

**THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
BOARD ACTION SUMMARY**

DEPT: Public Works

BOARD AGENDA: 5.C.2
AGENDA DATE: April 24, 2018

SUBJECT:

Approval of Amendment No. 3 to the E-PUR Professional Services Agreement to Perform Additional Test Borehole Drilling and Zonal Monitoring Well Installation to Support Assessment of On-Site Water Supply Alternative(s) at the future Crows Landing Industrial Business Park Location

BOARD ACTION AS FOLLOWS:

RESOLUTION NO. 2018-0181

On motion of Supervisor Chiesa _____, Seconded by Supervisor Monteith _____
and approved by the following vote,

Ayes: Supervisors: Olsen, Chiesa, Withrow, Monteith, and Chairman DeMartini _____


Noes: Supervisors: _____ None _____

Excused or Absent: Supervisors: _____ None _____

Abstaining: Supervisor: _____ None _____

- 1) Approved as recommended
- 2) _____ Denied
- 3) _____ Approved as amended
- 4) _____ Other:

MOTION:

ATTEST: 
ELIZABETH A. KING, Clerk of the Board of Supervisors

File No.

**THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
AGENDA ITEM**

DEPT: Public Works

BOARD AGENDA:5.C.2
AGENDA DATE: April 24, 2018

CONSENT:

CEO CONCURRENCE:

4/5 Vote Required: No

SUBJECT:

Approval of Amendment No. 3 to the E-PUR Professional Services Agreement to Perform Additional Test Borehole Drilling and Zonal Monitoring Well Installation to Support Assessment of On-Site Water Supply Alternative(s) at the future Crows Landing Industrial Business Park Location

STAFF RECOMMENDATION:

1. Approve amendment No. 3 to the E-PUR, LLC professional services agreement to perform additional test borehole drilling and zonal monitoring well installation to support assessment of on-site water supply alternatives at and near the Crows Landing Industrial Business Park, in the amount of \$328,500.
2. Authorize the Director of Public Works to execute the amendment with E-PUR, LLC in the amount of \$328,500, and to sign necessary documents.

DISCUSSION:

The former Crows Landing Naval Air Facility is located in the unincorporated portion of western Stanislaus County, approximately 1 mile east of Interstate 5. The 1,531 acre airfield is bound by Marshall Road to the north, Fink Road to the south, Bell Road to the east, and Davis Road to the west. A segment of the Delta Mendota Canal and Little Salado Creek cross the site. The site includes two decommissioned runways, associated pavement, and an air traffic control tower. Most of the structures that supported former military operations on the premises have been demolished.

In 2004, the Board of Supervisors accepted conveyance of the former Crows Landing Air Facility, and the National Aeronautics and Space Administration transferred ownership of approximately 1,356 acres to the County. Of the remaining 176 acres associated with the former military facility, 6 parcels totaling 94.7 acres have undergone soil and groundwater remediation and were determined to be clean per industrial standards. Remediation of one 81.3-acre parcel is ongoing.

The primary goal associated with the County's acquisition of the Crows Landing project area has been to create an opportunity to produce a locally based job center that will allow County residents and those living nearby to earn sustainable wages without commuting to the Bay Area or other distant job centers. Specifically, the former Crows Landing Air Facility is envisioned to be an industrial business park that combines the assets of a public use, general aviation airport, and proximity to Interstate 5.

The combination of available land, nearby transportation infrastructure, and regional

connections to the San Francisco Bay Area presents an opportunity for investment and creativity that has the potential to provide a new and important regional employment center in central California.

On October 15, 2013, the Board of Supervisors approved an agreement for professional services with AECOM Technical Services, Inc. for land use, engineering, and environmental consultant services for the Crows Landing Development Project. The services included a review and analysis of needed infrastructure to ensure the viability of this business park and to meet the California Environmental Quality Act guidelines for required detailed analysis of potential water supply sources, as well as sewer and storm water.

On September 20, 2016, the Board of Supervisors approved the contract for professional services for the development of two water exploratory boreholes (test wells) to E-PUR, LLC for the Crows Landing Industrial Business Park (CLIBP) development. The purpose of the test well (TW) program, performed in early 2017, was to gain knowledge of the underlying groundwater system primarily below the Corcoran Clay. Test wells were drilled and water samples were taken from below the Corcoran Clay to determine quality and quantity of groundwater supplies in this area. The work completed included construction of two test wells that would allow evaluation of the suitability of the proposed site for the installation of future drinking water supply wells based on the results of the geophysical exploration and water quality sampling of the test hole.

