

SCOPE OF WORK

Design Engineering

Summary

The project involves design of several critical projects to the VRWD water system intended to promote efficiency, increase resource responsibility and implement long lasting improvements. The District identified projects include water main improvements, tank and pump station improvements ~~and solar projects~~ at specific locations. The District has initiated draft engineering reports of the different improvements. After gathering the necessary data from the District on the facilities and desired direction for the projects, tasks involving updating the engineering reports and projects to a conceptual level (10%) is needed. Concurrent with that stage, the projects will initiate design efforts such as obtaining topographic surveying, geotechnical investigation, CEQA environmental document preparation and contacting the right of way agencies such as the City of Ojai, County of Ventura and Caltrans to begin the encroachment permit process for the pipeline projects.

Once the concept plans and engineering reports are updated and agreed upon by the District, design of the improvements will commence. The funding amount of the improvements has been established so it is important to update the project costs in the conceptual stages to provide any necessary project modifications to stay within the design/construction budget. Design efforts will be reviewed at 60% and 100% levels and will include review by the State Revolving Fund staff. Comments will be addressed and incorporated in the next submittal deliverable. When the plans and specifications are completed, they will be turned in as a Final (Issued for Bid) construction ready deliverable.

Bid and Construction Phase Services (Construction Manager) are included in this scope of work.

The numbering in the RFP was preserved as best as possible in developing this scope of work.

The project contains numerous projects that are important to providing reliability to the VRWD water system. This scope of work covers similar tasks for each project with minor variations which are noted. For the sake of brevity, the scope of work applies to all of the projects unless noted otherwise. The projects are in three major categories and include:

Pipelines

Water Improvements for Tico Annexation	Highway 33 Pipeline – Nova Lane to Well #6
Emergency Turnout – Ojai Terrace	Casitas Springs Water Pipe Nye Road Loop
Monte Via Pipe Replacement	Catalina Street Pipe Replacement
Encino and Thomas PRV Vault Improvements	Ojai Terrace Pipe Replacements
Santa Ana Water Main	Loma Drive Pipe Replacement

Tank and Pump Stations

Second Parker Tank	Zone 5 Pump Station Improvements
Baldwin Tank Replacement	Baldwin Pump Station Renovation/Flood Proofing

Solar Projects

~~Parker Tank Area~~

~~Baldwin Site Area~~

~~Administration Office/Parking Area~~

Our firm has already designed the Encino and Thomas PRV vaults as well as the Santa Ana Water Main projects. Those projects are at a 90% design level so the initial tasks up to Task 1.6 do not apply to those projects and therefore, time will not be included in our fee.

Phase 1 – DESIGN SERVICES

Task 0.1 – Project Initiation/Data Collection

This task will involve meeting with District staff to set the project parameters, gather District data related to the projects, refine project schedules and milestones and protocols for communication. It is assumed that the District Engineering Reports will be provided in Word format for use on the project.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Jill Johnson, Steve Romofsky (IRJ Engineers), Mike Zielsdorf (Pacific Coast Land Design), and Jeff Lubberts (RGSE, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Refine the expectation/schedules for the project design efforts (pipelines ~~and~~ tanks ~~and solar~~).
- Discuss the project aspects and data sharing components for the work.
- Obtain any District provided data for the efforts of the design team.
- Prepare a project schedule and meeting agenda.
- Field site walk of tank/pump station and ~~solar areas~~ pipelines along with electrical and HVAC equipment visits at the Baldwin site.

Deliverable: A meeting summary will be provided outlining the meeting topics and the decisions discussed during the meeting. One electronic copy of the meeting summary will be delivered to all of the design team members and the District staff.

Task 0.5 – Concept Level Project Deliverables (Update Engineer Reports) (10% Level)

This task will involve updating the engineering reports that were prepared by the District and begin to formulate initial Opinions of Probable Construction Cost (budgetary level). Recent pandemic related construction material shortages and equipment supply delays have caused the construction costs to escalate to unprecedented levels. This spike in cost has wreaked havoc with agencies implementing critical infrastructure. It is going to be important to rank the projects in the list to agree on an overall priority for design and eventual construction depending on budget. The concept plans are referred to in the RFP as 10% level, which with

the information provided by the District will likely end up as Preliminary Design Reports (PDRs). The PDRs will take the information, update it, and provide additional information on intended options for consideration by the District. This could be in the form of alternative construction techniques for pipelines, alignment options, tank sizing/location ~~or solar panel location~~ considerations. The preliminary design reports will include an initial list of specification sections as well as a list of sheets to be included in the plan sets.

Hydraulic modeling efforts for the pipeline project sizing will be performed by the District retained firm responsible for management of the District hydraulic model under a separate contract with the District.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Jill Johnson, Steve Romofsky (IRJ Engineers), and Jeff Lubberts (RGSE, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Development of concept level (10%) projects and update OPCCs
- Prioritization of projects based on available funding
- Review of the draft documents with the District and incorporation of their comments.
- Updating the Engineer's Reports to Preliminary Design Reports (PDRs).

Deliverable: PDRs will be provided to the District in MS Word and .pdf formats. OPCCs will be provided electronically in MS Excel and .pdf formats at the review and final stages.

Task 1.1 – Topographic Surveying

This task will involve obtaining topographic surveying of the project sites related to the pipe, tank ~~and solar~~ project areas. Topographic surveying efforts will capture the aboveground culture (trees, hardscape, at grade utilities, driveways, existing improvements in the project areas, parcel lines, etc.). The topographic survey will be provided to the design team in Civil 3D format for creation of base maps of the improvement areas.

