

# **Draft Post Oak Savannah Groundwater Conservation District**

## **Groundwater Well Assistance Program (GWAP)**



Post Oak Savannah Groundwater Conservation District  
310 East Avenue C  
Milano, TX 76556  
512.455.9900

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## ACROYNMS AND ABBREVIATIONS

DFC	Desired Future Condition
GAM	groundwater availability models
GCD	groundwater conservation district
GMA	Groundwater Management Area
GWAP	Groundwater Well Assistance Program
POSGCD	Post Oak Savannah Groundwater Conservation District
TWC	Texas Water Code
WARF	Well Assistance Request Form
WAWOF	Well Assistance Work Order Form

### 1.0 Introduction

The mission of the Post Oak Savannah Groundwater Conservation District (POSGCD) is to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and to protect groundwater users, by adopting and enforcing rules consistent with state law. The District accomplishes this mission by developing and enforcing rules to manage groundwater production and by participating in joint planning with adjacent and nearby districts to manage groundwater conditions across Groundwater Management Area (GMA) 12 and GMA 8.

Among the important considerations in managing groundwater in POSGCD are statutory requirements in the Texas Water Code (TWC) that require a balance between groundwater production and protection. TWC Section 36.0015 (b) states that one purpose of a groundwater conservation district (GCD) is “to protect property rights, balance the conservation and

development of groundwater to meet the needs of the state, and use the best available science in the conservation and development of groundwater.” In addition, TWC Section 36.108 (d)(d-2) states that the desired future conditions (DFC) development through the joint planning process for districts “must provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and the control of subsidence in the management area.”

A potential consequence associated with providing for the highest practicable level of groundwater production and respecting groundwater as a property right is that groundwater pumping may cause water level declines resulting in the water level dropping below the pump in some wells. Therefore, POSGCD has established the Groundwater Well Assistance Program (GWAP).in order to assist well owners whose wells are projected to experience water levels in their wells dropping below the pump during normal operations as a result of groundwater production in GMA 12.

## **2.0 Purpose**

The primary purpose of the GWAP is to identify wells in the District which may require action to prevent the water level in the well from dropping below the pump due to groundwater level declines caused by aquifer-wide pumping. The intent is to identify wells which may be at risk of these adverse impacts up to 10 years in advance and provide assistance in preventing the loss of water supply in those wells. Additionally, should an emergency situation arise where the water level in a well has dropped below the pump before corrective action has been taken, this purpose shall include restoring a water supply to those well owners.

A secondary purpose of the GWAP is to improve the POSGCD monitoring program and the POSGCD’s understanding of groundwater aquifer systems in POSGCD by increasing the number of monitoring wells in the monitoring well network.

## **3.0 Annual Assessments**

The District will take a proactive approach to assessing projected impacts to existing wells in the District. Beginning in 2018, the District will annually perform evaluations which will include the most recent information and data gathered from the District’s Well Monitoring Network, including localized hydrogeological studies at monitoring locations, as well as Groundwater Availability Model (GAM) simulations, using the most recent Central Queen City/Sparta/Carrizo-Wilcox GAM, and including the most recent information on projected pumping in GMA 12. This evaluation shall be known as the GWAP Annual Needs Assessment (GANA), and be performed by the District’s hydrologist. The results of this assessment shall be organized into a report, and presented to the Board at a regular or called public meeting, at or before the September monthly Board meeting, and published on the District’s website within 30 days of completion. The report generated from the GANA shall include the estimated year any well may require assistance under this program,

with qualified wells requiring assistance within the first 10 years being addressed as soon as possible, and when possible, in the order identified in the report.

The report generated from the GANA shall be used to establish the annual budget for the projected needs of the GWAP Fund, and may also be used in establishing guidelines for completions of water wells in certain areas of the District in the future.

#### **4.0 Corrective Actions**

Actions supported by the GWAP to an affected well owner could entail, but are not limited to, lowering a pump in a well, modifying the construction of an existing well, or drilling a new well. These actions shall result in the pump being set at a depth that will exceed the anticipated 50 year water level declines as identified by the GANA evaluations. In some situations, corrective actions may include installation of a solar powered pump system, providing a connection to a local water supply corporation or municipal water supply, or digging a stock pond.

