5.0 ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

Established policies and procedures of the SAFMC and the NMFS (Appendix N) provide the framework for conserving and enhancing essential fish habitat. Integral components of this framework include adverse impact avoidance and minimization; provision of compensatory mitigation whenever the impact is significant and unavoidable; and incorporation of enhancement as a fundamental component of fishery resource recovery. New and expanded responsibilities contained in the MSFCMA will be met through appropriate application of these policies and principles. In assessing the potential impacts of proposed projects, the SAFMC, the NMFS, and USFWS are guided by the following general considerations:

- The extent to which the activity would directly and indirectly affect the occurrence, abundance, health, and continued existence of fishery resources;

- The extent to which the goal of "no net-loss of wetlands" would be attained;

- The extent to which an unacceptable precedent may be established or potential for a significant cumulative impact exists;

- The extent to which adverse impacts can be avoided through project modification or other safeguards;

- The availability of alternative sites and actions that would reduce project impacts;

- The extent to which the activity is water dependent if loss or degradation of EFH is involved; and

- The extent to which mitigation may be used to offset unavoidable loss of aquatic habitat functions and values.

5.1 SAFMC Essential Fish Habitat and Environmental Protection Policy

In recognizing that managed species are dependent on the quantity and quality of their essential habitats, it is the policy of the SAFMC to protect, restore, and develop habitats upon which species fisheries depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, “habitat” is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the SAFMC policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The SAFMC will pursue these goals at state, Federal, and local levels. The Council shall assume an aggressive role in the protection and enhancement of habitats important to species, and shall actively enter Federal, decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

5.2 SAFMC Essential Fish Habitat Policy Statements

5.2.1 SAFMC Policy Statements on Essential Fish Habitat Types

5.2.1.1 SAFMC Policy for Protection and Enhancement of Marine Submerged Aquatic Vegetation (SAV) Habitat.

The South Atlantic Fishery Management Council (SAFMC) and the Habitat and Environmental Protection Advisory Panel has considered the issue of the decline of Marine Submerged Aquatic Vegetation SAV (or seagrass) habitat in Florida and North Carolina as it relates to Council habitat policy. Subsequently, the Council's Habitat Committee requested that the Habitat Advisory Panel develop the following policy statement to support Council efforts to protect and enhance habitat for managed species.

Description and Function:

In the South Atlantic region, SAV is found primarily in the states of Florida and North Carolina where environmental conditions are ideal for the propagation of seagrasses. The distribution of SAV habitat is indicative of its importance to economically important fisheries: in North Carolina, total SAV coverage is estimated to be 200,000 acres; in Florida, the total SAV coverage is estimated to be 2.9 million acres. SAV serves several valuable ecological functions in the marine systems where it occurs. Food and shelter afforded by SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that is important both to the overall system ecology as well as to commercial and recreationally important fisheries. SAV habitat is valuable both ecologically as well as economically; as feeding, breeding, and nursery ground for numerous estuarine species, SAV provides for rich ecosystem diversity. Further, a number of fish and shellfish species, around which is built several vigorous commercial and recreational fisheries, rely on SAV habitat for a least a portion of their life cycles.

Status:

SAV habitat is currently threatened by the cumulative effects of overpopulation and consequent commercial development and recreation in the coastal zone. The major anthropogenic threats to SAV habitat include:

(1) mechanical damage due to:
- (a) propeller damage from boats,
- (b) bottom-disturbing fish harvesting techniques,
- (c) dredging and filling;

(2) biological degradation due to:
- (a) water quality deterioration by modification of temperature, salinity, and light attenuation regimes;
- (b) addition of organic and inorganic chemicals.

SAV habitat in both Florida and North Carolina has experienced declines from both natural and anthropogenic causes. However, conservation measures taken by state and federal agencies have produced positive results. The National Marine Fisheries Service has produced maps of SAV habitat in the Albemarle-Pamlico Sound region of North Carolina to help stem the loss of this critical habitat. The threats to this habitat and the potential for successful conservation measures highlight the need to address the decline of SAV. Therefore, the South Atlantic Council

recommends immediate and direct action be taken to stem the loss of this essential habitat. For more detailed discussion, please see Appendix 2.

Management:

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws and regulations apply to modifications, either direct or indirect, to SAV habitat. However, to date the state and federal regulatory process has accomplished little to slow the decline of SAV habitat. Furthermore, mitigative measures to restore or enhance impacted SAV have met with little success. These habitats cannot be readily restored; the South Atlantic Council is not aware of any seagrass restoration project that has ever prevented a net loss of SAV habitat. It has been difficult to implement effective resource management initiatives to preserve existing seagrass habitat resources due to the lack of adequate documentation and specific cause/effect relationships. (for more detailed discussion, please see Appendix 3)

Because restoration/enhancement efforts have not met with success, the South Atlantic Council considers it imperative to take a directed and purposeful action to protect remaining SAV habitat. The South Atlantic Council strongly recommends that a comprehensive strategy to address the disturbing decline in SAV habitat in the South Atlantic region be developed. Furthermore, as a stepping stone to such a long-term protection strategy, the South Atlantic Council recommends that a reliable status and trend survey be adopted to verify the scale of local declines of SAV.

The South Atlantic Council will address the decline of SAV, and consider establishing specific plans for revitalizing the SAV resources of the South Atlantic region. This may be achieved by the following integrated triad of efforts:

Planning:

- The Council promotes regional planning which treats SAV as a integral part of an ecological system.

- The Council supports comprehensive planning initiatives as well as interagency coordination and planning on SAV matters.

- The Council recommends that the Habitat Advisory Panel members actively seek to involve the Council in the review of projects which will impact, either directly or indirectly, SAV habitat resources.

Monitoring and Research:

- Periodic surveys of SAV in the region are required to determine the progress toward the goal of a net resource gain.

- The Council supports efforts to
  (1) standardize mapping protocols,
  (2) develop a Geographic Information System databases for essential habitat including seagrass, and
  (3) research and document causes and effects of SAV decline including the cumulative impacts of shoreline development.

Education and Enforcement:

The Council supports education programs designed to heighten the public's awareness of the importance of SAV. An informed public will provide a firm foundation of support for protection and restoration efforts.

Existing regulations and enforcement need to be reviewed for their effectiveness.

Coordination with state resource and regulatory agencies should be supported to assure that existing regulations are being enforced.

SAFMC SAV Policy Statement- Appendix 1

DESCRIPTION AND FUNCTION

Worldwide, Submerged Aquatic Vegetation (SAV) constitutes one of the most conspicuous and common shallow-water habitat types. These angiosperms have successfully colonized standing and flowing fresh, brackish, and marine waters in all climatic zones, and most are rooted in the sediment. Marine SAV beds occur in the low intertidal and subtidal zones and may exhibit a wide range of habitat forms, from extensive collections of isolated patches to unbroken continuous beds. The bed is defined by the presence of either aboveground vegetation, its associated root and rhizome system (with living meristem), or the presence of a seed bank in the sediments, as well as the sediment upon which the plant grows or in which the seed back resides. In the case of patch beds, the unvegetated sediment among the patches is considered seagrass habitat as well.

There are seven species of seagrass in Florida's shallow coastal areas: turtle grass (*Thalassia testudium*); manatee grass (*Syringodium filiforme*); shoal grass (*Halodule wrightii*); star grass (*Halophila engelmanni*); paddle grass (*Halophila decipiens*); and Johnson's seagrass (*Halophila johnsonii*) (See distribution maps in Appendix 4). Recently, *H. johnsonii* has been proposed for listing by the National Marine Fisheries Service as an endangered plant species. Areas of seagrass concentration along Florida's east coast are Mosquito Lagoon, Banana River, Indian River Lagoon, Lake Worth and Biscayne Bay. Florida Bay, located between the Florida Keys and the mainland, also has an abundance of seagrasses, but is currently experiencing an unprecedented decline in SAV distribution.

The three dominant species found in North Carolina are shoalgrass (*Halodule wrightii*), eelgrass (*Zostera marina*), and widgeongrass (*Ruppia maritima*). Shoalgrass, a subtropical species has its northernmost distribution at Oregon Inlet, North Carolina. Eelgrass, a temperate species, has its southernmost distribution in North Carolina. Areas of seagrass concentration in North Carolina are southern and eastern Pamlico Sound, Core Sound, Back Sound, Bogue Sound and the numerous small southern sounds located behind the beaches in Onslow, Pender, Brunswick, and New Hanover Counties (See distribution maps in Appendix 4).

Seagrasses serve several valuable ecological functions in the marine estuarine systems where they occur. Food and shelter afforded by the SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that are important both ecologically and to commercial and recreational fisheries. Organic matter produced by these seagrasses is transferred to secondary consumers through three pathways: herbivores that consume living plant matter; detritivores that exploit dead matter; and microorganisms that use seagrass-derived particulate and dissolved organic compounds. The living leaves of these submerged plants also provide a substrate for the attachment of detritus and epiphytic organisms, including bacteria, fungi, meiofauna, micro- and marcroalgae, macroinvertebrates. Within the seagrass system, phytoplankton also are present in the water column, and macroalgae and microalgae are associated with the sediment. No less important is the protection afforded by the variety of living spaces in the tangled leaf canopy of the grass bed itself. In addition to

biological benefits, the SAVs also cycle nutrients and heavy metals in the water and sediments, and dissipate wave energy (which reduces shoreline erosion and sediment resuspension).

