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4000 Planning

This section will only provide information specific to the COTP Wilmington zone. Refer to Appendix [9750 Field Operations Guide](#) for information on Incident Command System (ICS) positions and [9700 Response Resources](#) for ICS forms.

4100 Planning Section Organization

The Planning Section is responsible for the collection, evaluation, and dissemination of tactical information related to the incident, and for the preparation and documentation of Action Plans. The section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident. Includes the Situation, Resource, Documentation, and Demobilization Units, as well as Technical Specialists. The Planning Section Units are shown in Figure 4-1. Refer to Appendices [9100 Emergency Notification](#), [9200 Personnel and Services Directory](#), [9300 Incident Action Plan Preparation](#), [9400 Area Planning Documentation](#) and [9700 List of Response Resources](#) for information necessary to develop the Incident Action Plan.

4110 Planning Section Chief

Responsible for the collection, evaluation, dissemination and use of information about the development of the incident and status of resources. Information is needed to understand the current situation, predict probable course of incident events and prepare alternative strategies of the incident.

4120 Planning Section Planning Cycle Guide

The "Planning Cane" is a generic Incident Action Plan development process that can be used by the Planning Section to prepare initial and subsequent IAPs. A depiction of the process can be found at [9750 Field Operations Guide](#).

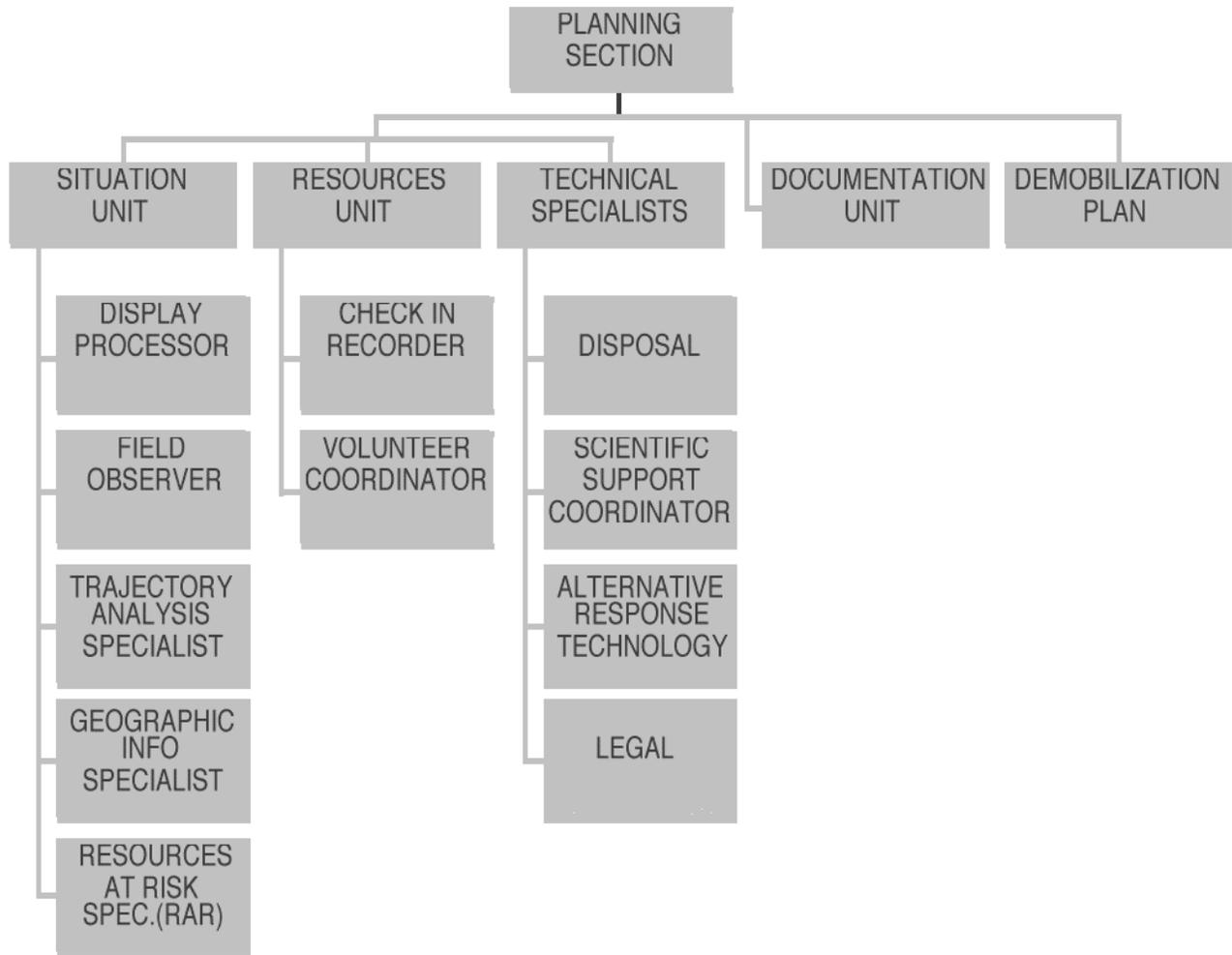


Figure 4-1 - Planning Section Diagram

4200 Situation Unit

Responsible for the collection and evaluation of information about current and possible future status of oil spill and spill response operations. This responsibility includes the compilation of information regarding the type and amount of oil spilled, the amount of oil recovered, the oil's current location and anticipated trajectory, and the impacts on natural resources. Refer to Appendices [9710 Geographic Response Plans](#) and [9720 Sensitive Area Information](#) for information necessary for this Unit.

4210 Chart/Map of Area

A description and map of the area covered by this Plan is located in [1200 Introduction.doc - Geographic Boundaries](#).

4220 Weather/Tides/Currents

Seasonal weather patterns may affect the planning and operational aspects of a response. Detailed weather information and forecasts can be obtained from a variety of sources, including the Intellicast Internet page: <http://www.intellicast.com/LocalWeather/World/UnitedStates/Southeast/NorthCarolina/>

4230 Situation Unit Displays

Various methods may be established for displaying current situation information to the Unified Command. The choice of method will depend on availability of resources, the kind of system used (i.e. OSC2 - see section 4240 below), and physical command post layout. The [9750 FOG 2000](#) contains a suggested Status Board display arrangement.

4240 On Scene Command and Control (OSC2)

Commandant (G-MOR), in conjunction with the Coast Guard Research and Development Center and the U.S. Army Corps of Engineers, has developed an integrated crisis management system designed to provide real time (or near-time) response and planning information to a Unified Command. Although still in a prototype stage of development, the system includes electronic forms using a Microsoft Access relational database, a Geographic Information System (GIS) situation display, and a web-based intranet system for disseminating information. See <http://www.uscg.mil/hq/g-m/mor/Articles/OSC2.htm> for additional information about the OSC2 prototype. The production version will be released as part of the Marine Information for Safety and Law Enforcement.

4250 Required Operational Reports

During a response, certain reports are required to be submitted to Coast Guard management to communicate the situation status, resources needs, and a summary of costs incurred. Responsibility for preparing these forms rests with the Coast Guard response members only.

4300 Resources Unit

Responsible for maintaining the status of all resources (primary and support) at an incident. This is achieved through the development and maintenance of a master list of all resources. Refer to Appendix [9200 Personnel and Services Directory](#) and [9750 FOG 2000.documents](#) for information on identification of supply sources and tracking of incident resources.

4310 Resource Management Procedures

4310.1 Check-In procedures

Check in recorders are responsible for ensuring all personnel are properly accounted for as they report for an incident. This includes personnel who will be working at the command post, field workers, and support personnel.

4320 Volunteer Coordination

The state of North Carolina has developed an effective plan for the receipt and distribution of donated goods and services. The volunteer coordinator will be identified by an affected county Emergency Management Director as described in the NC Emergency OPLAN.

Volunteers as described in NC Department of Labor, Occupational Safety and Health Division, Operational Procedure Notice 60(B) are exempt from NCOSHA regulations. However, training for volunteers who may reasonably be expected to be exposed to the area of a spill, must receive sufficient training to ensure their safety. Ideally volunteer organizations would seek out and receive this training on a continuing basis. But, in the event the use of untrained volunteers is desired, training required to ensure personal safety as determined for the particular risk, must be provided. The Cape Fear United Way is the local organization who would manage volunteers in a response situation.

4400 Documentation Unit

The Documentation Unit is essential to properly collecting, organizing, and maintaining custody of materials during and following the incident response. Guidance for properly performing these tasks may be found in the ICS Documentation Unit Leader Job Aid at the Online Documents page of the National Strike Force Coordination Center at

<http://www.uscg.mil/hg/nsfcc/nsfweb/NSF/onlinedoc.html>.

4410 Services Provided

The Documentation unit is responsible for the maintenance of accurate, up-to-date incident files. This unit shall ensure each section is maintaining and providing appropriate documents.

4420 Administrative File Organization

Establishing and maintaining an administration filing system is dependent on the complexity of the incident as well as the potential for future litigation. Typically, the person assigned to the Documentation Unit Leader position will be experienced in the management of such a task. Assistants should review the Job Aid found at the Web Site provided above.

4500 Demobilization

Responsible for developing the Incident Demobilization Plan, and assisting sections and units in ensuring that an orderly, safe and cost effective demobilization of personnel and equipment is accomplished from the incident. Refer to [9200 Personnel and Services Directory](#) and [9320 Demobilization](#) for information and a plan template.

4600 Environmental Unit

The Environmental Unit provides various technical support functions including, Scientific Support Coordination, sampling, trajectory analysis, weather, resources at risk, shoreline cleanup assessment, historical/ cultural resources, disposal, and weather forecasting. More detailed information for technical specialists are found in the following section. Information on wildlife-specific alternatives can be found in the [Wildlife Contingency Plan 1999.doc](#).

