

**ARIZONA GAME AND FISH DEPARTMENT  
HABITAT PARTNERSHIP PROGRAM  
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

**PROJECT INFORMATION**

<b>Project Title:</b> Chappo Betty Water Development, Rose Tree Ranch	<b>Project No.</b> 09-501
---	---------------------------

<b>Region/GMU:</b> Region V/ 35A	<b>HPC:</b> Tucson HPC
----------------------------------	------------------------

**Project Type:** Water Development

**Project Description:** This project will improve water distribution in the Chappo Betty Pasture, located on state land leased by the Rose Tree Ranch. Currently, the pasture which contains approximately 1,666 acres, utilizes an existing windmill, cement storage, and trough to furnish water to livestock and wildlife. Livestock are grazed throughout the pasture for approximately 30 days per year during January through March, but the Ranch continues to furnish yearlong water for wildlife.

Through the development of two livestock/wildlife troughs on the north and south ends of the pasture, livestock distribution will be enhanced along with yearlong wildlife water available to a variety of big game species, a variety of bird species and bats. Due to the unreliability of the existing windmill, a solar pump will be installed to increase reliability, water availability and decrease maintenance costs. From the well, 1 ¼" Numex water line will run above-ground starting at the existing windmill and run uphill to the north where a 20,000 gallon storage tank and wildlife accessible trough will be established. Additionally, another water line will run downhill to the southwest corner of the pasture where another wildlife accessible trough will be placed. Escape ramps will be installed in all troughs, and the existing storage tank to prevent drowning by various wildlife species.

**Wildlife Species to Benefit:** Pronghorn Antelope, Whitetail, Mule Deer, Javelina

**Possible Funding Partners:**

<b>Implementation Schedule:</b> <b>Beginning:</b> January 2010 <b>Completed:</b> December 2010, if funded	<b>NEPA Compliance: (if applicable)</b> <b>Completed:</b> Yes _____ No <u>X</u> _____ <b>Projected Completion Date:</b> June 1, 2009
---	--

**PROJECT FUNDING**

<b>SBG Funds Requested:</b> \$ 22,555.50 <b>Cost Share Funds:</b> \$ 29,514.86 <b>Total Project Costs:</b> \$ 52,069.86
---

**PARTICIPANT INFORMATION**

<b>Applicant:</b> Aaron Miller (AGFD)/ [REDACTED] [REDACTED] (please print) <b>Telephone:</b> [REDACTED]	<b>Address:</b> Aaron Miller 555 N. Greasewood Tucson, AZ 85745
---	---

**AGFD Contact and Phone No.**  
**(If applicant is not AGFD personnel)**

Coordinated with: [REDACTED] – Rose Tree Ranch [REDACTED] – State Land Department, Tucson [REDACTED], President, Arizona Antelope Foundation [REDACTED], Arizona Antelope Foundation John Windes, Habitat Specialist, Tucson Reg. V	<b>Date:</b> 10-10-2008 10-30-2008; 11-26-2008 11-3-2008; 12-8-2008 12-8-2008 12-8-2008
---	---

<b>Applicant's signature:</b>	<b>Date: 8/28/2009</b>
-------------------------------	------------------------

**SEND COMPLETED APPLICATIONS TO:****Game Branch****5000 W Carefree Highway.****Phoenix, AZ 85086****[rthompson@azgfd.gov](mailto:rthompson@azgfd.gov)****WAS PROJECT PRESENTED TO THE LOCAL HPC?      YES   X        NO****HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED?**  
**NO****NEED STATEMENT/PROBLEM ANALYSIS:**

Over the past 15 years, the Rose Tree Ranch has been a cooperating partner with the Arizona Game and Fish Department in improving habitat through improvement of livestock grazing utilization, developing yearlong waters, and permitting hunter access. Continuing with improving the areas habitat potential, the Rose Tree Ranch is interested in enhancing water distribution in the Chappo Betty pasture, located on State Trust Land along the southwest end of the Mustang Mountains. This pasture contains approximately 1,666 acres of prime habitat for pronghorn antelope, mule deer, javelina, and whitetail deer. While the developed water sources will be utilized by livestock and wildlife, the grazing management practice of the Rose Tree Ranch is one of rest/rotation where all pastures are grazed for approximately 30 days per year. All waters on the ranch are left on and functional on a yearlong basis, therefore, allowing annual wildlife access to water.