Key team members associated with this task:

Jon Turner, Ali Smith(Phoenix Civil Engineering), Larry Frager (Benner and Carpenter).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Perform topographic surveying of the project areas (pipelines, tanks ~~and solar~~).

Deliverable: No deliverable is associated with this task. Data obtained during this task will be used in other tasks.

Task 1.2 – Geotechnical Investigation

For all of the projects listed (except the three noted to be at final design, geotechnical exploration, laboratory testing and recorded documentation research and report preparation with recommendations will be performed. In summary the tasks include:

1. Submit an exploration work plan for the project presenting the locations, types, and depths of planned field explorations; site access requirements; hole abandonment cutting disposal procedures; and a schedule for field exploration activities. Attend a project kickoff meeting and two team progress meetings.

2. Visit the sites to mark the locations of the explorations and notify Underground Services Alert (USA) to contact utilities and review the locations prior to beginning the field exploration program and prepare a health and safety plan for field activities.
3. Yeh will retain 2R Drilling of Chino, California to drill thirty-four (34) hollow stem auger borings to depths ranging between 10 and 20 feet deep depending on the location and proposed work. Borings will be backfilled with bentonite cement grout, cement slurry and/or approved native fill in accordance with permit requirements. Borings drilled in roadway areas will be patched with rapid set concrete dyed black. Subcontracted traffic control will be provided around our work areas within vehicular roadways that will consist of a lane closure with flagging and per encroachment permits requirements. Yeh will perform a 1-day effort to excavate shallow test pits near the proposed erosion protection area and tank at the Baldwin site using a local subcontractor supplied backhoe and operator.
4. Perform laboratory tests on selected samples collected from the drilling. Soil tests for classification, sand equivalent, shear strength, corrosion, consolidation, and compaction will be performed on selected samples recovered from the borings.
5. Present findings of the base scope field exploration and laboratory testing at a Geotechnical Findings Meeting with VRWD and the design team.
6. Prepare and submit the draft *Geotechnical Report – Pipelines* for the design of the proposed pipeline segments and connections. The report will provide conclusions and recommendations regarding:
 - Geologic setting;
 - Soil and groundwater conditions encountered;
 - Seismic data for use design methods and code requirements, site class, causative fault, design earthquake and corresponding peak ground acceleration;
 - Geotechnical considerations for addressing the potential for geologic hazards such as fault rupture and seismic settlement or displacement;
 - Excavation characteristics of the ground conditions encountered relative to groundwater, hard rock, presence of cobbles or boulders, loose or caving ground;
 - Design of new pipelines:
 - Typical trench detail for use with VRWD standards;
 - Foundation preparation and support for the pipe and subexcavation of the trench bottom;
 - Material and compaction requirements for bedding, pipe zone and trench backfill;
 - Suitability of the materials encountered in the borings for reuse as general trench backfill or select pipe zone or bedding material;
 - Existing pavement thicknesses encountered and pavement structural section(s) for trench patching;
 - Passive resistance, K_0 and pipe-backfill friction to resist thrust along the pipe and for sizing thrust blocks;
 - Corrosion test data; and

- Construction considerations regarding excavation characteristics of soil and rock encountered, temporary excavations or shoring, and groundwater.
- The design of trenchless pipe installations:
 - Subsurface conditions and suitability of using jack and bore-~~HDD~~, or microtunneling to complete the installation;
 - Ground conditions relative to groundwater, hard rock, presence of cobbles or boulder, heading stability, caving or running ground;
 - Jacking or thrust resistance for launching the pipes;
 - Monitoring requirements for settlement or heave; and
 - Discussion of Frac-out potential and considerations for emergency response planning prepared by the Contractor.
- 7. Incorporate information and comments from the design team and District as well as the State Revolving Fund reviewers and prepare the final *Geotechnical Report – Pipeline Improvements* for the project.
- 8. Prepare and submit the draft *Geotechnical Report – Baldwin Site and Parker Tank Sites Improvements* for the design of the replacement or new tank, generator pad, erosion protection, ~~and solar projects~~ at the Baldwin and Parker sites. The report will provide conclusions and recommendations regarding:
 - Geologic setting;
 - Soil and groundwater conditions encountered;
 - Seismic data for use design methods and code requirements, site class, causative fault, design earthquake and corresponding peak ground acceleration;
 - Geotechnical considerations for addressing the potential for geologic hazards such as fault rupture and seismic settlement or displacement;
 - Excavation characteristics of the ground conditions encountered relative to groundwater, hard rock, presence of cobbles or boulders, loose or caving ground;
 - Grain-size classification of encountered material at Baldwin site for consideration in erosion protection;
 - Recommendations for design of above ground tank, generator pad:
 - Seismic data for use with the California Building Code (CBC) and American Water Works Association (AWWA);
 - Site preparation and grading considering depth of excavation and subgrade conditions encountered;
 - Material and compaction requirements for backfill;
 - Shallow foundation design (allowable bearing resistance, estimated total and differential settlements considering static and seismic loads, and minimum footing embedment and widths);
 - Mat foundation design (allowable bearing resistance and subgrade modulus (spring constant) from settlement analyses);
 - Expansive soil considerations;
 - Resistance to lateral loads from friction and passive resistance; and
 - Construction considerations regarding excavation characteristics of soil encountered, temporary slopes and shoring, and construction dewatering.

