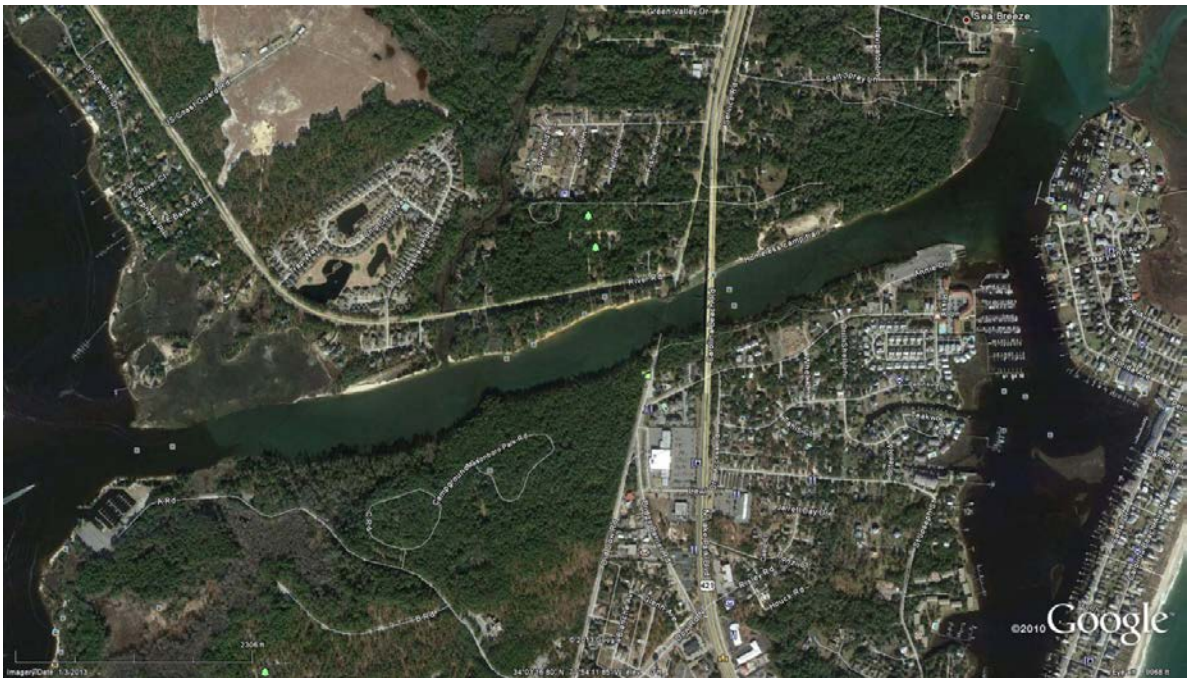
US Army Corps of Engineers ®
Wilmington District

SNOW'S CUT
MASTER PLAN SUPPLEMENT



Atlantic Intracoastal Waterway,
Myrtle Grove Sound to Cape Fear River
New Hanover County, North Carolina

May 2015

SNOW'S CUT MASTER PLAN SUPPLEMENT
NEW HANOVER COUNTY, NORTH CAROLINA

January 2015

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SNOW'S CUT MASTER PLAN SUPPLEMENT
NEW HANOVER COUNTY, NORTH CAROLINA

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1.0 INTRODUCTION

Snow's Cut is located in southeastern North Carolina about 12 miles south of Wilmington (Figure 1). A Master Plan (MP) was completed for Snow's Cut in1994, but this MP needs to be updated to reflect current conditions. A Master Plan Supplement (MPS) is used for this update when there are only minor changes and modifications to the original MP. The MPS has been prepared in accordance with Project Operations, Recreation Operations and Maintenance Guidance and Procedures, EP 1130-2-550, Change 5, 30 January 2013.

The National Environmental Policy Act of 1969, as amended (NEPA), requires consideration of the environmental impacts for major federal actions. An environmental assessment (EA) has been prepared to ensure the environmental consequences of the proposed action are considered (USACE 2015, Appendix A).

1.1 Project Authorization

Snow's Cut was authorized by the Navigation Act of January 1927 (P.L. 69-560; 44 Stat. 1010, Ch. 47 (Jan. 11, 1927)), as part of the Atlantic Intracoastal Waterway (AIWW) from Beaufort, North Carolina, to the Cape Fear River, North Carolina.

1.2 Project Purpose

The purpose of this supplement is to update changes since the last MP, which was completed in 1994. The changes are in land use classifications. This MPS provides for the orderly and coordinated development and management of the land and water areas of the project. It recognizes the dominant nature of the project (Navigation/Operations) and outlines the routine management requirements of the project for operation purposes and for the use and preservation of the project resources.

1.3 History of Project

In the Navigation Act, approved January 1927, provision was made for construction of an intracoastal waterway from Beaufort, North Carolina, to the Cape Fear River in accordance with a project as stated in (P.L. 69-560; 44 Stat. 1010, Ch. 47 (Jan. 11, 1927), subject to the condition that, among other things, local interests furnish, without costs to the United States, a right-of-way, 1,000 feet wide.

