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DRAFT ENVIRONMENTAL ASSESSMENT PROPOSED MODIFICATION AND EXPANSION OF THE NATIONAL OCEAN SERVICE COASTAL SERVICES CENTER CNC CHARLESTON SC

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Draft Report • August 2002

ENVIRONMENTAL ASSESSMENT

PROPOSED MODIFICATON AND EXPANSION OF THE NATIONAL OCEAN SERVICE (NOS) COASTAL SERVICES CENTER (CSC), NORTH CHARLESTON, SOUTH CAROLINA

Envirotechnical Program

Patricia Burns, Program Director
John Chamberlain, Senior Environmental Consultant
Scott Rotman, Environmental Engineer
Caren Wilhoit, Research Analyst
Linda Hawke-Gerrans, Senior Engineering Assistant
Roshni Easley, Administrative Assistant
Teresa Cochran, Administrative Specialist

SRI Project 11976

Prepared for:

National Oceanic and Atmospheric Administration
Eastern Administrative Support Center
Norfolk Federal Building
200 World Trade Center
Norfolk, VA 23510-1624

August 30, 2002

To Whom It May Concern:

The National Ocean Service (NOS), within the National Oceanic and Atmospheric Administration (NOAA) and U.S. Department of Commerce, proposes to add to and upgrade existing facilities at its Coastal Services Center (CSC) located in North Charleston, South Carolina. The proposed action primarily involves the construction of two new structures, providing an additional 21,500 gross square feet for office and other workspace used for data management, information dissemination and staff training activities. The proposed two-story structures, adjacent to existing facilities within 6.6-acres at 2234 Hobson Avenue, would enable CSC program activities to grow or be added at this NOAA property.

NOAA has prepared the enclosed Draft Environmental Assessment (EA) in conformance with requirements for implementing the National Environmental Policy Act (NEPA). The Draft EA analyzes the potential for significant environmental impacts to occur to the human environment due to implementation of the proposed action. This Draft EA is being distributed to you and other interested members of the public and government agencies for review and comment. Please provide written comments during the 30-day review period ending October 4, 2002. NOAA will then prepare a Final EA addressing substantive comments prior to making its decision whether to proceed with the preferred action as proposed. NOAA will not implement its preferred action until the NEPA review process has been completed.

Please send written comments postmarked on or prior to October 4, 2002, to NOAA's designated NEPA coordinator at the following address:

Ms. Caren Wilhoit
SRI International, G-231
333 Ravenswood Avenue
Menlo Park, CA 94025

Thank you for your participation in this review process.

Sincerely,

John A. Chamberlain
Senior Environmental Consultant
Envirotechnical Program

SRI International
333 Ravenswood Avenue • Menlo Park, CA 94025 • 650 859.2000

SUMMARY

Background and Purpose

The National Ocean Service (NOS), a part of the National Oceanic and Atmospheric Administration (NOAA), is responsible for protecting and managing the United States' (U.S.) coastal resources. NOS operates the Coastal Services Center (CSC) to provide information, technology, and training to the nation's coastal resource managers. The CSC consists of two principle structures used for administrative, data management, and training functions. CSC facilities are located within 6.57 acres at the former Charleston Naval Shipyard (Shipyard), part of the former Naval Base Charleston, in the city of North Charleston, South Carolina. Due to anticipated growth in staff and program capabilities, NOAA proposes to construct two building additions adjacent to its existing CSC buildings. This would entail modification to existing CSC facilities and on-site infrastructure.

NOAA has prepared this Environmental Assessment (EA) document in conformance with requirements for implementing the National Environmental Policy Act (NEPA) and NOAA Administrative Order 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act*. This EA analyzes the potential for significant environmental impacts to occur to the human environment as a result of the preferred action and the no-action alternative. The Draft EA has been distributed to interested members of the public and government agencies for review and comment. NOAA will accept written comments during a 30-day comment period beginning September 3, 2002, and ending October 4, 2002. NOAA will evaluate all comments received during the comment period and prepare a Final EA. From this information, NOAA will determine whether a Finding of No Significant Impact (FONSI) is warranted or an Environmental Impact Statement (EIS) should be prepared. NOAA will not initiate the proposed action or any alternative action until the environmental review process has been completed.

Description of Proposed and Alternative Actions

The preferred action involves the modification of existing CSC facilities and the addition of two office buildings all within 6.57 acres of property owned by NOAA. The property was obtained by NOAA from the U.S. Department of the Navy (Navy) in 1994. It contains two principle structures: the Reserve Training Center, Building 1 (Building RTC-1) and Building 2, or the NOAA Port Services Building (formerly Building 200). Under the proposed action, NOAA would:

- Construct a 5,900 gross square foot (sq ft) two-story addition to Building RTC-1 (Addition A).

- Construct a 14,690 gross sq ft two-story addition connecting Building RTC-1 and Building 2 (Addition B).
- Construct 956 gross sq ft of new stairs and loading dock space.
- Remodel portions of Building RTC-1 and Building 2, particularly in areas connecting existing and proposed structures via hallways.
- Reconfigure the CSC access driveway, parking area, and landscaping.
- Add a stormwater retention area and direct all roof gutters to existing and proposed yard drains.
- Extend or reroute utility infrastructure within the property.

Under a separate action by NOAA, two abandoned towers near Building 2 will be removed for safety reasons.

The proposed development will strive to meet certification of compliance standards under the U.S. Green Building Council's program: Leadership in Energy and Environmental Design (LEED). LEED is a voluntary building rating system that evaluates environmental and energy performance over the building's lifecycle. To the maximum extent possible, "green building" techniques associated with LEED certification would be incorporated into design, construction, and maintenance for the proposed action.

The current semicircular access driveway serving Building 2 would be removed and replaced with vegetation and parking spaces. A paved access driveway for staff parking and service vehicles would be added in place of pavement and the landscaped area at the east perimeter of the site. Partial or complete removal of concrete blocks formerly supporting an aboveground steam pipeline along the shoreline and at Pier Romeo is proposed.

NOAA obtained the property from the Navy under a base realignment and closure (BRAC) program initiated under the Base Closure and Realignment Act (BCRA) of 1988 and associated regulation. The BRAC program requires the Navy to identify and mitigate for any unknown, preexisting contamination from hazardous materials or petroleum products. The Navy plans to remove several monitoring and reference wells established on site pursuant to the BRAC program. This removal is expected to occur by the end of 2002. Separately, either the Navy or NOAA will remove an oil/water separator at Building 2 that was installed by the Navy.

In addition to the proposed action, reasonable alternative actions considered were: construction of additions northeast and northwest of Building RTC-1 and acquiring or sharing existing facilities near the CSC. These alternatives would not be effective in meeting NOAA's goal for space efficiency and collaboration among various organizations at the CSC and were eliminated from consideration. NOAA also considered the alternative of taking no action, in which no change to existing facilities would occur. Facility capacity needs and functional efficiency would not be met; hence, the no-action alternative is not preferred.

Environmental Consequences and Mitigation

The proposed action would not result in significant impacts to the existing human environment. All related activities would occur in a partially developed NOAA parcel. No effect to existing on-site or adjacent land uses would occur. As stipulated under the Public Buildings Amendments of 1988, Public Law 100-678, NOAA would provide building plans to local planning agencies for a 30-day courtesy review and allow normal inspections during the construction period. A maritime cargo loading and transfer terminal has been proposed for the area surrounding the CSC. This major industrial development, if undertaken, has the potential to adversely affect existing and future land use compatibility with the CSC and other tenants and landowners.

Charleston County is classified as "in attainment" or unclassifiable for all National Ambient Air Quality Standards (NAAQS) for criteria pollutants under the federal Clean Air Act (CAA). The CSC is a permitted minor source of air pollution. The amount of vehicle traffic, energy consumption, and emissions of air pollutants generated by the CSC due to the proposed action would increase slightly in the short term; these effects would not be significant. Construction activities may generate dust, which would be controlled through the application of standard suppression measures such as periodic watering.

Commercial utility services currently provided to the CSC, such as water, wastewater disposal, electricity, and heating systems would be adequate. New and relocated existing chiller units would be added on-site. No change in off-site utility infrastructure is proposed, only the extension of on-site services. No changes to public roads are proposed. Noise emissions during the construction and operation of the proposed facilities would not be significant. Due to the architectural similarities between proposed and existing structures, they would appear as part of the same development. While the CSC property contains structures originally built over 50 years ago, each building has been significantly renovated in the last 8 years. Based on prior cultural resource inventories, it has been determined that no structures on or eligible for inclusion in the National Register of Historic Places (NRHP) are present. The potential for finding previously undiscovered archaeological resources is low. No effects to historic structures or archaeological resources would result from the proposed action. The South Carolina State Historic Preservation Office (SHPO) concurs with this opinion. Also, no recreational opportunities, such as public recreation areas, parks, or hunting and fishing areas, would be affected.

The project site and surrounding area has a similar percentage of minorities and a higher per capita income relative to Charleston County as a whole. Disproportionately high and adverse environmental effects on minority or low-income communities would not result due to the proposed action. Construction expenditures by NOAA would represent a modest, beneficial effect. Overall socioeconomic impacts would not be significant.

The proposed action would not adversely affect sensitive ecological or natural resources. Soils dredged from the Cooper River were deposited and graded for urban development at and near the site in the 1940s. No wetlands or habitat critical to protected flora and fauna would be

affected. Small areas of mowed lawn and clusters of landscaped trees and shrubs would be displaced. About 2 acres of impervious surface are present within the 6.57-acre site. The proposed action would not result in significant net change in impervious surfaces. Adjacent to the Clouter Creek Reach of the Cooper River, the CSC property and adjacent waterfront contain several active piers and a major shipping channel, none of which would be affected by the proposed action. NOAA's Pier Romeo or tidal and submerged land below the mean high water line adjacent to the CSC would not be altered. Designated wild and scenic rivers would not be affected.

The CSC and the majority of the Shipyard are within flood Zone AE, where the 100-year floodplain has been determined to reach 12 feet (ft) National Geodetic Vertical Datum (NGVD). The ground elevation at the proposed building location ranges between 5 ft and 9 ft NGVD. The proposed additions would be constructed with finished floor elevation of 10 ft NGVD, below the 100-year floodplain. Since no alternative location outside of the 100-year floodplain is feasible, proposed structures will either be flood-proofed or raised above the 100-year floodplain elevation. The proposed project is within the South Carolina Coastal Zone Management (CZM), and would not have a significant adverse effect on coastal resources such as bay or river waters, tidelands, or beach/dune systems. The proposed action would be consistent with state and regional CZM policies. Conditional concurrence with this determination has been received from the South Carolina Department of Health and Environmental Control (SCDHEC), Office of Ocean and Coastal Resource Management (OCRM).

A National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm runoff water from a construction site would be required. However, a Stormwater Management and Sediment Reduction Act permit from the OCRM, the federally approved NPDES permitting authority for the project area, would be sufficient. A new stormwater retention area is proposed to regulate runoff and reduce effects to water quality. No significant impact to water quality would result from the proposed action.

The Navy retains liability for subsurface contamination that may be present prior to NOAA's acquisition of the project area. Several Navy studies have indicated that limited subsurface contamination was present on site; however, no indication of statistically significant contaminant levels have been found. Completion of the Navy's obligation for examination and removal of subsurface contamination at the CSC is expected by December 2002. Lead-based paints or asbestos-containing materials (ACM) have been identified in CSC buildings. All federal, state, and local standards regulating the reporting and handling of hazardous wastes would be followed.

The no-action alternative would result in no change to the existing environment, except that two towers currently at the CSC would be removed. Erosion occurring beneath existing structures and the potential for flood damage during severe weather would remain unchanged.

Findings

Implementation of the proposed action or no-action alternative would not result in significant individual or cumulative environmental effects. Preparation of a FONSI is warranted for either the proposed action or the no-action alternative.

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ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
a.k.a.	also known as
AOC	Area of Concern
APE	area of potential effect
AST	aboveground storage tank
B-2	General Business District
BCP	BRAC Cleanup Plan
BCRA	Base Closure and Realignment Act
BMP	Best Management Practice
BRAC	base realignment and closure
Btu/hr	British thermal units per hour
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CATEX	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CHPSAMP	*Charleston Harbor Project Special Area Management Plan*
CMS	corrective measures study
CO	carbon monoxide
COC	contaminant of concern
CSC	Coastal Services Center
CSI	Confirmatory Sampling Investigation
CZM	Coastal Zone Management
dBA	A-weighted decibel(s)
DBCRA	Defense Base Closure and Realignment Act
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
EA	Environmental Assessment
EBST	Environmental Baseline Survey for Transfer
EC	Environmental Coordinator
ECP	Erosion Control Plan
EIS	Environmental Impact Statement
E.O.	Executive Order
EPA	Environmental Protection Agency
EQC	Environmental Quality Control
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft	foot/feet
HVAC	Heating, Ventilation, and Air Conditioning
I	Interstate Highway
ICBO	International Conference of Building Officials
kW	kilowatt(s)
LEED	Leadership in Energy and Environmental Design
LPITS	Legislative Printing, Information and Technology Systems
M-2	Heavy Industrial Use
mi	mile(s)

ABBREVIATIONS (CONCLUDED)

MLLW	mean lower low water
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
Navy	U.S. Department of the Navy
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
No.	number
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NO_x	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OCRM	Ocean and Coastal Resource Management
OMAO	Office of Marine and Aviation Operations
Pb	lead
PM	particulate matter
ppm	part(s) per million
RCRA	Resource Conservation and Recovery Act
RDA	Redevelopment Authority
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RTC-1	Reserve Training Center, Building 1
RTC-4	Reserve Training Center, Building 4
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
Shipyard	Charleston Naval Shipyard
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPA	State Ports Authority
sq ft	square foot/feet
SWMU	Solid Waste Management Unit
TIGER	Topologically Integrated Geographic Encoding and Referencing
TPH	total petroleum hydrocarbon
UBC	*Uniform Building Code*
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	*U.S. Code*
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VOC	volatile organic compound

1 INTRODUCTION

The National Ocean Service (NOS) is part of the National Oceanic and Atmospheric Administration (NOAA) within the U.S. Department of Commerce. NOS operates the Coastal Services Center (CSC) located in the city of North Charleston, South Carolina. The CSC mission is to "foster and sustain the environmental, social, and economic well being of the coast by linking people, information, and technology." NOAA and NOS have determined its existing CSC facilities will not meet anticipated staff and equipment needs. To continue to meet its mission, NOAA proposes to construct two buildings to be connected to existing CSC structures within its 6.57-acre property. The proposed action also would include reconfiguration of landscaping, utility infrastructure, and vehicle access and parking within the property. The proposed action is scheduled to commence in fiscal year 2003 and end in fiscal year 2005.

This Draft Environmental Assessment (EA) has been prepared in conformance with the National Environmental Policy Act (NEPA) and NOAA Administrative Order 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act* (amended May 20, 1999). This EA analyzes the potential for the proposed action to result in significant impacts to the human environment. The no-action alternative is also analyzed.

Written comments on the content of the Draft EA are being sought from government agencies, organizations, and the public during a 30-day period beginning September 3, 2002, and ending October 4, 2002. A Final EA, considering the written comments received by NOAA, will be prepared. Subsequently, NOAA will make a determination whether to issue a Finding of No Significant Impact (FONSI) and implement the proposed action or prepare an Environmental Impact Statement (EIS).

Written comments on the Draft EA should be sent to:

Ms. Caren Wilhoit
SRI International, G-231
333 Ravenswood Avenue
Menlo Park, CA 94025-3493

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2 PURPOSE AND NEED

NOS is responsible for the protection and management of the United States (U.S.) coastal resources and ecological health. The CSC provides the nation's coastal resource managers with supporting information, technology, and training. It is staffed by various branches of NOAA and other federal agencies and non-government entities that require the dissemination of information, services, and technology to its constituents. The CSC partners include NOS; National Marine Fisheries Service; National Weather Service; National Environmental Satellite, Data, and Information Service; Oceanic and Atmospheric Research; and the NOAA Office of Marine and Aviation Operations (OMAO) (formerly known as NOAA Corps); U.S. Department of Agriculture; U.S. Geological Survey (USGS); the Federal Emergency Management Agency (FEMA); National Aeronautics and Space Administration (NASA); state entities; and universities. The CSC is a partner in over 100 ongoing projects concerning site-specific coastal issues. The CSC also issues a bimonthly publication titled *Coastal Services*.

The CSC consists of 49,000 gross sq ft of office and administrative space in renovated structures obtained from the U.S. Department of the Navy (Navy). Since originally established in the city of North Charleston as the Center for Coastal Ecosystem Health in 1994, program and support staff at the CSC have grown at an average rate of just over 20 full-time equivalent positions each year. Space for additional growth for new staff and programs is no longer sufficient at the CSC. To meet the needs of the coastal resource management community, NOAA will need to increase its net square feet (sq ft) by over 30 percent. The proposed increase in building space would provide sufficient work areas for existing and future employees, and would facilitate growth in existing or added programs and training opportunities.

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3 PROPOSED ACTION

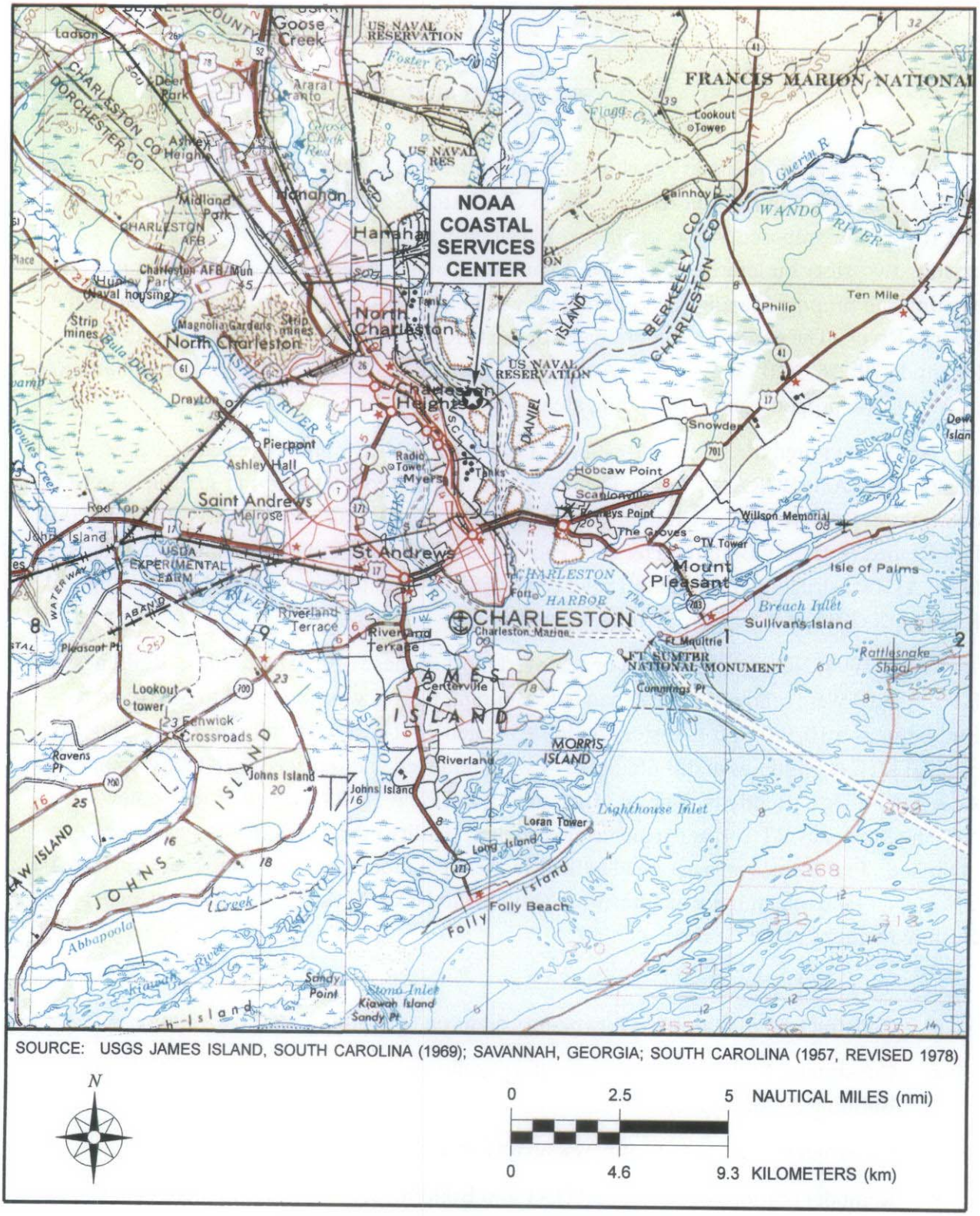
NOAA proposes to modify existing CSC facilities and add two new buildings at its property located at 2234 South Hobson Avenue, North Charleston, South Carolina (see Figures 1(a) and 1(b)). The proposed action would add 21,546 gross sq ft adjacent to NOAA's two existing two-story buildings, which have a combined area of 48,975 gross sq ft. Both the existing and proposed facilities would remain within a 6.57-acre NOAA parcel adjacent to the Cooper River. The geographic coordinates of the CSC are latitude 32° 50' 58.9" North and longitude 79° 56' 33.0" West (North American Datum of 1983). Figure 2 is an aerial photograph of the NOAA property and surrounding areas.

NOAA acquired the subject property in 1994 from the Navy under the Base Closure and Realignment Act (BCRA) of 1990. The Navy also transferred the following structures to NOAA ownership: Reserve Training Center, Building 1 (RTC-1); Building 2 (formerly Building 200); Pier Romeo (formerly Berthing Pier R or Facility 330); Reserve Training Center, Building 4 (RTC-4) (two structures); Building 1874; Tower 685; a watchtower connected to Building 2; Building X-30-A; and supporting infrastructure.

Since 1994, NOS has renovated or removed most of these original facilities. Buildings RTC-1 and 2 were renovated and expanded. Building RTC-1 was expanded to 38,675 sq ft. Building 2 is a 10,300 sq ft two-story building located 73 ft east of Building RTC-1. The two original RTC-4 buildings and Building 1874 were removed and replaced with landscaping. Added facilities currently include an office trailer, Building 1874 (a storage shed), a new building known as RTC-4, and a picnic area shelter. Utility infrastructure was also added or improved. Pier Romeo was assigned to the Marine Operations Center, Atlantic, of the NOAA OMAO, and the remaining structures were assigned to NOS. Figure 3 is a land survey of existing facilities at the CSC.

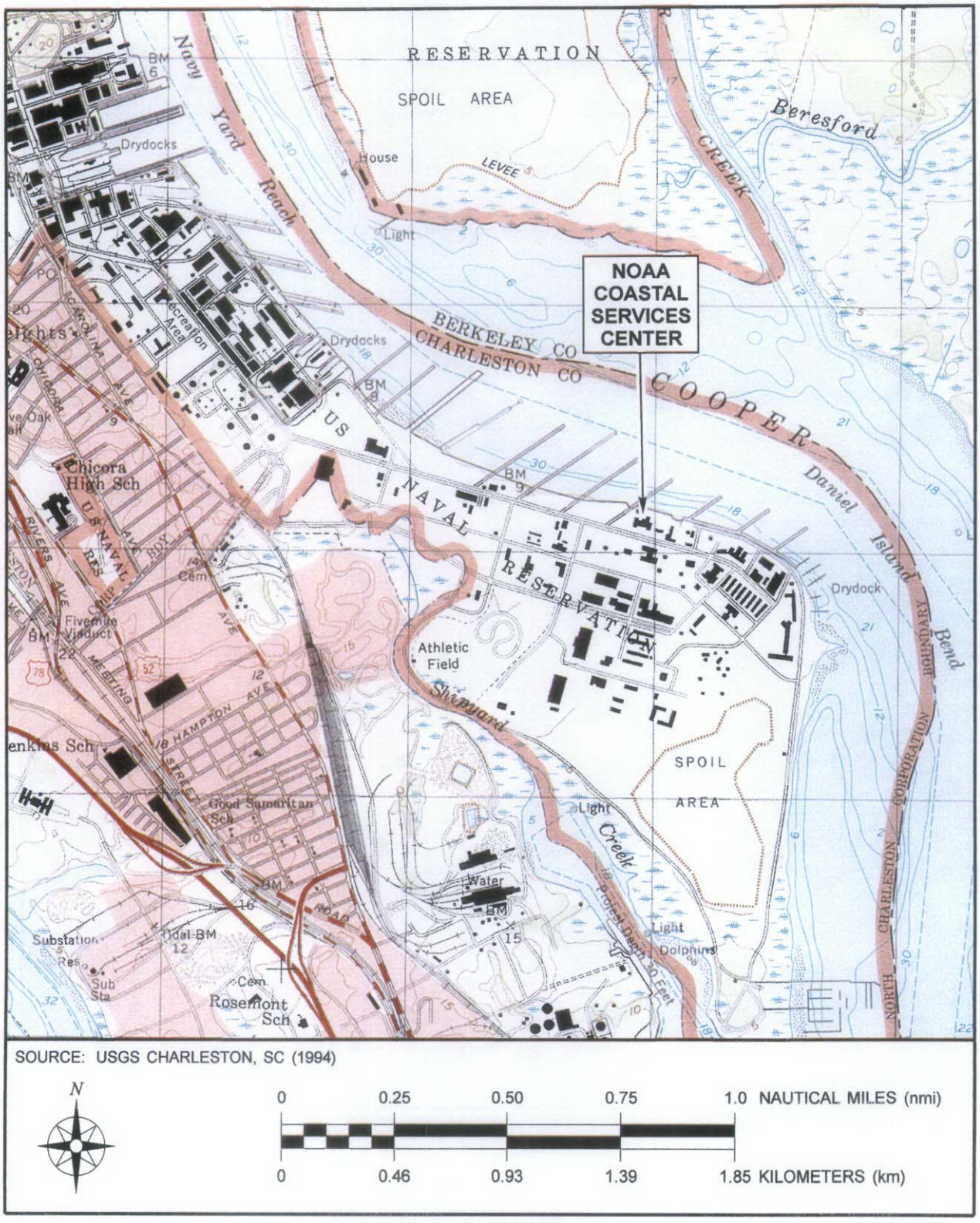
The proposed action would:

- Construct a 5,900 gross sq ft two-story addition to Building RTC-1 (Addition A).
- Construct a 14,690 gross sq ft two-story addition connecting Building RTC-1 and Building 2 (Addition B).
- Construct 956 gross sq ft of new stairway and loading dock space.
- Remodel portions of Building RTC-1 and Building 2, particularly in areas connecting existing and proposed structures via hallways.
- Reconfigure the CSC access driveway, parking area, and landscaping.