- ~~The preliminary design of solar installations:~~
 - ~~Preliminary recommendations for drilled pier/flagpole design for use with the earth pressure balance method in the California Building Code;~~
 - ~~Corrosion considerations; and~~
 - ~~Construction considerations regarding excavation characteristics of soil encountered, temporary slopes and shoring, and construction dewatering.~~

9. Incorporate information and comments from the design team and District as well as the State Revolving Fund reviewers and prepare the final *Geotechnical Report – Baldwin and Parker Sites Improvements* for the project.
10. Review plans, specifications and provide general consultation within the proposed level of effort to verify the recommendations of the geotechnical report were incorporated into the design and construction documents. A letter of compliance can be submitted once any comments have been incorporated into the plans and specifications. Incorporate information and comments from the design team and prepare the final geotechnical reports for the projects (pipelines and tanks/pump stations).

~~Optional Services (not included, but available for a negotiated fee)~~

~~Sonic coring is being considered where abundant cobbles and boulders are anticipated: along the Casitas Springs Nye Loop pipeline segment and the Baldwin site. Sonic coring is an effective way to advance borings through zones of cobbles and boulders with the ability to measure their approximate size and the thickness of matrix soil between them and/or core into bedrock, if encountered. This approach is recommended if a tunnel installation approach is selected in those areas or if the findings of the base drilling scope are not adequate to support final selected design alternatives.~~

1. ~~*Sonic Coring:* Retain a drilling subcontractor to advance six (6) sonic cores to depths of 20 to 40 feet below the ground surface to support design of the Casitas Springs Nye Loop segment or at the Baldwin Site. Yeh will oversee the drilling, log the cores, record core run, recovery, and photograph the samples in the field. Representative samples will be collected for select laboratory testing. Process data, perform additional laboratory testing and incorporate the findings into the geotechnical reports.~~

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering), Loree Berry (Yeh and Associates, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Exploration work plan submission and review.
- Underground Service Alert notifications and field explorations.
- Laboratory testing and data review.
- Preparation of draft geotechnical reports for the pipeline projects as well as the Baldwin and Parker sites improvement projects.
- Incorporation of District review comments and report finalization.

Deliverable: Work products associated with this task will be provided electronically as MS Word and .pdf copies. One paper copy of the final documentation will be provided to the District for their project files. Additional paper copies can be provided upon request.

Task 1.3 – Right of Way Assistance

This task will involve assisting the District in preparing applications for encroachment permits with Ventura County for working within County roads and/or along the Ojai Valley Bike Path and with the City of Ojai, as appropriate. Geotechnical exploration excludes exploration in the State right of way. The Caltrans encroachment permit process is fairly lengthy and cumbersome. With the compressed design schedule, the design team looked for opportunities to obtain the necessary data without needing an encroachment permit. The one exception would be the topographic survey for the pipeline along SR 33. For that effort, we included optional tasks to assist the District with obtaining permits. The challenge is that in the ~~Nova Lane to Well #6 work Casitas Springs~~ alignment location, one lane of traffic would have to be shut down to perform the work which would be incredibly expensive. ~~The same for the Nova Road to Well #6 work.~~ For purposes of this proposal, we anticipated that these areas would be discussed with the District and a decision made regarding the need for topographic surveying and related encroachment permits.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering), Loree Berry (Yeh and Associates, Inc.) and Larry Frager (Benner and Carpenter).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Assist the District with preparing encroachment permit applications for the design efforts and construction work.

Deliverable: Permit application packages will be prepared for the District. Electronic (MS Word and .pdf) will be provided for review prior to submission.

Task 1.4 – Environmental/CEQA Assistance

This task will involve preparation of the necessary environmental permits associated with the three types of projects: pipelines, tanks/pump stations, ~~solar~~. The tasks are:

Project Development Assistance

Padre will assist during geotechnical exploration, and during the assessment and development of conceptual plans for the individual projects, which may include:

- Field visit to identify the limits of California Department of Fish and Wildlife (CDFW) regulatory jurisdiction at the Baldwin Pump Station site.
- Cultural resources record search to identify areas of known resources to be avoided.
- Attend engineering design meetings as needed to facilitate selection of concept plans that minimize environmental impacts and mitigation requirements, which may include ~~reducing the height of the different construction materials for the~~ new Parker Tank and selecting pipe alignments ~~and solar panel sites~~ that minimize tree removal.

CEQA Document Preparation

Based on review of the Engineers Reports provided, we have determined that a Mitigated Negative Declaration (MND, supported by an Initial Study) is the appropriate CEQA document. The Initial Study (IS) will include an appropriate response for each issue on the State 2021 CEQA checklist, and an analysis of potential cumulative impacts, which may include any other VRWD projects.

The sections/analysis to be included are:

Project Description.

Land Use Planning Goals and Policies.

Aesthetics.

Air Quality and Greenhouse Gas Emissions.

Biological Resources.

Cultural Resources.

Noise.

Geology.

Preparation of responses to all comments on the Public Draft IS/MND received during the public comment period. These responses can be attached or summarized in the IS/MND. Padre will also prepare a draft Mitigation Monitoring and Reporting Plan for review by VRWD.

Meetings and Public Hearing. Attendance up to four team meetings and one public hearing. If requested, we will also attend the VRWD Board hearing regarding adoption of the Final IS/MND.