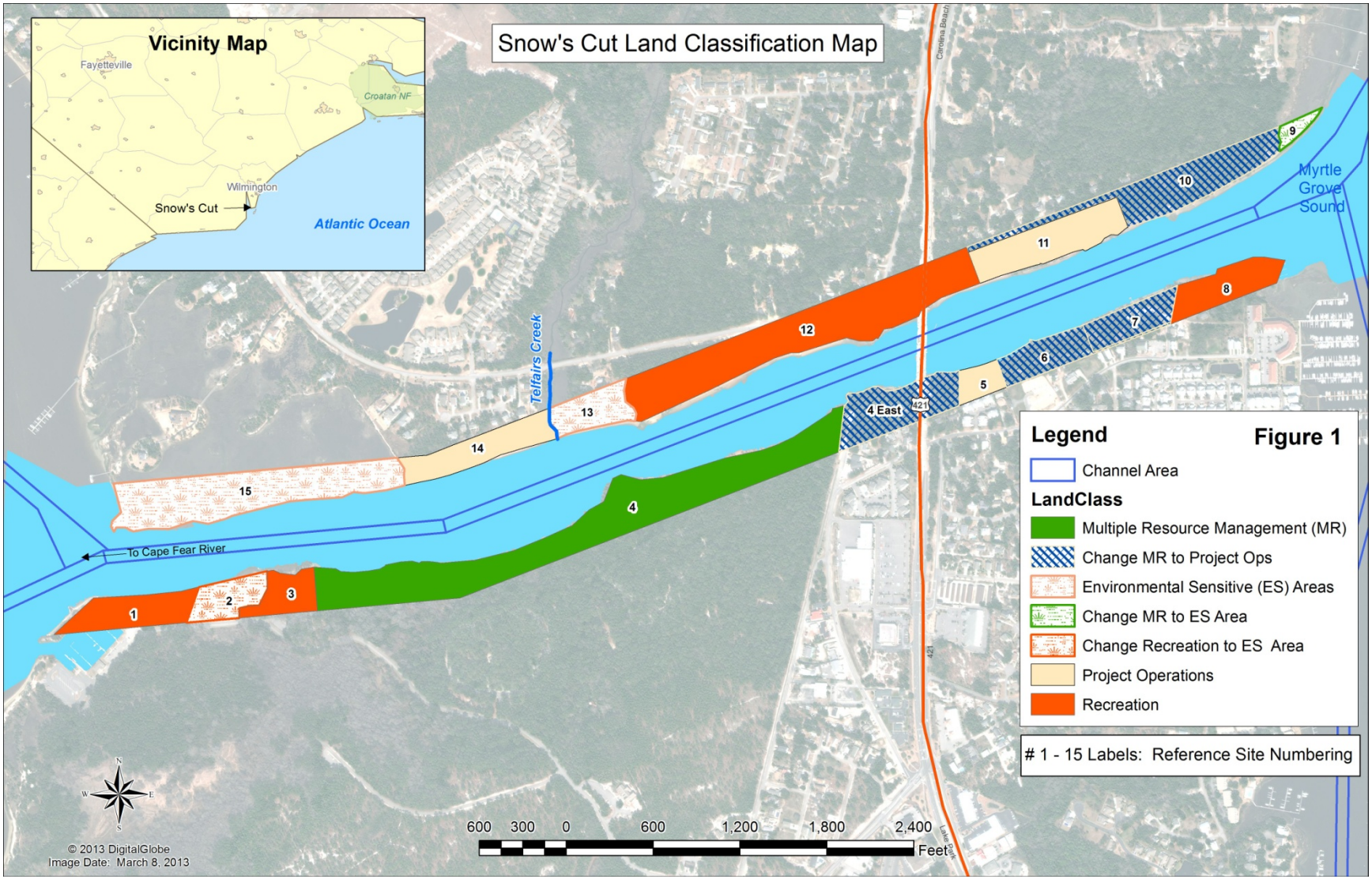


Figure 1. Proposed Snow's Cut Land Classification Map.

The State of North Carolina, by legislative act, assumed the duty of fulfilling this condition and authorized its agencies to acquire and furnish the 1,000-foot-wide right-of-way required to the Federal government. Major William A. Snow was the U.S. Army Corps of Engineers District Engineer from 1926 to 1930, and it was during this period that the land cut portion of the AIWW was dredged. It became commonly known as Snow's Cut at that time.

The initial construction of the project began in 1929. The channel and a swing-truss bridge, necessitated by the cutting of U.S. Highway 421, were completed in 1931. The North Carolina State Highway Commission assumed the responsibility for operation and maintenance of the bridge in perpetuity at that time. In August 1950, the North Carolina State Highway Commission constructed SR 1100, known as River Road, across a portion of Government land. In 1961, the North Carolina State Highway Commission completed a fixed bridge, and the swing-truss bridge was removed. During its history, Snow's Cut has served as a convenient safe inland navigation channel for both commercial and pleasure crafts moving northwardly and southwardly along the coast of North Carolina.

1.4 Project Description

Snow's Cut, a part of the AIWW between Beaufort, North Carolina, and the Cape Fear River, North Carolina (Figure 1), is an authorized navigation channel, 90 feet wide and 12 feet deep, between the Cape Fear River and Myrtle Grove Sound, approximately 9,000 feet in length. The channel centers on a 1,000-foot, fee-owned right-of-way along its entire length. Although the authorized navigation channel is only 90 feet in width, erosion of the adjacent shoreline has increased the waterway to a width in excess of 400 feet. Strips of land lie within the right-of-way along each side of the project. These strips average 300 feet in width and range up to 25 feet above the average high tide elevation. Gentle upland slopes are the norm, except at the banks where frequent steep 10- to 25-foot escarpments have been formed by tides and tidal currents, boat wakes and wave action. These upland strips are generally heavily wooded and dominated by loblolly pines and various oak species, except for the previous used disposal sites which are dominated by shrubs, grasses and barren sand (Figure 1, sites 11 and 14).

An area is leased by New Hanover County (Figure 1 site 12 and Figure 2). Sanitary water and picnic facilities are available to the public at no charge. A boat launching facility exists at the southeast corner of the project and is operated by the North Carolina Wildlife Resources Commission (NCWRC, Figure 1 site 8 and Figure 2). The North Carolina Division of Parks and Recreation leases over half the shoreline on the south side of Snow's Cut (Figure 1 sites 1-4 and Figure 2). Available facilities include camping, picnicking, and a marina complex with boat launching lanes. New Hanover County has subleased a portion of the southern shoreline to Carolina Beach which is used as part of a Carolina Beach Greenway trail (Figure 1 sites 4 east through 7 and Figure 2). The trail in site 5 is near to the steep eroding shoreline. The State of North Carolina has two right-of-way easements for public roads on the Government property. Also, Southern Bell Telephone and Telegraph Company have a 20-foot-wide easement

for a submerged cable across the channel and over Government lands. Finally, the Town of Carolina Beach has an easement on the south side of Snow's Cut just west of the bridge (Figure 2). The area contains the town's water supply well #10 which is an active part of the Carolina Beach water

