy	[illegible]	1-18-22
Rodrigo Tamayo	[illegible]	1-18-22
matilde Vilches	matilde vilches	1-18-22

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Name/ Nombre	Signature/ Firma	Date/Fecha
Berta Mata	Berta Mata	1/18/22
CRoz	CRoz	1/18/22
Yanet Rojas	Yanet	1/18/22
Maria Valadez	Maria	1/18/22
Bernardo Calzada T	[illegible]	1/18/22
Gabriela Ramirez	[illegible]	1/18/22
MariaRamirez	Maria Ramirez	1/18/22
Ana Garcia	Ana Garcia	1/18/22
Jerry Miller	Jerry Miller	1/18/22
Donald Platt	Don Platt	1/18/22
Helen Platt	Helen Platt	1/18/22

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Name/ Nombre	Signature/ Firma	Date/Fecha
Adriana Rocha	Adriana Rocha	1-18-22
Xochitl Rodriguez	Xochitl Rodriguez	1-18-22
Nohemi Troncoso	Nohemi Troncoso	1-18-22
Martin Barron	[illegible]	1-18-22
Mary Jo Burns	Mary Jo Burns	1/18/22
Juan Zuniga	Juan Zuniga	1/18/22
Bruce Mullins	[illegible]	1/18/22
Jenny Magee	Jenny Magee	1-18-22
Blanca torres	Blanca torres	1-18-22
Rafaela magdalena	Rafaela A. magdalena	1-18-22
Maria V	Maria V	1-18-22

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Name/ Nombre	Signature/ Firma	Date/Fecha
Guadalupe Rivas	[illegible]	1-18-22
[illegible]	[illegible]	1/18/22
Cristina Estrada	[illegible]	1/18/22
Maria Escobedo	ME	1-18-22
Ymelda Bravo	Y.B	1-18-22
Erika Torres	Erika Torres.	1/18/22
Juan Hernandez	[illegible]	1/18/22
Monica Agua[illegible]	Monica Agayo	1/18/22
Amelia Magdaleno	A.M	1/18/22
MARIA ALVAREZ	[illegible]	1/18/22
Luz Torres	[illegible]	1/18/22

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Name/ Nombre	Signature/ Firma	Date/Fecha
Otilia Frausto	Otilia Frausto	1-18-22
[illegible]	Elizabeth Rodarte	1-18-22
C Moriarty	C Moriarty	1-18-22
Hector Leal	Hector Leal	1/18/22
Ana Flores	Ana Flores	1/18/22
Ana Maria Cabrera	Maria Cabrera	1/18/22
Marta Palma	Marta Pal.	1-18-22
Elia Hernandez	Elia Hernandez	1-18-22
JEAN L CARRETE	[illegible]	1-18-22
Beatriz R Lopez		1-18-22
Lucila [illegible]		1-18-22

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Name/ Nombre	Signature/ Firma	Date/Fecha
Gloria Tarula	Gloria Tarula	01/18/2022
Manuel Navarro	Manuel Navarro	1/18-22
Susana Barron	Susana	1/18/22
Loreto Bravo	Loreto Bravo	1/18/22
Teresa Garcia	Teresa G.	1/18/2022
Alejandra B.	Alejandra B.	1/18/2022
Patricia Ramos	Ramos	1/18/2022
Pedro Valdez	Pedro Valdez	1/18/2022
Alberto Garcia	Alberto Garcia	1/18/22
Jose Francisco T.	Jose F. Tovar C	1/18/22
Fernando C. P.		

Name/Nombre	Signature/Firma	Date/Flecha
Craig Johnson	Craig Johnson	1-18-22
Brenda Lewis	Brenda A Lewis	1-18-22
Luis Hernandez	Luis E Hernandez	1-18-22
Pedro Hernández	Pedro Hernández T.	1-18-22
Lorenzo	Lorenzo Vilches	1 18 22
Salomón Bello		1-18-22
Jessica Díaz		1-18-22
Alvaro Delgado		01-18-22.

Project Information Submittal Form

Project Submitter/Owner: Borrego Water District

Project Name: Rams Hill Waste Water Treatment Facility Monitoring Wells

Contact Information

Name: Geoff Poole
Phone: (760) 767-5806
Email: geoff@borregowd.org
Address: 806 Palm Canyon Drive, Borrego Springs, CA 92004

Project Summary

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

The Borrego Water District (BWD) owns and operates the Rams Hill Waste Water Treatment Facility (WWTF), which is a 250,000-gallons-per-day extended aeration (oxidation ditch) plant with evaporation/percolation ponds for disposal. The WWTF serves approximately 20% of the community of Borrego Springs, specifically the Rams Hill residential community and the Town Center area, which includes hotels and small businesses along Palm Canyon Drive. Several studies of the Rams Hill WWTF are ongoing per the recent amendment of the Waste Discharge Requirements (WDR) of the California Regional Water Quality Control Board Colorado River Basin Region Plan (R7-2019-0015). The goals of the studies are to determine the fate and transport of nitrogen and total dissolved solids originating from the discharge of effluent, document existing spare capacity of the facility and evaluate potential modifications to the treatment process. To date, BWD has prepared Regional Board approved Groundwater Monitoring Network Technical Report and Work Plan for the drilling and installation of six monitoring wells (three clusters of paired wells up to 100 feet in depth). The Project is currently completing CEQA and is almost ready to start the bidding phase. The Project has incurred $75,000 through November 2021. Project completion anticipated by December 2022.

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.

The Project location is entirely located within the Borrego Springs Subbasin (Basin) and within the service area of the BWD (Figure 1). The WWTF includes a treatment plant facility that is located on Assessor's Parcel Number (APN) 200-120-42, and evaporation/percolation ponds and a groundwater monitoring well that are located on APN 200-120-41 (Figure 1). The WWTF currently treats an annual average flowrate of 74,000 gpd—with low season (summer) flows down to approximately 20,000 gpd. Treated effluent from the Rams Hill WWTF is discharged into evaporation-percolation ponds. Given the desert location and dry, hot conditions a portion of the treated effluent is evaporated and a portion percolates into the aquifer. There is one existing monitoring well, WWTP-1, in the vicinity of the evaporation/percolation ponds that is part of the monitoring network for the Groundwater Management Plan (GMP). The well is equipped with a pressure transducer that records groundwater levels at a sub-daily frequency and water quality is monitored semi-annually. Results indicate that seasonal mounding of water occurs in the vicinity of the evaporation/percolation ponds as a result of discharge of effluent. Sample results from WWTP-1 were below the drinking water maximum contaminant level (MCL) for all constituents of concern (COCs), with the exception of nitrate as nitrogen (as N), which has exceeded the drinking water MCL of 10 milligrams per liter (mg/L) for every recorded sample. The average nitrate as N concentration for samples collected from 2016 to 2019 is 27.8 mg/L. The Project will lead to better understanding of the fate and transport of nitrate and total dissolved solids in the aquifer. As the non-potable discharge will become part of the potable water in the aquifer, which provides drinking water for Borrego Water District customers, the Project will benefit ratepayers of the BWD and residents and tourists that frequent businesses in Town Center. The data will be used to assist with evaluation of treatment processes at the WWTF and potentially result in upgrades to the facility to lower nitrate concentrations in discharged effluent.

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 Project is directly related to achieving the Basin's sustainability goal of SGMA to operate the Basin within its sustainable yield without causing an undesirable result by addressing water quality through evaluating point source discharges to the aquifer. If additional treatment processes at the WWTF are required to reduce nitrate loads and concentrations in effluent than the information gained from the Project will be used to improve Basin water quality. The Project is contemplated in GMP Section 4.6, Projects and Management Actions (PMA) No. 5 – Water Quality Optimization. The goal of this PMA is to ensure that water quality meet potable drinking water standards specified in Title 22 of the CCR. This PMA called for, "(1) investigation to identify the sources, nature, and extent of existing and potential future water quality impairments; (2) as needed, development of work plans to implement mitigation strategies; and (3) implementation of water quality mitigation projects". The WWTF monitoring wells project specifically addresses above items 1 and 2 and provides necessary data and analsyis to evaluate whether mitigation is required for further treatment of wastewater prior to discharge.

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

The specific goals for the Project are to evaluate fate and transport of nitrate and other COCs from effluent discharged from the WWTF. The Project will achieve these goals through installation of three new clusters of depth-discrete monitoring wells in the vicinity of the percolation/evaporation ponds, data collection and reporting. The wells will be monitored for water quality and groundwater levels to track trends and evaluate fate of nitrate and COC in the aquifer. Furthermore, the data will be used to assist with evaluation of treatment processes at the WWTF and potentially result in upgrades to the facility to lower nitrate concentrations in discharged effluent.

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?

The quantifiable benefits include protection and potentially enhancement of water quality through future upgrades to the WWTF treatment processes, if necessary. Benefits will be quantified through collection of water quality and groundwater level data. Water quality testing will be done by a certified lab and results will be shared with the public. A fate and transport analsyis will be completed to determine if upgrades are required to the WWTF treatment processes. If upgrades are required, benefits will be quantified by measuring the reduction in nitrate from plant effluent discharge.

Does the Project or Component fully describe their plan for outreaching and engaging interested parties (e.g., residents, local leaders, non-profit representing Underrepresented Communities, etc.) located within Underrepresented Communities? Does the outreach and engagement include interested parties during all phases of the Project or Component (e.g., planning, design, and implementation)? Can interested parties provide input and be involved in the decision-making processes?

All steps of the process will be shared in BWD board meetings where public input is directly solicited. Before the well drilling begins BWD will reach out directly to nearby residents who could be disturbed by drilling noise. BWD will create and share with local residents a detailed daily schedule of the work, when trucks will be coming and going and when the noisy drilling will take place. The schedule will be in English and Spanish. If noise looks to be or becomes an issue BWD can build a temporary sound barrier wall.

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.

The Basin has been identified as a Disadvantaged Community (DAC) and Severely Disadvantaged Community (SDAC) (Figure 2). As documented by the BWD affordability of water is already a challenge for many of the District's ratepayers because Borrego Springs median household income is approximately $36,583 (Rafetelis 2018). Ratepayers at the median income pay 2% of their household income for essential water use, 2.5% for efficient water use, and 3% for target average water use in fiscal year 2018 (Rafetelis 2018). Those at the 20th percentile and those at the poverty level spend between 3.2% and 3.8% of their income solely for essential water needs. An affordability standard of 2.5% and 2% of national median household income for water and sewer bills respectively was selected based on U.S. Environmental Protection Agency guidelines for water quality standards and Combined Sewer Overflow (CSO) compliance. This analysis supports the conclusion that the SDAC community should be insulated from cost increases due to SGMA compliance.

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.

Data collected for the Project will provide better understanding of current aquifer conditions and address potential water quality impairment to nearby shallow domestic wells and the Borrego Air Ranch mutual water company that serves a small private community.

Installation of monitoring wells will improve understanding of groundwater levels and water quality of the shallow aquifer in the vicinity of the WWTF. There are shallow domestic wells located approximately 1-mile northwest of the WWTF and the Borrego Air Ranch is approximately 2 miles from it. The new monitoring wells will provide valuable information pertaining to the fate and transport of nitrates and COCs in the aquifer.

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 for Rams Hill Waste Water Treatment Facility Monitoring Wells does not address the needs of the State Water Board's SAFER Program.

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?

The Project will benefit all BWD customers including the SDAC community because of it's potential impact to the underlying aquifer.

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 Basin is 100% groundwater dependent with no currently economically viable alternative sources of supply. Climate change is expected to bring greater variability of rainfall to the Basin and contributing watershed, and increased temperatures that will result in increased reference evapotranspiration resulting in increased water demand for irrigation. The Project addresses potential water quality impairment by evaluating COC from a point source of discharge to the Basin. The Project provides for protection and potentially enhancement of water quality through future upgrades to the WWTF treatment processes, if necessary. By maintaining the aquifer as potable source of water supply, potentially costly and energy intensive water treatment can be avoided. At this point, the Basin provides potable water that meets CCR Title 22 requirements without the need for treatment and estimation of any potential future reduction in greenhouse gas emissions from not having to potentially need to treat water would be speculative. It is not anticipated that any carbon will be sequestered as part of the Project.

Figure 1. Borrego Springs Subbasin and Rams Hill WWTF

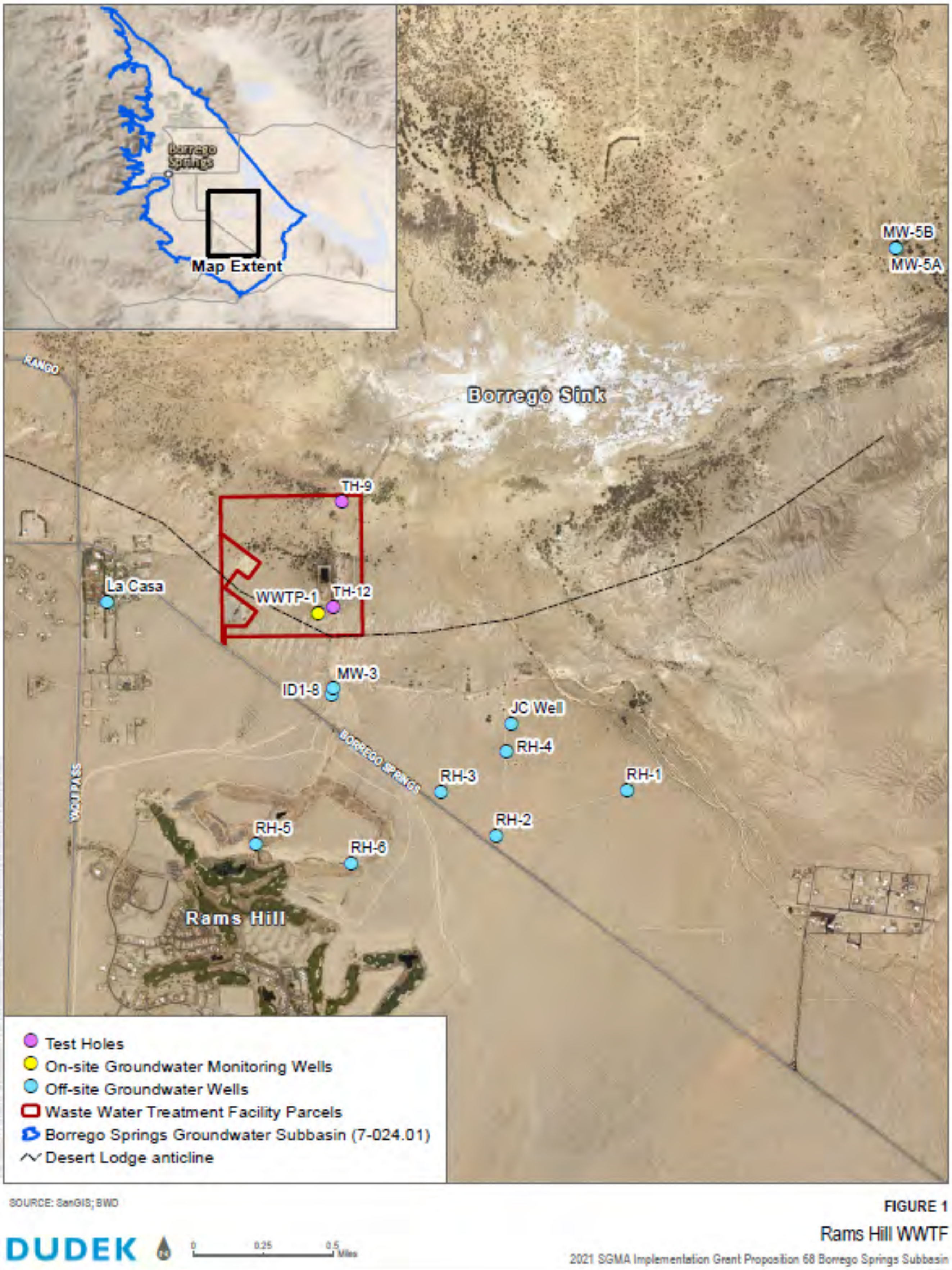


Figure 2. SDAC

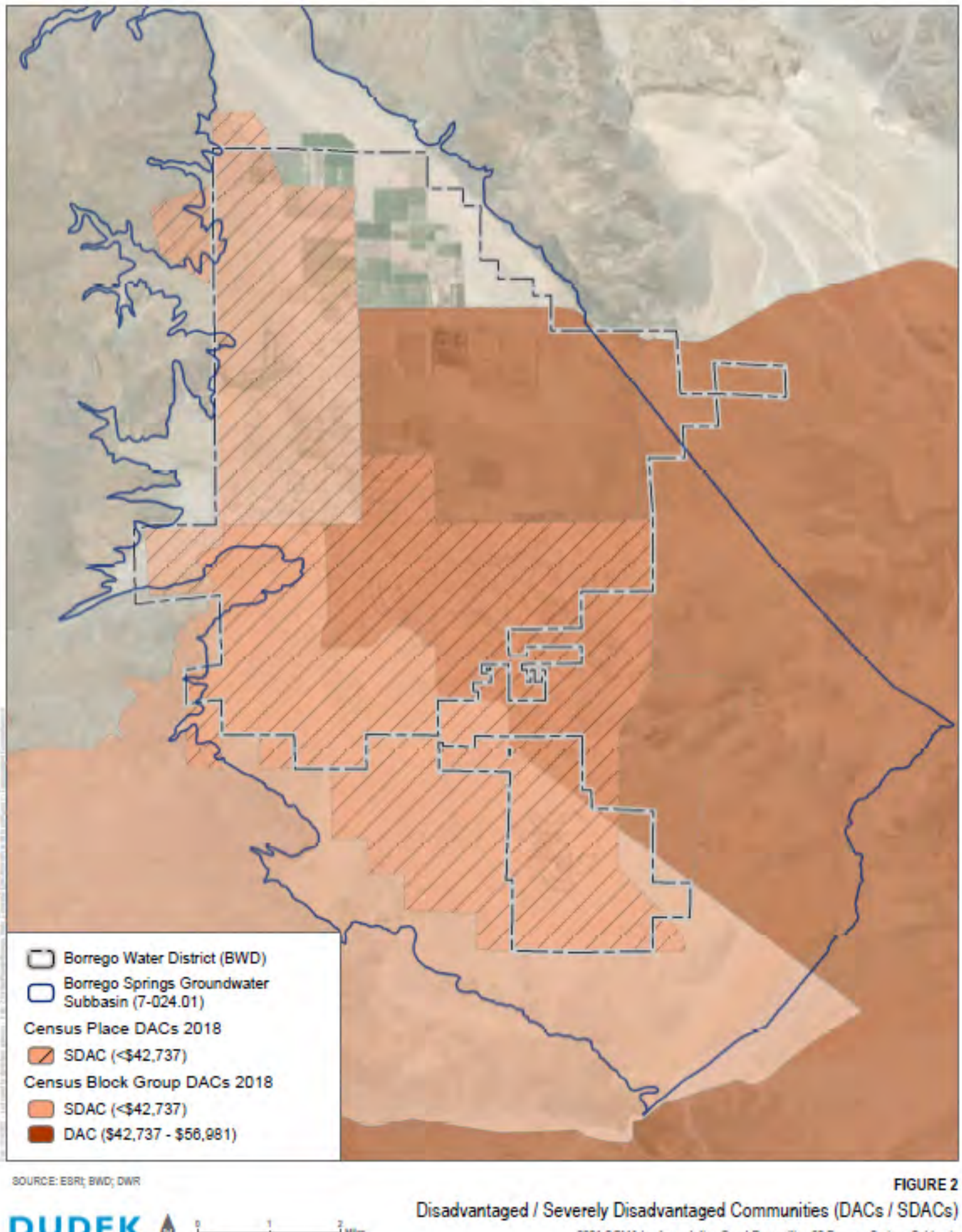


FIGURE 2
Disadvantaged / Severely Disadvantaged Communities (DACs / SDACs)
2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

Work Plan

Budget Category (a): Project Administration

Task 1 – Project Management

This Task includes managing the grant agreement, including compliance with grant requirements, and preparation and submission of all supporting grant documents. In addition, providing updated schedule and progress reports as well as all required meetings or teleconference calls to ensure Project success and completion. This task also includes administrative responsibilities associated with the project, such as coordinating with consultants/contractors, and preparation/submittal of invoices, including relevant supporting documentation for submittal to DWR.

> **Deliverables:** Project schedule and progress reports. Invoices and necessary grant documentation.

Budget Category (b): Planning/Design/Environmental

Task 2. – Planning

Activities necessary to secure a contractor and award the contract including: developing bid documents for drilling and installation of three clustered monitoring wells, preparing advertisement and contract documents for construction contract bidding, conducting a pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed. BWD has an in-house engineer and operations staff that will oversee procurement and construction management of the Project. The BWD has already prepared the following documents for this project: Groundwater Monitoring Network Technical Report (Dudek 2019a), Total Dissolved Solids Source Control Program Technical Report (Dudek 2019b), Groundwater Monitoring Network Work Plan (Dudek 2020) and Final Contract Documents and Specifications (BWD 2021). The Project is in the process of completing CEQA and near shovel ready. Through December 2021, approximately $75,000 has been spent on this Project.

> **Deliverables:** All above listed deliverables are 100% complete

Task 3. – CEQA

Because this project does not have a significant effect on the environment, BWD will file for a California Environmental Quality Act (CEQA) Categorical Exemption citing CEQA Section 15303 New Construction or Conversion of Small Structures. As part of this Notice of Exemption, staff will perform the required field surveys to support the exemption claim (i.e. cultural, biology, and focused surveys). CEQA costs were estimated based on recent environmental compliance work completed for Well ID5-15 in the amount of $19,000.

Deliverables: Field Surveys and CEQA Notice of Exemption

Budget Category (c): Construction/Implementation

Task 4. – Construction Management

Field Oversight for Monitoring Well Drilling, Construction, Development and Water Quality Sampling will include, but not be limited to lithological sample collection, documentation and logging, downhole geophysical logs (as-applicable), drilling mud characteristics (as applicable), field observations, and progress reporting. Field staff will make sure the monitoring wells are drilled, constructed, and developed according to the project technical specification. Casing will be inspected when delivered to verify the material is the same as determined by the final well design, including casing diameter, wall thickness, screen schedule, blank lengths, and slot size. As casing is installed, field staff will verify that screen/blank sections are assembled according to final design. During filter pack placement, field staff will verify that volume placed in the annular space is appropriate. During placement of annular seals, field staff will confirm that volume of material placed is approximate to the theoretical annular volume. Field staff will be on-site to oversee well development. Development may consist of a combination of well surging using a surge block, then bailing and/or pumping with a submersible pump to remove fines, silts, and clays. The volume of water removed from each well during development will be recorded. Water quality parameters such as pH, specific conductivity, temperature, and turbidity will be monitored during development.

Deliverables: Daily field inspection logs/notes/photographs/labor detail

Task 5. – Monitoring Well Drilling and Installation

The work shall include the drilling, construction, and development of six groundwater monitoring wells. The wells will be drilled and completed in the unconsolidated deposits of the Borrego Springs Groundwater Subbasin to a maximum depth of approximately 100 feet using the sonic drilling method in accordance with the Final Contract Documents and Specifications (BWD 2021). An engineer's estimate of probable cost to complete the drilling, construction, and development of six monitoring wells with 10% contingency is $107,000.

Deliverables: Driller's Well Completion Reports

Budget Category (d): Monitoring/Assessment

Task 6. – Water Quality Sampling

After well development, field staff will collect groundwater samples from each well using a submersible pump to be analyzed for specific constituents detailed in Table 1 of the approved Work Plan. This task includes scope and fee to collect a sample from each new monitoring well and the existing WWTP-1 monitoring well.

Deliverables: One-round water quality sample results for 7 wells.

Task 7. – Well Completion Report

The new monitoring wells will be surveyed using high precision Global Position System equipment as described in the approved Work Plan. Upon completion of well installation activities, BWD will coordinate with the drilling contractor to prepare and submit the well completion report to the County of San Diego and DWR. In addition to the driller's well completion report, BWD's consultant will prepare a more detailed, comprehensive well completion report which will document all drilling operations, include a description of the lithology encountered at each borehole, the type and quantity (volumes) of well construction materials used. Well development forms which document well development using standard metrics (i.e. turbidity, pH, electrical conductivity, temperature, total depth, and depth to water measurements), which will also be provided in the well completion report.

Deliverables: Well completion report.

Task 8. – Nitrogen Control Strategy Technical Report: Fate and Transport Investigation and Effluent Limit Feasibility Study

Data collection: Available influent and effluent water quality data from the WWTP, including flow, BOD, TSS, TKN (influent) and Total Nitrogen (TN) and Nitrate-N (effluent). This data will be used to determine current plant performance and nitrogen removal.

Process Analysis: Available data will be analyzed, and treatment process performance documented for nitrogen removal and compared to expected performance based on process capacity and typical industry ranges. If there is insufficient data, an analysis to document the nitrogen removal performance will be completed.

Identify Process Improvement Alternatives and 10 mg/L TN feasibility: Recommend alternatives to improve nitrogen removal performance at the WWTP, which may include enhanced process monitoring and control, modifications to aeration system, operational adjustments to promote biological nutrient removal, and/or construction of additional process infrastructure will be identified. If sufficient data exists, the feasibility of obtaining a 10 mg/L total nitrogen effluent limitation with existing infrastructure will be determined. Alternatively, the steps to make the determination will be documented in the work plan. For each improvement alternative, a budgetary cost estimate (based on unit costs, cost of major process equipment, and recent similar project cost data) to determine a cost of improvement will be prepared. The nitrogen removal associated with each alternative will be estimated in order to calculate an approximate dollars per ton of nitrogen removed and approximate cost per EDU to BWD ratepayers.

Calculate Effluent Nitrogen Mass Load to Groundwater Basin and Basin assimilative capacity: The existing nitrogen mass load to the groundwater basin and the mass load assuming a 10 mg/L effluent TN limit to determine the current load to the basin and anticipated future load will be calculated. In parallel, the nitrogen assimilative capacity of the basin will be calculated and compared to both the current load and anticipated load with a 10 mg/L TN effluent limitation. This analysis will determine both if the wastewater is impairing groundwater quality and whether or not the discharge is causing an exceedance of the nitrogen receiving water limitation. If insufficient data exists, methods and means to make this determination will be developed.

Prepare Nitrogen Control Strategy Technical Report: The report will (1) determine if wastewater discharged to the evaporation/percolation ponds is causing nitrogen impairment to groundwater (2) determine the feasibility of achieving a 10 mg/L total nitrogen effluent limit and, (3) ensure that any proposed effluent limit for nitrogen does not cause exceedance of the nitrogen receiving water limitation. The report will document the analysis and outline the work plan and schedule to complete tasks with insufficient data and/or additional work to be required.

Deliverables: Nitrogen Control Strategy Work Plan

Budget Category (e): Interested Parties Outreach/Education

Task 9. – Outreach and Education

BWD continually emphasizes education of its ratepayers through various formats including Town Hall meetings, presentations, and informational flyers. BWD will highlight the project through an informational flyer that will be posted to the BWD's website.

Deliverables: WWTF Informational flyer, updates on the project execution in BWD board meetings, ongoing publication of the water quality reports.

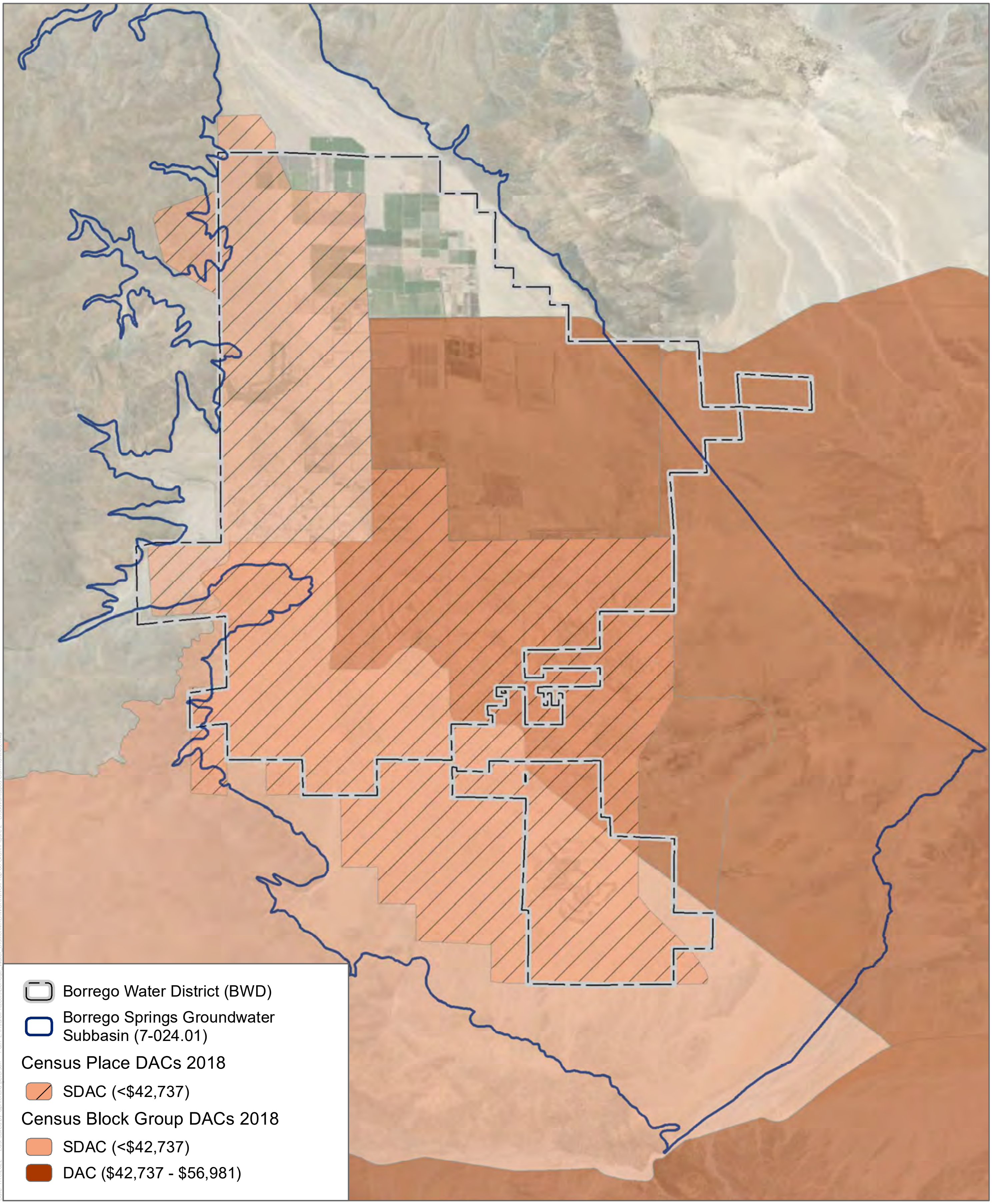
Budget

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**	**$10,000**	**$0**	**$10,000**	0%
	Task 1. Project Management	$10,000	$0	$10,000	
(b)	**Planning/Design/Environmental**	**$19,000**	**$75,000**	**$94,000**	**80%**
	Task 2. Planning	$0	$75,000	$75,000	
	Task 3. CEQA	$19,000	$0	$19,000	
(c)	**Construction/Implementation**	**$141,000**	**$0**	**$141,000**	**0%**
	Task 4.Construciton Management	$34,000	$0	$34,000	
	Task 5. Monitoring Well Drilling and Implementation	$107,000	$0	$107,000	
(d)	**Monitoring/Assessment**	**$33,500**	**$0**	**$33,500**	**0%**
	Task 6. Water Quality Sampling	$5,000	$0	$5,000	
	Task 7. Well Completion Report	$8,500	$0	$8,500	
	Task 8. Nitrogen Control Strategy Technical Report	$20,000	$0	$20,000	
(e)	**Interested Parties Outreach/Public Education**	**$3,000**	**$0**	**$3,000**	**0%**
	Task 9. Outreach and Education	$3,000	$0	$3,000	
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	**$206,500**	**$75,000**	**$281,500**	**27%**

* List sources of Local Cost Share funding: The BWD Board voted unanimously on January 18, 2022 to provide a 5% cost share for all funding obtained for the WWTF Project. The source of the local cost share is revenue generated from BWD water rates. BWD has already spent $75,000 on the Project to date and we apply these funds as a local cost share, if eligible.

Schedule

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**01/01/2022**	**06/01/2023**
	Task 1. Project Management	01/01/2022	06/01/2023
(b)	**Planning/Design/Environmental**	**01/01/2021**	**04/01/2022**
	Task 2. Planning	01/01/2021	12/31/2021
	Task 3. CEQA	01/01/2022	04/01/2022
(c)	**Construction/Implementation**	**04/01/2022**	**01/01/2023**
	Task 4.Construciton Management	04/01/2022	01/01/2023
	Task 5. Monitoring Well Drilling and Implementation	04/01/2022	01/01/2023
(d)	**Monitoring/Assessment**	**08/01/2022**	**06/01/2023**
	Task 6. Water Quality Sampling	08/01/2022	10/01/2022
	Task 7. Well Completion Report	09/01/2022	11/01/2022
	Task 8. Nitrogen Control Strategy Technical Report	01/01/2023	06/01/2023
(e)	**Interested Parties Outreach/Public Education**	**01/01/2022**	**06/01/2023**
	Task 9. Outreach and Education	01/01/2022	06/01/2023



SOURCE: ESRI; BWD; DWR

DUDEK

0 1 2 Miles

FIGURE 2

Disadvantaged / Severely Disadvantaged Communities (DACs / SDACs)

2021 SGMA Implementation Grant Proposition 68 Borrego Springs Subbasin

Project Information Submittal Form

Project Submitter/Owner: Environmental Working Group of the Borrego Springs Watermaster

Project Name: Biological Restoration of Fallowed Lands

Contact Information

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Project Summary

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

To maintain a viable water supply for current and future beneficial uses and users of groundwater in the Borrego Springs Subbasin (Basin), the Watermaster's Groundwater Management Plan (GMP) defines a sustainability goal of operating the Basin within its sustainable yield in a manner that does not exhibit undesirable results by 2040. Achieving this goal requires implementation of an aggressive pumping rampdown of approximately 75 percent over the next twenty years. The GMP lists several projects and management actions (PMAs) that are intended to support the reduction of groundwater pumping demands. The GMP recognizes that fallowing of agricultural lands will be a primary tool to reduce groundwater demands, but that there are several adverse impacts that could be associated with land fallowing, including airborne emissions through wind-blown dust, the introduction or spreading of invasive plant species, and changes to the landscape that could adversely affect visual quality.

The Watermaster's Environmental Working Group (EWG) contends that biological restoration of current and future fallowed lands could be a solution for addressing the potential adverse impacts associated with land fallowing, and could be helpful in protecting human health, the environment, and the socioeconomic wellbeing of the Borrego Springs community during GMP implementation. However, the land use changes that have occurred in the past have created various barriers to the establishment of native habitat on fallowed lands, and not all land parcels will have equal habitat value.

The Project proposed herein describes a three-year program to: characterize historical and current conditions; explore the feasibility of various biological restoration/rehabilitation techniques; and develop guidance for future biological restoration projects on current and future fallowed lands within the Subbasin. The goals of restoration/rehabilitation are: reduce water consumption; manage airborne dust emissions; increase natural biodiversity and habitat value; and maintain or enhance values pertinent to the Anza Borrego State Park and the residents of Borrego Springs.

Drawing upon the collective experiences of Land IQ managing dust issues for the Los Angeles Department of Water and Power on Owens Lake and the Imperial Irrigation District on the Salton Sea, and UCI research on ecological restoration and desert ecology, the Project scope-of-work will produce spatially explicit strategies for fallowing retired citrus orchards based upon the potential for rehabilitation given known environmental constraints. Land IQ and UCI have provided a separate scope-of-work that provided the basis for this Project description (attached).

The work will start with gathering and synthesizing existing information resources: utilizing geospatial datasets, the literature, and interviewing industry experts and people knowledgeable in land use management and history in the vicinity of Borrego Springs, including members of the EWG. The existing information will be supplemented with ground and drone measurements stratified across major ecological units based on plant community type and physical properties of the landscape. The potential for rehabilitation and the appropriate methodological approaches across these units will be further informed by measurements of life history stages and microsite characteristics critical to plant recruitment and establishment among a series of successional stages or land use states (e.g., recently fallowed, fallowed 5-10 years, existing natural reference sites, and existing citrus).

A unique challenge presented by the fallowing of citrus orchards is how to manage dust, make use or dispose of dead trees, and facilitate physical and biological processes important to the development of a natural desert landscape. The Project proposes a citrus tree removal strategy that is conducive to both dust management and increasing natural habitat value, while minimizing visual blight in the short term. A case study will be executed to inform the development of best practices and will involve sample “Brush Pile Wildlife Sand Fences” with cut citrus tree material placed strategically to manage wind/dust patterns. The Sand Fences will serve multiple functions including dust control by reducing soil particle velocity, safe sites for native plant recruitment through moisture retention and shading, and wildlife habitat by providing perches and cover. Furthermore, by not mulching the trees there will be a cost savings and avoidance of altered carbon cycles inconsistent with the native ecosystem and plant community succession.

The Project study area will be approximately 3,000 acres and encompass the extent of agriculture land uses in the Subbasin and any appropriate adjacent natural open space suitable for reference conditions for habitat restoration planning. For the farmlands that have the potential for permanent fallowing, a prioritization model will be prepared to assist in strategic planning to select sites for restoration.

The Project will be implemented in a phased approach over a three-year period under the guidance of the EWG and the approval of the Watermaster Board.

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.

The Project location will be focused within the agricultural land uses in the northern portion of the Borrego Springs Subbasin. However, the results of the Project will assist with all lands that are currently fallowed in the Basin or may be fallowed during GMP implementation. A map is attached from the GMP that shows the current land uses within the Subbasin. Most of the agricultural and recreational land uses are located within the northern portion of the Subbasin. However, the entire Borrego Valley potentially benefits from the Project via the mitigation of airborne emissions of wind-blown dust, combatting the spread of invasive plant species, improving the visual quality of the landscape, and restoring natural recharge processes.

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 Project is not listed as a standalone project or management action (PMA) in the GMP. However, the project is referenced in some PMAs as a potential supporting activity and will thereby help achieve the Sustainability Goal of reducing groundwater pumping by 75 percent without causing undesirable results. Explanation is described below.

The PMAs listed in the GMP to achieve the Sustainability Goal were developed based the following considerations: (i) there are few opportunities for capture of excess precipitation; (ii) the Subbasin is remote to potential sources of imported water and totally dependent on groundwater for its water supply; (iii) water uses by volume within the Subbasin are primarily for agriculture and recreation; and (iv) the magnitude of the overdraft is estimated to be almost 400% above the Sustainable Yield. For these reasons, several of the PMAs listed in the GMP call for reducing groundwater demands that could involve fallowing of agricultural or recreational lands:

- **PMA No. 1 - Water Trading Program**. The Water Trading Program provides an economic incentive for conserving water by providing the potential to monetize voluntary water conservation or the elimination of water intensive uses. An example is a water trade from high-intensity agricultural water users to other lower-intensity water users, which may involve the fallowing of the agricultural lands.

- **PMA No. 3 - Pumping Reduction Program**. The Pumping Reduction Program is the central tool to implement the Physical Solution and achieve the sustainability goal for the Subbasin. The program involves the gradual Rampdown of groundwater production rights to the Sustainable Yield of the Subbasin by 2040. The Pumping Reduction Program may incentivize high-intensity agricultural or recreational water users to take advantage of the water trading (PMA No. 1) or land fallowing (PMA No. 4) management programs.

- **PMA No. 4 - Voluntary Fallowing of Agricultural Land Program**. The Voluntary Fallowing of Agricultural Land Program will constitute a mechanism to facilitate the conversion of high water use irrigated agriculture to low water use open space, public land, or other development on a voluntary basis.

While the GMP recognizes that fallowing of agricultural lands will be key to achieving the Sustainability Goal, it also recognizes the potential adverse environmental effects of fallowing, including airborne emissions through wind-blown dust, the introduction or spreading of invasive plant species, and changes to the landscape that could adversely affect visual quality.

Section IV.H of the Stipulated Judgment provides that:

> *An Environmental Working Group (EWG) will be established to advise the Watermaster on GDE and any other matters approved by the Watermaster.*

The role of the EWG is to advise and further the mission of the Watermaster to implement the Stipulated Judgment and comply with the SGMA by focusing on the protection of human health and the environment. The activities of the EWG are always approved by the Watermaster Board and always include a nexus between environmental issues and the sustainable use of groundwater in the Borrego Springs Subbasin.

The EWG held its inaugural meetings in February and May 2021 to discuss and prioritize activities that the EWG could engage in pursuant to its purview and duties as defined by the Judgment. Some EWG members contend that biological restoration of current and future fallowed lands could be a solution for addressing potential adverse impacts associated with land fallowing, and is necessary to protect human health, the environment, and the socioeconomic wellbeing of the Borrego Springs community.

The Project proposed herein is intended to explore the feasibility of biological restoration techniques and develop guidance for future biological restoration projects on current and future fallowed lands within the Subbasin. Since land fallowing will be a central tool to reduce groundwater demands and achieve groundwater sustainability, the Project helps achieve the Sustainability Goal by addressing the potential adverse impacts associated with land fallowing.

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 develop data, information, and criteria to guide the use of biological restoration as a technique to mitigate the potential adverse impacts associated with the fallowing of lands that is expected to occur within the Subbasin. The Project will achieve these goals through analyses of existing data and information, field reconnaissance, and test cases of biological restoration techniques at existing fallowed lands within the Subbasin. A final technical report will describe and document the results, conclusions, and recommendations of the Project. The final report will describe and document the biological restoration strategies that are expected to be most effective within the Subbasin and a prioritization of land parcels for biological restoration.

The needs of the Project will be met by hiring technical subconsultants with demonstrated expertise in desert ecosystems and restoration ecology and obtaining guidance and review from the technical experts participating on the EWG.

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?

The main benefit of the Project will be the development of guidance criteria for the use of biological restoration as a technique to mitigate the potential adverse impacts associated with the fallowing of lands. Specifically, the Project develop the following beneficial information: an inventory of all current and prospective fallowed lands in the Subbasin; the types of restoration/rehabilitation strategies that are most effective and on which types of lands; and a prioritization of the fallowed lands that are most appropriate for biological restoration with the highest habitat value. These benefits will be quantified and described in the interim and final deliverables of the project.

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.

A map is attached from the GMP of the Basin and the area defined as a SDAC. While the Project activities will be focus within the northern portions of the Basin, the Project will serve the entire Basin, including the community of Borrego Springs and the area classified as a SDAC, because it is designed to mitigate the physical and biological impacts that may be associated with the progressive reductions in pumping.

- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park, dark and clear night skies, and the beautiful flora and fauna of the region. The Project will help maintain or enhance the physical and biological environment within the community, and thereby support economic activity within Borrego Springs.

- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to the residents and rate payers.
- The community's water supply is solely dependent on the Basin. The Project is related to the larger project of implementation of the Judgment and GMP, which will ensure that the groundwater basin remains an affordable, high-quality source of water for the community in perpetuity.

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.

Private shallow wells likely exist on current and/or potential future lands that will be fallowed. The Project may include recommendations for the continued use of domestic wells after fallowing to assist in biological restoration.

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?

N/A

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?

N/A

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.

Biological restoration could act to sequester carbon through the process of biosequestration, which is the capture and storage of the atmospheric carbon dioxide by creation of natural vegetation and habitat and enhanced biological processes.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 1 – Project Management. This task includes:

- **Task 1a. Project Management.** The objective of this task is to perform monthly project management activities for the program, including coordinating work, tracking task schedules and budget, managing sub-consultants and vendors, reporting progress to the Watermaster Board and EWG, and taking actions as necessary to address schedule or budget challenges.
- **Task 13b. Grant Management and Reporting.** The objective of this task is to coordinate with the Borrego Water District to the manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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: Invoices and necessary documentation.

Budget Category (b): Planning/Design/Environmental

n/a

Budget Category (c): Construction/Implementation

n/a

Budget Category (d): Monitoring/Assessment

Task 2 – Review and Analysis of Existing Data

Task 2.1 – Kick-off Meeting. A kick-off meeting will be held with the EWG and the consultants at Land IQ and UCI to review the proposed scope-of-work and receive EWG input.

Task 2.2 – Literature Review. Literature review; data mining from existing reports; and written summary of relevant information for report.

Task 2.3 – Interviews with Key Stakeholders and Experts. The interviews will be conducted with local experts and subject-matter experts.

Task 2.4 – Project Geodatabase Creation. Creation of Project Geodatabase for relevant land use and environmental thematic layers, including, but not limited to topography, flow accumulation, soil characteristics, and wind patterns.

Task 2.5 – Farmland Water Consumption. Collect water consumption data from BWD; update parcel level Geographic Information System (GIS) data, as necessary; calculate water consumption by parcel, and digitize new data layers, as necessary.

Task 2.6 – Review of Historical Data. Review of historical maps, search of available historical records (e.g., herbarium records and historical accounts); georeference available historical maps and old place name references; synthesize information to describe site specific historical ecology; and include comparison of historical and current vegetation cover densities. Provide guidance on feasible restoration targets.

Deliverables:

1. Technical Memo Summarizing Existing Data
2. Initial Fallowed Farmland Rehabilitation Opportunities and Prioritization Map.

Task 3 – Existing Fallowed Farmland and Reference Natural Habitat Field Study

Task 3.1 – Field Observations of a Time Series of Existing Fallowed Farmland. Interviews with past and current BWD staff about experience with fallowed fields, field visits, and data collection of existing conditions.

Task 3.2 – Field Sampling of Reference Natural Habitat to Guide Farmland Restoration Potential. Use GIS layers to stratify landscape in the Valley, including the agricultural land into similar geomorphic features for sampling. Based on this stratification and information from the time series of fallowed farmland, determine a sampling design to collect more detailed information on plant cover and "greenness" utilizing drones and multispectral imagery over hundreds of acres. Areas of interest will be visited on the ground to compare vegetation composition and plant physiological data that will further help to identify specific areas and species most promising for rehabilitation. Sample cover data, analyze and interpret reference conditions to identify a range of reasonable habitat restoration targets for fallowed farmland.

Deliverables:

1. Technical Report of Field Study Results

Task 4. Brush Pile Wildlife Sand Fence Case Study

Task 4.1 – Identify Manipulative Sites for Sand Fences. Working on land with BWD access agreements, identify one or multiple sites, based on feasibility, for construction of Sand Fences.

Task 4.2 – Design and Construct Sample Sand Fences. Working directly with crews in the field, identify the most economical method of construction, and build variations on the design, as appropriate. Sand Fences will be compared to control (no action) and mulched fields with chipped orchard tree material.

Task 4.3 – Baseline Observations of Sand Fence Function and Wildlife Value. Take baseline data for comparison to future datasets, and to characterize the habitat and dust control value of the Sand Fences. Utilizing information from Task 2 and initial results from Task 3, establish a pilot study with promising plant species to help understand plant response to Sand Fences.

Deliverables:

1. Constructed Sample Sand Fences
2. Technical Report

Task 5 – Farmland Fallowing Rehabilitation Strategies

Task 5.1 – Develop Conceptual Models for Key Rehabilitation Processes. Based on literature review, geodatabase indices and analysis, field study results, and expert interviews, develop conceptual models of key processes involved in dust, native recruitment, and habitat restoration of fallowed farmland.

Task 5.2 – Design Rehabilitation Strategies. Develop Rehabilitation Strategies for Fallowed Farmland based on conceptual models, the range of potential for rehabilitation based on site level measurements across the study area, and project goals.

Task 5.3 – Farmland Fallowing Best Practice Recommendations. Recommendations for Best Practice Language for Fallowing of Farmland to be incorporated into the GSP. Identify gaps in knowledge for future monitoring and study to improve best practice adaptively as land begins to be fallowed for water conservation.

Deliverables:

1. Draft Rehabilitation Strategies and Best Practice for Fallowing
2. Final Rehabilitation Strategies and Best Practice for Fallowing

Task 6 – Farmland Fallowing Prioritization

Task 6.1 – Prioritization Model for Fallowing Farmland Ranked by Benefits of Water Conservation and Rehabilitation Potential. Develop a model for prioritizing farmland for fallowing based on the reduction of water consumption, and likelihood of success of the rehabilitation strategies.

Deliverables:

1. Prioritization of Farmland Fallowing Report
2. Prioritization of Farmland Fallowing Map

Budget Category (e): Interested Parties Outreach/Education

Task 7 – Conduct EWG Meetings. At least two EWG meetings per year will be necessary for the EWG to: receive updates on project progress; receive input from the public and interested stakeholders; provide guidance and input to the Watermaster Technical Consultant and subcontractors; review draft and final project deliverables and make recommendations to the Watermaster Board.

Deliverables: Meeting agendas/packets; PowerPoint presentations; summary meeting notes; and memorandums with recommendations to the Watermaster Board. All EWG meeting deliverables will be posted to the Watermaster's website.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

		(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	$ 50,000		$ 50,000	0%
(b)	**Planning/Design/Environmental**				
	n/a				
(c)	**Construction/Implementation**				
	n/a				
(d)	**Monitoring/Assessment**				
	Task 2. Review and Analysis of Existing Data	$ 84,070		$ 84,070	0%
	Task 3. Existing Fallowed Farmland and Reference Natural Habitat Field Study	$ 218,750		$ 218,750	0%
	Task 4. Brush Pile Wildlife Sand Fence Case Study	$ 220,680		$ 220,680	0%
	Task 5. Farmland Fallowing Rehabilitation Strategies	$ 75,220		$ 75,220	0%
	Task 6. Farmland Fallowing Prioritization	$ 56,620		$ 56,620	0%
(e)	**Interested Parties**				

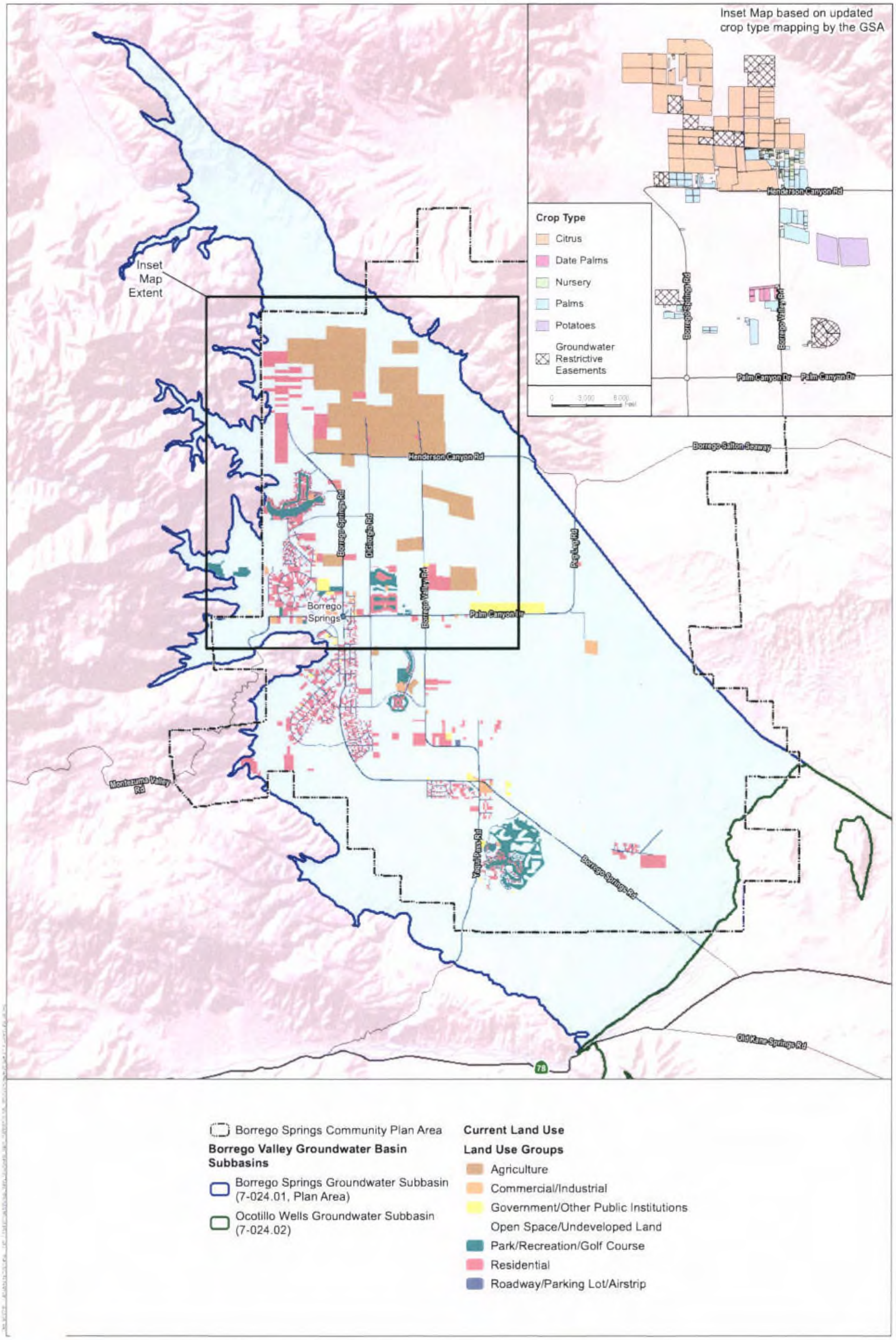
	Outreach/Public Education				
	Task 7 – Conduct EWG Meetings	$ 50,000		$ 50,000	0%
(f)	**Grand Total (Sum rows (a) through (e) for each column)**	$ 755,340	0	$ 755,340	0%

*** List sources of Local Cost Share funding:**

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

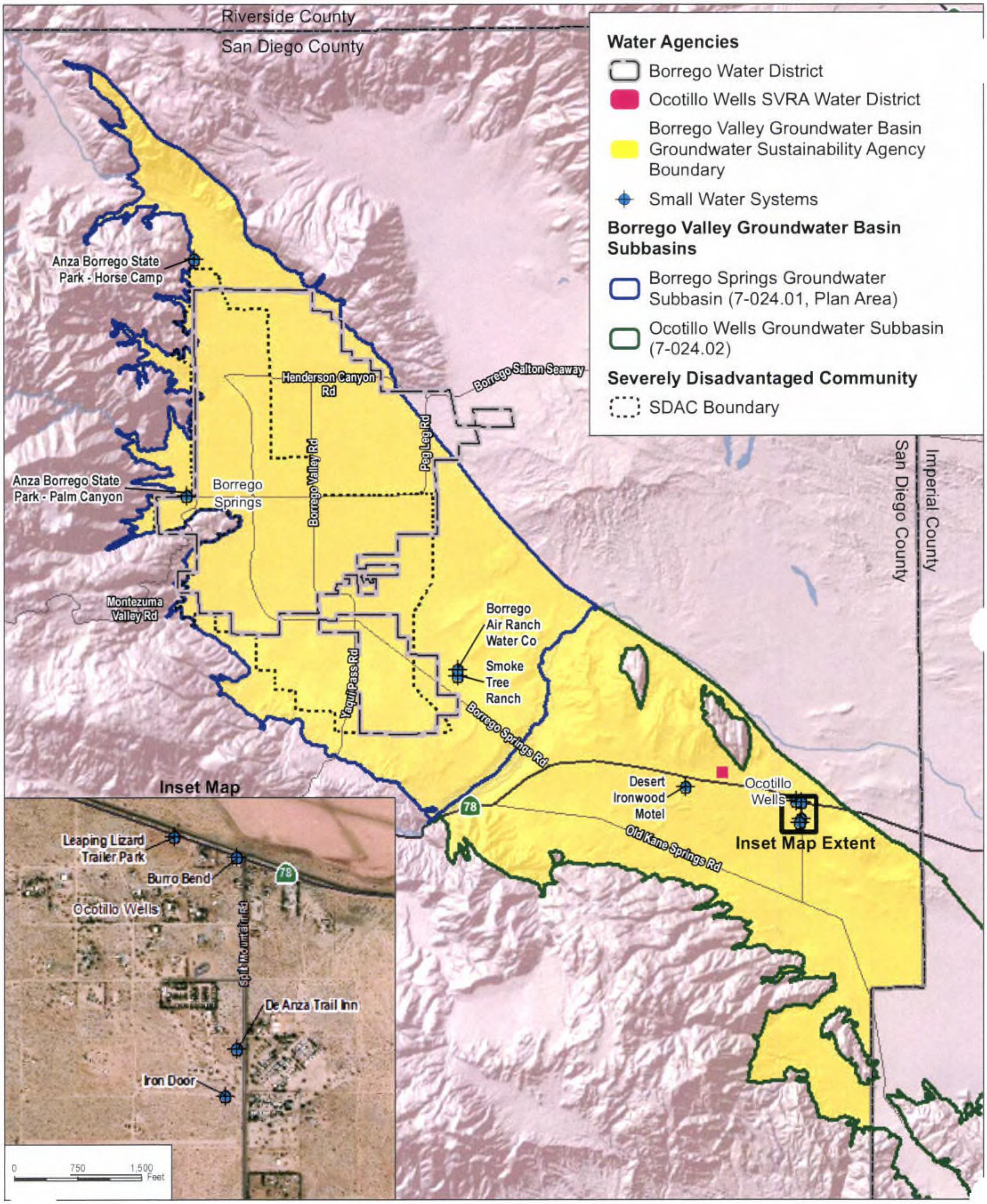
Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**7/1/2022**	**6/30/2025**
	Task 1. Project Management	7/1/2022	6/30/2025
(b)	**Planning/Design/Environmental**		
	n/a		
(c)	**Construction/Implementation**		
	n/a		
(d)	**Monitoring/Assessment**	**7/1/2022**	**6/30/2025**
	Task 2. Review and Analysis of Existing Data	7/1/22	11/30/22
	Task 3. Existing Fallowed Farmland and Reference Natural Habitat Field Study	1/1/23	12/31/24
	Task 4. Brush Pile Wildlife Sand Fence Case Study	1/1/23	12/31/24
	Task 5. Farmland Fallowing Rehabilitation Strategies	1/1/24	6/30/25
	Task 6. Farmland Fallowing Prioritization	1/1/24	6/30/25
(e)	**Interested Parties Outreach/Public Education**	**7/1/2022**	**6/30/2025**
	Task 7 – Conduct EWG Meetings	7/1/2022	6/30/2025



DATUM: NAD 1983 DATA SOURCE: SanGIS 2017; Inset Map Source: GSA 2018

DUDEK January 2020

Figure 2.1-4
Current Land Use
Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin



DATUM: NAD 1983. DATA SOURCE: DWR 2015; San Diego County

DUDEK January 2020 0 1.5 3 Miles

Figure 2.1-2

Water Purveyors within the Groundwater Sustainability Agency Boundary

Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin

Technical & Cost Proposal

Concept Feasibility Plan for Rehabilitation of Fallowed Irrigated Agricultural Land in the Borrego Valley Groundwater Basin

Submitted to:

Environmental Working Group of the Borrego Springs Watermaster

c/o West Yost Associates
23692 Birtcher Drive • Lake Forest, CA 92630

January 14, 2020

Submitted by:

LAND IQ

THE UNIVERSITY OF CALIFORNIA · IRVINE · LET THERE BE LIGHT

January 14, 2022

Environmental Working Group of the Borrego Springs Watermaster
c/o West Yost Associates
23692 Birtcher Drive
Lake Forest, CA 92630

RE: Letter of Transmittal for a Technical and Cost Proposal—Concept Feasibility Plan for Rehabilitation of Fallowed Irrigated Agricultural Land in the Borrego Valley Groundwater Basin

Dear Members of the Environmental Working Group,

The Land IQ/UCI Team is pleased to submit our proposal to develop a Concept Feasibility Plan (Plan) to improve fallowing practices for the Borrego Valley Groundwater Basin. The cost for the Project is a not-to-exceed price of $728,480.

