United States Department of Agriculture

NRCS Natural Resources Conservation Service

Pumping Plant

WA-533

Washington Conservation Practice – Energy CAP Job Sheet **July 2013**

Definition

A facility that delivers water at a designed pressure and flow rate. Includes the required pump(s), associated power unit(s), plumbing, appurtenances, and may include on-site fuel or energy source(s), and protective structures.

Purpose

This practice may be applied as a part of a resource management system to achieve one or more of the following:

- Delivery of water for irrigation, watering facilities, wetlands, or fire protection
- Removal of excessive subsurface or surface water
- Provide efficient use of water on irrigated land
- Transfer of animal waste as part of a manure transfer system
- Improvement of energy use efficiency
- Improvement of air quality

Where used

This practice applies where conservation objectives require the addition of energy to pressurize and transfer water to maintain critical water levels in soils, wetlands, or reservoirs; transfer wastewater; or remove surface runoff or groundwater.

Resource Management Systems (RMS)

A RMS is a combination of structural, vegetative and management practices that meet a set of objectives and solve resource problems. On irrigated land, the pumping plant is one of several components of a RMS used to supply water to a crop through an irrigation system. The RMS for pumping plant includes the supply system to the field, the method used to apply the water, how to schedule and manage irrigations, plus how to manage nutrient and pesticide applications.

Plans and Specifications

Plans and specifications for constructing pumping plants shall be in accordance with the standard and describe the requirements for properly installing the practice to achieve its intended purpose. As a minimum, the plans and specifications shall include the following:

- A plan view showing the location of the pumping plant in relationship to other structures or natural features.
- Detail drawings of the pumping plant and appurtenances, such as piping, inlet and outlet connections, mounting, foundations, and other structural components.

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- Written specifications that describe the site specific details of installation.

Pump Criteria

Pump requirements Design flow rate, range of operating heads, and pump type shall meet the requirements of the application.

Selection of pump materials shall be based on the physical and chemical qualities of the material being pumped and manufacturer's recommendations.

Variable Frequency Drives The owner shall inform the electric power provider that a Variable Frequency Drive will be installed prior to installation, and be responsible for following requirements of the electric power provider.

The Variable Frequency Drive shall be protected against overheating.

The Variable Frequency Drive control panel shall provide the read out display of flow rate or pressure.

Flow and Pressure Provisions for the connection of flow and pressure measurement devices shall be included in power plant system design.

Operation and Maintenance

An Operation and Maintenance plan specific to the pumping plant being installed shall be prepared for use by the owner and responsible operator. The plan shall provide specific instructions for operating and maintaining facilities to ensure the pumping plant functions properly as designed. As a minimum, the plan shall address the following:

- Inspection or testing of all pumping plant components and appurtenances.
- Proper start-up and shut-down procedures for the operation of the pumping plant.
- Routine maintenance of all mechanical components (power unit, pump, drive train, etc.) in accordance with the manufacturer's recommendations.
- Procedures to protect the system from damage due to freezing temperatures.
- When applicable, procedures to frequently check the power unit, fuel storage facilities, and fuel lines, for leaks and repair as needed.
- Periodic checks and removal of debris as necessary from trash racks and structures, to assure adequate flow capacity reaching the pumping plant intake.
- Periodic removal of sediment in suction bays, to maintain design capacity and efficiency.
- Inspection and maintenance of anti-siphon devices, if applicable.
- Routine test and inspection of all automated components of the pumping plant, to assure the proper functioning as designed.

CLIENTS ACKNOWLEDGEMENT

By signing below, I acknowledge that I:

- ☐ have reviewed and understand the above information on pumping plant;
- ☐ will work with NRCS on flow rate and pressures required for my irrigation system;
- ☐ will work with NRCS on the design of the pumping plant in order to get the most efficient system available;
- ☐ will monitor and maintain my pumping plant according to the O and M plan.

Client's signature: _____ Date: _____

Contract No._____ CIN_____