Regulatory Permitting

Bank protection has been proposed to protect the upgraded Baldwin Pump Station from floodwaters in the Ventura River. Depending on the ultimate design and placement, this bank protection may require a Lake and Streambed Alteration Agreement (LSAA) with CDFW. Padre will complete a notification package for review by the VRWD based on the IS/MND project description (updated as needed). A biological impact assessment and mitigation plan will be prepared in support of the notification. Note that off-site mitigation may be required, which could include habitat enhancement and/or invasive plant removal. CDFW will require a hydrology/hydraulic study to determine the effects of proposed bank protection on stream hydrology and hydraulics including potential erosion of the adjacent bank. This study is not included in this proposal and is dependent on the environmental analysis.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering), and Matt Ingamells (Padre Associates, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Preparation of the environmental document for the projects (assumed MND supported by an IS.
- Noticing of the documents and submittal to the appropriate reviewing agencies.
- Public hearing attendance and team meetings.
- Regulatory permitting for the Baldwin site flood protection dependent on the design and potential jurisdictional impacts.

Deliverable: Up to five paper copies of the Administrative Draft IS/MND will be provided for review by the VRWD. A second Administrative Draft IS/MND will be provided to address project changes (changes in individual project designs and/or the selection of projects to be implemented) following concurrent with the review of the ~~60-20~~ percent engineering designs by State Revolving Fund Program staff. Following receipt of comments on the second Administrative Draft, Padre will prepare the Public Draft IS/MND. For budgeting purposes, it is assumed 10 hardcopies and 30 electronic copies of the Public Draft IS/MND will be required. For budgeting purposes, we have assumed ten hardcopies of the Final IS/MND will be

required. The Draft and Final IS/MND will be provided in electronic format (MS WORD and Adobe Acrobat).

Task 1.5 – Plans, Specifications and Estimate Preparation

Task 0.5 includes the 10% Level. This task includes the **60%** deliverable.

Utilizing the work product and decisions from the previous tasks, this task will develop 60% level plans and specifications for the tank/pump station and the pipeline ~~and solar~~ projects. **The Santa Ana Water Main, Encino, and Thomas PRV projects are already designed to a 90% level by our firm. Completing these projects will be easily performed and combined with the remaining projects.**

The District supplied front end documents will be incorporated into the Greenbook format specifications. Five digit CSI specification format can be provided at the District's request. It will be necessary to confirm with the SRF reviewing staff that a front end format similar to the EJCDC is required for the project to be eligible for funding. Other State and federal agencies require this depending on the program. Once that determination is made, the technical specifications will be prepared. Additionally, the project engineer's opinion of probable construction cost (OPCC) will be in draft form and will detail the project components consistent with the design level.

The pipeline project designs will be prepared by Phoenix Civil Engineering. The tank, pump station ~~and solar~~ projects will involve design assistance from the rest of the team: RGSE for structural, IRJ for electrical and mechanical (District office HVAC system), and PCLD for landscaping associated with the Parker Tank site. **The tank projects will need to be reviewed by the Division of Drinking Water (DDW) for permitting compliance and adherence to AWWA and California guidelines for aboveground welded potable water steel storage tanks.**

~~The Baldwin pump station will require an optimization analysis to look at improving the overall efficiency of the booster pumps. Consideration will be provided to a smaller horsepower pump that would operate on a continuous basis to essentially reduce the need for the larger existing pumps until extreme events such as maximum day demand or peak hour demands where the larger pump capacity would cover the filling of the storage in the existing tanks. The solar projects are going to be prepared differently than the other projects (pipeline and tank/pump station). Typically, the solar projects are handled as design build projects for large solar fields/arrays. It is anticipated that for the solar projects that are identified for this project a performance specification, site plans and electrical infrastructure plans (meter locations, array locations, conduit paths, load/demands, battery location). The package will be bid out to allow the contractor to select the solar design firm that they propose to use and there will be requirements in the performance specifications that allow for the District to have input in the selection process. That way, the proprietary solar design will be handled by the solar subcontractor and their team. Final review by the District and SRF staff will be required. In preparing this proposal, this technique/concept for the solar projects was confirmed by other Ventura County agencies who recently constructed solar projects.~~

The anticipated drawing sheet count for the pipeline projects (combined as one project) is as follows:

- **Title Sheet**
- **Notes, Abbreviations and Survey Data**
- **Site Plan (2 sheets)**

- **Plan Sheets (17-15 sheets) – excludes Santa Ana as well as Encino/Thomas PRVs as those are already completed**
- **Detail Sheets (4 sheets)**

The anticipated drawing sheet count for the tanks/pump station projects (combined as one project) is as follows:

- **Site Plan (2 sheets)**
- **Piping, Structural Tank Detail Sheets (9 sheets)**
- **Structural Sound Wall Plan/Profile and Details (2 sheets)**
- **Electrical Equipment Layout and Single Line Diagram (3 sheets)**
- **District Office HVAC Design (2 sheets)**
- **Planting Plan and Details**
- **Irrigation Plan and Details**

The anticipated drawing sheet count for the solar projects (combined as one project) is as follows:

- **Site Plan (2 sheets)**
- **Structural Detail Sheets (3 sheets)**
- **Electrical Equipment Layout and Single Line Diagram (3 sheets)**

The specific disciplines are listed below along with their respective tasks that will be included in the efforts above.

(Electrical)

Second Water Tank to Parker Pump Station site:

- Site visit to verify the existing conditions match the record drawings.
- Verification of capacity on the electrical distribution system will be confirmed by reviewing the most recent twelve months of electrical utility bills and performing calculations.
- Construction Documents consisting of drawings and specifications that reflect the following work:
 - Branch-circuit and control connections for the tank level control.
 - Site lighting at the new tank location.

