

CONSTRUCTION OF REMOTE FIXED FACILITY BUXTON DARE COUNTY NORTH CAROLINA



Prepared for

**U.S. Department of Homeland Security
United States Coast Guard
2100 2nd Street, SW, Stop 7701
Washington, DC 20593-7701**

November 2009

Prepared by



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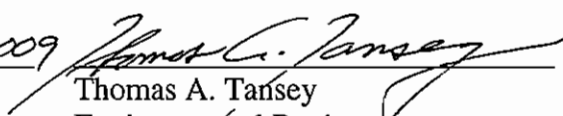
U.S. COAST GUARD
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

FOR
CONSTRUCTION OF REMOTE FIXED FACILITY BUXTON
DARE COUNTY, NORTH CAROLINA

This project has been thoroughly reviewed by the U.S. Coast Guard (USCG) and it has been determined, by the undersigned, that this project will have no significant effect on the human environment.

The associated site-specific Environmental Assessment (EA) has been prepared to describe the Proposed Action and a range of reasonable alternatives, including the No Action Alternative. The No Action Alternative provides a baseline for comparing the Proposed Action with existing conditions. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA; 42 U.S.C. 4321, 4331, 4332), the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500 through 1508), Department of Homeland Security (DHS) Management Directive (MD) 023-01 (71 Federal Register 16790-16820 [April 4, 2006]), *Environmental Planning Program*, and the U.S. Coast Guard's policy guidelines for implementing NEPA, COMDTINST M16475.1D, *National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts*.

This Finding of No Significant Impact (FONSI) is based on the attached contractor-prepared EA, which has been independently evaluated by the USCG and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project and provides sufficient evidence and analysis for determining that a Environmental Impact Statement is not required. The USCG takes full responsibility for the accuracy, scope, and content of the attached EA.

11/30/2009 
Date Thomas A. Tansey
Environmental Reviewer

Environmental Program Manager
USCG Rescue 21 Project
Title/Position

I have considered the information contained in the EA, which is the basis for this FONSI. Based on the information in the EA and this FONSI document, I agree that the proposed action, as described above and in the EA, will have no significant impact on the human environment.

11/30/2009 
Date Eugene G. Lockhart
Responsible Official

Deputy Project Manager
USCG Rescue 21 Project
Title/Position

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AAL	Acceptable Ambient Level
ACHP	Advisory Council on Historic Preservation
AEC	Area of Environmental Concern
amsl	Above Mean Sea Level
AOR	Area of Responsibility
APE	Area of Potential Effect
AQCR	Air Quality Control Region
ASR	Antenna Structure Registration
BMP	Best Management Practice
CAA	Clean Air Act
CAMA	Coastal Area Management Act
CB	Citizen Band Radio
CBRA	Coastal Barrier Resources Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERL	Construction Engineering Research Laboratory
CFR	Code of Federal Regulations
CMA	Coastal Management Area
CMP	Coastal Management Program
CO	Carbon Monoxide
CWA	Clean Water Act
CWS	Carolina Wetlands Services
CZMA	Coastal Zone Management Act
dB	Decibel
dBA	A-weighted Sound Level
DCAHC	Dare County Affordable Housing Committee
DF	Direction Finding (antenna)
DHS	Department of Homeland Security
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
HLS	High Level Site
IBA	Important Bird Area
kHz	Kilohertz

LED	Light-Emitting Diode
L _p	Sound Pressure Level
MBTA	Migratory Bird Treaty Act
MD	Management Directive
MHz	Megahertz
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NCA	Noise Control Act
NC DAQ	North Carolina Division of Air Quality
NC DENR	North Carolina Department of Environment and Natural Resources
NDRS	National Distress and Response System
NDRSMP	National Distress and Response System Modernization Project
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O ₃	Ozone
OSA	Office of State Archaeology
Pb	Lead
PCN	Pre-Construction Notification Form
PEA	Programmatic Environmental Assessment
PEL	Permissible Exposure Limit
PM _{2.5}	Particulate Matter of 2.5 Microns or Less
PM ₁₀	Particulate Matter of 10 Microns or Less
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RF	Radio Frequency
RFF	Remote Fixed Facility
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SO _x	Sulfur Oxides
SPDES	State Pollutant Discharge Elimination System
SPEA	Supplemental Programmatic Environmental Assessment
SRCS	Short-Range Communication System
UHF	Ultra High Frequency

USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USCB	U.S. Census Bureau
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VHF-FM	Very High Frequency-Frequency Modulation
VOC	Volatile Organic Compound

The U.S. Coast Guard (Coast Guard) has identified the need to modernize and replace its antiquated maritime search and rescue communications system in North Carolina as part of a nationwide mandate. The new equipment will fill existing coverage gaps in very high frequency-frequency modulation (VHF-FM) marine communications used for Coast Guard operational missions, including search and rescue, maritime law enforcement, maritime pollution prevention and response, and homeland security. The new system, known as “Rescue 21,” will be the maritime equivalent of a “911” communications system, enhancing maritime safety by helping to minimize the time that search and rescue teams spend looking for people in distress. Rescue 21 represents a quantum leap forward in coastal command and control and distress communications. It will enhance the United States’ homeland security capabilities, as well as other safety and security missions, bringing tremendous benefits to the Coast Guard and the American public.

As part of the Rescue 21 program, the Coast Guard is proposing to construct a remote fixed facility (RFF) to help fill the existing communications gap for the Sector North Carolina Area of Responsibility (AOR) which extends 301 miles along the North Carolina coastline from the State’s border with Virginia to the north to the border with South Carolina to the south. An RFF would be built on U.S. government-owned property in Buxton, on Cape Hatteras, Dare County, North Carolina. In conjunction with the installation of eight other RFF sites to the north, west, and southwest, the proposed RFF Buxton would serve as a critical component to complete communications coverage and reduce several existing communication gaps in the current system’s coverage in the Sector North Carolina AOR. The Rescue 21 communications tower at RFF Buxton would provide optimum coverage for the waters surrounding Cape Hatteras.

The Coast Guard proposes to replace an existing U.S. Coast Guard-owned, 425-foot-tall guyed communications tower with a new 525-foot-tall tower as part of the Rescue 21 project on Coast Guard-administered property in Buxton, North Carolina. The new tower would be supported with 24 guy wires with bird flight diverters and 3 guy wire anchor points. The anchors would consist of reinforced concrete caisson foundations set within a 400-foot radius of the tower. The tower foundation would consist of a drilled, reinforced concrete caisson. The Coast Guard is considering alternative actions to construct a 39-guy wire tower or a self-supported tower and both painted and unpainted options. A painted tower would not require daytime lights, whereas an unpainted tower would require high intensity daytime lights in accordance with FAA Advisory Circular AC70/7460-1K Change 2, *Obstruction Marking and Lighting*.

This Environmental Assessment (EA) has been prepared to describe the Proposed Action, the No Action Alternative and two Alternative Actions; describe the natural, cultural, and socioeconomic resources located in the project area; and evaluate the potential impacts of the alternatives on natural, cultural, and socioeconomic resources. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA; 42 U.S. Code [U.S.C.] 4321, 4331, 4332), the Council on Environmental Quality regulations implementing NEPA (40 CFR Parts 1500–1508), Department of Homeland Security (DHS) Management Directive (MD) 023-01, *Environmental Planning Program*, and the U.S. Coast Guard’s policy guidelines for implementing NEPA, COMDTINST M16475.1D, *National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts*.

A summary of potential impacts is provided in Table ES-1.

Table ES-1: Impact Summary

Resource Area	No Action	Proposed Action 24-Guy Wire Tower	Alternative Two 39-Guy Wire Tower	Alternative Three Self-Supported Tower
Noise	No impact.	Temporary increase in noise levels would occur during construction activities. Construction activities would be limited to business hours to minimize impacts. The emergency generator and communications equipment would create intermittent, minor noise impacts.	Same as Proposed Action.	Same as Proposed Action.
Air Quality	No impact.	Temporary increase in air emissions would occur during construction activities. Mitigation measures would be implemented to minimize impacts. Occasional use of the emergency generator would result in a negligible increase in long-term emissions.	Same as Proposed Action.	Same as Proposed Action.
Geology and Topography	No impact.	Minor and site-specific disturbance is anticipated.	Same as Proposed Action.	Same as Proposed Action.
Soils	No impact.	Temporary disturbance of soils would occur during construction activities. Best management practices (BMPs) would be used to minimize soil loss.	Same as Proposed Action.	Same as Proposed Action.
Prime Farmland	No impact.	No impact.	No impact.	No impact.
Water Resources	No impact.	Temporary increase in runoff to local surface waters during construction. BMPs would be used to minimize impacts.	Same as Proposed Action.	Same as Proposed Action.
Utility Availability	No impact.	Short-term utility increases (electricity and/or water) may be required during construction.	Same as Proposed Action.	Same as Proposed Action.

Resource Area	No Action	Proposed Action 24-Guy Wire Tower	Alternative Two 39-Guy Wire Tower	Alternative Three Self-Supported Tower
Solid Waste Management	No impact.	No impact.	No impact.	No impact.
Drainage	No impact.	Temporary increase in runoff during construction activities. BMPs would be used to minimize impacts.	Same as Proposed Action.	Same as Proposed Action.
Transportation and Site Access	No impact.	Minor, temporary increase in volume of traffic during construction activities.	Same as Proposed Action.	Same as Proposed Action.
Hazardous Substances	No impact.	Minor amounts of hazardous materials may be generated or used during construction or operation of the tower. All hazardous materials/waste would be handled in accordance with applicable Federal, State, and local regulations.	Same as Proposed Action.	Same as Proposed Action.
Radio Frequency Radiation	No impact.	The proposed tower would generate radio frequency (RF) radiation; however, the tower would not substantially increase existing RF radiation in the project area and would not exceed permissible exposure limits (PEL).	Same as Proposed Action.	Same as Proposed Action.
Wildlife	No impact.	No significant habitat loss or conversion would occur. The Coast Guard would implement all reasonable measures to avoid affecting migratory birds, including installation of bird diverters on guy wires. A 24-guy wire tower would pose more of a risk to migratory birds than the existing 18-guy wire tower.	No significant habitat loss or conversion would occur. The Coast Guard would implement all reasonable measures to avoid affecting migratory birds, including installation of bird diverters on guy wires. A 39-guy wire tower would pose more of a risk to migratory birds than the existing 18-guy wire tower.	No significant habitat loss or conversion would occur. A self-supported tower would pose less of a risk to migratory birds than the existing guyed tower.

Resource Area	No Action	Proposed Action 24-Guy Wire Tower	Alternative Two 39-Guy Wire Tower	Alternative Three Self-Supported Tower
Vegetation	No impact.	The project site is disturbed and partially paved; minimal amounts of herbaceous vegetation would be removed.	Same as Proposed Action	Same as Proposed Action
Threatened and Endangered Species	No impact.	No impacts to protected species are anticipated.	Same as Proposed Action.	Same as Proposed Action.
Wetlands	No impact.	A section 404 permit would be required for 0.106 acre of wetland impact. BMPs would be used to minimize soil erosion impacts to downstream waters and wetlands.	A section 404 permit would be required for 0.21 acre of wetland impact. BMPs would be used to minimize soil erosion impacts to downstream waters and wetlands.	No impact.
Floodplains	No impact.	Construction would occur outside of the 100-year floodplain but within the 500-year floodplain. However, the new tower would not impede movement of floodwaters and the Proposed Action is not expected to have an effect on upstream or downstream floodplains and no adverse impacts to floodplains are anticipated.	Same as Proposed Action.	Same as Proposed Action.
Cultural Resources	No impact.	No impacts on archaeological resources are anticipated. No adverse impact to aboveground historic properties would occur as long as the new tower is painted instead of being left unpainted but with high intensity strobe lights attached.	Same as Proposed Action.	This alternative would have an adverse visual effect to the historic Cape Hatteras Light Station. No impacts to archaeological resources are anticipated.
Recreation	The safety of citizens participating in	The Proposed Action would have a positive impact on marine recreational users by ensuring a more reliable and	Same as Proposed Action.	Alternative Three would have a positive impact on marine recreational users by ensuring

Resource Area	No Action	Proposed Action 24-Guy Wire Tower	Alternative Two 39-Guy Wire Tower	Alternative Three Self-Supported Tower
	recreational marine activities could be adversely affected by the lack of upgraded communications equipment for search and rescue activities.	efficient response by the Coast Guard in emergencies. The tower would be visible from local parks and beaches, but would be similar in appearance to the existing tower. No adverse impacts are expected.		a more reliable and efficient response by the Coast Guard in emergencies. The self-supported tower would be more visible from local parks and beaches than the existing tower and would have a negative visual effect on recreation resources.
Visual Resources	No impact.	The proposed tower would be visible to residents and visitors near the project area. Because the new tower would be similar in appearance, the new tower is not expected to be more visually obtrusive than the existing tower.	Same as Proposed Action.	The proposed tower would be visible to residents and visitors near the project area. Since a self-supported tower is a more substantial structure in terms of its mass than the existing guyed tower, this alternative would have an adverse effect on the visual environment.
Socioeconomic Resources	Not upgrading the Coast Guard's communication equipment could result in adverse effects to recreational boaters and marine businesses due to property losses associated with marine incidents and accidents.	The proposed tower would reduce property losses associated with marine incidents and accidents.	Same as Proposed Action.	Same as Proposed Action.

Resource Area	No Action	Proposed Action 24-Guy Wire Tower	Alternative Two 39-Guy Wire Tower	Alternative Three Self-Supported Tower
Coastal Zone	No impact.	No impact. The Proposed Action is consistent to the extent practicable with the enforceable policies of the North Carolina Coastal Management Program (CMP).	Same as Proposed Action.	Alternative Three is inconsistent with CMP Policy 0510, because of its adverse visual effect on the historic Cape Hatteras Light Station.
Coastal Barrier Resources	No impact.	No impact. The project site is not located within the Coastal Barrier Resources System.	Same as Proposed Action.	Same as Proposed Action.
Environmental Justice	No impact.	No impact.	No impact.	No impact.
Cumulative Effects	The communications gap in the Sector North Carolina AOR would not be filled, potentially resulting in property losses and loss of life due to inadequate search and rescue capabilities.	The proposed tower, in combination with existing and future towers in the area, could result in cumulative impacts to migratory birds and visual resources. Although the cumulative effects of towers on migratory birds are not well understood, impacts associated with the Proposed Action are not expected to be significant, because the tower's height would not be significantly above the threshold generally thought to pose the greatest risk. Additional tower design features have been selected to minimize any potential harm to migratory birds. Since the Proposed Action tower would resemble the existing communications tower on the project site, cumulative visual impacts would not be significant.	Same as Proposed Action.	A self-supported tower, both painted and unpainted options, will have an adverse visual effect on the historic Cape Hatteras Light Station and may contribute to a cumulative adverse visual impact to that resource.

SECTION ONE PURPOSE AND NEED FOR ACTION

1.1 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies consider potential environmental consequences of proposed and alternative actions in their decision-making process. NEPA encourages Federal agencies to protect, restore, and enhance the environment through well-informed decisions. The Council on Environmental Quality (CEQ) was established under NEPA for the purpose of implementing and overseeing Federal policies as they relate to this process. The CEQ regulations provide the implementation guidelines for NEPA and require Federal agencies to develop agency-specific NEPA guidelines.

This site-specific Environmental Assessment (EA) has been prepared to describe the Proposed Action and a range of reasonable alternatives, including the No Action Alternative. The No Action Alternative provides a baseline for comparing the Proposed Action with existing conditions. This EA has been prepared in accordance with NEPA, the CEQ regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500 through 1508), and the U.S. Coast Guard's policy guidelines for implementing NEPA, Department of Homeland Security (DHS) Management Directive (MD) 023-01, *Environmental Planning Program*, and COMDTINST M16475.1D *National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts*.

1.2 BACKGROUND

The U.S. Coast Guard (Coast Guard) is required by Federal statutes to carry and maintain communication via very high frequency-frequency modulation (VHF-FM) radio, establishing it as the standard means for maritime communication. Other Federal statutes task the Coast Guard with additional responsibilities, such as operating facilities for the promotion of search and rescue operations, enforcing Federal laws and statutes, and assisting Federal and State agencies in protecting the coastlines.

The National Distress and Response System (NDRS), the Coast Guard's current short-range VHF-FM radio system, forms the backbone of the Coast Guard's Short-Range Communication System (SRCS). Established during the 1970s, the NDRS is a VHF-FM-based radio communication system that provides two-way voice communication with commercial and recreational traffic in coastal areas and in navigable inland waterways. It consists of approximately 300 remotely controlled VHF-FM transmit/receive high-level sites (HLS) located throughout the continental United States (including the Great Lakes and all major inland bays and waterways), Alaska, Hawaii, the Caribbean, and Guam. The NDRS' primary mission is to provide the Coast Guard with a means to monitor the domestic and international VHF-FM distress frequency and to coordinate search and rescue response operations. Its secondary mission is to provide command and control communications for virtually all Coast Guard missions.

While this system has served the Coast Guard well over the years, it consists of out-of-date and non-standard equipment that has many limitations. The current NDRS does not provide the Coast Guard with a reliable means of meeting its multi-mission requirements, including search and

rescue, maritime law enforcement, maritime pollution prevention and response, and homeland security. Nationwide, NDRS operational deficiencies include:

- Obsolete/non-standard equipment
- Inadequate transmission security
- Numerous geographic coverage gaps
- Imprecise position-locating capability
- Inadequate channel capacity
- Limited data capability
- Inadequate communications with public safety and other emergency response service agencies
- Poor caller verification assistance and recording capability
- No digital selective calling capacity
- No interface with the rest of the Coast Guard's telecommunications system

In July of 1998, the Coast Guard prepared a Programmatic Environmental Assessment (PEA) to evaluate the potential environmental impacts of the proposed National Distress and Response System Modernization Project (NDRSMP), a proposed Federal project subject to the NEPA review process (USCG, 1998). Four technology modernization alternatives were selected for analysis: 1) No Action; 2) Rehabilitated or Upgraded System; 3) Dual Mode VHF and/or Ultra High Frequency (UHF) Network; and 4) Multi-Mission Satellite, Cellular VHF Network. The 1998 PEA evaluated the potential impacts of each alternative on the following environmental resource areas: geology and soils, hydrology and water quality, biological resources, land use, visual resources, hazardous materials and wastes, air quality, cultural resources, noise, transportation and circulation, socioeconomics, and radio waves.

In September of 2002, the Coast Guard prepared a Supplemental PEA (SPEA) because a substantial amount of time had passed since the 1998 PEA was published. In the 2002 SPEA, the Coast Guard considered four alternatives to deploy the NDRSMP: 1) No Action; 2) Deploying New Communications Technology to an Existing Antenna Tower Site that Supports the NDRS; 3) Deploying New Communications Technology to a Leased Commercial Tower Site; and 4) Deploying New Communications Technology to a New Undeveloped Site. The 2002 SPEA updated the potential effects of each of the new alternatives on each of the environmental resource areas that were addressed in the 1998 PEA, and assessed the potential effects to environmental resource areas that were not originally assessed in the 1998 PEA. The 2002 SPEA identified, described, and evaluated the potential environmental impacts that could result from implementation of the NDRSMP, and took into consideration cumulative impacts from other actions (USCG, 2002a). The 1998 PEA and 2002 SPEA are the first level of documents upon which subsequent NEPA analysis and documentation, including this EA, are tiered for individual actions and their site-specific impacts.

1.3 PURPOSE AND NEED FOR ACTION


As part of a nationwide initiative, the Coast Guard has identified the need to modernize and replace its antiquated maritime distress and response communications system in North Carolina. The coverage gaps that exist in the current VHF-FM marine communications system present limitations to the Coast Guard's effectiveness in monitoring distress calls and other operational missions, including search and rescue, maritime law enforcement, maritime pollution prevention and response, and homeland security. To address the limitations of the current communications system, the Coast Guard has implemented a new technologically advanced communications system that is more robust, more reliable, and more capable, and will revolutionize how the Coast Guard communicates and carries out its various missions.

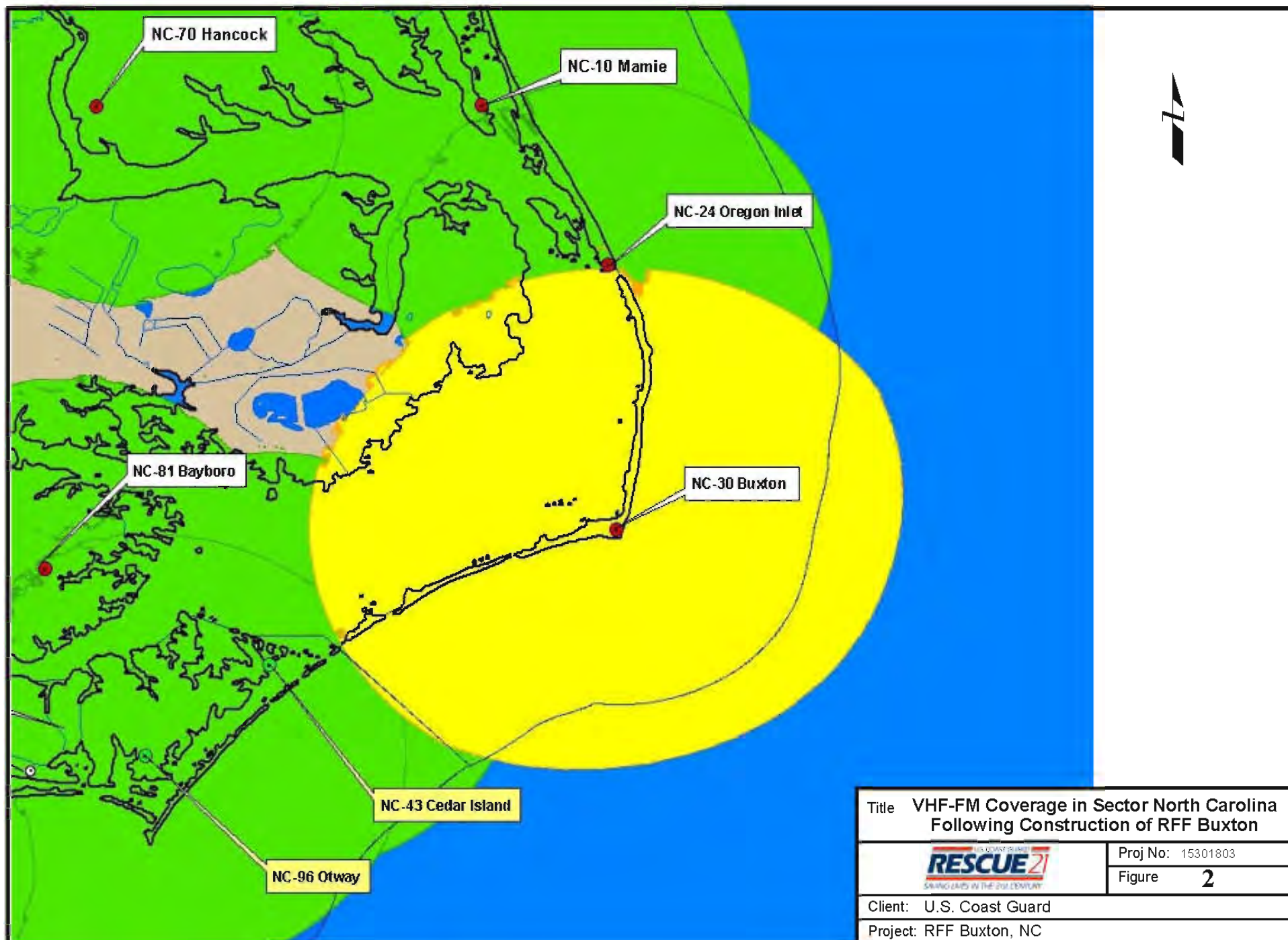
The new system, known as "Rescue 21," will be the maritime equivalent of a "911" communications system, enhancing maritime safety by helping to minimize the time that search and rescue teams spend looking for people in distress. Rescue 21 represents a quantum leap forward in coastal command and control and distress communications, and will replace a wide range of aging, obsolete VHF-FM radio communications equipment. The Coast Guard's current NDRS does not provide a reliable means of meeting its multi-mission requirements. Rescue 21 will provide the Coast Guard with a state-of-the-art maritime distress and response communications system and will enhance the United States' homeland security capabilities, as well as other safety and security missions, bringing tremendous benefits to the Coast Guard and the American public. As of November 2009, the Coast Guard has provided Rescue 21 communications coverage along 32,334 miles of U.S. coastal waters.