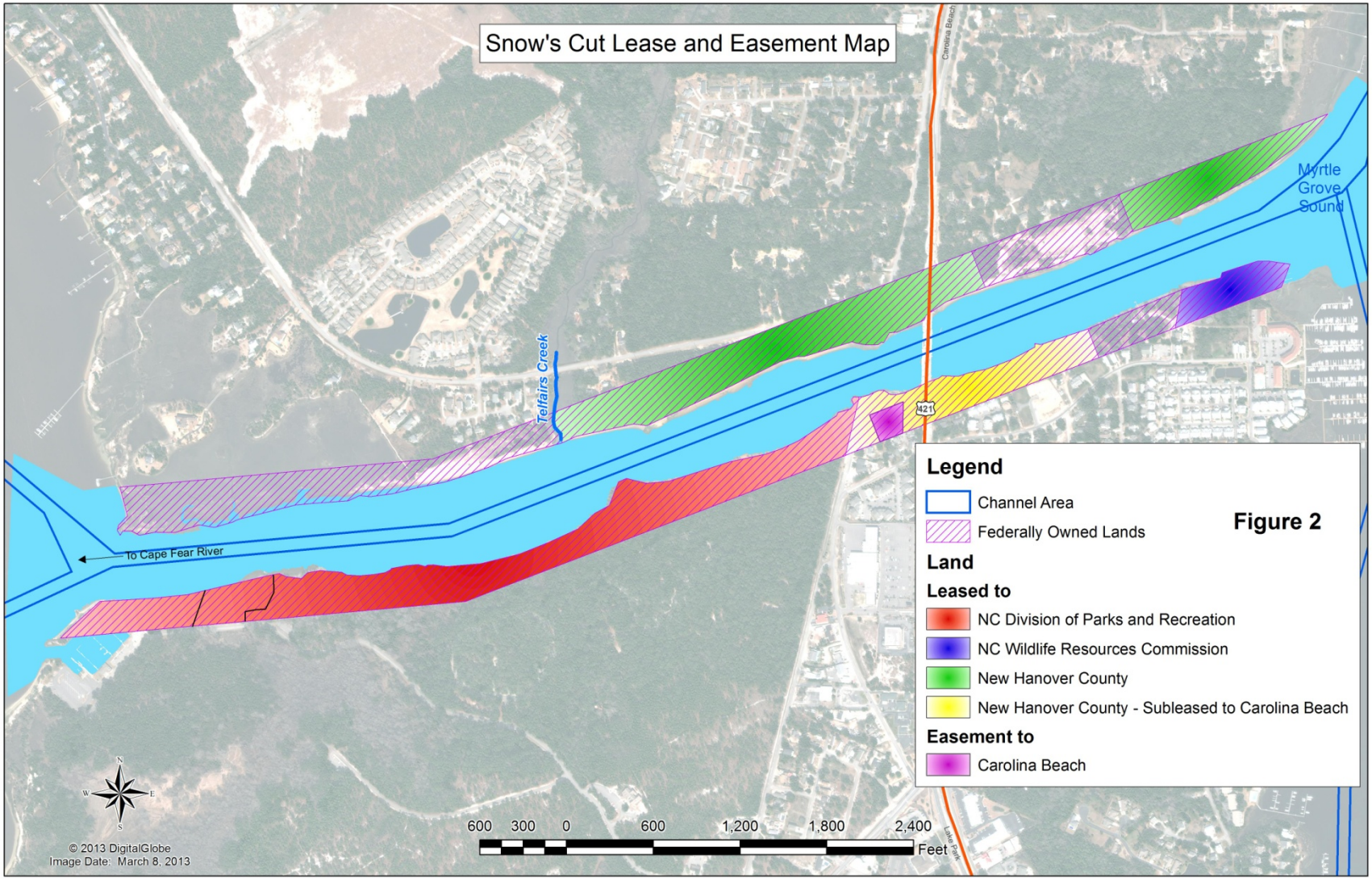


Figure 2. Snow's Cut Lease and Easement Map

distribution system. The 8" diameter well withdraws water from the Castle Hayne aquifer at a pumping rate of about 200 gallons/minute. To preclude potential contamination of this well, no structures, vehicles, or potential hazardous materials (e.g. fuel storage tank) are allowed within 100 feet of the well.

1.5 Master Plan Supplement

This MPS provides for the orderly and coordinated development and management of the land and water areas of the project. It recognizes the dominant nature of the project (Navigation/Operations) and outlines the routine management requirements of the project for operational purposes and for the use and preservation of the project resources.

A MP provides a programmatic approach to the management of all of the government-owned lands included within the Snow's Cut project boundaries. The MP project area includes all of the area within the Snow's Cut fee-owned lands. Since the publication of the 1994 Snow's Cut MP, USACE has updated its policies directing the development and implementation of MPs. Specific MP requirements are contained in *Engineer Pamphlet* (EP) *1130-2-550 Project Operations - Recreation Operations and Maintenance Guidance and Procedures* which was last updated on January 30, 2013. The current guidance includes revised categories of Land Classifications used to define project lands. The current guidance also includes requirements for an interdisciplinary team approach to be used for the development, reevaluation, and supplementation or updating of MPs. Coordination with other agencies and the public is an integral part of the master planning process.

The MP is programmatic and identifies conceptual types and levels of activities, not designs, project sites, or estimated costs. Actions by USACE, North Carolina, and other management partners must be consistent with the MP. Therefore, the MP should be kept current in order to provide effective guidance in decision-making. MPs in need of only minor revisions and modifications may be supplemented. Supplements (MPS) can be prepared as often as necessary to ensure that the MP continues to serve its intended purpose.

An environmental assessment (EA) has been prepared for this MPS (USACE 2014) (Appendix A). The typical focus of NEPA compliance consists of environmental impact assessments for individual projects, rather than for long-range plans. However, application of NEPA to MPS decisions not only meets the Council on Environmental Quality (CEQ) implementing regulations (40 CFR 1500-1508) and USACE regulations for implementing NEPA (ER 200-2-2), but also allows USACE and management partners to begin considering the environmental consequences of their actions long before any physical activity is proposed. Multiple benefits can be derived from such early consideration. Effective and early NEPA integration with the master planning process can increase the usefulness of the plan to the decision maker, if environmental information can be provided to the correct individuals, at the right time, and in the right form. If such utility can be realized, organizational outcomes, such as support for the project mission and NEPA compliance can be improved. Environmental documents

prepared concurrently with the MPS can influence and modify strategic land use decisions, whereas environmental documents prepared after the MPS would have little influence on strategic decisions already made. Consequently, the MPS and associated EA were prepared in accordance with the following guidance:

- Engineer Regulation (ER) 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles and Doctrine, 30 October 2003;
- ER 200-2-2, Environmental Quality – Procedures for Implementing the National Environmental Policy Act, 4 March 1988;
- ER 1105-2-100, Planning Guidance, 22 April 2000, 30 June 2004, 31 January 2007, 30 June 2004, 20 November 2007;

1.6 Prior Documents

Over the past two decades the USACE has published two planning reports related to Snow's Cut. These reports are listed below and are incorporated by reference.

- U.S. Army Corps of Engineers, Wilmington District. January 1994. Snow's Cut, Atlantic Intracoastal Waterway, Myrtle Grove Sound to Cape Fear River North Carolina, Master Plan, Design Memorandum No. 2B. The purpose of this report was to serve as a guide to coordinate use and development of project lands at Snow's Cut in order to insure the maximum sustained benefit to the public may be attained.

- U.S. Army Corps of Engineers, Wilmington District. January 2000. Snow's Cut, Atlantic Intracoastal Waterway, Myrtle Grove Sound to Cape Fear River North Carolina, Section 216-Review of Completed Project, Initial Appraisal Report. The purpose of this report was to present the results of an initial appraisal investigation to determine if a Federal interest existed in possible modifications of the Snow's Cut project. The focuses of the study were improved long-term resource management, and the need for measures to arrest continuing erosion and saltwater intrusion. No action has been taken on these issues since the report.

2.0 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 Hydrology

Snow's Cut connects Masonboro Sound on the east to the Cape Fear River on the west. Snow's Cut is subject to lunar tides that can exceed five feet. Tidal currents in the Cut frequently approach 1.8 knots (http://tidesandcurrents.noaa.gov/currents13/). As indicated below in section 2.2, this tidal fluctuation and strong tidal currents are one of the reasons for the high shoreline erosion.

2.2 Shoreline Erosion

The 90-foot-wide authorized navigation channel has expanded to a width of over 400 feet along much of the length of the Cut. This expansion has occurred due to wind-blown wave action, tidal currents, and boat wakes. Escarpments, 10 to 25 feet high, occur along most of the water frontage of both Carolina Beach State Park and New Hanover County Park. Root systems of large trees are continually being exposed and accelerated bank erosion occurs when these trees fall. Figure 3 illustrates the ongoing erosion problems along the entire length of Snow's Cut since 1953.