New pumps at the Parker Pump Station site to serve Zone 5:

- Site visit to verify the existing conditions match the record drawings.
- Verification of capacity on the electrical distribution system will be confirmed by reviewing the most recent twelve months of electrical utility bills and performing calculations.
- We will prepare Construction Documents consisting of drawings and specifications that reflect the following work:
 1. Power and control connections to two new booster pumps, maximum 15-horsepower each. VFD control for the pumps motors will be included.
 2. Conduit and conductors for instruments, including flow transmitter and pressure transmitter.

Renovation of Baldwin Pump Station.

- Site visits to verify the existing conditions match the record drawings.
- Verification of capacity on the electrical distribution system will be confirmed by reviewing the most recent twelve months of electrical utility bills and performing calculations.

- We will prepare Construction Documents consisting of drawings and specifications that reflect the following work:
 1. New 480V, 3-phase, 4-wire utility service main switchboard to replace the existing obsolete equipment. The feasibility of installing the replacement switchboard in the same location as the existing switchboard will be reviewed. The new switchboard will be interconnected with the existing Tesla battery equipment and the existing emergency generator and associated automatic manual transfer switch. The design will take into account a future solar system, vehicle charging stations for four vehicles, the office connected to the pumping meter and maximizing the number of pumps that can be operated by the Diesel Engine Generator.
 2. New pump motor control panels for each of the three booster pumps, using VFDs as the starting and running method. Each control panel shall be located adjacent to the motor that it controls to minimize the length of the circuit between VFD and motor in the most efficient location within the existing station enclosure footprint.
 3. ~~New pump motor control panels for each of the five well pumps, using VFDs as the starting and running method. Each control panel shall be located adjacent to the motor that it controls.~~
 - 4.3. Harmonic mitigation shall be provided for the system to comply with IEEE 519.
 - 5.4. Electrical branch-circuit and control connections shall be provided for equipment specified by others including the chlorination equipment, instruments, and SCADA equipment.
 - 6.5. Reconnection of the existing feeder for the District office building to the new transformer served from the new main switchboard.
 - 7.6. Demolition of existing equipment to be replaced.

Solar Projects

- ~~Site visit each to Baldwin Pump Station and Parker Pump Station to verify the existing conditions match the record drawings.~~
- ~~Prepare Construction Documents consisting of drawings and specifications that reflect a single point connection of the proposed solar array system to the existing electrical distribution system at the respective site. Coordination with the specifier of the solar array system to identify the connection requirements will be provided.~~

(Structural)

- Preparation of structural design and analysis as well as a calculations packages for the tanks, sound wall ~~and solar~~ projects.
- Review and recommendation on the type of temporary shoring to be listed as a recommendation in the design. Actual shoring design is not included and will be listed as a contractor responsibility.
- Preparation of structural drawings and specifications of the improvements for permit and construction.

(Mechanical)

- Main Office HVAC System Modifications Scope - Site visit to the Main Office to review and document the existing conditions related to the HVAC system and to gather information related to the heating, ventilating, and air conditioning calculations. This task will be performed if there is benefit realized to reducing the start up load of the HVAC equipment with the existing and future power system configuration.

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- Review issues related to the functioning of the HVAC system as reported by the building's occupants. Evaluate the heating, ventilating, and air conditioning requirements for the building and develop recommendations for HVAC corrective work to address functional issues, system capacity issues, system efficiency issues, and system electrical demand.
- Prepare Construction Documents consisting of drawings and specifications that reflect modifications to the HVAC system based on recommendations developed above.

(Landscape Architect)

- Conceptual Planting Plan - Conceptual Design process assumes one (1) review meeting prior to initiating 60% Construction Documents.
- Site Design - Planting Concept. Planting character elevation exhibits will be prepared illustrating planting condition at time at installation and at landscape maturity.
- 60% Construction Documents - 60% Construction Document process assumes one (1) review meeting prior to moving to 100% Construction Documents.

Key team members associated with this task:

Jon Turner, Sarah Watte, Alison Smith, Kathleen Bosworth (Phoenix Civil Engineering), Jack Ivers, Jill Johnson, Steve Romofsky (IRJ Engineers), Mike Zielsdorf (Pacific Coast Land Design), and Jeff Lubberts (RGSE, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Provide 60% level design plans (**Civil, Electrical, Structural, Mechanical and Landscape**) and draft specifications incorporating the District provided front end documents. These packages will be prepared for the pipeline, tanks/pump station improvements ~~and solar~~ projects.
- Coordinate with DDW staff regarding the tank projects for compliance.
- Development of an engineer's opinion of probable construction cost for the projects.
- Review meeting to obtain the District's and SRF staff review comments.

Deliverable: At the 60% submittal stage, three sets of the project plans (22x34), specifications and draft OPCC will be provided to the District. One electronic copy of the deliverable will be provided (in MS Word and .pdf). Plans will be prepared using AutoCAD Civil 3D (compatible with release 2018).

Task 1.5 – Plans, Specifications and Estimate Preparation

100% Level

Once the District and SRF review comments have been received, this task will produce 100% level plans, specifications and estimate work products that reflect the continued design efforts, District and SRF review comments, and design team member comments.

Key team members associated with this task:

Jon Turner, Sarah Watte, Alison Smith, Kathleen Bosworth (Phoenix Civil Engineering), Jack Ivers, Jill Johnson, Steve Romofsky (IRJ Engineers), Mike Zielsdorf (Pacific Coast Land Design), and Jeff Lubberts (RGSE, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Provide 100% level updated design plans (**Civil, Electrical, Structural, Mechanical and Landscape**) and specifications incorporating District and SRF staff review comments on the 60% level submittal.
- Continued refinement of the engineer's opinion of probable construction cost (OPCC).
- Review meeting to obtain the District's and SRF staff review comments.