(a) EXISTING FACILITIES — 1:250,000 SCALE

FIGURE 1 SITE LOCATION MAP — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA



(b) EXISTING FACILITIES — 1:24,000 SCALE

FIGURE 1 SITE LOCATION MAP — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

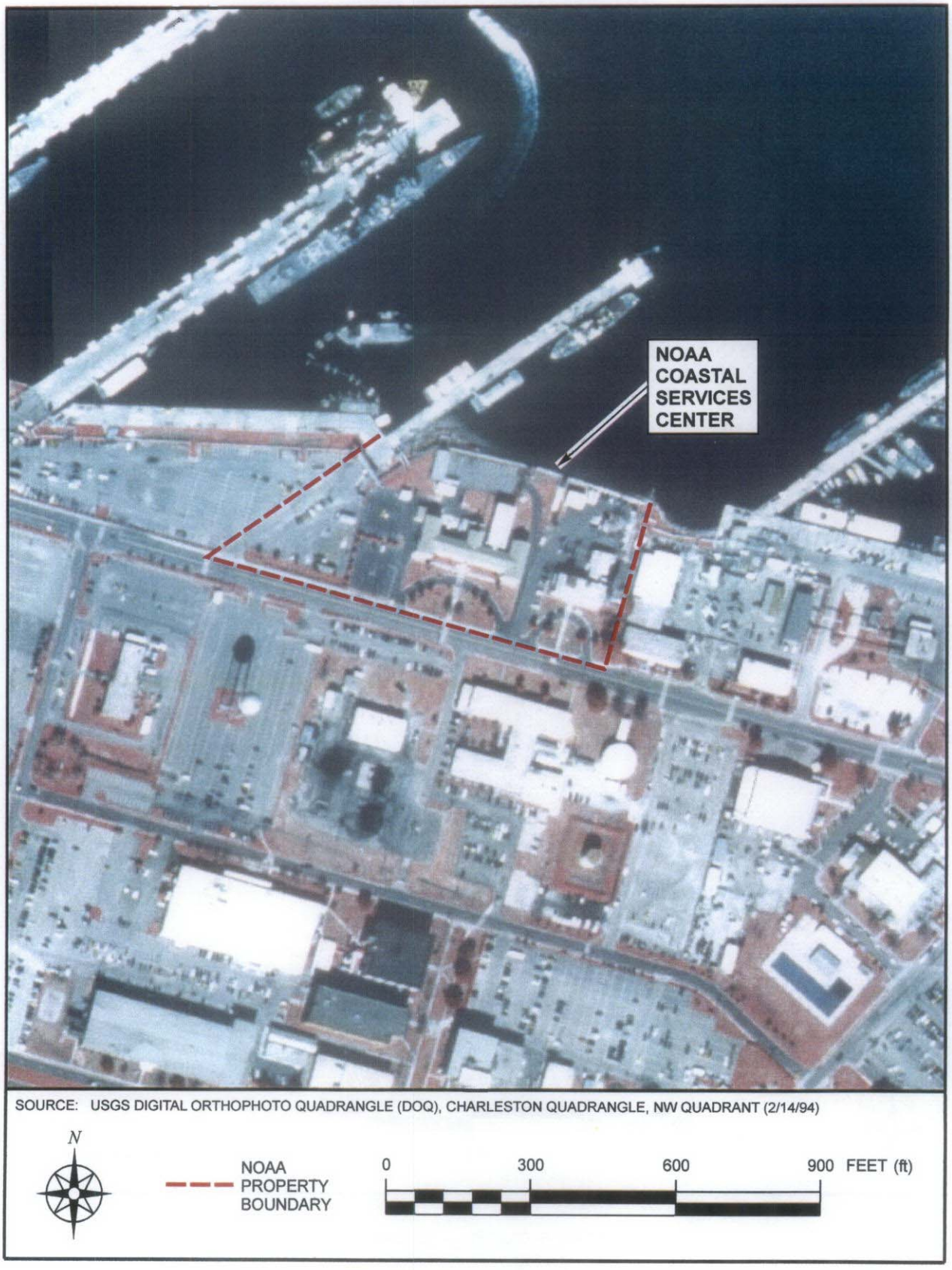
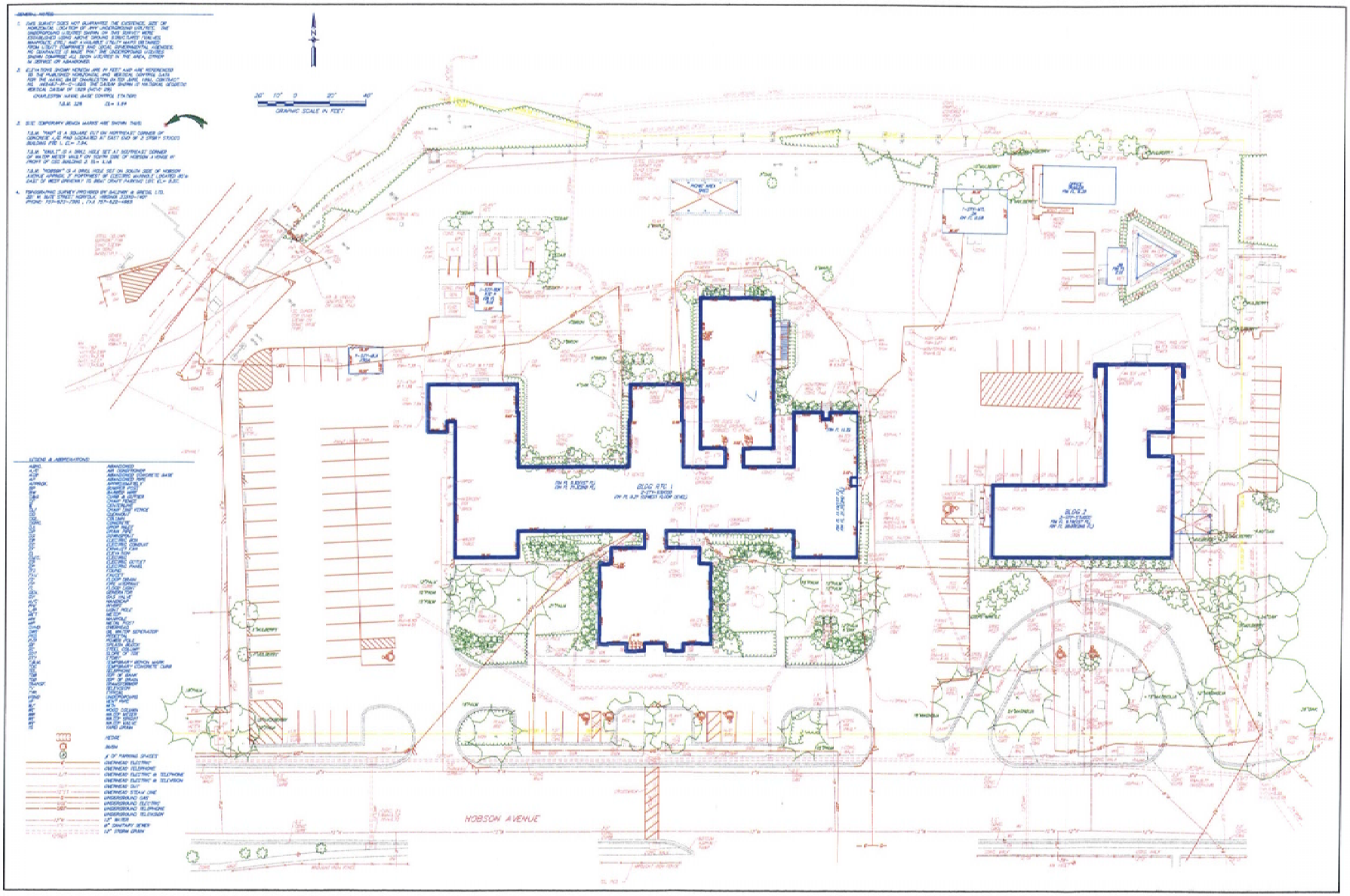


FIGURE 2 AERIAL PHOTOGRAPH — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA



SOURCE: NOAA, 2002

FIGURE 3 LAND SURVEY OF EXISTING FACILITIES — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

- Add a stormwater retention area and direct all roof gutters to existing and proposed yard drains.
- Extend utility infrastructure within the property.

The proposed action will not affect Pier Romeo, nor will it directly affect land beyond the summit of the shoreline, or tidal and submerged land below the mean high water line.

The proposed action would expand total CSC staffing capacity to at least 175 full-time equivalent staff. The proposed structures would add 15,800 net sq ft of space for offices, common area, training area, loading dock, and storage. About 2,100 sq ft of Building RTC-1 would be renovated (U.S. Department of Commerce [DOC], 2002b). Figure 4 is a site plan showing both existing and proposed facilities. Addition A would replace about 10,300 sq ft of grass and landscaped vegetation. Addition B would replace pavement and a small area of landscaped vegetation. Landscaping would be added to areas currently used for access parking and walkways. Figures 5(a), 5(b), 5(c), and 5(d) are site photographs of existing conditions. The proposed site plan is depicted in Figure 6. Additional photographs are provided in Appendix A.

The proposed structures would be similar in style and appearance to Building RTC-1, with sloped roofs and stucco and brick exteriors. Exterior materials of Building 2 also would be replaced with stucco and brick. Figures A-1(a) and A-1(b) in Appendix A show the architectural style of these buildings. Figure 7 provides various elevations and perspectives of the existing and proposed buildings.

The CSC access and adjacent asphalt areas drive would be reconfigured for efficiency to provide more parking and an aesthetically pleasing pedestrian access. The current semicircular access drive serving Building 2 would be replaced with landscaping and parking (see Figure A-1(c) in Appendix A). Access along the south and east sides of Building 2 would be reconfigured. The planned access drive would replace Tower 685 and the Building 2 watchtower (to be removed under a separate action), a parking area, and vegetation at the east edge of the NOS property (see Figures A-1(d) through A-1(g) in Appendix A). No change in utilities infrastructure is proposed except for the extension of utility lines on site.

To prevent erosion near foundations caused by stormwater runoff, gutters would be added to Building RTC-1, Building 2, and on the proposed structures. Overall, roughly 83,500 sq ft of impervious surfaces are present within the 6.57-acre property. This would decrease to 72,648 sq ft after implementation of the preferred action.

Remnant infrastructure at the CSC formerly used by the Navy includes several pairs of concrete posts that had supported a steam pipeline located near the shore. NOAA would remove all or portions of the remaining concrete posts. Figure A-1(h) in Appendix A is a photograph of the shoreline and several concrete posts.

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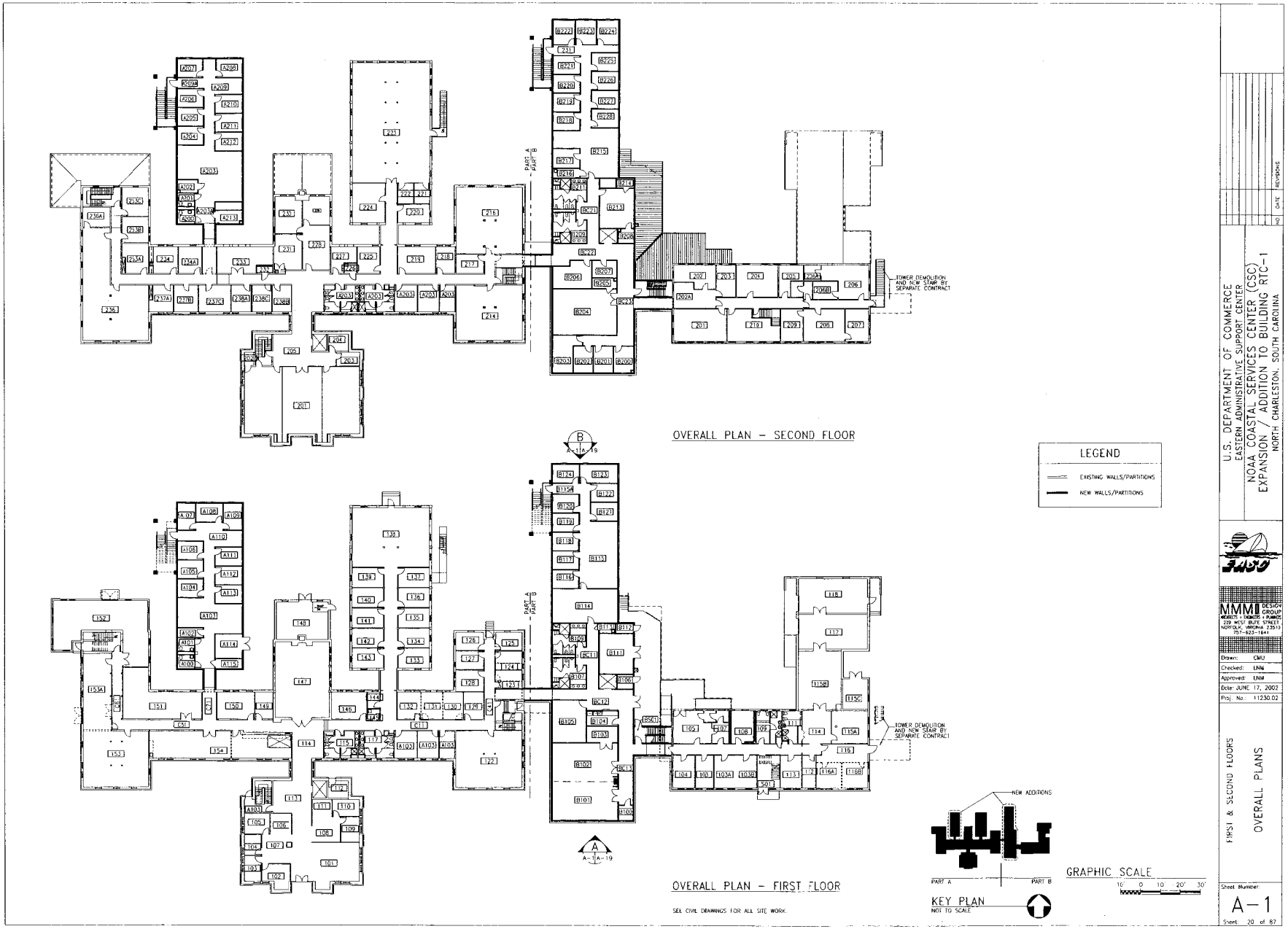


FIGURE 4 EXISTING AND PROPOSED BUILDINGS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

(a) VIEW (LOOKING NORTHEAST) OF NOAA COASTAL SERVICES CENTER BUILDING RTC-1

(b) VIEW (LOOKING SOUTH) OF NOAA COASTAL SERVICES CENTER BUILDINGS RTC-1 AND 2

FIGURE 5 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

(c) VIEW (LOOKING SOUTH) OF PROPOSED LOCATION FOR BUILDING ADDITION "A"

(d) VIEW (LOOKING NORTH) OF PROPOSED LOCATION FOR BUILDING ADDITION "B"

FIGURE 5 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (continued)

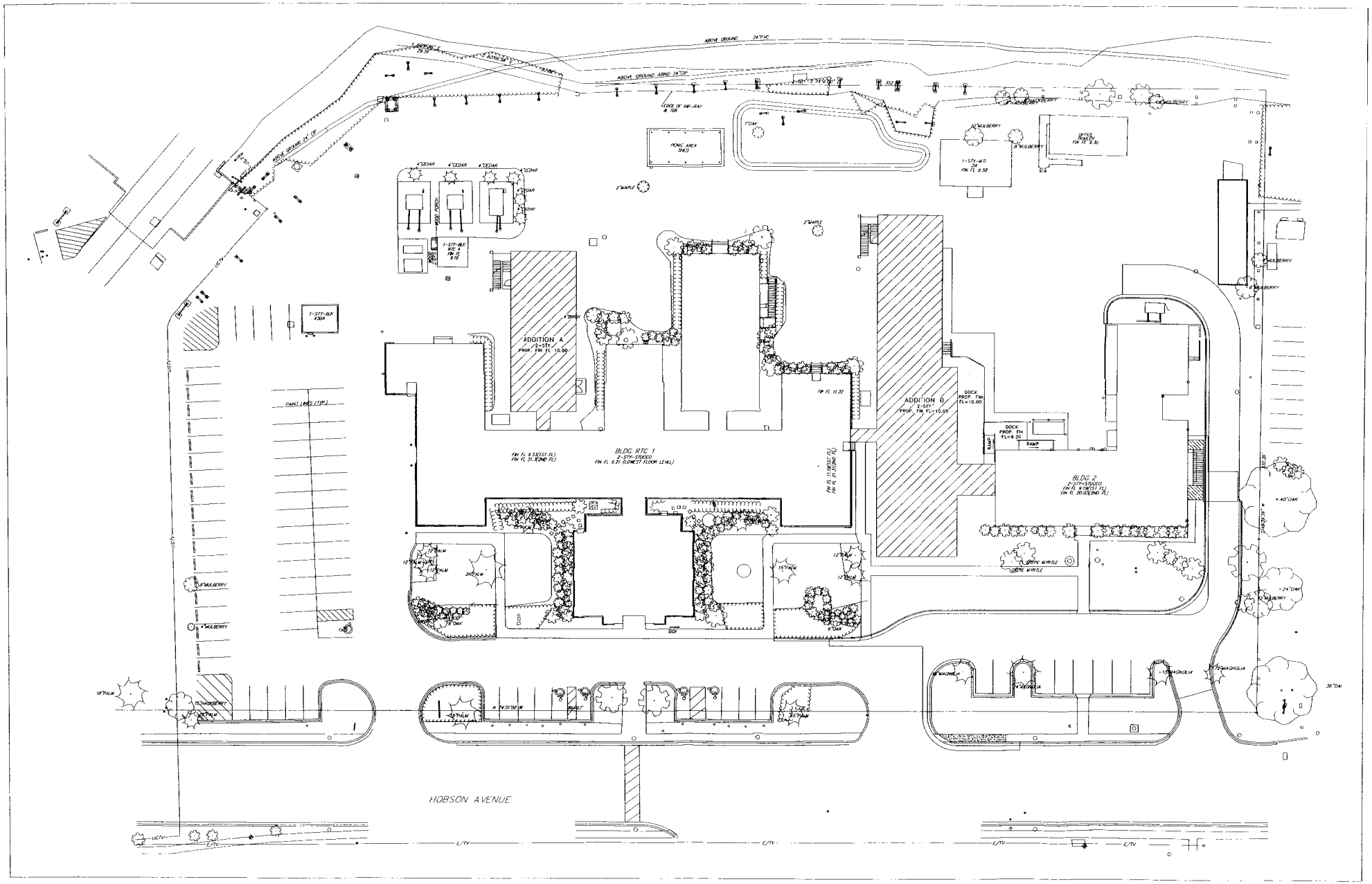
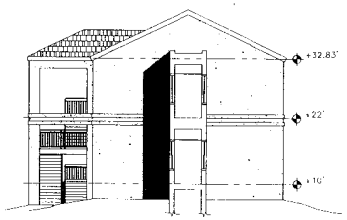


FIGURE 6 PROPOSED SITE PLAN — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

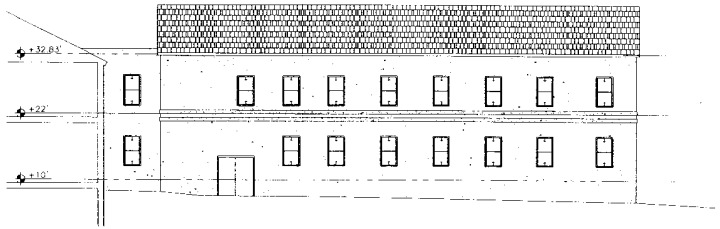
OVERALL NORTH ELEVATION A A-5 A-19

OVERALL SOUTH ELEVATION B A-5 A-19

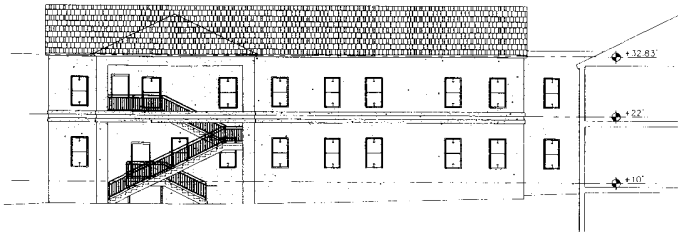
NORTH ELEVATION C A-5 A-19



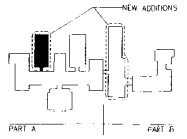
SOUTH ELEVATION D A-5 A-19



EAST ELEVATION E A-5 A-19



WEST ELEVATION F A-5 A-19



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE
70' 0 10' 20' 30'
5' 0 5' 10' 15'

U.S. DEPARTMENT OF COMMERCE
EASTERN ADMINISTRATIVE SUPPORT CENTER
NOAA COASTAL SERVICES CENTER (CSC)
EXPANSION / ADDITION TO BUILDING RTC-1
NORTH CHARLESTON, SOUTH CAROLINA

NO. | DATE | REVISIONS

MMM DESIGN GROUP
ARCHITECTS + ENGINEERS + PLANNERS
229 WEST 21ST STREET
NORFOLK, VIRGINIA 23510
757-623-1641

Drawn:	CMU
Checked:	LNM
Approved:	LNM
Date:	JUNE 17, 2002
Proj. No.	11230.07

PART A
BUILDING ELEVATIONS

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FIGURE 7 EXISTING AND PROPOSED BUILDING ELEVATIONS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA

FIGURE 7

The base realignment and closure (BRAC) program requires the Navy to identify and remediate unknown, preexisting contamination from hazardous materials or petroleum products. The Navy installed several monitoring and reference wells on site to determine whether surrounding soils are contaminated with petroleum products or other hazardous material, and an oil/water separator was installed at Building 2. The Navy plans to remove the monitoring and reference wells by December 2002, and either the Navy or NOAA plan to remove the oil/water separator near Building 2.

NOAA may seek certification of compliance under the U.S. Green Building Council's program: Leadership in Energy and Environmental Design (LEED). LEED is a voluntary building rating system that evaluates environmental and energy performance over the building's lifecycle. Certification is earned by incorporating design plans that meet sustainable siting, water efficiency, energy efficiency, utilization of recycled/renewable materials and resources, and indoor environmental quality criteria. To the maximum extent possible, the "green building" techniques under LEED would be incorporated into the CSC addition designs, construction, and maintenance.

Under a separate action, NOAA will remove Tower 685 and the watchtower at Building 2, which were installed by the Navy in 1954 and 1980, respectively, for safety reasons. Tower 685 has the potential to fall during extreme storm events. Neither structure has a current function, except that the watchtower provides an emergency stairwell for the second story of Building 2. A new stairwell would be installed in place of the watchtower stairwell. That action would occur as a Categorical Exclusion (CATEX) prior to implementation of the proposed action described in this EA.

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4 ALTERNATIVES CONSIDERED

In addition to the preferred action, NOAA also considered alternative building designs within its property, the use of other existing facilities near its property, and the alternative of taking no action. These alternatives are described below.

4.1 Alternative Building Designs

In addition to the design as described in Section 3, *Proposed Action,* NOAA considered two other designs. One design involved installing a square, two-story building at the northwest corner of Building RTC-1. The second design placed a new building on the northeast corner of Building RTC-1.

NOAA also considered constructing a third story on one or both of the existing two-story structures. That design would entail significant structural modification to Building RTC-1 and Building 2, which were originally constructed in 1944 and 1954, respectively, and were not designed to accommodate a third story. It would be difficult to ensure structural soundness of these buildings with a third story within a reasonable cost. That action also would cause temporary disruption of a large portion of CSC activities.

The design alternatives described above were less efficient and cost-effective than the proposed action.

For the aforementioned reasons, actions proposing the alternative designs were eliminated from consideration.

4.2 Use of Other Facilities

Under the alternative of using other facilities, NOAA would use an existing vacant structure near the CSC. This would entail leasing property from the Navy or the Charleston Naval Complex Redevelopment Authority (RDA), or sharing space with existing landowners or tenants. All locations within a reasonable distance to the CSC for the purpose of staff collaboration and functional efficiency are inside the 100-year floodplain.

The CSC is within a portion of the Charleston Naval Shipyard (Shipyard) that is moderately developed with facilities generally constructed in the first half of the twentieth century. Nearby buildings are used for administration, ship berthing, ship maintenance, housing, and training. These facilities are either already in use, are structurally inadequate, or lack sufficient size or proximity to meet the needs of NOAA at the CSC. Nearby federal and state tenants have their own growth plans, and there is a lack of usable space at these properties for additional staff, storage, and parking. NOAA staff at a distant satellite facility would not have direct access to

CSC resources. Significant infrastructure improvements at satellite facilities likely would be required.

NOAA eliminated this alternative from consideration due to the lack of space available in the immediate vicinity and inefficiency associated with locating staff at a satellite facility.

4.3 No-action Alternative

Under the no-action alternative, NOAA would not modify or add to its existing facilities. Improvements in operational and functional efficiency would not be achieved. The CSC would forego opportunities to participate in future cooperative programs and opportunities. Taking no action would restrict the number of critical programs supported by the CSC. The no-action alternative could adversely affect the ability of the CSC to fulfill its mission in the near future. For these reasons, the no-action alternative was rejected.

5 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

5.1 Land Use

5.1.1 Existing Environment

The NOS property is zoned as Heavy Industrial Use (M-2), by the city of North Charleston (Gore, 2002). The purpose of the M-2 zoning district is to provide for commercial, manufacturing, storage, and transportation-related activities and facilities such as railroad yards and docks. Container storage facilities are also permitted, subject to review and approval by the city council. The minimum lot size in the M-2 zone is 5 acres and the minimum setback is 50 feet (ft), per Section 6-4 of the Zoning Ordinance of the City of North Charleston (City of North Charleston, 1984).

According to the Charleston Naval Complex RDA's Preliminary Zoning Map dated June 1, 1999, the immediate area would be zoned as General Business District (B-2), for future commercial development (Faulk, 2000; Harrell, 2002).

The CSC is located within the southern portion of the 505-acre Shipyard, which was established as a component of Naval Base Charleston in 1901 for building and repairing Navy ships, and was developed with industrial, warehousing, administrative, housing, docking, dry-docking, recreational, and waste-handling facilities. The Shipyard currently provides shipyard and industrial facilities to commercial and government entities. While portions of the Shipyard have been abandoned or structures removed, many of the Navy's former administrative, training, ship berthing, and marina facilities remain.

In 1993, over 2,800 acres of the greater Naval Base Charleston, including the entire Shipyard, was determined to be surplus and made available for redevelopment (U.S. Department of the Navy, 2002). Under the Defense Base Closure and Realignment Act of 1990 (DBCRA), the Navy adopted a BRAC plan that directs conveyance and redevelopment of Navy property, and said redevelopment is ongoing. The Navy's proposed redevelopment plan and its potential impacts are described in the *Final Environmental Impact Statement* (FEIS) *for Disposal and Reuse of the Charleston Naval Base* (U.S. Department of the Navy, 1995a). The state's Charleston Naval Complex RDA is currently tasked with subleasing property still owned by the Navy. The property is maintained and protected by the Naval Facilities Engineering Command, Southern Division (U.S. Department of Defense [DOD], 1996).

NOAA acquired its 6.57-acre parcel from the Navy in September 1994 under the Navy's BRAC plan (U.S. Department of the Navy, 1995b). Congressional legislation that transferred the property to NOAA stipulated that NOAA's ownership may terminate if NOAA ceases to use the subject property (see Charleston Naval Complex RDA telephone conversation record in

Appendix B). The parcel contained Building RTC-1, Building 2, Pier Romeo, two towers, and several lesser structures. NOAA assigned Pier Romeo to the NOAA OMAO, and, the rest of the property to NOS for its CSC. The NOS property is adjacent to the Clouter Creek Reach of the Cooper River, which contains several active piers and a major shipping channel. Adjacent land uses consist of ship berthing and maintenance to the north, a satellite training facility to the east, an administrative and dormitory building to the south, and a parking area to the west. Nearby tenants consist of federal and state entities such as the U.S. Border Patrol, the Americorps/National Civilian Conservation Corps, the U.S. Coast Guard (USCG), and the State Department.

The Navy's proposed redevelopment plan was established in the *Charleston Naval Complex Reuse Plan* (Trident's BEST Committee, 1994), and later amended in the FEIS (U.S. Department of the Navy, 1995a). The Preferred Redevelopment Plan set forth therein proposes utilization of Naval Base Charleston as a private shipyard. A 363-acre maritime cargo terminal would be established at and around the NOS property, and an integrated intermodal rail yard, maritime industrial park, office facilities, and active recreational areas would be located nearby (Trident's BEST Committee, 1994). Following public review of the Preferred Redevelopment Plan, a Contingent Redevelopment Plan was identified, which does not consider the maritime cargo terminal or intermodal rail yard, but allows for continuation of certain existing land uses and for existing tenants, such as NOAA, to remain at their present location. Both Plans were adopted by the RDA as baselines for guiding redevelopment (DOD, 1996), and are outlined under Alternative Reuse Scenario 3 or 3A and 3B in the FEIS (U.S. Department of the Navy, 1995a). In order to effectuate any redevelopment plan, the lands of the former Naval Base Charleston to which the Navy has retained title would be conveyed to the City of North Charleston and to the South Carolina State Ports Authority (SPA).

Conveyance, or transfer of title, of the former Naval Base Charleston is being undertaken in discussions between the Navy and the Charleston Naval Complex RDA.

The SPA recently evaluated the feasibility of using the Shipyard and several other prospective sites as a new container storage and transfer facility. South Carolina State Senate Bill 926 (2002) authorizes the SPA to begin environmental studies and real estate actions in order to site a container storage and transfer facility on the west bank of the Cooper River (Office of Legislative Printing, Information and Technology Systems [LPITS], 2002b). As a result, the SPA was required to evaluate the siting feasibility locations such as the Shipyard. Senate Bill 926 intends that the new terminal facilities be completed by the end of 2008.

Under Section 15 of South Carolina House Bill 4879 (ratified May 28, 2002) and subsequent agreements between the City of North Charleston and South Carolina SPA, title to the land still owned by the Navy at the Shipyard will be portioned approximately 1.0 to 1.25 miles (mi) west-southwest of the CSC. Shipyard land north of that point will be conveyed to the City of North Charleston, and Shipyard land south of the road will be conveyed to the SPA. All existing leases made by the RDA with existing tenants will be honored (Office of

LPITS, 2002a). The city of North Charleston proposes to use Shipyard property for urban remodelization, while the SPA would likely use Shipyard property for a proposed maritime cargo terminal as generally outlined in the Preferred Redevelopment Plan. Negotiations to determine the precise realignment of the Shipyard are ongoing (see Charleston Naval Complex RDA telephone conversation record in Appendix B).

The construction of breakbulk, roll on-roll off, and container terminals, and dock operations at the Shipyard if completed, would dramatically change the complexion of land use around, and possibly on, the CSC facilities. In that instance, the existing CSC facilities and the proposed expansion may be rendered incompatible with other land uses in the area.

5.1.2 Environmental Consequences—Proposed Action

The proposed action would conform with existing zoning regulations to the maximum extent possible. Pursuant to the Public Buildings Amendments of 1988, Public Law 100-678, NOAA should provide building plans for the proposed infrastructure improvements to City of North Charleston Department of Planning and Management for a 30-day courtesy review. NOAA would consider comments from that department when preparing its final architectural design plans, and would permit normal inspections by local officials during the construction period. A building permit from the City of North Charleston Building Inspections Department typically is required for non-federal construction, reconstruction, alterations, demolition, or relocation of any structure. The federal government cannot be obligated to take any action by local officials.

One of the key strategies of the *Charleston Naval Complex Reuse Plan* was to create an office complex targeted to federal tenants (Trident's BEST Committee, 1994). Modification and expansion of NOAA's existing CSC facilities would be consistent with this plan, as well as the Charleston Naval Complex RDA plans to continue redevelopment of this former military facility. No impacts to current land use would result from the proposed action.

The proposed action would occur entirely on the existing federal lands owned and administered by NOS and NOAA on a partially developed portion of the CSC property. The functions of existing buildings would not change. Implementation of the proposed action would support the continued operation of the CSC. Pier Romeo or tidal and submerged land below the mean high water line would not be affected. Current and planned operations of the facility would not differ in character. The proposed action would not affect adjacent land uses.

The Farmland Protection Policy Act sets forth federal policies to prevent the unnecessary conversion of agricultural land to non-agricultural use. The proposed project site is within an urbanized area of North Charleston. Soil at the proposed project site is not suited to crop production, and the CSC and adjacent land or utility/access corridors are not classified as prime farmland, unique farmland, or farmland of statewide importance.

No change in the nature or type of activities conducted at the CSC would result from the proposed action. No significant impacts on existing or planned uses in the vicinity of the NOS property would result.

5.1.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, the proposed facility improvements would not be implemented. No effects to land use would result.

5.1.4 Mitigation

No mitigation measures are required. As part of its proposed action, NOAA would adhere to the Public Buildings Amendments of 1988, Public Law 100-678. For example, building plans would be provided to the city of North Charleston Department of Planning and Management for a 30-day courtesy review and NOAA would consider those comments when preparing its final design plan.

