

IMPLICATIONS OF PROPOSED EPA EFFLUENT GUIDELINES FOR GEORGIA AQUATIC ANIMAL PRODUCTION FACILITIES

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Abstract. In 1998, the U.S. Environmental Protection Agency (EPA) announced plans for developing new and revised effluent guidelines regulating industrial discharges to surface waters and to publicly owned treatment works. In 2000 EPA decided to include aquaculture in the process and in September of 2002 they released for public comment the proposed effluent guidelines for aquatic animal production facilities. EPA is proposing these guidelines to control the discharge of Total Suspended Solids and also to limit the release of drugs, chemicals, pathogens and non-native species. The categories proposed for consideration include flow-through, recirculating, and net pens systems producing at least 100,000 pounds of fish annually. It is estimated by EPA that 4.1 million pounds of TSS will be eliminated from discharge into waters of the U.S. and the net result will be a reduction in BOD and nutrient discharge of 8.7 millions pounds annually. They estimate an annual economic benefit to the U.S. of between \$22,00-\$113,000. Compliance cost to the industry nationwide is estimated at \$1.5 million. The proposed requirements are assumed to affect 222 facilities nationwide, three of which are in Georgia. The public comment period on the proposal ends in January 2003. EPA is under a Decree to develop final rules by 2004.

INTRODUCTION

Since 1974 when the Federal Water Pollution Control Act, commonly known as the Clean Water Act, was developed, there has been an ever-increasing emphasis on improving water quality in the U.S. Many of these efforts focus on regulating the discharge of pollutants into the waters of the U.S. Aquaculture, as a facet of agriculture, is an industry that has come under focus at various times as a potential contributor of pollutants.

In September of 1998, EPA published in the Federal Register (63 Federal Register, 1998) an announcement about developing new and revised effluent guidelines to regulate various industrial discharges to surface waters

and to publicly owned treatment works. This notice made mention of a court-order consent Decree (NRDC et al. V. Browner, 1992) requiring EPA to develop additional effluent rules for a list of potential categories. These categories included: petroleum refining, textile mills, inorganic chemicals, steam electric power generation, photographic processing, chemical formulators and packagers, urban storm water, airport deicing, and aquaculture. Aquaculture was added as a category for consideration when a modification to the consent Decree replaced industrial container cleaning with aquaculture. During the comment period on the proposal, EPA received a dichotomy of opinions. They ranged from the assertion that pollutant discharges were adequately addressed by National Pollutant Discharge Elimination System (NPDES) permits and required no further effluent guidelines, to a belief that confined aquatic animal production (CAAP) operations were regulated by inconsistent and inadequate state-issued permits. Clearly, this resulted in EPA deciding that it needed additional information to determine whether the existing NPDES permit process was adequate to address aquaculture discharges. No final decision was made at that time about whether or not EPA would be developing national effluent guidelines on some or all parts of the industry. The consent Decree requires that final rules for aquaculture be proposed by June 2002 and be finalized by June 2004. This has led to various actions on the part of EPA in an effort to develop meaningful effluent guidelines for the aquaculture industry.

EPA RULE DEVELOPMENT ACTIONS

In order to arrive at the decisions necessary to develop effluent rules for the aquaculture industry, EPA has undertaken a process that is designed to define the industry, gather technical and economic data, develop an industry profile and develop technology options (EPA 2002). Most of the information presented in this paper detailing the specifics of EPA's plan may be

found in the aforementioned EPA document. As part of a data gathering process and in an effort to help define the aquaculture industry, EPA sent out short screener surveys in August of 2001. Out of approximately 6,000 facilities chosen nationwide, EPA received a response from 4,900 facilities and 2,300 of those facilities reported that they do produce aquatic animals. From information gained through the screener survey, EPA developed a list of approximately 263 facilities that would receive a more detailed survey on their operations. These surveys went out in late summer 2002 and EPA hoped to have all data reviewed and announced in a Notice of Data Availability (NODA) in the summer of 2003.

The Federal Register Notice of September 12, 2002 released details of the proposed effluent rule and set a date for receiving comments. EPA produced a voluminous set of documents to support this effort. The industry and government agencies interested in reviewing the proposal and making comments were faced with over 1300 pages of documents to review. In response to requests made by the industry and other agencies, EPA extended the deadline for receiving comments by an additional 45 days. Final comments were due to EPA by January 27, 2003.