The purpose and need for the proposed project is to provide optimum Radio Frequency (RF) coverage of the Sector North Carolina Area of Responsibility (AOR), which extends 301 miles along the North Carolina coastline north to the Virginia border and south to the South Carolina border. The Coast Guard proposes to replace an existing U.S. Coast Guard owned, 425-foot tall guyed communications tower with a new 525-foot tall tower as part of the Rescue 21 project on Coast Guard-administered property in Buxton, North Carolina. The Proposed Action property is located at 46392 Cape Point Campground Road in Dare County. The site is approximately 1.5 miles south of Buxton (Figure 1) within the limits of the Cape Hatteras National Seashore and approximately 0.5 mile from the coastline.

The Proposed Action as well as the installation of eight other Remote Fixed Facility (RFF) sites to the north, west, and southwest, would complete the communications coverage and reduce several existing communication gaps in the current system's coverage in the Sector North Carolina AOR. The Rescue 21 communications tower at RFF Buxton would provide optimum coverage for the waters surrounding Cape Hatteras within the Coast Guard's Sector North Carolina AOR (Figure 2).



Title		Site Location	
		Proj No: 15301803	
		Figure	1
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			



1.4 PUBLIC PARTICIPATION

In late June and early July 2009, as part of the NEPA compliance process for the construction of RFF Buxton, the Coast Guard sent initial coordination letters to the agencies listed in Section 5. On July 24, 2009 a Draft EA was submitted to the same agencies for review. A public notice advertising the availability of the Draft EA was published in the Outer Banks Sentinel on July 29, 2009 and the Coastland Times on July 28, 2009. The Draft EA was made available for public review between July 28 and August 28, 2009 at the Hatteras Public Library, Hatteras Community Center. The Cape Hatteras National Seashore, Outer Banks Group posted a link to the National Park Service's Planning, Environment and Public Comment Web site where a copy of the Draft EA could be downloaded. To date, the Coast Guard has received responses from the following agencies:

- National Weather Service
- North Carolina Department of Administration, State Environmental Review Clearinghouse
- North Carolina Department of Cultural Resources State Historic Preservation Office
- North Carolina Department of the Environment and Natural Resources, Division of Coastal Management
- North Carolina Department of the Environment and Natural Resources, Division of Land Resources
- North Carolina Department of the Environment and Natural Resources, Division of Water Quality
- North Carolina Department of the Environment and Natural Resources, Natural Heritage Program
- North Carolina Wildlife Resources Commission
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture, Natural Resource Conservation Service
- U.S. Department of the Interior, National Park Service
- U.S. Department of Interior, U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency

All responses received are included in Appendix A and are addressed in this Final EA.

The Final EA will be available on December 1, 2009. A Public Notice advertising the availability of the Final EA was published in two local newspapers, the Outer Banks Sentinel and the Coastland Times. The Public Notice also served as the Coast Guard's notice of compliance with Executive Order (EO) 11988 (Floodplain Management), the Coastal Zone Management Act (CZMA) of 1972, and Section 106 of the National Historic Preservation Act (NHPA) of 1966. A copy of the Final EA was provided to the agencies listed in Section 5. In preparing the 2002 SPEA, the Coast Guard coordinated with an extensive list of government and local agencies nationwide. These agencies are also listed in Section 5.

SECTION TWO DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVES

2.1.1 Siting Process

Towers supporting the Rescue 21 project are placed to provide clear and effective radio communications to serve the Coast Guard's operational missions. For Coast Guard operational regions in coastal areas, the communication coverage area extends seaward at least 20 nautical miles from the territorial sea baseline, as defined in Federal regulations (33 CFR 2.5-2.22). The transmission patterns are circular, resulting in potential coverage gaps between adjacent towers; overlap of coverage areas is required to support reliable radio reception and identify the direction of received signals, such as those for search and rescue calls. These requirements along with the regional topography dictate the tower's general location and minimum height. Meeting these initial operational requirements is the first step in the siting process.

Once initial operational requirements are determined, the Coast Guard then searches the Federal Communications Commission (FCC) tower database to identify all registered towers that could possibly support the Rescue 21 equipment. First, existing towers are considered as co-location to save time and money, and to avoid potential environmental consequences that would result from constructing a new or replacement tower. The Coast Guard screens these existing towers for technical requirements, such as height compatibility with established Coast Guard frequencies. Existing towers that meet the initial screening requirements are then evaluated by the Coast Guard for the following additional requirements:

- Structural integrity and potential for overload if Coast Guard equipment is installed
- Frequency interference that cannot be filtered effectively at the height required to install Coast Guard equipment (each filter reduces the range of the Rescue 21 equipment)
- Space on the existing tower at the height required to install the Rescue 21 equipment
- Willingness of the existing tower owner to lease tower space to the Coast Guard

If no existing towers are available or suitable for supporting the Rescue 21 equipment, the Coast Guard begins to look for open land within the area where an RFF is required based on operational requirements. The Coast Guard's priority for selecting land for the construction of a new tower is a function of the cost to build and maintain the tower over its lifetime and the difficulty of implementation. The Coast Guard uses the following order of priorities for site selection: 1) Coast Guard-controlled land; 2) land controlled by another Federal agency; 3) lease of non-federally owned land; and 4) acquisition of new land.

In the case of RFF Buxton, the Coast Guard would construct a replacement tower on Coast Guard-administered, U.S. government-owned land. The combination of the proposed tower location and height would provide continuous coverage for the required 20-nautical-mile area, thus meeting the stated purpose and need. Other potential tower locations were considered but dismissed because they did not meet operational requirements or had technical flaws (see Section 2.2, Alternatives Considered and Dismissed).

2.1.2 No Action Alternative

Under the No Action Alternative, a new communications tower would not be constructed at RFF Buxton, resulting in VHF-FM and UHF communications coverage gaps within the Coast Guard's Sector North Carolina AOR when the existing National Distress Response System is discontinued. Existing non-Coast Guard public service agencies, including the Department of the Interior's National Park Service (NPS), National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service, North Carolina Division of Marine Fisheries, and Dare County Emergency Services, would need to remove their communications equipment from the existing HLS tower as it would no longer be maintained by the Coast Guard and would eventually be dismantled.

The existing 425-foot tall HLS communications tower is a three-sided, painted, guyed tower, supported by 18 guy wires and six concrete anchor points. The three inner anchors are set within a 200-foot radius, while the three outer anchors are within a 340-foot radius from the tower. Bird flight diverter devices are not presently installed on the guy wires. Aircraft obstruction marking was accomplished by using the FAA's red obstruction lighting system (FAA Style A) which is composed of a single (2,000 candela) red flashing beacon (L-864) at the 425-foot level, two similar L-864 beacons at approximately the 212-foot level, and three L-810 steady burning red (32.5 candela) obstruction lights at both the 106-foot and 318-foot levels. The L-864 beacons flash synchronously 20 times per minute. The lights turn on and off automatically and operate only during the nighttime. All of the HLS tower lights use older, incandescent bulbs versus the more modern and easier to maintain, light emitting diode (LED) fixtures. In order to meet daytime and twilight marking requirements, the tower is painted with seven, equal width, alternating bands of aviation orange and white paint.

Existing onsite buildings include a concrete-block equipment shelter, NPS office buildings, several storage buildings and equipment sheds, a two-story, four-bay garage presently used as a communications equipment building, the Coast Guard's elevated HLS equipment shelter, and an emergency backup generator. Photographs of the existing HLS tower and proposed tower site are included below.

2.1.3 Proposed Action – Construction of RFF Buxton

The Coast Guard proposes to replace an existing U.S. Coast Guard owned, 425-foot-tall, 18-guy wire communications tower with a new 525-foot-tall tower as part of the Rescue 21 project on Coast Guard-administered property in Buxton, North Carolina. The addition of a top-mounted direction finding (DF) antenna and a lightning rod to the 525-foot tall tower will bring the overall height of the new tower and appurtenances to 538 feet above ground level. The property selected for the Proposed Action is located at 46392 Cape Point Campground Road in Dare County. The site is approximately 1.5 miles south of Buxton (Figure 1) within the limits of the Cape Hatteras National Seashore and approximately 0.5 mile from the coastline.

The proposed tower site is an 11.25-acre tract of land acquired by the Coast Guard on May 29, 1937, for Coast Guard Station Cape Hatteras. The Coast Guard constructed an HLS communications tower on this property in 1993, which replaced an older, 425-foot tall communications tower owned by the Coast Guard. After relocating the Station's administrative and operational offices, the Coast Guard retained unrestricted use of the entire 11.25-acre parcel as a communications site for the NDRS. In June 2004, the remainder of the property, including

Description of the Proposed Action and Alternatives

several former Coast Guard administrative and maintenance buildings, was transferred to the NPS.

The Coast Guard has allowed several other public service agencies to maintain their own communications equipment on the existing tower, including the NPS, NOAA's National Weather Service, North Carolina Division of Marine Fisheries, and Dare County Emergency Services. The Coast Guard fully intends to design the replacement tower with sufficient structural and space capacity to continue to accommodate these existing non-Coast Guard public service agencies.

The proposed site is accessible via an existing driveway off Lighthouse Road, which is used to access the HLS tower, equipment buildings, and NPS offices. The replacement tower would be constructed approximately 50 feet southwest of the existing 425-foot tower.



Photograph 1: View of existing HLS guyed tower and equipment buildings, looking west.



Photograph 2: View of existing HLS guyed tower and equipment buildings, looking east.

The new tower would be supported with 24 guy wires with bird flight diverter devices and 3 guy-wire anchor points. The anchors would consist of reinforced concrete caisson foundations that are 5.5 feet in diameter, 52 feet deep, and set within a 400-foot radius of the tower. The tower foundation would consist of a 59-foot-deep, 3.5-foot-diameter, drilled and reinforced concrete caisson. The Coast Guard had considered both painted and unpainted tower options. After concluding Section 106 NHPA consultations with the State Historic Preservation Officer, a painted guyed tower (Option 1) is now the preferred alternative. A painted tower would not require daytime lights, whereas an unpainted tower would require high-intensity daytime lights in accordance with Federal Aviation Administration (FAA) Advisory Circular AC70/7460-1K Change 2, *Obstruction Marking and Lighting*.

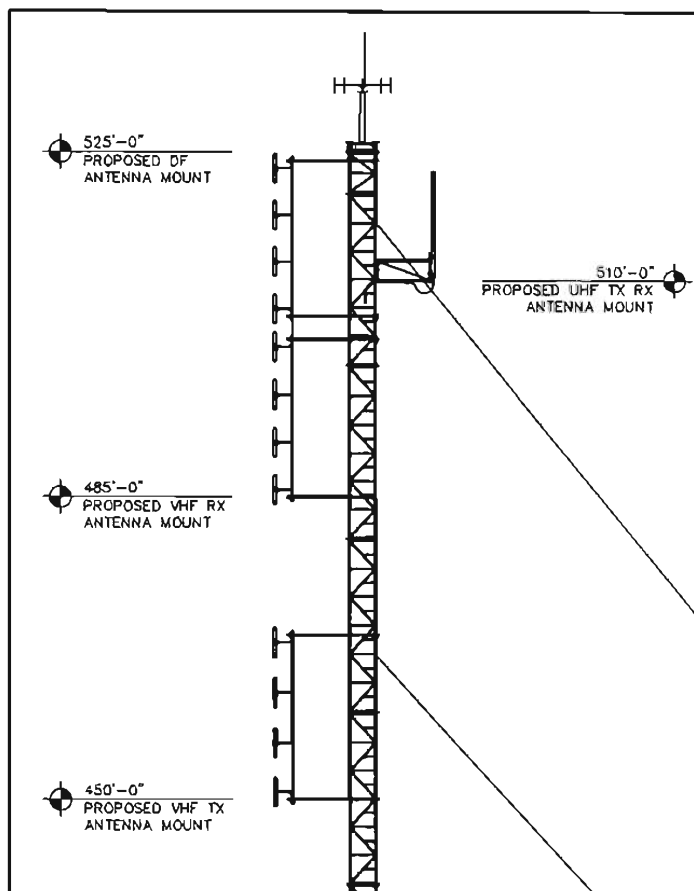
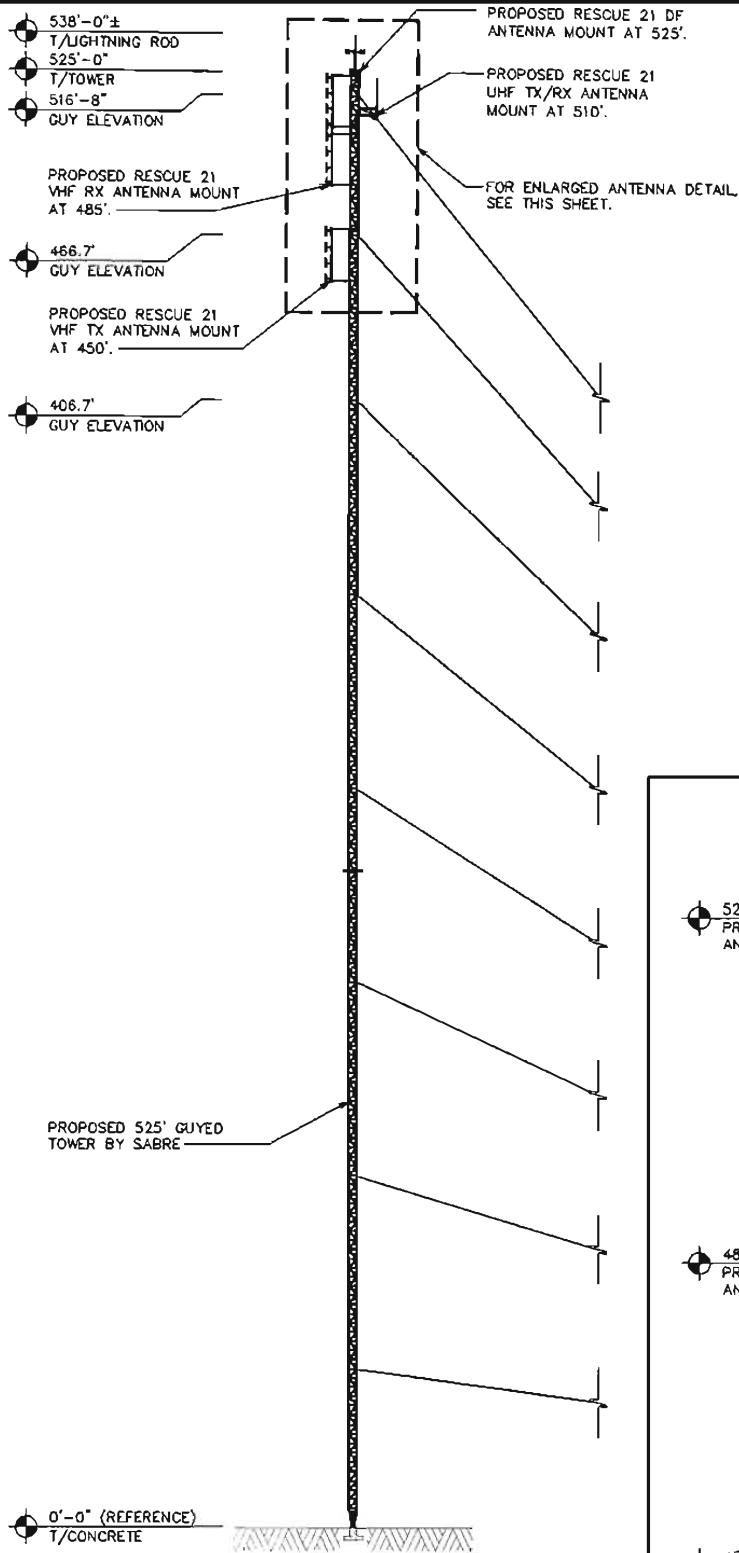
- **Option 1:** A 525-foot-tall tower painted with seven equal-width alternating bands of aviation orange and white paint according to FAA standards. This option would not require daytime high intensity white strobe lighting. Nighttime lighting for any of the painted tower alternatives would be similar in appearance and intensity to the existing HLS tower, although LED lights would be used in lieu of incandescent bulbs because they require less maintenance and less energy to operate. Two L-864 red flashing beacons would be mounted at both the 525-foot and 263-foot levels. Three L-810 steady burning red obstruction lights would be mounted at both the 131-foot and 394-foot levels.
- **Option 2:** A 525-foot-tall unpainted tower (the tower would remain a steel grey color) that would require daytime high intensity (270,000 candelas) white strobe lighting in accordance with FAA standards for dual high intensity obstruction lighting (FAA Style F). Because each high intensity (L-856) white strobe light only covers an arc of 120

Description of the Proposed Action and Alternatives

degrees, three L-856 flashheads would be mounted at both the 525-foot and approximately the 263-foot levels. Nighttime lighting for any of the unpainted tower alternatives would be the same in appearance, flash rate, and intensity as Option 1 for a painted tower, while using low maintenance LED light fixtures (L-864 and L-810) instead of incandescent bulbs.

The Proposed Action would also include the construction of a 30-foot by 50-foot equipment compound with an elevated 12-foot by 25-foot steel platform, an 8-foot by 12-foot concrete equipment shelter, an emergency backup generator, a 500-gallon propane tank used to fuel the emergency generator, and associated equipment. The top of the elevated equipment platform will be 2 feet above the base flood elevation and approximately 4.5 feet above ground level. The surveyed site elevation was determined to be 7 feet above mean sea level (amsl). An 8-foot-tall chain link fence topped with 3-strand barbed wire and a single vehicle access gate would surround the compound. Equipment would be staged on existing paved surfaces or sparsely vegetated areas adjacent to the proposed site. Utilities for the new tower would be connected to existing nearby services. See Figures 3, 4, 5, and 6 for drawings of the Proposed Action tower, site plan, compound detail, and platform layout.

The combination of the proposed tower location and the 525-foot height would provide continuous Rescue 21 communications coverage for the Coast Guard's Sector North Carolina AOR, thus meeting the purpose and need for the Proposed Action. In addition, the new tower would be constructed in accordance with current industry storm resistance requirements to meet the Structural Standards for Antenna Supporting Structures and Antennas (ANSI/TIA/EIA 222-G).