5.2 Geological Resources

5.2.1 Affected Environment

The NOS property is within the South Atlantic Coastal Plain, which is a low-lying coastline of submergence. The North Charleston area contains reverse faults that have little to no surface indications. Earthquakes having a magnitude greater than 6 on the Richter scale are considered to be damaging in the Charleston area, which experienced an earthquake of about Richter magnitude 7.6 in 1886. Since 1974, the Charleston area generally has experienced 10 earthquakes per year having magnitude 3.8 or less, none of which occurred within 42 mi of the NOS property (Charleston Southern University, 2002; USGS, 2001). The *Uniform Building Code* (UBC), prepared by the International Conference of Building Officials (ICBO), identifies the NOAA property as within seismic Zone 2A (ICBO, 1997).

The soil association is defined as man-made land (see soil survey of Charleston County, South Carolina, in Appendix B). This is typical of low-lying areas that are filled and developed for urban expansion. Topsoils consist of dredged sands, silts, and clays from the Cooper River. The original surface soils consist of recent formations of fine-grained marine and riverine sediments. About 4 inches of fill are present over loose to firm sands and gray clays having varying plasticity. Cooper Marl (also known as [a.k.a.] Ashley Marl), a hard clay unit, is found at depths of over 50 ft below the surface. Santee Limestone extends from the Cooper Marl to depths of 250 ft (U.S. Department of the Navy, 1995a; DOC, 2002b). Within the NOS property, signs of light erosion are evident at two areas near Building RTC-1 where stormwater runoff is directed from the roof to the ground.

The topography of the upland portions of the Shipyard is generally level and low-lying, with elevations of less than 20 ft National Geodetic Vertical Datum (NGVD). The proposed project site ranges from about 4 ft above NGVD near the shoreline to about 9 ft above NGVD along

South Hobson Avenue. Within the NOS property, groundwater is found at about 3 to 5 ft below the surface, depending on the current tide elevation (DOC, 2002b). Open spaces generally contain pavement, landscaped vegetation, or ruderal species. The proposed sites of Additions A and B are nearly level lands containing lawn and, near the existing buildings, landscaped vegetation or asphalt. Within the NOS property, signs of slight to moderate erosion are evident near the foundation of Building RTC-1, particularly where stormwater runoff is directed from the roof to the ground.

Charleston County commercially produces or has sources of lime, common clay, and construction sand and gravel (USGS, 2000). According to the USGS Mineral Resource Data System, an active lime plant is located 1.3 mi south while the nearest commercial source of mineral resources is a sand pit located 2.3 mi southwest (USGS, 1998). No significant sources of commercial-grade mineral resources are present at or near the project area.

5.2.2 Environmental Consequences—Proposed Action

The proposed action would occur within a developed area adjacent to existing CSC buildings. Up to 1 acre of land would be cleared of vegetation or pavement during site preparation for the new additions, parking, and landscaping. This would temporarily expose soils to erosion due to wind and water action.

The footprint for Addition B contains 2 inches of asphalt concrete over 8 inches of stabilized aggregate base. Due to the soft, loose soils found on site, the proposed buildings would be supported by a reinforced slab foundation on concrete piles. The soft clays found on site have the potential for large strain consolidation settlement; thus, fill material should have a thickness of less than 1 ft (DOC, 2002b). The high groundwater table may impact excavation of utility lines and building foundations. Work should be performed during a period of dry weather to the maximum extent possible so as to avoid deterioration to exposed subgrade (DOC, 2002b).

To minimize the potential for soil erosion, short- and long-term erosion control measures would be implemented, potentially including the placement of temporary sediment filters around all drainage inlets and temporary silt fences at the boundaries of the construction site adjacent to the Cooper River to retain soil. The filters and silt fences would remain in place through the construction period and cleaned a minimum of once every two weeks. A construction entrance also would be constructed and maintained to limit the amount of dirt and debris from entering onto public roadways by construction vehicles. After construction is complete, disturbed areas would be covered by structures or vegetated. Stormwater would be diverted away from foundations into established drainages leading to the Cooper River. The potential for long-term soil erosion would not be significant.

Mineral extraction at the proposed NOAA site is improbable due to the lack of resources. Implementation of the proposed action would not affect access to mineral resources.

Effects on geologic mineral resources would not be significant.

5.2.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, no new construction or demolition activities would be undertaken, and no effects on geology, soils, or mineral resources would result.

5.2.4 Mitigation

To minimize the potential for erosion, standard control measures would be implemented at and adjacent to areas of soil disturbance (i.e., areas cleared of vegetation, pavement, or foundations). Those measures include placement of filters around all drainage inlets, temporary silt fences at the boundaries of cleared areas to retain soil, and periodic sprinkling of bare soil with water to reduce dust generation.

5.3 Water Resources

5.3.1 Affected Environment

The Charleston area climate is temperate with a maritime influence from the Atlantic Ocean. The average annual precipitation is 46.4 inches and rainfall may occur during all months. While the majority (41 percent) of precipitation occurs in the summer as showers and thunderstorms, local storms are concentrated in the spring. The area is characterized with relatively moderate winters and hot, humid summers. This area is subject to influences from tropical storms and hurricane winds and tidal surge. Local climatological data for Charleston, South Carolina, is presented in Appendix B.

The CSC is adjacent to the Cooper River. The waterfront consists of piers that are actively used for ship berthing and maintenance, and upland development associated with a shipyard and industrial complex. The Cooper River drains into the Charleston Harbor Estuary at a point about 3 mi south. This area contains tidal salt water subject to semidiurnal tides with a mean tidal range of about 5.3 ft and a maximum tidal range of 7.08 ft (NOAA, 2000). Near the NOS property, the Cooper River reaches depths of 13 ft to 1 ft below the mean lower low water (MLLW) line (DOC, 2002b). No surface water is retained upland from the shoreline to the Cooper River. The next nearest body of surface water is a tributary tidal creek called Shipyard Creek, which is located roughly 0.4 mi west of the NOS property. The water quality of Cooper River generally is considered good although wasteload assimilation, nonpoint source runoff impacts, and toxic pollutants are ongoing concerns (South Carolina Department of Health and Environmental Control [SCDHEC], 2002).

Cooper Marl, which is found at depths of about 50 ft to 270 ft below the surface, acts as a confining layer above Santee Limestone formations, an aquifer for regional groundwater over 300 ft below 0 ft NGVD. This aquifer would not be affected by the proposed action. The soils on site consist of poorly graded sands over high plastic gray clays; the latter probably serves as a local confining layer (SEC Donohue, Inc., 1993; U.S. Department of the Navy, 1995a). A shallow groundwater table at depths of less than 60 ft and above Cooper Marl at the NOS

property flows northward toward Cooper River (see corrective measures study [CMS] excerpt in Appendix B; SEC Donohue, Inc., 1993).

The Navy installed monitoring wells to depths of 15 ft and 18 ft at the NOS property to monitor for fuel and hydraulic oils after removal of underground storage tanks (USTs) in the shallow groundwater. Samples of groundwater obtained from those wells were tested and indicated very little to no contamination (SEC Donohue, Inc., 1993; U.S. Department of the Navy, 1999; see CMS excerpt in Appendix B).

Within the NOS property, groundwater is found at 3 ft to 5 ft below the ground surface, depending on the current tide elevation (DOC, 2002b). About 1.92 acres of the NOS property, or about 29 percent of its total area, is characterized as impervious surface. Open spaces generally contain pavement, landscaped vegetation, or ruderal species. The proposed sites for Addition A and Addition B are nearly level land containing lawn, asphalt surfaces, and, near the existing buildings, landscaped vegetation. Stormwater runoff not absorbed within the NOS property is directed into the Cooper River via an underground stormwater drainage system or direct surface flows.

There are no improvements planned to the subsurface stormwater system serving South Hobson Avenue and the CSC (McDonell, 2002). Most of the stormwater conveyances were constructed prior to 1975 and inadequately distribute runoff; however, areas at and near the NOS property have not been subject to flooding for this reason (U.S. Army Corps of Engineers [USACE], 1999, U.S. Department of the Navy, 1999; DOC, 2002b).

State regulations governing stormwater management include: *Standards for Stormwater Management and Sediment Reduction* (Title 48, Chapter 14 of the *Code of Laws of South Carolina of 1976*, as amended) and the *Erosion and Sediment Reduction Act of 1983* (Title 48, Chapter 18 of the *Code of Laws of South Carolina of 1976*, as amended). The *South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbance Activities* guides project proponents through the compliance process (SCDHEC, 1998b). In the city of North Charleston, the 1984 *Master Drainage and Floodplain Management Plan: 1985-2005/City of Charleston, South Carolina* is used in accordance with the state's stormwater management program (Mallette, 2002; City of Charleston, 1984). The Office of Ocean and Coastal Resource Management (OCRM), within the SCDHEC, administers the stormwater management permitting program for counties located within the coastal zone, such as Charleston County.

5.3.2 Environmental Consequences—Proposed Action

Construction of the new additions would create about 0.24 acre of new impervious surfaces at the NOS property. However, reconfiguration of paved areas would result in a loss of 0.25 acre of impervious surface. The amount of storm runoff from the site would decrease slightly. This change would have an insignificant effect on water quality. Because the proposed project site is within 0.5 mi from a receiving water body, the OCRM within the SCDHEC would require preparation of an approved Erosion Control Plan (ECP).

New stormwater drop inlets and drainage swales would be established and have similar outfalls as the existing stormwater system. Any increases in stormwater runoff would be minor. A stormwater retention area would be installed under the proposed action to regulate flows and improve the water quality of surface runoff to the Cooper River.

The total area of construction ground disturbance would be greater than 2 acres; hence, a National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater runoff from a construction site would be required. The SCDHEC administers the federally approved NPDES permitting program for South Carolina. Upon review and approval of the *Standard Reporting Application for Construction Sites Disturbing More Than 2 Acres*, the Charleston OCRM main office, within the SCDHEC, would issue the NPDES permit for the proposed action (SCDHEC, 1998a). As mentioned in Section 5.2.4, standard measures would be implemented during and after construction to minimize the potential for soil erosion at cleared or disturbed areas. These standard measures include Best Management Practices (BMPs) outlined in the OCRM's *South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbance Activities* (SCDHEC, 1998b).

The South Carolina Department of Natural Resources (SCDNR) has reviewed the proposed action to evaluate its impact on water quality and other resources of specific concern. They concur that the proposed action would "not substantially alter the quality of the natural environment" (see SCDNR letter in Appendix B).

No changes in drainage patterns or the location of drainage channels would result from implementation of the proposed action. No significant impacts to water quality and drainage would occur.

5.3.3 Environmental Consequences—No-action Alternative

Implementation of this alternative would not result in clearing of soil or creation of new impervious surfaces. No significant impacts on drainage patterns, runoff flow rates, or the quality of surface or ground water would result.

5.3.4 Mitigation

A stormwater plan that includes a stormwater BMP facility to remove pollutants from entering the Cooper River or offsite storm sewer system would be created and submitted to the OCRM. An NPDES permit for discharge of storm runoff water from a construction site would be obtained from the OCRM.

An ECP would be submitted to the OCRM. Standard measures would be implemented during and after construction to minimize the potential for soil erosion at cleared or disturbed areas. These standard measures include BMPs as outlined in the OCRM's 1998 *South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbance Activities.*

5.4 Air Quality

5.4.1 Affected Environment

Air quality is analyzed and regulated by federal, state, and regional agencies under the Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1977 and 1990. Under the CAA, the Environmental Protection Agency (EPA) promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants: particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO_2), lead (Pb), ozone (O_3), and carbon monoxide (CO). Following this legislation, the CAAA of 1990 identified certain areas of the country as being in non-attainment of the NAAQS. Individual states then were required to submit, for federal approval, a State Implementation Plan (SIP), which specifies actions designed to bring nonattainment areas into conformity with federal air quality standards. South Carolina's federally approved SIP is overseen by the Bureau of Air Quality, within the Office of Environmental Quality Control (EQC), SCDHEC.

The NOS property is located in Charleston County, which is within the Charleston Intrastate Air Quality Control Region. All counties and cities within the Charleston Intrastate Air Quality Control Region are in attainment with NAAQS for all criteria pollutants (EPA, 2002). Charleston County is designated a Class I area, an area in which maximum allowable increases of certain criteria pollutants are at lower levels relative to Class II or III areas. The area's only major pollutant source (emissions greater than 100 tons per year) nearby is the Foster Wheeler Resource Recovery Facility (EPA, 1998), 0.4 mi southwest of the NOS property. Several major inactive generators exist southwest of the NOS property (EPA, 2001).

The CSC is a permitted minor source of air pollution (EPA, 2001). Air pollution is generated at the CSC by a natural gas-fired boiler within Building RTC-1 and an emergency generator immediately north of Building RTC-1. The boiler is rated at 2.1 British thermal units per hour (Btu/hr) and, based on a review of South Carolina Electric & Gas data for the year 2001, emits approximately 0.09 ton of air pollutants per year (Whitsett, 2002). Operation of the boiler at the CSC is certified until December 2002 under Operating Permit Number (No.) 0560-0256. No monitoring or source test schedule was required by the SCDHEC under that permit (Richardson, 1998). While Operating Permit No. 0560-0256 requires renewal for another five years following the end of 2002, use of the boiler is expected to remain in compliance with regulations at *South Carolina Air Quality Regulations: Regulation 61-62.18: Air Pollution Control Regulations and Standards.*

The existing 150-kilowatt (kW) emergency engine-generator operates during failure of primary power and for maintenance purposes. Review of operation logs indicates that the engine-generator's total annual hours of operation are less than 250 hours per year (Richardson, 1998). Emergency power generators of less than 150 kW, or operating no more than 250 hours per year, are exempted from permitting requirements (SCDHEC, 2001b).

5.4.2 Environmental Consequences—Proposed Action

Short-term impacts are those that would occur during site preparation and construction. Operation of a haul truck, front loader, backhoe, and crane would occur during varying stages of construction. Worker equipment and vehicles would access the project site during the construction period, generating a small number of vehicle trips per day. Paints and surface coatings would be used, which would emit volatile organic compounds (VOCs) during application. Short-term emissions of ozone precursors, VOCs, and NO_x would be far below all minimum emission threshold levels established by the EPA at 40 *Code of Federal Regulations* (CFR) 51.853(c)(2).

Site preparation would require removal of some mowed lawns. Removal of vegetation and clearing of paved areas would expose silt soils to wind erosion, potentially generating airborne dust. The demolition of walls at Building RTC-1 and Building 2 would generate minor amounts of dust emissions. The amount of fugitive dust released from earth moving operations would be minimized by use of ground dust-suppression methods, such as daily sprinkling of water on exposed soil. Total dust emissions are expected to be negligible.

Long-term impacts are those that would occur during operation of the proposed facilities. When considering added operations resulting from the proposed project, the CSC boiler would remain in compliance with SCDHEC air-emission permitting requirements. The emergency generator would continue to qualify for exemption from air quality control permits.

Implementation of the proposed action would not significantly add to existing sources of air emissions. The proposed action would be in conformance with the South Carolina SIP. No significant effects on air quality would result.

5.4.3 Environmental Consequences—No-action Alternative

No impacts on air quality would occur as a result of the no-action alternative.

5.4.4 Mitigation

To minimize the amount of dust generated at the NOAA demolition and construction site, exposed soil would be sprinkled periodically with water or treated with dust suppressants.

5.5 Recreational Resources

5.5.1 Affected Environment

Except for a picnic area canopy at the CSC, no recreational resources such as publicly owned recreation areas, waterfowl or wildlife refuges, or historic sites of national, state, or local importance occur at the CSC or adjacent areas. Before its closure in 1996, the Shipyard contained a variety of recreational facilities. Former Navy facilities maintained by the city of North Charleston for public recreation are located within the Sterret Hall Complex (USACE, 1999), which is located about 1 mi northwest of the NOS property. The area is zoned

M-2, by the city of North Charleston for commercial, manufacturing, storage, and transportation-related activities. Adjacent land uses consist of an administrative office and industrial facilities.

The Cooper River is rated by the State of South Carolina as a Class SB water, which is suitable for fishing and boating, but not for swimming or the harvesting of oysters, mussels and clams (Office of LPITS, 2001). The CSC is located adjacent to a reach of the Cooper River containing active piers and a major shipping channel. This reach generally is not available for fishing, boating, swimming, or harvesting. No national or state wildlife management areas or refuges are located near the Shipyard. The Francis Marion National Forest is located over 8.4 mi northeast. The nearest historic or culturally significant resource listed on the National Register of Historic Places (NRHP) is the Florence Crittenton Home, located about 3.3 mi south of the CSC (National Park Service [NPS], 2002).

The National Wild and Scenic Rivers Act (16 *U.S. Code* [USC] Section 1271) and amendments preserve free-flowing rivers containing important scenic, recreational, geologic, biological, historical, or cultural values. The nearest national wild and scenic river is an 8.1 mi reach of the Chattooga River, located over 230 mi northwest of the city of North Charleston.

5.5.2 Environmental Consequences—Proposed Action

The nearest known public recreational area, the Sterret Hall Complex, would not be directly affected. Because the reach of the Cooper River to which the CSC is adjacent generally is unavailable and not used for recreational purposes, no impacts to riverine recreation would result from implementation of the proposed action.

Due to the distance of the CSC from any designated wild and scenic river, implementation of the proposed action would not affect wild and scenic rivers or associated resources.

The proposed action would not directly or indirectly affect publicly owned areas designated or used for parks, recreation, wildlife or waterfowl protection, or historic preservation purposes.

5.5.3 Environmental Consequences—No-action Alternative

No impacts on recreational resources would occur as a result of the no-action alternative.

5.5.4 Mitigation

No mitigation would be required.

5.6 Cultural Resources

5.6.1 Affected Environment

Naval Base Charleston was established along the Cooper and Wando Rivers in the early 20th century and operated by the Navy. During the time periods associated with the World Wars,

the Shipyard was a key site for building, decommissioning, storing, and overhauling Navy ships and submarines. The Navy established drydocks, cranes, waste-handling facilities, and offices on undeveloped marshland. Training, hospital, warehousing, housing, and personnel support facilities also were developed during major wartime periods. The Shipyard was known for its Naval maintenance and nuclear refueling capabilities, and as a major regional employer until its closure in 1996; many of the facilities originally constructed remain standing and are used for other purposes or are abandoned.

As part of the BRAC process, surveys were conducted to identify and evaluate for potentially significant cultural resources at the Naval Base Charleston, including surveys for buried archeological artifacts and potentially historic structures. A site determined to be potentially eligible to be listed in the NRHP was discovered about 2 mi northwest of the CSC. During this process, the State Historic Preservation Office (SHPO) determined that other developed areas at the Naval Base Charleston have a low potential to contain significant intact archaeological deposits (U.S. Department of the Navy, 1995a). The SHPO also determined that from over 110 structures, four potentially are eligible for inclusion in the NRHP. The nearest such resource within the proposed Naval Shipyard Historic District is located about 1,286 ft south-southwest of the CSC (U.S. Department of the Navy, 1995a). Treatment of these archaeological and historic resources was outlined in agreements made between the Navy, SHPO, and Advisory Council on Historic Preservation (ACHP) in 1995 (U.S. Department of the Navy, 1995a).

NOAA obtained title of a 6.57-acre parcel and structures for the CSC from the Navy in 1994. Several structures within the NOS property were constructed in the 1940s. NOS structures at the CSC are listed in Table 1.

Table 1

NOS Structures at the CSC

Current (Former) Function/Name	Date Constructed	Status
Building RTC-1 (NOAA Academic General Instruction Building)	1943	Renovated
Old Building RTC-4 (former structure)	1944	Removed
Paint storage building (Building RTC-4)	1954	Removed
Transformer vault structure (X-30-A)	1944	
Building 2 or NOAA Port Services Building and Ship Radar Cal Facility/Tower NOAA (Building 200 and watchtower)	1954	Renovated
Port Services Storage Building (Building 1874)	1980	Replaced
Tower 685	1980	Present
New Building RTC-4	circa 1980s	Present

Source: Heames, 2001; U.S. Department of the Navy, 1995b, 1999.

The nearest listed historic resource is the Florence Crittenton Home, located about 3.3 mi south of the CSC (NPS, 2002).

5.6.2 Environmental Consequences—Proposed Action

Section 106 of the National Historic Preservation Act (NHPA) of 1966 and amendments requires federal agencies to consider the effects of their actions on historic properties and to seek comments from the SHPO and as necessary, the ACHP. Section 106 regulations are set forth in 36 CFR 800. In consideration of NOAA's requirements under Section 106 of the NHPA, properties listed or eligible for listing on the NRHP at or near the proposed project site were identified.

A direct Area of Potential Effect (APE) would include those structures within the NOS property that would be directly impacted and include the following:

- Building RTC-1: constructed in 1943 as the Bachelors Office Quarters for the Naval seaplane unit, it was converted to the Naval Reserve Readiness Center training facility following World War II.
- Building 2: constructed in 1954 with concrete roofing and flooring and metal watchtower attached, it contained offices, a machine shop, and port navigation control for the Charleston Naval Station.

Since 1992, Building RTC-1 and Building 2 were significantly renovated by NOAA (U.S. Department of the Navy, 1995b). These renovations include two additions constructed at the south and north ends of Building RTC-1 after 1994.

CSC structures that would not be affected are:

- Port service storage building, a trailer located north of the NOAA Port Services Building.
- Building RTC-4, a 244 sq ft storage building north of Building RTC-1. Two original RTC-4 buildings constructed in 1944 and 1954 have been removed.
- A transformer vault building (a.k.a. X-30-A), a 252 sq ft building adjacent to Building RTC-4.
- Building 685, a former ship radar calibration facility with a one-story brick shelter and adjacent tower.

Pier Romeo is a NOAA-managed concrete pier constructed in 1947 and improved in 1987 (U.S. Department of the Navy, 1995b). It would not be affected by the proposed activities.

There are no places listed on the NRHP within the project's APE. No indirect effects to known or potentially eligible historic structures would result.

The proposed structural additions would be similar in size, architecture, and appearance to existing CSC structures. Visual impacts to historic properties would not result.

According to previous studies, the potential for archaeological resources to be present is low (U.S. Department of the Navy, 1995a). This is largely due to substantial disturbance of soils from previous construction activities. If previously undiscovered artifacts are uncovered during construction activities, construction activities in that area would be suspended and the SHPO notified to assess the significance of the find.

No impact to archaeological resources or historic properties would result from implementation of the proposed action. The South Carolina SHPO at the South Carolina Archives and History Center concurs with this determination (see South Carolina Archives and History Center letter in Appendix B).

5.6.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, no improvements or demolition activities would occur and no effects on cultural or historic properties would result.

5.6.4 Mitigation

If previously undiscovered artifacts are uncovered during construction activities, construction activities in that area would be suspended and the SHPO notified to assess the significance of the find.

5.7 Biological Resources

5.7.1 Affected Environment

The subject site is largely developed. No surface water is retained inland of the high point of the Cooper River shoreline. The shoreline is narrow and comprised of stone riprap, small areas of vegetation, and pipes. Open upland areas generally contain buildings, pavement, landscaped vegetation, or ruderal species. Vegetation within the site consists of mowed lawn, and natural and exotic shrubs and trees including saw palmetto (*Sabal palmetto*), crepe myrtle (*Lagerstroemia indica*), red mulberry (*Morus rubra*), oak (*Quercus* ssp.), and magnolia (*Magnolia* ssp.).

State- and federally protected species that could be present in Charleston County are provided in Appendix B. Numerous transient avian species are expected to occur sporadically at the site. Osprey (*Pandion halietus*) and Least tern (*Sterna antillerum*) are confirmed residents of Naval Base Charleston but do not occur at or near the NOS property. No endangered plant species are known or likely to exist within the affected area (U.S. Department of the Navy, 1995a).

The Cooper River drains into the Charleston Harbor Estuary at a point about 3 mi south. Tidal creeks in the Charleston Harbor Estuary region are critical for providing nurseries for estuarine-dependent plants and animals, and the Cooper River supports many commercially, recreationally, and ecologically important aquatic species (SCDHEC, 2002). The nearest tidal creek outlet is where Shipyard Creek discharges into Cooper River at a point 1.3 mi southeast of the CSC, and an upper reach of Shipyard Creek is located roughly 0.4 mi west of the site. The stretch of the Cooper River adjacent to the NOS property is maintained at depths of 13 to 15 ft below MLLW for ship berthing (DOC, 2002a). Shipping channels are maintained within Cooper River and Shipyard Creek through dredging.

5.7.2 Environmental Consequences—Proposed Action

Implementation of the proposed action would result in displacement and reconfiguration of landscaped vegetation. While construction of the new aisle drive at the south side of Building 2 was planned so as to retain several large trees, construction of the proposed access road includes removal of two red mulberry and four crepe myrtle trees. Construction of Addition A includes removal of two birch trees, and planted vegetation immediately adjacent to Building RTC-1 (i.e., eight young trees and a row of shrubs).

The proposed locations of the new additions are nearly level land containing mowed grass lawn and near the existing buildings, clusters of planted trees and shrubs. Naturally occurring vegetation has been greatly altered by existing land use developments at and near the NOS property. Based on the site conditions and the close proximity to existing CSC activities, the property has minimal value as wildlife habitat.

No state or federally protected species, candidate species, or species of special concern are known to inhabit or use the proposed site. No impact to protected species would result from the proposed action. Concurrence with this finding has been received from the U.S. Fish and Wildlife Service (USFWS) and SCDNR (see USFWS response and SCDNR letter in Appendix B).

No significant effects on biological resources would result from implementation of the proposed action.

5.7.3 Environmental Consequences—No-action Alternative

No construction or demolition would occur as a result of the no-action alternative. No effects to listed species or critical habitat would result.

5.7.4 Mitigation

No mitigation would be required.

5.8 Floodplains and Wetlands

5.8.1 Affected Environment

Tidal flooding from hurricane and tropical storm surge entering the Cooper River can result in temporary flooding at the CSC and adjacent coastal areas. The entire project area is within Zone AE, a portion of the 100-year floodplain in which building floor elevations subject to flooding have been determined (see 1996 FEMA publication in Appendix B). The base flood elevation established for the proposed project area is 12 ft NGVD (see 1986 FEMA publication in Appendix B). Under Executive Order (E.O.) 11988, *Floodplain Management*, federal structures should not be built within the 100-year floodplain or, if unavoidable, designed or modified to minimize harm to or within the floodplain (President, 1977a). Methods to minimize harm include raising the finished floor elevations of principle structures above the established floodplain level or flood-proofing structures.

A wetland is an ecosystem in which the water table is recurrently at or near the surface and in which hydric soils, hydrophilic vegetation, and standing water are present for extended periods. Executive Order 11990, *Protection of Wetlands*, requires that federal agencies avoid locating facilities in wetlands unless no alternative locations are available (President, 1977b). No wetlands are present at or near the proposed site; all potentially affected areas are categorized as uplands (see National Wetlands Inventory [NWI] map in Appendix B). A site survey indicated that no previously unidentified federal jurisdictional wetlands are present. The nearest known wetland resources are estuarine, subtidal areas of the Cooper River, located adjacent to the NOS property.

5.8.2 Environmental Consequences—Proposed Action

The proposed action involves establishing finished floor elevations for new structures at 10 ft NGVD, or 2 ft below the established flood level for the 100-year floodplain located at the CSC. No reasonable development alternative exists outside the 100-year floodplain. To be consistent with policies set forth in E.O. 11990, NOAA would flood-proof the proposed structures or elevate structures so that the lowest finished floor elevation is at 13 ft NGVD, or 1 ft above the 100-year floodplain.

The proposed action will not directly affect shoreline, or tidal and submerged land below the mean high water line. No construction would occur in wetlands, although demolition and construction activities would disturb soils located upland and immediately adjacent to the Cooper River. Standard measures would be implemented during and after construction to minimize the potential for soil erosion at cleared or disturbed areas. Those measures would include placement of filters around drainages, placement of temporary silt fences or hay bales at the boundaries of cleared areas to retain soil, and periodic sprinkling of bare soil with water to reduce dust emissions. Provided measures to prevent flow of runoff are enacted, no significant effects on wetlands would occur as a result of the proposed action. No significant effects to wetlands would occur. The proposed action would be consistent with E.O. 11990.

5.8.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, no construction would occur. No impacts on wetlands would result. Under this alternative, no effects on the floodplain would result. Implementation of this alternative would be consistent with policies set forth in E.O. 11990.

5.8.4 Mitigation

To be consistent with policies set forth in E.O. 11990, NOAA would flood-proof the proposed structures or elevate structures so that the lowest finished floor elevation is at 13 ft NGVD, or 1 ft above the 100-year floodplain.

5.9 Coastal Zone Management

5.9.1 Affected Environment

The NOS property is adjacent to the Clouter Creek Reach of the Cooper River, and is within the state's coastal zone. Under Federal Consistency provisions of the Coastal Zone Management Act of 1972, federal activities having the potential to impact South Carolina's coastal resources must be consistent, to the maximum extent practicable, with the state's Coastal Zone Management (CZM) program. The OCRM issues a coastal zone consistency certification upon verification that a federal activity is consistent with CZM policies.

According to the South Carolina CZM Plan, development within "critical areas" requires review, and may be subject to special permitting requirements by the OCRM. These "critical

areas," defined as coastal waters, tidelands, and the beach/sand dunes system, are defined by the OCRM. Clouter Creek Reach is considered a critical area.

The OCRM also administers the *Charleston Harbor Project Special Area Management Plan* (CHPSAMP), which was established in response to local concerns regarding rapid population growth and associated land use changes. The CHPSAMP guides the long-term planning and management of areas within the Charleston Harbor Estuary's watershed, which encompasses about 2 million acres and includes the Cooper River and NOS property. The CHPSAMP contains recommendations regarding water quality, biological habitats, land uses, and cultural resources (SCDHEC, 2002).

