

Semitropic Water Storage District

Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie

**WaterSMART Drought Response Program:
Drought Resiliency Projects for FY 2018
Funding Opportunity Announcement No. BOR-DO-18-F008**

**Project Location:
Semitropic Water Storage District,
Northwestern Kern County
of the Southern San Joaquin Valley, CA**

Semitropic Water Storage District

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February 13, 2018

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3.0 Technical Proposal and Evaluation Criteria

3.1 Executive Summary

Date	February 13, 2018
Project Name	Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie
<i>Applicant Information</i>	
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Note: all figures are contained in Appendix A, unless noted.

Semitropic Water Storage District (Semitropic, District) proposes a cost-shared project with the U.S. Bureau of Reclamation (Reclamation, USBR) to install permanent pumping facilities that convey surplus surface water supplies from Buena Vista Water Storage District (Buena Vista, BVWSD) to Semitropic WSD. The *Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie* (Project) will provide drought resiliency for in-District and external users by solving the conveyance limitations the District is currently experiencing from the lack of permanent infrastructure to move water from west to east. The Project will replace the District's current ineffective method of renting multiple horizontal diesel pumps when there is excess water to convey during wet years. Improving the District's infrastructure will provide additional available water supplies to the District, non-contract water supply purchasers, participants in Semitropic's Landowner Recharge Program, and recreation groups (duck clubs). Total Project costs equate to \$2,522,561. Of this total, \$750,000 is requested as Federal funding.

The Project is estimated to provide the following annual benefits, in acre-feet.

Avg. Annual District Water Supply	378,879 AF
Est. Additional Annual Water Supplies¹	56,769 AF
Est. Annual Water Better Managed²	56,769 AF

¹ Additional water supplies in this context, indicates the increase in volume of water captured during wet years to be used or stored as a result of the proposed Project

² Indicated as water better managed for beneficial use within the District.

3.1.1 Project Duration and Completion Date

The Project is expected to be completed within the three years Reclamation allows from signing a grant agreement. Design, engineering, and acquisition of permits will be completed during the first year, while simultaneously finalizing the environmental assessment and requirements. Construction activities are expected to last six months to one year, allowing for all Project activities to be completed in three years or less.

3.1.2 Project Relation to Federal Facilities

The Project will contribute to the capture of additional water supplies in a basin within Reclamation's Central Valley Project (CVP) Place of Use. The specific Project location along the Cox Canal is not located on any Federal right of way.

3.2 Background Data

3.2.1 Geographic Location

The location of the District is shown in Figure 1, in the north-central portion of Kern County in the Southern San Joaquin Valley of California. The District actively supplies a service area of approximately 221,400 acres, with approximately 136,000 acres as irrigated lands (approx. 61 percent of the District). The District lies between Interstate 5 to the west, State Highway 99 and the City of Wasco to the east, the City of Shafter to the southeast and the small community of Buttonwillow to the southwest. At its greatest extent, the District's service area is up to 19 miles wide (east-west) and 27 miles long (north-south).

Buena Vista Water Storage District lies directly adjacent to the southwest side of the District. The Cox Canal is owned by BVWSD and is part of Buena Vista's system of canals used to convey water from south to north when there is excess surface flow from the Kern River. The proposed Cox Canal pumping plant and intertie will be located near the border of the two districts where the Cox Canal and the District's Primary Intake Canal meet. The location of the Project is shown in Figure 2.

3.2.2 Primary Water Supplies and Sources

The District was established as a public entity in 1958 and began importing surface water in 1973. The primary source of surface water is State Water Project (SWP) water delivered through the California Aqueduct and dedicated intake canals using infrastructure described in the following sub-section. The District's importation of surface water helps to support those landowners who continue to rely on pumped groundwater by reducing the District's overall reliance on the underlying groundwater. Imported surface water is applied to three types of service areas within the District: (1) contract surface water service area, (2) temporary contract surface water service area, and (3) in-lieu water service area. These three areas, which total about 108,000 acres, receive deliveries of imported surface water on an as-available basis. The various services areas can be seen in Figure 3. Besides SWP supplies, the District supplements deliveries with water originating from other surface water sources as available, including Poso Creek, Kern River, and CVP via the Friant-Kern Canal.

Contract water is an amount of SWP water that has been contracted by a landowner and must be applied to a specific parcel of land. Unlike contract water, non-contract water is available only in average or wet years. Non-contract water is made available for contract, temporary, and in-lieu service areas on a first-come, first-serve basis. Because the availability of non-contract water is dependent on the amount of "surplus" water available, deliveries may be terminated at any time. Prices for non-contract water are set to be competitive with the grower's cost to pump groundwater through the use of on-farm deep wells.

The fourth type of District service area is the groundwater-only service area which contains about 40,000 acres of irrigated lands. A significant portion of the District overlies a usable groundwater basin; in particular the Kern County Subbasin of the Tulare Lake Basin, with an estimated 40 million acre-feet total capacity (DWR, 2004). Landowners in the District utilize pumped wells to extract underlying groundwater resources to meet on-farm water demands when surface water supplies are inadequate. The District measures and records groundwater pumping from district-owned wells; however, pumping from privately-owned wells is not reported to the District unless the water is pumped into the District’s system for conveyance and delivery to other locations (i.e., “wheeled” water supplies) or in support of the Semitropic Groundwater Storage Banking Program. The following table categorizes these varied sources by applicable contractual allocations and average annual deliveries from 2011 to 2016:

Water Supply	Annual Contracted Allocation (AF)	Avg. Annual Deliveries (AF)
State Water Project (SWP)	155,000 ¹	118,834 ²
Central Valley Project (CVP)	0 ³	0
Kern River	0 ⁴	0
Poso Creek ⁵		< 1,000
Other Water Deliveries ⁶		3,822
Groundwater Resources ⁷	Not applicable.	255,259
Total⁸	155,000	378,879

¹ Imported SWP water under contract with KCWA, signed in 1973.

² Includes all water supplies from the SWP, including principle (Table A) contracted allocation, annual carryover, and other water-purchase programs.

³ The District is not a long-term CVP contractor with the USBR, however, is capable of receiving diversions of “Section 215” water (i.e., un-storable and unmanaged flows of short duration) as they are made available.

⁴ The District is not a contractor for Kern River water supplies, however, occasionally receives diversions courtesy of the KCWA.

⁵ Agreement between the District, the North Kern Water Storage District, and the Cawelo Water District for Poso Creek flow, as measured at the State Highway 65 streamflow gaging station for times where water is available.

⁶ Includes the following: 1) Reclamation water purchased from Buena Vista WSD at intersection of Main Drain Canal and Intake Canal; 2) Buena Vista East Canal deliveries; and 3) water deliveries through interconnections with neighboring districts, including SWID and NKWSD.

⁷ Includes *estimates* of on-farm (or private) groundwater pumping necessary to meet water requirements for irrigated lands within District boundary. Value includes water pumped from private wells in support of the Groundwater Banking Program. (SWSD, 2017).

⁸ Totals based on District measurements and approximations (SWSD, 2017). Values do not include Kern River or Poso Creek water sources.

In March of 2017, the District initiated a Pilot Program for On-Farm Recharge brought forth by the abundant water supply available for growers. The program provided Landowners an opportunity to establish a Landowner banking account through the enhancement of recharge capacity in the District. After fulfilling certain criteria, the District offered Landowners two program options: 1) District Spreading and; 2) Landowner Recharge. Option 1 – District Spreading consists of Landowners volunteering fallowed land for the District to deliver surface water at no cost to the grower to allow groundwater benefit for the District. Option 2 – Landowner Recharge creates a Landowner bank account whereby 1 AF of every 2 AF is contributed to the Landowner bank account for future use within the district with the remainder

less losses being recharged for the benefit of the District. Under Option 2 the Landowner prepares their lands for recharge operations in coordination with the District and purchases flood water at the non-contract price for recharge. Figure 4 demonstrates the process of banking operations.

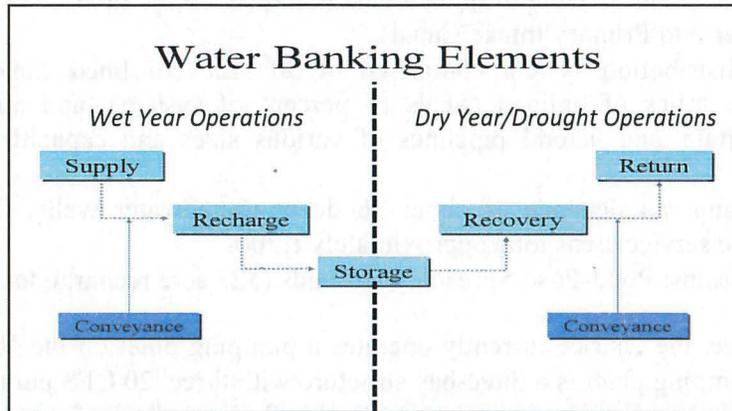


Figure 4: Water Banking Process followed by the District

Banked water has a positive impact on groundwater levels, by reducing the lift, which reduces the amount of energy for groundwater pumping. The District has based its water distribution system on conjunctive management of its surface water and groundwater resources to ensure long-term sustainability for water users. In addition, the District coordinates its activities with neighboring districts and continually reviews and modifies its water supply management practices to preserve and enhance the groundwater resources for the benefit of its landowners.

3.2.3 Water Conveyance and Delivery System

The District's canal and pipeline distribution systems and related works were initially completed in 1973. Additional features and enlargements (e.g., pumping stations, canal check structures, and spreading basins) were constructed and expanded over time with the District's service area, increasing the ability to deliver supplemental surface water supplies to agricultural water users. The current distribution system and service area consists of the following infrastructure:

- California Aqueduct Turnouts
 - Turnout No. 1 (800 cfs capacity).
 - Turnout No. 2 (300 cfs capacity reverse flow capacity to deliver water back to Aqueduct).
 - Turnout No. 3 (640 cfs capacity; reverse flow capacity to deliver water back to Aqueduct; connected to Pond-Poso Canal, 2.5 miles north of Intake Canal).
- Primary Intake Canal (supplied by Turnouts No. 1 and 2; water from Cox Canal will be pumped into the Primary Intake Canal).
 - Pond-Poso Canal System (20 miles; north-northeast through District).
 - Buttonwillow Ridge Canal System (10 miles; south-southeast through District).
- Three Spillway Basins used to capture emergency and/or operational spills and return water to distribution system.

- Pump Stations and Discharge Pipelines
 - Junction Pumping Plant (120-inch diameter pipeline en route to Aqueduct; Seven-mile pipeline connects Turnout No. 3 to Pond-Poso Canal).
 - Pump-Back Pumping Plant (78-inch diameter pipeline parallel to Intake Canal).
 - Main Drain Canal Pumping Plant (equipped with three 20 CFS pumps to lift water into Primary Intake Canal)
- Irrigation distribution system comprised of 30 miles of lined canals (9 percent of system), 16 miles of unlined canals (5 percent of system), and approximately 270 miles of main and lateral pipelines of various sizes and capacities (86 percent of system).
- Operation and maintenance of about 36 deep groundwater wells. On-farm (private) wells in the service areas total approximately 1,200.
- Recharge Basins: Pond-Poso Spreading Grounds (525 acre recharge facility).

As mentioned above, the district currently operates a pumping plant on the Main Drain Canal. The Main Drain pumping plant is a three-bay structure with three, 20 CFS pumps. This pumping plant, similar to the pumping plant proposed with this Project, allows for transfers to be made between districts and increases overall operational flexibility.

The District's principle water conveyance facilities can also be seen in Figure 3. Lands within the District but outside the surface water (primary) service area depend exclusively on pumped groundwater for their irrigation supply. On occasion, typically in wet years, the District is capable of delivering surface water supplies to these areas. The District receives SWP water at the California Aqueduct, with water diverted from direct turnouts (listed above) for District purposes. Water provided to the District for groundwater banking purposes from SWP contractors is also delivered to the District using the same infrastructure. Water returned to the Aqueduct as part of the Banking Program is conveyed through Turnouts No. 2 and 3. Kern River water, when available, is conveyed to the District through the nearby Beardsley and Lerdo canals, under an agreement with the Kern County Water Agency (KCWA) and neighboring districts. Occasionally, there are differences in hydrology between the SWP, Kern River, and CVP's Friant Unit that create opportunities for mutually beneficial exchanges based on the use of intertie infrastructure between districts.

The District does not have local access to storage in a large external reservoir (such as nearby Lake Isabella) to regulate seasonal or year-to-year water supplies. In this regard, the District relies on the *Storage* and *Recovery* of groundwater for the year-to-year regulation which is required to manage variations in the District's surface water supplies.

3.2.4 Water Use

The District was formed under Provisions 13 of the California Water Commission (CWC) for the purpose of providing supplemental or partial water supplies for agricultural water uses. The active supply of other water uses by the District is limited, including recreational, municipal and industrial, and environmental. Regarding in-district uses, when surface water supplies which are surplus to immediate irrigation requirements are available, the District will dedicate them for direct groundwater recharge at the Pond-Poso Spreading Ponds (Facilities). In this regard, the District makes use of over 500 acres of direct recharge ponds connected to their conveyance network. In addition, the District will recharge and

store water outside of the immediate area through participation in external groundwater banking projects located on the Kern River fan. Annual volumes dedicated to recharge are relatively modest or non-existent in dry years, however, during particularly wet years recharge through the use of the Facilities can be over 18,000 AF/year. Note that the groundwater recharge referenced here does not include supplies as part of the Banking Program.

Regarding agricultural water use, total crop acreage is based on the District's annual crop surveys. Permanent crops, primarily nut trees such as almonds and pistachios, account for around 59 percent of the crops planted in the District. Following these, the most abundant crops in the District, alfalfa and other grains/pasture, account for approximately 43,000 acres (around 32 percent). Using estimate ETc values, agricultural water usage requirements account for approximately 385,500 AF per year in the District (98 percent of total usage) (SWSD, 2016). By comparison, other water uses and outflows, such as groundwater recharge, conveyance seepage and evaporative losses, and limited environmental uses account for an estimated 8,000 AF per year. Water from on-farm (or private) groundwater wells is pumped either to meet necessary water requirements for irrigated lands, for transfer to other landowner locations across the District (i.e., water 'wheeling'), or for supplies in support of the District's Groundwater Banking Program.

Also within the District lies recreational water uses, specifically for approximately 1,000 acres of Duck Clubs. These clubs only receive water when non-contract water is available and otherwise rely on groundwater to replenish their duck ponds. The duck club areas are shown in Figure 2. Similarly, the location of the Kern National Wildlife Refuge, an environmental user in the District, can also be found in Figure 2.