Currently, the pasture is watered by one water source consisting of a windmill, supplying water to a cement storage tank and water trough. Due to the limitation of water throughout the pasture, livestock do not utilize the entire pasture and concentrate on the water throughout the day causing intensive utilization around the water. Additionally, unrestricted access by wildlife is limited due to livestock concentration.

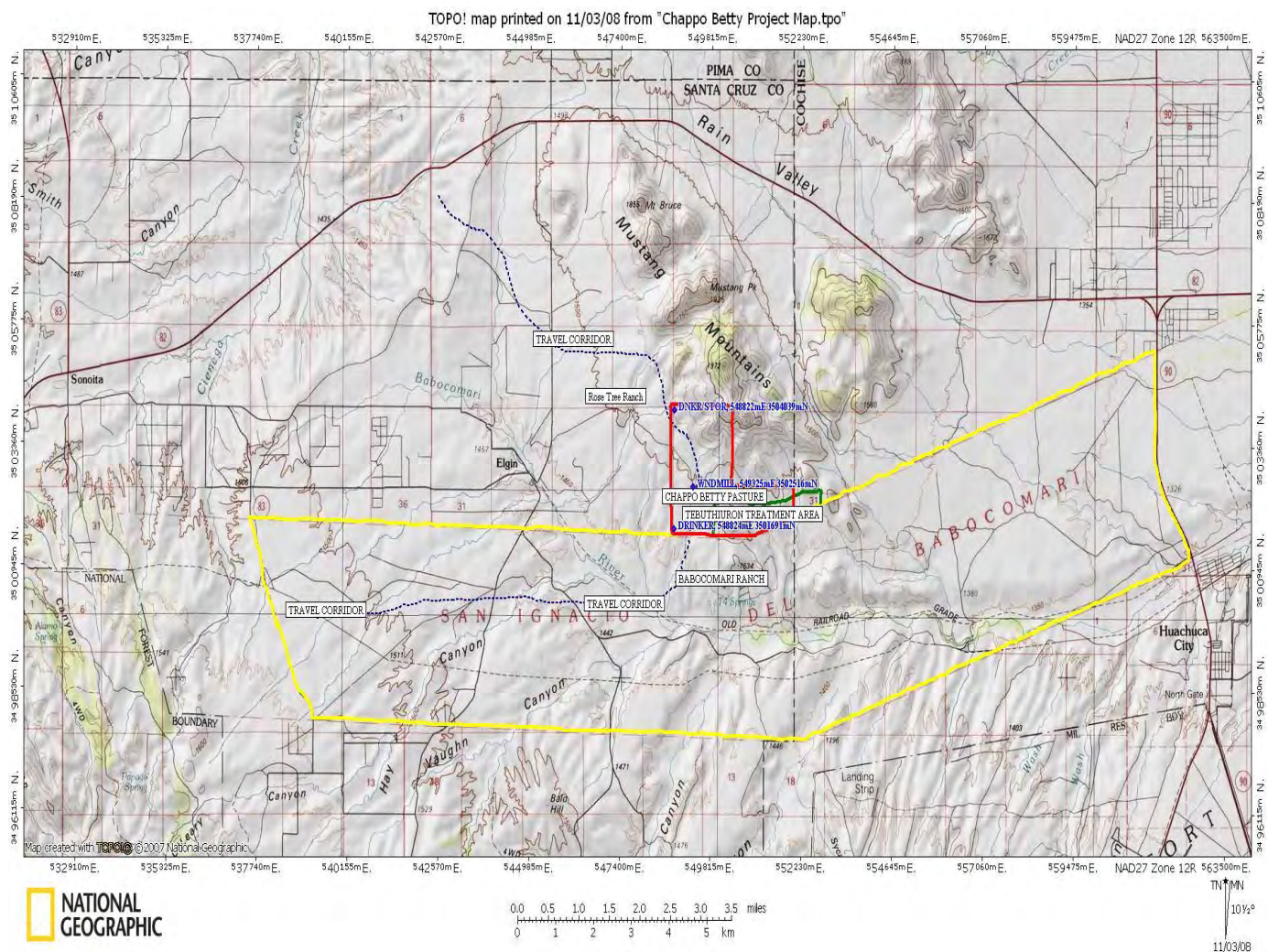
The proposed project would greatly assist the ranch in improving utilization through the development of two additional drinkers along the north and south end of the Chappo Betty pasture. The windmill that currently exists has failed several times, resulting in lapses in water availability until repairs could be completed. Therefore, to increase reliability, lower operating costs, and increase water volume the ranch will replace the windmill with a solar water pump. The northern-most drinker will have a 20,000 gallon storage tank installed, which will be supplied by the Rose Tree Ranch, allowing for the system to be expanded into other pastures in future years. The southern-most drinker will only utilize a drinker since it is along the Ranches southern boundary fence. Water will be supplied to the storage tank and drinkers by laying 1 1/4 " Numex pipe on the ground to each development. The addition of the large capacity storage tank will also allow for a water reserve that can be utilized if the well or pump experiences down time.

