

ATTACHMENT III

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2

**DATE:** August 2009  
**SUBJECT:** 403(c) OCEAN DISCHARGE CRITERIA DECISION FOR SNAPPERFARM INC.  
NPDES NO. PR0026361 PUERTO RICO  
**FROM:** Moses Chang, Aquatic Biologist  
**TO:** Permit File, NPDES NO. PR0026361

PREPARED BY:  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION 2 403(c) REVIEW TEAM

**August 28, 2009**

403(c) OCEAN DISCHARGE CRITERIA DECISION  
FOR  
SNAPPERFARM INC.

NPDES NO. PR0026361  
PUERTO RICO

PREPARED BY:  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION 2 403(c) REVIEW TEAM  
**August 28, 2009**

## TABLE OF CONTENTS

INTRODUCTION.....	1
DECISION CRITERIA.....	2
I. Unreasonable Degradation [40 CFR 125.122].....	2
II. Permit Requirements [40 CFR 125.123].....	3
III. No Irreparable Harm [40 CFR 125.123].....	3
DECISION MAKING PROCESS.....	4
403(c) OCEAN DISCHARGE CRITERIA ANALYSIS FOR SNAPPERFARM INC.....	10
I. Determination of Unreasonable Degradation.....	10
II. Permit Requirements.....	10
III No Irreparable Harm.....	10
SUMMARY OF FINDINGS.....	17
RECOMMENDATIONS/PERMIT CONDITIONS.....	18
<b>Appendix A:</b> Outline of Snapperfarm 403(c) Benthic Invertebrate Community Monitoring Program (NPDES No. PR 0026361).....	22

## **INTRODUCTION**

Snapperfarm, Inc. (Snapperfarm) was established in 1998 and since 1999 began to focus its efforts on developing an open ocean aquaculture demonstration project, with the goal of establishing a full-scale commercial facility. Between 1999 and 2000, the company studied a number of locations in the Caribbean and ultimately chose Culebra, Puerto Rico as the site for its demonstration project. Snapperfarm installed two finfish cages in 2002 as a demonstration to study the adequacy, operation, effectiveness and potential impacts from such a project.

Snapperfarm (the applicant) submitted a National Pollutant Discharge Elimination System (NPDES) permit application to the U.S. Environmental Protection Agency (EPA) for the establishment of an offshore Concentrated Aquatic Animal Production (CAAP) facility for a total of eight (8) 106,000 ft<sup>3</sup> submerged finfish cages. Snapperfarm plans to produce up to a total yearly maximum harvestable weight of 750 tons of cobia (*Rachycentron canadum*). Cobia (*Rachycentron canadum*) is a pelagic warm water fish species found worldwide in tropical and subtropical ocean and estuarine waters.

Snapperfarm has requested an NPDES permit (NPDES number PR0026361), under Section 402 of the Clean Water Act (the Act), to discharge aquaculture wastewater to the waters of the Caribbean Sea. In order for EPA Region 2 to issue the NPDES permit, Snapperfarm must demonstrate that the discharge from its Snapperfarm caged farm meets the ocean discharge criteria requirements set forth in Section 403(c) of the Act and implemented by EPA's regulations at 40 Code of Federal Regulations (CFR) Part 125, Subpart M, Ocean Discharge Criteria (45 FR 65953, October 3, 1980). This document presents the Findings, Conclusions, Recommendations, and Conditions of EPA Region 2's 403(c) review team.

The CWA 403(c) review has been prepared by the Division of Environmental Planning and Protection. The review is based on the following information/data:

- Snapperfarm Inc. NPDES Permit Application (PR0026361) dated August 15, 2004;
- Final Water Quality Certificate for Snapperfarm Inc. issued by the Puerto Rico Environmental Quality Board (EQB) on September 30, 2008;
- Environmental Monitoring Program (EMP) for Snapperfarm Inc. dated June 2009;
- Environmental Assessment – Snapperfarm Inc. NPDES Permit for New Source Discharge from an Offshore Concentrated Aquatic Animal Production, August 2009; and
- Proposed draft Snapperfarm Inc. NPDES Permit (PR0026361) dated August 2009.

On August 15, 2004, Snapperfarm submitted to EPA an NPDES permit application for its Snapperfarm facility. Facilities such as Snapperfarm that discharge to marine waters beyond the established baseline must comply with the Ocean Discharge Criteria at 40 CFR Part 125, Subpart

M and must demonstrate that the discharge does not and will not cause unreasonable degradation to the marine environment and biota before EPA can issue a permit.

If there is insufficient information to make a determination of no unreasonable degradation, a permit may still be issued if, among other provisions, the applicant can demonstrate that the discharge will cause no “irreparable harm” to the marine environment [40 CFR §125.123(c)(1)].

## **DECISION CRITERIA**

### **I. Unreasonable Degradation [CFR 40 §125.122]**

Under Section 403(c) of the Clean Water Act, 33 U.S.C. 1343(c), Ocean Discharge Criteria regulations (45 FR 65942, October 3, 1980, codified at 40 CFR Part 125, Subpart M) which establishes guidelines for the issuance of NPDES permits (i.e., Section 402 permit) for the discharge of pollutants from a point source into the marine environment, EPA must make a judgment, based on the criteria, whether a discharge will or will not cause “unreasonable degradation” of the marine environment.