There are several types of association fish may have with the SAVs. Resident species typically breed and carry out much of their life history within the meadow (e.g., gobiids and syngnathids). Seasonal residents typically breed elsewhere, but predictably utilize the SAV during a portion of their life cycle, most often as a juvenile nursery ground (e.g., sparids and lutjanids). Transient species can be categorized as those that feed or otherwise utilize the SAV only for a portion of their daily activity, but in a systematic or predictable manner (e.g., haemulids).

In Florida many economically important species utilize SAV beds as nursery and/or spawning habitat. Among these are spotted seatrout (*Cynoscion nebulosus*), grunts (Haemulids), snook (*Centropomus sp.*), bonefish (*Albulu vulpes*), tarpon (*Megalops atlanticus*) and several species of snapper (Lutianids) and grouper (Serranids). Densities of invertebrate organisms are many times greater in seagrass beds than in bare sand habitat. Penaeid shrimp, spiny lobster (*Panulirus argus*), and bay scallops (*Argopecten irradians*) are also dependent on seagrass beds.

In North Carolina 40 species of fish and invertebrates have been captured on seagrass beds. Larval and juvenile fish and shellfish including gray trout (*Cynoscion regalis*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), mullet (*Mugil cephalus*), spot (Leiostomus xanthurus), pinfish (*Orthopristis chrysoptera*), gag (*Mycteroperca microlepis*), white grunt (*Haemulon plumieri*), silver perch (*Bairdiella chrysoura*), summer flounder (*Paralichthys dentatus*), southern flounder (*P. lethostigma*), blue crabs (*Callinectes sapidus*), hard shell clams (*Mercenaria mercenaria*), and bay scallops (*Argopecten irradains*) utilize the SAV beds as nursery areas. They are the sole nursery grounds for bay scallops in North Carolina. SAV meadows are also frequented by adult spot, spotted seatrout, bluefish (*Pomatomus saltatrix*), menhaden (*Brevortia tyrannus*), summer and southern flounder, pink and brown shrimp, hard shell clams, and blue crabs and offshore reef fishes including black sea bass (*Centropristis striata*), gag (*Mycteroperca microlepis*), gray snapper (*Lutianus griseus*), lane snapper (*Lutjanus synagris*), mutton snapper (*Lutianus analis*), and spottail pinfish (*Diplodus holbrooki*). Ospreys, egrets, herons, gulls and terns feed on fauna in SAV beds, while swans, geese, and ducks feed directly on the grass itself. Green sea turtles (*Chelonia mydas*) also utilize seagrass beds, and juveniles may feed directly on the seagrasses.

SAFMC SAV Policy Statement- Appendix 2

STATUS

The SAV habitat represents a valuable natural resource which is now threatened by overpopulation in coastal areas. The major anthropogenic activities that impact seagrass habitats are: 1) dredging and filling, 2) certain fish harvesting techniques and recreational vehicles, 3) degradation of water quality by modification of normal temperature, salinity, and light regimes, and 4) addition of organic and inorganic chemicals. Although not caused by man, disease ("wasting disease" of eelgrass) has historically been a factor. Direct causes such as dredging and filling, impacts of bottom disturbing fishing gear, and impacts of propellers and boat wakes are easily observed, and can be controlled by wise management of our seagrass resources (See Appendix 3). Indirect losses are more subtle and difficult to assess. These losses center around changes in light availability to the plants by changes in turbidity and water color. Other indirect causes of seagrass loss may be ascribed to changing hydrology which may in turn affect salinity levels and circulation. Reduction in flushing can cause an increase in salinity and the ambient temperature of a water body, stressing the plants. Increase in flushing can mean decreased salinity and increased turbidity and near-bottom mechanical stresses which damage or uproot plants.

Increased turbidity and decreasing water transparency are most often recognized as the cause of decreased seagrass growth and altered distribution of the habitats. Turbidity may result from upland runoff, either as suspended sediment or dissolved nutrients. Reduced transparency due to color is affected by freshwater discharge. The introduction of additional nutrients from terrigenous sources often leads to plankton blooms and increased epiphytization of the plants, further reducing light to the plants. Groundwater enriched by septic systems also may infiltrate the sediments, water column, and near-shore seagrass beds with the same effect. Lowered dissolved oxygen is detrimental to invertebrate and vertebrate grazers. Loss of these grazers results in overgrowth by epiphytes.

Large areas of Florida where seagrasses were abundant have now lost these beds from both natural and man-induced causes. (This is not well documented on a large scale except in the case of Tampa Bay). One of these depleted areas is Lake Worth in Palm Beach County. Here, dredge and fill activities, sewage disposal and stormwater runoff have almost eliminated this resource. North Biscayne Bay lost most of its seagrasses from urbanization. The Indian River Lagoon has lost many seagrass beds from stormwater runoff has caused a decrease in water transparency and reduced light penetration. Many seagrass beds in Florida have been scarred from boat propellers disrupting the physical integrity of the beds. Vessel registrations, both commercial and recreational, have tripled from 1970-71 (235, 293) to 1992-93 (715,516). More people engaged in marine activities having an effect on the limited resources of fisheries and benthic communities, Florida's assessment of dredging/propeller scar damage indicates that Dade, Lee, Monroe, and Pinellas Counties have the most heavily damaged seagrass beds. Now Florida Bay, which is rather remote from human population concentrations, is experiencing a die-off of seagrasses, the cause of which has not yet been isolated. Cascading effects of die-offs cause a release of nutrients resulting in algal blooms which, in turn, adversely affect other seagrass areas, and appear to be preventing recolonization and natural succession in the bay. It appears that Monroe County's commercial fish and shellfish resources, with a dockside landing value of $50 million per year, is in serious jeopardy.

In North Carolina total SAV coverage is estimated a 200,000 acres. Compared to the state's brackish water SAV community, the marine SAVs appear relatively stable. The drought and increased water clarity during the summer of 1986 apparently caused an increase in SAV abundance in southeastern Pamlico Sound and a concomitant increase in bay scallop densities. Evidence is emerging, however, that characteristics of "wasting disease" are showing up in some of the eelgrass populations in southern Core Sound, Back Sound, and Bogue Sound. The number of permits requested for development activities that potentially impact SAV populations is increasing. The combined impacts of a number of small, seemingly isolated activities are cumulative and can lead to the collapse of large seagrass biosystems. Also increasing is evidence of the secondary removal of seagrasses. Clam-kicking (the harvest of hard clams utilizing powerful propeller wash to dislodge the clams from the sediment) is contentious issue within the state of North Carolina. The scientific community is convinced that mechanical harvesting of clams damages SAV communities. The scallop fishery also could be harmed by harvest-related damage to eelgrass meadows.

SAFMC SAV Policy Statement- Appendix 3

MANAGEMENT

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws require permits for modification and/or development in SAV. These include Section 10 of the Rivers and Harbors Act (1899), Section 404 of the Clean Water Act (1977), and the states' coastal area management programs. Section 404 prohibits deposition of dredged or fill material in waters of the United States without a permit from the U.S. Army Corps of Engineers. The Fish and Wildlife Coordination Act gives federal and state resource agencies the authority to review and comment on permits, while the National Environmental Policy Act requires the development and review of Environmental Impact Statements. The Magnuson Fisheries Conservation and Management Act has been amended to require that each fishery management plan include a habitat section. The Council's habitat subcommittee may comment on permit requests submitted to the Corps of Engineers when the proposed activity relates to habitat essential to managed species.

State and federal regulatory processes have accomplished little to slow the decline of SAV habitat. Many of the impacts cannot be easily controlled by the regulations as enforced. For example, water quality standards are written so as to allow a specified deviation from background concentration, in this manner standards allow a certain amount of degradation. An example of this is Florida's class III water transparency standard, which defines the compensation depth to be where 1% of the incident light remains. The compensation depth for seagrass is in excess of 10% and for some species is between 15 and 20%. The standard allows a deviation of 10% in the compensation depth which translates into 0.9% incident light or an order of magnitude less than what the plants require.

Mitigative measures to restore or enhance impacted areas have met with little success. SAV habitats cannot be readily restored; in fact, the South Atlantic Council is not aware of any seagrass restoration project that has ever avoided a net loss of seagrass habitat. It has been difficult to implement effective resource management initiatives to preserve seagrass habitat due to the lack of documentation on specific cause/effect relationships. Even though studies have identified certain cause/effect relationships in the destruction of these areas, lack of long-term, ecosystem-scale studies precludes an accurate scientific evaluation of the long-term deterioration of seagrasses. Some of the approaches to controlling propeller scar damage to seagrass beds include: education, improved channel marking restricted access zones, (complete closure to combustion engines, pole or troll areas), and improved enforcement. The South Atlantic Council sees the need for monitoring of seagrass restoration and mitigation not only to determine success from plant standpoint but also for recovery of faunal populations and functional attributes of the essential habitat type. The South Atlantic Council also encourages long-term trend analysis monitoring of distribution and abundance using appropriate protocols and Geographic Information System approaches.