Mule deer, whitetail, and javelina populations throughout this area have been on the decline over the past 15 years due to a number of factors, including, long-term drought conditions and lack of yearlong

## Game/Development Branch

water. This project will not only enhance water availability throughout the area, but will improve habitat through better livestock distribution. Another attribute, and a very important one, of this project is the enhancement of a prime wildlife corridor for the above mentioned species along with pronghorn. The private lands to the west and north of the Rose Tree Ranch are being aggressively developed into mini-ranchettes. The area to the south of the ranch is privately owned by the Babocomari Ranch and contains a population of pronghorn antelope. To date, no development has occurred on the Babocomari, but the potential is there. If the Babocomari Ranch decides to sell and develop in the future, the existing population of pronghorn will be land-locked. Enhancing habitat and developing waters on the Rose Tree Ranch will aid in developing a travel corridor that will extend from the Babocomari Ranch to the south, northward on public lands that extend to the Las Cienegas National Conservation Area.

Along with the benefits of this proposed project, the Rose Tree Ranch has secured NRCS funding, along with personal funds to complete aerial Tebuthiuron treatment on 360 acres east of the Chappo Betty pasture. This project will restore grassland habitat by eliminating the invasion of whitethorn acacia and sandpaper bush. The Ranch is also working with the Arizona Game and Fish Department in completing treatment on an additional 500 acres in 2010. (See Attached Map).



**PROJECT OBJECTIVES:** Develop yearlong waters and storage tank in large pasture where available water is limited. Replace the existing windmill with a solar pump in an effort to increase reliability, reduce maintenance costs, and increase water availability.

When the water system is completed, the increased water availability will provide yearlong water to a variety of big game species, and aid in the development of a pronghorn corridor. Habitat condition will be improved by distributing livestock grazing throughout the pasture resulting in more uniform utilization of grasses.

An additional component of this project will be the development of wildlife escape structures in each trough and the existing cement storage tank, to mitigate the potential of drowning by a variety of wildlife species, including birds and bats.

This project is only one facet of a larger ecological plan that is being proposed for the area. During the 1990's, volunteers with the Arizona Antelope Foundation raised the lower strand along the Upper Elgin Road to aid in pronghorn movement. In 2002 a pronghorn water development was established in the Davis Pasture on BLM property. In 2004, the Rose Tree Ranch developed a number of waters along the west side of the Mustang Mountains to assist in their rest-rotation grazing system and to provide yearlong water to pronghorn antelope and other big game species. Since 2004, the Rose Tree Ranch has developed additional waters throughout the Ranch, along with developing wildlife standard cross fencing to improve grazing utilization and to protect riparian areas. Currently, the Ranch is working with NRCS and the Arizona Game and Fish Department in completing aerial tebuthiuron treatment over a 2-year period to stop the invasion of whitethorn and sandpaper bush. Once treatment is completed, the area east of the Chappo Betty pasture will produce long term habitat benefits consisting of the restoration of grasslands, improvement of riparian habitats along the Babacomari River and the lower San Pedro River by reducing sediment load, improving infiltration of rainwater, and improvement to the groundwater recharge.

It is also anticipated that the development of yearlong waters and restoration of grasslands throughout the area will provide pronghorn antelope with an increase in available habitat along with an uninterrupted travel corridor from the Babocomari Ranch, through the Rose Tree Ranch and onto the Las Cienegas National Conservation Area.