CATEGORIES TO BE REGULATED AND POTENTIAL BENEFITS

After consideration of the aquatic animal production (AAP) industry as a whole, EPA's rule would cover three subcategories of CAAP: flow-through systems, recirculating systems and net pens. Within these subcategories, EPA chose to only include coldwater flow-through operations that produce greater than 100,000 pounds of fish annually. This was further broken down into a 100,000 to 475,000 pounds of annual production group and a greater than 475,000 pounds of annual production group. Recirculating systems producing greater than 100,000 pounds of fish per year are to be covered, as are net pen systems producing more than 100,000 pounds of annual production. Operations were chosen for consideration based on size and methods of production rather than by consideration of the individual species that are raised.

Types of CAAP operations not considered for effluent limitations and guidelines include: ponds, lobster ponds, crawfish, molluscan shellfish production in open waters, aquariums, alligator farms and Alaskan net pen systems. This decision was made based on evaluating information gathered by EPA from sources such as the 2001 screener survey, the 1998 Census of

Aquaculture data (USDA 2000), and contacts with various industry experts. Factors such as the variability of production system operation methods, the assumption that various types of operations do not contribute more than trivial amounts of pollutants, and the belief that feasible pollution control technologies for some operations do not exist, all played a role in EPA's decision. The production systems chosen for consideration essentially correspond, to a certain degree, with those that are currently regulated under the existing National Pollutant Discharge Elimination System (NPDES) program. EPA does not propose changes to the existing NPDES program.

To achieve the desired effluent pollutant reductions, EPA proposes the use of various wastewater treatment technologies and management practices. Specific practices and actions include: feed management, fish health management, control of non-native species escapes, drug and chemical use management, water quality monitoring, primary solids settling, disinfection, and additional solid removal.

It is estimated by EPA that 4.1 million pounds of TSS will be eliminated from discharge into waters of the U.S. and the net result will be a reduction in BOD and nutrient discharge of 8.7 millions pounds annually. EPA estimates an annual economic benefit to the U.S. of between \$22,00-\$113,000. This benefit value estimate was derived from quantifying anticipated environmental benefits and then assigning some monetized value to these benefits. The benefits that were quantified by EPA include water quality improvements in stream reaches downstream of flow-through and recirculating systems, and improvement in the recreational use of these reaches. There were other benefits that EPA was not able to quantify or assign a monetary value to. These include water quality benefits from net pen loadings reductions, reductions in escapements, and reductions in drugs and other chemicals. EPA may quantify these benefits for the final rule.

EPA indicated that compliance cost to the industry nationwide is estimated at \$1.5 million. The proposed requirements are assumed to affect 222 facilities nationwide. EPA's engineering staff developed estimates of various expenses associated with rule compliance. These expenses included: capital, one-time non-equipment, and operating and maintenance costs for incremental pollution control in the AAP industry. Capital improvement costs may include things such as developing and installing quiescent zones and settling basins in flow-through systems. An example of a one-time, non-equipment cost would be something like an

engineering study commissioned to find ways to improve facility operation parameters in order meet effluent limitation guidelines (ELGs). Operating and maintenance costs would be those associated with the operation and upkeep of structure or systems designed to bring facility effluents within the ELGs. This would also include compliance monitoring costs as each facility.

IMPACTS TO GEORGIA: CAAP FACILITIES AND AQUATIC ENVIRONMENTS

What are the potential effects of the EPA proposal on Georgia? There are a couple of areas to consider when attempting to answer this question. First, what impact will the proposed rule and ELGs have on CAAP facilities? And secondly, what impacts, if any, will this all have on Georgia's aquatic environments? Related to this second question is potentially yet another one, namely, what impacts will a Nationwide Rule promulgated by EPA have on the agencies in Georgia that are charged with enforcing environmental regulations?

To answer the first question, we must consider the "CAAP industry" in Georgia. As of December 2002, there were 210 individuals or businesses possessing current Aquaculture Registrations. This Registration, issued by the Department of Natural Resources (DNR), allows certain types of fish rearing and fish selling activities. Of those businesses, 86 categorized themselves as "hatcheries" and 62 as "catch out ponds". The remainder are wholesalers, retailers or other non-production based businesses. There were 18 out-of-state entities registered to do business in Georgia. In addition to these operations, there are various research related facilities around the state and nine hatcheries operated by the Wildlife Resources Division (WRD) of DNR. There are also two Federal hatcheries in the state operated by the U.S. Fish and Wildlife Service. Based on the final criteria released by EPA, out of all these CAAP facilities statewide, three would potentially be affected by the proposed rule. This is just slightly less than one-and-a-half percent of the total number of facilities nationwide that EPA estimates may fall under the proposed rule. Two of the WRD facilities, both flow-through trout hatcheries, and one Federal facility, also a flow-through trout hatchery, would fall under the proposed rule. Most other facilities in the state would potentially not be affected because they are either non-target production facilities (i.e. pond or alligator) or do not fall into the proper size categories based on their

production levels. There is also a potential for some large commercial recirculating system operations to fall under the scope of the rule, although they are not permitted dischargers to any surface waters or municipal sewer systems.