The Land IQ/UC Irvine Team is uniquely qualified to provide the full range of necessary services to meet the goals of the Plan to reduce water consumption, manage dust, and increase natural habitat value in a sustainable manner. Our areas of expertise include agricultural and natural systems, remote sensing, native plant and land systems management, and ecological restoration. This expertise along with technical skills in plant ecology and physiology, research study design, and data analysis, enables our Team to determine optimal solutions to complex problems in our environment.

Our Team has demonstrated experience planning and successfully developing innovative solutions to challenging environmental problems throughout California. Notable experience for this project includes Land IQ's work developing dust mitigation measures on Owens Lake for the Los Angeles Department of Water and Power, and Statewide Crop Mapping product published to the State Department of Water Resources (DWR) Land Use Viewer, which is a resource for land use and water managers, including Groundwater Sustainability Agencies (GSAs). The new web map is viewable here: https://gis.water.ca.gov/app/CADWRLandUseViewer/.

UC Irvine (UCI) brings experience conducting research, working with land managers, and identifying optimal approaches to restoration and conservation challenges as part of the UCI Environmental Collaboratory. The UCI Environmental Collaboratory integrates three programs at UCI, allowing each program's strengths to work collaboratively to offer excellence in research, education, and land stewardship. These programs are UCI Nature, the Center for Environmental Biology, and the Master's program in Conservation and Restoration Science. Specifically, UCI Nature oversees UCI's natural reserves, including the Steele/Burnand Anza-Borrego Desert Research Center. Over the last few years one of the Environmental Collaboratory projects has included working with Anza Borrego State Park staff, the Anza Borrego Foundation, and other scientists on the Proposition 1 Sentenac Cienega Ecosystem Restoration Project in Anza Borrego State Park. This project has strengthened working relationships among these organizations, in addition our relationships with the broader community in the area through events that have been offered to inform and involve the public and tribes in the restoration assessment and planning process.

Land IQ staff and UCI have worked together on successful habitat restoration projects, such as the restoration of cactus scrub habitat for the cactus wren on the UCI Nature Reserve. And we are actively integrating monitoring and habitat restoration planning efforts for the Orange County Central-Coastal Natural Community Conservation Plan & Habitat Conservation Plan (NCCP/HCP). We formulate our habitat restoration plans from careful consideration of landscape position, hydrology, and soils to determine the most appropriate habitat enhancement and restoration for each project site based on data analysis of existing information and comprehensive study design in highly complex environments. We generally bring fresh and efficient approaches to planning projects that can result in cost savings without sacrificing ecological function. For example, Land IQ pioneered direct seeding of saltgrass dominated meadows at Owens Lake that provide more efficient use of water to control dust on the lake while balancing open shorebird habitat.

Our Team has the experience to collectively address the scientific and practical challenges of rehabilitating farmland for the benefit of the community and the natural landscape and the professional capacity to carry such a project to completion. Our Team looks forward to working with the Environmental Working Group and its partners on this challenge.

Land IQ is a DGS Certified Small Business (Supplier No. 1748303).

Sincerely,

Mica Heilmann, CPSS
Land IQ
Owner | Soil & Agricultural Scientist

Travis Brooks
Land IQ
Restoration Ecologist

Megan Lulow, PhD
Executive Director
UCI Nature

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Scope of Work

Task 1 — 1 Project Management

Task 2 — Review & Analysis of Existing Data

- 2.1 Kick-off Meeting
- 2.2 Literature Review
- 2.3 Interviews with Key Stakeholders and Experts
- 2.4 Project Geodatabase Creation
- 2.5 Farmland Water Consumption
- 2.6 Review of Historical Data

Task 3 — Field Study

- 3.1 Field Observations of a Time Series of Existing Fallowed Farmland Physical and Biological Conditions
- 3.2 Field Sampling of Reference Natural Habitat to Guide Farmland Restoration Potential

Task 4 — Brush Pile Wildlife Sand Fence Case Study

- 4.1 Identify Manipulative Sites for Sand Fences
- 4.2 Design and Construct Sample Sand Fences
- 4.3 Baseline Observations of Sand Fence Function and Wildlife Value

Task 5 — Farmland Fallowing Rehabilitation Strategies

- 5.1 Develop Conceptual Models for Key Rehabilitation Processes
- 5.2 Design Rehabilitation Strategies
- 5.3 Farmland Fallowing Best Practice Recommendations

Task 6 — Farmland Fallowing Prioritization

- 6.1 Prioritization Model for Fallowing Farmland Ranked by Benefits of Water Conservation and Rehabilitation Potential

Task 7 — 7 Env. Working Group Meetings

Approach

Given the significant overdraft of the Borrego Valley Groundwater Basin (BVGB), the Borrego Water District (BWD) has instituted a 'Water Credit Policy' that encourages the voluntary reduction of water consumption. One of the most significant means of reducing water consumption will be permanently fallowing irrigated agricultural land in the BVGB. There are serious potential and realized risks to the natural desert landscape and the local community from standard fallowing practice, including dust, invasive plants, visual blight, and barriers to the establishment of native habitat.

To manage those risks and to take advantage of opportunities for rehabilitation of the land, we will develop strategies for fallowing farmland in the BVGB, with the following goals:

1) Reduce water consumption
2) Manage dust
3) Increase natural biodiversity and habitat value
4) Maintain or enhance values pertinent to the Anza Borrego State Park mission and Borrego Springs residents (e.g., invasive species control and reducing visual blight)

Rehabilitation or restoration strategies will be the basis for writing best practices for agricultural land fallowing for incorporation into the draft Groundwater Sustainability Plan that is currently in development.

Drawing upon the collective experiences of Land IQ managing dust issues for the Los Angeles Department of Water and Power on Owens Lake, and the Imperial Irrigation District on the Salton Sea, and UCI research on ecological restoration and desert ecology, we have developed a scope of work that will produce spatially explicit strategies for fallowing retired citrus orchard lands based upon the potential for rehabilitation given known environmental constraints.

We will initiate work with gathering and synthesizing existing information resources: utilizing geospatial datasets, the literature, and interviewing industry experts and people knowledgeable in land use management and history in the vicinity of Borrego Springs, including members of the Environmental Working Group. We will build upon this information with ground and drone measurements stratified across major ecological units based on plant community type and physical properties of the landscape. Potential for rehabilitation and methodological approach across these units will be further informed by measurements of life history stages and microsite characteristics critical to plant recruitment and establishment among a series of successional stages or land use states (recently fallowed, fallowed 5-10 years, existing natural reference sites, and existing citrus).

A unique challenge presented by the fallowing of citrus orchards in the BVGB is how to manage dust, make use or dispose of dead trees, and facilitate physical and biological processes important to the development of a natural desert landscape. For this Proposal we have developed a citrus tree removal strategy that is conducive to both dust management and increasing natural habitat value, while minimizing visual blight in the short term. We will conduct a case study to inform the development of best practices and create sample "Brush Pile Wildlife Sand Fences" with cut citrus tree material placed strategically to manage wind/dust patterns. The Sand Fences will serve multiple functions including dust control by reducing soil particle velocity, safe sites for native plant recruitment through moisture retention and shading, and wildlife habitat by providing perches and cover. Furthermore, by not mulching the trees there will be a cost savings and avoidance of altered carbon cycles inconsistent with the native ecosystem, which can impact plant community succession.

The study area will be approximately 3,000 acres and encompass the extent of agriculture in the BVGB and any appropriate adjacent natural open space suitable for reference conditions for habitat restoration planning. For the farmland that has potential for permanent fallowing, we will develop a prioritization model to assist the BWD in strategic planning to reduce water consumption and rehabilitate the natural landscape.

Task 1. Project Management

1 Project Management. The staffing structure and internal project control procedures will ensure clear lines of communication between the EWG and the technical and scientific staff at Land IQ and UCI. The Project Manager, Travis Brooks, will be the point of contact for EWG communications.

Land IQ has a strong commitment to producing high-quality work products on time and within budget. We accomplish this goal through strong working relationships with our clients, depth of experience, following QA/QC procedures, phased and prioritized project schedules and budget control using up-to-date accounting tools and dedicated budget management staff.

Land IQ's technical document editors, cartographers and geospatial experts are well versed in biological resource management, monitoring and planning. In addition to technical editorial review, deliverables will be reviewed at multiple stages of development by senior staff, including Margot Griswold, Joel Kimmelshue and Megan Lulow, to help safeguard that work is consistent with our legacy of excellent biological resource management and technical analysis.

Task 2. Review and Analysis of Existing Data

2.1 Kick-off Meeting. Kick-off meeting with attendance of key staff.

2.2 Literature Review. Literature review; data mining from existing reports; and written summary of relevant information for report.

2.3 Interviews with Key Stakeholders and Experts. Interview local and subject matter experts.

2.4 Project Geodatabase Creation. Creation of Project Geodatabase for relevant land use and environmental thematic layers, including, but not limited to topography, flow accumulation, soil characteristics, and wind patterns.

2.5 Farmland Water Consumption. Collect water consumption data from BWD; update parcel level Geographic Information System (GIS) data, as necessary; calculate water consumption by parcel and, digitization of new data layers, as necessary.

2.6 Review of Historical Data. Review of historical maps, search of available historical records (e.g., herbarium records and historical accounts); georeference available historical maps and old place name references; synthesize information to describe site specific historical ecology; and include comparison of historical and current vegetation cover densities. Provide guidance on feasible restoration targets.

Task 3. Existing Fallowed Farmland and Reference Natural Habitat Field Study

3.1 Field Observations of a Time Series of Existing Fallowed Farmland. Interviews with past and current BWD staff about experience with fallowed fields, field visits, and data collection of existing conditions.

3.2 Field Sampling of Reference Natural Habitat to Guide Farmland Restoration Potential. Use GIS layers to stratify landscape in the Valley, including the agricultural land into similar geomorphic features for sampling. Based on this stratification and information from the time series of fallowed farmland, determine a sampling design to collect more detailed information on plant cover and "greenness" utilizing drones and multispectral imagery over hundreds of acres. Areas of interest will be visited on the ground to compare vegetation composition and plant physiological data that will further help to identify specific areas and species most promising for rehabilitation. Sample cover data, analyze and interpret reference conditions to identify a range of reasonable habitat restoration targets for fallowed farmland.

Task 4. Brush Pile Wildlife Sand Fence Case Study

4.1 Identify Manipulative Sites for Sand Fences. Working on land with BWD access agreements, identify one or multiple sites, based on feasibility, for construction of Sand Fences.

4.2 Design and Construct Sample Sand Fences. Working directly with crews in the field, identify the most economical method of construction, and build variations on the design, as appropriate. Sand Fences will be compared to control (no action) and mulched fields with chipped orchard tree material.

4.3 Baseline Observations of Sand Fence Function and Wildlife Value. Take baseline data for comparison to future datasets, and to characterize the habitat and dust control value of the Sand Fences. Utilizing information from Task 2 and initial results from Task 3, establish a pilot study with promising plant species to help understand plant response to Sand Fences.

Task 5. Farmland Fallowing Rehabilitation Strategies

5.1 Develop Conceptual Models for Key Rehabilitation Processes. Based on literature review, geodatabase indices and analysis, field study results, and expert interviews, develop conceptual models of key processes involved in dust, native recruitment, and habitat restoration of fallowed farmland.

5.2 Design Rehabilitation Strategies. Develop Rehabilitation Strategies for Fallowed Farmland based on conceptual models, the range of potential for rehabilitation based on site level measurements across the study area, and project goals.

5.3 Farmland Fallowing Best Practice Recommendations. Recommendations for Best Practice Language for Fallowing of Farmland to be incorporated into the GSP. Identify gaps in knowledge for future monitoring and study to improve best practice adaptively as land begins to be fallowed for water conservation.

Task 6. Farmland Fallowing Prioritization

6.1 Prioritization Model for Fallowing Farmland Ranked by Benefits of Water Conservation and Rehabilitation Potential. Develop a model for prioritizing acquisition of farmland for fallowing based on the reduction of water consumption, and likelihood of success of the rehabilitation strategies.

Task 7. Environmental Working Group Meetings

7 Environmental Working Group Meetings. The Project Manager, Travis Brooks, and other key personnel relevant to the meeting agenda, will attend up to 2 meetings per year, for three years to present findings from each of the tasks in the work plan and seek feedback from EWG members.

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https://commons.wikimedia.org/wiki/File:Large_lemon_orchard_prepared_for_irrigation_in_the_San_Fernando_Valley,_California,_ca.1900_(CHS-1773).jpg
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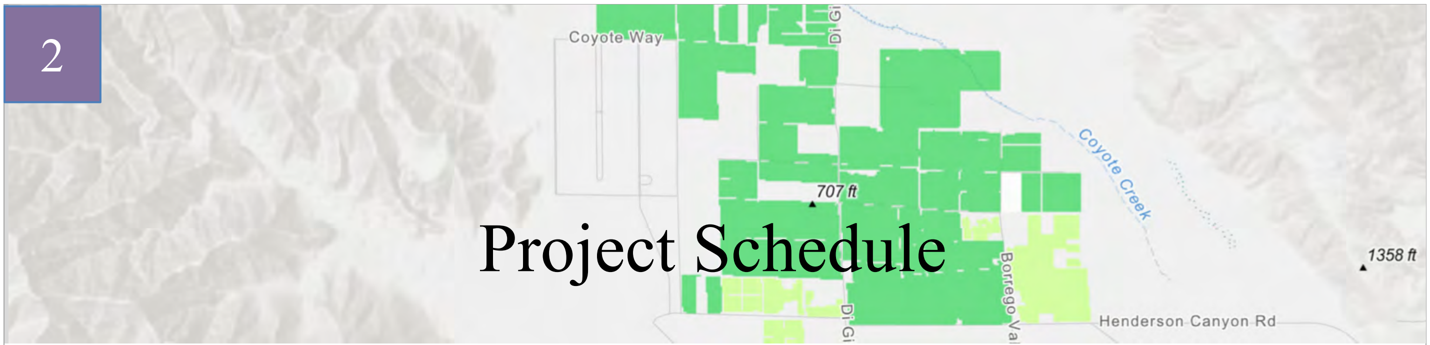


Project Schedule

Task	Approx. Time to Complete in Months	Anticipated End Date	Deliverables
Notice to Proceed (NTP)	---	July 1, 2022	
Task 1. Project Management	36	June 30, 2025	Quarterly Status Updates
Task 2. Review and Analysis of Existing Data	5	Nov. 30, 2022	Kick-Off Meeting Technical Memo Summarizing Existing Data Initial Fallowed Farmland Rehabilitation Opportunities and Prioritization Map
Task 3. Existing Fallowed Farmland and Reference Natural Habitat Field Study	24	Dec. 31, 2024	Technical Report of Field Studies
Task 4. Brush Pile Wildlife Sand Fence Case Study	24	Dec. 31, 2024	Constructed Sample Sand Fences Technical Report
Task 5. Farmland Fallowing Rehabilitation Strategies	18	June 30, 2025	Draft and Final Rehabilitation Strategies and Best Practice for Fallowing
Task 6. Farmland Fallowing Prioritization	18	June 30, 2025	Prioritization of Farmland Fallowing Report and Maps
Task 7. Env. Working Group Meetings	36	June 30, 2025	Participation in 6 Meetings

Project Team Organization

Environmental Working Group
Borrego Springs Watermaster

Travis Brooks | Project Manager
Restoration Ecologist, Land IQ

University of California, Irvine

Ecology & Geosystems

- **Megan Lulow** – UCI Project Manager, Senior Field Ecologist
  - **Sarah Kimball** – Senior Scientist Data Manager, Data Analysis
  - **Field Ecologist** – Anza-Borrego Desert Research Center
    - **Assistant Field Ecologist** – Field Studies and Data Management

Land IQ

Soil Science & Agriculture,
Geospatial Analysis, Invasive Species Control
Ecological Restoration

- **Margot Griswold** – Senior Restoration Ecologist
  - **Melissa Riedel-Lehrke** – Field Biologist, Invasive Species Control
- **Joel Kimmelshue** – Agricultural Systems and Land Reclamation
  - **Seth Mulder** – Soil Science & Agriculture
  - **Christopher Stall** – Soil Science & Agriculture
- **Zongwu Wang** – Geospatial Analysis & Remote Sensing
  - **Justin Sitton** – Associate Analyst, GIS

Firm Information

Land IQ is a specialized land-based (agricultural and natural systems) science and remote sensing firm that pairs scientific knowledge of agronomic, native plant and land systems management with advanced remote sensing technologies, custom modeling, and analytical methods to develop powerful and cost-effective client solutions. The Land IQ team has been operating for over 15 years and some of our firm's select certifications and achievements include:

- California Small Business Enterprise (Micro) #1748303
- Women Business Enterprise #13010130
- Sacramento Area Sustainable Business
- 2017 Professional Services Contractor of the Year – Los Angeles Department of Water and Power – Owens Lake Dust Mitigation Science & Regulatory Team

Technical Expertise

Land IQ maintains a staff of soil scientists, agronomists, ecologists, and remote sensing and GIS specialists. Our staff average over 14 years professional experience and hold professional certifications including Certified Professional Soil Scientists and Agronomists, Registered Professional Soil Scientists, Biologists, Ecologists, and Certified Professionals in Erosion and Sediment Control Specialists.

The Land IQ Habitat Restoration Group offers a wide range of specialized services in natural resource planning, analysis, restoration, and management. Our achievements in revegetating and reclaiming drastically disturbed landscapes, monitoring for mitigation, and assessing and monitoring exotic species highlight our success in restoration ecology. Land IQ has assessed over 15,000 acres of land for habitat restoration potential and developed specific protocols for resource management plans.

Land IQ has existing working project relationships with a variety of technical experts and universities that may be resources for selected project efforts. We value and welcome cooperative efforts and our relationships include researchers and experts from CSUMB/NASA-Ames, Cal Poly ITRC, UC Davis, Fresno State, UC Irvine, UCLA, USC, and UC Cooperative Extension.

Project Experience

- **Owens Lake Dust Mitigation Program –** Land IQ works with the Los Angeles Department of Water and Power to support the design of irrigation, grading and tillage plans, as well as the development of soil preparation and planting specifications specifically for the purpose of comprehensive dust control on the 100 square mile Owens Dry Lakebed. Land IQ specifically develops appropriate native seed mixes and manages the collection of local species to not only control dust but also enhance habitat value of the dust control areas.

- **Upper Chiquita Canyon Habitat Conservation Area Restoration & Management -** Land IQ is responsible for managing a 1,158-acre conservation easement in southern Orange County that supports important populations of California gnatcatchers and coastal cactus wrens. Land IQ staff has identified restoration opportunities on approximately 500 acres of land disturbed by historic dry-land farming and grazing, and developed efficient techniques for large-acreage restoration areas of cactus scrub, coastal sage scrub, native grassland, oak woodland habitats and rare plant species.

- **Stabilization of Exposed Salton Sea Floor** - Land IQ has consulted with the Imperial Irrigation District (IID) to identify strategies for stabilizing vast expanses of fragile, erodible exposed Sea floor by developing concepts for methods such as planting native cover, roughening surfaces to disrupt wind, or combinations of these approaches.

UCI University of California, Irvine

Statement of Qualifications

The Environmental Collaboratory

The UCI Environmental Collaboratory enables three programs at UCI who focus on advancing our understanding and stewardship of natural areas to leverage each other's strengths to provide excellent research and innovative solutions to environmental problems. The Environmental Collaboratory functions through working partnerships to develop knowledge networks, which are opportunities for the academic community, local land managers, policy makers, and conservation organizations to share information and utilize an active adaptive management framework to inform management activities. UCI-Nature facilitates research, education, and public service on the reserves it manages and in partnership with other neighboring land managers. The Center for Environmental Biology (CEB) offers year-long internships in which students are engaged in authentic environmental research and outreach experiences. The Masters in Restoration and Conservation Science Program prepares students to become leaders in the fields of environmental science, conservation, and restoration. Each cohort completes a group capstone project working with a partner sponsor to provide solutions to environmental challenges through an active adaptive management process.

Megan Lulow, Ph.D., Executive Director, UCI-NATURE

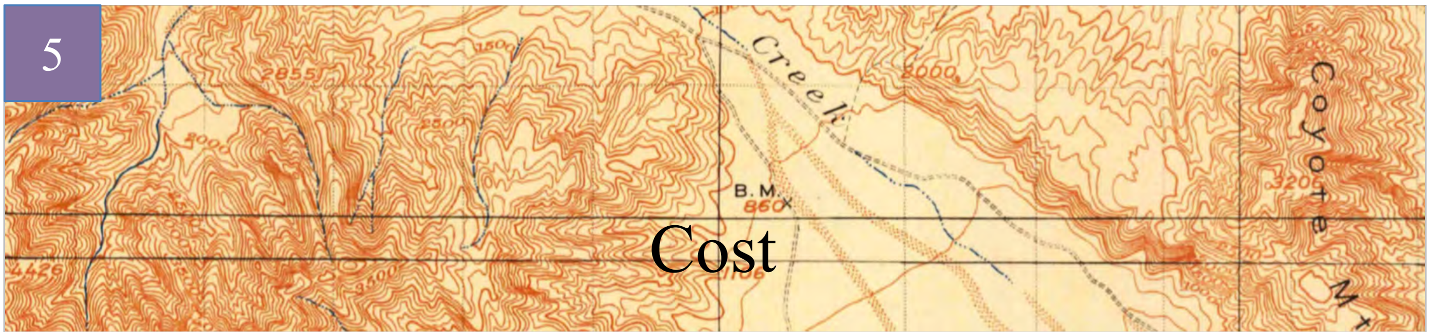
Megan oversees operations and programs for UCI-NATURE, which includes two desert reserves, a freshwater marsh, and an upland coastal reserve. She also teaches Restoration Techniques as part of the MCRS curriculum. She has seventeen years of professional experience in natural lands management as an ecologist and program director and has supervised several restoration projects. UCI Nature is part of the UC Natural Reserve System with reserves throughout California. It is central to the mission of these reserves to not only facilitate research and education on its reserves, but to foster connections between the University and the communities surrounding the reserves. Megan has published several studies in peer-reviewed journals with a focus on restoration ecology.

Sarah Kimball, Ph.D., Associate Adjunct Professor & Director, CEB

Sarah is an ecologist with broad interests, specializing in plants. She determines the research agenda for CEB, collaborating with local land managers to develop research projects that evaluate the effectiveness of conservation and restoration efforts. Sarah mentors students through the process of designing and carrying out ecological experiments. Sarah also teaches Restoration Ecology and Ecology, and serve as an academic advisor for the MCRS program. She has published over 35 studies in peer-reviewed journals, several of which focus on restoration ecology.

Selected Projects and Publications

1. Sentenac Cienega Ecosystem Restoration, Anza Borrego State Park, California Department of Parks and Recreation, CDFW Prop 1.
2. Water Management Improvements under Climate Change at the UC Irvine San Joaquin Marsh. Wildlife Conservation Board, Prop 68, Pacific Flyway Conservation.
3. Ecological Preserve Defensible Space Demonstration Project. Natural Communities Coalition, Natural Reserve of Orange County, Natural Communities Conservation Plan.
4. Drought Net Restoration Study: An Examination of the Effects of Seed Source on Restoration Success in a Changing Precipitation Regime
5. Kimball, S., M. Lulow, Q. Sorenson, K. Balazs, Y. Fang, S. Davis, M. O'Connell, and Travis E. Huxman. 2015. Cost-effective ecological restoration. *Restoration Ecology*. 23(6):800-810.
6. Wilson, K., M. Lulow, J. Burger, Y. Fang, C. Anderson, D. Olson, H. Possingham, M. O'Connell, and M.F. McBride. 2011. Optimal restoration: accounting for space, time, and uncertainty. *Journal of Applied Ecology.* 48(3):715-725.
7. Kimball, S., Long, J. J., Ludovise, S., Ta, P., Schmidt, K. T., Halsch, C. A., . . . Nguyen, L. (2019). Impacts of competition and herbivory on native plants in a community-engaged, adaptively managed restoration experiment. *Conservation Science and Practice, 1*(12). doi:10.1111/csp2.122



5 Cost

Land IQ and UCI strive to provide cost-effective professional services. Based upon the agreed upon Scope of Work, we will make efficient use of staff to carry out tasks under the contract.

The total price for Concept Feasibility Plan for Rehabilitation of Fallowed Irrigated Agricultural Land in the Borrego Valley Groundwater Basin Project is a not-to-exceed price of $728,480. Cost by Task is provided in the following table.

Task	Cost by Task
Task 1. Project Management	**$ 50,440**
Task 2. Review and Analysis of Existing Data	**$ 84,070**
Task 3. Existing Fallowed Farmland and Reference Natural Habitat Field Study	**$ 218,750**
Task 4. Brush Pile Wildlife Sand Fence Case Study	**$ 220,680**
Task 5. Farmland Fallowing Rehabilitation Strategies	**$ 75,220**
Task 6. Farmland Fallowing Prioritization	**$ 56,620**
Task 7. Environmental Working Group Meetings	**$ 22,700**
TOTAL	**$ 728,480**

Borrego Springs Youth and Seniors Center, Inc.

PO Box 1362

Borrego Springs, CA 92004

A 501(C)(3) Charitable Nonprofit Corporation

January 17, 2022

To: California Department of Water Resources (DWR)

We understand that the Borrego Springs Watermaster is submitting several Project proposals to include in a grant application “spending plan” for the DWR’s Sustainable Groundwater Management Grant Program under Proposition 68 and the 2021 Budget Act. We understand the Watermaster’s project proposals to be the following:

- **Watermaster Monitoring, Reporting, and Update to the Groundwater Management Plan**. This project covers a broad range of Watermaster tasks that include: conducting monitoring programs (e.g. groundwater-level and water quality); reporting on the monitoring programs; and updating the Groundwater Management Plan as required by the DWR. The activities included in this project will help the Watermaster comply with the Judgment and the Groundwater Management Plan, and will support the sustainable management of the Borrego Springs Groundwater Subbasin.

- **Biological Restoration of Fallowed Lands**. This project is recommended by the Watermaster’s Environmental Working Group. The project will develop information to guide the use of “biological restoration” as a technique to mitigate the potential adverse impacts associated with the fallowing of lands that is expected to occur within the Subbasin due to future reductions in groundwater pumping needed to achieve sustainable groundwater management. Reducing the potential for airborne dust emissions and enhancing habitat are the primary objectives of this project.

- **Groundwater Dependent Ecosystems (GDE) Monitoring Program**. This project is also recommended by the Watermaster’s Environmental Working Group. This project is designed to determine if the historical GDEs within the Subbasin (particularly the Mesquite Bosque in the Borrego Sink) are dependent on the regional aquifer of the Subbasin, or not. The results of this project could be used to update and improve the Groundwater Management Plan to protect the environmental uses of groundwater in the basin.

These projects will have multiple benefits to the severely disadvantaged and underrepresented community of Borrego Springs:

- The community’s water supply is solely dependent on the groundwater basin. These projects will help to ensure that the groundwater basin remains an affordable, high-quality source of water for the community.

- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to our severely disadvantaged community.

- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park, dark and clear night skies, and the beautiful flora and fauna of the region. These projects will help maintain or enhance the physical and biological environment within the community, and thereby support economic activity within Borrego Springs.

We support the projects described in this letter, and the Watermaster’s efforts to achieve sustainable groundwater management in Borrego Springs.

Daniel Wright,

Board President

Project Information Submittal Form

Project Submitter/Owner: Environmental Working Group of the Borrego Springs Watermaster

Project Name: Groundwater Dependent Ecosystems (GDE) Monitoring Program

Contact Information

Name: Andy Malone, PG – Lead Technical Consultant
Phone: 949-420-3030
Email: amalone@westyost.com
Address: Borrego Springs Watermaster, c/o West Yost Associates, 23692 Birtcher Drive, Lake Forest, CA 92630

Project Summary

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

The technical work that supported the Watermaster's Groundwater Management Plan (GMP) indicated that all existing GDEs within the Borrego Springs Subbasin (Subbasin) have never been, or are no longer, dependent on groundwater in the Subbasin. The major GDE identified as once dependent on the regional aquifer within the Subbasin was a honey mesquite community in the vicinity of the Borrego Sink (Mesquite Bosque).

The Watermaster's Environmental Working Group (EWG) contends that a GDE Monitoring Program is necessary to check/verify the conclusions of the technical work that supported the GMP. For the Project proposed herein, a GDE Monitoring Program will be developed and implemented in a phased approach under the guidance of the EWG and the direction of the Watermaster Board over an approximate three-year period concluding by June 30, 2025. The major tasks and subtasks are:

- **Task 1: Prepare the GDE Monitoring Program Workplan**. The Watermaster will prepare a GDE Monitoring Program Workplan (Workplan) under the guidance of the EWG and the Watermaster Board. Subtasks to prepare the Workplan include:
    - *Task 1a – Review the technical work that supported the conclusions in the GMP*.
    - *Task 1b – Prepare a draft Workplan and distribute to the EWG for review and comment*. The Workplan task will include: (i) a precise articulation of the gaps in the current understanding regarding all potential GDEs within the Subbasin and (ii) the detailed steps and costs to fill the gaps in understanding.
    - *Task 1c – Prepare a final Workplan based on the feedback from the EWG*. The final Workplan will be approved by the Watermaster Board.
- **Task 2: Implement the GDE Monitoring Program**. The Watermaster will implement the GDE Monitoring Program Workplan under the guidance of the EWG and the Watermaster Board. In this grant application, the Workplan is conceptual but will likely include the following activities:
    - *Task 2a – Update the mapping and characterization of the historical GDEs in the*

Subbasin. This type of work was previously performed to support the GMP. The work proposed in this subtask will build upon the GMP, and may include:

- Maps of the extent and health of the potential GDEs using air photos and remote sensing data (e.g., Normalized Difference Vegetation Index [NDVI]) to display the extent and health of GDEs over time.
- Charts and data graphics that reveal/demonstrate the relationships between changes in GDEs and changes in those factors that could influence the GDEs (e.g., groundwater production, groundwater levels, surface water discharge, and climate).
- A comparison of the history of GDEs in the Borrego Springs Subbasin to the GDEs in the Ocotillo-Clark Valley Groundwater Basin (which has not experienced the same magnitude of groundwater-level declines).

A task memorandum will be prepared to document the results and conclusions of this subtask and will include recommendations for the subsequent subtasks. The recommendations will be used to update the GDE Monitoring Program Workplan that was prepared in Task 1.

- *Task 2b – Fill gaps in understanding*. In this subtask, the gaps in understanding as identified in the GMP and the GDE Monitoring Program Workplan will be filled. The work proposed in this subtask may include:
  - Field-mapping and photo-documentation of potential GDEs to characterize GDE composition and establish baseline conditions.
  - Investigation of rooting-depth and source-water of the Mesquite Bosque in the Borrego Sink.
  - Construction and equipping of a shallow duel-nested monitoring well facility within the GDE near the Borrego Sink. This monitoring well is expected to support the investigation of rooting-depth and source-water of Mesquite Bosque (second bullet above).[1]
  - Construction and equipping of a surface-water monitoring station in the Borrego Sink. This monitoring site is expected to support the investigation of rooting-depth and source-water of Mesquite Bosque (second bullet above).[1]
- *Task 2c – Conduct interim monitoring program through 2024*. This subtask will include the collection and analysis of data from the monitoring program (e.g., NDVI, groundwater production, groundwater levels, surface-water discharge, and climatic parameters). The maps and data graphics prepared for the technical memorandum in Task 2a will be updated and shared with the EWG and Watermaster Board.

- **Task 3: Prepare GDE Monitoring Program Report and Recommendations**. The Watermaster will summarize the findings of Task 2 and prepare a technical report that describes the results, conclusions, and recommendations of the GDE Monitoring Program.

[1] Budget for construction and equipping of groundwater and surface-water monitoring facilities are not included herein, but are included in the separate Watermaster Project Submittal for Monitoring, Reporting, and GMP Update.

- If the monitoring program indicates that GDE(s) ***are dependent*** on the regional aquifer within the Subbasin, then the EWG will provide recommendations to the Watermaster Board for revisions to the GMP to protect the environmental beneficial uses of groundwater pursuant to the requirements of the SGMA.
- If the monitoring program indicates that GDE(s) ***are not dependent*** on the regional aquifer within the Subbasin, then the GMP will not be modified. Any continuation of GDE monitoring will only be conducted at the recommendation of the EWG and at the discretion of the Watermaster Board.

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.

The project location is the Borrego Springs Subbasin and the potential GDEs that exist or existed within the Subbasin. A "control area" in the Ocotillo-Clark Valley Groundwater Basin is also expected to be included in the project. Exhibit A (attached) is a map is from the GMP that shows the potential GDE areas within the Subbasin, particularly the Mesquite Bosque within the Borrego Sink. This potential GDE are the potential environmental users of groundwater, and hence, represent the benefiting 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 Project is not listed as a standalone project or management action (PMA) in the GMP. However, the SGMA requires that all beneficial uses and users of groundwater, including GDEs, be considered in the development and implementation of Groundwater Sustainability Plans (GSP) (Water Code § 10723.2). GDEs are specifically defined under the SGMA as "ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" (23 CCR § 351(m)). The GSP Regulations include specific requirements to identify GDEs and consider them when determining whether groundwater conditions are having potential effects on beneficial uses and users.

The Watermaster's Groundwater Management Plan (GMP) is a repurposed GSP that is part of the Physical Solution under the Stipulated Judgment. The GMP is intended to avoid "undesirable results" as defined in the SGMA, such as adverse impacts to environmental uses/users of groundwater within the Borrego Springs Subbasin (e.g., GDEs). The GMP identified and characterized several historical and current GDEs overlying the Subbasin and within the tributaries of the mountain-front watersheds. However, the GMP concluded that all existing GDEs have never been, or are no longer, dependent on the regional aquifer of the Subbasin. The major GDE identified as once dependent on the regional aquifer of the Subbasin was a honey mesquite community in the vicinity of the Borrego Sink.

The main conclusions and recommendations of the GMP regarding GDEs are as follows [Appendix D4: Borrego Springs Subbasin Groundwater Dependent Ecosystems, page 26]:

> *"A review of available pertinent spatial datasets, historical data including stream flow and groundwater levels, satellite-derived vegetation metrics, and geology was completed to develop a robust HCM* [hydrogeologic conceptual model] *to evaluate nexus of GDEs with Subbasin regional groundwater levels. Because of the long-term imbalance of pumping with available natural recharge, an irreversible impact has likely occurred on the honey mesquite community from a decline in groundwater levels, an impact which, based on the best available science, was*

> *completed and became permanent sometime prior to 1985. The comprehensive assessment revealed potential GDEs identified within the Subbasin no longer have direct reliance on groundwater emerging from aquifers or on groundwater occurring near the ground surface, and instead are sustained by periodic stormwater flows, soil moisture, and potentially perched groundwater where present. These findings indicate that based on best available data there is no need for the GSP to address minimum groundwater level thresholds with respect to potential GDEs. Detailed mapping of vegetation is lacking for the area in the vicinity of the Borrego Sink. Groundwater level monitoring of wells located in the vicinity of the Borrego Sink should continue."*

Section IV.H of the Stipulated Judgment provides that:

> *An Environmental Working Group (EWG) will be established to advise the Watermaster on GDE and any other matters approved by the Watermaster.*

The EWG held its inaugural meetings in February and May 2021 to discuss and prioritize activities that the EWG could engage in pursuant to its purview and duties as defined by the Judgment. Some EWG members contend that more study is necessary to determine if existing GDEs are dependent on the regional aquifer of the Subbasin, or not.

The Project proposed herein is intended to clarify this uncertainty through the development and implementation of a GDE Monitoring Program conducted by the Watermaster under the guidance of the EWG. If the results and conclusions of the monitoring program indicate that GDE(s) are dependent on the regional aquifer of the Subbasin, then the EWG will provide recommendations for revisions to the GMP to protect the environmental beneficial uses of groundwater pursuant to the requirements of the SGMA.

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

The main objective of the project is to determine if the potential GDEs within the Subbasin are dependent on the regional aquifer of the Subbasin, or not. A GDE Monitoring Program is needed to make this determination. A final technical report will describe the results, conclusions, and recommendations of the GDE Monitoring Program.

The GDE Monitoring Program will be developed and implemented under the guidance of the technical experts participating on the EWG. Technical subconsultants, with demonstrated expertise in surface-water and groundwater hydrology, desert ecology, and GDEs, will likely be needed to execute the monitoring program.

If the monitoring program indicates that GDE(s) ***are dependent*** on the regional aquifer within the Subbasin, then the EWG will provide recommendations to the Watermaster Board for revisions to the GMP to protect the environmental beneficial uses of groundwater pursuant to the requirements of the SGMA. If the monitoring program indicates that GDE(s) ***are not dependent*** on the regional aquifer within the Subbasin, then the GMP will not be modified.

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?

The project will enhance the understanding of the groundwater basin, and potentially, will result in revisions to the GMP to protect the environmental beneficial uses of groundwater pursuant to the requirements of the SGMA. These benefits will be quantified and described in the interim and final deliverables of the project.

In addition, there are monitoring facilities, such as monitoring wells, that are expected to be constructed in to support the project. These monitoring facilities will generate data and information to assist the Watermaster with other basin management initiatives, including the periodic Redetermination of the Sustainable Yield, groundwater-level and groundwater-quality monitoring programs, annual reporting to the DWR, etc.

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.

Exhibit B is a map of the Basin and the area defined as a SDAC. While the Project activities will be focus within the primary GDE within the Borrego Sink, the Project will serve the entire Basin, including the community of Borrego Springs and the area classified as a SDAC, because it is designed to better understand and (potentially) protect the natural resources within the Subbasin.

- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park and the flora and fauna of the region. The Project is designed to better understand and (potentially) protect the natural resources within the community, and thereby support economic activity within Borrego Springs.
- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to the residents and rate payers.
- The community's water supply is solely dependent on the Basin. The Project is related to the larger project of implementation of the Judgment and GMP, which will ensure that the groundwater basin remains an affordable, high-quality source of water for the community in perpetuity.

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.

N/A

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?

N/A

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?

N/A

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.

GDEs can act to sequester carbon through the process of biosequestration, which is the capture and storage of the atmospheric carbon dioxide by natural vegetation. The Project is designed to better understand and (potentially) protect the GDEs and their function within the Earth's carbon cycle.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 0 – Project Management. This task includes: preparation and submission of supporting grant documents and coordination with the Grantee; preparing invoices including relevant supporting documentation for submittal to DWR via the Grantee; tracking project budget and schedule progress; and coordinating with staff, partnering agencies, and consultants/contractors.

Deliverables: Invoices and necessary documentation.

Budget Category (b): Planning/Design/Environmental

Task 1 – Prepare the GDE Monitoring Program Workplan. The Watermaster will prepare a GDE Monitoring Program Workplan under the guidance of the EWG and final approval of the Watermaster Board. Subtasks to prepare the Workplan include:

Task 1a – Review the technical work that supported the conclusions in the GMP.

Task 1b – Prepare a draft Workplan and distribute to the EWG for review and comment.

Task 1c – Prepare a final Workplan based on the feedback from the EWG.

Deliverables: Draft and final versions of the GDE Monitoring Program Workplan

Budget Category (c): Construction/Implementation

Task 2b – Fill gaps in understanding. In this subtask, the gaps in understanding as identified in the GMP and the GDE Monitoring Program Workplan will be filled. The work proposed in this subtask may include:

Task 2b(iii) – Construct and equip a dual-nested monitoring well in the Borrego Sink.

Task 2b(iv) – Construct and equip a surface-water monitoring station in the Borrego Sink.

Deliverables: Draft and final technical specifications for the monitoring sites; contractor bid documents; and final completion reports for the monitoring facilities.

Budget Category (d): Monitoring/Assessment

Task 2a – Update the mapping and characterization of the historical GDEs in the Subbasin. This type of work was previously performed to support the GMP. The work proposed in this subtask will build upon the GMP, and may include:

- Maps of the extent and health of the potential GDEs using air photos and NDVI to display the extent and health of GDEs over time.
- Charts and data graphics that reveal/demonstrate the relationships between changes in GDEs and changes in those factors that could influence the GDEs (e.g., groundwater production, groundwater levels, surface water discharge, and climate).
- A comparison of the history of GDEs in the Borrego Springs Subbasin to the GDEs in the Ocotillo-Clark Valley Groundwater Basin (which has not experienced the same magnitude of groundwater-level declines).

Deliverables: A task memorandum will be prepared to document the results and conclusions of this subtask and will include recommendations for the subsequent subtasks. The recommendations will be used to update the GDE Monitoring Program Workplan that was prepared in Task 1.

Task 2b – Fill gaps in understanding. In this subtask, the gaps in understanding as identified in the GMP and the GDE Monitoring Program Workplan will be filled. The work proposed in this subtask may include:

Task 2b(i) – Field-mapping and photo-documentation of potential GDEs to characterize GDE composition and establish baseline conditions.

Task 2b(ii) – Investigation of rooting-depth and source-water of the Mesquite Bosque in the Borrego Sink.

Deliverables: Draft and final technical reports to document the investigations and technical work.

Task 2c – Conduct interim monitoring program through 2024. This subtask will include the collection and analysis of data from the monitoring program (e.g., NDVI, groundwater production, groundwater levels, surface-water discharge, and climatic parameters).

Deliverables: The maps and data graphics that were prepared for the Task 2a technical memorandum will be updated annually and shared with the EWG and Watermaster Board.

Task 3 – Prepare GDE Monitoring Program Report and Recommendations. The Watermaster will summarize the findings of Task 2 and prepare a technical report that describes the results, conclusions, and recommendations of the GDE Monitoring Program.

Deliverables: Draft and final GDE Monitoring Program Report and Recommendations.

Budget Category (e): Interested Parties Outreach/Education

Task 4 – Conduct EWG Meetings. At least two EWG meetings per year will be necessary to: receive updates on project progress; provide guidance and input to the Watermaster Technical Consultant and subcontractors; review draft and final project deliverables and make recommendations to the Watermaster Board.

Deliverables: Meeting agendas/packets; PowerPoint presentations; summary meeting notes; and memorandums with recommendations to the Watermaster Board. All EWG meeting deliverables will be posted to the Watermaster's website.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

		(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 0. Project Management	30,000		30,000	0%
(b)	**Planning/Design/Environmental**				
	Task 1. **Prepare the GDE Monitoring Program Workplan**	50,000		50,000	0%
(c)	**Construction/Implementation**				
	Task 2b(iii) – Construct and equip a dual-nested monitoring well in the Borrego Sink[2]				
	Task 2b(iv) – Construct and equip a surface-water monitoring station in the Borrego Sink[2]				
(d)	**Monitoring/Assessment**				
	Task 2a – Update the mapping and characterization of the historical GDEs in the Subbasin	125,000		125,000	0%
	Task 2b(i) – Field-mapping and	105,000		105,000	0%

[2] Budget for construction and equipping of groundwater and surface-water monitoring facilities are not included herein, but included in the separate Watermaster Project Submittal for Monitoring, Reporting, and GMP Update.

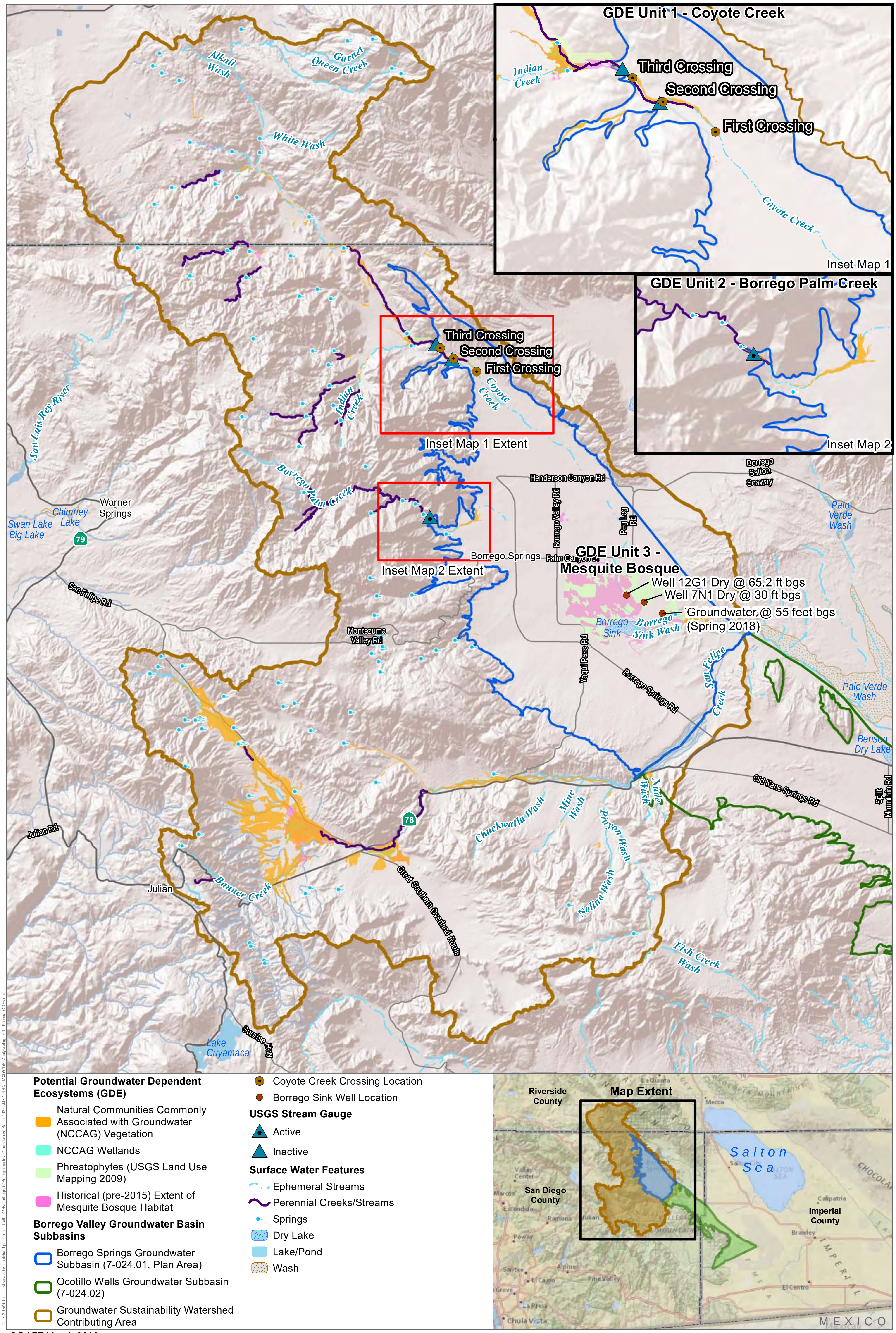
	photo-documentation of potential GDEs to characterize GDE composition and establish baseline conditions				
	Task 2b(ii) – Investigation of rooting-depth and source-water of the Mesquite Bosque in the Borrego Sink	105,000		105,000	0%
	Task 2c – Conduct interim monitoring program through 2024	30,000		30,000	0%
	Task 3 – Prepare GDE Monitoring Program Report and Recommendations	90,000		90,000	0%
(e)	**Interested Parties Outreach/Public Education**				
	Task 4 – Conduct EWG Meetings	50,000		50,000	0%
(f)	**Grand Total (Sum rows (a) through (e) for each column)**	585,000		585,000	0%

*** List sources of Local Cost Share funding:**

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**4/1/2022**	**6/30/2025**
	Task 0. Project Management	4/1/2022	6/30/2025
(b)	**Planning/Design/Environmental**	**4/1/2022**	**8/1/2022**
	Task 1. Prepare the GDE Monitoring Program Workplan	4/1/2022	8/1/2022
(c)	**Construction/Implementation**	**7/1/2022**	**10/1/2023**
	Task 2b(iii) – Construct and equip a dual-nested monitoring well at the Borrego Sink	4/1/2022	10/1/2023
	Task 2b(iv) – Construct and equip a surface-water monitoring station at the Borrego Sink	4/1/2022	10/1/2023
(d)	**Monitoring/Assessment**	**4/1/2022**	**6/30/2025**
	Task 2a – Update the mapping and characterization of the historical GDEs in the Subbasin	4/1/2022	1/1/2023
	Task 2b(i) – Field-mapping and photo-documentation of potential GDEs to characterize GDE composition and establish baseline conditions	4/1/2022	10/1/2023
	Task 2b(ii) – Investigation of rooting-depth and source-water of the Mesquite Bosque in the Borrego Sink	4/1/2022	10/1/2023
	Task 2c – Conduct interim monitoring program through 2024	1/1/2023	1/1/2025
	Task 3 – Prepare GDE Monitoring Program Report and Recommendations	1/1/2025	6/30/2025
(e)	**Interested Parties Outreach/Public Education**	**4/1/2022**	**6/30/2025**
	Task 4 – Conduct EWG Meetings	4/1/2022	6/30/2025



DRAFT March 2019

DATUM: NAD 1983. DATA SOURCE: DWR 2018; USGS NHD 2017; State Parks 2017; SanGIS 2017

DUDEK

0 2 4 Miles

Figure 1
Borrego Springs Subbasin and Potential Groundwater Dependent Ecosystems

Borrego Springs Subbasin Potential Groundwater Dependent Ecosystems

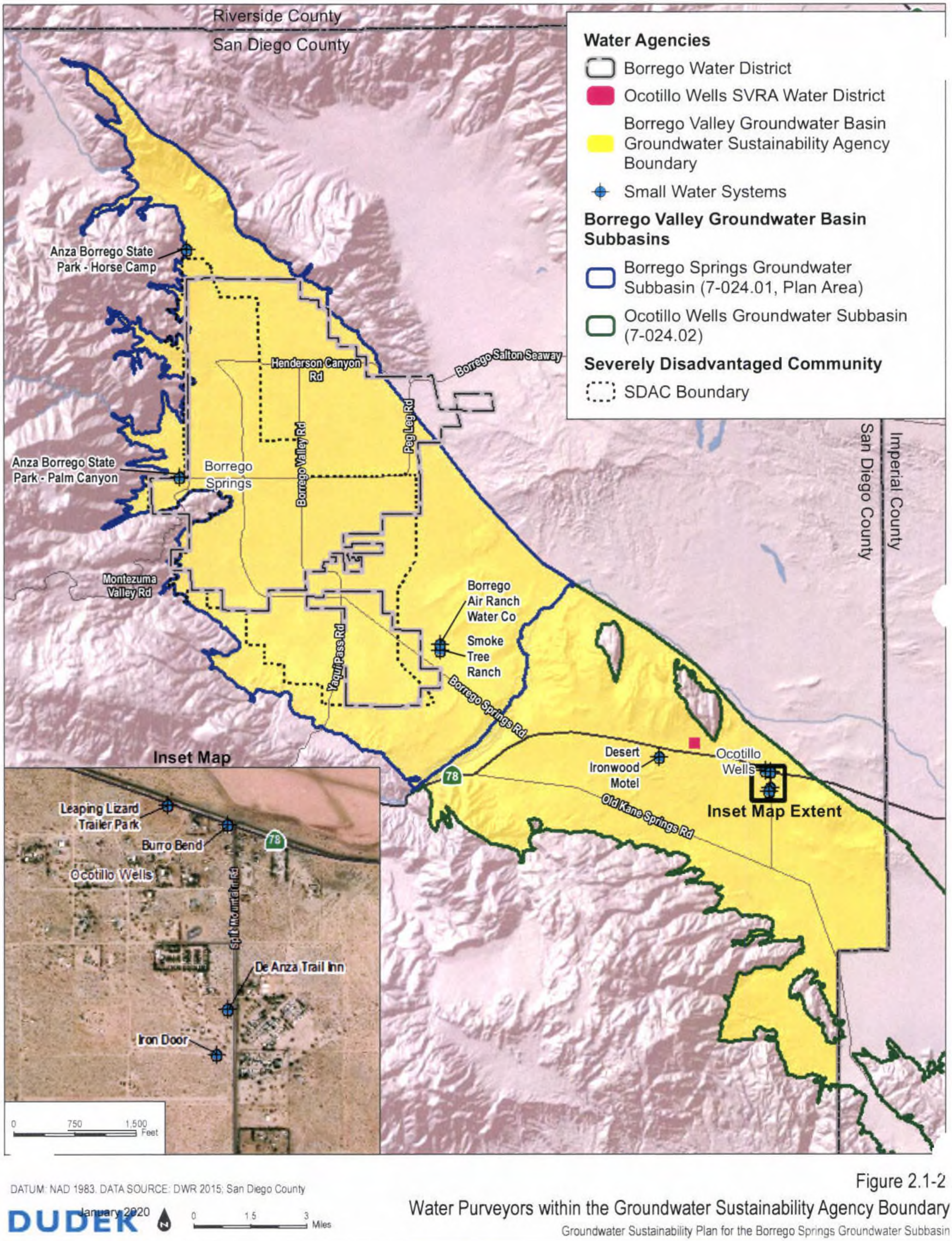


Figure 2.1-2
Water Purveyors within the Groundwater Sustainability Agency Boundary

Borrego Springs Youth and Seniors Center, Inc.

PO Box 1362

Borrego Springs, CA 92004

A 501(C)(3) Charitable Nonprofit Corporation

January 17, 2022

To: California Department of Water Resources (DWR)

We understand that the Borrego Springs Watermaster is submitting several Project proposals to include in a grant application “spending plan” for the DWR’s Sustainable Groundwater Management Grant Program under Proposition 68 and the 2021 Budget Act. We understand the Watermaster’s project proposals to be the following:

- **Watermaster Monitoring, Reporting, and Update to the Groundwater Management Plan**. This project covers a broad range of Watermaster tasks that include: conducting monitoring programs (e.g. groundwater-level and water quality); reporting on the monitoring programs; and updating the Groundwater Management Plan as required by the DWR. The activities included in this project will help the Watermaster comply with the Judgment and the Groundwater Management Plan, and will support the sustainable management of the Borrego Springs Groundwater Subbasin.