Future allocations from the State Water Project are anticipated as 62 percent of SWP water supplies, from the SWP Water Supply Reliability Report (DWR, 2017). Shortages in SWP supplies are occurring more frequently and are larger than originally envisioned, mainly due to regulatory restrictions on exports from the Bay-Delta. Based on climate change projections, there will be increased demands for irrigation water which, with reduced surface water deliveries, would be met by an increased reliance on groundwater. Creating infrastructure to effectively capture and recharge wet year water is critically important to help offset this anticipated increased reliance on groundwater supplies.

3.2.5 Regional Climate

The District is located at the southern end of the San Joaquin Valley, a portion of the valley that is partially surrounded by a horseshoe-shaped ring of mountains. The Sierra Nevada Mountains to the east shut out most of the cold air that flows southward over the continent in the winter. It also catches and accumulates snow, the runoff of which provides water for many of the local surface water sources during the dry summer months.

Summers in the southern portion of the valley are typically hot and dry. Winters are typically cooler and are characterized by frequent fog or low clouds which occur mostly at night. Mean temperatures vary throughout the year from 45°F in January to around 82°F in July, with summers generally in the upper 90s and winters in the low to mid 40s. Most of the precipitation occurs in the winter with little to none occurring during the summer months.

Annual precipitation typically ranges between five to seven inches, with most of the rainfall occurring during the “Wet Season” of November through March.

3.2.6 Prior Working Relationships with Reclamation

Various: The District has entered into numerous Warren Act contracts for the wheeling of agricultural water supplies with and between neighboring Federal CVP surface water contractors in Kern and Tulare Counties. The three-party agreements facilitating these transfers were signed between the District, the counter-party, and the USBR.

2007: Reclamation completed the first phase of the “Semitropic Stored Water Recovery Unit Special Study Report” and also worked with Reclamation to complete a second phase.

2008: The District, acting as lead agency for the Poso Creek Integrated Regional Water Management (IRWM) Group, was awarded a USBR WaterSMART Grant in fall 2008 to prepare a System Optimization Review. The focus of the SOR was to (1) prioritize the implementation of structural water management measures for the Region based on their expected benefits to the region’s water reliability and (2) identify and resolve institutional constraints to exchanges between districts and enhance the use of district groundwater banking facilities that will help mitigate the projected loss of water reliability to the Region.

2009: The District received a “Water for America” challenge grant from Reclamation for the Water Management and Measurement Improvements for Return of Stored Water from the Semitropic Water Storage District Groundwater Bank (Agreement No. R09AP200079).

2009: The District received an ARRA-funded grant through Reclamation (Agreement No. R10AP20R22) for the Pond-Poso Spreading and Recovery Facility; completed December 2010.

2009: The District, as a member of the Semitropic-Rosamond Water Bank Authority, received an ARRA-funded grant through Reclamation (Agreement No. R09AP20R26) for the Antelope Valley Water Bank Initial Recharge and Recovery Facility Improvement Project; completed in 2011.

2010: The District entered into a grant agreement with Reclamation (Agreement No. R10AP20013) for a project entitled groundwater banking improvements in northwestern Kern County. The grant funding was for non-construction improvements to resolve permitting issues for the Stored Water Recovery Unit. The work is complete.

2011: The District entered into a grant agreement with Reclamation (Agreement No. R11AP20112) for the Water Use Efficiency and Energy Improvements for Semitropic WSD and Growers; funded through the WaterSMART Program, Bay-Delta Agricultural Water Conservation and Efficiency Projects. The work is substantially completed including the procurement and installation of a Turbine Generator.

2012: In May 2012, Reclamation approved the Final Environmental Assessment EA-09-121, the Poso Creek IRWM Plan: 25-Year Groundwater Banking, Transfer, and Exchange Program, to enable better conservation and management of the region’s decreasing water resources.

2015: In June 2015, the District was notified of a grant award for the Agricultural Water Conservation and Efficiency Grant, administered by both Reclamation and the USDA Natural Resource Conservation Service (NRCS). In September 2015, the District entered into a

grant agreement with Reclamation (Agreement No. R13AP00203) for the Groundwater Well Operational Data Acquisition and Solar Power Project, which is for groundwater well operation data acquisition and solar power energy upgrade.

2015: In August 2015, the District was notified of a grant award for the WaterSMART Drought Resiliency Project Grants for the Groundwater Well Extraction Improvements for Return of Stored Water. The project was for the equipping of nine existing recovery wells with pumps, motors, discharge piping, and electrical equipment for completion of the Aquifer Storage and Recovery project.

2016: In June 2016, the District was notified of a grant award for the Agricultural Water Conservation and Efficiency Grant, administered by both Reclamation and the USDA Natural Resource Conservation Service (NRCS). The project was for the concrete lining of canals and installation of well telemetry in the Pond-Poso Spreading Grounds.

2016: In August 2016, the District was notified of a grant award for the WaterSMART Drought Resiliency Project Grants for the Groundwater Well Extraction Improvements for Return of Stored Water: Phase 2. That project was for the equipping of seven existing recovery wells with pumps, motors, discharge piping, and electrical equipment for completion of the Aquifer Storage and Recovery project.

2016: In December 2016, the District was notified of a grant award for the Agricultural Water Use Efficiency Grant, administered by The California Department of Water Resources. The project was for implementation of ET Remote Sensing Instrumentation and Comparison for Agricultural Water Use Efficiency.

2017: In July 2017, the District was notified of a grant award for the CALFED Water Use Efficiency Grant, administered by Reclamation in support of the Bay-Delta Restoration Program. The project was for the construction of Semitropic WSD and Shafter-Wasco ID Groundwater Recharge Intertie (Diltz Intertie).

3.3 Technical Project Description

3.3.1 Project Summary

This Project proposes to construct a permanent pumping plant and intertie system equipped with two 100 CFS, 150 HP pumps to convey excess wet year surface water supplies from Buena Vista WSD to Semitropic WSD. The 200 CFS pumping plant will lift water from Buena Vista's Cox Canal into Semitropic's Primary Intake Canal via two 48" diameter pipes, connecting the 33 feet distance between the canals. The purpose of this project is to improve the District's surface water intake infrastructure, effectively creating additional water supplies for District constituents and, also, increase the efficiency and flexibility of the system during wet years. The project accomplishes this by creating an efficient conveyance route for water to be wheeled from west to east, making surface water supplies available for landowner and District recharge, recreational water use (duck clubs), and non-contract water supply for users to purchase.

To secure wet year flows in 2017, the District installed temporary pumps in the Cox and East Side Canals to allow delivery of surplus Kern River water from Buena Vista as shown in Figure

5. Three temporary 45 CFS pumps were rented from a local company, Rain for Rent, and ran with diesel driven engines. The proposed permanent facility is anticipated to more efficiently convey wet period Buena Vista water into the District through the Cox Canal at an increased rate from temporary facilities by 65 CFS. The capacity of both the temporary facility and proposed permanent facility is shown in the table below.

	Number of Pumps	Pump Capacity (CFS)	Total Capacity (CFS)
Temporary Facility (rented)	3	45	135
Proposed Permanent Facility	2	100	200

Additional water supplies to the District as a result of building a permanent pumping facility is estimated to be 283,845 AF over the 30-year life of the project, equal to 9,462 acre-feet when normalized over that time period (see calculation in Section 3.5.1). From an efficiency perspective, the proposed permanent facility improves water supply management by increasing the capacity to move water west to east by 48% (65 CFS / 135 CFS). The energy efficiency gained from using electric-powered pumps in comparison to the diesel-powered rentals also contributes to the overall better management of water supplies.

The proposed Project has many benefits including 1) providing long-term resiliency to drought for the District and its landowners; 2) improving the District's water management and 3) providing benefits for wildlife and the environment. From a drought resiliency standpoint, this Project is expected to improve the District's ability to absorb surface water supply in wet year conditions, providing a greater amount of stored groundwater to rely on during periods of drought. The Project provides a new source of surface water to support the newly implemented Landowner Recharge Program and District recharge efforts. With more water recharged during wet years, a greater volume of stored water supply can be drawn from during dry years to meet in-District and landowner demands when other surface water supplies are limited. In other words, drought resiliency is improved by building the facilities needed to move wet year water into the District for recharge and replenishment of groundwater supplies that can be called upon in dry years when surface water is scarce.

In summary, this proposed Project will provide 56,769 acre-feet of additional water in a wet year to be available for drought resiliency. This project benefits multiple interests within the region bringing enhancement to agricultural, recreational, and wildlife communities alike.

3.3.2 Tasks and Project Work

Eight tasks are defined below to accomplish the Project work and are organized to parallel Budget and Schedule items.

Task 1: Grant Administration - Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration including preparation of invoices and maintenance of financial records. *Deliverables:* Preparation of invoices and other deliverables, as required.

Task 2: Project Reporting - Reports on the Project financial status will be submitted on a semi-annual basis. A Final Project Report prepared upon project completion. *Deliverables:* Submission of semi-annual status reports, significant development reports, and a Final

Project Report as specified in the grant agreement.

Task 3: Project Design – A preliminary design for the proposed Project has been completed with all design work anticipated to be completed and review prior to the start of construction.
Deliverables: Final Design.

Task 4: Environmental Documentation and Regulatory Compliance – An environmental document that meets the requirements of CEQA and NEPA will need to be prepared for the Facility.
Deliverables: Coordinate with Reclamation on compliance of NEPA documentation. Complete and report results of the pre-activity biological survey at the time of construction.

Task 5: Permits and Approvals - The Project is located within the District's owned and maintained rights-of-way. As such, permitting and approval issues regarding the Project should be minimal. The remaining work under this task will involve consulting with the District and District's Legal Counsel regarding any additional permitting requirements.
Deliverables: Complete necessary permitting/approval activities prior to construction activities.

Task 6: Project Construction – The project includes the construction of a pumping plant facility and intertie that would administer the efficient transfer of surplus water from Buena Vista WSD into the District's primary intake canal. Work under this task will include: mobilization and site preparation (pre-construction surveys), pre-construction meetings, equipment procurement, equipment delivery, and equipping the facility. Construction of the pump station and intertie will be performed by a contractor and overseen by District staff.
Deliverables: Reference Construction Administration task below.

Task 7: Construction Administration/Management - This task is simplified in that the bid will include most construction management with the District Staff performing construction administration. For the District, this task includes construction contracting and site visits.
Deliverables: Construction progress pay estimates; documentation and authorization of Change Orders; Responses to Requests for Information (RFIs); Notice of Completion.

3.4 Performance Measures

Water Deliveries: Semitropic Water Storage District measures all water deliveries at connection points using flowmeters, between pipelines. These meters are equipped with totalizers, a flow accumulation measurement device, periodically checked for measurement accuracy as part of the District's routine operation and maintenance. When properly calibrated, the meters with totalizers provide an accurate method of measuring both the flow rate and the volume of water delivered to the District's system (Semitropic WSD AWMP, 2015).

The proposed 48" pipes will have electromagnetic flowmeters to measure all supplies delivered through the pipeline from Buena Vista to Semitropic. Per District operation standards, each delivery location from a turnout must also be at minimum equipped with a propeller meter to measure the flow delivered. Existing District infrastructure allows for flow measurement to be made at turnouts to growers, district spreading facilities, and recreational duck clubs. As such, water distributed to these groups during wet years will be measured with flow totalizers or by applying a time scale to flow measurement readings. These records will then be stored and compared year over year to the existing baseline. Flows will be measured in cubic feet per second (CFS) and volumes measured in acre feet (AF).

Records of monthly flow rate and volume deliveries will be maintained at the pumping plant as well as delivery locations. If funded under this grant, the District will include a Project water supply analysis with the post project report following the methodology given above.

Increasing Energy Efficiency in Water Management: The energy required by the District to operate the proposed pumping plant and total amount of water pumped will be recorded daily, and reconciled monthly. Therefore, the power meter readings and acre-feet pumped will be gathered and assessed as a kilowatt hour (kWh) per acre-feet (AF) efficiency value assessed as part of water supply management. The data will quantify the amount of energy necessary to move water west to east and then be compared to similar pumping plants located both in District and out of District. This data can also be compared to the costs associated with conveying water with diesel pumps prior to the implementation of the proposed Project. The efficiency improvement will be presented in both energy (kWh/AF) and water flow units.

3.5 Evaluation Criteria

3.5.1 Evaluation Criterion A – Project Benefits

How will the project build long-term resilience to drought? How many years will the project continue to provide benefits?

As previously discussed in section 3.2.2, during drought, water demands are met using groundwater which can result in significant declines in groundwater levels. To this extent, an increase in the District's ability to recharge groundwater supplies leads to an increase in the District's resiliency to drought. The purpose of this Project is to provide increased conveyance of wet year surface water supplies to the District to recharge the groundwater using District and Landowner spreading facilities. With increased groundwater stored in the underlying aquifer, a greater volume of water can be recovered during drought years. This purpose is aligned with strategies described in Semitropic's Agricultural Water Management Plan (AWMP) and the Funding Opportunity Announcement (FOA).

The District's AWMP identifies "expand groundwater recharge and banking efforts through expansion of spreading pond acreage to capture wet-period water supplies and thereby help to maintain groundwater levels" as one of the strategies against drought and climate change. The District has expanded areas of recharge by creating a Landowner Recharge Program which includes "bank accounts" for landowners and introduces another level of conjunctive use management that is in anticipation of constraints on groundwater use under the new sustainable groundwater act in California. The excess surface flows allow for the District and participants to recharge water in spreading facilities and fields during wet years, store it, and then recover water from this account in dry years. By increasing the total supply of wet year surface water supplies, more in-district landowners can participate in this Landowner Recharge Program and increase spreading acreage. The response to the following question quantifies the District's ability to increase the amount of water supply for storage, following the principle that this Project provides the District with the ability to capture more water.

The present infrastructure has been constructed and managed (e.g., spreading facility, conveyance canals, pumping plants and pipelines) such that deliveries and groundwater recharge within the

District will remain operational for the foreseeable future. For the purposes of this application, however, the ‘life’ of the Project is estimated as 30-years from pump, control mechanisms, and connector pipe operational life.

*Will the project make **additional water supplies** available? If so, what is the estimated quantity of additional supply the project will provide and how was this estimate calculated? What percentage of the total water supply does the additional water supply represent and how was this estimate calculated? Provide a brief qualitative description of the degree/significance of the benefits associated with the additional water supplies.*

The project will make additional water supplies available by increasing the capacity of water deliveries to Semitropic WSD from Buena Vista WSD during a wet year, such as 2017. The lower capacity of the temporary pumping facilities that were enlisted in 2017 limited the amount of excess Kern River water that the District could purchase from Buena Vista. Without this infrastructure constraint, more water could have been purchased and recharged by the District and landowners or provided to duck clubs for environmental and recreation use.

