



CONSERVATION ENHANCEMENT ACTIVITY

E449A

CONSERVATION STEWARDSHIP PROGRAM

Complete pumping plant evaluation for water savings

CONSERVATION PRACTICE: 449 - Irrigation Water Management

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Water

ENHANCEMENT LIFE SPAN: 1 years

Enhancement Description

Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more.

Criteria

- Pump test evaluation will include all irrigation pumps on fields where the activity is implemented. There could be multiple pumps that are used on single or multiple fields.
- Minimum data necessary to complete the pumping evaluation:
 - Flow rate, instantaneous and for the season.
 - Pressure at different flow rates based on partial or complete irrigation.
 - Power usage to compute efficiency of the drive unit.
 - Area and fields irrigated.
 - Estimate of friction loss in pipelines based on pressure drop in lines during test.
- The irrigation water management plan is followed and includes, as per NRCS Conservation Standard Practice, Irrigation Water Management (Code 449):
 - An irrigation system layout map showing the main pipeline(s), irrigated area, soil moisture locations and depths (if used), and soils. If water level sensors are used, show locations and number of sensors used.
 - Methods used to measure or determine the flow rate or volume of the irrigation applications.

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- Measurement records showing the amount of water used to irrigate as it comes onto the farm and goes to each field.
- Documentation of the scientific method used for scheduling the timing and amount of irrigation applications.
- The Irrigation water management plan explains:
 - How irrigation system meets crop needs, while maximizing irrigation water efficiency.
 - Seasonal or annual planned water application volumes by crop.
 - Management allowable depletion (MAD) and depth of the managed crop root zone or water level for each crop and stage of growth.
 - Evaluation of irrigation system distribution uniformity and necessary changes to insure uniform irrigation.
 - Information on how to recognize irrigation induced erosion and how to mitigate it.
 - Indicate how data from the sensor locations and depths will be considered to make field-wide irrigation decisions.
 - Water application scheduling based on soil moisture or water level monitoring and or evapotranspiration monitoring from the weather station
- Recordkeeping documents for the irrigator to use during operation and management.

Documentation and Implementation Requirements

Participant will:

Prior to implementation

- Provide NRCS with a map showing the location of all fields and pumps connected to the irrigation system.
- Arrange for pump test evaluations of all irrigation pumps on fields where activity is implemented.
- Acquire an irrigation water management plan meeting NRCS Conservation Practice Standard Irrigation Water Management (Code 449) requirements.



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During implementation

- Follow the irrigation water management plan and keep records as required by the plan.
- Have a pump test evaluation performed on all irrigation pumps on fields where activity is implemented.

After implementation

- Make the following items available for review by NRCS to verify implementation of the enhancement:
 - Irrigation water management plan and records kept.
 - Pump test evaluation report(s).
 - Provide a list of any adjustments to improve system efficiency made as a result of the evaluation. Calculate the reduction of water use based on before and after conditions.

NRCS will:

Prior to implementation

- Provide and explain NRCS Conservation Practice Standard Irrigation Water Management (Code 449) to participant as it relates to implementing this enhancement.
- As needed, provide additional technical assistance to the participant as requested.

After implementation

- Verify implementation of the irrigation water management plan, by reviewing records kept during enhancement implementation.



OREGON SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY E449A

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Additional Information and Requirements for Oregon

- In addition to the documentation requirements specified in the National job sheet E449A the following additional documentation requirements apply in Oregon
 - Requirements:
 - Rehabilitate, replace, or reconfigure pump to improve water delivery efficiency by 10% or more
 - 10% improvement in overall plant efficiency
 - Output HP / Input HP
 - Output HP – discharge pressure in ft, pumping water level to discharge in feet
- ○ Data required
 - Flow rate, instantaneous and for the season
 - Pressure at different flow rates based on partial or complete irrigation
 - Power usage to compute efficiency of the drive unit
 - Area and fields irrigated
 - Estimate of friction loss in pipelines based on pressure drop in lines during test
 - See “NRCS_Pumping_Plant_Detailed_Evaluation_Worksheet”
- ○ Purpose
 - Determine whether water savings can be achieved through better IWM / pump adjustments

Design Approvals & Acknowledgements:

Design Approval	Date	Job Approval Authority
Designed by:		
Approved by:		

Client's Acknowledgement Statement:

The client acknowledges:

- I have received a copy of the specification and understand the contents and requirements.
- It is my responsibility to obtain all necessary permits and/or rights and to comply with all ordinances and laws pertaining to the application of this practice.
- I will not begin installation of this practice until I have received appropriate approval to do so. I understand NRCS also has Federal and state laws to comply with that may take some time to address (e.g. cultural resources).

Client's Signature	Date

Certification Documentation:

	Field Evaluation: Post-treatment inventory, measurements, notes, as-built, and supporting documentation (document completion in conservation plan), as required.
	Map(s): Including field numbers, fields treated, and units treated (may document on conservation plan map), as required.
	Photos or other supporting documentation (e.g., seed tags, soil tests, receipts, invoices, spray records, fertilizer records, etc.)
Brief Description of Work Accomplished (types of equipment used, date of application, extents and quantities installed, etc.)	

Certification Statement:

The employee certifies the implementation of this conservation practice:

- Meets the purpose, general criteria, and any required additional criteria as documented in the conservation practice standard and/or enhancement sheet.
- Meets the specifications contained herein and is complete.
- Conforms to my existing Job Approval Authority controlling factors and levels.

Name	Date	Job Approval Authority

Field Level Certification – For multiple applications of this design.				
Land Unit/ Contract Item Number	Date	Unit(s)	Amount Installed	Certifier