PINEDALE ANTICLINE PROJECT OFFICE (PAPO)

1625 West Pine
PO Box 768
Pinedale, Wyoming 82941
Attention: Project Coordinator 307-367-5386

APPLICATION FOR FUNDING

(use additional sheets if necessary)

1. GENERAL PROJECT INFORMATION

P*roject Name*: Square Top Windmill to Solar Conversion & Predatory Perch Reduction Project

General Location (distance and direction from nearest city/town, attach map at a scale not less than ½" = 1 mile):

Approximately 20 miles South of Boulder, WY on the East side of HWY 191.

Legal Location of Project (attach map at a scale not less than 1" = 2,000').

Township: T various N

Range: R various W

Section(s): various

County: Sublette

Refer to attached Map

Surface Ownership (check all that apply): Federal X State _____ Private_____

**If project includes a mosaic of land ownerships (e.g., mix of federal, state and/or fee lands), provide a breakdown for each specific owner by acres and percent of total project area.

This project is located exclusively on BLM lands.

Contact Information for Affected Parties or Agencies:

Square Top Cattle Association Attn.: Cotton Bousman (307) 537-5222

Sublette County Conservation District (307) 367- 2257

RC Lopez – BLM, (307) 367-5369

2. APPLICANT INFORMATION			
Name/Organization: Square Top Cattle Association Attn: Cotton Bousman			
Mailing Address: PO Box 125			
City: Boulder	*State:* WY	*Zip Code* : 82923	
Daytime Phone # 537-5222 360-6142	*Fax #*		
Email Address: ckbousman@wildblue.net			
Point of Contact (if different from above)			

3. PROJECT DESCRIPTION

General Project Type (check all that apply):

Land Use/Livestock X_____ Land Use/Recreation _____

Cultural _____ Wildlife X_____

Air _____ Other _____

Describe Project Proposal (e.g., mechanical treatment, water improvement, etc.)

This project is designed to improve existing infrastructure while providing benefits to both livestock and wildlife through more reliable water sources and better control of those sources. The project consists of the conversion of windmill type pumping systems to solar pumping systems on 5 water wells within the Square Top Allotment. This will include pump testing and cleaning or acidizing wells as needed. These improvements will allow water to continue flowing all summer, and if possible, creating a pond or green overflow area. Brood-rearing sage-grouse, pronghorn and other sagebrush-obligate species will all benefit from this, as seen with the previous Lander Trail and Square Top well projects (JIO 2007). The project includes the removal of windmill towers and reconstruction of drinking tanks where necessary. Removing these windmill structures may decrease predation of sage-grouse eggs and chicks by territorial breeding pair ravens, which are known to perch and/or nest on such structures (*Common Raven Activity in Relation to Land Use in Western Wyoming: Implications for Greater sage-grouse Reproductive Success*, T.D. Bui, J.M. Marzluff and B. Bedrosian 2010).

Additional resources relating to raven predation on wildlife species indicate that "Breeding and nonbreeding ravens have been associated with increased predation effects in desert ecosystems" (*Spatial pattern of risk of common raven predation on desert tortoise*, Kristan and Boarman 2003) and that "The primary source of sage-grouse nest failure is predation, accounting for an average of 94% of nest loss" (*Factors affecting nest survival of greater sage-grouse in northcentral Montana*, Moynahan e.t al. 2007).

Also, see *Nest Predation of Greater Sage-Grouse in Relation to Microhabitat Factors and Predators* states (P. Coates, and D. Delehanty, 2010) and *Managing a Subsidized Predator Population: Reducing Common Raven Predation on Desert Tortoises*, Boarman 2003).

Total Project Acres (if applicable) N/A

Acres Indirectly Affected (if applicable, explain) The entire Square Top Allotment will be indirectly affected in some way. Total acreage of Square Top Allotment = 40,549 acres.

4. OBJECTIVES OF PROJECT, AND BENEFITS TO PAPO Off-Site Mitigation Strategic Goals.

Within the PAPO Strategic Plan, the number one wildlife objective is to maintain, conserve, restore and/or enhance habitat and habitat function both onsite and offsite for impacted species. The goal of this project is to remove windmill driven water sources and replace them with solar systems, thus increasing habitat effectiveness and function for sage-grouse and big game species by adding a reliable water sources throughout the summer months and removing nesting structures of ravens. This may provide more time for sage grouse hens to rear their chicks before moving to other seasonal habitats. By allowing more time for chicks to mature in a safer setting, survival may increase.