Title

24 Guy Wire Tower Elevation

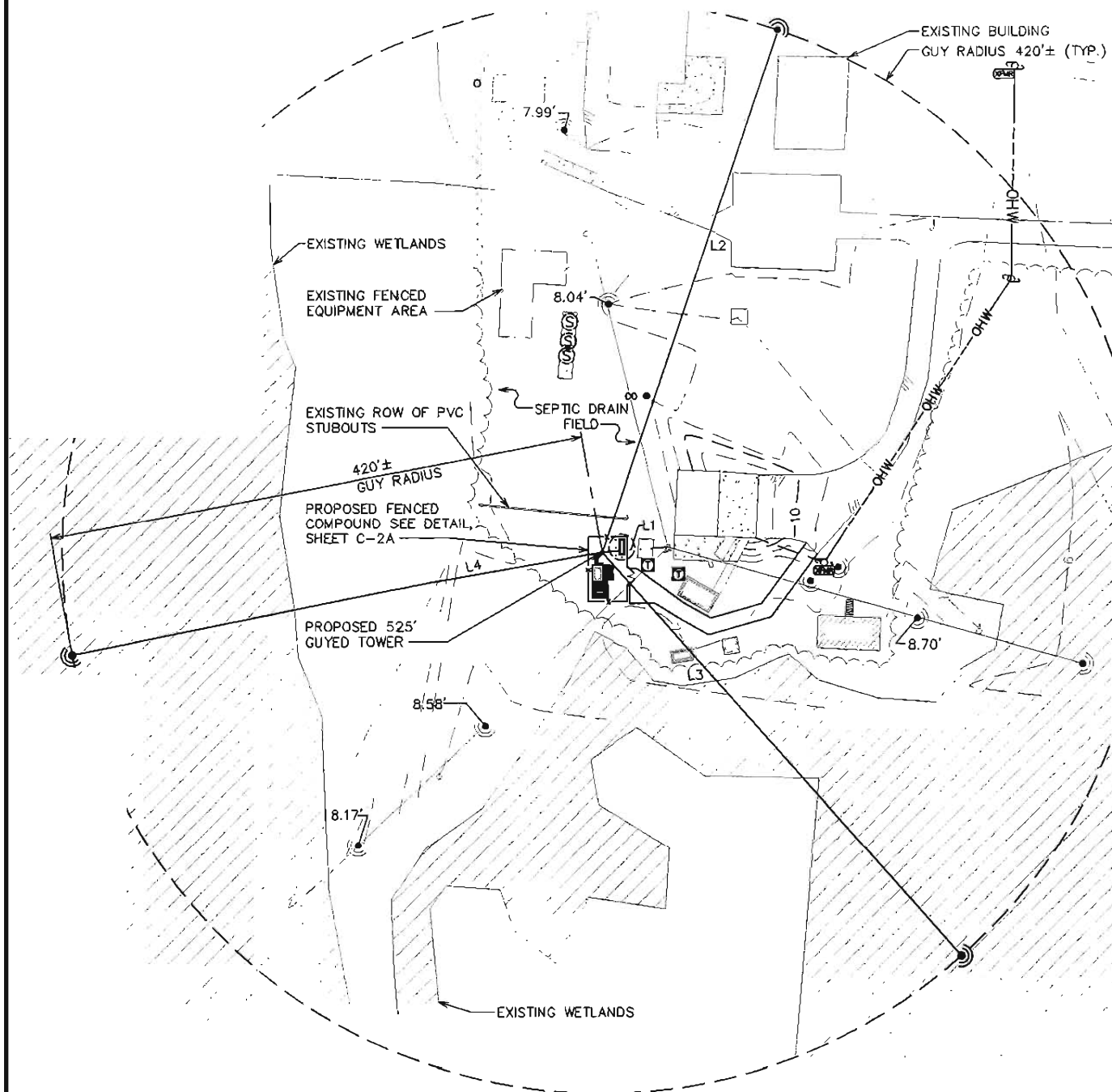


Proj No: 15301803

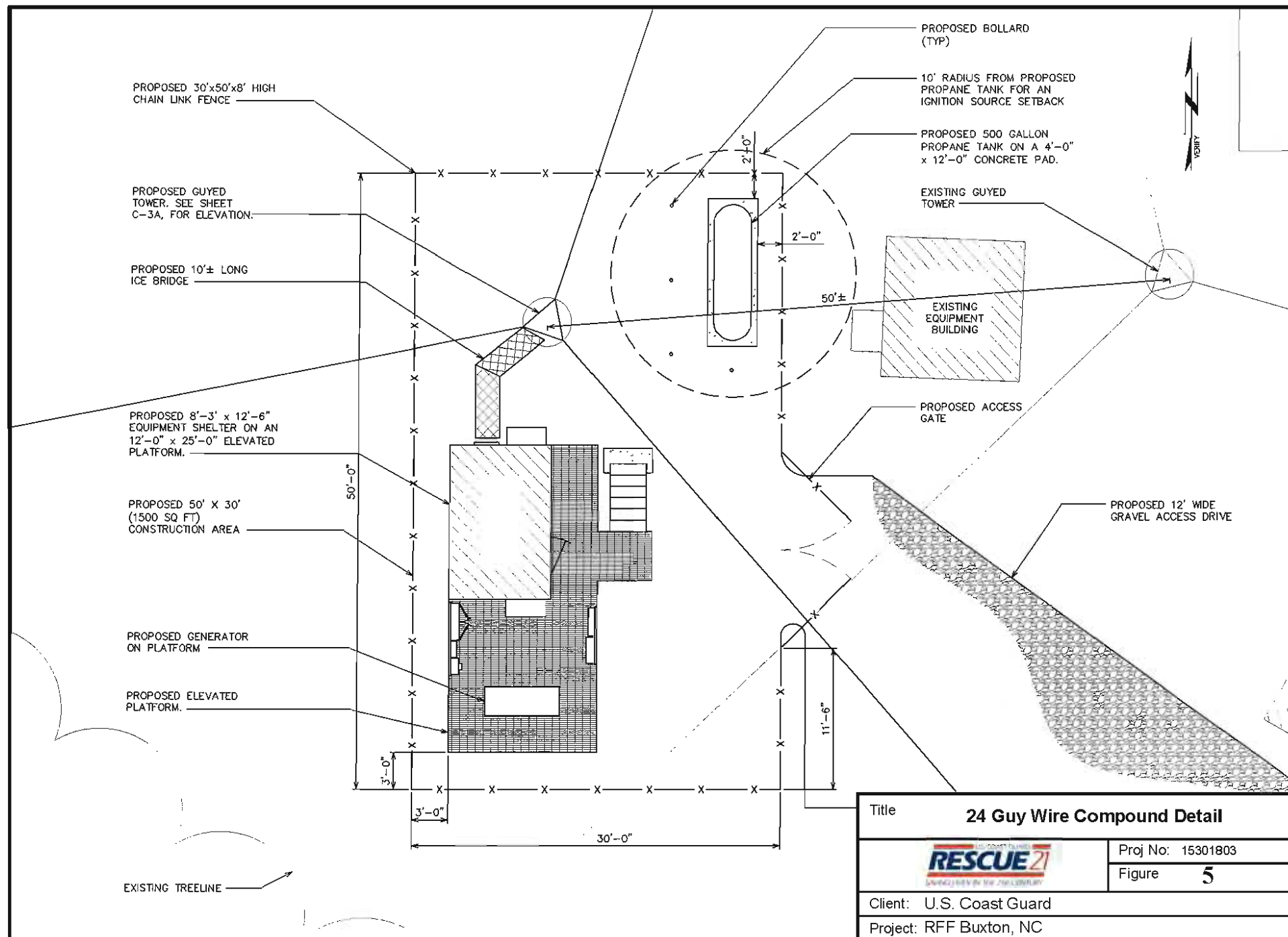
Figure 3

Client: U.S. Coast Guard

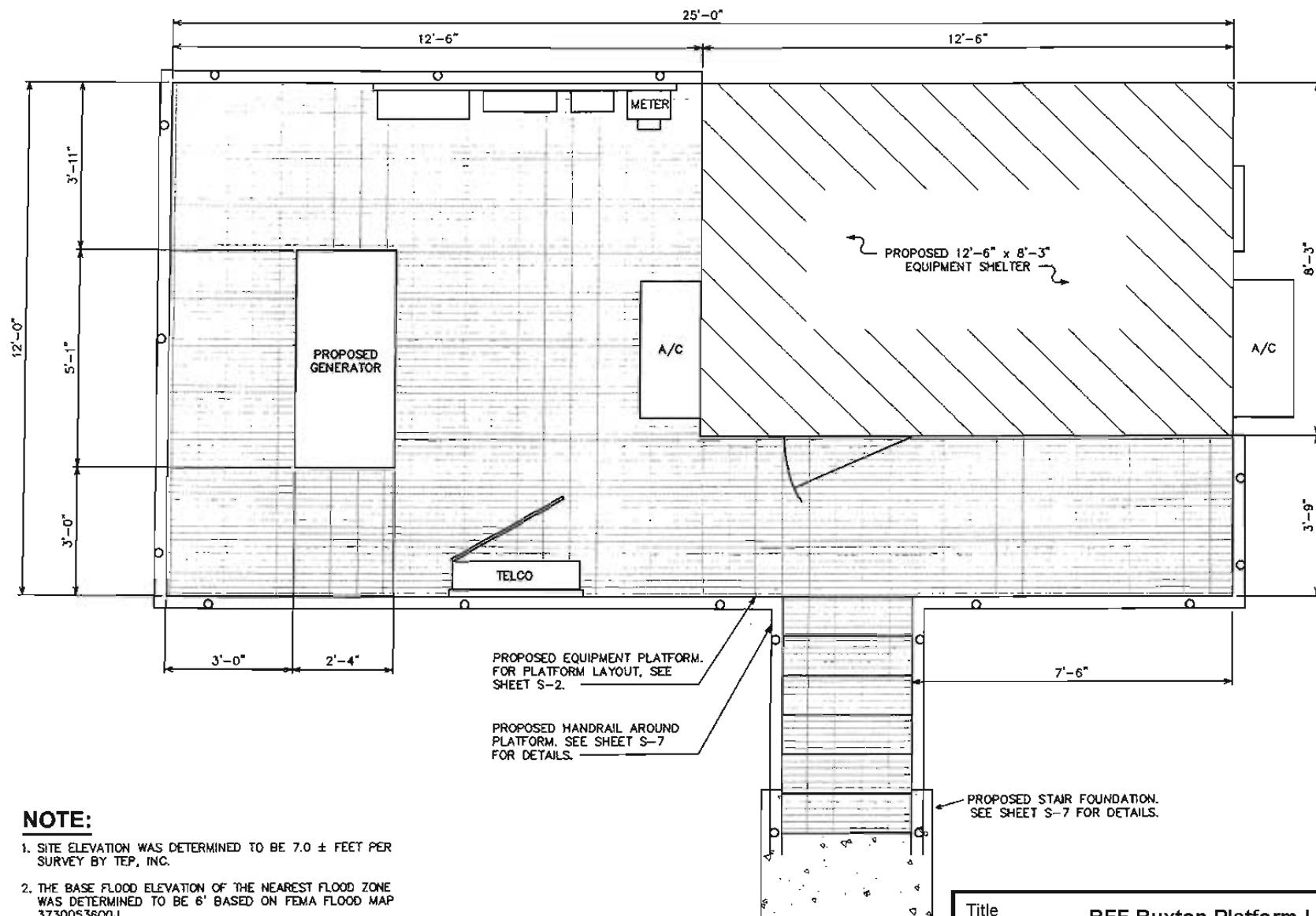
Project: RFF Buxton, NC



2-7



Title 24 Guy Wire Compound Detail	
	Proj No: 15301803
	Figure 5
Client: U.S. Coast Guard	
Project: RFF Buxton, NC	



NOTE:

1. SITE ELEVATION WAS DETERMINED TO BE 7.0 ± FEET PER SURVEY BY TEP, INC.
2. THE BASE FLOOD ELEVATION OF THE NEAREST FLOOD ZONE WAS DETERMINED TO BE 6' BASED ON FEMA FLOOD MAP 37300S3600J.
3. TOP OF PLATFORM STEEL IS TO BE 2 FEET ABOVE BASE FLOOD ELEVATION, BUT NOT LESS THAN 4 FEET OVERALL ABOVE THE TOP OF FOUNDATION.

Title		RFF Buxton Platform Layout
	Proj No:	15301803
	Figure	6
Client: U.S. Coast Guard		
Project: RFF Buxton, NC		

2.1.4 Alternative Two – 39-Guy Wire Tower

Alternative Two consists of constructing a new 525-foot-tall guyed communications tower in the same location as the Proposed Action site. Under Alternative Two, the new tower would be supported with 39 guy wires and would require six anchor points. The anchors would consist of buried horizontal 3-foot by 4-foot by 24-foot long blocks for the inner anchor points and 5-foot by 3.5-foot by 36-foot long blocks for the outer anchor points set within a 261-foot and 400-foot radius of the tower, respectively. The tower foundation would consist of a 56-foot-deep, 5-foot diameter, drilled and reinforced concrete caisson. Bird diverters and lighting versus painting options will be considered as described for the Proposed Action. The compound dimensions and ground support equipment would be approximately the same as for the Proposed Action. Compound dimensions would be approximately 36 feet by 45 feet according to preliminary drawings. Equipment would be staged on existing paved surfaces or sparsely vegetated areas adjacent to the proposed site. Utilities for the new tower would be connected to existing nearby services. See Figures 7, 8, and 9 for drawings of the Alternative Two tower, site plan, and compound detail.

2.1.5 Alternative Three – Self Supported Lattice Tower

Alternative Three consists of constructing a new 525-foot self-supported lattice tower in the same location as the Proposed Action site. Lighting versus painting options will be considered as described for the Proposed Action. The foundation for the three-leg tower would consist of 72.5-foot-deep, 8-foot diameter, drilled and reinforced concrete caissons. The three caissons would be set 45 feet apart. In order to accommodate the larger footprint for the three-leg tower, the fenced compound dimensions would be increased to 65 feet by 70 feet. The raised platform dimensions and associated ground support equipment would remain the same as described for the Proposed Action. Equipment would be staged on existing paved surfaces or sparsely vegetated areas adjacent to the proposed site. Utilities for the new tower would be connected to existing nearby services. See Figures 10, 11, and 12 for drawings of the Alternative Three tower, site plan, and compound detail.

538'-0"±
 T/LIGHTNING ROD
 525'-0"
 T/TOWER
 516'-8"
 GUY ELEVATION

476'-8"
 GUY ELEVATION
 PROPOSED RESCUE 21
 VHF/RX ANTENNA MOUNT
 AT 485'. SEE ANTENNA
 MOUNT DETAILS, SHEET
 C-7 & C-8.

426'-8"
 GUY ELEVATION
 PROPOSED RESCUE 21
 VHF/TX ANTENNA MOUNT
 AT 450'. SEE ANTENNA
 MOUNT DETAILS, SHEET
 C-7 & C-8.

PROPOSED RESCUE 21 DF ANTENNA MOUNT
 AT 525'. FOR DETAILS, SEE SHEET S-9 & S-10.

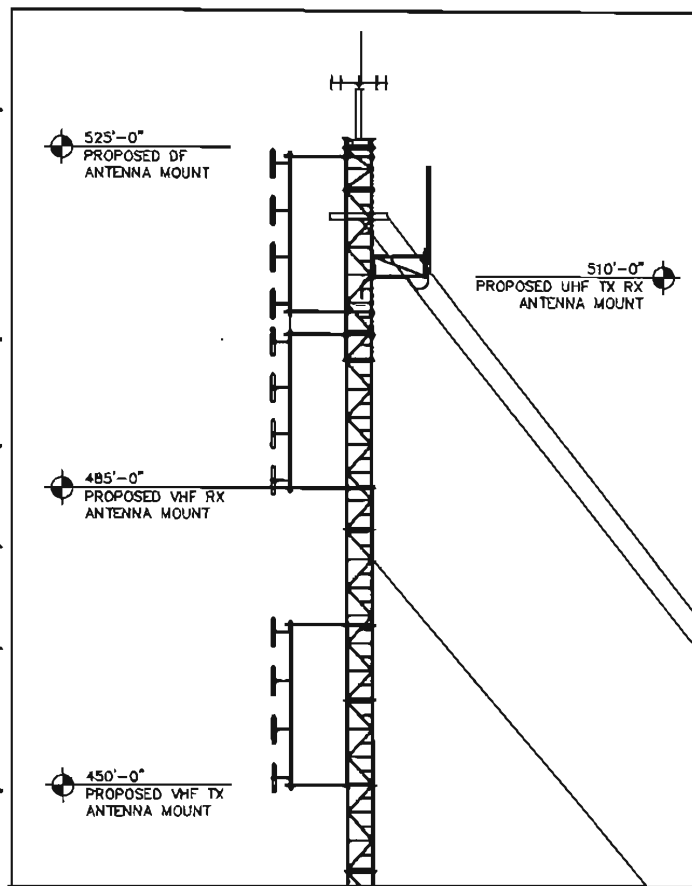
PROPOSED RESCUE 21
 UHF TX/RX ANTENNA
 MOUNT AT 510'. SEE ANTENNA
 MOUNT DETAILS, SHEET
 C-7 & C-8.


FOR ENLARGED ANTENNA DETAIL,
 SEE THIS SHEET.

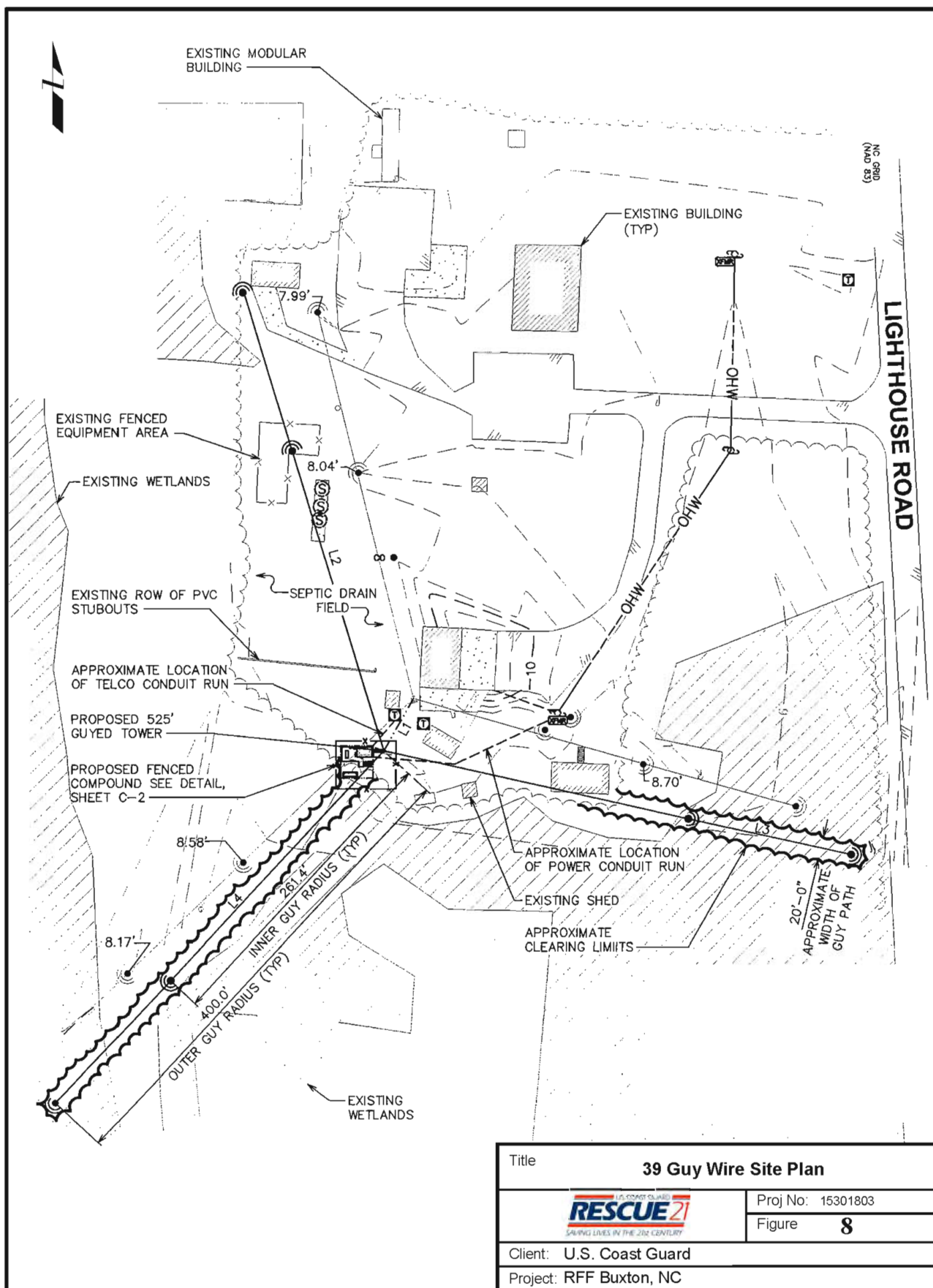
0 50 100
 SCALE IN FEET
 SCALE: 1" = 50'


PROPOSED 525' GUYED
 TOWER BY SABRE

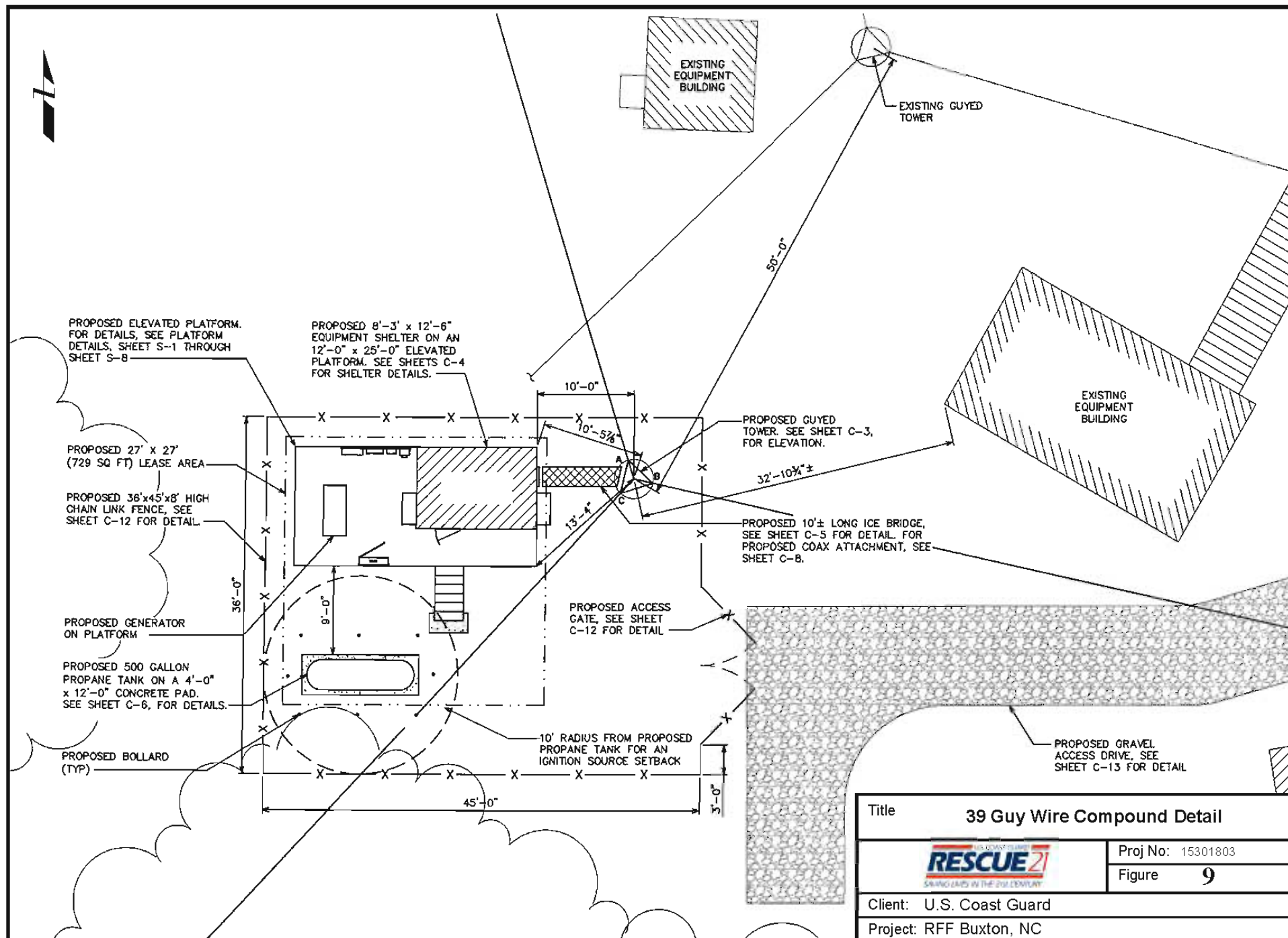
0'-0" (REFERENCE)
 T/CONCRETE



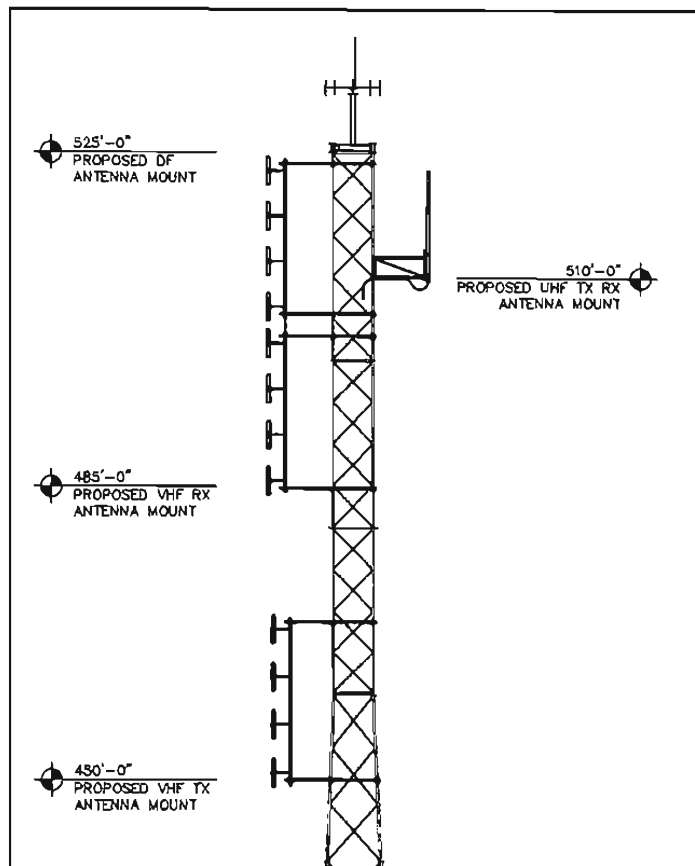
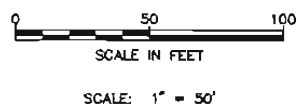
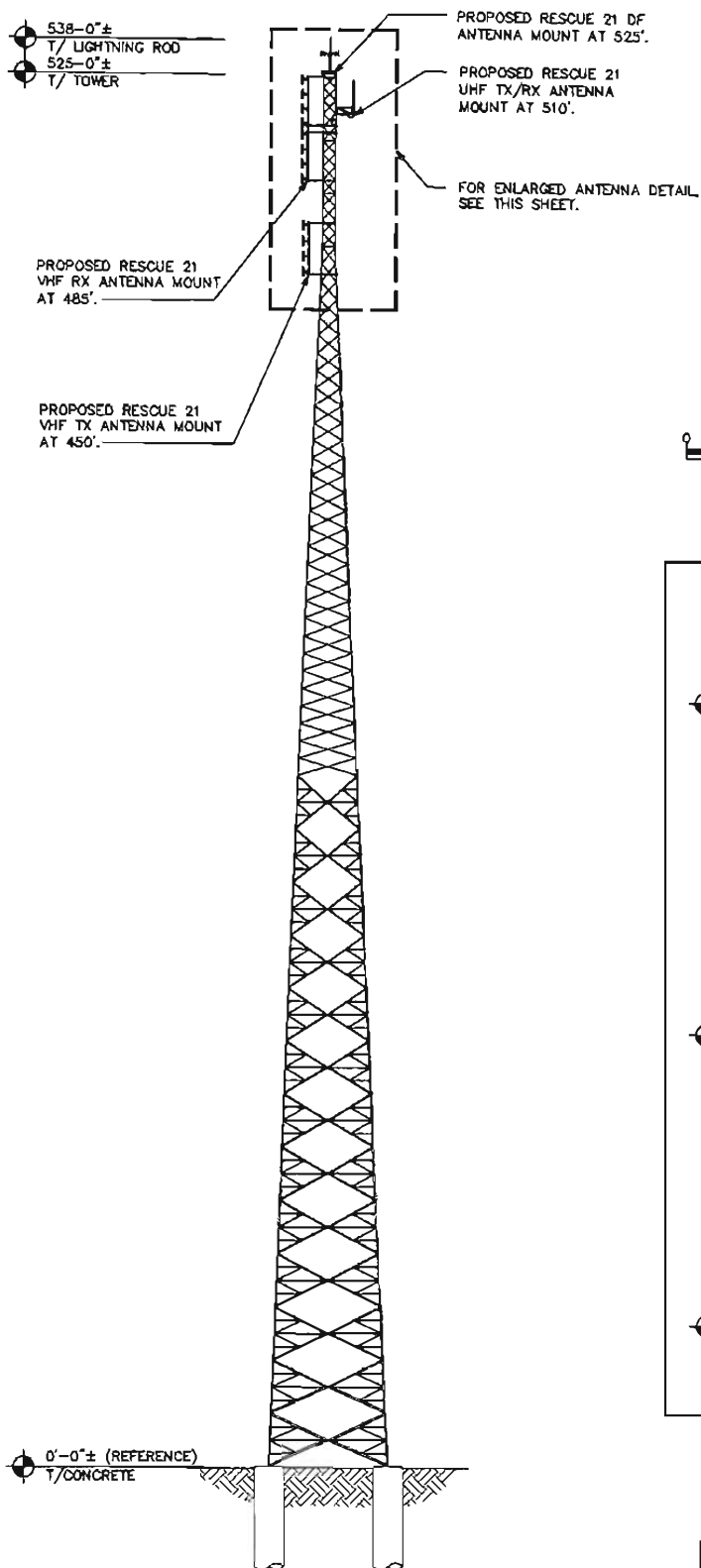
Title		39 Guy Wire Tower Elevation	
		Proj No:	15301803
		Figure	7
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			