With implementation of the Project, the capacity to move wet year water from west (Buena Vista WSD) to east (Semitropic WSD) is increased. For this analysis, a wet year is defined as any year with greater than 87.5% SWP Table A water allocation. This definition differs from current DWR Water Year Hydrologic Classification Indices, which bases classifications on snowpack and rainfall runoff estimates, not allocations of SWP Table A water. From the DWR SWP Final Delivery Capability Report 2017 (DWR, 2017), historical annual SWP allocation percentages were analyzed using 2017 condition modeling techniques for the years 1921 through 2003 to “project future conditions” using historical data (i.e., allocations from futuristic model results reported for existing condition runs against historical hydrology). These models also accounted for potential climate change impacts on reduced surface hydrology for the SWP (DWR, 2015; KCWA, 2011), some of which are explained in Section 3.4.2.

Per Figure 5.2 of the 2017 DWR SWP Final Delivery Capability Report, allocations of at least 87.5% are predicted to be made 17% of any given year. Compared to the DWR Water Year Hydrologic Classification Indices, this wet year classification of 17% is more conservative to account for the fact that water availability, as experienced in 2017, will only occur in very wet years. The table below compares the DWR Water Year Hydrologic Classification Indices for the Sacramento Valley and San Joaquin Valley to the “87.5% of Table A Allocations” method used in this analysis. With a 30-year project, this analysis conservatively assumes that the proposed pumping plant will be used in 5 of those years to move purchased Buena Vista water east in the Semitropic Intake Canal (30 years x 17% = 5.1 years).

Method	# of Wet Years (1921-2003)	% of Wet Years
DWR: Sacramento Valley	26	31%
DWR: San Joaquin Valley	24	29%
87.5% of Table A Allocation	14	17%

In 2017, Semitropic purchased a total of 38,319 acre-feet from Buena Vista to supply water for

the Landowner Recharge Program and recreational duck club use. About 88% of the 38,319 acre-feet was purchased in a five-month period from March to July. The amount purchased was limited by the pumping capacity of the rental pumps, meaning that supply was not an issue and more water could have potentially been conveyed with a larger pumping plant. The rented diesel pumps were rated for a total of 135 cubic feet per second and provided 38,319 acre-feet of total water purchases. Increasing the capacity by 48% to 200 cubic feet per second would allow for 56,769 acre-feet to be purchased (38,319 AF x 148% of original capacity). Therefore, during a wet year it is expected that the Project will provide an additional water supply equal to 15% of Semitropic's total annual water supply (56,769 AF / 378,879 AF).

Assuming a 30-year life cycle for the pumps, motors, discharge pipeline, traveling water screens, and electrical equipment for the pumping plant installed under this Project, as explained above, approximately 5 years would expectedly result in wet year excess flows (30 years x 17%). Using the annual purchased volume mentioned above, approximately 283,845 acre-feet over the projects lifetime, could potentially be used for the Landowner Recharge Program, duck club recreation use, and other non-contract water deliveries (56,769 AF x 5 years). Normalized over 30-years, the result is approximately 9,462 acre-feet annually (283,845 AF / 30 years).

*Will the project improve the **management of water supplies**? For example, will the project increase efficiency, increase operational flexibility, or facilitate water marketing? If so, how will the project increase efficiency or operational flexibility? What is the **estimated quantity of water better managed** as a result of the project and how was this estimate calculated? What percentage of the total water supply does the water better managed represent? How was this estimate calculated? Provide a brief qualitative description of the degree/significance of anticipated water management benefits.*

This project will greatly improve the management of water supplies. The previous method of renting diesel pumps is not efficient in terms of cost, emissions, or capacity over the long term. Building a permanent facility will increase the conveyance capacity (west to east) during wet year operations and allow for increased supply for District and Landowner recharge programs in addition to non-contract water use. The new facility will also provide operational flexibility by increasing the wet year operation banking elements (Supply, Conveyance and Recharge), thereby improving water supply management during wet and dry year operations. The connection between Buena Vista's Cox Canal and Semitropic's Primary Intake Canal also provides the infrastructure and opportunity for water marketing with other Kern River contractors in the future.

The total amount of water expected to be better managed is 283,845 acre-feet over the 30-year life of the project, equal to 9,462 acre-feet annually when normalized over the 30-year period (following logic above). Water provided by this Project derives from surface flows that exceed environmental and downstream demand and, therefore, would otherwise not have a reasonable, or beneficial use. Deviating these flows to be either artificially recharged in District and landowner facilities, or used by duck clubs and the Kern National Wildlife Refuge as seasonal wildlife habitat, puts the water to a reasonable and beneficial use. By "capturing" and repurposing excess flows, the project succeeds in better managing surplus wet year water. The estimate for water better managed was calculated with the same method as the additional water supplies calculation above. Therefore, during a wet year it is expected that water better managed will equate to 15% of Semitropic's total annual water supply (56,769 AF / 378,879 AF).

*Will the project make **new information available to water managers**? If so, what is that information and how will it improve water management?*

Construction of the proposed permanent pumping plant will include electromagnetic flowmeter installations in both 48-inch connector pipes to allow for accurate flow measurement and totalizing of deliveries from the Cox Canal. This data can then be used by water managers to better operate both canals and have precise measurement to account for inflows into the Primary Intake Canal. This data, in combination with existing flow measurement and water level control devices, will allow for better management and control of canal flow and water level.

All turnouts to Landowner Recharge Program participants and to duck clubs will also have flow measurement capabilities. New metering will be installed at duck club delivery points, since the District does not normally provide surface water to their area. Reporting these flows allows water managers to better measure total recharge in the basin and, also, measure the amount of water used to create seasonal wildlife habitat and recreation opportunities for duck clubs.

*Will the project have **benefits to fish, wildlife, or the environment**? If so, please describe those benefits.*

The Project will provide the ability to convey excess Kern River water to recreational users (duck clubs) in the upland habitat. The upland habitat provides critical water for wildlife and the environment, specifically waterfowl and shorebirds. Figure 2 shows the route that water will take and the location of the wildlife and environmental benefit. The Duck Clubs are located in the District's groundwater service area and normally do not receive surface water deliveries. In 2017, Semitropic was able to deliver 1,476 acre-feet per month to 1,000 acres of duck clubs in the upland habitat providing a total of 7,335 acre feet for the entire year. With a permanent pumping plant, it is expected that this number could increase as capacity increases.

Similarly, the Project's new connection will also help deliver or bank non-contract surface water supplies to all water users, including the Kern National Wildlife Refuge (Refuge). In this regard, the Project can provide critical water for wildlife and the environment, specifically waterfowl, shorebirds, and other wetland dependent species that rely on the Refuge for habitat. In 2017, the participating district and source of Cox Canal's excess water supply, Buena Vista, delivered 22,429 acre-feet to the Refuge. In addition, with increased capacity provided by this project, less demand will be imposed on CVP supplies and, consequently, the San Joaquin River system – which provides critical habitat for salmon and other fish species.

3.5.2 Evaluation Criterion B – Drought Planning and Preparedness

*Explain how the **applicable plan addresses drought**. Proposals that reference plans clearly intended to prepare for and address drought will receive more points under this criterion. Explain whether the drought plan was developed with **input from multiple stakeholders**. Was the drought plan developed through a collaborative process?*

Included as the existing drought plan is the District's Drought Management Plan section from

the 2015 Agricultural Water Management Plan (AWMP) filed with the California Department of Water Resources (DWR). The 2015 AWMP was developed with input from the cities and county within the District service area. To the extent that the District has identified potential impacts from perennial or long-term dry conditions, they have taken steps towards addressing reduced surface water supplies and curbing agricultural demands. Many of the planning associated with these identified impacts, as well as quantification of water supplies and demands in the District, was covered in their 2015 AWMP. The District is committed to monitoring and addressing the potential impacts of sustained drought conditions (e.g., decreased surface water deliveries, heavy groundwater use reliance and resultant subsidence, fallowing and agricultural economic impacts) with neighboring agencies and regional growers.

The District has not filed a standalone drought plan, but will be a part of a comprehensive drought plan for the entire Poso Creek Regional Water Management Group (RWMG) based on the framework identified in Reclamation's Drought Contingency Planning. The Group was awarded Drought Plan funding in 2017 and is currently undergoing the last steps of reaching an agreement with USBR. The Poso Creek RWMG will develop a Drought Planning Task Force (Task Force) consisting of interested stakeholders within the planning area that want to actively participate in developing the comprehensive Drought Contingency Plan. The Task Force will be initiated by the membership representing multiple interests in the Poso Creek Integrated Regional Water Management (IRWM) Plan. The Poso Creek RWMG will reach out to add additional diversity through the established relationships developed in the IRWM planning process. Outreach will occur to other groups in Kern and Tulare counties, such as the Kern Groundwater Authority who is activity meeting to form Groundwater Sustainability Authority under the recent change to California groundwater law. The Poso Creek RWMG anticipates they will be able to develop diverse representation on the Task Force.

Also included is the 2016 Drought Contingency Plan written by Reclamation, DWR, the U.S. Fish & Wildlife Service, National Marine Fisheries Service, and the California Department of Fish and Wildlife that addresses the Central Valley Project and State Water Project operations of which Semitropic is a contractor.

*Does the drought plan include consideration of **climate change impacts** to water resources or drought?*

The District addressed this issue in their 2015 AWMP (SWSD, 2016) following discussion and quantification of water supplies and agricultural water demands. That plan discusses the expectation of climate change impacts to increase both daytime and nighttime temperatures in the region (DWR, 2012). This general increase in temperatures, coupled with greater variability and unpredictability in precipitation, is expected to lead to greater year-to-year variability in hydrologic conditions (i.e., more drought conditions and limited wet year events). More on the impacts of potential climate change events on the region, specifically with regards to water supplies, is covered in the following Section 3.4.3.

*Describe how your proposed drought resiliency **project is supported by an existing drought plan**. Does the drought plan identify the proposed project as a potential **mitigation or response action**? Does the proposed project implement a **goal or need** identified in the drought plan?*

*Describe how the proposed project is **prioritized** in the referenced drought plan?*

The Drought Management Plan in Semitropic WSD's 2015 AWMP discusses the importance of the District's conjunctive use management and alternative water supplies. The plan identifies the significance of wet year deliveries to satisfy irrigation water requirements within all service areas. To this extent, the AWMP specifically outlines the District's strategy of relying on recharged groundwater to be returned in dry years. In addition, the District identifies Kern River water as a supplemental water supply that should be taken advantage of when possible due to the reduced reliability of contracted SWP water. The Project also acts as a noted drought response measure for individual landowners to better manage water resources in order to minimize impacts caused by drought.

3.5.3 Evaluation Criterion C – Severity of Actual or Potential Drought Impacts

*What are the ongoing or potential drought impacts to specific sectors in the project area if **no action** is taken (e.g., impacts to agriculture, environment, hydropower, recreation and tourism, forestry), and how severe are those impacts? Impacts should be quantified and documented to the extent possible.*

If the proposed Project is not implemented, there would be no increase in the capability of Semitropic to capture and store or repurpose excess wet year flows. Without improvements to infrastructure, this may lead to a scenario where wet year water supplies are available, but there is no capacity to convey the water. Most in-district demand consists of agricultural uses and, as noted below and in the District's 2015 AWMP (SWSD, 2016), any decrease in District supplies to their users would result in land fallowing or increased groundwater pumping.

Some communities, rural residences, and business in Northern Kern County (in and around Semitropic) rely on groundwater from the aquifers as their principal supply. Many of these entities lack the current infrastructure necessary to convey surface water supplies to their locations. Should climate change result in a reduction in water available from surface supplies, the increased frequency and quantity of groundwater pumping by other agricultural, municipal, and other users will lead to a decrease of groundwater storage without the necessary means of replenishing the depleted groundwater. Those users currently relying on groundwater as their primary means of supply may find themselves competing with other users in the near future for those limited, and already stressed, resources. According to a CAWSC study (Hanson et al., 2010), counties across the Central Valley including Kern County should expect such a scenario due to the identified impacts of sustained drought conditions, along with land surface subsidence, and the dewatering of aquifer materials beyond that which has been experienced historically.

*Whether there are **public health concerns** or social concerns associated with current or potential drought conditions (e.g., water quality concerns including past or potential shortages of drinking water standards, increased risk of wildfire, or past or potential shortages of drinking water supplies? Does the community have another water source available to them if their water service is interrupted?)*

Many of the communities in the surrounding region are considered disadvantaged communities (DACs) based on a comparison of the statewide median household income (\$48,574 for 2010-2014 based on ACS Census data) to the population-weighted average household income level. Regarding the extensive use of groundwater supplies by these DACs, efforts proposed by the District as part of the Poso Creek IRWM Group have focused on projects and programs that benefit the underlying groundwater basin. In this regard, recall that the agricultural water management districts and DACs, as well as other cities and M&I users, share a groundwater basin that is hydraulically connected and utilized by all users in the Region. In many cases, DACs rely exclusively on pumped groundwater as supplies for their residents.

Accordingly, any decline in water levels due to extensive use under drought conditions will be felt by all users, including the regional DACs that rely on the groundwater for their supplies. This is expectedly due to an associated increase in the use of power and energy resources (environmental burden), as well as infrastructure (well) upgrades which become necessary to pump groundwater from deeper in the aquifer. The results can be detrimental to the DACs, since availability from other water sources in this scenario are very limited and may lead to interruption in services. To that extent, projects and programs such as the proposed Project works to mitigate declines in water levels and will provide benefits to other groundwater users in the surrounding region. This is accomplished by maintaining levels in Semitropic through the storage of wet year supplies, thus leading to less competition for other hydrologically connected groundwater resources.

*Whether there are ongoing or potential **environmental impacts** (e.g., impacts to endangered, threatened or candidate species or habitat)*

There are no impacts related to endangered or threatened species in the District's service area or facilities. However, as explained in Section 3.4.1, the District can provide additional water supplies to wildlife habitat with the implementation of the Project. Kern County is also known to have more than two dozen threatened and endangered species that are land-based mammals. The three primary endangered species known to live within the District's boundaries, per the federally-recognized candidate listing, are the San Joaquin Kit Fox, Tipton Kangaroo Rat, and the San Joaquin Woolly-Threads. The proposed Project is not expected to lessen or improve the status of these species.

*Whether there are ongoing or potential, local, or **economic losses** associated with current drought conditions (e.g., business, agriculture, reduced real estate values)*

Most of the District's water use is for agricultural purposes. Other users in the region, such as industrial (some of which related to agriculture), commercial, and domestic users and communities, typically rely on groundwater as the sole source of supply. The economic fiber of the region depends on the effective, efficient, and conjunctive use of surface water supplies and groundwater from the common groundwater basin. As such, being able to replenish the basin with wet year and excess surface water supplies means less competition between users in the region (i.e., some water supplies that are banked end up being used for in-district uses). The consequences of failing to increase water supply reliability include: increased costs of agricultural production; decreased cropped and irrigated acreage; decreased workforce; and significant economic losses, both locally and statewide. As drought continues to threaten the

reliability of imported surface water on an annual basis, the reliance on other sources of supply becomes more pronounced.