- (a) *The director shall determine whether a discharge will cause unreasonable degradation of the marine environment based on consideration of:*
  - (1) *The quantities, composition and potential for bioaccumulation or persistence of the pollutants to be discharged;*
  - (2) *The potential transport of such pollutants by biological, physical, or chemical processes;*
  - (3) *The composition and vulnerability of the biological communities which may be exposed to such pollutants, including the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act, or the presence of those species critical to the structure or function of the ecosystem, such as those important for the food chain;*
  - (4) *The importance of the receiving water area to the surrounding biological community, including the presence of spawning sites, nursery/forage areas, migratory pathways, or areas necessary for other functions or critical stages in the life cycle of an organism;*
  - (5) *The existence of special aquatic sites including, but not limited to marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas, and coral reefs;*
  - (6) *The potential impacts on human health through direct and indirect pathways;*

- (7) *Existing or potential recreational and commercial fishing, including finfishing and shellfishing;*
  - (8) *Any applicable requirements of an approved Coastal Zone Management plan;*
  - (9) *Such other factors relating to the effects of the discharge as may be appropriate;*
  - (10) *Marine water quality criteria developed pursuant to section 304(a)(1).*
- (b) *Discharges in compliance with section 301(g), 301(h), or 316(a) variance requirements or State water quality standards shall be presumed not to cause unreasonable degradation of the marine environment, for any specific pollutants or conditions specified in the variance or the standard.”*

## **II. PERMIT REQUIREMENTS [40 CFR §125.123]**

- (a) *If the director on the basis of available information including that supplied by the applicant pursuant to §125.124 determines prior to permit issuance that the discharge will not cause unreasonable degradation of the marine environment after application of any necessary conditions specified in §125.123(d), he may issue an NPDES permit containing such conditions.*
- (b) *If the director, on the basis of available information including that supplied by the applicant pursuant to §125.124 determines prior to permit issuance that the discharge will cause unreasonable degradation of the marine environment after application of all possible permit conditions specified in §125.123(d), he may not issue an NPDES permit which authorizes the discharge of pollutants.*

## **III. NO IRREPARABLE HARM [40 CFR §125.123]**

- (c) *If the director has insufficient information to determine prior to permit issuance that there will be no unreasonable degradation of the marine environment pursuant to §125.122, there shall be no discharge of pollutants into the marine environment unless the director on the basis of available information, including that supplied by the applicant pursuant to §125.124 determines that:*
- (1) *Such discharge will not cause irreparable harm to the marine environment during the period in which monitoring is undertaken, and*
  - (2) *There are no reasonable alternatives to the on-site disposal of these materials, and*
  - (3) *The discharge will be in compliance with all permit conditions established pursuant to paragraph (d) of this section.*

- (d) *All permits which authorize the discharge of pollutants pursuant to paragraph (c) of this section shall:*
- (1) *Require that the discharge of pollutants will: (i) Following dilution as measured at the boundary of the mixing zone not exceed the limiting permissible concentration for the liquid and suspended particulate phases of the waste material as described in §127.27(a) (2) and (3), §127.27(b), and §127.27(c) for the Ocean Dumping Criteria; and (ii) not exceed the limiting permissible concentration for the solid phase of the waste material or cause an accumulation of toxic materials in the human food chain as described in §127.27(b) and (d) of the Ocean Dumping Criteria;*
  - (2) *Specify a monitoring program, which is sufficient to assess the impact of the discharge on water, sediment, and biological quality including, where appropriate, analysis of bioaccumulative and/or persistent impact on aquatic life of the discharge;*
  - (3) *Contain any other conditions, such as performance of liquid or suspended particulate phase bioaccumulation tests, seasonal restrictions on discharge, process modifications, dispersion of pollutants, or schedule of compliance for existing discharges which are determined to be necessary because of local environmental conditions, and*
  - (4) *Contain the following clause: In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.*

### **DECISION MAKING PROCESS**

If a determination can be made on the basis of available information, including that supplied by the applicant pursuant to §125.124, prior to permit issuance that the discharge will not cause unreasonable degradation of the marine environment after application of any necessary conditions specified in §125.123(d), an NPDES permit containing such conditions may be issued. The conditions specified in §125.123(d) include: effluent toxicity limits, specification of an ongoing monitoring program, any other permit provisions based on local conditions, and a permit reopener clause.

If there is insufficient information to make a determination of no unreasonable degradation, a permit can still be issued if, among other provisions, it can be demonstrated that the discharge will cause no “irreparable harm” to the marine environment (40 CFR §125.123(c)(1)).

## Description of Facility

The proposed project will be located at a 61.8-acre site in the Vieques Sound in the Caribbean Sea approximately 2 nautical miles (nM) southwest of Culebra, Puerto Rico. Snapperfarm's offshore site is located in Vieques Sound, approximately 2 nautical miles southwest of the ferry pier in Culebra and 1 mile south of the Luis Peña Reserve (see Figures 1 and 2). The site is a square, with its boundaries running North, South, East and West, each 500 m long, encompassing a total area of 250,000 square meters. The area is delineated within the following coordinates:

Northern boundary: 18° 16.67' N      Eastern boundary: 65° 19.72' W  
Southern boundary: 18° 16.4' N      Western boundary: 65° 20' W



FIGURE 1 - East Coast of Puerto Rico and neighboring islands of Vieques and Culebra.

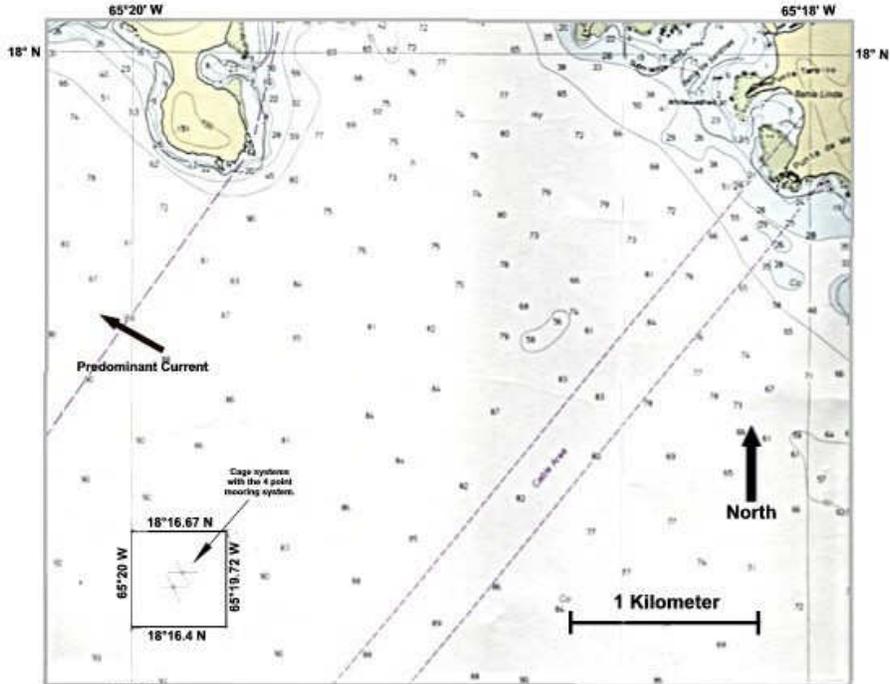


FIGURE 2 - NOAA Chart illustrating Snapperfarm offshore location.