Additionally, the completion of these yearlong waters will greatly assist the mule deer and whitetail populations that currently exist in the area. Due to prolonged drought-like conditions and the lack of water in all available habitats, the population of these species has declined throughout this immediate area. This is particularly true for the areas mule deer population. Four of the past 5 winter helicopter surveys throughout the immediate area have resulted in zero mule deer observations.

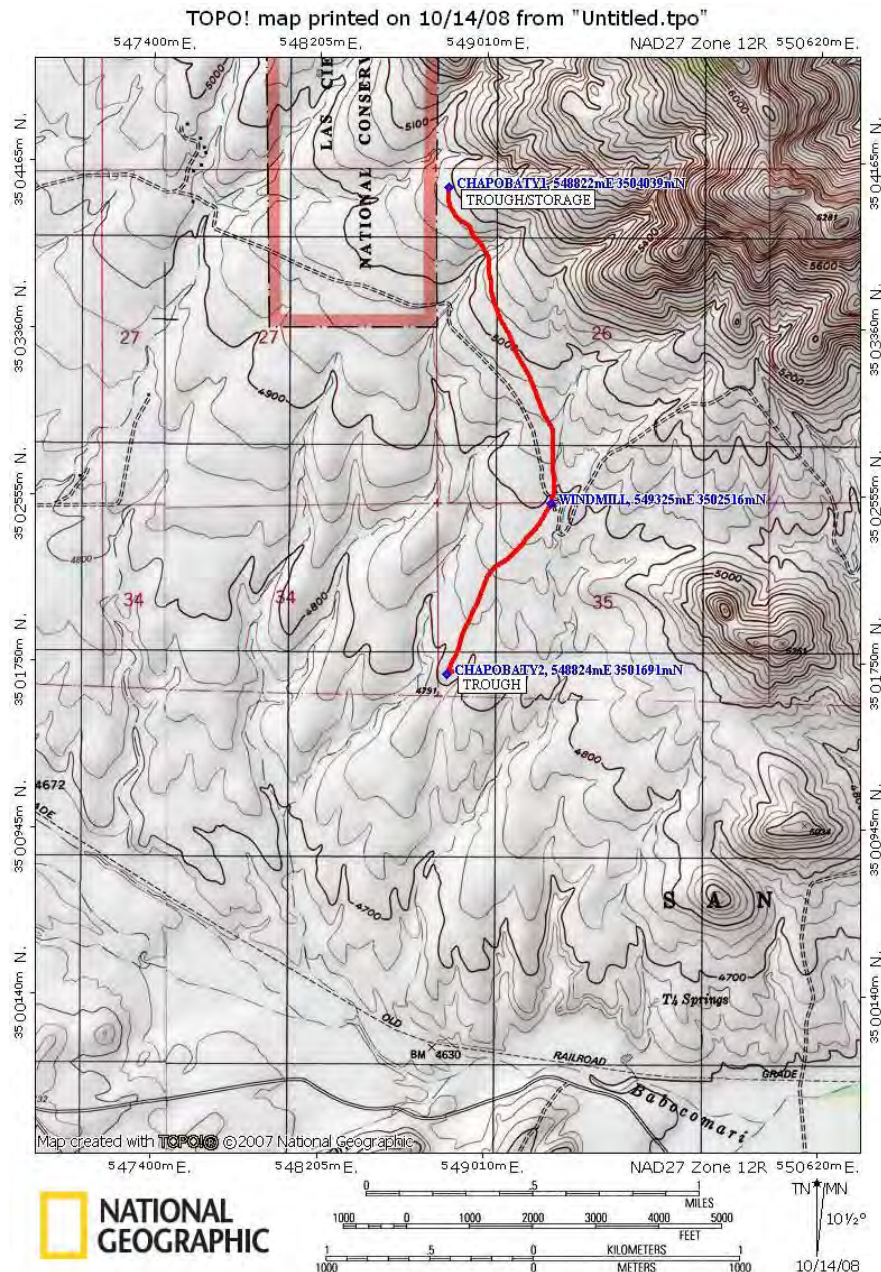
#### **PROJECT STRATEGIES:**

Utilize SBG Funds to improve water distribution in the Chappo Betty Pasture, located on the Rose Tree Ranch along the southwestern end of the Mustang Mountains. This project will consist of running 1 ¼" Numex water lines, above ground, to 2 waters located in the northwest and southwest corner of the pasture. The northern most drinker, which is uphill from the existing well will be supplied by a 20,000 gallon storage tank, supplied by the Rose Tree Ranch. This will eliminate long-term pumping uphill, and will allow the leasee the opportunity to extend the pipeline into neighboring pastures as the need arises. It will also act as a reserve in case the well or pump is inoperable for a period of time.