2.3 Water Quality and Saltwater Intrusion

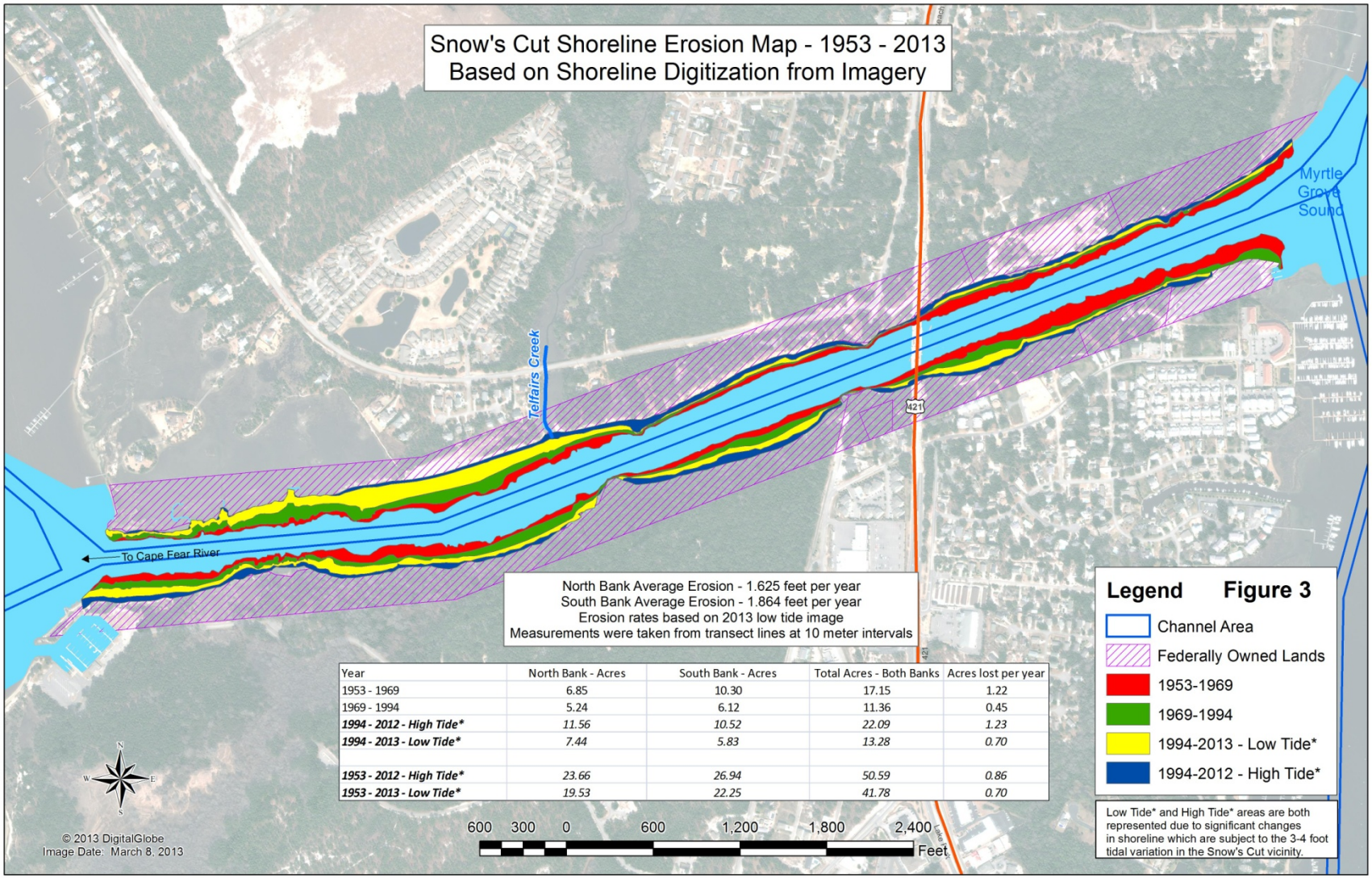
NC Water Quality Classification by river basin can be found at: http://portal.ncdenr.org/web/wq/ps/csu/classifications. According to this website, all of Snow's Cut is classified SC. "SC" waters are all tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife. The waters on either side of Snow's Cut are classified as SA; HWQ except for the Carolina Beach Yacht Basin at the eastern end of Snow's Cut which is classified as SB. SA waters are all tidal salt waters that are used for commercial shellfishing or marketing purposes and are also protected for all Class SC and Class SB uses. All SA waters are also HQW by supplemental classification. HQW waters are a supplemental classification intended to protect waters which are rated excellent based on biological and physical/chemical characteristics through monitoring or special studies, as primary nursery areas (PNA) designated by the North Carolina Division of Marine Fisheries (DMF), Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission. For example, the SA waters at the east end of Snow's Cut are PNA.

SB waters are tidal salt waters protected for all SC uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis. In addition, Telfairs Creek, which enters Snow's Cut from the north (Figures 1, 2 and 3), is classified SC/Sw. Sw is a supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.

The salinity in Snow's Cut frequently approaches sea strength (35 practical salinity units, psu) since Carolina Beach Inlet is only about 1.5 miles from the eastern end of the Cut. The salinity seldom drops below 25 psu because there is minimal input of freshwater and the salinity of the Cape Fear River to the west averages around 25 psu (McAdory 2000). As indicated in USACE 2000, saltwater intrusion into the Cape Fear River from Carolina Beach Inlet via Snow's Cut has led to timber die-off along the edge of the river and increased sedimentation in the river and nearby Military Ocean Terminal Sunny Point (MOTSU). The increased sedimentation is caused by increased flocculation of sediments due to higher salt content in the water.

Table 1: NC DENR Primary Surface Water Classifications for Snow's Cut

HWQ – High Quality Waters	Supplemental classification intended to protect waters which are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission.
SA	Tidal salt waters that are used for commercial shellfishing or marketing purposes and are also protected for all Class SC and Class SB uses. All SA waters are also HQW by supplemental classification.
SB	Tidal salt waters protected for all SC uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.
SC	All tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife.
Sw – Swamp Waters	Supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.



Year	North Bank - Acres	South Bank - Acres	Total Acres - Both Banks	Acres lost per year
1953 - 1969	6.85	10.30	17.15	1.22
1969 - 1994	5.24	6.12	11.36	0.45
1994 - 2012 - High Tide*	*11.56*	*10.52*	*22.09*	*1.23*
1994 - 2013 - Low Tide*	*7.44*	*5.83*	*13.28*	*0.70*
1953 - 2012 - High Tide*	*23.66*	*26.94*	*50.59*	*0.86*
1953 - 2013 - Low Tide*	*19.53*	*22.25*	*41.78*	*0.70*

Figure 3. Snow's Cut Shoreline Erosion Map - 1953 - 2013

According to the NC Division of Water Quality latest ambient monitoring report for the Cape Fear River (NCDWQ 2009), the water quality in the lower Cape Fear River generally meets state standards. However occasionally near the mouth of the Brunswick (Cape Fear River Channel Markers 54, 56, and 61, about 9 miles north of Snow's Cut) dissolved oxygen (DO) values are below 5 mg/l and pH values are below 6.8. In the vicinity of Snow's Cut, there is no indicated DO or pH issues, but Snow's Cut and surrounding areas are closed to the taking of shellfish due to elevated fecal coliform levels (NC Division of Marine Fisheries 2014).