This proposed project does not involve the construction or development of new landside facilities. Major land activities are limited to the following:

- routine storage and transport of feed,
- storage, transport, and maintenance of support equipment (e.g., diving equipment), and
- land transportation of fingerlings from the San Juan Airport to the cages.

The Snapperfarm facilities are located approximately 1 nM from sensitive ecosystems such as the NOAA defined specific areas of particular concern (i.e., coral reefs of Luis Peña Natural Reserve, and seagrass beds) near Culebra that were identified as essential fish habitats (EFH) in the Fish Management Plans (NMFS, 2006b). Snapperfarm is located in open waters away from embayments and other locations with limited circulation and flushing or impaired waters. In addition, established environmental procedures include an environmental monitoring plan and a best management practices (BMP) plan. As required by 40 CFR 451 CAAP guidelines, the BMP plan addresses feed management, waste collection and disposal, transport or harvest discharge, carcass removal, material storage, inspection and maintenance, record keeping and training (USEPA, 2004).

### Sea Floor Characteristics:

Prior to the establishment of Snapperfarm within the concession area in 2002, the entire site, including the area where the new cages will be placed, was surveyed with side scan sonar. In addition, parts of the area were visually inspected with a drop camera and by SCUBA dives. The study was documented in *Archaeological Remote Sensing Survey of Snapperfarm, Inc., Offshore*

Mariculture Project Site, Vieques Sound, Culebra, Puerto Rico. The following conclusions were made regarding this study:

*In general terms the side-scan sonar records verify that the seabed in the 500 x 500 m square is flat, with less than 0.5 meter of relief anywhere, and slopes slightly from S to N. Relatively hard bottom habitats appear as darker areas with scattered closed reflectors. These areas alternate with a soft bottom habitat of calcareous sand in which long waves trending WNW-ESE may be seen in the sonar mosaic, particularly in the northern third of the site square.*

During the site assessment study, it was observed that the bottom is predominantly sandy with patches of the calcifying macroalgae *Halimeda* spp. These thick, crusty algae, which build a skeleton of calcium carbonate like corals, appear to be the predominant type in the area surveyed. *Halimeda* spp. are well adapted to low-nutrient conditions typically found in tropical seas and their presence is characteristic of oligotrophic areas. Other macroalgae commonly found in association with high nutrient, eutrophic environment in the tropics (e.g. *Ulva* spp; *Gracilaria* spp) were not observed. These observations indicated that the natural productivity in the selected area is low, which fulfills one of the most important site assessment criteria for offshore marine fish aquaculture.

On May 9, 2006, NMFS listed elkhorn and staghorn corals as threatened species (NMFS, 2006a). These two species of coral are typically found in shallow warm water reefs within high-energy zones. The species are found throughout Florida and the Caribbean (Colin, 1988) and were once one of the most important reef builders (NOAA, 2006). Their unique branching morphology creates enormous surface area and complex tri-dimensional structures that serve as habitat for multiple reef organisms (NOAA, 2006). No other hermatypic coral species can fulfill this ecological role (NOAA, 2006). Factors believed to be responsible for their decline include disease, elevated sea surface temperature, and hurricanes (NMFS, 2006).

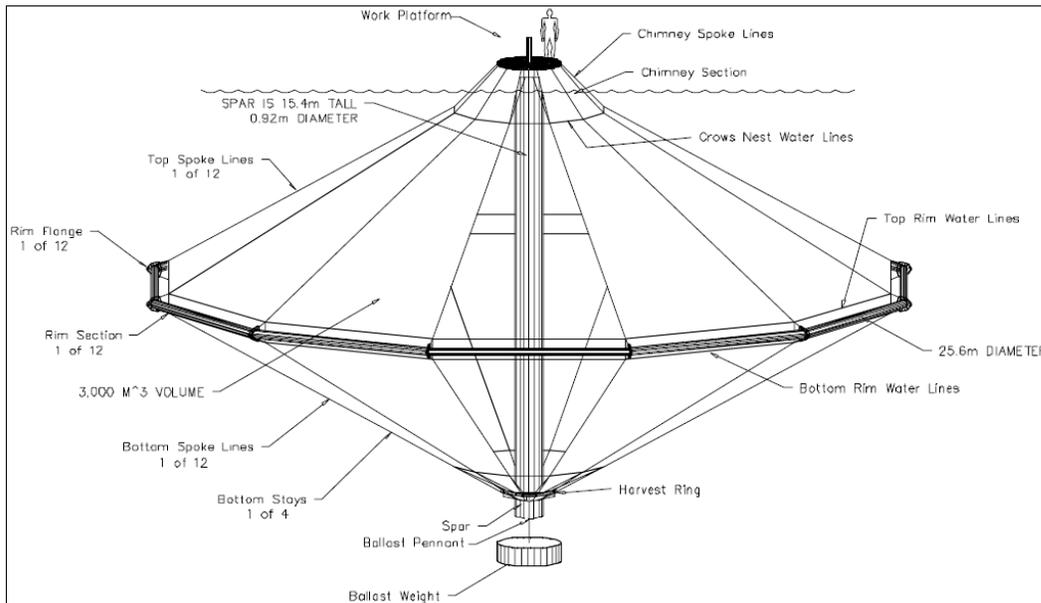
While elkhorn and staghorn coral are present in the waters surrounding Culebra, this area and Snapperfarm's proposed offshore site are not designated as critical habitat for this species. The closest known elkhorn and staghorn coral colonies from Snapperfarm's cages are located at Punta Viento, in the southern point of Cayo Luis Peña, at an approximate distance of 1 nM. In addition, a staghorn coral aquaculture farming system is located at Punta Soldado and Bahía Tamarindo, within the Luis Peña Natural Reserve, approximately 2 nM from the Snapperfarm's cages.