- **Biological Restoration of Fallowed Lands**. This project is recommended by the Watermaster’s Environmental Working Group. The project will develop information to guide the use of “biological restoration” as a technique to mitigate the potential adverse impacts associated with the fallowing of lands that is expected to occur within the Subbasin due to future reductions in groundwater pumping needed to achieve sustainable groundwater management. Reducing the potential for airborne dust emissions and enhancing habitat are the primary objectives of this project.

- **Groundwater Dependent Ecosystems (GDE) Monitoring Program**. This project is also recommended by the Watermaster’s Environmental Working Group. This project is designed to determine if the historical GDEs within the Subbasin (particularly the Mesquite Bosque in the Borrego Sink) are dependent on the regional aquifer of the Subbasin, or not. The results of this project could be used to update and improve the Groundwater Management Plan to protect the environmental uses of groundwater in the basin.

These projects will have multiple benefits to the severely disadvantaged and underrepresented community of Borrego Springs:

- The community’s water supply is solely dependent on the groundwater basin. These projects will help to ensure that the groundwater basin remains an affordable, high-quality source of water for the community.

- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to our severely disadvantaged community.

- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park, dark and clear night skies, and the beautiful flora and fauna of the region. These projects will help maintain or enhance the physical and biological environment within the community, and thereby support economic activity within Borrego Springs.

We support the projects described in this letter, and the Watermaster’s efforts to achieve sustainable groundwater management in Borrego Springs.

Daniel Wright,

Board President

Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Watermaster

Project Name: Monitoring, Reporting, and GMP Update for Sustainable Management in the Borrego Springs Subbasin

Contact Information

Name: Samantha Adams, Executive Director
Phone: 949.238.0698
Email: sadams@westyost.com, borregospringswm@westyost.com
Address: Borrego Springs Watermaster, c/o West Yost, 23692 Birtcher Dr., Lake Forest, CA 92691

Project Summary

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

A Stipulated Judgment (Judgment) adjudicating all groundwater rights in the Borrego Springs Subbasin (Basin) of the Borrego Valley Groundwater Basin was entered by the Orange County Superior Court of the State of California on April 8, 2021. The Judgment provides a physical solution for the perpetual management of the Basin to achieve sustainable groundwater management consistent with the substantive objectives of the SGMA and with reasonable and beneficial use pursuant to the California Constitution. The Judgment considered together with the Groundwater Management Plan (GMP; included as Exhibit 1 to the Judgment) constitutes the Physical Solution for the Basin and serves as the technical approach to achieve sustainability. The Physical Solution is intended to provide flexibility and adaptability to allow the Court to use existing and future technological, social, institutional, and economic options to maximize reasonable and beneficial water use in the Basin. The Physical Solution (e.g., the Judgment and GMP) was submitted to the California Department of Water Resources (DWR) as an Alternative to a GSP in June 2021.

The Basin has been, and presently is, in a condition of long-term overdraft and there is no viable means to remedy the overdraft through artificial recharge or other supply augmentation strategies under current Basin conditions and pumping quantities. Therefore, it is necessary to implement the Physical Solution, which provides for an immediate and aggressive rampdown of annual pumping over the next twenty years. The Court deemed that the evidence to support this conclusion is that the Physical Solution appropriately balances competing economic, social, and environmental considerations, and that it will result in the optimal management of the Basin. The Physical Solution will accelerate water-saving actions and provide flexibility and adaptability to maximize the reasonable and beneficial use of the Basin's groundwater and protect against undue economic harm to the Borrego Springs community.

To maintain a viable water supply for current and future beneficial uses and users of groundwater in the Basin, the sustainability goal of the Physical Solution is to ensure that by 2040, and thereafter, the Basin is operated within its Sustainable Yield and does not exhibit Undesirable Results. The Physical Solution establishes that the initial Sustainable Yield of the Basin is 5,700 acre-feet per year (afy). The Rampdown of pumping is intended to reduce annual pumping from the Baseline Pumping Allocation (BPA) of 24,293 acre-feet per year (afy) to the Sustainable Yield by water year (WY) 2039/40. In each of the first five years of implementation (WY 2020/21 through WY 2024/25), the annual pumping allocation will be reduced by five percent of each pumpers' BPA. The amount and pace of the Rampdown after WY 2024/25 will be through a systematic process that adjusts the Rampdown rate after periodic redeterminations of the Sustainable Yield that consider new data and information obtained through implementation of the GMP. The first refined and specific estimate of the Sustainable Yield must be determined by the Watermaster by January 1, 2025 through a formal Technical Advisory Committee process based on the best available science including the use of the Borrego Valley Hydrologic Model (BVHM) and consideration of all sources of Basin replenishment and outflow. The five-year updates of the GMP are timed to follow each Sustainable Yield redetermination to ensure the plan can be adapted to the latest understanding of Basin conditions.

To support the sustainability goal of the Physical Solution, the GMP established minimum thresholds and measurable objectives for the following sustainability indicators determined to be a current and/or potential future Undesirable Result: chronic lowering of water levels, reductions of groundwater storage, and water-quality degradation. The GMP defines a comprehensive initial groundwater and surface-water monitoring program to collect the data and information needed to track Basin conditions relative to the minimum thresholds and measurable objectives. Additionally, the GMP also identifies data gaps that should be filled. The data gaps include:

- **Metered groundwater pumping.** The initial Sustainable Yield is based largely on estimates of historical pumping and could be improved through the metering of pumping at wells. The Physical Solution requires metering of all non-*de minimis* wells in the Basin and provides for the collection of meter reads of pumping volumes at appropriate frequency to support the update, calibration, and use of the BVHM. It also requires pumpers to perform annual accuracy testing to ensure the accurate calculation of groundwater pumping (Judgment Sections VI.A, IV.E.6).
- **Groundwater elevation.** The current monitoring network should be evaluated annually to ensure representative spatial distribution of wells and address loss of wells over time due to various factors. Construction of new monitoring wells should be considered in areas where data gaps can't be filled with existing wells. The GMP identified that, "multi-completion wells or well clusters screened at discrete intervals in the upper, middle, and lower aquifers would be required to determine the potentiometric surface by aquifer unit".
- **Groundwater quality.** There are limited contemporary data available for private wells located in the North and Central Management Areas of the Basin to delineate nitrate and TDS concentrations laterally and vertically in the upper aquifer. the GMP indicated that, "Multi-completion wells or depth discrete water quality samples would be required to better characterize water quality by aquifer zone and depth in the [Basin]." There are also potential threats to water quality posed by improperly abandoned wells. The Physical Solution addresses these issues as follows:
    - Water quality monitoring is essential to avoiding Undesirable Results and achieving sustainable groundwater management in the Basin. The Physical Solution provides for the development of a Water-Quality Monitoring Plan that can be implemented to characterize and track water-quality trends in the Basin and develop remedies for significant and unreasonable changes in water quality under the water quality optimization Project and Management Action (Judgement Section VI.B). Construction of new monitoring wells should be considered in areas where data gaps can't be filled with existing wells.
    - The Watermaster will cooperate with the County of San Diego in the enforcement of the well abandonment ordinance as improperly abandoned wells have the potential to provide a mitigation pathway of contaminants into the Basin (Judgement Section X.B).

- **Surface water flow.** The primary sources of natural recharge to the basin are mountain-block recharge and infiltration from ephemeral streams entering the Borrego Valley from the adjacent mountain watersheds. These sources of recharge were estimated using data from the regional Basin Characterization Model (BCM). The installation of stream gaging stations in Coyote Creek and other major drainages to the Basin could improve the BCM estimates of runoff to the basin.
- **Aquifer properties.** The results of BVHM calibration and validation indicate a slight bias of the model to underestimate hydraulic heads in certain areas. Aquifer stress testing at wells could provide site-specific and depth-specific estimates of hydraulic conductivity and storage parameters that could then be used to constrain future model calibration efforts and improve model accuracy.

In recognizing the critical role of monitoring and analyzing Basin conditions to ensure achievement of the sustainability goal, the Judgment provides for flexible, adaptive management that mandates the study, refinement, and improvement of the Sustainable Yield estimate based on the best available science, records, and data.

To effectively implement the Physical Solution, the Watermaster must meet regularly to make decisions and take actions to achieve sustainability. The update of the Sustainable Yield and GMP, including all the work performed to support these updates, is enabled by participatory and competent Basin governance through the appointment of a Watermaster Board representing diverse interests in the Basin, including municipal, agricultural, recreation, community, and County representatives. The Judgment prescribes an equitable and transparent decision-making process and provides for perpetual ongoing Court oversight to ensure compliance with the Judgment, to amend the Judgment if ever necessary, and to efficiently resolve conflicts. It also requires the formation of a Technical Advisory Committee (TAC) and an Environmental Working Group (EWG) to provide guidance to the Watermaster Board on subject matters within their purview.

The TAC's responsibilities include making recommendations based on best science and data collected regarding the Water Budget and the avoidance of undesirable results including, without limitation, information generated from BVHM model runs. TAC meetings are open to the public and are an important venue for public comment. Membership of the Technical Advisory Committee is open to experts hired by any Party holding BPA or the County and thus constitutes a diverse decision-making body. The TAC is responsible to endeavor to decide all matters by consensus.

All meetings of the Watermaster, including meetings of the Board, TAC, and EWG, are public outreach opportunities that provide for communication of Watermaster planned actions and a venue to receive public input prior to making decisions. Outreach to the community through these regular meetings is critical to maintain support for the mission of achieving sustainability. The Watermaster maintains a website and an interested stakeholder distribution list to advertise meetings, disseminate important information, and call for input at Watermaster hearings that are required by the Judgment to be held prior to Board action on key decisions.

As evident by this summary, the implementation of a comprehensive program to monitor, analyze, and report on key hydrogeologic data is paramount to successfully achieving the sustainability goal of the Basin in a manner that complies with the Judgment and seeks input from the local community on a regular basis.

The proposed project for *Monitoring, Reporting, and GMP Update for Sustainable Management in the Borrego Springs Subbasin* is a comprehensive monitoring, analysis, data management and reporting program that will ensure the effective implementation of the pumping rampdown, including filling data gaps identified in the Judgment and GMP, and performing the required redetermination of the Sustainable Yield and GMP update due in 2025.

This project is made up of the following components:

- Task 1 - Groundwater Pumping Monitoring
- Task 2 - Groundwater Level Monitoring
- Task 3 - Groundwater Quality Monitoring
- Task 4 - Surface Water Flow Monitoring
- Task 5 - Construction of New Monitoring Facilities
- Task 6 - Identify and address improperly Abandoned Wells
- Task 7 - Maintain and enhance the Basin Data Management System
- Task 8 - Annual Reporting to DWR and the Court
- Task 9 - Redetermination of the Sustainable Yield by 2025
- Task 10 - Prepare the 2025 GMP Update.
- Task 11 - Stakeholder Outreach
- Task 12 - Project Management and Grant Reporting

The description of each component, including its major sub-tasks are described below.

Task 1. Groundwater Pumping Monitoring. The objective of this task to collect, compile, and manage all Basin pumping data to ensure successful compliance with the pumping rampdown. The subtasks include:

- Task 1a - Monthly meter reading and pumping calculations. This involves Watermaster contractors visiting wells with manual read meters to record meter readings, collecting self-reports of meter reads between Watermaster reading events, and downloading meter reads for wells with telemetry systems. Each month, data will be processed, checked for QA/QC, and loaded to Watermaster's Data Management System (DMS).
- Task 1b - Annual meter accuracy testing. This involves performing annual meter accuracy testing at all non-de minimis wells in the Basin. Upon completion of testing, reports will be reviewed, checked for QA/QC, and recorded. Letters requesting corrective action will be sent to any pumper with test results indicating that meters are not accurately reporting production.
- Task 1c - Outreach to existing and new *de minimis* pumpers to cooperate in pumping monitoring efforts, including collecting well data, and meter reading if applicable. There are about 50 de minimis wells in the Basin. The Judgment requires Watermaster approval of construction of all new de minimis wells. Installation of meters is a condition of approval and Watermaster will perform semi-annual meter reads at the de minimis wells. Watermaster will also perform outreach to existing de minimis well owners to request voluntary cooperation in Watermaster's pumping and other groundwater monitoring programs.

Task 2. Groundwater Level Monitoring. The objective of this task is to implement a comprehensive groundwater-level monitoring program to track changes in Basin conditions (e.g., groundwater levels, storage, and flow directions) and the effectiveness of the Physical Solution. Subtasks include:

- Task 2a - Implement the existing and future expanded groundwater-level monitoring program. This involves semi-annual monitoring events to collect manual water level measurements and download pressure transducers with continuously-recording data-loggers. Following each field event, data will be processed, checked for QA/QC, and loaded to Watermaster's Data

Management System (DMS). This task also provides for the purchase and installation of up to fifteen new pressure transducers.

- Task 2b - Expand Monitoring Network through Outreach. This involves performing outreach efforts to the DWR, the Parties, and others to obtain cooperation from well owners in expanding the groundwater-level monitoring network, visiting wells in the field to assess suitability for monitoring, and executing access agreements.
- Task 2c - Prepare monitoring well construction work plan. The Borrego Water District (BWD) and Watermaster are currently working cooperatively with the DWR Technical Support Services (TSS) staff to locate, design, drill, and construct one new multi-completion monitoring well in the North Management Area of the Basin. BWD in cooperation with the Watermaster presented proposed new monitoring well locations to the Watermaster's TAC and have elected to proceed with the TSS grant for one new well. During the well locating task, it was determined that additional monitoring wells will be necessary to replace aging wells and fill data gaps in the monitoring network. The workplan will include a well-siting study and technical specifications for construction of one new multi-depth monitoring well in an area with insufficient monitoring. The well-siting study in this Task 2c could also be designed to address gaps in the groundwater-quality monitoring network identified in Task 3b.
- Task 2d. Aquifer testing. This task would involve development of an aquifer testing work plan in conjunction with the TAC, the filed work to perform the aquifer test, data analysis, and preparation of a draft and final report of results and recommendations.

Task 3. Groundwater Quality Monitoring. The objective of this task to implement a comprehensive groundwater-quality monitoring program to track changes in Basin conditions and evaluate the need for water quality optimization programs to achieve sustainability. Subtasks include:

- Task 3a - Implement the existing and future expanded groundwater-quality monitoring program. This involves semi-annual monitoring events to collect water quality grab samples at wells. The water samples will be analyzed for constituents identified in the GMP, including arsenic, fluoride, nitrate, sulfate, TDS, and all other major anions and cations. Following each field event, data will be processed, checked for QA/QC, and loaded to Watermaster's DMS.
- Task 3b - Prepare Water-Quality Monitoring Plan (WQMP). The purpose of the plan is to enhance the monitoring network and program. The steps to develop the WQMP include: (i) define the questions that the monitoring plan should answer to comply with the Judgment; (ii) identify the gaps in the interim groundwater-quality monitoring program that should be filled to comply with the Judgment; and (iii) describe recommended steps and costs to fill the data gaps.

Task 4. Surface Water Flow Monitoring. The objective of this task to implement a surface water monitoring program to collect data that can be used in the BVHM to assess Basin recharge and the Sustainable Yield. In the first year of the grant period, this task will involve the current flow monitoring on Coyote Creek described in the GMP and will be expanded after completion of the surface-water discharge station described in Task 5b. The expanded monitoring is described in Exhibit A (Task 5 and Optional Task).

Task 5. Construction of New Monitoring Facilities. The objective of this task to design and construct monitoring facilities to fill data gaps identified in the GMP and/or by the TAC and EWG. This work includes acquiring permits, performing CEQA, preparing technical specifications, preparing bid documents, performing construction and oversight, and preparation of facility completion reports. Subtasks include:

- Task 5a. Construct multi- completion monitoring well. This project component provides for design, drilling, and construction of a multi-completion monitoring well pursuant to the workplan completed in Task 2c.

- Task 5b. Construct and equip a surface-water discharge monitoring station in Coyote Creek. Approximately 65% of the surface water inflow to the Borrego Valley comes from Coyote Creek, and the GMP identified monitoring of these flows as a data gap. This project involves installation of a camera (ECAM or equivalent) and staff gauge, surveys, establishing rating curves, and repairs/maintenance of the facility in the event of disturbances during or after high-discharge events. The detailed project approach is described in Exhibit A (Tasks 1 through 4).
- Task 5c. Construct and equip a shallow duel-nested monitoring well facility within the potential groundwater dependent ecosystem near the Borrego Sink. This monitoring well will only be constructed pursuant to a recommendation from the EWG and direction of the Watermaster Board and is expected to support an investigation of rooting-depth and source-water of the Mesquite Bosque.
- Task 5d. Construct and equip a surface-water monitoring station within the potential groundwater dependent ecosystem near the Borrego Sink. This monitoring site will only be constructed pursuant to a recommendation from the EWG and is expected to support an investigation of rooting-depth and source-water of the Mesquite Bosque.

Task 6. Identify and Address Improperly Abandoned Wells. The GMP identified abandoned wells as a potential Project and Management Action (PMA). The objective of this task to identify improperly abandoned wells, and if accessible through an easement or other access agreement, the wells will either be properly abandoned or converted to a monitoring well. Subtasks include:

- Task 6a - Outreach. Develop outreach tools to identify improperly abandoned wells and perform outreach to determine access.
- Task 6b – Well Abandonment. Properly abandon up to 3 inactive production wells. An Engineers Estimate was obtained to properly abandon a 16-inch diameter, 500 feet deep well in 2018 dollars in accordance with DWR Bulletin 74-81 and 74-90 (i.e. California Well Standards). It is $33,500 assuming the well needs to be pressure grouted with cement and prevailing wage applies. For each additional foot of well depth an additional $41 should be added to the cost. Costs for narrower diameter wells would be less expensive. The Engineers Estimate to pull a turbine pump installed to a depth up to 500 feet is $6,800 assuming prevailing wage applies. Thus, the Engineers Estimate to properly destroy wells is approximately $40,300 per well assuming prevailing wage applies.
- Task 6c – Conversion of Abandoned Wells to Monitoring Wells. Conversion of up to 2 inactive production wells. The task would provide for the removal of the existing pumping equipment, remediation of any down-well turbine fluid, collection of one water quality sample for general minerals and metals, and installation of a pressure transducer to monitor groundwater levels at a sub-daily frequency.

Task 7. Maintain and Enhance the Data Management System. The objective of this task to maintain and improve the Watermaster's Data Management System for efficient reporting in compliance with the Judgment and Grant requirements. As part of this task, Watermaster will develop specific reporting tools to efficiently report data to CASGEM, CEDEN, GAMA, or other required platforms. Additional tools may be developed to improve the efficiency of data analysis and report of production, water level, and water quality data.

Task 8. Annual Reporting to DWR and the Court. The objective of this task is to prepare the combined annual report of Basin conditions and the Physical Solution implementation progress. The annual report will be prepared pursuant to the requirements of CCR Section 356.2, Section IV.E(5)(b) of the Judgment, and Section 4.2.8 of the Watermaster Rules and Regulations. Each year, a draft report will be reviewed at a public hearing to receive comments and the final report will be completed and submitted to the Court and the DWR no later than April 1st following the end of the calendar year. A detailed record of public comments will be included in the final report. Over the grant period, Annual Reports will be prepared for WY 2021 (due April 1, 2022), WY 2022 (due April 1, 2023), WY 2023 (due April 1, 2024), and WY 2024 (due April 1, 2025).

Task 9 - Redetermination of the Sustainable Yield by 2025. The Borrego Valley Hydrologic Model (BVHM) and its supporting tools, the Basin Characterization Model (BCM) and the Farm Process (FMP), were originally developed by the USGS[1] and used to estimate of the Sustainable Yield of the Borrego Springs Subbasin (Subbasin) and to evaluate future scenarios of "Rampdown" in groundwater pumping that would eliminate conditions of overdraft. The BVHM was updated by Dudek[2] to characterize the water budget and determine the Sustainable Yield of 5,700 acre-feet per year (afy) which was incorporated into the Judgment. The USGS and Dudek identified several areas of model uncertainty, including private pumping estimates, aquifer properties, and streambed recharge.

Section III.F. of the Judgment states:

- During the first four Water Years (2020-2021 to 2023-2024), the Watermaster will collect additional data and refine the BVHM, using model runs to update the determination of Sustainable Yield in collaboration with the Technical Advisory Committee (TAC).
- The choice to perform specific technical tasks will be informed by considering the value and importance of the work to attain a better understanding of the Basin and the goal of advancing Sustainable Groundwater Management in comparison to the cost of the work.

In WY 2021, the TAC and Watermaster Board agreed upon an incremental approach to updating the BVHM and using it to redetermine the Sustainable Yield. This approach focused on improving model estimates of historical and future pumping, and that other model refinements and model recalibration should be performed for future redeterminations of Sustainable Yield after 2025.

The availability of SGM grant funding provides an opportunity for the Watermaster to perform a more comprehensive update to the BVHM to support the redetermination of Sustainable Yield by 2025. The proposed scope of work includes comprehensive model updates (e.g., updated model versions, model grids, FMP, etc.), model recalibration, development and implementation of a transparent process to use model projections to redetermine the Sustainable Yield, comprehensive reporting, and model documentation. This approach not only provides a more defensible and robust redetermination of Sustainable Yield in 2025, but also provides long-term benefits to the Watermaster Parties by avoiding future expenses associated with model updates and recalibrations.

The Project will occur over an approximate three-year period concluding by June 30, 2025. The major tasks and subtasks are:

- Task 9a: Prepare the Redetermination of the Sustainable Yield Workplan. The Watermaster will prepare a Redetermination of the Sustainable Yield Workplan (Workplan) under the guidance of the TAC and the Watermaster Board. Subtasks include:
    - Using the project description, cost estimates, and schedule proposed in this grant

[1] USGS. 2015. Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego County, California.
[2] Dudek. 2019. Update to USGS Borrego Valley Hydrologic Model for the Borrego Valley GSA (draft final).

application, Watermaster staff will prepare a draft Workplan. The Workplan will include a detailed description of the steps and costs to perform Tasks 2 through 6.

  - The TAC will provide written comments and suggested revisions to Watermaster staff.
  - Watermaster staff will finalize the draft Workplan based on feedback received from the TAC. The TAC will recommend that the Board adopt the Workplan and authorize grant funds to implement the Workplan.

The Watermaster's Technical Consultant has estimated the likely tasks and subtasks that will be included in the Workplan:

- Task 9b: Model Improvements
  - Refine the finite-difference grid of the BVHM. The model domain is currently defined by a finite-difference grid of uniform cells with each cell being 2,000-feet by 2,000-feet, or approximately 92 acres in area. This relatively coarse cell size is a model limitation. First, hydraulic heads calculated by the model are average values across each model cell. Therefore, model-calculated hydraulic heads can vary considerably from measured heads at specific wells within the cell, which can limit the ability of the model to calibrate to measured heads. Second, the Farm Process Version 3 (FMP3) used in the current model only allows one land use type per cell. Therefore, the coarseness of the model grid may overstate the water demands of certain land-use types, like golf courses, and, consequently, overestimate the amount of groundwater pumped to meet the water demand. The goal of this task is to refine the finite-difference grid of the BVHM to allow for a more accurate spatial representation of land use type and assist in model recalibration. Subtasks include:
    - Refine the discretization of aquifer parameters, such as hydraulic conductivity and specific yield, by splitting each model grid cell into several smaller grid cells. The original value of the larger grid cell will be assigned to the smaller grid cells.
    - Rebuild the input files to the MODFLOW packages used by BVHM based on the newly refined grid, including the Flow and Head Boundary, Multi-Node Well 2, Time-Variant Specified Head, Streamflow-Routing, and Unsaturated Zone Flow packages.
    - For the input files to FMP3, refine the discretization of the following data by splitting each model grid cell into several smaller grid cells: land use, historical precipitation, potential evapotranspiration, ground surface elevation, designation of farms, and soil types. Update the refined data of land use and farms to better represent the actual spatial extent of land use types.
  - Upgrade the current MODFLOW-OWHM Version 1 (MF-OWHM1) model input files to MODFLOW-OWHM Version 2 (MF-OWHM2) model input files. MF-OWHM2 was released by the USGS in 2020 and includes a variety of improvements to all the MODFLOW packages and a complete redevelopment of the Farm Process Version 4 (FMP4). Updates to FMP4 include, but are not limited to, the ability to specify multiple land-use types (crops) within a model cell, the ability to specify additional demand types not associated with land use, a "sand" soil type and bare-soil or fallow land use option, and a complete redesign of the input structure for easy maintenance and calibration. MF-OWHM2 also includes additional features to facilitate easier model updates, faster execution, and better runtime-error messages and reporting. The goal of this task is to take advantage of the improvements and additional features that are included in MF-OWHM2. Since MF-OWHM2 has been designed to maintain backward compatibility with

all packages except FMP4, the only major changes to model input files will be those associated with FMP4. This task includes the following subtasks:

- Create a new FMP4 input file with the new input structure. While the input style of the file will be changed, the information contained in the file will be consistent with the existing data contained in the FMP3 input file.
- Make any additional changes to model input files necessary to get the newly upgraded MF-OWHM2 model to run.

  - Compare the results from the BVHM MF-OWHM1 model to the newly upgraded BVHM MF-OWHM2 model.
  - The TAC will review the model results and provide comments and suggested revisions to Watermaster staff.

- Task 9c: Extend the model through September 2022. The simulation period of the current BVHM is from October 1929 through September 2016. The work proposed in this subtask would extend the model simulation period through September 2022, adding six years of data to the model. Subtasks include:
  - Collect the required model input data from October 2016 through September 2022. The required input data includes monthly precipitation, evapotranspiration and runoff data obtained from the Basin Characterization Model (BCM), land use data obtained from arial imagery, monthly municipal pumping from Borrego Water District, and the number of current septic systems.
  - Extend the model input files from October 2016 through September 2022 using the data collected in Task 3a.
  - Run the model.
  - The TAC will review the model results and provide comments and suggested revisions to Watermaster staff.
- Task 9d: Conduct Model Recalibration. The aquifer properties in the current BVHM were calibrated using observed water levels from 1945 to 2010. The work proposed in this subtask would include extending the calibration period to include observed water levels from 1945 to 2022. Additionally, newly acquired metered pumping data from October 2020 through September 2022 will be used to calibrate the Farm Process to better estimate the water demands for the various crops and golf courses being irrigated. This will enhance the ability of the BVHM to better estimate historical and future pumping which is essential to future redeterminations of the Sustainable Yield of the Subbasin. Subtasks include:
  - Construct the input data files for PEST.
  - Use PEST to calibrate the model.
  - Prepare a draft Technical Memorandum (TM): Update and Recalibration of the BVHM. This TM will document the results from Tasks 2, 3, and 4.
  - Conduct a meeting with the TAC to review the draft TM. The TAC will provide written comments and suggested revisions to Watermaster staff.
  - Prepare final TM. Watermaster staff will finalize the draft TM based on feedback received from the TAC. This TM will eventually become a chapter in the final report prepared in Task 6.

- Task 9e: Redetermine the Sustainable Yield in 2025. Subtasks include:
    - Prepare a draft TM – Modeling Methods to Redetermine the Sustainable Yield. This TM will describe the process to develop and run projection scenarios, accounting for uncertainty in future pumping, land use changes, and climate change. The TM will also propose various options for interpreting the model results for the redetermination of the Sustainable Yield.
    - Conduct a meeting with the TAC to review the draft TM. The TAC will provide written comments and suggested revisions to Watermaster staff.
    - Prepare a final TM. Watermaster staff will finalize the draft TM based on feedback received from the TAC. The TAC will recommend that the Board adopt the process described in the TM and direct the TAC to proceed with the model simulations of the projection scenarios.
    - Run the model simulations pursuant to the process described in the TM.
    - Conduct a TAC meeting(s) to review the model results and the estimates of the Sustainable Yield. The TAC will provide written comments and suggested revisions to Watermaster staff.
- Task 9f: Prepare Final Report. The Watermaster will prepare a final technical report: Redetermination of the Sustainable Yield of the Borrego Springs Subbasin (2025). The report will include detailed documentation on the process and results of the model improvements, model extension, model recalibration, and use of the model to redetermine the Sustainable Yield. The technical report will include an appendix of detailed model documentation.

Task 10. Prepare the 2025 GMP Update. Pursuant to the Physical Solution, the Watermaster will evaluate its GMP at least every 5 years. The evaluation will include the elements of the annual reports and an assessment of the progress toward the sustainability goal. At a minimum, the 5-year evaluation will include the elements required Pursuant to CCR Section 356.4. the assessment will include the following components: current groundwater conditions; implementation progress on the pumping rampdown and other PMAs; evaluation and update (as appropriate) of plan elements such as undesirable results, minimum thresholds, management areas etc.; water budget review; sustainable yield, description of the monitoring network and data gaps; new information; enforcement actions, stakeholder outreach and coordination efforts, and plan amendments. The plan will be presented in a series of workshops for stakeholder input as part of the Watermaster's regular meeting process.

Task 11. Stakeholder Outreach. The objectives of this task are to facilitate public outreach and communications of Watermaster planned actions and provide a venue to receive public input prior to making Watermaster decisions. Outreach to the community through regular Watermaster meetings is critical to maintain support for the mission of achieving sustainability.

- Task 11a. Board Meetings. The Board will meet approximately ten times per year to conduct its decision-making process on the implementation of the Physical Solution and GMP. Detailed memos are prepared in support of each meeting on the subject matter and are posted to Watermaster's website and email list for distribution to interested stakeholders. The public is afforded an opportunity to provide comments to the Watermaster on items not on the agenda and on each agenda item. All public input is recorded in meeting minutes. During the grant period, the Watermaster will include a standing agenda item on implementation progress of grant activities. During the grant period the Board will meet 36 times, the budget assumes about two-thirds of these Board meetings will be related to outreach on the Project.
- Task 11b: TAC Meetings**.** The TAC meets approximately four times per year to review data,

review Watermaster's technical activities described in the Judgment, and make recommendations to the Watermaster based on best science and data collected in support of sustainable management. Detailed memos are prepared in support of each meeting on the subject matter and are posted to Watermaster's for distribution to interested stakeholders. The key business of the TAC each year includes: discussion of the redetermination of Sustainable Yield (see Task 9), review of the Watermaster's pumping metering program, development and review of the WQMP, review of the groundwater and surface water monitoring programs. TAC meetings are working meetings critical to the consensus-based advancement of the monitoring and reporting tasks in this program and also represent a key venue for outreach to and input from interested Stakeholders. During the grant reporting period, the TAC will meet 15 times.

- Task 11c. Stakeholder Workshops and Open House. The Watermaster will hold up to two events per year to perform additional outreach to interested stakeholders in the Basin. The events are intended to be an open forum to present relevant information on the latest Watermaster and sustainable management activities and receive stakeholder input to report to the Board. During the grant period, six Stakeholder Workshops will be held. The intent is to hold the workshops in-person, health and safety permitting. Virtual workshops will be held, if necessary.
- Task 11d. Maintain Website, Distribution List, and Respond to Stakeholder Inquiries**.** The Watermaster will maintain its website and an interested stakeholder distribution list to advertise meetings, disseminate important information, and call for input at Watermaster hearings that are required by the Judgment prior to Board action on key decisions.

Task 12. Project Management and Grant Reporting. Subtasks include:

- Task 12a. Project Management. The objective of this task is to perform monthly project management activities for the program, including coordinating work, tracking task schedules and budget, managing sub-consultants and vendors, reporting progress to the Watermaster Board, TAC and EWG, and taking actions as necessary to address schedule or budget challenges.
- Task 12b. Grant Management and Reporting. The objective of this task is to coordinate with the Borrego Water District to the manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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.

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.

The project is located in the Borrego Springs Subbasin (Basin) of the Borrego Valley Groundwater Basin. Exhibit B is a map of the general location of the Basin and Exhibit C is a map that shows the location of the Basin along with time-history charts of groundwater levels at key wells in the three Basin Management Areas (MAs): North, Central and South.

The Basin has been, and presently is, in a condition of long-term overdraft and there is no viable means to remedy the overdraft through artificial recharge or other supply augmentation strategy under current Basin conditions and pumping quantities. Therefore, it is necessary to implement the Physical Solution, which provides for an immediate and aggressive rampdown of annual pumping over the next twenty years. The Court deemed that the evidence to support its conclusion that the Physical Solution appropriately balances competing economic, social, and environmental considerations, and that it will result in the optimal management of the Basin. The Physical Solution will accelerate water-saving actions and provide flexibility and adaptability in order to maximize the reasonable and beneficial use of the Basin's Groundwater and protect against undue economic harm to the Borrego Springs community.

The entire Basin will benefit from the project as it endeavors to implement the key monitoring, analysis, and reporting efforts necessary to ensure the effective implementation of the pumping rampdown which is the cornerstone action in the Physical Solution to achieve sustainability by 2040.

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 Judgment which adjudicates all groundwater rights in the Basin provides a physical solution for the perpetual management of the Basin to achieve sustainable groundwater management consistent with the substantive objectives of the SGMA and with reasonable and beneficial use pursuant to the California Constitution. The Judgment considered together with the Groundwater Management Plan (GMP; included as Exhibit 1 to the Judgment) constitutes the Physical Solution for the Basin and serves as the technical approach to achieve sustainability. The Physical Solution is intended to provide flexibility and adaptability to allow the Court to use existing and future technological, social, institutional, and economic options to maximize reasonable and beneficial water use in the Basin. The Physical Solution (e.g., the Judgment and GMP) was submitted to the California Department of Water Resources (DWR) as an Alternative to a GSP in June 2021. Please refer to the Project Description above for a more thorough description of the background and objectives of the Judgment and GMP.

The Project described herein is the implementation plan for the Judgment and GMP. Therefore, implementing the Project will ensure a viable water supply for current and future beneficial uses and users of groundwater in the Subbasin over the planning and implementation horizon of the GMP, and ensure that the Subbasin is operated within its Sustainable Yield and does not exhibit Undesirable Results as defined by California Water Code Section 10721(x).

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

The goals and needs of the project are to ensure that the Basin achieves its sustainability goal to operate at the sustainable yield by 2040. The implementation of the comprehensive program to monitor, analyze, and report on key hydrogeologic data as provided for by the Physical Solution is paramount to successfully achieving the sustainability goal of the Basin in a manner that complies with the Judgment and seeks input from the local community on a regular basis.

The proposed project for *Monitoring, Reporting, and GMP Update for Sustainable Management in the Borrego Springs Subbasin* is a comprehensive monitoring, analysis, data management and reporting program to that will ensure the effective implementation of the pumping rampdown, including filling data gaps identified in the Judgment and GMP, and performing the required redetermination of the Sustainable Yield and GMP update due in 2025.

The Watermaster is the responsible entity to develop, contract, and carry out Physical Solution activities to ensure this happens. The Board recognizes that some activities may best be implemented in coordination with the Borrego Water District (BWD) or other parties to achieve efficiencies, when doing so is consistent with the Judgment, Physical Solution and established Governance structure for decision making and approval. The Watermaster anticipates implementing components of this project in coordination with the BWD where appropriate to achieve efficiencies, stay on schedule, and obtain support for community outreach efforts.

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?

The benefits of the project are the development of the robust data sets needed to assess if the key elements of the Physical Solution are achieving the desired results including, but not limited to reductions in pumping, decreased rate of water level declines, water quality consistent with drinking water regulations, and refined estimation of water budget components. These benefits can be quantified in a multitude of ways by analyzing the datasets and quantifying changed basin conditions, such as:

- Demonstrating reductions in pumping through groundwater pumping monitoring
- Demonstrating groundwater level trends through groundwater level monitoring
- Demonstrating groundwater level trends through groundwater storage estimations
- Demonstrating groundwater quality trends through groundwater quality monitoring
- Demonstrating improved estimation of sustainable yield through model recalibration

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.

The Project serves the entire Basin including the community of Borrego Springs and the area classified as a SDAC. Exhibit D is a map of the Basin and the area defined as a SDAC.

- The community's water supply is solely dependent on the Basin. The Project ensures that the groundwater basin remains an affordable, high-quality source of water for the community in perpetuity.
- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to the residents and rate payers.
- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park, dark and clear night skies, and the beautiful flora and fauna of the region. The Project will help maintain or enhance the physical and biological environment within the community, and thereby support economic activity within Borrego Springs.

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.

The Judgment and the GMP addressed the future impacts on private shallow wells by accelerating pumping reductions as compared to what is required by SGMA. Subtasks that accelerate GMP tasks to fill in data gaps will reduce risks associated with water quality and shallow wells, as the Watermaster will have better data to manage the basin sustainably without Undesirable Results.

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 Physical Solution addresses these issues as follows:

- Water quality monitoring is essential to avoiding undesirable results and achieving sustainable groundwater management in the Basin. The Physical Solution provides for the development of a water quality monitoring plan that will be implemented to characterize and track water quality trends in the basin and develop remedies for significant and unreasonable changes in quality under the water quality optimization PMA (Judgement Section VI.B). Construction of new monitoring wells should be considered in areas where data gaps can't be filled with existing wells.
- The Watermaster will cooperate with the County in the enforcement of the well abandonment ordinance as improperly abandoned wells have the potential to provide a mitigation pathway of contaminants into the Basin (Judgement Section X.B).

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, the Borrego Water District calculated the human right to water at under 400 afy.

The Physical Solution addresses the human right to water as follows:

- By achieving its sustainability goal, the Physical Solution is intended to protect the long-term beneficial uses and users of groundwater.
- Even after the period of the rampdown of groundwater pumping rights (2040), it is expected that groundwater availability for domestic uses will exceed the calculated human right to water.
- The Judgment allows for *de minimis* pumping (i.e. pumping less than 2 afy) by domestic users.
- Implementation of the Physical Solution explicitly requires ongoing evaluation of water quality and avoidance of undesirable water quality conditions.

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 Physical Solution recognizes that climate change enhances the probability, magnitude, and periodicity of extreme precipitation events and that recharge over the 20-year GMP implementation period is an estimation. As such, the interim milestones for chronic lowering of groundwater levels will be closely monitored to determine whether the Basin is on track to achieve its sustainability goals. The Watermaster will annually review actual Basin groundwater extraction, historical and contemporary groundwater-level trends, changes in groundwater storage, and climatic condition (i.e., dry, normal, wet year/period) to determine whether metrics indicate the Basin is on track to achieve its sustainability goals.

The project does not include any measures to reduce greenhouse gas emissions or sequester carbon. However, there are no significant facilities required to achieve the pumping rampdown.

Fallowing could cause reduced carbon sequestration, but the EWG is exploring biological restoration of fallowed lands as a technique to mitigate this potential impact, among other impacts associated with fallowing.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 12. Project Management and Grant Reporting. Subtasks include:

- Task 12a. Project Management
- Task 12b. Grant Management and Reporting

  Deliverables:

  - Invoices and necessary documentation.

Budget Category (b): Planning/Design/Environmental

None

Budget Category (c): Construction/Implementation

Task 5. Construction of New Monitoring Facilities. Subtasks include:

- Task 5a. Construct multi- completion monitoring well.
- Task 5b. Construct and equip a surface-water discharge monitoring station in Coyote Creek.
- Task 5c. Construct and equip a shallow duel-nested monitoring well facility within the potential groundwater dependent ecosystem near the Borrego Sink
- Task 5d. Construct and equip a surface-water monitoring station within the potential groundwater dependent ecosystem near the Borrego Sink.

  Deliverables:

  - CEQA determinations and permits
  - Well technical specifications
  - Well completion reports (draft and final)
  - Surface water monitoring station design and completion report

Task 6. Identify and Address Improperly Abandoned Wells. Subtasks include:

- Task 6a - Outreach.
- Task 6b - Well Abandonment
- Task 6c - Conversion of Abandoned Wells to Monitoring Wells.

Deliverables:

- Documentation of proper abandonment
- Documentation of conversion to monitoring wells

Budget Category (d): Monitoring/Assessment

Task 1. Groundwater Pumping Monitoring. Subtasks include:

- Task 1a - Monthly meter reading and pumping calculations.
- Task 1b - Annual meter accuracy testing.
- Task 1c - Outreach to existing and new de minimis pumpers to cooperate in pumping monitoring efforts, including collecting well data, and meter reading if applicable.

Deliverables:

- Semi-annual monitoring summary reports
- Annual water rights accounting report

Task 2 - Groundwater Level Monitoring. Subtasks include:

- Task 1a - Monthly meter reading and pumping calculations.
- Task 2b - Expand Monitoring Network through Outreach.
- Task 2c - Prepare monitoring well construction work plan.
- Task 2d – Aquifer testing

Deliverables:

- Data delivered to CEDEN, GAMA and other platforms requested by DWR
- Semi-annual monitoring summary reports
- Draft and final monitoring well construction work plan
- Draft and final aquifer testing work plan
- Draft and final aquifer testing report

Task 3 - Groundwater Quality Monitoring. Subtasks include:

- Task 3a - Implement the existing and future expanded groundwater-quality monitoring program.
- Task 3b - Prepare Water-Quality Monitoring Plan (WQMP).

Deliverables:

- Data delivered to CEDEN, GAMA and other platforms requested by DWR
- Semi-annual monitoring summary reports
- Draft and final WQMP

Task 4 - Surface Water Flow Monitoring. The objective of this task to implement a surface water monitoring program to collect data that can be used in the BVHM to assess Basin recharge and the Sustainable Yield. In the first year of the grant period, this task will involve the current flow monitoring on Coyote Creek described in the GMP and will be expanded after completion of the surface-water discharge station described in Task 5b.

Deliverables:

- Data delivered to CEDEN, GAMA and other platforms requested by DWR

Task 7. Maintain and Enhance the Data Management System. The objective of this task to maintain and improve the Watermaster's Data Management System for efficient reporting in compliance with Judgment and Grant requirements. As part of this task, Watermaster will develop specific reporting tools to efficiently report data to CASGEM, CEDEN, GAMA, or other required platforms. Additional tools may be developed to improve the efficiency of data analysis and report of production, water level, and water quality data.

Deliverables:

- Data delivered to CASGEM, CEDEN, GAMA and other platforms requested by DWR

Task 8. Annual Reporting to DWR and the Court. This task is to prepare the four annual reports that are due to the DWR and Court during the grant period

Deliverables:

- Draft and Final Annual Reports for WY 2021, 2022, 2023, and 2024.

Task 9. Redetermination of the Sustainable Yield by 2025. Perform a comprehensive update to the BVHM to support the redetermination of Sustainable Yield by 2025. Subtasks include:

- Task 9a: Prepare the Redetermination of the Sustainable Yield Workplan
- Task 9b: Model Improvements
- Task 9c: Extend the model through September 2022
- Task 9d: Conduct Model Recalibration
- Task 9e: Redetermine the Sustainable Yield in 2025
- Task 9f: Prepare Final Report

Deliverables:

The following draft and final TMs and reports:

- Redetermination of the Sustainable Yield Workplan
- Update and Recalibration of the BVHM
- Modeling Methods to Redetermine the Sustainable Yield
- Redetermination of the Sustainable Yield of the Borrego Springs Subbasin (2025)

Task 10. Prepare the 2025 GMP Update. This task is to prepare and adopt the 2020 GMP Update by June 30, 2025

Deliverables:

- Draft and Final 2025 GMP

Budget Category (e): Interested Parties Outreach/Education

Task 11. Stakeholder Outreach.

- **Task 11a. Board Meetings**
- **Task 11b. TAC Meetings**
- **Task 11c. Stakeholder Workshops**
- **Task 11d. Maintain Website, Distribution List, and Respond to stakeholder inquiries**

Deliverables:

- Meeting agendas and packets; meeting presentations; meeting summaries; Stakeholder outreach materials

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

ALL LOCAL COST-SHARE IS PROVIDED BY THE BORREGO SPRINGS WATERMASTER AND REPRESENTS COSTS INCURRED ON THE PROJECT FROM JANUARY 1, 2022 THROUGH MARCH 31, 2022.

		(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 12a. Project Management	$175,000	$2,500	$172,500	1%
	Task 12b. Grant Management and Reporting	$45,000	$0	$45,000	0%
(b)	**Planning/Design/Environmental**				
	none				
(c)	**Construction/Implementation**				
	Task 5a. Construct multi-completion monitoring well.	$750,000	$0	$750,000	0%
	Task 5b. Construct and equip a surface-water discharge monitoring station in Coyote Creek.	$89,000	$0	$89,000	0%
	Task 5c. Construct and equip a shallow duel-nested monitoring well facility within the potential groundwater dependent	$100,000	$0	$100,000	0%

	ecosystem near the Borrego Sink				
	Task 5d. Construct and equip a surface-water monitoring station within the potential groundwater dependent ecosystem near the Borrego Sink.	$100,000	$0	$100,000	0%
	Task 6a. Outreach.	$10,000	$0	$10,000	0%
	Task 6b. Well Abandonment	$198,000	$0	$198,000	0%
	Task 6c. Conversion of Abandoned Wells to Monitoring Wells.	$132,000	$0	$132,000	0%
(d)	**Monitoring/Assessment**				
	Task 1a - Monthly meter reading and pumping calculations.	$95,000	$7,000	$102,000	7%
	Task 1b - Annual meter accuracy testing.	$65,000	$0	$65,000	0%
	Task 1c - Outreach to existing and new de minimis pumpers to cooperate in pumping monitoring efforts, including collecting well data, and meter reading if applicable.	$13,000	$0	$13,000	0%
	Task 2a - Implement the existing and future expanded groundwater-level monitoring program.	$105,000	$9,000	$114,000	8%
	Task 2b - Expand Monitoring Network through Outreach.	$10,000	$0	$10,000	0%

	Task 2c - Prepare monitoring well construction work plan.	$25,000	$0	$25,000	0%
	Task 2d – Aquifer testing	$65,000	$0	$65,000	0%
	Task 3a - Implement the existing and future expanded groundwater-quality monitoring program.	$145,000	$17,000	$162,000	11%
	Task 3b - Prepare Water-Quality Monitoring Plan (WQMP).	$35,000	$0	$35,000	0$
	Task 4. Surface Water Flow Monitoring.	$90,000	$2,000	$92,000	2%
	Task 7. Maintain and Enhance the Data Management System.	$57,000	$3,000	$60,000	5%
	Task 8. Annual Reporting to DWR and the Court.	$125,000	$35,000	$160,000	22%
	Task 9a: Prepare the Redetermination of the Sustainable Yield Workplan.	$50,000	$0	$50,000	0%
	Task 9b: Perform Model Improvements.	$100,000	$0	$100,000	0%
	Task 9c: Extend the model through September 2022	$100,000	$0	$100,000	0%
	Task 9d: Conduct Model Recalibration	$150,000	$0	$150,000	0%
	Task 9e: Redetermine the Sustainable Yield in 2025	$150,000	$0	$150,000	0%
	Task 9f: Prepare Final Report.	$100,000	$0	$100,000	0%
	Task 10. Prepare the 2025 GMP Update.	$190,000	$0	$190,000	0%

(e)	**Interested Parties Outreach/Public Education**				
	Task 11a. Board Meetings.	$255,000	$85,000	$340,000	25%
	Task 11b: TAC Meetings.	$105,000	$15,000	$120,000	13%
	Task 11c. Stakeholder Workshops and Open House.	$45,000	$0	$45,000	0%
	Task 11d. Maintain Website, Distribution List, and Respond to Stakeholder Inquiries.	$15,000	$0	$15,000	0%
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	$3,684,000	$175,500	$3,859,500	5%

*** List sources of Local Cost Share funding:**

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**01/01/2022**	**6/30/2025**
	Task 12a. Project Management.	01/01/2022	06/30/2025
	Task 12b. Grant Management and Reporting.	4/30/2022	6/30/2025
(b)	**Planning/Design/Environmental**	**-**	**-**
	None	-	-
(c)	**Construction/Implementation**	**4/1/2022**	**6/30/2025**
	Task 5a. Construct multi- completion monitoring well.	4/1/2022	6/30/2025
	Task 5b. Construct and equip a surface-water discharge monitoring station in Coyote Creek.	4/1/2022	10/1/2023
	Task 5c. Construct and equip a shallow duel-nested monitoring well facility within the potential groundwater dependent ecosystem near the Borrego Sink	4/1/2022	10/1/2023
	Task 5d. Construct and equip a surface-water monitoring station within the potential groundwater dependent ecosystem near the Borrego Sink.	4/1/2022	10/1/2023
	Task 6a. Outreach.	1/1/2022	6/30/2025
	Task 6b. Well Abandonment	1/1/2022	6/30/2025
	Task 6c. Conversion of Abandoned Wells to Monitoring Wells.	1/1/2022	6/30/2025
(d)	**Monitoring/Assessment**	**4/1/2022**	**6/30/2025**
	Task 1a - Monthly meter reading and pumping calculations.	1/1/2022	6/30/2025
	Task 1b - Annual meter accuracy testing.	08/01/2022	12/31/2024
	Task 1c - Outreach to existing and new de minimis pumpers to cooperate in pumping monitoring efforts, including collecting well data, and meter reading if applicable.	1/1/2022	6/30/2025

	Task 2a - Implement the existing and future expanded groundwater-level monitoring program.	1/1/2022	6/30/2025
	Task 2b - Expand Monitoring Network through Outreach.	4/1/2022	6/30/2021
	Task 2c - Prepare monitoring well construction work plan.	11/1/2022	5/1/2023
	Task 2d. Aquifer testing.	10/1/2022	9/30/2023
	Task 3a - Implement the existing and future expanded groundwater-quality monitoring program.	1/1/2022	6/30/2025
	Task 3b - Prepare Water-Quality Monitoring Plan (WQMP).	4/15/2022	4/1/2023
	Task 4. Surface Water Flow Monitoring.	01/01/2022	6/30/2025
	Task 7. Maintain and Enhance the Data Management System.	01/01/2022	6/30/2025
	Task 8. Annual Reporting to DWR and the Court.	1/1/2022	4/30/2025
	Task 9a: Prepare the Redetermination of the Sustainable Yield Workplan	4/1/2022	6/1/2022
	Task 9b: Perform Model Improvements	7/1/2022	11/30/2022
	Task 9c: Extend the model through September 2022	12/1/2023	4/30/2023
	Task 9d: Conduct Model Recalibration	5/1/2023	11/30/2024
	Task 9e: Redetermine the Sustainable Yield in 2025	12/1/2023	7/31/2024
	Task 9f: Prepare Final Report	8/1/2024	12/31/2024
	Task 10. Prepare the 2025 GMP Update.	6/1/2024	7/30/2025
(e)	**Interested Parties Outreach/Public Education**	**01/01/2022**	**6/30/2025**
	Task 11a. Board Meetings.	01/01/2022	6/30/2025
	Task 11b: TAC Meetings.	01/01/2022	6/30/2025
	Task 11c. Stakeholder Workshops and Open House.	06/01/2022	6/30/2025
	Task 11d. Maintain Website, Distribution List, and Respond to Stakeholder Inquiries.	01/01/2022	6/30/2025

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

January 20, 2022

Samantha Adams
Borrego Springs Watermaster

Subject: Working Draft Proposition 68 Grant Project Support for Borrego Springs Coyote Creek Alternative Stream Monitoring

Dear Ms. Adams:

Dudek is providing this scope for alternative stream monitoring at Coyote Creek in Borrego Springs as a potential project component of the Proposition 68 Grant Project. This scope provides a first order estimate.

As identified in the GMP, approximately 65% of the surface water inflow to the Borrego Valley comes from Coyote Creek (USGS 1982). The watershed encompasses approximately 180 square miles and is located almost entirely within the boundary of the Anza-Borrego Desert State Park. Streamflow in the Coyote Creek Watershed has been documented by USGS as the number one source of recharge to the Basin via streamflow leakage (i.e., infiltration of surface water runoff). Two historical stream gages were located on Coyote Creek, one of which stopped recording streamflow in 1983, and the other stopped recording flow in 1993. USGS Station Number 1025580 (Upper–Northern) recorded daily discharge data from 1951–1983; at this station, annual average streamflow was measured to be 1,831 AFY (USGS 2017). USGS Station Number 10255805 (Lower–Southern) recorded daily discharge data from 1983–1993; at this station, annual average streamflow was measured to be 1,774 AFY (USGS 2017). Annual variability over the period measured ranges from 326 acre-feet to 10,715 acre-feet. This large annual variability is a function of large annual variability of precipitation falling on the Coyote Creek Watershed. The BWD and Watermaster have been periodically taking manual stream flow measurements along perennial reaches of Coyote Creek since the Spring of 2018.

The BWD, DWR and USGS conducted a site reconnaissance during the GMP preparation to determine if a stream gage could be reactivated along Coyote Creek. Due to the dynamic nature of the braided alluvial fan—high sedimentation and erosion that occurs along Coyote Creek—it was determined by the agencies that Coyote Creek was not a good candidate for a traditional stream gage.

This project provides for installation of camera (ECAM or equivalent) and staff gauge to document high flows in Coyote Creek. The ECAM camera is a standalone, cellular, solar, and battery operated camera that can be accessed 24 hours per day 7 days per week and configured to push images to a website. This infrastructure has successfully been deployed by the Santa Barbara County Flood Control District. It is anticipated that the ECAM will be mounted at the approximate historical location of USGS Station Number 10255805 where the ECAM will likely be mounted on top of an existing metal building or on a standalone tower. This proposed location is also the general location of the San Diego County Flood Control's Coyote Creek Station 27034 rain gauge. The BWD will coordinate with San Diego County Flood Control and Anza-Borrego Desert Research Center to determine whether the ECAM can use existing telemetry infrastructure already deployed in the Basin. In order to calculate stream flow discharge, a survey of the cross-sectional area of Coyote Creek at the proposed location of the staff gauge and upstream and downstream of the staff gauge location will be completed. A rating curve displaying discharge versus stage at the location of the staff gauge will be developed in order to determine stream flow discharge using the staff gauge as recorded by the ECAM. Due to the shifting nature of the stream channel geometry it is anticipated that the Coyote Creek channel will likely need to be resurveyed at least annually and after major flood events. The rating curve would also require updating as part of the channel resurvey. The estimated cost to complete the Coyote Creek streamflow monitoring is $160,000, including contingency for the channel shifting.

Task 1 – Survey

A 1-D model will be used to generate the stage-discharge curve. The modeling software that will be used is the River Analysis System developed by the Hydrologic Engineer Center, U.S. Army Corps of Engineers also referred to as HEC-RAS. As part of the model development, terrain data is needed of the channel at the intended installation location. It was assumed that no more than 10 cross-sections will be required when generating the cost estimate. Since the channel has a history of shifting, the cross-sections will cover all visible historical channels in the area of interest. The cost estimate for surveying includes preparation, surveying field work and post-processing the data for input into the model.

Cost for Task 1 ....$22,000.00

Task 2 – Model Development

A 1D HEC-RAS model will be developed of the channel segment where the stream gage and camera are to be installed. To do this, information about the channel will be entered into the HEC-RAS program, namely, ground elevations and the type of ground cover. The ground cover is important because dense grass affects the river flow more than clear sand. It is assumed that historic data from USGS is available for use in the model, in addition to, the field data collected by Dudek.

Cost for Task 2 ....$23,500.00

Task 3 – Stage-Discharge Rating Curve

To create the stage-discharge rating curve, the model will be run for various stream flows. The results will provide corresponding water surface elevations. Each water surface elevation and streamflow pair will be one point on the stage-discharge rating curve. Then, as long as the channel conditions remain the same, the curve can be used to estimate streamflow given the height of the water surface on the staff gage.

Cost for Task 3 ....$7,000.00

Task 4 – Initial Installation of Camera and Staff Gage

This task captures the cost of installing the staff gage and camera at the site.

Cost for Task 4 ....$35,000.00

Task 5 – Monitoring/Assessment

The site will be monitored for three years. This involves manual measurements, maintenance of the equipment and updating the stage-discharge rating curve as conditions at the site change. It is assumed that a storm large enough to change the channel characteristics will occur about once a year for the two subsequent years after the initial installation. Therefore, the budget includes two additional surveys of the established cross-sections. Then after each re-survey; the model will be updated, re-run and the rating curve will be regenerated. Also included are manual measurements of the water surface elevation and corresponding streamflow each year for a total of three trips.

Cost for Task 5 ....$63,000.00

OPTIONAL

The stream has been known to create and shift to a new channel during a large storm. This optional task assumes that this may happen one time during the three-year monitoring duration and includes the cost of moving the equipment to a new location. It is assumed that the equipment is not damaged and remains functional.