SAFMC SAV Policy Statement- Appendix 4

(SAV Distribution Maps in SAFMC 1995 and Revised in Appendix C)

5.2.2 SAFMC Policy Statements on Activities Affecting Habitat

5.2.2.1 SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

5.2.2.1.1 Ocean Dredged Material Disposal Sites (ODMDS) and SAFMC Policies

The shortage of adequate upland disposal sites for dredged materials has forced dredging operations to look offshore for sites where dredged materials may be disposed. These Ocean Dredged Material Disposal Sites (ODMDSs) have been designated by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as suitable sites for disposal of dredged materials associated with berthing and navigation channel maintenance activities. The South Atlantic Fishery Management Council (SAFMC; the Council) is moving to establish its presence in regulating disposal activities at these ODMDSs. Pursuant to the Magnuson Fishery Conservation and Management Act of 1976 (the Magnuson Act), the regional fishery management Councils are charged with management of living marine resources and their habitat within the 200 mile Exclusive Economic Zone (EEZ) of the United States. Insofar as dredging and disposal activities at the various ODMDSs can impact fishery resources or essential habitat under Council jurisdiction, the following policies address the Council's role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

The Council acknowledges that living marine resources under its jurisdiction and their essential habitat may be impacted by the designation, operation, and maintenance of ODMDSs in the South Atlantic. The Council may review the activities of EPA, COE, the state Ports Authorities, private dredging contractors, and any other entity engaged in activities which impact, directly or indirectly, living marine resources within the EEZ.

The Council may review plans and offer comments on the designation, maintenance, and enforcement of disposal activities at the ODMDSs.

ODMDSs should be designated or redesignated so as to avoid the loss of live or hard bottom habitat and minimize impacts to all living marine resources.

Notwithstanding the fluid nature of the marine environment, all impacts from the disposal activities should be contained within the designated perimeter of the ODMDSs.

The final designation of ODMDSs should be contingent upon the development of suitable management plans and a demonstrated ability to implement and enforce that plan. The Council encourages EPA to press for the implementation of such management plans for all designated ODMDSs.

All activities within the ODMDSs are required to be consistent with the approved management plan for the site.

The Council's Habitat and Environmental Protection Advisory Panel when requested by the Council will review such management plans and forward comment to the Council. The Council may review the plans and recommendations received from the advisory sub-panel and comment to the appropriate agency. All federal agencies and entities receiving a comment or recommendation from the Council will provide a detailed written response to the Council regarding the matter pursuant to 16 U.S.C. 1852 (i). All other agencies and entities receiving a comment or recommendation from the Council should provide a detailed written response to the Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C. 1852 (i).

ODMDSs management plans should indicate appropriate users of the site. These plans should specify those entities/ agencies which may use the ODMDSs, such as port authorities, the U.S. Navy, the Corps of Engineers, etc. Other potential users of the ODMDSs should be

acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

Feasibility studies of dredge disposal options should acknowledge and incorporate ODMDSs in the larger analysis of dredge disposal sites within an entire basin or project. For example, Corps of Engineers analyses of existing and potential dredge disposal sites for harbor maintenance projects should incorporate the ODMDSs. as part of the overall analysis of dredge disposal sites.

The Council recognizes that EPA and other relevant agencies are involved in managing and/or regulating the disposal of all dredged material. The Council recognizes that disposal activities regulated under the Ocean Dumping Act and dredging/filling carried out under the Clean Water Act have similar impacts to living marine resources and their habitats. Therefore, the Council urges these agencies apply the same strict policies to disposal activities at the ODMDSs. These policies apply to activities including, but not limited to, the disposal of contaminated sediments and the disposal of large volumes of fine-grained sediments. The Council will encourage strict enforcement of these policies for disposal activities in the EEZ. Insofar as these activities are relevant to disposal activities in the EEZ, the Council will offer comments on the further development of policies regarding the disposal/ deposition of dredged materials.

The Ocean Dumping Act requires that contaminated materials not be placed in an approved ODMDS. Therefore, the Council encourages relevant agencies to address the problem of disposal of contaminated materials. Although the Ocean Dumping Act does not specifically address inshore disposal activities, the Council encourages EPA and other relevant agencies to evaluate sites for the suitability of disposal and containment of contaminated dredged material. The Council further encourages those agencies to draft management plans for the disposal of contaminated dredge materials. A consideration for total removal from the basin should also be considered should the material be contaminated to a level that it would have to be relocated away from the coastal zone.

5.2.2.1.2 Offshore and Nearshore Underwater Berm Creation

The use of underwater berms in the South Atlantic region has recently been proposed as a disposal technique that may aid in managing sand budgets on inlet and beachfront areas. Two types of berms have been proposed to date, one involving the creation of a long offshore berm, the second involving the placement of underwater berms along beachfronts bordering an inlet. These berms would theoretically reduce wave energy reaching the beaches and/or resupply sand to the system.

The Council recognizes offshore berm construction as a disposal activity. As such, all policies regarding disposal of dredged materials shall apply to offshore berm construction. Research should be conducted to quantify larval fish and crustacean transport and use of the inlets prior to any consideration of placement of underwater berms. Until the impacts of berm creation in inlet areas on larval fish and crustacean transport are determined, the Council recommends that disposal activities should be confined to approved ODMDSs. Further, new offshore and near shore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

5.2.2.1.3 Maintenance Dredging and Sand Mining for Beach Renourishment

The Council recognizes that construction and maintenance dredging of the seaward portions of entrance channels and dredging borrow areas for beach re-nourishment occur in the

EEZ. These activities should be done in an appropriate manner in accordance with the policies adopted by the Council.

The Council acknowledges that endangered and threatened species mortalities have occurred as a result of dredging operations. Considering the stringent regulations placed on commercial fisherman, dredging or disposal activities should not be designed or conducted so as to adversely impact rare, threatened or endangered species. NMFS Protected Species Division should work with state and federal agencies to modify proposals to minimize potential impacts on threatened and endangered sea turtles and marine mammals.

The Council has and will continue to coordinate with Minerals Management Service (MMS) in their activities involving exploration, identification and dredging/mining of sand resources for beach renourishment. This will be accomplished through membership on state task forces or directly with MMS. The Council recommends that live bottom/hard bottom habitat and historic fishing grounds be identified for areas in the South Atlantic region to provide for the location and protection of these areas while facilitating the identification of sand sources for beach renourishment projects.

5.2.2.1.4 Open Water Disposal

The SAFMC is opposed to the open water disposal of dredged material into aquatic systems which may adversely impact habitat that fisheries under Council jurisdiction are dependent upon. The Council urges state and federal agencies, when reviewing permits considering open water disposal, to identify the direct and indirect impacts such projects could have on fisheries habitat.

The SAFMC concludes that the conversion of one naturally functioning aquatic system at the expense of creating another (marsh creation through open water disposal) must be justified given best available information.

5.2.2.2 SAFMC Policy on Oil & Gas Exploration, Development and Transportation

The SAFMC urged the Secretary of Commerce to uphold the 1988 coastal zone inconsistency determination of the State of Florida for the respective plans of exploration filed with Minerals Management Service (MMS) by Mobil Exploration and Producing North America, Inc. for Lease OCS-G6520 (Pulley Ridge Block 799) and by Union Oil Company of California for Lease OCS-G6491/6492 (Pulley Ridge Blocks 629 & 630). Both plans of exploration involve lease blocks lying within the lease area comprising the offshore area encompassed by Part 2 of Lease Sale 116, and south of 26° North latitude. The Council's objection to the proposed exploration activities is based on the potential degradation or loss of extensive live bottom and other habitat essential to fisheries under Council jurisdiction.

The SAFMC also supported North Carolina's determination that the plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS Manteo Unit are not consistent with North Carolina's Coastal Zone Management program.

The Council has expressed concern to the Outer Continental Shelf Leasing and Development Task Force about the proposed area and recommends that no further exploration or production activity be allowed in the areas subject to Presidential Task Force Review (the section of Sale 116 south of 26° N latitude).

The SAFMC recommends the following to the MMS when considering proposals for oil and gas activities for previously leased areas under Council jurisdiction:

1) That oil or gas drilling for exploration or development on or closely associated with live bottom habitat, or other special biological resources essential to commercial and recreational fisheries under Council jurisdiction, be prohibited.
2) That all facilities associated with oil and gas exploration, development, and transportation be designed to avoid impacts on coastal wetlands and sand sharing systems.
3) That adequate spill containment and cleanup equipment be maintained for all development and transportation facilities and, that the equipment be available on site within the trajectory time to land, and have industry post a bond to assure labor or other needed reserves.
4) That exploration and development activities should be scheduled to avoid northern right whales in coastal waters off Georgia and Florida as well as migrations of that species and other marine mammals off South Atlantic states.
5) That the EIS for Lease Sale 56 be updated to address impacts from activities related to specifically natural gas production, safety precautions which must be developed in the event of a discovery of a "sour gas" or hydrogen sulfide reserve, the potential for southerly transport of hydrocarbons to near shore and inshore estuarine habitats resulting from the cross-shelf transport by Gulf Stream spin-off eddies, the development of contingency plans to be implemented if problems arise due to the very dynamic oceanographic conditions and the extremely rugged bottom, and the need for and availability of onshore support facilities in coastal North and South Carolina, and an analysis of existing facilities and community services in light of existing major coastal developments.