Deliverable: At the 100% submittal stage, three sets of the project plans (22x34) and the specifications will be provided to the District. One copy of the OPCC will be included. One electronic copy of the deliverable will be provided (in MS Word and .pdf).

Task 1.6 – Final Design Submittal

This task will incorporate the efforts of the previous submittals and work products into a final set of plans, specifications and opinion of probable construction cost. The final set of deliverables will be in a bid ready set format for the District to begin the construction bid advertising process.

Key team members associated with this task:

Jon Turner, Sarah Watte, Alison Smith, Kathleen Bosworth (Phoenix Civil Engineering), Jack Ivers, Jill Johnson, Steve Romofsky (IRJ Engineers), Mike Zielsdorf (Pacific Coast Land Design), and Jeff Lubberts (RGSE, Inc.).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Incorporation of 100% District and SRF review comments into the project documents.
- Provide final project plans, specifications and opinion of probable construction cost package to the District.
- Assist the District with DDW tank permit package submission.
- Compilation of final project design files (survey data, geotechnical reports, permit documents).

Deliverable: One full size reproducible set of plans on bond (22x34), one unbound paper copy of project specifications, three bound copies of the project specifications, plans and engineer's OPCC documents and a download link containing the design electronic files (AutoCAD Civil 3D 2018, MSWord and MExcel files 2016 as well as compiled .pdfs) will be provided to the District.

Task 1.7 – State Revolving Fund/Agency Coordination

This task will prepare monthly project updates on the design efforts and progress. The report shall include the percentage of work completed, the budget expended and remaining and the updated project schedule. This report will be provided to the District for forwarding to the SRF review team.

Key team members associated with this task:

Jon Turner (Phoenix Civil Engineering).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Monthly project reports including the list of tasks performed during the prior month, the updated project schedule, the updated project budget and upcoming tasks for the next month.

Deliverable: Monthly reports will be provided in electronic format (MSWord, MSEXcel 2016, or .pdf) at the end of every month during the project design phase.

Phase 2 – BID PHASE SERVICES

Task 2.1 Prebid Meeting Attendance

This task includes providing engineering and management support to the District for the project prebid meeting. The meeting will be held at the District office and potentially at select project sites. The meeting agenda and prebid meeting activities will be conducted by Phoenix Civil Engineering. It is anticipated that the District will maintain a list of contract document plan holders for record purposes.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Preparation of the pre bid meeting agenda.
- Attendance at and conducting the pre bid meeting.
- Preparation of prebid meeting summary and list of questions for addendum preparation.

Deliverable: An agenda will be prepared by Phoenix in collaboration with the District. An electronic copy (.pdf) of the agenda will be provided along with a sign in sheet. Meeting questions will be documented so that any formal responses/addendum can be prepared on behalf of the District.

Task 2.2 Preparation of Addenda

Phoenix will prepare up to five project addenda incorporating any prebid meeting questions or RFI responses warranting formal clarification. The addenda will be emailed out to the prospective bidders by Phoenix and confirmation emails will be obtained documenting receipt of the addenda by the prospective bidders.

Key team members associated with this task:

Jon Turner, Sarah Watte, Kathleen Bosworth (Phoenix Civil Engineering). Other team members will be involved in responding to questions or RFIs on an as needed basis.

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Preparation of up to five formal project addenda documenting clarifications and/or changes to the Contract Documents.

Deliverable: Up to five formal project addenda will be provided in electronic (MS Word 2016 and .pdf) format for District files and distributed to the project plan holders via email by Phoenix. Copies of all of the addenda confirmation paperwork will be retained in the project files and delivered to the District once completed.

Task 2.3 – Bid Package Review

This task will review the contractor bid packages that are received by the District. Bid schedule completeness, license status, bid bond verification, reference contact summaries and a recommendation of award letter/package will be prepared on behalf of the District for review by the District and the SRF review staff.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Review of the contractor bid documents
- Preparation of a bid tab summary.
- Preparation of a recommendation of award letter/package on behalf of the District for review and approval.

Deliverable: One electronic file containing the review documents and award letter (MSWord and .pdfs) will be provided to the District.

Task 2.4 – Conformed Document Submittal

This task will incorporate the efforts of the prebid addenda responses and successful bidder documents into a conformed set of construction plans and specifications. The conformed documents will be titled Issued for Construction and will be the official version of the project Contract Documents to be used by the contractor and District team.

Key team members associated with this task:

Jon Turner, Sarah Watte, Kathleen Bosworth and Alison Smith (Phoenix Civil Engineering). Other team members will be involved in compiling their respective specifications or plan sheets on an as needed basis.

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Incorporation of the prebid addenda into the Issued for Construction documents.
- Distribute the Conformed Document package to the District.

Deliverable: One full size reproducible set of plans on bond(22x34), three bound copies of the project specifications, plans and engineer's opinion of probable construction cost documents and a download link containing the design electronic files (AutoCAD Civil 3D 2018, MSWord and MExcel 2016 files) will be provided to the District.

Task 3 –Construction Phase Services

Task 3.1 –Meetings and Site Visits

Once the District has awarded the project to a contractor to perform the work and the contract has been finalized, a preconstruction meeting will be set up with a subsequent visit to the project site. Phoenix and the design team will be in attendance. Phoenix will prepare the meeting agenda and the meeting summary documenting important decisions and necessary milestones. Additionally, site visits and investigations, as well as preparing for and participation in weekly progress meetings and conference calls will be performed during construction.