5.9.2 Environmental Consequences—Proposed Action

The proposed action would be consistent with CZM policies and the CHPSAMP. Proposed actions will not affect a critical area, including Pier Romeo or tidal and submerged land below the mean high water line. Concurrence with this determination has been received from the OCRM. Their concurrence is contingent upon establishing and marking the critical area boundary on site plans and construction drawings and avoiding the area during project implementation (see SCDHEC letter in Appendix B).

A Stormwater Management and Sediment Reduction Act permit from the OCRM is required, and would be obtained prior to implementation of the proposed action. The plan would include BMPs to remove project-related pollutants from entering the Cooper River. With the possible exceptions of the proposed internal roadway and removal of concrete blocks, no construction activities would occur within 20 ft of the shoreline's summit.

No significant impacts would occur as a result of the proposed action on resources of the coastal zone.

5.9.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, no construction would be undertaken, and no impacts to the coastal zone would result.

5.9.4 Mitigation

A Stormwater Management and Sediment Reduction Act permit from the OCRM is required prior to the implementation of the proposed action.

A coastal zone consistency certification from the OCRM is conditioned upon delineating adjacent critical areas on construction plans and avoiding those areas during project implementation.

5.10 Noise

5.10.1 Affected Environment

The CSC is located in a moderately developed area. Nearby sources of noise consist of industrial, commercial, and outdoor training land uses, as well as use of vehicles using nearby highways and internal roads of the CSC. Noise generated by operation of heating and air conditioning equipment, use of power equipment, and occasional aircraft overflights also contribute noise. The proposed site is adjacent to a reach of the Cooper River that contains several active piers and a major shipping channel. Noises emanating from ships and shipping activities are present.

5.10.2 Environmental Consequences—Proposed Action

Construction and demolition of the new additions, existing facilities, and roadway would require use of heavy machinery and equipment (e.g., excavators, bulldozers, backhoes, forklifts, concrete mixers, compressors, and haul trucks) and hand tools (e.g., hammers, power saws, drills, sanders, scrapers, and welding equipment). Use of that equipment and machinery would generate intermittent loud noises typical of construction sites. It is expected that the loudest noises would result from use of a pile driver, which can generate noise levels of 105 A-weighted decibels (dBA) at 50 ft from the noise source (Bolt, Beranek, and Newman, 1971). Equipment such as jackhammers and tractors may be used and would generate noise of up to 98 dBA at 50 ft (Bolt, Beranek, and Newman, 1971). Construction and demolition activities would occur primarily during normal working hours, but such activities may occur during early morning hours or at nighttime. Construction and demolition noise impacts would be temporary and insignificant.

Vehicle traffic would increase in the area during the construction and demolition activities, but would not be expected to significantly affect traffic noise levels. After construction and demolition activities are completed, noise levels would return to current levels. No change in the nature or type of activities conducted at the CSC would result from the proposed action. No significant long-term increase in noise levels would result.

5.10.3 Environmental Consequences—No-action Alternative

Under this alternative, no construction or demolition activity would be undertaken and no new noise would be generated.

5.10.4 Mitigation

No mitigation would be required.

5.11 Transportation

5.11.1 Affected Environment

Charleston International Airport provides commercial and military air service for the region. Six private airports located throughout the region can accommodate both corporate and private aircraft. Approximately 100 motor carriers, Interstate Highways (I) I-26, I-95, and I-526, and three railroads serve the region. Federal Highways 52 and 78 are directly west of the Shipyard. The Shipyard is accessible via Viaduct Road or McMillan Avenue, which connect to primary roadways such as Spruill Street and Meeting Street. South Hobson Avenue is an internal Shipyard roadway that provides access to the CSC. It has two travel lanes and is paved. Traffic volumes on South Hobson Avenue near the site are relatively low. The access drives within the NOS property are paved and are utilized by staff and visitors of the CSC. A large parking area is located west of Building RTC-1. There also are drive aisles with parking spaces at the south side of Building RTC-1 and along the west and north sides of Building 2.

To accommodate shipping traffic, a navigation channel is maintained in the lower Cooper River and extends 20 mi upstream from the mouth of the river. It is maintained to depths of over 40 ft MLLW along much of its length. The NOAA Marine Operations Center, Atlantic, operates Pier Romeo for the maintenance of its low draft vessels. Larger, deep draft marine vessels utilize a pier located further north. The NOS property contains an upland storage area for approximately a dozen boats under 20 ft in length.

5.11.2 Environmental Consequences—Proposed Action

During the construction and demolition periods, supply trucks, construction vehicles, and workers' vehicles would use South Hobson Avenue and other internal Shipyard roadways to access the NOS property. The amount of construction-related traffic generated would vary greatly during implementation of the infrastructure improvements. The largest number of vehicle trips would be generated during construction of the new additions. Construction debris from the demolition activities would be hauled by truck to a local landfill. In total, during this period, up to several dozen trips per day would be generated by commute vehicles used by construction workers, construction vehicles, trucks delivering supplies and equipment, and trucks removing construction debris. However, vehicle trips during the construction period would not significantly affect traffic levels on South Hobson Avenue.

The proposed action would expand capacity for up to an additional 40 persons, bringing the total on-site staff to about 175 persons. Access to the CSC would be via the existing drive serving Building RTC-1 or to the new proposed roadway to serve Building 2. No changes to existing public roads would result. The existing asphalt parking area between Building RTC-1 and Building 2 would be removed and replaced with Addition B, while the parking area immediately east of Building 2 would be replaced with an access road that would connect South Hobson Avenue to a loading dock at the north end of Building 2. New parking spaces and a sidewalk would be established south of Building 2.

The proposed action will not affect the piers or their traffic, although the upland OCRM storage area would be removed.

Implementation of the proposed improvements would not significantly affect long-term traffic. No adverse effects on operation of local roads would result.

5.11.3 Environmental Consequences—No-action Alternative

Under the no-action alternative, no changes in existing roads or levels of traffic would result, and no impacts to transportation would ensue.

5.11.4 Mitigation

No mitigation would be required.

5.12 Public Utilities

5.12.1 Affected Environment

Existing water supply, wastewater treatment, primary and secondary electric, and heating systems would accommodate the proposed increase in staff. The CSC obtains water from the Charleston Commissioners of Public Works. Wastewater is directed to the municipal sanitary system: the North Charleston Sewer District. Electrical and mechanical building systems at Building RTC-1 are controlled by a central heating, ventilation, and air conditioning (HVAC) system. Electric service is provided by South Carolina Electric & Gas. A natural gas-fired boiler provides heating and is located within Building RTC-1. A 150 kW generator provides secondary power and is located immediately north of Building RTC-1. The emergency generators operate infrequently, such as during failure of primary power and during maintenance. Telephone service provided by Bell South would be extended a short distance to provide dial-up and internet links.

Physical plant operations at the CSC use an electrical and mechanical building system. The CSC contains an uninterruptible power supply (i.e., batteries to provide short-term power) and diesel-fueled generators that provide backup electric power during the loss of primary electric service and during maintenance activities. A 150 kW engine-generator provides a secondary power source and is located immediately north of Building RTC-1 (see Figure 5(a)). The emergency generator operates infrequently; review of the operation log indicates a run time of less than 250 hours per year (Richardson, 1998). Telephone service is provided by Bell South. The city of North Charleston largely derives its water supply from the Edisto River; no potable groundwater resources are known to be at or near the proposed project site (SEC Donohue, Inc., 1993). Separate fire protection lines and domestic water service systems serve Building RTC-1 and Building 2, and connect to water mains at South Hobson Avenue. The Charleston Commissioners of Public Works provides, monitors, and maintains water service for the CSC. Wastewater is directed to the municipal sanitary sewer system. The new additions would receive water and wastewater service via connection to existing utility lines located within the NOS

property. Employment at the CSC would change by about 50 persons following construction of the new additions. The increase in consumption for 60 new persons (assuming a consumption rate of 30 gallons per day per person) at the new additions is about 1,800 gallons per day (DOC, 2002b). Wastewater is directed to the municipal wastewater treatment system. The sanitary sewer system serving the NOS property has the capacity for the increase in demand (600,000 gallons per day). No substantial increase in overall water consumption would result.

5.12.2 Environmental Consequences—Proposed Action

Equipment used to construct the new additions and modify existing facilities would consume modest amounts of gasoline and diesel for a short period of time.

The proposed interior improvements (new wall construction) to existing Building RTC-1 and Building 2 would not change their size. Two doors would be replaced with permanent walls and possible windows. The new additions would add approximately 21,546 gross sq ft to the existing Building RTC-1 and Building 2. Existing water supply, wastewater treatment, primary and secondary electric, and heating systems needed to meet expanded requirements are available at the site.

No new service lines would be connected to the existing water mains at South Hobson Avenue. A new sprinkler system connected to the fire service system serving Building RTC-1 would be installed in the two new additions. All changes to the fire protection lines and domestic water service lines would be within the site. The proposed action would entail two new service connections to the existing sewer system at the north side of the project area. An existing service line located at the footprint of Addition A would be relocated; no other changes to the existing sanitary sewer system lines on and off site would be required (DOC, 2002a).

The primary power system (2,500-ampere) would continue to be utilized. The uninterruptible power supply system and standby diesel generators at the CSC would provide standby electric power for the new additions in the case of failure of the primary power source. No change in utilities infrastructure is proposed except for the extension of utility lines on site. Proposed modifications and expansions to Building RTC-1 and Building 2 would not significantly affect an increase in the amount of operational energy consumed at those buildings.

Significant adverse impacts on energy use or availability would not occur as a result of the proposed action.

5.12.3 Environmental Consequences—No-action Alternative

No new consumption of energy would occur as a result of the no-action alternative.

5.12.4 Mitigation

No mitigation would be required.

5.13 Aesthetics

5.13.1 Affected Environment

The CSC is located at about 4 to 9 ft NGVD adjacent to the Cooper River waterfront. Open spaces generally contain pavement, landscaped vegetation, or ruderal species. Building RTC-1 is similar in height and size to adjacent structures. Exterior materials of Building RTC-1 consist of stucco and brick. The shoreline at and near the NOS property contains stone riprap, exposed piping, and remnant piping and concrete posts (see Appendix A, Figure A-1(h)). Figure 5(b) is a photograph of the NOS property as viewed from the Pier Romeo in the Cooper River. The former Navy communications towers located adjacent to Building 2 are the prominent visual elements of the viewshed, but are planned for removal in the near future and prior to implementation of the proposed action. Building RTC-1 and Building 2 are generally not visible from areas outside of the Shipyard, including federal highways and interstate highways located to the west.

5.13.2 Environmental Consequences—Proposed Action

The proposed additions to the CSC would have minimal effects on the visual setting of the CSC. The proposed additions would be brick and stucco buildings that are similar in appearance to Building RTC-1. Exterior materials of Building 2 would be removed and replaced with stucco and brick so that it is similar in appearance to existing Building RTC-1 and the proposed additions. The proposed interior improvements (new wall construction) to existing Building RTC-1 and Building 2 would not change their size, although new walls would have a minor effect on their external appearance. Figure 6 depicts the appearance of the main CSC building subsequent to implementation of the proposed action.

The proposed action would occur entirely on the existing federal lands administered by NOS and NOAA and will not affect Pier Romeo or tidal and submerged land below the mean high water line. Construction of the new additions would occur at a partially developed portion of the CSC property. Due to the physical similarities between the new additions and the existing Building RTC-1, they would appear unobtrusive visually. The new additions would be a congruent new visual element and would not significantly change the appearance of the CSC to external viewers.

No significant impacts on aesthetics would result.

5.13.3 Environmental Consequences—No-action Alternative

No change in the visual environment would occur as a result of the no-action alternative.

5.13.4 Mitigation

No mitigation is required.

5.14 Hazardous Materials

5.14.1 Affected Environment

Information relating to hazardous materials has been obtained through a records search, interviews, and visual inspections of the property. The Environmental Baseline Survey for Transfer (EBST), Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), Confirmatory Sampling Investigation (CSI), and other studies concluded that limited subsurface contamination existed at the NOS property and that no significant problems are on site. More recently, no indications of statistically significant contaminant levels were found, indicating that oil spillage has not significantly affected the quality of soils and groundwater. Limited sampling was also conducted to test for migration of contaminants from nearby parcels onto the NOS property; no indications of statistically significant contaminant levels were found.

Under the BCRA of 1988 and associated regulations, the Navy must address preexisting contamination of divested property at the Shipyard. Provisions were made in the CSC property transfer to NOAA stating that the Navy retains liability for subsurface contamination discovered during Navy restoration activities, including investigation and remediation (U.S. Department of the Navy, 1995b).

The Navy implemented a Corrective Action Program over the past two decades, from which potential cleanup sites requiring further investigation as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs) were identified. SWMUs and AOCs are sites that require investigation and possibly corrective actions under a RCRA Facility Assessment (RFA). Based on the RFA, either a "no further action" determination is made or further investigation is conducted under a CSI and/or an RFI. For its RCRA Corrective Action Program, the Navy divided up the Naval Base Charleston into 12 study zones; the NOS property is within Zone I. The Navy's EBST enables compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended.

Various former and existing structures and property have been examined by the Navy at the NOAA parcel. The original Building RTC-4 was a 24 ft × 60 ft metal structure built in 1944 for storing heavy construction equipment (Heames, 2001; U.S. Department of the Navy, 1995b). It was located immediately north of another structure that was later given the name RTC-4, which was designated AOC No. 674 because it was used for storage of paints, chemicals, oils, solvents, and degreasers. The original Building RTC-4 has been removed and replaced with a diesel fuel aboveground storage tank (AST) and three emergency generators. A previously paved area adjacent to the original two Buildings RTC-4 has been replaced with mowed lawn. AOC No. 674 no longer exists. Due to spillage of petroleum products from equipment operations (e.g., lawnmowers, backhoes) on asphalt surfaces at and near Buildings RTC-4, the two buildings and surrounding area were designated as SWMU No. 177. A CSI and RFI were conducted for SWMU No. 177, including testing for contaminants of concern (COCs) of numerous surface and subsurface soil and groundwater samples collected on site (U.S. Department of the Navy, 1999).

various hydrocarbons, and organic compounds that may occur on site based on historical process operations. No COCs were identified in shallow or deep groundwater resources. Samples of surface and subsurface soils did not contain COCs with the exception of five localized and low-concentration organic compounds (methylene chloride, 1,1,2,2 tetrachloroethane, benzo(a)pyrene equivalents, benzo(a)anthracene, and dieldrin). In addition, since SWMU No. 177 was identified, NOAA has redeveloped this area with the aforementioned diesel fuel AST and three emergency generators, trees, shrubs, and mowed lawn. The analytical studies and a summary of the RFI for SWMU No. 177 were presented in the form of a CMS. Based on the May 2002 CMS, it has been determined that "no further action" is required for SWMU No. 177 (see CMS excerpt in Appendix B).

A 1,000-gallon UST that provided diesel fuel to oil-fired boiler was removed from Building 2 (formerly Building 200, the NOAA Port Services Building). Investigations and analytical tests of soil and groundwater conducted for the UST found that maximum contaminant levels are not exceeded, and the SCDHEC concurred with the Navy that no further remedial action was required for potential contamination from the removed UST (U.S. Department of the Navy, 2001; Bishop, 2001). Building 2 also possessed five hazardous/flammable lockers within a bermed concrete area to contain battery electrolyte, as well as a 550-gallon AST containing gasoline that has been removed. The bermed containment drained into an underground oil/water separator located southeast of Building 2. Water from the unit discharges into the stormwater sewer system. This area at Building 2 is no longer used to contain hazardous or flammable materials, but the oil/water separator remains on site. An inspection in 1995 found the oil/water separator to be in good condition with no visible evidence of cracking or deterioration (U.S. Department of the Navy, 1995b), although removal of the separator remains an option under the proposed action. Removal can be undertaken only subsequent to the Navy's issuance of an Environmental Release, or closure of remedial action.

Two 1,000-gallon USTs (Tank No. 1 and Tank No. 2) were removed from locations near Building RTC-1 in 1990. The USTs previously provided diesel fuel to a hot water boiler for heating Building RTC-1. Soil and groundwater samples were taken during excavation of the USTs. Soil near Tank No. 2 had a concentration of total petroleum hydrocarbon (TPH) as high as 2,500 part per million (ppm). Consequently, contaminated soils were removed from near Tank No. 2, additional soil samples were obtained, and additional monitoring wells were installed. Subsequent sampling of soils and groundwater indicated that TPH and Pb concentrations were below cleanup levels, except for the Pb parameter at one well, which nonetheless was not at a significantly high concentration. Analytical soil tests near Tank No. 1, located adjacent to the proposed footprint of Addition A, showed TPH concentrations below 20 ppm. Based on these tests, no further remedial action was recommended or taken (SEC Donohue, Inc., 1993; U.S. Department of the Navy, 1995b).

Although it has been determined that soils are below cleanup levels, the Navy requires that soils excavated from the NOS property remain at or near the area from which they were

removed. Recently excavated soil remains as spoils on site atop the pad containing the underground oil/water separator. The shallow groundwater monitoring wells also remain. According to the Environmental Coordinator (EC) and Program Manager for the Naval Base Charleston BRAC Cleanup Plan (BCP), the Navy plans to remove many of the monitoring wells later this year and intends to provide clearance documents to allow removal of the oil/water separator later this year. A monitoring well may remain on site for monitoring assessment and closure of the oil/water separator (Hunt, 2002). Monitoring wells will be permanently abandoned by a certified well driller licensed in South Carolina in accordance with the South Carolina Well Standards and Regulations (R61-71), or properly maintained.

Asbestos-containing materials (ACMs) and lead-based paint have been removed from various areas at Building RTC-1 and Building 2 over the last decade. In May/June 2002, a survey for ACMs and lead-based paints was conducted for Building RTC-1 and Building 2, specifically at areas that would be subject to renovation and demolition activities under the proposed action. The survey was comprised of 41 samples taken from floor tiles, mastic, ceiling tiles, gypsum board, roofing shingles, stucco, moldings, caulks, and plaster. The mastic used to install floor tiles at Building 2 is an ACM; however, the mastic is overlain with carpet, is nonfriable, and in good condition; therefore, the potential for exposure, even during construction, is low. Paint chip samples were collected from various locations at the exterior and interior of Building RTC-1 and Building 2 and tested for lead content of more than 5 percent content by weight. Several areas at both buildings contained paint chips with sufficient amounts of lead to be considered a hazardous waste under regulations at 40 CFR 262.24 (DOC, 2002b). A description of the paint chip samples and the analytical results are included in Appendix B.

Water samples were taken in the stormwater inlets near the CSC and tested for the presence of semi-volatiles, pesticides, polychlorinated biphenyls, target analyte list metals, and cyanide (Vernoy, 2002). The initial screening of the water samples identified COCs. The Navy is responsible for ensuring improvement of water quality. The location of the sample sites and initial data from these tests are provided in Appendix B. While the samples are for comparison purposes only, potential contaminants of concern were identified from these locations and are highlighted on the data sheets. These include levels of copper and methoxychlor, an insecticide, above EPA screening values.

Existing and proposed facilities do not and would not accommodate biological or chemical laboratory activities. Former laboratories have been converted to offices, workstations, etc. Fume hoods and such have been removed, although some sinks and cabinetry remain.

5.14.2 Environmental Consequences—Proposed Action

Construction of the proposed structures and modification of existing CSC facilities would generate wastes typical of a construction site, such as asphalt, wood and metal debris, wallboard, excess electrical wire and piping, and so on. Those wastes generally would be non-hazardous and would be collected for disposal or recycling. Some wastes, such as chemicals used to clean

or degrease equipment and excess coatings and paint, may be considered hazardous and would be separated from non-hazardous wastes for proper disposal. Asphalt would be removed from the south, east, and west ends of Building 2 and replaced with new pavement, landscaped vegetation, and Addition B. It is likely that small quantities of fuel, lubricating oil, or other fluids used in vehicle maintenance dripped or were spilled onto the pavement near Building 2. Removed asphalt can be recycled for reuse at the CSC. If proper practices are used for handling and disposal of construction wastes, no significant impact on the environment will result.

The Navy is responsible for ensuring previously contaminated properties are remediated according to EPA action levels. NOAA should ensure the Navy continues to address contamination of stormwater found during initial screening of the inlet at the CSC. Removal of nonfriable ACMs requires notification to the SCDHEC and, depending on the removal method (i.e., sanding, saw-cutting, mechanical abrading, or pulverization), may be subject to state and federal regulations. Lead-based paint should be stripped from the surface prior to demolition and removed for disposal as a hazardous waste. ACMs and hazardous lead-based paint would be disposed at a facility licensed to accept those wastes.

Depending upon whether NOAA removes the oil/water separator southeast of the former building, the proposed action either will have no effect on the small quantities of hazardous materials present, or will result in the removal of such materials.

Provided that hazardous wastes are properly identified and separated for off-site disposal, no significant impacts would result.

5.14.3 Environmental Consequences—No-action Alternative

No new construction or demolition would occur and no solid or hazardous wastes would be generated as a result of the no-action alternative.

5.14.4 Mitigation

Some wastes, such as chemicals used to clean or degrease equipment and excess coatings and paint, may be considered hazardous. They should be separated from non-hazardous wastes for proper disposal. Asphalt removed to allow construction of the proposed structures and parking areas should be recycled where feasible. All federal, state, and local standards regulating the reporting and handling of hazardous wastes would be followed.

Removal of nonfriable ACMs requires notification to the SCDHEC and, depending on the removal method (i.e., sanding, saw-cutting, mechanical abrading, or pulverization), may be subject to state and federal regulations. Lead-based paint would be stripped from the surface prior to demolition and removed for disposal as a hazardous waste. ACMs and hazardous lead-based paint would be disposed at a facility licensed to accept those wastes.

5.15 Socioeconomic Impacts and Environmental Justice

5.15.1 Affected Environment

Under E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, federal agencies must identify and address, as appropriate, disproportionately high and adverse environmental or human health effects on minority populations and low-income populations. Minority communities and low-income communities must also have access to public information on matters related to human health and the environment (President, 1994).

The CSC is located in Census Tract 45.019.004200, which covers the entire Shipyard. According to data from the U.S. Census Topologically Integrated Geographic Encoding and Referencing (TIGER) files, Census Tract 45.019.004200 had a population of 577 and no households as of 1990. Charleston County as a whole had a population of 107,069 and 295,039 households in 1990. The census tract containing the CSC contained about 0.2 percent of the total population of the Charleston County. The percentage of minority population (persons of Black, American Indian, Asian, or other non-white race) within the tract (37.6 percent) was virtually identical to that of Charleston County as a whole (37.7 percent). The Shipyard has no unemployment or persons in poverty. The rate of unemployment and persons in poverty for Charleston County as a whole was 4.8 and 17.3 percent, respectively. The average per capita income for people within the tract was $16,544, which is 21 percent higher than the average per capita income in the Charleston County as a whole ($13,068). The entire population in 1990 within the census tract consisted of persons in the armed forces (U.S. Census Bureau, 2002).

Because of the official closure of the Shipyard in 1996, persons now living within the Shipyard generally consist of transient personnel being trained and lodged by federal government entities such as the Americorps/National Civilian Conservation Corps and the U.S. Border Patrol. The overall population of the tract has decreased. The number of households, rate of unemployment, and number of persons living in poverty within the census tract (which was 0 in 1990) are not expected to be significantly different and the percentage of minorities and per capita income is anticipated to be relatively unchanged as well.

5.15.2 Environmental Consequences—Proposed Action

Implementation of the proposed action would result in a modest, short-term stimulus to the local economy due to construction-period expenditures for equipment, materials, supplies, etc., and employment of workers by the construction contractors.

After construction is complete, NOS would operate and maintain the improved and new facilities. The proposed action would expand capacity, bringing the total on-site staff to about 175 persons. In the long-term, the improvement of the CSC facilities would not result in significant direct economic impacts. Indirectly, the improved quality of facilities of the CSC may improve its ability to attract new programs and missions and to retain and expand existing

functions, which could benefit the local economy of the Charleston area by increasing the amount of economic activity and/or employment generated by the CSC. Economic growth induced by continued operation of the CSC, even at a higher activity level, would not be significant when compared to the overall economy of the Charleston area.

The proposed action would occur at a developed federal property. Dislocation of persons or businesses would not result. Disproportionately high and adverse environmental effects would not result on either minority or low-income populations of the area, or on the population as a whole. Due to the scope and location of the proposed action, socioeconomic effects would not be significant.

5.15.3 Environmental Consequences—No-action Alternative

The proposed infrastructure improvements would not be implemented and no socioeconomic effects would result.

5.15.4 Mitigation

No mitigation would be required.

5.16 Cumulative Impacts

5.16.1 Affected Environment

Direct cumulative effects are those impacts resulting from the combined influence of other unrelated but proximal and simultaneous activities at or near the proposed project area. The environmental setting is described in each of the preceding subsections.

5.16.2 Environmental Consequences—Proposed Action

NOAA proposes to construct new additions and modify existing facilities. The proposed action represents a minor infrastructure and facility improvement. Implementation of the proposed action or foreseeable related actions would not result in significant effects on the human environment. However, existing and proposed development at the NOS property would be affected by development of a cargo terminal speculated for this immediate area within the next several years (see Section 5.1.2). Because the port facilities are speculative, it is impossible to measure the cumulative impacts of that unrelated action.

5.16.3 Environmental Consequences—No-action Alternative

No individual or cumulative impacts would occur as a result of the no-action alternative.

5.16.4 Mitigation

No mitigation would be required.

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6 COMMUNITY INVOLVEMENT

NOAA prepared this Draft EA in conformance with NOAA Administrative Order 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act*, and NEPA. This document examines the potential for facility expansion within the CSC property to affect the quality of the environment. The no-action alternative is also examined. During preparation of this Draft EA, a number of federal, state, and local agencies and organizations were consulted (see Section 10 and Appendix C).

NOAA would follow the UBC in its facility design and comply with local zoning and building codes to the extent practicable. As with other federal projects, NOAA would follow procedures set forth in the Public Buildings Amendments of 1988, Public Law 100-678. Plans for the proposed additions and the final site layout of the NOS property would be submitted to the city of North Charleston for courtesy review and comment.

This Draft EA will be distributed to interested persons and government agencies and made available at the local public library and at the NOAA CSC. Comments on the Draft EA will be received during a 30-day comment period between September 3, 2002, through October 4, 2002. All written comments received during the official comment period will be addressed, as necessary, in the Final EA. Based on information contained in the Final EA, NOAA will make its determination to prepare either a FONSI or an EIS.

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7 SUGGESTED MITIGATION MEASURES

The following measures have been identified to reduce or eliminate potentially significant impacts during construction and operation of the proposed action. Application of these measures would ensure that no significant environmental effects would result.

As part of its proposed action, NOAA would adhere to the Public Buildings Amendments of 1988, Public Law 100-678. For example, building plans would be provided to the city of North Charleston Department of Planning and Management for a 30-day courtesy review and NOAA would consider those comments when preparing its final design plan.

To minimize the potential for erosion, standard control measures would be implemented at and adjacent to areas of soil disturbance (i.e., areas cleared of vegetation, pavement, or foundations). Those measures include placement of filters around all drainage inlets, temporary silt fences at the boundaries of cleared areas to retain soil, and periodic sprinkling of bare soil with water to reduce dust generation.

A stormwater plan that includes a stormwater BMP facility to remove pollutants from entering the Cooper River or offsite storm sewer system would be created and submitted to the OCRM. An NPDES permit for discharge of storm runoff water from a construction site would be obtained from the OCRM.

An ECP would be submitted to the OCRM. Standard measures would be implemented during and after construction to minimize the potential for soil erosion at cleared or disturbed areas. These standard measures include BMPs as outlined in the OCRM's 1998 *South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbance Activities.*

To minimize the amount of dust generated at the NOAA demolition and construction site, exposed soil would be sprinkled periodically with water or treated with dust suppressants.

If previously undiscovered artifacts are uncovered during construction activities, construction activities in that area would be suspended and the SHPO notified to assess the significance of the find.

To be consistent with policies set forth in E.O. 11990, NOAA would flood-proof the proposed structures or elevate structures so that the lowest finished floor elevation is at 13 ft NGVD, or 1 ft above the 100-year floodplain.

A Stormwater Management and Sediment Reduction Act permit from the OCRM is required prior to the implementation of the proposed action.

A coastal zone consistency certification from the OCRM is conditioned upon delineating adjacent critical areas on construction plans and avoiding those areas during project implementation.

Some wastes, such as chemicals used to clean or degrease equipment and excess coatings and paint, may be considered hazardous. They should be separated from non-hazardous wastes for proper disposal. Asphalt removed to allow construction of the proposed structures and parking areas should be recycled where feasible. All federal, state, and local standards regulating the reporting and handling of hazardous wastes would be followed.

Removal of nonfriable ACMs requires notification to the SCDHEC and, depending on the removal method (i.e., sanding, saw-cutting, mechanical abrading, or pulverization), may be subject to state and federal regulations. Lead-based paint would be stripped from the surface prior to demolition and removed for disposal as a hazardous waste. ACMs and hazardous lead-based paint would be disposed at a facility licensed to accept those wastes.

Implementation of the no-action alternative would not result in changes in the environment. No measures are needed to mitigate effects of the no-action alternative.

8 CONCLUSION

This Draft EA conforms to procedural and technical requirements set forth in NOAA Administrative Order 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act,* and NEPA. It examines the potential for either the proposed action or the no-action alternative to have a significant effect on the environment.

Based on the detailed analyses of environmental impacts and implementation of associated mitigation measures contained in this Draft EA, significant environmental effects would not result. A FONSI is warranted.

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9 LIST OF PREPARERS

SRI International of Menlo Park, California, served as the prime contractor for preparation of this EA under contract to the U.S. Department of Commerce. The following staff from SRI International worked on this Draft EA.