Due to the ongoing erosion indicated in section 2.2, turbidity due to suspended sediments is evident along the Snow's Cut shoreline.

2.4 Topography, Geology and Soils

Snow's Cut is located in the coastal plain of North Carolina, which is confined between the Piedmont Plateau on the west and the Continental Shelf on the east.

The coastal plain area of North Carolina was submerged in early Pleistocene times. With each emergence and subsequent submergence, increasingly larger areas were left above the sea. Several well-defined terraces have been recognized in North Carolina. The seaward part of the coastal plain was covered by a thin mantle of the lowest of these terraces, the Pamlico. This covering, composed almost entirely of sand, clays and some gravel was deposited by waves and currents during the floods attending the last interglacial State (Wisconsin); it never emerged again to a level higher than its present one. Deposits of recent age overlie the Pamlico formation. These are chiefly tidal marsh, beach sand, and dunes. In the marsh area, the soil consists largely of accumulations of peaty matter. The thickness of the deposits varies from 15 feet to 25 feet. Drainage within the area consists of sluggish creeks and drainage canals.

2.5 Resource Analysis

2.5.1 Fish and Wildlife Resources

Common fish species in the vicinity of Snow's Cut include bluefish (*Pomatomus saltatrix*), trout (*Cynoscion regalis and nebulosus*), red drum (*Sciaenops ocellatus*), mullets (*Mugil cephalus or M. curema*), flounder (*Paralichthys dentatus*), croakers (*Micropogonias undulatus*), sheepshead (*Archosargus probatocephalus)* and spots (*Leiostomus xanthurus*).

Sport fishing in the vicinity of Snow's Cut is a popular activity during the spring, summer, and early fall months. Best angling months, however, are September and October.

No primary or secondary nursery areas designated by the NC Division of Marine Fisheries are present in Snow's Cut, but primary nursery areas are present in Masonboro Sound at the east end of the Cut (http://portal.ncdenr.org/web/mf/primary-

nursery-areas). PNA are defined by the State of North Carolina as tidal saltwaters which provide essential habitat for the early development of commercially important fish and shellfish (15 NC Administrative Code 3B 1405).

Numerous species of birds including waterfowl visit the project area. Common birds noted in the area near the water are herring gulls (*Larus smithsonianus*), laughing gulls (*Leucophaeus atricilla*) royal terns (*Thalasseus maximus*), brown pelicans (*Pelecanus occidentalis*) and double-crested cormorants (*Phalacrocorax auritus*). Common woodland birds include the northern cardinal *(Cardinalis cardinalis)*, blue jay *(Cyanocitta cristata)*, wood thrush (*Hylocichla mustelina),* American robin (*Turdus migratorius*), and yellow-rumped warbler (*Setophaga coronata).* Terrestrial mammals common in the area are the eastern grey squirrels (*Sciurus carolinensis*), gray fox (*Urocyon cinereoargenteus*), white-tail deer (*Odocoileus virginianus*), and eastern cottontail (*Sylvilagus floridanus*).

USACE also contacted the NC Natural Heritage Program about potential resources in the Snow's Cut area. Their email response is included in Appendix A. The email listed several rare species that may occur in the area including coral snake (*Micrurus fulvius*), southern hognose snake (*Heterodon simus*), and painted bunting (*Passerina ciris*). If new development is proposed for Snow's Cut, a survey for rare species will be conducted during plan development.

2.5.2 Upland Vegetative Resources

Most of the project lands are dominated by mature loblolly (*Pinus taeda*) and longleaf pines (*Pinus palustris*) with a variety of canopy trees such as blackjack oak (*Q. marilandica*), live oak (*Q. virginiana*), water oak (*Q. nigra),* black gum (*Nyssa sylvatica*) and southern magnolia (*Magnolia grandiflora*). Understory frequently contains turkey oak (*Quercus laevis*), sweetbay (*Magnolia virginiana*), hawthorn (*Crataegys spp.*) common sassafras (*Sassafras albidum*) flowering dogwood (*Cornus florida*) and yaupon (*Ilex vomitoria*).

The above-named vegetation covers the entire upland project except for two disposal areas (Figure 1 sites 11 and 14) The disposal sites are dominated by barren sand and various grasses such as salt meadow hay (*Spartina patens*), and small trees such as loblolly pine, live oak, black cherry (*Prunus serotina*), and persimmon (*Diospyros virginiana*).

2.5.3 Threatened and Endangered Species

An updated list of endangered and threatened (E&T) species for the project areas was obtained from National Marine Fisheries Service (NMFS 2014) and the U.S. Fish and Wildlife Service (USFWS 2014) web pages in September 2014. The actual occurrence of a species in the area depends upon the availability of suitable habitat, the season of the year relative to a species' temperature tolerance, migratory habits, and other factors.

For Snow's Cut, the only species that may occur in the project area are two endangered sturgeon species [shortnose (*Acipenser brevirostrum*) and Atlantic (*Acipenser oxyrinchus oxyrinchus)*], loggerhead seaturtle *(Caretta caretta),* and Florida manatee (*Trichechus manatus*). The U.S. Fish and Wildlife Service, has also recently listed the rufa red knot (*Calidris canutus rufa*) as a threatened species under the Endangered Species Act of 1973, as amended. The red knot does over-winter in North Carolina but is not likely to be present in Snow's Cut due to lack of feeding habitat.

2.5.4 Invasive Species

During a site investigation in April 2014 several species of invasive (non-native) plants were observed growing within the Corps property abutting Snow's Cut. The most common invasive species noted were: Japanese honeysuckle (*Lonicera japonica*), Chinese privet (*Ligustrum sinense*), Bermuda grass (*Cynodon dactylon*), Mimosa Tree (*Albizia julibrissin*), Chinese wisteria (*Wisteria sinensis*) and Common Reed (*Phragmites australis*). Currently, Operations does not manage for the removal of invasive plant species on the property.

2.5.5 Wetlands

The Environmentally Sensitive Areas indicated on Figure 1 are wetlands. The lower portions of the wetlands are marshes dominated by smooth cordgrass (*Spartina alterniflora*), and the higher portions are dominated by shrubs including fetterbush (*Lyonia lucida*), buttonbush (*Cephalanthus occidentalis*), and groundsel-tree (*Baccharis halimifolia*). No other wetlands exist on the project area except for intermittent fringes of smooth cordgrass near the high water line of the Cut.

2.5.6 Cultural Resources

An intensive archaeological reconnaissance of the Snow's Cut right-of-way was conducted in 1981 by Dr. Michael Baker, Archaeological Research Consultants, Incorporated. Dr. Baker reported no sites within a 200- to 250-foot-wide area along the Cut. Dr. Baker recommended no further work unless erosion or changes in land use require expansion of the right-of-way beyond that of 1981.