Title		39 Guy Wire Site Plan	
		Proj No: 15301803	
		Figure 8	
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			



Title		39 Guy Wire Compound Detail	
		Proj No: 15301803	
		Figure 9	
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			



Title **Self-Supported Tower Elevation**

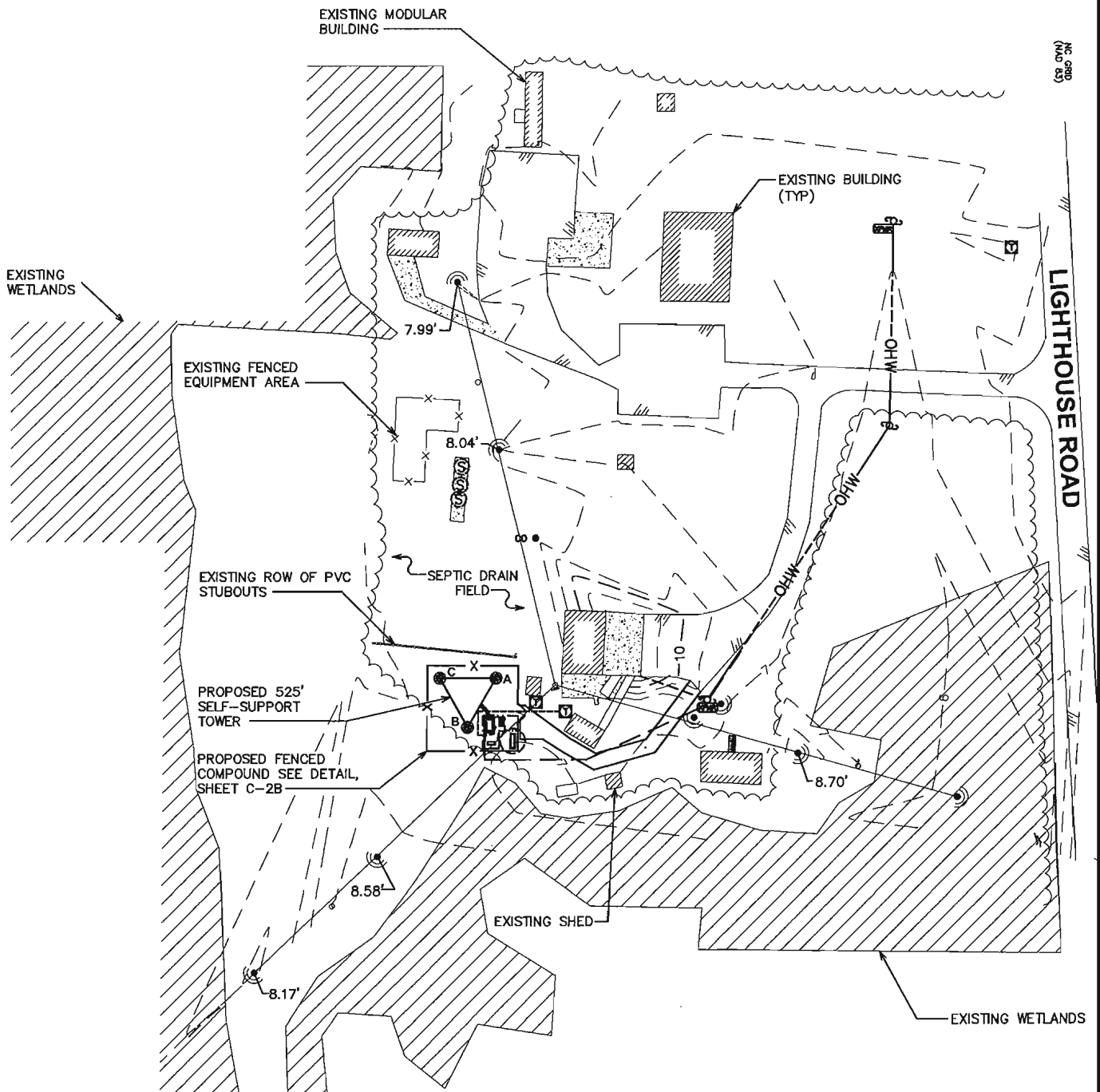



Proj No: 15301803

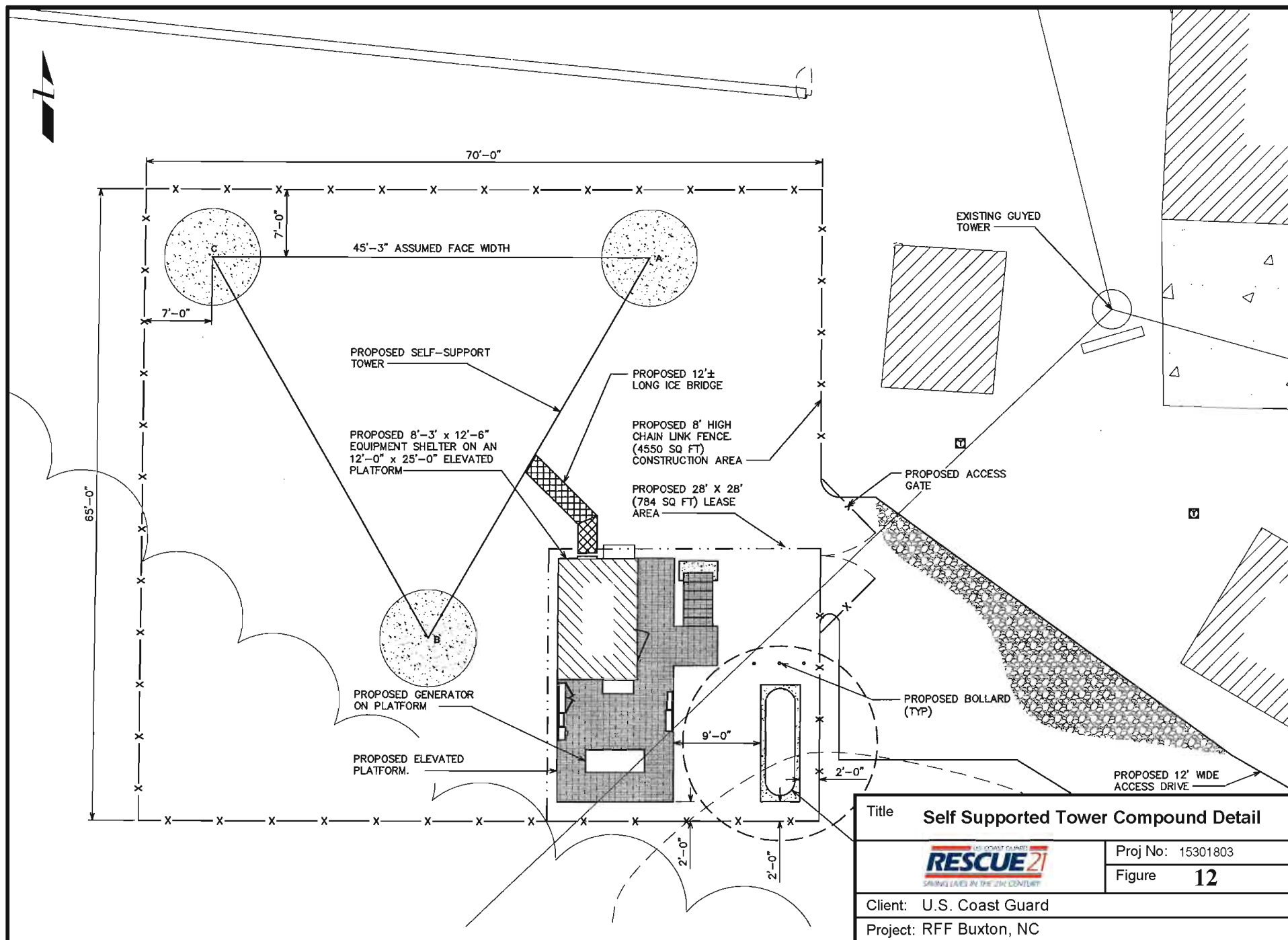
Figure **10**


Client: U.S. Coast Guard

Project: RFF Buxton, NC



Title		Self Supported Tower Site Plan	
		Proj No: 15301803	
		Figure 11	
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			



Title Self Supported Tower Compound Detail	
	Proj No: 15301803
	Figure 12
Client: U.S. Coast Guard	
Project: RFF Buxton, NC	

2.2 ALTERNATIVES CONSIDERED AND DISMISSED

The Coast Guard's site selection methodology includes comprehensive analyses of existing RFFs and potential candidate sites. The site selection process is focused on identifying and developing candidate sites that can achieve technical requirements with affordable costs, appropriate schedule, and minimal implementation risk. Two alternative locations were considered but dismissed for installation of the Coast Guard Rescue 21 equipment within the Sector North Carolina AOR.

2.2.1 Co-Location on Existing Commercial or Government Owned Towers

No existing towers within a 20-mile radius of the Proposed Action site meet the structural or height requirements for Rescue 21 project antennae installations. Table 1 lists the nine towers within the 20-mile radius and the reasons they were dismissed from consideration. Figure 13 provides a location map of the seven closest existing towers including HLS Buxton. The existing HLS tower was determined to be structurally inadequate to support the added weight of the four new Rescue 21 antennas. In addition, the HLS tower would not provide sufficient vertical separation to avoid frequency interference between the NOAA National Weather Service transmitting antenna and the Rescue 21 equipment.

2.2.2 Construction of New Tower on the Former Coast Guard Group Cape Hatteras Property

The Coast Guard has an agreement from the NPS to use and make permanent improvements on approximately 16 acres of land bordering the Atlantic Ocean in the Community of Buxton. Located south of State Route 12 on Old Lighthouse Road and due north of the original location of Cape Hatteras Light Station, the property was used for Coast Guard Group Cape Hatteras from 1982 until disestablishment in June 2005. The Coast Guard Group Cape Hatteras property was once used by the Department of Defense as the Naval Facility Cape Hatteras from January 1956 until decommissioning in June 1982. In 2004, the Coast Guard elected to close Group Cape Hatteras and established a Sector Command Center in Atlantic Beach, NC and a Sector Field Office in Nags Head, NC for logistical support. The Coast Guard owns an 8-acre parcel of land due north and immediately adjacent to the NPS-owned 16-acre parcel, formerly used as a housing area for Group Cape Hatteras personnel. Dare County and other agencies have sought to acquire the 8-acre parcel of land still owned by the Coast Guard with its valuable abandoned Coast Guard housing facilities; the property is expected to be identified as excess to the needs of the Federal Government. Due to the desire of other agencies to preserve this property and the large number of buildings and support facilities on both the NPS 16-acre parcel and the Coast Guard 8-acre parcel, the NPS/Coast Guard parcels were determined to be unsuitable for the construction of a tall guyed tower. Neither the 16-acre parcel, nor the 8-acre parcel is large enough to accommodate the potential fall zone of a 525-foot tower because approximately 25.3 acres are required. The existing HLS Buxton site would not require such a large fall zone because it is surrounded by undeveloped wetlands owned by the Federal Government. In addition, the NPS/Coast Guard parcels are close to the beach in an area that does not currently have a communication tower or any other obstruction of the view; thus, construction of a new tower would negatively impact the viewshed in that area.

2.2.3 Construction of New Tower on Property Not Owned by Coast Guard

The U.S. General Services Administration real property policy requires that all Federal agencies “achieve maximum use of their real property, in terms of economy and efficiency” and satisfy their real property needs by first seeking affordable property held by other entities within the same agency (i.e., other Coast Guard or U.S. Department of Homeland Security entities), and then other Federal agencies, rather than acquiring such property from a non-Federal entity, unless mission requirements dictate otherwise (41 CFR 102-73.10, 102-73.250[a], and 102-75.25[a]).

In order to meet operational coverage requirements for this portion of the Sector North Carolina AOR, the RFF would need to be sited on Hatteras Island within no more than a 5-mile radius of Cape Hatteras. Other than the 11.25-acre parcel of land selected for the proposed RFF installation (which is currently administered by the Coast Guard), the majority of Hatteras Island in the Cape Hatteras vicinity is Federal property administered by the NPS as part of the Cape Hatteras National Seashore and is, therefore, unavailable for consideration.

Privately owned land located between the towns of Frisco and Buxton facing Pamlico Sound was not investigated for an RFF site. The majority of the remaining undeveloped land in this area is classified as wetland. The presence of Billy Mitchell Airport (HNC/KHSE) in the community of Frisco prevents tower construction to the west of Cape Hatteras. Hatteras Island is located in an area of expensive real estate, which raises significant obstacles to implementing a cost-effective solution. In a developed area, approximately 25.3 acres of land would be needed to site a 525-foot-tall tower; therefore, purchase of property for construction of a new tower in this area is not considered a reasonable alternative. Any acquisition of land within areas of the AOR close to the coastline would be expensive due to the tourism- and resort-based nature of the region. For these reasons, purchasing property for construction of a new tower alternative was dismissed from consideration.

Table 2-1 provides a summary of the existing towers that were considered and the reason(s) they were dismissed.



Title Existing Towers Considered for Co-Location



Proj No: 15301803

Figure 13

Client: U.S. Coast Guard

Project: RFF Buxton, NC

Description of the Proposed Action and Alternatives

Table 2-1: Alternative Tower Sites Considered for Co-Location

ASR¹ No.	Street Address	Town	Owner²	Tower Design	Overall Height (feet)	Reason Tower Was Not Suitable for R21 Equipment
1005791	Not Provided	Buxton	U.S. Cellular Corp.	Lattice self-supported tower	316	Inadequate tower height to meet coverage objectives. Close proximity to several FM broadcasters (less than 0.5 mile) presents interference issues with R21 direction finder.
1006884	St. Hwy 12	Hatteras	Embarq	Lattice self-supported tower	142	Inadequate tower height and location is too far west to meet coverage objectives.
1006885	St. Hwy 12	Buxton	Embarq	Lattice self-supported tower	248	Inadequate tower height to meet coverage objectives.
1033395	St. Hwy 12	Buxton	Pinnacle Towers, LLC	Guyed	300	Inadequate height and available tower space to meet coverage objectives. No tower space is available above 247 feet. FM radio station on the top of the tower prevents R21 direction finder from being mounted within 200 feet.
1207404	Light House Road	Buxton	USCG – HLS Buxton	Guyed	425	Inadequate height to allow vertical separation with NOAA antenna; inadequate structural design.
1246243	52159 St. Hwy 12	Frisco	New Cingular Wireless PCS, LLC	Lattice self-supported tower	80	Inadequate tower height to meet coverage objectives.
None	Former USCG Group Cape Hatteras property	Buxton	Coast Guard	Lattice self-supported tower	100	Inadequate tower height to meet coverage objectives.
None	47109 Light Plant Rd	Buxton	Cape Hatteras Electric	Lattice self-supported tower	Not provided	Inadequate tower height to meet coverage objectives.
None	Cape Hatteras Light	Buxton	NPS	Lighthouse	208	National Historic Landmark – built in 1871. Inadequate height to meet coverage objectives.

¹ASR No. is the number assigned to the antennae by the FCC Antennae Registration System
²As identified by the FCC (FCC, 2009)

SECTION THREE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This section presents the existing environment or baseline conditions at the project site for the biophysical resources that would potentially be affected by the No Action Alternative, the Proposed Action, Alternative Two, and Alternative Three. Information for this section was derived from a review of relevant literature and Web sites, as well as a site visit conducted on April 14, 2009.

This section is organized by individual resource and includes descriptions of both the biological and physical portions of the potentially affected resource. Within this section, environmental consequences are presented for each alternative. Unless noted in the text, impacts from either the painted or unpainted tower option are considered to be the same.

3.2 NOISE

Affected Environment

Noise is generally defined as unwanted sound and can include any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Responses to noise by living organisms vary depending on the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day.

Sound pressure level (L_p) can vary over an extremely large range of amplitudes. The decibel (dB) is the accepted standard unit for measuring the amplitude of sound because it accounts for the large variations in amplitude and reflects the way people perceive changes in sound amplitude. Sound levels are easily measured, but the variability is subjective and physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation by subjective terms such as “loudness” or “noisiness.”

Different sounds have different frequency contents. When describing sound and its effect on a human population, A-weighted sound levels (dBA) are typically used to account for the response of the human ear. The term “A-weighted” refers to a filtering of the noise signal, which emphasizes frequencies in the middle of the audible spectrum and de-emphasizes low and high frequencies in a manner corresponding to the way the human ear perceives sound. The dBA has been found to correlate well with people’s judgments of the noisiness of different sounds and has been used for many years as a measure of community noise.

Noise is federally regulated by the Noise Control Act of 1972 (NCA). Although the NCA gives the U.S. Environmental Protection Agency (EPA) authority to prepare guidelines for acceptable ambient noise levels, it only directs those Federal agencies that operate noise-producing facilities or equipment to implement noise standards. EPA guidelines, and those of many other Federal agencies, state that outdoor noise levels in excess of 55 dBA are “normally unacceptable” for noise-sensitive land uses such as residences, schools, or hospitals.

Affected Environment and Environmental Consequences

Loud, disturbing, and unnecessary noise at the project site is regulated by the Dare County Code of Ordinances, Chapter 97 (Dare County, 2009a). The ordinance states that “no person shall make, continue or cause to be made or continued, any noise disturbance.” The ordinance does not provide specific dBA noise limits, however, the term “noise disturbance” is defined as “any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities, or endangers or injures personal or real property.” The ordinance provides an exemption for construction activities during normal business hours (from 7:00 a.m. to 10:00 p.m.). The State of North Carolina does not regulate noise.

Environmental Consequences

No Action

Under the No Action Alternative, there would be no new construction, and, therefore, no impact on ambient noise levels in the project area.

Proposed Action

Under the Proposed Action, noise would be emitted from mechanical equipment used in the construction of the communication tower. Table 3-1 shows the anticipated noise levels at a distance of about 50 feet from miscellaneous heavy equipment at the project site. The use of heavy equipment would be a short-term, temporary activity only associated with the initial construction phase of the proposed project. The impact of noise would be greatest within 50 feet of the site. Noise levels decrease with distance, and the impact would, therefore, be attenuated as distance from the site increased. To minimize noise impacts, construction activities would comply with Dare County’s noise ordinance and would be limited to normal business hours.

Table 3-1: Heavy Equipment Noise Levels at 50 Feet

Equipment Type ^a	Number Used ^a	Generated Noise Levels L _p (dBA) ^b
Scraper	1	89
Bulldozer	1	88
Trenching Machine	1	85
Backhoe (rubber tire)	1	80
Front Loader (rubber tire)	1	80
Concrete Finisher	1	80
Dump Truck	1	75
Concrete Truck	1	75
Crane	1	75
Flat-Bed Truck (18 wheel)	1	75
^a Estimated		
^b Source: CERL, 1978		

A generator used for emergency backup power and the continuous, low volume hum of the communications equipment would be other sources of noise associated with the operation of RFF Buxton. The generator would run for short periods on a regular basis for routine

maintenance checks, and would automatically start during power outages. The Coast Guard estimates that the generator would run up to 12 hours per year. Based on the intermittent use of the generator, no significant noise impacts are anticipated. Noise impacts resulting from the long-term operation and maintenance of the communication tower are not expected to be significant. No adverse impacts to ambient noise levels within the project area are anticipated.

Alternative Two

Under Alternative Two, noise impacts would be the same as those described for the Proposed Action. No adverse impacts to ambient noise levels within the project area are anticipated.

Alternative Three

Under Alternative Three, noise impacts would be the same as those described for the Proposed Action. No adverse impacts to the ambient noise levels within the project area are anticipated.

3.3 AIR QUALITY

Affected Environment

Air Pollutants and Regulations

Under the provisions of the Clean Air Act (CAA), as amended, the EPA has established National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Federal NAAQS are currently established for the following six criteria pollutants: carbon monoxide (CO), ozone (O₃), lead (Pb), nitrogen oxides (NO_x), sulfur oxides (SO_x), and particulate matter equal to or less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}). The CAA established two types of air quality standards. Primary standards establish pollutant limits to protect public health, including the health of sensitive populations such as children, the elderly, and asthmatics. Secondary standards establish pollutant limits to protect public welfare, including protection against decreased visibility and damage to wildlife, crops, vegetation, and buildings (EPA, 1995).

The EPA classifies the air quality within an air quality control region (AQCR) according to whether the region meets or exceeds Federal primary and secondary NAAQS. Federal projects that occur in regions not meeting primary or secondary standards must be evaluated to determine if a CAA conformity analysis is required in accordance with 40 CFR 93.

Regional Air Quality Considerations

Key factors affecting air quality conditions for a location or region are pollutant emission rates, emission parameters, topographic features, chemical reactions, cumulative effects from other emission sources, and meteorological conditions (e.g., temperature, winds, and precipitation).

An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified for each of the six criteria pollutants. Attainment describes a condition in which one or more of the six NAAQS are being met in an area. The area is considered to be in attainment only for those criteria pollutants for which the NAAQS are being met. Non-attainment describes a condition in which one or more of the six NAAQS are not being met in an area. Unclassified indicates that air quality in the area cannot be classified and is therefore treated as attainment. An area may have all three classifications for different criteria pollutants.

For non-attainment areas, a State must submit to the EPA a detailed State Implementation Plan (SIP), a federally approved and enforceable plan by which the State identifies how it will attain

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and/or maintain NAAQS. From time to time, a State may choose to revise its SIP or EPA may require a State to revise its SIP. Air emission regulations are more stringent in non-attainment areas.

Buxton is located in Dare County, which is a designated attainment area for O₃ and PM_{2.5} by both EPA Region 4 and the North Carolina Division of Air Quality (NC DAQ). On March 12, 2009, NC DAQ submitted to EPA its recommendations for non-attainment designations in North Carolina within the 1 year of promulgation of a new or revised NAAQS. The 8-Hour O₃ NAAQS was revised to 0.075 parts per million (ppm) on March 12, 2008. According to 2006–2008 monitoring data for North Carolina, Dare County is in an attainment area for the 1-hour and 8-hour O₃. There are several potential sources for O₃: motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents, as well as natural sources that emit NO_x and volatile organic compounds (VOCs), which help to form O₃. The NC DAQ air toxics program is a risk-based regulatory program designed to protect the public health by limiting emissions of toxic air pollutants from man-made sources; the program uses Acceptable Ambient Level (AAL) guidelines to monitor the attainment of 97 toxic air pollutants (NC DAQ, 2007).

Environmental Consequences

No Action

Under the No Action Alternative, no new construction or operations would occur and there would be no increase in long-term or short-term air emissions.