Cost for Optional Task...$8,000.00

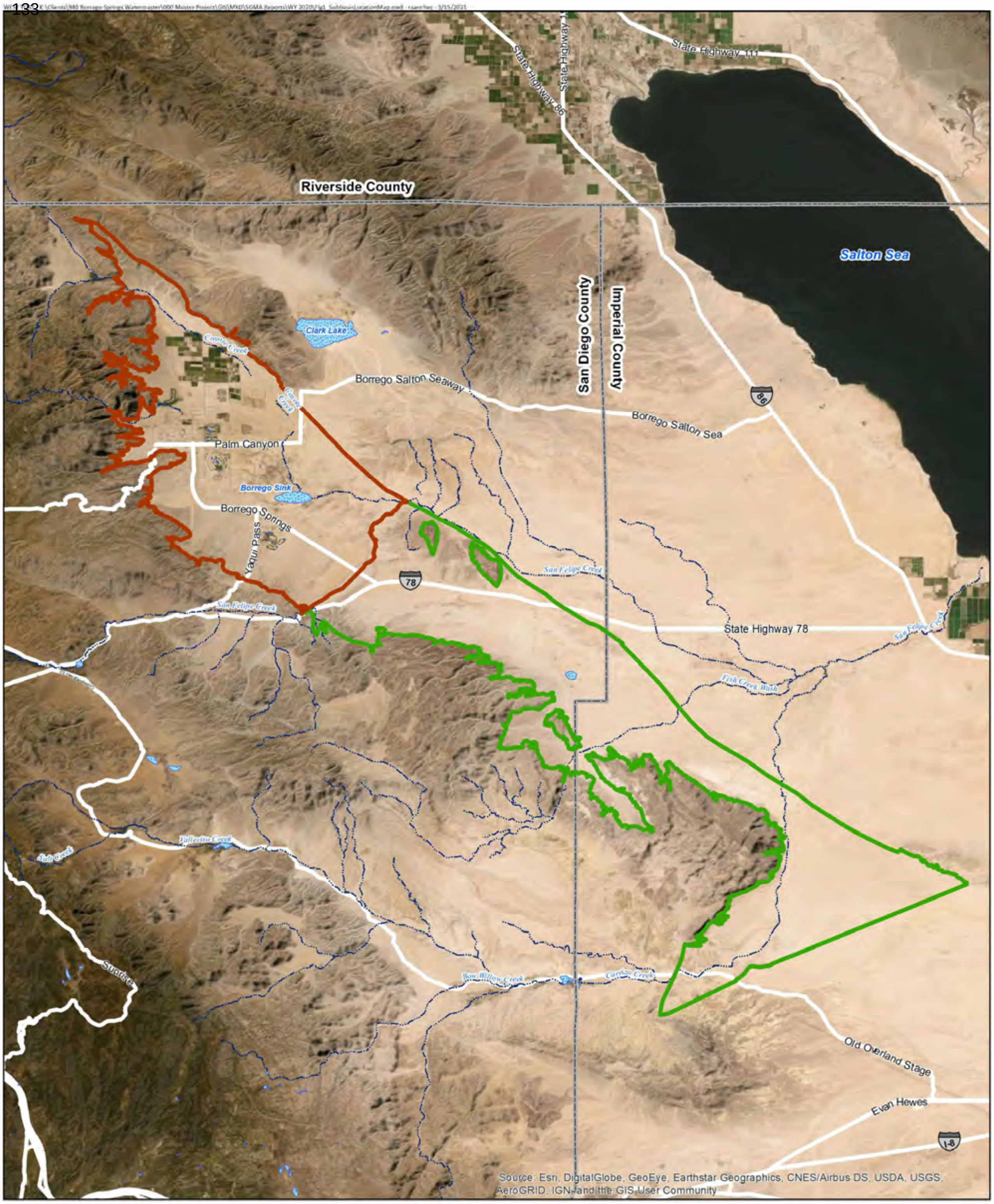
Dudek appreciates this opportunity to assist you. If you have any questions or require further discussion, please contact me at 760.415.1425.

Sincerely,

Trey Driscoll

Trey Driscoll, PG No. 8511, CHG No. 936
Senior Principal Hydrogeoloigst

cc: Amy Lynn-Williams, Dudek



Borrego Valley Groundwater Basin Subbasins

- Borrego Springs Groundwater Subbasin (7-024.01)
- Ocotillo Wells Groundwater Subbasin (7-024.02)

Surface Water Features

- Streams
- Dry Lake

Notes:
1. Source: Borrego Springs Groundwater Subbasin Annual Report: Covering Water Years 2016 through 2019 (Dudek, 2020).

0 1 2
Miles

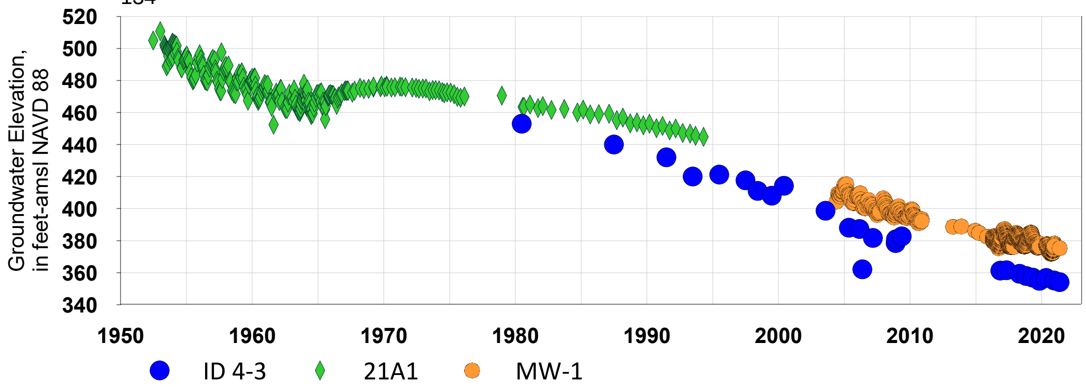
Figure 1

Borrego Springs Groundwater Subbasin Location Map

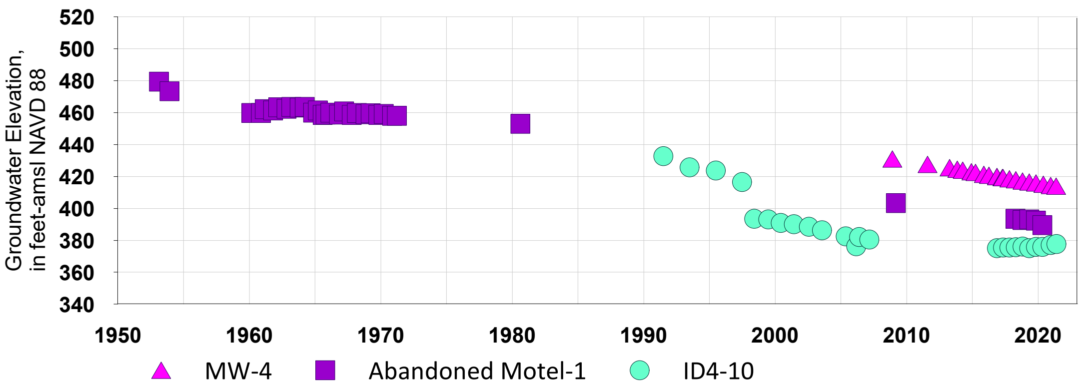
WEST YOST

Borrego Springs Watermaster
Borrego Springs Subbasin
2020 Annual Report

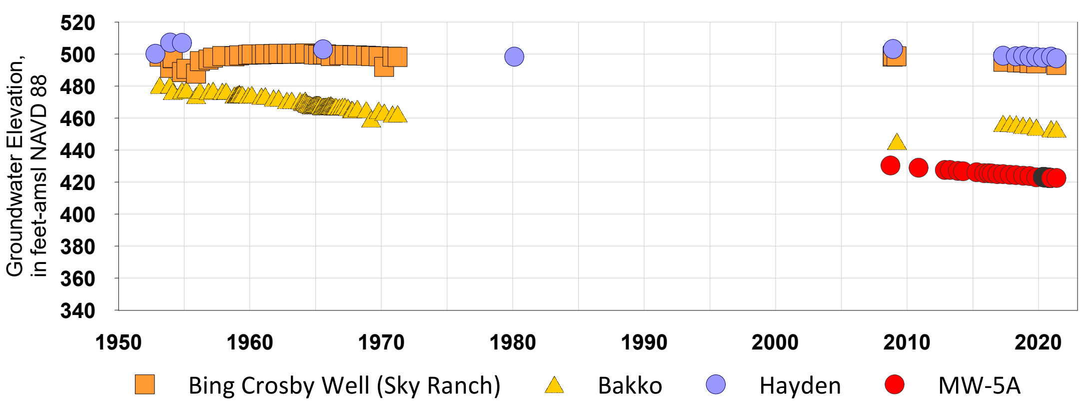
North Management Area

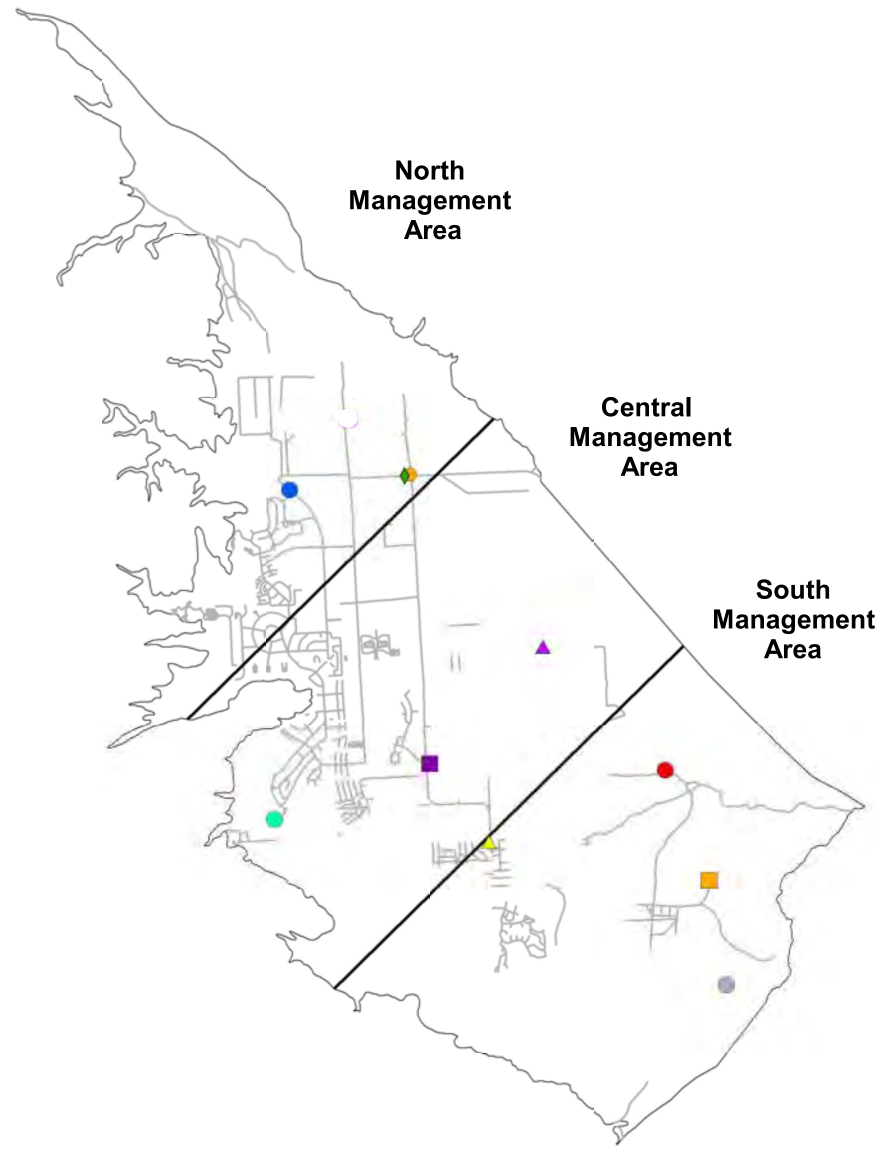


Central Management Area



South Management Area



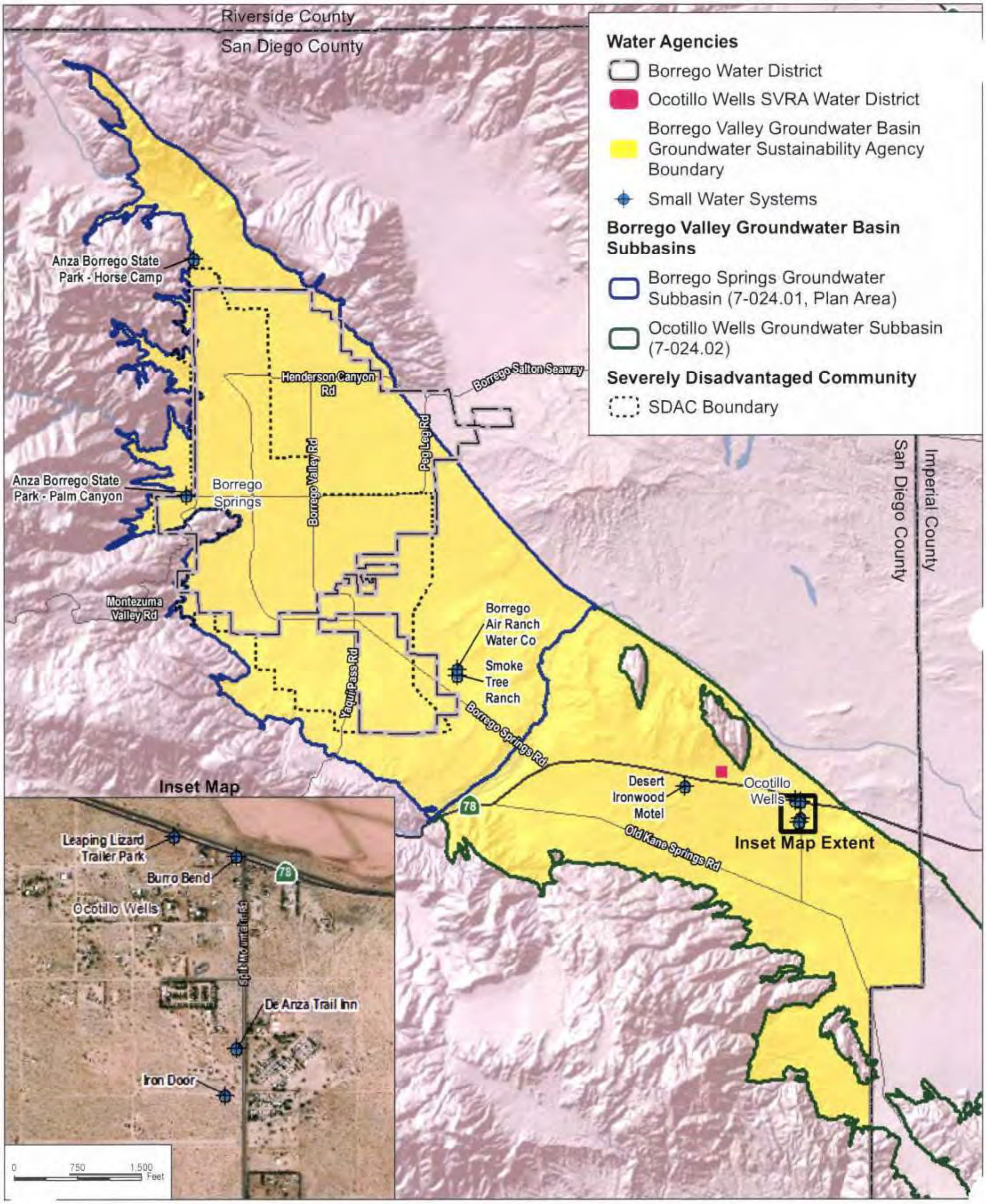


WEST YOST
Water. Engineered

Author: AP
Date: 20210806
File: Figure 6_GW Levels in Key Wells.grf

Exhibit 3

Groundwater Levels in Selected Wells



DATUM: NAD 1983 DATA SOURCE: DWR 2015; San Diego County

DUDEK January 2020 0 1.5 3 Miles

Figure 2.1-2

Water Purveyors within the Groundwater Sustainability Agency Boundary

Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin

Borrego Springs Youth and Seniors Center, Inc.
PO Box 1362
Borrego Springs, CA 92004
A 501(C)(3) Charitable Nonprofit Corporation

January 17, 2022

To: California Department of Water Resources (DWR)

We understand that the Borrego Springs Watermaster is submitting several Project proposals to include in a grant application “spending plan” for the DWR’s Sustainable Groundwater Management Grant Program under Proposition 68 and the 2021 Budget Act. We understand the Watermaster’s project proposals to be the following:

- **Watermaster Monitoring, Reporting, and Update to the Groundwater Management Plan.** This project covers a broad range of Watermaster tasks that include: conducting monitoring programs (e.g. groundwater-level and water quality); reporting on the monitoring programs; and updating the Groundwater Management Plan as required by the DWR. The activities included in this project will help the Watermaster comply with the Judgment and the Groundwater Management Plan, and will support the sustainable management of the Borrego Springs Groundwater Subbasin.

- **Biological Restoration of Fallowed Lands.** This project is recommended by the Watermaster’s Environmental Working Group. The project will develop information to guide the use of “biological restoration” as a technique to mitigate the potential adverse impacts associated with the fallowing of lands that is expected to occur within the Subbasin due to future reductions in groundwater pumping needed to achieve sustainable groundwater management. Reducing the potential for airborne dust emissions and enhancing habitat are the primary objectives of this project.

- **Groundwater Dependent Ecosystems (GDE) Monitoring Program.** This project is also recommended by the Watermaster’s Environmental Working Group. This project is designed to determine if the historical GDEs within the Subbasin (particularly the Mesquite Bosque in the Borrego Sink) are dependent on the regional aquifer of the Subbasin, or not. The results of this project could be used to update and improve the Groundwater Management Plan to protect the environmental uses of groundwater in the basin.

These projects will have multiple benefits to the severely disadvantaged and underrepresented community of Borrego Springs:

- The community’s water supply is solely dependent on the groundwater basin. These projects will help to ensure that the groundwater basin remains an affordable, high-quality source of water for the community.

- The Watermaster was officially formed in April 2021. Expenses to conduct Watermaster activities are relatively new costs that are ultimately funded by the residents and rate payers within the community. The grant funding will help offset the new costs and provide financial relief to our severely disadvantaged community.

- A primary driver of the economy in Borrego Springs is ecotourism associated with the Anza-Borrego State Park, dark and clear night skies, and the beautiful flora and fauna of the region. These projects will help maintain or enhance the physical and biological environment within the community, and thereby support economic activity within Borrego Springs.

We support the projects described in this letter, and the Watermaster’s efforts to achieve sustainable groundwater management in Borrego Springs.

Daniel Wright,

Board President

Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Watermaster

Project Name: Water Supply Augmentation

Contact Information

Name: Andy Malone, PG
Phone: 949.600.7503
Email: amalone@westyost.com
Address: 23692 Birtcher Drive
Lake Forest, California 92630
USA

Project Summary

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

The Project will investigate alternatives for supply augmentation of Borrego Springs Groundwater Subbasin (Subbasin) and their feasibility. Previously considered methods for supply augmentation of the Subbasin include but are not limited to: importing supply from adjacent areas, production of recycled water for groundwater recharge, enhanced stormwater retention and infiltration methods, desalination of Salton Sea or its inflow from agricultural return flows. The Project will fill out data gaps from these previously studied alternatives for water supply augmentation, which were not developed or continued due to incomplete information or lack of funds. The Project will also evaluate the amount of available water supply and its quality, the cost and feasibility of the alternative, and potential treatment costs (if necessary).

In addition, the Project will investigate methods to improve efficiency of the existing artificial groundwater recharge to the Subbasin, and their feasibility. The Project will benefit the community of Borrego Springs. Plan Implementation Timeline is provided in the Schedule. Minimum thresholds and feasibility are not applicable given that the project is entirely conducting research.

<u>Summary of alternatives previously proposed for water supply augmentation</u>

Previous studies for groundwater augmentation that have been considered for Borrego Springs are summarized below:

- *Importation of groundwater from non-local sources.* Replenishment of groundwater extractions were studied in the past, however the feasibility of the options considered were not conclusively determined due to lack of funding necessary to determine yield.
  - The Borrego Water District (BWD) studied projects for importing water from nearby groundwater basins: Clark Dry Lake[1], Ocotillo Wells Subbasin, and Allegretti Farms (Ocotillo-Clark Valley Groundwater Basin). However, some of the results from these

[1] Watermaster is submitting a separate proposal to study feasibility of water importation from wells near Clark Dry Lake. This "Water Augmentation Project" is submitted as a separate project and should be considered independent from the Clark Dry Lake.

  studies were inconclusive, and further studies were judged to be infeasible at the time due to lack of funding.
  - The U.S. Bureau of Reclamation evaluated structural alternatives for water imports from external sources (Lake Henshaw, Coachella Canal, Carter Reservoir, and West Side Canal) but were not considered cost effective at the time given the lack of information about project yield.
- *Wastewater Treatment Plant Upgrades:* Water recycling was evaluated by BWD and determined not to be feasible at the time.
- *Stormwater Capture and Infiltration*. Due to the infrequent occurrence of rainfall in the area, capturing and infiltrating flood events was previously considered. However, projects related to stormwater retention are very limited and further investigation will be needed.
- *Desalination*. Desalination of Salton Sea water or the agricultural return flows before they enter the Sea are potential water supply sources. This alternative strategy was not developed, but may warrant further analysis.

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.

Borrego Springs is located in the northeastern corner of San Diego County, about 20 miles west of the Salton Sea. The groundwater basin underneath Borrego Springs is identified in Bulletin 118 as the Borrego Springs Groundwater Subbasin (Subbasin), which has a surface area of approximately 98 square miles. Exhibit B1 shows the Project Location, regional map, current conditions, and benefitting areas.

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. According to the GMP (Section 2.2.1.4), there are currently no water inputs to the Subbasin from external sources, and surface water imports are not available for managed recharge. In addition, there are currently no stormwater recharge facilities in Borrego Springs. Therefore, natural recharge is limited to infiltration of stormwater, and in a lesser degree, irrigation return flows, septic recharge and subsurface inflow. There are no major diversions to storage in the Subbasin other than irrigation ponds such as those located at golf courses (Section 2.1.6).

The GMP explains that perennial streams in the Subbasin are predominantly disconnected from the underlying groundwater table. Stream flows of moderate and short duration (when occurring) do not tend to percolate deeply enough into the aquifer to act as a source of recharge. Instead, flows within the saturated alluvium beneath the stream bed are subject to evaporation or transpiration losses (see Section 2.2.2.6). This serves as an example of the benefits that the Project will provide, in particular related to investigation of methods to improve stormwater capture and infiltration.

The Borrego Springs community is entirely dependent on groundwater supply. Historically, the Subbasin has been in an overdraft condition, where groundwater extraction exceeds the amount of groundwater being recharged. A USGS groundwater study (Faunt et. al., 2014) of the area indicates the aquifer is in an overdraft of 17,000 acre-feet per year (AFY) and estimates that the upper aquifer may be depleted within the next 50 years in the absence of the Physical Solution currently being implemented by the Borrego Springs Watermaster.

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.

Evaluation and investigation of alternatives for groundwater augmentation in the Subbasin will increase water supply for the community of Borrego Springs. 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.

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?

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.[2] 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 GMP states that supply augmentation through local and/or imported surface water was not a feasible option at that time; the only way to achieve groundwater sustainability is through demand reduction.

The Physical Solution for the Borrego Springs Subbasin is comprised of the GMP and the Judgement. The Physical Solution is intended to meet the overarching sustainability goal of SGMA to operate the Borrego Springs Subbasin within sustainable yield without causing an undesirable result.

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. 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 proposed and new alternatives for groundwater recharge (and evaluating their feasibility) will be another step to support the intent of the GMP and the Judgment to achieve long-term groundwater sustainability within the Borrego Springs Subbasin by 2040 as required by SGMA.

According to the IRWM Plan, 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 the projects contemplated in the IRWM Plan.

It is noteworthy that the Watermaster will support small distributed projects such as rain water harvesting, reuse and/or surface water capture, and recharge projects (see page 2-36 of the GMP).

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

[2] 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)).

The goal of the Project is to investigate techniques for augmentation of groundwater supply in the Subbasin and fill data gaps identified in previous studies regarding groundwater recharge.

Historically, annual natural recharge to the Subbasin has been exceeded by the annual groundwater extraction from the Subbasin. According to the GMP, the USGS (2015) reported that natural recharge that reaches the saturated zone is on average 5,700 AFY, which is approximately 5,000 AFY less than the average groundwater extracted as estimated by the Borrego Valley Hydrologic Model (10,750 AFY).

Given the limited quantity and means for groundwater recharge, the Project will study methods for artificial recharge to augment the amount of available groundwater in the Subbasin without causing undesirable results an in accordance with the Physical Solution and the Judgment.

The Project will provide the opportunity to supplement the water supply of the Borrego Springs community. To achieve the goals, the Project will:

1. Conduct research on the variety of methods for groundwater augmentation.
2. Evaluate previously considered methods and alternatives and fill data gaps or information that is currently unknown/incomplete from these alternatives.
3. Investigate methods to improve efficiency of the existing artificial groundwater recharge to the Subbasin, including their feasibility.

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?

Investigating recharge alternatives for water supply augmentation of the Borrego Springs aquifer will initially provide information that is currently unknown, missing or incomplete from previous studies. In addition, the Project will evaluate strategies (and their feasibility, if possible) to improve efficiency of the existing artificial groundwater recharge to the Subbasin (e.g., stormwater retention and infiltration, irrigation return flows, infiltration of recycled water, etc).

The main goal of the project is to generate the missing data identified in previous studies needed to determine the economic and technical feasibility of groundwater augmentation alternatives. Quantifiable benefits include potential improvements to recharge to the basin to offset long-term loss of groundwater in storage.

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 (Section 3.1.2), 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.[3] 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 any Underrepresented Community in Borrego Springs by providing the opportunity to increase water supply and provide a more reliable and . The amount of funding that will benefit the SDAC of Borrego Springs and any Underrepresented Community is about $536,000 (see Budget).

A map showing the location of the Borrego Springs community that will benefit from the Project is given in Exhibit B2.

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 system in Borrego and its service area map is included as the last page of Exhibit 4 of the Judgment (also provided 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 determining methods to increase the overall rate of groundwater recharge, and the 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 and provide possible techniques for water supply augmentation. If the result(s) from this Project are 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

[3] 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.

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.

Historic climate research and current climate modeling efforts indicate dry conditions may be more frequent and of longer duration than those that have occurred over the past 100 years. Climate change-related impacts may also decrease precipitation, snowpack, and water supply availability (USBR, 2015).

The GMP states that future recharge from the unsaturated zone will likely be less than historical conditions due to diminishing of irrigation return flows (due to less pumping following Physical Solution) and/or the potential effects of climate change on recharge of the Subbasin (Section 2.2.3.6). This supports the need to investigate alternatives that could increase water supply available for use in the community of Borrego Springs. The Project will study, evaluate and propose methods for groundwater recharge or to improve the efficiency of current recharge rate of the Subbasin. 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.

[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.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

1. **Task 1 – Project Management**
   1.1. Provide grant management services as needed for Project completion; monitor, supervise, and review all work performed; and coordinate budgeting and scheduling to ensure the Project is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations. Prepare invoices 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: Invoices and necessary documentation

Budget Category (b): Planning/Design/Environmental

2. **Task 2 – Planning**
   2.1. Conduct a literature review of methods for groundwater recharge in arid desert environments and where natural recharge is limited such as in Borrego Springs (e.g., stormwater capture and infiltration, recharge using recycled water).
   2.2. Compile and review reports and information from previously proposed projects regarding groundwater augmentation in the Borrego Springs Groundwater Subbasin (Subbasin); compile documentation, engineering plans, studies and other sources of information of existing recharge methods of the Subbasin including but not limited to irrigation return flows, percolation ponds at the Rams Hill WWTP, upgrades to existing wastewater treatment facilities.
   2.3. Conduct a data gap analysis of information that was left incomplete or unknown from the projects or studies reviewed in item 2.2.
   2.4. Prepare a summary report with the results of the data gap analysis.

   Deliverables:

   - Data gap analysis from task 2.3.
   - Summary report documenting the results from task 2.1
   - Copies of the technical reports, documents, plans, studies and all sources of information compiled in task 2.2.

Budget Category (c): Implementation

3. **Task 3. – Evaluation of alternatives for groundwater recharge**
    3.1. Determine the methods from task 2.1 that could be appropriate/viable to fill the data gaps identified in item 2.3 and determine methods to improve efficiency of existing recharge of the Subbasin. Identify constraints and opportunities to be considered in the development of these methods and alternatives.
    3.2. Develop a quantitative estimate of the amount of groundwater available for recharge from the alternatives identified in task 3.1 and the amount of water augmentation in Borrego Springs as the result of implementing the alternatives identified in task 3.1.
    3.3. Develop a technical memorandum and a summary table of potential benefits and limitations, technical and environmental constraints of each alternative identified in task 3.1, and for alternatives that have not been considered but were identified in task 3.1. Include the quantities estimated in task 3.2.

Deliverables: Technical memorandum and summary table describing the planning objectives, benefits, limitations, constraints and opportunities for each alternative evaluated in this task.

4. **Task 4. – Feasibility Study**
    4.1. Conduct a constraint analysis for each groundwater recharge alternatives identified in task 3.
    4.2. Prepare a cost estimate for implementation and construction of each alternative identified in task 3.
    4.3. Conduct a feasibility study to assess institutional, regulatory, technical, and financial opportunities and challenges associated with the groundwater recharge alternatives identified in task 3. The opportunities and challenges will be studied in sufficient detail to determine if the proposed alternatives identified in item 3 are practical and feasible. Include a cost-benefit analysis. The feasibility report shall contain at the minimum: introduction, Criteria/Constraints, methodology, Overview of Alternative Options, Evaluation, Conclusions and Recommended Plan.

Deliverables: Final Feasibility Report

5. **Task 5. – Environmental Impacts**
    5.1. Develop CEQA evaluation to determine the need for consideration of environmental impacts.
    5.2. Complete documentation required under the California Environmental Quality Act (CEQA) for the recommended alternative from Task 4. Take all required steps to prepare, circulate, and certify the required CEQA document(s).

Deliverables: Required CEQA documents: Initial Study/Negative Declaration and/or Environmental Impact Report.

Budget Category (d): Monitoring/Assessment

Monitoring/Assessment is not applicable to the SOW because the Project consists of planning and investigating.

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.

The public outreach will be based on the findings and progress of the technical memorandum and feasibility study obtained in tasks 3 and 4. The public outreach will inform interested parties of recommendations for future decisions and opportunities for groundwater management.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**				
	Task 1 – Project Management				
	1.1 Grant Management Services	16,000		16,000	
(b)	**Planning/Design/Environmental**				
	Task 2 – Planning				
	2.1 Literature review	15,000		15,000	
	2.2 Compilation of data sources, reports and documentation	20,000		20,000	
	2.3 Data gap analysis	20,000		20,000	
	2.4 Summary report	30,000		30,000	
(c)	**Implementation**				
	Task 3. – Evaluation of alternatives for groundwater recharge				
	3.1 Methods for groundwater recharge	25,000		25,000	
	3.2 Quantitative estimate of water available and water augmentation	50,000		50,000	
	3.3 Technical memorandum	50,000		50,000	
	Task 4. – Feasibility Study				
	4.1 Constraint analysis	25,000		25,000	
	4.2. Cost estimate	10,000		10,000	
	4.2 Feasibility study report	50,000		50,000	
	Task 5. – Environmental Impacts				

	5.1 CEQA Evaluation	25,000		25,000	
	5.2 CEQA documentation	200,000		200,000	
(d)	**Monitoring/Assessment**				
	Not Applicable				
(e)	**Interested Parties Outreach/Public Education**				
	Task 6. – Outreach with Interested Parties and Stakeholders		25,000	25,000	100%
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	536,000		536,000	

*** List sources of Local Cost Share funding: Approved Watermaster budget**

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**01/01/2023**	**12/31/2024**
	Task 1 – Project Management	01/01/2023	12/31/2024
	1.1 Grant Management Services		
(b)	**Planning/Design/Environmental**	**01/01/2023**	**06/30/2023**
	Task 2 – Planning	01/01/2023	06/30/2023
	2.1. Literature review	01/01/2023	02/28/2023
	2.2. Compilation of data sources, reports and documentation	01/01/2023	02/28/2023
	2.3. Data gap analysis	03/01/2023	04/30/2023
	2.4. Summary report	05/01/2023	06/30/2023
(c)	**Implementation**	**07/01/2023**	**12/31/2024**
	Task 3. – Evaluation of alternatives for groundwater recharge		
	3.1 Methods for groundwater recharge	07/01/2023	08/31/2023
	3.2 Quantitative estimate of water available and water augmentation	09/01/2023	11/15/2023
	3.3 Technical memorandum	09/01/2023	12/31/2023
	Task 4. – Feasibility Study		
	4.1 Constraint analysis	01/01/2024	02/29/2024
	4.2. Cost estimate	02/01/2024	02/29/2024
	4.2 Feasibility study report	03/01/2024	06/30/2024
	Task 5. – Environmental Impacts		
	5.1 CEQA Evaluation	07/01/2024	08/15/2024
	5.2 CEQA documentation	09/01/2024	12/31/2024

(d)	**Monitoring/Assessment**		
	Not Applicable		
(e)	**Interested Parties Outreach/Public Education**	**01/01/2023**	**12/31/2024**
	Task 6. – Outreach with Interested Parties and Stakeholders	01/01/2023	12/31/2024

R. OF S. NO. 1841

RECORD OF SURVEY
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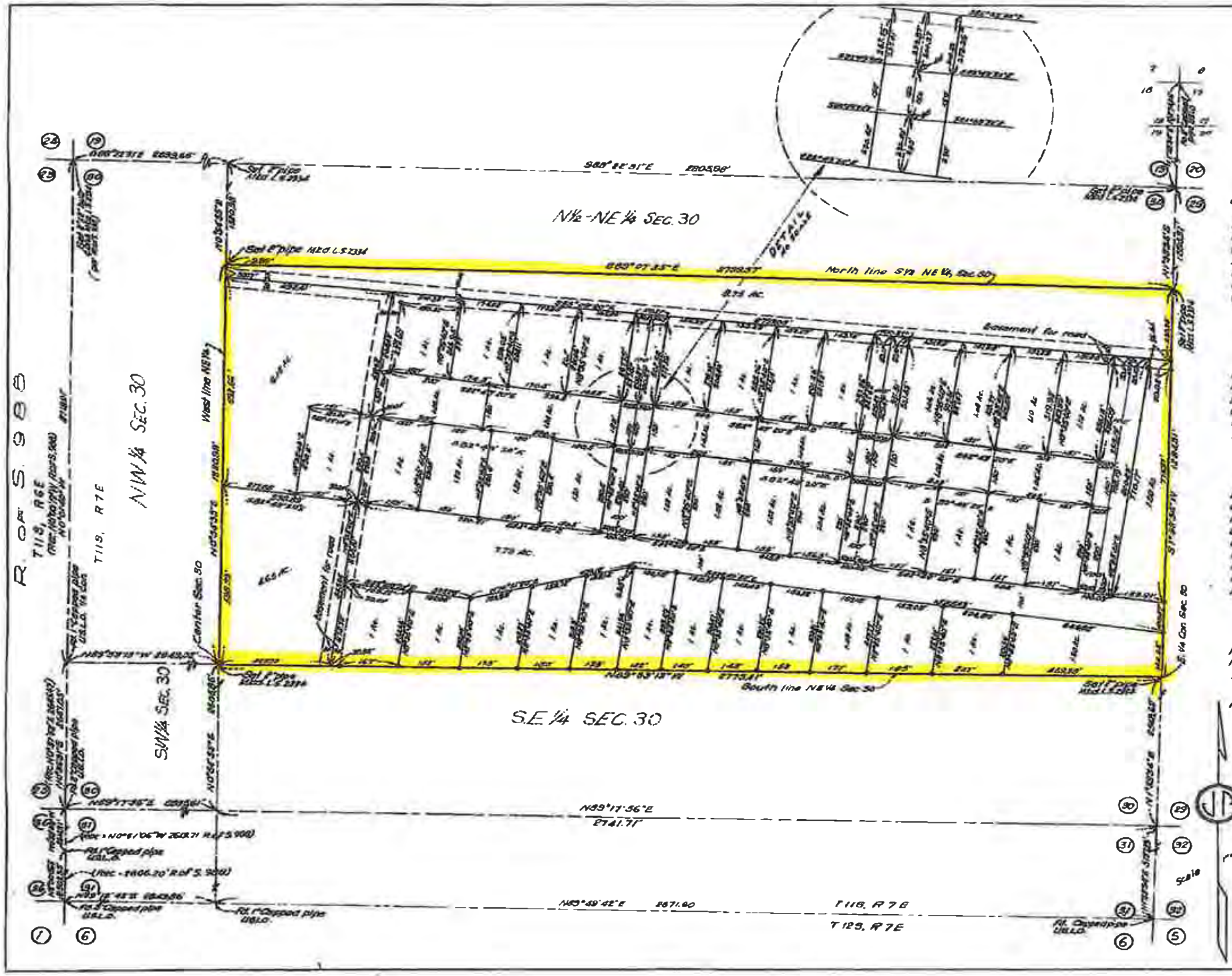


Basis of bearing derived from R.of S. No. 988 i.e. N 5°00'56"E, West Line of SW¼ Sec. 31, T11S, R7E, which is in terms of Lambert Grid, Zone 6, Calif. o=¾" pipe set centered with a copper disk stamped L.S. 2334 unless otherwise noted.

I, James S. Peterson, a licensed surveyor of the State of California, certify that this survey was made by me or under my direction on or about October 8, 1947, that the name of owner who authorized me to make this survey was Mr. Ed Fletcher, Jr. that this survey is true and complete as shown, that the monuments are of the character and occupy the positions indicated and are sufficient to enable the survey to be retraced.

James S. Peterson
Licensed Surveyor No. 2334

I, James S. Peterson, hereby state that I am the surveyor who made this record of survey, that the land is divided into lots or parcels, each of a net area of 1 acre or more, and the Board of Supervisors of the County of San Diego has approved a tentative map thereof as to street alignment and width, drainage provisions and lot design.

James S. Peterson
Licensed Surveyor No. 2334

I, J. H. Mack, County Surveyor of San Diego County state that I have examined this map with respects to (a) its accuracy of survey and mathematical data; (b) its conformity to other records or satisfactory evidence of the error of such other records; (c) its compliance with the provisions of Chap. 15, Div. 3, Business and Professions Code and find it satisfactory, I further certify that it does not appear to be the record of a survey of a subdivision as defined in Section 11535 of the Subdivision Map Act.

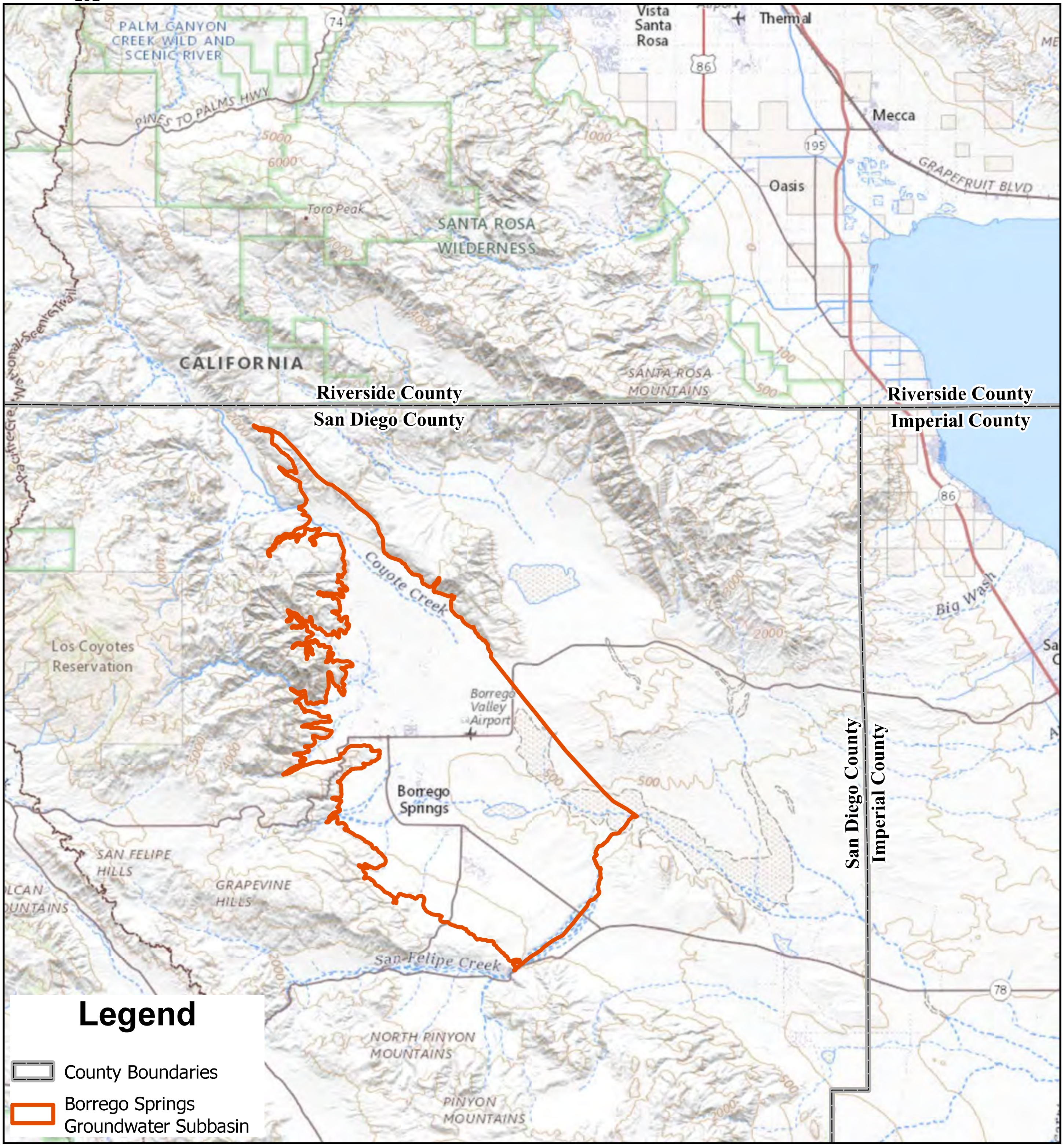
J. H. Mack, County Surveyor
By [signature]
Assistant

File No. 53381
Filed at the request of James S. Peterson, this 26 day of MAY 1948, A.D. at 31 minutes past 2 o'clock P.M.
Roger N. Howe, County Recorder

Fee $1.00

By H. G. Schneider
Deputy

Note: Corner common to Sections 19-20-29 & 30 and corner common to Sections 29-30-31 & 32 were established by "Single Proportionate measurement" between corners common to Sections 7-8-17 & 18 and Sections 31-32; T11S, R7E, & Sections 6 & 5, T12S, R7E.



Regional Map

Regional and Project Location Map

Exhibit B1

Project Name: Water supply augmentation

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

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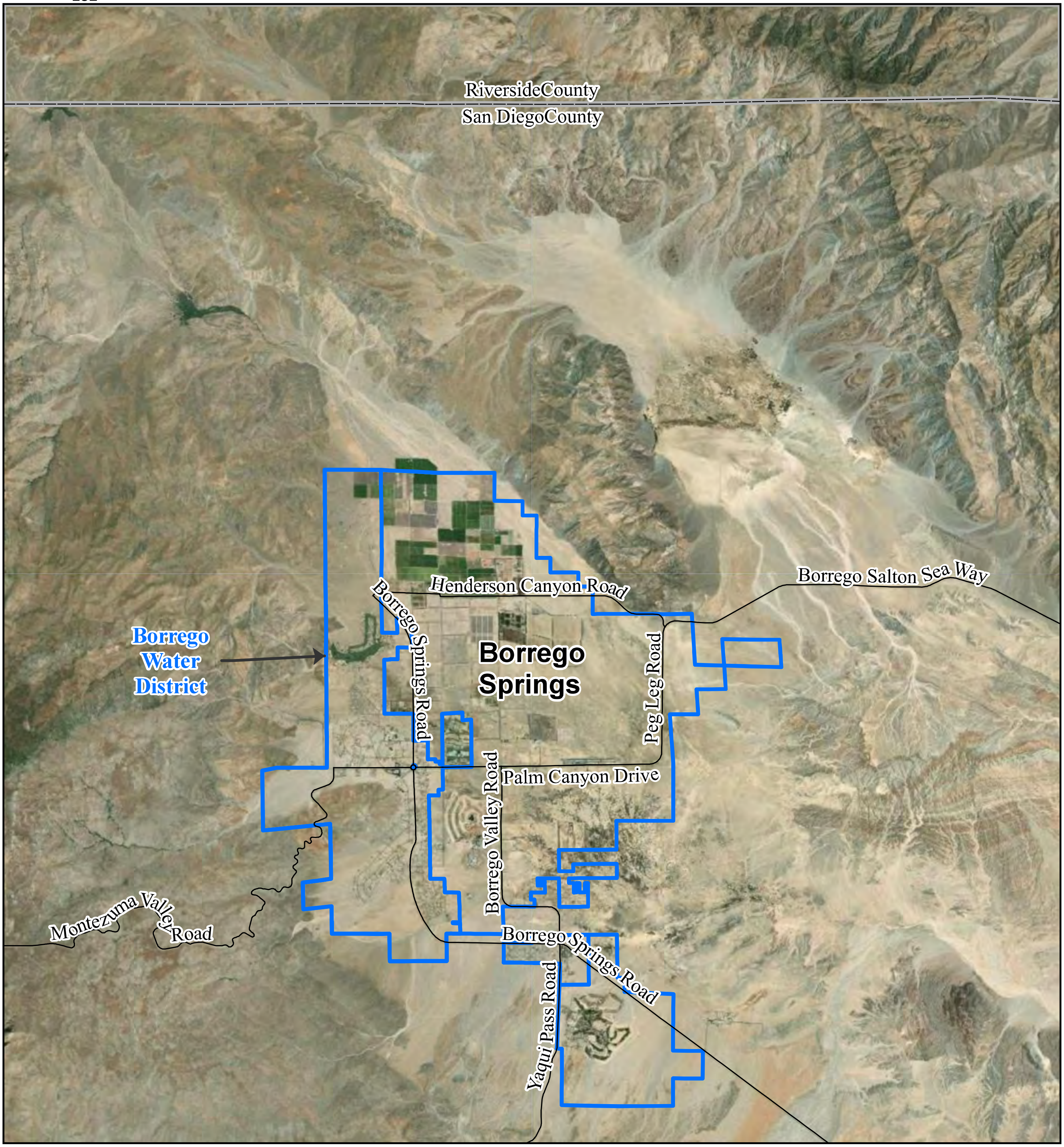
Wagner & Bonsignore
Consulting Civil Engineers, A Corporation



Regional Map

Borrego Springs Community

Exhibit B2

Project Name: Water supply augmentation

Earthstar Geographics, County of Riverside, California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

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0 1.25 2.5 Miles

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Watermaster

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

Contact Information

Name: Andy Malone, PG
Phone: 949.600.7503
Email: amalone@westyost.com
Address: 23692 Birtcher Drive
Lake Forest, California 92630
USA

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 acre-foot 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.

<u>Clark Dry Lake – Project background</u>

In 1998, BWD completed an initial groundwater study which included drilling a test hole on a 240-acre 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 will support the intent of the GMP and the Judgment to achieve long-term groundwater sustainability 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 long-term, 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)

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.

[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)).

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

[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.

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 Watermaster[3] 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 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 non-local 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?

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

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 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.

[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.

Work Plan

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
- 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.

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.

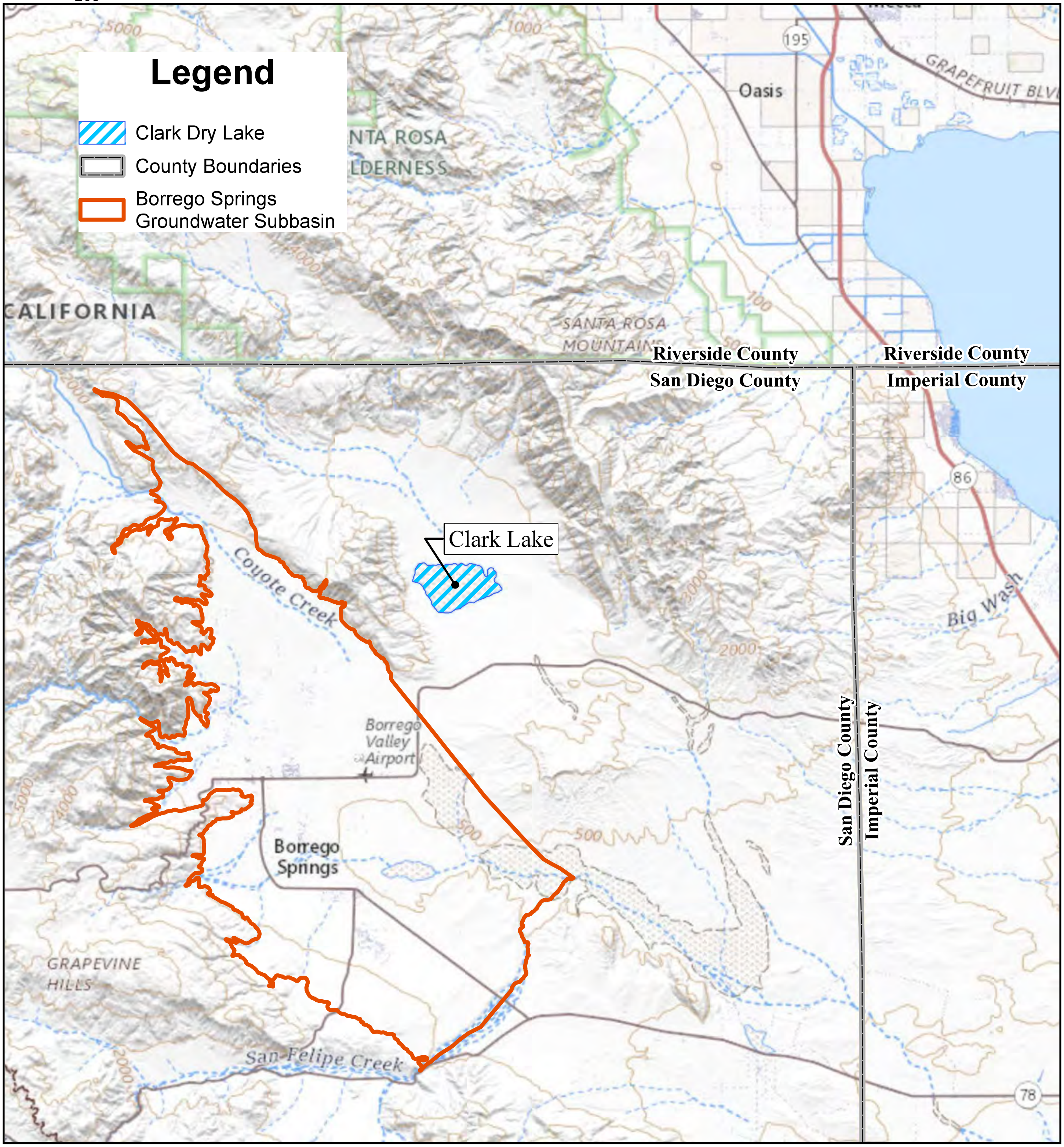
Budget

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % 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**				
	Task 2. – Planning 2.1 Hydrological/geotechnical investigation 2.2 Testing plan 2.3 Access Agreements 2.4 Biological assessment 2.5 Well permit(s)	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
(c)	**Construction/Implementation**				
	Task 3. – Construction Management Task 4. – Implementation and Data Collection Construction of test wells (2) Observation wells (4) Performing well test	35,000 180,000 280,000 40,000	0 0 0 0	35,000 200,000 280,000 40,000	N/A
(d)	**Monitoring/Assessment**				
	Task 5. – Data Analysis and Estimate of Available Yield	75,000	0	75,000	N/A
(e)	**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	

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

Schedule

	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**



Regional Map

Regional and Project Location Map

Exhibit A1

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

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.,

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

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0 2 4 Miles

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation

Regional Map

Borrego Springs Community

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

Earthstar Geographics, County of Riverside, California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

Exhibit A2

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Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

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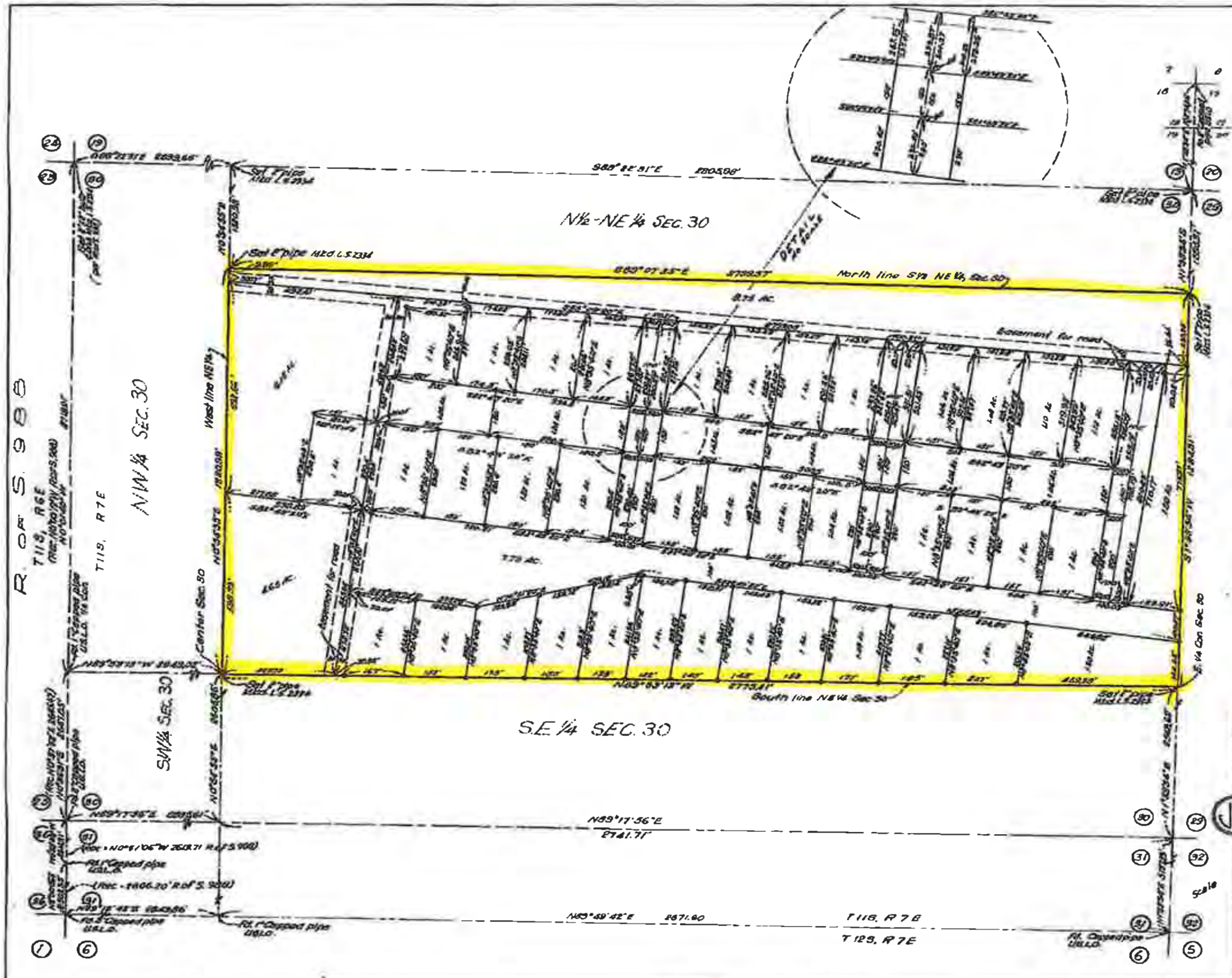
SAN DIEGO COUNTY, CALIF.



Basis of bearing derived from R of S. No. 988 i.e. N 5°00'56"E, West Line of SW¼ Sec. 31, T11S, R7E, which is in terms of Lambert Grid, Zone 6, Calif. o = ¾" pipe set centered with a copper disk stamped L.S. 2334 unless otherwise noted.

I, James S. Peterson, a licensed surveyor of the State of California, certify that this survey was made by me or under my direction on or about October 8, 1947, that the name of owner who authorized me to make this survey was Mr. Ed Fletcher, Jr. that this survey is true and complete as shown, that the monuments are of the character and occupy the positions indicated and are sufficient to enable the survey to be retraced.