5. DIRECT/INDIRECT EFFECTS ON OTHER RESOURCES. (if applicable)

The impact of providing a steady water source in an arid landscape may ultimately enhance the brood-rearing capabilities of sage-grouse. Furthermore, it will help prevent conflicts with sage-grouse on adjacent private lands where problems occur during dry months when wildlife commonly move to private hay meadows. Pronghorn also stand to benefit from additional water sources in this area. Pronghorn typically move from the area when water sources dry up and livestock leave the area. Pronghorn are forced to move to riparian corridors (i.e. Private lands) creating conflicts and impacts on these riparian systems. Keeping pronghorn dispersed throughout the BLM allotments through the summer may aid in recovery of sagebrush communities that are suffering. This project may also enhance habitat for Pygmy Rabbits and Prairie Dogs, along with other wildlife species.

6. POTENTIAL FOR FUTURE EXPANSION OF PROJECT. Explain

There is potential to continue expanding this project, or similar type projects, throughout the Upper Green River Basin. Knowledge gained from the Lander Trail and Square Top projects (2007) will aid in this project and as this project is completed new ways to increase efficiency of conversions will undoubtedly be found. The potential creation of green areas may also further expand this project and provide other opportunities.

7. LIST ALL PROJECT PARTNERS/COOPERATORS, THEIR ROLES AND/OR CONTRIBUTIONS

Square Top Cattle Association—Applicant and project manager
Sublette County Conservation District—Funds manager and disbursement
PAPO—Overview and wildlife monitoring of project
BLM—Overview of project
WWNRT - Potential financial contributor

8. PROJECT MONITORING AND REPORTING (Describe how monitoring and reporting will be done, and how it relates to the objectives)

The PAPO will be responsible for monitoring the wildlife component of the project, (i.e. cameras documenting the amount of use of the green area projects by wildlife). There may be some additional monitoring to determine the benefits of removing raven perches and nesting sites to reduce predation on sage-grouse. The grazing permittees will monitor the pumping systems for proper function and take before and after pictures for records and aid in future projects.

9. RESEARCH POTENTIAL

There is research potential for studying sage grouse nest success based upon the removal of the windmill towers. These structures serve as nests/perches for avian predators, and the removal of the structure can impact nest success. A study could be designed that further explores the relationship of ravens to sage grouse and may provide key information on both species. There is also potential for research of the benefits of providing water in an arid landscape that can benefit all wildlife species.

10. PERMITS AND AUTHORIZATIONS REQUIRED PRIOR TO PROJECT IMPLEMENTATION (including but not necessarily limited to the following):

PERMIT OR AUTHORIZATION	REQUIRED		SUBMITTED		APPROVED	
	Yes	No	Yes	No	Yes	No
Cultural Resource Inventory		X				
COE Section 404 Permit		X				
Cooperative Agreement(s)						
NEPA Analysis		X				
Pesticide Application Permit		X				
Private Landowner Agreement(s)		X				
Sensitive Species Clearance	X					
Surface/Ground Water Permits		X				
T/E Species Clearance	X					
Other (explain) The DDCT process is not required for these types of projects.						

11. TOTAL PROJECT COST (Attach detailed budget)

Project Planning and Design	$ $1000
Project Implementation	$ $105,000
Project Operation and Maintenance	$ 5,000
Total Required	$ $111,000

12. MATCHING FUNDS ANTICIPATED IN CASH (list source and amount)

WWNRT-- $67,900 (expected)

13. ANTICIPATED "IN KIND" MATCHING FUNDS (list source, valuation, and valuation method)

Labor and construction completed by Square Top Grazing Association – $11,250 (750 hours @ $15/hr.)

14. PERCENTAGE OF FUNDING ON HAND OR COMMITTED

62% (EXPECTED)

15. TOTAL PAPO FUNDING REQUESTED: $ 43,100

16. EXPECTED/ANTICIPATED LIFE OF PROJECT (LOP)

Perpetual _____ > 50 Years___X_____ 25-50 Years_____ < 25 Years_____

Explain Basis for Projected LOP: As long as there is livestock grazing these allotments, there will be permittees using these solar pumping systems for water. LOP is only limited by how long equipment will last before it must be replaced (ex: solar panels, wiring, etc.).

17. PROJECT TIMELINE AND ESTIMATED COMPLETION DATE. Explain

Winter of 2013/204 will be used for building each solar component and planning for construction and implementation. In the Spring of 2014, the conversion of the wells will begin. The conversion of all wells should be completed by the end of Fall 2014. A contingency plan will be developed in conjunction with the PAPO upon funding that would include: prioritization of wells, key dates and goals for next summer's implementation, and a brief guide with a timeline to reference in the case of well(s) not being completed within an ideal timeframe. This plan will serve as a guide and aid in the completion of the project in timely manner and, where/when necessary, aid in any work that may need to be completed in the following years.