Key team members associated with this task:

Jon Turner, Sarah Watte (Phoenix Civil Engineering). Other team members will be involved in responding to questions or RFIs on an as needed basis.

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Pre-construction meeting (Phoenix project manager and design team members).
- Weekly progress meetings (Phoenix project management team).
- Up to two HVAC meetings and/or site visits (Phoenix project manager, mechanical engineer).
- Up to three site electrical meetings and/or site visits (Phoenix project manager, electrical engineer).

Deliverable: Agendas will be prepared by Phoenix. An electronic copy (.pdf) of the agenda will be provided to the District and attendees. Meeting questions and discussions (meeting summary) will be documented and distributed to the attendees and applicable team members.

Task 3.2 Submittal Review

This task includes reviewing the contractor provided submittals and providing responses. It is anticipated that 70 submittals are to be provided and two reviews are anticipated for a total of 140 submittals for purposes of this proposal. The submittals include project materials/products, schedules, plans, studies, test results, affidavits, O&Ms, and contractor-designed items/calculations. The management of the submittal process is included in this task. Submittals will be electronically managed by Phoenix. All submittals will be tracked in a submittal log for quick reference on the status of specific items. Only certain submittals will be additionally reviewed by VRWD and those are identified on the attached submittal list. The submittal process is as follows:

Key team members associated with this task:

Jon Turner and Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Steve Romofsky and Jill Johnson (IRJ), Jeff Lubberts (RGSE), and Mike Zielsdorf (PCLD).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Submittal review and processing.
- Creation and maintenance of a submittal log documenting the submittal status.
- Electronic submittal transmittals to the contractor and the District staff.
- Management of the submittal review process.

Deliverable: Electronic submittal correspondence (.pdf) will be sent directly to the Contractor and District from Phoenix with copies to all of the team participants.

Task 3.3 Requests for Information (RFIs)

Phoenix will review and respond to up to 40 RFIs. Certain RFI responses may require minor design clarifications to supplement the Contract Documents, in the form of additional construction details/exhibits, which will be performed as part of this task.

Key team members associated with this task:

Jon Turner and Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Steve Romofsky and Jill Johnson (IRJ), Jeff Lubberts (RGSE), and Mike Zielsdorf (PCLD).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- RFI review and processing.
- Creation and maintenance of a RFI log documenting the RFI status.
- Electronic RFI transmittals to the contractor and District.
- Preparation and distribution of design modifications as needed.

Deliverable: Electronic correspondence (.pdf) will be sent directly to the Contractor from Phoenix with copies to the District and applicable team participants.

Task 3.4 – Work Change Directives (WCDs) and Change Orders

When requested by the District, Phoenix will prepare work change directives and change order paperwork. Phoenix will provide assistance on up to 20 work change directives and up to 3 change orders. It is assumed that up to 10 Drawings and up to 10 Specification sections may need to be modified, replaced, and/or added to the Contract Documents via WCD and/or change order.

These changes will be made electronically to the IFC set of plans during the project so the record drawing compilation will be performed over the course of the project rather than at the end of the project.

Key team members associated with this task:

Jon Turner and Sarah Watte (Phoenix Civil Engineering). Other team members will be involved in responding to questions or RFIs on an as needed basis.

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Work Change Directives and Change Order review with the District and processing.
- Creation and maintenance of a WCD and Change Order log documenting the status.
- Electronic document distribution to the contractor and District.
- Preparation and distribution of design modifications as needed.

Deliverable: Electronic correspondence (.pdf) will be sent directly to the Contractor from Phoenix with copies to the District and applicable team participants after review and approval by the District.

Task 3.5 – Construction Management

Phoenix will provide construction management on the project and the design team members will provide technical support on an as needed basis. Construction management consists of daily observation of the project activities, preparation of daily observation reports, coordination of the design team members, materials testing firm scheduling, coordination with the District staff regarding field decisions or input, monitoring adherence by the contractor to their schedule, review of contractor pay requests and preparation of reimbursement requests to the SRF on behalf of the District, preparation of weekly project reports detailing the week's activities (including the meeting summary), construction reports and photographs, issues encountered and field decisions. These documents will be compiled at the end of the project and provided to the District for their files. Meeting time is included in Task 3.1.

During the course of the project, it may be necessary to support the District during construction phase services by providing environmental monitoring services, as likely to be required by the mitigation measures developed as part of the IS/MND. This will be done by Padre as part of this project. At this time, the projects to be implemented have not been fully identified and design information is lacking. However, for the purposes of this proposal, we have assumed the following environmental monitoring will be required:

- New Parker Tank and solar panels: archeological monitoring during initial excavation (up to 80 field hours), arborist monitoring during tree removal (up to 40 field hours).
- Baldwin Pump Station upgrade, new tank, bank protection: archeological monitoring during initial excavation (up to 16 field hours).
- Casitas Springs SR 33 Loop: arborist monitoring during tree removal (up to 40 field hours).
- In-fill pipe along State Route 33: arborist monitoring during tree removal (up to 24 field hours).

The construction phase scope of work and fee estimate should be considered preliminary since the type and extent of monitoring will not be known until the IS/MND is completed. In addition, our scope of work and fee estimate does not include any construction monitoring by a Native American consultant/advisor, if required.