*Whether there are **other drought-related impacts** not identified above, including tensions over water that could result in a water-related crisis or conflict.*

The Project is the result of collaboration among neighboring water agencies. In 2005, the District joined with neighboring water agencies to develop the Poso Creek IRWM Plan (Plan) for the region. In addition to Semitropic, the agencies that developed and adopted the Plan included, Shafter-Wasco Irrigation District, North Kern Water Storage District, Cawelo Water District, Kern-Tulare Water District, and Delano-Earlimart Irrigation District. These agencies represent about 350,000 irrigated acres and a gross area of 500,000 acres. These agencies represent SWP, CVP, and local Kern River water supply contractors.

As recognized in the Plan, projects that result in improved management of groundwater supplies in the region benefit all users because of the widespread reliance on the underlying common basin resource. Therefore, the proposed Project which helps improve the reliability of regulated groundwater supplies for regional and banking interests, is supported by several neighboring districts, and helps to prevent water-related crisis and reduce conflict.

*Describe existing or potential drought conditions in the project area. Is the project in an area that is currently **suffering from drought** or which has recently suffered from drought? Please describe existing or recent drought conditions, including when and the period of time that the area has experienced drought conditions (please provide supporting documentation, [e.g., Drought Monitor, droughtmonitor.unl.edu]).*

According to the U.S. Drought Monitor, sponsored by the U.S. Department of Agriculture and the National Drought Mitigation Center: Semitropic, as well as much of the Southern San Joaquin Valley in California, is experiencing 'Abnormally Dry (D0)'. Prior to the heavy precipitation of 2017, this region experienced 'Exceptional Drought (D4).' The result of prolonged drought conditions was little or no surface water deliveries to users in the region, and many fallowed fields due to inadequate water supply. The latest release of this information was January 2, 2018. As with much of the Southern San Joaquin Valley in California, current drought conditions have improved and surface water deliveries have increased when compared to the drought years (2011-2017).

*Describe any projected increases to the severity or duration of drought in the project area resulting from **climate change**. Provide support for your response (e.g., reference a recent climate change analysis, if available)*

The District's 2015 AWMP analyzed the effects of climate change on agricultural water supply and demand. The future of the District's water supply will be driven mainly by changes in hydrology and particularly by the volume, variability, and timing of precipitation of the Sacramento-San Joaquin River Delta, as the receiving watershed area is the source of supply for the SWP, the primary source of surface water for the District. For many climate change scenarios, and a range of future climate projections studied (Chung et al. 2009), the reliability of the SWP and CVP water supply systems is expected to be reduced from less frequent, but more intense precipitation events. Decreases in surface water deliveries to areas south of the

Sacramento-San Joaquin River Delta, directly affecting the water volume supplied to Semitropic, including potential ‘excess’ volumes which could be stored and recharged.

Two models predicted that the District’s service area will become warmer and drier relative to historic conditions in response to assumptions of increasing greenhouse-gas emissions (USGS 2009, CEC 2015). Based on these projections, climate change could result in potentially longer and more frequent drought conditions, increased demands for irrigation water, and reduced surface water deliveries that would be met by increasing groundwater pumping. This, in turn, would likely lead to increased depths to groundwater and increased land subsidence. These combined effects have the potential for the District to rely more on groundwater to supplement years where surface supplies are inadequate to meet demand.

3.5.4 Evaluation Criterion D – Project Implementation

*Describe the **implementation plan** of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work.*

The Project will be implemented as follows: Activities would begin around September 1, 2018; design to be completed while the District meets Reclamation’s environmental compliance requirements; construction would be completed by the end of February 2021; and all project work and reporting would be completed by June 2021. A draft Project Completion Report will be submitted to Reclamation for Project Manager’s comment and review no later than 90 days after project completion, followed by a Final Report addressing comments. The report shall be prepared and presented in accordance with the provision of a grant contract. A Gantt Schedule estimating the phases and milestones for completion of the work is shown in Appendix A.

*Describe any **permits** that will be required, along with the process for obtaining such permits.*

An evaluation will be made by District Counsel regarding whether construction of the Project will require any additional permits. It is noted that the District is not subject to the County’s jurisdiction with regard to building and grading permits. Accordingly, no County-issued permits will be required. The District will comply with CEQA and NEPA before commencing any ground disturbing activities, as discussed further in Section 5.0. Additionally, a pre-activity survey will be conducted by a qualified biologist prior to the start of construction.

*Identify and describe any **engineering or design work** performed specifically in support of the proposed project.*

Preliminary design by engineering consultants has been completed and included in Appendix C.

*Describe any new **policies or administrative actions** required to implement the project.*

A Project participation agreement with BVWSD will be completed.

*Describe how the **environmental compliance estimate** was developed. Has the compliance costs been discussed with the local Reclamation office?*

The environmental compliance estimate was based off previous experience with similar projects

and has not been discussed with a local Reclamation office.

3.5.5 Evaluation Criterion E – Nexus to Reclamation

How is the proposed project connected to a Reclamation project or activity?

The District is not a long-term CVP contractor of Reclamation-managed water supplies. However, Semitropic is in the CVP place of use and has purchased CVP-Friant water that has been available from time to time, typically during the peak runoff period of wet years. In addition, the District's immediate neighbors are CVP-Friant contractors; namely, the Southern San Joaquin Municipal Utility District and the Shafter-Wasco Irrigation District. To facilitate mutually beneficial transfer and exchange arrangements, as well as water banking exchanges, with neighboring water agencies, the District has constructed facilities that have added inter-district conveyance capacity involving Reclamation project water supplies.

Will the project benefit any tribe(s)?

There are no tribal areas in the immediate Project area.

Does the applicant receive Reclamation project water?

As stated in the first question of Evaluation Criterion E, the District is not a long-term CVP contractor of Reclamation-managed water supplies. However, Semitropic has purchased CVP-Friant water that has been available from time to time, typically in wet years.

Is the project on Reclamation project lands or involving Reclamation facilities?

Yes. The Project is in the CVP place of use.

Is the project in the same basin as a Reclamation project or activity?

As mentioned in Section 3.2.2, the District overlies a usable groundwater basin, the Kern County Sub-basin of the Tulare Lake Basin, which is actively and conjunctively managed. The District's immediate neighbors are CVP-Friant contractors with the infrastructure and conveyance systems used to deliver project water to their respective service areas. These neighbors, as well as others, rely on the same groundwater basin for their supplies when supplemental surface water is inadequate to satisfy demands.

Will the proposed work contribute water to a basin where a Reclamation project is located?

The Project will contribute to the capture of additional water supplies in a basin that is a Reclamation CVP place of use.

4.0 Project Budget

4.1 Funding Plan and Letters of Commitment

How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant.

The District's cost-match portion will be covered by the District's general engineering account, and, if needed, their reserve account. The District adopts an annual budget during the fall of each year and revisits the budget at mid-year to evaluate the need for any mid-year adjustments. The District completed a Proposition 218 election in 2013 that has allowed District funds to help support the capital improvement program going forward and has recently sold some bonds to help with financing capital projects.

In-kind costs incurred before the anticipated project start date to include as project costs. District Staff and consultants have participated in the design of the pump station and intertie to allow project definition in preparation for this application. The consultant's costs are captured by the District by use of task orders and invoices. The District will not include any in-kind costs incurred prior to the anticipated project start date as project costs. A preliminary design of the project is complete. Design work has supported the preparation of construction cost estimates.

Identity and amount of funding to be provided by funding partners.

No other funding partners need to be identified.

Funding requested or received from other Federal partners.

No other Federal funding has been requested or received for the proposed work.

Pending funding requests that have not yet been approved.

The District does not have any pending funding requests that have not yet been approved for the Project components.

Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
Semitropic Water Storage District Monetary Contribution	\$ 1,772,561
Non-Federal Subtotal	\$ 1,772,561
Other Federal Entities	
Other Federal Subtotal	\$ -
Requested Reclamation	\$ 750,000
Total Funding	\$ 2,522,561

4.2 Budget Proposal

The total Project budget for the *Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie* (Project) is estimated at \$2,522,561 with \$750,000 in requested grant funds (Federal Cost Share) and \$1,772,561 in Non-Federal Cost Share funds. It is expected that the pump station and intertie will be completed by a construction contractor with support from District staff. Of the total Project budget, \$2,397,036 was estimated for construction and procurement based on a contractor's estimate. Ultimately, final construction costs cannot be determined until bid solicitation packages are received for the project works. The total requested grant funds amount to about 30% percent of total project costs, with the remainder (70% percent) funded by the Applicant. Refer to Table 4-1a, which provides a summary of the estimated budget, by task, including Reclamation and Applicant contributions.

The Project budget was prepared based on the level of effort required to implement the project as discussed in Section 3.3.2 – Tasks and Project Work. The Work Plan identifies and describes eight tasks used to define the overall Project Scope, Schedule, and Budgets:

- Task 1: Grant Administration
- Task 2: Project Reporting
- Task 3: Project Design
- Task 4: Environmental Documentation and Regulatory Compliance
- Task 5: Permits & Approvals
- Task 6: Construction (Pump Station and Intertie)
- Task 7: Construction Administration/Management

Budget Table Format:

Several tables have been prepared in support of these budget estimates, which immediately follow this section in the order shown below.

- a. Table 4-1a provides a task-by-task summary of the estimated budget. Table 4-1b summarizes program funding sources, including Reclamation and Applicant contributions.
- b. Tables 4-2 through 4-7 provide a summary of Project costs by task and follow the “sample budget proposal format” from the FOA.
- c. Table 4-6 provides a summary of Project Construction costs for constructing the pump station and intertie. Refer to Appendix C for a summary breakdown of costs for contractual construction administration, labor, and equipment procurement based on the contractor's estimate provided to the District by W.M. Lyles Co.
- d. Table 4-8 provides a summary of the aggregated costs for implementation of the Project.
- e. Table 4-9 provides a listing of burdened hourly rates for District Staff.

The Standard Budget Form 424C is included at the end of Section 4.4

Table 4-1a. Budget Summary by Task

Task Number - Name	Total Cost
Task 1 - Grant Administration (See Table 4-2)	\$ 4,628
Task 2 - Project Reporting (See Table 4-3)	\$ 4,624
Task 3 - Project Design (See Table 4-4)	\$ 80,256
Task 4 - Environmental Documentation and Regulatory Compliance	\$ 24,976
Task 5 - Permits and Approvals (See Table 4-5)	\$ 690
Task 6 – Construction-Pump Station and Intertie (See Table 4-6)	\$ 2,397,036
Task 7 – Construction Admin/Management- (See Table 4-7)	\$ 10,351
TOTALS	\$ 2,522,561

Table 4-1b. Program Funding Sources

Funding Sources	Percent Total Project Costs	Total Cost by Source
Recipient Funding	70%	\$ 1,772,561
Reclamation Funding	30%	\$ 750,000
Other Federal Funding	0%	\$ -
TOTAL PROGRAM COSTS	100%	\$ 2,522,561

Cost Estimating Notes:

- 1) This table is supported by detailed tables which are included immediately following the Budget Narrative.
- 2) Tasks 1 & 2: Administration and Reporting, about 0.4% of the total cost, is based on the administration of previous grant projects. See background.
- 3) Task 3: Project Design - This estimate is based on final design done by consultants.
- 4) Task 4: Environmental Documentation and Regulatory Compliance - Based on recent approach to NEPA assessment on existing grant agreements with Reclamation.
- 5) Task 7: Construction management will likely be included as part of the construction contract, the figure represented above includes construction contracting and field visits.
- 6) Salaries and Wages and Fringe Benefits for District office and field staff are shown in Table 4-9.
- 7) Reference the Technical Proposal (Section 3.3.2) for task descriptions.
- 8) Refer to the Table 4-8 for a Budget Summary of all Projects costs.

4.3 Budget Narrative

Salaries and Wages:

Jason Gianquinto, General Manager for Semitropic WSD, is the representative for the Applicant and will provide overall Project Management. The District’s Project Manager for the technical design and construction of the project components will be Isela Medina, District Engineer for Semitropic WSD and licensed Civil Engineer in the state of California. The project will also be staffed by the Contractor’s personnel, including office and field personnel. In this regard, the District’s office staff will perform the required project administration, reporting, and assist in the design and construction tasks. Additionally, the District will have accounting staff responsible for tracking costs and maintaining financial records to administer Project finances, including making all payments for contracted services.

Tables 4-2 through 4-7, under “Salaries and Wages”, provide an estimated cost for District staff to complete the work under each task. The tables provide a summary of the estimated hours (by job classification) necessary to complete the work in each task and their applicable hourly rates. The number of hours for District office personnel to complete the work in each task was estimated based on recent experience by the District in implementing projects that have been funded by federal grants. This provided the basis for the number of hours estimated for implementing tasks related to the grant administration and reporting. The number of hours estimated for the District staff to assist in design and construction tasks was based on experience by staff in performing similar work on a previous project. In this regard, the District constructed a similar pump station on the Main Drain Canal to also convey surplus flow from Buena Vista WSD to Semitropic WSD and provides experience in completing this work.

Any work related to “Grant Reporting” will be completed by the District office staff and covered under this category in Table 4-3, under Task 2-Project Reporting. The total reporting costs were determined by multiplying the total number of hours by the hourly labor rate. The total number of hours necessary to complete the reporting (based on the implementation of the project over a three-year time frame) was based on prior experience by the District staff in implementing this task for other federally-funded grants.

The hourly labor rates for District personnel were calculated as the annual salary, plus benefits, divided by 260 days (2,080 hours).

The costs provided under Salaries and Wages were calculated by multiplying the estimated number of hours, by the applicable hourly rate for each job classification. Salaries and Wages costs will be part of the Federal cost share. In this regard, the District will be asking for reimbursement for any Salaries and Wages costs.

The main component of this project focuses on contractual/construction work. In this regard, all contractual work is shown under the category “Contractual”.

Fringe Benefits:

Fringe benefits for District personnel vary from between 24 percent to 44 percent of the base hourly rate, depending on level of staff. Fringe benefits include Medical Insurance, Employee's Pension Plan, Social Security, District portion of Medicare, Dental Insurance, Vision Insurance, Life Insurance, and Disability Insurance. Refer to Table 4-9 for a summary of the fringe benefits by job classification for District personnel. It is noted that the applicant has not worked through a Federally-approved benefit agreement.

Travel:

District will not be charging any travel expenses to the Project, nor will they be asking for reimbursement of any incidental travel costs.

Equipment:

The proposed Project will be advertised for bid and the District will be soliciting sealed bids for construction of the Project work. In this regard, the District will contract with a local contractor who will provide costs to “furnish and install” the necessary project components. Equipment expenses have not been included inasmuch as the districts will not be purchasing or leasing any equipment to construct the project works, but rather the successful contractor will be providing such equipment as part of the work. Refer to Construction Estimate in Appendix C.