4610 Sensitive Area Information

4610.1 Southeast North Carolina

4610.11 Introduction

Sensitive environments and species are identified in the Area Contingency Plan ([ESI Maps\INDEX.PDF](#)) to provide for coordinated, immediate, and effective protection of fish, wildlife, and their habitats that may be affected by a discharge of oil or hazardous material. Identification of sensitive areas will priority to be placed on protection of these resources prior to a discharge (through pre-spill planning of appropriate countermeasures and pre-staging of response equipment), as well as during a spill event (by focusing attention and response resources on the most critical areas). The overall goals of identifying and prioritizing sensitive areas for spill response are to:

1. minimize injury to natural resources; and,

2. minimize economic damages to natural resource-related municipal and commercial activities.

4610.12 Identification

Sensitive areas and species may include: biological resources, such as vegetation, shellfish, fin fish, turtles, and waterfowl; important habitat for these biological resources, such as rookeries, spawning grounds, and migratory pathways; areas sensitive due to their management missions and objectives, such as National Estuarine Research Reserves, National Wildlife Refuges, and National Parks; and, areas sensitive due to human use and economic value, such as recreational areas, areas of commercial fishing activity, and archeological sites.

Sensitive environments may include a human-use component which can translate to economically important environmental areas, such as national and state seashore recreational areas. These sensitive environments also may be susceptible to the direct impacts of oil or susceptible to the effects of response actions. These areas may be determined to be sensitive because of the economic value of the natural resource (e.g., from both a recreational or commercial perspective), or they may be habitat that is considered "unique" (such as aquaculture areas, fishing grounds, or seasonal habitats). Obviously, there is overlap in these categories. For example, a National Estuarine Research Reserve has fish and wildlife habitat value in addition to its value as a protected foundation for scientific study, and fisheries habitat overlaps with commercial fishing activity. Because natural systems are dynamic, the best available information on the identification and distribution of sensitive resources is obtained through the natural resource managers working with coastal and estuarine organisms and ecosystems. The experience of these professionals, as well as their ability to provide the most up-to-date information, cannot effectively be utilized without the event-specific conditions of a discharge, such as the location, season, weather, tides, and type and amount of material involved.

The US Coast Guard shall alert those on this sensitive areas contact list during an incident via faxing spill notifications, or situation reports. Once alerted, personnel will provide event-specific technical assistance to the Coast Guard through their agency's designated liaison to the Coast Guard On Scene Coordinator or the North Carolina State Emergency Operations Center. This early alert network is intended to augment, not replace, the functions of the State Emergency Operations Center and Emergency Response Team.

Clearly, there is a need for prior identification of sensitive environments to guide those responding to discharges during the initial phases of response (i.e., before the consensus opinions of natural resource managers can be obtained). Although there are several sources of information on the distribution of sensitive coastal and estuarine resources, they all have limitations which restrict their utility as planning tools for the Area Contingency Plan.

Because of these limitations, NOAA's [Environmental Sensitivity Index \(ESI\)](#) maps for North Carolina have been included in this Area Contingency Plan. Marked on the map are habitats of Federally-listed endangered and threatened species (American alligator, bald eagle, peregrine falcon, piping plover, roseate tern, three endangered plants, and sea turtles). Concentration areas for gulls, terns, skimmers, marsh birds, shorebirds, and wading birds are marked as are nesting areas for anhinga, brown pelicans, and colonial water birds. Other habitat designations on the map include oyster cultch sites, sea grass beds, extensive marsh, sheltered tidal flats, reef locations, primary nursery areas, freshwater marsh, and fringing marsh. Important socioeconomic resources noted are marinas, archeological sites, important natural heritage areas, and recreation areas. These maps have the advantage of being widely distributed through their inclusion in the Area Contingency Plan and ease of updating. This will facilitate coordination between those involved in spill response by providing a common planning tool.

4610.13 Prioritization

Because of the diversity and extent of mapped sensitive areas in coastal North Carolina, it is important to reach a consensus, to the extent possible, on the highest resource priorities in order to provide for time-sensitive, coordinated, and effective protection, rescue, and restoration.

Although prioritization is difficult, several criteria that could be used in making this determination include:

1. relative abundance or scarcity of a particular resource, on regional and national scales;
2. relative diversity and abundance of resources at a particular site;
3. fecundity of resources;
4. vulnerability to spills;
5. sensitivity to oil;

6. amenability to restoration or re-mediation;
7. protection by federal and State laws; and,
8. economic importance.

After considering all of these factors, federal and State-listed threatened and endangered species should receive the highest priority for protection. Their status as imperiled, our limited ability, if any, to mitigate injuries to or restore these populations, and their legal protection all support their place in an upper echelon of resource protection priorities. A second component of this category for highest priority protection are "protected areas," including National Wildlife Refuges, National Estuarine Research Reserves, National and State Parks/Seashores, Outstanding Resource Waters and natural heritage areas.

In addition to the enabling legislation which place many of these areas in the public trust, or regulations, which provide enhanced protection, their coastal wildlife habitat value merits the highest priority for protection. In southeastern North Carolina, many of the best remaining unspoiled coastal habitats are located within these preserved lands, including: the barrier island beaches and sound side flats of Cape Lookout National Seashore; the black needle rush marshes of Cedar Island National Wildlife Refuge; and the maritime forests of Theodore Roosevelt Natural Area and Bald Head Island Ecological Preserve. Finally, water bodies that are utilized for drinking water are considered a sensitive environment to be placed within the category for highest protection because human health concerns and the direct and dependent relationship of the water bodies to the overall quality of the ecosystem. A list and description of each resource / area within this highest tier for protection has been assembled below.

A second tier of resources for high priority protection includes the all submerged aquatic vegetation (SAV) beds, sheltered tidal flats, spoil islands, and inter tidal and freshwater marshes, including the creeks and streams that feed them, not falling into the protected areas described in the first tier. All of these serve as highly productive fish and wildlife resting, foraging, breeding, and nursery habitats. As such, they act as concentration areas for a diversity of species, including: colonial water birds on spoil islands; waterfowl in areas of extensive SAV; and juvenile fish and crabs in inter tidal marshes. In addition, all of these habitats are highly sensitive to the effects of oil with little re-mediation and restoration potential. Because all of these habitats occur inside of the barrier islands, inlet protection and countermeasures should be a priority for a marine spill. To the maximum extent possible (with deference to endangered and threatened species and protected lands considerations), deflecting and collecting material in the marine environment or on the high-energy environment of the barrier island beaches should occur. Immediately behind the inlets are productive tidal flats and marshes, SAV beds, and spoil islands, such as those found at Ocracoke, Drum, Beaufort, and Masonboro Inlets. For an in-shore spill, or in the event that oil from a marine spill enters the estuaries, keeping the material in the open water portions of the sounds and away from the shores or shallows is essential.

In an off shore spill, pelagic birds are possibly the most sensitive and vulnerable to the effects of oil. Although some bird concentration areas are known in the marine environment, the only effective way to address protection of avian species is to be aware of their sensitivity and to seek event-specific information on the species present, numbers present, their locations, and appropriate countermeasures as early in the spill incident as possible.

4610.14 Conclusion

The combination of the new sensitive area map and response priority categorization scheme discussed above will provide response teams with an initial guide for immediate response. Use of the resource agency contact list will trigger the input of those able to provide event-specific context on sensitive areas to guide response actions during or soon after the immediate response. The efficacy of protecting fish, wildlife, and their habitats that may be affected by a discharge of oil or hazardous material is dependent upon utilizing all of these resources.

4610.2 Archaeological and Tribal Use Areas

Archaeological sites and tribal use areas are plentiful within the MSO Wilmington AOR. These areas are considered level (A) for protection and must be quickly evaluated for determination of protection strategies. This information is readily available from the State Historic Preservation Office at 919-733-4763 and on their website:

<http://www.hpo.dcr.state.nc.us>

4610.3 Sensitive Habitats & Species

Categories of resource sensitivity to be used by natural resource managers and the response community as criteria for protection and prioritization.

Tier 1

Federal and state-listed Threatened and Endangered Species

Protected Areas:

National Wildlife Refuges and designated Wilderness Areas

National Estuarine Research Reserves

National Parks / Seashores

State Parks, State Gamelands

Outstanding Resource Waters

Drinking Water Supplies

Tier 2

Submerged Aquatic Vegetation (SAV) Beds

Sheltered tidal flats Spoil Islands - see discussion of Colonial water birds under Breeding,

Spawning, and Nursery Areas.

Inter-tidal and freshwater marshes

Breeding, Spawning, and Nursery Areas:

Estuarine Nursery Areas Anadromous Fish Spawning Areas

Shellfish Producing Habitats

Colonial Waterbird Nesting Sites

Pelagic birds concentration areas

Tier 3
Monuments
Archeological Sites
Heritage Program Sites
Historic Sites
Commercial and Industrial Areas
Marinas

4610.31 Tier I

**4610.31.1 Federal and State-listed Threatened and Endangered Species
in North Carolina Coastal Counties.**

A. Federally listed Species - species below are excerpted from:

U.S. Fish and Wildlife Service, (1992). Endangered and Threatened Species of the Southeast United States (The Red Book). Prepared by Ecological Services, Division of Endangered Species, Southeast Region, Government Printing Office, Washington, D.C. 1,314 pp.