- Patricia L. Burns, M.B.A. Santa Clara University, California; B.A. in English, Duke University, Durham, North Carolina; 26 years of professional and management experience. Ms. Burns served as project supervisor for this EA.
- John Chamberlain, M.S. in environmental studies, San Jose State University and B.S., meteorology, San Jose State University; 19 years of experience in environmental impact assessment and project management. Mr. Chamberlain served as project leader and co-author for this EA.
- Teresa Cochran, A.A. in individual studies, Foothill College, Los Altos Hills, California; 12 years of experience in report preparation and coordination. Ms. Cochran served as editor and word processor for this EA.
- Roshni Easley, in process of obtaining A.A. in business administration, Foothill College, Los Altos Hills, California; 4 years of experience in report preparation and coordination. Ms. Easley served as editor and report coordinator for this EA.
- Linda Hawke-Gerrans, A.A. in technical illustration, College of San Mateo, California; 29 years of experience in technical illustration and 7 years of experience in geographic information systems. Ms. Hawke-Gerrans served as illustrator and geographic analyst for this EA.
- Scott R. Rotman, Ph.D candidate, natural resources management, State University of New York College of Environmental Science and Forestry, Syracuse, New York; J.D., law, Rutgers School of Law-Newark, Newark, New Jersey; B.A., international relations, Colgate University, Hamilton, New York; 4 years of experience in environmental impact assessment and project management. Mr. Rotman served as technical reviewer for this EA.
- Caren Wilhoit, B.S. in environmental studies with a concentration environmental impact assessment, San Jose State University, San Jose, California; 2 years of experience performing environmental investigations. Ms. Wilhoit served as research analyst and co-author for this EA.

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APPENDIX A

SITE PHOTOGRAPHS

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(a) VIEW (LOOKING NORTHWEST) OF BUILDING RTC-1

(b) VIEW (LOOKING NORTHEAST) OF BUILDING 2

FIGURE A-1 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (continued)

(c) VIEW (LOOKING SOUTHWEST) OF EXISTING ACCESS DRIVE AT BUILDING 2 (TO BE REALIGNED)

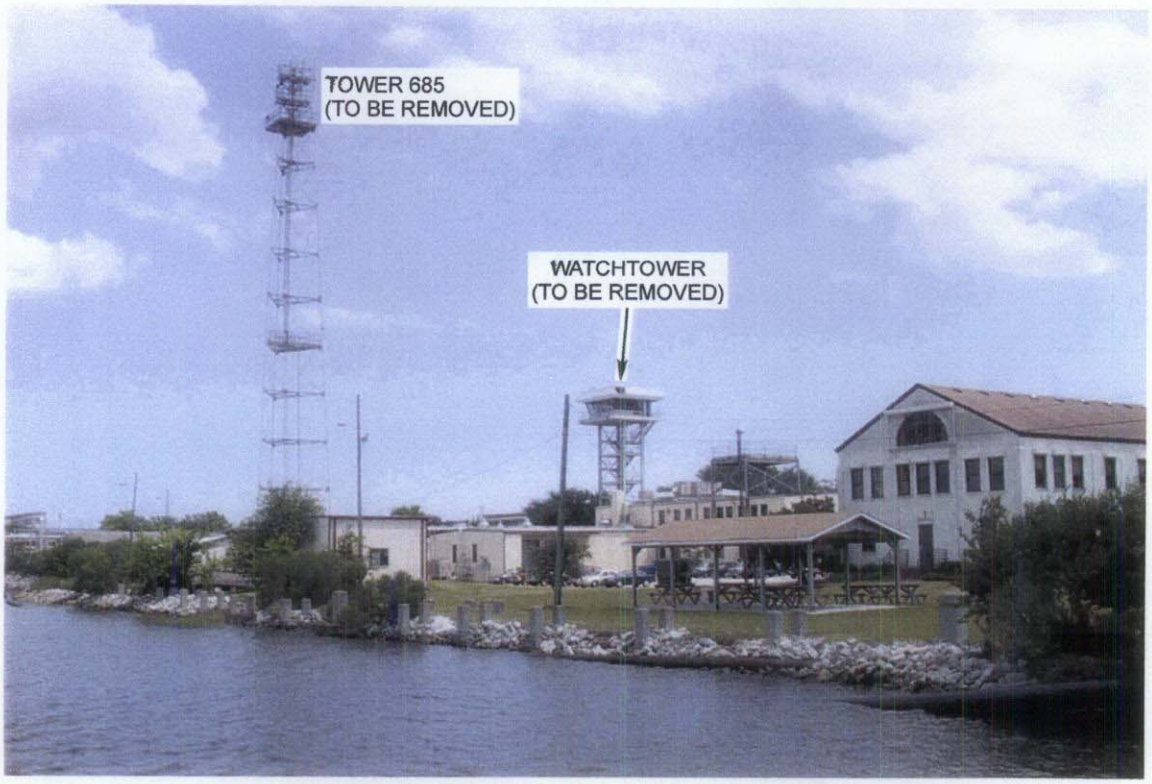
FIGURE A-1 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (continued)

(d) VIEW (LOOKING NORTH) OF PROPOSED ACCESS DRIVE ROUTE ADJACENT TO BUILDING 2

(e) VIEW (LOOKING NORTH) OF PROPOSED ACCESS DRIVE ENTRANCE AT BUILDING 2

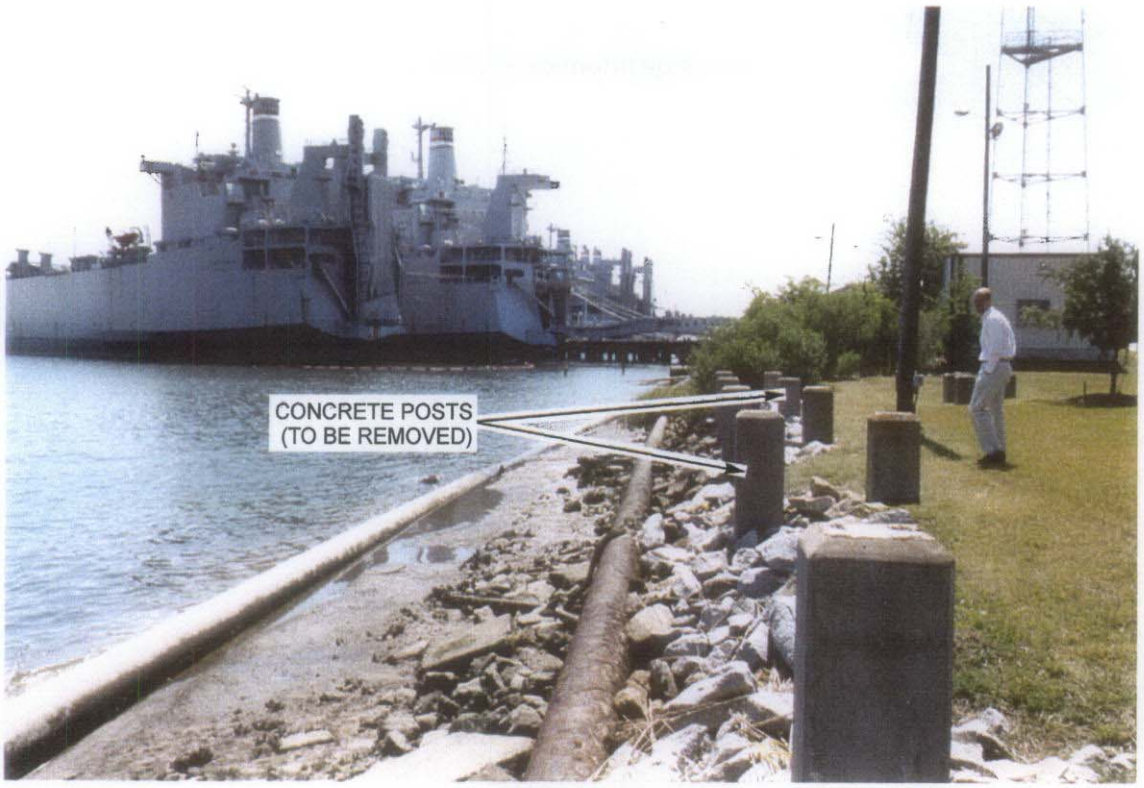
FIGURE A-1 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (continued)

(f) VIEW (LOOKING NORTH) OF NOAA BUILDINGS TO REMAIN IN PLACE



(g) VIEW (LOOKING SOUTHEAST) OF NOAA PROPERTY

FIGURE A-1 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (concluded)



(h) **VIEW (LOOKING EAST) OF SHORELINE**

FIGURE A-1 SITE PHOTOGRAPHS — NOAA COASTAL SERVICES CENTER, NORTH CHARLESTON, SOUTH CAROLINA (continued)

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APPENDIX B

CORRESPONDENCE AND BACKGROUND INFORMATION

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SRI INTERNATIONAL
333 Ravenswood Ave. G-226
Menlo Park, CA 94025-3493

ENGINEERING & SYSTEMS DIVISION
Envirotechnical Program

Telephone Conversation Record

Call Initiated By SRI ☒ **Client** ☐ **Date:** July 8, 2002

Person Contacted: Mr. Robert Ryan **Title:** Director of Economic Development

Agency: Charleston Naval Complex Redevelopment Authority (RDA)

Phone No.: (843) 747-0010

Project : Proposed expansion of National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center (CSC), North Charleston, South Carolina

Re: Realignment of the Charleston Naval Complex

Result of discussion: According to Mr. Ryan, negotiations between the city of North Charleston and the South Carolina State Ports Authority (SCSPA) to determine the future boundaries within the Charleston Naval Complex are ongoing. Upon realignment, all current leases will be honored.

The legislation by which the CSC site was conveyed to NOAA did not indicate that NOAA may have to vacate the premises if the land is required for future port expansion; it merely contained a reverter provision that is contingent upon NOAA ceasing its use of the premises.

Mr. Ryan foresees that port expansion will require SCSPA and the State of South Carolina, etc., to relocated the CSC in 15 to 20 years. Therefore, undertaking the proposed CSC expansion must be done with full consideration of the fact that NOAA's use of the facility may be relatively short-lived.

Action to be taken: No further action is required.

Recorded by: Scott Rotman

cc: NOAA CSC files

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Issued March 1971

SOIL SURVEY
Charleston County
South Carolina

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
and
Forest Service
In cooperation with
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

Their subsoil is very dark gray fine sandy loam in the upper part and dark-gray fine sandy clay loam in the lower part.

Meggett soils are nonacid soils that are poorly drained. Typically, their surface layer is very dark grayish-brown loam, and their subsoil is gray and dark-gray clay loam and clay.

Pine and hardwood forest occupy more than 90 percent of this association. Most of it is managed by the U.S. Forest service. The rest of the acreage is used for general farming.

Most of the soils in this association, even if properly drained, are only poor to fair in suitability for farming. They have moderate to severe limitations for engineering uses and severe limitations for dwellings that require septic tanks. The low areas are well suited to hardwoods; higher areas and well-drained areas are suited to pines and to wildlife management. Some sites would be excellent if managed as fields for ducks.

10. Tidal Marsh Association

Marshy areas flooded by tidewater

This association occurs on level plains along the Atlantic coastline and inland along the tidal streams and rivers.

The association occupies 31 percent of the county. Tidal marsh, soft, at elevations 3 feet above to 3 feet below mean sea level, makes up 70 percent of the association, and Capers soils make up about 18 percent. Coastal beaches and Dune land and Crevasse, Dawhoo, Pamlico, and Rutlege soils make up the remaining 12 percent.

Tidal marsh, soft, is dark-gray to black or brown loam, clay, muck, or peat. It is covered by 6 to 24 inches of salt water at high tides, and it is constantly saturated with water. The content of organic matter is medium to high. The sulfur content is high, and if the land is drained and allowed to dry it becomes cat clay, which does not support plant growth.

Capers soils are dark-gray clay loams to silty clays that are high in content of organic matter. They are covered by sea water once a month or oftener. If they are allowed to dry, they become cat clay, which does not support vegetation.

This association is not suited to crops, improved pasture, or trees. Tidal marsh, soft, has a thick cover of tall, salt-tolerant grasses, and the Capers soils, a thick cover of salt-tolerant plants. Capers soils have sufficient bearing strength to support low dams and the traffic of animals. Tidal marsh, soft, has very low bearing strength and consequently is not suited to range management, duck ponds, fish ponds, or installation of dikes and other structures for management of water.

11. Mine Pits and Dumps-Made Land Association

Mined areas and Made land

This association is in areas that have been changed by phosphate mining, by land smoothing, and by land filling. The high, narrow ridges, the low hummocks, and the deep, water-filled troughs result from phosphate mining. The nearly level areas were made by land smoothing and by land filling, mainly as a part of urban development.

This association occupies about 2 percent of the county. The pits and dumps left by phosphate mining make up about 70 percent of the association, and Made land, the remaining 30 percent.

About 66 percent of this association, mainly on the land mined for phosphate, is wooded. Where drainage is adequate, phosphate left after mining encourages a good growth of pines. Most of the mined areas, however, are poorly drained.

Urban development has taken place mainly on those areas of smoothed or filled land that are moderately well drained.

How This Survey Was Made

This survey was made to learn what kinds of soils are in Charleston County, where they are located, and how they can be used. Soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. As they traveled over the county, they observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The categories of their classification most used in a local survey are the *soil series* and the *soil phase*.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Edisto and Kiawah, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

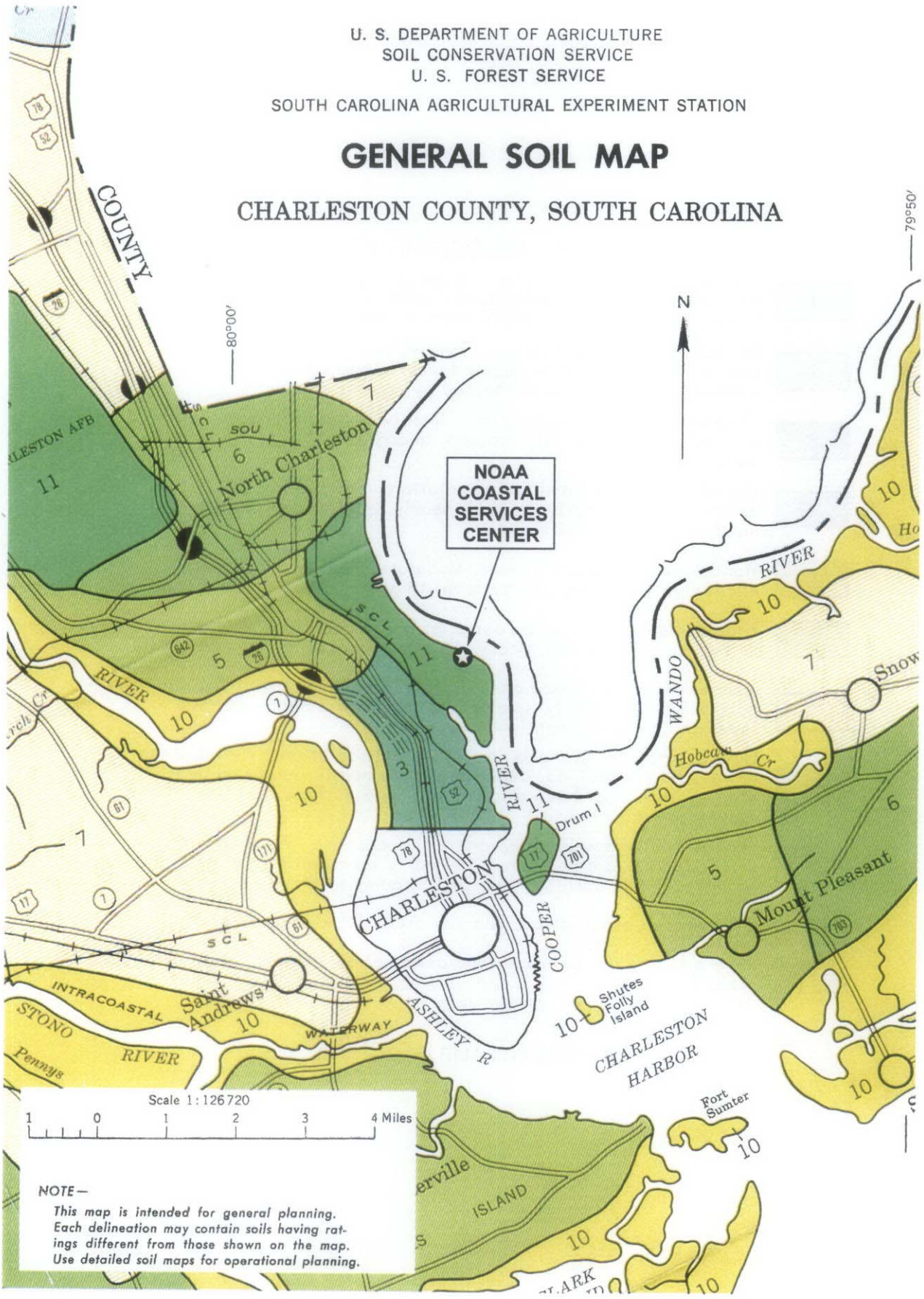
Soils of one series can differ in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Hockley loamy fine sand, 2 to 6 percent slopes, is one of several phases within the Hockley series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
U. S. FOREST SERVICE
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

CHARLESTON COUNTY, SOUTH CAROLINA



GENERAL SOIL MAP (Page 1 of 2)

SOIL ASSOCIATIONS

1 Seewee-Rutlege association: Somewhat poorly drained to moderately well drained, nearly level, sandy soils on ridges and poorly drained to very poorly drained, sandy soils in depressions

2 St. Johns-Leon association: Somewhat poorly drained to poorly drained, level to nearly level, sandy soils that contain a weakly cemented layer stained by organic matter

3 Chipley-Lakeland association: Mainly moderately well drained and excessively drained, nearly level to gently sloping, sandy soils

4 Rutlege-Scranton-Pamlico association: Somewhat poorly drained to very poorly drained, nearly level to depressional, sandy and mucky soils

5 Wando-Seabrook association: Moderately well drained to excessively drained, nearly level to gently sloping, sandy soils

6 Kiawah-Seabrook-Dawhoo association: Moderately well drained to very poorly drained, nearly level to depressional, sandy soils

7 Yonges-Hockley-Edisto association: Moderately well drained to poorly drained, nearly level soils that have a sandy surface layer and a predominantly loamy subsoil

8 Bayboro-Wagram-Orangeburg-Quitman association: Well-drained to very poorly drained, depressional to nearly level and gently sloping soils that have a loamy to sandy surface layer and a clayey to loamy subsoil

9 Wadmalaw-Yonges-Stono-Meggett association: Poorly drained to very poorly drained, level to nearly level soils that have a loamy to sandy surface layer and a loamy to clayey subsoil

10 Tidal marsh association: Marshy areas flooded by tidewater

11 Mine pits and dumps-Made land association: Mined areas and Made land

October 1969

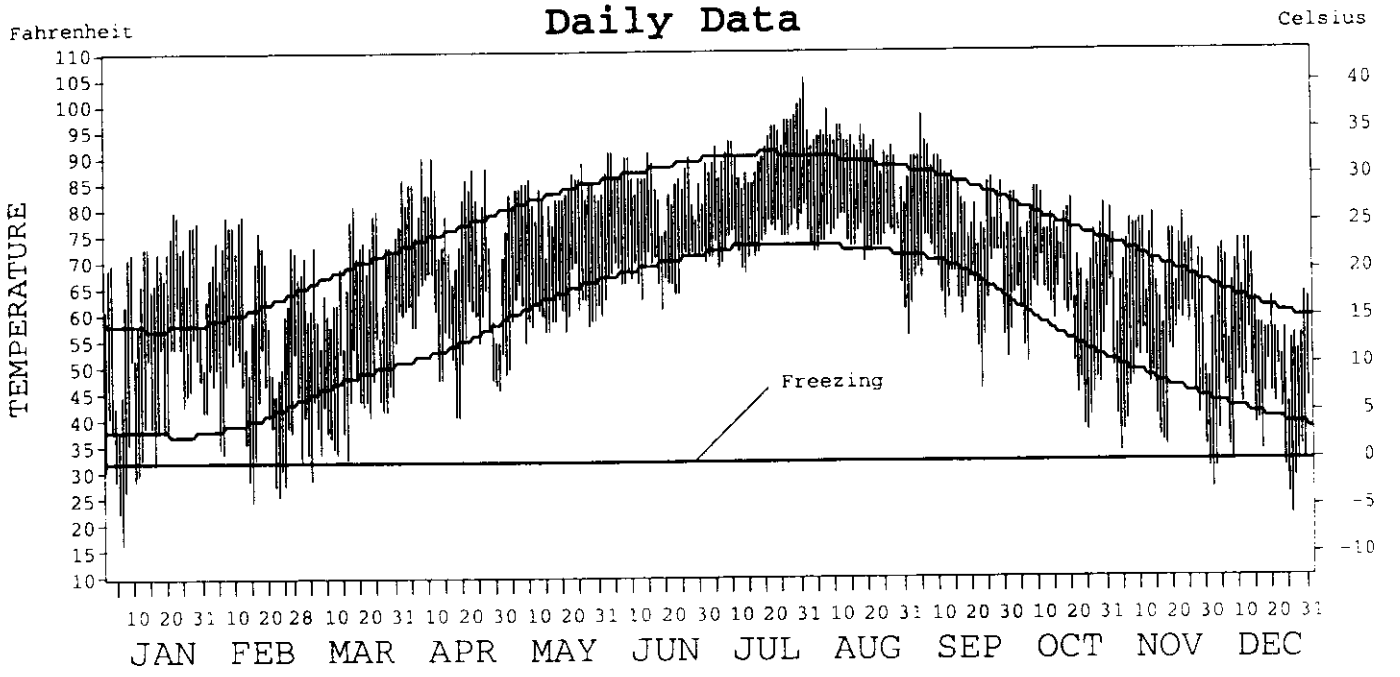
GENERAL SOIL MAP (Page 2 of 2)

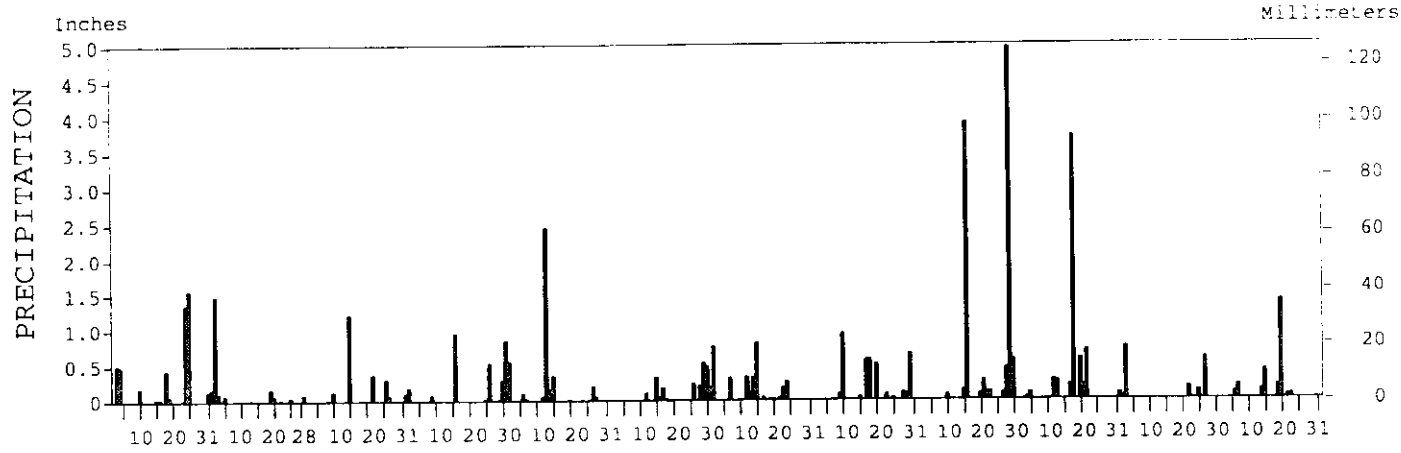
1999 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA

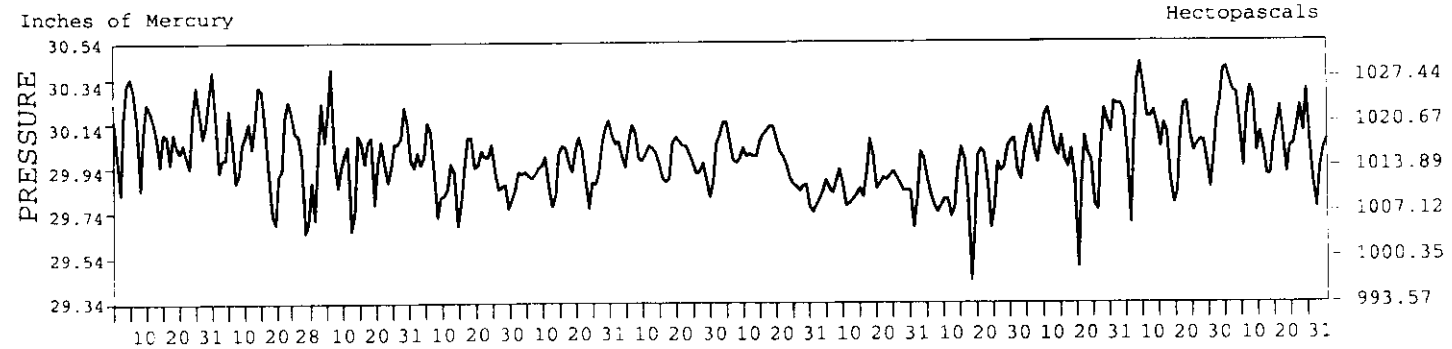
ISSN 0198-4616

CHARLESTON,
SOUTH CAROLINA (CHS)

Daily Data







I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

Thomas R Karl

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA

DIRECTOR NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 1999

CHARLESTON, SC (CHS)

LATITUDE: 32° 53′ 55″ N | LONGITUDE: 80° 02′ 27″ W | ELEVATION (FT): GRND: 44 BARO: 44 | TIME ZONE: EASTERN (UTC + 5) | WBAN: 13880

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	MEAN DAILY MAXIMUM	66.1	65.9	67.5	78.3	81.4	85.2	91.2	92.2	84.3	76.2	71.2	61.5	76.8
	HIGHEST DAILY MAXIMUM	80	79	81	90	89	91	101	105	98	84	80	74	105
	DATE OF OCCURRENCE	22	07+	18	11+	26	15+	31	01	05	10+	01	13+	AUG 01
	MEAN DAILY MINIMUM	41.0	41.3	42.2	57.3	59.4	67.6	73.7	74.1	65.0	56.6	48.4	39.4	55.5
	LOWEST DAILY MINIMUM	17	25	29	41	46	60	68	61	46	38	34	22	17
	DATE OF OCCURRENCE	06	15	05	19+	01	01	14	31	23	25	04	26	JAN 06
	AVERAGE DRY BULB	53.6	53.6	54.9	67.8	70.4	76.4	82.5	83.2	74.7	66.4	59.8	50.5	66.2
	MEAN WET BULB	48.7	48.0	48.1	60.6	63.8	70.6	76.2	76.0	68.4	61.8	55.0	46.8	60.3
	MEAN DEW POINT	43.4	41.4	40.3	55.8	59.8	67.9	74.0	73.2	64.7	58.6	50.7	41.8	56.0
	NUMBER OF DAYS WITH:													
	MAXIMUM ≥ 90°	0	0	0	2	0	6	18	26	8	0	0	0	60
	MAXIMUM ≤ 32°	0	0	0	0	0	0	0	0	0	0	0	0	0
	MINIMUM ≤ 32°	8	6	1	0	0	0	0	0	0	0	0	10	25
	MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0
H/C	HEATING DEGREE DAYS	358	315	314	61	20	0	0	0	4	71	175	446	1764
	COOLING DEGREE DAYS	10	1	6	153	193	351	548	571	303	122	25	1	2284
RH	MEAN (PERCENT)	72	69	63	71	73	79	79	76	75	79	76	75	74
	HOUR 01 LST	85	81	78	82	87	92	91	89	87	90	89	84	86
	HOUR 07 LST	86	87	78	83	86	88	90	88	86	92	89	86	87
	HOUR 13 LST	50	48	42	52	52	61	62	58	57	61	55	56	54
	HOUR 19 LST	74	66	61	68	69	75	77	74	74	80	77	76	73
S	PERCENT POSSIBLE SUNSHINE													
W/O	NUMBER OF DAYS WITH:													
	HEAVY FOG(VISBY ≤ 1/4 MI)	6	2	0	5	3	4	2	1	4	0	4	3	34
	THUNDERSTORMS	4	0	3	6	5	5	11	12	3	0	1	0	50
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	MIDNIGHT-MIDNIGHT: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	NUMBER OF DAYS WITH:													
	CLEAR													
	PARTLY CLOUDY													
	CLOUDY													
PR	MEAN STATION PRESS. (IN.)	30.14	30.05	30.01	29.95	29.96	30.00	30.00	29.88	29.88	30.05	30.11	30.12	30.01
	MEAN SEA-LEVEL PRESS. (IN.)	30.19	30.10	30.06	29.99	30.01	30.05	30.05	29.92	29.93	30.10	30.15	30.16	30.06
WINDS	RESULTANT SPEED (MPH)	1.2	1.4	0.7	2.8	2.4	1.1	1.0	1.7	3.7	4.2	2.0	1.4	0.6
	RES. DIR. (TENS OF DEGS.)	22	26	27	22	24	26	30	22	03	04	02	29	30
	MEAN SPEED (MPH)	7.8	8.5	9.3	10.1	8.1	8.0	6.5	7.8	8.9	7.7	6.7	6.8	8.0
	PREVAIL.DIR.(TENS OF DEGS.)	05	22	26	20	19	20	20	19	03	04	01	26	20
	MAXIMUM 2-MINUTE WIND:													
	SPEED (MPH)	33	33	37	31	32	23	32	30	51	29	25	28	51
	DIR. (TENS OF DEGS.)	18	26	19	20	02	22	12	32	36	32	33	21	36
	DATE OF OCCURRENCE	18	28	03	15	14	15+	22	19	15	17	30+	10	SEP 15
	MAXIMUM 5-SECOND WIND:													
	SPEED (MPH)	39	40	45	40	45	29	55	38	67	38	31	34	67
	DIR. (TENS OF DEGS.)	17	26	19	20	02	29	11	02	36	34	33	04	36
	DATE OF OCCURRENCE	23+	28	03	15	14	26+	22	29+	15	17	30+	19+	SEP 15
PRECIPITATION	WATER EQUIVALENT:													
	TOTAL (IN.)	4.96	2.01	2.15	2.90	3.95	2.32	3.19	3.68	10.81	6.20	1.70	2.54	46.41
	GREATEST 24-HOUR (IN.)	2.92	1.55	1.21	0.95	2.47	1.01	0.81	1.14	5.35	3.92	0.75	1.58	5.35
	DATE OF OCCURRENCE	23-24	01-02	14	15	11-12	28-29	14	16-17	28-29	16-17	01-02	18-19	SEP 28-29
	NUMBER OF DAYS WITH:													
	PRECIPITATION ≥ 0.01	12	9	6	8	10	10	12	11	11	11	7	8	115
	PRECIPITATION ≥ 0.10	8	3	4	5	6	8	8	6	9	8	4	6	75
	PRECIPITATION ≥ 1.00	2	1	1	0	1	0	0	0	2	1	0	1	9
SNOWFALL	SNOW, ICE PELLETS, HAIL:													
	TOTAL (IN.)													
	GREATEST 24-HOUR (IN.)													
	DATE OF OCCURRENCE													
	MAXIMUM SNOW DEPTH (IN.)													
	DATE OF OCCURRENCE													
	NUMBER OF DAYS WITH:													
	SNOWFALL ≥ 1.0													