Because of continued erosion, a second archaeological reconnaissance was conducted by a Corps' archaeologist in 2004. Although no significant sites were reported, the archaeologist identified two locations on either side of Snow's Cut where prehistoric material was eroding from the shoreline. A second surface survey that was performed in 2007 resulted in the discovery of a small amount of prehistoric material in the vicinity of the two locations identified in 2004. As recommended following the 2004 surface survey, the archaeologist again recommended annual surveys of selected portions of the shoreline.

The latest survey was conducted in 2013 when Corps personnel conducted a surface survey of the areas previously identified as producing prehistoric material from eroded shorelines. While no prehistoric or historic material was identified, annual surface surveys of these previously identified shoreline locations will be continued.

2.6 Recreational Facilities and Activities

No Corps of Engineers operated recreational facilities exist at Snow's Cut. However, New Hanover County operates Snow's Cut Park along the northern shore of the Cut pursuant to a lease with the USACE (Figure 1, site 12). The park has 9 picnic tables, 2 shelters, a playground and restroom facilities. From the spring through the fall, the park averages about 100 visitors per day during the week and about 200 visitors per day during the weekends.

The Wildlife Resources Commission Boat Ramp along the southern shore (Figure 1, site 8) has 84 vehicle and trailer parking spaces and 16 single vehicle spaces. Most of the activity occurs from the spring through the fall when the weather is warmer and fishing is the best. Personal communication with NC Wildlife Resources Commission (NCWRC) on October 27, 2014 concluded that the NCWRC is not collecting data on boat ramp usage at the Snow's Cut Boat Ramp. The parking lot is frequently observed full during this period, especially on the weekends. The only use records available are for fishing tournament permits issued, and for Snow's Cut Ramp there have been 3 of these permits issued for 2014.

Carolina Beach State Park is also located along the southern shore and the park averages about 500,000 visitors per year. In 2012, there were 550,890 visitors. Portions of the marina, picnic area and woodlands are leased to the park (Figure 1, sites 1, 3 and 4, respectively). During 2012 the marina had 8,789 boat launches and the picnic area had 25,008 users.

2.7 Real Estate

An area is leased by New Hanover County (Figure 1 site 12 and Figure 2). Sanitary water and picnic facilities are available to the public at no charge. New Hanover County had also leased site 10 for a potential future recreation area, but the County no longer has any plans for that site. A boat launching facility exists at the southeast corner of the project and is operated by the NCWRC, (Figure 1 site 8 and Figure 2). The North Carolina State Parks Department leases over half the southern shoreline (Figure 1 sites 1-4 and Figure 2). Available facilities include camping, picnicking, and a marina complex with boat launching lanes. New Hanover County has subleased a portion of the southern shoreline to Carolina Beach, which is used as part of a Carolina Beach Greenway (Figure 1 sites 4 east through 7 and Figure 2). The State of North Carolina has two right-of-way easements for public roads on the Government property. Also, Southern Bell Telephone and Telegraph Company have a 20-foot-wide easement for a submerged cable across the channel and over Government lands. Finally, the Town of Carolina Beach has an easement on the south side of Snow's Cut just west of the bridge (Figure 2). The area contains the Town's water supply well #10, which is an active part of the Carolina Beach water distribution system. To preclude potential contamination of this well, no structures, vehicles, or potential hazardous materials (e.g. fuel storage tank) are allowed within 100 feet of the well.

The leases that New Hanover County has on sites 4 through 7 and site 10 would be modified if the land classification is changed from Multiple Resources Management to Project Operations; however the easement Carolina Beach has for Pump #4 would not be altered.

2.8 Floodplains

Most of the project lands are within the 100-year floodplain including all of sites 1, 2, 3, 6, 7, 8, 9, 10, 13, 14 and 15. (http://maps.nhcgov.com/Flood/). The only developed areas are the Carolina Beach State Park Marina at the western end of the Cut and the NC Wildlife Resources Commission boat ramp at the east end of the Cut. However no permanent dwellings exist at either site.

2.9 Safety

The steep eroded banks along much of both sides of the Cut pose a safety hazard. Even though signs are posted to discourage the public from accessing those areas, there is clear evidence from foot paths that the public is entering multiple spots for fishing and other activities.

3.0 RESOURCE OBJECTIVES

Resource objectives are clearly written policy statements, specific to a project, that specify attainable management goals for natural and man-made resource development and/or management. They focus on authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and expressed public interests. Specific Objectives were developed for each of the following issues shown below in Table 2.

Table 2. Snow's Cut Objectives

Project Topics	Objectives
Cultural Resources	• Protect known significant cultural resources, and in accordance with the NC Division of Cultural Resources request conduct an annual archaeological reconnaissance of the Snow's Cut shoreline and eroding banks. • Conduct archaeological review and survey as appropriate for land disturbing activities in areas.
Fish and Wildlife	• Ensure that future land disturbing activities will not negatively impact the fish and wildlife resources and recreation resources. • Protect any rare, threatened, and endangered species of plants and animals that may occur in the project area now or in the future.
Land Use Planning and Management	• Work with state and local official to manage land use or user conflicts.
Natural Resources	• Actively manage natural resources for multiple uses wherever possible.
Project Operations	• Provide support for the AIWW, the Wilmington Floating Plant and Wilmington Survey vessels.
Recreation	• Adjust leases for recreation management practices when indicators identify adverse effects to protect the quality of the resources. • •
Safety	• Signage is in place to discourage public access to steep cliffs along the edge of Snow's Cut.

4.0 LAND ALLOCATION AND CLASSIFICATION

4.1 Land Allocation

Land allocation is the identification and documentation of lands at USACE projects in accordance with the authorized purposes for which they were acquired. Snow's Cut, a part of the AIWW between Beaufort, North Carolina, and the Cape Fear River, North Carolina, is an authorized navigation channel, 90 feet wide and 12 feet deep, between the Cape Fear River and Myrtle Grove Sound, approximately 9,000 feet in length. The channel centers on a 1,000-foot, fee-owned right-of-way along its entire length. Although the authorized navigation channel is only 90 feet in width, erosion of the adjacent shoreline has increased the waterway to a width in excess of 400 feet. The projects lands were originally obtained for Project Operations for constructing and operating the project. This MPS focuses primarily on Land Classifications instead of Land Allocations. These classifications are discussed in the following section.

4.2 Land Classification

All project lands are classified to provide for development and resource management consistent with authorized project purposes and other Federal regulations. The classification process refines the land allocations to fully define the management and use of project lands and considers public needs, legislative authority, regional and project-specific resource requirements, and suitability. Management and use of the lands assigned to each Land Classification are discussed in the following sections.

In most cases the Land Classifications in this MPS are consistent with the Classifications of the 1994 Snow's Cut MP. The definitions of the land classification have been updated to reflect current policy. Additionally this MPS represents a review of the land classifications in order to utilize project lands in accordance with the authorized project purpose while considering public desires and regional and project specific resource requirements. Again, for this MPS, only changes to classifications highlighted in the following section are proposed.