### **Finfish Cage Characteristics:**

When fully operational, the offshore facility would consist of eight 106,000 ft<sup>3</sup> Sea Ocean Spar Sea Station™ finfish cages (OST, 2003). The cages will occupy a 61.8-acre site situated in waters with depths of 90 to 100 ft, and approximately 2 nM southwest of Culebra, in the Vieques Sound.

Each finfish cage has a volume of 106,000 ft<sup>3</sup>, with approximately 95,350 ft<sup>3</sup> of usable area. A

central floating steel spar 49 ft in length, surrounded by a steel rim 82 ft in diameter, forms the frame of the cage. Around this frame, taut netting is attached to spoke lines forming Sea Station's shape. Built into the net are zippered entries for easy diver access. Snapperfarm utilizes Dynema 4-ply knotless netting with 1.4 inches stretched mesh. A smaller 21,890 ft<sup>3</sup> net will be located inside the main cage and will act as the nursery. After stocking, the fish will spend 60 to 90 days in this nursery net before being released into the main cage.



**Figure 3: Ocean Spar Sea Station™ finfish cages.**

The finfish cages will be moored in a northeast to southwest direction, across the predominant water flow direction maintaining 164 ft of separation between the outside rims of the cages to maximize water circulation (Figure 3). The cages will be moored in approximately 100 ft of water, with the top of the cages located 30 feet below the surface.

Snapperfarm purchases cobia fingerlings from the University of Miami's Marine Fish Hatchery in Key Biscayne, Florida; and Great Bay Aquaculture, L.L.C. in New Hampshire.

The fingerlings will be shipped by air to San Juan, Puerto Rico, where they will be transported by truck to Fajardo on the east coast of Puerto Rico and loaded into a vessel for the trip to the farm site off Culebra. Cobia fingerlings are shipped at approximately a 35- to 45- day post hatch, when they weigh between 0.04 and 0.05 ounce. Because of fast growth rates, after a week, Cobia fingerlings may reach about 0.1 ounce in weight (ACFK, 2005).

The fingerlings are kept within nursery nets inside the submerged cages until they reach a size that prevents their escape through the net's three-inch mesh openings. Once stocked with a cohort of fingerlings, the cages will be monitored twice daily by divers to ensure proper health of the growing fish population and efficient use of feed. Incidental daily mortality of a few individual fishes is expected within the growing population. Snapperfarm will remove and dispose as solid

waste any dead fish found in the cages during the twice-daily monitoring. Based on results from the demonstration phase, it is expected that Cobia could reach a harvestable average size of around 10 lbs approximately nine months after stocking of cages (Langan, 2006).

#### **Predominant Current Direction:**

One of the aspects of primary importance for the site is the characteristic of the current flow and intensity. A study conducted on site provided information on the currents at the site. The study concluded that the predominant flow regime follows a Northwestward flow (towards 300°-320° true) while the ebbing tides coincides with a Southeastward flow (120°-140° true).

At the Snapperfarm site, the tidal ellipses are elongated along bottom contours to the point of nearly a straight line so that changes in direction occur very quickly, there is very little transport towards land and the velocity vectors are observed to swing back and forth across the offshore hemisphere. The coastal current at the monitoring location flows towards the northwest 62% of the time, resulting in 74% of the transport whereas the corresponding amounts towards the southeast are 31% and 24%, respectively.

#### **Conclusions**

It appears that Snapperfarm is located in an open ocean environment with strong current to help disperse and dilute animal waste and unconsumed feed material. Strong water circulation is also essential because it assists in maintaining adequate oxygen and salinity for the animal cages and surrounding waters. The finfish cages will be moored across the predominant water flow direction, and with 164 ft of separation between the outside rims of the neighboring cages, to maximize water circulation. The site provides an adequate area to install multiple cages and a lack of nearby sensitive ecosystems reduces the potential impacts from the project. In addition, since installation of two finfish cages in 2002, continued monitoring of these two cages has demonstrated no significant impacts.

## **403(c) OCEAN DISCHARGE CRITERIA ANALYSIS FOR SNAPPERFARM INC.**

### **I. DETERMINATION OF UNREASONABLE DEGRADATION [40 CFR §125.122]**

EPA Region 2 has reviewed the available data submitted by the applicant and finds that the data are not sufficient to support the finding that no unreasonable degradation will occur as a result of the Snapperfarm operation discharge.

However, as explained below, EPA, Region 2, has determined that the available data indicates that no irreparable harm will occur to the environment during the 5-year period of the Snapperfarm NPDES permit.

### **II. PERMIT REQUIREMENTS [40 CFR §125.123]**

- (a) *If the director on the basis of available information including that supplied by the applicant pursuant to §125.124 determines prior to permit issuance that the discharge will not cause unreasonable degradation of the marine environment after application of any necessary conditions specified in §125.123(d), he may issue an NPDES permit containing such conditions.*
- (b) *If the director, on the basis of available information including that supplied by the applicant pursuant to §125.124 determines prior to permit issuance that the discharge will cause unreasonable degradation of the marine environment after application of all possible permit conditions specified in §125.123(d), he may not issue an NPDES permit which authorizes the discharge of pollutants.*

EPA Region 2 has reviewed the available data submitted by the applicant and finds that the data are not sufficient to support the finding that no unreasonable degradation will occur as a result of the Snapperfarm operation. However, as explained below, EPA Region 2, has determined that the available data indicates that no irreparable harm will occur to the environment and supports the issuance of the Snapperfarm NPDES permit.

### **III. NO IRREPARABLE HARM [40 CFR §125.123(c) & (d)]**

- (c) *If the director has insufficient information to determine prior to permit issuance that there will be no unreasonable degradation of the marine environment pursuant to §125.122, there shall be no discharge of pollutants into the marine environment unless the director on the basis of available information, including that supplied by the applicant pursuant to §125.124 determines that:*
  - (1) *Such discharge will not cause irreparable harm to the marine environment*

*during the period in which monitoring is undertaken, and [40 CFR §125.123(c)(1)]*

After reviewing the available data, EPA has determined that the data provided by the applicant and the data obtained by EPA are sufficient to determine that no irreparable harm will occur to the environment during the term of this NPDES permit as a result of the Snapperfarm operation.