NORMALS, MEANS, AND EXTREMES

CHARLESTON, SC (CHS)

LATITUDE: 32° 53′ 55″ N LONGITUDE: 80° 02′ 27″ W ELEVATION (FT): GRND: 44 BARO: 44 TIME ZONE: EASTERN (UTC + 5) WBAN: 13880

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	57.8	61.0	68.6	75.8	82.7	87.6	90.2	89.0	84.9	77.2	69.5	61.6	75.5
	MEAN DAILY MAXIMUM	54	59.3	62.1	68.4	76.2	82.8	87.6	90.1	89.1	84.6	76.9	68.9	61.4	75.6
	HIGHEST DAILY MAXIMUM	57	83	87	90	94	98	103	104	105	99	94	88	83	105
	YEAR OF OCCURRENCE		1950	1989	1974	1989	1989	1944	1986	1999	1944	1986	1961	1972	AUG 1999
	MEAN OF EXTREME MAXS.	54	75.5	78.0	82.9	88.4	92.5	96.3	96.6	95.9	92.5	86.9	81.6	76.9	87.0
	NORMAL DAILY MINIMUM	30	37.7	40.0	47.5	53.9	62.9	69.1	72.7	72.2	67.9	56.3	47.2	40.7	55.7
	MEAN DAILY MINIMUM	54	38.0	39.9	46.0	53.1	61.8	68.7	72.2	71.5	67.0	55.8	46.1	39.4	55.0
	LOWEST DAILY MINIMUM	57	6	12	15	29	36	50	58	56	42	27	15	8	6
	YEAR OF OCCURRENCE		1985	1973	1980	1944	1963	1972	1952	1979	1967	1976	1950	1962	JAN 1985
	MEAN OF EXTREME MINS.	54	21.1	23.7	29.3	37.8	48.1	58.5	65.7	64.3	55.2	39.1	29.4	22.7	41.2
	NORMAL DRY BULB	30	47.8	50.5	58.1	64.9	72.8	78.3	81.5	80.6	76.4	66.8	58.4	51.2	65.6
	MEAN DRY BULB	54	48.6	51.0	57.2	64.7	72.4	78.1	81.1	80.4	75.8	66.3	57.6	50.4	65.3
	MEAN WET BULB	16	44.8	47.3	51.7	58.0	65.8	72.2	75.8	74.7	70.4	61.8	54.3	46.9	60.3
	MEAN DEW POINT	16	39.0	41.2	45.3	52.1	61.6	69.3	73.2	72.3	67.5	58.0	49.8	41.5	55.9
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.0	0.1	1.2	4.1	10.7	18.1	15.3	5.7	0.4	0.0	0.0	55.6
	MAXIMUM ≤ 32°	30	0.3	0.1	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
	MINIMUM ≤ 32°	30	12.2	8.6	2.5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	2.9	9.2	35.6
	MINIMUM ≤ 0°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H/C	NORMAL HEATING DEG. DAYS	30	548	414	239	66	0	0	0	0	0	74	233	439	2013
	NORMAL COOLING DEG. DAYS	30	15	8	25	63	242	399	512	484	342	130	35	11	2266
RH	NORMAL (PERCENT)	30	70	67	68	68	72	75	77	79	78	74	73	72	73
	HOUR 01 LST	30	78	77	80	81	86	87	88	89	89	86	84	80	84
	HOUR 07 LST	30	80	79	82	83	85	85	86	89	89	87	85	82	84
	HOUR 13 LST	30	55	52	50	47	53	58	60	63	61	54	52	55	55
	HOUR 19 LST	30	68	64	64	62	68	71	74	77	77	75	74	71	70
S	PERCENT POSSIBLE SUNSHINE	39	56	60	66	71	70	66	67	64	61	63	59	56	63
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI)	50	4.1	2.2	2.4	2.1	2.2	1.5	0.7	1.2	1.9	2.5	3.6	3.7	28.1
	THUNDERSTORMS	57	0.9	1.1	2.2	3.0	6.5	10.0	13.3	11.2	5.3	1.5	0.8	0.6	56.4
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1			5.6		2.4	4.0							
	MIDNIGHT-MIDNIGHT (OKTAS)	1			5.6			4.0							
	MEAN NO. DAYS WITH:														
	CLEAR	1	3.0	4.0	11.0		13.0	9.0							
	PARTLY CLOUDY	1	1.0	2.0	3.0		4.0	11.0							
	CLOUDY	1	4.0	3.0	9.0		3.0	2.0							
PR	MEAN STATION PRESSURE(IN)	27	30.10	30.10	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.09	30.10	30.03
	MEAN SEA-LEVEL PRES. (IN)	16	30.14	30.12	30.07	30.02	30.03	30.01	30.05	30.04	30.03	30.09	30.13	30.17	30.08
WINDS	MEAN SPEED (MPH)	47	8.9	9.7	10.0	9.7	8.4	8.1	7.7	7.3	7.7	7.9	8.0	8.4	8.5
	PREVAIL.DIR(TENS OF DEGS)	28	27	20	20	20	19	18	20	18	02	02	01	02	20
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	4	36	33	39	38	32	44	34	38	51	39	32	29	51
	DIR. (TENS OF DEGS)		31	10	26	20	30	17	03	27	36	21	20	31	36
	YEAR OF OCCURRENCE		1996	1998	1997	1998	1998	1997	1996	1997	1999	1996	1996	1996	SEP 1999
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	4	43	47	52	44	45	51	55	48	67	56	39	39	67
	DIR. (TENS OF DEGS)		21	25	24	20	02	18	11	26	36	21	20	32	36
	YEAR OF OCCURRENCE		1996	1997	1997	1998	1999	1997	1999	1997	1999	1996	1996	1996	SEP 1999
PRECIPITATION	NORMAL (IN)	30	3.45	3.30	4.34	2.67	4.01	6.43	6.84	7.22	4.73	2.90	2.49	3.15	51.53
	MAXIMUM MONTHLY (IN)	57	8.92	10.17	11.11	9.50	9.28	27.24	18.46	16.99	17.31	12.11	7.35	7.09	27.24
	YEAR OF OCCURRENCE		1993	1998	1983	1958	1957	1973	1964	1974	1945	1994	1972	1953	JUN 1973
	MINIMUM MONTHLY (IN)	57	0.63	0.33	0.70	0.01	0.68	0.96	1.76	0.73	0.18	0.08	0.16	0.66	0.01
	YEAR OF OCCURRENCE		1950	1947	1995	1972	1944	1970	1972	1980	1990	1943	1998	1984	APR 1972
	MAXIMUM IN 24 HOURS (IN)	57	3.90	5.93	6.63	4.10	6.23	10.10	5.81	5.77	10.52	5.77	5.24	3.40	10.52
	YEAR OF OCCURRENCE		1993	1998	1959	1958	1967	1973	1960	1964	1998	1944	1969	1978	SEP 1998
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	10.0	8.9	9.4	7.1	8.7	11.1	12.4	13.2	9.3	5.7	6.7	8.4	110.9
	PRECIPITATION ≥ 1.00	30	0.8	0.6	1.3	0.7	1.1	2.0	2.1	2.3	1.3	1.0	0.6	0.9	14.7
SNOWFALL	NORMAL (IN)	30	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0
	MAXIMUM MONTHLY (IN)	54	1.0	7.1	2.0	T	0.0	T	T	0.0	0.0	0.0	T	8.0	8.0
	YEAR OF OCCURRENCE		1977	1973	1969	1985		1995	1993				1995	1989	DEC 1989
	MAXIMUM IN 24 HOURS (IN)	54	0.8	5.9	2.0	T	0.0	T	T	0.0	0.0	0.0	T	6.6	6.6
	YEAR OF OCCURRENCE		1966	1973	1969	1985		1995	1993				1995	1989	DEC 1989
	MAXIMUM SNOW DEPTH (IN)	48	1	7	1	0	0	0	0	0	0	0	0	8	8
	YEAR OF OCCURRENCE		1966	1973	1980									1989	DEC 1989
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0	30	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3

PRECIPITATION (inches) 1999 CHARLESTON, SC (CHS)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	2.51	2.86	7.72	1.34	3.78	0.96	5.93	10.64	2.53	4.08	0.67	2.90	45.92
1971	5.45	4.71	4.05	4.11	4.15	4.07	6.04	16.32	0.53	7.22	1.61	2.28	60.54
1972	4.13	5.18	2.52	0.01	5.67	5.29	1.76	4.52	1.82	0.25	7.35	4.36	42.86
1973	4.59	5.57	6.15	2.55	1.83	27.24	3.60	6.66	7.93	0.63	0.84	4.58	72.17
1974	1.42	2.96	3.04	0.86	4.82	9.45	3.09	16.99	4.80	0.40	3.78	3.00	54.61
1975	4.92	3.54	4.54	3.74	5.06	5.96	9.34	7.18	5.16	1.97	1.43	3.35	56.19
1976	1.62	0.95	2.33	0.62	8.87	5.59	4.48	5.22	6.03	4.10	3.57	5.12	48.50
1977	2.72	1.38	5.31	0.45	4.66	2.12	3.86	8.13	2.48	2.49	1.76	5.88	41.24
1978	4.31	1.82	3.25	1.97	4.68	3.42	6.19	4.01	5.06	0.18	1.87	4.13	40.89
1979	3.43	3.04	3.01	3.81	8.09	2.23	8.35	0.88	15.36	3.87	3.29	2.62	57.98
1980	3.99	1.25	7.99	3.43	5.85	3.15	6.97	0.73	2.60	1.52	2.19	1.25	40.92
1981	0.93	2.23	2.38	1.87	4.02	6.04	12.66	9.30	1.27	1.95	1.06	5.73	49.44
1982	2.18	3.64	1.26	6.51	3.04	9.16	5.40	4.10	3.92	2.42	1.19	4.20	47.02
1983	4.86	6.35	11.11	3.57	0.75	2.37	8.89	2.90	3.50	2.36	3.08	4.35	54.09
1984	5.12	3.51	5.63	6.30	6.89	2.96	4.87	1.96	5.27	1.67	1.39	0.66	46.23
1985	0.87	2.70	1.50	1.12	2.79	7.02	12.06	8.48	2.53	4.58	5.49	1.21	50.35
1986	2.05	4.17	2.67	0.83	0.93	2.51	5.07	13.41	4.60	2.95	4.03	5.21	48.43
1987	7.17	4.58	5.55	1.31	2.29	5.64	2.92	6.97	14.49	0.56	3.65	1.57	56.70
1988	2.76	2.38	1.78	3.21	1.86	2.32	4.13	11.88	9.72	0.73	1.08	0.72	42.57
1989	2.31	1.17	2.87	4.84	2.14	7.26	1.93	9.18	13.35	4.08	1.85	4.74	55.72
1990	3.96	1.68	6.63	1.65	1.91	3.12	5.95	6.32	0.18	7.29	3.75	2.69	45.13
1991	7.78	0.94	4.66	4.59	5.37	4.54	7.38	8.09	2.29	0.77	1.64	1.62	49.67
1992	4.93	2.23	3.59	2.75	5.07	6.22	4.36	9.55	3.04	4.87	5.76	1.50	53.87
1993	8.92	3.08	5.80	2.72	2.67	3.70	4.21	7.69	5.01	3.00	3.59	2.30	52.69
1994	7.50	1.23	4.44	0.39	2.35	11.71	8.07	5.39	8.08	12.11	2.92	6.35	70.54
1995	3.94	3.73	0.70	1.77	1.31	6.72	5.81	11.07	7.98	3.52	2.02	1.02	49.59
1996	1.05	1.36	4.04	2.70	1.72	4.04	7.34	5.73	8.77	5.07	1.74	2.14	45.70
1997	2.68	2.86	1.81	6.61	2.04	13.76	8.51	2.15	9.58	4.12	3.26	5.19	62.57
1998	7.58	10.17	5.51	4.01	4.63	3.41	6.74	4.44	14.74	1.99	0.16	4.34	67.72
1999	4.96	2.01	2.15	2.90	3.95	2.32	3.19	3.68	10.81	6.20	1.70	2.54	46.41
POR= 129 YRS	3.20	3.24	3.71	2.79	3.50	5.27	6.98	6.71	5.28	3.14	2.29	2.82	48.93

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AVERAGE TEMPERATURE (°F) 1999 CHARLESTON, SC (CHS)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	41.0	48.5	57.1	66.3	72.7	78.4	82.5	80.6	77.3	67.5	54.1	52.1	64.8
1971	49.9	49.8	51.9	62.7	71.1	80.4	80.3	79.6	77.1	70.8	57.1	58.8	65.8
1972	54.8	48.9	56.9	64.0	69.8	74.0	80.1	80.4	76.4	67.3	56.8	55.7	65.4
1973	48.0	46.1	61.0	61.5	71.7	78.4	82.6	81.0	79.6	69.6	61.4	51.3	66.0
1974	61.8	51.5	62.0	63.6	74.0	75.4	78.2	79.3	75.0	61.8	55.5	51.0	65.8
1975	53.8	54.7	56.9	62.3	75.1	78.5	79.2	81.5	76.8	69.0	59.3	49.7	66.4
1976	44.8	55.9	62.3	64.0	70.3	75.8	81.0	77.2	73.9	61.4	50.9	48.8	63.9
1977	38.7	46.3	60.6	66.4	72.8	81.2	83.8	81.4	78.7	63.5	61.3	5.0	61.6
1978	43.5	42.7	55.2	66.5	72.0	78.6	81.1	81.3	77.4	65.7	63.3	52.7	65.0
1979	45.4	46.8	57.4	64.9	72.4	75.9	82.0	81.4	76.5	66.0	59.4	48.7	64.7
1980	48.7	45.9	54.6	64.3	71.4	78.4	82.4	82.1	79.8	65.0	55.4	47.5	64.6
1981	41.6	50.8	54.3	67.5	70.8	82.7	83.5	80.3	74.8	64.1	55.4	46.2	64.3
1982	45.1	51.5	59.2	61.8	72.2	78.8	81.2	80.0	74.5	65.1	60.9	57.0	65.6
1983	45.6	49.0	56.4	61.0	71.7	76.9	82.8	82.9	75.5	68.9	57.4	48.8	64.7
1984	46.1	52.8	57.6	64.0	71.7	78.8	79.9	81.1	73.0	71.3	54.2	57.2	65.6
1985	42.6	50.5	60.7	67.8	73.6	79.6	80.9	79.9	75.8	72.2	67.3	47.9	66.6
1986	45.8	55.5	58.0	66.1	74.3	81.4	86.1	79.9	78.6	68.8	63.1	52.8	67.5
1987	47.2	48.8	56.8	62.6	73.3	80.1	83.0	83.5	77.8	61.0	60.1	53.5	65.6
1988	43.2	49.2	57.4	64.4	71.9	76.7	81.8	82.0	76.3	62.7	61.0	50.6	64.8
1989	55.6	55.0	59.7	65.3	72.3	80.4	82.8	80.7	76.6	68.7	60.6	43.2	66.7
1990	55.4	59.2	62.5	66.0	74.4	81.0	83.6	82.5	79.2	70.5	60.4	56.4	69.3
1991	50.8	54.9	60.5	67.6	76.3	78.9	83.6	82.0	77.4	67.6	56.0	54.3	67.5
1992	49.5	55.0	57.9	63.6	70.3	77.5	83.9	80.6	76.2	65.1	60.4	51.0	65.9
1993	53.7	49.7	55.9	61.6	72.5	79.5	85.5	82.0	78.3	67.3	59.3	48.5	66.2
1994	46.5	53.4	61.3	68.3	71.1	79.8	82.0	80.0	75.7	66.4	62.5	54.4	66.8
1995	49.7	50.2	60.4	68.5	76.0	78.5	83.4	82.5	75.6	69.8	53.8	47.5	66.3
1996	48.0	51.8	53.7	64.2	74.4	78.3	81.9	78.7	75.4	65.8	54.6	52.3	64.9
1997	49.7	55.1	64.3	63.1	69.2	74.8	80.8	79.0	76.0	66.0	55.2	49.9	65.3
1998	52.5	53.7	56.2	65.2	75.1	82.8	83.8	81.2	77.3	68.6	62.4	55.7	67.9
1999	53.6	53.6	54.9	67.8	70.4	76.4	82.5	83.2	74.7	66.4	59.8	50.5	66.2
POR= 126 YRS	49.6	51.5	57.6	64.6	72.5	78.7	81.3	80.6	76.5	67.2	57.9	51.1	65.8

HEATING DEGREE DAYS (base 65°F) 1999 CHARLESTON, SC (CHS)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0	0	11	42	324	392	465	424	404	127	16	0	2205
1971-72	0	0	0	13	261	220	317	463	249	113	8	0	1644
1972-73	0	0	0	33	268	302	520	524	167	141	18	0	1973
1973-74	0	0	0	34	158	428	131	378	150	114	2	0	1395
1974-75	0	0	5	136	299	432	350	294	273	152	0	0	1941
1975-76	0	0	0	40	221	466	624	265	146	94	15	3	1874
1976-77	0	0	0	159	418	501	808	516	186	58	17	0	2663
1977-78	0	0	0	112	175	459	663	616	309	52	18	0	2404
1978-79	0	0	0	57	83	399	602	505	241	70	2	0	1959
1979-80	0	0	0	68	203	500	495	555	321	82	17	0	2241
1980-81	0	0	0	80	287	537	719	393	333	55	16	0	2420
1981-82	0	0	3	88	291	577	611	372	214	132	3	0	2291
1982-83	0	0	0	102	154	276	596	440	264	146	2	0	1980
1983-84	0	0	4	24	230	500	578	347	240	92	16	0	2031
1984-85	0	0	9	13	337	249	692	418	183	47	4	0	1952
1985-86	0	0	2	16	54	526	586	261	244	74	4	0	1767
1986-87	0	6	0	56	128	376	545	446	272	131	7	0	1967
1987-88	0	0	0	135	188	358	669	458	239	85	7	2	2141
1988-89	0	0	0	107	145	442	286	312	220	121	14	0	1647
1989-90	0	0	1	50	169	669	294	189	137	67	0	0	1576
1990-91	0	0	0	65	152	280	432	293	185	34	0	0	1441
1991-92	0	0	0	41	281	349	472	293	234	119	28	0	1817
1992-93	0	0	3	70	197	430	353	421	279	132	1	0	1886
1993-94	0	0	3	49	206	504	568	327	152	30	11	0	1850
1994-95	0	0	0	46	119	338	468	414	167	35	1	0	1588
1995-96	0	0	8	44	357	535	518	383	350	107	15	0	2317
1996-97	0	0	0	54	323	391	467	288	94	106	20	9	1752
1997-98	0	0	0	87	293	463	391	318	288	66	0	0	1906
1998-99	0	0	0	38	113	306	358	315	314	61	20	0	1525
1999-	0	0	4	71	175	446							

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COOLING DEGREE DAYS (base 65°F) 1999 CHARLESTON, SC (CHS)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	0	0	9	126	253	410	552	487	384	130	3	1	2355
1971	2	5	5	65	215	469	480	457	369	199	31	32	2329
1972	7	3	5	93	163	275	475	488	351	110	30	22	2022
1973	1	0	50	42	233	412	554	501	445	184	56	10	2488
1974	41	7	63	80	288	319	417	450	312	46	18	3	2044
1975	8	13	26	74	318	414	449	516	361	171	58	0	2408
1976	2	9	73	70	187	329	502	384	274	52	2	1	1885
1977	0	1	54	107	263	493	588	518	417	71	71	1	2584
1978	0	0	13	106	242	414	505	514	378	86	40	21	2319
1979	0	2	9	71	241	335	533	514	354	105	40	0	2204
1980	0	9	7	69	221	407	549	539	451	87	5	1	2345
1981	0	0	9	138	199	539	582	481	307	66	9	0	2330
1982	0	2	42	42	232	420	510	475	293	111	36	34	2197
1983	0	0	6	32	217	362	559	567	322	149	10	4	2228
1984	0	1	19	67	228	420	471	509	254	212	21	10	2212
1985	7	17	57	136	276	445	501	470	332	245	129	5	2620
1986	0	2	36	114	300	499	662	474	414	182	78	5	2766
1987	0	0	26	62	269	459	567	580	389	18	48	9	2427
1988	0	2	12	74	229	359	529	534	349	43	30	4	2165
1989	5	37	64	136	246	470	561	493	358	173	44	0	2587
1990	4	34	65	105	302	487	583	548	430	238	24	21	2841
1991	0	20	52	118	356	426	584	531	379	128	18	25	2637
1992	0	7	20	83	199	381	592	495	345	79	68	5	2274
1993	7	0	4	37	241	440	644	536	410	127	42	0	2488
1994	0	7	42	133	210	449	537	473	327	93	53	17	2341
1995	1	6	29	146	349	410	577	552	334	198	26	0	2628
1996	0	8	6	88	313	405	531	432	320	87	18	6	2214
1997	0	17	77	56	158	309	496	444	336	124	7	0	2024
1998	10	6	23	77	320	542	592	509	378	158	43	26	2684
1999	10	1	6	153	193	351	548	571	303	122	25	1	2284

SNOWFALL (inches) 1999 CHARLESTON, SC (CHS)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0.0	0.0	0.0	0.0	0.0	0.0	T	T	T	0.0	0.0	0.0	T
1971-72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972-73	0.0	0.0	0.0	0.0	0.0	0.0	T	7.1	0.0	0.0	0.0	0.0	7.1
1973-74	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	T
1974-75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1975-76	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
1976-77	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0	1.3
1977-78	0.0	0.0	0.0	0.0	0.0	0.0	T	0.4	T	0.0	0.0	0.0	0.4
1978-79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8
1979-80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.3	0.0	0.0	0.0	1.3
1980-81	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.8
1981-82	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1982-83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	T
1983-84	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1984-85	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	T	0.0	0.0	T
1985-86	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.0	0.0	T
1987-88	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
1988-89	0.0	0.0	0.0	0.0	0.0	T	0.0	0.9	T	0.0	0.0	T	0.9
1989-90	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
1990-91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	T
1991-92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992-93	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	T
1993-94	T	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	T
1994-95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T
1995-96	0.0	0.0	0.0	0.0	T	0.0	0.0						
1996-97													
1997-98													
1998-99													
1999-													
POR= 53 YRS	T	0.0	0.0	0.0	T	0.3	0.1	0.2	0.1	T	0.0	T	0.7

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REFERENCE NOTES:

PAGE 1:
THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:
H/C INDICATES HEATING AND COOLING DEGREE DAYS.
RH INDICATES RELATIVE HUMIDITY
W/O INDICATES WEATHER AND OBSTRUCTIONS
S INDICATES SUNSHINE.
PR INDICATES PRESSURE.
CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).

GENERAL:
T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.
+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.
NORMALS ARE 30-YEAR AVERAGES (1961 - 1990).
ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.
PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.
POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.
WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.
0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.
CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET.
THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.

GENERAL CONTINUED:
CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.
WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.
RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.
AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.
SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.
A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F.
DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.
DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.
WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

1999
CHARLESTON, SOUTH CAROLINA (CHS)

Charleston is a peninsula city bounded on the west and south by the Ashley River, on the east by the Cooper River, and on the southeast by a spacious harbor. Weather records for the airport are from a site some 10 miles inland. The terrain is generally level, ranging in elevation from sea level to 20 feet on the peninsula, with gradual increases in elevation toward inland areas. The soil is sandy to sandy loam with lesser amounts of loam. The drainage varies from good to poor. Because of the very low elevation, a considerable portion of this community and the nearby coastal islands are vulnerable to tidal flooding.

The climate is temperate, modified considerably by the nearness to the ocean. The marine influence is noticeable during winter when the low temperatures are sometimes 10-15 degrees higher on the peninsula than at the airport. By the same token, high temperatures are generally a few degrees lower on the peninsula. The prevailing winds are northerly in the fall and winter, southerly in the spring and summer.

Summer is warm and humid. Temperatures of 100 degrees or more are infrequent. High temperatures are generally several degrees lower along the coast than inland due to the cooling effect of the sea breeze. Summer is the rainiest season with 41 percent of the annual total. The rain, except during occasional tropical storms, generally occurs as showers or thunderstorms.

The fall season passes through the warm Indian Summer period to the pre-winter cold spells which begin late in November. From late September to early November the weather is mostly sunny and temperature extremes are rare. Late summer and early fall is the period of maximum threat to the South Carolina coast from hurricanes.

The winter months, December through February, are mild with periods of rain. However, the winter rainfall is generally of a more uniform type. There is some chance of a snow flurry, with the best probability of its occurrence in January, but a significant amount is rarely measured. An average winter would experience less than one cold wave and severe freeze. Temperatures of 20 degrees or less on the peninsula and along the coast are very unusual.

The most spectacular time of the year, weatherwise, is spring with its rapid changes from windy and cold in March to warm and pleasant in May. Severe local storms are more likely to occur in spring than in summer.

The average occurrence of the first freeze in the fall is early December, and the average last freeze is late February, giving an average growing season of about 294 days.

STATION LOCATION

CHARLESTON, SOUTH CAROLINA

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE SEA LEVEL	ELEVATION ABOVE GROUND								AUTOMATIC OBSERVING EQUIPMENT *	REMARKS
						GROUND TEMPERATURE SITE	WIND INSTRUMENTS	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET RAIN GAGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOMETER		
CITY - - NOTE: For the period January 1871 through July 19, 1949, refer to previous editions.																
200 East Bay Street	7/19/49	Present	No change	32° 47'	79° 56'	9	92 X	6 X	5 X		3				X	There are some breaks in the record, especially during the Revolutionary War and the War between the States. Partial consolidation with AP November 1952; further consolidation of activities at AP in January 1957. Automatic wind records continued at Custom House locations plus two visual observations daily for synoptic report. X - Office not manned, ments removed Dec. 1985. Handar equipment (installed 7/18/85) remotes wind, precipitation, and temperature to Airport WSO.
AIRPORT																
Administration Building Municipal Airport 10 miles NW of P. O.	12/28/31	7/29/41	NA	32° 54'	80° 02'	44	38	NA a4	4	NA	NA	NA	3	NA	NA	a - Installed 5/25/35. Building Moved. b - Effective 1/2/45. c - Raised 1/14/52. d - Installed 2/1/54. e - New inst. installed at center of airfield 2000' W of administration building 10/6/58. f - Installed on roof 12/31/58. g - Moved to evap. sta. 450' NE of admin. bldg. 3/12/59. h - Telepsychrometer (5') 10/1/48-10/8/59 & 12/4/59-12/12/59. i - Moved to evap. sta. 450 ft. NE of admin. bldg. 12/31/59. j - Moved to evap. sta. 450 ft. NE of admin. bldg. 6/1/60. k - Commissioned on field site 6/1/60. m - Effective 6/1/60. n - Moved to roof 6/1/64. p - Moved to roof 8/1976. q - Minor adjustment 7/1981. r - Not moved. t - Relocated to new site 5/26/82. u - Relocated to new site 6/1/82. v - Type change 6/5/85. w - Minor adjustment 10/15/87.
Weather Bureau Building Municipal Airport	7/29/41	12/17/42	Adjacent to Admn. Bldg.	32° 54'	80° 02'	43	30	5	5	NA	NA	NA	3	NA	NA	
Weather Bureau Building Municipal Airport	12/17/42	8/11/49	900 ft. SE	32° 54'	80° 02'	41	30 b38	5	5	NA	NA	NA	3	NA	NA	
New Administration Bldg Municipal Airport+	8/11/49	6/7/82	2600 ft.NW	32° 54'	80° 02'	41 m40	73 c77 e20	5 j5	5 j5 n18	NA f25	NA	NA d4 g5 p18 q18	4 i4 q4	h n k4	NA	
International AP (Effective 1974)																
NWS Building International AP	6/7/82	10/01/95	0.25 mi. S	32° 54'	80° 02'	40	r20 w20	t5	t5	u7	u4	t5	t5	t6 v6	NA	
Charleston Int'l AP	10/01/95	Present	NA	32°54'	80°02'	44									S	ASOS Commissioned 10/01/95

SUBSCRIPTION:
Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801.
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CORRECTIVE MEASURES STUDY WORK PLAN

Zone I

Charleston Naval Complex
North Charleston, South Carolina

SUBMITTED TO
U.S. Navy Southern Division
Naval Facilities Engineering Command

PREPARED BY
CH2M-Jones

May 2002

Revision 1
Contract N62467-99-C-0960
158814.ZI.PR.00

Certification Page for Corrective Measures Study Work Plan (Revision 1) – Zone I

I, Dean Williamson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

P.E. No. 21428

Dean Williamson, P.E.