These three government-run trout hatcheries currently possess NPDES permits covering discharge parameters such as BOD, pH, total suspended solids (TSS), settleable solids and flow. The EPA proposal will consider and set limits for TSS, toxic pollutants, and non-conventional pollutants. Toxic pollutants include toxic metals such as chromium, lead, nickel and zinc and toxic organic compounds such as benzene and phenol. Non-conventional pollutants are those which are not priority pollutants by EPA definition, and would include things such as ammonia-N, formaldehyde, phosphorus. In the 1970's EPA did give some consideration to the potential for aquaculture effluents as a source of toxic metals and organics. This reflected the focus of the 1977 CWA amendments, which concentrated the agency's attention on organics and toxins. EPA's evaluation of aquaculture at the time did not reveal significant contributions of these types of materials (67 Federal Register, 2002).

The proposed EPA limits on TSS and non-conventional and toxic pollutants varies according to the production facility type and facility production level. For example, TSS discharges from a full-flow, flow-through system producing between 100,000 and 475,000 pounds of fish per year would have maximum allowable daily limit of 11 mg/L, with a monthly average of 6 mg/L. Facilities that have a separate offline settling system would have a daily TSS limit of 87 mg/L with a maximum monthly average of 67 mg/L. These proposed limits vary slightly from the existing NPDES parameters that are currently permitted at two Georgia CAAP facilities within this category. At all facilities, EPA would require development and implementation of operational Best Management Practices (BMP) plans to address and achieve a reduction or elimination of non-conventional and toxic pollutant discharges.

As proposed, what effect will the EPA rule have on Georgia's aquatic environment? First off, it is difficult to say whether or not CAAP facilities are currently having serious and direct detrimental effects on the water quality and aquatic environments of this state. Whether or not any particular water bodies are impaired as a direct result of CAAP operations has yet to be proven. Certainly, any modifications to facility designs and operations may have the potential to reduce effluent TSS loads and eliminate or reduce other

substances of concern, but at what cost, and to what quantifiable benefit? There is an assumption in the CAAP industry that individual facility costs for compliance with the proposed rules will exceed EPA's estimate of approximately \$6700 per facility. Estimates for modifications at the three potentially impacted Georgia facilities do exceed the EPA figure (personal communications, GA DNR and USFWS).

As proposed, the rule will most likely only impact the three NPDES-permitted facilities in the state. As such, the rule probably won't involve any additional regulatory action or paperwork on the part of the Environmental Protection Division (EPD) of DNR. EPD is the authority responsible in this state for the implementation of the Federal Water Pollution Control Act and as such is the issuing authority for NPDES permits. EPD works to set appropriate limits on discharge parameters covered by those permits to be protective of the waters of this state within the bounds and responsibilities of the Georgia water Quality Act (O.C.G.A. 12-5-20) and the Federal Clean Water Act.

THE NEXT STEPS

EPA accepted comments on the proposed rule until January 27, 2003. After that time, they will evaluate the comments received and will also evaluate the results of the detailed surveys which were mailed out in the summer of 2002. Final rule development is planned to take place by June 2004 in order to stay within the timetable established by the 1992 Consent Decree.

It is not certain how the final rule will read. EPA requested input on various facets of the proposal. Comments were solicited on such things as the appropriateness of the scope of facilities chosen for regulation, on the production thresholds selected, on the actual numerical limits chosen for TSS, and on the proposed requirement for facility BMP plans. What is equally as important is the opportunity for comments to be submitted on what EPA has chosen not to regulate. The decision to not consider AAP systems such as ponds and alligator farms is also up for comment. EPA also is soliciting comments on the option of promulgating no nationwide rule at all.

What is certain is the assumption that this rulemaking decision by EPA will be closely watched and anticipated by the aquatic animal production industry, including governmental operations. Any promulgated rules will have real costs to government and industry and will need to be planned for fiscally. Capital improvements will require additional funding, as will any increases in operation and maintenance

costs, including compliance and monitoring efforts, at affected facilities.

EPA recently completed similar efforts to develop effluent guidelines and rules for the livestock industry specifically related to confined animal feeding operations (CAFOs). That final rule requires, among other things, that certain operations develop nutrient management plans. It also allows a certain amount of flexibility and adds opportunity for the states to tailor the final rules to meet their individual needs. Everyone involved in this issue will have to wait and see what final form the aquaculture effluent rule takes.

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