Proposed Action

The Proposed Action would result in short-term air emissions during construction activities, principally from construction activities related to site preparation and the use of construction equipment. The Proposed Action would result in a negligible amount of long-term emissions from occasional use of the emergency generator.

A majority of the emissions from the Proposed Action would occur as a direct result of construction activities. Site clearing and preparation activities are a potential source of fugitive dust emissions that may have a temporary impact on local air quality in the immediate project vicinity. If necessary, the construction contractor would water down disturbed areas of the construction site to reduce the impact of fugitive dust emissions. The effects of fugitive dust would be limited to the immediate project vicinity, would last only as long as the duration of construction, and would not result in long-term impacts.

Emissions from fuel-burning combustion engines (e.g., heavy equipment, earthmoving machinery, and motor vehicles) could temporarily increase the levels of some criteria pollutants, including CO, NO_x, and PM, as well as some non-criteria pollutants such as VOCs. To minimize the potential for these impacts, engines would be properly maintained and fuel-burning equipment running times would be kept to a minimum. The effects of fuel-burning combustion engines would be limited to the immediate project vicinity, last only as long as the duration of construction, and would not result in long-term impacts.

A final potential source of increased emissions would be the emergency generator, which would run during power outages and routine maintenance checks. The Coast Guard estimates the generator would operate for up to 12 hours per year. Potential emissions from the generator within the immediate project vicinity include CO, SO_x, NO_x, PM₁₀, and VOCs. Based on the intermittent usage and fuel type, an air permit from the NC DAQ would not be required for the

generator. No significant short- or long-term impacts are expected from use of the emergency generator.

In compliance with 40 CFR 93, the Proposed Action has been evaluated to address the potential need for preparation of an air quality conformity analysis. Under the CAA, a general conformity analysis is not required if a federally proposed action is to take place in an existing attainment area except when indirect emissions from sources associated with the proposed action would occur in a non-attainment or maintenance area. Designated non-attainment and maintenance areas in NC are located in central and western North Carolina (away from east coastal Dare County). All emissions for this project would fall well below the outlined limits; therefore, a CAA conformity analysis is not required for the Proposed Action.

The proposed communication tower would not be classified as a major emission source and the short-term and long-term emissions from construction and operation would not exceed the NAAQS or NC DAQ AALs. NC DAQ does provide construction guidelines (NC DAQ, 2004) for an air quality permit for a new facility or modification of a permit for an existing facility. The existing RFF Buxton facility is not an air-permitted facility. The temporary emission of minor amounts of air pollution during construction would be unavoidable; however, the individual and cumulative impacts during construction would be insignificant. Long-term impacts from criteria pollutant emissions during monthly testing and infrequent use of the emergency generator and from quarterly equipment maintenance visits would be negligible. Impacts to air quality are not expected to be significant.

Alternative Two

Air impacts under Alternative Two would be the same as those described for the Proposed Action; impacts to air quality under Alternative Two are not expected to be significant.

Alternative Three

Air impacts under Alternative Three would be the same as those described for the Proposed Action; impacts to air quality under Alternative Three are not expected to be significant.

3.4 EARTH RESOURCES

3.4.1 Geology and Topography

Affected Environment

The project site is located within the Atlantic Coastal Plain physiographic province. Cape Hatteras is underlain by bedrock of the Quaternary system or Cenozoic era. Depth to bedrock is less than 1 foot (EDR, 2009). Sand clay, gravel, and peat deposited in marine fluvial, eolian, and lacustrine environments dominate the area.

The topography at the project site is level and the elevation is approximately 7 feet amsl (EDR, 2009).

Environmental Consequences

No Action

Under the No Action Alternative, no physical changes to the project site would occur and there would be no impacts to the geology or topography of the area.

Proposed Action

Under the Proposed Action, no significant adverse impacts to geology or topography at the project site are anticipated. Bedrock will be encountered during construction activities, but the area of impact will be minor and site specific. The proposed tower's three anchors would consist of reinforced concrete caisson foundations that are 5.5 feet in diameter, 52 feet deep, and set within a 400-foot radius of the tower. The tower foundation would consist of a 59-foot-deep, 3.5-foot diameter, drilled and reinforced concrete caisson. The Proposed Action would also include the construction of a 30-foot by 50-foot equipment compound. Grading for the preparation of the tower and compound would not have a noticeable effect on the project site's existing level topography. The Proposed Action is not anticipated to have any adverse or long-term impacts to geology and topography.

Alternative Two

Alternative Two would have similar impacts to geology and topography as those described for the Proposed Action. Under Alternative Two, the anchors would consist of buried horizontal 3-foot by 4-foot by 24-foot-long blocks for the inner anchor points and 5-foot by 3.5-foot by 36-foot-long blocks for the outer anchor points set within a 261-foot and 400-foot radius of the tower, respectively. The tower foundation would consist of a 56-foot-deep, 5-foot-diameter, drilled and reinforced concrete caisson. The equipment compound would have approximately the same dimensions as described for the Proposed Action. No significant adverse impacts to geology or topography at the project site are anticipated under Alternative Two.

Alternative Three

Alternative Three would have similar impacts to geology and topography as those described for the Proposed Action. Under Alternative Three, the foundation for the three-leg tower would consist of 72.5-foot-deep, 8-foot-diameter, drilled and reinforced concrete caissons. The three caissons would be set 45 feet apart. In order to accommodate the larger footprint, the fenced compound dimensions would be increased to 65 feet by 70 feet. No significant adverse impacts to geology or topography at the project site are anticipated under Alternative Three.

3.4.2 Soils

Affected Environment

According to the Dare County Soil Survey, soils within the project site are mapped within the Corolla-Duckston complex (CrB) (NRCS, 2009). The soil series consists of poorly to moderately well-drained soils formed in sandy sediments along the Atlantic Coast. Slopes range from 0–6 percent with a medium to high alkalinity. Permeability of the surface and subsurface layers is low. The soil is rarely flooded. Surface and subsurface soils consist of coarse grained soils, sands, clean sands, and poorly graded sands. Saturated hydrologic conductivity is 141 micrometers/second (EDR, 2009).

The Coast Guard sent a letter to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) in June 2009 to obtain information on any regulatory requirements for the proposed RFF Buxton construction. The Coast Guard received a response from the NRCS in a letter dated July 29, 2009 stating that the project area is outside the NRCS's program areas (Appendix A).

Environmental Consequences

No Action

Under the No Action Alternative, no physical changes to the project site would occur and there would be no impacts to soils.

Proposed Action

Under the Proposed Action, no significant adverse impacts to soils are anticipated. Temporary disturbance to surficial soils would occur during construction. To reduce the potential adverse impacts associated with soil disturbance, best management practices (BMPs), such as minimizing the removal of existing vegetation, mulching bare soils after construction is completed, and using sediment barriers such as silt fence, would be used to prevent the erosion of soils and transport of sediment from the project site. Grading and excavation of soils within the project site would be minimized to the greatest extent possible.

Alternative Two

Impacts to soils under Alternative Two are anticipated to be the same as those described for the Proposed Action. No significant adverse impacts are anticipated.

Alternative Three

Impacts to soils under Alternative Three are anticipated to be the same as those described for the Proposed Action. No significant adverse impacts are anticipated.

3.4.3 Prime Farmland

Affected Environment

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. The Farmland Protection Policy Act (FPPA), DHS directive MD 023-01, *Environmental Planning Program*, and COMDTINST M16475.1D require that the Coast Guard examine the impacts of its actions on prime or unique agricultural lands and minimize any potential impacts.

The Corolla-Duckston fine sand soil units, the mapped soil units for the project site, are not classified as prime farmland soil within Dare County (NRCS, 2009). In addition, no unique farmland occurs within or adjacent to the project area (NRCS, 2009).

The Coast Guard sent a letter to the NRCS in June 2009 to obtain information on any regulatory requirements for the proposed RFF Buxton construction. The Coast Guard received concurrence that no prime farmland exists within the project area from the NRCS in a letter dated July 29, 2009 (Appendix A).

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no adverse impacts to prime or unique farmland soils.

Proposed Action

Under the Proposed Action, no construction would occur within or adjacent to prime or unique farmlands and, therefore, there would be no adverse impacts to prime or unique farmland soils.

Alternative Two

Under Alternative Two, no construction would occur within or adjacent to prime or unique farmlands and, therefore, there would be no adverse impacts to prime or unique farmland soils.

Alternative Three

Under the Alternative Three, no construction would occur within or adjacent to prime or unique farmlands and, therefore, there would be no adverse impacts to prime or unique farmland soils.

3.5 WATER RESOURCES

Affected Environment

The project site is located within the limits of Cape Hatteras National Seashore and is approximately 0.5 mile from the Atlantic Ocean coastline and about 3 miles from the Pamlico Sound. Both water bodies support recreational activities including boating and fishing.

Aquifers in the Coastal Plain are regional in extent, consisting of porous sand and limestone aquifers. The Coastal Plain sediments have been divided into 10 aquifers separated by confining units. A shallow unconfined surficial aquifer is present in most areas. Confined aquifers include the Peedee, Black Creek, Upper Cape Fear, Lower Cape Fear, Castle Hayne, Beaufort, Pungo River, and Yorktown aquifers (USGS, 2009). The aquifers and confining units rest upon crystalline basement rocks; dip and thicken to the east-southeast; and are overlain by younger aquifers and confining units in deposits of Quaternary and Tertiary age. The top of the uppermost aquifer, the Peedee, ranges from 122 feet above to 595 feet below sea level. The maximum thickness of all aquifers and confining units in Cretaceous rocks is more than 1,600 feet (Winner and Lyke, 1989).

Drinking water for the project site is provided by the Dare County Public Water Supply. Water is obtained from aquifers 300–400 feet below ground near the Reverse Osmosis plant in Frisco and is distributed to Avon, Buxton, Frisco, and Hatteras (EPA, 2009).

The Clean Water Act (CWA) (33 U.S. Code [U.S.C.] 1251) prohibits unauthorized discharges into navigable waters of the United States. In addition, the CWA targets point source discharges, such as municipal wastewater outfalls, and nonpoint source discharges, such as stormwater discharges. Stormwater runoff and other nonpoint source pollution may cause adverse impacts to surface water resources. Stormwater discharges associated with construction activities that disturb a total of 1 or more acres of land must be permitted under the National Pollutant Discharge Elimination System (NPDES). North Carolina has an EPA-approved program for the control of wastewater and stormwater discharges in accordance with the CWA. The program is known as the State Stormwater Management Program, and it is broader in scope than the CWA in that it regulates point source discharges to groundwater as well as surface water. As part of General Permit requirements, an erosion and sediment control plan must be developed for construction activities that disturb more than 1 acre of land. The North Carolina Division of Water Quality administers the State Pollutant Discharge Elimination System (SPDES) permitting program.

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The Coast Guard sent a letter to the North Carolina Department of Environment and Natural Resources (NC DENR) in June 2009 to obtain information on any regulatory requirements under its jurisdiction for the proposed RFF Buxton construction. The Coast Guard received correspondence from the NC DENR on July 21, 2009 in response to the scoping letter and again on August 21, 2009 in response to the Draft EA (Appendix A). A letter dated July 21, 2009 from the NC DENR Division of Water Quality indicated that no impacts are anticipated on wetlands or surface waters as a result of the Proposed Action (Appendix A).

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no impacts to surface water or groundwater resources.

Proposed Action

No significant or long-term impacts to surface or groundwater resources are expected as a result of the Proposed Action. The Proposed Action would not result in any discharges to navigable waters. During construction, ground disturbance at the project site would be limited to approximately 5,625 square feet (0.13 acre), plus anchor points and associated access roads. Total ground disturbance would be less than 0.5 acre.

The Coast Guard would implement appropriate BMPs, such as installing silt fences and revegetating bare soils, to minimize surface water runoff from the site. The construction of impervious surfaces within the project site would be limited to those structures (tower and equipment shelter) that require concrete foundations. The remaining portion of the project site would be lined with crushed limestone. The total increase in impervious surface area at the project site would be minor and is not expected to result in any adverse impacts to surface water resources. Although there would be some minor ground disturbance associated with these activities, the proposed construction would not occur in an aquifer recharge zone; therefore, these activities are not expected to impact groundwater resources in the area. Because there will be less than 1 acre of disturbance, a NPDES permit is not required.

Alternative Two

No significant or long-term impacts to surface or groundwater resources are anticipated under Alternative Two. Alternative Two would not result in any discharges to navigable waters. During construction, ground disturbance at the project site would be limited to approximately 5,625 square feet (0.13 acre), plus six anchor points and associated access roads. Total ground disturbance would be less than 0.5 acre.

The Coast Guard would implement appropriate BMPs, such as installing silt fences and revegetating bare soils, to minimize surface water runoff from the site. The construction of impervious surfaces within the project site would be limited to those structures (tower and equipment shelter) that require concrete foundations. The remaining portion of the project site would be lined with crushed limestone. The total increase in impervious surface area at the project site would be minor and is not expected to result in any adverse impacts to surface water resources. Although there would be some minor ground disturbance associated with these activities, the proposed construction would not occur in an aquifer recharge zone; therefore, these activities are not expected to impact groundwater resources in the area. Because there will be less than 1 acre of disturbance, a NPDES permit is not required.

Alternative Three

No significant or long-term impacts to surface or groundwater resources are anticipated under Alternative Three. Alternative Three would not result in any discharges to navigable waters. During construction, ground disturbance at the project site would be limited to approximately 4,550 square feet (0.10 acre).

The Coast Guard would implement appropriate BMPs, such as installing silt fences and revegetating bare soils, to minimize surface water runoff from the site. The construction of impervious surfaces within the project site would be limited to those structures (tower and equipment shelter) that require concrete foundations. The remaining portion of the project site would be lined with crushed limestone. The total increase in impervious surface area at the project site would be minor and is not expected to result in any adverse impacts to surface water resources. Although there would be some minor ground disturbance associated with these activities, the proposed construction would not occur in an aquifer recharge zone; therefore, these activities are not expected to impact groundwater resources in the area. Because there will be less than 1 acre of disturbance, a NPDES permit is not required.

3.6 INFRASTRUCTURE AND UTILITIES

3.6.1 Utility Availability

Affected Environment

Utility services are currently available to the project site. Electricity service is provided by Cape Hatteras Electric. Telecommunication service is provided by Charter Communications (Dare County, 2009b).

Environmental Consequences

No Action

Under the No Action Alternative, no change in existing conditions would occur and no impacts to area utilities would occur.

Proposed Action

Under the Proposed Action, no significant adverse impacts to utility availability would occur. The operation of RFF Buxton would require electric and telecommunication services. At the project site, power utilities are currently provided by Cape Hatteras Electric. A new 20-kilowatt emergency generator on a concrete slab, and one 500-gallon aboveground propane tank would be installed to provide emergency backup power to the communications tower compound.

No disruption to utility services is anticipated during construction activities. Short-term utility usage increases (electricity and/or water) may be required during construction activities; however, these temporary needs would be limited in scope and easily accommodated by the existing infrastructure.

Alternative Two

Alternative Two would have the same impacts to utilities as those described for the Proposed Action. No significant adverse impacts are anticipated.

Alternative Three

Alternative Three would have the same impacts to utilities as those described for the Proposed Action. No significant adverse impacts are anticipated.

3.6.2 Solid Waste Management

Affected Environment

The Dare County Sanitation Department provides residential and commercial solid waste collection for most areas of Dare County, including Cape Hatteras. Solid waste is collected and transported to a commercially operated Transfer Station located in Manteo. This waste is then transported to Bertie County for final disposal (Dare County, 2009c).

Environmental Consequences

No Action

Under the No Action Alternative, no change in existing conditions would occur and no impact to solid waste management availability would occur.

Proposed Action

Under the Proposed Action, no significant adverse impacts to solid waste management services are anticipated. Normal operations of RFF Buxton would not require solid waste collection and disposal services. Waste generated during the construction activities would be removed from the project site and taken to an appropriate disposal site. In all situations where wastes requiring disposal are generated, waste manifests would be maintained indicating the quantity and type of wastes generated, the work required, the transportation service used, and the disposal location. The amount of waste generated would not cause a significant impact to local or regional solid waste management resources.

Alternative Two

Alternative Two would have the same impacts to solid waste management services as those described for the Proposed Action. No significant adverse impacts are anticipated.

Alternative Three

Alternative Three would have the same impacts to solid waste management services as those described for the Proposed Action. No significant adverse impacts are anticipated.

3.6.3 Drainage

Affected Environment

Stormwater at the project site flows southeast toward the adjacent wetland and east toward the Atlantic Ocean (EDR, 2009).

Environmental Consequences

No Action

Under the No Action Alternative, no activity would be performed and no impacts to drainage would occur. Stormwater at the project site would continue to flow toward the adjacent wetland and the Atlantic Ocean.

Proposed Action

Under the Proposed Action, no significant adverse impacts to drainage are anticipated. Construction activities would have the potential to increase sediment transport to the adjacent wetland. To reduce the potential adverse impacts associated with soil erosion, BMPs would be used to prevent sediment runoff from the project site. Grading and excavation of soils at the project site would be minimized to the greatest extent possible.

Alternative Two

Alternative Two would have the same impacts to drainage as those described for the Proposed Action. No significant adverse impacts are anticipated.

Alternative Three

Alternative Three would have the same impacts to drainage as those described for the Proposed Action. No significant adverse impacts are anticipated.

3.6.4 Transportation and Site Access

Affected Environment

The project site is located off Lighthouse Road within the limits of the Cape Hatteras National Seashore parkland/conservation area. The main road through this area is Lighthouse Road. The project site contains one paved road and a small gravel parking lot. The project site shares a driveway with the NPS office buildings.

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no impacts to transportation or site access.

Proposed Action

Under the Proposed Action, no significant adverse impacts to transportation or site access are anticipated. A minor temporary increase in the volume of construction traffic on roads in the immediate vicinity of the project site could potentially result in a slower traffic flow for the duration of the construction phase. To mitigate potential delays, construction vehicles and equipment would be stored on site during project construction and appropriate signage would be posted on affected roadways. No road closures are anticipated. Operation and maintenance of the tower compound would require monthly visits by workers.

Under the Proposed Action, unpaved access roads leading to each guy wire anchor will need to be constructed. The access roads will be slightly elevated and maintained by mowing.

Alternative Two

No significant adverse impacts to transportation or site access are anticipated under Alternative Two; only minor, temporary impacts would occur as described for the Proposed Action. Unpaved access roads to each guy wire anchor will need to be constructed. The access roads will be slightly elevated and maintained by mowing.

Alternative Three

No significant adverse impacts to transportation are anticipated under Alternative Three; only minor, temporary impacts would occur as described for the Proposed Action. No access roads would be constructed for Alternative Three.

3.7 HAZARDOUS SUBSTANCES

Affected Environment

Hazardous substances are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health and the environment. Improper management and disposal of hazardous substances can lead to pollution of groundwater or other drinking water supplies, and the contamination of surface water and soil. The primary Federal regulations for the management and disposal of hazardous substances are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA).

No recognizable hazardous materials or wastes were observed at the project site during the April 14, 2009, site visit. No known hazardous waste handlers or facilities, including leaking underground storage tanks or brownfield sites, were identified within a 1-mile radius of the project site (EDR, 2009). Hazardous wastes are not anticipated to be encountered during excavation and construction at the project site.

Environmental Consequences

No Action

Under the No Action Alternative, the Coast Guard would not construct the communication tower; therefore, there would be no additional generation of hazardous wastes at the project site.

Proposed Action

The Proposed Action is not anticipated to generate a substantial amount of hazardous wastes as a result of construction and operation of the communication tower. Hazardous substances specific to the construction and operation of RFF Buxton may include batteries, spent fuel and used oil, and obsolete or broken system components (e.g., computer parts and solar panels). These hazardous substances would be generated during construction, maintenance, or decommissioning of the tower and its components. At the project site, the only potential baseline hazardous substance would be the propane used to fuel the emergency generator. The Coast Guard would handle (i.e., contain, store, transport, and dispose) all hazardous materials and wastes generated or discovered in accordance with applicable State and Federal regulations.

Routine maintenance and upkeep of the site (i.e., repairing and replacing system components) would normally include servicing, cleaning, or repairing the electronic equipment contained in the site compound or mounted on the tower. Materials and chemicals commercially available for use in electronic maintenance would be used, stored, and disposed of in accordance with applicable Federal, State, and local regulations. Routine maintenance on the emergency backup generator (changing the engine oil, etc.) would generate regulated waste that would need to be properly managed. Additionally, any maintenance to the tower structure or site compound (painting, etc.) could involve regulated materials that would need to be properly managed.

Alternative Two

Alternative Two is not anticipated to generate a substantial amount of hazardous wastes as a result of construction and operation of the communication tower; hazardous waste will be handled as described for the Proposed Action.

Alternative Three

Alternative Three is not anticipated to generate a substantial amount of hazardous wastes as a result of construction and operation of the communication tower; hazardous waste will be handled as described for the Proposed Action.

3.8 RADIO FREQUENCY RADIATION

RF radiation (i.e., radio waves) can be defined as electromagnetic waves generated by the oscillation of a charged particle with a wave frequency (the number of sound waves per unit of time) in the RF range, which is usually between 10 kilohertz (kHz) and 300,000 megahertz (MHz) (Morris, 1992). Radio waves are radiated by antennas used for several applications, including cellular communications, radio broadcasts, and two-way radio communications. For comparison purposes, a handheld cellular phone broadcasts at a frequency of 824 to 849 MHz; a citizen band (CB) radio broadcasts at frequencies from 26.96 to 27.41 MHz; and a large urban FM radio station may broadcast at frequencies ranging from 88 to 108 MHz (Brain, 2002). Although RF radiation does not present as great a health hazard as “ionizing” radiation sources (which can cause molecular changes that may result in significant genetic damage), such as X-rays and gamma rays, high intensities of RF radiation can be harmful. Similar to microwaves, RF radiation can heat biological tissue rapidly, resulting in tissue damage, which is known as a “thermal” effect. The extent of this heating depends on several factors, including RF. Other factors include the size, shape, and orientation of the exposed object; duration of exposure; environmental conditions; and efficiency of heat dissipation (FCC, 1999).

Due to the surrounding populations and the existing communication sources in the surrounding area (radio stations, cellular telephones and associated towers, CB radios, etc.), radio waves currently exist within the project area.

For relatively low levels of exposure to RF radiation, the evidence of harmful biological effects is unproven (FCC, 1999). However, multiple sources of information list maximum permissible exposure, also known as permissible exposure limits (PELs), for RF radiation. The FCC adopted guidelines for RF radiation in 1996, which were developed by the American National Standards Institute and the Institute of Electrical and Electronics Engineers, Inc. in 1992. These exposure criteria identify the threshold level at which harmful biological effects may occur based on electric and magnetic field strength and power density. FCC guidelines are most stringent for the frequency range from 30 to 300 MHz, the range in which the human body absorbs RF radiation most efficiently. PELs were developed for two categories. The first category, which affects the occupational population, applies to human exposure to RF fields when people are exposed due to their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure (USCG, 2002b). The second category, which affects the general population, applies to human exposure to RF fields when the general public may be exposed or when personnel exposed because of their employment may not be aware of exposure or cannot exercise control over the exposure (USCG, 2002b). A significant impact would occur if exposure limits to the occupational or general population exceeded the maximum PEL.

Operating power is a major factor in determining exposure limits. Commercial radio and television stations operate in a range from a few hundred watts up to millions of watts. The FCC only requires that tower-mounted installations be evaluated if antennas are mounted lower than 10 meters (32.8 feet) above the ground and the total power of all channels being used is more than 1,000 watts of effective radiated power.

Environmental Consequences

No Action

Under the No Action Alternative, the Coast Guard would not construct RFF Buxton. Current RF radiation would remain at existing levels.

Proposed Action

Under the Proposed Action, RFF Buxton would be constructed in the place of an existing communication tower, which already transmits radio waves. The proposed operating power of the radio transmitter for RFF Buxton would be a maximum of 50 watts, with frequencies ranging from approximately 156 to 414 MHz. Based on this operating power, the potential for harmful exposure to RF radiation would be extremely low.

