

**Soil Quality Enhancement Activity – WQL27 – Drainage water management for nutrient, pathogen, or pesticide reduction**



**Enhancement Description**

This enhancement consists of managing soil and/or surface water levels during the non-cropping season in order to reduce the loss of nutrients, pathogens, or/and pesticides from a crop field through drainage systems and into downstream receiving waters. This enhancement may also be utilized to reduce the oxidation of organic matter in the soil and/or reduce wind erosion or particulate matter (dust) emissions.

**Land Use Applicability**

Cropland

**Benefits**

This enhancement holds nutrients in the soil, reduces pathogens leaving the field, and/or reduces pesticides leaving the field when crops are not actively growing. Additional benefits may include reduction of the oxidation of organic matter and/or reduced wind erosion or particulate matter (dust) emissions.

**Conditions Where Enhancement Applies**

This enhancement applies to cropland that has been artificially drained (surface or subsurface) and which is flat enough that significant portions can be flooded or saturated by controlling outflow from the drainage system.

**Criteria**

1. Implementation of this enhancement requires compliance with the requirements of the Conservation Practice Standard, Drainage Water Management (554) and the associated plan;
2. Operate water control structures/devices to hold water surface elevations no more than 6 inches **below** the ground surface on the affected area for a minimum of 90 days per year;
3. This enhancement only applies to the areas of cropland where water levels can be effectively maintained at the desired elevations.

**Adoption Requirements**

This enhancement is considered adopted when a drainage water management plan that meets NRCS Conservation Practice Standard, Drainage Water Management, Code 554 has been implemented (check with your local NRCS Field Office for a copy of the practice standard) and fields are flooded such that ponding or saturated conditions meet the target hydrologic conditions in the above criteria.



United States Department of Agriculture  
Natural Resources Conservation Service

2013 Ranking Period 1

### **Documentation Requirements**

1. List of fields where this enhancement was utilized, the field size, and the equipment installed/used,
2. Dates when fields were flooded and water removed from fields, and
3. Photo documentation of saturated soil areas. Photos must be dated and labeled with field number.

### **References**

Drury, C.F., C.S. Tan, J.D. Gaynor, T.O. Oloya and T.W. Welacky. 1996. Influence of controlled Drainage-Subirrigation on Surface and Tile Drainage Nitrate Loss. Journal Environmental Quality. Vol 25. pp 317-324. <https://www.soils.org/publications/jeq/abstracts/25/2/JEQ0250020317>

Fouss, J.L. and M. Sullivan. 2009. Agricultural Drainage Management Systems Task Force (ADMSTF). <http://hostedweb.cfaes.ohio-state.edu/usdasdru/ADMS/411-ASCE%20EWRI%20Congress%202009%20-%20JLF%20&%20MCS.pdf>

**WQL27**  
**Mississippi Supplement**

The types of landscape that have the potential for flooding would be the alluvial flood plains.

**PLAN OF OPERATION  
DRAINAGE WATER MANAGEMENT  
CODE 554**

Landowner/Operator \_\_\_\_\_

Practice Location \_\_\_\_\_

County \_\_\_\_\_ Farm/Tract No. \_\_\_\_\_

Prepared By \_\_\_\_\_ Date \_\_\_\_\_

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

**Purpose**

To flood portions of agricultural fields by utilizing a water control structure (587) outside of the growing season in order to reduce rainfall impact, reduce soil erosion, increase sedimentation, reduce nutrient and pesticide export, permit nutrient and pesticide processing, reduce downstream peak flows, increase groundwater recharge, and to provide wildlife benefits to migratory birds and aquatic fauna.

**General requirements**

Inspections and maintenance are required to achieve the intended function, benefits, and life of the practice. The landowner/operator is responsible to establish and implement an inspection and maintenance program. Items to inspect and maintain during the 10-year design life of the practice include, but are not limited to, the following:

1. Inspect after significant storm events and at least annually to identify repair and maintenance needs.
2. Repair or replace damaged or inoperable pumps, controls or structures.

Critical dates and target elevations of the water level necessary to accomplish the intended purposes of this practice are identified below.

**F/A Practice**

For F/A, impoundment must begin no later than November 1, and drawdown begin no earlier than March 1. Full impoundment capability (e.g. maximum # of boards), must be reached no later than December 15. A minimum of 50% of the field must be impounded.

**Operation Plan**

Date	Target Elevation or # of boards	Date Verified
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Water elevations in the field shall be periodically monitored to ensure the target elevation is achieved. If elevations are used, a permanent staff gage will be established in the impoundment or affixed to the riser.

If F/A is made on the practice, fields will be inspected and certified that the water impoundment is occurring as planned.