Key team members associated with this task:

Jon Turner and Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Steve Romofsky and Jill Johnson (IRJ), Jeff Lubberts (RGSE), Loree Berry (Yeh and Associates, Inc.), Matt Ingamells (Padre) and Mike Zielsdorf (PCLD).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Construction Management of the projects.
- Onsite observation of the projects.
- Materials testing on an as needed basis.
- Technical support on an as needed basis.
- Weekly report preparation (observation reports, activities, schedules, issues, etc.).
- Review of progress payment requests and submission to the SRF for processing/reimbursement.
- Final project file compilation and delivery to the District.

Deliverable: Communication and management activities during the project will be handled electronically (.pdf and MS Word files). Reports and status documents will be reviewed with the District prior to distribution.

Task 3.6 – Startup Assistance

Once the contractor has installed the pump station and tank equipment and has acknowledged that they are ready for equipment startup, a coordination meeting will be held to review the associated startup procedures and verification steps included in the accepted Site Startup and Test Plan included in the Contract Documents. In the presence of the District and selected design team members, the contractor will perform the necessary startup activities of the electrical systems related to the pumps and tank components. It is not anticipated that the startup activities will take place at the same time. Startup activities will occur at several milestones as specific equipment is ready to be commissioned (Parker and Baldwin tanks, Zone 5 pump station and Baldwin pump station, solar systems).

It is anticipated that during the startup process, certain activities will require the attendance of certain design team members.

Key team members associated with this task:

Jon Turner and Sarah Watte (Phoenix Civil Engineering), Jack Ivers, Steve Romofsky and Jill Johnson (IRJ).

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Preparation for and conducting the startup activities planning meeting.
- Onsite assistance during start up activities of the Parker/Baldwin tanks, pump stations and solar projects.
- Compilation of punch list items or correction items associated with equipment startup will be provided to the District for review.
- Distribution of the punch list to the contractor and selected design team members.

Deliverable: Documentation related to the startup activities will be provided to the District for review and input in electronic format (MS Word and .pdf).

Task 3.7 – Record Drawings and Project Closeout

Phoenix and the design team members will prepare record drawings based on information/markups provided by the contractor as well as change orders, work change directives, and RFI responses.

Key team members associated with this task:

Jon Turner, Sarah Watte, Alison Smith (Phoenix Civil Engineering). Other team members will be involved in responding to questions or RFIs on an as needed basis.

THE FOLLOWING EFFORTS ARE IN THIS TASK:

- Incorporation of design modifications during the construction as well as contractor red line markups into the record drawings. Drawings will be prepared in accordance with the District preference.
- Compile final submittal package and project communication documents.

Deliverable: One full size reproducible set of plans on bond (22x34), one box link containing the construction project electronic files (AutoCAD Civil 3D 2018, .pdf files, and MSWord and MSExcel 2016 files) will be provided to the District.

Assumptions

- The District assumptions listed in the RFP are included here.
- This proposal does not include horizontal directional drilling (HDD) tasks during the design or construction. The technology has specific requirements which are considerably more expensive than traditional cut and cover construction. ~~There is one specific pipeline project that likely will not be able to benefit from HDD due to existing geotechnical considerations. However, if during the geotechnical exploration task, it is discovered that there is a potential for HDD at that location, this topic will be discussed with the District.~~
- Services of a noise consultant are not included in this proposal.
- The District will utilize their SCADA/Instrumentation consultant to coordinate with the design team and implement the necessary District system modifications. No SCADA or instrumentation consulting services are included in this proposal.
- Hydraulic modeling of the District water system will be performed by the District consultant contracted direct with the District.
- The District will be the lead on coordination with the DDW regarding the tank permit process.
- VRWD site access or access to private property and any other permits required for the work that is not specially noted in this proposal will be provided to us. We assume work hours within City and County roadways will be restricted to between ~~8~~7:00am and ~~4~~7:00pm.
- Outside Agency review times may vary and cannot be controlled.
- The proposed scope of field exploration services does not include location of underground utilities (other than that provided by USA). Phoenix Civil will not be responsible for damage to any unlocated or mislocated utilities due to incorrect information provided by the utility.
- This proposed scope of work assumes that the subsurface soils and groundwater are free of hazardous substances and specifically excludes the search for, and evaluation of, hazardous materials in soil, water, or air.
- ~~Solar projects and equipment is proprietary and therefore, the design package for these projects will be performance specification based (contractor team will perform the design of the specific solar panel, mounting assembly and layout systems as well as wiring and connections to the Phoenix team design connection points.~~
- Large scale printing is included in the scope, any additional copies requested by the District other than the quantity specified will be billed at cost without mark-up.
- Legal work (including use easement, ROW entry agreements and other legal documents that may be required) are not included.
- VRWD ~~has kept accurate and up to date record documents, which include additions and deletions~~ will provide the most accurate record drawings available for the existing electrical systems. Effort to reproduce the existing electrical system is not included in the proposed scope of work.
- The existing electrical services and distribution have sufficient capacity for the proposed additions/modifications.
- The existing electrical installations are Code compliant based on the codes in effect at the time the equipment was installed.
- Calculations required to determine the capacity and adequacy of the Tesla battery installation to supply the proposed loads shall be performed by others. Assistance will be provided to the District to document the effect of running the Tesla battery system under real world conditions without SCE power to witness the actual run time (storage) of the batteries under different pumping/power scenarios.
- ~~The Baldwin Pump Station existing emergency generator and automatic transfer switch have adequate capacity for the proposed modifications.~~
- The structural analysis will be based on CBC 2016 part 2, volume 2.

- Sub-consultants are marked up by 10%.
- Any and all permit, inspection and/or filing fees will be paid by the District.
- The contractor will be in charge of maintaining red-line mark ups during construction.