5/2/2002

Date

13.0 CMS Work Plan for SWMU 177/RTC

This section summarizes the results and conclusions from the soil and groundwater investigations conducted at SWMU 177/RTC, which were reported in the *Zone I RFI Report, Revision 0* (EnSafe, 1999), Section 10.12, and as amended by the *Zone I RFI Report Addendum, Revision 1* (CH2M-Jones, 2001). Figure 13-1 presents the site features and RFI sample locations.

As part of the Zone I RFI, four surface soil and subsurface soil investigations and two groundwater sampling events were conducted at SWMU177/RTC. The RFI report presented the results of the investigations and conclusions concerning contamination and risk, as summarized in Sections 13.1 and 13.2 of this CMS Work Plan. A further evaluation of COCs is provided in Section 13.3 of this work plan.

13.1 Background

SWMU 177/RTC consisted of two adjacent buildings, both designated as Building RTC-4. The original RTC-4 was a 24 x 60-foot metal structure used to house heavy equipment, including backhoes and trackhoes. The designation RTC-4 was also given to the newer building, which was constructed next to the original RTC-4. The newer RTC-4 was used to store lawn mowers and other lawn maintenance equipment. This unit was designated as a SWMU due to oil spillage associated with operations at the two buildings. Visual inspections during the RFA identified several areas of stained soil and concrete in and around the two buildings. These buildings were both less than 50 feet from the Cooper River.

This area was included in a lease agreement between the Navy and the National Oceanographic and Atmospheric Administration (NOAA) in the spring of 1995. Since taking over this area, NOAA has removed both buildings and installed a diesel fuel aboveground storage tank (AST) and three generators at the site.

The area is zoned for business use (B-2).

13.2 RFI Investigation Results

13.2.1 Soil Investigation Results

As part of the RFI field investigation, surface and subsurface soils were collected (see Figure 13-1) during four sampling events conducted in 1995, 1996 and 1998, and analyzed for the parameters listed in Table 13-1.

13.2.1.1 Surface Soils

Twenty-nine surface soil samples were collected during the four sampling events (see Table 13-1). Surface soil sample analytical results were evaluated relative to the EPA Region III RBC. Based on the analysis presented in the RFI report, BEQs in surface soil were identified as COCs under the unrestricted land use scenario.

13.2.1.2 Subsurface Soils

Sixteen subsurface soil samples were collected during the four sampling events and analyzed for various parameters as shown in Table 13-1. Subsurface soil sample analytical results were evaluated relative to EPA Region III unrestricted and industrial risk-based concentration and SSLs with a DAF=10. Based on the analysis presented in the RFI report, Sample I177SB0087 exceeded the reported BEQ Region III SSL of 1.6 mg/kg[12]. As a result of the screening process and subsequent risk analysis, BEQs were identified as COCs for subsurface soils under the unrestricted land use scenario.

13.2.2 Groundwater

Shallow groundwater at this site flows northward toward the Cooper River, with contours that essentially duplicate the shoreline (see Figure 13-2).

Two shallow monitoring wells were installed as part of the RFI investigation. During two sampling events, groundwater samples were obtained from both of the new shallow wells, plus grid well pair IGDIGW016/IGDIGW016D, and analyzed for various parameters (see Table 13-2). The grid well pair was sampled during four sampling events for VOCs, SVOCs, pesticides/PCBs, cyanide, metals, chloride, sulfate, and TDS.

[12] CH2M-Jones has not been able to establish the source of the 1.6 mg/kg Region III SSL used in the RFI report. However, this criteria was presented for comparative purposes in Table 10.12.2 as a Region III RBC and in Table 10.12.4 as a soil-to-groundwater SSL.

Constituents detected in the groundwater samples were evaluated relative to MCLs, tap water RBCs, and Zone I groundwater BRCs. The following sections set out the findings as presented in the RFI report.

13.2.2.1 Shallow Groundwater

Analytes detected in shallow groundwater samples were evaluated in the RFI report. As a result of the screening process and subsequent risk analysis, no COCs for shallow groundwater were identified at SWMU 177/RTC.

13.2.2.2 Deep Groundwater

Analytes detected in deep groundwater samples from grid well IGDIGW016D were evaluated in the RFI report. As a result of the screening process and subsequent risk analysis, no COCs for deep groundwater were identified at SWMU 177/RTC.

13.2.3 RFI Risk Summary

Based on unrestricted and industrial land use scenarios, the following COCs were identified in the RFI report:

Surface Soil: BEQs
Subsurface Soil: BEQs

13.2.4 Recommendations from *Zone I RFI Report, Revision 0*

13.2.4.1 Soil

EnSafe assumed that future land use would be unrestricted and recommended a CMS for soils, considering no action, excavation with offsite disposal, and containment/capping options.

13.2.4.2 Groundwater

No groundwater COCs were identified; therefore, NFA for groundwater was recommended in the RFI report.

13.3 COPC/COC Refinement

The COCs identified in the RFI include BEQs in surface and subsurface soil, which are further evaluated in the following sections. In addition, concentrations of VOCs detected in soils were rescreened using an SSL based on a DAF=1.

13.3.1 Surface Soil

13.3.1.1 Rescreening of Surface Soil VOC Data Based on SSL (DAF=1)

The results following rescreening of the VOCs detected in surface soils using an SSL with a DAF=1 indicated that there were two VOCs at concentrations exceeding their respective SSLs: methylene chloride and 1,1,2,2-Tetrachloroethane (see Table 13-3). Each of these compounds are discussed below.

Methylene Chloride

Methylene chloride was detected in 2 of 29 surface soil samples and at a maximum concentration of 12 µg/kg. Methylene chloride is a common laboratory contaminant, so its presence may be indicative of laboratory contamination. In addition, methylene chloride was not detected in groundwater at the site, indicating that significant leaching into groundwater has not occurred. Consequently, methylene chloride is not considered a COC for soils at SWMU 177 /RTC.

1,1,2,2-Tetrachloroethane

1,1,2,2-Tetrachloroethane was detected in only 1 of 29 surface soil samples (0.002 mg/kg at I177SB017), and it was not detected in either subsurface soil or groundwater. Given the single detection (<5 percent of the samples) and its absence in subsurface soil and groundwater, 1,1,2,2,-Tetrachloroethane is not considered a COC at SWMU 177/RTC.

13.3.1.2 BEQs in Surface Soil

BEQs were detected in 7 of 27 samples of surface soil, with a maximum detected value of 1.459 mg/kg (I177SB010) (see Table 13-4). The base-wide reference concentration for BEQs in surface soil is 1.304 *mg*/kg. The maximum detected value of 1.459 mg/kg was the only sample that exceeded the base-wide reference concentration.

Although the maximum concentration of BEQs in surface soil exceeded the base-wide reference concentration, the other site samples were indicative of background conditions at the site. In addition, all but one subsurface soil sample were below both the base-wide reference concentration and the SSL value. The single subsurface soil exceedance occurred at sample location I177SB007. In addition, the entire site area is paved with asphalt. It is not likely that the elevated concentration of BEQs in surface soil represents site constituents, given the numerous anthropogenic sources of BEQs at the facility. BEQs, are not considered a COC in surface soil at SMWU 177.

13.3.2 Subsurface Soils

BEQs were identified as the only COCs in the RFI report.

13.3.2.1 Rescreening of Subsurface Soil VOC Data Based on SSL (DAF=1)

The results following rescreening of the VOCs detected in subsurface soils using an SSL with a DAF=1 indicated that there was only one VOC at a concentration exceeding its SSL: methylene chloride (see Table 13-4).

Methylene Chloride

Methylene chloride was detected in 2 of 16 subsurface soil samples with a maximum concentration of 15 µg/kg. Methylene chloride is a common laboratory contaminant, so its presence may be indicative of laboratory contamination. In addition, methylene chloride was not detected in groundwater at the site, indicating that significant leaching into groundwater has not occurred. Consequently, methylene chloride is not considered a COC for soils at SWMU 177/RTC.

13.3.2.2 BEQs in Subsurface Soil

BEQs were detected in only 1 of 16 samples of subsurface soil, with a maximum detected value of 2.899 mg/kg (I177SB007) (see Table 13-6). The base-wide reference concentration for BEQs in subsurface soil is 1.400 *mg*/kg. The maximum detected value of 2.899 mg/kg was the only sample that exceeded the base-wide reference concentration and was the only detection of BEQs in the subsurface soils. BEQs were not detected in the surface soil sample collected at the same location (detection limit = 0.439 mg/kg).

Although the maximum concentration of BEQs in subsurface soil exceeded the base-wide reference concentration, all other site samples were non-detects. In addition, the entire site area is paved with asphalt. It is not likely that the elevated concentration of BEQs in surface soil represents site constituents, given the numerous anthropogenic sources of BEQs at the facility. BEQs are not considered a COC in subsurface soil at SMWU 177.

13.2.3 Groundwater

No COPCs or COCs were identified in groundwater at SWMU 177/RTC. Therefore, for future industrial/commercial land use, no further actions are necessary for groundwater.

13.3.4 COPC/COC Refinement Summary

In summary, there are no COCs at SWMU 177/RTC in soil or groundwater. Therefore, the site is recommended for NFA.

13.4 Summary of Information Related to Site Closeout Issues

13.4.1 RFI Status

The RFI report, as amended by the RFI Report Addendum, is complete.

13.4.2 Presence of Inorganics in Groundwater

For the purpose of site closeout documentation, the inorganics in groundwater issue refers to the occasional or intermittent detection of several metals (primarily arsenic, thallium, and antimony) in groundwater at concentrations above the applicable MCL, preceded or followed by detection of these same metals below the MCL or below the practicable quantitation limit. These constituents are addressed in Section 13.3 above.

13.4.3 Potential Linkage to SWMU 37, Investigated Sanitary Sewers at the CNC

Data indicate that SWMU 177/RTC was never connected to the sanitary sewer system. Therefore, there are no concerns regarding connections to the sanitary sewer. Further evaluation of this issue is not warranted.

13.4.4 Potential Linkage to AOC 699, Investigated Storm Sewers at the CNC

No direct connection of SWMU 177/RTC to the storm sewer is known to exist. No COCs requiring further evaluation are present at the site. Further evaluation of this issue is not warranted.

13.4.5 Potential Linkage to AOC 504, Investigated Railroad Lines at the CNC

The area associated with SWMU 177/RTC is located approximately 4,350 feet west-northwest of the nearest railroad line (located in Zone E). There is no known linkage between SWMU 177/RTC and the investigated railroad lines of AOC 504, and further evaluation of this issue is not warranted.

13.4.6 Potential Migration Pathways to Surface Water Bodies at the CNC

The nearest surface water body to SWMU 177/RTC is the Cooper River, which lies approximately 10 feet northwest of the unit. The only potential migration pathway from the site to surface water is via overland flow via stormwater runoff. Since the entire site is covered with pavement, which eliminates contact of surface soil with stormwater, and no COCs were identified at the site, further evaluation of a potential pathway for contaminant

migration via stormwater runoff is not warranted. Similarly, runoff directed to the storm sewer system, which discharges to the Cooper River, does not contact the surface soil.

13.4.7 Potential Contamination in Oil/Water Separators (OWSs)

There are no OWSs associated with SWMU 177/RTC. Therefore, there are no concerns regarding connections to the sanitary sewer, and further evaluation of this issue is not warranted. In addition, there is no reference to an OWS at this facility in the *Oil Water Separator Data* report (Department of the Navy, September 2000).

13.4.8 Land Use Control Management Plan

The COC refinement did not identify any COCs at SWMU 177/RTC. This evaluation was based on a unrestricted land use classification. Therefore, land use controls are not necessary.

13.5 CH2M-Jones Recommendations

Evaluation of the primary media of concern (surface soils, subsurface soils, and groundwater) indicated that there were no issues associated with the historical operation of, or releases from, this unit. Based on a review of COPCs/COCs in Section 13.3, no COCs were identified in soil or groundwater.

The RFI report concluded that CMS activities were necessary for soil. However, CH2M-Jones has re-evaluated the risks posed by the identified COCs and determined that no COCs exist at SWMU 177/RTC. Therefore, this site is recommended for NFA.

TABLE 13-1
RFI Soil Sampling Summary
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sampling event	Sampling Date	Samples Collected	Sample Analyses
1	05/26/95	Upper - 10 (10)	Standard Suite
		Duplicate - 2	Standard Suite, Dioxins
2	06/07/96	Upper - 7	Standard Suite, DRO, GRO, Dioxins
		Lower - 6	Standard Suite, DRO, GRO, Dioxins
3	04/03/98	Upper - 8	VOCs, SVOCs
		Lower - 6	VOCs, SVOCs
4	06/17/98	Upper - 4	VOCs, SVOCs
		Lower - 4	VOCs, SVOCs

Notes:
( ) = Parentheses indicate the number of samples proposed.
Standard Suite = VOCs, SVOCs, metals, cyanide, pesticides, and PCBs were analyzed at DQO Level III.

1

TABLE 13-2
RFI Groundwater Sampling Summary
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sampling Round	Sampling Date	Wells Sampled	Sample Analyses
1	04/15/98	177001 177002	VOCs, SVOCs
2	08/17/98	177001 177002	VOCs, SVOCs, metals

2

TABLE 13-4
BEQs in Surface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Station	Sample ID	Sample Date	BEQ Result (µg/kg)	Qualifier
		BKGD	1,304	
I177SB001	177SB00101	06/07/1996	428	U
I177SB002	177SB00201	06/07/1996	416	U
I177SB003	177SB00301	06/07/1996	428	U
I177SB004	177SB00401	06/07/1996	393	U
I177SB005	177SB00501	06/07/1996	428	U
I177SB006	177SB00601	06/10/1996	404	U
I177SB007	177SB00701	06/07/1996	439	U
I177SB008	177SB00801	04/03/1998	416	U
I177SB009	177SB00901	04/03/1998	4,160	U
I177SB010	177SB01001	04/03/1998	1,459	=
I177SB012	177SB01201	04/03/1998	283	=
I177SB013	177SB01301	04/03/1998	241	=
I177SB014	177SB01401	04/03/1998	411	=
I177SB015	177SB01501	04/03/1998	428	U
I177SB016	177SB01601	06/17/1998	402	=
I177SB017	177SB01701	06/17/1998	404	U
I177SB018	177SB01801	06/17/1998	274	=
I177SB019	177SB01901	06/17/1998	2,195	U
IRTCSB002	RTCSB00201	05/26/1995	714	U
IRTCSB003	RTCSB00301	05/26/1995	713	U
IRTCSB004	RTCSB00401	05/26/1995	702	U
IRTCSB005	RTCSB00501	05/26/1995	731	U
IRTCSB006	RTCSB00601	05/26/1995	720	U
IRTCSB007	RTCSB00701	05/26/1995	643	U
IRTCSB008	RTCSB00801	05/26/1995	643	U
IRTCSB009	RTCSB00901	05/26/1995	643	U
IRTCSB010	RTCSB01001	05/26/1995	422	=

= Chemical is detected at concentration shown.
U Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL).
µg/kg Microgram per kilogram

TABLE 13-5
VOCs Detected in Subsurface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		Ethylbenzene Result (mg/kg)	Ethylbenzene Qualifier	Naphthalene Result (mg/kg)	Naphthalene Qualifier	Toluene Result (mg/kg)	Toluene Qualifier	Xylenes, Total Result (mg/kg)	Xylenes, Total Qualifier
			SSL	0.7000		4		0.6000		NA	
			SB BKGD	NA		NA		NA		NA	
I177SB001	177SB00102	02/05/01		0.0109	=	0.0200	J	0.0122	=	0.9830	=
I177SB002	177SB00202	06/07/96		0.0020	U	0.4000	U	0.0020	U	0.0030	U
	177SB00202	06/07/96		0.0060	U	0.0010	U	0.0060	U	0.0060	U
	177SB00224	02/05/01		0.0022	U	0.0011	U	0.0022	U	0.0033	U
I177SB003	177SB00302	06/07/96		0.0070	U	0.4400	U	0.0070	U	0.0070	U
I177SB004	177SB00402	06/07/96		0.0060	U	0.3900	U	0.0060	U	0.0060	U
I177SB005	177SB00502	06/07/96		0.0060	U	0.4100	U	0.0060	U	0.0060	U
I177SB006	177SB00602	06/10/96		0.0060	U	0.4200	U	0.0060	U	0.0060	U
I177SB007	177SB00702	06/07/96		0.0060	U	0.4200	U	0.0060	U	0.0060	U
I177SB008	177SB00802	04/03/98		0.0061	U	0.4000	U	0.0061	U	0.0061	U
I177SB009	177SB00902	04/03/98		0.0009	J	0.4000	U	0.0008	J	0.0043	J
I177SB012	177SB01202	04/03/98		0.0067	U	0.4400	U	0.0067	U	0.0067	U
I177SB013	177SB01302	04/03/98		0.0011	J	0.4100	U	0.0062	U	0.0047	J
I177SB014	177SB01402	04/03/98		0.0064	U	0.4200	U	0.0008	J	0.0032	J
I177SB015	177SB01502	04/03/98		0.0059	U	0.3900	U	0.0059	U	0.0024	J
I177SB016	177SB01602	06/17/98		0.0060	U	0.4200	U	0.0060	U	0.0060	U
I177SB017	177SB01702	06/17/98		0.0070	U	0.4700	U	0.0070	U	0.0070	U
I177SB018	177SB01802	06/17/98		0.0060	UJ	0.4200	U	0.0060	UJ	0.0060	UJ
I177SB019	177SB01902	06/17/98		0.0070	UJ	0.4600	U	0.0070	UJ	0.0070	UJ

TABLE 13-5 (CONTINUED)
VOCs Detected in Subsurface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		1,2-Dichloroethene (total) Result (mg/kg)	Qualifier	Carbon Disulfide Result (mg/kg)	Qualifier	Acetone Result (mg/kg)	Qualifier	Methyl ethyl ketone (2-Butanone) Result (mg/kg)	Qualifier
			SSL	0.02		2.0000		0.8000		NA	
			SB BKGD	NA		NA		NA		NA	
I177SB001	177SB00102	02/05/01									
I177SB002	177SB00202	06/07/96		0.0060	U	0.0060	U	0.0200	U	0.0120	U
	177SB00202	06/07/96									
	177SB00224	02/05/01									
I177SB003	177SB00302	06/07/96		0.0070	U	0.0070	U	0.0280	J	0.0140	U
I177SB004	177SB00402	06/07/96		0.0060	U	0.0060	U	0.0680	U	0.0120	U
I177SB005	177SB00502	06/07/96		0.0060	U	0.0020	J	0.0440	U	0.0060	J
I177SB006	177SB00602	06/10/96		0.0060	U	0.0060	U	0.0390	U	0.0130	U
I177SB007	177SB00702	06/07/96		0.0060	U	0.0060	U	0.0130	U	0.0130	U
I177SB008	177SB00802	04/03/98		0.0061	U	0.0061	U	0.0610	U	0.0300	U
I177SB009	177SB00902	04/03/98		0.0060	U	0.0060	U	0.0370	J	0.0071	J
I177SB012	177SB01202	04/03/98		0.0067	=	0.0067	U	0.0450	J	0.0094	J
I177SB013	177SB01302	04/03/98		0.0062	U	0.0062	U	0.0470	J	0.0075	J
I177SB014	177SB01402	04/03/98		0.0064	U	0.0064	U	0.1300	=	0.0270	J
I177SB015	177SB01502	04/03/98		0.0059	U	0.0059	U	0.0220	J	0.0290	U
I177SB016	177SB01602	06/17/98		0.0060	U	0.0060	U	0.0220	U	0.0060	U
I177SB017	177SB01702	06/17/98		0.0070	U	0.0070	U	0.0210	U	0.0070	U
I177SB018	177SB01802	06/17/98		0.0060	UJ	0.0030	J	0.0220	UJ	0.0060	UJ
I177SB019	177SB01902	06/17/98		0.0070	UJ	0.0040	J	0.0310	UJ	0.0030	J

TABLE 13-5 (CONTINUED)
VOCs Detected in Subsurface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		Methylene Chloride Result (mg/kg)	Methylene Chloride Qualifier	o-Xylene Result (mg/kg)	o-Xylene Qualifier	m+p Xylene Result (mg/kg)	m+p Xylene Qualifier
			SSL	0.0010		9		10	
			SB BKGD	NA		NA		NA	
I177SB001	177SB00102	02/05/01				0.5010	=	0.4820	=
I177SB002	177SB00202	06/07/96		0.0220	U	0.0020	U	0.0040	U
	177SB00202	06/07/96							
	177SB00224	02/05/01				0.0022	U	0.0044	U
I177SB003	177SB00302	06/07/96		**0.0150**	=				
I177SB004	177SB00402	06/07/96		0.0210	U				
I177SB005	177SB00502	06/07/96		0.0070	U				
I177SB006	177SB00602	06/10/96		0.0270	U				
I177SB007	177SB00702	06/07/96		0.0160	U				
I177SB008	177SB00802	04/03/98		0.0061	U				
I177SB009	177SB00902	04/03/98		0.0060	U				
I177SB012	177SB01202	04/03/98		0.0067	U				
I177SB013	177SB01302	04/03/98		0.0062	U				
I177SB014	177SB01402	04/03/98		0.0064	U				
I177SB015	177SB01502	04/03/98		0.0059	U				
I177SB016	177SB01602	06/17/98		0.0080	U				
I177SB017	177SB01702	06/17/98		0.0080	U				
I177SB018	177SB01802	06/17/98		0.0140	UJ				
I177SB019	177SB01902	06/17/98		0.0140	UJ				

=	Chemical is detected at concentration shown.
J	Chemical is detected at concentration below the method detection limit; the concentration is not known.
U	Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL).
UJ	Not detected; analytical detection limit is estimated.
mg/kg	Milligrams per kilograms

TABLE 13-6
BEQs in Subsurface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Station	Sample ID	Sample Date		BEQ Result (µg/kg)	Qualifier
			BKGD	1,400	
I177SB002	177SB00202	06/07/1996		462	U
I177SB003	177SB00302	06/07/1996		508	U
I177SB004	177SB00402	06/07/1996		451	U
I177SB005	177SB00502	06/07/1996		474	U
I177SB006	177SB00602	06/10/1996		485	U
I177SB007	177SB00702	06/07/1996		**2,899**	=
I177SB008	177SB00802	04/03/1998		462	U
I177SB009	177SB00902	04/03/1998		462	U
I177SB012	177SB01202	04/03/1998		508	U
I177SB013	177SB01302	04/03/1998		474	U
I177SB014	177SB01402	04/03/1998		485	U
I177SB015	177SB01502	04/03/1998		451	U
I177SB016	177SB01602	06/17/1998		485	U
I177SB017	177SB01702	06/17/1998		543	U
I177SB018	177SB01802	06/17/1998		485	U
I177SB019	177SB01902	06/17/1998		532	U

= Chemical is detected at concentration shown.
U Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL).
µg/kg Microgram per kilogram

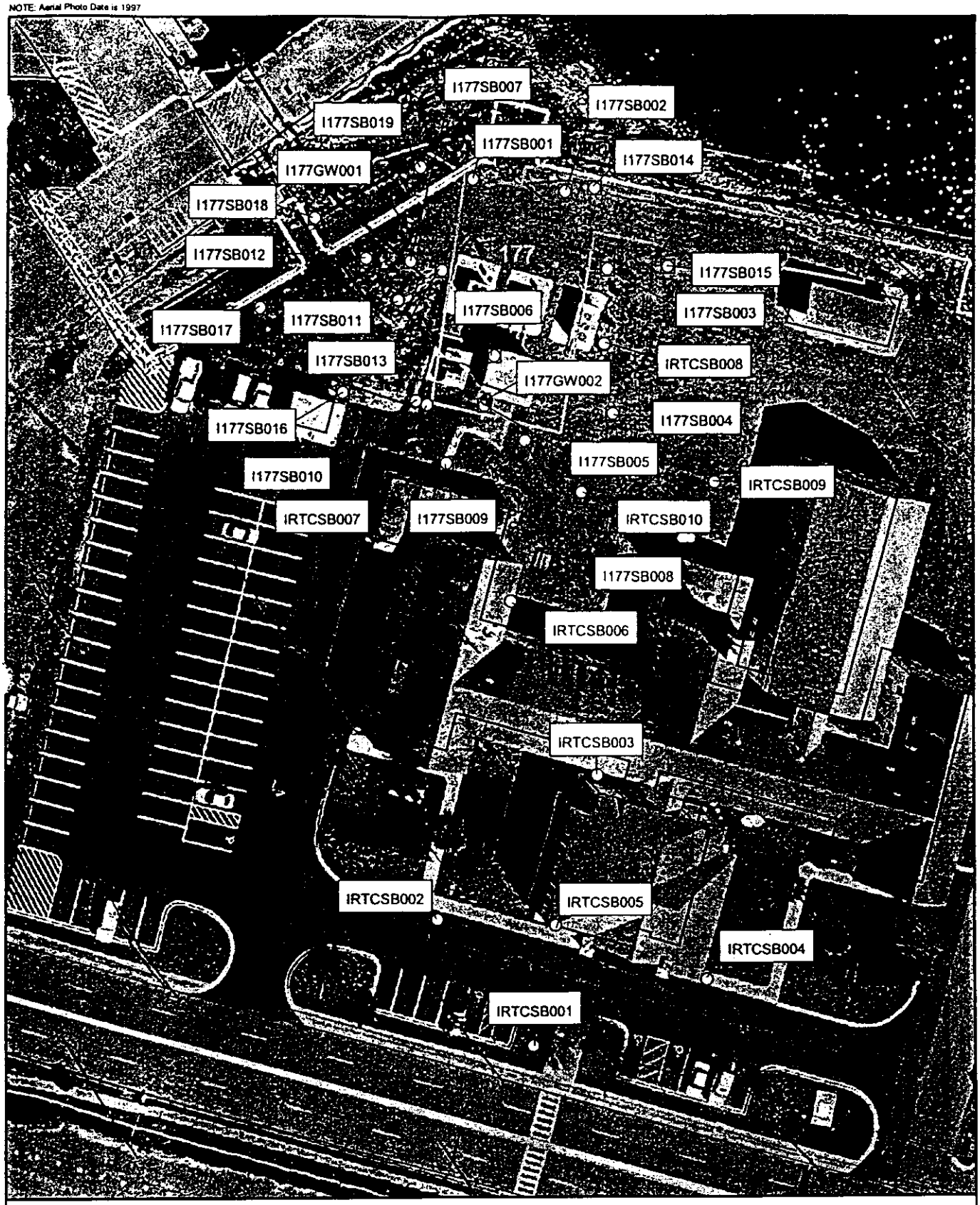

Figure 13-1
Sample and Test Location Map
SWMU 177/RTC
Zone I
Charleston Naval Complex

CH2MHILL

File Path: C:\18gis\Projects\Zone_I\AOC671\Aprs\aoc671.apr, Date: 19 Feb 2002 9:03, User: NMOUDRY, Figure 13-1 Sample and Test Location Map - SWMU 177

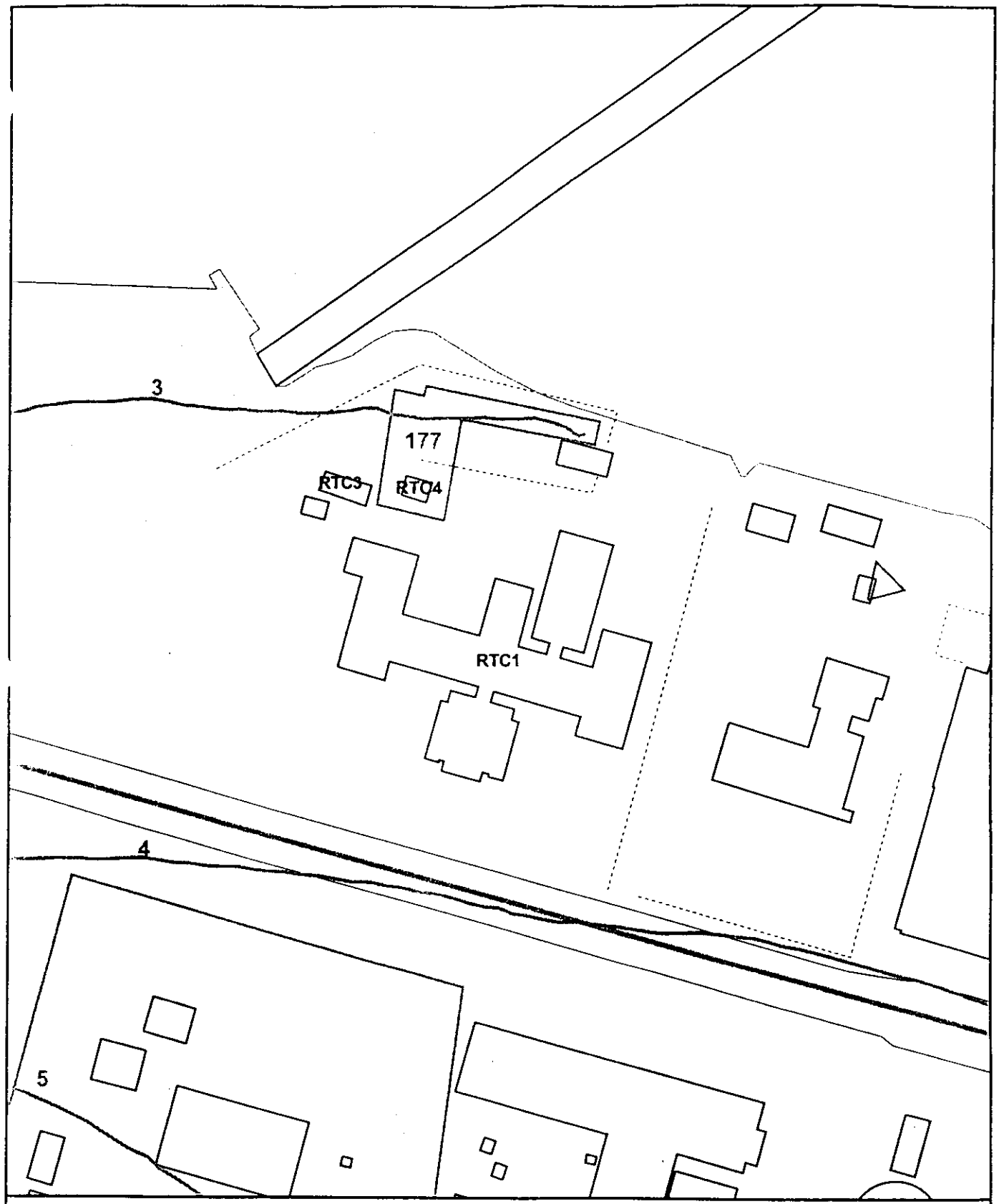

Figure 13-2
Shallow Groundwater Contour Map
SMWU 177 and RTC, Zone I
Charleston Naval Complex