18. ATTACHMENTS AND SUPPORTING DOCUMENTATION

Project Design ___X___

Letters of Support ___X___

Management Plan _____ Long Term _____ Short Term _____ [1]

Monitoring Plan _____ Long Term _____ Short Term _____ [1]

Relevant Past Experience X_____ Other X_____ Explain: Map of well locations, BLM Engineers estimates

[1] Long term is defined as greater than (>) 5 years; short term is less than (<) 5 years.

19. ADDITIONAL INFORMATION FOR PAPO CONSIDERATION

Two of the five wells that would be converted are within the PAPA boundary (see Map) and the other three wells are close to it. Conversion of the wells in both settings may provide the PAPO with information to further understand the benefits and/or drawbacks that relate to on-site vs. off-site mitigation efforts and could provide rationale for a decision on effectiveness. This information would be key in future projects of any kind.

This entire project is very similar to the JIO well conversion project (Lander Trail and Square Top) done in 2007 on the Square Top allotment. This is a continuation of that project idea to additional wells in Square Top Allotment. The success of the projects done in 2007 demonstrated that there is justification to expand this project to other wells throughout the landscape.
The Sublette County Conservation District will hold these funds which will be managed by the Square Top Cattle Association and used to purchase the solar systems and contract work that may need to be done.

All of the proposed well conversions are within the Governor's Core Area. A DDCT is not required for these conversions and due to the lack of any new impacts or disturbances and falls under "de minimus" activity and therefore was not completed for each well. Also, NEPA analysis is not required for these conversions and will not be completed until clearly proven to be necessary.

Please see the attached estimates from the BLM engineering staff.

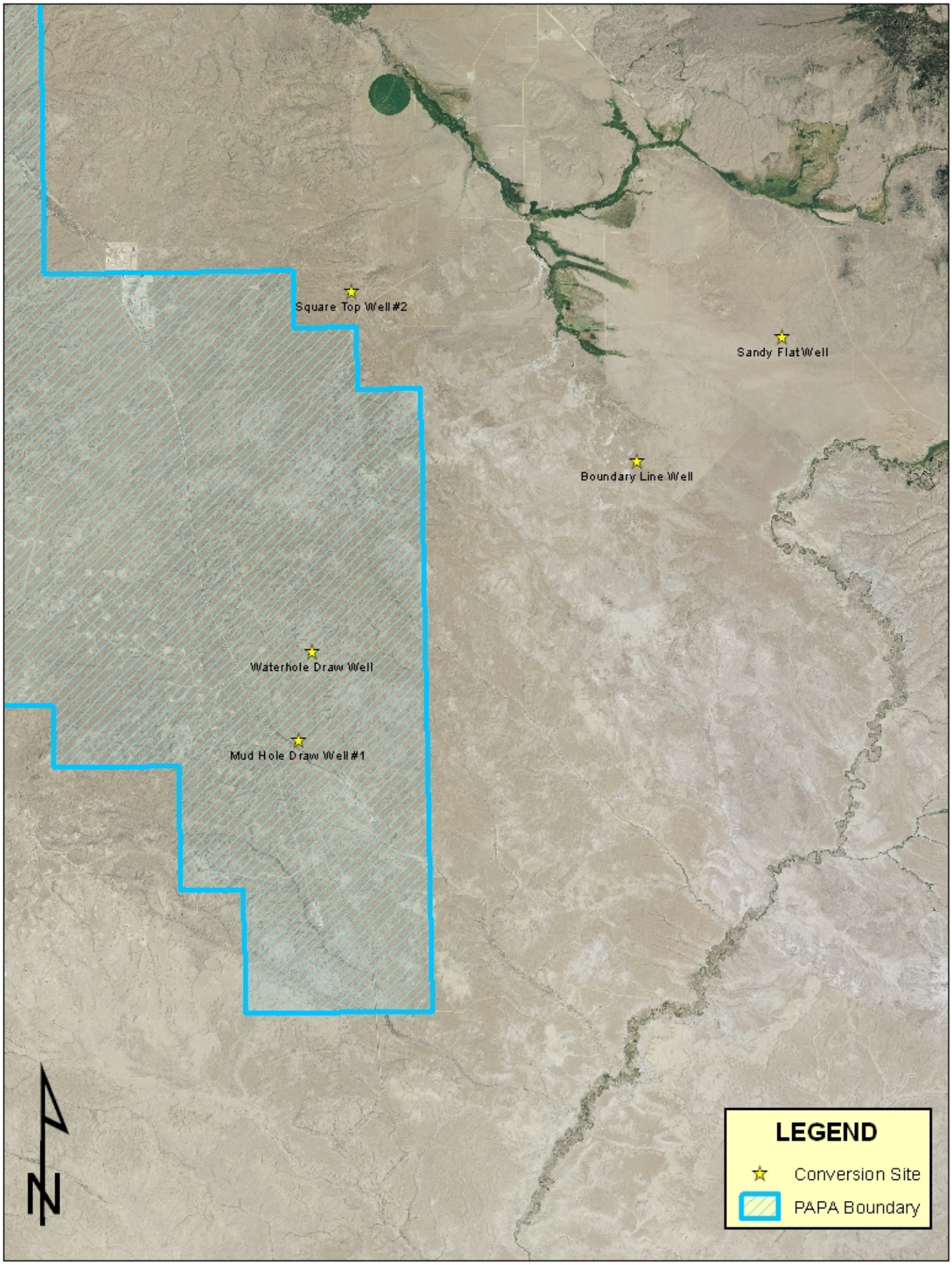
20. ACKNOWLEDGEMENT: this project and requested funding is subject to approval by the PAPO Pinedale Anticline Mitigation Management Board.