#### **5.0 Funding**

The District shall create a GWAP Fund by the end of 2018 for the purpose of fully funding this program, and monies committed to that fund shall remain encumbered for that purpose. Funding to support activities as outlined in this manual shall be funded by fees collected by the District on permitted amounts for the production and/or transport of groundwater. The amount of funding to be maintained by the District in the GWAP Fund shall be determined by the most recent GANA evaluations performed for this purpose. The projections of wells requiring assistance shall be evaluated to establish the amount of funding necessary to accomplish the purposes of the GWAP. To offset the possibility of unforeseen events resulting in needs for GWAP Fund exceeding available funding in any given year, the District shall, in its annual budgeting, budget to collect fees as necessary to fund and maintain twice the amount indicated as necessary for that year according to the most recent GANA evaluation.

The GWAP shall be a stand alone program of the District, independent of all other programs in the District's Budget. The GWAP shall be fully funded from fees collected by the District to accomplish the purpose of the program. Funds committed to the GWAP may only be expended on the GWAP, and funds budgeted for the GWAP may only be reduced by a budget amendment approved by a 2/3 majority vote of the Board after public hearings, posted with at least 10 days notice.

The District will cover all costs associated with this program for qualifying wells, except in cases where a well owner desires a method of corrective action which exceeds the costs of any appropriately identified remedies by more than 20%.

## **6.0 Administration of the Groundwater Well Assistance Program**

The GWAP will be administered by the General Manager, working in coordination with the Water Resource Management Specialist and, when appropriate, the District's hydrogeologist. The primary responsibility of the Water Resource Management Specialist is to verify eligibility, oversee the investigation and evaluation of any application, and recommend appropriate action.

In situations where the water level has dropped below the pump due to aquifer-wide pumping, District staff will endeavor to respond to requests for assistance within 24 hours and proceed with corrective actions to restore water supply as appropriate.

In instances where water supply has not been lost, the Water Resource Management Specialist will then consult with the District's hydrogeologist and recommend to the General Manager a course of action for providing assistance to a well owner as appropriate to avoid loss of water supply in the future.

All necessary evaluations must be completed for a well to qualify for funding. These evaluations may include, but not be limited to, an inspection of the well, including acquiring water level measurements, and considerations of water level data from nearby wells.

## **7.0 Eligibility Requirements for Assistance from the Groundwater Well Assistance Program**

The District will maintain a database of registered and permitted wells to establish eligibility of qualifying wells. Information maintained will include a valid and complete Well Driller's Log, as submitted to the State of Texas, and when appropriate the District. If a valid and complete Well Driller's Log is not available, ownership, well construction, pump settings, and where possible, water levels, must be established for these wells.

To be eligible for assistance in the GWAP, a well must meet the following qualifications:

1. Well must be located in Milam or Burleson counties
2. Well must be functional and registered with the District
3. Well must be in the monitoring well network (see POSGCD website for instructions to join)
4. Well must be either a low-capacity non-exempt permitted well that produces less than 50 gallons per minute OR an exempt well used for domestic and/or livestock use as defined in the District's Rules
5. Well must be completed in one of the formations associated with the Carrizo-Wilcox, Queen City-Sparta, or Yegua-Jackson aquifers.

6. Well may not be covered by a mitigation agreement included in a permit issued by the District or required by the State of Texas.

## **8.0 Groundwater Well Assistance Program Contact Information**

The POSGCD Water Resource Management Specialist will be the primary point of contact for the well owners. The Water Resource Management Specialist contact information for the GWAP is listed below:

Post Oak Savannah Groundwater Conservation District  
Water Resource Management Specialist: Mr. Bobby Bazan  
310 East Avenue C  
Milano, Texas 76556  
Phone: 512.455.9900  
Toll-free: 800.231.8196  
Fax: 512.455.9909  
Email: [bbazan@posgcd.org](mailto:bbazan@posgcd.org)

### **8.1 Handling Requests for Assistance**

All requests for assistance from the GWAP must be reviewed and pre-approved by the District and all work must be completed by the District's pre-approved contractors. No work will be conducted on wells which fail to qualify for the GWAP. All requests shall be submitted to the District on the Well Assistance Request Form (WARF). A copy of the WARF is included in Appendix A.