To complete this work, four change orders were executed. Three change orders were completed under the 10% contingency of the original contract. The fourth change order exceeded the 10% contingency and was approved by the Board of Supervisors on May 2, 2017.

The geology found in the test wells concluded that there is a large water production zone immediately above the Corcoran Clay and below at the northern exploration location (TW-2). Depth to water was roughly 82 feet below ground surface (bgs) in the north and the Corcoran Clay begins at 260 feet bgs. At the southern location (TW-1) there was little water above the Corcoran Clay and below.

Water quality sample results demonstrated that groundwater quality in the southern location (TW-1) is generally poor. Groundwater quality in well TW-2 exceeds the short term limit for sulfate and would require either blending with another source lower in sulfate or treatment in order to meet all current codes and regulations.

Water production was very good at each of the three depth zones tested in location TW-2 and is estimated to be capable of producing 2,000 gallons per minute (gpm)/well with acceptable drawdown. The desirable operating range for each well completed in that zone is then likely to be 50% of that rate or 1,000 gpm/well as potential production. Two wells are capable of producing the stated potable supply need of 1,000 to 1,500 gpm for all 3 phases of CLIBP development.

The water supplies for the Crows Landing Industrial Business Park (CLIBP) require further assessment beyond the preliminary work done by E- PUR in 2017. This proposed contract amendment scopes a Task 7 left as an optional consideration in our September 5, 2017 proposal for a Feasibility Study (FS) of water supply alternatives for

CLIBP. E- PUR's consulting team is performing that work. E- PUR and Provost & Pritchard are the principal members of that consulting team already under contract.

There are several common considerations for all water supply alternatives. The estimated annual water demand for potable and non-potable supplies for the CLIBP have not changed. Each water supply alternative must develop the water supply capacity on-site at the CLIBP. Neither Crows Landing CSD nor City of Patterson have supply capacity and/or water quality sufficient to supply CLIBP without water production at the CLIBP.

The Draft Environmental Impact Report (DEIR) evaluated the needed flow rates and yearly quantities of potable water supply from water producing zones beneath a region wide thick clay layer, the Corcoran Clay, and the same evaluation was done for non-potable water supply from water producing zones above the Corcoran Clay. This strategy of supplies was done because it was believed that the zone beneath the Corcoran Clay was a more reliable source for water quality and quantity. E-PUR's Technical Memorandum (TM) of May 17, 2017 found a sufficient supply rate of groundwater is available beneath the Corcoran Clay at the north end of the property (and not the south end on Fink Road). However the water quality in that groundwater zone, while manageable, had concentrations of sulfate that would require either blending or treatment to produce potable water within drinking water standards (DWS). Thus the configuration and conceptual engineering designs of water supply for the CLIBP from groundwater are being revisited in the water supply FS.

Further evaluation of on-site groundwater as the primary source of both potable and non-potable water to the CLIBP is necessary. E-PUR tested groundwater quality in the groundwater zone immediately above the Corcoran Clay from five on-site wells built by the Navy for their contamination assessment. This was done as part of the pre-feasibility study scope in the fall of 2017. These five wells intercept a very productive groundwater zone just above the Corcoran Clay at a depth range of around 200 to 250 feet. The data E-PUR developed show groundwater is generally potable; sulfate concentrations are between the secondary and primary DWS for sulfate, and nitrate concentrations are at and below the DWS.

An exclusively on-site water-supply alternative would involve blending water from wells completed in different aquifer zones to mitigate sulfate concentrations to below secondary drinking water standards and to alleviate nitrate concerns. The most desirable outcome is to eliminate the need for sulfate treatment but the resulting outcome may be a reduction of the need for sulfate treatment.

E-PUR's scope of work encompasses directing and overseeing two additional test boreholes advanced to a depth of 600 feet along the northern portion of Bell Road and installing up to three depth specific test wells in those locations. The scope of work also includes installing a fourth test well just above the Corcoran Clay at the northern test location from February 2017, TW-2; the zones below the Corcoran Clay were tested for their water quality and water production properties and documented in E-PUR's May 17, 2017 TM. Locations for each of these are shown on Figure A attached to the proposed scope amendment (Attachment 1).

A copy of the project's as-built drawings of the monitoring well along with geologic logs, geophysical logs, laboratory water quality data, and laboratory grain-size analyses will

be required by Public Works and shall be included in the wellfield's technical memorandum.

Field work is estimated to take 45 field days (6.5 calendar weeks) to complete. The start date will largely depend on driller availability. The overall schedule including lab turnaround time to assessment is 14 weeks.