The SAFMC recommends the following concerns and issues be addressed by the MMS prior to approval of any application for a permit to drill any exploratory wells in Lease Sale 56 and that these concerns and issues also be included in the Environmental Impact Statement for the Outer Continental Shelf (OCS) Leasing Plan for 1992-1997:

1) Identification of the on-site fisheries resources, including both pelagic and benthic communities, that inhabit, spawn, or migrate through the lease sites with special focus on those specific lease blocks where industry has expressed specific interest in the pre-lease phases of the leasing process. Particular attention should be given to critical life history stages. Eggs and larvae are most sensitive to oil spills, and seismic exploration has been documented to cause mortality of eggs and larvae in close proximity.
2) Identification of on-site species designated as endangered, threatened, or of special concern, such as shortnose sturgeon, striped bass, blueback herring, American shad, sea turtles, marine mammals, pelagic birds, and all species regulated under federal fishery management plans.
3) Determination of impacts of all exploratory and development activities on the fisheries resources prior to MMS approval of any applications for permits to drill in the Exploratory Unit area, including effects of seismic survey signals on fish behavior, eggs and larvae; temporary preclusion from fishing grounds by exploratory drilling; and permanent preclusion from fishing grounds by production and transportation.
4) Identification of commercial and recreational fishing activities in the vicinity of the lease or Exploratory Unit area, their season of occurrence and intensity.
5) Determination of the physical oceanography of the area through field studies by MMS or the applicant, including on-site direction and velocity of currents and tides, sea states, temperature, salinity, water quality, wind storms frequencies, and intensities and icing conditions. Such studies must be required prior to approval of any exploration plan submitted in order to have an adequate informational database upon which to base subsequent decision making on-site specific proposed activities.

6) Description of required existing and planned monitoring activities intended to measure environmental conditions, and provide data and information on the impacts of exploration activities in the lease area or the Exploratory Unit area.
7) Identification of the quantity, composition, and method of disposal of solid and liquid wastes and pollutants likely to be generated by offshore, onshore, and transportation operations associated with oil and gas exploration development and transportation.
8) Development of an oil spill contingency plan which includes oil spill trajectory analyses specific to the area of operations, dispersant-use plan including a summary of toxicity data for each dispersant, identification of response equipment and strategies, establishment of procedures for early detection and timely notification of an oil spill including a current list of persons and regulatory agencies to be notified when an oil spill is discovered, and well defined and specific actions to be taken after discovery of an oil spill.
9) Studies should include detailing seasonal surface currents and likely spill trajectories.
10) Mapping of environmentally sensitive areas (e.g., spawning aggregations of snappers and groupers); coral resources and other significant benthic habitats (e.g., tilefish mudflats) along the edge of the continental shelf (including the upper slope); the calico scallop, royal red shrimp, and other productive benthic fishing grounds; other special biological resources; and northern right whale calving grounds and migratory routes, and subsequent deletion from inclusion in the respective lease block(s).
11) Planning for oil and gas product transport should be done to determine methods of transport, pipeline corridors, and onshore facilities. Siting and design of these facilities as well as onshore receiving, holding, and transport facilities could have impacts on wetlands and endangered species habitats if they are not properly located.
12) Develop understanding of community dynamics, pathways, and flows of energy to ascertain accumulation of toxins and impacts on community by first order toxicity.
13) Determine shelf-edge down-slope dynamics and resource assessments to determine fates of contaminants due to the critical nature of canyons and steep relief to important fisheries (e.g., swordfish, billfish, and tuna).
14) Discussion of the potential adverse impacts upon fisheries resources of the discharges of all drill cuttings that may result from activities in, and all drilling muds that may be approved for use in the lease area or the Exploration Unit area including: physical and chemical effects upon pelagic and benthic species and communities including their spawning behaviors and effects on eggs and larval stages; effects upon sight feeding species of fish; and analysis of methods and assumptions underlying the model used to predict the dispersion and discharged muds and cuttings from exploration activities.
15) Discussion of secondary impacts affecting fishery resources associated with on-shore oil and gas related development such as storage and processing facilities, dredging and dredged material disposal, roads and rail lines, fuel and electrical transmission line routes, waste disposal, and others.

The following section addresses the recommendations, concerns and issues expressed by the South Atlantic Council (Source: Memorandum to Regional Director, U.S. Fish and Wildlife Service, Atlanta, Georgia from Regional Director, Gulf of Mexico OCS Region dated October 27, 1995):

"The MMS, North Carolina, and Mobil entered into an innovative Memorandum of Understanding on July 12, 1990, in which the MMS agreed to prepare an Environmental Report (ER) on proposed drilling offshore North Carolina. The scope of the ER prepared by the MMS was more comprehensive than and EIS would be. The normal scoping process used in

preparation of a NEPA-type document would not only "identify significant environmental issues deserving of study" but also "deemphasize insignificant issues, narrowing the scope" (40 CFR 1500.4) by scoping out issues not ripe for decisions.

Of particular interest to North Carolina are not the transient effects of exploration, but rather the downstream and potentially broader, long-term effects of production and development. The potential effects associated with production and development would normally be "scoped out" of the (EIS-type) document and would be the subject of extensive NEPA analysis only after the exploration phase proves successful, and the submittal of a full-scale production and development program has been received for review and analysis. The ER addressed three alternatives: the proposed Mobil plan to drill a single exploratory well, the no-action alternative; and the alternative that the MMS approve the Mobil plan with specific restrictions (monitoring programs and restrictions on discharges). The ER also analyzes possible future activities, such as development and production, and the long-term environmental and socioeconomic effects associated with such activities. The MMS assured North Carolina that all of the State's comments and concerns would be addressed in the Final ER (MMS, 1990).

The MMS also funded a Literature Synthesis study (USDOI MMS, 1993a) and a Physical Oceanography study (USDOI MMS, 1994), both recommended by the Physical Oceanography Panel and the Environmental Sciences Review Panel (ESRP). Mobil also submitted a draft report to the MMS titled, Characterization of Currents at Manteo Block 467 off Cape Hatteras, North Carolina. The MMS also had a Cooperative Agreement with the Virginia Institute of Marine Science to fund a study titled, Seafloor Survey in the Vicinity of the Manteo Prospect Offshore North Carolina (USDOI MMS, 1993b). The MMS had a Cooperative Agreement with East Carolina University to conduct a study titled, Coastal North Carolina Socioeconomic Study (USDOI MMS, 1993c). The above-mentioned studies were responsive to the ESRP's recommendations as well as those of the SAFMC and the State of North Carolina.

Citations:

USDOI, MMS. 1990. Atlantic Outer Continental Shelf, Final Environmental Report on Proposed Exploratory Drilling Offshore North Carolina, Vols. I-III.

USDOI, MMS. 1993a. North Carolina Physical Oceanography Literature Study. Contract No. 14-35- 0001-30594.

USDOI, MMS. 1993b. Benthic Study of the Continental Slope Off Cape Hatteras, North Carolina. Vols. I-III. MMS 93-0014, -0015, -0016.

USDOI, MMS. 1993c. Coastal North Carolina Socioeconomic Study. Vols. I-V. MMS 93-0052, -0053, -0054, -0055, and -0056.

USDOI, MMS. 1994. North Carolina Physical Oceanographic Field Study. MMS 94-0047.

Copies of these studies can be acquired from the address below:

Minerals Management Service, Technical Communication Services
MS 4530
381 Elden Street
Herndon, VA 22070-4897 (703) 787-1080

5.2.2.3 SAFMC Policy Statement on Ocean Dumping

The SAFMC is opposed to ocean dumping of industrial waste, sewage sludge, and other harmful materials. Until ocean dumping of these materials ceases, the SAFMC strongly urges state and Federal agencies to control the amount of industrial waste, sludge, and other harmful materials discharged into rivers and the marine environment , and these agencies should increase their monitoring and research of waste discharge. The SAFMC requests that the Environmental Protection Agency continue to implement and enforce all legislation, rules, and regulations with increased emphasis on the best available technology requirements and pretreatment standards. The SAFMC requests that EPA require each permitted ocean dumping vessel (carrying the above described material) to furnish detailed information concerning each trip to the dump site. This might be monitored with transponders, locked Loran C recorder plots of trips to and from dump sites, phone calls to the EPA when a vessel leaves and returns to port, or other appropriate methods. Also the EPA should take legal action to enforce illegal (short or improper) dumping. The SAFMC requests that fishermen and other members of the public report to the EPA, Coast Guard, and the Councils any vessels dumping other than in approved dump sites. The SAFMC supports the phase out of ocean dumping of the above described materials.

5.3 Activity Based Policies

5.3.1 Docks and Piers

Docks and piers, whether built over or floating on the water, are generally acceptable methods of gaining access to deep water. General considerations include:

a. Docks and piers should be constructed so that waterflow restriction and blockage of sunlight on wetland surfaces is avoided or minimized;

b. Docks and piers should be of adequate length to reach navigational depths without increasing dredging needs; and

c. Docks and piers should be designed and located to avoid areas that support submerged aquatic vegetation, shellfish beds and harvest areas, and other fragile and productive habitats.