\s\ Cotton Bousman \s\
Signed

Cotton Bousman
Printed Name

Rancher/Square Top permittee
Title

10/31/2013
Date


Square Top Well #2
Sandy Flat Well
Boundary Line Well
Waterhole Draw Well
Mud Hole Draw Well #1
N
LEGEND
Conversion Site
PAPA Boundary

BLM Estimates from Joe Cantrell (Engineering, Rock Springs)

2014 SQUARETOP SOLAR WELL CONVERSION PROJECT

Proposal is for 5 fixed array systems.
We will have 5 BLM owned (?) windmills to dispose of.

SUGGESTED APPROACH

Wells need to be available May – June so work could be initiated July 1 and finished prior to May 1 the following year.

1 – Pull existing down-hole equipment (drop pipe, pump cylinder, etc.), leaving the windmill tower in place, to allow access for testing. Or, if part of the objective is to pull the towers, remove them.

2 – Test wells. This could include physical evaluation, pump testing and possibly video inspection. This would determine whether the well is in functioning condition and capable of supporting solar pumping. It would also identify necessary design factors – yield, static and pumping water levels, etc. Testing and/or inspection could also identify opportunities for well and facility improvement/enhancement.

3 – If well is functional, but not suitable for solar, an option might be to replace existing windmill down-hole equipment and maintain operability as a windmill facility. Or, P&A and drill new well.

4 – Size solar and develop plan – well by well. Plan would include any facility/well enhancement items. For example: remove windmill tower, repair and or replacement of water distribution system (troughs, overflow, pitless adapter applicability, etc.), well cleaning and redevelopment, and fencing.

5 – Order solar equipment and additional required materials, and initiate site work.

6 – Install systems.

OPTIONS

REMOVE OLD EQUIPMENT

1- Have BLM Force Account Crew (FAC) pull windmill down-hole equipment.
2- Contract or micro purchase to have equipment pulled.

Possibly sell towers or trade work for salvage.

TESTING AND INSPECTION

1- Have FAC do testing/inspection.
2- Contract testing/inspection.

SOLAR DESIGN AND SIZING

BLM and/or contract solar sizing and design.

SITE PLAN

Develop site/facilities plan. (troughs, etc.)

WELL DEVELOPMENT OR REHABILITATION

Complete well development work with BLM or contract.

SITE DEVELOPMENT

FAC or contract site development.

SOLAR INSTALLATION

FAC or contract installation of solar pumping systems

NEEDS

Any available information on the wells

- Project files
- SEO filing & completion information
- Information on maintenance and operation (BLM or operator)

Existing, minimum, and desired yield and season of use for each WELL

COST ESTIMATES

PULLING WINDMILLS & DOWNHOLE EQUIPMENT

1 day per well estimate, FAC or contract

VIDEO INSPECTION (optional)

Assuming we can borrow equipment from Casper, these costs

4 days for all 5 wells (includes 2 field days, 2 half day travel, 1 day analysis/write-up)

40 hrs	$2000
3.5 days of travel	$600
750 miles	$423.75
Incidentals (gen fuel, . . .)	$76.25
TOTAL	$3100

Also could contract this work (estimate $750-$1000 per well) or arrange for Shane Evans (BLM) to come over from Casper & do work (1/4 WM + vehicle + travel).