All information included in the WARF is essential to properly assess a request for assistance, therefore, the WARF must be completely filled out for work to begin. In an emergency situation, such as an incident that occurs on a weekend or holiday, verbal approval from the District to the District's approved contractors shall suffice in lieu of a completed WARF, and the WARF shall be completed as soon as possible.

## **9.0 Implementation**

### **9.1 Well Assistance Agreement**

Prior to beginning any well assistance work, the well owner must sign the Well Assistance Work Order Form accepting the corrective strategy selected and approved by the District. After the owner signs the Well Assistance Work Order Form, POSGCD will sign to commit funding to implement the corrective action. These funds will be released to the well owner after the work has been completed. **Appendix B** provides a copy of the Well Assistance Work Order Form.

## **9.2 Contractor Scheduling**

A well owner may select from the list of pre-qualified water well drillers to conduct well assistance work. If the selected water well driller is unable to accept the work at the time of selection due to other obligations, the well owner may either select another pre-qualified water well driller or a water well driller who agrees to the rates identified in the Unit Cost Schedule, and meets are other criteria as outlined in this GWAP and necessary to perform the corrective and approved work.

## **9.3 Well Corrective Work**

The District shall issue the selected water well driller a completed Well Assistance Work Order Form (WAWOF) that describes the work to be performed and the pre-determined costs to complete the work. If, during the course of the approved work, unforeseen conditions occur that require changes in the negotiated scope of work, a water well driller must first get an amendment to the WAWOF approved by the District before conducting the changed scope of work. All work must be completed to the satisfaction of POSGCD in order for the water well driller to receive payment.

## **9.4 Timeline for Starting Scheduled Work**

Prior to the selection of a driller, a timeline for performing the work will be negotiated and become a part of the contract.

## **9.5 Standard Practices**

All water well drillers contracted for work with the District shall be properly licensed and use standard practices acceptable to the Texas Department of Licensing and Regulation for Water Well Drillers and Water Well Pump Installers.

## **9.6 Completion of Well Assistance Work**

The selected water well driller shall use reasonable due diligence in accordance with standard practices for water well drillers and pump installers for completing the approved work in a timely matter. Upon completion of the work, the water well driller and well owner shall sign off on the WAWOF. The completed and signed WAWOF shall be submitted to the District for final approval of the work and payment.

## **10.0 Groundwater Well Assistance Fund Contracts**

The District will solicit bids from and contract with several qualified water well drilling and pump installation companies, duly licensed in the State of Texas, to provide services under the Groundwater Well Assistance Fund Agreements. Contracting with more than one water well drilling company will ensure that a water well driller will be available in emergency situations.

### **10.1 Contractor Qualifications**

Contractors engaged in work for the District shall:

1. Be a company engaged in the business of providing water well drilling and pump services for a minimum of five years within the last seven years. Recent start-up businesses do not meet the

requirements of this contract. A start-up business is defined as a new company that has no previous operational history or expertise in the relevant business and is not affiliated with a company that has that history or expertise.

2. Be a licensed Water Well Driller in the State of Texas with a current license issued by the Executive Director pursuant to the Texas Occupations Code, Chapter 1901 and maintain the license throughout the term of the contract.
3. Be a licensed Water Well Pump Installer in the State of Texas with a current license issued by the Executive Director pursuant to the Texas Occupations Code, Chapter 1902 and maintain the license throughout the term of the contract.
4. Be located within a 70-mile radius of the District boundaries.
5. Be in good financial standing, not in bankruptcy, current in payment of all taxes and fees as required by law.

Have sufficient personnel and equipment to handle all Groundwater Well Assistance Fund service requests from the District.

## **10.2 Insurance**

Before being qualified to perform any work for the District, a contractor must provide and maintain a certificate of insurance, at contractor's expense, covering all the activities to be performed by contractor's company or contractor's subcontractors, as described below.