5.3.2 Boat Ramps

a. Sites should be located along shorelines that do not support wetland vegetation and where adjacent waters have adequate navigational depths. Acceptable sites may include existing marinas; bridge approaches and causeways (with highway agency approval) where construction access channels exist; and natural and previously created deep water habitats;

b. Preferably, sites should be restricted to areas that do not require dredging to gain access to navigable waters. When located in the vicinity of seagrass beds, adequate navigation channels must exist and should be clearly marked. Boat ramps should not be located in areas where boats will encroach on sensitive and productive habitats;

c. Ramps should not be located in areas where encroachment into wetlands is likely to occur. Sites should contain adequate upland area for parking and for boat launching/removal; and

d. Adequate waste collection facilities should be required at public facilities.

5.3.3 Marinas

All marinas adversely affect aquatic habitats to some degree. These effects can be minimized through proper location and design. In addition to applicable recommendations for boat ramps, bulkheads, and seawalls, the following apply:

a. Marinas should be located in areas where suitable physical conditions exist. For example, potential sites should be located close to navigable waters and in locations where marina-related activities would not affect living marine resource forage, cover, harvest, and/or nursery habitats. Attention also should be given to sediment deposition rates and maintenance dredging requirements;

b. Marinas should be located at least 1,000 feet from shellfish harvest areas, unless state regulations or other considerations specify differently;

c. Dry-stack storage is generally preferable to wet mooring of boats. Open dockage extending into deep water is generally preferable to basin excavation;

d. Mooring basins should be sited in uplands rather than wetlands, and they should be designed so that water quality degradation does not occur. This may require consideration of basin flushing characteristics and incorporation of other design features such as surface and waste water collection and treatment facilities;

e. Turning basins and navigation channels should not create sumps and other slack-water areas that could degrade water quality nor should they be located in areas where circulation is poor. Depths generally should not exceed those of adjoining waters and, where practicable, they should provide for light penetration that is capable of sustaining benthic plant life. Dissolved oxygen levels in channels and basins should be adequate for fish and macroinvertebrate survival;

f. Consideration should be given to aligning access channels and configuring marinas to take full advantage of circulation from prevailing summer winds;

g. Permanent dredged material disposal sites (for use in initial and maintenance dredging) that do not impact wetland areas should be identified and acquired. Suitable disposal alternatives include placing dredged material on uplands, and using dredged material to create/restore wetlands. Projects that lack permanent disposal sites should not be authorized if maintenance dredging is needed and disposal sites/options are not available;

h. Catchment basins for collecting and storing surface runoff should be included as components of the site development plan. Marine railways or upland repair facilities should be equipped with hazardous material containment facilities so that biocides such as marine paints, oil and grease, solvents, and related materials are not directly or indirectly discharged into coastal waters and wetlands;

I. Consideration should be given to parking and other support facilities when it appears that available uplands are not adequate to support such needs and wetland encroachment is anticipated;

j. Marinas with fueling facilities should be designed to include practical measures for reducing oil and gas spillage into the aquatic environment. Spill control plans may be needed when marina facilities are to be located in the vicinity of large, emergent wetland areas, shellfish harvest sites, and other fragile/productive aquatic sites; and

k. Facilities for collection of trash and potential marine debris should be required. Where vessels with marine toilets will be moored, pump out facilities and notices regarding prohibition of sewage and other discharges should be provided.

5.3.4 Bulkheads and Seawalls

Bulkheads are used to protect adjacent shorelines from wave and current action and to enhance water access. Applications for bulkheads usually specify construction in open water followed by placing fill material behind the structure. Bulkheads may adversely impact wetlands through direct filling; through isolation; and through exacerbation of wave scour. Adverse impacts may be reduced by applying the following criteria:

a. Except in cases of recent and rapid erosion, structures should be aligned at or shoreward of the normal high waterline. Structures should be constructed so that reflective wave energy does not scour or otherwise adversely affect adjacent EFH or wetlands. For example, in areas that support fringing wetlands consideration should be given to the use of breakwaters (with regular openings -- see item c., below) or placement of riprap at the toe of the bulkhead or along the waterward edge of eroding wetlands;

b. Where possible, sloping (3:1) riprap, gabions, or vegetation should be used rather than vertical seawalls; and

c. Shoreline protection devices that are located in areas having fringe wetlands should have openings that allow for fish ingress and egress and water circulation. Recommended spacing for structure openings is no less than one linear foot per five linear feet of structure.

5.3.5. Cables, Pipelines, and Transmission Lines

Wetland excavation is sometimes required for installing submerged cables, pipelines, and transmission lines. Construction also may require temporary or permanent wetlands filling. The following recommendations apply:

a. Wetland crossings should be aligned along the least environmentally damaging route. Submerged aquatic vegetation, shellfish beds, coral reefs, etc., must be avoided;

b. Construction of permanent access channels should be avoided since they disrupt natural drainage patterns and destroy wetlands through direct excavation, filling, and bank erosion. The push-ditch method, in which the trench is immediately backfilled, reduces the impact duration;

c. Excavated wetlands should be backfilled with either the same material as removed or a comparable material that is capable of supporting suitable replacement wetlands. Original marsh elevations should be restored and, where practicable, excavated vegetation should be stockpiled, kept viable, and returned to the excavated site. After backfilling, erosion protection measures should be implemented where needed to prevent fish habitat degradation and loss;

d. Excavated materials should be stored on uplands. If storage in wetlands cannot be avoided, discontinuous stock-piles should be used to allow continuation of sheet flow. Where practicable, stockpiled materials should be stored on construction cloth rather than bare marsh surfaces. Topsoil and organic surface material such as root mats should be stockpiled separately and returned to the surface of the restored site;

e. In open-water areas, excavated materials should be deposited in discontinuous piles to preclude significant blockage of water movement. Back-filling is recommended if the excavated material would alter circulation patterns or interfere with fishing;

f. Use of existing rights-of-way should be recommended when use of these areas would lessen overall wetland encroachment and disturbance; and

g. Directional drilling, a technique that allows horizontal, sub-surface, placement of pipelines should be used in situations where normal trenching and backfill would cause unacceptable levels of habitat loss or alteration.

5.3.6. Transportation

State and federal highway agencies generally have the capability of conducting advanced planning with road, causeway, and bridge construction. To the extent possible, NMFS Branch Office and USFWS personnel should participate in early planning efforts. Since highway projects are generally considered to be in the public interest and frequently require wetland crossings, identification of mitigation needs, and development of suitable mitigation plans should be undertaken early in the planning process. The following criteria should be considered:

a. Transportation corridors/facilities should avoid wetlands. Where wetland crossings cannot be avoided, bridging should be used rather than filling, and the least environmentally damaging route, preferably along existing rights-of-way and road beds, should be followed;

b. Disrupting or reducing fish and invertebrate migration routes should be avoided. In areas that support or could support anadromous fish migrations, low, narrow, and/or dark passageways such as culverts and small bridges should not be utilized unless aligned and designed so that elimination of or significant reductions in fish migrations do not occur;

c. Structures should be designed to prevent shoaling and alteration of natural water circulation. Suitable erosion control and vegetation restoration should be implemented at wetland crossings; and

d. Transportation facilities should be designed to accommodate other public utilities, thus avoiding the need for additional wetland alteration. An example would be using bridges to support transmission lines and pipelines.

5.3.7. Navigation Channels and Boat Access Canals

Construction and maintenance of navigation channels and boat access canals may cause severe environmental harm. In addition to direct habitat losses associated with wetland and deepwater excavation and filling, these activities may significantly modify salinity and water

circulation patterns. These changes could greatly modify the distribution and abundance of living marine resources. The following criteria should be followed:

a. Where possible, dredging should be minimized through the use of natural and existing channels;

b. Alignments should avoid sensitive habitats such as shellfish beds, finfish and invertebrate nurseries, submerged aquatic vegetation, and emergent wetlands;

c. Permanent dredged material disposal sites should be located in non-wetland areas. Where long-term maintenance excavation is anticipated, disposal sites should be acquired and maintained for the entire project life;

d. Boat access canals should be designed to ensure adequate flushing and should be uniform in depth or made progressively deeper in the direction of receiving waters. Where possible, they should be aligned to take advantage of wind and lunar tides;

e. Construction techniques that minimize turbidity and dispersal of dredged materials into sensitive wetland areas (e.g., submerged grasses and shellfish beds) are encouraged. Work should be scheduled to avoid periods of high biological activity such as fish and invertebrate migration and spawning;

f. Care should be taken to avoid adverse alteration of tidal circulation patterns, salinity regimes, or other factors that influence local ecological and environmental conditions;

g. Channels and access canals should not be constructed in areas known to have high sediment contaminant levels. If construction must occur in these areas, consideration should be given to the use of silt curtains or other techniques needed to contain suspended contaminants; and

h. Use of sidecast dredges should be confined to areas such as inlets and open water areas where benthic communities are limited and hopper or pipeline dredging is not possible.