It is proposed that E-PUR will perform the services on this project on a time and materials basis in accordance with the current Stanislaus County Contract. Our estimated costs inclusive of subcontracted activities are approximately \$328,500.

POLICY ISSUE:

The Board of Supervisors' must approve any amendments to existing professional services agreements.

FISCAL IMPACT:

The proposed amendment consists of three steps. Step 1 is E-PUR's Labor and will cost \$40,130. Step 2 is the Direct Expenses and will cost \$6,950. Step 3 is the Subcontracted Expenses and will cost \$281,420. It is recommended that all three steps be implemented for a total cost of \$328,500.

Funding for this project is available in the Fiscal Year 2017-2018 Crows Landing Air Facility Adopted Final Budget. An existing agricultural lease provides a revenue source to fund studies necessary for the Crows Landing Air Facility development project.

BOARD OF SUPERVISORS' PRIORITY:

The recommended actions are consistent with the Boards' priority of *Delivering Efficient Public Services and Community Infrastructure* by developing a reliable and sustainable water supply for the Crows Landing Industrial Business Park.

STAFFING IMPACT:

Existing Public Works staff is overseeing this project.

CONTACT PERSON:

Matt Machado, Public Works Director
Keith Boggs, Assistant Executive Officer

Telephone: (209) 525-4153
Telephone: (209) 652-1514

ATTACHMENT(S):

1. E-PUR, LLC Contract Amendment #3

STANISLAUS COUNTY
Third Amendment to Professional Design Services Agreement
between County of Stanislaus and E-PUR, LLC

Crows Landing Industrial Business Park

This Third Amendment is made and entered into this 24th day of April, 2018, in the City of Modesto, State of California, by and between the County of Stanislaus ("County") and E-PUR, LLC of Stockton, California ("Consultant"), for and in consideration of the promises, and the mutual promises, covenants, terms, and conditions, hereinafter contained.

WHEREAS, on September 20, 2016, the Stanislaus County Board of Supervisors awarded a Professional Design Services Agreement ("Agreement") to Consultant for the Crows Landing Industrial Business Park Project in the amount of \$312,879;

WHEREAS, on September 20, 2016, the Stanislaus County Board of Supervisors authorized the Director of Public Works to execute the agreement with the Consultant and to sign necessary documents, including any amendments to the Agreement not to exceed 10%;

WHEREAS, this amendment exceeds 10% of the contract and requires Board of Supervisor approval;

WHEREAS, Section 3.3 of the Agreement states that additional services must be approved in writing by the County;

WHEREAS, the Director of Public Works has exercised his authority to make change orders totaling \$31,287.50;

WHEREAS, on May 2, 2017 the Stanislaus County Board of Supervisors approved an additional change order for \$30,852;

WHEREAS, on September 19, 2017, the Stanislaus County Board of Supervisors authorized the Director of Public Works to execute Amendment No. 1 in the amount for \$173,750;

WHEREAS, on March 27, 2018, the Stanislaus County Board of Supervisors authorized the Director of Public Works to execute Amendment No. 2 in the amount of \$30,650;

WHEREAS, the Director of Public Works has determined that additional services are necessary for Consultant to complete the project;

WHEREAS, an increase of Three Hundred Twenty-Eight Thousand Five Hundred Dollars (\$328,500) to the Agreement is necessary to cover the additional services;

\$579,418.50	Agreement
<u>+328,500.00</u>	Third Amendment
\$907,918.50	Total

WHEREAS, Consultant has continued to diligently perform the services requested to support this project in good faith; and,


NOW THEREFORE, the parties agree as follows:

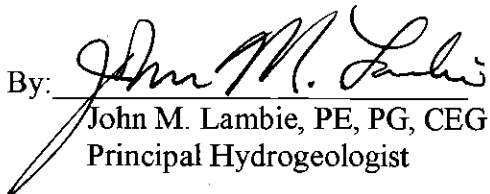
1. Section 1.1 - Scope of Services is amended to include additional services as shown in "Exhibit 1-A" attached hereto and made a part of this Amendment.
2. Section 3.1 - Compensation is amended to include additional fees of Three Hundred Twenty-Eight Thousand Five Hundred Dollars (\$328,500) as shown in "Exhibit 1-A" attached hereto and made a part of this Amendment. Consultant's compensation shall in no case exceed Nine Hundred Seven Thousand Nine Hundred Eighteen and 50/100 Dollars (\$907,918.50).
3. All other terms and conditions of the Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Third Amendment effective on the date written above.