Additionally, replacement of the existing windmill is necessary due to reliability issues over the past several years. On at least two occasions, necessary repair of the windmill resulted in livestock being removed from the pasture due to water being unavailable for an extended period of time. The addition of a solar pump to the system will not only result in yearlong water availability, but will also reduce long-term maintenance costs. Also, the increased volume and water pressure will assure that sufficient water will be pumped to the storage tank, allowing for a 20,000 gallon reserve. The installation of these two components will assure that yearlong water is available to wildlife.

**PROJECT LOCATION: R18E, T20S, Sections 22,26,34 and 35  
SEE ATTACHED MAP.**



**LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):** State Land Department

**IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?**

**Not Applicable**

**HABITAT DESCRIPTION:**

Lying at an elevation ranging from 4791 feet to 5100 feet, the area is made up predominantly of various grasses including a variety of grammas (*Bouteloua spp.*), Lehmann Lovegrass (*Eragrostis lehmanniana*), Three-Awns (*Aristida spp.*), Arizona Cottontop (*Trichachne spp.*) and Red Brome (*Bromus rubens*).

The area also includes many annuals, forbs, and woody plants that are important foods for pronghorn and deer. Some of the species include: burroweed (*Isocoma tenuisecta*), false mesquite (*Calliandra eriophylla*), *Mimosa spp.*, Mesquite (*Prosopis juliflora*), *Rhus spp.*, *Yucca spp.*, *Opuntia spp.*, Beargrass (*Nolina spp.*), Ocotillo (*Fouquieria splendens*), and *Acacia spp.*

A number of drainages are located throughout the pasture which originate in the Mustang Mts. and flow to the Babocomari River watershed. Vegetational types along these riparian areas include: Desert Hackberry (*Celtis pallida*), Oak (*Quercus spp.*), Juniper (*Juniperus spp.*), and Desert Willow (*Chilopsis linearis*).

**ITEMIZED USE OF FUNDS:**

Pipe and troughs (See attached material breakdown summary)	\$8,444.90
Solar Pump, Equipment and Connectors ( see attached breakdown)	\$13,774.60

**NOTE: On Solar Exchange quotation, the Ranch is not eligible for SSVEC rebate**

9- 20' lengths #4 Rebar	\$122.00
3- 4'X8' 13 gauge expanded metal	<u>\$214.00</u>

**BUDGET SUMMARY**

Requested	\$22,555.50
Cost Share	\$29,514.86
<b>TOTAL</b>	<b>\$52,069.86</b>

**LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:**

**Rose Tree Ranch:** Install pipelines, storage tank, solar system and escape ramps with assistance from local volunteers.  
Obtain permits  
Maintain system.

**Cost Share Summary:**

**Administrative costs:** Obtain permits, proposal preparation,

---

Game/Development Branch

<b>Biological Assessment writeup, State Land Dept. Arch. clearance:</b>	<b>\$2,801.40</b>
<b>Ranch Labor and material installation:</b>	<b>\$ 8,400.00</b>
<b>Maintenance and system upkeep/ year</b>	<b>\$7,488.00</b>
<b>6' high X 16' diameter fiberglass storage tank</b>	<b>\$8,985.00</b>
<b>Local volunteer will fabricate escape ramps at \$ 65.00/hour (includes equipment usage)</b>	<b>\$544.00</b>
<b>Volunteer labor and travel to install ramps: 2 volunteers X 6 hours</b>	<b>\$200.00</b>
<b>Site visits/coordination/project and BA write ups/salary (AZGFD)</b>	<b>\$1,096.46</b>

**PROJECT MONITORING PLAN:**

The Rose Tree Ranch will check and maintain the system on a yearly basis.