5.3.8. Disposal of Dredged Material

Previous and on-going disposal of dredged material is a major contributor to wetland losses in marine and estuarine ecosystems. Recognizing that most navigation channels and access canals require periodic maintenance dredging, it is important that long-range plans be developed and that they provide for mitigation of unavoidable adverse environmental impacts. Implementing the following criteria would minimize adverse impacts associated with most dredged material disposal activities:

a. Dredged material should be viewed as a potentially reusable resource and beneficial uses of these materials should be encouraged. Materials that are suitable for beach replenishment, construction, or other useful purposes should be placed in accessible non-wetland disposal areas;

b. Disposal sites that are located in unprotected coastal areas and adjacent to wetlands are especially susceptible to wind and water erosion. These forces can carry substantial quantities of

dredged material into aquatic habitats. If located near wetlands, disposal site surfaces should be stabilized using vegetation or other means to eliminate possible erosion or encroachment onto adjacent wetlands;

c. Dredged material should be placed in contained upland sites or approved open-water locations where adverse impacts to living marine resources are minimal. When placed in open water, dredged material should be used to enhance marine fishery resources. For example, materials could be used to renourish eroding wetlands or to fill previous borrow sites;

d. The capacity of existing disposal areas should be used to the fullest extent possible. This may necessitate increasing the elevation of embankments to augment the holding capacity of the site and applying techniques that render dredged material suitable for export or for use in reestablishing wetland vegetation;

e. Where possible, outfalls should be positioned so that they discharge into the dredged area or other sites that lack biological/ecological significance. When evaluating potential upland disposal sites, the possibility of saltwater intrusion into ground water and surrounding freshwater habitats should be assessed by the construction/regulatory agencies. Groundwater contamination could necessitate redesign of disposal practices, with subsequent harm to living marine resources; and

f. Toxic and highly organic materials should be disposed in impervious containment basins located on upland. Effluent should be monitored to ensure compliance with state and federal water quality criteria and measures should be incorporated to ensure that surface runoff and leachate from dredged material disposal sites do not enter aquatic ecosystems.

5.3.9. Impoundments and Other Water-Level Controls

A. Wetland impoundments:

Thousands of wetland acres are impounded each year in the Southeast for purposes such as waterfowl habitat creation, aquaculture, agriculture, flood control, hurricane protection, mosquito control, and control of marsh subsidence and erosion. Projects range in size from minor, such as repair of existing embankments, to large-scale marsh management projects where constructing dikes and water- control structures may affect thousands of wetland acres.

Proposals to impound or control marsh water levels should contain water management plans with sufficient detail to determine the accessibility of impounded areas to marine organisms and the degree to which detrital and nutrient export into adjacent estuarine areas will be affected. Significant adverse impacts can be avoided or minimized with implementation of the following recommendations:

a. Proposals to impound or reimpound previously unimpounded wetlands are unacceptable unless designed to accommodate (1) normal access and wetland use by marine fish and invertebrates and (2) continuation of other biological interaction, such as nutrient exchange, and other similarly important physical and chemical interactions; and

b. Proposals to repair or replace water control structures will be assessed on a case-by-case basis.

B. Watershed Impoundments:

Water-development agencies sometimes propose impounding rivers, bayous, and tributaries for such purposes as flood control or creation of industrial, municipal, and agricultural water supplies. Activities of this type are usually unacceptable because associated alteration of the quality, quantity, and timing of freshwater flow into estuaries may cause large-scale adverse modification or elimination of estuarine and marine habitats. Such actions also may block fish and invertebrate migrations.

5.3.10. Drainage Canals and Ditches

Drainage canals may be important components of upland development. Their potential to shunt polluted runoff and fresh water directly into tidal waters requires intermediate connection to retention ponds or wetlands. This allows natural filtration and assimilation of pollutants and dampening of freshwater surges prior to discharge into tidal waters. Recommendations include:

a. Drainage canals that dewater or cause other adverse wetland impacts are unacceptable and should not be built;

b. Drainage canals and ditches from upland development generally should not extend or discharge directly into wetlands;

c. Constructing upland retention ponds and other water management features such as sheet-flow diffusers is encouraged. A retention pond or other pollution elimination/assimilation structure should be required if the effluent contains or may contain materials that are toxic to marsh vegetation or other aquatic life,

d. Excavated materials resulting from canal and retention pond construction should be placed on upland or used to restore wetlands;

e. Proposed drainage plans should be in accordance with comprehensive flood plain management plan(s) and applicants should be encouraged to consult with the EPA and appropriate state agencies to ensure that federal and state water quality standards are met;

f. Locating mosquito control ditches in wetlands should be discouraged. If built, they should be designed so that they do not drain coastal wetlands. They also should be designed to avoid water stagnation, and they should provide access for aquatic organisms that feed on mosquito larvae; and

g. Use of innovative techniques such as rotary ditching, spray dispersal of dredged materials, and open-water marsh management should be encouraged where appropriate.

5.3.11 Oil and Gas Exploration and Production

Exploration and production of oil and gas resources in wetlands usually have adverse impacts since excavation and filling are generally required to accommodate access and production needs. In open marine waters, dredging and filling is usually not necessary, but special stipulations are required to minimize adverse impacts to living marine resources. In

addition to the above recommendations for navigation channels, access canals, and pipeline installation, the following apply:

A. In coastal wetlands:

a. Activities should avoid wetland use to the extent practicable. Alternatively, the use of uplands, existing drilling sites and roads, canals, and naturally deep waters should be encouraged. When wetland use is unavoidable, work in unvegetated and disturbed wetlands is generally preferable to work in high quality and undisturbed wetlands;

b. Temporary roadbeds (preferably plank roads) generally should be used instead of canals for access to well sites;

c. Water crossings should be bridged or culverted to prevent alteration of natural drainage patterns;

d. Culverts or similar structures should be installed and maintained at sufficient intervals (never more than 500-feet apart) to prevent blockage of surface drainage or tidal flow;

e. Petroleum products, drilling muds, drill cuttings, produced water, and other toxic substances should not be placed in wetlands;

f. If the well is productive, the drill pad and levees should be reduced to the minimum size necessary to conduct production activities; and

g. Defunct wells and associated equipment should be removed and the area restored to the extent practicable. Upon abandonment of wells in coastal wetlands, the well site, various pits, levees, roads, and work areas should be restored to preproject conditions by restoring natural elevations and planting indigenous vegetation whenever practicable. Abandoned well access canals should generally be plugged at their origin (mouths) to minimize bank erosion and saltwater intrusion, and spoil banks should be graded back into borrow areas or breached at regular intervals to establish hydrological connections.

B. In open estuarine waters:

Activities in estuarine waters should be conducted as follows:

a. Existing navigable waters already having sufficient width and depth for access to mineral extraction sites should be used to the extent practicable;

b. Petroleum products, drilling muds, drill cuttings, produced water, and other toxic substances should not be placed in wetlands; and

c. Defunct equipment and structures should be removed.

C. On the continental shelf:

Activities should be conducted so that petroleum-based substances such as drilling mud, oil residues, produced waters, or other toxic substances are not released into the water or onto the sea floor. The following measures may be recommended with exploration and production activities located close to hard banks and banks containing reef building coral:

a. Drill cuttings should be shunted through a conduit and discharged near the sea floor, or transported ashore or to less sensitive, NMFS-approved offshore locations. Usually, shunting is effective only when the discharge point is deeper than the site that is to be protected;

b. Drilling and production structures, including pipelines, generally should not be located within one mile of the base of a live reef;

c. All pipelines placed in waters less than 300 feet-deep should be buried to a minimum of three feet beneath the sea floor, where possible. Where this is not possible and in deeper waters where user-conflicts are likely, pipelines should be marked by lighted buoys and/or lighted ranges on platforms to reduce the risk of damage to fishing gear and the pipelines. Pipeline alignments should be located along routes that minimize damage to marine and estuarine habitat. Buried pipelines should be examined periodically for maintenance of adequate earthen cover.

5.3.12. Other Mineral Mining/Extraction

a. Proposals for mining mineral resources (sand, gravel, shell, phosphate, etc.) from or within 1,500 feet of exposed shell reefs and vegetated wetlands, and within 1,500 feet of shorelines are unacceptable except when the material is to be used for oyster cultch; and

b. All other proposals will be considered on a case-by-case basis.

5.3.13. Sewage Treatment and Disposal

Urbanization and high density development of coastal areas has resulted in a substantial increase in proposals to construct sewage treatment and discharge facilities in coastal wetlands. Since many of these facilities utilize gravity flow systems for movement of waste water and materials, wetlands and other low-lying areas are often targeted as sites for placement of pipelines and treatment facilities. Since pipelines and treatment facilities are not water dependent with regard to positioning, it is not essential that they be placed in wetlands or other fragile coastal habitats. The guidance provided in Section 5.3.5., "Cables, Pipelines, and Transmission Lines," also applies to sewage collector and discharge pipelines. The following guidance should be considered with other aspects of sewage treatment and discharge:

a. Discharges should be treated to the maximum extent practicable, including implementation of up-to-date methodologies for reducing discharges of biocides (e.g., chlorine) and other toxic substances;

b. Use of land treatment and upland disposal/storage techniques should be implemented where possible. Use of vegetated wetlands as natural filters and pollutant assimilators for large scale discharges should be limited to those instances where other less damaging alternatives are not available and the overall environmental and ecological suitability of such an action has been demonstrated;

c. Discharging into open ocean waters is generally preferable to discharging into estuarine waters since discharging into estuarine waters is more likely to result in living marine resources contamination and nutrient overloading. Discharge points in coastal waters should be located well away from shellfish beds, seagrass beds, coral reefs, and other similar fragile and productive habitats. Proposals to locate outfalls in coastal waters must be accompanied by hydrographic studies that demonstrate year round dispersal characteristics and provide proof that effluents will not reach or affect fragile and productive habitats.