COUNTY OF STANISLAUS

E-PUR, LLC

By: 
Matt Machado, Director
Department of Public Works

By: 
John M. Lambie, PE, PG, CEG
Principal Hydrogeologist

APPROVED AS TO FORM
John P. Doering, County Counsel

By: 
Amanda DeHart
Deputy County Counsel



EXHIBIT 1-A

March 8, 2018

Mr. Matt Machado, P.E., L.S.
Director, Stanislaus County Department of Public Works
1716 Morgan Road
Modesto, CA 95358

SUBJECT: PROPOSED AMENDMENT NO. 3 TO PERFORM ADDITIONAL FIELD CHARACTERIZATION OF GROUNDWATER SUPPLY AVAILABLE FOR THE CROWS LANDING INDUSTRIAL BUSINESS PARK

Dear Matt:

The water supplies for the Crows Landing Industrial Business Park (CLIBP) require further assessment beyond the preliminary work done by E-PUR in 2017. This proposed contract amendment scopes a Task 7 left as an optional consideration in our September 5, 2017 proposal for a Feasibility Study (FS) of water supply alternatives for CLIBP. E-PUR's consulting team is performing that work. E-PUR and Provost & Pritchard are the principal members of that consulting team already under contract via Stanislaus County Contract 2016-479.

BACKGROUND FOR THIS PROPOSAL

Two things changed as the water supply development has evolved. First state regulations on creating a new water system have changed under SB 1263. SB 1263 prompted the FS to begin in September to support the CLIBP's DEIR and to gather information and initiate dialogue with the two existing drinking water systems nearby. Under SB 1263 the CLIBP must analyze annexation or consolidation with the City of Patterson and Crows Landing Community Services District (Crows Landing CSD). The other change was that the groundwater data E-PUR gathered in 2017 for water-supply-well design changed the configuration of water-supply alternatives to the northern portions of the CLIBP; groundwater has better quality and, greater abundance and reliability in that area than in the south where the earliest phases of development are slated. No alteration of the phasing of development is currently under consideration; water from the north will be piped south and that fits well to developing a reliable water supply system in partnership with Crows Landing CSD if possible.

An initial meeting between California Division of Drinking Water (DDW) and Stanislaus County Public Works on September 26, 2017 identified that if Stanislaus County applies for a drinking water supply permit that SB 1263 will require consideration of operating CLIBP's water supply under one or both existing system permits. DDW also indicated that for a new permit for the CLIBP they will impose both primary and secondary drinking water standards rather strictly. As a result of that meeting the water supply FS is considering three water supply alternatives:

Alternative A) extension of the Crows Landing CSD's service area to the CLIBP to cooperatively supply water and system improvements under the existing drinking water supply permit,

Proposal for Additional Field Characterization of Groundwater
CLIBP Water Supply Alternatives FS and Design
Stanislaus County Public Works Department

Alternative B) the County performs all the steps necessary to obtain a new permit to provide drinking water to the CLIBP including the required evaluations with nearby systems, and

Alternative C) the City of Patterson's water service area is extended to include the CLIBP under its existing drinking water supply permit.

There are several common considerations for each of the three alternatives. The estimated annual water demand for potable and non-potable supplies for the CLIBP have not changed. Each water supply alternative must develop the water supply capacity on-site at the CLIBP. Neither Crows Landing CSD or City of Patterson have supply capacity and/or water quality sufficient to supply CLIBP without water production at the CLIBP.

The DEIR evaluated the needed flow rates and yearly quantities of potable water supply from water producing zones beneath a region wide thick clay layer, the Corcoran Clay, and the same evaluation was done for non-potable water supply from water producing zones above the Corcoran Clay. This strategy of supplies was done because it was believed that the zone beneath the Corcoran Clay was a more reliable source for water quality and quantity. E-PUR's Technical Memorandum (TM) of May 17, 2017 found a sufficient supply rate of groundwater is available beneath the Corcoran Clay at the north end of the airstrip (and not the south end on Fink Road). However the water quality in that groundwater zone, while manageable, had concentrations of sulfate that would require either blending or treatment to produce potable water within drinking water standards (DWS). Thus the configuration and conceptual engineering designs of water supply for the CLIBP from groundwater are being revisited in the water supply FS.

