

warm water facilities we visited, data for the remaining four facilities was not available. For both facilities, the data indicate that the discharges are lower than the proposed limits when evaluating TSS on a net basis (*i.e.*, which accounts for the concentrations in the source water). These discharges are consistent with the facilities' current NPDES permits. The second warm water facility also consistently meets its NPDES permit limits for phosphorus. Although these two warm water species production facilities differ in many ways from facilities engaged in the production of cold water species, the data confirms that these facilities can achieve the proposed effluent TSS concentrations. Thus, the proposed limits for recirculating systems may be achievable for green water/warm water facilities generally. Therefore, based on current data, there is no basis for differentiating between warm water and cold water production systems for any limitations for TSS in the final rule. (See the site visit reports DCNs 62393, 62394, 62395 and DMR data DCNs 31093, 30850). EPA seeks comment on this issue and requests any additional data for these types of systems to supplement EPA's current data set.

Other commenters questioned whether the database we used is sufficiently representative to evaluate the effectiveness of microscreen treatment, especially in cold temperatures. (Microscreens are one component of the Option 3 technology that was the basis for the proposed limitations and standards for certain subcategories.) EPA identified 13 facilities from the detailed surveys that reported using microscreen technology as a primary or secondary solids removal system. To observe the operation of the microscreen, EPA also made site visits to five facilities (three with recirculating systems and two with flow-through systems) that use microscreens. We visited facilities in areas that experience freezing temperatures in winter and concluded that operating a microscreen filter year round is possible because the facilities demonstrated satisfactory performance.

However, unlike our assumptions for the proposal, these facilities operate the microscreen filters in indoor spaces that are protected from freezing. Their microscreens are installed in existing heated spaces or, in one case, in a recently-constructed building that houses other effluent treatment system components. The facilities using microscreens were satisfied with their performance and at least one was planning renovations that included additional microscreens (*see site visit*

reports DCN 62388, 62389, 62390, 62391, 62392). For the NODA and in its evaluation of the costs of second stage solids removal technology, EPA adjusted costing to include either full-flow settling basins where appropriate or microscreens in heated spaces of existing buildings. Our analysis shows that, based on available data, either of these technologies, the full-flow settling basin or microscreen, can achieve the proposed limits so we used the lower cost option for each facility in our analysis.

B. Production Systems

1. Flow-Through and Recirculating Systems

Based on comments, EPA may combine the two separate subcategories for flow-through and recirculating systems into a single subcategory. We received comments with engineering descriptions for identifying recirculating systems, including assertions that EPA had not adequately evaluated green water systems; however, the commenters did not give a specific regulatory definition that EPA could use. While we found that a widely-accepted formal definition for recirculating systems does not exist, these systems are generally distinguished by some form of engineered biological treatment, that allows for extended water reuse. (EPA uses the term "engineered" biological treatment to distinguish a recirculating system from a pond, having a "natural" biological treatment process that allows for extended water reuse.) A green water system, in turn, takes advantage of the algae's and bacteria's ability to improve water quality. The commenters based the distinction between the categories on hydraulic residence time or cumulative feed burden, which they define as the feed application rate divided by the flushing rate. Based on comments, we realize that the distinction between the two systems is less obvious than we assumed for the proposal. Further, some facilities may commingle components of both systems. Therefore, EPA may combine the two subcategories into a single subcategory and we seek comment on this approach.

Regardless of whether the subcategories are combined, EPA is considering the same modified BMP plan for both systems (Section III.F describes this BMP plan and Section III.G. presents potential TSS limitations.

2. Net Pens

EPA proposed best management practices, rather than numeric limits, for facilities raising fish in net pens. At

proposal, we stated that net pen facilities discharged pollutants into receiving waters. We also noted that researchers had documented environmental impacts due to discharges in limited areas near and beneath some U.S. net pen facilities. EPA found reports documenting rapid recoveries of benthic areas impacted by net pen operations. We are also aware that State regulatory programs have addressed a number of concerns associated with these discharges and require regular benthic monitoring at sites to identify problems early so they can be corrected. Public comments on the proposal also asserted that State regulatory programs effectively address environmental concerns associated with pollutant discharges from net pen operations and no further environmental benefits from additional effluent guideline requirements are likely (DCN 70236, 70283, 70104). However, we also received comments that asserted the proposed requirements were not adequate or reflective of scientific understanding of environmental impacts (including impacts from solids deposition and from the use of drugs and chemicals). These comments also suggested how such impacts might be managed (*e.g.*, DCNs 70253, 70269, and 70270).

In light of these comments, EPA tried to collect more information to support evaluation of regulatory options for controlling pollutant discharges from net pen systems. EPA updated its literature search on the environmental effects of discharges of solids, nutrients, BOD, and drugs and chemicals from net pen facilities. The search included examining existing permit requirements and other practices currently used by net pen facilities. It also involved recognizing modeling tools that were developed and described in research literature that may be useful in translating pollutant load reductions into environmental responses. We do not expect to use these models to estimate environmental benefits for the net pen subcategory because our analysis suggests that practices relating to minimizing releases of solids at most net pen facilities would already meet the requirements we are considering (*see* Section II.E and DCN 62399).

EPA is also aware of a recently-updated major scientific review of non-native Atlantic salmon at net pen farms in the Pacific Northwest. This review updates an assessment that was considered at proposal (DCN 40149) and appears in a group of six articles published in Volume 62 (2003) of the journal, *Fisheries Research*. The updated information helps EPA better