NATURAL RESOURCES CONSERVATION SERVICE
INTERIM
CONSERVATION PRACTICE STANDARD
NEW JERSEY

SHELLFISH AQUACULTURE MANAGEMENT

(No.)
CODE 706 A-D

DEFINITION

Applying environmentally sound management and sustainable aquaculture practices in the husbandry of bivalve mollusk species.

PURPOSE

- Enhance the sustainability of aquaculture
- Minimize adverse impacts of shellfish farming on water, plant, animal and human resources
- Ensure dependable quantity and quality of water to support shellfish production
- Ensure adequate quantity and quality of food to support shellfish production

CONDITIONS WHERE PRACTICE APPLIES

Intertidal and subtidal areas where propagation and aquaculture of shellfish is licensed and/or permitted by the governing regulatory authorities.

CRITERIA

This Practice Standard consists of separate components:
706A Fuel/oil spill prevention kits
706B Gear cycling
706C Reduced toxicity anti-fouling paint
706D Grant delineation

In addition, New Jersey Standard 370 Atmospheric Resource Quality Management, shall be followed for renewable energy criteria and considerations relating to: marine engine exchange, fuel types, and solar power for clam hatchery operations.

General Criteria

All forms of shellfish aquaculture must comply with federal, state, and local regulations. Shellfish farming is licensed and regulated by the NJ Dept. of Environmental Protection, NJ Dept. of Agriculture, NJ Dept of Health and Senior Services, and the U.S. Army Corps of Engineers (Nationwide Permit #48.)

All shellfish farming areas or licensed shellfish growing sites must be properly sited in approved waters, and adequately marked and recorded with the appropriate regulatory authority.

Implementation of the prescribed best management practices shall satisfy the criteria set forth in the current Recommended Management Practices for Aquatic Farms, NJDA and Rutgers Cooperative Extension.

A Shellfish Aquaculture Management Plan shall be developed in consultation with NJDA that addresses all of the identified resource concerns, including, but not limited to, the following:

Water Quality and Water Quantity

The successful growth and harvesting of food-quality shellfish requires high water quality--quality that is vulnerable to the effects of myriad of coastal uses. Chronic degradation of water quality and associated substrate can threaten the health and survival of shellfish.

Bottom-dwelling shellfish by their very nature are capable of filtering, along with their traditional intake, pollutant and wastes from the surrounding water and substrate.

Improvement of water quality is largely dependant on balancing marine resource uses and fostering biodiversity. More direct action by growers shall include the following:

- Ensure that any manipulation of sediment or defouling removal activities do not impact sites downstream.

Maintaining adequate water flow through the growing area is critical and involves the following management activities:

- Monitor nets and other equipment regularly for biofouling.
- When bio-fouling restricts water flow to cultured shellfish, clean and remove the fouling organisms to facilitate shellfish health and growth, or replace the nets with new and/or clean material.
- Use of in-water cleaning methods must not result in accumulation of removed materials downstream where they may cause local degradation of the environment.
- Cycle off-bottom equipment with redundant gear for cleaning and air drying.

Protection of Important, Threatened, Rare and Endangered Species

Risk of accidental loss of aquaculture gear into the environment, due to inadequate securing, excessive fouling and ice damage, shall be managed through adoption of the following management strategies:

- Netting, cages and/or other shellfish containment systems must be secured and well maintained.
- Monitor weather and seasonal conditions (severe storms, ice masses, very low water/air temperatures) to allow proper scheduling of equipment removal or movement.
- Remove or move gear to deep water licensed shellfish growing sites during winter to avoid damage, loss and transport of gear into the environment.
- Cycle redundant gear off-site to reduce excessive fouling.
- Replace nets in a timely manner.
- Collect and properly disposal of nets.
- Keep records of net cycling, replacement, removal and movement.

Implementation of the prescribed Shellfish Aquaculture Management Plan shall be accomplished through the implementation of approved Shellfish Aquaculture Best Management Practices (BMPs).

Just as shellfish aquaculture can increase marine biodiversity and habitat, use of the intertidal area for bottom culture raises concern over the potential loss of resting and feeding areas for migratory birds. To address this concern, buffers shall be established between adjacent shellfish growing areas to provide relatively undisturbed habitat for wildlife corridors and to encourage biodiversity for a healthier ecosystem.

Compatibility with Other Coastal Uses

Shellfish growing areas shall be marked with standard U.S. Aids to Navigation to improve public safety and reduce boat strikes, and thereby reduce the risk of petrochemical spills, loss of gear and livestock. A log book shall be kept of buoy maintenance and replacement.

Spacing within an aquaculture area shall allow for normal operations and maintenance on the site, without impairing or interfering with activities within and around the farmed area.

Buffer zones or unplanted areas between adjacent shellfish growing areas shall be established to provide space for site access and gear manipulation, while providing barriers to infective disease transmission.

Rafts or other floating equipment must be maintained so as not to impede normal navigation through the area.

<u>Hatchery Specific Criteria</u>

Have a list of important phone numbers for essential employees with contact

information for police, fire and other emergency responders is posted in a visible location.

Daily security checks and observations for signs of tampering or unusual situations are conducted.

Reports of suspicious activity are investigated immediately and law enforcement officials are alerted to any reports of suspicious activity.