At the finfish offshore cage site, the sources of potential pollutants that may impact water quality are unconsumed fish meal and the excrement from the fish population. The unconsumed fish meal and excrement has the potential to increase the nutrient concentration, suspended solids, and biological oxygen demand of receiving waters. EPA bases its no irreparable harm determination on the following:

- Once stocked with a cohort of fingerlings, the cages will be monitored twice daily by divers to ensure proper health of the growing fish population and efficient use of feed. Incidental daily mortality of a few individual fishes is expected within the growing population. Snapperfarm will remove and dispose as solid waste any dead fish found in the cages during the twice-daily inspections.
- Effective feed management is based on two components: waste reduction and optimal feed conversion ratio. Twice daily feeds are planned, with the volume and tempo of feeding adjusted based on fish size class, cage population, and observed feeding efficiency. As with the demonstration phase, the goal of Snapperfarm is to maximize population growth rates while minimizing loss of unconsumed feed material. This decreases operational cost and reduces environmental impact by minimizing potential nutrient loading to receiving waters.
- To mitigate the risk of spreading fish diseases to the surrounding environment and to ensure the health of the fish stocked in the cages, Snapperfarm has contracted with established major producers of fingerlings with experience supplying other aquaculture projects. The cobia fingerlings used by Snapperfarm are produced in hatcheries under strict laboratory conditions and are shipped only after a veterinary certification of good health is obtained. This prevents the risk of transmitting diseases and importing invasive species.
- Because of the spacing of each finfish cage (e.g., 164 ft to allow water circulation), continuous dispersion and mixing by ocean currents, and monitoring of feed material provided to the growing Cobia population, an adverse or significant impact on the quality of coastal waters is not reasonably foreseeable during the establishment and operation of the Snapperfarm CAAP facility. However, as mitigation, water quality shall be monitored in accordance with a water quality plan developed in coordination with NMFS and a series of conditions listed in the Water Quality Certificate issued by the EQB on September 30, 2008.

- The Water Quality Certificate determined that there are reasonable assurances that the proposed project will not cause violations to the applicable water quality standards of the receiving waters.
- The data/information presented in the application indicates that all applicable water quality standards as applied in the NPDES permit will be met at the edge of the production cages.

Based on the above EPA has determined that no irreparable harm will occur to the biota in the vicinity of the Snapperfarm production cages as a result of this caged aquaculture discharge. A monitoring program will be included in this permit which will assure that Snapperfarm 's next NPDES renewal application contains the appropriate and sufficient data necessary to allow EPA to determine whether the Snapperfarm discharge complies with 40 CFR §125.122, and does not cause unreasonable degradation.

Also, during its assessment of the potential impact of the Snapperfarm discharge on the marine environment, and in making its determination of no irreparable harm, EPA took into account the following considerations:

- Marine and Estuarine Sanctuaries and Refuges/Wildlife Areas:

As per the Marine Protection, Research and Sanctuaries Act, 16 U.S.C. 1431 et seq. EPA has considered “the existence of special aquatic sites including, but not limited to marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas and coral reefs. [40 CFR §125.122(a)(5)]” According to information from the NOAA, National Marine Sanctuary Program, there is no special aquatic site designated under the Title III of the Marine Protection, Research and Sanctuary Act in the vicinity of Snapperfarm production area. Therefore, EPA has concluded that the discharge from Snapperfarm will not cause any irreparable harm to any special aquatic site.

- Coastal Zone Management Act:

When a proposed discharge is located within an area covered by an approved Commonwealth Coastal Zone Management Program pursuant to the Coastal Zone Management Act, 16 U.S.C. 1451 et seq., an NPDES permit may not be issued unless the proposed discharge is certified to comply with such program.

On May 1, 2001, the PR Planning Board issued a determination that establishment and operation of the Snapperfarm offshore cages (2 cages) is consistent with the Puerto Rico Coastal Management Program. The number of the determination is CZ-2001-0912-029. At the time of public notice of the draft NPDES permit, EPA has not yet received a determination from the PR Planning Board for the operation of the 8 cages. Although EPA is preparing a draft permit we will not issue a final NPDES permit without this determination.

- Endangered or Threatened Species Act: “the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act. [40 CFR 125.122(a)(3)]”

Table 1. List of Threatened and Endangered Species of Concern for Puerto Rico

Finback Whale - <i>Balaenoptera physalus</i>	Leatherback Sea Turtle - <i>Demochelys coriacea</i>
Blue Whale - <i>Balaenoptera musculus</i>	Green Sea Turtle - <i>Chelonia mydas</i>
Sei Whale - <i>Balaenoptera borealis</i>	Hawksbill Sea Turtle - <i>Eretmochelys imbricata</i>
Humpback Whale - <i>Megaptera novaeangliae</i>	Loggerhead Sea Turtle - <i>Caretta caretta</i>
Sperm Whale - <i>Physeter catodon</i>	Caribbean Monk Seal - <i>Monachus tropicalis</i>
West Indian Manatee - <i>Trichechus manatus</i>	Staghorn coral - <i>Acropora palmata</i>
Elkhorn coral - <i>Acropora cervicornis</i>	

EPA has gathered information regarding the potential presence of endangered species in the area of the Snapperfarm discharge. The discharge of the Snapperfarm is not located within the boundaries of any critical habitat for the endangered species of concern listed above, as identified in 50 CFR. Sections 17.12, 226.208, and 226.209. It is EPA’s position that Commonwealth Water Quality Standards are protective of human health and aquatic life. Therefore, EPA has concluded that the proposed NPDES permit for Snapperfarm is not likely to adversely affect critical habitats for endangered species and is not likely to affect endangered or threatened species.

NMFS is responsible for administering the ESA as it applies to listed marine species. Section 7 consultation with NMFS was initiated by the United States Army Corps of Engineers (USACE) as part of the requirements for Section 10 of the Rivers and Harbor Act permit application submitted by Snapperfarm. On May 30, 2001, NMFS completed the Section 7 consultation by concurring with the USACE determination that the installation and operation of the initial two cages is not likely to adversely affect ESA listed species or their critical habitats. To date, EPA is in the process to work with NMFS to complete the Section 7 consultation by concurring with the USACE determination that the proposed action to expand the Snapperfarm operation is not likely to adversely affect ESA listed species or their critical habitats.