James S. Peterson
Licensed Surveyor No. 2334

I, James S. Peterson, hereby state that I am the surveyor who made this record of survey, that the land is divided into lots or parcels, each of a net area of 1 acre or more, and the Board of Supervisors of the County of San Diego has approved a tentative map thereof as to street alignment and width, drainage provisions and lot design.

James S. Peterson
Licensed Surveyor No. 2334

I, J. H. Mack, County Surveyor of San Diego County state that I have examined this map with respects to (a) its accuracy of survey and mathematical data; (b) its conformity to other records or satisfactory evidence of the error of such other records; (c) its compliance with the provisions of Chap. 15, Div 3, Business and Professions Code and find it satisfactory, I further certify that it does not appear to be the record of a survey of a subdivision as defined in Section 11535 of the Subdivision Map Act.

J. H. Mack, County Surveyor
By [signature]
Assistant

File No. 53381
Filed at the request of James S. Peterson, this 26 day of MAY 1948, A.D. at 31 minutes past 2 o'clock P.M.
Roger N. Howe, County Recorder

Fee $1.00

By H. G. Schneider
Deputy

Note: Corner common to Sections 19-20-29 & 30 and corner common to Sections 29-30-31 & 32 were established by "Single Proportionate measurement" between corners common to Sections 7-8-17 & 18 and Sections 31-32; T11S, R7E, & Sections 6 & 5, T12S, R7E.

Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Unified School District

Project Name: Educate Your Community, Sustain Your Water

Contact Information

Name: Mark Stevens
Phone: 760-767-5357
Email: mstevens@bsusd.net
Address: 2281 Diegueno Rd. Borrego Springs CA 92004

Project Summary

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

This project will create a CTE (Career Technical Education) Pathway in Energy, Environment and Utilities for Borrego Springs Middle and High Schools. The goal is to educate our young people around the water issues and challenges pertinent to our basin from historical times to the present Stipulated Agreement. In addition, this CTE Pathway will introduce our students to vital skills and job opportunities for post high school. Currently there is little understanding among our students and their families about Borrego's water sustainability challenges and the required ramp down of water usage over the next 18 years.

This project will address this lack of awareness by exposing our students to a curriculum that will teach all aspects of water as a natural resource to be understood, regulated and conserved in order to achieve sustainability. These lessons will be embedded in studies around environmental issues and the world of work in utilities. The curriculum of 330 hours will be integrated into science classes in middle school and in high school the curriculum will become part of the Energy, Environment and Utilities Pathway. This Pathway will lead to internships in the Borrego Water District, partnerships with pumpers in our basin exploring water sustainable practices, career investigations, certifications, partnerships with various community groups also pursuing water sustainability, OSHA (Occupational Safety and Health Administration) certification and enrollment in post high school vocational programs at community colleges.

An additional component of this Educate your Community, Sustain Your Water (Education Project) will be outreach to parents and independent gardeners in our severely disadvantaged community. The parents of BSUSD's students are predominantly Latinx/Spanish speaking and employed in agriculture, golf course maintenance, restaurants, hotels and as independent gardeners. Their understanding of the legal and urgent call for a ramp down of water pumping as stated in the Stipulated Agreement is negligent if not non-existent. Our local newspaper is in English only and informational community-wide meetings around water issues, although offered with Spanish translation, are not well attended due to cultural barriers.

This challenge with our underrepresented population will be overcome with students serving as the presenters to their parents and to our local gardeners, the majority of whom have children in the school district. As students gain the knowledge, expertise and communication skills (one of the soft skills taught in CTE classes) to share this information, they will do so in the language of their parents. By doing so, the Borrego Springs water situation will be understood and appreciated by a large number of residents which will support water use efficiency and therefore water sustainability. It is to be noted that when students present or perform, parents always attend!

An additional benefit of this program to water sustainability in our basin is the shift away from high water use jobs in agriculture and golf course maintenance to alternative careers in water management, xeriscape gardening, engineering, consulting, water-wise gardening, etc. At least 1/3 of high school graduates (about 12 each year) remain in Borrego Springs and often follow their parents into their line of work, especially in ag and golf course maintenance. As water is reduced, jobs will be eliminated. This project will create new opportunities for our young people to remain in Borrego Springs, raise their families and keep our community economically vibrant and with a guaranteed water supply.

A strong component of this program, as mentioned above, is its outreach to the community and the schools' partnerships with other entities also focused on SGM (Sustainable Groundwater Management): ArtPark Community Garden at the Borrego Art Institute, ABDNHA (Anza Borrego Desert Natural History Association, ABF (Anza Borrego Foundation) and ABDSP (Anza Borrego Desert State Park). There is a village-wide interest in promoting water sustainability and the collective energy is palpable.

<u>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.</u>

The Education Project is located within the basin of Borrego Springs, including students, parents and gardeners who live in the adjacent basin of Ocotillo Wells and come to Borrego Springs for school and work. Currently our local residents have heard about our water situation and are mostly concerned with their high water bills. There is very little understanding of the Stipulated Agreement and the legal requirements around making our basin sustainable.

The benefitting area will be the Borrego Valley Subbasin. The residents receiving this education work in agriculture, golf courses, resorts, restaurants and in business and home gardens. All of these areas of employment use water and with hundreds of residents having a thorough understanding of the need for water use efficiency, the collective impact will be measurable and substantial.

<u>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?</u>

One of the GMP's sustainability strategies is a water conservation program specifically to address agriculture, municipal and recreation pumpers. The GMP has established minimum thresholds and measurable objectives for sustainability. Aggressive pumping cutbacks must be established to reduce water demand within the subbasin.

Although the Education Project is not listed in the GMP, its goals and objectives are in line with the goals of the GMP, specifically as it relates to job retraining programs as well as training for gardeners and landscapers. Workers in ag, workers in recreation and water users all over Borrego Springs from stay at home mothers to hospitality workers must be made aware of the imperative to reduce the water demand within our subbasin.

With hundreds of local residents, including students, working and living in Borrego Springs with an educated understanding and knowledge of the mandatory reduction in water use required by the GMP, the sustainability goal will be reached with far more efficiency and buy-in from the community.

Local Latinx residents have repeatedly expressed their desire to live in this community due to its tranquil location free from gangs and big city problems. We are a severely disadvantaged community and a continued overdraft of the basin at its present rate of pumping could cause severe economic hardship for the community. Our families need to understand the immediacy of this issue. The Education Project would do just this.

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

<u>Goal 1: Create an Energy, Environment and Utilities CTE (Career Technical Education) Pathway Curriculum of 330 hours for Borrego Springs Middle and High Schools. This curriculum will cover among other topics, specific information about the history of water use in Borrego Springs, the GMP, the Stipulated Agreement and sustainable careers in Borrego Springs for young adults.</u>

<u>How will goals be achieved and needs met?</u>

- Local ABDNHA (Anza Borrego Desert Natural History Association) will develop the 330 hours of a 6-12th grade curriculum. This organization has a long history of creating programs for Borrego Springs that are researched, professional and of high quality. In addition, ABDNHA has written previous creative science lessons for after school classes in the Borrego Springs Unified School District (BSUSD).
- ABDNHA will work jointly with BSUSD staff, specifically our CTE Coordinator and Business Pathway Teacher, using the California Academic Content Standards for Science and Social Science as well as the California Career Technical Education Model Curriculum Standards: Energy, Environment and Utilities, as guides to design lessons, create hands-on activities and study trips to local venues highlighting successful water sustainability practices.

<u>Goal 2: BSUSD will hire a CTE instructor certified in Energy, Environment and Utilities</u>.

<u>How will goals be met and needs met?</u>

- The job will be posted on Edjoin, a website listing employment opportunities in schools across the US.
- A search for locals with work experience in Energy, Environment and Utilities related fields and an interest in obtaining a CTE Credential will be accomplished through posts in the local Borrego Sun Newspaper as well as personal referrals and contacts.

- Ultimately a screening, interviewing and hiring of a qualified CTE teacher for this position will occur.

Goal 3: The CTE Teacher will implement the curriculum developed by ABDNHA while creating partnerships with the rich variety of local entities able to enhance the curriculum.

How will goals be achieved and needs met?

- CTE Teacher will set up his/her classroom and be ready to teach in September, 2023.
- CTE Teacher will create an MOU with the BWD creating a partnership for job shadowing, internships, apprenticeships, guest speakers, field trips.
- CTE Teacher will create a list of needed classroom materials and equipment.
- CTE teacher will work with the School Community Liaison to forge connections with businesses, farmers and entities relevant to the students' understanding of how a sustainable aquifer is an imperative for everyone in our community.
- CTE Teacher and High School Counselor will introduce the Energy, Environment and Utilities Pathway to high school students and encourage interest and participation. It will be mandatory in grades 6-9.
- CTE Teacher will collaborate with local community colleges offering AA degrees and certifications in Energy, Environment and Utilities studies, specifically water certificates: Imperial Valley College and College of the Desert.
- CTE Teacher will work jointly with ABDNHA and the ArtPark Community Garden personnel as they create outdoor water sustainability education projects for CTE students as well as gardeners and the general public.
- CTE Teacher will work jointly with our local OLAX (Organización de Latinx) Co-Director, Esmeralda Garcia, in the creation of a culturally relevant and comprehensible curriculum based on Borrego's GMP for parents which will be presented by students. Esmeralda works for the Borrego Water District and her family has a long history of working in the Borrego Valley orchards, golf courses and resorts. She is an excellent source for information on bridging the communication gap between our silent majority Latinx folks and our sustainability issues.
- CTE Teacher will work in collaboration with local Borrego Water District personnel (including Esmeralda Garcia) and best practices from local desert gardens at ABDNHA as well as the ArtPark Garden, to create an appropriate curriculum for our students to present to the dozens of local gardeners. This will culminate in gardeners receiving a "Water Wise" recognition magnet for their business trucks showcasing their participation in an environmentally responsive landscaping class.
- CTE Teacher will coordinate an effort along with the School Community Liaison to find and invite local gardeners to this presentation. This will be accomplished through students' acquaintances, postings at various relevant places or as is so easily done in Borrego - simply take a drive around town and one can net at least two dozen gardeners working in yards!
- BS students in the Graphic Design Class will create the magnets for the gardeners' trucks.
- BSUSD's official translator will be tasked with translating the materials for the parent and gardener classes into Spanish.

Goal 4: Four experiential outdoor classroom laboratories for the Environment, Energy and Utilities CTE students will be built at the ArtPark/ Community Garden at the Borrego Art Institute (non-profit) for studies in aquaponics water smart growing, xeriscape gardening, best water conservation practices in irrigation and soil studies for watershed and absorption.

How will goals be achieved and needs met?

- The CTE Teacher and the ArtPark Director will meet and plan the creation of the 4 laboratories to be used as hands-on classrooms for students.
- Funds will be transferred to the ArtPark for purchase of materials needed for the construction of these 4 labs.

Goal 5: Interpretive signs in English and Spanish will be created and placed in the ABDNHA Desert Garden with content to educate CTE students, gardeners and the general public about the essential roles that desert plants play in the overall ecosystem of the desert environment, best water conservations practices, low water-use plants for landscaping and wildlife habitat and the operation of effective irrigation practices.

How will goals be achieved and need met?

- The CTE Teacher and designated ABDNHA staff will coordinate the development of the interpretive signs so they can be used as a part of the overall educational plan, with hands-on activities for students working with living plants in the setting of a developed desert garden environment.
- Funds will be transferred to ABDNHA for consultation and content design, fabrication, planting and installation of the signs.

Goal 6: ABF (Anza Borrego Foundation) will work jointly with the ABDSP (Anza Borrego Desert State Park) to create interpretation materials in English and Spanish that explain the "why" of our watershed situation and attempt to give a broader understanding of our water resource. These materials will be integrated into the Energy, Environment and Utilities Pathway at the school as well as the curriculum for parents, gardeners and the general public. With Borrego's location in the middle of the vast ABDSP, any partnerships with local organizations would need to include them as a strong voice for the thousands of visitors who come to our town every year.

How will goals be achieved and need met?

- Program Manager will coordinate with ABF and ABDSP to discuss their ideas and how they can be integrated with the goals of the Education Project.
- Funds will be transferred to ABF for project implementation upon agreement between the parties.

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?

The quantifiable benefits of the Project are:

- Community-wide enhanced understanding of Borrego Springs' over-drafted water basin.
- Conservation of water due to this collective knowledge and appreciation of our legal requirement to pump less water.
- Sustainable water levels will be reached over time with this community-wide awareness.

- Local students and residents become part of the solution to our sustainable groundwater management through their pursuit of less water intensive careers.
- Creation of an economically viable and sustainable community.
- Tourists to our town (thousands each year) will also be made aware of Borrego's SGM requirements and have an understanding and respect for water conservation.

Evaluation of the benefits of this Project:

- Presentation of the curriculum.
- Lists of the numbers of students in grades 6-12 who participate in the Energy, Environment and Utilities CET Pathway over the course of two years.
- Lists of the number of parents and gardeners who receive the training over the course of two years.
- Students' growth on pre and post surveys measuring their knowledge of Borrego's water sustainability situation.
- Parents' and gardeners' growth on pre and post surveys measuring their knowledge of Borrego's water sustainability situation.
- Number of high school seniors completing the Energy, Environment and Utilities CET Pathway and acknowledgment of how many pursue related careers.
- Hiring of a CTE Teacher.
- Photos of the four labs at the ArtPark.
- Photos of the plant signage at ABDNHA.
- List of the number of partnerships created in this program.
- BSUSD's water bill over the two years of program implementation showing a decline.

<u>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.</u>

Borrego Springs is a Severely Disadvantaged Community. Our year round community (avg. pop.3,500) is largely Latinx and they are the working backbone of our town. Their jobs are in agriculture, golf course maintenance, restaurants, hotels and in cleaning businesses and homes. All 3 schools are Title 1 with all students receiving free breakfasts and lunches. A majority of our students enter Kindergarten speaking only Spanish.

Snowbirds come to our town in the winter and they are retired and the reason we have some upscale restaurants, a seasonal concert series, a modern library and a host of art shows and venues. These are rarely frequented by our Latinx population.

During the pandemic, a huge number of families lost jobs due to the closure of resorts, golf courses and restaurants. In response to this, the Borrego Ministers Association (BMA) began a program of reaching out to those in need of assistance with rent, utilities, food and gas money. With only donations from generous local folks and institutions, the BMA has offered financial assistance to the tune of $300,000 to our low-income families. This speaks to the gap between our local workers and our more affluent population.

Our remote, rural location and the cost of gas over $5.25/gallon have prevented our low-income families from driving to Coachella to shop for less expensive food. This has resulted in full participation of our low-income families in our 7 monthly Food Banks.

In addition, our Latinx folks are not a part of the decision making in our town due to cultural and language barriers as well as the timing of events during the workday when they are not able to attend. The formation of our OLAX (Organización de Latinx) is a start to an inclusion of our entire community in different decision making events.

As our Underrepresented and Severely Disadvantaged Community becomes aware of the dire need to sustain our groundwater, this will enable them to be a part of the solution because they wish to keep this community economically sustainable for work and for a tranquil place to raise a family.

A map is attached showing the community of Borrego Springs. Our SDAC families are scattered throughout our valley and the Borrego Springs Middle and High School where the Education Project will occur is clearly marked.

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.

This Educational Project will serve to educate our students, parents and local gardeners to all challenges to water sustainability in our basin.

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?

This Educational Project is ensuring that our small community will always have safe, adequate and affordable drinking water by enforcing a legal requirement of sustainability by SGMA.

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?

This Project will ensure that Borrego Springs does not run out of water, thereby ensuring that every human being has the right to safe, clean, affordable and accessible water adequate for human consumption, cooking and sanitary purposes.

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.

Not applicable.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 1 – Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices including relevant supporting documentation for submission 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: Invoices and necessary documentation

Budget Category (b): Planning/Design/Environmental

Task 1 – Design

Contract with Anza Borrego Desert Natural History Association (ABDNHA) for the creation of an Energy, Environment and Utilities CTE Pathway curriculum of 330 hours for grades 6-12.

Deliverables: Printed Curriculum of lessons

Task 2 - Planning

CTE Teacher to plan, design and publish lessons for students to present to parents and gardeners.

Deliverables: Two sets of lessons: for parents 3 hours; gardeners 6 hours.

Task 3 - Design

Translator to provide Spanish translation of lessons for parents and gardeners.

Deliverables: Two sets of lessons in Spanish.

Task 4 - Design

High School Graphic Design Class to design and produce "Water Wise" certificates for all parent participants and magnets for gardeners' trucks.

Deliverables: Certificates and magnets.

Task 5 - Design

CTE Teacher to provide students with the necessary equipment and materials for the instruction.

Deliverables: Teacher created list of needed supplies and receipts verifying purchase.

Task 6 - Design

ABF and ABDNHA will collaborate with CTE Coordinator and Program Manager to create materials for Watershed Interpretation: video and printed materials in Spanish and English.

Deliverables: Video and printed materials.

Budget Category (c): Construction/Implementation

Task 1 – Implementation

Recruit and hire an Energy, Environment and Utilities CTE Teacher with appropriate credentials. This task involves writing a clear job description, posting the job, interviewing and hiring a person.

Deliverables: Signing of a 2 year contract between the CTE Teacher and BSUSD.

Task 2 – Construction

Contract with Borrego Art Institute (BAI) for the construction of four outdoor learning labs for the CTE classes to use for hands-on, experiential learning.

Deliverables: Construction of 4 laboratories at the ArtPark: aquaponics, xeriscape gardening, best water conservation in irrigation, soil studies for watershed and absorption.

Task 3 - Construction

Contract with ABDNHA for the creation and installation of educational signage in their Desert Garden highlighting best water practices in desert gardening.

Deliverables: Installation of the signs.

Budget Category (d): Monitoring/Assessment

Task 1. Assessment

Create, administer and score pre and post assessments of all students and adults in the Education Project to assess their growth in understanding SGMA and its impact on sustainability of water in the Borrego Valley. To be done in year 1 and year 2.

Deliverables: Scoring results displayed in graphic form.

Budget Category (e): Interested Parties Outreach/Education

Task 1. Interested Parties Outreach

Coordinate partnerships with community wide entities, businesses and public works to enrich the learning experience of students around SGMA as well as to create opportunities for internships, field trips, job shadowing and work experience.

Deliverables: Documentation of parties participating in this project either directly or indirectly and the nature of their involvement.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

		(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 for 3 years	$60,000	$15,000	$75,000	25%
(b)	**Planning/Design/Environmental**				
	Task 1. ABDNHA to Design CTE Curriculum	$75,000		$75,000	
	Task 2. Planning SGMA Lessons for parents and gardeners: office supplies, printing, materials.	$5,000		$5,000	
	Task 3. Translate lessons into Spanish: services.	$1,000		$1,000	
	Task 4.Design Water Wise Certificates and truck magnets: printing, office supplies, materials for magnets.	$2,000		$2,000	
	Task 5. Purchase necessary materials and equipment for classes: unknown at this time.	$10,000		$10,000	
	Task 6. ABF and ABDNHA to create a video and printed materials for Watershed	$25,000			

	Interpretation.				
(c)	**Construction/Implementation**				
	Task 1. Recruit and hire a CTE Credentialed Teacher for 2 years	$170,000	$2,500	$172,500	1.5%
	Task 2. Construct 4 Learning Labs at the ArtPark at BAI: materials.	$15,000		$15,000	
	Task 3. Construct and install educational signage at ABDNHA:materials and labor.	$20,000		$20,000	
(d)	**Monitoring/Assessment**				
	Task 1.Create and administer pre and post assessments for students: office supplies, printing.	$1,000	$5,000	$6,000	500%
(e)	**Interested Parties Outreach/Public Education** Task 1. Coordinate partnerships within the community and neighboring community colleges: communiques, printing, office supplies; transportation costs for internships and study trips.	$10,000	$10,000	$20,000	100%
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	$394,000	$32,500	$401,500	8 %

* List sources of Local Cost Share funding:

- School overhead costs (air conditioning, heating, light)
- School Community Liaison time no cost to the grant

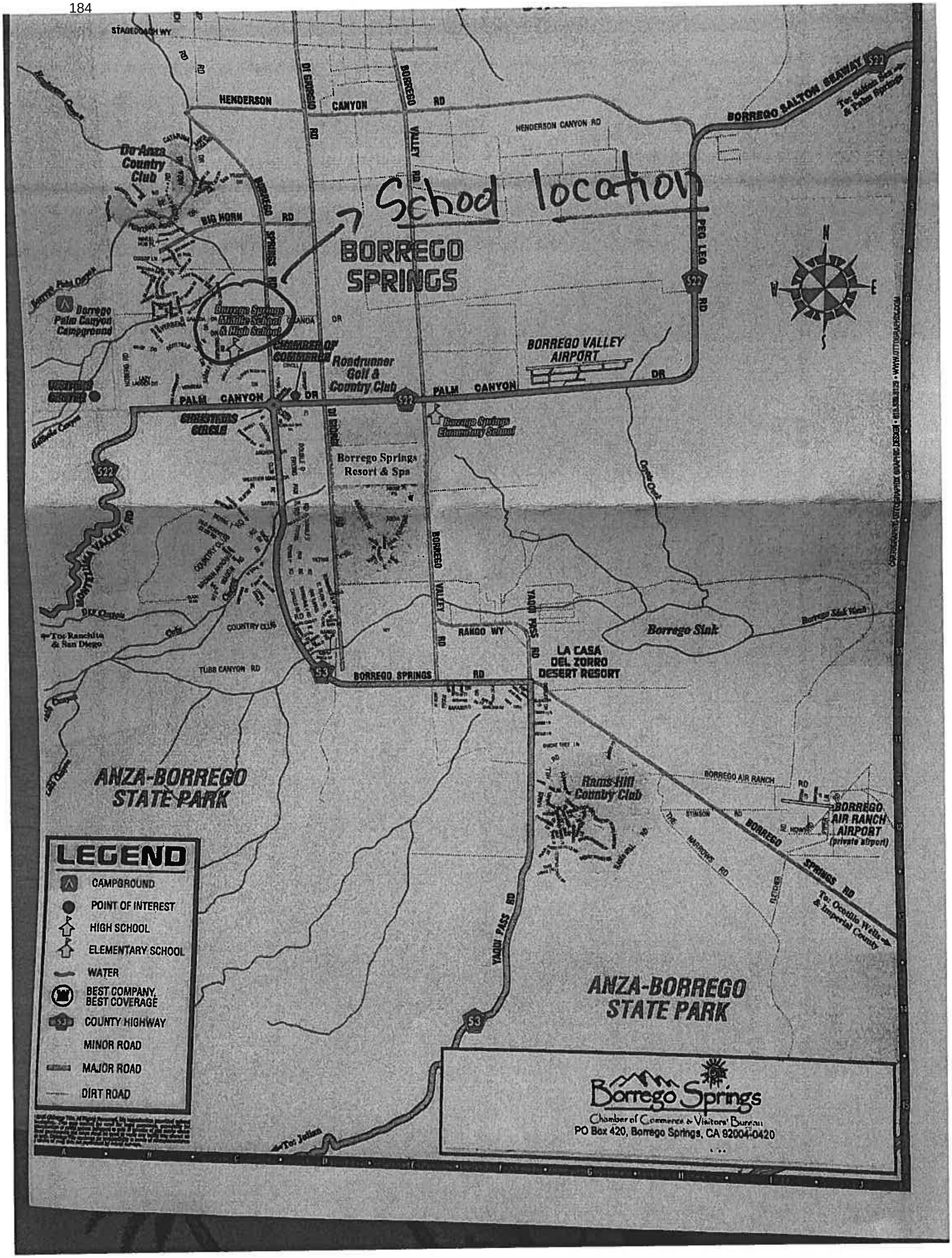
- School donated Internet services
- School donation of Graphic Design Teacher time
- School donation of refreshments and child care for evening presentations
- School donation of HR services for job posting, hiring, other responsibilities
- School donation of service equipment: copiers, promethean boards, projectors, etc

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task 1- Project Management	09/01/2022	06/30/2025
(b)	**Planning/Design/Environmental**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task 1 - ABDNHA design CTE curriculum	07/01/2022	08/01/23
	Task 2 - CET Teacher to plan Parent Lessons with students	03/01/2024	04/01/24
	Task 3 - Parent Lessons translated into Spanish	04/01/2024	04/14/24
	Task 3 - CET Teacher to plan Gardener Lessons with students	09/30/24	10/30/24
	Task 4 - Gardener Lessons translated into Spanish	10/30/24	12/14/24
	Task 5 - Graphic Design high school class designs and produces Water Wise Certificates for Parent Class and magnets for gardeners' trucks	01/01/24	04/01/24
	Task 6 - Purchase of materials necessary for CTE Teacher's class	08/15/23	08/15/24
(c)	**Construction/Implementation**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task 1 - Recruit and hire CTE Teacher for Energy, Environment and Utilities Pathway	08/01/23	06/30/25
	Task 2 - Construction of the 4 learning labs at the ArtPark Community Garden	07/01/22	07/01/23
	Task 3 - Construction and installation of the educational signage at ABDNHA	07/01/22	02/01/24
	Task 4 - Creation of video and printed materials by ABF and ABDNHA	07/01/22	01/01/24
(d)	**Monitoring/Assessment**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task 2 - Create and administer a pre and post assessment for parents and gardeners to gauge their knowledge of water sustainability in Borrego Springs	04/14/2023	01/30/2024
(e)	**Interested Parties Outreach/Public Education**	**MM/DD/YYYY**	**MM/DD/YYYY**

	Task 1 - Coordinate partnerships within the community and in nearby community colleges	09/01/2022	06/30/2025


School location
STAGECOACH WY
HENDERSON
CANYON
RD
DI GIORGIO RD
BORREGO VALLEY RD
HENDERSON CANYON RD
BORREGO SALTON SEAWAY
De Anza Country Club
BIG HORN RD
BORREGO SPRINGS RD
BORREGO SPRINGS
PEG LEG RD
Borrego Palm Canyon Campground
Borrego Springs Middle School & High School
CHAMBER OF COMMERCE
Roadrunner Golf & Country Club
BORREGO VALLEY AIRPORT
PALM CANYON DR
CHRISTMAS CIRCLE
Borrego Springs Elementary School
Borrego Springs Resort & Spa
MONTEZUMA VALLEY RD
To: Ranchita & San Diego
COUNTRY CLUB
TUBB CANYON RD
RANGO WY
YAQUI PASS RD
LA CASA DEL ZORRO DESERT RESORT
Borrego Sink
ANZA-BORREGO STATE PARK
Rams Hill Country Club
BORREGO AIR RANCH RD
BORREGO AIR RANCH AIRPORT
(private airport)
STINSON RD
THE NARROWS RD
BORREGO SPRINGS RD
To: Ocotillo Wells & Imperial County
LEGEND
CAMPGROUND
POINT OF INTEREST
HIGH SCHOOL
ELEMENTARY SCHOOL
WATER
BEST COMPANY, BEST COVERAGE
COUNTY HIGHWAY
MINOR ROAD
MAJOR ROAD
DIRT ROAD
ANZA-BORREGO STATE PARK
To: Julian
Borrego Springs
Chamber of Commerce & Visitors' Bureau
PO Box 420, Borrego Springs, CA 92004-0420

Borrego Springs Unified School District

1315 Palm Can Palm Canyon Drive, Borrego Springs, CA 92004 P: (760) 767-5357 F: (760) 767-0494

January 19, 2022

Dear SGM Grant Program Staff,

I serve as the CTE Coordinator and Business Pathway Teacher at Borrego Springs Unified School District. I am excited to support BSUSD's Grant Application for the **Educate Your Community, Sustain Your Water** Grant. I see the opportunities it will bring our students in employment and the vital importance of educating our students and families about the need for sustainability of our aquifer. Without this, our community will lose its ability to thrive.

My role will be Project Manager and I will work closely with all participants in this grant to fulfill the requirements and to put in place a strong, focused, and sustainable Energy, Environment and Utilities CTE Pathway Program for our middle and high school students. I will guide and advise ABDNHA as they create the curriculum, using the California Career Technical Education Model Curriculum Standards. My focus will be on ensuring a program that will be eligible for appropriate CTE Grant funding to ensure the sustainability of the pathway for Borrego Springs students. I will support the hired teacher in creating an advisory committee and meeting the many requirements to reach the standards set forth by the California Dept. of Education. ABDNHA will focus on content specific to Borrego Springs with their long history of desert expertise including issues around water sustainability. In addition, their knowledge of the local community, businesses, farms and organizations will enable them to include in their curriculum study trips to locations in the valley that highlight best practices, employment opportunities and examples of the challenges we face with SGM (Sustainable Groundwater Management).

My work with students in my first year in Borrego Springs has made me realize the urgent need for more CTE Pathways into skilled jobs in our village. For our students who don't choose to attend universities, there is little for them to do except follow their parents into jobs in ag, resorts and golf courses. As water pumping is reduced, many of these jobs will be eliminated.

In addition, our students come from disadvantaged homes where the median household income is $36,583 (Refetelis 2018). CTE Pathways are one of the most promising means to provide skills and job opportunities for our local young people who wish to live, work and raise their families in Borrego Springs. If they wish to pursue their Pathway, College of the Desert and Imperial Valley College are both within reach for AA degrees and Certifications.

Please feel free to contact me with any questions.

Sincerely,

Marjorie White

Marjorie White
CTE Coordinator and Business Pathway Teacher
mwhite@bsusd.net

Borrego Springs Youth and Seniors Center, Inc.
Community Resource Center
PO Box 1362
Borrego Springs, CA 92004
A 501(C)(3) Charitable Nonprofit Corporation

January 17, 2022

To Whom It May Concern;

I am writing this letter of support for the Borrego Springs Unified School District's Educate Your Community, Sustain Your Water Grant.

As the Director of one of the major Food Banks in Borrego Springs, we serve a minimum of 160 families each week at our Food Bank in the Community Resource Center in the Mall. Our families are largely Latinx and are all suffering from food insecurity, especially in this time of job losses due to COVID. They are part of our community of underrepresented and disadvantaged folks and our Resource Center also serves as a point of contact for their multitude of other needs such as information about COVID, employment opportunities and social services.

This grant would assist our young people and subsequently their families in understanding the issues surrounding our limited aquifer in Borrego Springs. As jobs in agriculture and golf course maintenance are eliminated due to SGMA, it would open up new job opportunities for our young people with the hope of their remaining in Borrego Springs, raising their families, having a sustainable water source and keeping our community economically vibrant.

Thank you.

Sincerely,
SArambula

Silvia Arambula
Food Bank Director
Borrego Community Resource Center

– OLAX –

Organización de LatinX de Borrego Springs

January 17, 2022

To Whom It May Concern;

I am writing this letter of support for Borrego Springs Unified School District's Educate Your Community . Sustain Your Water Grant.

I am the Co-Director of OLAX (Organización of LatinX) in Borrego Springs. We represent our largely underrepresented LatinX community, many of whom do not have a voice in issues that affect our community. We came together a year ago in response to this challenge and our goal is to educate and keep our LatinX families informed about issues that affect their daily lives.

OLAX is in agreement with the intention of the Educate Your Community. Sustain Your Water Grant's objectives. We understand the need for our young people to be trained for future employment in jobs that are less water-dependent. We also understand the imperative to educate our young people, as well as our LatinX population of adults and gardeners, in the need to reduce pumping in order to reach sustainability in our basin.

As an employee at the Borrego Springs Water District, I deal daily with issues and questions around high water bills. I've come to realize that our population needs clear and comprehensible instruction about our overdrafted aquifer. They need this in order to become active participants in our 18 year required ramp down of water usage.

I am the daughter and granddaughter of long-time agricultural workers in Borrego Springs. My family, like so many others in Borrego Springs, love this tranquil community and wish to raise our families here. This will not be possible if we don't reach sustainability in our aquifer.

The Borrego Springs Middle and High School's CTE Pathways program in Energy, Environment and Utilities will address this issue and provide our students alternative career pathways. It will also educate their parents and our many local gardeners and landscapers about the requirement to reduce water usage and follow best practices in water conservation. This will allow them to remain in Borrego Springs, raise their families and live in an economically viable town.

Sincerely,

Esmeralda Garcia
Co-Director, Organización de LatinX de Borrego Springs

Project Information Submittal Form

Project Submitter/Owner: Borrego Springs Unified School District; Mark Stevens, Ed.D. Superintendent

Project Name: High School Football Field Synthetic Turf Conversion

Contact Information

Name: **Mark Stevens**
Phone: **760-767-5357**
Email: **mstevens@bsusd.net**
Address: **2281 Diegueno Road, Borrego Springs, CA 92004**

Project Summary

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

Conversion of the Borrego High School football field from natural grass to synthetic turf. The high school football field is used by both students and community members year-round. Having a turf field would allow significantly greater use by the community of Borrego Springs. This grant application also includes additional pricing for the softball field conversion.

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.

The project is located on the campus of the Borrego Springs High School at 2281 Diegueno Road. The football field's conditions vary, depending on the time of year, climate, and maintenance. Although considerable resources have been spent to properly maintain the fields, age, use and ground pests have severely impacted its surface and usability.

The beneficiaries of such a project would extend to the entire community of Borrego Springs, with a smaller benefit to all school athletes within the high school's league. The fields located at the elementary school and high school are currently the only usable athletic fields in the Borrego area. These fields benefit all of the students in the Borrego Springs area. Community members often use the fields for events and recreational play. Fields are also used by community organizations, such as AYSO and Little League.

See attached map for a photograph of current conditions.

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 GMP's sustainability strategy is a water conservation program specifically aimed to address agriculture, municipal and recreation pumpers. The GMP has established minimum thresholds and measurable objectives for sustainability. Aggressive pumping cutbacks must be established to reduce water demand within the sub basin. The turf conversion has a direct impact on water conservation. The football field project has an estimated groundwater savings of 20 acre/ft. annually. Adding the softball field would add an additional 8 acre/ft per year of water savings.

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

The specific goals of the projects are twofold: 1. Lower water usage by converting grass turf to synthetic. 2. Increase access and use of the fields for the public.

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?

The football field project has an estimated groundwater savings of 20 acre/ft. annually. Adding the softball field would add an additional 8 acre/ft per year of water savings. BSUSD is currently monitoring its water usage. Water use is measured and reported to BWD quarterly. Savings from the turf conversion would be easily measurable.

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 Severely Disadvantaged Community. Our year round community (pop.3,500) is largely Latinx and they are the working backbone of our town. Their jobs are in agriculture, golf course maintenance, restaurants, hotels and in cleaning businesses and homes. All 3 schools are Title 1 with all students receiving free breakfasts and lunches. A majority of our students enter Kindergarten speaking only Spanish. The community only has a single public high school. This project serves the entire community by providing the only usable athletic fields.

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.

This project does not impact the small water systems or domestic wells.

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 school district currently leases water rights from the Borrego Water District. Savings in water use would directly impact the amounts usable to the general public.

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?

The school district currently leases water rights from the Borrego Water District. Savings in water use would directly impact the amounts usable to the general public.

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.

Estimates of athletic field turf conversion provide the following benefits:

- Reduction in carbon emission and pollutants from mowing/other field equipment.
    - Synthetic turf helps reduce noxious emissions. According to the EPA, “lawn mowers emit high levels of carbon monoxide, a poisonous gas, as well as hydrocarbons and nitrogen oxides that contribute to the formation of ground level ozone, a noxious pollutant that impairs lung function, inhibits plant growth and is a key ingredient of smog.”5 The EPA also reports that a push mower emits as much pollution in one hour as 11 cars and a riding mower emits as much as 34 cars.
- Reduction of pesticide and fertilizer use.
    - According to the North Carolina Department of Environment and Natural Resources polluted storm water run-off is the No. 1 cause of water pollution in their state, with common examples including over-fertilizing lawns and excessive pesticide use.3 The EPA has identified run-off of toxic pesticides and fertilizers as a principal cause of water pollution.
- Reduction in the accidental spilling of gas and oil while maintaining mowing equipment
    - It is estimated that over 17 million gallons of gas and oil are spilled annually from refilling equipment. The district mows its field at least two times a month for 9 months out of the year, and about 1 per month at a minimum during the low growth months (November, December, January). That means that it is mowed approximately 21 times per year. Although unintentional, gas and oil spills while refueling and maintaining equipment does happen.
- Reduction of water use.
    - 55 gallons of water per year is saved for every square foot of natural grass replaced with synthetic turf. The football field is estimated to be 90,000 square feet in size.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 1.0– Project Management

Management of the grant

Borrego Unified School District will engage the services of a project manager to manage the project in accordance with the Grant Agreement between the District and the State of California Department of Water Resources (DWR). Said compliance will include preparing support documentation relative to the procurement of materials and services necessary to implement the installation of the synthetic turf field, or fields, at the high school site. The project manager will also provide evidentiary material, or materials, to demonstrate compliance with the Public Contract Code, and any related requirements that DWR may have. The project manager will also be responsible for the District's construction administration of the public works contract. As such, the project manager will work closely with the architectural and engineering team, the general contractor, the Division of State Architect, and any specialty testing and inspection requirements to complete the project. The District reserves the right to have the project architect assigned to the role of Project Manager, or to retain the services of a qualified independent consultant to provide the tasks and responsibilities.

Deliverables: Deliverables will include but not be limited to invoices, Notice of Determination as it relates to compliance with the California Environmental Quality Act (CEQA). School District Governing Board approvals and documentation and documentation specifically required in the Grant Agreement or adopted processes and guidelines the DWR may have.

Budget Category (b): Planning/Design/Environmental

Task B 1. – Planning

Planning will include project programming and conceptual designs necessary to ensure that the architectural and engineering documents necessary to bid the project meet school district curriculum needs, the State of California Department of Education Facilities Guidelines, and CIF requirements as they relate to Track & Field, Football, and any other competitive sport which may be played on the field(s).

Deliverables: It is anticipated that the Deliverables will include

- the final programming document, sometimes referred to as the educational specifications,
- the bid documents: the plans, specifications and front end bid documents to ensure compliance with the Public Contract Code and the Director of Industrial Relations requirements for payment

of Prevailing Wages and applicable record keeping,
- The Notice of Completion approved by the School Board at the end of work and acceptance of the project,
- The Division of State Architect certification that the project is certified to have been constructed in accordance with the DSA approved plans and specifications.
- If required, a deliverable may include a Financial Summary, or Fiscal Report of expenditures, including any school board approved change orders.

Task B 2. – CEQA

The construction of the conversion of an existing football field, or other athletic field, does constitute a project within the definitions of the California Environmental Quality Act (CEQA). If there is no statutory or categorical exemption which applies to the specific project, then the District will comply with CEQA by completing and processing an Initial Study. At this time, it is anticipated that Negative Declaration of Environmental Impact may be appropriate, but a more comprehensive analysis will be done to determine if an Environmental Impact Report (EIR) is required.

Deliverables: It is anticipated that the Deliverables for Task B 2 will include but not be limited to:

- The Initial Study
- A Notice of Exemption, if applicable
- A Draft Negative Declaration, if applicable
  - A Draft Mitigated Negative Declaration, if applicable
- An E.I.R if it is determined that the Negative Declaration process is inappropriate for the project. If an EIR is required, the district anticipate that it's cost may be in excess of $150,000. Due to the very specific issues which require analysis and determination of mitigation measures.

Budget Category (c): Construction/Implementation

Task B 3. – Construction Management

In K-12 public school construction the project architect is required to develop the bid documents. The documents include the aforementioned front end bid documents such as the bid form, the Performance Bond and Payment Bond requirements, documentation demonstrating that the contractor has Workman's Compensation coverage, project insurance coverage in accordance with the District's standards. The general conditions section of the front end bid documents will also be prepared by the project architect. The technical specifications and blueprints will also be provided by the Project Architect. The Project Manager, or Construction Manager should the District decide to retain one for this project, will provide the day to day construction administration including but not limited to contractor performance, represent the District in weekly construction meetings, act as the liaison between the District and local and state agencies if required, review progress reports and monthly payment applications, provide oversight with the on-site DSA inspector retained by the District, and coordinate with the local Division of State Architect field office. The project manager will also assist the District with the close out of the project through DSA and any specific requirements of DWR.**Deliverables:** Delierables for B 3 may include but not be limited to:

- Evidence of Public Notice of Opportunity to Bid
- The Bid Set and Bid Results Sheet

- The Schedule of Values from the contractor awarded the public works contract
- The Critical Path Method (CPM) Construction Schedule required in the Bid Documents
- Copies of School Board Agenda Items that pertain to the project, if required by DWR.

Task B 4. – Project Close Out

Project Close-Out will include the tasks necessary to demonstrate the contractor's completion of Punch List Items, the collection of manuals and training documentation that are required in the specifications, processing and assuring the recordation of the Notice of Completion with the School Board, the submission of documentation to the Division of State Architect for the processing of the Certification of Completion in compliance with the plans and specifications. Project close out will also include any documentation and processing required by DWR.

Deliverables: It is anticipated that the Deliverables for Task B 4 will include but not be limited to:

- The DSA Certification Letter
- Any relevant Close Out Documentation by DWR, if applicable
- Documentation certifying compliance with the Storm Water Compliance Permit
- A set of project manuals and As-Built drawings for the School District's project files

Budget Category (d): Monitoring/Assessment

Task B 5. – Although Monitoring and Assessment is not anticipated to be a requirement of the synthetic field project; there will be assistance with the contractor's 1-year guarantee for labor, and applicable term for specific product warrantees that exceed the 1-year minimum. The project manager will be available to represent the District in the enforcement of the guarantees and warranties.

Deliverables: Deliverables for B 5 will include a Product Warrantee matrix which identifies the duration of the guarantee and warrantee, and which identifies the responsible sub-contractor that provided the labor and materials for the specific scope, or scopes, of work. Budget Category (e): Interested Parties Outreach/Education

Task B-6. – Should, through the CEQA process for this project, there be a required outreach or follow-up with interested parties, the Project manager may be tasked to provide that service. It may also be completed by District staff.

Deliverables: Deliverables for B 6 are yet to be identified, as it is not yet known if outreach or education is applicable.

[Description]

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**		$20,000	$20,000	100.00%
	Task 1.0				
(b)	**Planning/Design/Environmental**	$204,927	$0.00	$204,927	0.00%
	Tasks B 1 and B 2				
(c)	**Construction/Implementation**	$2,081,625	100,000 (contingency)	$2,181,625	4.80%
	Task B 3 and B 4				
(d)	**Monitoring/Assessment**	$0.00	$1,500	$1,500	100.00%
	Task B 5				
(e)	**Interested Parties Outreach/Public Education**	$0.00	$0.00	$0.00	$0.00
	Task B 6				
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	$2,286,552	$121,500	$2,408,052	5.31%

*** List sources of Local Cost Share funding: The source of local funding may be from local bond proceeds, or local developer fees.**

***Local sources of revenue come from the BSUSD general fund.**

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**03/01/2022**	**04/30/2023**
	Task 1		
(b)	**Planning/Design/Environmental**	**04/01/2022**	**03/31/2022**
	Task B 1& B 2		
(c)	**Construction/Implementation**	**03/01/2022**	**04/30/2023**
	Task B 3 and B 4		
(d)	**Monitoring/Assessment (Monitoring of the 1-year warrantee period)**	**03/01/2023**	**02/28/2024**
	Task B 5		
(e)	**Interested Parties Outreach/Public Education: As-Needed**	**TBD MM/DD/YYYY**	**TBD MM/DD/YYYY**
	Task B 6	As Needed	As-Needed

Alternate Budget with Softball Field

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**				
	Task 1.0	$20,000		$20,000	0.00%
(b)	**Planning/Design/Environmental**	$83,000		$83,000	0.0%
	Tasks B 1 and B 2				
©	**Construction/Implementation**	807,000	$80,000 (contingency)	$887,000	9.02%
	Task B 3 and B 4				
(d)	**Monitoring/Assessment**	$0.00	$1,500	$1,500	100.00%
	Task B 5				
(e)	**Interested Parties Outreach/Public Education**	$0.00	$0.00	$0.00	0.00%
	Task B 6				
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	$910,000	$81,500	$991,500	8.22%

*** List sources of Local Cost Share funding: The source of local funding may be from local bond proceeds, or local developer fees.**


Google Earth
Imagery date: 9/10/...
70 m
Camera: 722 m
33°15'54"N 116°22'...

Borrego High School & Middle School

2281 Diegueno Road, Borrego Springs, CA

Carlee's

Carlee's
660 Palm Canyon Dr.
PO Box 839
Borrego Springs, CA 92004
(760) 767-3262
Macuga1360@gamil.com
Carleesplace.com

January 20, 2022

To Whom It May Concern:

I am writing this letter in regard to Borrego Springs Unified School District's attempt to acquire a grant for their sports fields improvement in the attempt to conserve water.

There is a need for sports both for our high school students and the entire community. Without a lot of entertainment options locally for residents, sports provide a past time as well as physical activity. Regular involvement in sports helps improve physical health as well as mental health.

There have been several studies recently by the University of Kansas, University of Pennsylvania, and the University of Rochester, just to name a few that show that high school student athletes are at least 28% more likely to attend college verse nonstudent athletes. These same studies have shown that their success once attending college is equally as advantageous in acquiring degrees and success moving forward into the business world.

Of course, providing the fields for these sports is always the greatest economic issue for school districts and communities alike. Providing an artificial turf field that can require less water to maintain would not only be helpful financially in the long run but would also help our local water table. It would be a win-win for our community on many levels.

Please consider our school district's need for this grant and the good that you can provide our students and community.

If you have any concerns or questions, please contact me at 760-767-3262.
Thank you,

Andrew R. Macuga
Owner/Operator
Carlee's
760-767-3262

Borrego Springs Middle/High School
1315 Palm Canyon Drive • 2281 Diegueno Road Borrego Springs, CA 92004
(760) 767-5335 • Fax (760) 767-5999

January 18, 2022

To Whom it May Concern:

I am writing this letter in support of the grant proposal for a turf-conversion of our football/soccer field located at Borrego Springs High School. I speak on behalf of the students who attend our schools, as a parent, and community member.

Living in a small, economically disadvantaged, isolated rural town, the schools are a center of activity for the community. Our fields and track are open for use by everyone. Many afternoons you will see families or groups of friends playing soccer, football, or just hanging out on our fields. Keeping our field in safe condition for student and community use is a strain on our resources; water and man power.

Currently, to keep our field in playable condition our maintenance staff has to water the field for hours, multiple times a day. Many times we can't water it enough to keep it green. We have been working as a community for years to reduce the amount of water consumption to keep our aquifer healthy and plentiful for future generations to continue to thrive here. Already our school site has switched to xeriscape in many areas to help conserve water; by having a turf conversion, the amount of water that could be saved would be astonishing and only benefit our community's future to stay viable.

Thank you,

Victoria Baay, M. Ed.
Principal
Borrego Springs Middle/High School
(760) 767-5335

January 18, 2022

To Whom it May Concern:

We are two athlete-students at Borrego Springs High School. Currently our football field is in poor condition with a combination of live grass, dead grass, dirt, and holes. As athletes and community members that use the field, it is not always the safest conditions. To fix the dead patches and to keep the field green and in playable condition, copious amounts of water has to be used daily. With an unstable field, due to watering issues, and the environment, athletes and community members have been hurt multiple times in the past.

With a turf conversion of the field our school and community would benefit from having an always ready surface to use. A new field would attract more community members without having the risk of injuries. Living in our desert community we know how important water conservation water is; the turf conversion would drastically decrease our water usage from our aquifer and help protect our community for future generations to come.

Thank you,

Miriam Hernandez, 10th Grade Student

Yair Fuentes, 10th Grade Student

Project Information Submittal Form

Project Submitter/Owner: **Borrego Valley Endowment Fund**

Project Name: Augmented Environmental Monitoring to Support Sustainable Groundwater Management

Contact Information

Name: **David Garmon**
Phone: **(619) 787-9121**
Email: **jdgarmon@mac.com**
Address: **230 W. Palm St., San Diego, CA 92103**

Project Summary

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

A Program Supporting Water Conservation

This program will provide essential data to the Borrego Watermaster, water management planners, and the affected citizens of the region during the implementation of the Groundwater Management Plan for the Borrego Subbasin. This program focuses on providing two datasets that fill gaps in planning for, and assessing the consequences of, sustainable groundwater management. The first is real time data to monitor the local weather and hydroclimate, including impacts of climate change, on the water economy of the Borrego Subbasin. The second data set is essential to assess the environmental impact of the Watermaster's one unavoidable Management Action—the fallowing of thousands of acres of agricultural lands.

The first data set will be generated by augmenting Borrego's existing hydroclimatic monitoring system with two new stations in the eastern sub-basin that fill the spatial gaps (and therefore data gaps) of the current system. The second data set focuses exclusively on the air quality impacts of fallowing agricultural lands. This data will be generated by a new network of particulate matter (PM2.5/PM10) sensors inside and around the perimeter of the area to be fallowed, and in residential and business areas of the community.

1) **Addressing Hydroclimatic Monitoring Data Gap**

Currently the University of California, Irvine (UCI) manages seven hydroclimate automatic weather stations (HCAWS) located in the western and central portions of the Subbasin. These stations have continuously operated, except for occasional planned and unplanned maintenance, since 2016. The data collected include precipitation, relative humidity, soil moisture (at 6 levels to 30 cm depth), temperature, wind speed and direction, and, at five of the stations, particulate matter (PM). These data have been used in ecosystem restoration planning, air quality studies, to

estimate the surface water budget and evapotranspiration in the Subbasin for the development of the GMP.

Going forward during the implementation of the GMP, the understanding of the water budget of the Subbasin becomes an even more critical factor in determining the speed with which the GMP must be implemented, if we are to avoid undesirable consequences described in the SGMA legislation. For example, if we do not have a sufficient understanding of the entire Subbasin's changing water economy, the implementation of our GMP could be too slow, thereby incurring undesirable consequences such as substantive, unbearable cost increases of potable water to this SDAC community and the destruction of beneficial users of water such as the Groundwater Dependent Ecosystems.

The current HCAWS provide an incomplete understanding of the water economy of the entire Subbasin due to their limited number and clustering in the western and central Subbasin. This Project would address the data gap in by placing an additional two stations in the eastern Subbasin at locations (e.g., near the Borrego sink) TBD by this project. The expansion proposed by this Project would help address the spatial gaps (and therefore the data gaps) of the current system and would thereby provide the Watermaster Board with a more complete picture of the water economy in the Subbasin as it iterates the speed and refines the implementation of the GMP against emerging undesirable consequences.

The effects of Climate Change are already measurable in the Subbasin and are likely to impact the rate of implementation of the GMP. Data from the new eastern Subbasin HCAWS sites, combined with reliable and ongoing data from the extant sites, will enable water-use policymakers to discern the trajectories of surface hydroclimate, and discern their influence on the Subbasin's water economy as the Watermaster Board attempts to implement the GMP in a changing environment.

2) Addressing Data Gap of the Environmental Impact of Fallowing

The second data set created by this Project will fill an existing data gap and will thereby enable the Watermaster to objectively assess/measure the environmental impact of its one Management Action that is the only pathway to sustainable yield—the fallowing of thousands of acres of agricultural land. This dataset focuses on the air quality impacts of fallowing agricultural lands. These data will be measured by two new, complementary networks of PM monitors, comprised of accurate yet relatively inexpensive off-the-shelf commercial sensors (nephelometers) manufactured by PurpleAir.com.

The remote network will be arranged around and inside the perimeter of the area to be fallowed. Each of the ~20 stations will include a PA-II-SD sensor with an SD card to record data, mounted on a mast with solar-powered batteries. Data from this network will reveal the emissions of fine and coarse mode dust emitted from the region, and any changes in emission spatiotemporal

patterns and amounts before, during, and after the fallowing to reduce groundwater withdrawal. The neighborhood network will be installed at local residences and businesses volunteered by their owners, sited as feasible to optimize coverage of where residents live and work. Each of these ~30 stations will comprise a PA-II sensors connected to the Internet via built-in WiFi. This network will measure the exposure of inhabitants to PM.

The following are examples of existing data gaps. There are currently no data to suggest which parcels of land, when fallowed, will be more or less impactful on PM Air Quality (PMAQ) in the Subbasin. There are currently no data upon which to predict the impact on PMAQ of fallowing 40 acres vs 400. There are currently no data available to assess the impact on PMAQ of efforts to rehabilitate fallowed land, or any such mitigation efforts. Without such data the Watermaster Board would essentially be flying blind in terms of assessing or mitigating the largest environmental impact their unavoidable water conservation efforts will produce in the Subbasin.

Filling these data gaps requires expanding the current research-level Air Quality Monitoring Program 1) to focus in and around the areas that will be fallowed, and 2) to provide a more robust and granular assessment capability of the air breathed by Borrego Springs residents and visitors. This expansion of the existing nascent program will be accomplished by surrounding the current agricultural lands with ~50 off-the-shelf PurpleAir sensors expected to cost in total less than one-third of the cost of the two new HCAWS stations.

The data from these new PM networks will be combined with the data from the five extant and two new research grade PM sensors at the HCAWS stations. The data will be analyzed by the UCI scientists who constructed the current Program. Armed with such data, the Watermaster Board will be able to "see" the environmental impact of their one essential Management Action: fallowing. They will, with the development of the Program over time, be able to make predictions as to the impact on Air Quality that fallowing a specific number of acres in a specific location might have. And they will have the tools to assess the success, or lack thereof, of mitigation efforts that will be necessary to keep the Air Quality of the Subbasin within allowable EPA standards.

Data Sharing

Filling the data gaps described above will generate streams of real time, continuous data that will be shared with the Water Data Library. There are currently no continuous data streams from southern California, making these data the first.

In addition to making the data available to the Water Data Library, this project will engage the wider Borrego Community during annual presentations/discussions of ongoing results. These annual meetings will be hosted by/at the SBABDRD and will center on educating interested citizens on the relationships among sustainability, hydroclimate, and local air quality. These annual meetings will be extended to include age-appropriate presentations to local K-12 students. Additionally, there will be ongoing outreach to the community in the form of monthly, remote Q&A meetings focused on current trajectories of subbasin hydroclimate and air quality.

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.

We can provide maps of the current location of the weather stations, which is also where the current nephelometers are. We can provide maps of the locations of the new weather stations and new nephelometers.

The entire Subbasin benefits from filling the data gaps that will allow more informed implementation of the GMP, both in terms of the rate of implementation depending upon changes in the Subbasin's water economy and in terms of the environmental impact of the one necessary Management Action–fallowing.

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?

Hydroclimatic Data Gap

One of the two existential water threats in the Borrego Subbasin is that the GMP is not implemented quickly enough to avoid the undesirable outcome of depleting the upper aquifer such that the only remaining water comes from the middle or lower aquifer. Water from these lower strata would have to be treated at a cost that would be difficult to bear for this SDAC. Filling a data gap that allows for more accurate assessments of the Subbasin's water economy will enable to Watermaster to be better informed as it makes its iterative decision each year about the rate at which water reductions are required of pumpers. The current rate of 5% per year for the first 10 years was an arbitrary estimate consistent with the time frame required by SGMA. It was not based on precise data about the Borrego Subbasin. This fact makes it critically important that the Borrego Watermaster have the tools to make the best assessment it can as to the changing water economy of the Subbasin during the remaining 18 years of water consumption rampdown. Filling the data gap of the existing hydroclimate monitoring capability provides the Watermaster a better tool to make those determinations.

Management Action (Fallowing) Impact Data Gap

Filling the looming data gaps in the current Air Quality Monitoring Program supports the essential water conservation Management Action in the Borrego Subbasin. Water conservation is the only pathway for the Borrego Subbasin to achieve sustainable yield. Sufficient water conservation in the Borrego Subbasin can only be achieved through the fallowing vast swaths of agricultural lands. *This fact is demonstrated by the fact that elimination of all municipal water use and all recreational water use would not get the Borrego Subbasin even halfway to the SGMA-mandated 75% reduction in water consumption in the Subbasin.* Whereas, if all agricultural lands in the Borrego Subbasin were fallowed today, we would be at, or very near to, sustainable yield.

The largest environmental impact, and community health impact, of fallowing agricultural lands in a desert environment is the effect that such a Management Action will have on Air Quality. Fallowed agricultural land is highly erodible and vulnerable to the frequent high-wind events of the desert. It would be ironic indeed if the Borrego Subbasin were to reach sustainable water yield only to find it had become uninhabitable due to degradation of its Air Quality.

In keeping with the goal of SGMA, the goal of the Borrego GMP is to have a healthy, viable, sustainable community at the end of the water reduction period, not a ghost town that has achieved sustainable yield through Management Actions not commensurate with maintaining a healthy community. This Project provides the Watermaster with tools to assess, manage, and mitigate the largest environmental impacts resulting from its one unavoidable water conservation Management Action —the fallowing of agricultural land.