All visitor access, including government regulators, contractors, suppliers, couriers, reporters, etc., is restricted through required proof of identity in logs at both entries ***and exits.*** Visitors are accompanied at all times.

Wells and pump houses are secured. The safety of the water source is checked regularly. Significant changes are reported to local law enforcement and Marine enforcement or the NJDEP Bureau of Water Monitoring.

A system is in place to quickly close down intake pipes in the event of an upstream contaminant problem.

Have a written SSOP (Sanitary Standard Operating Procedure).

Proper biosecurity protocols are upheld to eliminate contamination and the spread of disease.

Notify the NJDA, Division of Animal Health within 48 hours if a red or yellow light disease is suspected or detected.

Sanitation and handwashing facilities are provided.

SPECIFIC CRITERA: Standard 706 components:

706A Fuel and Oil Spill Kits:
Kits shall be approved U.S. Coast Guard issue, and consist of at least 2 oil sorbent sheets, one fuel splash sorbent collar, one fuel spill warning label and one bilge sock absorber. At least one kit shall be maintained on watercraft at all times.

706B Gear Cycling: A set of redundant nets, bags and associated gear amounting to production area of at least 25% of existing gear.
706C Reduced Toxicity Anti-fouling Paint: Paint used for boat hulls shall be free from copper and equivalent of U.S. Navy approved anti-fouling paints and primers.
706D Grant Delineation: U.S. Aids to Navigation System markers- 20 inch diameter yellow balls, or NJ farm grown Atlantic white cedar posts, tops flagged or marked for high visibility shall be used.

CONSIDERATIONS

Wherever possible, avoid areas that contain significant amounts of submerged aquatic vegetation, or areas within designated critical or priority habitat for aquatic or upland species identified as important, threatened, rare or endangered.

Wherever possible, avoid selecting growing areas that are in close proximity to pollution sources or areas with the potential for reduced water quality.

Consider reduced toxicity, ant-fouling copper- free marine paint for all boat painting.

Access routes to sites should be planned to minimize the need for motorized transport, and transport over private property.

If wetland buffer zones are involved in the accessing of sites, proper permitting must be obtained by the grower.

Layout and placement of gear should be designed to minimize impact on the natural function of the ecosystem, while allowing for normal activities of the farmer.

Consider using biodegradable materials when available to reduce the environmental risk of accidental losses.

Keep records of all notifications filed with local harbor masters and other regulatory authorities.

Design measures to avoid depredation by birds or other animals.

Growers should be aware of locally important, state and federally listed species that may be encountered in the area. Consider using a wildlife identification field guide, and keeping a journal to log sightings

of protected or endangered wildlife species in and around the growing area.

PLANS AND SPECIFICATIONS

Plans and specifications for shellfish aquaculture management shall be in keeping with this standard and shall describe the site-specific requirements for applying the practice to achieve its intended purpose.

Shellfish Aquaculture Management Plans shall include the following:

- Plan map, showing gear layout, access points, buffer zones, and any other relevant information.
- Identification and location of environmentally sensitive areas.
- Location of priority or estimated wildlife habitat, and identification of protected or endangered species.
- Plan narrative, describing management strategies and activities that are planned to achieve the purpose and criteria of the practice.
- Shellfish Aquaculture Management Plan Schedule of Operations.
- Guidance documents necessary to aid the grower in implementation of the practice.

OPERATION AND MAINTENANCE

A plan for operation and maintenance shall be prepared for use by those responsible for the system. This plan shall provide for inspection, operation, and maintenance of the aquaculture management system. O&M plan components shall include, but are not limited to the following:

- Maintain site markers, particularly during periods of high use of the coastal zone.
- Do not exceed the 18 inch elevation limit on structures placed on the site.
- Remove all unused or unnecessary equipment from the site.
- Mark all equipment left on the flats with distinctive marks for identification (i.e. name and permit number), and secure it properly to minimize risk of damage or offsite movement.
- Inspect growing areas following storm events, and repair any damage.
- Monitor and keep records of the following:
  - net replacement cycles
  - water temperatures and weather conditions
  - disease episodes
  - wildlife sightings in research leases
- Winter maintenance:
  - Position all equipment and materials flush with the sediment surface.
  - Carefully secure all netting and other materials to the substrate with supplemental attachment devices during winter or remove materials off-site to an upland or deep water licensed shellfish growing site.
  - Ensure that any net or other gear left on the flats during the winter is free from fouling to reduce the potential for attachment of ice to netting.
  - Replace marker buoys on-site with winter sticks or other marking device that is approved by the appropriate authority to minimize the risk of movement by ice.

REFERENCES

Best Management Practices for the Shellfish Culture Industry in Southeastern Massachusetts, 2004. Massachusetts Shellfish Growers and South Eastern Massachusetts Aquaculture Center.

Environmental Benefits of NRCS Participation in Shellfish Aquaculture Projects in Massachusetts, 2006. USDA NRCS East National Technology Support Center Greensboro, NC

Field Office Technical Guide, Standard 706 2005.USDA NRCS Massachusetts. Amherst, MA.

Recommended Management Practices for Aquatic Farms, March 2004. Rutgers Cooperative Extension New Brunswick, NJ.