- Essential Fish Habitat (EFH) Requirement: 40 CFR §1215.122(a)(4)

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) 16 U.S.C. Section 1801 et seq. federal agencies are required to consult with NMFS, when any activity proposed to be permitted, funded, or undertaken by a federal agency may have adverse impacts on designated Essential Fish Habitat included in a Fisheries Management Plan.

All the available data evaluated by EPA indicates that all applicable EQB water quality standards will be met at the edge of the production cages which have been included in the permit. The effluent limits included in the proposed Snapperfarm permit ensure that these pollutants will not cause or contribute to an exceedence of the applicable ambient water quality standards. It is EPA’s determination that Commonwealth Water Quality Standards are protective of human

health and aquatic life. Also, NMFS provided EFH conservation recommendations to the USACE permit application to install the finfish cages. After evaluating all the above information and studies, EPA has concluded that the proposed discharge is not likely to adversely affect designated Essential Fish Habitat.

- Executive Order on Coral Reef Protection:

40 CFR §125.122(a)(3) On June 11, 1998, President Clinton issued an Executive Order (E.O.) on coral reef protection, directing federal agencies to expand research, preservation and restoration activities for the protection of coral reef ecosystems. As indicated above, according to information obtained by EPA from the Environmental Sensitivity Index and the Benthic Habitats of Puerto Rico and the U.S. Virgin Islands, no coral reefs or seagrass beds have been identified in the vicinity of the discharge from Snapperfarm. Nevertheless, the NPDES permit for Snapperfarm contains effluent limitations and requirement, as necessary, to assure that the applicable Commonwealth Water Quality Standards are met. EPA has concluded that the Commonwealth Water Quality Standards are protective of human health and aquatic life. Therefore, the proposed action is consistent with the Executive Order on Coral Reef Protection.

The only marine reserve near the propose project is the Luis Peña Natural Reserve, located 1 nM north of the proposed offshore site. The reserve, established in Augusts 21, 1999, is a no take marine area with the main purpose of protecting coral reefs and sea turtles and providing breeding grounds for fish species. The reserve has the Elkhorn coral colonies closest to Snapperfarm's offshore facility. Based on the project design, data and observation since 2001 from the ongoing monitoring program, the proposed project is not likely to affect the Luis Peña Natural Reserve.

- Marine Protection, Research, and Sanctuaries Act:

The Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), as amended (also referred to as the "Ocean Dumping Act"), prohibits the transportation of toxic material from the U.S. for the purpose of dumping it into ocean waters (33 USC §1402(f)). The term "dumping," as defined under the MPRSA, does not include the intentional placement of any device in ocean waters for a purpose other than disposal. In the case of the proposed action, the feed will be transported for the purposes of feeding the fish. Thus, the proposed action will not involve transporting material for the purpose of dumping into ocean waters, and the proposed action will not require an ocean dumping permit.

(2) *There are no reasonable alternatives to the on-site disposal of these materials, and*" [40 CFR §125.123(c)(2)]

A set of basic requirements guides the evaluation and selection of the proposed Snapperfarm project locations. These requirements are:

- An open ocean environment with strong water circulation to help disperse and dilute animal waste and unconsumed feed material. Strong water circulation is also essential

because it assists in maintaining adequate oxygen and salinity for the animal cages and surrounding waters.

- Sufficient area to locate and space all cages.
- Lack of sensitive benthic ecosystems such as coral reefs or seagrass beds that could be affected by a chronic input of diluted animal waste and unconsumed feed.
- A level of isolation to avoid conflicts with other activities such as commercial and recreational fishing.
- Access to shoreside facilities to ensure effective operations and logistics, such as feed delivery, cage monitoring, and harvest transport for pierside distribution.

A two-step process was used to identify and finalize alternative offshore locations for consideration. First, the environmental characteristics of the proposed locations were evaluated to ensure they met the project requirements; then operational considerations were evaluated for feasibility.

It is EPA's determination that there is no reasonable alternative to the current Snapperfarm ocean discharge of aquaculture effluent. The site provides adequate area to install multiple cages, and strong offshore currents to ensure adequate water circulation. The combination of predominantly sand and gravel benthos and a lack of nearby sensitive ecosystems (e.g., coral reefs) reduce the potential impacts from the project.

*(3) The discharge will be in compliance with all permit conditions established pursuant to paragraph (d) of this section.” [40 CFR §125.123(c)(3)]*

Based on all the available data/information, EPA has determined that the Snapperfarm will be in compliance with the proposed effluent limitations and the requirements established in EQB's September 30, 2008 Water Quality Certificate and EPA's draft NPDES permit.

*(d) All permits which authorize the discharge of pollutants pursuant to paragraph (c) of this section shall:*

*(1) Require that the discharge of pollutants will:*

*(i) Following dilution as measured at the boundary of the mixing zone not exceed the limiting permissible concentration for the liquid and suspended particulate phases of the waste material as described in §227.27(a) (2) and (3), §227.27(b), and §227.27(c) of the Ocean Dumping Criteria; and” (ii) not exceed the limiting permissible concentration for the solid phase of the waste material or cause an accumulation of toxic materials in the human food chain as described in §127.27(b) and (d) of the Ocean Dumping Criteria;” [40 CFR §125.123(d)(1)]*

The Snapperfarm discharge will only consist of cobia excrement and unconsumed food coming from the production system. Furthermore, the proposed Snapperfarm NPDES permit requires

that the permittee shall employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of animal growth. The permittee also shall dispose of accumulated solids and attached marine growth contained within or on the cages in a manner which prevents to the maximum extent practical these materials from entering or re-entering the receiving water body.

The Snapperfarm location provides an open ocean environment with strong water circulation to help disperse and dilute animal waste and unconsumed feed material. Strong water circulation is also essential because it assists in maintaining adequate oxygen and salinity for the animal cages and surrounding waters.

In addition, the above specified requirement in 40 CFR §125.123(d)(1) will be included in the draft permit.