Additionally, the change in broadcast frequencies resulting from the Rescue 21 technology upgrades would not significantly alter the safety factor. At the tower, only two of the four antennas would transmit signals; the other two antennas would receive signals. Receiving signals poses no exposure risk. The transmitters would not operate continuously; they would only generate radio waves while being used to communicate with distressed boaters or Coast Guard vessels.

The risk of exposure is further minimized because the tower would be 525 feet tall. The distance between the antennas (on top of the tower) and human populations would be too great to present a significant exposure risk.

No research currently exists to prove that harmful biological effects can result from exposure to low-level RF radiation. A significant impact would occur if exposure limits to the occupational or general population exceeded the maximum PELs; however, the Coast Guard has designed the tower to include safety measures to ensure that exposure limits are not exceeded.

Additionally, the proposed communication tower would meet guidelines set forth in Coast Guard Commandant Instruction M10550.25A, *Electronics Manual* (USCG, 2002b). RFF Buxton is not anticipated to substantially increase RF radiation in the project area.

Alternative Two

No adverse impacts on RF exposure levels are anticipated under Alternative Two; the tower is not anticipated to substantially increase RF radiation in the project area.

Alternative Three

No adverse impacts on RF exposure levels are anticipated under Alternative Three; the tower is not anticipated to substantially increase RF radiation in the project area.

3.9 BIOLOGICAL RESOURCES

3.9.1 Review of Regulatory Programs Affecting Biological Resources

Biological resources include wildlife, vegetation, threatened and endangered species, wetlands, and floodplains. These biological resources are protected by several EOs, including EO 13186 (Protection of Migratory Birds), EO 13112 (Invasive Species), EO 11990 (Protection of Wetlands), and EO 11988 (Floodplain Management), as well as several Federal laws, including the Migratory Bird Treaty Act (MBTA), the Endangered Species Act (ESA), and the CWA. A discussion of these policies is provided within the following subsections.

3.9.2 Wildlife

Affected Environment

The project site is located within the limits of Cape Hatteras National Seashore, which supports a variety of aquatic and terrestrial habitats. The immediate vicinity of the project site consists of a disturbed dirt and gravel area, with scattered trees, shrubs, and herbaceous vegetation. Wetlands are present on the southeast portion of the property and surrounding the property to the west and south. Common terrestrial species found near the project site include white-tailed deer, green anoles, and black rat snakes. No aquatic habitat exists on the project site, but whales, sharks, dolphins, sea turtles, and many fish species abound in the Atlantic Ocean, about 0.5 mile east of the property. Speckled trout, gray trout, bluefish, stripers, black drum, red drum, cobia, spadefish, spot croaker, false albacore, king mackerel, Spanish mackerel, flounder, sea mullet, and pompano are among the fish species commonly found off the coast of Cape Hatteras. Shellfish, crabs, cottonmouth snakes, waterfowl, wading birds, and nutria are frequently encountered in the tidal marshes near the project site.

There are over 360 documented bird species within the Cape Hatteras National Seashore's habitats. Located on the Atlantic Flyway, a major avian migratory route, the park was designated as a Globally Important Bird Area (IBA) in 1999 by the American Bird Conservancy. According to the Audubon Society, current conservation issues at Cape Hatteras National Seashore include off-road vehicle and other recreational pursuits disturbing nesting colonial birds and piping plovers (Audubon Society, 2009). Predation from feral cats, as well as raccoons, is a significant stress on ground nesting plovers and colonial birds. Habitats have been altered by dune building, channelization, and ditching, and the seashore habitat and vegetation have changed in quantity and quality.

The Atlantic Flyway is a regular travel route for migrating land and water birds. A migratory bird is any species that lives, reproduces, or migrates within or across international borders at some point during its annual life cycle. The MBTA was enacted to ensure the protection of shared migratory bird resources and prohibits the take and possession of any migratory bird, their eggs, or nests, except as authorized by a valid permit or license. In addition, EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), directs Federal agencies whose activities have or are likely to have a measurable, negative effect on migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to promote the conservation of migratory bird populations.

Communication towers present a potential risk for collisions to migratory birds. To address this risk, the Coast Guard prepared a white paper that summarized issues surrounding avian mortality due to tower collisions. The white paper found that:

- Neo-tropical migratory birds are primarily involved in tower collisions. Most tower kills occur in the spring and fall when birds are migrating, with the fall representing the highest number of kills.
- Avian mortality at communication towers is well documented; however, the overall impact of towers on migratory bird populations is unknown.
- Avian mortality due to domestic cats, pesticides, and collisions with buildings, transmission lines, and vehicles seems to have a greater impact on bird populations than do communication towers.
- An unscientific methodology and approach makes determining which factors (tower lighting, height, topographic location, etc.) directly contribute to avian mortality difficult.
- Weather may be the most important environmental factor leading to large avian kills at towers. Cloudy, foggy nights create a low-cloud ceiling, which affects birds' ability to accurately navigate.
- No published research has determined the best lighting scheme and color for minimizing avian collisions with towers.

Avian collision with towers tends to occur more often at night, primarily because birds migrate more during nighttime. Foggy or cloudy nights have been shown to disrupt navigation, and the effect of tower lights on birds during cloudy conditions may additionally complicate navigation at night (Woodlot, 2003). Tower height also plays a role in avian mortality, though the exact height threshold for mortality is undetermined. Shorter towers (less than 400–500 feet tall) may not pose as great a risk to migrating birds as taller towers (above 500 feet) (Crawford and Engstrom, 2001 in Woodlot, 2003; Gehring, 2004).

In compliance with EO 13186, the Coast Guard has negotiated an MOU with the USFWS for new antenna tower sites constructed on Coast Guard property to support the Rescue 21 program. In accordance with that MOU, the Coast Guard sent a letter in June 2009 to the USFWS requesting concurrence with the Coast Guard's determination that construction of RFF Buxton includes all reasonable measures to avoid affecting migratory birds (Appendix A). A letter was received from the USFWS on July 16, 2009 in response to the scoping letter. The letter states that potential hazards to avian species were not minimized by the proposed action as described in the letter sent to them. A letter from the Natural Heritage Program dated July 23, 2009 and from the NC Wildlife Resources Commission dated July 29, 2009 expressed similar concerns. However, no responses were received from these agencies regarding the Draft EA, which contained a more detailed description of the tower design and mitigation measures.

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no impacts to wildlife.

Proposed Action

Under the Proposed Action, no significant adverse impacts to wildlife are anticipated. The Proposed Action would not result in the destruction or alteration of any significant terrestrial or aquatic habitat. Construction of the tower and associated equipment would occur mostly on a previously disturbed area and would minimally affect common wildlife species that are present within the project site by removing some vegetation. No significant habitat loss or conversion would result from the Proposed Action.

Because a guyed communications tower is already located on the project site, no additional impact to migratory birds is anticipated from the Proposed Action. The Proposed Action replaces a shorter tower (425 feet) with a taller tower (525 feet) that is only slightly above the 500-foot threshold for heights generally thought to pose the greatest risk to migrating birds. However, some studies suggest that a higher number of guy wires will increase the chance of bird collisions; therefore, the Proposed Action would pose more of a risk to migratory birds than the existing 18-guy wire tower.

Through its MOU with USFWS, the Coast Guard has considered the USFWS *Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning* (USFWS, 2000) to the maximum extent practicable. In designing the tower, all reasonable measures to avoid affecting migratory birds have been undertaken. Non-reflective bird diverters will be installed on the guy wires to reduce the chance of bird collisions (see example below). As the existing 18-guy wire tower has no diverter devices, this will be a vast improvement over the status quo option even with the addition of six more guy wires and the 100-foot increase in tower height. After careful consideration of the many different types of available devices, the Coast Guard believes yellow, helical spiral diverter devices will be the best choice for this application. The devices are made of a flexible ultraviolet resistant polyvinyl chloride (PVC) rod designed to wrap around the guy wires. The devices will be installed in accordance with the manufacturer's recommended spacing every 15 feet along the length of each wire. Two manufacturers of the helical spiral device are Dulmison® and Preformed Line Products®.

The bird flight diverter devices are designed to increase the visual signature of the otherwise gray steel guy wires and serve as a visual warning of an obstruction to birds in flight. Although manufactured in both gray and yellow material, yellow will be the preferred color of the device on this installation for added visibility to migrating birds. Birds are known to have excellent color vision, superior to primates, including four different types of color receptors. Although visible at close range to birds in flight, the devices are not visible from a considerable distance, such as from the Cape Hatteras Light, and will not cause an adverse visual effect to the historic lighthouse.



Example of a Helical Spiral Bird Flight Diverter developed by Preformed Line Products © (2008)

In accordance with FAA Advisory Circular AC 70/7460-1K, Change 2, *Obstruction Marking and Lighting*, the proposed tower would not require daytime lighting if it is painted, but both tower options would require nighttime lighting (FAA, 2007), which may disrupt navigation of migratory birds during conditions of poor visibility. After concluding Section 106 NHPA consultations with the State Historic Preservation Officer, a painted guyed tower (Option 1) is now the preferred alternative.

The parks and recreation areas on Cape Hatteras are typically focused on conserving ecologically critical habitats to preserve avian resources. The potential threats to these areas are development, pollution, and recreational and development overuse. The new Coast Guard tower would be located outside of these designated areas, and BMPs would be applied to construction activities; therefore, construction and tower use would not result in significant adverse impacts to parks, natural areas, or conservation areas near the project site.

Alternative Two

Under this alternative, no significant adverse impacts to wildlife are anticipated. Construction of a 39-guy wire tower and associated equipment would occur mostly on a previously disturbed area and would minimally affect common wildlife species that are present within the project site by removing some vegetation. Some studies suggest that a higher number of guy wires will increase the chance of bird collisions; therefore, Alternative Two would pose more of a risk to migratory birds than the existing 18-guy wire tower.

Through its MOU with USFWS, the Coast Guard has considered the USFWS *Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning* (USFWS, 2000) to the maximum extent practicable. In designing the tower, all reasonable measures to avoid affecting migratory birds have been undertaken. Non-reflective bird diverters will be installed on the guy wires to reduce the chance of bird collisions.

In accordance with FAA Advisory Circular AC 70/7460-1K, Change 2, *Obstruction Marking and Lighting*, the proposed tower would not require daytime lighting if it is painted, but both tower options would require nighttime lighting (FAA, 2007), which may disrupt navigation of migratory birds during conditions of poor visibility.

The parks and recreation areas on Cape Hatteras are typically focused on conserving ecologically critical habitats to preserve avian resources. The potential threats to these areas are development, pollution, and recreational and development overuse. The new Coast Guard tower would be located outside of these designated areas, and BMPs would be applied to construction activities; therefore, construction and tower use would not result in significant adverse impacts to parks, natural areas, or conservation areas near the project site.

Alternative Three

Under this alternative, no significant adverse impacts to wildlife are anticipated. The Coast Guard would construct a self-supported lattice tower on a previously disturbed area, which would minimally affect common wildlife species present within the project site by removing some vegetation. Because self-supported towers are generally believed to cause less avian mortality than towers supported by multiple guy wire cables, Alternative Three would pose less of a risk to migratory birds than the existing 18-guy wire tower.

Through its MOU with USFWS, the Coast Guard has considered the USFWS *Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning* (USFWS, 2000) to the maximum extent practicable. In designing the tower, all reasonable measures to avoid affecting migratory birds have been undertaken.

In accordance with FAA Advisory Circular AC 70/7460-1K, Change 2, *Obstruction Marking and Lighting*, the proposed tower would not require daytime lighting if it is painted, but both tower options would require nighttime lighting (FAA, 2007), which may disrupt navigation of migratory birds during conditions of poor visibility.

The parks and recreation areas on Cape Hatteras are typically focused on conserving ecologically critical habitats to preserve avian resources. The potential threats to these areas are development, pollution, and recreational and development overuse. The new Coast Guard tower would be located outside of these designated areas, and BMPs would be applied to construction activities; therefore, construction and tower use would not result in significant adverse impacts to parks, natural areas, or conservation areas near the project site.

3.9.3 Vegetation

Affected Environment

The project site consists of a previously disturbed area containing grass and pavement and shrubs. Trees and scrub-shrub wetlands occur on the southeast corner of the site and surround the property to the south and west.

Cape Hatteras National Seashore encompasses more than 70 miles of barrier islands including much of the area often referred to as the “Outer Banks.” It is a diverse landscape and one of the best examples of a mid-Atlantic barrier island system. The area known as Buxton Woods is one of North Carolina’s best examples of maritime forest and includes an extensive fresh water marsh system

EO 13112 (Invasive Species) directs all Federal agencies to review projects to ensure no increase in the spread of invasive species.

Environmental Consequences

No Action

Under the No Action Alternative, no ground disturbance would occur and there would be no impacts to vegetation.

Proposed Action

Under the Proposed Action, no significant adverse impacts to vegetation are anticipated. With the exception of the installation of two of the guy wire anchor points in the wetland area (discussed in Section 3.9.5), construction would occur in a previously disturbed area containing mostly pavement and grass. A minimal amount of herbaceous vegetation may be disturbed during equipment staging and construction of unpaved access roads to anchor points.

The Coast Guard would use routine vegetative maintenance to discourage the establishment of invasive plant species after construction.

Alternative Two

No significant adverse impacts to vegetation are anticipated under Alternative Two. With the exception of the installation of five of the guy wire anchor points in the wetland area (discussed in Section 3.9.5), construction would occur in a previously disturbed area containing mostly pavement and grass. A minimal amount of herbaceous vegetation may be disturbed during equipment staging and construction of unpaved access roads to anchor points.

The Coast Guard would use routine vegetative maintenance to discourage the establishment of invasive plant species after construction.

Alternative Three

No significant adverse impacts to vegetation are anticipated under Alternative Three. No wetlands would be disturbed (discussed in Section 3.9.5) and construction would occur in a previously disturbed area containing mostly pavement and grass. A minimal amount of herbaceous vegetation may be disturbed during equipment staging and construction of the self-supported tower.

The Coast Guard would use routine vegetative maintenance to discourage the establishment of invasive plant species after construction.

3.9.4 Threatened and Endangered Species

Affected Environment

Under Section 7 of the ESA, as amended, Federal agencies, in consultation with the USFWS, or NOAA's National Marine Fisheries Service (NMFS) for marine mammals and fish, are required to evaluate the effects of their actions on special status species of fish, wildlife, and plants, and their habitats, and to take steps to conserve and protect these species. Special status species are defined by the USFWS as plants or animals that are candidates for, proposed as, or listed as sensitive, threatened, or endangered.

The USFWS lists the federally endangered (E) and threatened (T) species for Dare County shown in Table 3-2 (USFWS, 2009a).

Table 3-2: USFWS Threatened and Endangered Species in Dare County, NC

Common Name	Scientific Name	Species Group	Status
Piping plover	<i>Charadrius melodus</i>	Bird	T (CH)
Red-cockaded woodpecker	<i>Picoides borealis</i>	Bird	E
Roseate tern	<i>Sterna dougallii dougallii</i>	Bird	T
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	Fish	E
Red wolf	<i>Canis rufus</i>	Mammal	E
West Indian manatee	<i>Trichechus manatus</i>	Mammal	E
Seabeach amaranth	<i>Amaranthus pumilus</i>	Plant	T
American alligator	<i>Alligator mississippiensis</i>	Reptile	T (S/A)
Green sea turtle	<i>Chelonia mydas</i>	Reptile	T
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Reptile	E
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	Reptile	E
Leatherback sea turtle	<i>Dermochelys comacea</i>	Reptile	E
Loggerhead sea turtle	<i>Caretta caretta</i>	Reptile	T

E=endangered, T=threatened, CH=designated critical habitat, S/A=due to similarity of appearance

In addition to the 13 federally threatened or endangered species listed by the USFWS, North Carolina lists 56 State endangered and 51 State threatened wildlife species. Although federally designated critical habitat for the piping plover is located along the coastline approximately 0.5 mile east of the project site, no critical habitat for this species is located on the project site.

According to a biologist with the Cape Hatteras National Seashore, loggerhead, green, and leatherback sea turtles have been known to nest along Cape Hatteras beaches (Muiznieks, 2008). These beaches are located approximately 0.5 mile to the east of the project site.

With the exception of some populations of hawksbills and Kemp's Ridley sea turtles, almost all adult sea turtle nesting behavior occurs at night along coastal beaches. Studies indicate that adult turtles will avoid nesting on beaches that are brightly lit with artificial lighting or when bright lights form a backdrop beyond the dunes. This avoidance behavior constitutes habitat loss for the species involved because turtles may emerge at alternative sites along the coast which are a less suitable nesting habitat (Witherington and Martin, 1996).

Sea turtle hatchling emergence also occurs principally at night, although some emergence may occur in early-morning or late afternoon. Immediately after emergence, hatchlings orient toward the sea. Sea turtle hatchlings have an inborn tendency to move in the brightest direction. On a natural beach, the brightest direction is most often the open view of the night sky over, and reflected by, the ocean. Hatchlings also tend to move away from darkly silhouetted objects associated with the dune profile and vegetation. Bright, artificial light sources have been shown to interfere with sea-finding orientation, as the hatchlings move toward the bright lights. Hatchlings are believed to be more sensitive to bright lights than adult turtles. Although there is some variation between species, long-wavelength light sources have been shown to be the least disruptive to sea turtles. Red light-emitting-diode (LED) lights are believed to be the least visible

to sea turtles and therefore the least disruptive to either adult or hatchling behavior (Witherington and Martin, 1996).

The proposed project site does not contain habitat suitable for any federally listed species due to the developed nature of the site. In accordance with Section 7(a)(2) of the ESA, the Coast Guard sent a coordination letter in June 2009 to the USFWS and the NC DENR, Wildlife Resources Commission, requesting concurrence in its determination that construction of RFF Buxton would not likely adversely affect or jeopardize the continued existence of any endangered or threatened species or critical habitat. The Coast Guard received concurrence from the USFWS in a letter dated July 16, 2009 (Appendix A).

Environmental Consequences

No Action

Under the No Action Alternative, there would be no physical changes to the project site and no adverse impacts to threatened or endangered species or their habitats.

Proposed Action

Under the Proposed Action, no significant adverse impacts to threatened or endangered species or critical habitats are anticipated. Construction of RFF Buxton would occur in a previously disturbed area and would result in only a minimal disturbance to herbaceous vegetation.

Under the Proposed Action, there would be no change in the color (red), intensity (2,000 candela), or flash rate (20 flashes per minute [fpm]) of the nighttime FAA obstruction lighting when compared to the existing HLS tower. Red LED lighting will replace the existing red incandescent nighttime lights on the HLS tower, but this will not change the appearance of the red lights.

Because adult sea turtle nesting for the three known species (loggerheads, greens, and leatherbacks) occurs predominantly at night along the Cape Hatteras beaches, there will be no significant adverse impact to any adult turtle nesting behavior from either a painted or unpainted tower option.

Alternative Two

No significant adverse impacts to threatened or endangered species or critical habitats are anticipated under Alternative Two; construction would occur mostly in a previously disturbed area and would remove some herbaceous vegetation. Effects of lighting for either a painted or unpainted tower would be similar to those described for the Proposed Action.

Alternative Three

No significant adverse impacts to threatened or endangered species or critical habitats are anticipated under Alternative Three; construction would occur mostly in a previously disturbed area and would remove some herbaceous vegetation. Effects of tower lighting for either a painted or unpainted tower would be similar to those described for the Proposed Action.

3.9.5 Wetlands

Affected Environment

The U.S. Army Corps of Engineers (USACE) and EPA jointly define wetlands as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration

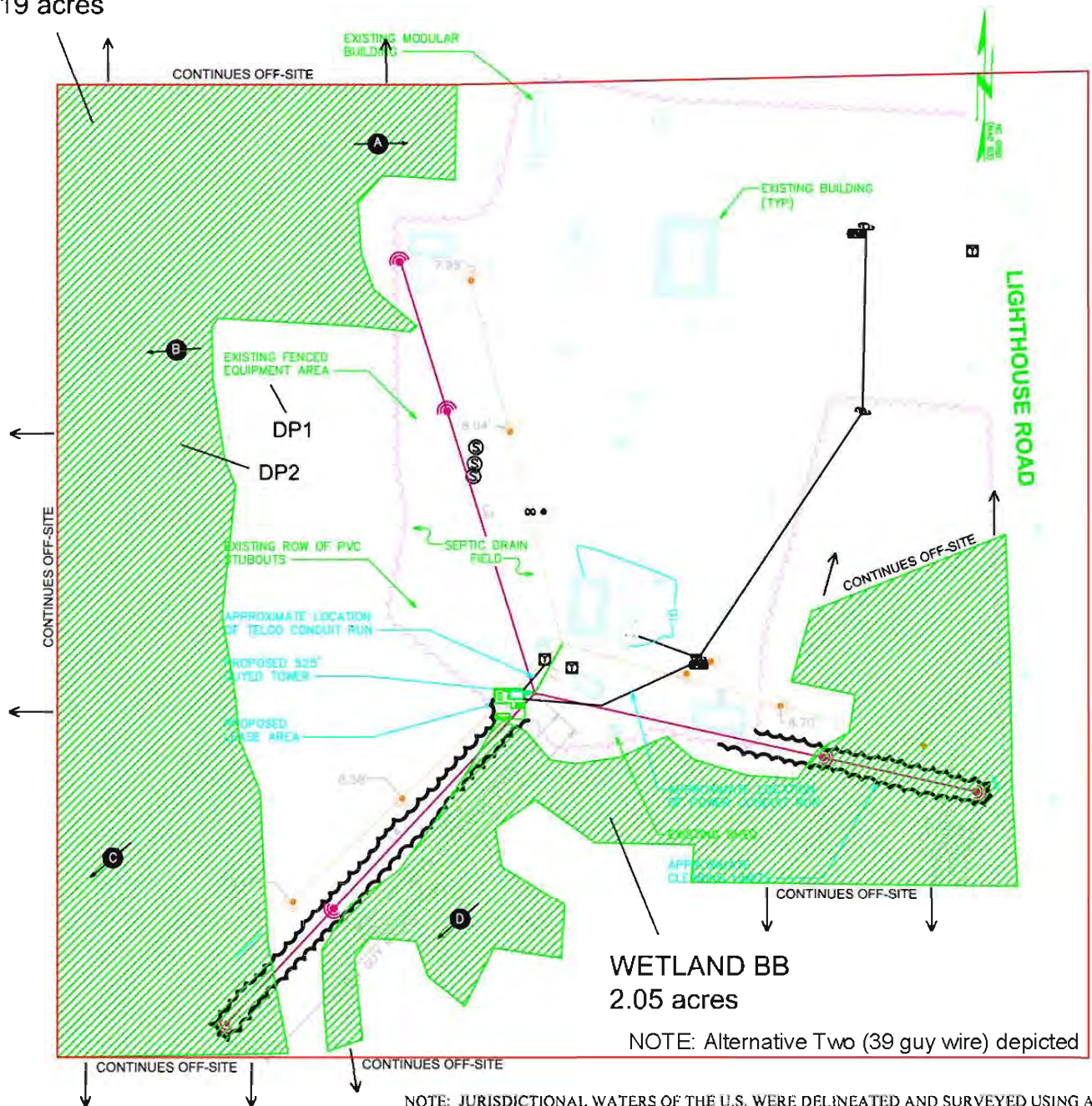
sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Jurisdictional waters of the United States, including wetlands, are protected under Section 404 of the CWA. In addition, EO 11990 (Protection of Wetlands) requires Federal agencies to minimize the loss of wetlands. The NEPA compliance process requires Federal agencies to consider direct and indirect impacts on wetlands that may result from federally funded actions.