1. PIPING PLOVER (*Charadrius melodus*)
2. SEABEACH AMARANTH (*Amaranthus pumilus*)
3. LOGGERHEAD SEA TURTLE
4. BALD EAGLE (*Haliaeetus leucocephalus*)
5. AMERICAN PEREGRINE FALCON (*Falco peregrinus anatum*)
6. AMERICAN ALLIGATOR (*Alligator mississippiensis*)
7. DISMAL SWAMP SOUTHEASTERN SHREW (*Sorex longirostris* fisherie)
8. WACCAMAW SILVERSIDE (*Menidia extensa*)
9. SHORTNOSE STURGEON *Acipenser brevirostrum*)
10. ROUGH LEAVED LOOSESTRIFE (*Lysimachia asperulaefolia*)
11. SENSITIVE JOINT VETCH
12. COOLEY'S MEADOWRUE (*Thalictrum cooleyi*)
13. ROSEATE TERN - (*Sterna dougallii dougallii*)
14. RED COCKADED WOODPECKER
15. LEATHERBACK TURTLE (*Dermochelys coriacea*)
16. WEST-INDIAN MANATEE (*Trichechus manatu*)
17. EASTERN COUGAR (*F.c. couguar*)
18. GREEN SEA TURTLE (*Chelonia mydas* (Linnaeus))

19. KEMP'S (ATLANTIC) RIDLEY (*Lepidochelys kempii* (Garman))
 20. RED WOLF (*Canis rufus*)

LISTED SPECIES LOCATED IN HYDE COUNTY

Species (Animal)	Status	
	Fed	NC
Bald Eagle	LE	E
Brown Pelican		SC
Black Vulture		SC
Cooper's Hawk		SC
Least Bittern		T
Little Blue Heron		SC
Loggerhead Shrike	C2	SC
Peregrine Falcon	LE	E
Red-Cockaded Woodpecker	LE	E
Snowy Egret		SC
Tricolored Heron		SC
Yellow Rail		E
Carolina Salt Marsh Snake		SC
Diamondback Teerapin		SC
American Alligator	T/SA	T
Star-Nosed Mole-Eastern NC Population		SC
Refineque's Big-Eared Bat	C2	SC

CODES:

Federal: LE-Listed Endangered, LT-Listed Threatened, C2-Candidate, category 2, 3C-Former candidate, rejected because more common/adequate protection

State: E-Endangered, T-Threatened, SC-Special Concern, SR-Significantly rare.

LISTED SPECIES LOCATED WITHIN PAMLICO AND BEAUFORT COUNTIES

Species (Animal)	Status	
	Fed	NC
Neuse River Waterdog	3C	SC
Carolina Gopher Frog	C2	SC
Brown Pelican		SC
Snowy Egret		SC
Little Blue Heron		SC
Tricolored Heron		SC
Glossy Ibis		SC
Black Vulture		SC
Cooper's Hawk		SC
Peregrine Falcon	LE	E
Black Rail	C2	SR
Northern Saw-Whet Owl		SC
Red-Cockaded Woodpecker	LE	E
Golden-Crowned Kinglet		SC
Bachman's Sparrow	C2	SC
Henlow's Sparrow	C2	SR
Shortnose Sturgeon		E
Atlantic Sturgeon		SC
Star-Nosed Mole-Eastern NC Population		SC
Refineque's Big-Eared Bat	C2	SC
Loggerhead Turtle	LT	T
Green Turtle	LT	T
Atlantic Ridley (Turtle)	LE	E
Diamondback Terrapin		SC
American Alligator	T/SA	T
Southern Hognose Snake	C2	SR
Carolina Salt Marsh Snake		SC

CODES

Federal: LE-Listed Endangered, LT-Listed Threatened, C2-Candidate, category 2, Former candidate, rejected because more common/adequate protection

State: E-Endangered, T-Threatened, SC-Special Concern, SR-Significantly rare.

LISTED SPECIES LOCATED IN ONSLOW COUNTY

Species (Animal)	Status	
	Fed	NC
Carolina Gopher Frog	C2	SC
Brown Pelican		SC
Snowy Egret		SC
Little Blue Heron		SC
Tricolored Heron		SC
Glossy Ibis		SC
Black Vulture		SC
Cooper's Hawk		SC
Peregrine Falcon	LE	E
Black Rail	C2	SR
Piping Plover	LT	T
Black Skimmer		SC
Northern Saw-Whet Owl		SC
Red-Cockaded Woodpecker	LE	E
Golden-Crowned Kinglet		SC
Loggerhead Shrike	C2	SC
Bachman's Sparrow	C2	SC
Henlow's Sparrow	C2	SR
Shortnose Sturgeon	LE	E
Atlantic Sturgeon		SC
Star-Nosed Mole-Eastern NC Population		SC
Refineque's Big-Eared Bat	C2	SC
Brazilian Free-Tailed Bat		SC
Eastern Woodrat		T
Sperm Whale	LE	
Fin Whale	LE	
Sei Whale	LE	
Humpback Whale	LE	
Black Right Whale	LE	
Loggerhead Turtle	LT	T
Green Turtle	LT	T
Atlantic Ridley (Turtle)	LE	E
Diamondback Terrapin		SC
American Alligator	T/SA	T
Mimic Glass Lizard	C2	SC
Southern Hognose Snake	C2	SR

CODES

Federal: LE-Listed Endangered, LT-Listed Threatened, C2-Candidate, category 2, Former candidate, rejected because more common/adequate protection

State: E-Endangered, T-Threatened, SC-Special Concern, SR-Significantly rare.

4610.4 Protected Areas

4610.41 National Wildlife Refuges and Designated Wilderness Areas

1. **Cedar Island National Wildlife Refuge** - The 14,482 acre-refuge is located in the coastal plain province of North Carolina. It is 80% irregular flooded salt marsh and 20% pocosin woodland habitat. This refuge supports a moderate number of wintering waterfowl and a small breeding population of black ducks and gadwall. Access is via NC 12 from US 70; the Cedar Island to Ocracoke Ferry Terminal is just outside the refuge boundary. Boat ramps are located in Atlantic and just beyond the refuge headquarters (small ramp). The refuge's biotic and abiotic resources are well described in the document Brinson, M.M. 1991. Ecology of a Non-tidal Brackish Marsh in Coastal North Carolina. USFWS, National Wetlands Research Center. Open File Report 91-03. 398 pp.

The refuge is administered by Matamuskeet NWR (919) 926-4021.

2. **Mattamuskeet National Wildlife Refuge** – encompasses 50,181 acres of Hyde County. The refuge largely consists of Lake Mattamuskeet, a shallow (average depth <1 meter) 40,915 acre natural lake that provides valuable habitat for a variety of migratory birds including the Federally-listed endangered bald eagle (*Haliaeetus leucocephalus*) and threatened peregrine falcon (*Falco peregrinus*). The refuge also provides critical resting and overwintering habitat for migrating waterfowl. Peak concentrations of migratory waterfowl occur between November 15 and February 15. Lake Mattamuskeet bisected by NC 94; water exchange between the two sides of the lake is facilitated by five culverts along the length of the highway. US 264 runs on the south side of the refuge. N.C Secondary Roads 13051311 run immediately adjacent to the north shore of the lake. Four major canals connect Lake Mattamuskeet to the surrounding sounds. Small boat ramps are located at the refuge headquarters on N.C. 94 near the south shore of the lake, off NC 1305 (Rose Bay Canal), Fairfield and Lake Landing. Shallow draft boats with outboard motors of 25 horsepower or less is recommended.

Refuge Phone (919) 926-4021.

3. **Swanquarter National Wildlife Refuge** - established in 1932 and consists of 16,411 acres of marsh and woodlands bordering Pamlico Sound in eastern North Carolina. About 12,700 acres of the refuge are low, flat salt marsh islands interspersed with potholes, tidal creeks and drainage ditches.

About 8,800 acres of the refuge are designated as part of the National Wildlife Refuge Wilderness System, and about 27,000 acres of adjacent waters in Pamlico Sound are closed to hunting by Presidential Proclamation. No motorized vehicles are allowed in the National Wilderness Area. The primary management objective of the refuge is to provide habitat for migratory waterfowl. Peak waterfowl numbers normally occur between January 15 and February 15. Estuarine waters near Swanquarters NWR are nursery areas for fin fish and shellfish; some are classified as Outstanding Resource Waters by the State. Access is via NC54 and county road 1124, 1129 south of US264. There are four marinas in the vicinity of Swansquarter / Rose Bay; the Ocracoke to Swansquarter Ferry Terminal is adjacent to the refuge. Caution: certain bays and waters adjacent certain shorelines require shallow draft boats. The refuge is administered by Mattamuskeet.

The refuge is administered by Matamuskeet NWR (919) 926-4021.

4610.41.1 National Estuarine Research Reserves

1. Rachel Carson National Estuarine Research Reserve - The 2,625 acre reserve is located near the mouth of the Newport River in southern Carteret County across Taylor's Creek from Beaufort. The site is accessible by boat only. The state Wildlife Resources Commission operates a boat ramp and parking lot on Taylor's Creek, while the Duke University Marine Laboratory and the National Marine Fisheries Service has boat facilities on nearby Pivers Island. The waters of the Rachel Carson Component are generally less than six feet in depth except for Taylor's Creek, which is maintained at a depth of twelve feet by the U.S. Army Corps of Engineers.

Various plant species are characteristic of dredge spoil, dune, maritime forest, and salt marsh communities. Weedy asters, grasses, vines and shrubs occupy successive communities on the numerous soil areas along Taylor's Creek. Sea oats grow on the few natural dunes (primarily on Bird Shoal). A small area of maritime forest and shrub thicket on the east end of Carrot Island is dominated by live oak, loblolly pine, red cedar, yaupon, and wax myrtle. Inter-tidal salt marsh is colonized by salt marsh cord grass, while supra-tidal or high marsh typically contains a mixture of salt meadow cord grass, sea ox eye, black needle rush, and glasswort. Over 160 species of birds have been observed within the area including the peregrine falcon, a federally listed endangered species. The site is an important feeding area for Wilson's plovers in the summer and piping plovers (threatened federal status) in the winter; both are species of special concern. The shrub thicket of Middle Marshes support egret and heron rookeries.