Based on the above, EPA has determined that the Snapperfarm discharge will not cause acute or chronic toxicity to the organisms located in the vicinity of the Snapperfarm caged production area and is in compliance with it §227.27(a) (2) and (3), §227.27(b), and §227.27(c) of the Ocean Dumping Criteria. In addition, the Snapperfarm NPDES permit, which prohibits the discharge of solids, will protect against solid phased-based accumulation of toxic material in the human food chain and is therefore in compliance §127.27(b) and (d) of the Ocean Dumping Criteria.

(2) *Specify a monitoring program, which is sufficient to assess the impact of the discharge on water, sediment, and biological quality including, where appropriate, analysis of bioaccumulative and/or persistent impact on aquatic life of the discharge”*  
[40 CFR §125.123(d)(2)]

The Snapperfarm Cage Operations Site is not expected to cause short-term impacts to the water, sediment, and biological communities. The assessment of long term impacts to the water and sediment will be addressed via the EMP, and the monitoring requirements included in its NPDES permit. The potential for long-term impacts on the sensitive biological communities in the proximity of the cages, as a result of concentrated fish biomass, its resultant waste discharge and unconsumed fish food, can not be determined. This will be addressed via the **Snapperfarm Benthic Invertebrate Community Monitoring Program** (as an indicator of the marine biota) as outlined in Appendix A, to be contained and become an enforceable condition in the Snapperfarm permit.

Please note, if appropriate, Snapperfarm may develop the benthic invertebrate community monitoring program in conjunction with the Snapperfarm EMP. EPA is willing to assist Snapperfarm in the development of such program.

The aforementioned monitoring programs (EMP, NPDES permit monitoring and the **Snapperfarm Benthic Invertebrate Community Monitoring program**) should yield sufficient data for EPA to determine whether there has been any unreasonable degradation due to the discharge within the permit period. If the monitoring data at any time shows irreparable harm occurring, EPA should suspend the permit unless the operator expeditiously takes measures to assure that no unreasonable degradation will occur.

(3) *Contain any other conditions, such as performance of liquid or suspended particulate phase bioaccumulation tests, seasonal restrictions on discharge, process modifications, dispersion of pollutants, or schedule of compliance for existing discharges which are determined to be necessary because of local environmental conditions” [40 CFR §125.123(d)(3)]*

**The monitoring program included as Table A-1 of the permit titled “Effluent Limitations and Monitoring Requirements” will contain all monitoring, including water quality monitoring necessary for EPA to assess whether the Snapperfarm discharge is in compliance with the “unreasonable degradation” requirement, at the time of its next permit renewal application.**

(4) *Contain the following clause: In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.” [40 CFR §125.123(d)(4)]*

**The above clause is included in Part I.F. ADDITIONAL REQUIREMENTS, Item 1.f of the draft Snapperfarm NPDES permit.**

### **SUMMARY OF FINDINGS**

According to 40 CFR §125.123(c), EPA has insufficient information to determine, prior to permit issuance, that there will be no unreasonable degradation of the marine environment. As required by 40 CFR §125.123 (c), EPA has determined, on the basis of available information, the following:

- (a) The discharge will not cause irreparable harm to the marine environment during the period in which monitoring is undertaken, and,
- (b) There are no reasonable alternatives to the on-site disposal of these materials, and,
- (c) The discharge will be in compliance with all permit conditions established pursuant to 40 CFR §125.123(d).

This finding is based upon the following:

- (a) The quantity and composition of the permittee's cage operation site and its potential for bioaccumulation and persistence is not expected to cause short term impacts to the marine biota. [40 CFR §125.122(a)(1)].
- (b) The physical environment and characteristics of the receiving waters at the location of the permittee's Cage operation site are such that the discharge will be sufficiently diluted within a reasonable distance from the site, and therefore not cause irreparable harm to distinctive habitats of limited distribution and recreational areas [40 CFR §125.122(a)(2)].
- (c) The permittee's cage operation site is not expected to cause short-term impacts to the water, sediment, and marine biota. The long term impacts to the water and sediment will be addressed via the EM Plan monitoring, and the monitoring requirements included in its NPDES permit. The potential for long-term impacts on the sensitive biological communities in the proximity of the cages, as a result of concentrated fish biomass, its resultant waste discharge and unconsumed fish food, can not be determined. This will be addressed via a Benthic Invertebrate Community Monitoring program (as an indicator of the marine biota) and will be contained in the permit [40 CFR §125.122(a)(3) and (4)].
- (d) It is unlikely there will be impacts to human health from toxic or conventional pollutants through direct or indirect pathways. [40 CFR §125.122(a)(6)].
- (e) It does not appear that the proposed permittee's cage operation site will result in any adverse recreational impacts or new restrictions outside of the permittee's production area approved by EQB in the WQC [40 CFR §125.122(a)(7)].
- (f) Concentrations of substances in the proposed permittee's cage operation site that do not have a Puerto Rico Water Quality Standard will comply with EPA criteria, as established under Section 304(a)(1) of the Act, after initial dilution at the edge of the permittee's production area. [40 CFR §125.122(a)(10)].
- (g) The proposed permittee's cage operation site will comply with the criteria established in the Puerto Rico Water Quality Standards Regulation after initial mixing at the edge of the permittee's production area. [40 CFR §125.122(b)].

## **RECOMMENDATIONS/PERMIT CONDITIONS**

EPA Region 2 recommends that the applicant's Section 403, Ocean Discharge, be allowed in accordance with the above findings, and that a public notice of the intent to issue a draft NPDES permit in accordance with the applicable provisions of 40 CFR Part 125, Subpart M be undertaken. However, the following conditions must be included in the permittee's (Snapperfarm Inc.) draft NPDES permit:

