

**National Marine Fisheries Service (NMFS)  
Pump Intake Screen Criteria For Water Drafting**

**Screen Approach Velocity (How to calculate):** The *approach velocity* must not exceed 0.40 feet per second (ft/s) for *active screens*, or 0.20 ft/s for *passive screens*. Using these approach velocities would minimize screen contact and/or impingement of juvenile fish. For pump intake screen designs for water drafting, *approach velocity* is calculated by dividing the maximum screened flow amount (cubic feet per second (cfs)) by the entire *effective screen area*. *Approach velocity* should be measured as close as physically possible to the boundary layer turbulence generated by the screen face.

**Effective Screen Area:** The minimum *effective screen area* must be calculated by dividing the maximum screened flow by the allowable *approach velocity* (0.40 ft/s for *active screens*, or 0.20 ft/s for *passive screens*).

**Specific Criteria and Guidelines for Pump Intake Screen Mesh 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%.

**Information provided by the following documents:**

NMFS (National Marine Fisheries Service). 2008. Anadromous Salmonid Passage Facility Design. Northwest Region. February 8, 2008

NMFS 1996. NMFS Juvenile Fish Screen Criteria for Pump Intakes Addendum. Environmental and Technical Services Division. Portland, Oregon. May 9, 1996.