2. Masonboro Island National Estuarine Research Reserve - located in New Hanover County between the barrier island towns of Wrightsville Beach and Carolina Beach. The city of Wilmington lies approximately five miles northwest. The component encompasses the entire barrier island and a small parcel of mainland totaling 5,097 acres of uplands and estuarine area. The island is accessible only by boat, most visitors land on the extreme north or south ends where there are sandy beaches associated with the back sides of Masonboro and Carolina Beach inlets. Public boat ramps are located in both beach towns. The sound waters of Masonboro Island are less than six feet in depth. Tides are semidiurnal and usually fluctuate approximately 3.8 feet, while spring tides average 4.5 feet. These waters have very high water quality, classified as "SA" by the State, and encompass primary nursery area.

The sound area was designated as Outstanding resource Waters in 1989 by the state Environmental Management Commission. Three animal species recognized as endangered or threatened by the federal government are found in the component area. Peregrine falcons (endangered) have been reported as rare seasonal transients. Piping plovers (threatened) feed on the island during the winter. Loggerhead sea turtles (threatened) nest on the Masonboro Island ocean beach. The primary habitats of the component are isolated eelgrass beds, subtidal softbottoms, intertidal mud and sand flats, regularly flooded (low) salt marshes dominated by saltmarsh cordgrass, irregularly-flooded (high) salt marshes fringing the upper edges to the low marsh, shrub thicket, maritime forest, dredge material or spoil areas bordering the waterway, dune or grasslands consisting of two subcategories:

1. primary dunes dominated by sea oats and
2. secondary dunes covered by salt meadow cord grass and panic grasses, and ocean beach - from the low tide line to the base of the dunes.

3. Zeke's Island National Estuarine Research Reserve - located in Brunswick/New Hanover counties, approximately four miles south of Kure Beach. The component is bounded by the Atlantic Ocean to the east, the Cape Fear River to the west, Bald Head Island State Natural Area to the south, and the Fort Fisher State Recreation area to the north. U.S. Route 421 provides access to the public boat ramp (maintained by state Wildlife Resources Commission). Access within jetty and off-road-vehicle road. In addition, the state maintains a pedestrian beach access facility and vehicular dune crossover areas north of the component near the N.C. Aquarium at Fort Fisher.

The estuary of the Zeke's Island is generally quite shallow deepest tidal creeks measuring less than ten feet in depth. The semi-diurnal tide range is up to six feet.

The vegetation includes pristine examples of barrier island communities found in this region. Dunes dominated by sea oats occur from the upper beach drift line back to the secondary dunes where they mix with other grasses and forbs to form a stable grassland. Shrub thicket and maritime forest consisting of live oak, loblolly pine, wax myrtle.

Extensive salt marshes are found throughout the component with intertidal areas dominated by saltmarsh cordgrass and supratidal flats containing a mixture of saltmeadow cordgrass, salt grass, black needlerush, sea ox-eye, glasswort, and sea lavender. (*Amaranthus pumilus*), a species with threatened status (federal), occurs on upper beaches and foredunes of the component.

4610.41.2 National Parks/ Seashores

1. Cape Lookout National Seashore - consists of three barrier islands with 56 miles of ocean beach stretching from Beaufort Inlet to Ocracoke Inlet. Shackleford Banks is miles long and has an East (SO169)West orientation. Shackleford Banks is bordered by Onslow Bay on the ocean side and Back Sound on the sound side. Core Banks which is 47 miles long has a Southeast to Northeast orientation and is divided by New Drum Inlet. Core Banks is surrounded by the Atlantic Ocean, Core Sound and Pamlico Sound. The islands are only accessible by boat. Private ferries provide vehicle access to Core Banks. Shackleford Banks is proposed wilderness and vehicle use is restricted to administrative purposes. The island of Cape Lookout typically have wide beaches backed by wide areas of dunes covered in grasses. The sound side of the island have a narrow band of myrtle shrub area with large salt marshes along the sound waters. There are very few trees on the island with the largest maritime forest area consisting of 90 acres on Shackleford Banks. Three federally listed species occur on Cape Lookout, these are piping plovers, loggerhead sea turtles and seabeach amaranth. Piping plovers, and other shorebirds nest on the islands from April until August. Loggerhead sea turtles nest and hatch from May until October. Other sea turtles including the green, leatherback and Kemps ridley occur in the waters surrounding Cape Lookout. Seabeach amaranth is a plant that mainly occurs in the same areas as nesting shorebirds. Several marine mammals inhabit the waters around Cape Lookout including bottlenose dolphins, harbor seals and several species of whales including humpback whales, finback whales and right whales all of which are federally listed as endangered.

4610.41.3 State Owned Gamelands.

1. GULL ROCK GAME LAND

Location: Hyde County, North Carolina, 5 miles southeast of Lake Mattamuskeet National Wildlife Refuge.

Access: Vehicular access to the inland portions of the game land via Outfall Canal Road and Hydeland Road. The game land is gated and vehicular traffic prohibited during the period March 1 - September 1. Marsh and Sound access can be obtained at an unimproved private boat ramp located at the southern end of Outfall Canal Road.

Ownership and Administration: North Carolina Wildlife Resources Commission.

Acreage: 19,436

Land Use: State owned game land open to public hunting, fishing and birdwatching. Primary wildlife species located on the area are white-tailed deer, black bear, gray squirrel, cottontail and marsh rabbits, bobwhite quail, woodcock, snipe, doves, waterfowl, river otter, muskrat, nutria, mink, longtail weasel, raccoon, and opossum. Gull Rock is an established black bear sanctuary and no hunting is allowed for this species. Hunting on the game land is controlled by the Wildlife Resources Commission. The game land is open to hunting 6 days a week, with the exception of waterfowl on Loop Road Impoundment. Hunting on this is restricted to Monday, Wednesday, Saturday, opening and closing days of the season and holidays. Hunters can not be on the impoundment before 0400 hours and must cease hunting by 1300 hours.

Land management activities are directed at improving habitat for wildlife. Approximately, 50 acres of wildlife openings are managed to improve conditions for wildlife. Prescribe burning is employed in the winter to improve forage and fruit production of many plants, while reducing wildfire hazards. Reforestation efforts have been directed towards establishing hardwood species which produce hard mast. Waterfowl management is conducted on approximately 300 acres to benefit both wintering, migrating and breeding waterfowl.

Three waterfowl impoundments are located on Gull Rock game land (GR1, GR2, And Loop Road.) Presently Loop Road is the only impoundment activity easily managed. GR1 and GR2 are currently not actively managed; however long-term plans call for the revitalization of GR2. GR1 which lies adjacent to Pamlico Sound, has numerous breaches through the dike. All three impounds provide waterfowl, furbearer and wading bird habitat. Vegetative Communities: Gull Rock contains the highest diversity of wetland habitat types in relatively natural condition remaining in Hyde County. The game land contains excellent examples of brackish marsh, low, high and pond pine-forested pocosin in the interior, and sweetgum-mixed hardwood flats in the northwest Hydeland section.

Special Concerns: Gull Rock Game Land is located within the third priority focuses are identified in the North American Waterfowl Management Plan-Atlantic Coast Joint Venture in North Carolina. The marshes and impoundments contained within this focus area are essential for waterfowl populations. The Pamlico Sound/Gull Rock Game land marsh interface, which totals approximately 25 miles, is an important migration and wintering area in the Atlantic Flyway. The Pamlico Sound, receives high use by ducks, especially diving and sea ducks. It is estimated that nearly half of the dabbling and diving ducks in the Atlantic Flyway migrate through Pamlico Sound Marshes and Impoundments Waterfowl Focus Area during most years with 10% wintering in this area. Of the ducks wintering in North Carolina from 1961-1990, nearly 11% of all dabblers and 40% of all divers and sea ducks wintered in the Pamlico Sound. At times, most of the State's and Flyway's canvasback, redheads, scaups, ruddy ducks, scotes, and mergansers are found in this focus area.

In addition to federally-listed species, the State has 11 animal species listed within the region (See Fig 3).

Critical areas to protect in case of an oil spill:

1. Gull Rock Marshes
2. GR1 and GR2
3. Outfall Canal
4. Phillips Canal
5. Pump Canal to Loop Road Impoundment
6. Loop Road Impoundment

2. GOOSE CREEK GAME LAND

Location: Centrally Located around Lowland, North Carolina (See Fig 7).

Access: Vehicular access to the inland portions of the game land (SC) via NC 33, 304, Tetterton, Indian Island and Canady Roads. The game land is gated and vehicular traffic prohibited during the period March 1 - September 1. Boat access is required to see much of the game land. A Wildlife Resources Commission maintained boat ramp is located on NC 33 and can be used to access waterfowl impoundments and marshes located on the western side of Goose Creek Island. Pamlico Point waterfowl Impoundment can best be accessed from a private boat ramp located at the northern end of Oyster Creek Road.

Ownership and Administration: North Carolina Wildlife Resources Commission.

Acreage: 7,599

Land Use: State owned game land open to public hunting, fishing and birdwatching. Primary wildlife species located on the area are white-tailed deer, black bear, gray squirrel, cottontail and marsh rabbits, bobwhite quail, woodcock, snipe, doves, waterfowl, river otter, muskrat, nutria, mink, longtail weasel, raccoon, and opossum. Goose Creek game Land provides some of the State's best public duck hunting opportunities. Hunting on the game land is controlled by the Wildlife Resources Commission. The game land is open to hunting 6 days a week, with the exception of waterfowl on Pamlico point, Campbell Creek, Spring Creek, Smith Creek, Hunting Creek, and Hobucken waterfowl impoundments. Hunting on this area is restricted to Monday, Wednesday, Saturday, opening and closing days of the season and holidays. Hunters can not be on the impoundment before 0400 hours and must cease hunting by 1300 hours. On Pamlico Point, Campbell Creek, and Spring Creek, after November 1, on "high pressure days" (opening, closing days of the season, holidays, and Saturdays) a special permit is required to hunt on these areas. Permits are limited in number and issued by computer drawing.