1. Statutory workers' compensation insurance valid in the State of Texas is required.
2. Comprehensive General Liability Insurance, covering liability, including but not limited to Public Liability, Personal Injury, and Property Damage, with coverage of at least \$1,000,000 per occurrence.
3. All insurance shall be placed with insurance companies licensed to do business in the State of Texas, and/or acceptable to the District.
4. The Comprehensive General Liability Insurance policy must include POSGCD as an additional insured during the duration of the contract with POSGCD. Any coverage afforded the District, the Certificate Holder, as an Additional Insured shall apply as primary and not excess to any insurance issued in the name of the District.
5. Comprehensive Automobile Liability Insurance covering the use of all vehicles used by the contractor, whether owned, hired or non-owned. This insurance shall be in at least the following amounts: bodily injury: \$500,000 per person; \$1,000,000 per occurrence; and property damage: \$500,000 per occurrence.

Contractor shall give the District unqualified prior written notice of cancellation or diminution of said insurance coverage ten (10) days prior to the effective date of any such cancellation or diminution.

## **10.3 Contract Terms**

The Groundwater Well Assistance Program Fund contracts shall be valid for a one-year period with an option to extend. A copy of the District Groundwater Well Assistance Fund Services Contract is included in **Appendix C**.

## **10.4 Unit Costs**



The District will reimburse contractors for work performed under the Groundwater Well Assistance Fund based on the attached Unit Cost Schedules. These schedules shall be reviewed by the District every year and provided to qualified contractors when changes are made. Copies of the initial Unit Cost Schedules are included in **Appendix D**.

### **10.5 Payment Terms**

Contractors will be reimbursed for work performed under a Well Assistance Work Order Form at the rates identified in the Unit Cost Schedule. Except in unforeseeable or emergency circumstances, no contractor costs will be reimbursed without an approved Well Assistance Work Order Form. The Well Assistance Work Order Form must be agreed to by the District and Contractor prior to beginning any work (signatures on Well Assistance Work Order Form required) and the work performed must be approved by the District (signature on WAWOF required) before any payments to the contractor will be made. Contractor payments must be approved by the District Board of Directors prior to payment. WAWOF payments will be mailed out on the following work day after approval at the monthly board meeting or the contractor can pick up the check at the District office.

### **10.6 Damages**

The contractor is responsible for any damages to property that occurs during the course of conducting well assistance activities on behalf of the District.

## **11.0 Groundwater Well Assistance Program Fund Management**

The District has an investment policy which is in compliance with various provisions of Texas law relating to the investment and security of funds of districts. Sections 36.155 and 36.156 of the TWC and Chapters 2256 and 2257 of the Government Code are applicable to the investment of the District's funds, including the investment funds associated with the GWAP. The investment policy addresses the methods, procedures, and practices that must be used to ensure effective and judicious fiscal management of the District's funds. The District purchases various insurance policies, including the bonding of all directors and employees of the District.

## **12.0 Recordkeeping and Reporting**

The District shall maintain records and supporting documentation for all Groundwater Well Assistance Program Fund work in accordance with the District Bylaws. By January 31<sup>st</sup> of each year following the creation and initial funding of the Groundwater Well Assistance Program Fund, the District shall make available to the public an accounting of Groundwater Well Assistance Program Fund revenues and expenses, information regarding the water well drillers qualified to perform work on behalf of the District, and a report summarizing the well assistance claims that were inspected, evaluated or completed.

**APPENDIX A:  
WELL ASSISTANCE REQUEST FORM**



**Post Oak Savannah Groundwater Conservation District  
Well Assistance Request Form**

Date: \_\_\_\_\_

Name of Well Owner: \_\_\_\_\_

Address of Well Owner: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

Well Location: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Driller Log Available (y/n): \_\_\_\_\_

Date Drilled: \_\_\_\_\_

Well Depth: \_\_\_\_\_

Pump Depth: \_\_\_\_\_

Well Screen Information: \_\_\_\_\_

Aquifer/Formation: \_\_\_\_\_

**APPENDIX B:  
WELL ASSISTANCE WORK ORDER FORM**



**Post Oak Savannah Groundwater Conservation District  
WELL ASSISTANCE WORK ORDER FORM**

WAWOF Number: \_\_\_\_\_

Date: \_\_\_\_\_

Name of Well Owner: \_\_\_\_\_

Address of Well Owner: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

Well Location: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Well Assistance Work: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contractor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

District Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Well Owner Signature: \_\_\_\_\_

Date: \_\_\_\_\_

*By this signature I am granting the District and/or its contractor access to the property on which the water well is located to conduct the agreed upon well mitigation activities.*

**WELL ASSISTANCE WORK AMENDMENT**

Date:

Amended Well Assistance Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contractor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

District Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**WELL ASSISTANCE WORK COMPLETION**

**Materials Used:**

Wiring:	_____	ft	Piping:	_____	ft
Blank Casing:	_____	ft	Well Screen:	_____	ft
Sand:	_____	sacks	Bentonite:	_____	sacks
Cement:	_____	sacks			
Pump Type:	_____	HP			
Mobilization/ Demobilization:	_____	miles roundtrip			
Other:	_____				

Date Work Completed: \_\_\_\_\_

Contractor Signature: \_\_\_\_\_

Well Owner Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*By this signature I acknowledge that the above described work was completed and I approve of the work.*

District Approval Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**APPENDIX C:**  
**GROUNDWATER WELL ASSISTANCE PROGRAM**  
**FUND SERVICES CONTRACT**  
*(contract with drillers – TBD)*

**APPENDIX D:  
UNIT COST SCHEDULE**

**Small Capacity/Shallow Wells (4” – 6” Diameter Wells to 800 feet)**

**Section 1.0 Well Data Collection**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Well Data Collection (including determining well use, pump setting, well construction details, well condition and contacting well driller for construction details.	each	
<b>b)</b>	Diagnostic Evaluation (pumping test, water quality)	each	
<b>c)</b>	Equipment and Labor to Remove/Reinstall Existing Pump	each	
<b>d)</b>	Downhole Camera Survey (up to 800 ft)	per foot	
<b>e)</b>	Mobilization/Demobilization ≤ 50 Miles Roundtrip	lump sum	
<b>f)</b>	Mobilization/Demobilization > 50 Miles Roundtrip	per mile	



**Section 2.0 Pump Removal/Installation Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment and Labor to Remove Existing Pump	each	
<b>b)</b>	Equipment, Labor and Materials to Install Electrical Pump to 100 ft (includes 1 HP pump w/ check valve, 1 HP control box, 1 1/4 column pipe (Sch 80 PVC), #10 electrical wire, well seal)	each	
<b>c)</b>	Equipment, Labor and Materials to Install Electrical Pump to 200 ft (includes 1 1/2 HP pump w/ check valve, 1 1/2 HP control box, 1 1/4 column pipe (Sch 80 PVC), #10 electrical wire, well seal)	each	
<b>d)</b>	Price per foot over 200 ft (includes pipe and wire)	per foot	
<b>e)</b>	Dole flow valve (15 gpm)	each	
<b>f)</b>	Pressure relief valve	each	
<b>g)</b>	Pressure control switch	each	
<b>h)</b>	PVC Electrical Conduit, Wiring, and Misc Fittings	per foot	
<b>i)</b>	Electrical Junction Box	each	
<b>j)</b>	Pre-Pressurized Tank (80 gal capacity, includes cement pads)	each	
<b>k)</b>	Portable Well Enclosure Panels (4)	total	
<b>l)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>m)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 3.0 Solar Pump Installation**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment and Labor to Install Solar Pump and all associated equipment to 200 ft	each	
<b>b)</b>	Solar Pump System (11 gpm and 2 solar panels)	each	
<b>c)</b>	Add Additional Solar Panel	each	
<b>d)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>e)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 4.0 Water Well Drilling Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment, Materials and Labor to Install 4" Dia well to 800 ft	per foot	
<b>b)</b>	Equipment, Materials and Labor to Install 5" Dia well to 800 ft	per foot	
<b>c)</b>	Equipment, Materials and Labor to Install 6" Dia well to 800 ft	per foot	
<b>d)</b>	Borehole seal with pelletized bentonite	per foot	
<b>e)</b>	Construct Concrete Well Pad	each	
<b>f)</b>	Equipment and Labor to Develop Wells	each	
<b>g)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>h)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 5.0 Plugging and Abandonment Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
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<b>a)</b>	Equipment, Materials and Labor to Abandon 4" Dia well to 800 ft	per foot	
<b>b)</b>	Equipment, Materials and Labor to Abandon 5" Dia well to 800 ft	per foot	
<b>c)</b>	Equipment, Materials and Labor to Abandon 6" Dia well to 800 ft	per foot	
<b>d)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>e)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 6.0 Miscellaneous**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Miscellaneous tasks (e.g. welding, electrical work)	per hour	