5.3.14. Steam-Electric Plants and Other Facilities Requiring Water for Cooling or Heating

Facilities that require substantial intake and discharge of water, especially heated and chemically-treated discharge water, are generally not suited for construction and operation in estuarine and near-shore marine environments. Major adverse impacts may be caused by impingement of organisms on intake screens; entrainment of organisms in heat-exchange systems or discharge plumes; and through the discharge of toxic materials in discharge waters. Protected Species Branch personnel should be notified of such projects early in the planning process since the operation of steam-electric plants often affects endangered species such as shortnose sturgeon and West Indian manatee. Projects that must be sited in the coastal zone and utilize estuarine and marine waters are subject to the following recommendations:

a. Facilities that rely on surface waters for cooling should not be located in areas such as estuaries, inlets, or small coastal embayments where fishery organisms are concentrated. Discharge points should be located in areas that have low concentrations of living marine resources, or they should incorporate cooling towers that employ sufficient safeguards to ensure against release of blow-down pollutants into the aquatic environment;

b. Intakes should be designed to minimize impingement. Velocity caps that produce horizontal intake/discharge currents should be employed and intake velocities across the intake screen should not exceed 0.5 feet per second;

c. Discharge temperatures (both heated and cooled effluent) should not exceed the thermal tolerance of the majority of the plant and animal species in the receiving body of water;

d. The use of construction materials that may release toxic substances into receiving waters should be minimized. The use of biocides (e.g., chlorine) to prevent fouling should be avoided where possible and least damaging antifouling alternatives should be implemented; and

e. Intake screen mesh should be sized to avoid entrainment of most larval and post-larval marine fishery organisms. Acceptable mesh size is generally in the range of 0.5 mm and rarely exceeds 1.0 mm in estuarine waters or waters that support anadromous fish eggs and larvae.

5.3.15. Mariculture/Aquaculture

The culture of estuarine and marine species in coastal areas can reduce or degrade habitats used by native stocks of commercially and recreationally important fisheries. The following criteria should be employed to reduce or eliminate adverse impacts:

a. Facilities should be located on upland. Tidally influenced wetlands should not be enclosed or impounded for mariculture purposes. This includes hatchery and grow-out operations;

b. Water intakes should be designed to avoid entrainment and impingement of native fauna;

c. Water discharge should be treated to avoid contamination of the receiving water, and should be located only in areas having good mixing characteristics;

d. Where cage mariculture operations are undertaken, water depths and circulation patterns should be investigated and should be adequate to preclude the buildup of waste products, excess feed, and chemical agents; and

e. Mariculture sites should be stocked with hatchery-reared organisms only. Non-native species should be certified to be disease free, and project design features that minimize escape or accidental release of cultured species should be required. The rearing of ecologically undesirable species is unacceptable since escape and accidental release of these species is virtually assured.

5.3.16. Mitigation

Sections 5.3.1 - 5.3.15 provide specific guidance for avoiding and reducing adverse impacts to fishery resources and their habitats. Compensatory mitigation is considered in cases where a resource is not unique and irreplaceable and only after a project has been demonstrated to be water-dependent, has no feasible alternative, is clearly in the public interest, and all significant impacts are found to be unavoidable. In all cases, mitigation shall comply with the definition of mitigation that is provided at 40 CFR 1508.20 of the Council on Environmental Quality Recommendations. Those recommendations define mitigation as a sequential process whereby impacts are avoided, minimized, rectified, reduced over time, or are offset through compensation.

Despite increasing use of mitigation to offset wetland and other losses, there are situations (e.g., projects affecting seagrass) where the affected habitats are of such enormous value that the anticipated adverse impacts cannot be offset. In instances involving such unique and irreplaceable resources, mitigation is not acceptable. There is also disagreement over the functional equivalency of created and natural wetlands and it should not be assumed they are equivalent in habitat value.

As a general rule, mitigation that restores previously existing habitats is more desirable and likely to succeed than that which seeks to create new habitat. The numerous impacted wetlands that exist in the Southeast provide substantial opportunity for wetlands restoration. Restoration may be relatively simple, such as restoring tidal flows to an impounded wetland area, or more complex such as restoring dredged cuts and disposal areas. Restoration of destroyed emergent and, to a lesser degree, submerged vegetation is a feasible and recognized option when implemented with the services of experienced restoration personnel.

The creation of new wetland habitat involves conversion of uplands or, in some situations, submerged bottom to vegetated wetlands or another desirable habitat such as oyster reef. Generation of wetland habitat should not involve converting one valuable wetland type to another. For example, building emergent wetlands in shallow water is unacceptable unless it can be demonstrated that the site is insignificant with regard to habitat or water quality function(s) or it previously supported wetland vegetation and restoration is desirable in terms of the ecology of

the overall hydrological unit (e.g., estuary). Regardless of which option is used (restoration or creation), a ratio of at least two acres of mitigation for each acre of habitat destroyed should be recommended.

Four basic considerations involved in the planning for habitat generation are type of habitat to be created, and its location, size, and configuration. Each of these considerations must be applied to the specific ecological setting and in accordance with the following recommendations:

a. Habitat type - As a general rule the created habitat should be vegetatively, functionally, and ecologically comparable to that which is being replaced. For example, a smooth cordgrass marsh should be created if a smooth cordgrass marsh is eliminated. The principal exception would be those cases where a different habitat is shown to be more desirable based on overall ecological considerations.

b. Location - Except in the case of overriding ecological considerations, the new site should be located as near as possible to the site that would be eliminated. In any event, the new site should be in the same estuarine system as the habitat that is being replaced. The replacement wetland should consider physical implications such as shoaling and existing circulation and drainage patterns.

NMFS and USFWS considers the overall ecological and environmental implications of its recommendations, including upland impacts. Mitigation that may alleviate impacts to aquatic environments, but cause significant adverse impacts to important upland habitats should be carefully evaluated.

c Size - The habitat to be restored or created should be at least twice the (areal) size of that which would be destroyed. This requirement is designed to offset differences in productivity and habitat functions that may exist between established project site wetlands and newly developed replacement wetlands. This size difference is also designed to address the possibility that the overall, long-term functional and ecological value of replacement habitats may be less than those of the impacted wetlands at the worksite.

d. Configuration - The configuration of replacement habitats is determined by the ecological setting and physical factors such as existing drainage and circulation patterns. Consideration should be given to maximizing edge habitat and to the needs of desirable biota that may inhabit the site.

Interest in the use of "mitigation banks" or created/restored wetlands that are intended for use in offsetting anticipated future wetland losses is increasing nationwide. Because of the complexity of developing and administering mitigation banks, guidance concerning their creation is beyond the scope of this document. NMFS Southeast Region Habitat Conservation Division Branch Office personnel that are participating in such efforts should consult early with other NMFS office personnel that have undertaken or are involved in such efforts since reliance on existing mitigation banking agreements may be beneficial. Habitat Conservation Division Branch Office personnel also should notify other participating agencies that signatory authority for mitigation bank agreements rests with the Regional Director. In all cases, consideration of

mitigation banks should be guided by the principle that no net-loss of wetlands would be incurred.

5.3.17 Detailed listing of non-fishing activities that may adversely impact habitat, including EFH, of managed species.

A. Physical Alterations

1. Hydrologic modifications
    - (a). Navigation channel construction/expansion
    - (b). Canals and ditches
    - (c). Dams and water control structures
        - (1). Hydropower operations
        - (2). Flood control
        - (3). Water supply
        - (4). Navigation
        - (5). Water diversion
    - (d). Levees, embankments, and impoundments
        - (1). Water management
        - (2). Wildlife Management
        - (3). Aquaculture
    - (e). Utility crossings and right-of-ways
    - (f). Roads, causeways, and bridges
    - (g). Alteration of freshwater inflow
    - (h). Ground water withdrawals
    - (i). Interbasin transfers/surface water withdrawals

2. Dredged material disposal and fills
    - (a). Open water disposal
    - (b). Placement of confined/unconfined material in wetlands
    - (c) Burial of nearshore habitats
3. Excavation
    - (a). Removal/alteration of wetlands and submerged bottoms
4. Minerals exploration and mining
    - (a). Removal/alteration of wetlands and submerged bottoms
5. Placement of structures in the coastal environment
    - (a). Industrial and Commercial
        - (1). Petroleum exploration and production platform operations
        - (2). Port development waterfront facilities
        - (3). Municipal wastewater outfall structures
    - (b). Navigation
        - (1). Breakwaters
        - (2). Jetties
        - (3). Anchorage/mooring areas
    - (c). Recreational/Environmental Structures
        - (1). Artificial reefs
        - (2). Fishing piers
    - (d). Beach Erosion Control Structures