Materials and Supplies:

Acquisition of materials and supplies for office use is not anticipated; rather, District will provide any incidental supplies. Accordingly, no “Materials and Supplies” expenses have been included.

Contractual:

With regards to contractual costs, the District will contract with a local contractor, who as previously stated, will assist the District with implementing the construction tasks of the Project. The work to be completed by the consulting contractor and any subcontractors is shown under this category. To support the costs for the construction task, a copy of a contractor’s estimate has been provided (refer to Appendix C). The estimate was used as the basis for the costs provided in Tables 4-2 through 4-7. The overall bid estimate consists of a base cost, overhead, and a percentage for profit.

Additionally, engineering consultants have been retained to supplement the Project design work. A copy of the fee schedules for the engineering consultant and sub consultants are included in Appendix C. The fee schedules list the billing rates by job classification. The contractual costs were determined by multiplying the total number of hours by the applicable labor rate identified in the fee schedules. The budgets under the “Contractual” category for each task are estimates at this time. However, they have been prepared based on considerable knowledge and expertise by the consultants, whom over the years, have provided similar services to the districts for projects that have been similar in scope and complexity.

Environmental and Regulatory Compliance Costs:

An estimated budget for environmental compliance is based on recent NEPA environmental document preparation for this District and neighboring districts under existing grant agreements. The District intends to work with Reclamation to determine the potential environmental effects the proposed Project may have in relation to NEPA, NHPA, ESA, and the Clean Water Act to ensure compliance with all applicable environmental laws. Based on inspection of the FOA, it is understood that Reclamation will determine who will perform the work under this category (i.e. Reclamation, the Applicant, or a consultant). In regards to CEQA, an Initial Study will be completed to fulfill the requirements and also used in the NEPA approach.

The proposed activities are located on district-owned and maintained rights of way. Accordingly, it is anticipated that it will not be difficult to obtain permits necessary for the work that is the subject of this Proposal.

Other Expenses:

No “Other Costs” are included in the budget. Accordingly, this category does not apply.

Indirect Costs:

No indirect costs are included in the budget. Accordingly, this category does not apply.

Total Costs:

Total project costs are estimated at \$2,522,561.

4.4 Budget Form

The following page is a completed SF-424C – Budget Information – Construction Programs for the proposed Project.

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	\$ 9,252.00	\$	\$ 9,252.00
2. Land, structures, rights-of-way, appraisals, etc.	\$	\$	\$
3. Relocation expenses and payments	\$	\$	\$
4. Architectural and engineering fees	\$ 105,232.00	\$	\$ 105,232.00
5. Other architectural and engineering fees	\$	\$	\$
6. Project inspection fees	\$	\$	\$
7. Site work	\$	\$	\$
8. Demolition and removal	\$	\$	\$
9. Construction	\$ 2,408,077.00	\$	\$ 2,408,077.00
10. Equipment	\$	\$	\$
11. Miscellaneous	\$	\$	\$
12. SUBTOTAL (sum of lines 1-11)	\$ 2,522,561.00	\$	\$ 2,522,561.00
13. Contingencies	\$	\$	\$
14. SUBTOTAL	\$ 2,522,561.00	\$	\$ 2,522,561.00
15. Project (program) income	\$	\$	\$
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ 2,522,561.00	\$	\$ 2,522,561.00
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter eligible costs from line 16c Multiply X 30 % Enter the resulting Federal share.			\$ 750,000.00

Table 4-2 Task 1 Grant Administration

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	12	Hours	\$ 1,228
District Engineer	67.92	36	Hours	\$ 2,445
Staff Accountant	30.31	0	Hours	\$ -
O&M Superintendent	71.16	0	Hours	\$ -
FRINGE BENEFITS				
General Manager	24.55	12	Hours	\$ 295
District Engineer	18.34	36	Hours	\$ 660
Staff Accountant	10.00	0	Hours	\$ -
O&M Superintendent	22.06	0	Hours	\$ -
TRAVEL				\$ -
SUPPLIES/MATERIALS				\$ -
CONTRACTUAL				\$ -
ENVIRONMENTAL/REG. COMPLIANCE				\$ -
OTHER				\$ -
TOTAL DIRECT COSTS				\$ 4,628
INDIRECT COSTS - __%				\$ -
TOTAL PROJECT COSTS				\$ 4,628

Notes:

(1) Salaries and Wages and Fringe Benefits shown for District office and field staff.

Table 4-3 Task 2 Project Reporting

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	0	Hours	\$ -
District Engineer	67.92	48	Hours	\$ 3,260
Staff Accountant	30.31	12	Hours	\$ 364
O&M Superintendent	71.16	0	Hours	\$ -
FRINGE BENEFITS				
General Manager	24.55	0	Hours	\$ -
District Engineer	18.34	48	Hours	\$ 880
Staff Accountant	10.00	12	Hours	\$ 120
O&M Superintendent	22.06	0	Hours	\$ -
TRAVEL				\$ -
SUPPLIES/MATERIALS				\$ -
CONTRACTUAL				\$ -
ENVIRONMENTAL/REG. COMPLIANCE				\$ -
OTHER				\$ -
TOTAL DIRECT COSTS				\$ 4,624
INDIRECT COSTS - __%				\$ -
TOTAL PROJECT COSTS				\$ 4,624

Notes:

(1) Salaries and Wages and Fringe Benefits shown for District office and field staff.

Table 4-4 Task 3 Design

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	0	Hours	\$ -
District Engineer	67.92	24	Hours	\$ 1,630
Staff Accountant	30.31	0	Hours	\$ -
O&M Superintendent	71.16	0	Hours	\$ -
FRINGE BENEFITS				
General Manager	24.55	0	Hours	\$ -
District Engineer	18.34	24	Hours	\$ 440
Staff Accountant	10.00	0	Hours	\$ -
O&M Superintendent	22.06	0	Hours	\$ -
TRAVEL				\$ -
SUPPLIES/MATERIALS				\$ -
CONTRACTUAL				
Engineering Consultant				
Senior Professional - Grade 7	\$245.00	150		\$ 36,750
Senior Professional-Grade 6	\$206.00	130		\$ 26,780
Project Professional-Grade 4	\$154.00	24		\$ 3,696
Senior CADD Drafter/Designer/GIS	\$137.00	80		\$ 10,960
ENVIRONMENTAL/REG. COMPLIANCE				\$ -
OTHER				\$ -
TOTAL DIRECT COSTS				\$ 80,256
INDIRECT COSTS - __%				\$ -
TOTAL PROJECT COSTS				\$ 80,256

Notes:

(1) Salaries and Wages and Fringe Benefits shown for District office and field staff.

Table 4-5 Task 5 Permits/Approvals

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	0	Hours	\$ -
District Engineer	67.92	8	Hours	\$ 543
Staff Accountant	30.31	0	Hours	\$ -
O&M Superintendent	71.16	0	Hours	\$ -
FRINGE BENEFITS				
General Manager	24.55	0	Hours	\$ -
District Engineer	18.34	8	Hours	\$ 147
Staff Accountant	10.00	0	Hours	\$ -
O&M Superintendent	22.06	0	Hours	\$ -
TRAVEL				\$ -
SUPPLIES/MATERIALS				\$ -
CONTRACTUAL				\$ -
ENVIRONMENTAL/REG. COMPLIANCE				\$ -
OTHER				\$ -
TOTAL DIRECT COSTS				\$ 690
INDIRECT COSTS - __%				\$ -
TOTAL PROJECT COSTS				\$ 690

Notes:

(1) Salaries and Wages and Fringe Benefits shown for District office and field staff.

Table 4-6 Task 6 Construction-Pump Station

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	0	Hours	\$ -
District Engineer	67.92	8 ¹	Hours	\$ 543
Staff Accountant	30.31	0	Hours	\$ -
O&M Superintendent	71.16	8 ¹	Hours	\$ 569
FRINGE BENEFITS				
General Manager	24.55	0	Hours	\$ -
District Engineer	18.34	8 ¹	Hours	\$ 147
Staff Accountant	10.00	0	Hours	\$ -
O&M Superintendent	22.06	8 ¹	Hours	\$ 176
TRAVEL				
				\$ -
CONTRACTUAL²				
Construction Contractor				
Pump Sump Structure	*See Appendix C*			\$ 502,800
100 cfs Pumps	*See Appendix C*			\$ 750,000
Discharge Piping & Appurtenances	*See Appendix C*			\$ 497,700
Metalwork	*See Appendix C*			\$ 19,500
Traveling Water Screens	*See Appendix C*			\$ 201,400
Electrical/SCADA	*See Appendix C*			\$ 344,700
Grading/Surfacing	*See Appendix C*			\$ 46,500
Fencing/Guard Posts	*See Appendix C*			\$ 21,600
Painting	*See Appendix C*			\$ 11,400
ENVIRONMENTAL/REG. COMPLIANCE				
				\$ -
TOTAL DIRECT COSTS				
				\$ 2,397,036
INDIRECT COSTS - __%				
				\$ -
TOTAL PROJECT COSTS				
				\$ 2,397,036

Notes:

¹ Hours added for field meetings

² Contractual costs are based on estimates from experienced contractor.

Table 4-7 Task 7 Construction Administration/Management

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	0	Hours	\$ -
District Engineer	67.92	120	Hours	\$ 8,150
Staff Accountant	30.31	0	Hours	\$ -
O&M Superintendent	71.16	0	Hours	\$ -
FRINGE BENEFITS				
General Manager	24.55	0	Hours	\$ -
District Engineer	18.34	120	Hours	\$ 2,201
Staff Accountant	10.00	0	Hours	\$ -
O&M Superintendent	22.06	0	Hours	\$ -
TRAVEL				\$ -
SUPPLIES/MATERIALS				\$ -
CONTRACTUAL				\$ -
ENVIRONMENTAL/REG. COMPLIANCE				\$ -
OTHER				\$ -
TOTAL DIRECT COSTS				\$ 10,351
INDIRECT COSTS - ___%				\$ -
TOTAL PROJECT COSTS				\$ 10,351

Notes:

¹ Construction management will likely be included as part of the construction contract.

² Hours include construction contracting, field inspection, and oversight.

Table 4-8 Budget Summary

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager	102.30	12	Hours	\$ 1,228
District Engineer	67.92	244	Hours	\$ 16,572
Staff Accountant	30.31	12	Hours	\$ 364
O&M Superintendent	71.16	8	Hours	\$ 569
FRINGE BENEFITS				
General Manager	24.55	12	Hours	\$ 295
District Engineer	18.34	244	Hours	\$ 4,475
Staff Accountant	10.00	12	Hours	\$ 120
O&M Superintendent	22.06	8	Hours	\$ 176
TRAVEL				
				\$ -
SUPPLIES/MATERIALS				
				\$ -
CONTRACTUAL				
Engineering Consultant				
Senior Professional - Grade 7	\$245.00	150	Hours	\$ 36,750
Senior Professional-Grade 6	\$206.00	130	Hours	\$ 26,780
Project Professional-Grade 4	\$154.00	24	Hours	\$ 3,696
Senior CADD Drafter/Designer/GIS	\$137.00	80	Hours	\$ 10,960
Construction Contractor				
Pump Sump Structure	*See Appendix C*			\$ 502,800
100 cfs Pumps	*See Appendix C*			\$ 750,000
Discharge Piping & Appurtenances	*See Appendix C*			\$ 497,700
Metalwork	*See Appendix C*			\$ 19,500
Traveling Water Screens	*See Appendix C*			\$ 201,400
Electrical/SCADA	*See Appendix C*			\$ 344,700
Grading/Surfacing	*See Appendix C*			\$ 46,500
Fencing/Guard Posts	*See Appendix C*			\$ 21,600
Painting	*See Appendix C*			\$ 11,400
ENVIRONMENTAL/REG. COMPLIANCE				
				\$ 24,976
OTHER				
TOTAL DIRECT COSTS				
				\$ 2,522,561
INDIRECT COSTS - __ %				
				\$ -
TOTAL PROJECT COSTS				
				\$ 2,522,561

Table 4-9 - Burdened Hourly Rates

Calculation of Burdened Labor Hourly Rate for District Staff

Job Classification	Hourly Rate ¹	Fringe Benefits ²	Total Burdened Hourly Rate
General Manager	\$102.30	\$24.55	\$126.85
District Engineer	\$67.92	\$18.34	\$86.26
Staff Accountant	\$30.31	\$10.00	\$40.31
O&M Superintendent	\$71.16	\$22.06	\$93.22

Notes:

¹ Fixed annual salary divided by 2080 hours.

² Typical fringe benefits are about 24 to 44 percent of Hourly Rate for health care, retirement, Social Security, paid vacation, sick leave, and holidays.

5.0 Environmental and Cultural Resource Compliance

The following section summarizes the District's approach to avoid, minimize, and mitigate any potential environmental impacts related to construction of the proposed Project. The Project will be constructed in compliance with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements.

Impacts on Surrounding Environment:

The extent of construction activities (footprint) of the Project is relatively small and located within property owned and operated by the District. All the proposed work is on actively disturbed land and district owned canals. Construction of the proposed Project will involve minimal soil disturbing activities that will have minimal impact on the air in the surrounding environment, inasmuch as the majority of the work involves installation of pumps, motors, discharge piping and installation of electrical equipment of the pumping plant. No impacts to water or animal habitat is expected. To minimize impacts from soil disturbing activities, the District will implement Best Management Practices during construction to mitigate any impacts as follows: construction equipment will be powered down when not in use to reduce unnecessary emissions; dust-control measures will be implemented during all earth-disturbing activities; and all equipment will be tuned and serviced to minimize unnecessary emissions. Additionally, to minimize impacts to animal habitat, the District will engage a qualified biologist to conduct a pre-activity survey before the start of construction to ensure that the construction area remains unoccupied by sensitive (endangered) species. In addition, standard avoidance and minimization protocols will be followed during construction. Moreover, the duration of the construction activity is expected to be relatively short (i.e., construction to occur over period of few months within the three-year window for utilizing the grant funds).

Impacts to Regional Endangered Species:

The District is aware that threatened and endangered species exist in the Southern San Joaquin Valley. Typically, endangered species habitat is not found within these actively disturbed areas. Natural vegetation is limited to ruderal, non-native grasses and forbs at the project site. However, certain species are known to exist around the edges of fields. Based on experience and the Kern Council of Governments Habitat Conservation Map and federally-listed species mapping, and review of the FWS Endangered Species Database and California Natural Diversity Database, the only sensitive species with native habitats near the Project are the San Joaquin Kit Fox (protected under the Endangered Species Act), the blunt-nosed leopard lizard, the Tipton Kangaroo Rat, and the giant kangaroo rat. As part of the environmental work, the District will retain a certified biologist to conduct a biological reconnaissance survey and prepare a report to evaluate potential impacts to biological resources within the project sites. It is expected that none will be encountered inasmuch as the project site is in an actively disturbed area. However, if potential impacts are identified, the District will follow recommendations by the biologist to reduce those impacts to a less than significant level.