According to the National Wetlands Inventory (NWI) map, two nontidal wetlands are within the project site boundaries (USFWS 2009b). A wetlands delineation was completed by Carolina Wetland Services (CWS) on November 19, 2007. The wetlands delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual and identified two jurisdictional vegetated wetland areas (Wetlands AA-BB) and two jurisdictional unnamed tributaries to the Atlantic Ocean within the project site (Figure 14; CWS 2008). This region of the Atlantic Ocean is within the Pasquotank River basin and is rated as “primary recreation, salt water” (SB waters) by the North Carolina Division of Water Quality. The site is in a Coastal Area Management Act county and portions of the project will occur in wetlands, but not coastal wetlands. CWS concluded that the project area contains freshwater wetlands, but not an Area of Environmental Concern (AEC) although it is located in a Coastal Area Management Act (CAMA) county. However, the wetlands are nontidal and contain none of the plant species specified in the CAMA regulations to be coastal wetlands. The Division of Coastal Management will make the final determination regarding the designation of onsite wetlands as AEC, although the Coast Guard and its professional wetlands contractors, CWS, do not believe this is AEC land, but Section 404 freshwater wetlands entirely located on Federal property (see Section 3.14.1, Coastal Zone).

Onsite jurisdictional waters of the United States, including wetlands, total approximately 6.24 acres (271,814 square feet), with wetland AA encompassing 4.19 acres and wetland BB encompassing 2.05 acres. Both wetlands are classified as shrub-scrub/herbaceous wetlands.

In accordance with the CWA, the Coast Guard submitted a letter to the USACE in July 2009 regarding requirements for a Department of the Army permit for the Proposed Action (Appendix A). In a letter dated July 29, 2009, the USACE states that wetlands impact should be minimized to the maximum extent possible by considering the use of weight distribution mats for equipment access to the anchor sites. In the event the method is determined not to be feasible, the temporary access road would be confined to the smallest footprint required for equipment access and all fill material placed on filter fabric and removed upon completion of construction. All anchor shaft drilled earthen spoil would be disposed of in upland areas. Methods would be employed to avoid any contact of “live” concrete with surface waters when pouring the concrete caissons.

WETLAND AA
4.19 acres



WETLAND BB
2.05 acres

NOTE: Alternative Two (39 guy wire) depicted

NOTE: JURISDICTIONAL WATERS OF THE U.S. WERE DELINEATED AND SURVEYED USING A SUB-METER GPS UNIT BY CWS, INC. ON NOVEMBER 19, 2007. JURISDICTIONAL FEATURES HAVE NOT BEEN VERIFIED BY THE USACE.

LEGEND

- PROPERTY BOUNDARY
- JURISDICTIONAL WETLAND AREA
- SCPI STREAM CLASSIFICATION POINT
- DP1 WETLAND DATA POINT
- PHOTO LOCATION AND DIRECTION

Title		Wetlands	
		Proj No:	15301803
		Figure	14
Client: U.S. Coast Guard			
Project: RFF Buxton, NC			

Environmental Consequences

No Action

Under the No Action Alternative, there would be no physical changes to the site and no adverse impacts to wetlands would occur.

Proposed Action

Under the Proposed Action, minor adverse impacts to wetlands would occur. Two of three anchors will be constructed within wetlands and the third anchor will be on the edge of the wetlands. Access roads out to each guy anchor will be slightly elevated and mowed. The Coast Guard will only place the minimal amount of fill that is required to provide a suitable, all-weather access road. Roads will not be further elevated than necessary to provide a suitable road base.

The Coast Guard and USACE have determined that impact to wetlands under the Proposed Action would be as follows:

- Projected permanent area of impact = 0.057 acre +/-.
- Projected temporary area of impact = 0.049 acre +/-.
- Projected total permanent and temporary area of impact = 0.106 acre +/-.

The Coast Guard is currently in the process of submitting a Preconstruction Notification Form (PCN) in anticipation of using a Nationwide Permit. The PCN is a joint USACE Section 404 and State of North Carolina Section 401 form. The PCN is submitted to the USACE, which in turn submits it to the NC DENR Division of Water Quality, which reviews the permit for the Section 401 Certification. The USACE indicated that proposed tower construction at Buxton would best fall under Nationwide Permit #12 for Utility Line Activities, as the construction of a communications tower would be considered a utility line as long as the construction area is less than 0.5 acre.

The Coast Guard will be required to mitigate the 0.057 acre of permanent impact to the onsite wetlands due to the two guy wire anchors installed in the wetlands. The Coast Guard is in the process of purchasing mitigation credits (in lieu fee mitigation) in the Great Dismal Swamp Wetlands Mitigation Bank per the recommendations of the USACE Wilmington District staff.

Successful mitigation of permanently impacted wetlands areas would be required. In addition, to reduce the potential adverse impacts to downstream waters and wetlands associated construction activities, the Coast Guard would use appropriate BMPs, including limiting temporary access roads to the smallest footprint required for equipment access, using filter fabric to place fill material on, and disposing of drilling spoil in upland areas. In addition, methods would be employed to avoid any contact of “live” concrete with surface waters when pouring the concrete caissons.

Alternative Two

Under Alternative Two, minor adverse impacts to the onsite wetlands would occur. Under Alternative Two, four out of six anchors would be located within the limits of a jurisdictional wetland and one anchor would be located at the edge of the wetlands. Access roads out to each guy anchor will be slightly elevated and mowed. The Coast Guard will only place the minimal

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amount of fill that is required to provide a suitable, all-weather access road. Roads will not be elevated more than necessary to provide a suitable road base.

The Coast Guard and USACE have determined that impact to wetlands under the Proposed Action would be as follows:

- Projected permanent area of impact = 0.112 acre +/-.
- Projected temporary area of impact = 0.098 acre +/-.
- Projected total permanent and temporary area of impact = 0.21 acre +/-.

Permitting and mitigation would be required as described under the Proposed Action; successful mitigation of permanently impacted wetlands areas would be required. To reduce the potential adverse impacts to downstream waters and the wetlands adjacent to the project site associated with soil erosion and sediment transport, erosion and sediment control BMPs would be used during and after construction.

Alternative Three

Under Alternative Three, the self-supported tower would be constructed outside of the on-site jurisdictional wetlands and no direct impacts to wetlands would occur. To reduce the potential adverse impacts to downstream waters and the wetlands adjacent to the project site associated with soil erosion and sediment transport, erosion and sediment control BMPs would be used during and after construction; therefore, no indirect impacts to wetlands would occur.

3.9.6 Floodplains

Affected Environment

Flood Insurance Rate Maps (FIRMs) and/or Flood Hazard Boundary Maps (FHBMs) outline flooding risks and define the 100-year floodplain for communities that are members of the National Flood Insurance Program (NFIP). The 100-year floodplain designates the area having a 1.0-percent chance of being inundated during a storm in any given year. These maps, prepared by the Federal Emergency Management Agency (FEMA), also identify the 500-year floodplain, which designates the area having a 0.2 percent chance of being inundated during a storm in any given year. EO 11988 (Floodplain Management) requires Federal agencies to minimize occupancy of and modification to floodplains. Specifically, the EO prohibits Federal agencies from funding construction in the 100-year floodplain (500-year floodplain for critical facilities) unless there are no practicable alternatives.

According to the FIRM for Dare County, North Carolina (panel number 3730053600J), the project site is located in Zone X, an area determined to be outside the 100-year floodplain but within the 500-year floodplain. Because a Rescue 21 Tower would be considered a critical facility under EO 11988, the 8-step process for floodplains was completed (Appendix B).

No Action

Under the No Action Alternative, there would be no physical changes to the project site and no adverse impacts to floodplains.

Proposed Action

Under the Proposed Action, construction would occur outside the 100-year floodplain but within the 500-year floodplain; however, no practicable alternatives exist because all of Cape Hatteras

is within the floodplain. In addition, the Coast Guard conducted a diligent search for alternative tower sites and has determined that they cannot fulfill their purpose under the Rescue 21 program without construction of RFF Buxton on the project site.

The Coast Guard completed the 8-Step Process for Floodplain Management for the Proposed Action (Appendix B). Although the Proposed Action would result in some modification of the floodplain, it would not impede movement of floodwaters within the floodplain, thus would not increase the level of floodwaters above existing conditions. Therefore, no adverse impacts to floodplains are expected as a result of the Proposed Action.

Alternative Two

Under Alternative Two, construction would occur outside the 100-year floodplain but within the 500-year floodplain; however, no practicable alternatives exist because all of Cape Hatteras is within the floodplain. In addition, the Coast Guard conducted a diligent search for alternative tower sites and has determined that they cannot fulfill their purpose under the Rescue 21 program without construction of RFF Buxton on the project site.

The Coast Guard completed the 8-Step Planning Process for Floodplains for the Proposed Action (Appendix C). Although Alternative Two would result in some modification of the floodplain, it would not impede movement of floodwaters within the floodplain, thus would not increase the level of floodwaters above existing conditions. Therefore, no adverse impacts to floodplains are expected under Alternative Two.

Alternative Three

Under Alternative Three, construction would occur outside the 100-year floodplain but within the 500-year floodplain; however, no practicable alternatives exist because all of Cape Hatteras is within the floodplain. In addition, the Coast Guard conducted a diligent search for alternative tower sites and has determined that they cannot fulfill their purpose under the Rescue 21 program without construction of RFF Buxton on the project site.

The Coast Guard completed the 8-Step Planning Process for Floodplains for Alternative Three (Appendix C). Although Alternative Two would result in some modification of the floodplain, it would not impede movement of floodwaters within the floodplain, thus would not increase the level of floodwaters above existing conditions. Therefore, no adverse impacts to floodplains are expected under Alternative Three.

3.10 CULTURAL RESOURCES

Organized seaside and coastal rescue aid efforts in the United States can be traced back as early as 1787 to colonial Massachusetts, where volunteer efforts established the Massachusetts Humane Society to rescue and aid victims of shipwrecks along the state's seaboard. The first official Federal involvement was on August 7, 1789, when an agency eventually known as the U.S. Lighthouse Service was established under the Department of the Treasury. Aside from services rendered at lighthouses, specific life-saving efforts were conducted entirely by volunteers until August 14, 1848, when Congress appropriated funds to erect life-saving buildings and purchase equipment to be used by volunteer organizations. The Lighthouse Board was established on October 9, 1852, and administered the nation's lighthouse system as part of the U.S. Lighthouse Service until July 1, 1910. The U.S. Life-Saving Service was established as a separate agency under the Department of the Treasury in June 1878. The U.S. Life-Saving Service remained an independent agency until January 28, 1915, when it was merged with the

Affected Environment and Environmental Consequences

U.S. Revenue Cutter Service to form the U.S. Coast Guard. The U.S. Lighthouse Service continued to operate until July 1, 1939, when it, too, was transferred to the jurisdiction of the U.S. Coast Guard.

Affected Environment

Cultural resources include archaeological and historical objects, sites, and districts; historic buildings and structures; cultural landscapes; and sites and resources of concern to local Native Americans and other ethnic groups. The National Historic Preservation Act (NHPA) of 1966, as amended, outlines Federal policy to protect historic sites in cooperation with Tribes, States, and local governments, and established the National Register of Historic Places (NRHP). Subsequent amendments designated the State Historic Preservation Office (SHPO) as the office designated by the Governor to administer the State's historic preservation program and duties described in 36 CFR Part 61 including nominating properties to the NRHP. The NHPA also created the Advisory Council on Historic Preservation (ACHP), the Federal agency responsible for providing commentary on Federal activities, programs, and policies that impact historic resources.

Section 106 of the NHPA and its implementing regulations (36 CFR 800) outline the procedures to be followed in the consideration of impacts to historic properties, defined as properties that are listed in or eligible for listing in the NRHP. The Section 106 process applies to any Federal undertaking that has the potential to affect historic properties. The Section 106 process requires the identification of significant historic properties and districts that may be affected by an undertaking and consideration of ways to avoid, minimize, and mitigate those adverse effects to properties listed or eligible for listing in the NRHP (30 CFR 60.4). Section 110 of the NHPA outlines the obligations Federal agencies have in regard to historic properties under their ownership.

In April 2009, a URS architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Historic Architecture (36 CFR Part 61) conducted background research, a field visit to the project site, and a windshield survey of the surrounding area to identify historic properties within the Area of Potential Effect (APE) of the project site. The survey also considered properties less than 50 years of age or older that might meet NRHP Criteria Consideration G. Unless written documentation was found, age determinations were made based on physical characteristics and visual analysis.

The APE for aboveground resources has been identified by the Coast Guard as the geographical area within a 2-mile radius of the proposed tower location. For archaeological resources, the APE is defined by the footprint of the tower compound, as well as any area surrounding the tower that would be potentially disturbed during its construction or installation. Information about previously identified archaeological resources located within a 1-mile radius of the proposed tower site was gathered to provide some information on the archaeological sensitivity of the project area.

Background research was conducted online through the National Register Information System (NRIS) and at the County Libraries in Nags Head and in Manteo, at the North Carolina SHPO's archives, including the Eastern Office in Greenville and the State Headquarters in Raleigh, and at the North Carolina Department of Archives and History. The SHPO offices were visited on April 14-16, 2009 to identify any recorded aboveground and archaeological resources. A cultural

resources report, *Section 106 Compliance Needs Assessment Report for Construction of RFF Buxton, Dare County, North Carolina* was prepared for SHPO review (USCG, 2009).

In addition, a Visual Impact Study was completed to assess the potential visual impacts on historical resources from construction of a new communications tower. Photo simulations of the proposed tower alternatives were created using field data and photographs. The visual simulations were based on established critical view points from historic sites where the proposed communication tower would be visible.

The findings of the cultural assessment and the visual impact study are summarized in this section.

Aboveground Resources: The assessment of cultural resources identified four historic properties and two potential historic properties. The Cape Hatteras Light Station is listed in the NRHP and is a National Historic Landmark (NHL). The CCC Cabins, the Urias Gaskins House, and the Rollinson House have each been determined eligible for listing in the NRHP. The former U.S. Coast Guard Station and the WW II British Sailor Cemetery were identified as potential historic properties.

Archaeological Resources: No previously identified archaeological resources listed in and/or determined eligible for listing in the NRHP were located within the footprint of the proposed tower compound or within a 1-mile radius.

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and no cultural resources would be impacted.

Proposed Action

According to research at the SHPO and discussions with the North Carolina Office of State Archaeology (OSA), no previously recorded archaeological resources are located within the archaeological APE (Myers, 2009; Appendix A). Assistant State Archaeologist John J. Mintz confirmed that one historic archeological site (31DR79**) had been recorded within a 1-mile-radius of the project site, but indicated that the site consists of “modern trash and is not considered eligible for inclusion to the National Register of Historic Places” (Mintz, 2009; Appendix A). Archaeological survey for the purpose of identifying additional archaeological resources has not been conducted, and the presence of archaeological resources within the area of ground disturbance associated with the Proposed Action is unknown. However, the OSA has reported that no archaeological sites are located within the project area location, that the general area has been heavily disturbed from construction, and that the existence of a NRHP eligible site is unlikely (Myers, 2009; Appendix A). Therefore, no impacts to archaeological resources are anticipated. If, during the course of construction, unanticipated archaeological resources are uncovered, the Coast Guard would consult with the SHPO regarding appropriate treatment measures.

Because a 425-foot, 18-guy wire communications tower already exists at the project site, the Coast Guard has determined that a new 24-guy wire tower would have no adverse effect on the NRHP-listed and NHL Cape Hatteras Light Station, the NRHP-eligible CCC Cabins, Urias

Gaskins House, and Rollinson House, or the potentially eligible former U.S. Coast Guard Station and the WW II British Sailor Cemetery.

In compliance with Section 106 of the NHPA, the Coast Guard sent a letter and the *Section 106 Compliance Needs Assessment Report for Construction of RFF Buxton, Dare County, North Carolina* to the North Carolina SHPO in July 2009 requesting initiation of Section 106 consultation and SHPO comments on the findings of the report. A copy of the report was also sent to NPS for review and comment. NPS concurred with the proposed alternative in their response letter dated August 27, 2009 (Appendix A).

The Coast Guard completed the Section 106 consultation in connection with the EA and received concurrence for the proposed action from the SHPO in a letter dated October 8, 2009 (Appendix A). The SHPO expressed a preference for Option 1, a painted tower that does not require high-intensity strobe lighting during the day.

Alternative Two

The OSA has reported that no archaeological sites are located within the project area location, that the general area has been heavily disturbed from construction, and that the existence of a NRHP eligible site is unlikely (Myers, 2009; Appendix A). Therefore, no impacts to archaeological resources are anticipated. If, during the course of construction, unanticipated archaeological resources are uncovered, the Coast Guard would consult with the SHPO regarding appropriate treatment measures.

Because a 425-foot, 18-guy wire tower already exists at the project site, the Coast Guard has determined that a new 39-guy wire tower would have no adverse effect on the NRHP-listed and NHL Cape Hatteras Light Station, the NRHP-eligible CCC Cabins, Urias Gaskins House, and Rollinson House, or the potentially eligible former U.S. Coast Guard Station and the WW II British Sailor Cemetery.

Alternative Three

The OSA has reported that no archaeological sites are located within the project area location, that the general area has been heavily disturbed from construction, and that the existence of a NRHP eligible site is unlikely (Myers, 2009; Appendix A). Therefore, no impacts to archaeological resources are anticipated. If, during the course of construction, unanticipated archaeological resources are uncovered, the Coast Guard would consult with the SHPO regarding appropriate treatment measures.

Under Alternative Three, a self-supported tower would be constructed. Because a self-supported tower is a more substantial structure than a guy wire tower in terms of its mass, this alternative would have an adverse visual effect from one of the critical viewpoints for the Cape Hatteras Light Station—the view from the top of the lighthouse (see Appendix C). The proximity of this historic property to the project site makes the current tower visible. From the top of the lighthouse, the visibility of the current tower is intensified. Because the entire tower is visible from this viewpoint, a self-supported tower's massing in comparison with a guy-wire tower would be much greater. Because of the size difference, which is most substantial near the base of the self-supported tower, the visual impact from a self-supported tower would be greater than a guy wire tower.

The Coast Guard has determined that the self-supported tower, both painted and unpainted options, will have an adverse visual effect on the NRHP-listed and NHL Cape Hatteras Light

Station. The visual effects of Alternative Three are discussed in more detail in the *Visual Impact Study* (USCG, 2009) (Appendix C). Because the Cape Hatteras Light Station is an NHL, this adverse visual effect may constitute a significant impact under NEPA. Section 106 of the NHPA emphasizes that agencies must make all feasible efforts to avoid adverse impacts to NHLs.

3.11 RECREATION

Affected Environment

Although Buxton is a prime location for recreational activities such as boating, fishing, swimming, and surfing, the project site is located inland surrounded by NPS property. The proposed tower site is bounded to the south and west by undeveloped wetlands, and is bounded to the north by wooded lands that are adjacent to the Buxton Woods. Buxton Woods offers various nature trails for recreational visitors. The Cape Hatteras Light Station, a popular tourist attraction, is located less than 0.5 mile northeast of the RFF Buxton site. The current tower is visible from the lighthouse. The Cape Hatteras National Seashore is north of the RFF Buxton site and stretches over 70 miles of barrier islands; the national seashore includes a number of natural and cultural resources. Once dubbed the “Graveyard of the Atlantic” for its treacherous currents, shoals, and storms, Cape Hatteras attracts recreational visitors to its historical landmarks and lighthouses.

Environmental Consequences

No Action

The No Action Alternative would not result in any direct impact to recreational resources because no action would be taken. However, if RFF Buxton is not constructed, there could be an indirect effect on the safety of citizens participating in recreational marine activities in the adjacent recreational water areas because the numerous deficiencies in the current Coast Guard communications system would not be corrected. Unavailability of equipment, existing coverage gaps, and inadequate channel capacity would continue to contribute to degraded command and control, and could result in delayed or unanswered calls for assistance from commercial and recreational boaters. The current system’s inability to determine the location of distressed vessels or hoax callers could result in wasted resources and lost lives.

Proposed Action

The Proposed Action would benefit marine commercial and recreational users in the vicinity of the project site by ensuring a more reliable and efficient response by the Coast Guard in emergency situations.

Since the Proposed Action would occur on Coast Guard-administered property that is not available to the public for recreation, there would be no reduction in the amount of space available for recreational activities. The new tower would be visible from the Cape Hatteras Light Station as well as local parks and beaches, but would be similar in appearance to the existing HLS tower, and is not anticipated to have a negative impact on recreational resources.

Alternative Two

Alternative Two would benefit marine commercial and recreational users in the vicinity of the project site by ensuring a more reliable and efficient response by the Coast Guard in emergency situations.

Since this alternative would occur on Coast Guard-administered property that is not available to the public for recreation, there would be no reduction in the amount of space available for recreational activities. The new tower would be visible from the Cape Hatteras Light Station as well as local parks and beaches, but would be similar in appearance to the existing HLS tower, and is not anticipated to have a negative impact on recreational resources.

Alternative Three

The Proposed Action would benefit marine commercial and recreational users in the vicinity of the project site by ensuring a more reliable and efficient response by the Coast Guard in emergency situations.

Since Alternative Three would occur on Coast Guard-administered property that is not available to the public for recreation, there would be no reduction in the amount of space available for recreational activities. The self-supported tower would be visible from the Cape Hatteras Light Station as well as local parks and beaches and because the structure is more massive in scale (and thus more visible) than the existing HLS tower, there would be a negative visual impact on recreational resources (see Section 3.10, Cultural Resources).

3.12 VISUAL RESOURCES

Affected Environment

Visual resources refer to the landscape character (what is seen), visual sensitivity (human preferences and values regarding what is seen), scenic integrity (degree of intactness and wholeness in landscape character), and landscape visibility (relative distances of seen areas) of a geographically defined viewshed. The APE for visual resources is a 2-mile radius of the proposed tower location.

The existing HLS tower is painted with seven, equal width, alternating bands of aviation orange and white paint in accordance with FAA obstruction marking requirements and does not have daytime lighting. The HLS tower's nighttime lighting consists of a single (2,000 candela) red flashing beacon (L-864) at the 425-foot level, two similar L-864 beacons at approximately the 212-foot level, and three L-810 steady burning red (32.5 candela) obstruction lights at both the 106-foot and 318-foot levels. The L-864 beacons flash synchronously 20 times per minute. The lights turn on and off automatically and operate only during the nighttime.

The *Visual Impact Study* conducted to identify any potential adverse effect on cultural resources considered eight critical viewpoints within the viewshed (i.e., actual visibility of the proposed structure). The viewpoints from these historic properties are also considered representative of views for residents and visitors in the project area and were used to determine impacts of the Proposed Action and alternatives to the project area viewshed.

Environmental Consequences

No Action

Under the No Action Alternative, no new construction or operations would occur and there would be no impacts to visual resources.

Proposed Action

Either of the two options for the Proposed Action (i.e., a painted tower with no daytime lights or an unpainted tower with high intensity daytime lights) would result in no adverse visual effects to historic properties or residents and visitors.

A 24-guy wire tower would be visible to residents and visitors within the vicinity of the project site during the daytime. A painted tower would not have daytime lighting; an unpainted tower would have high intensity (270,000 candela) white strobe obstruction lights (FAA L-856) which will flash 40 times per minute. While a painted tower will have more visibility than an unpainted tower, the greater visibility is a minor factor in the assessment of effects and the paint scheme, in itself, will not have an adverse effect. The high intensity daytime strobes are believed to be more visually obtrusive up close than a tower painted with orange and white banding. The painted option, however, may be more visually obtrusive from a distance than the high intensity daytime strobes.

Nighttime lighting for the Proposed Action would be almost identical to the existing HLS tower, except that LED lights would be used instead of the incandescent bulbs used on the existing tower and the lights would be placed higher on the tower. Two red flashing beacons would be mounted at the 525-foot level and two at the 263-foot level. Three steady burning red obstruction lights would be mounted at the 394-foot level and 394-foot level. There will be a negligible change in visual appearance of the lighting between the existing HLS tower and the replacement tower during the nighttime and no change in the intensity or flash rate of the nighttime lighting.

The replacement tower will be 100 feet taller than the existing HLS tower and, when viewed from a distance during the daytime, there will be a negligible change in visual appearance between the existing HLS tower and the replacement RFF tower.

