

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**TILE INTAKE REPLACEMENT**

(No.)

**INTERIM CODE IA-980**

**DEFINITION**

Replacement of a surface intake which uses an agricultural drainage well as the outlet with subsurface drains.

**PURPOSE**

To improve water quality by eliminating surface water intakes which allow water to drain directly into the groundwater through an agricultural drainage well.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all sites in which a surface water intake in a pothole or depressional area removes surface water into a subsurface drain or conveyance pipeline which outlets into an agricultural drainage well and an alternative outlet is not immediately available.

The standard also applies to replacing surface intakes which are part of a terrace system if the outlet is an agricultural drainage well.

This practice is not intended to change the status of any wetlands or areas which could be determined to be wetlands.

**CRITERIA**

The capacity of the outlet shall not be increased if doing so would adversely affect wetland hydrology.

Subsurface drains shall be installed to provide comparable drainage as previously available with the surface inlet. Subsurface drains and appurtenances shall meet the requirements of Subsurface Drain (606) with the exception of the prohibition on using an agricultural drainage well as the outlet.

In lieu of a site-specific analysis, the total length of tile to be used to replace each intake shall be based on the size of the pothole or depression. Fifty feet of drain pipe shall be used for each 0.1 acre of pothole or depression. The size of the pothole or depression can be estimated based on the area of the least permeable soil type around the intake.

In lieu of a site-specific analysis, the spacing of drain lines in grids shall be based on the soil permeability as shown in Table 1.

**Table 1. Drain Spacing Requirements**

Permeability	Tile Line Spacing
Less than 0.6 in/hr	10 feet
Greater than 0.6 in/hr	15 feet

French drains or other types of drains utilizing granular material for the drainage medium shall not be used.

If air vents or relief wells are needed when the surface intake is removed, the following criteria shall apply:

- The material shall be non-perforated pipe.
- The top of the pipe shall extend to the maximum water level expected from a 50-year, 24-hour rainfall event.

**CONSIDERATIONS**

The topography and soils of a site will affect the design and layout of a subsurface drainage system, which replaces a tile intake.

In some large potholes or depressional areas, one tile intake does not completely drain all of the surface water in a timely manner for drainage purposes.

In these situations, it will be important to use sound engineering judgment to determine the extent of a subsurface drainage system to replace the tile intake so the overall hydrologic characteristics of the site are not significantly changed.

When surface intakes are removed there may be a need for an air vent or relief well. Engineering judgment must be used to make this decision.

Replacing surface intakes with subsurface tile in a pothole or depressional area may not provide equivalent drainage. However, it is the intent of the criteria in this standard to provide a system that will minimize the difference between the two types of systems.

## PLANS AND SPECIFICATIONS

Plans and specifications for tile intake replacement shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

The following list of Construction Specifications is intended as a guide to selecting the appropriate specifications for each specific project. The list includes most, but may not contain all, of the specifications needed for a specific project:

- IA-1 Site Preparation
- IA-3 Structure Removal
- IA-5 Pollution Control
- IA-6 Seeding and Mulching for Protective Cover
- IA-9 Drainage Tile Investigation and Removal
- IA-11 Removal of Water
- IA-21 Excavation
- IA-23 Earthfill
- IA-27 Diversions
- IA-45 Plastic (PVC, PE) Pipe
- IA-51 Corrugated Metal Pipe
- IA-52 Steel Pipe Conduits
- IA-81 Metal Fabrication and Installation
- IA-95 Geotextile

## OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan will be prepared for each site.

Specified actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance). The following activities shall be addressed in the plan:

- Inspect the area in the spring and after large rains to look for blowouts, signs of piping, etc. Fill and re-compact any holes that are found.
- If settlement has occurred in the tile trenches, fill the trenches back to the ground surface or slightly higher so water cannot pond in the trench.

## REFERENCES

USDA-NRCS, National Engineering Handbook (NEH), Part 650, Engineering Field Handbook (EFH), Chapter 14, Drainage

Iowa Drainage Guide, Iowa State University, Special Report 13