WELL REHAB/ENHANCEMENT (optional)

Ideally this would involve physical (jetting, scrubbing, and air lift or bail cleanup) and possible chemical (acidizing) treatment. It is possible FAC could do all but the jetting/scrubbing, or contract to have it done. This would probably take 3 days for the 5 wells.

A wild guess on this would be $2k/well

PUMP TEST **$9,665**

Worst case, this would take 1 day per well. Assuming we could do all 5 in one week. using FAC & BHC:

FAC Labor, Vehicle, Expenses	?	
BHC		
60 hrs	$3000	Includes oversight as well as test analysis
6.5 days of travel	$1100	
1000 miles	$565	
TOTAL	$4665	

If we contract to have pump set & testing like we did with Mesa in 2013, can estimate an additional $1000 per well ($5000 total).

SOLAR DESIGN, COST ESTIMATE, QUOTES **$1000**

If we use BHC, assume 20 hrs or $1000.

SOLAR EQUIPMENT AND INSTALLATION (everything needed to get water to surface) **$50,000**

Using the estimated pumping water levels provided from PFO, figures are shown below. There is a significant discrepancy between the SEO Permit data and the water level provided. This will be cleared up when we test the wells. Total cost at approximately $50,000 (see individual wells below).

CONTRACT TO INSTALL **$25,000**

For BHC, probably $4000 (hours, travel, mileage) per well with help from FAC or $5000 without.

Probably similar to contract another entity (i.e. Pronghorn or Atnip) with additional cost for BHC oversight, if desired. $4000 + $2500.

TOTAL ESTIMATE (BALL PARK)	**$95K**
Add Video	**$98K**
Add Rehab	**$108K**

In summary this gets water to the surface, but costs for surface facilities will need to be added to this. Additional funding should also be added for contingencies.

Estimate costs for BLM-FAC work could be paid with 8100 WM spread.

Also, in addition to this would be any contract work to add trickle overflow systems, fine tuning, etc. I would recommend BHC and High Desert Plowing for any contract work needed. We have used these contractors with other JIO/PAPO water well projects with great success.

INDIVIDUAL WELL INFORMATION

Squaretop #2 (Speedway)
T30N R107W NWSW S13
30'
SEO
P9362W
7-5-1941
TD=250'
WL=61'
YIELD = 3 GPM

SWAG ON SOLAR: PWL 200, 10 GPM 8 MODS
TOTAL = $12000

Mud Hole Draw #1 AKA WELL #69
T29N R107W NESE S10
30'
SEO
P9369W
7-6-1963
TD=102'
WL=18'
YIELD = 3 GPM
SWAG ON SOLAR: PWL 80, 10 GPM 4 MODS
TOTAL = $8500

Water Hole Draw
T29N R 107W NWNW S2
165'
SEO
P71946W
2-19-1986
TD=190'
WL=145'
YIELD = 25 GPM
SWAG ON SOLAR: PWL 200, 10 GPM 8MODS
TOTAL = $12000

Boundary Line
T30N R106W SENW S22
84'
SEO
P9356W
9-30-1963
TD=101'

WL=20’
YIELD = 5 GPM
SWAG ON SOLAR: PWL 100, 10 GPM 4 MODS
TOTAL = $8600

Sandy Flat
T30N R106W SENE S12
64’
SEO
P9346W
10-12-1963
TD=102’
WL=20’
YIELD = 4 GPM
SWAG ON SOLAR: PWL 80, 10 GPM 4 MODS
TOTAL = $8500

Sublette County Conservation District

October 29, 2013

Eric Decker
JIO/PAPO Office
Pinedale BLM
Pinedale, WY

Dear Eric,

Cotton Bousman has presented a proposal to the JIO/PAPO project RFP for the conversion of several windmills to solar power. He's asked for a letter supporting that proposal.

As you know, the District is supportive of Wind-to-Solar conversion for a number of reasons, importantly among them is the elimination of Raven nesting on the elevated structure. The result is enhanced Sage grouse nest success. The increased reliability of water availability, for the purposes of livestock distribution, also improves the ability to manage toward improved grouse habitat conditions. There are a number of additional benefits, for both wildlife and livestock, and for all these reasons we are supportive of the proposal before you.

If you have any question, please don't hesitate to ask!

Sincerely,

ERIC PETERSON, Manager
Sublette County Conservation District

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Conservation – Development –Self-Government