Land arrangement activities are directed at improving habitat for wildlife species. Approximately 6 acres of wildlife opening are managed to improve feeding and cover for wildlife. Prescribe burning is employed during the winter and growing seasons to improve forage, fruit and timber production, while reducing wildfire hazards. Waterfowl management is the primary activity conducted on this game land. Approximately, 1,335 acres of waterfowl impoundments are managed through water level manipulation (SG)tions, and vegetation control techniques to provide optimum habitat conditions for migrating, wintering and breeding waterfowl, furbearers, and wading and shore birds.

Vegetative Communities: Goose Creek contains a high diversity of habitat types. The game land contains excellent examples of brackish marsh, impounded wetlands, longleaf/loblolly pine and red maple/gum forests.

Special Concerns: Goose Creek Game Land is located within the third priority area identified in the North American Waterfowl Management Plan-Atlantic Coast Joint Venture in North Carolina. The marshes and impoundments contained within this focus area are essential for waterfowl populations. Due to Goose Creek's location, a wide array of waterfowl species can be observed using or adjacent to game land impoundments. The Pamlico Sound, receives high use by ducks, especially diving and sea ducks. It is estimated that nearly half of the dabbling and diving ducks in the Atlantic Flyway migrate through the Pamlico Sound Marshes and Impoundments Waterfowl focus Area during most years with 10% wintering in this area. Of the ducks wintering in North Carolina from 1961-1990, nearly 11% of all dabblers and 40% of all divers and sea ducks wintered in the Pamlico Sound. At times, most of the State's and Flyway's canvasback, redheads, scaups, ruddy ducks, scotes, and mergansers are found in this focus area.

In addition to federally-listed species, the State has 17 animal species listed within the region (See Fig 4).

Critical areas to protect in case of an oil spill:

1. Goose Creek Game Land Marshes
2. Pamlico Point, Campbell Creek, Spring Creek, Smith Creek, Hunting Creek, Hobucken Waterfowl Impoundments.

3. WHITE OAK RIVER GAME LAND

Location: Onslow County, North Carolina, 2 miles south of Stella.

Access: Vehicular Access (administrative only) to the inland portions of the game land via private road which crosses the Percy Morton estate. Marsh and impoundment access can be obtained at an unimproved private boat ramp located on Stella Road at the bridge which crosses the White Oak River.

Ownership and Administration: North Carolina Wildlife Resources Commission

Acreage: 100

Land Use: State owned game land open to public hunting, fishing and bird watching. Primary wildlife species located on the area are white-tailed deer, cottontail and marsh rabbits, bobwhite quail, woodcock, snipe, waterfowl, river otter, muskrat, mink, longtail weasel, raccoon, and opossum. White Oak River provides additional public waterfowl hunting opportunities as well as providing critical wintering and migrating habitat for waterfowl and crucial breeding and brood rearing areas for wood ducks. Hunting on the game land is controlled by the Wildlife Resources Commission. The game land is open to hunting 3 days a week. Hunting on this area is restricted to Monday, Wednesday, Saturday, opening and closing days of the season and holidays. Hunters cannot be on the impoundment before 0400 hours and must cease hunting by 1300 hours.

Land management activities are directed at improving habitat for wildlife species. Waterfowl management is the primary activity conducted on this game land.

Approximately, 100 acres of impounded wetlands are managed through water level manipulations, and vegetation control techniques to provide optimum habitat conditions for migrating, wintering and breeding waterfowl, furbearers, and wading and shore birds.

Vegetative Communities: White Oak contains excellent examples of brackish marsh along the river and creek edge.

Special Concerns: White Oak River Game Land lies adjacent to the third priority focus area identified in the North American Waterfowl Management Plan-Atlantic Coast Joint Venture in North Carolina. The marshes and impoundments contained within this focus area are essential for waterfowl populations. Due to White Oaks' location, a wide array of waterfowl species can be observed using or adjacent to game land impoundments. The Pamlico Sound, receives high use by ducks, especially diving and sea ducks. It is estimated that nearly half of the dabbling and diving ducks in the Atlantic Flyway migrate through the Pamlico Sound Marshes and Impoundments Waterfowl focus Area during most years with 10% wintering in this area. Of the ducks wintering in North Carolina from 1961-1990, nearly 11% of all dabblers and 40% of all divers and sea ducks wintered in the Pamlico Sound. At times, most of the State's and Flyway's canvasback, redheads, scaups, ruddy ducks, scotes, and mergansers are found in this focus area.

In addition to federally-listed species, the State has 19 animal species listed within the region.

Critical areas to protect in case of an oil spill:

1. White Oak river Marsh
2. Webb Creek and a unnamed creek which is south and east of the impoundment
3. White Oak River Impoundment

4610.41.4 Outstanding Resource Waters (ORWs) -

Certain waters of the State have been classified as ORW upon finding that such waters are of exceptional state or national recreational or ecological significance and that the waters have exceptional water quality while meeting the following conditions: 1) there are no significant impacts from pollution with the water quality rated as excellent based on physical, chemical, or biological information; and, 2) the characteristics which make these waters unique and special may not be protected by the assigned narrative and numerical water quality standards. In order to be classified ORW, a waterbody must exhibit one or more of the following values or uses to demonstrate it is of exceptional state or national recreational or ecological significance: 1) outstanding fish (or commercially important aquatic species) habitat and fisheries; 2) unusually high level of water based recreation or the potential for such; 3) the waters have already received some special designation, such as a North Carolina or National Wild and Scenic River or National Wildlife Refuge; 4) the waters represent an important component of a state or national park or forest; or, 5) the waters are of special ecological or scientific significance such as habitat for rare or endangered species or areas for research and education. In the southern coastal zone, the following waters are ORW:

1. Roosevelt Natural Area including all fresh and saline waters within the property boundaries of the natural area.
2. Northeast Swanquarter Bay Area including all waters northeast of a line from a point at Lat. 35 (SO178) 23' 51" and Long. 076 (SO178) 21' 02" thence southeast along the Swanquarter National Wildlife Refuge hunting closure boundary (as defined by the 1935 Presidential Proclamation) to Drum Point.
3. The Neuse-Southeast Pamlico Sound Area (Southeast Pamlico Sound Section of the Southeast Pamlico, Core and Back Sound Area) including all waters within an area defined by a line extending from the southern shore Ocracoke Inlet northwest to the Tar-Pamlico River and Neuse River basin boundary, then southwest to Ship Point.
4. The Core Sound Section of the Southeast Pamlico, Core, and Back Sound Area including all waters of Core Sound and its tributaries, but excluding Nelson Bay, Little Port Branch, and Atlantic Harbor at its mouth, and those tributaries of Jarrett Bay that are closed to shellfishing.
5. The Western Bogue Sound Section of the Western Bogue Sound and Bear Island Area including all waters within an area defined by a line from Bogue Inlet to the mainland at SR 1117 to a line across Bogue Sound from the southwest side of Gales Creek to Rock Point, including Taylor Bay and the Intracoastal Waterway.

6. The Stump Sound Area including all waters of Stump Sound and Alligator Bay from marker number 17 to the western end of Permuda Island, but excluding Rogers Bay and the King Creek Restricted Area and Mill Creek.

7. The Topsail Sound and Middle Sound Area including all estuarine waters from New Topsail Inlet to Mason Inlet, including the Intracoastal Waterway and Howe Creek, but excluding Pages Creek and Futch Creek.

8. The Swanquarter Bay and Juniper Bay Area including all waters within a line beginning at Juniper Bay Point and running south and then west below Great Island, then northwest to Shell Point and including Shell Bay, Swanquarter and Juniper bays and their tributaries, but excluding all waters northeast of a line from a point at Lat. 35 (SO178) 23' 51" and Long. 76 (SO178) 21' 02" thence southeast along the Swanquarter National Wildlife Refuge hunting closure boundary (as defined by the 1935 Presidential Proclamation) to Drum Point and also excluding the Blowout Canal, Hydeland Canal, Juniper Canal, and Quarter Canal.

9. The Back Sound Section of the Southeast Pamlico, Core and Back Sound Area including that area of Back Sound extending from Core Sound west along Shackleford banks, then north to the western most point of Middle Marshes and along the northwest shore of Middle Marshes (to include all of Middle Marshes), then west to Rush Point on Harker's Island, and along the southern shore of Harker's Island back to Core Sound.

10. The Bear Island Section of Western Bogue Sound and Bear Island Area including all waters within an area defined by a line from the western most point on Bear Island to the northeast mouth of Goose Creek on the mainland, east to the southwest mouth of Queen Creek, then south to green marker No. 49, then northeast to the northern most point on Huggins Island, then southeast along the shoreline of Huggins Island to the southeastern most point on Huggins Island, then south to the northeastern most point on Dudley Island, then southwest along the shoreline of Dudley Island to the eastern tip of Bear Island.

11. The Masonboro Sound Area including all waters between the Barrier Islands and the mainland from Carolina Beach Inlet to Masonboro Inlet.

4610.41.5 Drinking Water Supplies

There are currently no municipal raw water intakes along the southeastern coast of North Carolina. The City of Wilmington and Brunswick County draw water from the Cape Fear river at Lock 1 in Bladen County.

4610.42 Tier II

4610.42.1 Submerged Aquatic Vegetation (SAV) Beds

Beds of submerged aquatic vegetation are those habitats in public trust and estuarine waters vegetated with one or more species of submerged vegetation such as eelgrass (*Zostera marina*), shoalgrass (*Halodule wrightii*) and widgeongrass (*Ruppia maritima*). These vegetation beds occur in both subtidal and intertidal zones and may occur in isolated patches or cover extensive areas. In either case, the bed is defined by the presence of above-ground leaves or the below-ground rhizomes and propagules together with the sediment on which the plants grow.