Further evaluation of on-site groundwater as the primary source of both potable and non-potable water to the CLIBP is necessary. E-PUR tested groundwater quality in the groundwater zone immediately above the Corcoran Clay from five on-site wells built by the Navy for their contamination assessment. This was done as part of the pre-feasibility study scope in the fall of 2017. These five wells intercept a very productive groundwater zone just above the Corcoran Clay at a depth range of around 200 to 250 feet. The data E-PUR developed show groundwater is generally potable; sulfate concentrations are between the secondary and primary DWS for sulfate, and nitrate concentrations are at and below the DWS.

An exclusively on-site water-supply alternative would involve blending water from wells completed in different aquifer zones to mitigate sulfate concentrations to below secondary drinking water standards and to alleviate nitrate concerns. The most desirable outcome is to eliminate the need for sulfate treatment but the resulting outcome may be a reduction of the need for sulfate treatment.

The scope of work for the FS developed a recommend sequencing to guide the project efforts as rapidly as practical to a resolution of the probable water supplies to CLIBP. The recommended sequencing was for three steps to this identification of a viable water supply to CLIBP.

STEP 1 PRE-FEASIBILITY STUDY (FS) ACTIONS

STEP 2 FEASIBILITY STUDY OF VIABLE WATER SUPPLY ALTERNATIVES

STEP 3 PREPARE CONCEPTUAL DESIGN OF PREFERRED WATER SUPPLY ALTERNATIVE

This proposal is for a Task 7 within Step 2.

Proposal for Additional Field Characterization of Groundwater
 CLIBP Water Supply Alternatives FS and Design
 Stanislaus County Public Works Department

The following scope sequence was developed and initiated in September 2017.

Step	Task Descriptions
Step 1 Pre-Feasibility Study (FS) Actions	Task 1 - Test Groundwater Quality from Existing Shallower Wells
	Task 2 - Collect and Compile Water-system Water-quality Data for Crows Landing CSD, City of Patterson, and Auxiliary Well for West Hills Water District
	Task 3 - Meet with DDW to Review Supply Options and Discuss Prospective Feasibility Study Alternatives and DDW Requirements
	Task 4 –Meet with Public Works and AECOM to Review Supply Options
	Task 5 – Hold Initial Meetings with Crows Landing CSD and City of Patterson
	Task 6 – Develop a TM for EIR Analyses of Potential Water-supply Alternatives to be considered in the Feasibility Study
Step 2 Feasibility Study (FS) of Water Supply Alternatives	Task 7 – Perform Additional Field Characterization of Groundwater Laterally and Vertically
	Task 8 - Investigate Feasibility of On-Site Supply Only via Blending of Shallow and Deep Groundwater or Limited Treatment
	Task 9 - Investigate Feasibility of a Blending System for Crows Landing CSD and CLIBP Sources
	Task 10 - Investigate Feasibility of a Blending System for City of Patterson and CLIBP Sources
	Task 11 – Prepare Initial FS Report of Supply Alternatives that identifies County preferred alternative
	Task 12 – Conduct Second Meetings with Crows Landing CSD and City of Patterson to discuss feasibility of consolidation or annexation
	Task 13 – Hold Second Meeting with DDW to Review Supply Alternatives and Feasibility of Annexation, Consolidation with Neighboring Systems
	Task 14 – Perform Background Investigation of Agency Data

Proposal for Additional Field Characterization of Groundwater
 CLIBP Water Supply Alternatives FS and Design
 Stanislaus County Public Works Department

Step	Task Descriptions
Step 3 Prepare Conceptual Design of Preferred Alternative	Task 15 – Preliminary Water Supply Engineering
	Task 16 – Develop Project Alignments for Water Supply System(s)
	Task 17 – Prepare Preliminary Engineering Report of the Preferred Water Supply Alternative
Project Coordination	Task 18 –Coordinate with AECOM on EIR input and comments
	Task 19 – Project Meetings with County Public Works
	Task 20 – Project Administration and Additional Coordination Meetings

SCOPE OF WORK FOR FIELD CHARACTERIZATION

TASK 7 – ADDITIONAL TEST BOREHOLE DRILLING AND ZONAL MONITORING WELL INSTALLATION TO SUPPORT ASSESSMENT OF ON-SITE WATER SUPPLY ALTERNATIVE(S)

E-PUR’s scope of work encompasses directing and overseeing two (2) additional test borehole advanced to a depth of 600 feet along the northern portion of Bell Road and installing up to three depth specific test wells in those locations. The scope of work also includes installing a fourth test well just above the Corcoran Clay at the northern test location from February 2017, TW-2; the zones below the Corcoran Clay were tested for their water quality and water production properties and documented in E-PUR’s May 17, 2017 TM. Locations for each of these are shown on Figure A attached to this proposed scope amendment.