## Large Capacity/Deep Wells (6” – 14” Diameter Wells > 800 feet)

### Section 1.0 Well Data Collection

	ITEM DESCRIPTION	UNITS	UNIT COST (\$)
a)	Well Data Collection (including determining well use, pump setting, well construction details, well condition and contacting well driller for construction details.	each	
b)	Diagnostic Evaluation (pumping test, water quality)	each	
c)	Equipment and Labor to Remove/Reinstall Existing Pump	each	
d)	Downhole Camera Survey (up to 3000 ft)	per foot	
e)	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
f)	Mobilization/Demobilization > 50 Miles Roundtrip	per mile	

**Section 2.0 Pump Removal/Installation Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment and Labor to Remove Existing Submersible Pump	FT	
<b>b)</b>	Equipment and Labor to Remove Existing Lineshaft Pump	FT	
<b>c)</b>	Equipment and Labor to Install Submersible Pump for Irrigation Well	FT	
<b>d)</b>	Equipment and Labor to Install Lineshaft Pump for Irrigation Well	FT	
<b>e)</b>	Pump and Associated Materials to Bid Out for Irrigation Wells	--	
<b>f)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>g)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 3.0 Solar Pump Installation (N/A for deep wells??)**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment and Labor to Install Solar Pump and all associated equipment to 200 ft	each	
<b>b)</b>	Solar Pump System (11 gpm and 2 solar panels)	each	
<b>c)</b>	Add Additional Solar Panel	each	
<b>d)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>e)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 4.0 Water Well Drilling Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
<b>a)</b>	Equipment, Materials and Labor to Install 6" Dia well to 3000 ft (375 wall steel casing)	per foot	
<b>b)</b>	Equipment, Materials and Labor to Install 10" Dia well to 3000 ft (375 wall steel casing)	per foot	
<b>c)</b>	Equipment, Materials and Labor to Install 12" Dia well to 3000 ft (375 wall steel casing)	per foot	
<b>d)</b>	Equipment, Materials and Labor to Install 14" Dia well to 3000 ft (375 wall steel casing)	per foot	
<b>e)</b>	Construct Concrete Well Pad	each	
<b>f)</b>	Equipment and Labor to Develop Wells	each	
<b>g)</b>	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
<b>h)</b>	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 5.0 Plugging and Abandonment Services**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
a)	Equipment, Materials and Labor to Abandon 6" Dia well to 3000 ft	per foot	
b)	Equipment, Materials and Labor to Abandon 10" Dia well to 3000 ft	per foot	
c)	Equipment, Materials and Labor to Abandon 12" Dia well to 3000 ft	per foot	
d)	Equipment, Materials and Labor to Abandon 14" Dia well to 3000 ft	per foot	
e)	Equipment, Materials and Labor to Abandon 16" Dia well to 3000 ft	per foot	
	Equipment, Materials and Labor to Abandon 18" Dia well to 3000 ft	per foot	
	Equipment, Materials and Labor to Abandon 20" Dia well to 3000 ft	per foot	
	Mobilization/Demobilization $\leq$ 50 Miles Roundtrip	lump sum	
	Mobilization/Demobilization $>$ 50 Miles Roundtrip	per mile	

**Section 6.0 Miscellaneous**

	<b>ITEM DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT COST (\$)</b>
a)	Miscellaneous tasks (e.g. welding, electrical work)	per hour	