Bird diverters would be attached to the guy wires high above the ground making the diverters either invisible to humans or appear as tiny black or pale orange dots along the length of the guy wires. Because bird diverters would be nearly invisible when standing nearby, and would become practically invisible when viewing the tower from a distance, they were considered to have no adverse visual impact.

Alternative Two

Either of the two options for Alternative Two (i.e., a painted tower with no daytime lights or an unpainted tower with high intensity daytime lights) would result in no adverse visual effects to historic properties or residents and visitors.

A 39-guy wire tower would be visible to residents and visitors within the vicinity of the project site during the daytime. A painted tower would not have daytime lighting; an unpainted tower would have high intensity (270,000-candela) white strobe obstruction lights (FAA L-856) which will flash 40 times per minute. While a painted tower will have more visibility than an unpainted tower, the greater visibility is a minor factor in the assessment of effects and the paint scheme, in itself, will not have an adverse effect. The high intensity daytime strobes are believed to be more visually obtrusive up close than a tower painted with orange and white banding. The painted option, however, may be more visually obtrusive from a distance than the high intensity daytime strobes.

Nighttime lighting for the Proposed Action would be almost identical to the existing HLS tower, except that LED lights would be used instead of the incandescent bulbs used on the existing

tower and the lights would be placed higher on the tower. Two red flashing beacons would be mounted at the 525-foot level and two at the 263-foot level. Three steady burning red obstruction lights would be mounted at the 394-foot level and 394-foot level. There will be a negligible change in visual appearance of the lighting between the existing HLS tower and the replacement tower during the nighttime and no change in the intensity or flash rate of the nighttime lighting.

The replacement tower will be 100 feet taller than the existing HLS tower and, when viewed from a distance during the daytime, there will be a negligible change in visual appearance between the existing HLS tower and the replacement RFF tower.

Bird diverters would be attached to the guy wires high above the ground making the diverters either invisible to humans or would appear as tiny black or pale orange dots along the length of the guy wires. Because bird diverters would be nearly invisible when standing nearby, and would become practically invisible when viewing the tower from a distance, they were considered to have no visual impact.

Alternative Three

Because the self-supported tower is a more substantial structure in terms of its mass, this alternative would have an adverse visual effect from one of the critical viewpoints for the Cape Hatteras Light Station—the view from the top of the lighthouse. From the top of the lighthouse, the visibility of the existing tower is intensified. Because the entire tower is visible from this viewpoint, a self-supported tower's massing in comparison with a guy-wire tower would be much greater.

3.13 SOCIOECONOMIC RESOURCES

Affected Environment

Social and economic resources include elements unique to the human environment, such as population, culture, employment, business activities, tax base, housing characteristics, and education. These indicators can be used to measure the influence of new investments in the local economy. The investments can be temporary, such as those related to construction, or they can be more permanent, such as those related to the operation and maintenance of facilities. A “ripple effect” is often observed, as indirect economic activities, such as demand for goods and services, respond to the initial direct economic stimulus. The indicators can be evaluated to determine the potential for a proposed project to cause temporary or long-term social and economic effects. Beneficial social and economic effects are considered significant if they resulted in a measurable increase in annualized rates of employment, personal income, or business activity either nationally or within the local economy of the project area. Adverse effects result from boom/bust economic cycles and temporary increased demand for goods and services beyond existing capacity. In addition, adverse effects to property values could result if the project reduces the desirability of the property.

Buxton is an unincorporated community of nearly 1,500 people on Hatteras Island (part of the Outer Banks) near Cape Hatteras. North Carolina Highway 12 links the community to other Outer Banks communities of Avon, Frisco, and Hatteras. However, none of these communities are identified as a census-designated place (i.e., a place with a concentration of population identified by the Bureau for statistical purposes). Therefore, 2000 Dare County census data and State of North Carolina census data are used in this analysis.

Affected Environment and Environmental Consequences

The 2000 Census reported that Dare County's total population was 29,967, with an estimated workforce of 16,601 people (ages 16 and older). The primary industries of Dare County are: 1) retail trade; 2) arts, entertainment, recreation, accommodation and food services; 3) construction; and 4) education, health, and social services. The median household income in 1999 was \$42,411 and the median income for a family was \$49,302. About 5.5 percent of families and 8.0 percent of the population were below the poverty line in 1999 (USCB, 2000).

The Outer Banks area attracts tourists and seasonal visitors because of a wide range of recreational activities and tourist attractions, such as lighthouses, nature trails, naturally formed dunefields, and fresh-water ponds. Water sports are common on both the Pamlico Sound side and the Atlantic Ocean side of the Buxton community. Proximity to the convergence of the Labrador Current and the Gulf Stream result in a large surf area on the East Coast. On the protected soundside of the island, water sports such as windsurfing, kayaking, kiteboarding, and swimming are readily available and accessible. Nature trails are found in Buxton Woods with a convergence of plant and wildlife found in both typically warmer and cooler climates. Fishing is also a major source of recreation as well as revenue in Buxton. Buxton is a recognized spot for angler sport fishing (Dare County, 2009).

In 2007, the Dare County Affordable Housing Committee (DCAHC) reported to county officials that over 80 percent of Dare County's land is publicly owned, which creates competition for the remaining 20 percent of privately owned land for the year-round residents and approximately 300,000 seasonal visitors. Of the total housing stock in 2005 (30,972 units), 50 percent was seasonal and year-round rentals. From 2000–2004, DCAHC reported a 47.1 percent increase in housing costs; the average home price in 2005 was \$355,000 (DCAHC, 2007).

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no change to social and economic resources when compared to existing conditions.

Proposed Action

Under the Proposed Action, no adverse impacts to social and economic resources are anticipated. The most tangible beneficial effects of the Proposed Action would be better Coast Guard communications and improved effectiveness of search and rescue operations. This would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

Local equipment would be purchased and local labor would be used to the greatest extent practicable to construct the proposed RFF Buxton. This would result in both direct and indirect spending in the local community. The amount of revenue introduced into the local economy during the construction phase would be limited in amount and duration. Ongoing expenses for the operation and maintenance of RFF Buxton would be minor. The beneficial local economic effects would therefore not be significant.

Adverse social and economic effects are not expected because of the small number of workers required to construct the tower and associated equipment. However, the timing of construction activities for RFF Buxton (i.e., before or after peak tourist season) may help with avoiding billeting shortages/costs. Since a communication tower already exists adjacent to the project site,

the construction of RFF Buxton is not expected to cause a depreciation of property values adjacent to or in the general vicinity of the project site.

Alternative Two

Under Alternative Two, impacts to socioeconomic resources would be the same as those described for the Proposed Action.

Alternative Three

Under Alternative Three, impacts to socioeconomic resources would be the same as those described for the Proposed Action.

3.14 LAND USE

3.14.1 Coastal Zone

Affected Environment

The NC DENR, Division of Coastal Management, is the lead agency for the North Carolina Coastal Management Program (CMP), which is authorized by NOAA to administer the CZMA. Any Federal or federally funded projects in North Carolina's Coastal Management Area (CMA) must be consistent with the enforceable policies of North Carolina's CMP. Although Federal lands are excluded from North Carolina's CMA under 15 CFR 923.33, any activity on Federal lands that has reasonably foreseeable coastal effects must be consistent with the North Carolina CMP. Because construction of RFF Buxton has the potential for coastal zone spillover effects due to the wetlands disturbance, the Coast Guard is required to evaluate the Proposed Action and Alternatives relative to the North Carolina CMP and submit either a consistency determination or a negative determination to the Division of Coastal Management.

The Coast Guard sent an initial coordination letter to the Division of Coastal Management in July 2009 (Appendix A). The Coast Guard received initial correspondence dated July 13, 2009. On July 21, 2009, the Coast Guard received comments regarding the initial coordination letter and on August 21, 2009, the Coast Guard received comments on the Draft EA from the Division of Coastal Management (Appendix A). On November 18, 2009 the Coast Guard sent a letter to the Division of Coastal Management (Appendix A) to address several concerns of State agencies. The Coast Guard has extended the State's review and comment period under the CZMA of the Coast Guard's consistency determination until December 18, 2009.

Environmental Consequences

No Action

Under the No Action Alternative, no construction would occur and there would be no impacts to the coastal zone.

Proposed Action

Under the Proposed Action, a communication tower would be constructed on Cape Hatteras in North Carolina CMA. The Coast Guard has reviewed the enforceable policies of the North Carolina CMP and determined that the Proposed Action would not result in any coastal spillover effects. This EA serves as the Coast Guard's consistency determination; the Draft EA has been provided to the NC DENR, Division of Coastal Resources, for review. A response was received on August 21, 2009 (Appendix A).

Affected Environment and Environmental Consequences

A complete evaluation of North Carolina coastal policies as they relate to the Proposed Action is provided as Table 3-3. The evaluation of consistency for the Proposed Action also applies to Alternatives Two and Three, with any exceptions noted in the table. The proposed tower site is in a Coastal Area Management Act county and portions of the project will occur in wetlands, but not coastal wetlands. The Division of Coastal Management makes the final determination as to whether the project site is within an AEC.

Table 3-3: North Carolina Coastal Management Program Consistency Evaluation

North Carolina State Coastal Policy	Is the Proposed Action Consistent?	Evaluation of Consistency
State Guidelines for Areas of Environmental Concern (DCM 15A North Carolina Administrative Code 07H)		
0205 Coastal Wetlands: To conserve and manage coastal wetlands so as to safeguard and perpetuate their biological, social, economic and aesthetic values; to coordinate and establish a management system capable of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine system.	Consistent	The Proposed Action project site does not contain coastal wetlands; RFF Buxton would not be sited in or affect coastal wetlands.
0206 Estuarine Waters: To conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their biological, social, aesthetic, and economic values; to coordinate and establish a management system capable of conserving and utilizing estuarine waters so as to maximize their benefits to man and the estuarine and ocean system.	Not applicable	The Proposed Action project site does not contain estuarine waters. RFF Buxton would not be sited in or adjacent to estuarine waters.
0207 Public Trust Areas: These areas are defined as waters of the Atlantic Ocean, natural waters subject to tides, or other navigable water bodies. To protect public rights for navigation and recreation and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic and aesthetic value.	Consistent	RFF Buxton is not sited in a public trust area and is more than ½ mile from the Atlantic Ocean, tidal waters, and navigable water bodies. The Proposed Action would enhance water-dependent recreation in nearby public trust areas by improving the Coast Guard's search and rescue capabilities and public safety on the water.
0209 Estuarine Shorelines: Ensures that shoreline development is compatible with the dynamic nature of coastal shorelines as well as the values and the management objectives of the estuarine and ocean system.	Consistent	The Proposed Action project site is more than ½ mile of the coastal shoreline and does not include development activities in or affecting estuarine shorelines.

Affected Environment and Environmental Consequences

North Carolina State Coastal Policy	Is the Proposed Action Consistent?	Evaluation of Consistency
0300 Ocean Hazard Areas: Ensures protection of natural hazard areas along the Atlantic Ocean shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, wind, and water, uncontrolled or incompatible development could unreasonably endanger life or property. Ocean hazard areas include beaches, frontal dunes, inlet lands, and other areas in which geologic, vegetative and soil conditions indicate a substantial possibility of excessive erosion or flood damage.	Not applicable	The Proposed Action is not located in an ocean hazard area.
0400 Public Water Supplies: Regulates development within critical water supply areas in the protection and preservation of public water supply well fields and A-II streams and to coordinate and establish a management system capable of maintaining public water supplies so as to perpetuate their values to the public health, safety, and welfare.	Not applicable	The Proposed Action is not located within a critical water supply area.
0505 Coastal Areas that Sustain Remnant Species: Protects unique habitat conditions that are necessary to the continued survival of threatened and endangered native plants and animals and minimizes land use impacts that might jeopardize these conditions.	Consistent	The Proposed Action project site does not provide habitat for any threatened or endangered native plants or animals. The 11.2-acre project site contains an existing 425-foot HLS tower and several buildings, as well as some grassed areas with scattered shrubs and trees. Piping plovers and sea turtle nesting sites occur in the general area; however, the project site is more than ½ mile away from shoreline beaches and would not have any impact to these nesting sites.
0506 Coastal Complex Natural Area: Protects features of a designated coastal complex natural area to safeguard its biological relationships, educational and scientific values, and aesthetic qualities. These areas are defined as lands that support native plant and animal communities and provide habitat qualities which have remained essentially unchanged by human activity.	Not applicable	The Proposed Action is not located within a coastal complex natural area.
0507 Unique Coastal Geologic Formations: Preserves unique resources of more than local significance that function as key physical components of natural systems, as important scientific and educational sites, or as valuable scenic resources.	Not applicable	The Proposed Action project site does not contain any unique coastal geologic formations.

Affected Environment and Environmental Consequences

North Carolina State Coastal Policy	Is the Proposed Action Consistent?	Evaluation of Consistency
0509 Significant Coastal Archaeological Resources: Conserves coastal archaeological resources of more than local significance to history or prehistory that constitute important scientific sites, or are valuable educational, associative, or aesthetic resources.	Consistent	The Proposed Action would not affect any significant coastal archaeological resources.
0510 Significant Coastal Historic Architectural Resources: Conserve coastal historic architectural resources of more than local significance which are valuable educational, scientific, associative or aesthetic resources.	Consistent (guyed tower; Proposed Action and Alternative Two) Inconsistent (self-supported tower; Alternative Three)	RFF Buxton has been designed and sited to minimize visual impacts to the historic Cape Hatteras Light Station. A visual assessment (Appendix C) was conducted for the Proposed Action and concluded that the Proposed Action will result in no adverse effect on the lighthouse for the two guy-wire tower alternatives. However, because the self-supported tower is a more substantial structure in terms of its massing, its physical presence is intensified and magnified and would have an adverse effect on the lighthouse.
0602 Pollution of Waters: Specifies that no development shall be allowed in any AEC which would have a substantial likelihood of causing pollution of the waters of the state in which shell fishing is an existing use to the extent that such waters would be officially closed to the taking of shellfish.	Consistent	Although shell fishing occurs in the general project area, the Proposed Action would not affect any shellfish waters.
0603 Minimum Altitudes: Specifies that no development involving airspace activity shall be allowed in any AEC which would result in violation of minimum altitude standards adopted by the Federal Aviation Administration and codified at 14 CFR Part 91.79.	Not applicable	The Proposed Action does not involve any airspace activity.
0604 Noise Pollution: Specifies that, except as required for safe aircraft takeoff and landing operations, airspace activity associated with coastal development shall not impose an increase in average noise exceeding 10 dBA above background levels.	Not applicable	The Proposed Action does not involve any airspace activity.

Affected Environment and Environmental Consequences

North Carolina State Coastal Policy	Is the Proposed Action Consistent?	Evaluation of Consistency
General State Policy Guidelines for the Coastal Area for Activities Outside Areas of Environmental Concern (DCM 15A North Carolina Administrative Code 07M)		
0200 Shoreline Erosion: Addresses development along ocean and estuarine shoreline and erosion response measures that should be developed to minimize the loss of private and public resources.	Consistent	Temporary disturbance to surficial soils would occur during the construction of RFF Buxton. To reduce the potential adverse impacts associated with soil disturbance, best management practices (BMPs) such as minimizing the removal of existing vegetation, mulching bare soils after construction is completed, and installing sediment barriers such as silt fences would be used to prevent the erosion of soils and transport of sediment from the project site. Grading and excavation of soils within the project site would be minimized as much as possible.
0300 Shorefront Access: Addresses provision of pedestrian access to the public trust waters, including the ocean beaches and estuarine waters for recreational purposes in the 20 coastal counties.	Not applicable	The Proposed Action would neither involve nor affect pedestrian access to any public trust waters.
0400 Coastal Energy: Addresses development of energy facilities and energy resources in the state and in offshore waters, and exploration for the development of offshore and outer continental shelf (OCS) energy resources such as oil and gas.	Not applicable	The Proposed Action does not include development of energy facilities or resources.
0500 Post-disaster: Intended to provide guidance on and mitigate for the effects of a coastal natural disaster by providing adequate plans for post-disaster reconstruction.	Not applicable	The Proposed Action does not include post-disaster reconstruction activities.
0600 Floating Structures: Addresses prohibition of floating structures intended for human habitation or commerce in public trust waters of the coastal area except in permitted marinas.	Not applicable	The Proposed Action does not include any floating structures.
0700 Mitigation: Addresses mitigation for adverse impacts to coastal lands and waters from development.	Consistent	The Proposed Action would have no adverse impacts to coastal lands or waters.
0800 Coastal Water Quality: Declares that no land or water use shall cause the degradation of water quality so as to impair traditional uses of the coastal waters, including activities outside the coastal area.	Consistent	The Proposed Action would not cause degradation of water quality so as to impair traditional uses of coastal waters, including activities outside the coastal area.

Affected Environment and Environmental Consequences

North Carolina State Coastal Policy	Is the Proposed Action Consistent?	Evaluation of Consistency
0900 Coastal Airspace: Preserves access corridors free of special use airspace designations along the length of the barrier islands and laterally at intervals not to exceed 25 miles to provide unobstructed access both along the coastline and from inland areas to the coast.	Not applicable	The Proposed Action does not obstruct airspace access corridors.
1000 Water and Wetland Based Target Areas for Military Training Activities: Ensures that use of water and wetland-based target areas for military training purposes not infringe on public trust rights, cause damage to public trust resources, violate existing water quality standards or result in public safety hazards.	Not applicable	The Proposed Action does not include the use of water and wetland-based target areas for military training purposes.
1100 Beneficial Use and Availability of Materials Resulting from the Excavation or Maintenance of Navigation Channels: Regulates disposal of materials resulting from excavation or maintenance of navigation channels and promotes its beneficial use whenever practicable.	Not applicable	The Proposed Action does not include excavation or maintenance of navigation channels.
1200 Ocean Mining: Regulates mining activities in state waters, or in federal waters insofar as the activities affect any land, water use, or natural or historic resource of the state waters.	Not applicable	The Proposed Action does not include mining activities.

3.14.2 Coastal Barrier Resources

Affected Environment

The Coastal Barrier Resources Act (CBRA), enacted in 1982, designated various undeveloped coastal barrier islands as units in the Coastal Barrier Resources System. Designated units are ineligible for direct and indirect Federal financial assistance programs that could support development on coastal barrier islands; exceptions are made for certain emergency and research activities. The project site is not included in the Coastal Barrier Resources System.

Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to a Coastal Barrier Resource.

Proposed Action

The project site is not located within the Coastal Barrier Resources System; therefore, under the Proposed Action Alternative, there would be no impacts to a Coastal Barrier Resource.

Alternative Two

The project site is not located within the Coastal Barrier Resources System; therefore, under Alternative Two, there would be no impacts to a Coastal Barrier Resource.

Alternative Three

The project site is not located within the Coastal Barrier Resources System; therefore, under Alternative Three, there would be no impacts to a Coastal Barrier Resource.

3.15 ENVIRONMENTAL JUSTICE

Affected Environment

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) requires Federal agencies to make achieving environmental justice part of their mission. Agencies are required to identify and correct programs, policies, and activities that have disproportionately high and adverse human health or environmental effects on minority and low-income populations. EO 12898 also tasks Federal agencies with ensuring that public notifications regarding environmental issues are concise, understandable, and readily accessible. Socioeconomic and demographic data for the project area was reviewed to determine if a disproportionate number (greater than 50 percent) of minority or low-income persons have the potential to be adversely affected by the proposed project.

According to the U.S. Census 2000, in 1999 the median household income reported in Dare County was \$42,411, with 8.0 percent of the population living below the poverty level. In addition, minorities represented 5.3 percent of the population of Dare County (USCB, 2000). Table 3-4 summarizes and compares the population, income, and minority demographics of the project area.

Table 3-4: Project Site Population Demographics

	North Carolina	Dare County
Total population (1999)	80,049,313	29,967
Median household income (\$/yr)	39,184	42,411
Individuals below poverty level (%)	12.3	8.0
% minority population	27.9	5.3

Environmental Consequences

No Action

Under the No Action Alternative, no activity would be performed and no disproportionately high or adverse impact on minority or low-income populations would occur.

Proposed Action

Under the Proposed Action, no disproportionately high or adverse impacts to minority or low-income populations are anticipated. The Proposed Action would provide improved marine safety to all persons in the project area regardless of their income or minority status. No minority or low-income populations would be displaced or adversely affected by the Proposed Action.

Alternative Two

No disproportionately high or adverse impacts to minority or low-income populations are anticipated under Alternative Two; Alternative Two would provide improved marine safety to all persons in the project area regardless of their income or minority status. No minority or low-income populations would be displaced or adversely affected by Alternative Two.

Alternative Three

No disproportionately high or adverse impacts to minority or low-income populations are anticipated under Alternative Three; Alternative Three would provide improved marine safety to all persons in the project area regardless of their income or minority status. No minority or low-income populations would be displaced or adversely affected by Alternative Three.

3.16 CUMULATIVE EFFECTS

In accordance with NEPA, this EA considers the overall cumulative impact of the Proposed Action and alternatives and other actions that are related in terms of time or proximity. According to CEQ regulations, cumulative impacts represent the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

To address cumulative impacts, this section examines Coast Guard actions as well as non-Coast Guard actions occurring or proposed in the vicinity of the project area. The combined effects of these actions are evaluated to determine if they could result in any cumulative impacts. It is expected that implementation of the Proposed Action would have an overall positive impact on human health and the environment as compared with the No Action alternative.

The Coast Guard is not proposing any major site work that, when combined with the Proposed Action, would have a cumulative effect on the human or natural environment. No major actions are anticipated in the vicinity of the project site since the project is located within the limits of the Cape Hatteras National Seashore National Park and bordering a jurisdictional wetland.

The enforceable policies of the North Carolina Coastal Management Program were reviewed to determine if the Proposed Action and Alternative Actions would result in any direct, indirect, or cumulative impacts. The Coast Guard has determined that the Proposed Action or Alternative Actions would not result in any cumulative impacts and has provided a consistency determination to the North Carolina Division of Coastal Management.

The construction of RFF Buxton, in combination with existing and potential future towers in the vicinity, could result in cumulative indirect impacts to migratory birds and cultural resources in the area. At this time, it is unknown how many new towers may be constructed, but it is expected that future commercial tower construction would be constrained by local opposition to new towers and the limited availability of land.

The cumulative impacts of communication towers on migratory birds are not well understood. The Coast Guard, in cooperation with the USFWS, is funding an avian research project to help better understand these effects. Based on existing available data, it is believed that towers around 500 feet tall pose minimal threat to migrating birds (Woodlot, 2003). Since RFF Buxton replaces

an existing tower and would not be significantly above the 500-foot threshold, it is expected that cumulative impacts to migratory birds associated with RFF Buxton would not be significant.

The Coast Guard analyzed the visual impacts of the Proposed Action and Alternative Actions to establish the cumulative effect on historic resources and impacts on the visual integrity of the surrounding viewshed, including the natural and man-built landscape and its freedom from encroaching elements. Visual integrity can be present in well-kept urban and rural landscapes, as well as in natural settings. While a painted tower will have more visibility than an unpainted tower, the visual impact study revealed that the greater visibility is a minor factor in the assessment of effects and that the paint scheme, in itself, will not have an adverse effect on historic properties. However, in cooperation with the North Carolina SHPO, the Coast Guard has determined that the high intensity daytime strobe lights considered with the unpainted tower option for the Proposed Action, as well as the alternative actions, would result in an adverse visual effect on the NRHP-listed and NHL Cape Hatteras Light Station and may contribute to a cumulative adverse impact to that historical resource. Furthermore, Alternative Three, the self-supported tower, both painted and unpainted options, will have an adverse visual effect on both cultural and visual resources within the project area. As a result of the Coast Guard's discussions with Dr. Jeffrey J. Crow, SHPO, and in order to avoid an adverse visual effect to the Cape Hatteras Light, the Coast Guard has agreed to use the painted, 24-guy wire tower design alternative and to follow the additional stipulations requested by Dr. Crow regarding dish-type antennas or any future requests for additional antennae installations on the proposed RFF Buxton tower.

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