

## Fish Screen Guidance for Irrigation Intakes Required for Maine NRCS Irrigation Assistance

### Policy Requirement

The attachment to ME 180-11-6 states, “All new or existing irrigation systems that NRCS provides assistance where the water source is public waters or waters covered by Chapter 587 (as determined by MDEP) will have fish screens installed on the inlet/intake pipe”.

Therefore, fish screens are required on any irrigation system where NRCS is involved in where water source is “Public Waters” (streams, rivers, ponds, lakes...).

<http://www.me.nrcs.usda.gov/intranet/MaineBulletins2011/MB180-11-6.html>

<ftp://ftp-fc.sc.egov.usda.gov/ME/BulletinsFY2011/a1-180-11-6.pdf>

### Technical Criteria

Fish screening criteria and guidance used in New England is basically based on criteria for anadromous salmonids that have been developed in Western states by the National Marine Fisheries Service (see – NOAA 2008 Fish Screen Criteria). Fish screens required for NRCS assisted irrigation practices in Maine will meet the following criteria. This criteria is based on fry-sized salmonids.

### Pump Intake Screen Flow Criteria

The minimum effective screen area in square feet for a pump intake screen is calculated by dividing the maximum flow rate in cubic feet per second (CFS) by an allowable approach velocity in feet per second (FPS). The maximum allowable approach velocity shall not exceed 0.40 FPS.

### Screen Face Material

- **Circular Screens:** Circular screen face openings must not exceed 3/32 inch in diameter. Perforated plate must be smooth to the touch with openings punched through in the direction of approaching flow.
- **Slotted Screens:** Slotted screen face openings must not exceed 1.75 mm (approximately 1/16 inch) in the narrow direction.
- **Square Screens:** Square screen face openings must not exceed 3/32 inch on a diagonal.
- **Material:** The *screen material* must be corrosion resistant and sufficiently durable to maintain a smooth uniform surface with long term use.
- **Other Components:** Other components of the screen facility (such as seals) must not include gaps greater than the maximum screen opening defined above.
- **Open Area:** The percent open area for any *screen material* must be at least 27%.

### Screen Intake Placement

It is preferable to place the screened intake away from the main channel or areas where fish would normally pass or gather. The intake must also accommodate the expected range of water surface elevations and provide the needed depth for the required pumping rate.

For **stream and rivers** the intakes should face parallel to the river and align with the adjacent bankline. A smooth transition between the bankline and the screen structure is important to minimize eddies and undesirable flow patterns in the vicinity of the screen.

For **pond and lakes** the intakes should be located off shore or in areas to minimize fish contact. Where possible, locate intakes where sufficient sweeping velocities exist. When possible, intakes must be located in areas with sufficient ambient velocity to minimize sediment accumulation in or around the screen and to facilitate debris removal and fish movement away from the screen face. Intakes in reservoirs should be as deep as practical, to reduce the numbers of juvenile salmonids that encounter the intake.

Other screen intake placement factors;

- The fish screen must be bolted or firmly attached to the pipe in such a manner it is unlikely to become dislodged.
- The screen should be installed on the pipe away from the river and lowered in the river after attachment.
- The pipe and screen will be removed from the river and any needed repairs be conducted in the dry.
- The integrity of the screen must be checked prior to any irrigation event.

### **Screens Sources and Suppliers**

Following are sources that can supply intake screens that meet the above criteria. This is not all inclusive as any other supplier that can meet the above criteria is acceptable.

- 1) Custom Technology Co. Incorporated  
[www.customtechnology.net/psf.html](http://www.customtechnology.net/psf.html)
- 2) Pump-Rite Screens  
[www.pump-rite.com](http://www.pump-rite.com)
- 3) Sure-Flow Fittings  
<http://www.sure-flo.com/>  
(A Maine contact for Sure-Flo is Ag. Engineers, Inc. in Gorham, ME 207-854-2481.)
- 4) Hydroscreen  
<http://hydroscreen.com/products/index.html>