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

The goals of this Project are two-fold. First, to ensure that the Watermaster has the best data available as it makes the iterative, annual decisions about the rate at which the GMP is implemented so as to avoid undesirable outcomes. This goal will be accomplished by filling the data gaps of the existing hydroclimate monitoring system as described above.

The second goal is to ensure that achieving sustainable yield is not accomplished at the cost of Air Quality degredation in a Severely Disadvantaged Community. This goal will be accomplished by creating a tool that will be used by the Waterboard to assess, manage, and mitigate the environmental impacts of its most significant Management Action. In order to fill the current data gaps, the Project will deploy an array of Air Monitoring devices around the agricultural area and throughout the community of Borrego Springs. The resulting data will be collected and analyzed by scientists at the University of California, Irvine. The results of this analysis will then be made available to the decision makers at the Borrego Watermaster Board.

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?

The quantifiable benefits of this Project are two-fold: first the filling of the hydroclimate data gaps will enhance the understanding of the water economy of the Subbasin, which is the critical driver of determining the rate of the water consumption rampdown, i.e. water conservation, under the GMP. This benefit will be quantified by the use of the data in making estimates of evapotranspiration across the Subbasin–a critical aspect of understanding the water economy of the Subbasin.

Second, the filling of data gaps associated with water conservation achieved by fallowing will enable this essential Management Action to proceed in a manner consistent with the SGMA goal of retaining a healthy, thriving community throughout the rampdown process. This benefit will be quantified in regularly published Air Quality reports and through specific information gleaned about the fallowing process's impact on Air Quality and about the effectiveness, or lack thereof, of specific mitigation efforts pursued as a result of fallowing. All of these benefits will be reported in terms of Clean Air Standards as promulgated by the US Environmental Protection Agency.

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.

My recollection is that DWR determined Borrego Springs to be an SDAC in 2017. It is no secret that DAC's and SDAC's have born the brunt of degraded air quality throughout California. If we do not develop the ability to measure, and therefore manage, the impacts of the one Management Action that will get Borrego Springs to sustainable yield, i.e. fallowing, Borrego Springs is in danger of becoming just one more SDAC whose air quality was sacrificed to "progress."

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.

No known nexus.

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?

No known nexus.

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?

No known nexus.

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 only water supply, present and future, is the aquifer in the Borrego Subbasin. The goal of the GMP is to reduce current water consumption to conserve that water supply for today and for future generations. If our rampdown is not fast enough and we begin drawing water from the Middle and Lower Aquifer, that water will have to be treated at a cost that is beyond what this SDAC is capable of. Now, at the beginning of the process of ramping down water consumption, the speed of the rampdown is an arbitrary assumption. We do not know how close we are to drawing water from the Middle Aquifer. Thus the crucial importance of monitoring as closely as possible the water economy of the entire Subbasin. If, through filling the data gaps in the hydroclimatic monitoring and the improved understanding of the water economy that this provides, the Watermaster has a better understanding of "where we are " in the decline of the aquifer, it can adjust the speed with which water conservation occurs.

Climate Change makes the iterative decisions of the Watermaster described above more difficult and more uncertain. Climate change is already nipping at the heels of the Borrego Subbasin as evidenced by increased record high temperatures and changes in average annual rainfall. More distressingly, a 2021 study from the Huxman lab at the University of California, Irvine has documented a 40% decrease in desert vegetation over the last 34 years due to a warming climate. These environmental changes support the aggressive timetable established by the GMP/Stipulated Agreement for reducing water consumption in the Subbasin by 50% over the next 8 years. This Project supports this aggressive timetable by giving the Watermaster Board the tools it needs to monitor and mitigate the Management Actions that it must take in the immediate future and that are complicated by the uncertainty introduced by Climate Change.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task a1 – Overall Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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: Invoices and necessary documentation

Task a2 – Supervise Environmental Monitoring and Assessment

Recruit, hire, and mentor Project Scientist at UC Irvine who will perform ongoing, day-to-day analysis and evaluation of hydroclimate and air quality datasets. Liaise with management at UC Steele-Burnand Anza Borrego Desert Research Center (SBABDRC) to prioritize efforts of SBABDRC staff. Liaise with BVEF to plan annual outreach days to discuss results of environmental monitoring with interested residents. Supervise data quality evaluation and assessment and attribution of primary contributors to particulate air quality degradation and exposure.

Budget Category (b): Planning/Design/Environmental

Task b1 – Planning/design of New Hydroclimate Automatic Weather Stations (HCAWS)

Identify two logical and feasible sites for new HCAWS that fill spatial data-gaps in eastern Borrego Springs subbasin. Negotiate and obtain required permits from landowners/authorities (BWD, ABDSP, etc.). Evaluate necessity of concrete base or fencing to protect planned sites from erosion/vandalism. Obtain quotes for two new HCAWS substantially equivalent to existing HCAWS.

Deliverables: Siting permits, assembly plans, and equipment quotes for two new HCAWS.

Task b2. – Planning/design of New Particulate Matter Network

Identify sites for new PM network comprising a remote (solar-powered) network in and around land to be fallowed and a wired (utility-powered) network in residential and business areas of Borrego Springs. Optimize siting to sample PM at least every 30 degrees around fallowing perimeter (remote network, PurpleAir PA-II-SD sensors), and to monitor neighborhood-level exposure to PM (wired network, PurpleAir PA-II sensors). Prototype remote network sensor (mast, panel, batter, PA-II-SD, optional anemometer). Negotiate and obtain required permits from landowners/authorities (BWD, ABDSP, etc) for remote network sites. Develop application for sub-contracted installation of wired sensors in residential/business locations. Solicit quotes from local licensed/bonded electricians to install wired PM network.

Deliverables: Siting permits, prototype installation plans, and equipment quotes for ~20 remote PM monitoring site/sensors and ~30 wired PM monitoring sites/sensors. Quotes from potential suppliers on volume-discount purchase of masts, panels, PA-II sensors and optional anemometer). Quotes from electrical sub-contractors for per-residence installation of wired PM sensors.

Task n. – CEQA

[Description]

Deliverables: [ex: Notice of Determination]

Budget Category (c): Construction/Implementation

Task c1. – Install two new HCAWS stations

Order, receive, assemble, test, install, and re-test two new HCAWS stations in the eastern Borrego subbasin. Components include rain gauge, soil moisture sensors, pressure/temperature/RH seasons, PM2.5/10/TSP monitor, solar panel, and spare parts to ensure uninterrupted operation over 3 years.

Deliverables: Real-time data hydroclimate data received from two new HCAWS stations

Task c2. – Install remote PM network

Order, receive, assemble, test, install and re-test up to 20 (off-the-shelf) PurpleAir PA-II-SD PM monitors in the region to be fallowed. With no local power lines, these monitors will be mast-mounted, powered by a battery linked to a solar panel on the mast with the monitor.

Deliverables: Near real-time PM data (up to two week delay) retrieved from SD cards on 12-20 remote PM sensors

Task c3. – Install wired PM network

Order, receive, install and test up to 30 (off-the-shelf) PurpleAir PA-II PM monitors in residential/business sites volunteered by owners. These monitors will be installed by sub-contracted electrician

Deliverables: Real-time PM data received from 20-30 neighborhood sensors.

Budget Category (d): Monitoring/Assessment

Task d1. – Assess/Evaluate Hydroclimate Automatic Weather Station Data

Review and organize existing and augmented HCAWS data and incorporate into DWR's Water Data Library and UCI's high-speed server http://sbabdrc.ess.uci.edu. Establish hydroclimate baselines (means and variability) for precipitation, soil moisture, RH, evaporation, winds, and dust concentration at existing and augmented sites. Compare ongoing measurements to climate and pre-fallowing norms and assess for statistically significant changes. Analyze data from new PM network to infer dust emissions from fallowed area, and quantify neighborhood-level spatio-temporal patterns of citizen exposure to PM. Quality control data by inspection for anomalies and instrument drift. Schedule sensors for periodic re-calibration (at the manufacturer) and intercalibration (in the field) against traceable standards. Improve user-friendliness of remotely accessible data, and respond to requests for hydroclimate data from other participants in SGMA implementation and from the broader community. Learn and improve hydroclimate modeling techniques necessary to estimate surface water budgets and attribute PM sources in future climate scenarios in support of SGM planning and implementation.

Deliverables: Real-time data and regularly updated, quality-controlled, environmental data from 7 HCAWS stations and new PM network publicly available via UCI server, PurpleAir.com map, and archived at Water Data Library. Summary reports on derived statistics including climate signals and attainment of EPA standards.

Task d2. – Inspect/Maintain Stations/Sensors, Collect Remote PM Network Data

Inspect 9 HCAWS stations and remote PM network at least monthly to identify maintenance needs and retrieve PM data from remote network SD cards. Upload SD data to UCI and PurpleAir servers. Refurbish parts as necessary and replace degraded batteries in Year 3.

Deliverable: Real time and near-real time data with fewest possible temporal gaps

Budget Category (e): Interested Parties Outreach/Education

Task e1. – Annual Outreach Workshops and Monthly Office Hours

Engage wider Borrego community in the project during annual presentations/discussions of ongoing results hosted by/at SBABDRC. Educate interested citizens on the relationships among sustainability, hydroclimate, and local air quality. Offer age-appropriate annual presentations to local K-12 schools. Host monthly remote Q&A "office hours" on recent trajectories of subbasin hydroclimate and air quality.

Deliverables: Monthly remote and annual in-person face-time Q&A with UCI scientists monitoring and evaluating subbasin hydroclimate and air quality.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**				
	Task a1. Project Management	24200	0	24200	0
	Task a2. Supervise Environ. Monitoring/Assessment	25000	0	25000	0
(b)	**Planning/Design/Environmental**				
	Task b1. Plan/Design HCAWS	25000	0	25000	0
	Task b2. Plan/Design PM networks	25000	0	25000	0
(c)	**Construction/Implementation**				
	Task c1. Install two HCAWS	105000	0	105000	0
	Task c2. Install remote PM network	15000	0	15000	0
	Task c3. Install wired PM network	20000	0	20000	0
(d)	**Monitoring/Assessment**				
	Task d1. Assess/evaluate HCAWS+PM data	305000	0	305000	0
	Task d2. Ongoing inspection, maintenance, remote data retrieval	80000	0	80000	0

(e)	**Interested Parties Outreach/Public Education**	5000	0	5000	0
	Task e1. Annual outreach workshop, monthly office hours				
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	629200	0	629200	0

* List sources of Local Cost Share funding:

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

	Categories	**Start Date** (Earliest Start Date)	**End Date** (Latest End Date)
(a)	**Project Administration**	**01/01/2023**	**12/31/2025**
	Task a1. Project Management	01/01/2023	12/31/2025
	Task a2. Supervise Environ. Monitoring/Assessment	01/01/2023	12/31/2025
(b)	**Planning/Design/Environmental**	**01/01/2023**	**06/30/2023**
	Task b1. Plan/Design new HCAWS stations	01/01/2023	06/30/2023
	Task b2. Plan/Design new PM networks	01/01/2023	06/30/2023
(c)	**Construction/Implementation**	**07/01/2023**	**12/31/2023**
	Task c1. Install two HCAWS stations	07/01/2023	12/31/2023
	Task c2. Install remote PM network	07/01/2023	12/31/2023
	Task c3. Install wired PM network	07/01/2023	12/31/2023
(d)	**Monitoring/Assessment**	**01/01/2023**	**12/31/2025**
	Task d1. Assess/evaluate HCAWS+PM data	01/01/2023	12/31/2025
	Task d2. Ongoing inspection, maintenance, remote data retrieval	07/01/2023	12/31/2025
(e)	**Interested Parties Outreach/Public Education**	**07/01/2023**	**09/30/2025**
	Task e1. Annual outreach workshop, monthly office hours	07/01/2023	09/30/2025

Project Information Submittal Form

Project Submitter/Owner: Borrego Valley Stewardship Council

Project Name: Borrego Springs Community Education, Empowerment, & Visioning for a Resilient Community Strategy

Contact Information

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Project Summary

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

The Borrego Valley Stewardship Council will convene groundwater stakeholders to develop plans, programs and projects to improve watershed health. The BVSC will: (1) establish a network of partners across the basin for community visioning and integrated planning; (2) support education and engagement with the Community Plan Update and Watermaster Board (WMB) implementation of the groundwater Settlement Agreement and Groundwater Management Plan (GMP); and (3) ensure natural resource and ecological priorities are aligned and protected across the region's primary planning documents.

This project will educate and engage vulnerable and marginalized community members in Borrego Springs, empowering them to develop solutions for adapting to climate impacts including constrained water resources, warming temperatures, air quality deterioration, and indirect effects on public health, the economy, and the environment. Environmental justice issues (access to decision-making, the Human Right to Water, public health threats, and limited economic opportunity) will be addressed by catalyzing community action to address Borrego Springs' environmental vulnerabilities. The community vision, resilient community strategy, and educational series will improve community capacity to adapt to and mitigate climate change-related events including extreme heat and pervasive drought.

Borrego Valley Stewardship Council (BVSC) — a cross-sectoral partnership between local CBOs, public agencies, civic groups, businesses, and citizens — formed in response to community-identified water, climate, and development challenges. LGC is a key partner in building organizational capacity, and this project will enable LGC to support BVSC in cultivating partnerships with county offices and marginalized subsets of the community to address a lack of cohesive vision and resilience strategies in the face of future water shortages.

Borrego must reduce its water use by 76% while preventing further air quality impairments (e.g., high particulates from off-road vehicles and land fallowing) and ensuring economic viability as an ecotourism hub and local jobs center (currently water-intensive agriculture and golf).

Project objectives and results:

- Educate the community about water and climate-related risks to Borrego Springs ecosystems and economy;
- Cultivate informed and equipped community water and climate ambassadors to engage with local decision makers; and
- Develop a cohesive vision and community resilience strategy with broad community support to ensure a resilient and prosperous Borrego Springs for future generations.

This project will encourage participation of community members experiencing the greatest climate vulnerability to foster their sense of belonging and ensure their interests are addressed. Spanish-speaking outreach workers (Promotoras) will engage Spanish-speaking residents, particularly students and parents, and identify opportunities to address climate change from an intercultural perspective. Educational series content will be community-driven, and may include: understanding water costs, community impacts of climate change, green jobs, and more. Participation in the educational series may foster interest among young people to pursue jobs in the sustainability or climate resilience sector, including potential internships with the Borrego Water District or Watermaster Board to help prevent water and air pollution through effective groundwater management. Community visioning and resilience strategies will help protect human health and the environment by promoting actions and policies that prioritize a climate-resilient Borrego. Borrego Springs can serve as a model for a just and resilient transition in the face of socio-economic and environmental disruption.

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.

This Colorado desert watershed encompasses the unique geography and biodiversity of Anza-Borrego Desert State Park, and the 100% groundwater-dependent unincorporated and "severely disadvantaged" Borrego Springs community. Necessary 76% water use reductions will significantly impact the agriculture and recreation-reliant economy of this "economically distressed area" of 2,328 year-round (50% lower than County and State MHI; 11.5% below federal poverty line) and ~1,000 seasonal residents it supports. Borrego is an aging community (median age; 53.8 years, nearly 60% of population 55 or older) with a large (20%) Hispanic and Latinx population. This small and under-resourced community is the only services provider to the 500,000 annual visitors to ABDSP.

Borrego Springs is completely isolated in northeastern San Diego County, surrounded on three sides by mountains and the Borrego Badlands, within the Colorado Desert. Three main features contribute to Borrego's water resources: 1) catchment area (or watershed itself), 2) valley floor, and 3) groundwater basin. Coyote Canyon is the most significant drainage feature; the groundwater basin underlying the valley floor is fed by rainfall in the watershed, as surface runoff in intermittent streams entering the valley floor through canyons (~16 in/yr. in the mountains, 3-6 in/yr. on the valley floor, most of which evaporates).

Borrego subbasin is identified as "high priority" and in "critical overdraft" under SGMA. The proposed project will support implementation of the basin's Settlement Agreement (submitted to DWR as an alternative to a GSP) by establishing a constituency for the Watermaster Board, and coordinating efforts that collectively advance goals of the basin's Groundwater Management Plan, Community Plan, and other watershed priorities. Projected 76% reductions in water use to achieve sustainability will have significant impacts on local water affordability and economic development, as well as water quality, ecosystem function, habitat, and air quality. The newly-appointed Watermaster Board is providing limited leadership in the Borrego basin, but coordinated efforts to protect and enhance the watershed as a whole is still lacking. Misaligned planning and management activities at the county level continue to hinder progress. The watershed is not included in any Regional Water Management Groups or IRWM plans. This is a pivotal moment for the BVSC to integrate Borrego's major governing documents and shape Borrego's future.

The entire Borrego Springs community and basin will benefit from this project, in addition to the 500,000 annual visitors to Anza-Borrego Desert State Park (ABDSP).

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 BVSC will support SGMA implementation and Borrego's Settlement Agreement (SA; submitted to DWR as an alternative to a GSP 1/31/2020), by establishing a constituency for the WMB (which will fulfill the responsibilities of a local groundwater sustainability agency). The BVSC will help identify, prioritize, and implement watershed initiatives supporting Borrego's GMP "projects and management actions" to minimize undesirable results (Ch4). The BVSC will "help reverse chronic lowering of groundwater levels" by enhancing water conservation programs; promoting water use efficiency; providing watershed education; identifying land-use policy changes to protect recharge areas, and exploring projects for water capture, reuse, and recharge. The BVSC will prevent "reductions in groundwater storage" by working with the WMB to identify subsidence-prone areas, land-uses that accelerate subsidence, and uses that slow subsidence, and propose land-use designations for the CP Update. The BVSC will help prevent "negative impacts to groundwater quality" by improving overall watershed health and recharge water quality through education programs and restoration projects. The BVSC will identify priority areas for protection, infill development, and stormwater capture, treatment, and reuse projects for the CP update. Recharge projects will prevent groundwater contamination from poor quality water. The BVSC will support GMP reporting and evaluation of watershed conditions (Ch 5) through coordinated citizen science initiatives to track measurable objectives against established minimum thresholds (Ch 3).

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

Project Goal: To increase the resilience and vitality of the Borrego Valley by coordinating collaborative visioning and improvement efforts for the Borrego Springs Watershed and Borrego Groundwater Basin.

Objective 1: Establish a network of local and regional partners across the watershed and groundwater basin critical to community visioning and integrated planning.

Objective 2: Support broad education and engagement with the Community Plan update process and newly-formed Watermaster Board for implementation of the groundwater stipulation agreement and groundwater management plan.

Objective 3: Characterize the watershed/basin and related community values to ensure natural resource and ecological priorities are aligned and adequately protected across both policies (Community Plan and GMP).

Objective 4: Coordinate with Watermaster Board & GMP to ensure community values and ecological priorities are aligned and adequately protected through GMP implementation.

Objective 5: Coordinate with Sponsor Group & Community Plan Update to ensure natural resource and ecological priorities are aligned and adequately protected in the Community Plan Update.

The BVSC will improve coordination of watershed and groundwater efforts, ensuring community priorities are elevated, and enhancing watershed and groundwater conditions. Specifically, BVSC will impact: habitat protection and restoration, water affordability, outdoor access, air quality, economic development, climate resilience, and community capacity. Capacity building outcomes will include: new and strengthened connections across sectors, increased collaboration opportunities; improved understanding of state and local government structures, policies, economic development, and socioeconomic and environmental factors; an informed network of watershed/basin leaders to advocate for improvements; a robust communication network of interested parties; and protocols for ongoing community engagement. The most important benefit of the BVSC will be a community vision for Borrego Springs to achieve resilience, which will in turn support the 500,000 annual visitors to ABDSP.

Water-related education and engagement initiatives will improve community understanding of socio-ecological systems, increasing their ability to engage in watershed/basin-wide planning and decision-making, and ensuring disadvantaged community member concerns are addressed. It will also create college and career pathways for students interested in pursuing natural resources, interpretive, or engineering professions. The BVSC network will facilitate collaboration across agencies, organizations, and community representatives, ensuring community resources are used efficiently. Engagement will include leadership development and paid “promotoras” positions to solicit input for the Community Plan Update and Watermaster Board from hard to reach community groups. Watershed and groundwater improvement projects identified by the BVSC and GMP “projects and management actions” will expand paid technical and green jobs for local residents, and will bring in contract jobs that contribute to local food and lodging businesses, supporting local community members.

For more specific enumeration of how each objective will be met, please see the Work Plan below.

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?

Objective 1 Quantifiable Benefits: ED hired and onboarded within 6 months of grant award; Organizational governance and procedures established within 6 months of grant award; At least 20, and up to 50, partners and/or cooperators identified and invited to participate in watershed and basin-wide coordination efforts; At least 5 funding opportunities identified and two funding proposals submitted during three-year grant period.

Objective 2 Quantifiable Benefits: At least 10, and up to 30 outreach channels (and audiences) identified, with relevant media, scheduling or publication/release timing, and contact information; At least 5, and up to 20, education and outreach providers identified in the watershed/basin; and invited to coordinate education and outreach efforts; Draft stakeholder engagement plan within 3 months of hiring ED; Final stakeholder engagement plan within 6 months of hiring ED; stakeholder engagement plan implemented within 1 year of hiring ED; At least 3, and up to 10, educational activities cross-promoted through the water network.

Objective 3 Quantifiable Benefits: Draft white paper within 3 months of grant award; Final white paper within 6 months of grant award; Feedback on summary white paper from at least 5 water network partners and/or cooperators; Meeting participation and/or survey results from at least 50 community members; Draft potential projects within 12 months of hiring ED; ID at least 5 water network partners or cooperators for potential project implementation; seek community feedback and prioritize potential projects within 18 months of hiring ED; Draft monitoring and evaluation protocols within 18 months of hiring ED; Feedback on draft from at least 5 water network partners or collaborators; Final monitoring and evaluation protocols within 24 months of hiring ED.

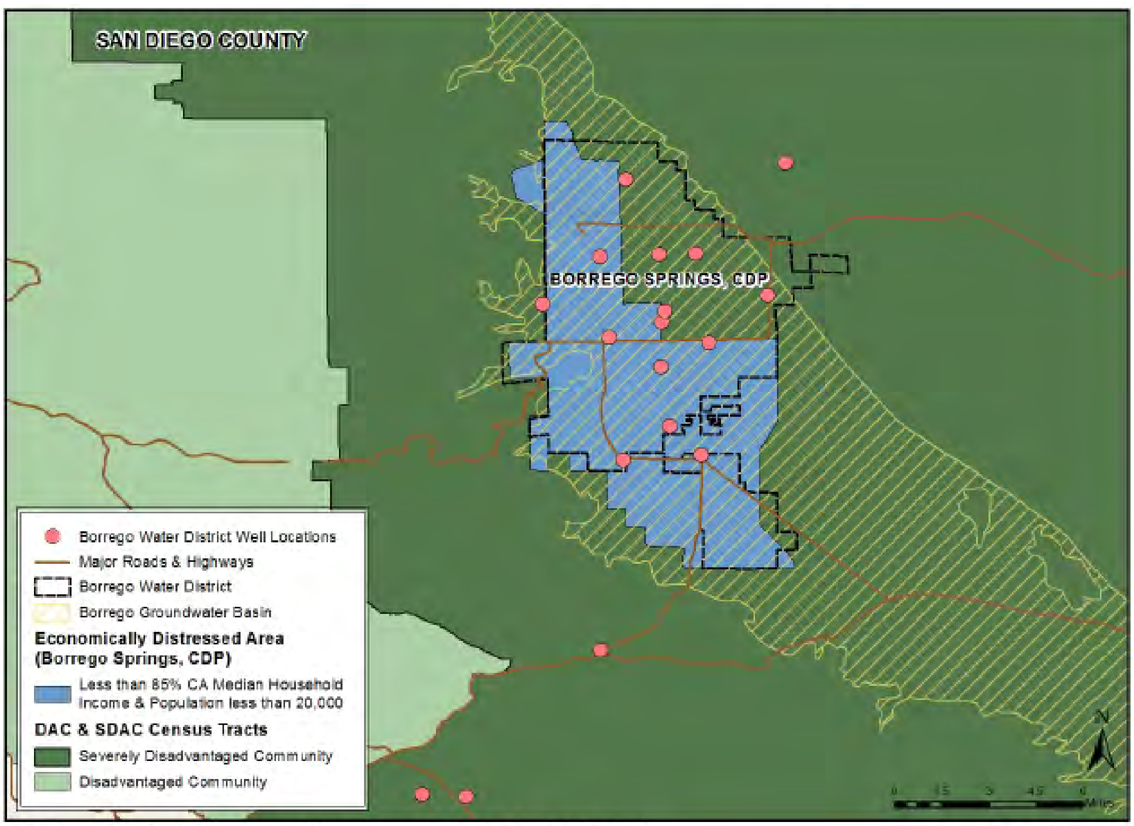
Objective 4 Quantifiable Benefits: Draft criteria for GMP analysis within 12 months of hiring ED; Feedback on draft from at least 5 water network partners or collaborators; Final criteria for GMP analysis within 18 months of hiring ED; Draft memorandum of analysis within 3 months of finalizing criteria; Feedback on draft from at least 5 water coordination partners or cooperators; Final memorandum within 6 months of finalizing criteria; Draft memorandum of recommendations within 3 months of completing analysis; Feedback on draft from at least 5 water coordination partners or collaborators; Final recommendations within 9 months of completing analysis; Request time on agenda for appropriate upcoming Watermaster Board meeting (once recommendations are completed); Confirm time on agenda for upcoming meeting; Draft presentation for Watermaster Board two weeks prior to meeting; Present recommendations to Watermaster Board during meeting.

Objective 5 Quantifiable Benefits: Attend at least 3 and up to 15 Sponsor Group or public meetings over the 3-year grant term; Host or co-host at least 1 and up to 3 community engagement efforts over the 3-year grant term; Draft recommendations within 12 months of hiring ED; Feedback from at least 5 water coordination partners or cooperators; Final recommendations within 24 months of hiring ED; Request time on agenda for next appropriate Sponsor Group or public meeting (once recommendations are finalized); Confirm time on agenda for scheduled meeting; Present to Sponsor Group (and possibly the public); Collect feedback from attendees within 2 weeks of meeting.

Project goals will be evaluated using qualitative and quantitative methods for community based participatory action research, systems change theory, and basic principles of water stewardship. Please see work plan for specific measures to evaluate each project objective. The Watermaster Board will closely monitor and evaluate benefits relevant to the five undesirable results, in accordance with the GMP and SGMA guidelines. Anza Borrego Desert State Park will measure and report on land area protected, habitat restored, and invasive species removal; Borrego Valley Stewardship Council (BVSC) will coordinate measuring and reporting from Anza Borrego Foundation (ABF), Anza Borrego Desert Natural History Association (ABDNHA), and Tubb Canyon Desert Conservancy (TCDC). The BVSC will establish metrics for evaluating progress toward measurable objectives set in the Community Plan and annual reporting to BVSC signatories.

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.

The project will serve the entirety of Borrego Springs, which is a Severely Disadvantaged Community (SDAC) and Economically Distressed Area (EDA) with an aging (median age 53.8 years, ~60% of population 55 or older) and large (20%) Hispanic and Latinx population. Borrego's median household income (MHI, $34,046) is nearly 50% less than San Diego County ($66,529) and California ($63,783). Roughly 11.5% of full-time residents live below the federal poverty line ($24,3000/household). The census tract is designated USDA "Low Income, Low Access," and 89% of Borrego Springs Unified School District (BSUSD) students qualify for free or reduced-price lunch. Borrego ranks in the highest CalEnviroScreen 3.0 percentile for drinking water and unemployment; and second or third highest for ozone, cleanups, groundwater threats, solid waste, and poverty.



data sources: CA Department of Water Resources, SanGIS/SANDAG

Map from Borrego Water District, 2017

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.

Borrego Springs is 100% groundwater-dependent. Borrego's GMP projects a 76% water use reduction need to achieve resilience. Depending on how these reductions are achieved, some residents may be at risk from localized drawdown.

The BVSC will establish a constituency for the Watermaster Board, which is tasked with managing the Borrego basin in coordination with Borrego Water District. Direct engagement with Borregans reliant on the aquifer as their sole water supply will elevate local priorities and concerns to the Watermaster Board and BWD. Water education programming will build capacity of local residents at risk from these impacts to better self-advocate. Through alignment with the Community Plan Update, the BVSC will influence land-use planning and decision-making to prioritize and protect groundwater recharge for both groundwater quality and supply reliability. The community visioning process will identify potential projects to further improve water quality.

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?

Borrego subbasin has relatively high water quality (meets California drinking water standards without treatment), but pockets contaminated with arsenic, sulfate, and nitrates above drinking water standards must be carefully monitored. Depending on how the Watermaster board and Borrego Water District determine to cover costs associated with achieving resilience, some residents may also be at risk for water affordability impacts due to increased rates. BVSC activities will improve overall watershed health, protecting groundwater quality from potential degradation, ensuring the drinking water supply remains safe. By creating a constituency for the WMB, the BVSC will protect drinking water access for the community's most at-risk residents when 76% demand reductions threaten to drive up water costs.

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?

Borrego ranks in the highest CalEnviroScreen 3.0 percentile for drinking water. Despite the Borrego subbasin having relatively high water quality (meets California drinking water standards without treatment), pockets contaminated with arsenic, sulfate, and nitrates above drinking water standards must be carefully monitored. BVSC activities will improve overall watershed health, protect groundwater quality from potential degradation, and ensure the drinking water supply remains safe.

As previously noted, Borrego's median household income (MHI, $34,046) is nearly 50% less than San Diego County ($66,529) and California ($63,783). Roughly 11.5% of full-time residents live below the federal poverty line ($24,3000/household). The census tract is designated USDA "Low Income, Low Access," and 89% of Borrego Springs Unified School District (BSUSD) students qualify for free or reduced-price lunch. Borrego ranks in the highest CalEnviroScreen 3.0 percentile for drinking water and unemployment. While water rates may be relatively affordable for the majority of Borregans, the community's lowest income residents experience heightened risk for water supply and sanitation cost burden. They are also highly vulnerable to water shutoffs due to unpaid bills. The BVSC will directly engage Borrego's lower-income and financially burdened residents to ensure their needs and interests are addressed in all decision-making. By creating a constituency for the Watermaster Board, the BVSC will protect drinking water access for the community's most at-risk residents when 76% demand reductions threaten to drive up water costs.

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 BVSC will address climate-related risks to the region's water supply and water infrastructure by enhancing the overall climate resilience of the community more broadly. BVSC's engagement, capacity building, and community visioning efforts will help protect valued natural features (e.g., clean air, dark night skies, scenic mountain vistas, and flora and fauna) from the triple threat of: economic development, water use reductions, and climate change impacts. The BVSC-led community visioning process will identify ecosystem characteristics for protection in the Community Plan update (e.g., increasing local business and nightlife for economic development will be reconciled with preserving Borrego's "dark sky community" designation). The BVSC will coordinate air and water quality monitoring and wetland restoration initiatives between local groups. The BVSC will combat the cycle of individual farm retirement ushering in invasive species colonization and watershed degradation from more intensive uses by working with the individual land owners, the Watermaster Board, Sponsor Group, and Anza Borrego Foundation to align land-use change with other watershed benefits (e.g., Community Plan land designations as high agricultural, ecological, commercial value, or low-value priority for land-use transition, and incentivize compatible land-use for each; establishing guidelines for land transition to minimize negative impacts; negotiated land and water transfers). The BVSC will increase invasive species removal (range of species and land area) by leveraging resources from multiple organizations currently leading independent initiatives (e.g., ABDSP, ABDNHA, TCDC; tamarisk, Sahara mustard, fountain grass, volutaria). The BVSC will ensure ecosystem restoration projects improve habitat for desert bighorn sheep, Least Bell's vireo, and other protected species, and advocate for strong ecosystem protections in the Community Update and GMP implementation. Water quality changes will be closely monitored as GMP implementation leads to shifts in well locations, new infrastructure, and possible water treatment. Proposed activities are consistent with resource protection activities and regulations, as identified in the ABDSP Master Plan, Borrego Basin GMP, Borrego Community Plan, San Diego County Air Pollution Control District, and San Diego Regional Water Quality Control Board. The BVSC will coordinate with the Borrego Village Association (BVA), which is pursuing a basin-wide carbon footprint, to ensure carbon sequestration opportunities are identified and proposed for the Community Plan Update. Climate-induced long-term drought poses significant risk to this 100% groundwater-dependent community. The BVSC will help its community achieve the only path to a resilient future through community visioning and the Community Plan Update: sustainably managing its aquifer and rebuilding its economy within its water supply reality.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

This budget category consists of one task, Project Management. Costs will include personnel time necessary to administer the project, such as executing sub awards, progress reports, invoices, and correspondence with DWR and BWD. Some minimal direct expenses associated with printing, copying, and mailing necessary documents will also be included.

Task 1 – Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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: Invoices and necessary documentation

Budget Category (b): Planning/Design/Environmental

This budget category will entail conducting necessary background research and preliminary activities to develop and prepare BVSC for implementing the community visioning process as well as formalizing the local water engagement network. Costs will include personnel time to conduct research, support BVSC staffing, develop outreach plan, and design the community vision process. Direct expenses will include local advertising, job posting fees, printing, mailing, and other multimedia expenses.

Task 2. – Planning

Establish a network of local and regional partners across the watershed critical to community visioning and integrated planning.

Task 2a: Recruit, hire, and onboard new part-time employee to serve as watershed coordinator under BVSC community visioning process.

Task 2b: Design a voluntary community visioning process that maximizes diverse community participation and elevates the voices of marginalized groups.

Task 2c: Establish a network of local and regional partners across the watershed/basin critical to community visioning and integrated planning.

Task 2d: Pursue additional funding opportunities to support ongoing water coordination activities.

Deliverables:

2a: Contract for Administrative Support Staff for 3 years, with position description and scope of work for ¼ FTE to fulfill role of "BVSC Coordinator."

2b: Community visioning process schedule, engagement arc, and engagement plan.

2c: Database with contact information, roles, and levels of engagement for each party.

2d: List or database of potential funding options, submitted applications.

Budget Category (c): Construction/Implementation

This budget category includes conducting the voluntary community visioning process and coordinating between key planning and governing bodies, the Sponsor Group and Watermaster Board. Personnel costs associated with this budget category will include research, data collection and analysis, communications, community engagement, coordination, and meeting facilitation. Direct expenses will include meeting and event supplies, local event promotion and advertising, data acquisition fees, and telecommunications fees.

Task 3. – Watershed/Basin Characterization

Characterize the watershed/basin and related community values to ensure natural resource and ecological priorities are aligned and adequately protected across both policies (Community Plan and GMP).

Task 3a: Conduct desktop research and literature review of the region's natural resources / environmental (watershed) characteristics, community priorities, planning, and governance.

Task 3b: Support community visioning process and the development of community priorities for the watershed

Task 3c: Identify and prioritize community watershed vision, which will include potential watershed restoration or management projects.

Task 3d: Develop monitoring and evaluation protocols for the community watershed vision and priorities.

Deliverables:

3a: Summary white paper of watershed characterization

3b: Summary notes from community meeting(s); and/or analysis of community survey results.

3c: Prioritized list of potential projects, with descriptions of each project, prioritization criteria, implementation partners, funding sources, and timelines.

3d: Document of watershed monitoring and evaluation protocols with identified responsible parties and timelines for monitoring and evaluation.

Task 4. – Watermaster Board Coordination

Coordinate with Watermaster Board & GMP to ensure community values and ecological priorities are aligned and adequately protected through GMP implementation.

Task 4a: Establish criteria for evaluating the impacts to the watershed from implementation of the GMP

Task 4b: Conduct GMP analysis for alignment with community watershed vision and potential impacts to the watershed.

Task 4c: Develop recommendations for implementing community watershed vision, priorities, and watershed protections.

Task 4d: Share analysis results and recommendations with Watermaster Board.

Deliverables:

4a: Document of criteria for analyzing GMP for watershed impacts

4b: Memorandum outlining potential impacts to the watershed from GMP implementation.

4c: Memorandum of recommendations to the Watermaster Board to prevent negative impacts to the watershed from GMP implementation.

4d: Presentation of recommendations to Watermaster Board during at least 1 public meeting; Feedback on presentation from attendees.

Task 5. – Sponsor Group Coordination

Coordinate with Sponsor Group & Community Plan Update to ensure natural resource and ecological priorities are aligned and adequately protected in the Community Plan Update.

Task 5a: Actively participate in Sponsor Group-driven Community Plan Update Process

Task 5b: Coordinate with Sponsor Group community engagement efforts to ensure adequate community input on watershed priorities and impacts (including protections for and/or improvements of environmental conditions and natural resources management).

Task 5c: Develop recommendations for environmental and natural resources components to be included in the Community Plan, including: potential policy changes, community initiatives, projects, activities, monitoring, evaluation, and education.

Task 5d: Share recommendations (or supplemental plan) with Sponsor Group and Community Plan update process.

Deliverables:

5a: List of Sponsor Group public meeting dates attended.

5b: Materials from community meetings and/or outreach efforts hosted or co-hosted by watershed coordination group (e.g., fliers, meeting agendas, presentations, other educational materials or documents).

5c: Memorandum of recommendations for Community Plan.

5d: Presentation to Sponsor Group and Community Plan Update participants; Summary of feedback on presentation.

Budget Category (d): Monitoring/Assessment

This budget category is not applicable to the proposed project.

Task n. – [Title]

[Description]

Budget Category (e): Interested Parties Outreach/Education

This budget category comprises the bulk of the project, consisting of direct community engagement to ensure alignment between the community-developed vision and the county-driven Community Plan update process as well as implementation of the Water Academy educational and leadership development program. Personnel costs associated with this budget category will include curriculum and content development, direct community outreach, broad community engagement, meeting facilitation, and program evaluation. Direct expenses associated with this budget category will include meeting and event supplies, participant stipends, telecommunications, promotional materials, local advertising expenses, printing, and mailing.

Task 6. – Community Plan Update

Support broad education and engagement with the Community Plan update process and newly-formed Watermaster Board for implementation of the groundwater stipulation agreement and groundwater management plan.

Task 6a: Compile a database of all outreach channels across the watershed.

Task 6b: Establish a network of relevant watershed education, engagement, and outreach providers.

Task 6c: Create a stakeholder and community engagement plan for basin/watershed coordination and education.

Task 6d: Coordinate and help promote local groundwater and watershed-related education efforts between providers and venues across the region.

Deliverables:

6a: Database of outreach channels, including contact info, media, outreach methods, and relevant timing information.

6b: Established system for regular communication, coordination, cross-promotion, and support between watershed education and outreach providers.

6c: Stakeholder and community engagement plan (including community outreach needs of the WMB, potential processes, tools, and resources).

6d: Regularly maintained calendar of coordinated education efforts.

Task 7. – Groundwater Training & Leadership Development Program

Recruit and retain community members to participate in the community resilience training and leadership development program (provided in English and Spanish) and evaluate their knowledge acquisition.

Task 7a: Develop curriculum for groundwater training and leadership development program.

Task 7b: Conduct extensive and purposeful direct engagement to target populations for recruiting program participants.

Task 7c: Implement the Water Academy Program in order to develop a constituency of informed local leaders to help shape the future of groundwater management and land-use decision-making in Borrego Springs.

Task 7d: Evaluate effectiveness of program implementation, identify areas of improvement, and adapt program structure and content for future iterations.

Deliverables:

7a: Curriculum outlines and materials

7b: Roster of participants

7c: Session agendas

7d: Evaluation survey results

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**				
	Task 1. Project Management	*$20,000*	*$5,000*	*$25,000*	*20%*
(b)	**Planning/ Design/ Environmental**				
	Task 2. Planning	*$30,000*	*$5,000*	*$35,000*	*14%*
(c)	**Construction/Implementation**				
	Task 3. Watershed/Basin Characterization	*$25,000*	*$10,000*	*$35,000*	*29%*
	Task 4. Watermaster Board Coordination	*$15,000*	*$10,000*	*$25,000*	*40%*
	Task 5. Sponsor Group Coordination	*$15,000*	*$10,000*	*$25,000*	*40%*
(d)	**Monitoring/Assessment**				
	N/a				
(e)	**Interested Parties Outreach/Public Education**				
	Task 6. Community Plan Update	*$50,000*	*$20,000*	*$70,000*	*33%*
	Task 7. Groundwater Training & Leadership Development	*$45,000*		*$45,000*	

	Program				
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	*$200,000*	*$60,000*	$260,000	*176%*

* List sources of Local Cost Share funding:

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**04/01/2022**	**06/30/2024**
	Task 1. Project Management	04/01/2022	06/30/2024
(b)	**Planning/Design/Environmental**	**05/01/2022**	**05/31/2024**
	Task 2. Planning	05/01/0222	05/31/2023
(c)	**Construction/Implementation**	**10/01/2022**	**06/30/2024**
	Task 3. Watershed/Basin Characterization	04/01/2022	06/30/2023
	Task 4. Watermaster Board Coordination	05/01/2022	06/30/2024
	Task 5. Sponsor Group Coordination	05/01/2022	06/30/2024
(d)	**Monitoring/Assessment**	**01/01/2023**	**10/01/2023**
	N/a		
(e)	**Interested Parties Outreach/Public Education**	**04/01/2022**	**06/30/2024**
	Task 6. Community Plan Update	04/01/2022	06/30/2024

Christmas Circle Community Park
700 Palm Canyon Drive,
Borrego Springs, California

Project Review Committee **January 18, 2022**
Prop 68

Enclosed is the application for a grant to establish a water reduction program for Christmas Circle Community Park located in the center of Borrego Springs. The park is a 3 acre facility serving thousand of visitors a year. It also provides the venue for all of the major outdoor community events. Borrego Springs has a large population of low income families that do not have adequate air conditioning for the hot summer months, so they take advantage of the cooler park environment for their evening activities.

A review of the irrigation system and the soil condition has revealed the cause for the high water consumption required to maintain the park landscape. The irrigation system is 40 plus years old

The park is a non-profit 501c3 facility. The funding to maintain the park each year is solely from grants and donations and has not been adequate to fund an irrigation upgrade or soil improvement program.

The grant request will result in a program that will meet our water reduction goals and reduce cost so those funds can be used to continue the soil enhancement program in the years following his program.

Jim Wilson, President, Christmas Circle Community Park
Board of Directors

A California Nonprofit Public Benefit 501 C3 Corporation Federal ID #91-1774674
P.O. Box 1025 Borrego Springs, California, 92004

Christmas Circle Community Park

Water Reduction and Implementation Plan and Schedule

Establish a project account to track all grant expenditures

Issue payments for project milestones set forth in the project plan

Provide accounting reports of progress payments

Prepare and submit a final expenditure report and project completion

Establish a plan and schedule to include a start date working back from the first day of Borrego Days

Establish a work plan with start and completion dates for the irrigation upgrade, the application of the Site One soil improvement program and the application the sand leveling and reseeding

To coordinate the various activities a meeting will be conducted with the Park Management, Fredericks Construction, Site One Landscape Supply and Fuentes Landscape Service To establish the sequence and schedule for each function of the program

Additional cost of the program;

> **Administration, Book Keeping, Payments and Reporting $1,000**
>
> **Application of Site One soil enhancing and water reduction material $ 3,600 (3 years)**

Project Information Submittal Form

Project Submitter/Owner: Jim Wilson, President, Board of Directors, 501c3

Project Name: Christmas Circle Community Park, Water Reduction Program

Contact Information

Name: Jim Wilson
Phone: 760-289-9595
Email: jimw366@gmail.com
Address: PO Box 1152 Borrego Springs, CA. 92004

Project Summary

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

The project contains the application of soil treating material that reduces water requirements. LASCO Carbon Pro is a nutrient optimizing system that harnesses the power of carbon, plant-microbe interactions and organic soil processes to maximize plant health and nutrition. There are five soil conditioning products in the plan four of which are applied one time a year and one applied twice a year.

The application of sand will reduce the uneven condition of the surface that creates an unsafe environment.

The irrigation upgrade to reduce water consumption will include:;

The new system will feature the following:

• Moisture Sensors - When the sensor detects dry conditions prior to the normal watering cycle, the cycle is allowed. When the soil is above the set moisture threshhold, the water cycle is suspended to avoid over-watering.

• Rainbird RSD Rain Sensor - To be attached to building. This system automatically turns off the sprinkler system when it rains.

• Flow monitor - 2" PVC - allows precise and accurate flow monitoring and setting of operating ranges that will shut off irrigation system in case of a break in the waterline.

• Sprinkler Heads - Rainbird 5000 series - with a 35' radius, with interchangeable nozzles for water savings capability and an output of 3.5 gallons/minute.

• Modular Smart Controller

We will set all moisture parameters and develop an efficient seasonal watering schedule with existing maintenance personnel.

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

The Park is located in the center of the business area of Borrego Springs. The Park contains mature trees and grass and has not had soil treatment as a result the lack of water retention requires frequent irrigation.

Christmas Circle Community Park is the only grassed shaded park in the Borrego Valley and draws thousands of visitors a year contributing to the local economy. There is a large number of low income resident families that lack adequate Air conditioning utilize the cooler Park environment during the hot summer months.

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?

This project is not named in the GMP. To meet the intent of the GMP the Board of Directors have reviewed a number of options to reduce water consumption and until the current system was proposed there was nothing that would not degrade the environment of the park.

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

The plan is to continue with the system for 3 years and evaluate the progress every 6 months to include all the conditions that occur from the winter to summer months. Coordination with the material supplier will continue so changes to the process can be made if needed

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?

Each month the water consumption will be compared to the past 5 year average for that same month.

It is estimated, based on experience in other locations, it is estimated the consumption rate will be reduced by an excess of 30 %

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.

As a Severely Disadvantaged community it is essential provide a safe clean well maintained facility to improve their quality of life. The current plan is designed to meet the requirement of the GSP without degrading the facility

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.

N/A

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?

N/A

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?

N/A

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 number of well maintained trees in the park contribute to CARBON REDUCTIONS

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverable s for each task.

Add additional tasks and subtasks as needed to provide a detailed work plan. Some examples and suggested language have been provided.

Budget Category (a): Project Administration

Task 1 – Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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.

Deliverable s: Invoices and necessary documentation

Budget Category (b): Planning/Design/Environmental

Task n. – Planning

[Description]Material will be applied in September as part of the reseeding processes. The application will conform to the recommendations of the material supplier (Site One). Soil samples will be taken every 6 months by the supplier to verify quanities of material applied are correct.

Deliverable: [ex: 100% Plans and Specifications]

Task n. – CEQA

[Description]

Deliverable s: [ex: Notice of Determination]

Budget Category (c): Construction/Implementation

Task n. – Construction Management

Activities necessary to secure a contractor and award the contract include: develop bid documents, prepare advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed. {Add applicable detail}

Deliverable s: Bids were solicited from local qualified sources. Christmas Circle Community Park management will over see the irrigation upgrade, the soil conditioning and coordinate with BWD as needed.

Task n. – [Title]

[Description]Upgrade the irrigation system accommodate reductions resulting from applications of soil treatment

Budget Category (d): Monitoring/Assessment

Task n. – [Title]

[Description]Progress payment reports will be made for CCCP and BWD's review, CCCP will monitor project schedule performance to assure completion date support for planned community events.

Budget Category (e): Interested Parties Outreach/Education

Task n. – [Title]

[Description]A display board will be installed to describe the water reduction program (irrigation upgrade, soil conditioning) including displaying the results in graph form. This will provide an informational source for other entities to develop programs to reduce water consumption without degrading their facilities.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan.

Category
(a)
(b)
(c)
(d)
Requested Grant Amount
Local Cost Share: Non-State Fund Source*
Total Cost
% Local Cost Share (Col(b))/(Col(c))

(a)
Project Administration

Establish account for total project. Manage and make payment as work is accomplished. Develop and submit final report of project cost
$1000
Task 1. 01

(b)
Planning/Design/Environmental

Task n. 01 training of maintenance contractor, design monitoring and evaluation

$500

(c)
Construction/Implementation

Task n. 02
Irrigation upgrade $105,350

Application sand for soil conditioning and soil treatment material
Application of sand $27,568

Application of soil conditioning material
Material ($7,327, 1 year, $21,981, 3 years) Labor ($ 1,200 1 year, $ 3,600 3 years)
Upgrade i

(d)
Monitoring/Assessment

Task n. 03 Monthly report of water usage 3 years (contract book keeper) $400
Cost report of progress payments to BWD/ Park Management

(e)
Interested Parties Outreach/Public Education

Task n. 04 Install a display board in the park showing information on soil treatment, irrigation monitoring and charting water reduction.

$1000

(f)
Grand Total (Sum rows (a) through (d) for each column)

Total project (3 years) $ 161,399

*** List sources of Local Cost Share funding:**

N/A

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
	Irrigation update	8-1-2022	
	Soil Preparation, Sanding and Seeding	9-7-2022	
(a)	**Project Administration**	**07/18/22**	**09/29/22**
	Task n. 01 Training	09/01/22	09/02/22

(b)	**Planning/Design/Environmental**		
	Task n. 01	07/25/22	07/29/22
(c)	**Construction/Implementation**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task n. 02	08/01/22	08/31/22
(d)	**Monitoring/Assessment**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task n. 03	09/30/22	09/01/23
(e)	**Interested Parties Outreach/Public Education**	**MM/DD/YYYY**	**MM/DD/YYYY**
	Task n. 04	09/30/22	08/31/25

Project Information Submittal Form

Project Submitter/Owner: de Anza Desert Country Club – Non-Profit
Project Name: Water Conservation Plan

Contact Information

Name: Ramien Shalizi
Phone: 714-475-8025
Email: GM@deanzacountryclub.com
Address: 509 Catarina Dr. #120, Borrego Springs, CA 92004

Overview

de Anza Desert Club is a non-privately owned, 501C (7) non-profit organization established in 1957 in Borrego Springs California. We intend to reduce our annual water consumption to expedite our commitment to reducing pumping from our critically over-drafted basin through a three-pronged approach:

1. Turf reduction & conversion to low water consumptive indigenous landscaping – Not Yet Funded
2. Overhaul of the irrigation system for efficiency and control – Not Yet Funded
3. Renovation of the irrigation lakes (liners & shores) - Funded

The property has 146.76 acres of consumptive turf area which we intend to convert into 93.2 acres of consumptive turf area complimented by 53.56 acres of indigenous low water consumptive landscaping and xeriscaping, thus conserving upwards of 345-acre feet of water annually. The turf reduction aspect will fast forward our conservation efforts by 9.25 years via completion of this portion of the overall conservation project within a 6-month period. The turf reduction would conserve over 3100-acre feet of water being pumped from our critically over drafted basin.

The irrigation overhaul project will allow better control and efficiency of the irrigation system. The lake renovation project will conserve 100–120-acre feet annually via replacement of its liner. This portion of the overall project will be funded by de Anza Desert Club.

All the acreage proposed in this conservation project is zoned in San Diego county's land use map as "Recreation". de Anza Desert Club lies on the historic San Juan Bautista trail and is utilized for wildlife viewing, recreation and outdoor experiences for adults and youth. In review of Proposition 68 Chapter 16 and the Outdoor Access Act of 2018 it is our interpretation that de Anza Desert Club is in alignment with the outlined definitions of "Park, Historical, Recreational" resources

Please refer to: Exhibit 1 San Diego County Land Use Map

Although the property is a golf course it also serves as a habitat for protected indigenous wildlife including Big Horn Sheep, Coyote, reptiles, fish and over 90 species of birds.

Our irrigation lakes are often utilized for emergency fire-fighting efforts by Cal Fire. Our grounds serve as parkland to the local community and visitors alike.

In addition to the aforementioned aspects, de Anza Desert Club is an employer of 40 local residents, and we are focused on enriching the economy of our underrepresented community through not only the creation jobs and advancement opportunities for our employees and their families but also in our commitment in working with vendors and service providers locally in our village first and secondly in neighboring areas in our county and always in our Golden State whenever possible. Additionally, many local organizations such as the Boys & Girls Club depend on de Anza Desert Club for their fund-raising efforts.

de Anza's effort to conserve water via our proposed project can be a shining example of BWD's leadership and commitment in successful and impactful administration of the SGMA.

Project Summary

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

de Anza Desert Club's baseline allocation is 957 Acre Feet Annually. This BPA is based on 148.56 acres comprised of 146.76 turf at 6.45-acre feet per acre annually 1.80 acres of pond at 5.75-acre feet annually. Our combined Groundwater consumptive rate per our 2021 BPA is 6.44-acre feet per acre annually. Our 2021 Assessment was based on 873-acre feet with a carryover credit of 74-acre feet

Please refer to: Exhibit 2 San Diego County SGMA BPA

We propose to reduce our water consumptive turf area to 93.2 acres for recreation. Play area includes 18 holes which include tee boxes, fairway, greens, and primary rough areas. Practice areas include includes our driving range, chipping areas and putting green. This will reduce our water consumptive area to 95 acres when factoring the 1.8 acres of pond as specified in the county's BPA letter. Xeriscaping/Native Hybrid will replace the 53.56 acres of turf at 0.75-acre feet consumptive factor totaling 40-acre feet. Overall, 39.25% reduction. At our current groundwater consumptive use factor of 6.44-acre feet/acre annually we project this endeavor to reduce our annual consumption by 345-acre feet annually which results in a reduction of 39.25% in a time span of 6 months (project duration) vs. 9.25 years based on 5% reduction per annum as currently ordered by the Stipulation of Adjudication judgement.

Please refer to: Exhibit 3 -Turf Reduction Drawings

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.

The location of the project is at de Anza Desert Club, 509 Catarina Dr. Borrego Springs, CA. APN140- 242-62-00, APN 140-261-01-00 and APN 140-264-08-00. The turf reduction is proposed throughout the golf course and will convert 53.56 acres throughout the current 146.76 acres of turf into indigenous desert landscaping. Currently all 146.76 acres are comprised of wall-to-wall turf grass with a county allocated consumptive rate of 6.2-acre feet of water annually. This purpose of this project is to remove turf grass around all 18 holes and any non-playable (out of bounds) areas referred to as the secondary rough. The areas where turf will be removed total 53.56 acres and will be converted to indigenous low water consumptive and xeriscaped areas that pay homage to the natural desert surroundings of Borrego Springs.

Please refer to: Exhibit 4 – Assessor's Parcel Data

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 purpose of this project is to reduce consumption of water and fast track the water reduction mandate set forth by the GMP wherein all pumpers of the Borrego basin are required to reduce water consumption/pumping by 70+% by the year 2040 at a reduction rate of 5% of base line allocation per year per the court ordered adjudication managed by the Borrego Water Master Board.

The reduction of our water consumptive turf area and fast forward our conservation goal by 9+ years via completion of a 6-month turf reduction project. Our consumption would decrease by 345-acre feet annually.

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

The goal of this project is to reduce consumption of water and fast track the water reduction mandate set forth by the GMP wherein all pumpers of the Borrego basin are required to reduce water consumption/pumping by 70+% by the year 2040 at a reduction rate of 5% of base line allocation per year per the court ordered adjudication managed by the Borrego Water Master Board.

To achieve our goal, we are asking the committee to approve our request for funding through this SGMA grant program. de Anza is not owned by its membership and cannot impose assessments on its members to fund this project. All funding for de Anza's Desert Club's projects and regular operations are funded through revenue that the club generates and voluntary member contributions.

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?

The reduction of our water consumptive turf area and fast forward our conservation goal by 9+ years via completion of a 6-month turf reduction project. This would bring our water consumption to 539 acre-feet annually by 2023, which is our pumping allocation goal for the year 2031 under the current adjudication plan of 5% reduction per year. Our consumption would decrease by 345- acre feet annually. The cumulative amount of water conserved over the next 9 years would be equivalent to 3100 acre-feet

Please refer to: Exhibit 5 - Water Reduction Matrix

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.

de Anza Desert Club is an employer of 40 local residents, and we are focused on enriching the economy of our underrepresented community through not only the creation jobs and advancement opportunities for our employees and their families but also in our commitment in working with vendors and service providers locally in our village first and secondly in neighboring areas in our county and always in our Golden State whenever possible.

de Anza is involved with almost every charitable organization in Borrego Springs and continues to hold fund-raising events for local organizations such as the Boys & Girls Club who was able to raise upwards of $90k two years in a row from their annual golf tournament at de Anza Desert Club depend on de Anza. De Anza Desert Club is also where the Borrego Springs youth golf team practice.

Our property also serves as a habitat for protected indigenous wildlife including Big Horn Sheep, Coyote, reptiles, fish and over 90 species of birds including waterfowl.

Our irrigation lakes are often utilized for emergency fire-fighting efforts by Cal Fire. Our grounds serve as parkland to the local community and visitors alike.

The land proposed in this conservation project is zoned in the county's planning map as "Recreation". In review of Proposition 68 and the Outdoor Access Act of 2018 is in alignment with the outlined definitions of "Park and Historical" resources.

Please refer to:

Exhibit 1: Borrego Springs Land Use Map

Exhibit 4: SD Assessor's Parcel Data

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.

