

Region I office. All undelegated states still have responsibility of regulating discharges from aquaculture facilities operating below 40 CFR guidelines. Undelegated states also provide water quality certification for NPDES and other federal permits with water quality provisions.

Solid Waste Reuse and Disposal

Two types of solid wastes, suspended solids and mortalities, are common by-products of finfish aquaculture. The settleable fraction of the suspended solids can be intercepted and removed from effluents using filtration or settling tanks to produce a sludge high in water content (>95%). Because the sludge is a residual of wastewater treatment, several states in the region classify and regulate it as an industrial or municipal waste. Other states consider the sludge to be an agricultural waste because of its composition (manure and unconsumed feed) and value as a non-toxic nutrient source. Mortalities are classified as either an agricultural or non-hazardous category of solid waste.

Land application and composting are the two most common methods used to recycle solid wastes from aquaculture facilities. Most states have guidelines or regulations for the use of manures and other organic wastes (including wastewater) to fertilize agricultural crops. Material suitable for land application must be free of pathogens, heavy metals and other contaminants and must be applied at agronomic rates (based upon nutrient content, soil type and plant nutrient uptake characteristics) to prevent groundwater contamination. Composting of mortalities (and sludge) to produce an inert organic mulch suitable as a soil conditioner is receiving wider regional attention and is preferred by several states as an alternative to land disposal. Other methods for recycling dead fish, such as production of fish meal and silage (liquefaction) or rendering, require sizeable quantities of raw material and are usually limited by economy of scale to large operations with both production and processing wastes.

Policies for disposition of solid wastes by composting, land application or other means vary by state. Four states in the region classify solids from aquaculture facilities as agricultural waste. Pennsylvania and New York consider settled solids and mortalities equivalent to other animal manures, crop residue and farm by-products, which are exempt from solid waste regulation. Connecticut and Delaware require permits for land application. Other states in the region that

classify solids as municipal or non-hazardous waste have provisions requiring permits for land application.

While disposal of mortalities in most states is controlled by the solid waste division, determining which section of the resource agency has regulatory oversight for settled solids (sludge) can be based upon its intended fate. For example, if a state considers solids from a retention basin to be a residual of a wastewater treatment process, its beneficial reuse as a fertilizer or soil amendment may require a permit or approval from the surface or groundwater divisions, but its disposal at a landfill or other approved site is regulated by the solid waste division as a municipal or other category of non-hazardous waste. In those states where composting is regulated, the solid waste division establishes specifications and issues permits for commercial or municipal composting facilities. Small scale, non-commercial operations may be exempt from state solid waste regulations and permit requirements if the final product is used on-site following recommended application guidelines.

Obtaining Permits

A comprehensive site/operational plan, and sufficient knowledge of state surface water standards and regulatory policy, are essential prerequisites for the development or expansion of any production facility. A permit pre-application conference with the lead resource agency or divisions can save time and expense and is recommended. Because most states develop permits on an individual basis, a meeting with agency staff provides an opportunity to discuss general aspects of facility design and operation and to learn about specific regulatory concerns or requirements for your particular project.

Demonstrating that you are proactive and plan to mitigate potential environmental degradation associated with siting, production and waste disposal through the use of sound planning, facility design and management is to your advantage from a business and regulatory standpoint. While there is no guarantee that receiving the necessary permits will be a rapid and problem-free exercise, pre-application meetings can facilitate communication and the permitting process. On the other hand, submitting an application with a poorly defined plan and vague answers to questions about anticipated production, water quality and waste management definitely is not in your best interest and is almost certain to increase the time, cost and technical requirements for obtaining a discharge permit.