Water Conveyance System:

The District's irrigation delivery system was completed in the mid-1970s. The District's irrigation delivery system is composed of two canal reaches referred to as the Pond-Poso and Buttonwillow Ridge Canal. In addition, the District operates a series of turnouts, spillway basins, recharge basins, pump stations and discharge pipelines as part of its conveyance system. The District began importing State Water Project water in 1973 via the California Aqueduct. The District's Primary Intake Canal is supplied by Turnouts No. 1 and 2 from the Aqueduct. The Project will construct facilities to move water from Buena Vista WSD's Cox Canal into the District's Primary Intake Canal.

Buildings and Structures Eligible for National Register of Historic Places:

There are no buildings or structures in the Project Area. If Reclamation deems necessary, Semitropic will contract with a private cultural resources management consultant and arrange for Reclamation staff to determine what, if any previous cultural resources surveys have been conducted near the project area. The expectation is that none will be identified inasmuch as the project will be constructed in actively disturbed lands.

Archaeological Sites:

There are no known archeological sites in the proposed project area. Most of the construction will be the installation of the pumping plant within the canal and along the bank. The only disturbed earth will be the two 33 ft pipelines connecting Cox Canal to Semitropic's Intake canal. If Reclamation deems necessary, the District will work with Reclamation cultural resources staff to obtain clearance for archaeological sites within the project area. The District will retain a private cultural resources management consultant or arrange for Reclamation staff to carry out a consultation to conduct a Phase I intensive pedestrian cultural resource survey, and a cultural resources records search and Native American consultation to evaluate any impacts to cultural sites. Impacts to cultural resources are not expected. Nevertheless, the District is prepared to implement any necessary mitigation measures should cultural resources be identified for any component of the Project.

Other Environmental and Cultural Concerns:

Other environmental and cultural concerns that were noted regarding the Project area are:

- a. There are no wetlands or other surface waters inside the Project boundaries that fall under CWA jurisdiction as "Waters of the United States".
- b. Construction of the Project will support the important agricultural-based economy in the Southern San Joaquin Valley and should have only positive impacts on low income or minority persons living in the region.
- c. The Project will not limit access to or ceremonial use of Native American sacred sites or tribal lands.
- d. The Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species in the region.

6.0 Required Permits or Approvals

The Project is located within District land with Cox Canal owned and operated by BVWSD and the Primary Intake Canal owned by Semitropic. All required permitting, construction management and construction administration tasks are within the experience of both districts. An evaluation will be made by District Counsel regarding whether project construction will require any additional permits. As design plans and specifications are further developed, the District will engage Reclamation, local agencies, and Buena Vista WSD to ensure all required permits, reviews, and special approvals are met. The following paragraphs detail the main points of the District's commitment to obtaining all relevant permits and approvals.

a. Bids for construction will be solicited through the competitive bidding process based on final plans and specifications. The standard specifications will include language relating to obtaining permits and approvals prior to construction. In particular, the standard language in the specifications state "The Contractor is an independent contractor and shall, at his sole cost and expense, comply with all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefore..." This would include, but is not limited to, such things as any required NPDES permitting and the preparation of a Storm Water Pollution Prevention Plan for construction of the Project.

b. It is noted that the District is not subject to the County's or City's jurisdiction with regard to building and grading permits relative to water resource projects. Accordingly, no city or County issued permits would be required.

7.0 Existing Drought Contingency Plan

The Drought Management Plan from Semitropic's 2015 Agricultural Water Management Plan (AWMP) is attached in Appendix B. The plan details how the District would prepare for droughts and manage water supplies and allocations during drought conditions.

Also attached is the Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations. Semitropic is a State Water Project contractor and is affected by the lack of Project water under dry conditions. This contingency plan establishes the goals and potential actions of the Projects' governing agencies in response to drought.

8.0 Letters of Project Support

The District has established long-term, working relationship with its neighboring water districts. Although neighboring water districts are not providing funding to construct the proposed facilities, they are interested in the facilities being constructed and may form future agreements with the district based on this infrastructure improvement. The pump station facilities are anticipated to increase the water supply available for recharge during wet years and lead to potential return of stored water during dry years.

The District has received a letter of support signed by the Chairman of the Poso Creek Integrated Regional Water Management Plan (IRWMP) Regional Water Management Group, which represents seven districts within the Poso Creek IRWMP. The following neighboring water agencies who participate as members of the Poso Creek IRWMP and are supportive of the project include:

- ✓ Cawelo Water District
- ✓ Delano-Earlimart Irrigation District
- ✓ Kern-Tulare Water District
- ✓ North Kern Water Storage District
- ✓ Shafter-Wasco Irrigation District
- ✓ Southern San Joaquin Municipal Utility District
- ✓ North West Kern Resource Conservation District

A copy of this letter of support is included following this page.



POSO CREEK IRWMP

Management Group

1101 Central Avenue, Wasco, CA 93280
661-758-5113

Mr. Jason Gianquinto
General Manager
Semitropic Water Storage District
1101 Central Avenue
Wasco, CA 93280

Subject: Proposed Project – Cox Canal Pumping Plant and Intertie

Dear Mr. Gianquinto:

On behalf of the Poso Creek Integrated Regional Water Management Group (Group), of which Semitropic Water Storage District (Semitropic) is apart, I am writing this letter in support of the Cox Canal Pumping Plant and Intertie Project. By installing permanent facilities in the Cox Canal to convey excess surface water, the project will enhance water supply reliability, improve operational flexibility, and help maintain the economic viability of water use in the region. These three benefits are directly aligned with three of the five primary goals of the IRWMP. The Group is clearly interested and supportive of this project which will benefit both the Group and Semitropic.

We hope that our expressions of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support for you project, we would be happy to do so.

Sincerely,

Dana Munn

Chairman of the IRWMP

9.0 Official Resolution

The Official Resolution for the *WaterSMART: Drought Resiliency Project Grants for Fiscal Year 2018* is scheduled for adoption by the District's Board of Directors at the District's March 14th Board Meeting. The draft resolution is provided below and a copy of the signed Resolution will be provided following the Board Meeting.

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE SEMITROPIC IMPROVEMENT DISTRICT
OF THE SEMITROPIC WATER STORAGE DISTRICT

IN THE MATTER OF: RESOLUTION NO. 18-XX
IN SUPPORT OF FILING AN APPLICATION WITH THE BUREAU OF RECLAMATION FOR A
GRANT UNDER *WATERSMART DROUGHT RESPONSE PROGRAM: DROUGHT RESILIENCY
PROJECTS (FY 2018)*

WHEREAS, the Semitropic Water Storage District (District or Applicant) partnered with several neighboring water districts in January 2006 and formulated an Integrated Regional Water Management Plan (Plan) for their collective area, which was adopted in July 2007 and updated in 2014 by each of the districts; and

WHEREAS, the Plan identified improving water supply reliability, operational efficiency, and flexibility as regional priorities and identified projects that regulate water supplies available to the District; and

WHEREAS, State and Federal regulatory measures in the Delta have rendered the District's SWP water less reliable, creating an additional need to regulate supplies when they are available from other sources; and

WHEREAS, the District's regulating capabilities can be improved with improvements made to the conveyance system components of the Cox Canal to the Primary Intake Canal; and

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WATERSMART DROUGHT RESPONSE PROGRAM: DROUGHT RESILIENCY PROJECTS FY 2018* (Funding Opportunity No.BOR-DO-18-F008); and

WHEREAS, District Staff has formulated a grant proposal for improvements to the conveyance component of the Primary Intake Canal, referred to as the *Cox Canal Pumping Plant and Intertie*.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the APPLICANT as follows:

- a. The District's Board of Directors has reviewed and supports the submission of a grant application to Reclamation entitled Cox Canal Pumping Plant and Intertie;
- b. The District's General Manager, Jason Gianquinto, or his designee, is directed to submit the grant application and is authorized to enter into an agreement with Reclamation on behalf of Semitropic for grant funding under Reclamation's *WaterSMART Drought Response Program: Drought Resiliency Projects (FY 2018)*
- c. The Applicant is capable of providing the amount of funding and in-kind contributions specified in the application; and
- d. The Applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

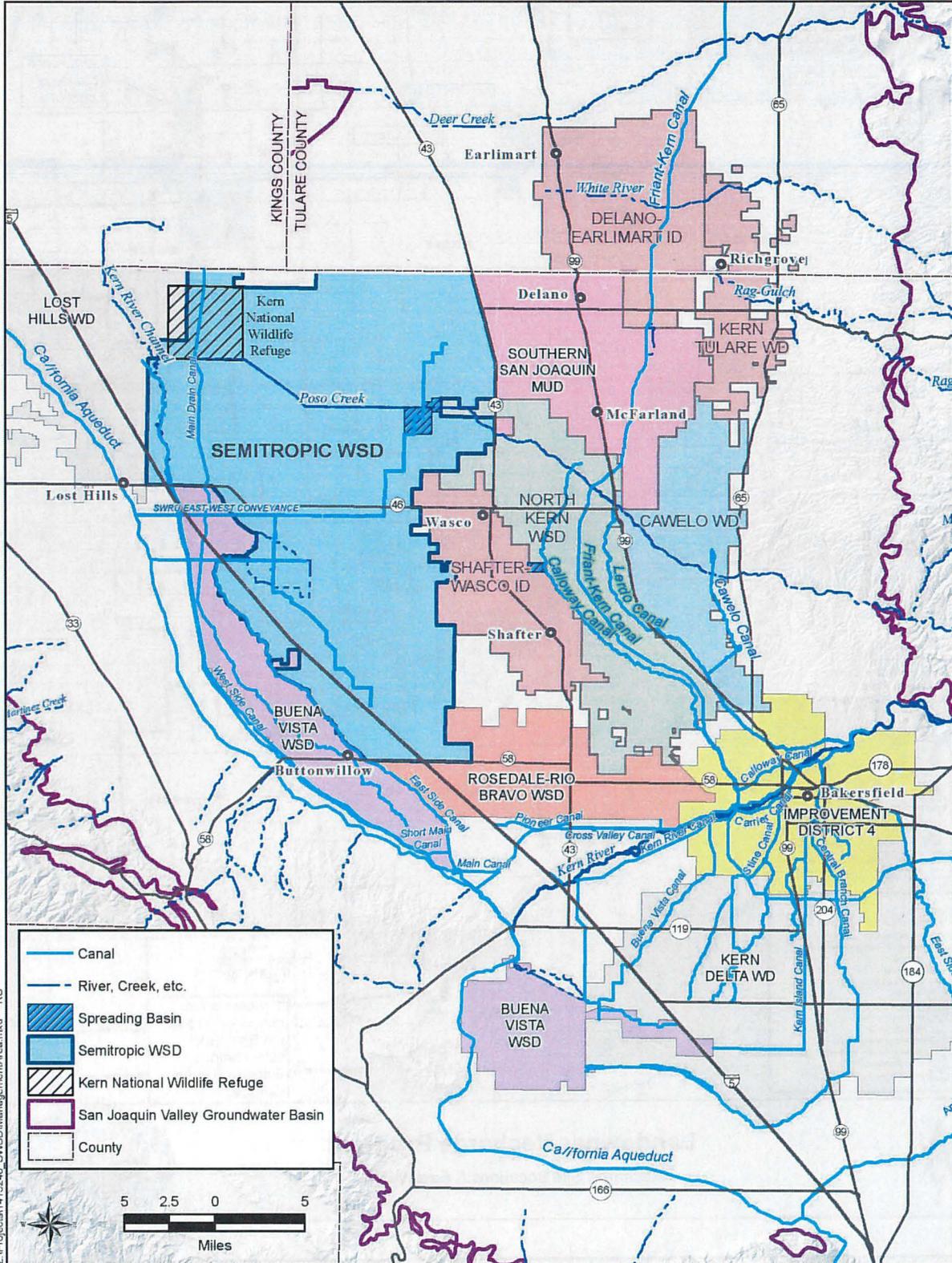
ALL THE FOREGOING, being on motion of _____, Director and seconded by _____, Director was authorized by the following vote:

10.0 List of References

The following list of references was cited throughout the proposal document:

- California Dept. of Water Resources (DWR), 2004. "Bulletin 118 – Update 2003: California's Groundwater. Kern River Valley Groundwater Basin." Report Basin 5-22.14.
- California Dept. of Water Resources (DWR), 2015. "The State Water Project: Final Delivery Reliability Report 2015."
- California Department of Water Resources (DWR), 2015. "State Water Project Delivery Capability Report 2015 – Public Draft." DWR Bay-Delta Office.
- Chung et al. California Department of Water Resources (DWR), 2009. "Using Future Climate Projections to Support Water Resources Decision Making in California."
- Hanson, R. U.S. Geological Survey (USGS). 2010. "Conjunctive Use in Response to Potential Climate Changes in the Central Valley, California."
- Kern County Water Agency (KCWA), 2011. "Water Supply Report."
- GEI Consultants, Inc., 2018. "Fee Schedule and Payment Terms." Standard Fee Schedule 2018.
- Poso Creek Integrated Water Management (IRWM) Group, 2007. "Poso Creek IRWM Plan."
- Semitropic Water Storage District (SWSD), 2016. "2014 Agricultural Water Management Plan (AWMP)." Board of Directors adopted March 9, 2016. Resolution No. ST 13-12.
- Semitropic Water Storage District (SWSD), 2012. "2012 Groundwater Management Plan (GWMP)." Board of Directors adopted 2012.
- U.S. Bureau of Reclamation (USBR), et al. 2016. "Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations."
- U.S. Geological Survey (USGS), California Water Science Center. Fact Sheet 2009-3074. 2009. "Effects of Climate Variability and Change on Groundwater Resources in the United States".