The proposed land classification for Snow's Cut is indicated in Figure 1 and Table 3. Acreages presented in Table 3 and the MPS were calculated using on Geographic Information System (GIS) data. According to EP 1130-2-550, there are six available land classifications for Snow's Cut; four of these are present at Snow's Cut and are described below. Mitigation and Water Surface classifications are not present or applicable at Snow's Cut.

Table 3. Land Classification Acreages for Management Areas
Total of 100.5 acres (See Figures 1 & 2).

Site #	Project Operations	Recreation	Multiple Resource Management	Environmentally Sensitive	Subtotals by Sites	Lessee/Sub lessee
1		4.2			4.2	NC DPR
2				2.8	2.8	NC DPR
3		2.6			2.6	NC DPR
4			21.5		21.5	Mostly NC DPR
4	5.6				5.6	New Hanover County subleased to Town of Carolina Beach
5	1.5				1.5	
6	3.4				3.4	
7	3.1				3.1	None
8		3.9			3.9	NC WRC
9				0.7	0.7	New Hanover
10	7.9				7.9	New Hanover County
11	6.1				6.1	None
12		16.8			16.8	New Hanover County
13				3.1	3.1	New Hanover County
14	4.7				4.7	None
15				12.5	12.5	None
Subtotals by Classification	**32.3**	**27.6**	**21.5**	**19.0**		
					100.5	**Total Acres**

NC DPR = NC Division of Parks and Recreation

4.2.1 Project Operations

This category includes those lands required for the levees, dikes, maintenance facilities, and other areas that are used solely for the operation of the project. Sites 5, 11 and 14 are previously used disposal sites for maintenance dredging of Snow's Cut. These sites are no longer used for disposal due to their limited remaining capacity. Maintenance dredged material from the Cut is sandy and is pumped by hydraulic pipeline dredge to the northern end of Carolina Beach. The existing area classified as Project Operations includes about 12.4 acres.

For Snow's Cut, site 7 in the 1994 MP was designated as Multiple Resource Management; however that site is proposed to be changed to the Project Operations classification. That approximately 3.1 acre site is currently surrounded on the upland portion by a chain link fence. Riprap was placed along the shoreline in 2003 to preclude erosion and a dock was constructed for periodic use by Corps of Engineers vessels. The upland portion of the site is being used for light industrial activities such as storage of equipment.

In addition, the eastern portion of site 4 (4 east), and all of sites 6 and 10 are proposed to be changed from Multiple Resource Management to Project Operations (see Figure 1). No alterations exist at those sites except for old chain link fencing along the northern border of site 10.

These proposed changes in land use would result in a continuous Project Operations area from site 4 east through site 7 and for sites 10 and 11. Project operations will not impact the Carolina Beach well #10 described in Section 1.4. Government vehicular access to the site is currently available via a locked gate at the east end of site 7, and additional access may be created into site 4 east via Dow Road.

A part of a Carolina Beach Greenway Trail extends through sites 4 east through 7, and the trail then continues south along Old Dow Road. The trail is used for hiking and biking. The trail on Corps property may be relocated along the south property line if potential future project operations would interfere with trail use.

As with the other Project Operation sites, there are no specific plans for sites 10 and 11, but the areas are not currently accessible to the public due to a chain link fence surrounding the upland portions. Government vehicular access to the site is currently available via a locked gate near the west end of site 11.

The areas to be changed from Multiple Resource Management to Project Operations include about 19.9 acres. The total acreage for both existing (12.4 acres) and proposed Project Operations (19.9 acres) is 32.3 acres.

If or when specific plans are developed for the use of project operation lands, an environmental assessment will be prepared and circulated for public review and comment before any construction activity is started.

4.2.2 Recreation (Consideration consistent with 16 U.S.C. 4601-12)

This Act establishes the policy that consideration be given to the opportunities for outdoor recreation in the investigating and planning of any Federal navigation project, when ever any such project can reasonably serve either or both purposes consistently. 16 U.S.C. 14601-12 "Recreation and fish and wildlife benefits of Federal multiple-purpose water resources projects; Congressional declaration of policy.

4.2.3 Multiple Resource Management

This classification allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands (e.g. a trail through an area designated as Wildlife Management). Example uses include low density recreation, wildlife management, and future or inactive recreation areas.

Site 4 (Figures 1 and 2) is leased by NC Division of Parks and Recreation as a part of Carolina Beach State Park for low density recreation such as hiking and wildlife viewing. As indicated in section 4.2.1 above, 19.9 acres of existing Multiple Resources Management Areas are proposed to be converted to Project Operations. This leaves about 21.5 acres in site 4 that is classified as Multiple Resource Management.

4.2.4 Environmental Sensitive Areas

The classification involves areas where scientific, ecological and/or cultural features have been identified as especially sensitive to adverse environmental impacts. Development of facilities on lands within this classification is normally limited or prohibited to ensure that the sensitive areas are not impacted. At Snow's Cut, sites 2, 9, 13 and 15 are intertidal salt marshes and are protected from human disturbance and development activity. Site 2 was previously incorrectly included under the high density recreation classification and is now correctly classified as an Environmental Sensitive Area. Additionally, site 9 was included in with site 10 in the 1994 MP and was misclassified as Multiple Resource Management when in fact the area should have also been classified as an Environmental Sensitive Area. Environmental Sensitive Areas include a total of about 19.0 acres for the project.

5.0 PROJECT OPERATIONS

5.1 Sites 10, 11 and 14

Management Agency: U.S. Army Corps of Engineers
Land Classification: Project Operations (Figure 1)

Potential Future Use: Project Operations
Rationale: Site 10, may be used in the future for operational facilities, but the timing and magnitude of such use, if any, is uncertain. Sites 11 and 14 are no longer used for disposal of dredged material from maintenance of Snow's Cut because of their small size. These two sites may be used in the future for operational facilities, but the timing and magnitude of such use, if any, is uncertain. However, since sites 10 and 11 are adjacent to each other, the entire 14.0 acre area would provide more options for use than the 6.1 acre site 11 alone.
Location: Sites 10 and 11 are located along the northeast side of Snow's Cut and access is by a dirt road near the west end of site 11. Site 14 is located along the northwest side of Snow's Cut, and has no road access.
Description: For site 10, eroding 8-10 foot high banks exist along the Snow's Cut shoreline on the western end of the site, but along the eastern end the site slopes gradually to the water's edge. The upland portion of the site is generally flat with slopes generally 5 percent or less. Soils are predominantly sandy. Upland over story vegetative cover is predominantly loblolly pines (*Pinus taeda*), live oak (*Quercus virginiana*) and water oaks (*Quercus nigra*). The understory is dominated by sapling over story species and red bay (*Persea borbonia*), holly (*Ilex opaca*), yaupon (*Ilex vomitoria*) and wax myrtle (*Myrica cerifera*). Sites 11 and 14 are dominated by sand and various grasses such as salt meadow hay (*Spartina patens*), and small trees such as loblolly pine, live oak, black cherry (*Prunus serotina*), and persimmon (*Diospyros virginiana*). The topography is generally flat except for the steep dikes around the perimeter of the sites. Eroding 10-25 foot high banks exist along the Snow's Cut shoreline.

