

IRRIGATION PUMPING PLANT ANALYSIS

Name _____ County _____ Tract No. _____
 NDNR Well Registration Number _____ Fuel Type _____
 Static Water Level _____ Feet

<u>Pumping Plant Condition</u>	<u>Before Adjustments</u>	<u>After Adjustments**</u>
Pumping Water Level	_____ Feet	_____ Feet
Operating Pressure	_____ psi	_____ psi
Operating Flow Rate	_____ gpm	_____ gpm
Power Requirements	_____ Whp	_____ Whp
Pump RPM	_____ RPM	_____ RPM
Engine RPM	_____ RPM	_____ RPM
Performance Rating (NPPPC)*	_____ %	_____ %

Energy Analysis

Water Application Capacity	_____ Ac-in/hr	_____ Ac-in/hr
Fuel Consumption/Hour	_____ unit/hr	_____ unit/hr
Fuel Unit Cost	_____ \$	_____ \$
Cost to Pump 1 Ac-in	_____ \$/Ac-in	_____ \$/Ac-in
Cost to Pump 1 Ac-ft	_____ \$/Ac-ft	_____ \$/Ac-ft

Summary of Fuel Cost for Pumping Plant

	% of NPPPC*	Acres	x	\$/Ac-in	x	in/year	=	Annual Cost	Annual Savings
Before Adj.	_____	_____	x	_____	x	_____	=	_____	_____
After Adj.	_____	_____	x	_____	x	_____	=	_____	_____
At Criteria	<u>100%</u>	_____	x	_____	x	_____	=	_____	_____

Adjustments, remarks and recommendations

*Nebraska Pumping Plant Performance Criteria

** Adjustments are not required to meet the requirements of the Conservation Security Program Enhancement Water Quality Enhancement Activity WQT03, Irrigation Pumping Plant Evaluation

Form modified from Cooperative Extension Service Agricultural Engineering Department, University of Nebraska – Lincoln

FIELD DATA

Name _____ County _____ Test No. _____
 Pump Brand _____ Stages _____ Serial No. _____
 Pump Setting _____ Pump Shaft Dia. _____ Threads/in _____
 Pump RPM _____ Driver RPM _____ Static Water Level _____ Cascading Water _____

Pumping Head

Pressure _____ psi x 2.31 = _____ ft Discharge Head
 + _____ ft Pumping Water Level = _____ **Total Pumping Head**

Flow Test

- Propeller Flow Meter:
 Time: _____ min _____ sec = _____ min
 Gallons STOP _____ - Gallons START _____
 = _____ Total Gallons ÷ Time in min _____ = _____ **GPM**
- Collins Flow Gauge:

10 Pt. Setting	Setting Position	Right		Left	
.158D					
.275D					
.354D					
.420D					
.475D					

Pipe I.D. _____ Average Velocity _____ x 2.45 x D² = _____ **GPM**

Energy Use Test

- Deisel Time: _____ min. _____ sec. = _____ Hours
 7.1 lb/gal Weight START _____ lbs. – Weight STOP _____ lbs.
 = _____ Net Weight Used ÷ _____ lbs/gallon
- Propane ÷ _____ Time in Hours = _____ gal/hr
 4.25 lb/gal
- Electric Time: _____ min. _____ sec. = _____ Seconds
 3.6 x _____ Disc Revolutions x _____ Kh ÷ _____ Seconds = _____ kW
 Volts _____ Amps _____
- Natural Gas Time: _____ min. _____ sec. = _____ Seconds
 3.6 x _____ Dial Capacity x _____ Dial Revolutions
 ÷ _____ Seconds = _____ x Correction Factor _____ = _____ mcf/hr
 Gas Pressure _____ psi Elevation _____

Performance Rating

_____ Head x _____ GPM ÷ 3960 = _____ Whp ÷ _____ Fuel Use
 = _____ Performance ÷ _____ Criteria = _____ % Performance Rating

Pump Adjustment**

_____ Pumping Head x _____ Downthrust = _____ Total Downthrust
 _____ Shaft Stretch x _____ Shaft Length/100 = _____ Total Stretch x _____ Threads/in
 = _____ Turns of Nut

** It is recommended that the pump adjustment be made only by trained professionals. Adjustments are not required to meet the requirements of the Conservation Security Program Enhancement Water Quality Enhancement Activity WQT03, Irrigation Pumping Plant Evaluation

Copies of this Field Data form should be completed for each test performed and submitted to NRCS.

Field Pump Test Data

Observation No.	Flow (GPM)	Well Pressure (psi)	Drawdown Pumping Level (ft)	Constant RPM ○ Motor RPM ○ Pump RPM
1				
2				
3				
4				
5				
6				
7				
8				

Note: Field pump test data must show data for all columns above. A minimum of four different points of flow at a constant RPM shall be documented. Points shall be obtained on both sides of the normal pump operating flow rate.

Date of Test: _____

Test completed by: _____

Contact Number of Tester: _____