4610.42.2 Sheltered tidal flats

4610.42.3 Spoil Islands - see discussion of Colonial Waterbirds under Breeding, Spawning, and Nursery Areas.

4610.42.4 Intertidal and Freshwater marshes

4610.42.5 Breeding, Spawning, and Nursery Area

Estuarine Nursery Areas Estuarine nursery areas are defined as those areas in which for reasons such as food, cover, bottom type, salinity, temperature and other factors, young finfish and crustaceans spend the major portion of their initial growing season. These areas divided into primary and secondary nursery areas.

Primary nursery areas are those areas in the estuarine system where initial post-larval development takes place. These areas usually located in the uppermost sections of a system where populations are uniformly very early juveniles.

Secondary nursery areas are those areas in the estuarine system where later juvenile development takes place. Populations are usually composed of developing sub-adults of similar size which have migrated from an upstream primary nursery area to the secondary nursery area located in the middle portion of the estuarine system.

These areas are utilized by 90% of the economically important recreational and commercial seafood species for a portion or all of their life cycles. Some of the species which use these areas include spot, croaker, flounder, shrimp and blue crabs.

These areas are distributed throughout southern North Carolina and have been mapped by the Division of Marine Fisheries. They are also noted on the Environmental Sensitivity Index Atlas of North Carolina.

Anadromous Fish Spawning Areas Anadromous fish spawning areas are defined as those areas where evidence of spawning of anadromous fish has been documented by direct observation of spawning, capture of running ripe females, or capture of eggs or early larvae. Anadromous fish nursery areas are defined as those areas in the riverine and estuarine systems utilized by post-larval and later juvenile anadromous fish as determined by sampling.

These areas are critical to the anadromous fish populations found in North Carolina. Species which use these areas include Atlantic Sturgeon, shornose sturgeon, river herring, American shad, hickory shad and striped bass.

Anadromous fish spawning and nursery areas in Southern North Carolina are concentrated in the upper portions of the Tar-Pamlico, Neuse and Cape Fear River systems. Smaller populations are also found in the New and White Oak Rivers. These areas are noted on the Environmental Sensitivity Index Atlas of North Carolina .

Shellfish Producing Habitats. Shellfish producing habitats are those areas in which economically important shellfish, such as clams, oysters, scallops, mussels, and whelks, whether historically or currently, reproduce and survive because of such favorable conditions as bottom type, salinity, currents, cover and cultch. Included are those shellfish producing areas closed to shellfish harvest due to pollution.

These areas are distributed throughout Southern North Carolina and are concentrated in the sounds and lower portions of the river basins. These areas are noted on the Environmental Sensitivity Index Atlas of Carolina.

Colonial Water bird Nesting Sites - The following narrative is adapted from:

1. Parnell J. Ford M.A.
2. Shields1990.
3. Management of North Carolina's Colonial Waterbirds. UNC
4. Sea Grant Publications UNC-SG-90-3.
5. Species of colonial water birds that breed in coastal North Carolina

Anhinga	Double-crested Cormorant	Brown Pelican
Great Blue Heron	Great Egret	Snowy Egret
Little Blue Heron	Tricolored Heron	Cattle Egret
Green-backed Heron	Black-crowned Night Heron	Yellow-crowned Night-Heron
White Ibis	Glossy Ibis	Laughing Gull
Herring Gull	Great Black-backed Gull	Gull -billed Tern
Caspian Tern	Royal Tern	Sandwich Tern
Command Tern	Forster's Tern	Least Tern
Black Skimmer		

Twenty- five species of colonial waterbirds nest in the coastal zone of North Carolina. The gulls, terns, Black Skimmer and Brown pelican nest on the ground, while the wading birds, Anhinga and Double-created Cormorant typically nest above the ground in trees or shrubs. Twenty of these species nest primarily in estuaries or along the barrier islands. Anhingas and Double-crested Cormorants nest in coastal swamps, and the Yellow-Crowned Night Heron and Green-backed Heron nest primarily in the swamps, but a few individuals are sometimes present in estuarine colonies. Great egrets regularly nest in both swamp and estuarine colonies.

Disturbances of colonies by humans can have devastating effects. When adult birds are disturbed by the presence of humans, they leave their nests unattended, and embryos and young nestlings may die of chilling or overheating. Larger chicks may wander from their nests and become lost or tangled in vegetation, or they may even be killed by other colony members whose territories they have entered. In addition; predators such as crows and gulls often take advantage of human-induced disturbances to rob unattended nest. Colony sites subjected to frequent or intense human disturbance are likely to be abandoned. Because nests are often densely packed together, even a single visit by a predator or human can have a significant, detrimental impact on the reproductive output of the colony. Several species of colonial waterbirds nest in large numbers at only a few sites along our coast. Predation or disturbance at just one of these sites could adversely affect the regional population of a species. Predation, or at lest reduction, of disturbance is there for a critical component of nay management effort. Although many of these birds do not nest on beach fronts, most forage regularly along beaches or adjacent waters.

The text of Management of North Carolina's Colonial Waterbird can be consulted for a listing of the colonial waterbird nesting areas. The document provides maps delineating the colony locations and gives latitude / longitude coordinates. Some of the sites are included as Natural Heritage Elements in the NC Natural Heritage Programs database. For the most current information on colony location and seasonal activity, contact either Mr. Tom Henson of the NC Wildlife Resources Commission (919) 946-1969 or Mr. Walker Golder of the National Audubon Society's North Carolina Coastal Islands Sanctuary (910) 256-1779.

4610.42.6 Pelagic Bird Concentration Areas-

The following is excerpted from: Lee, D.S. and M.C. Socci. 1989. Potential Effects of Oil Spills on Seabirds and Selected Other Oceanic Vertebrates Off the North Carolina Coast. North Carolina Biological Survey. 1989-

North Carolina has the largest documented marine bird and mammal fauna of any geographic unit in the North Atlantic. In part, the documented diversity is a result of intensive field research. Studies by the North Carolina State Museum staff have provided some of the most extensive long-term surveys available for any oceanic area. However, it is primarily the location of the state in relation to tropical and subtropical areas, migration of species. For example, the winter in or migrate through North Carolina waters. The summer avifauna consists mainly of foraging tropical and subtropical birds or vagrants of species that normally migrate in the eastern Atlantic. Many of these birds, and others discussed in this report, appear to reach either the northern or southern limits of their known or expected ranges in North Carolina waters. Even though at the limits of their range, these species may be present in significant numbers.

Most of North Carolina's marine avifauna have relatively protracted periods of occurrence off the state's shore. There are several factors that account for this, the more obvious of which include (1) local currents and upwellings that provide important foraging areas for both low-and high-latitude species, (2) extended migratory periods for particular species because of the staggered schedules of various age groups, and (3) a typically long adolescence in some species during which subadults may linger in local waters for extended periods before returning to nesting areas. Therefore, an oil spill in any season could affect a large number of birds. Several endangered species occur off the North Carolina coast. In addition, many species in the area represent populations of special concern, i.e., they are species whose global populations could be damaged by an oil spill.

Oil on the ocean surface would present different problems in different zones. In areas adjacent to the coast (<10 fathoms), the greatest danger would be to species that live on the coastal fringe and in shallow water. Here, loons gannets, Piping Plovers, and nesting seabirds would be particularly threatened (see also the narrative on Colonial Waterbird Nesting Sites above).

The zone from 10 to 40 fathoms is broad and relatively devoid of seabirds and marine mammals. The only critical species found here regularly are marine turtles and Common loons. The latter are present only from late October to early May. Oil spills and cleanups in the zone would have the fewest harmful effects on oceanic life.

The shelf-edge zone (40-100 fathoms) supports the largest numbers of species. Typical inhabitants include Northern Fulmars, Cory's Shearwaters, Greater Shearwaters, Manx Shearwaters, Audubon's Shearwaters, Wilson's Storm-Petrels, phalaropes, jaegers, Black-legged Kittiwakes, Bridled Terns, Spotted Dolphins, and Bottlenosed Dolphins. Because the edge of the Gulf Stream typically flows over this zone, large numbers of marine mammals animals are likely to come into contact with spilled oil here.

The pelagic zone (100 fathoms and beyond) is dominated by the Gulf Stream. Most of the birds and mammals listed in the shelf-edge zone also occur in the deep zone. Species that are common here include Black-capped Petrels, Band-rumped Storm-Petrels, Sooty Tern, Short-finned Pilot Whales, and Sperm Whales. Oil spills here in the shelf-edge zone would present the greatest danger to most of the species of primary concern.

4610.43 Endangered and Vulnerable Pelagic Bird Species

4610.43.1 Endangered

The following species are considered Endangered or threatened by the U.S. Fish and Wildlife Service or known to be Endangered on a global basis, occur in the base area. All could be severely affected by oil spills off the North Carolina coast.