Appendix A - Proposal Figures



Z:\Projects\1415240_SWSD\ManagementArea.mxd RS 23-Mar-2015

Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie

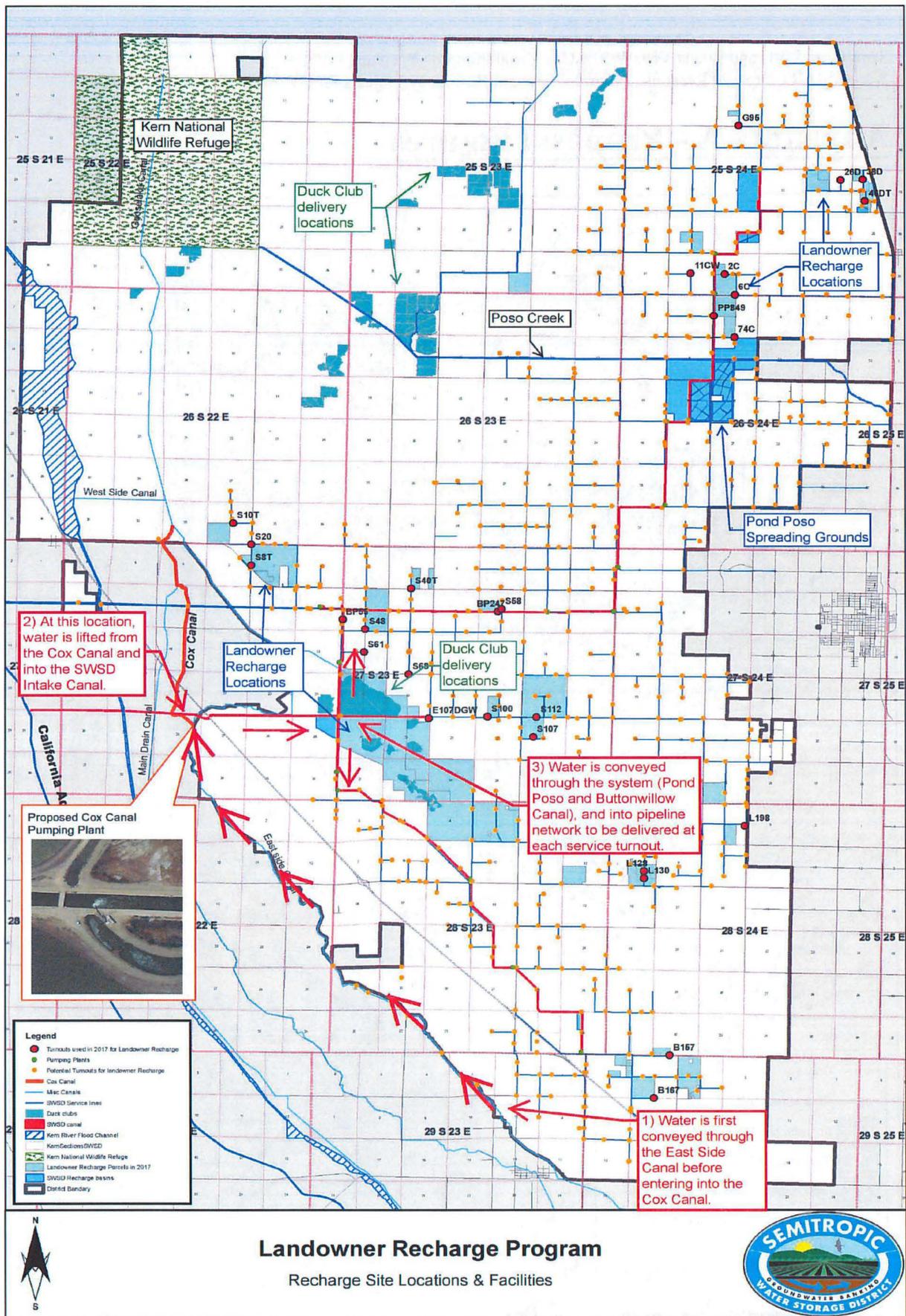
Semitropic Water Storage District

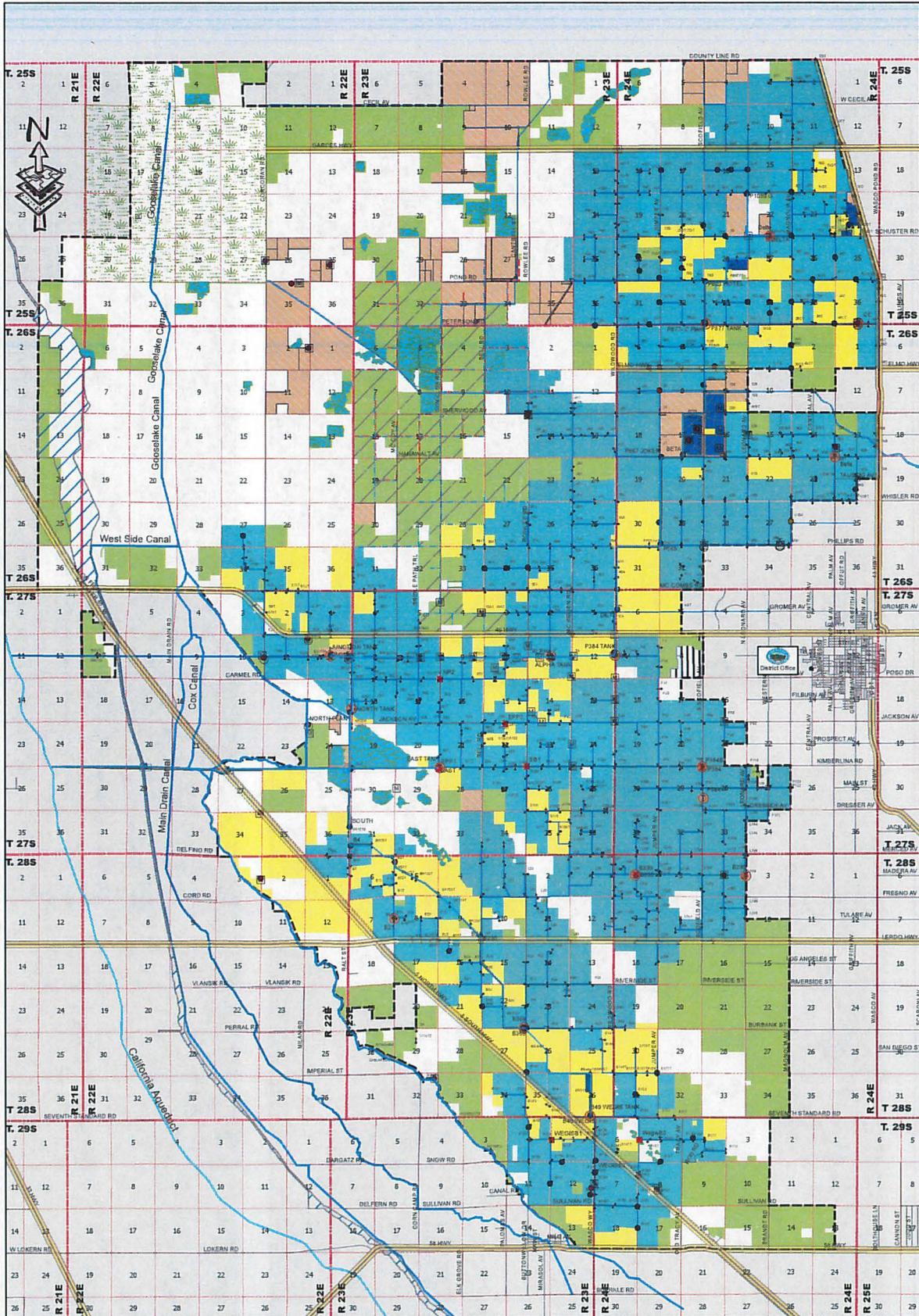


February 2018

Management Area and Neighboring Water Agencies

FIGURE 1





- Legend**
- Lodi Hills Water District
 - Contract
 - Intermittent Surface Water Service Area
 - Temporary Service
 - Groundwater Service
 - Groundwater / Future Intermittent Surface Water Service Area
 - District Owned
 - Wasco State Prison





Semitropic WSD and Buena Vista WSD: Cox Canal Pumping Plant and Intertie

Semitropic Water Storage District

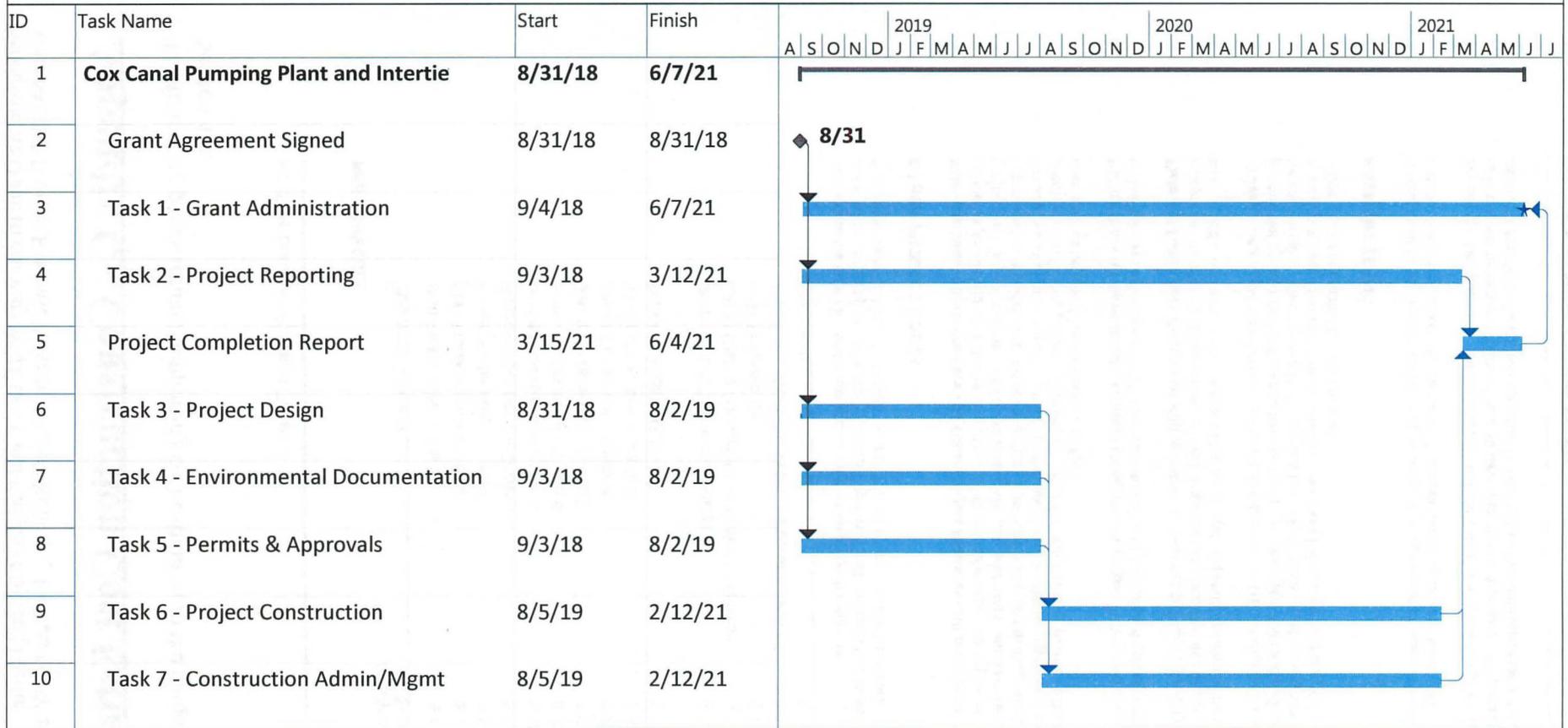


Aerial Images of Temporary Pumps

February 2018

FIGURE 5

Figure 6: Project Schedule



Appendix C - Construction Cost Estimates

The following pages contain supporting cost estimates to the budget narrative and tables explained in Section 4.0.

FEE SCHEDULE AND PAYMENT TERMS



FEE SCHEDULE

<u>Personnel Category</u>	<u>Hourly Billing Rate</u> \$ per hour
Staff Professional – Grade 1	\$ 113
Staff Professional – Grade 2	\$ 125
Project Professional – Grade 3	\$ 137
Project Professional – Grade 4	\$ 154
Senior Professional – Grade 5	\$ 181
Senior Professional – Grade 6	\$ 206
Senior Professional – Grade 7	\$ 245
Senior Consultant – Grade 8	\$ 275
Senior Consultant – Grade 9	\$ 335
Senior Principal – Grade 10	\$ 335

Senior CADD Drafter and Designer	\$ 137
CADD Drafter / Designer and Senior Technician	\$ 125
Field Professional	\$ 103
Technician, Word Processor, Administrative Staff	\$ 102
Office Aide	\$ 80

These rates are billed for both regular and overtime hours in all categories. Rates will increase up to 5% annually, at GEI's option, for all contracts that extend beyond twelve (12) months after the date of the contract. Rates for Deposition and Testimony are increased 1.5 times.

OTHER PROJECT COSTS

Subconsultants, Subcontractors and Other Project Expenses - All costs for subconsultants, subcontractors and other project expenses will be billed at cost plus a 15% service charge. Examples of such expenses ordinarily charged to projects are subcontractors; subconsultants: chemical laboratory charges; rented or leased field and laboratory equipment; outside printing and reproduction; communications and mailing charges; reproduction expenses; shipping costs for samples and equipment; disposal of samples; rental vehicles; fares for travel on public carriers; special fees for insurance certificates, permits, licenses, etc.; fees for restoration of paving or land due to field exploration, etc.; state sales and use taxes and state taxes on GEI fees.

Billing Rates for Specialized Technical Computer Programs - Computer usage for specialized technical programs will be billed at a flat rate of \$10.00 per hour in addition to the labor required to operate the computer.

Field and Laboratory Equipment Billing Rates - GEI-owned field and laboratory equipment such as pumps, sampling equipment, monitoring instrumentation, field density equipment, portable gas chromatographs, etc. will be billed at a daily, weekly, or monthly rate, as needed for the project. Expendable supplies are billed at a unit rate.

Transportation and Subsistence - Automobile expenses for GEI or employee owned cars will be charged at the rate per mile set by the Internal Revenue Service for tax purposes plus tolls and parking charges or at a day rate negotiated for each project. When required for a project, four-wheel drive vehicles owned by GEI or the employees will be billed at a daily rate appropriate for those vehicles. Per diem living costs for personnel on assignment away from their home office will be negotiated for each project.

PAYMENT TERMS

Invoices will be submitted monthly or upon completion of a specified scope of service, as described in the accompanying contract (proposal, project, or agreement document that is signed and dated by GEI and CLIENT).

Payment is due upon receipt of the invoice. Interest will accrue at the rate of 1% of the invoice amount per month, for amounts that remain unpaid more than 30 days after the invoice date. All payments will be made by either check or electronic transfer to the address specified by GEI and will include reference to GEI's invoice number.