For the two new test boreholes along Bell Road, formation samples are to be collected by the driller a minimum of every 10 feet and at formation changes in the exploration borehole. An E-PUR geologist will log the samples taken during this activity. All drilling and lithologic logging will be overseen by a licensed professional geologist and/or qualified engineer. Upon completion of the exploration borehole a geophysical log will be made. The geophysical log will be made for resistivity (long normal and short normal), spontaneous potential (SP) and borehole water temperature. The drilling contractor will subcontract and engage the geophysical survey crew since those schedules are closely intertwined.

E-PUR will use the formation samples and geophysical log from the test holes to identify the target water-producing zones to be assessed. The value of aquifer intervals or zones to produce a useful rate and quality of water is evaluated from the geophysical-log responses in the test hole. These responses provides information about the general water quality of the zone and the relative quantity of water moving within that zone.

Proposal for Additional Field Characterization of Groundwater
CLIBP Water Supply Alternatives FS and Design
Stanislaus County Public Works Department

Based on those findings E-PUR will install up to three (3) depth-specific zonal monitoring wells at each location.¹ While the depths and screen intervals are always a bit uncertain due to the vagaries of exploration drilling, for the purposes of developing a clear scope and cost, E-PUR's scope and accompanying costs are for completion of the wells using 4-inch diameter mild steel with an engineered PVC plastic screen interval and sand-gravel filter pack. The initial test borehole will be converted to a monitoring well at the deepest interval selected from the geophysical log and formation sampling data. The drillers scope of work cost estimate is based upon drilling to 600 feet in depth and installing one well to 550 feet, one well to 400 feet, and a third well to 250 feet. Each well is projected to be constructed with a 30-foot screen and sand-gravel pack although this screen length may vary by location. Each monitoring well will be completed with a 3'X3' concrete pad and locking steel riser pipe for the wellhead. Each well will be outfitted with a brass padlock or other as preferred by Public Works. Costs for obtaining water for the drillers from City of Patterson have been incorporated as have costs for monitoring well permits from Stanislaus County.

E-PUR will subsequently prepare a lithologic log of each of the two boreholes that describes the geologic formations encountered and the depths of the completed monitoring wells. Up to three formation samples will be submitted from discrete depths at each borehole for grain-size analysis to provide data for the design of an appropriate well screen slot size and gravel pack for water production.

Each monitoring well is to be developed by the drilling contractor by pumping followed by swabbing, and more pumping until the well produces water of sufficient clarity, typically less than 10 NTU. E-PUR will monitor the water discharged during purging for specific conductance, pH, total dissolved solids, and temperature. After purging a sufficient volume and ensuring that the water quality parameters have stabilized, water quality samples from each aquifer will be collected and laboratory tested for Title 22 parameter requirements as well as others including: general minerals, drinking water metals plus uranium, volatile organic compounds (including ethylene dibromide and trichloropropane associated with past farming practices), and methane.

After hydraulic development the monitoring well will be allowed to "rest" overnight with the submersible pump still in it along with a nearby electricity generator. The projected scope of work includes extracting water from the well at a fixed rate for up to six hours followed by pump shut down and recovery observation up to 3 hours. Depth to water data from both the drawdown and water level recovery will be collected and analyzed for the transmissivity and corresponding estimates of hydraulic conductivity of each aquifer zone. This process will be repeated for each of the monitoring wells in the sequence that they are drilled, developed, sampled, and then hydraulically tested. Water quality samples will be collected from each well at the conclusion of aquifer testing.

Task 7 Deliverable: A wellfield TM with as-built drawings of the monitoring well completions along with geologic logs, geophysical logs, laboratory water quality data, and laboratory grain-size analyses.

¹ Only two zonal wells are thought to be necessary, one above and one below the Corcoran Clay. However, if conditions suggest distinguishing a third zone scope and budget have been included here.

Proposal for Additional Field Characterization of Groundwater
 CLIBP Water Supply Alternatives FS and Design
 Stanislaus County Public Works Department

Task 7 Schedule: Field work is estimated to take 45 field days (6.5 calendar weeks) to complete. The start date will largely depend on driller availability. The overall schedule including lab turnaround time to assessment is 14 weeks.

SCHEDULE OF COST AND FEES

E-PUR will perform the services in this project on a time and materials basis in accordance with our Standard Fee Schedule that was in effect for our current Stanislaus County Contract 2016-479. Our fee detail is provided in Attachment A. Our estimated costs inclusive of subcontracted activities are approximately \$328,500. The large subcontracted costs to support Task 7 are provided for information and review in Attachment B, Roadrunner Drilling (who ably performed the earlier work), and Attachment C, California Laboratory Services.