The Arizona Game and Fish Department will conduct annual winter big game surveys throughout the area to track population trends and use.

**PROJECT MAINTENANCE:**

The Rose Tree Ranch will maintain the system on a yearly basis. The Ranch practice is to keep all waters available to wildlife on a yearlong basis, even though, livestock graze individual pastures approximately 30 days per year. Therefore, the Ranch conducts regular checks of all waters.

**PROJECT COMPLETION REPORT TO BE FILED BY:****WATER DEVELOPMENT PROJECTS (see attached worksheet):****TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):**

FROM : SIERRA LUMBER

FAX NO. :

Jan. 14 2009 01:35PM P2

## Sierra Lumber

### Material bid



Rose Tree Ranch  
Material Bid

Number of Items	Description	Cost/Piece	Total Cost
10,500.00 Feet	1 1/2" Numex Pipe-300ft. roll 35 Rolls / .65 per foot	.65'	6,825.00
100 Feet	1 1/2" Numex Pipe-100ft. roll 1 Roll / .65 per foot	.65'	65.00
35	Galvanized Barbed Inserts	3.29	115.15
2	1" Bob Valves	17.00	34.00
4	1" Galvanized 90s	1.65	6.60
2	1 x 3/6" Nipples	14.59	29.18
2	1 x 1 1/2" Galvanized reducers	1.89	3.78
70	Pipe Clamps	.70	49.00
2	6" Brass Ball Floats	30.00	60.00
2	Float Rod with swivel	20.40	40.80
2	320 Gal. Oval Galvanized Tanks RE328	196.75	393.50
2	1" Galvanized Pipe 21 foot joints	59.25	118.50
Sub Total			\$ 7,740.51
Tax			704.39
Total			\$8,444.90



# THE SOLAR EXCHANGE

## Quotation

██████████ - Rose Tree Ranch Pump System - 14 January 2009

QUANTITY	UNITS	DESCRIPTION	Unit Price	Extended Price
1	ea.	Grundfos 11SQF3 Submersible Solar Pump	\$1,675.00	\$1,675.00
1	ea.	CU200 Pump Controller w/readout and float switch capability	\$295.00	\$295.00
1	ea.	I0 101 Grid/Generator/Solar choice controller	\$365.00	\$365.00
340	ft.	1 1/4" polyethylene drop pipe	\$2.99	\$1,016.60
340	ea.	3/8" safety rope	\$0.20	\$68.00
2	ea.	1 1/4" brass x polyethylene male connectors with SS stiffeners	\$121.00	\$242.00
1	ea.	1 1/4" brass x polyethylene coupler with SS stiffeners	\$96.00	\$96.00
1	ea.	Delta LA302DC Lightning arrestor	\$55.00	\$55.00
	ea.			\$0.00
1	ft.	Conduit and conductor	\$75.00	\$75.00
1	ea.	terminals, connectors, tape, misc. hardware	\$149.00	\$149.00
350	ft.	#10-2 w/ground submersible pump cable	\$1.60	\$560.00
1	ea.	HD three wire splice kit	\$11.00	\$11.00
1	ea.	6" x 1" sanitary well seal	\$49.00	\$49.00
	ft.			\$0.00
8	ea.	Sharp 170 watt solar modules	\$875.50	\$7,004.00
1	ea.	Zomeworks UTRF120 Tracker	\$2,207.00	\$2,207.00
15	ft.	Mount post concrete	\$5.00	\$75.00
1	ea.	6" sch. 40 steel tracking mount post	\$385.00	\$385.00
	ea.			\$0.00
	ea.			\$0.00
	ea.			\$0.00
	ft.			\$0.00
	ea.			\$0.00
	ea.			\$0.00
	ea.			\$0.00
		Sub-total		\$14,327.60
		Incoming freight		\$150.00
		Installation including pump truck for pulling existing pump		\$5,200.00
		Sub-Total		\$19,677.60
		30% Federal Tax Credit		\$5,903.28
		SSVEC \$4.00/watt Utility Rebate (1360 Watts)		\$5,440.00
		TOTAL Installed price after Tax Credits and Utility Rebates		\$8,334.32
SOLAR PUMPING PRODUCTS POWER GENERATION POWER STORAGE				