W. M. LYLES CO. - Bid Summary

Semitropic Water Storage District - Cox Canal Pump Station
 Bid Date: 2/13/18 @ 2:00 PM
 Estimate Number: 18-RA-001

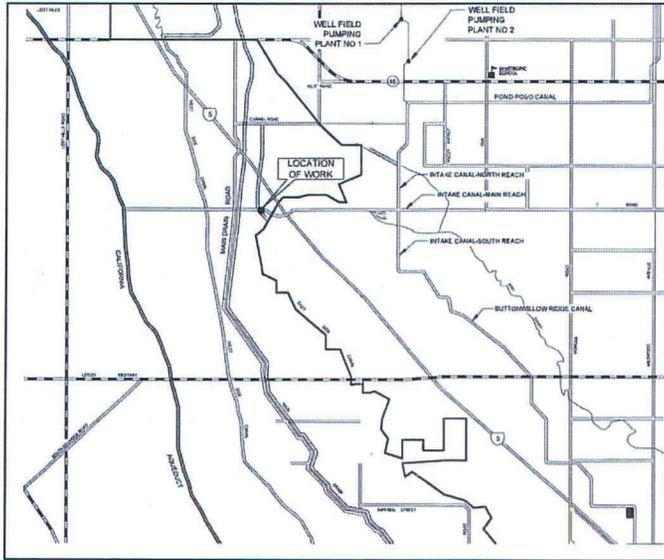
Bid Item	Description	Qty	Unit	Unit L&E	Total L&E	General Conditions	Material Tax Added	Material No Tax Added	Take-off Materials	Subcontract	Total Cost	Company Overhead	Profit	Total	Unit Price	Bid Unit	Bid Total	
1	Pump Sump Structure	1	LS	160,439.00	160,439.00	100,369.18	24,984.96	26,026.00	-	98,548.00	410,967.14	23,309.76	67,117.53	502,794.43	502,794.43	502,800.00	502,800.00	
2	100cfs Pumps	2	EA	5,626.00	11,252.00	7,039.15	641,891.25	-	1,072.50	-	651,254.90	20,749.28	67,954.60	749,958.79	374,979.39	375,000.00	750,000.00	
3	Discharge Piping & Appurtenances	1	LS	104,147.00	104,147.00	65,153.42	162,516.65	9,330.00	66,527.18	10,302.00	417,986.24	20,977.56	58,728.67	497,692.47	497,700.00	497,700.00	497,700.00	
4	Metawork	1	LS	5,416.00	5,416.00	3,388.30	7,287.64	-	-	-	16,091.84	921.56	2,489.60	19,503.00	19,503.00	19,500.00	19,500.00	
5	Traveling Water Screens	2	EA	10,562.00	21,124.00	13,214.98	135,564.00	-	3,861.00	-	173,763.98	6,924.38	20,810.30	201,498.66	100,749.33	100,700.00	201,400.00	
6	Electrical / SCADA	1	LS	21,252.00	21,252.00	13,255.06	853.71	3,305.00	1,018.88	260,763.00	300,487.64	10,736.46	33,503.47	344,727.58	344,727.58	344,700.00	344,700.00	
7	Grading / Surfacing	1	LS	17,160.00	17,160.00	10,735.14	-	9,564.00	-	-	37,459.14	2,514.07	6,535.43	46,508.64	46,508.64	46,500.00	46,500.00	
8	Fencing / Guard Posts	1	LS	3,000.00	3,000.00	1,876.77	1,930.50	-	-	11,700.00	18,307.27	798.28	2,338.40	21,643.95	21,643.95	21,600.00	21,600.00	
9	Painting	1	LS	-	-	-	-	-	-	10,105.00	10,105.00	303.15	1,010.50	11,418.65	11,418.65	11,400.00	11,400.00	
10		1	LS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTALS					343,790.00	215,071.90	978,038.71	48,225.00	72,479.53	331,418.00	2,046,023.15	83,234.51	260,488.50	2,395,746.17				2,395,600.00

1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00	1000000.00
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Total L&E 343,790.00
 Crew 5/Day 5,424.00
 Days 63.38

MARK-UP FACTORS	
OVERHEAD	
Labor & Equipment:	9.00%
GC's (From GC's Layer):	6.36%
Material:	3.00%
Subcontract:	3.00%
PROFIT	
L&E and GC's:	20.00%
Material:	10.00%
Subcontract:	10.00%
MARK-UP ANALYSIS	
FACTORS	
OH:	89,235
PROFIT:	260,489
OH + PROFIT:	349,723
COST:	2,046,023
BID TOTAL:	2,395,746
LABOR & EQUIPMENT:	343,790
ANALYSIS	
OH DIVIDED BY COST:	4.36%
OH DIVIDED BY BID TOTAL:	3.72%
PROFIT DIVIDED BY COST:	12.73%
PROFIT DIVIDED BY BID TOTAL:	10.87%
OH + PROFIT DIVIDED BY COST:	17.09%
OH + PROFIT DIVIDED BY BID TOTAL:	14.60%

Sub Listing (0.5%)
 11,978.00

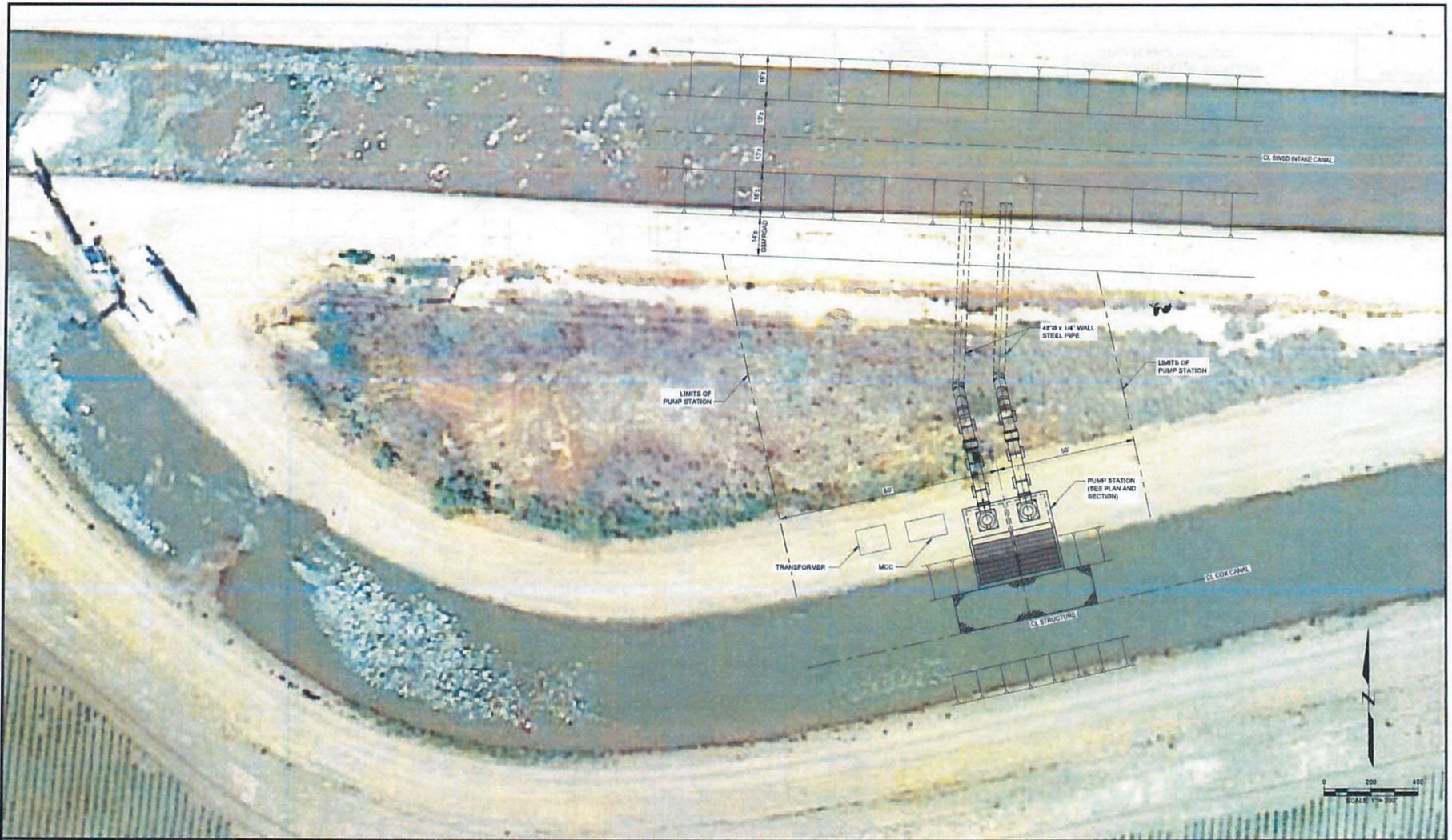


VICINITY MAP



LOCATION MAP

 FOR REVIEW PURPOSES ONLY	DESIGNED: HUANG CHECKED: DARGAHI DRAWN: CHUNG SUBMITTED: ROZMAN	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA GEI CONSULTANTS, INC. PASADENA, CALIFORNIA		SEMITROPIC WATER STORAGE DISTRICT DROUGHT RESILIENCY - COX CANAL PUMP STATION	DATE January 2018									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>SUB</th> <th>APP'D</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED					
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DESIGNED	HLIANG	CHECKED	DARGAHI	
DRAWN	CHUNG	SUBMITTED	ROZMAN	
REV	DATE	DESCRIPTION	SUB	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
 KERN COUNTY, CALIFORNIA

GEI CONSULTANTS, INC.
 PASADENA, CALIFORNIA

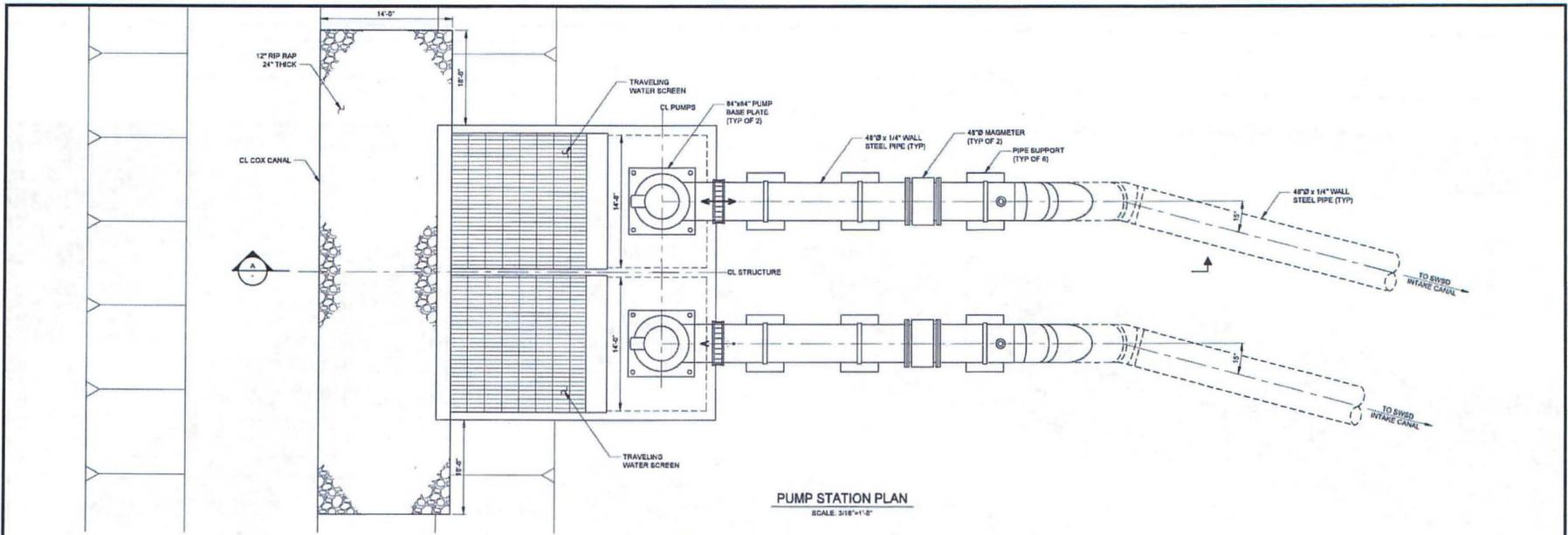


SEMITROPIC WATER STORAGE DISTRICT
 DROUGHT RESILIENCY - COX CANAL PUMP STATION

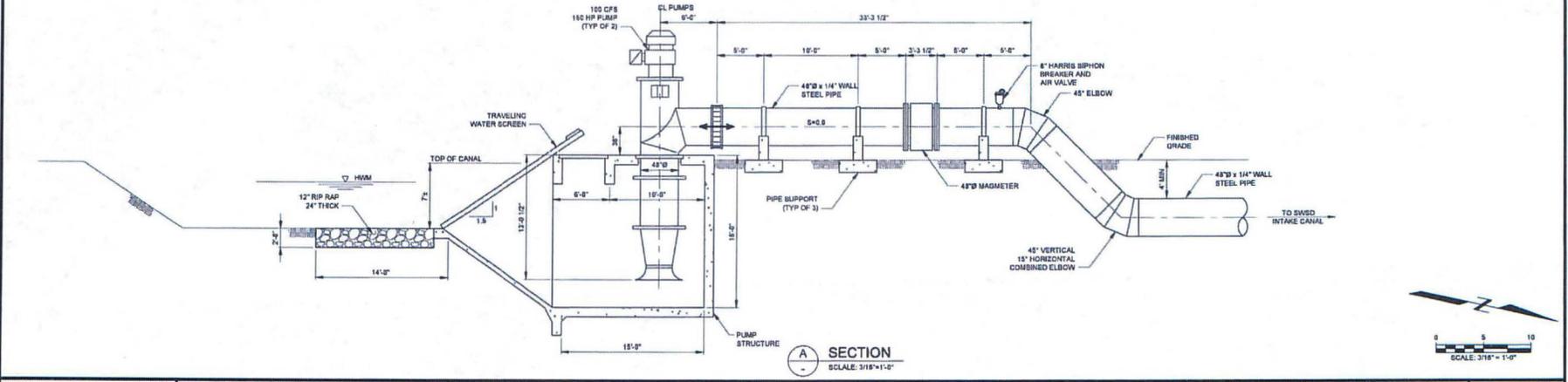
**COX CANAL PUMP STATION
 SITE PLAN**

DATE
 January 2018

DRAWING NUMBER



PUMP STATION PLAN
SCALE: 3/16"=1'-0"



A SECTION
SCALE: 3/16"=1'-0"

REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

DESIGNED: HUANG CHECKED: DARGAHI
 DRAWN: CHUNG SUBMITTED: ROZMAN

SEMITROPIC WATER STORAGE DISTRICT
 KERN COUNTY, CALIFORNIA

GEI CONSULTANTS, INC.
 PASADENA, CALIFORNIA



SEMITROPIC WATER STORAGE DISTRICT
 DROUGHT RESILIENCY - COX CANAL PUMP STATION

**COX CANAL PUMP STATION
 PLAN AND SECTION**

DATE
 January 2018

DRAWING NUMBER



Appendix B – Drought Plan Documents

This appendix contains pages from the below-listed documents referenced in Section 7:

- Semitropic Water Storage District Agricultural Water Management Plan
- Central Valley Project and State Water Project 2016 Drought Contingency Plan For Water Project Operations February - November 2016