PROPOSED FEE SCHEDULE				
Step 2	E-PUR Labor	Direct Expenses	Subcontracted Expenses	Subtotals by Task
Task 7 – Additional Exploration Boreholes and Test Wells	\$40,130	\$6,950	\$281,420	\$328,500
TOTAL ESTIMATED FEE				\$328,500

Fees will be invoiced monthly as they are accrued. Reimbursable expenses will be invoiced in addition to professional fees and are included in the estimate above. If it appears we will need to exceed the estimate above, we will notify you in writing before we do so, and will provide a revised estimate. We will not continue work beyond the initial budget without additional authorization.

ASSUMPTIONS

Property access will be provided by Stanislaus County.

E-PUR will obtain well permits for three drilling locations from Stanislaus County DER.

Drilling conditions will be on stable ground for anchoring of the exploration drilling rig.

Aquifer test water can be discharged onto the nearby ground or into nearby stormwater conveyance.

Drilling contractor will provide needed water and all material supplies for mud-rotary drilling.

March 8, 2018

Proposal for Additional Field Characterization of Groundwater
CLIBP Water Supply Alternatives FS and Design
Stanislaus County Public Works Department

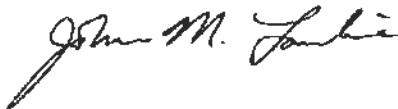
CLOSING

E-PUR can efficiently provide Stanislaus County these groundwater characterization services in support of the water supply alternatives FS. We look forward to the opportunity to continue to demonstrate for Stanislaus County the enthusiasm and the rigor we bring to our work.

I would be happy to discuss any aspects of the proposed work.

Sincerely,

E-PUR, LLC



John M. Lambie, PE, PG, CEG
Principal Hydrogeologist

cc: Mike Osborn, E-PUR
Gary Moore, PG, E-PUR
Dena Traina, PE, Provost & Pritchard

Attachments:

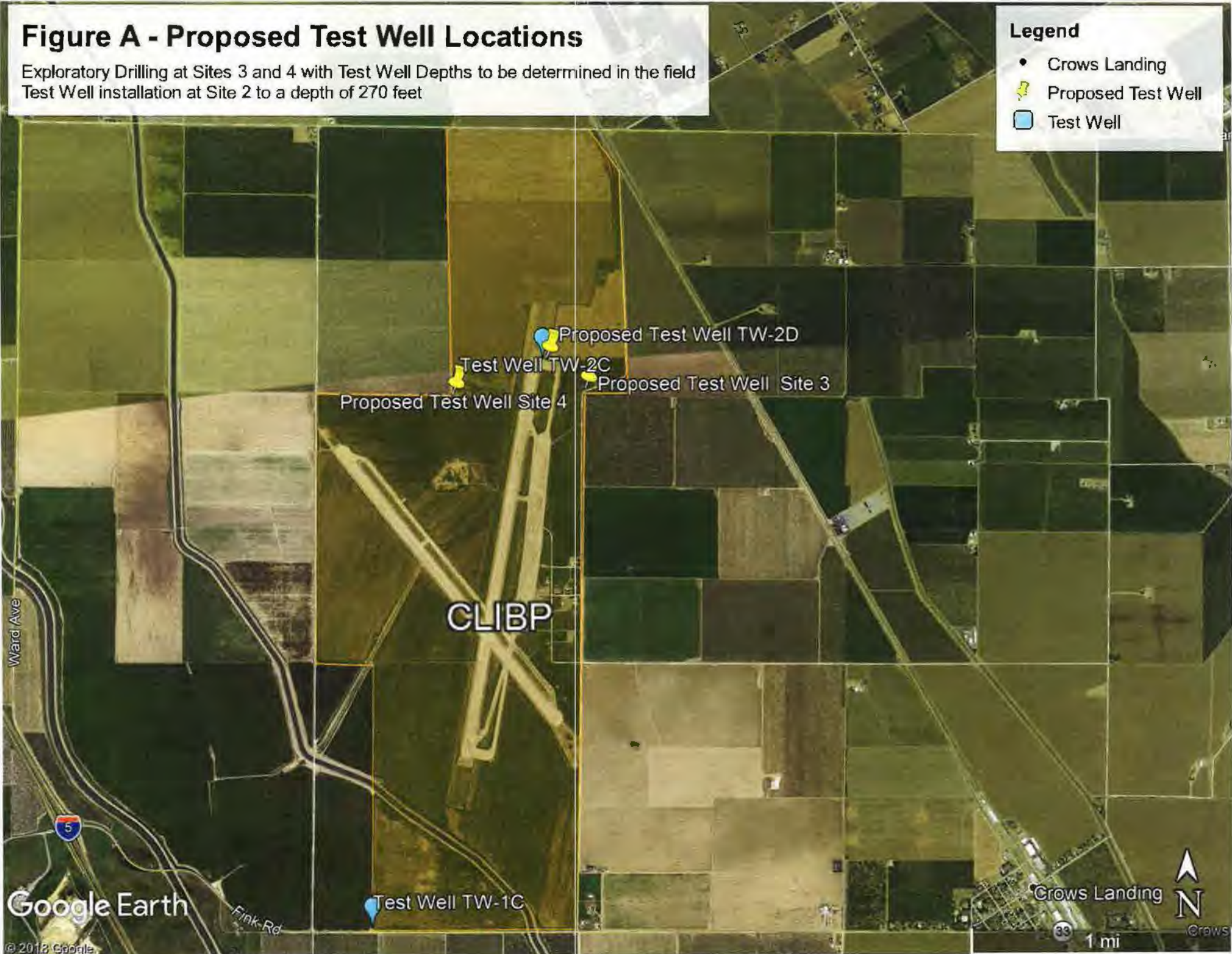
Figure A – Proposed Test Well Locations
Attachment A: E-PUR Contract Fee Schedule
Attachment B: Roadrunner Drilling Cost Estimated Scope of Work and Fees
Attachment C: California Laboratory Services Quotations