There are no known archaeological resources and no threatened or endangered species exist within sites 10, 11 and 14. The sites 10 and 14 are within the 100-yr floodplain (http://maps.nhcgov.com/viewer.html), but not site 11 due to the height of the dikes. No permanent dwellings would be located within the 100-yr floodplain.

5.2 Sites 4, 5, 6, and 7

Management Agency: Corps of Engineers
Land Classification: Project Operations (Figure 1)
Potential Future Use: Project Operations
Rationale: For site 7, the upland portion is being used for light industrial activities such as storage of equipment used by the Corps snag boat Snell, such as dredging and sediment sampling (vibracore) equipment. The site was previously designated Multiple Resource Management, but the designation is being changed to Project Operations due to its current and potential future use. In addition, the eastern portion of site 4 (4 east), and all of site 6 is proposed to be changed from Multiple Resource Management to Project Operations (Figure 1). This would result in a contiguous Project Operations area from sites 4 east through 7. This entire area would encompass 13.6 acres.
Location: The contiguous area is located along the southeast corner of Snow's Cut, and the east end of site 7 is accessible by a paved road.

Description: Site 7 is surrounded on the upland portion by a chain link fence, and riprap was placed along the shoreline in 2003 to preclude erosion. Also a dock was constructed along Snow's Cut for periodic use by Corps of Engineers vessels. Sites 4 east, 6 and 7 are generally flat except for steep slopes along the shoreline. Soils are predominantly sandy, and the vegetative cover is predominantly live and water oaks and loblolly pines. The majority of the understory for site 7 is maintained cleared by the USACE so the area can be utilized for project operations but sites 4 east and 6 are not maintained and consists of an understory of turkey oak (*Quercus laevis*), sweetbay (*Magnolia virginiana*), hawthorn (*Crataegys spp.*), common sassafras (*Sassafras albidum*) flowering dogwood (*Cornus florida*) and yaupon (*Ilex vomitoria*). Site 5 is maintained by mowing.

There are no known archaeological resources within the sites and no threatened or endangered species exist on the sites. Most of sites 5, 6 and 7 are within the 100-yr floodplain, (http://maps.nhcgov.com/viewer.html) but no permanent dwellings would be located in those areas.

6.0 MANAGEMENT FACTORS

This section provides an overview of administrative, social, and environmental factors that influence and constrain present and future options for use and management at Snow's Cut.

6.1 Area Growth

The area adjacent to Snow's Cut has experienced significant growth and development since the project was constructed in the 1930's and since the preparation of the 1994 MP. Carolina Beach State Park was founded in 1969. There has been residential development along both sides of the Cut and particularly in the Town of Carolina Beach along Spencer-Farlow Road. The Land Classifications, Resource Objectives, and Recommended Future Uses for project lands attempt to address these potential conflicts.

6.2 Changing Environmental Conditions

The Snow's Cut area has shoreline erosion along much of the length of the Cut due to wind-blown wave action, tidal currents, and boat wakes. Escarpments, 10 to 25 feet high, occur along portions of the water frontage of both Carolina Beach State Park and New Hanover County Park. Root systems of large trees are continually being exposed and accelerated bank erosion occurs when these trees fall. These conditions could affect the use of existing facilities or future recreational sites.

6.4 Addressing Unauthorized and Inappropriate Use

Unauthorized and inappropriate use occurs whenever visitors engage in activities that are not appropriate for the given area of the project, are in conflict with regulations by

the given management agency, or violate the law. This MPS attempts to address this issue by updating Land Classifications to define more appropriate use of project lands and to address growing trends.

6.5 Lessee Coordination

State and local governments that operate within the project conduct day-to-day operations on land that is leased to them. The Land Classifications, Objectives, and other policies included in this MPS represent the continued collaboration between USACE and these lessees to successfully manage the resources and meet each agency's purposes, goals, and objectives.

7.0 AGENCY AND PUBLIC COORDINATION

A scoping meeting was held with the Snow's Cut lessees and sublessees on July 29, 2013, at the Carolina Beach State Park Visitor's Center to explain the purpose of the MPS. Representatives attending the meeting were from New Hanover County, the Town of Carolina Beach, Carolina Beach State Park, the NC Wildlife Resources Commission and the Corps of Engineers. A scoping letter was circulated on July 30, 2013 via email to the same representatives indicated above plus the US Fish and Wildlife Service, NC Division of Coastal Management, the National Marine Fisheries Service, the NC Division of Marine Fisheries and the NC Division of Cultural Resources. Only two written comments were received during the scoping process. Both were received on September 9, 2013. The first was a letter from the NC Division of Cultural Resources and the second was an email from the NC Wildlife Resources Commission. These scoping comments are included in Appendix A along with information received from the Natural Heritage Program in April 2013 on rare species that may occur in the area. In summary, the NC Division of Cultural Resources "recommend that an annual archaeological reconnaissance of the Snow's Cut shoreline and eroding banks be incorporated into the revised MP. If significant remains are encountered or if it is deemed by the professional archaeologist conducting the reconnaissance that an adverse impact to unassessed or potentially eligible sites is imminent that a data recovery be implemented to mitigate damage to or loss of the cultural resources." The Corps will comply with this recommendation.

An EA entitled Snow's Cut, Atlantic Intracoastal Waterway, Myrtle Grove Sound to Cape Fear River North Carolina, Environmental Assessment for the Master Plan Supplement, October 2014 was prepared for the MPS. No specific actions are proposed as a result of the MPS; therefore, no significant environmental impacts are anticipated. If specific actions are proposed in the future, then an EA would be prepared for that action and the environmental impacts would be addressed in that EA.

8.0 SUMMARY OF RECOMMENDATIONS

It is recommended that this MPS be utilized in managing the land use and environmental resources at Snow's Cut. The policies and objectives within this MPS are consistent with authorized project purposes and funding capabilities and needs.

The MPS serves as a land use tool, since it provides USACE, other management partners, and the public with management objectives, land classifications, and recommended future uses, of the Snow's Cut project area.

The following are the MPS recommendations:

- Change the classification of sites 4 east, 6, 7 and 10 from Multiple Resource Management to Project Operations. This change is due to current use by the Corps for storage and docking vessels at site 7 and potential Project Operations use of the other sites.
- Reclassify sites 2 and 9 to the Environmental Sensitive classification since they were misclassified as Recreation in the 1994 MP.
- Conduct a cultural resources survey of the Snow's Cut shoreline and eroding banks annually using a professional archaeologist. If significant remains are encountered or if it is deemed by the professional archaeologist conducting the reconnaissance that an adverse impact to unassessed or potentially eligible sites is imminent, data recovery will be implemented to mitigate damage to or loss of the cultural resources.
- Prohibit structures, vehicles, and potential hazardous materials (e.g. fuel storage tank) within 100 feet of the Carolina Beach water supply well #10 to avoid potential contamination.

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