The conservation of water that this project will achieve will help to ensure that the basin is less over-drafted per the reduction guidelines set forth by the GMP and managed by the Borrego Water Master.

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?

This project is intended for non-potable water which is pumper into our irrigation lakes for the purpose of irrigation only. However, conservation of water that this project will achieve will help to ensure that the basin is less over-drafted per the reduction guidelines set forth by the GMP and managed by the Borrego Water Master.

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?

Fast-tracking of our pumping ramp down will help ensure that sufficient groundwater is available in the future for all local needs, including the basic needs for 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.

Not applicable

Work Plan

Budget Category (a): Project Administration

Tasks – Project Management

- Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District.
- Prepare invoices 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: Invoices and necessary documentation

Budget Category (b): Planning/Design/Environmental

Tasks – Planning

- Draft initial renderings for areas to be converted
- Review and approve design
- Finalize budget and approve

Deliverables: Approved plans and budget

Budget Category (c): Construction/Implementation

Tasks – Construction Management

Activities necessary to secure a contractor and award the contract include:

- Develop bid documents, prepare advertisement, and contract documents for construction contract bidding.
- Conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.
- Contractors to obtain necessary permits.

Deliverables: Contractor(s) to obtain permits where necessary and commence construction.

Budget Category (d): Monitoring/Assessment

Tasks – Monitoring of work and Progress

- Monitor work to ensure high standard of work.
- Ensure that environmental concerns if any are addressed.
- Ensure that contractor(s) are adhering to the budget.
- Ensure that project is completed on time.

Deliverables: Complete project with a high standard and deliver the intended results and on time.

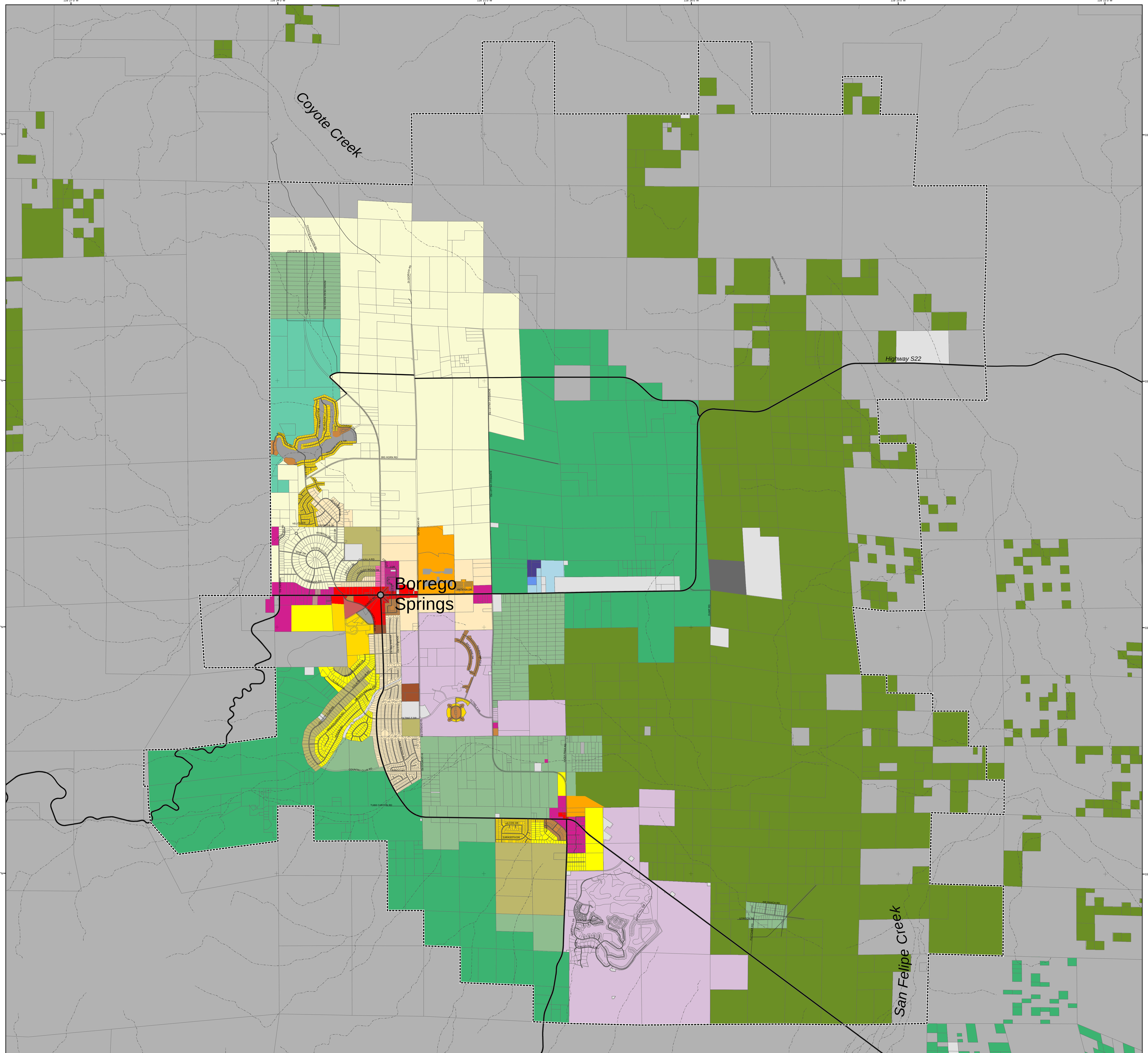
Budget

	Category	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source*	(c) Total Cost	(d) % Local Cost Share (Col(b))/(Col(c))
(a)	**Project Administration**	$115,003.26	de Anza Desert Club	$128,517.81	10.52%
			$13,514.55		
(b)	**Planning/Design/Environmental**	$204,698.06	de Anza Desert Club	$248,956.38	17.78%
			$44,258.32		
(c)	**Construction/Implementation**	$2,670,383.34	de Anza Desert Club	$2,963,988.83	9.91%
			$293,605.49		
(d)	**Monitoring/Assessment**				
(e)	**Interested Parties Outreach/Public Education**				
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	$2,990,084.65	$351,378.36	$3,341,463,02	10.52%

Please refer to: Exhibit 6 – Preliminary Construction Quotes

Schedule

	Categories	Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**05/16/2022**	**11/01/2022**
	Project Management		
(b)	**Planning/Design/Environmental**	**05/16/2022**	**6/15/2022**
	Drawings		
	Review and Approval		
	Permitting where necessary		
(c)	**Construction/Implementation**	**6/15/2022**	**11/16/2022**
	Commence construction	6/1/2022	
	Conclude Construction		**11/01/2022**
(d)	**Monitoring/Assessment**	**6/1/2022**	**11/1/2022**
	Manage project to ensure high standard of work		
	Ensure timely completion		
	Ensure environmental issues if any are addressed		



Borrego Springs

Subregional Group Area

General Plan Land Use Designations[1,2]

- Village Residential (VR-30)
- Village Residential (VR-24)
- Village Residential (VR-20)
- Village Residential (VR-15)
- Village Residential (VR-10.9)
- Village Residential (VR-7.3)
- Village Residential (VR-4.3)
- Village Residential (VR-2.9)
- Village Residential (VR-2)
- Semi-Rural Residential (SR-.5)
- Semi-Rural Residential (SR-1)
- Semi-Rural Residential (SR-2)
- Semi-Rural Residential (SR-4)
- Semi-Rural Residential (SR-10)
- Rural Lands (RL-20)
- Rural Lands (RL-40)
- Rural Lands (RL-80)
- Specific Plan Area[4]
- Office Professional[3]
- Neighborhood Commercial[3]
- General Commercial[3]
- Rural Commercial[3]
- Limited Impact Industrial[3]
- Medium Impact Industrial[3]
- High Impact Industrial[3]
- Village Core Mixed Use
- Public/Semi-Public Facilities[3]
- Public/Semi-Public Lands (Solid Waste Facility)
- Public Agency Lands
- Tribal Lands
- Open Space (Recreation)
- Open Space (Conservation)
- County Water Authority Boundary
- Planning Area Boundary

NOTES:

1: The type and intensity of development depicted on the map must be implemented in accordance with General Plan goals and policies and other County regulations which may further affect the type and intensity of use.

2: Land Use Element, Table LU-1 indicates the applicable Regional Category for each designation.

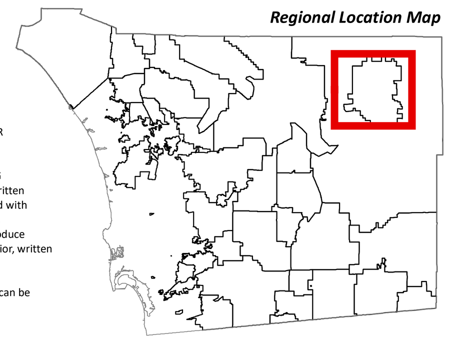
3: Maximum development intensity for non-residential designations is provided in Land Use Element, Table LU-1.

4: Refer to Community Plan for general land uses and intensities allowed in Specific Plan area (SPA).

Map Prepared By:

LUEG GIS
Land Use & Environment Group Geographic Information Service

Coordinates: NAD83 Feet



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20
ACRES

0 2,700 5,400 10,800
Feet

Map Date: 1/6/2017

County of San Diego

MARK WARDLAW
DIRECTOR

PLANNING & DEVELOPMENT SERVICES
5510 OVERLAND AVENUE, SUITE 310, SAN DIEGO, CA 92123
(858) 694-2962 • Fax (858) 694-2555
www.sdcounty.ca.gov/pds

KATHLEEN A. FLANNERY
ASSISTANT DIRECTOR

January 18, 2019

DE ANZA DESERT COUNTRY CLUB
509 CATARINA DRIVE
P O BOX 120
BORREGO SPRINGS CA, 92004

RE: SUSTAINABLE GROUNDWATER MANAGEMENT ACT – BASELINE PUMPING ALLOCATION FOR BORREGO VALLEY GROUNDWATER BASIN

Dear Owner Representative/Property Manager:

This letter serves as an update to your baseline pumping allocation previously detailed to you in a letter from the County of San Diego (County) dated July 6, 2018. The draft baseline allocation is being provided as part of the groundwater sustainability plan (GSP) being prepared for the Borrego Springs Subbasin of the Borrego Valley Basin. DUDEK, working with the County and Borrego Water District as the Groundwater Sustainability Agency, has updated the baseline pumping allocation methodology based on review of comments received from pumpers within the basin.

Your updated baseline pumping allocation for your property(ies) is summarized as follows:

Assessor Parcel Number	Property Name	Irrigation Type	Groundwater Consumptive Use Factor (acre-feet/acre)	Maximum Use Year	[1]Acres	[2]Baseline Pumping Allocation (acre-feet/year)
14024262 14018519 14026101 14026408	De Anza Country Club	Turf	6.45	2012	146.76	946.60
		Ponds	5.75	2012	1.80	10.35
				Total	**148.56**	**957**

[1]Attachment A presents aerial imagery of the farm which depicts the area of irrigation for each of your parcels.
[2]Attachment B describes the methodology used to develop the baseline pumping allocation.

Request for Comments: The baseline pumping allocations for the Subbasin will be finalized by the GSA on March 1, 2019. As a last opportunity, please provide any comments you may have on your baseline pumping allocation by February 8, 2019.

Please provide any comments regarding the draft baseline pumping methodology/results and/or groundwater pumping data via e-mail to PDS.Groundwater@sdcounty.ca.gov or via US Mail to:

County of San Diego
Planning & Development Services
Jim Bennett, Water Resources Manager
5510 Overland Avenue, Suite 310
San Diego, CA 92123

If you have any questions, please contact me at 858-694-3820.

Sincerely,

JIM BENNETT, Water Resources Manager
County of San Diego Planning & Development Services

Attachment A: Aerial Imagery, Irrigated Acres
Attachment B: Baseline Pumping Allocation Methodology

SOURCE: NAIP 2012; SANGIS 2018

DUDEK

0 400 800 Feet

Attachment A

Recreation Sector

Proposed Baseline Pumping Allocation

Attachment B: Baseline Pumping Allocation Methodology

The Groundwater Sustainability Plan (GSP) will include a baseline pumping allocation for each identified non-de minimis groundwater user in the Borrego Springs Subbasin (Subbasin). The "baseline pumping allocation" is defined as the amount of groundwater each pumper in the Subbasin is allocated prior to SGMA-mandated reductions. It is further defined as the verified maximum annual production, in acre-feet per year (AFY), for each well owner over the baseline pumping period. The baseline pumping period is the 5-year period from January 1, 2010 through December 31, 2014.

The County of San Diego (County) sent letters via U.S. Mail to each non-de minimis pumper in January 2018 and July 2018 with a request to provide the Groundwater Sustainability Agency (GSA) any historical groundwater production data or other information to help the GSA develop the baseline pumping allocation. Any data provided by pumpers was agreed to be kept confidential by the GSA to the maximum extent allowed by law including but not limited to Government Code 6254. Identified non-de minimis pumpers included one municipal pumper (Borrego Water District), 30 agricultural pumpers, 6 golf course pumpers, and 4 other pumpers (Anza-Borrego Desert State Park, Borrego Air Ranch Water Company, Borrego Springs Elementary School, and La Casa Del Zoro Resort and Spa [Figure 1]. In cases where the GSA could validate submitted historical groundwater data, the GSA used the data to develop the baseline pumping allocation.

After the GSA reviewed data submitted from pumpers, baseline pumping allocations utilizing validated historical production data were determined for Borrego Water District, Anza-Borrego Desert State Park (Palm Canyon), and one agricultural pumper. The GSA further determined for the Borrego Air Ranch Water Company (provides water to individual residences) that the baseline pumping allocation would be estimated based on a demand of 0.5 acre-feet per year for each residential unit. For all other pumpers, the GSA developed a water-use estimate approach (Evapotranspiration Method) discussed below. The County sent letters via U.S. Mail to each non-de minimis pumper in January 2019 to provide individual baseline pumping allocations. The baseline pumping allocations are summarized by water use sector categories as follows:

Table 1: Baseline Pumping Allocation by Sector

Water Use Sector	Baseline Pumping Allocation (acre-feet/year)
Agriculture	15,680
Recreation (Golf Courses)	4,050
Municipal (Borrego Water District)	2,122
Other Pumpers (Borrego Air Ranch, Anza-Borrego State Park, Casa Del Zoro Resort, and Borrego Elementary School)	63
Total	21,915

Existing Issued Water Credits: The Borrego Water District has a Demand Offset and Mitigation Water Credits Policy in which actively irrigated agricultural land can be permanently fallowed in exchange for water credits. The water credits issued through the

Attachment B: Baseline Pumping Allocation Methodology

Borrego Water District policy are under review by the GSA and may be converted to a Baseline Pumping Allocation at a later date.

EVAPOTRANSPIRATION METHOD

This approach includes the use of available aerial imagery to determine irrigated areas on each parcel, which is multiplied by a water use factor for each crop type. The following outlines the methodology for measuring total irrigated area and calculating the water use factor.

Area Irrigated: The area of irrigation was determined using ArcGIS (GIS), a computer based mapping and data analysis software. A 1:2,000 scale was used to create polygons of irrigated area over available aerial imagery from the National Agriculture Imagery Program (NAIP). Available years of aerial imagery included 2010, 2012, and 2014. The total area of each polygon was calculated using coordinate system NAD 1983, State Plane California VI, feet. One exception to this approach was for Rams Hill Golf Course, which was in not in full production during the baseline period of 2010 through 2014. Aerial imagery from 2017 was selected to capture full golf course irrigation.

Water Use Factor: The water use factor estimates the total applied groundwater lost through the evaporation from soil and transpiration from plants (evapotranspiration). These factors are specific to each vegetation type. Turf, ponds, palms, citrus, nursery, and potatoes were identified and considered for all sectors. Table 2 provides the water use factors for each irrigation use type.

Table 2: Water Use Factors

Use Type	Water Use Factor (Feet per Year)
Citrus	6.29
Date Palms[a]	7.74
Landscape (Decorative)	3.63
Landscape (Native)	2.76
Nursery	4.84
Palms (Ornamental)	4.03
Ponds[b]	5.75
Potatoes[c]	2.50
Turf	6.45

Source: Water Use Classification Landscape Species IV (WUCOLS IV), DWR 2018, Borrego Water District and County of San Diego 2013.
Notes:

a. Includes additional water required for a 30% cover crop (turf) that is irrigated in the understory of the date palms.
b. Applied to golf courses only. Surface water evaporation based on pan evaporation data from the Imperial Valley (Salton Sea Salinity Control Research Project U.S. Department of Interior 2004).
c. Approximately 2.5 acre-feet per acre are applied to potato fields per information obtained from the potato farmer in the Subbasin.

The water use factor is calculated using local station specific evapotranspiration (ETo), documented plant factors, and irrigation efficiency by irrigation type (Equation A). The

Attachment B: Baseline Pumping Allocation Methodology

water use factor for citrus and date palms also includes a factor for leaching (Equation B).

The equations below present the calculations used to determine the water use factor.

Equation A

$$Annual\ Water\ Use\ Factor = \frac{ETo * PF * 1\ Acre}{IE}$$

Equation B

$$Annual\ Water\ Use\ Factor = \left(\frac{ETo * PF * 1\ Acre}{IE} * CLF\right) + \left(\frac{ETo * PF * 1\ Acre}{IE}\right)$$

Where:

ETo = Reference Evapotranspiration (feet/year)
PF = Plant Factor
IE = Irrigation Efficiency
CLF = Citrus and Date Palms Leaching Factor

The following section describes the factors, which contribute to calculating the water use factors.

Reference Evapotranspiration: Reference evapotranspiration (ETo) is based on potential evapotranspiration (ET) from turf grass/alfalfa crop, which assumes a continuous source of moisture and does not consider summer plant dormancy. Therefore, ETo is an overestimation of actual ET, which varies with the vegetation type since some plants consume significantly more water than others. The ETo was determined from the California Irrigation Management Information System (CIMIS) station #207 located in Borrego Springs (DWR 2018). ETo was selected as 6.45 feet from 2010, which was the highest year during the 2010-2014 baseline period.

Table 3: 2010-2014 Reference Evapotranspiration (ETo) for Borrego Springs

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total (Inches)	Annual Total (Feet)
2010	2.41	3.21	8.81	9.84	8.58	9.22	9.51	9.11	7.44	4.36	2.88	1.98	77.35	**6.45**
2011	2.68	3.35	5.55	7.12	8.77	8.23	7.98	8.47	6.43	4.92	2.72	2.11	68.33	5.69
2012	2.85	3.56	5.33	6.77	7.66	9.47	8.77	8.04	7.09	5.04	3.2	2.23	70.01	5.83
2013	2.54	3.57	5.75	7.56	8.64	9.02	8.01	7.57	6.46	5.05	3	2.27	69.44	5.79
2014	2.67	3.66	5.94	7.23	8.66	9.13	8.83	8	6.97	4.55	3.14	1.58	70.36	5.86

Source: Borrego Springs CIMIS Station #207 (DWR 2018).

Plant Factor: The plant factor is the percentage of evapotranspiration needed to maintain acceptable health, appearance, and growth of a specific plant type. Plant factors were

Attachment B: Baseline Pumping Allocation Methodology

obtained from the Water Use Classification of Landscape Species (WUCOLS) database. Additionally, the County has relied on documented plant factors used for assigning water credits, which are outlined in the Memorandum of Agreement between the Borrego Water District and the County of San Diego Regarding Water Credits (MOA). The plant factor used in this report either was based on an average of recent WUCOLS data or documented County plant factors, whichever was higher. For Date Palms, the highest plant factor range was selected.

Table 4: Plant Factors

Type	Plant Factor (MOA)	Plant Factor Range (WUCOLS VI)	Proposed Plant Factor Used
Citrus	0.65[a]	0.4 - 0.6	0.65
Date Palms	N/A	0.4 – 0.6	0.6
Landscape (Decorative)	N/A	0.30 – 0.6	0.45
Landscape (Native)	N/A	>0.1 – 0.6	0.3
Nursery	0.6	0.4 - 0.6	0.6
Palms (Ornamental)	0.5	0.4 – 0.6	0.5
Potatoes	N/A	N/A[b]	N/A
Turf	0.63[c]	0.6 – 0.8	0.7

Source: BWD and County 2013, WUCOLS 2014, UCCE CDWR 2000
N/A = not available
a. Source: UC Cooperative Extension and Department of Water Resources, A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California, 2000
b. There is no plant factor for potatoes in WUCOLS VI. Approximately 2.5 acre-feet per acre are applied to potato fields per information obtained from the potato farmer in the Subbasin.
c. An average of warm and cool season.

Irrigation Efficiency: Irrigation efficiency is the amount of water supplied to a plant type compared to the amount consumed. Two common irrigation methods in the Subbasin are rotor and drip. The irrigation efficiency was determined from the Turf and Landscape Irrigation Best Management Practices prepared by the Water Management Committee of the Irrigation Association (Water Management Committee of the Irrigation Association 2004). Table 5 presents the irrigation efficiencies used by irrigation method.

Table 5: Irrigation Efficiency

Irrigation Method	Irrigation Efficiency
Rotor[a]	0.7
Drip[b]	0.8

Source: BWD and County 2013, Water Management Committee of the Irrigation Association 2004.
a. Rotor used for turf and decorative landscaping
b. Drip used for citrus, nursery, palms, and native landscaping

Salt Leaching: Leaching for salts is the overwatering of an area to flush excessive salts below the root zone. Leaching typically occurs in arid environments with high evapotranspiration rates. Because leaching is necessary for the health of citrus and date

Attachment B: Baseline Pumping Allocation Methodology

palms in the Subbasin, a leaching requirement of 20% of the water use factor is assumed based on optimal crop yield and source water with total dissolved solids (TDS) concentration of less than 1,000 mg/L.[1] The leaching requirement is provided in Equation C (Rhoades 1974; and Rhoades and Merrill 1976):

Equation C

$$LR = ECw / 5(ECe) - ECw$$

where:

LR = the minimum leaching requirement needed to control salts within the tolerance (ECe) of the crop with ordinary surface methods of irrigation
ECw =salinity of the applied irrigation water in deciSiemens per meter[2] (dS/m)
ECe = average soil salinity tolerated by the crop as measured on a soil saturation extract.

---

[1] A 20% leaching requirement for citrus and date palms is assumed taking into account typical Subbasin water quality (i.e. <1,000 mg/L TDS and average soil salinity tolerated by grapefruit of 1.8 dS/m for optimal yield (Ayers and Westcot 1985).

[2] Soil and water salinity is often measured by electrical conductivity (EC). A commonly used EC unit is deciSiemens per metre (dS/m). The ratio of total dissolved solids (TDS) to EC of various salt solutions ranges from 550 to 700 ppm per dS/m, depending on the compositions of the solutes in the water. Simple relationships are used to convert EC to TDS, or vice Versa:
TDS (mg/L or ppm) = EC (dS/m) x 640 (EC from 0.1 to 5 dS/m)
TDS (mg/L or ppm) = EC (dS/m) x 800 (EC > 5 dS/m)
Source University of California Salinity management: http://ucanr.edu/sites/Salinity/Salinity_Management/Salinity_Basics/Salinity_measurement_and_unit_conversions/

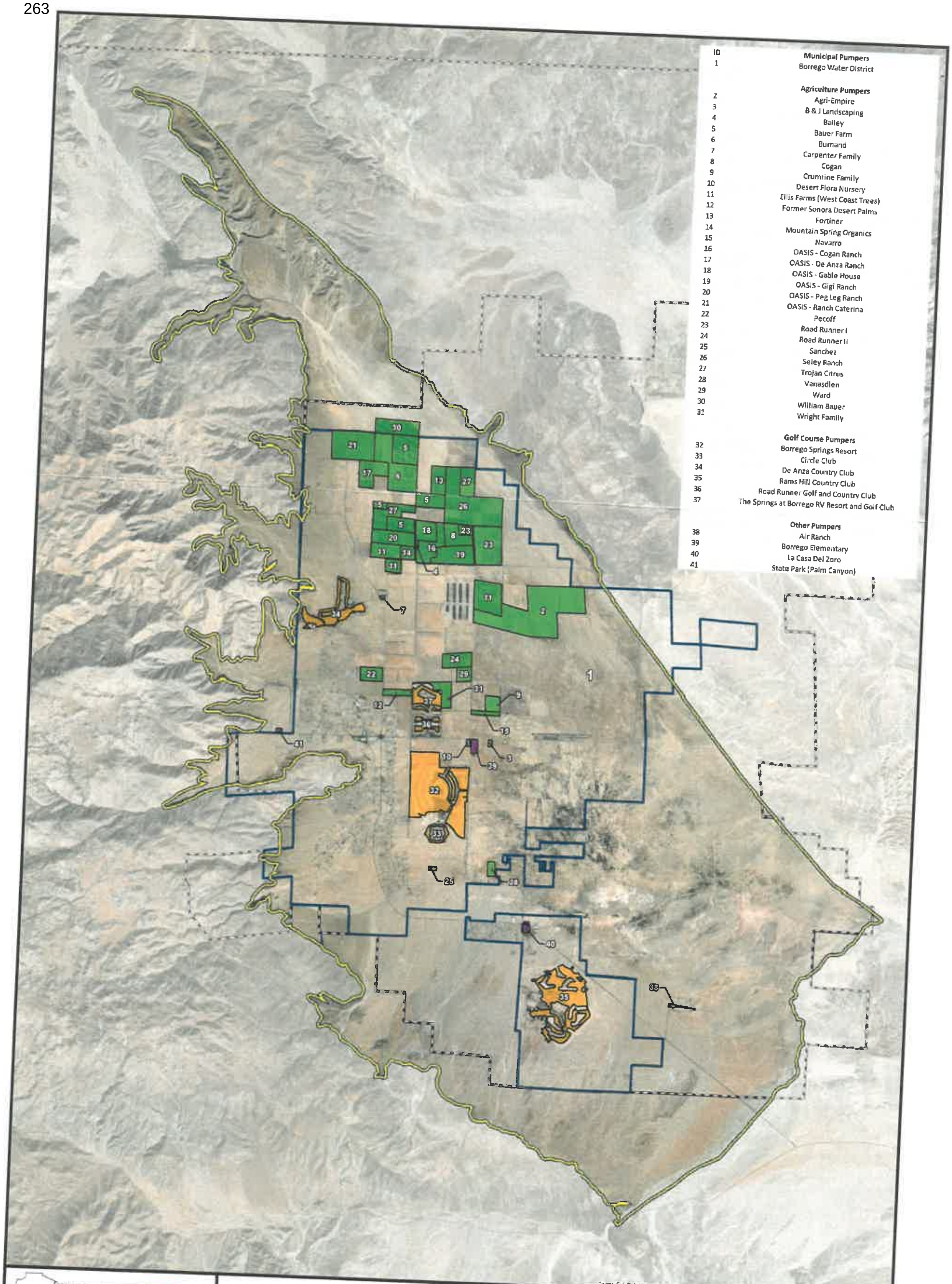
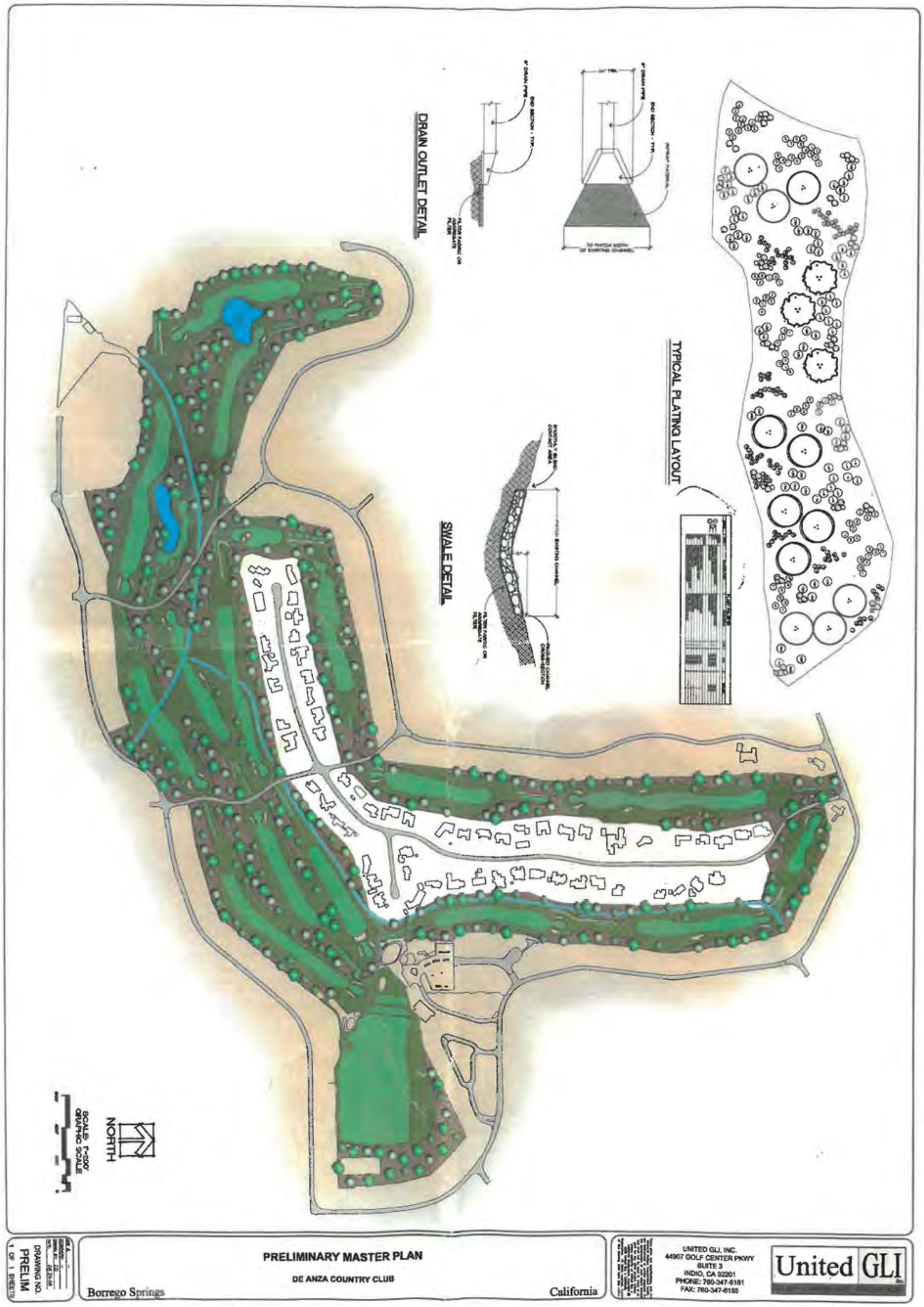


Figure 1: Non-De Minimis Pumpers Within Borrego Springs Subbasin

Agriculture
Golf Course
Other
Borrego Springs Subbasin
Borrego Water District
Community Planning Area Boundary

County of San Diego
Planning and Development Services
Land Use & Environmental Group
Geographic Information Service

TURF REDUCTION PLAN



INDEGENIOUS LANDSCAPING

IRRIGATION DESIGN

Search | **Property Detail** | Transaction History | Supplemental Tax Estimator | Recent Sales | Property Reports

Ernie Dronenburg , County Assessor

Property Address: **509 CATARINA DR BORREGO SPRINGS CA 92004-4311**

General Information

Parcel # (APN):	**140-242-62-00** Open Map
Owner:	See Full Detail
Mailing Address:	**P O BOX 120 BORREGO SPRINGS CA 92004**
Legal Description:	**TR 3363 LOT 299*53.12 AC M/L IN LOTS 1&73&IN**
Use Type:	**RECREATIONAL**
Tax Rate Area:	**058-020**
Value Notice:	Open

Full Detail $14.95 Add to Cart

PLEASE NOTE: If a field is empty on this page, there is no data available, and the field will also be empty on the Full Detail property report.

Assessment

Total Value:	**$1,300,000**	Year Assd:	**2021**
Land:	**$275,000**	Zoning:	See Full Detail
Structures:	**$1,025,000**	Use Code:	See Full Detail
Other:		Census Tract:	See Full Detail
% Improved:	See Full Detail	Price/SqFt:	
Exempt Amt:			
HO Exempt:	**N**		

Sale History

	Sale 1	Sale 2	Sale 3	Transfer
Document Date:				See Full Detail
Document Number:				See Full Detail
Document Type:				
Transfer Amount:				
Seller (Grantor):				

Property Characteristics

Bedrooms:		Fireplace:		Units:	See Full Detail

Ernie Dronenburg , County Assessor

Property Address: **BORREGO SPRINGS CA 92004**

General Information

Parcel # (APN):	**140-261-01-00** Open Map
Owner:	See Full Detail
Mailing Address:	**P O BOX 120 BORREGO SPRINGS CA 92004**
Legal Description:	**TR 3363 LOT 301***
Use Type:	**RECREATIONAL**
Tax Rate Area:	**058-020**
Value Notice:	Open

Full Detail $14.95 Add to Cart

PLEASE NOTE: If a field is empty on this page, there is no data available, and the field will also be empty on the Full Detail property report.

Assessment

Total Value:	**$215,128**	Year Assd:	**2021**
Land:	**$215,128**	Zoning:	See Full Detail
Structures:		Use Code:	See Full Detail
Other:		Census Tract:	
% Improved:	See Full Detail	Price/SqFt:	
Exempt Amt:			
HO Exempt:	**N**		

Sale History

	Sale 1	Sale 2	Sale 3	Transfer
Document Date:				See Full Detail
Document Number:				See Full Detail
Document Type:				
Transfer Amount:				
Seller (Grantor):				

Property Characteristics

Bedrooms:		Fireplace:		Units:	
Baths (Full):		A/C:		Stories:	
Baths (Half):		Heating:		Quality:	
Total Rooms:		Pool:		Building Class:	
Bldg/Liv Area:		Park Type:		Condition:	
Lot Acres:	**38.020**	Spaces:		Site Influence:	

Ernie Dronenburg , County Assessor

Property Address: **RIVERALL RD BORREGO SPRINGS CA 92004**

General Information

Parcel # (APN):	**140-264-08-00** Open Map
Owner:	See Full Detail
Mailing Address:	**P O BOX 120 BORREGO SPRINGS CA 92004**
Legal Description:	**TR 3363 LOT 302*(EX DOC74-35497)DOC72-302234 IN SEC 19-10-6E&ALL OF**
Use Type:	**RECREATIONAL**
Tax Rate Area:	**058-020**
Value Notice:	Open

Full Detail $14.95 Add to Cart

PLEASE NOTE: If a field is empty on this page, there is no data available, and the field will also be empty on the Full Detail property report.

Assessment

Total Value:	**$215,093**	Year Assd:	**2021**
Land:	**$192,499**	Zoning:	See Full Detail
Structures:	**$22,594**	Use Code:	See Full Detail
Other:		Census Tract:	
% Improved:	See Full Detail	Price/SqFt:	
Exempt Amt:			
HO Exempt:	**N**		

Sale History

	Sale 1	Sale 2	Sale 3	Transfer
Document Date:				See Full Detail
Document Number:				See Full Detail
Document Type:				
Transfer Amount:				
Seller (Grantor):				

Property Characteristics

Bedrooms:		Fireplace:		Units:	See Full Detail
Baths (Full):		A/C:		Stories:	
Baths (Half):		Heating:		Quality:	
Total Rooms:		Pool:		Building Class:	
Bldg/Liv Area:		Park Type:		Condition:	

Stipulation of Adjudication

2021 Base Line Allocation	**957**	Acre-Feet
Annual Ordered Reduction	**5%**	

Reduction Schedule	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Annual Allocated Consumption	909	864	821	779	741	703	668	635	603	573
Actual	884									

Turf Removal Plan Forecasted Results

Proposed Annual Decrease **345** Acre-Feet

		2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Annual Consumption	Acre-Feet	564	564	564	564	564	564	564	564	564
Decrease from BPA	Acre-Feet	300	256	215	176	139	104	71	39	9
Cumilative Conservation from BPA	Acre-Feet	300	556	771	948	1087	1191	1262	1301	1310
Overall Conservation from Basin	Acre-Feet	345	690	1035	1380	1725	2070	2415	2760	3105

DIAMOND GOLF INTERNATIONAL

De Anza Desert Country Club

509 Catarina Drive PO Box 120

Borrego Springs CA 92004.- **January 05, 2022.**

Turf Reduction Program Presentation.

Introduction.-

Derived from the need to reduce water use in the State of California, irrigation systems are being implemented to improve the use of water used in the golf course.

For this reason "De Anza Desert Country Club" is launching a program to reduce irrigable grass areas in the Golf Course.

Description & Scope of works.

The program to reduce irrigable grass areas includes:

Reduce from 146.76 Acres of grass in the golf course to 93.8 acres of grass.

The use of Tiff Tuff Grass on the Golf Course is contemplated.

Create new native areas with desert theme landscape.

Installation of a new irrigation system that is more efficient in the use of water.

Water storage lake upgrade, which includes new liner.

Lake Linning to eliminate water leaks.- New liner 30 PVC will be installed , slopes on lake should be no less than 3 to 1. Lake slopes and bottom floor will be compacted and smooth rolled prior to lake liner installation. Shoreline trenching perimeter of lake will be 3 feet above water level with a depth 12" and a width of 12". Lake liner earth cover will be a minimum 12" depth screened debris free cover. Lake liner will be tested prior to earth cover Lake liner will have an 8" overlap when connecting panels.

DIAMOND GOLF INTERNATIONAL

De Anza Desert Country Club Renderings (by Jon Garner Golf Design), Note.- only conceptual proposal.

Hole 10

DIAMOND GOLF INTERNATIONAL

De Anza Desert Country Club Renderings (by Jon Garner Golf Design), Note.- only conceptual proposal.

Hole 14.

DIAMOND GOLF INTERNATIONAL

De Anza Desert Country Club Renderings (by Jon Garner Golf Design), Note.- only conceptual proposal.

Hole 15.

DIAMOND GOLF INTERNATIONAL

De Anza Desert Country Club Renderings (by Jon Garner Golf Design), Note.- only conceptual proposal.

Hole 16.

De Anza Desert Country Club Renderings (by Jon Garner Golf Design), Note.- only conceptual proposal.

Hole 18.

New Irrigation System, by Bryant Taylor Gordon (Note.- only conceptual proposal.)

DIAMOND GOLF INTERNATIONAL

DIAMOND GOLF INTERNATIONAL

Lake Lining Process

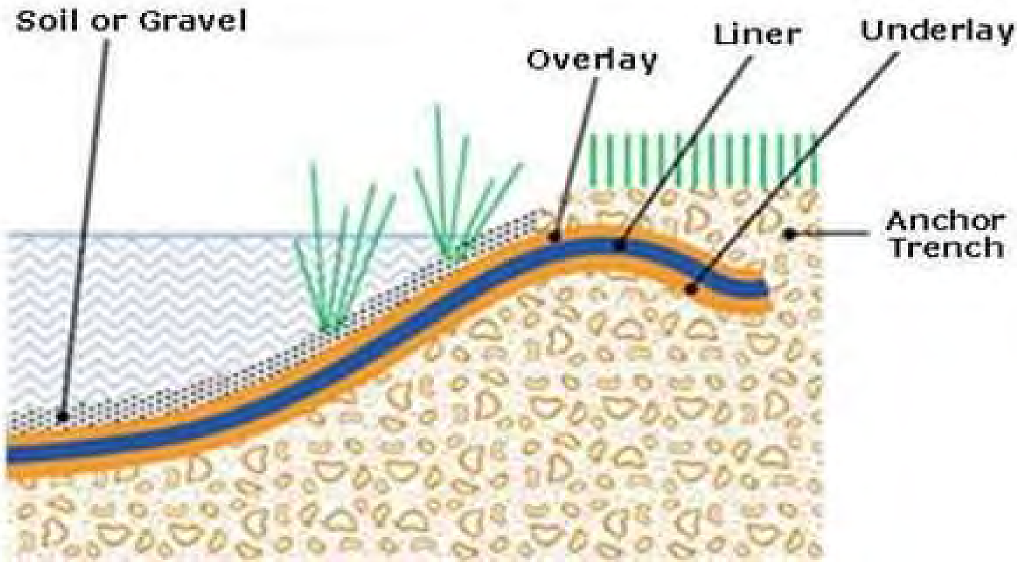
Lake preparation.-

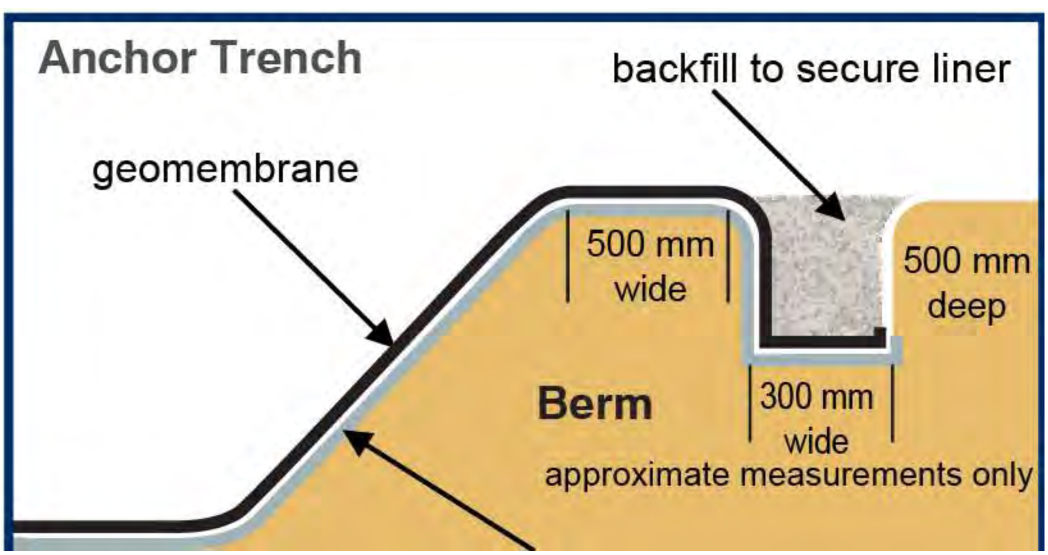
Liner installation

Lake Lining Process

Back Filling

Esquematic lake liner installation





DIAMOND GOLF INTERNATIONAL

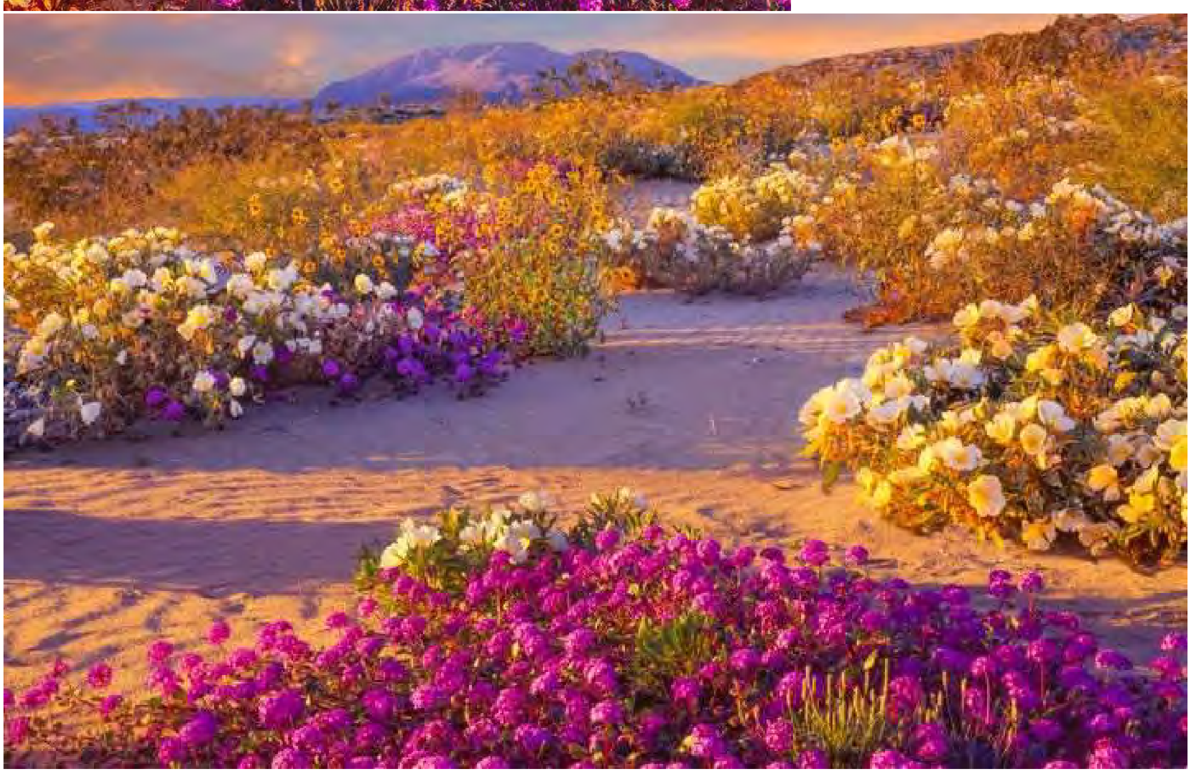
Lake concrete shore line

DIAMOND GOLF INTERNATIONAL

Landscape Signature Level

DIAMOND GOLF INTERNATIONAL

Desert Seasonal Accent Landscape



DIAMOND GOLF INTERNATIONAL

Landscape Desert Native

DIAMOND GOLF INTERNATIONAL

Formal Bunkers

Waste Bunkers

DIAMOND GOLF INTERNATIONAL

General Contractor

DIAMOND GOLF INTERNATIONA INC.

23753 Sonata Dr.

Murrieta CA. 92563

Tel. 001 (951) 696-04-26.

diamondgolf@hotmail.com.

Contractor Estate Registration Number .- 1023224.

TURF REDUCTION & LANDSCAPE

Planning/Design/Environmental

Concept	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	$ 9,940.00	$ 9,940.00
General Conditions, housing, transportation, administrative	Months	4	$ 6,480.00	$ 25,920.00
Golf Design	LS	1	$ 42,500.00	$ 42,500.00
Survey & Layout	LS	1	$ 2,240.00	$ 2,240.00
			Sub-total	**$ 80,600.00**

Construction/Implementation

Fairway Turf Reduction

	Unit	Quantity	Unit Price	Total
Survey & Layout	LS	1	$ 4,800.00	$ 4,800.00
Drain sump with catch basins 12" Pipe	Each	24	$ 1,800.00	$ 43,200.00
Turf Removal / Spray Out	Acre	80	$ 3,250.00	$ 260,000.00
Grading	Acre	80	$ 1,150.00	$ 92,000.00
Finishing	Acre	80	$ 925.00	$ 74,000.00
Soil Ammendments	LS	1	$ 48,000.00	$ 48,000.00
			Sub-total	**$ 522,000.00**

Construction/Implementation

Indegenious Landscape

Concept	Unit	Quantity	Unit Price	Total
Signature Level.- Desert theme Landscape.- few boulders, native gravel as mulch, succulents plants, agaves, cactus and few specimen trees with drip irrigation	Acre	6.0	$ 33,190.00	$ 199,140.00
Seasonal Accent Landscape.- Rock, mulch, few boulder and Native Seasonal flowers with Quick coupler for grow-in irrigation.	Acre	8.5	$ 20,090.00	$ 170,765.00
Natural Level.- Desert theme Landscape.- with out trees, few boulders and native plant materials that require no irrigation, quick couplers for establishment	Acre	39.1	$ 9,990.00	$ 390,609.00
			Sub-total	**$ 760,514.00**
			Total Amount	**$ 1,363,114.00**

Project Administration	4%	Management Fee	$ 54,524.56
		Sub-total	**$ 1,417,638.56**
	7.75%	State Tax	$ 109,866.99
		Total	**$ 1,527,505.55**

IRRIGATION RENOVATION

Planning/Design/Environmental

	Unit Price	Total
Mobilization	$ 7,455.00	$ 7,455.00
General Conditions, housing, transportation, administrative, food & beberage	$ 4,860.00	$ 19,440.00
Golf Design	$ -	$ -
Irrigation Design	$ 32,800.00	$ 32,800.00
Lake Design	$ -	$ -
Survey & Layout	$ 1,680.00	$ 1,680.00
Irrigation Demolition	$ 48,000.00	$ 48,000.00
	Sub-total	**$ 109,375.00**

Construction/Implementation

	Unit Price	Total
New irrigation system	$ 1,195,800.00	$ 1,195,800.00
	Sub-total	**$ 1,195,800.00**
	Total Amount	**$ 1,305,175.00**
Project Administration	Management Fee	$ 52,207.00
	Sub-total	**$ 1,357,382.00**
	State Tax	$ 105,197.11
	Total	**$ 1,462,579.11**

LAKE RENOVATION

Planning/Design/Environmental

	Unit Price	Total
Mobilization	$ 7,455.00	$ 7,455.00
General Conditions, housing, transportation, administrative	$ 4,860.00	$ 19,440.00
Golf Design	$ -	$ -
Irrigation Design	$ -	$ -
Lake Design	$ 12,500.00	$ 12,500.00
Survey & Layout	$ 1,680.00	$ 1,680.00
	Sub-total	**$ 41,075.00**

Construction/Implementation

West Lake

	Unit Price	Total
Demo Lake Liner and haul off-site.	$ 22,800.00	$ 22,800.00
Bury concrete inside lake cavaty	$ 18,500.00	$ 18,500.00
Earth cover 12", local soil	$ 6.20	$ 10,354.00
Anchor Trench 8' ft aprox	$ 15.60	$ 23,400.00
2' Concrete Verneer washed finish	18.5	$ 19,147.50
30 mil RPE Liner with earth cover 12"	$ 1.22	$ 51,142.40
	Sub-total	**$ 145,343.90**

East Lake

	Unit Price	Total
Demo Lake Liner and haul off-site.	$ 18,700.00	$ 18,700.00
Bury concrete inside lake cavaty	$ 15,232.00	$ 15,232.00
Earth cover 12", local soil	$ 6.20	$ 8,556.00
Anchor Trench 8' ft aprox	$ 15.60	$ 23,400.00
2' Concrete Verneer washed finish	$ 18.50	$ 19,147.50
30 mil RPE Liner with earth cover 12"	$ 1.22	$ 42,108.30
	Sub-total	**$ 127,143.80**
	Total Amount	**$ 313,562.70**

Project Administration

	Management Fee	$ 12,542.51
	Sub-total	**$ 326,105.21**
	State Tax	$ 25,273.15
	Total	**$ 351,378.36**

Project Information Submittal Form

Project Submitter/Owner: Tubb Canyon Desert Conservancy

Project Name: Borrego Basin Groundwater Dependent Ecosystem (GDE) Identification, Assessment & Monitoring

Contact Information

Name: Robert Staehle
Phone: (626) 798-3235 voice landline; (626) 429-3405 cell alternate
Email: gaboon@sbcglobal.net
Address: 153 Jaxine Drive, Altadena CA 91001

Project Summary

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

GENERAL PROJECT DESCRIPTION

The Sustainable Groundwater Management Act (SGMA) defines Groundwater Dependent Ecosystems (GDEs) as Beneficial Users of Water in all regulated groundwater basins, and thus must be considered in the creation and implementation of a Groundwater Management Plan (GMP). In the Borrego Subbasin there are, in essence, three categories of "potential" GDEs:

1. The first category refers to those ecosystems that were once indisputably groundwater dependent, but that at the present time *may* no longer be accessing groundwater due to declines in the water table over the past several decades.
2. The second category refers to ecosystems that occur on the edges of the Subbasin as defined in DWR Bulletin 118, and that may, or may not, be maintained by groundwater that is impacted by changes in groundwater levels in the Borrego Subbasin. We refer to these as "potentially Subbasin-dependent GDEs."
3. The third category refers to those groundwater dependent ecosystems that are located sufficiently "upstream" in elevation from the aquifer within the defined Borrego Subbasin such that changes in the level of the water table in the Subbasin have no effect on these ecosystems.

This Project focuses exclusively on Categories 1 and 2 as defined above, and the Project is designed 1) to determine if the "potential" GDE of Category 1 is, in fact, groundwater dependent and 2) to determine if the groundwater that supports the GDEs of Category 2 is impacted by changes in the groundwater level in the Borrego Subbasin. While there have been recent assertions that summarily dismiss the existence of GDEs in and near the Borrego Subbasin, most particularly in Appendix D4 of the Groundwater Management Plan (GMP), those same assertions are accompanied by statements noting the lack of important and relevant data that could establish, or prove non-existent, the linkage between four specific "potential" GDEs and management of the Subbasin.

This Project is to be undertaken with specific involvement of the Watermaster (WM) through its Environmental Working Group (EWG) and its Technical Advisory Committee (TAC), with frequent informal and formal exchange of information, requirements and discussion in order to ensure that suitable data types and quality, accompanied by objective scientific analysis, be made available at timely intervals to the WM. The mechanism for this interaction is to be through the WM's Community Representative, Mark Jorgensen, as the liaison between the WM and this GDE-focused project. This Project is to be led by Tubb Canyon Desert Conservancy (TCDC), overseen by the Borrego Water District (BWD), as part of BWD's responsibility to the Department of Water Resources. For its overall management of the Borrego Subbasin aquifer, the WM requires information on a range of topics much broader than GDEs, coming from a number of disparate sources. TCDC has assembled an experienced team of scientific experts with strong Borrego Valley-local knowledge to fill the data gaps that need to be filled for objective evaluation and reporting on the relevance and health of potential GDEs, as defined in SGMA. It is assumed that the WM may, at its discretion, perform additional analyses and utilize additional data sources in a non-duplicative way, if and when it feels that such additional GDE-relevant work is necessary to perform its water management functions.

When considering the different data types that could be useful in determining connectivity (or lack thereof) of GDEs to the Subbasin aquifer, we found that remote sensing data beyond that already acquired and published did not contribute to a definitive dataset. We concluded that in-situ data taken together was far more definitive, such as isotopic analysis, population and health surveys in very limited representative areas of the potential GDEs, along with direct measurement of groundwater and evapotranspiration conditions (temperature, humidity, precipitation, wind, and insolation).

It is contemplated that the data generated by the Project will be of critical importance to the Borrego Watermaster and all its constituents: the Borrego Water District, the Borrego Community at large, the agricultural community, the recreational community, and the County of San Diego. Therefore, integral to this Project is regular reporting of status and findings to the Borrego Water District, the Borrego Watermaster, the WM's Environmental Working Group, the Department of Water Resources and interested stakeholders/community members.

The quantifiable benefits of this Project are manifold, and include:

1. Determining if there is/are SGMA-defined Beneficial User(s) of Water in the Borrego Subbasin that has/have not to date been taken into consideration in the GMP,
2. If it is determined there is/are GDEs in the Subbasin, the opportunity to update the GMP and its implementation accordingly, and
3. The creation of a data gathering system that will enable the Subbasin to perceive some of the impacts of Climate Change in real time, thereby increasing the resilience of the community.

While the study areas described in this Project are four relatively small circumscribed areas within the Subbasin, the implications of the Project are basin-wide as described in the above paragraph. Thus this Project impacts the entire Subbasin and all members of the community, particularly the Underrepresented Communities in the Subbasin who are most vulnerable to a GMP that does not avoid SGMA-defined undesirable outcomes. Also particularly vulnerable to a GMP that does not avoid SGMA-defined undesirable outcomes are small water systems and shallow domestic wells. This Project has the potential of positively impacting these vulnerable communities through identifying, monitoring, and protecting the most demonstrably vulnerable and already negatively impacted community: the environmental users of water known as GDEs. The protection of these vulnerable communities–underrepresented communities, small water systems, shallow domestic wells, and environmental users–is foundational to the establishment of the Human Right to Water.

We recognize that the scope of this Project as described is a definitive evaluation of all potential GDE's in the Borrego Subbasin that could potentially be impacted by the implementation of the GMP. If the Project must be reduced, or phased, due to funding constraints, we recommend the following prioritization of tasks: The first priority of this Project is all those tasks described in Category 1–The Mesquite Bosque. The second priority of this Project is all tasks described in Category 2 that are associated with the evaluation of potentially Subbasin-dependent GDE's in the following descending order: Coyote Canyon, Palm Canyon, and Tubb Canyon.

GENERAL WORK PLAN DESCRIPTION

Category 1–The Mesquite Bosque.

There is no dispute that the mesquite bosque located near the Borrego sink was at one time a healthy, thriving GDE. In recent decades, however, the extent of this once thriving ecosystem has diminished by an order of magnitude from the approximately 450 acres it once covered. It is generally agreed that the reduction of the mesquite bosque has occurred in response to a lowering of the water table in the area from approximately 11 feet below ground surface in the 1950's to 55 ft. below ground surface in 2018 (Fall 2018, MW-5A/B, Borrego GMP, Appendix D4, pg. 17).