Black-capped Petrel	Bermuda Petrel	Peregrine Falcon	Roseate Tern
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Highly Vulnerable - The six species listed below are considered to be highly vulnerable to local oil pollution. Through none is considered Endangered or Threatened, all are represented by populations that are either small and genetically isolated (most recognized as indigenous subspecies), or abundant with much of the global population seasonally concentrated off the North Carolina coast:

Greater Shearwater	Sooty-Shearwater	Audubon's Shearwater
Band-rumped Storm-Petrel	Masked Booby	Bridled Tern

4610.43.2 Vulnerable

The following four species could experience considerable population decline resulting from local oil spills, since a large percentage of their total populations seasonally occurs off North Carolina. In case of the two tropic birds, the small numbers that have been documented from local waters may, in fact, represents significant portion of small and declining populations. Nevertheless, it does not seem likely that oil spills in coastal North Carolina waters could reduce populations of these species past the point of recovery:

Common Loon	White-tailed Tropicbird
Red-billed Tropicbird	Northern Gannet

4610.43.3 General Concern

Of general concern are the locally nesting seabirds. None of these is considered Endangered on a global level, but eight of them are considered of Special Concern or Vulnerable by the state of North Carolina; Brown Pelican, Gull-billed Tern, Royal Tern, Common Tern, Forester's Tern, Least Tern, and Black Skimmer. The extent of oil induced mortality on these nesting populations would depend on locations and seasons of spills and success of cleanup operations. Species with Numerically High Mortality - The following species are expected to experience numerically high mortality from oil contamination. A spill would have little effect on total global populations and probably would have only short-term effects on local nesting species, unless it is associated with nesting areas or primary foraging areas of nesting birds. Species affected would vary based on seasons and locations of spills, as indicated after each of the birds listed below:

1. Sea ducks (winter, inshore)
2. Cory's Shearwater (summer, offshore)
3. Wilson's Storm-petrel (summer, offshore)
4. Double-crested Cormorant (winter, inshore, particularly at inlets)
5. Brown Pelican (all season, inshore)
6. Red Phalarope (fall through spring, offshore)
7. Red-necked Phalarope (spring and fall, offshore)
8. Herring Gull (winter, all zones)
9. Ring-billed Gull (winter, inshore)
10. Great Black-backed Gull (winter, all zones)
11. Laughing Gull (summer, inshore, other seasons, all zones)

12. Royal Tern (summer; all zones, but mostly inshore).

4610.43.4 NORTH AMERICAN WATERFOWL MANAGEMENT PLAN

**NORTH CAROLINA WATERFOWL FOCUS AREAS
(IN DESCENDING ORDER OF PRIORITY)**

1. Roanoke River (Bertie, Halifax and Martin Counties)
2. Pamlico-Albemarle Peninsula (Beaufort, Dare, Hyde, Tyrrell and Washington Counties)
3. Pamlico Sound Marshes and Impoundments (Beaufort, Carteret, Hyde, and Pamlico Counties)
4. Currituck Sound and North River Marshes (Camden and Currituck Counties)
5. Currituck Outer Banks (Currituck County)
6. Pee Dee River (Anson County)
7. Croatan National Forest (Carteret, Craven and Jones Counties)

WATERFOWL USING GAME LANDS

Species	Special Status	Species	Special Status
Ring - necked duck	High priority	Gadwell	None
Redhead	High priority	American Widgeon	None
Canvas back	High priority	Greater Scaup	None
Atlantic Brant	High priority	Lesser Scaup	None
Wood Duck	High priority	Old Squawer	None
Northern Pintail	Priority	Surf Scoter	None
Blue-winged Teal	Priority	White-winged Scoter	None
Black Duck	Priority	Black Scoter	None
Mallard	Priority	Common Goldeneye	None
Tundra Swan	None	Bufflehead	None
Snow Goose	None	Hooded Merganser	None
Canada Goose	None	Red-breasted Merganser	None
Green-winged Teal	None	Ruddy Duck	None
Northern Shovler	None		

NONGAME (MIGRATORY BIRDS)

Species	Special Status		Species	Special Status
Northern Harrier	Mgmt. Concern		Common Loon	Mgmt Concern
Least Bittern	Mgmt. Concern		Common Bittern	Mgmt Concern
White-faced Ibis	Mgmt. Concern		Black Rail	Mgmt Concern
Gull-billed Tern	Mgmt. Concern		Seaside Sparrow	Mgmt Concern
Lesser Golden Plover	Spec. Attention		Black-necked Stilt	Spec. Attention
Common Snipe	Spec. Attention		Marbled Godwit	Spec. Attention
White-eyed Vireo	Spec. Attention		Louisiana Waterthrush	Spec. Attention
Swamp Sparrow	Spec. Attention		Blue Grosbeak	Spec. Attention
Least Sandpiper	Spec. Attention		Semipalmated Plover	Spec. Attention
Killdeer	Spec. Attention		Willet	Spec. Attention
Long-billed Dowitcher	Spec. Attention		American Avocet	Spec. Attention
Hooded Warbler	Spec. Attention		Yellow-Throated Warbler	Spec. Attention
Common Yellowthroat	Spec. Attention		Belted Kingfisher	Spec. Attention
White-rumped Sandpiper	Spec. Attention		Purple Sandpiper	Spec. Attention
Western Sandpiper	Spec. Attention		Black-bellied Plover	Spec. Attention
Wilson's Plover	Spec. Attention		Ruddy Turnstone	Spec. Attention
Lesser Yellowlegs	Spec. Attention		Greater Yellowlegs	Spec. Attention
Sanderling	Spec. Attention		American Oystercatcher	Spec. Attention
Red Knot	Spec. Attention		Dunlin	Spec. Attention
Marsh Wren	Spec. Attention		Sedge Wren	Spec. Attention
Prothonotary Warbler	Spec. Attention		Kentucky Warbler	Spec. Attention
Swainson's Warbler	Spec. Attention		Song Sparrow	Spec. Attention
Ruby-throated Hummingbird	Spec. Attention			

Information on migrating seasons and nesting habits can be obtained by contacting the Wildlife Management Division of the NC Wildlife Resources Commission at 919-733-7291.

4610.44 Tier III

To be developed

4700 Technical Support

Technical support for a response can be found with certain advisors with special skills needed to support an incident. Technical specialists may be assigned anywhere in the ICS structure but are typically assigned to the Environmental Unit.

4800 Hazardous Substances

Every pollution incident is unique. However, sufficient similarities and recurring elements are found in each incident to justify the development of standard response procedures to HAZSUB incidents. While the organization and planning for HAZMAT response is similar to that for oil, the execution of their respective response plans varies greatly.

Tactics for both HAZMAT and oil spills focus on minimizing risk to the public and response personnel, avoiding escalation of the incident, and stabilizing the situation. However, basic assumptions about oil and chemical spills result in oil clean-up crews and HAZMAT responders implementing very different strategies and tactics. Oil spill response tactics are well established and involve the deployment of many resources in support of a goal of picking up as much product as possible, as soon as possible. HAZMAT release, on the other hand, can create extremely varied dangers for responders and may therefore require additional planning and evaluation.

4810.1 General Response Procedures for HAZSUB Releases

Local emergency responders are generally considered the experts for handling incidents involving hazardous materials. Consequently, they will be relied upon to initiate the tactical responses to spills and releases while being supervised by State and Federal personnel. Depending on the severity of the spill, the Unified Command will be initiated and adjusted to meet the needs of all stakeholders.

The following outline provides a general guide as to how an incident is addressed as it evolves in severity.

Upon being notified of a potential HAZSUB spill release, the closest Fire department will dispatch an engine unit or boat team as the situation requires to investigate.

If the report is confirmed as a true HAZSUB incident, then the NC Hazardous Materials Regional Response Team (RRT) for the affected area will be activated. The NC Hazardous Materials Regional Response program is a system of six teams strategically located in the state to provide hazardous materials response services to the citizens of North Carolina. The RRTs are available to respond whenever an incident exceeds local capabilities with technical support, manpower, specialized equipment and/or supplies. RRTs are located:

- RRT-1 Town of Williamston Fire and Rescue, Martin County
- RRT-2 City of Wilmington Fire Department, New Hanover County
- RRT-3 City of Fayetteville Fire Department, Cumberland County
- [RRT-4 Parkwood Volunteer Fire Department, Durham County](#)

- [RRT-5 City of Greensboro Fire Department, Guilford County](#)
- RRT-6 City of Asheville Fire Department, Buncombe County

The RRT will provide assistance with mitigating the incident to a point where it has stabilized, and the emergency phase has been terminated; at which time the RRT will clear the scene. Cleanup of the material, and restoration of the site is the obligation of the responsible party. The RRT and/or representatives from the N.C. Division of Water Quality or N.C. Division of Waste Management may provide guidance on how to select a clean-up contractor. If a responsible party has either not been identified, or is unwilling to take responsibility for the clean-up, the local emergency management coordinator, in conjunction with Water Quality and Waste Management representatives may authorize clean-up to begin.

Upon receipt of the report, MSO Wilmington will send representatives to monitor response actions at the incident. These representatives will act as liaison between the On-Scene Incident Commander and their respective agencies to ensure that State and Federal interests are properly addressed and to offer any assistance as necessary.

Upon activation of the RRT, the FOSC will formally organize operations under the Incident Command System. The Unified Command will be responsible for directing the overall risk assessment, securing the source, containment and removal, mitigation, resource protection, and disposal. Local control to manage the spill will still rest with the On-Scene Incident Commander.

If additional assistance is required, the FOSC will contact the National Strike Force Coordination Center, the Atlantic Strike Team, EPA Response teams, or appropriate BOA contractors to augment responding resources.

4810.2 General Responsibilities of the Federal On-Scene Coordinator (FOSC)

Under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Coast Guard provides pre-designated Federal on-Scene Coordinators (FOSCs) for response to hazardous substance releases in the coastal zone, Great Lakes waters, and specified inland ports and harbors. The FOSC's jurisdiction and authority within this zone includes releases of hazardous substances, pollutants, or contaminants into all environmental media - air, land, ground water, and surface waters.