Figure A - Proposed Test Well Locations

Exploratory Drilling at Sites 3 and 4 with Test Well Depths to be determined in the field
Test Well installation at Site 2 to a depth of 270 feet

Legend

- Crows Landing
- 📌 Proposed Test Well
- ☐ Test Well



Proposal for Additional Field Characterization of Groundwater
CLBP Water Supply Alternatives FS and Design
Stanislaus County Public Works Department

ATTACHMENT A
E-PUR CONTRACT RATE SCHEDULE



COST ESTIMATE WORKSHEET

Client Stanislaus County Public Works	Date 3/2/2018
Project Name CLIBP Water Supply Alternative Development	Project Number 624-001-02
Task 7 - Additional field characterization for a wellfield design to a TM	Estimate By JML

		<i>Rate</i>	<i>Units</i>	<i>Quantity</i>	<i>Cost</i>	
Labor	Principal II	\$225	Hours	16	\$ 3,600	\$40,130
	Principal I	\$205	Hours	12	\$ 2,460	
	Associate	\$185	Hours		\$ -	
	Senior	\$170	Hours		\$ -	
	Senior	\$165	Hours	80	\$ 13,200	
	Engineer III	\$150	Hours		\$ -	
	Project	\$145	Hours	120	\$ 17,400	
	Staff	\$125	Hours		\$ -	
	Assistant Engineer/GIS Technician	\$105	Hours	30	\$ 3,150	
	Field Technician/CAD Drafting	\$90	Hours		\$ -	
	Project Coordinator	\$80	Hours	4	\$ 320	
	Clerical	\$65	Hours		\$ -	

Direct Expenses	Ground Travel	\$ 0.5350	Miles	3420	\$ 1,830	\$6,941
	Field Costs/ Day	\$ 30	Days	18	\$ 540	
	Subsistence, Overnight	\$ 75	Nights	18	\$ 1,350	
	Transducer Rental	\$ 140	Week	15	\$ 2,100	
	Water Level Sounder	\$ 35	Days	7	\$ 245	
	Well Depth Sounder	\$ 35	Days	7	\$ 245	
	GPS Rental	\$ 45	Days		\$ -	
	Materials (as % of ODCs)	+10%	Total		\$ 631	

Outside Expenses	Well Permits (3*\$265)	\$ 795				\$281,429
	Provost & Pritchard	\$ 1,200				
	Roadrunner Drilling	\$ 246,000				
	California Lab Services (7 samples for full suite of COCs and General Minearal Chemistry of Water)	\$ 6,045				
	Laboratory Grain Size Testing at ETS Lab (7@ \$175 each)	\$ 1,225				
	Scope Contingency for Quantity Costs (5%)	\$ 12,763				
	Administrative Overhead	\$ 13,401				

TOTAL FOR TASK \$ 328,500
