

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

IRRIGATION SYSTEM, TAILWATER RECOVERY

(no.)
CODE 447

DEFINITION

A planned irrigation system in which all facilities utilized for the collection, storage, and transportation of irrigation tailwater for reuse have been installed.

PURPOSE

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

Conserve irrigation water supplies;

Improve offsite water quality.

CONDITIONS WHERE PRACTICE APPLIES

Tailwater recovery systems are suitable for lands and facilities that are served by a properly designed and installed irrigation system where recoverable irrigation runoff flows can be anticipated.

This standard applies to irrigation tailwater recovery systems including pickup ditches, sumps, pits, and pipelines. It does not apply to detailed design criteria for individual structures or components of the recovery system.

CRITERIA

Tailwater recovery systems shall comply with all federal, state, and local laws, rules and regulations. Laws and regulations of particular concern include those involving water and drainage rights, land use, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.

Components of the system shall be designed and constructed according to appropriate South Dakota (SD) Natural Resources Conservation Service (NRCS) practice standards. Design criteria for components not addressed in SD NRCS practice standards

shall be consistent with sound engineering principles.

This standard does not apply to SD NRCS conservation practice standard, Irrigation System, Microirrigation (441).

Collection Facilities. Tailwater recovery facilities can be an integral part of irrigation systems covered by SD NRCS practice standards Surface and Subsurface (443) and Sprinkler (442). These facilities may include ditches, culverts, pumping plants, pipelines, water control and/or grade stabilization structures or other erosion control measures.

Storage Facilities. Facilities are needed to store collected water until it is redistributed in the irrigation system. In determining the size of the storage facility, consider the runoff volume and rate, and the required level of water control at the point where the tailwater is returned to the irrigation system.

Where tailwater is discharged into an irrigation pit, regulating reservoir, or pipeline having float valves, etc., for regulating fluctuating flows, small sumps with frequently cycling pumps may be used. For systems unable to regulate flows, tailwater sumps or pits must be large enough to provide the regulation needed to permit efficient use of the water.

When tailwater pump back systems are subject to interruption, safe emergency bypass cannot be provided, or tailwater discharges violate regulations, tailwater storage shall include adequate volume to store the complete runoff from a single irrigation set.

Inlets to sumps and pits shall be designed to prevent erosion. Provide sediment storage and traps as needed.

Conveyance Facilities. Provide facilities to convey water from tailwater storage back to the irrigation system.

Conservation practice standards are reviewed periodically and updated if needed. The current version of this standard is posted on our website at www.sd.nrcs.usda.gov or may be obtained at your local Natural Resources Conservation Service.

The capacity of conveyance facilities must be sized for reliable operation within planned use. If the return flow is used as an independent irrigation supply rather than as a supplement to the primary irrigation water supply, the rate and volume of flow must be adequate for the method(s) of water application employed.

Vegetative Cover and Fencing. Noncropped, disturbed areas must be seeded following completion of construction. Fencing must be provided where necessary to protect vegetation and control grazing.

ADDITIONAL CRITERIA APPLICABLE TO IMPROVING WATER QUALITY

Storage Facilities. Where additional storage is required to provide retention time for the breakdown of chemicals in the runoff waters, storage facilities shall be sized accordingly. Allowable retention times shall be site specific to the particular chemical used.

Seepage from a storage facility shall be controlled when the storage facility is expected to receive chemical-laden waters. Control may be in the form of natural soil liners, commercial liners, or other approved methods.

Where additional storage is required for sediment deposition, storage facilities shall be sized accordingly. Retention times shall be site specific to the particular sediment types.

CONSIDERATIONS

Nutrient and pest management measures should be planned to limit chemical-laden tailwater. Chemical-laden water can create a hazard to wildlife, especially waterfowl that are drawn to ponded water.

Consider protection of system components from storms and excessive sedimentation.

Downstream flows or aquifer recharge volumes dependent on runoff will be reduced. Existing wetland hydrology could be impacted.

This practice may affect cultural resources and must comply with General Manual 420, Part 401.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be site specific, meet this standard, and include requirements needed achieve the purpose.

OPERATION AND MAINTENANCE (O&M)

A site specific O&M plan shall be prepared for use by the owner/operator. Provide specific instructions to ensure proper long-term function. Include:

Periodic cleaning and re-grading of collection facilities to maintain proper flow lines and functionality.

Periodic inspection and removal of debris as necessary to assure proper operation.

Periodic removal of sediment from traps and/or storage facilities to maintain design capacity and efficiency.

Inspection and testing of all pipeline and pumping plant components and appurtenances, as applicable.

Routine maintenance of all mechanical components following manufacturer's recommendations.