The response functions that Coast Guard FOSCs carry out in the event of a HAZMAT release cover several different responsibilities:

1. Conducting local contingency planning for response to hazardous chemical releases

2. Conducting traditional COTP response measures such as restricting access to the affected area and controlling marine traffic; notifying facilities operating vulnerable water intakes in the vicinity of the release; coordinating with state and local emergency forces; and assisting as resources and capabilities permit.
3. Conducting a preliminary assessment of the incident to:
 4. Evaluate the magnitude of the threat to the public health and welfare and the environment, Determine if response action by the spiller and/or the State and local government is adequate, establish jurisdiction for a Federal response, and collect the data necessary to formulate a response plan if a Federal response is warranted.
 5. Contacting the owner and/or operator of the source of the release, if known, to inform them of their potential liability for government removal costs, to explain the Coast Guard's role as FOSC, and to gather information for response and port safety purposes. Administrative orders shall be used when appropriate to direct the responsible party's actions.
 6. Based on the findings of the preliminary assessment, carrying out first aid mitigation actions if the situation warrants immediate action. First aid mitigation actions are those response actions taken by FOSC personnel necessary to address immediate concerns prior to the arrival of cleanup contractors or action by the responsible party.
 7. Monitoring cleanup actions of responsible parties or, in the case of Federal removals, providing on-scene supervision of removal activities, ensuring the employment of a sound removal strategy. The FOSC is responsible for organizing and supervising resources capable of designing and carrying out -a complex removal plan. In certain situations, support from Special Forces (e.g. National Strike Forces, (NSFs), EPA Environmental Response Teams (ERTs), and NOAA Scientific Support Coordinators (SSC)) may be necessary to assist in the development or review of a removal strategy. In either case, the FOSC shall ensure that guidelines regarding worker safety are adhered to by all parties involved in the response.
 8. For Federal removals, arranging for the services of contractors and supervising their actions, and ensuring that all necessary information and response costs are properly documented.

For more Information or contacts within North Carolina, see the [NC Emergency Management HAZMAT website](#).

4810.3 Publications

When responding to a hazardous chemical spill, an early concern is assessing the hazards associated with materials involved in the incident. Many reference sources exist for collecting the necessary data. The listing below is not intended to be comprehensive. It is a possible list of resources which can be consulted to investigate a particular hazardous material. It is also important to remember that these resources are often updated in new editions. Obviously, the most recent addition of each source will be the most beneficial.

The Condensed Chemical Dictionary. Rose, Arthur, & Elizabeth Reinhold Book Corp.

Matheson Gas Data Book Matheson Gas Products, P.O. Box 85 East Rutherford, NJ 07073

Chemical Hazards Response Information System (CHRIS)

Dangerous Properties of Industrial Material. Sax, N. Irving. Reinhold Publishing Corp., New York.

Hazardous Materials Emergency Response Guidebook, U.S. Department of Transportation.

Emergency Responder Training Manual for the Hazardous Materials Technician. Andrews, Lori P., ed. 1992. Van Nostrand Reinhold, New York.

TLV's for Chemical Substances In Workroom Air American Conference of Governmental Industrial Hygienists P.O. Box 1937 Cincinnati, OH 45201

Fire Protection Guide on Hazardous Materials, National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210

Handling Guide for Potentially Hazardous Materials, Richard B. Cross CO, 103 South Howard Street P.O. Box 405 Oxford, IN 47971

NIOSH/OSHA Pocket Guide to Chemical Hazards, NIOSH Publication 78-210. List of Industrial Hygiene Consultants American Industrial Hygiene Association, 475 Wolf Ledges Parkway Akron, OH 44311

GATX Tank Car Manual, General American Transportation Company, 120 South Riverside Plaza, Chicago, IL 60606, 773-581-2340

Fundamentals of Industrial Hygiene, National Safety Council, 444 N. Michigan Ave. Chicago, IL 60611

Hazardous Materials Response Handbook. Henry, M.F., ed., 1989. Quincy, MA: National Fire Protection Association.

4810.4 Industry Assistance

The extent that emergency response assistance may be provided varies with each manufacturer. Assistance ranges from an emergency response team capable of mitigating the effects of a discharged chemical to only providing advice pertinent to the situation and the product involved. Normally, industry emergency response assistance is accessed by contacting CHEMTREC (800-424-9300). Direct industry contact is recommended for contingency planning in order to confirm capability and response times for a given region.

The following is a partial listing of industry firms known to possess some form of chemical expertise.

ALLIED SIGNAL, INC HOECHST CELANESE

Chesterfield Plant Portsmouth Plant

Supt. of Environmental Affairs Portsmouth, VA

Hopewell, VA 757-483-7373

804-541-6124, 757-465-8308

804-541-6000

ALLIED SIGNAL, INC HUNTSMAN CHEMICAL CORP

Hopewell Plant Chesapeake, VA

Hopewell, VA 757-494-2560

804-541-5000, 757-481-7522

AMERICAN CYNAMID MONSANTO

Wayne, NJ St. Louis, MO

201-835-3100 314-694-3100

ATLANTIC RICHFIELD (ARCO)

Newtown Square, PA SHELL OIL

215-353-8300 Woodriver, IL

618-254-7331

CHEMTREC (800-424-9300)

Houston, TX

DOW CHEMICAL CORPORATION

713-473-9461

Midland, MI

STAUFFER CHEMICAL COMPANY

Westport, CT

203-226-6602

E. I. DUPONT DE NEMOURS AND CO. SUN OIL COMPANY (SUN
TRANSPORT)

Wilmington, DE

302-774-7500

Philadelphia, PA

215-353-8300

UNION CARBIDE

Charleston, West Virginia

304-744-3487 (24 Hrs)

4820 Oil Spill Response

4820.1 Scientific Support Coordinator

Provides the FOSC scientific advise in regard to the best course of action during a spill response. See Appendix [9110 Emergency Notification List](#) for contact information.

4820.2 Shoreline Cleanup Assessment

4820.3 Natural Resource Damage Assessment

The goal of OPA 90 is to make the environment and public whole for injuries to natural resources and services resulting from an incident involving a discharge or substantial threat of a discharge of oil. This goal is achieved through the return of the injured natural resources and services to baseline and compensation for interim losses of such natural resources and services from the date of the incident until recovery.

Information on expeditious and cost-effective restoration of natural resources and services injured as a result of an incident through a Natural Resource Damage Assessment (NRDA) can be found at [NPFC Natural Resource Damage Claims Division](#).

4820.4 Decontamination

4820.5 Disposal

Disposal will be performed by the responsible party or contractor in accordance with applicable federal and state requirements. Refer to Appendix [9330 Disposal](#) for a plan template.

4900 Required Correspondence, Permits & Consultation

4910 Administrative Orders

Administrative/Directive Order. An administrative/directive order is a tool used by the FOSC to ensure appropriate actions are being taken by a Responsible Party in a potential threat or actual spill or FWPCA hazardous material release. The Oil Pollution Act of 1990 amended the Federal Water Pollution Control Act and provided more authority to FOSC's to direct the removal actions in response to discharges of oil or FWPCA hazardous substances. Under 33 USC 1321 (c) and (e), an FOSC may now issue orders to responsible parties to ensure effective and immediate removal of a discharge or the mitigation or prevention of a substantial threat of a discharge of oil or FWPCA hazardous substance. An FOSC may also issue administrative orders "that may be necessary to protect public health and welfare".

4920 Notice of Federal Interest

Reference COMDTINST M16000.11, Coast Guard Marine Safety Manual, Volume VI, Chapter 7.B.3.a.

The Notice of Federal Interest (NOFI) is used to designate and notify the owners, operators or persons in charge, in writing that an oil pollution incident occurred or threatens to occur and that specified personnel may be financially responsible for that incident. The responsible party is liable for among other things, removal costs and damages resulting from the incident. The NOFI notifies the responsible party that the failure or refusal to provide all reasonable cooperation and assistance requested by the Federal On-Scene Coordinator (FOSC) will eliminate any defense, or entitlement to limited liability. The NOFI notifies the responsible party that failure to properly carry out the removal of the discharge, or comply with any administrative order of the FOSC may result in civil penalties or up to three times the cost incurred by the Oil Spill Liability Trust Fund. For an example of an NOFI, reference the NPFC User Reference Guide. A copy of an NOFI can also be obtained on the world wide web at:

<http://www.uscg.mil/hq/g-m/nmc/pubs/msm/v6/c7.pdf>.

4930 Notice of Federal Assumption

Reference COMDTINST M16000.11, Coast Guard Marine Safety Manual, Volume VI, Chapter 7.B.3.d.

The Notice of Federal Assumption (NOFA) is used to notify the responsible party of an oil pollution discharge and to advise he/she is financially responsible. The NOFA also advises that their actions to abate the threat or removal of oil from the waters, or adjacent shoreline have been evaluated as being unsatisfactory by the U.S. Coast Guard's Federal On-Scene Coordinator and that the U.S. Coast Guard will conduct oil response/removal activities under federal statutes. For an example of an NOFA, reference the National Pollution Funds Center User Reference Guide. A copy of an NOFA can also be obtained on the world wide web at:

<http://www.uscg.mil/hq/g-m/nmc/pubs/msm/v6/c7.pdf> .

4940 Letter of Designation

Reference COMDTINST M16000.11, Coast Guard Marine Safety Manual, Volume VI, Chapter 7.

Notice of Designation of Source Policy. Designation of a source under section 1014 of OPA 90 is done to fulfill the requirements relating to the dissemination of information about an incident, through advertisements, so that potential claimants will be aware of the opportunity and procedures for submitting claims for uncompensated removal costs or damages. Exact specification and types of advertisement required are provided in the letter issued by the NPFC. OPA provides that designation of source is done where "possible and appropriate." "Technical Operating Procedures for Designation of Source" can be obtained at:

<http://wwwftp.uscg.mil/hq/npfc/source.pdf> .

MSO Wilmington will not issue Notices of Designations. The National Pollution Funds Center (NPFC) will designate the source, notify the reporting party/guarantor, and set the advertising requirements. In the event that it appears there is a reasonable possibility for claims in a given incident, but the source is not known, the OSC immediately notifies the NPFC. The NPFC will then advertise as required under section 1014(c) of OPA.

4950 Fish and Wildlife Permits

4960 ESA Consultations

4970 Disposal

4980 Dredging

41000 Reserved for Area/District

41100