(1). Jetties
(2). Groins
(3). Bulkheads
(4). Special purpose structures

6. Ocean dumping
   (a). Dredged materials
   (b). Hazardous materials
   (c). Municipal solid waste
   (d). Municipal wastewater/sludge
7. Introduction of exotic species
   (a). Pet and agriculture (including mariculture) related industries
   (b). Ship ballast water releases
   (c). Incidential relocation on vessels, machinery, and animals
8. Watershed land use practices
   (a). Agriculture
   (b). Silviculture
9. Erosion/Subsidence
   (a). Channel and shoreline erosion from vessel wakes.
   (b). Shoreline erosion caused by manmade structures
      (1). Jetties
      (2). Groins
      (3). Breakwaters
   (c). Faulting induced by ground water extraction
   (d). Relative sea level rise
   (e). Reduced sediment renourishment
   (f). Barrier islands and shorelines
10. Recreational boating impacts
   (a). Propeller scarring
   (b). Anchor scarring
   (c). Grounding
   (d). Trash
   (e). Oil and gasoline spillage
   (f). Boat wakes
11. Military Facilities
   (a). Degaussing facilities
   (b). Ordnance disposal areas
   (c). Special training areas, bombing ranges

B. Water Quality Issues

1. Non-point-source Pollution (Percent)
   (a). Agriculture
   (b). Urbanization
   (c). Silviculture
2. Point-source Pollution (PS)
   (b). Industrial discharges
   (c). Municipal wastewater discharges
   (d). Urban stormwater discharges
   (e). Vessel wastewater discharges

(f). Thermal effluents from electric power generation facilities

3. Oil spills
   (a). Hydrocarbon pollution
   (b). Toxic substances in cleaning materials
4. Chemical contaminant spills
5. Air emissions
6. Ocean dumping
7. Salinity
8. Turbidity
9. Recreational boating impacts
   (a). Fuel/oil contamination
   (b). Overboard discharges
   (c). Prop and anchor damage to reefs/bottoms

5.4 Interagency and Interstate Policies

5.4.1 Joint Agency Habitat Statement

The SAFMC has endorsed a "Joint Statement to Conserve Marine, Estuarine, and Riverine Habitat" to promote interagency coordination in the preservation, restoration, and enhancement of fishery habitat. This statement as adopted by state, Federal, and regional bodies concerned over fishery habitat, is presented in Appendix VII of The Fishery Management Plan for Shrimp (SAFMC 1993a).

5.4.2 Atlantic States Marine Fisheries Commission Seagrass Policy/ Implementation Plan.

The Atlantic States Marine Fisheries Commission seagrass policy and implementation plan for the seagrass policy is also presented in Appendix I.

5.5 Federal Habitat Protection Laws, Programs, and Policies.

See Appendix J for a listing and brief description of environmental laws directly, or indirectly protecting marine resources and the habitat they depend on.

5.6 State Habitat Protection Programs

5.6.1 North Carolina

The Coastal Area Management Act was passed in 1974 to protect North Carolina's fragile coastal resources through planning and management at the state and local level. The Department of Environment, Health and Natural Resources administers the program. Policy direction is provided by the Coastal Resources Commission, a group of citizens appointed by the Governor. The Division of Coastal Management (DCM), under authority from the Coastal Resources Commission (CRC), is responsible for implementing the North Carolina Coastal Management Program for the protection, preservation, orderly development and management of the state's twenty coastal counties. DCM is part of the Department of Environment, Health and Natural Resources. Present activities of DCM include: Permitting and enforcing regulations in Areas of Environmental Concern; Reviewing consistency of government and larger private activities in the coastal zone for compliance with the Coastal Area Management Act; Planning for the Ocean Resources in North Carolina's jurisdictional waters; Providing for effective disposal of boat sewage; Identifying high priority watersheds; Developing strategies for

managing secondary and cumulative impacts; Transferring technology and information to local governments; Identifying wetlands in the coastal area; Assessing the relative significance of wetlands on the landscape; and Identifying and prioritizing wetland restoration sites.

5.6.2 South Carolina

The Office of Ocean and Coastal Management implements the Coastal Management Act. The Office has authority to formulate and implement a comprehensive coastal management program and direct control through a permit program that oversees activities in critical areas that include coastal waters, tidelands, beaches, and primary ocean-front sand dunes. Indirect management authority of coastal resources is granted to the Office in counties containing one or more of the critical areas. In issuing permits, the Coastal Management Act requires that the Office consider the effects of proposed alterations on the production of fish, shrimp, oysters, crab, or any marine life, wildlife, or other natural resources.

5.6.3 Georgia

On April 22, 1997, Governor Miller signed the Georgia Coastal Management Act into law which established the Department of Natural Resources Coastal Resource Division as the authority to create the program, receive and dispense funds, and to coordinate with federal and state agencies regarding Coastal Management issues. On January 26, 1998 the Georgia Coastal Management Program received official approval. This approval marks the end of a six year combined effort by state and local government in partnership with private citizens to develop an integrated, networked program. The program uses existing State laws to manage Georgia's critical coastal resources. With the approval of the Georgia Coastal Management Program comes over $1 million in federal funds annually. Most of the funds will be allocated to local communities and organizations through the "Coastal Incentive Grant" program. The Coastal Resources Division has completed and submitted the first grant award request and expects to began dispersing the Coastal Incentive Grants in the eleven county service area April 1, 1998. Incentive grants will be presented to local governments and universities to address critical local issues in coastal Georgia such as water management, local government planning and small scale construction projects.

5.6.4 Florida

The Florida Legislature adopted the Florida Coastal Management Act in 1978. This act authorized the development of a coastal management program and its submittal to the appropriate federal agency. In 1981, the Florida Coastal Management Program (FCMP) was approved by the Secretary of the United States Department of Commerce. Florida’s goal in creating the FCMP was not to create a new agency or new statutes concerned with coastal issues, but instead to use existing agencies and laws to address Florida’s coastal needs. Florida’s rules and laws adequately protected the coast, but were not always effectively implemented because of breakdowns in communication between agencies and administrative shortcomings. The FCMP was created to bridge these gaps and to open the lines of communication among the agencies so that their actions could be coordinated.

The FCMP, as it exists today, is a network of ten state agencies and five water management districts using 23 statutes to protect Florida’s coastal interests. The agencies most directly involved in issues that affect Essential Fish Habitat are listed below.

The Department of Community Affairs (DCA) is the lead agency for the FCMP, serving as coordinator of coastal issues and as the liaison between the state agencies and the federal

government. DCA also houses the State Clearinghouse and serves as the state's land planning agency and emergency management agency.

The Department of Environmental Protection(DEP), formed by the merger of the former Department of Environmental Regulation and the former Department of Natural Resources, serves as the state's chief environmental regulatory agency and the manager and steward of many of its natural resources. Among the natural resources over which the DEP has jurisdiction are submerged lands within state estuarine and marine waters. The Department of Health regulates on-site sewage disposal. The Marine Fisheries Commission exercises jurisdiction over saltwater fisheries and marine mammals. The five water management districts, organized along watershed lines, act in partnership with DEP in regulating activities in wetlands and waters of the state and the use of water resources.

5.7 Threatened and Endangered Species

The Sustainable Fisheries Act of 1996 established certain requirements and standards the Councils and the Secretary must meet in managing fisheries under the Magnuson-Stevens Act. Implementing the provisions in the SFA will not have any negative impacts on the listed and protected species under the Endangered Species Act (ESA) and Marine Mammals Protection Act (MMPA) including:

	Whales:	Date Listed
(1)	Northern right whale- *Eubalaena glacialis* (ENDANGERED)	12/2/70
(2)	Humpback whale- *Magaptera novaeangliae* (ENDANGERED)	12/2/70
(3)	Fin whale- *Balaenoptera physalus* (ENDANGERED)	12/2/70
(4)	Sei whale- *Balaenoptera borealis* (ENDANGERED)	12/2/70
(5)	Sperm whale- *Physeter macrocephalus* (ENDANGERED)	12/2/70
(6)	Blue whale- *Balaenoptera musculus* (ENDANGERED)	

	Sea Turtles:	Date Listed
(1)	Kemp's ridley turtle- *Lepidochelys kempii* (ENDANGERED)	12/2/70
(2)	Leatherback turtle- *Dermochelys coriacea* (ENDANGERED)	6/2/70
(3)	Hawksbill turtle- *Eretmochelys imbricata* (ENDANGERED)	6/2/70
(4)	Green turtle- *Chelonia mydas* (THREATENED/ENDANGERED)	7/28/78
(5)	Loggerhead turtle- *Caretta caretta* (THREATENED)	7/28/78

	Other Species Under U.S. Fish and Wildlife Service Jurisdiction:	Date Listed
(1)	West Indian manatee- *Trichechus manatus* (ENDANGERED)	3/67
	(Critical Habitat Designated)	1976
(2)	American crocodile - *Crocodulus acutus* (ENDANGERED)	9/75
	(Critical Habitat Designated)	12/79

Recent research efforts identifying use of *Sargassum* habitat by juvenile sea turtles is summarized in Appendix R.