The Borrego Subbasin GMP notes the considerable variation of the rooting depths of the dominant species of this once thriving phreatophytic ecosystem: the honey mesquite (*Prosopis glandulosa*, and potentially other *Prosopis* sp.) found throughout the southwestern US. The GMP notes that the extent of our understanding of this particular ecosystem in the Borrego Subbasin however is limited by "the lack of site specific information on the root depth of the honey mesquite community… (leaving us with a) very high uncertainty associated with these values." (GMP, Appendix D4, pg. 17) Thus, existing data is unable to determine if the remaining mesquite bosque is in fact sustained in whole or in part by the groundwater of the Subbasin.

This Project uses a two-prong approach to resolve this question. The first prong uses the established method of comparing the isotopic signature of the groundwater (primarily using isotopes of oxygen and hydrogen) to the predominant isotopes found in the plants themselves. The second prong is based on capturing a number of data sets that enable a calculation to determine if the plant assemblage and supported fauna at the proposed GDE could survive only with access to surface water. These data sets are: 1) a complete inventory of the plants and fauna in the potential GDE, 2) a water needs assessment of that plant assemblage found at the potential GDE, and 3) determining the availability of surface water at the potential GDE. Each of these data sets, and the methods used for filling the current gaps, are described below.

Task 1–Isotopic Comparison. Plant use of different water sources (near-surface water, ground water) will be measured by the use of stable isotope abundance in water held within plant tissues. The mixing of water sources by plants can be partitioned by sampling water contained in plant tissue and comparing the signal to the differential isotopic composition of those sources using mixing model approaches. Measured across time, the differential use of water relative to periods of stress can be evaluated, whereby the presence of groundwater can identify critical need. Sampling four times over the year is assumed to cover seasonal variations in water uptake fractions from groundwater vs. surface/recent rain water.

Briefly, groundwater typically possesses a distinct oxygen and hydrogen stable isotope signature associated with the dominant period of infiltration and percolation within the hydrologic year (estimated from the global meteorologic line), while surface water originating from on-site and nearby precipitation is often influenced by the ephemeral nature of the rainfall, temperature, and evaporation such that the two water sources provide distinct signals.

Water samples will be collected from soils, wells, and plant tissues, co-located sufficiently to assume root access, and then sealed in vials preventing evaporation. This requires approximately 2-3 ml of soil and well water (for repeated sampling) and typically 2-3 cm-long stems of ~1.0 cm-diameter woody plants. Water will be cryogenically extracted or filtered (from liquid samples) prior to isotopic analysis at one of the major environmental isotope sampling laboratories (e.g., SIRFER at University of Utah, Salt Lake City, Utah). Where simple mixing models do not work, we will rely on published isotope sourcing models.

Task 2–Inventory of Species Present. Flora: The second data gap will be filed by an inventory of the plant species in and around the mesquite bosque. The first step in filling this data gap will be to conduct special searches of the San Diego Herbarium (including the San Diego County Plant Atlas database) and the California Consortium of Herbaria (CCH2) to see what scientific specimens of plants have historically been documented from within the GDE polygons. Next comes the incorporation of those iNaturalists (iNat) observations that Dr. Rebman (Curator of Botany, San Diego Natural History Museum) has personally verified by spatially searching the downloaded database of iNat observations that document plant species from within the GDE. This process will provide a preliminary plant list for the GDE. Once this baseline is established, we will organize public iNat training in Borrego Springs to show volunteer botanists–citizen scientists–how to appropriately use the iNat app and how to document plants in the potential GDE. This training will occur at the Steele-Burnand Anza-Borrego Desert Research Center and also in the field at the site of the mesquite bosque. The training will focus on using the iNat app, how to properly document plants using the app, what resources are available to help observers in the field, etc. We will thereby create an iNat project focused on the mesquite bosque, so the curator of the app (Dr. Rebman) can easily see, identify, and verify all the observations that are already, and will be, made within the study site. The curator will personally travel to the site to survey for plants and document more difficult plant groups such as grasses, small and often overlooked plant species, and other graminoids that are more difficult to accurately identify using photography.

Fauna: In the event that the Mesquite Bosque is shown to be definitively a GDE, measuring the health of the entire dependent "ecosystem" becomes important in assessing groundwater effects on the health of the GDE as a beneficial user. In order to establish a baseline, quantitative measurement of fauna, as described under Category 2, is an important metric. Small changes in plant health can have a magnified effect on dependent fauna, and thus can sometimes be detected as a stronger integrated signal over time, than deterioration or improvement in plant health metrics alone.

Task 3–Water Needs Assessment of Extant Plant Assemblage. The third data gap is a "water needs" assessment of the plant assemblage identified and cataloged by the task described above. This assessment of the water needs of the extant plant assemblage will be completed by scientists from the University of California, Irvine who published in May 2021 an assessment of declining desert vegetation, but on a regional scale.

Task 4–Surface Water Availability & Evapotranspiration Environment Measurement. The fourth data gap is to be filled by estimates of surface water available to the extant plant assemblage at the mesquite bosque. We are fortunate to have on this Project scientists from UCI who have been measuring climate parameters, such as soil moisture, in the Borrego Valley since 2016. The data continuously collected since 2016 from the seven climate monitoring stations located throughout the valley, one of which is near the GDE in question, will be analyzed to create an understanding, both historically and currently, of the surface water available to the extant plant assemblage at this potential GDE.

Task 5–Measuring the Water Table. The fifth data gap has to do with measuring the water table at and around the remaining plant assemblage. This Project will use existing monitoring wells, as well as nearby abandoned wells, to capture data to reveal trends in the water table underneath this remnant GDE. As a contingency, if there are no monitoring wells or abandoned wells sufficiently near the study area, a new monitoring well will be created (for which funding is included in the Year 1 budget). The creation of a new well would be undertaken in consultation/coordination with the WM's Technical Advisory Committee and after appropriate surface geophysical investigation. If it is determined that a new monitoring well must be created, it is anticipated the resulting depth-to-water data will be available in years 2 and 3 of this project.

The above tasks will answer the following questions:

1. What are the correlations between the isotopic signature of groundwater and the moisture found inside the honey mesquite plants at the mesquite bosque?
2. What plants now compose the remnant mesquite bosque,
3. What is the "water economy" of this plant assemblage, and
4. In combination, these data sets will answer the question "Is this plant assemblage sustained by groundwater and/or surface water?"

If it is determined the mesquite bosque is a GDE, and therefore a beneficial user of water in the Subbasin, a system of monitoring will be established. This system will involve ongoing on-the-ground assessment of the flora and fauna located in the ecosystem as well as ongoing monitoring of the level of the water table at the site of the GDE throughout the duration of the funding period. This monitoring will largely use the same equipment already employed at the site.

This part of the project has the unique opportunity to coordinate its activities with those in an adjacent subbasin, Clark Dry Lake. As an additional approach to determining whether or not the Mesquite Bosque east of Borrego Sink is indeed dependent on groundwater in the Borrego Subbasin aquifer, its conditions will be compared with those of the nearby Clark Dry Lake mesquite bosque, where there is no question that the mesquite trees are dependent on the water table there that is much closer to the surface and that aquifer is not significantly pumped to support other beneficial users. Evapotranspiration conditions driven by solar illumination, temperature, humidity, and wind conditions are similar between the two locations. Precipitation can vary significantly between the two locations, despite their proximity. Existing wells in the vicinity of Clark Lake may be available to be used to measure groundwater levels . Measuring comparative vegetation health through the seasonal cycle , along with weather conditions including precipitation, will enable determining with reasonable certainty if the mesquites in the Borrego Mesquite Bosque are dependent on a permanent root connection to an aquifer beneath them, or likely not. If the Borrego mesquites are heavily stressed compared to the Clark Lake mesquites at the same time of year, but healthy only after significant precipitation, then their connection to the Borrego Subbasin aquifer via roots is less probable. A comparison of older/larger trees (as measured by girth and exterior effects of age) that presumably could sustain deeper roots than younger/smaller trees will enable a more refined distinction between the aquifer connection of the Borrego vs. Clark lake populations.

Each of these evapotranspiration conditions will be measured at both the Borrego Sink and Clark Dry Lake sites, to the extent possible with existing sensors. New sensors have been budgeted using low-cost automated satellite-enabled data relay (available since late 2021 from Swarm.Space of Silicon Valley at $60/yr per sensor suite), but will only be procured if sufficient existing data sources and datalinks aren't available.

Category 2—Potentially Subbasin-dependent GDEs at the Subbasin's periphery

This portion of the project will fill GDE-related data gaps identified in the hydrogeological conceptual model (HCM) of the Subbasin, and will therefore focus on those three GDEs located in areas where "the groundwater table may shallow within the narrow 'fingers' of alluvium that extend into the canyons on the northern and western margins of the Subbasin (fringe areas), because the subsurface boundary between the alluvium and bedrock steeply rises in these locations." (GMP, Appendix D4, pg. 19). These potentially Subbasin-dependent GDEs are within the Subbasin as defined by DWR Bulletin 118.

With these GDEs, the question is not whether they are supported by groundwater, but rather whether the groundwater that supports them is impacted by what happens to the level of the groundwater in the more central portions of the Subbasin, and the extent to which changes in that groundwater level impacts the groundwater availability to plants at the heart of these GDEs.

It is thought that all potential GDEs in the Borrego Springs Subbasin are known and mapped presently from previous satellite Normalized Difference Vegetation Index (NDVI) and air photo analysis; however, the degree of linkage between the Subbasin aquifer and the GDEs at the periphery of the Borrego Subbasin is not fully understood. This represents a data gap with consequences important to SGMA. We propose to fill this data gap by making measurements over time to determine if the supporting groundwater level and ecological health of three key potential Subbasin-dependent GDEs are, or are not, influenced by drawdown of the Borrego Subbasin aquifer. Based on mapping of natural communities commonly associated with groundwater (NCCAG [see for definition Mapping Indicators of GDEs | Groundwater Resource Hub]), as published at https://tnc.maps.arcgis.com/apps/webappviewer/index.html?id=9b4770ae49c54585bf3d18d45e7d97b5), with the "Vegetation" layer turned on, one can see several locales of potential GDEs a short distance inside the periphery of the Borrego Subbasin [see Fig 3] (as identified on the Water Management Tool at https://gis.water.ca.gov/app/boundaries/), with the layers for "Critically Overdrafted Groundwater Basins," and "Critically Overdrafted Basin Boundaries" turned on. Based on this mapping and personal on-site observations, we have selected for investigation as "potentially Subasin-dependent GDEs" sites at the mouth of Tubb Canyon (see Figure 1), Palm Canyon, and Coyote Canyon (below First Crossing), because these represent the largest outlets from their upstream watersheds of inflow to the Borrego Subbasin, and as result of this hydrological connection, these GDEs likely are most influenced, if at all, by the level of the Subbasin aquifer. Further drawdown of the aquifer may cause increased depth-to-water at these peripheral locations at a significant, but less than 1:1 ratio. A less than 1:1 ratio is significant because the plant communities at these locations include species that are expected to show greater sensitivity to draw-down than in the Mesquite Bosque, because they do not all have especially deep roots (e.g., various palm species). Thus, as a hypothetical example, a 10-foot drop near the center of the Subbasin aquifer might result in a 6" to 1' drop at these peripheral locations. Such a drop could have a magnified negative effect on these GDEs compared to the effects of a 6" to 1' drop in the depth-to-water beneath the Mesquite Bosque, where the mesquites may have roots well in excess of 50 feet deep.

Figure 1 (left): *A magnified inset shows the Tubb Canyon GDE looking east from the watershed above. At least one working well is located within 0.5 mile downstream of the GDE. Another well is located ~1 mile east, where DWR has taken measurements. The GDE and both wells are on private land where the owners are supportive of TCDC and this project's goals. (Photo by Lori Paul)*

Because, as stated on page 19 of GMP Appendix D4, "The groundwater monitoring network does not extend into these fringe areas," we intend to fill this current data gap for these three potential GDEs by installing shallow/small monitoring wells within each of these areas containing NCCAG. Combined with depth-to-water measurements from nearby existing wells, this new data will enable over time the determination of the existence or non-existence of a direct correlation between groundwater level at these potential GDEs, and the groundwater level of the broader Borrego Subbasin.

For each potentially Subbasin-dependent GDE near the edge of the relatively flat, lower elevation portion of the Borrego Valley geographic land surface, there is a possible, but not fully confirmed or refuted, direct connection to the hydrographic surface below the land surface whereby the level of the Borrego Subbasin aquifer directly influences the health of such GDEs, even though much of their water comes from surface runoff. As the Borrego Subbasin aquifer level is drawn deeper below the geographic land surface, the plant communities that are the heart of these GDEs may be negatively impacted, with ripple effects continuing into the community of fauna that depend on the GDE's plant communities.

For GDEs significantly above (e.g., by hundreds of feet) the land surface level of the flatter parts of Borrego Valley, there is clearly a less direct connection to the hydrologic level of the Borrego Subbasin aquifer, and thus these GDEs that are fully outside the already-defined Borrego Subbasin will be excluded from all but cursory attention. As climate change influences precipitation and evapotranspiration in the watersheds above the flatter part of the Borrego Valley, all potential GDEs and hydrologic subsurface flow will be affected in ways that are only poorly predictable today. Thus, the geographically-dispersed potentially Subbasin-dependent GDEs represent not only a data gap in terms of understanding their condition and changes over time; they also represent an opportunity by which measurement of their changes over time may improve the accuracy of estimating the inflow to the Borrego Subbasin aquifer from its primary recharge regions in the mountains rising to the north and west of the Borrego Valley. (It should be noted that management of the critically overdrafted Borrego Subbasin aquifer requires understanding and projecting both the outflow terms quantifying water use, and the source terms quantifying water replenishment. With the effects of climate change, both the outflow and the source terms can be expected to vary in unpredictable ways not seen historically. As an indirect benefit, the additional measurements proposed as part of this project are likely to provide additional insight more quickly into the local effects of climate change, and to help the community prepare and respond.)

With this understanding, each of the three selected peripheral potentially Subbasin-dependent GDEs will be assessed to determine its degree of groundwater dependence and its hydrological relevance as a beneficial user affected by the aquifer level in the Borrego Subbasin. If during this project, it is determined that any of these potentially Subbasin-dependent GDEs are definitively not connected to the Borrego Subbasin aquifer, their monitoring may be discontinued and the associated funds not spent.

Because of the likelihood that the three potentially Subbasin-dependent GDEs that are the focus of this section are sustained by *both* groundwater as well as surface water, we will determine the degree of groundwater dependence of these GDEs using the isotopic method of distinguishing the percentage of water received from each source as described under Category 1 above.

Summary descriptions of the specific tasks as part of Category 2 assessment and monitoring follow.

Task 1: Inventory of Species Present: The full range of flora and fauna in the three selected potentially Subbasin-dependent GDEs at the periphery of the Borrego Subbasin will be assessed and monitored starting with quantification of natural communities commonly associated with groundwater (NCCAG [an official term defined by DWR; see https://groundwaterresourcehub.org/sgma-tools/mapping-indicators-of-gdes]) i.e., potentially groundwater-dependent plants and trees, and working the way up the food chain of resident and transient species in order to assess the quantity, diversity, and health of the associated local natural community. Plant surveys and wildlife cameras will be used at intervals during Year 1, and compared with nearby areas lacking access to groundwater. Along with Isotopic Comparison (Task 2), the first year's results will be a factor in making a determination of Subbasin-dependent, or not, GDE status, as opposed to today's characterization as "potentially Subbasin-dependent GDEs."

As with the Mesquite Bosque in Category 1, the plant population data gap will be filled by an inventory of the plant species in and around the three potentially Subbasin-dependent GDEs that are the subject of this section. (These activities will be conducted together for the Category 1 potential GDE and the Category 2 potentially Subbasin-dependent GDEs, but are budgeted in separate tasks.) The first step in filling this data gap will be to conduct special searches of the San Diego Herbarium (including the San Diego County Plant Atlas database) and the California Consortium of Herbaria (CCH2) to see what scientific specimens of plants have historically been documented from within the GDE polygons. Next comes the incorporation of those iNaturalists (iNat) observations that Dr. Rebman (Curator of Botany, San Diego Natural History Museum) has personally verified by spatially searching the downloaded database of iNat observations that document plant species from within the GDE. This process will provide a preliminary plant list for the GDE. Once this baseline is established, we will organize iNat training in Borrego Springs to show volunteer botanists how to appropriately use the iNat app and how to document plants in the potential GDE. This training will occur at the Steele-Burnand Anza-Borrego Desert Research Center and also in the field at the site of the Mesquite Bosque and potentially Subbasin-dependent GDEs. The training will focus on using the iNat app, how to properly document plants using the app, what resources are available to help observers in the field, etc. We will thereby create an iNat project focused on the potentially Subbasin-dependent GDEs, so the curator of the app can easily see, identify, and verify all the observations that are already, and will be, made within the assessment & monitoring sites. The curator will personally travel to the sites to survey for plants and document more difficult plant groups such as grasses, small and often overlooked plant species, and other graminoids that are more difficult to accurately identify using photography.

Unlike the Mesquite Bosque with its singular nearby flat land environment distant from mountains, the three peripheral GDEs are expected to have a greater diversity of dependent wildlife visiting to feed on the plants present, and on smaller fauna. These GDEs support a broad spectrum of fauna, from insects, reptiles, birds, bats, and rodents, all the way up to Peninsular Bighorn Sheep (*Ovis canadensis* ssp. *nelsoni*) and Mountain Lion (*Puma concolor*). In order to assess the fauna component of the health of the ecosystem as a whole, data-driven estimates must be made of the number of different species present, the number of members of each species present, the size, and apparent health of species members (to the extent easily visible on wildlife cameras). These measurements need to be made at different times of day to sample nocturnal and diurnal populations, and throughout the year, particularly to identify significant migratory species that may be dependent upon the site(s). For these sites, the best way to conduct a survey is with remote wildlife cameras, and automated video image analysis to dump images showing nothing of interest. Local and San Diego County students will be recruited (emphasizing disadvantaged communities) and trained under project science supervision, and tested on known sample video imagery. Those students who pass testing on sample video imaging will be given supervised internships to extract the needed data. Data quality will be ensured by the supervising scientist using random review of students' and volunteers' counts and assessments, and detailed in-person examination of reported unusual activity, species, along with other unexpected events or circumstances. Exact sites for wildlife cameras and solar/battery-powered support equipment will be selected during initial surveys with project scientists and cooperating landowners, including the State Park where sites are on Park land.

Task 2: Isotopic Comparison: See description under Category 1/Task 1 Isotopic Comparison.

Task 3: Evapotranspiration Environment Measurement: temperature, humidity, precipitation, wind quantification and insolation will be measured using automated stations (see example in Figure 2) in order to model the water needs, uptake and losses of the vegetation present in order to support determination of whether water needs are met entirely from upstream runoff, rain, and groundwater inflow; or whether some of the plants' water needs appear to be supplied by access to and dependence on the level of the Borrego Subbasin aquifer.

Task 4: Measuring the Water Table: Because existing wells aren't known at this time within these GDEs themselves, small/shallow monitoring wells are to be installed using sonic drilling or other appropriate techniques at each of these three GDEs, not expected to be more than 50-100 feet deep, based on plant assemblages present that are thought to require water nearly or fully year-around, having roots no deeper than this depth. Creation of these wells would occur in the context of consultation/ coordination with the WM's Technical Advisory Committee and after appropriate surface geophysical investigation. Additionally, we anticipate significant permitting/CEQA requirements for two of these wells. Where there are existing wells outside these GDEs from ~100 to ~2000 ft in a direction from the potential GDE roughly toward the central part of the subbasin, water levels will be measured using existing active and abandoned wells where available, in order to measure a gradient of the Subbasin aquifer level from the potential GDE out toward the more central subbasin. Using this data and the data from the other tasks, a determination will be made if one or more of these potentially Subbasin-dependent GDEs are not tied to the greater Borrego Subbasin aquifer level. If there is not a clear disconnect, and not a clear indication that plants at the heart of the potential GDE do not get a significant (to the plants' health) portion of their water from groundwater, the level of which is impacted by the level of the Subbasin aquifer, then these potential GDEs will be considered GDEs, and will move into the monitoring phase in Years 2 & 3.

Figure 2 (left): Example ModuSense IIoT Weather Station communicates via Swarm.Space's new satellite constellation that began commercial operation under FCC license in 2021. Cost for data relay for up to hourly readout is $60/year. Source selection is not implied by use of this example figure; detailed requirements will be developed and vendors chosen during the Project Plan/Design/ Environmental Phase. Solar panel is ~1' square. (ModuSense photo downloaded 2022 January 14 from https://shop.modusense.com/products/ iiot-weather-station-satellite-swarm)

Task 5: Monitoring GDE Health: During Years 2 and 3, each remaining GDE's plantscape, fauna, and evapotranspiration environment will be monitored for sensitivity to groundwater changes, comparing these changes with the same hydrological measurements, meteorological measurements and, where known, depth-to-water in nearby active wells, and where useful and feasible, with measurements of depth-to-water in abandoned wells. This dataset will enable estimation of the variation in fraction of water needs to sustain the GDE that is being affected by the level of the Borrego Subbasin aquifer. Monitoring will utilize the methods and instrumentation noted in Tasks 1, 2, & 3 above.

For monitoring GDE health, the data available from the differing types of measurements, such as depth-to-water in shallow wells, number of apparent species vs. time of year, and abundance of specific species vs. time of year, together make a better assessment of GDE health than any single measurement. Water level, for example, is an instantaneous measurement, while number of apparent species at particular points in the seasonal cycle (from which biodiversity can be derived) is a more integrative measurement, showing the results of accumulated changes in water availability, nutrients and other factors over time.

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.

See attached map as Figure 3.

Figure 3. Project Locations: Location of the four potentially Subbasin-dependent GDEs to be investigated are outlined in red. All are within the Borrego Subbasin, which is indicated by the blue outline congruent with that in DWR Bulletin 118. The GDEs start in the SE with the Mesquite Bosque near Borrego Sink, and then, counterclockwise, the peripheral potentially Subbasin-dependent GDEs, namely Tubb Canyon, Palm Canyon, and Coyote Canyon. Precise locations of investigation and monitoring equipment will be determined during an initial site visit to each potential GDE involving a project scientist(s), landowner or representative, technician, and the Project Manager. Additional comparison monitoring will be done of some parameters in the Clark Lake Bosque, seen to the north of the Mesquite Bosque, as described under Category 1 tasks. (Downloaded 2022 January 4 from https://tnc.maps.arcgis.com/apps/webappviewer/index.html?id=...; map credits are at the bottom of the figure.)


Natural Communities Commonly Associated with Groundwater Version 2.0 (NCCAG 2.0)
Coyote Canyon
Palm Canyon
Tubb Canyon
Mesquite Bosque
Borrego Springs
Borrego Valley
Clark Valley
Clark Lake
Little Clark Lake
Borrego Salton Seaway
Desert Lodge
Collins Valley
Sheep Canyon
Cougar Canyon
Indian Canyon
Palm Mesa
San Ysidro Mountain
San Ysidro Mountain Wilderness Study Area
Hellhole Canyon
Montezuma Valley
Culp Valley
Pinyon Ridge
Grapevine Hills
Grapevine Canyon
San Felipe Hills
Yaqui Flat
Yaqui Ridge
Stag Cove
Mescal Bajada
Jackass Flat
Butler Canyon
Rabbit Peak
Borrego Springs Rd
Borrego Valley Rd
Peg Leg Rd
Yaqui Pass Rd
Coyote Creek
San Felipe Creek
78
3196 ft
2888 ft
6603 ft
2mi
Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, ...
esri

Recognition of contention: We note in the *Draft Final Technical Memorandum* "Borrego Springs Groundwater Subbasin Potential Groundwater Dependent Ecosystems", dated August 21, 2019, of The Groundwater Management Plan Appendix D4 "Borrego Springs Subbasin Groundwater Dependent Ecosystems" the assertion:

> *"...Not only is the Subbasin's groundwater level elevation hundreds of feet lower than the springs/seeps that contribute to stream flow, but activities within the Subbasin have no effect on the amount or frequency of recharge received in the mountains. Therefore, aquifer depletion and/or declining groundwater levels within the Subbasin has no effect on the occurrence, volume or frequency of flow within the interconnected portions of Coyote Creek, Borrego Palm Creek, and other creeks that enter the fringes of the Subbasin."*

We believe that while this situation indeed applies to the GDEs hundreds of feet above the aquifer that spans the Borrego Subbasin at varying levels below the ground surface, this situation may not apply to the potentially Subbasin-dependent GDEs on the periphery of the Subbasin, i.e., where the canyon bottoms empty out to the relatively flatter geographic surface extent that defines the Borrego Subbasin. Based on nearby well water depths (where available) and other observations, the health of these GDEs may be at least partially dependent on the local aquifer level definitively within the defined Borrego Subbasin. For example, east of the Sierra Nevada, observations in the past of the GDE near the mouth of Rush Creek where it enters the Mono Basin and, ultimately, Mono Lake showed major stress as the level of Mono Lake decreased. In the Mono Basin case, water salinity is an important parameter not in play in this part of the Borrego Subbasin. So, clearly the hydrological situations in the two locations differ, but given that the existing groundwater monitoring network does not extend into these fringe areas, current data are not sufficient to rule out dependence of the health and viability of these GDEs on the level of the Borrego Subbasin aquifer.

Thus we are proposing to take measurements at the three peripheral potentially Subbasin-dependent GDEs to ascertain their actual degree of dependence upon the level of the Borrego Subbasin aquifer, even though, at its periphery, variations in aquifer level below ground are expected to be smaller than variations at, for example, the Mesquite Bosque. For conservative budgetary purposes, we are assuming continued monitoring at the peripheral potentially Subbasin-dependent GDEs for the duration of this 3-year project. We agree that it is possible that a solid data-driven conclusion could be reached as soon as a year 2 into measurements and scientific analysis that one or more of these GDEs are not dependent on the Subbasin groundwater level. In that event, we would be prepared to wind up activities at such GDE(s), and cease funding from this grant for further activity at that/those GDE(s).

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?

This project is intimately linked to the Sustainability Goal of the Borrego Subbasin GMP by virtue of the fact that any extant GDEs in the basin would be classified as Beneficial Users of Water whose interests must be considered under SGMA. The subject of this project – potential groundwater dependent ecosystems – is referenced at length in the GMP in Appendix D4. The goal of the GMP is to take into equitable consideration the interests of all of the Beneficial Users of Water in the Subbasin. Without this project, one of the important, SGMA-identfied Beneficial Users of Water will have been discarded without adequate scientific "consideration."

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

The specific goal of this Project is to determine if there are GDE(s) in the Borrego Subbasin, the health and condition of which being dependent on the aquifer level in the Subbasin; and if so, to assess their current "health status" and to monitor that status for the duration of the project. The need that is being met is the SGMA-mandated need to take into account the needs of a Beneficial User of Water during the implementation of the GMP. To date, this "potential" Beneficial User of water has been deemed to not exist (GMP, Appendix D4); however, we and other experts do not agree that existing data either supports, or totally refutes, this conclusion. This Project will determine scientifically if a SGMA-identified Beneficial User of Water has been overlooked.

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?

This project will lead to a significantly enhanced understanding of the Borrego Subbasin, particularly as it pertains to potential environmental/ecological users of water in the Subbasin. If it is determined there are GDEs in the Subbasin, the "consideration" of the needs of these Beneficial Users of Water is required under SGMA. Thus, this project will ensure that the necessary and unavoidable water conservation Management Actions that are being undertaken in the Borrego Subbasin are occurring in accordance with the requirements of SGMA.

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.

This project will serve the entire community–Underrepresented and SDAC. For example, if it is determined there are GDEs in the Subbasin that are being harmed through desultory implementation of the GMP, this would be a clear indicator of the need to adjust the pace of GMP implementation so as to avoid undesirable consequences for the entire Subbasin, including its Underrepresented and SDAC members.

In addition, our project plan is to utilize student interns, actively sought from the local area and from nearby Native American communities. These interns are to be paid and trained in scientifically exacting observations and measurements, relevant environmental science, software and field techniques, current instrumentation and satellite networking techniques, clear record-keeping and data integrity techniques, and preparation and presentation of results. Young people and vulnerable constituencies can better protect and defend their limited resources when some of their cohort acquire awareness of water issues and skills associated with preserving their Human Right to Water.

Beyond the student interns, community volunteers are also to be recruited who have an interest in measuring plants and animals of natural communities commonly associated with groundwater (NCCAG).

The communities so served will center around the town of Borrego Springs, as shown near the center of the map in Figure 3, and potentially the adjacent communities of the Los Coyotes Indian Reservation, Ranchita, Warner Springs, and Ocotillo Wells. DWR recognizes Borrego Springs as a "Severely Disadvantaged Community" (SDAC) and an "Economically Distressed Area" (EDA)."

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.

This project provides as close to a 1:1 correlation with small water systems and shallow domestic wells as imaginable, because, if there are GDEs in the Subbasin, they function essentially as small water systems and shallow wells. GDEs would serve as "canaries in the coal mine" for all shallow wells in the Subbasin. If the GDEs are being damaged by the drawdown of the water table, so will be small, shallow domestic wells, of which there are many within the Subbasin.

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?

No known nexus.

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?

By protecting the interests of all Beneficial Users of Water in the Subbasin, the Human Right to Water is protected. If it is scientifically determined there are GDEs in the Subbasin, and that their interests must be taken into account to avoid the undesirable result of their demise, then adjusting the GMP to protect what is arguably the most vulnerable, and already demonstrably damaged Beneficial User of Water in the Subbasin–the mesquite bosque–will ensure that the Human Right to water is simultaneously preserved.

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.

A by-product of this project is that it will extend data collection capability in the Subbasin in such a way as to create an exquisitely granular system of perceiving/monitoring Climate Change. This project will develop and rely on data streams that will capture the impacts of climate change such as changes in precipitation, soil moisture, evapotranspiration, temperature, and water table depth. These data streams will enable the Subbasin to better model its water economy on a continuous basis which is a sine qua non for responding quickly and appropriately to the changing climate. Borrego cannot be a resilient community if it cannot perceive quickly and accurately alterations in local climate. This project provides the data streams that form the basis for resilience.

It will be possible from the data to be collected to estimate the amounts of carbon being sequestered in the GDEs, and to quantify what is being lost from these GDEs if GDE health deteriorates; or for that matter, how much carbon is being sequestered if GDE health improves.

Work Plan

The Work Plan must contain descriptions of the anticipated tasks necessary to complete the project. Tasks should be organized by the five budget categories, as applicable: (a) Project Administration, (b) Planning/Design/Environmental, (c) Construction/Implementation, (d) Monitoring/Assessment, and (e) Interested Parties Outreach/Education. The Work Plan should also identify the anticipated deliverables for each task.

Task Numbering is taken from the Project Summary. Thus, some task numbers are skipped in some Budget Categories when a task is not performed as part of a particular Budget Category. Budget Categories (b), (c), (d), and (e) each begin with a separate task entitled "Task Management, Analysis & Reporting," which applies across that particular Budget Category.

Budget Category (a): Project Administration

Task 1 – Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee, Borrego Water District. Prepare invoices 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: Invoices and necessary documentation, periodic reporting, informal interactions and coordination between this project managed by Tubb Canyon Desert Conservancy (TCDC), and the sponsoring Borrego Water District, and the Department of Water Resources as the funding agency. TCDC oversight and internal controls ensuring proper project management, safety and integrity.

Project organization plan: The project management plan utilizes a full-time, experienced project manager, the funding for whom is spread across the different Budget Categories depending on where project activity occurs from one quarter to the next. There is also an experienced technician approximately full time, spread across categories requiring technician involvement, and budgeted within each task requiring technician support. An interim project manager, Robert Staehle (retired from NASA/Caltech/JPL) has agreed to manage task startup, with one of his first objectives to recruit a project manager for the remainder of the project. One candidate has been identified, but not confirmed. Others may be identified before funding and kickoff. The project manager and technician are planned to be TCDC employees. The project manager will report to Robert Staehle, Vice President of TCDC, and David Garmon, President of TCDC, and will be responsible to TCDC and the Borrego Water District for meeting project objectives on time and within budget. The technician will report to the project manager. All scientists and other contractors will be either independent, or employed by a home institution, and will be retained on a per-task or per-day (or hour) basis, and in their work for this project, will report to the project manager. Interfaces with other DWR/BWD project organizations will be negotiated by David Garmon as TCDC President, and interactions with these organizations may be delegated by him to the project manager.

Budget Category (b): Planning/Design/Environmental

Task Management, Analysis & Reporting: Project Management allocable to this task, analysis, and reporting.

Deliverables: Successful implementation and completion of this task within schedule and budget, and associated reporting.

Task 1. – Planning

For each of the tasks described in the Project Summary, complete detailed plans of the specific locations, all equipment necessary for the data chain from field sensors to science workstations to quality control to web-accessible archive, and timelines for equipment purchases, recruitment and staffing/contracting of scientific experts (where not already known and noted in the Project Summary), interns, and community volunteers.

Deliverables: Detailed plans, specifications and timelines for each of the tasks described in the Project Summary.

Task 2. – CEQA and other approvals

Interactions as required to gain approval for temporary installation of equipment for environment assessment and monitoring, and to secure required permits for any new wells that must be drilled and equipped for groundwater monitoring.

Deliverables: Required approvals and permits.

Budget Category (c): Construction/Implementation

Task Management, Analysis & Reporting: Project Management allocable to this task, analysis, and reporting.

Deliverables: Successful implementation and completion of this task within schedule and budget, and associated reporting.

Cat 1/Task 5. – Construction of Monitoring Well for Measuring the Water Table

Activities necessary to select the site for and drill one monitoring well if needed at Mesquite Bosque site (smaller amount needed if an existing or abandoned well can be adapted), including to secure a contractor and award the contract for drilling well, then drilling the well (if needed) and installing monitoring equipment.

Deliverables: Operating calibrated monitoring well.

Cat 2/Task 4. – Construction of Monitoring Wells for Measuring the Water Table

Activities necessary to drill one monitoring well at each Potentially Subbasin-dependent GDE site, including to secure a contractor(s) and award the contract for drilling wells, then drilling the wells and installing monitoring equipment. Satellite-enabled automatic monitoring equipment is newly available (as of 2021 Q4) from ModuSense in New Zealand in partnership with Swarm.Space of Silicon Valley, and has been included in the budget, eliminating the need for frequent manual monitoring.

Deliverables: Operating calibrated monitoring wells at each of the 3 potentially Subbasin-dependent GDEs.

Other Tasks: Because equipment required for the other tasks does not involve "construction" of major equipment that remains fixed in the ground, the setup costs for these other tasks, including equipment purchases, are accounted for under Budget Category (d): Monitoring/Assessment.

Budget Category (d): Monitoring/Assessment

Task Management, Analysis & Reporting: Project Management allocable to this task, analysis, and reporting.

Deliverables: Successful implementation and completion of this task within schedule and budget, and associated reporting.

Cat 1/Task 1 Isotopic Comparison: (see Project Summary) Measurement at seasonal intervals of the isotopic composition of water in primary potentially GDE-dependent plant specimens, and measure isotopic composition of groundwater under and nearby the GDE.

Deliverables: Scientific analysis of the comparison of plant vs. aquifer water atomic isotope similarities and differences over the seasonal cycle, leading to conclusions regarding the fraction of Subbasin aquifer water that supplies the Mesquite Bosque plants.

Cat 1/Task 2 Inventory of Species Present: (see Project Summary) Quantify flora and fauna present over the seasonal cycle, and continue in Years 2 & 3 unless Mesquite Bosque is shown to not be groundwater-dependent.

Deliverables: Quantitative record of NCCAG species present over time, analysis of biodiversity and variations indicating GDE health, and scientific analysis to link or show lack of a link to Subbasin aquifer parameters.

Cat 1/Task 3 Water Needs Assessment of Extant Plant Assemblage: (see Project Summary) Measure local evapotranspiration conditions (temperature, humidity, precipitation, wind parameters and illumination) and combine this data with the plant inventory to model how much water the local plants need to be present in the observed extant distribution and health.

Deliverables: Quantification of the required water uptake over time from all sources needed to support the observed present plants.

Cat 1/Task 4 Surface Water Availability: (see Project Summary) Determination from local historical data taken since 2016, and from existing and new (if required) sensors of the amount of surface water available to the measured plant community in the Mesquite Bosque.

Deliverables: Quantification of the amount of surface water that has been and newly becomes available over time to the extant plants in the Mesquite Bosque.

Cat 1/Task 5 Measuring the Water Table: (see Project Summary) Determine from existing wells (if possible), or a new monitoring well, the depth to water over time at the Mesquite Bosque.

Deliverables: Measurement of the depth to water over time at the Mesquite Bosque.

Cat 2/Task 1 Inventory of Species Present: (see Project Summary) Same as description under Cat 1/Task 2, but for the 3 peripheral GDEs.

Deliverables: Quantitative record of NCCAG species present over time, and scientific analysis to link or show lack of a link to Subbasin aquifer parameters for each of the three potentially Subbasin-dependent GDEs. In the event that there is shown by the data acquired and analysis undertaken by the Project to be lack of a link to Subbasin aquifer parameters at the end of Year 1 or later, this Project's Monitoring Assessment tasks will be wound up and discontinued, with results published in the scientific peer-reviewed literature.

Cat 2/Task 2 Isotopic Comparison: (see Project Summary) Measurement at seasonal intervals of the isotopic composition of water in primary potentially Sub-basin dependent GDE plant specimens at each site, and measure isotopic composition of groundwater under and nearby the GDE.

Deliverables: Scientific analysis of the comparison of plant vs. aquifer water atomic isotope similarities and differences over the seasonal cycle, leading to conclusions regarding the fraction of Subbasin aquifer water that supplies the plants in each of the potentially Sub-basin dependent GDEs.

Cat 2/Task 3 Evapotranspiration Environment Measurement: (see Project Summary) Measure local evapotranspiration conditions (temperature, humidity, precipitation, wind parameters and illumination) and combine this data with the plant inventory to model how much water the local plants need to be present in the observed extant distribution and health.

Deliverables: Quantification of the required water uptake over time from all sources needed to support the observed present plants.

Cat 2/Task 4 Measuring the Water Table: (see Project Summary) Determine from new shallow wells (constructed as part of Budget Category (c): Construction/Implementation) the depth to water over time at each of the 3 potentially Subbasin-dependent GDEs.

Deliverables: Measurement over time of the depth to water at each GDE.

Cat 2/Task 5 Monitoring GDE Health: (see Project Summary) Using data from Cat 2/Task 1, analyze and derive accepted metrics for biodiversity and variations indicating the state of GDE health.

Deliverables: Annual reporting and seasonal quantification leading to a scientific assessment of parameters of GDE health that have a credible linkage to Subbasin groundwater conditions. Publication of overall Project results in the peer-reviewed scientific literature.

Budget Category (e): Interested Parties Outreach/Education

Task Management, Analysis & Reporting: Project Management allocable to this task, analysis, and reporting.

Deliverables: Successful implementation and completion of this task within schedule and budget, and associated reporting.

Task 1: Recruiting local Borrego Springs and/or nearby Native American student(s) and broader San Diego County interns, and volunteers.

Deliverables: Employment of two interns in each of two ~10-week sessions per year, and associated broadening of their science, technology, engineering, art & mathematics (STEAM) skills in a manner that advances their education and enhances their opportunities for future higher education and professional employment. Recruitment of ~5 dedicated local volunteers each year as community scientists helping with gathering Project data that meets scientific quality standards.

Task 2: Public website and social media posts for educating public and students, sharing data, and accepting comments, suggestions, along with recruiting and training qualified volunteers.

Deliverables: Posting by 6 months into Year 1 a vibrant website and social media campaign, and developing public traffic on these, such that a significant fraction of tech-savvy local and San Diego County residents regularly learn more about GDEs and their role in sustaining the natural values and resulting ecotourism of areas in and adjacent to the Borrego Subbasin. Make some of these services available also to less tech-savvy residents, as well as to residents with disabilities.

Task 3: Public meetings to share results and plans with the community. Put on, (or participate in those put on by the Borrego Water District; at some budgetary cost saving) public meetings near the start of Years 1, 2, and 3, and a final meeting at the end of Year 3, sharing plans and results with the community, and fielding questions and comments.

Deliverables: Materials for, presentations at, wide advance notice of to community and interested parties, securing venue for, and conducting and production of public meetings; recording comments, feedback and input for use in remaining planning for the project.

Budget

DWR required budget categories have been included below. Add tasks as applicable; additional rows must be added under the applicable categories to present the cost of each task described in the Work Plan. (Real Year $ shown including estimated inflation at 8% from Yr1 to Yr2 and a compounded additional 5% from Yr2 to Yr3. Totals may differ slightly as a result of rounding.)

		(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**	277,614	0	277,614	0
	TCDC Project Administration	277,614	0	277,614	0
(b)	**Planning/Design/Environmental**	346,186	0	346,186	0
	Task Mgmt & Reporting	10,714	0	10,714	0
	Task 1 Planning	92,614	0	92,614	0
	Task 2 CEQA & Other Approvals	242,857	0	242,857	0
(c)	**Construction/Implementation**	831,418	0	831,418	0
	Task Mgmt & Reporting	29,721	0	29,721	0
	Task C1/T5 Measuring the Water Table (Mesquite Bosque)	321,647	0	321,647	0
	Task C2/T4 Measuring the Water Table (Peripheral GDEs)	480,050	0	480,050	0
(d)	**Monitoring/Assessment**	1,692,324	0	1,692,324	0
	Task Analysis, Mgmt & Reporting	573,741	0	573,741	0
	Cat 1/Task 1 Isotopic Comparison (Mesquite Bosque)	50,000	0	50,000	0

	C1/T2 Inventory of Species Present	264,980	0	264,980	0
	C1/T3 Water Needs Assessment of Extant Plant Assemblage	42,140	0	42,140	0
	C1/T4 Surface Water Availability & Evapotranspiration Environment Measurement	73,503	0	73,503	0
	C1/T5 Measuring the Water Table	22,267	0	22,267	0
	Cat 2/ Task 1 Inventory of Species Present (Peripheral GDEs)	374,544	0	374,544	0
	C2/T2 Isotopic Comparison	75,000	0	75,000	0
	C2/T3 Evapotranspiration Environment Measurement	102,220	0	102,220	0
	C2/T4 Measuring the Water Table	40,972	0	40,972	0
	C2+C1/T5 Monitoring GDE Health (Mesquite Bosque & Peripheral GDEs)	72,958	0	72,958	0
(e)	**Interested Parties Outreach/Public Education**	214,677	0	214,677	0
	Task Mgmt & Reporting	66,883	0	66,883	0
	Task 1: Recruiting local Borrego Springs and/or nearby Native American student and broader San Diego County interns, and volunteers.	19,839	0	19,839	0
	Task 2: Public website and social media posts for	105,786	0	105,786	0

	educating public and students, sharing data, and accepting comments, suggestions, and recruiting and training volunteers.				
	Task 3: Public meetings to share results and plans with community.	22,169	0	22,169	0
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	3,362,220	0	3,362,220	0

* List sources of Local Cost Share funding: N/A

Schedule

The Schedule must be organized in a manner that is consistent with the Work Plan and Budget that will be contained in the Grant Agreement. The Schedule Table presented below is a template that must be completed for each project in the proposal. The required budget categories have been included below. Add additional rows for each task as described in the Work Plan and Budget.

This schedule assumes that Tubb Canyon Desert Conservancy receives authority to proceed and conditions required to proceed from Borrego Water District on May 1, 2022. If this date is different, other dates will change accordingly.

Categories		Start Date (Earliest Start Date)	End Date (Latest End Date)
(a)	**Project Administration**	**05/01/2022**	**04/30/2025**
	TCDC Project Administration	**05/01/2022**	**04/30/2025**
(b)	**Planning/Design/Environmental**	**05/01/2022**	**04/30/2023**
	Task Mgmt & Reporting	**05/01/2022**	**04/30/2023**
	Task 1 Planning	**05/01/2022**	**07/31/2022**
	Task 2 CEQA & Other Approvals	**05/15/2022**	**04/30/2023**
(c)	**Construction/Implementation**	**11/01/2022**	**04/30/2023**
	Task Mgmt & Reporting	**11/01/2022**	**04/30/2023**
	Task C1/T5 Measuring the Water Table (Mesquite Bosque)	**11/01/2022**	**04/30/2023**
	Task C2/T4 Measuring the Water Table (Peripheral GDEs)	**11/01/2022**	**04/30/2023**
(d)	**Monitoring/Assessment**	**08/01/2022**	**04/30/2025**
	Task Analysis, Mgmt & Reporting	**08/01/2022**	**04/30/2025**
	Cat 1/Task 1 Isotopic Comparison (Mesquite Bosque)	**08/01/2022**	**04/30/2025**
	C1/T2 Inventory of Species Present	**08/01/2022**	**04/30/2025**
	C1/T3 Water Needs Assessment of Extant Plant Assemblage	**08/01/2022**	**04/30/2025**
	C1/T4 Surface Water Availability & Evapotranspiration Environment Measurement	**08/01/2022**	**04/30/2025**
	C1/T5 Measuring the Water Table	**08/01/2022**	**04/30/2025**
	Cat 2/ Task 1 Inventory of Species Present (Peripheral GDEs)	**08/01/2022**	**04/30/2025**

	C2/T2 Isotopic Comparison	**08/01/2022**	**04/30/2025**
	C2/T3 Evapotranspiration Environment Measurement	**08/01/2022**	**04/30/2025**
	C2/T4 Measuring the Water Table	**08/01/2022**	**04/30/2025**
	C2+C1/T5 Monitoring GDE Health (Mesquite Bosque & Peripheral GDEs)	**08/01/2022**	**04/30/2025**
(e)	**Interested Parties Outreach/Public Education**	**05/15/2022**	**04/30/2025**
	Task Mgmt & Reporting	**05/15/2022**	**04/30/2025**
	Task 1: Recruiting local Borrego Springs and/or nearby Native American student and broader San Diego County interns, and volunteers.	**05/15/2022**	**01/15/2025**
	Task 2: Public website and social media posts for educating public and students, sharing data, and accepting comments, suggestions, and recruiting and training volunteers.	**05/15/2022**	**04/30/2025**
	Task 3: Public meetings to share results and plans with community.	**05/15/2022**	**04/30/2025**

TCDC\Grant Opp\DWR via BWD\Proposal\Cost\GDE estimate 20220111 1st totals updated 20220119.xlsx
PRELIMINARY DRAFT COST ESTIMATE
INFLATION ADJUSTMENTS APPLIED for Yrs 2 & 3 in "RY$" columns

							Inflation factor Yr2/Yr1			Inflation factor Yr3/Yr1			
							1.08			1.134			
Cost item	start date	end date	Total	**Yr1 prelim estimate CY22$ 2022/1/11**	Total	**Yr2 prelim estimate CY22$ 2022/1/11**	**Inflated Yr2 estimate RY$**	Total	**Yr3 prelim estimate CY22$ 2022/1/11**	**Inflated Yr3 estimate RY$**	**Yr 1-3 prelim estimate Total CY22$**	**estimate Total Yrs1-3 RY$** (inflation	Estimate source, Remarks & Use
Project Total				**2061916**		**585205**	**632021**		**589315**	**668283**	**3236435**	**3362220**	
Budget Category (a): Project Administration				170250		48320	**52185**		48659	55179	267229	**277614**	
TCDC Project Admin (~9%)	5/1/22	4/30/25		170250		48320	**52185**		48659	55179	267229	**277614**	
Total before Project Administration				1891666		536885	**579836**		540656	613103	2969207	**3084605**	
Budget Category (b): Planning/Design/Environmental				346186		0	**0**		0	0	346186	**346186**	
Task Management & Reporting				10714									
Task 1 Planning	5/1/22	7/31/22		92614									Planning: PM 90 d @ $700/d; Sci 45 d @ $1000/d, Tech 30d @ 500/d
Task 2 CEQA and Other Approvals	5/15/22	4/30/23		242857									CEQA & permits: PM included above, + $200 K for consultants/environmental firms to handle permitting.
Budget Category (c): Construction/Implementation				831418		0	**0**		0	0	831418	**831418**	
Task Management & Reporting	11/1/22	4/30/23		29721									
Cat 1/Task 1 Isotopic Comparison	see (d) Monitoring & Assessment												
C1/T2 Inventory of Species Present	see (d) Monitoring & Assessment												
C1/T3 Water Needs Assessment of Extant Plant Assemblage	see (d) Monitoring & Assessment												
C1/T4 Surface Water Availability & Evapotranspiration Environment Measurement	see (d) Monitoring & Assessment												
C1/T5 Measuring the Water Table				321647									
well drilling			250000	250000									drilling and equipping well, in event that a new well is needed. $250K if an existing well can't be used, per John Pearson-->JDG-->RLS 2022/1/15
hydrological consultation			45000	45000									where to drill the well; geophysical survey & expert consultation
continuous satellite-enabled water level monitoring equipment			16590	16590									2 wells/GDE site (on-site shallow well + "adopted" nearby existing well) x 2 GDE sites + incl 1 extra as ready spare. --> 5 units from ModuSense/Swarm.Space @$3318/set (2X catalog price to cover needed mods, sales tax, shipping, training, sw, incidentals & tools). Catalog: https://shop.modusense.com/products/water-level-monitoring-solution
consultant, scientist & technician support				10057									
Cat 2/ Task 1 Inventory of Species Present	see (d) Monitoring & Assessment												
C2/T2 Isotopic Comparison	see (d) Monitoring & Assessment												
C2/T3 Evapotranspiration Environment Measurement	see (d) Monitoring & Assessment												
C2/T4 Measuring the Water Table				480050									includes drilling one small/shallow well (<50') per peripheral GDE, and adopting 1 nearby existing nearby but abandoned or operating well
well drilling			375000	375000									3 wells @ $125K each per JDG>RLS 2022/1/16 use $125K/shallow well, based on John Pearson's recommendation of $250K/deeper monitopring well.
hydrological consultation			60000	60000									JDG>RLS 2022/1/16 use $20K/shallow well, based on John Pearson's recommendation for hydrological analysis. Where to drill the well; geophysical survey & expert consultation
continuous satellite-enabled water level monitoring equipment			26544	26544									2 wells/GDE site (on-site shallow well + "adopted" nearby existing well) x 3 GDE sites + incl 1 extra as ready spare, and another extra to cannibalize for parts. --> 8 units from ModuSense/Swarm.Space @$3318/set (2X catalog price to cover and needed mods, sales tax, shipping, training, sw, incidentals & tools). Catalog: https://shop.modusense.com/products/water-level-monitoring-solution
consultant, scientist & technician support				18506									
C2/T5 Monitoring GDE Health	see (d) Monitoring & Assessment												
Budget Category (d): Monitoring/Assessment				635191		477477	**515675**		477477	541459	1590144	**1692324**	
Task Analysis, Mgmt & Reporting	8/1/22	4/30/25		124108		203086	219333		203086	230300		**573741**	
Cat 1/Task 1 Isotopic Comparison				50000		0	0		0	0		**50000**	Travis Huxman>JDG>RLS 2022/1/16 stated $25K/site x 2 sites for Cat 1. Measure 4x/yr. Do we want to do the isotopic analysis again in Yrs 2 & 3? Assumed not here. JDG agreed 1/16.
C1/T2 Inventory of Species Present				110000		70000	75600		70000	79380		**264980**	
Flora: Full initial survey in Yr1, followed by updates in Yrs 2 & 3			50000		20000			20000					John Rebman>JDG>RLS 2022/1/15 $25K/site for initial plant survey x 2 sites. RLS assumes $10K/site for Yrs2 & n3.
Fauna: equipment, shipping, modifications			12000		4000			4000					
installation & field labor			2000										
Fauna: scientific oversignt, analysis labor, sw, etc			30000		30000			30000					
Fauna: student interns			16000		16000			16000					accounted here for fauna survey, but will be used across the Tasks
C1/T3 Water Needs Assessment of Extant Plant Assemblage				20000		10000	10800		10000	11340		**42140**	
scientific analysis labor, sw, etc			20000		10000			10000					10 scientist days/site Yr1; half this for Yrs2 & 3.
C1/T4 Surface Water Availability & Evapotranspiration Environment Measurement				29553		19851	21439		19851	22511		**73503**	
equipment, shipping, modifications			14553		4851			4851					Yrs 2 & 3 ~1/3 of Yr 1 to cover storm damage, breakage, vandalism, etc.
scientific analysis labor, sw, etc			15000		15000			15000					5d/site science effort (10 d + $5K sw & tools)
C1/T5 Measuring the Water Table				0		10057	10862		10057	11405		**22267**	
consultant, scientist & technician support (for Yr1 this is included in Construction/Implementation)			0		10057			10057					Yrs2 & 3 estimated at Yr 1cost
Cat 2/ Task 1 Inventory of Species Present				162000		96000	103680		96000	108864		**374544**	
Flora: Full initial survey in Yr1, followed by updates in Yrs 2 & 3			75000		30000			30000					John Rebman>JDG>RLS 2022/1/15 $25K/site for initial plant survey x 3 sites. RLS assumes $10K/site for Yrs2 & 3.
Fauna: equipment, shipping, modifications			18000		6000			6000					Yrs 2 & 3 ~1/3 of Yr 1 to cover storm damage, breakage, vandalism, etc.
Fauna: installation & field labor													
Fauna: scientific oversignt, analysis labor, sw, etc			45000		36000			36000					Yrs 2 & 3 @ 80% of Yr1 to account for setup not needing to be repeated, but still large amount of data.
Fauna: student interns			24000		24000			24000					accounted here for fauna survey, but will be used across the Tasks
C2/T2 Isotopic Comparison				75000		0	0		0	0		**75000**	Travis Huxman>JDG>RLS 2022/1/16 stated $25K/site x 3 sites for Cat 2. Measure 4x/yr. Do we want to do the isotopic analysis again in Yrs 2 & 3? Assumed not here. JDG agreed 2022/1/16.
C2/T3 Evapotranspiration Environment Measurement				41830		27277	29459		27277	30932		**102220**	
equipment & maintenance, shipping, modifications			21830		7277			7277					Met Stations (temp, humidiy, precip, wind & illumination) at 5 sites, + 1 ready spare + 1 spare for cannibalization. Assumes Ref 2022/1/11 https://shop.modusense.com/products/iiot-weather-station-satellite-swarm, multiplied by 1.5 to account for taxes, shipping, mods, training, sw, etc. Yrs 2 & 3 at 1/3 of Yr1 for maintenance, replacement, vandalism, storm damage, etc.
scientific analysis labor, sw, etc			20000		20000			20000					5d/site science effort (15 d + $5K sw & tools)
C2/T4 Measuring the Water Table				0		18506	19986		18506	20985		**40972**	well adoption/setup in (c) Construction
consultant, scientist & technician support for Yr1 included in Construction/Implementation			0		18506			18506					Yrs 2 & 3 estimated at Yr1 support level
scientific analysis labor, sw, etc. included above for Yrs2 & 3.			0		0			0					

C2+C1/T5 Monitoring GDE Health				22700		22700	24516		22700	25742		**72958**	
scientific analysis, labor, sw, etc. to compile data, calculate accepted metrics, and draw conclusions from data across C1 T2, T3, T4 & T5; and C2 T1, T2, T3 & T4			20000		20000			20000					15 days additional science effort beyond data collection/supervision to draw GDE health conclusions + $5K related expenses.
Data Uplink, cataloging, storage & management			2700		2700			2700					Swarm.Space published uplink data plan rates as of 2022/1/16, multiplied by 3X to also cover data cataloging, storage & mgmt.
Budget Category (e): Interested Parties Outreach/Education				78871		59409	64161		63179	71645	201459	**214677**	
Task Management & Reporting	5/15/22	4/30/25		16924		22565	24370		22565	25589		**66883**	
Task 1: Recruiting local Borrego Springs and/or nearby Native American student and broader San Diego County interns, and volunteers.				6641		6641	7173		5313	6025		**19839**	Cost of paying student interns is carried in the technical tasks they support. This cost is for time, outreach materials, consultation with educators, social media, web, and on-site recruiting at schools and tribal venues.
Task 2: Public website and social media posts for educating public and students, sharing data, and accepting comments, suggestions, and recruiting and training volunteers.				50207		25104	27112		25104	28467		**105786**	Initial year Web & social media account setup, preparation & review of materials to be posted, and active response. A young expert webmaster and content editor is/are likely to be solicited and selected to lead and perform these functions part-time.
Task 3: Public meetings to share results and plans with community.				5099		5099	5506		10197	11564		**22169**	1 half-day meeting at a Borrego Springs school, Library, or other public venue at the start of each year (1 mo after Project start in Yr1), plus a final mtg in Yr3. If BWD hosts a broader public forum, cost for this project could be reduced dramatically.