1. The permittee must comply with all permit conditions established pursuant to 40 CFR §125.123(d) as follows (where the CFR citation is noted in brackets) and with other related permit conditions as follows:
  - a. The discharge of pollutants will, following dilution as estimated at the boundary of the production area, not exceed the limiting permissible concentration for the liquid and suspended particulate phases of the waste material as described in 40 CFR §227.27(a) (2) and (3), §227.27(b), and §227.27(c) of the Ocean Dumping Criteria; and (ii) not exceed the limiting permissible concentration for the solid phase of the waste material or cause an accumulation of toxic materials in the human food chain as described in §127.27(b) and (d) of the Ocean Dumping Criteria. [40 CFR §125.123(d)(1)]
  - b. The discharge of medications from the production system may result in accumulating in the sediments in toxic concentration. The permittee must use drugs approved by the Food and Drug Administration (FDA) to ensure that there are no adverse impacts on farmed cobia as well as on the marine organisms. **[Note: Although this requirement refers to the discharge of medications, Part I, A. Special Condition 1 does not authorize the discharge of drugs from the production area.]**
  - c. The potential long-term impacts from the permittee's cage operation site on the water quality, benthic invertebrate community, bioaccumulation, and sediment in the vicinity of the proposed production area must be assessed via the following:
    - i. Environmental Monitoring Program (EMP) for Snapperfarm Inc. Open Ocean Aquaculture (dated June 2009) specified in Part I.E.1 of the NPDES permit [40 CFR 125.123(d)(2)];
    - ii. Conditions listed in the Snapperfarm FNSI dated August 2009 which are relevant to Ocean Discharge Criteria;
    - iii. PR EQB WQC's Monitoring requirements dated September 30, 2008 [40 CFR 125.123(d)(2)];
    - iv. NPDES permit monitoring requirements dated August 2009 [40 CFR 125.123(d)(2)], and
    - v. A comprehensive Snapperfarm Benthic Invertebrate Community Monitoring Program, to assess the stability condition of the benthic community as a result of the permitted discharge, must be proposed by the permittee which follows the guidelines in the **"Outline of the Snapperfarm Benthic Invertebrate Community Monitoring Program"**

in the appendix section of this document (Appendix A). [40 CFR 125.123(d)(2)]

The permittee must, within 6 months of the effective date of its NPDES permit, submit to EPA for its review and approval, a POS and QAPP for the Snapperfarm Benthic Invertebrate Community Monitoring Program. EPA is willing to assist the permittee in the development of such program. The POS and QAPP may be submitted as a single document if appropriate.

No monitoring under the Benthic Invertebrate Community Monitoring Program shall begin until the permittee has an EPA approved POS and QAPP. EPA will notify the permittee in writing of any deficiencies in the POS and QAPP along with a due date for response. The permittee must follow the procedures in the approved POS and QAPP when conducting the Snapperfarm Benthic Invertebrate Community Monitoring Program. The POS and QAPP must be developed according to the "Outline of the Snapperfarm Benthic Invertebrate Community Monitoring Program" in Appendix A.

- vi. If the sediment core sample results from the EMP indicate that a potential bioaccumulation in the marine organisms may occur then a Plan of Study (POS) and Quality Assurance Project Plan (QAPP) for a fish bioaccumulation monitoring plan must be developed and submitted to EPA by the permittee no later than 60 days after the EPA's written request. EPA is willing to assist the permittee in the development of such program. The POS and QAPP may be submitted as a single document if appropriate. [40 CFR §125.123(d)(2)]
  
- d. The final Snapperfarm monitoring report must be submitted to EPA by the permittee with the permittee's renewal NPDES permit application. The report must be a comprehensive assessment of all of the above-mentioned data/information collected from, but not limited to, the EMP, the monitoring requirements included in its NPDES permit and the Snapperfarm Benthic Invertebrate Community Monitoring. The report must compile the monitoring data and include: appropriate data analysis, summary of the data collected, conclusions based on the data collected and other available data and an explanation of how the data complies with the Ocean Discharge Criteria requirements in 40 CFR §125 Subpart M. The report must support the permittee's findings regarding whether or not its operation has caused unreasonable degradation. [40 CFR 125.123(d)(2)], [40 CFR 125.123(d)(3)]
  
- e. In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment. [40 CFR §125.123(d)(4)]



## **Appendix A: Outline of the Snapperfarm Benthic Invertebrate Community Monitoring Program (NPDES NO. PR0026361)**

Ocean Discharge Criteria of the Snapperfarm NPDES permit must include a monitoring program requirement that is sufficient to allow EPA to assess the impact of the discharge on water, sediment, and biological quality including, where appropriate, analysis of bioaccumulative and/or persistent impact on aquatic life of the discharge and therefore, make a determination that there will be no unreasonable degradation for the next Snapperfarm NPDES permit application.

Determination of no unreasonable degradation of the marine environment is based on an analysis of the extent to which there are:

- a) Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding communities.
- b) Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms, or
- c) Loss of aesthetic, recreational, scientific, or economic values which is unreasonable in relation to benefit derived from the discharge.

**Monitoring Objective:** To assess the stability of the benthic community as a result from the permitted discharge.

**Approach:** By comparing biological variables of benthic population/or community at both potentially impacted areas and reference areas. This community data will yield significant information on the effects of effluent on marine biota, including magnitude and direction of community response. A sediment analysis in conjunction with the infauna sampling will relate the biota condition with the concentrations of contaminants present.

**Criteria:** Unreasonable degradation occurs when a 25% or greater reduction in diversity for a given community or a 50% or greater reduction in the population of a dominant or commercially important species takes place in any one of the three major community groups (plankton, nekton or benthos).

**Assessment parameters:**

- a) Species diversity (ecosystem diversity)
- b) Abundance (population size)
- c) Species richness
- d) Evenness
- e) Dominance
- f) Mean biomass (wet weight)

- g) Sediment analysis (total organic content, grain size)
- h) Cluster analysis
- i) List of pollution tolerant and opportunistic species

**Methods:** Grab sampler (either 0.1m<sup>2</sup> van Veen grab or Smith-McIntyre) attached to hydraulically operated cable, with 0.5 mm mesh screens for sieving sediments. Five replicates should be collected at each station.

**Sampling Frequency:** Sampling should be conducted quarterly beginning within 3 months after EPA approves the Plan of Study (POS) and Quality Assurance Project Plan (QAPP) or, if operations have not begun at the time of approval, then beginning within 3 months after the start of operations. Subsequent sampling frequency and duration will be re-evaluated by EPA based upon an analysis of the data (both water quality and benthic data from this Benthic Invertebrate Community Monitoring Program, the EM plan, and NPDES permit monitoring). EPA will notify the permittee in writing of the revised sampling frequency/duration.