CH2MHILL

File Path: C:\18gis\Projects\Zone_fgroundwaterfigs\zonelgroundwater_figures.apr, Date: 28 Dec 2001 8:17, User: NMOUDRY, Figure 13-2 Shallow Groundwater Contour Map

TABLE 13-3
VOCs Detected in Surface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Acetone		1,2-Dichloroethene (total)		2-Hexanone	
				Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier
			IND RBC	100.0000		20000.0000		41000.0000				20000.0000		1,800		8200.0000	
			RES RBC	12.0000		780.0000		1600.0000				780.0000		70.0000		310.0000	
			SSL	0.0020		0.7000		0.6000				0.8000		0.0190		NA	
			SS BKGD	NA		NA		NA		NA		NA		NA		NA	
I177SB001	177SB00101	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0180	J	0.0060	U	0.0110	UJ
	177SB00124	02/05/01		0.0024	U	0.0007	J	0.0010	J	0.0044	=						
I177SB002	177SB00201	06/07/96		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0110	UJ	0.0060	=	0.0110	UJ
I177SB003	177SB00301	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0110	UJ	0.0060	U	0.0110	UJ
I177SB004	177SB00401	06/07/96		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0080	U	0.0050	U	0.0100	U
I177SB005	177SB00501	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.1600	=	0.0060	U	0.0110	U
I177SB006	177SB00601	06/10/96		0.0050	U	0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0130	U	0.0050	U	0.0110	UJ
I177SB007	177SB00701	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0110	UJ	0.0060	U	0.0110	UJ
I177SB008	177SB00801	04/03/98		0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0540	UJ	0.0054	U	0.0270	U
I177SB009	177SB00901	04/03/98		0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0540	UJ	0.0054	U	0.0270	U
I177SB010	177SB01001	04/03/98		0.0008	J	0.0018	J	0.0019	J	0.0079	=	0.0560	U	0.0056	U	0.0280	U
I177SB011	177SB01101	04/03/98		0.0055	U	0.0008	J	0.0055	U	0.0055	U	0.0550	U	0.0055	U	0.0270	U
I177SB012	177SB01201	04/03/98		0.0056	U	0.0012	J	0.0008	J	0.0055	J	0.0560	U	0.0056	U	0.0280	U
I177SB013	177SB01301	04/03/98		0.0056	U	0.0013	J	0.0008	J	0.0068	=	0.0560	U	0.0056	U	0.0280	U
I177SB014	177SB01401	04/03/98		0.0056	U	0.0006	J	0.0056	U	0.0043	J	0.0560	U	0.0056	U	0.0280	U
I177SB015	177SB01501	04/03/98		0.0056	U	0.0056	U	0.0056	U	0.0046	J	0.0560	U	0.0056	U	0.0280	U
I177SB016	177SB01601	06/17/98		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U
I177SB017	177SB01701	06/17/98		0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0110	U	0.0050	UJ	0.0060	J
I177SB019	177SB01901	06/17/98		0.0060	UJ	0.0060	UJ	0.0060	UJ	0.0060	UJ	0.0080	U	0.0060	UJ	0.0060	UJ
IRTCSB002	RTCSB00201	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.0130	J	0.0510	U	0.0390	UJ
IRTCSB003	RTCSB00301	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.1000	UJ	0.0500	U	0.0390	UJ
IRTCSB004	RTCSB00401	05/26/95		0.0160	U	0.0160	U	0.0160	U	0.0220	U	0.0980	J	0.0490	U	0.0380	UJ
IRTCSB005	RTCSB00501	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	UJ	0.0230	UJ	0.0510	U	0.0400	U
IRTCSB006	RTCSB00601	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	U	0.1000	UJ	0.0510	U	0.0400	UJ
IRTCSB007	RTCSB00701	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	U	0.1300	J	0.0520	U	0.0400	UJ
IRTCSB008	RTCSB00801	05/26/95		0.0150	U	0.0150	U	0.0150	U	0.0200	U	0.0120	J	0.0460	U	0.0360	UJ
IRTCSB009	RTCSB00901	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.0080	J	0.0500	U	0.0390	UJ
IRTCSB010	RTCSB01001	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	UJ	0.0220	UJ	0.0500	U	0.0390	U

TABLE 13-3
VOCs Detected in Surface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Acetone		1,2-Dichloroethene (total)		2-Hexanone	
				Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier	Result (mg/kg)	Qualifier
			IND RBC	100.0000		20000.0000		41000.0000				20000.0000		1,800		8200.0000	
			RES RBC	12.0000		780.0000		1600.0000				780.0000		70.0000		310.0000	
			SSL	0.0020		0.7000		0.6000				0.8000		0.0190		NA	
			SS BKGD	NA		NA		NA		NA		NA		NA		NA	
I177SB001	177SB00101	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0180	J	0.0060	U	0.0110	UJ
	177SB00124	02/05/01		0.0024	U	0.0007	J	0.0010	J	0.0044	=						
I177SB002	177SB00201	06/07/96		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0110	UJ	0.0060	=	0.0110	UJ
I177SB003	177SB00301	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0110	UJ	0.0060	U	0.0110	UJ
I177SB004	177SB00401	06/07/96		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0080	U	0.0050	U	0.0100	U
I177SB005	177SB00501	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.1600	=	0.0060	U	0.0110	U
I177SB006	177SB00601	06/10/96		0.0050	U	0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0130	U	0.0050	U	0.0110	UJ
I177SB007	177SB00701	06/07/96		0.0060	U	0.0060	U	0.0060	U	0.0060	U	0.0110	UJ	0.0060	U	0.0110	UJ
I177SB008	177SB00801	04/03/98		0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0540	UJ	0.0054	U	0.0270	U
I177SB009	177SB00901	04/03/98		0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0540	UJ	0.0054	U	0.0270	U
I177SB010	177SB01001	04/03/98		0.0008	J	0.0018	J	0.0019	J	0.0079	=	0.0560	U	0.0056	U	0.0280	U
I177SB011	177SB01101	04/03/98		0.0055	U	0.0008	J	0.0055	U	0.0055	U	0.0550	U	0.0055	U	0.0270	U
I177SB012	177SB01201	04/03/98		0.0056	U	0.0012	J	0.0008	J	0.0055	J	0.0560	U	0.0056	U	0.0280	U
I177SB013	177SB01301	04/03/98		0.0056	U	0.0013	J	0.0008	J	0.0068	=	0.0560	U	0.0056	U	0.0280	U
I177SB014	177SB01401	04/03/98		0.0056	U	0.0006	J	0.0056	U	0.0043	J	0.0560	U	0.0056	U	0.0280	U
I177SB015	177SB01501	04/03/98		0.0056	U	0.0056	U	0.0056	U	0.0046	J	0.0560	U	0.0056	U	0.0280	U
I177SB016	177SB01601	06/17/98		0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U	0.0050	U
I177SB017	177SB01701	06/17/98		0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0050	UJ	0.0110	U	0.0050	UJ	0.0060	J
I177SB019	177SB01901	06/17/98		0.0060	UJ	0.0060	UJ	0.0060	UJ	0.0060	UJ	0.0080	U	0.0060	UJ	0.0060	UJ
IRTCSB002	RTCSB00201	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.0130	J	0.0510	U	0.0390	UJ
IRTCSB003	RTCSB00301	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.1000	UJ	0.0500	U	0.0390	UJ
IRTCSB004	RTCSB00401	05/26/95		0.0160	U	0.0160	U	0.0160	U	0.0220	U	0.0980	J	0.0490	U	0.0380	UJ
IRTCSB005	RTCSB00501	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	UJ	0.0230	UJ	0.0510	U	0.0400	U
IRTCSB006	RTCSB00601	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	U	0.1000	UJ	0.0510	U	0.0400	UJ
IRTCSB007	RTCSB00701	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0230	U	0.1300	J	0.0520	U	0.0400	UJ
IRTCSB008	RTCSB00801	05/26/95		0.0150	U	0.0150	U	0.0150	U	0.0200	U	0.0120	J	0.0460	U	0.0360	UJ
IRTCSB009	RTCSB00901	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	U	0.0080	J	0.0500	U	0.0390	UJ
IRTCSB010	RTCSB01001	05/26/95		0.0170	U	0.0170	U	0.0170	U	0.0220	UJ	0.0220	UJ	0.0500	U	0.0390	U

TABLE 13-3
VOCs Detected in Surface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

Sample Station	ID	Date		1,1,2,2-Tetrachloroethane Result (mg/kg)	Qualifier	Methyl ethyl ketone (2-Butanone) Result (mg/kg)	Qualifier	Methyl isobutyl ketone (4-Methyl-2-pentanone Result (mg/kg)	Qualifier	Methylene Chloride Result (mg/kg)	Qualifier	Trichloroethylene (TCE) Result (mg/kg)	Qualifier	m+p Xylene Result (mg/kg)	Qualifier
			IND RBC	29.0000		120000.0000		16000.0000		760.0000		520			
			RES RBC	3.2000		4700.0000		630.0000		85.0000		58			
			SSL	0.0002		NA		NA		0.0010		3			
			SS BKGD	NA		NA		NA		NA		NA			
I177SB001	177SB00101	06/07/96		0.0060	U	0.0110	U	0.0110	U	0.0120	J	0.0060	U		
	177SB00124	02/05/01													
I177SB002	177SB00201	06/07/96		0.0050	U	0.0110	U	0.0110	U	0.0060	U	0.0050	U		
I177SB003	177SB00301	06/07/96		0.0060	U	0.0110	U	0.0110	U	0.0070	=	0.0060	U		
I177SB004	177SB00401	06/07/96		0.0050	U	0.0100	U	0.0100	U	0.0050	U	0.0050	U		
I177SB005	177SB00501	06/07/96		0.0060	U	0.0110	U	0.0110	U	0.0130	U	0.0030	J		
I177SB006	177SB00601	06/10/96		0.0050	U	0.0110	U	0.0110	UJ	0.0230	U	0.0030	J		
I177SB007	177SB00701	06/07/96		0.0060	U	0.0110	U	0.0110	U	0.0060	U	0.0020	J		
I177SB008	177SB00801	04/03/98		0.0054	U	0.0270	UJ	0.0270	U	0.0054	U	0.0054	U		
I177SB009	177SB00901	04/03/98		0.0054	U	0.0270	UJ	0.0270	U	0.0054	U	0.0054	U		
I177SB010	177SB01001	04/03/98		0.0056	U	0.0280	U	0.0280	U	0.0056	U	0.0056	U		
I177SB011	177SB01101	04/03/98		0.0055	U	0.0270	U	0.0270	U	0.0055	U	0.0055	U		
I177SB012	177SB01201	04/03/98		0.0056	U	0.0280	U	0.0280	U	0.0056	U	0.0056	U		
I177SB013	177SB01301	04/03/98		0.0056	U	0.0280	U	0.0280	U	0.0056	U	0.0056	U		
I177SB014	177SB01401	04/03/98		0.0056	U	0.0280	U	0.0280	U	0.0056	U	0.0056	U		
I177SB015	177SB01501	04/03/98		0.0056	U	0.0280	U	0.0280	U	0.0056	U	0.0056	U		
I177SB016	177SB01601	06/17/98		0.0050	U	0.0050	U	0.0050	U	0.0080	U	0.0050	U		
I177SB017	177SB01701	06/17/98		0.0020	J	0.0030	J	0.0060	J	0.0140	U	0.0020	J		
I177SB019	177SB01901	06/17/98		0.0060	UJ	0.0060	UJ	0.0060	UJ	0.0240	U	0.0060	UJ		
IRTCSB002	RTCSB00201	05/26/95		0.0110	U	0.0390	UJ	0.0280	U	0.0220	U	0.0220	U		
IRTCSB003	RTCSB00301	05/26/95		0.0110	U	0.0390	UJ	0.0280	U	0.0220	U	0.0220	U		
IRTCSB004	RTCSB00401	05/26/95		0.0110	U	0.0380	UJ	0.0270	U	0.0220	U	0.0220	U		
IRTCSB005	RTCSB00501	05/26/95		0.0110	U	0.0400	U	0.0280	U	0.0230	UJ	0.0230	U		
IRTCSB006	RTCSB00601	05/26/95		0.0110	U	0.0400	UJ	0.0280	U	0.0230	U	0.0230	U		
IRTCSB007	RTCSB00701	05/26/95		0.0110	U	0.0400	UJ	0.0290	U	0.0230	U	0.0230	U		
IRTCSB008	RTCSB00801	05/26/95		0.0100	U	0.0360	UJ	0.0260	U	0.0200	U	0.0200	U		
IRTCSB009	RTCSB00901	05/26/95		0.0110	U	0.0390	UJ	0.0280	U	0.0220	U	0.0220	U		
IRTCSB010	RTCSB01001	05/26/95		0.0110	U	0.0390	U	0.0280	U	0.0220	UJ	0.0220	U		

TABLE 13-3
VOCs Detected in Surface Soils
CMS Work Plan, SWMU 177/RTC, Zone I, Charleston Naval Complex

=	Chemical is detected at concentration shown.
J	Chemical is detected at concentration below the method detection limit; the concentration is not known.
U	Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL).
UJ	Not detected; analytical detection limit is estimated.
mg/kg	Milligrams per kilogram

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South Carolina Department of
Natural Resources

Paul A. Sandifer, Ph.D.
Director
John V. Miglarese
Deputy Director for
Marine Resources

June 28, 2002

Ms. Caren Wilhoit
SRI Interntional
333 Ravenswood Ave.
Menlo Park, CA 94025

REF: Proposed Facilities Expansion; NOAA Coastal Services Center
Cooper River - North Charleston, SC

Dear Ms. Wilhoit:

Personnel from the South Carolina Department of Natural Resources have reviewed the above referenced project and evaluated its impact on fisheries and wildlife habitat, water quality, recreation and other factors relating to the conservation of natural resources. No natural resources of specific concern, including state protected species, have been identified on the proposed project site and it is our opinion that the proposed work will not substantially alter the quality of the natural environment.

Sincerely,

for Robert E. Duncan
Environmental Programs Director

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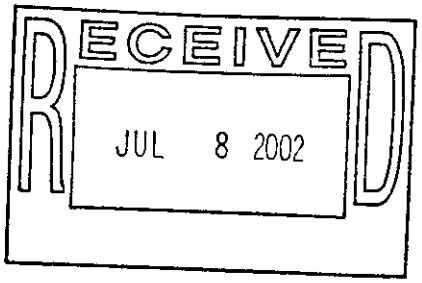

July 5, 2002

Ms. Caren Wilhoit
Research Analyst
SRI International
333 Ravenswood Avenue
Menlo Park, CA 94025

Re: National Oceanic and Atmospheric Administration
Coastal Services Center, North Charleston, SC

Dear Ms. Wilhoit:

Thank you for your letter of June 20, which we received on June 24, regarding the proposed expansion of NOAA's existing Coastal Services Center at 2224 South Hobson Avenue, North Charleston, South Carolina.

We concur with your assessment that no properties meeting listed in or determined eligible for listing in the National Register of Historic Places will be affected by the proposed undertaking.

We do want to point out that you did not complete the identification and assessment process required under Section 106 of the National Historic Preservation and its regulations at 36 CFR Part 800. The Area of Potential Effect is part of the former Charleston Naval Base Complex. As part of the proposed Base closure, the Navy entered into a Programmatic Agreement in 1995 with the SC State Historic Preservation Office and the Advisory Council on Historic Preservation. Four National Register eligible historic districts and four individually eligible properties were identified as part of the identification and evaluation process.

This information is not reflected in your June 20 letter. We are not going to request that you reassess potential effects; we have determined that no eligible properties or districts will be affected. Any future undertakings at the Base area should reference the Programmatic Agreement and the properties determined National Register eligible.

Please don't hesitate to call me at 803/896-6169 if you have questions.

Sincerely,

Nancy Brock, Coordinator
Review and Compliance Programs
State Historic Preservation Office

Cc: Mr. Don Couch
Navy Preservation Officer

List of State and Federal Threatened and Endangered Species and State Species of Concern Found in Charleston County, South Carolina

Species Name	State Status	Federal Status
Cooper's hawk (*Accipiter Cooperii*)	Species of Concern	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	Endangered
Northern cricket frog (*Acris crepitans crepitans*)	Species of Concern	
Bachman's sparrow (*Aimophila aestivalis*)	Species of Concern	
Seabeach amaranth (*Amaranthus pumilus*)	Threatened	Threatened
Flatwoods salamander (*Ambystoma cingulatum*)	Endangered	Threatened
Blue maiden-cane (*Amphicarpum muehlenbergianum*)	Species of Concern	
Purple silkyscale (*Anthaenantia rufa*)	Species of Concern	
Winter grape fern (*Botrychium lunarioides*)	Species of Concern	
Bearded grass-pink (*Calopogon barbatus*)	Species of Concern	
Bandana-of-the-Everglades (*Canna flaccida*)	Species of Concern	
Loggerhead sea turtle (*Caretta caretta*)	Threatened	Threatened
Cypress-knee sedge (*Carex decomposita*)	Species of Concern	
Wilson's plover (*Charadrius wilsonia*)	Threatened	
Shiny spikegrass (*Chasmanthium nitidum*)	Species of Concern	
Spotted turtle (*Clemmys guttata*)	Species of Concern	
Star-nosed mole (*Conylura cristata*)	Species of Concern	
Southeastern tickseed (*Coreopsis gladiata*)	Species of Concern	
Rafinesque's big-eared bat (*Corynorhinus rafinesqii*)	Endangered	
Piedmont flatsedge (*Cyperus tetragonus*)	Species of Concern	
Black-throated green warbler (*Dendoica virens*)	Species of Concern	
American swallow-tailed kite (*Elanoides forficatus*)	Endangered	
Viviparous spike-rush (*Eleocharus vivapara*)	Species of Concern	
Hollow joe-pye weed (*Eupatorium fistulosum*)	Species of Concern	
Godfrey's privet (*Forestiera godfreyi*)	Species of Concern	
Elliot's milkpea (*Galactia elliottii*)	Species of Concern	
Bald eagle (*Haliaeetus leucocephalus*)	Endangered	Threatened
Southeastern sneezeweed (*Helenium pinnatifidum*)	Species of Concern	
Southern hognose snake (*heterodon simus*)	Species of Concern	
Mississippi kite (*Ictinia mississippiensis*)	Species of Concern	
Large-stem morning-glory (*Ipomoea macrorhiza*)	Species of Concern	
Beach morning-glory (*Ipomoea stolonifera*)	Species of Concern	
Walter's iris (*Iris hexagona*)	Species of Concern	
Hoary bat (*Lasiurus cinereus*)	Species of Concern	
Southern lepuropetalon (*Lepuropetalon spathulatum*)	Species of Concern	
Swainson's warbler (*Limnothlypis swainsonii*)	Species of Concern	
Southern twayblade (*Listera austeralis*)	Species of Concern	
Pondspice (*Litsea astivalis*)	Species of Concern	
Boykin's lobelia (*Lobelia boykinii*)	Species of Concern	
Lance-leaf seedbox (*Ludwigia lanceolata*)	Species of Concern	

List of State and Federal Threatened and Endangered Species and State Species of Concern Found in Charleston County, South Carolina

Species Name	State Status	Federal Status
Lance-leaf loosestrife (*Lysimachia hybrida*)	Species of Concern	
Red-headed woodpecker (*Malanerpes erythrocaphalus*)	Species of Concern	
Meadow vole (*Microtus pennsylvanicus*)	Species of Concern	
Eastern coral snake (*Micrurus fulvius*)	Species of Concern	
Bentgrass (=hairgrass)(*Muhlenbergia filipes*)	Species of Concern	
Wood stork (*Mycteria americana*)	Endangered	Endangered
Southeastern myotis (*Myotis austeroriparius*)	Threatened	
Eastern woodrat (*Neotoma floridana*)	Species of Concern	
Island glass lizard (*Ophisaurus compressus*)	Species of Concern	
One-flowered broomrape (*Orobanche uniflora*)	Species of Concern	
Canby's dropwort (*Oxypolis canbyi*)	Endangered	Endangered
Bead-grass (*Paspalum bifidum*)	Species of Concern	
Brown pelican (*Pelecanus occidentalis*)	Species of Concern	
Spoon-flower (*Peltandra sagittifolia*)	Species of Concern	
Harbor seal (*Phoca vitulina*)	Species of Concern	
Slender-leaved dragon-head (*Physostegia leptophylla*)	Species of Concern	
Red-cockaded woodpecker (*Picoides borealis*)	Endangered	Endangered
Climbing fetter-bush (*Pieris phillyreifolia*)	Species of Concern	
Pineland plantain (*Plantago sparsiflora*)	Species of Concern	
Yellow fringeless orchid (*Platanthera integra*)	Species of Concern	
Glossy ibis (*Plegadis falcinellus*)	Threatened	
Dwarf siren (*Pseudobranchus striatus*)	Threatened	
Whisk fern (*Psilotum nudum*)	Species of Concern	
Crested fringe orchid (*Pteroglossaspis ecristata*)	Species of Concern	
Gopher frog (*Rano capito*)	Species of Concern	
Awned meadowbeauty (*Rhexia aristosa*)	Species of Concern	
Horned beakrush (*Rhynchospora careyana*)	Species of Concern	
Harper beakrush (*Rhynchospora harperi*)	Species of Concern	
Drowned hornedrush (*Rhynchospora inundata*)	Species of Concern	
Tiny-leaved buckthorn (*Sageretia minutiflora*)	Species of Concern	
Sweet pitcher-plant (*Sarracenia rubra*)	Species of Concern	
Chaffseed (*Schwalbea Americana*)	Endangered	Endangered
Eastern fox squirrel (*Sciurus niger*)	Species of Concern	
Baldwin nutrush (*Scleria baldwinii*)	Species of Concern	
Black swamp snake (*Seminatrix pygaea*)	Species of Concern	
Lace-lip ladies-tresses (*Spuranthes laciniata*)	Species of Concern	
Least-tern (*Sterna antillarum*)	Threatened	
Nodded pogonia (*Triphora trianthophora*)	Species of Concern	
Barn owl (*Tyto alba*)	Species of Concern	

List of State and Federal Threatened and Endangered Species and State Species of Concern Found in Charleston County, South Carolina

Species Name	State Status	Federal Status
Black bear (*Ursus americanus)*	Species of Concern	
Elliot yellow-eyed grass (*Xyris elliottii*)	Species of Concern	

Source: South Carolina Department of Natural Resources. *South Carolina Rare, Threatened, & Endangered Species Inventory: Species Found in Charleston County*, http://www.dnr.state.sc.us/pls/heritage/county_species.list?pcounty=charleston (September 10, 2001).

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June 21, 2002

Mr. Roger Banks
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

RE: Proposed Facilities Expansion; National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center (CSC), North Charleston, South Carolina

Dear Mr. Banks:

The National Oceanic and Atmospheric Administration (NOAA) proposes to expand its existing Coastal Services Center (CSC) facilities located at 2224 South Hobson Avenue in the city of North Charleston, South Carolina. SRI International is preparing an environmental assessment of this proposed action in conformance with the National Environmental Policy Act. We seek the U.S. Fish and Wildlife Service's opinion regarding possible impacts to protected species.

Proposed Action

The CSC serves the nation's coastal resource managers by providing supporting information, technology, and training. Due to anticipated growth in CSC staffing and program capabilities, two new buildings totaling 21,560 net square feet (sq ft) will be constructed adjacent to NOAA's existing tw about 10,780 sq ft would be added to the exi

CSC is located within the former Charle River waterfront in the city of North Charles topographic elevation at the proposed projec mean sea level (AMSL). The coordinates at 58.9" North and longitude 79° 56' 33.0" We 2 is an aerial photograph of the NOAA site a proposed facilities are provided in Figures 4 conditions are provided in Figure 5.

The U.S. Fish and Wildlife Service (USFWS) has reviewed the plans for this proposed project.

☑ **It is our opinion that the proposed action is not likely to have reasonably foreseeable adverse effects on resources under the jurisdiction of the USFWS that are currently protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.)(Act). Therefore, no further action is required under Section 7(a)(2) of the Act.**

☑ **It is our opinion that the proposed action is not likely to have significant adverse wetland impacts. Please contact the Corps of Engineers for more information.**

U.S. Fish and Wildlife Service, 176 Croghan Spur Road, Suite 200, Charleston, SC 29407, (843) 727-4707

FWS Log No. 4602I320 **Date** 7/22/02

Field Supervisor acting Paula J. Sisson

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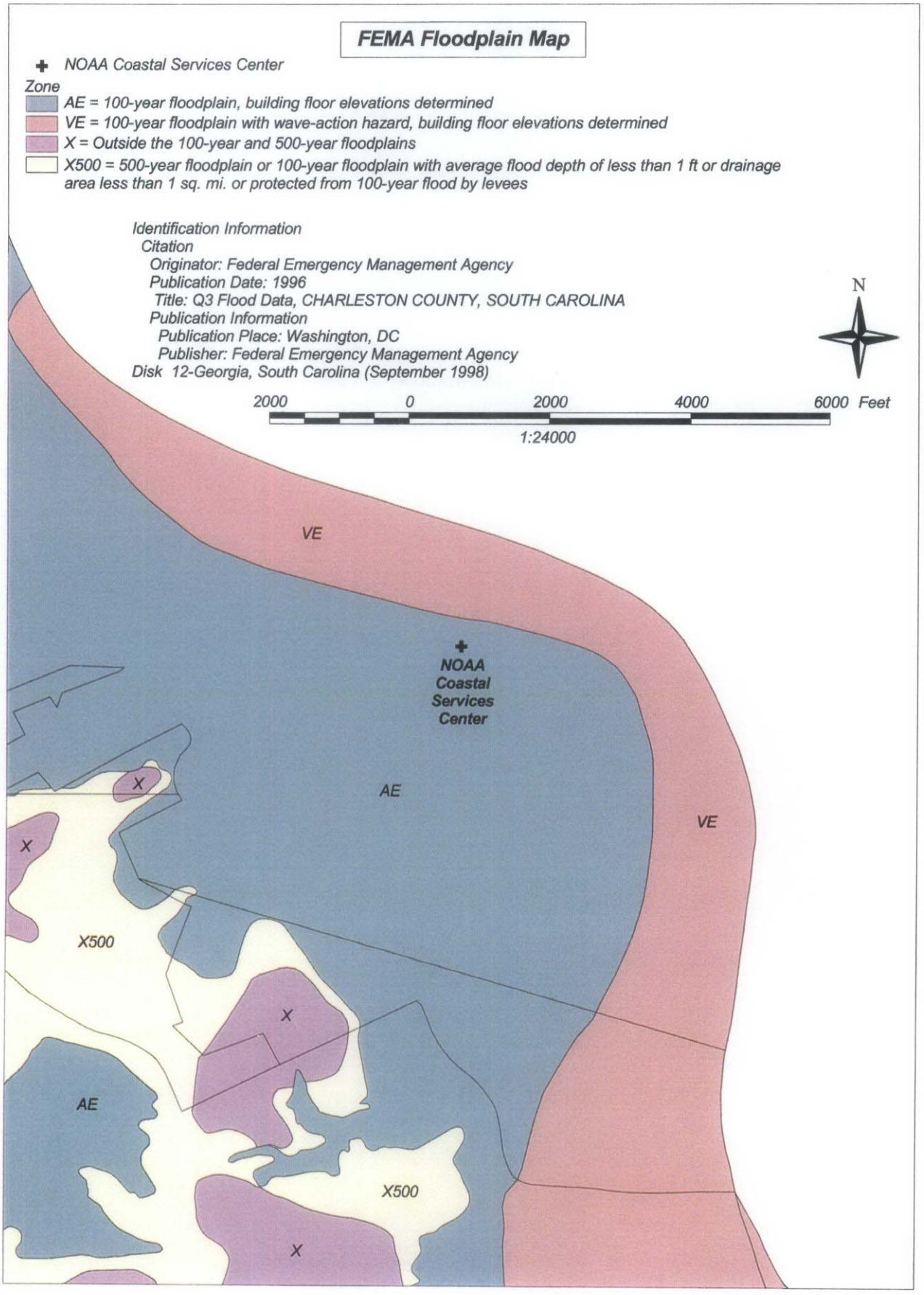
FEMA Floodplain Map
NOAA Coastal Services Center
Zone
AE = 100-year floodplain, building floor elevations determined
VE = 100-year floodplain with wave-action hazard, building floor elevations determined
X = Outside the 100-year and 500-year floodplains
X500 = 500-year floodplain or 100-year floodplain with average flood depth of less than 1 ft or drainage area less than 1 sq. mi. or protected from 100-year flood by levees
Identification Information
Citation
Originator: Federal Emergency Management Agency
Publication Date: 1996
Title: Q3 Flood Data, CHARLESTON COUNTY, SOUTH CAROLINA
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Disk 12-Georgia, South Carolina (September 1998)
N
2000 0 2000 4000 6000 Feet
1:24000
VE
NOAA Coastal Services Center
AE
VE
X
X
X500
X
AE
X500
X

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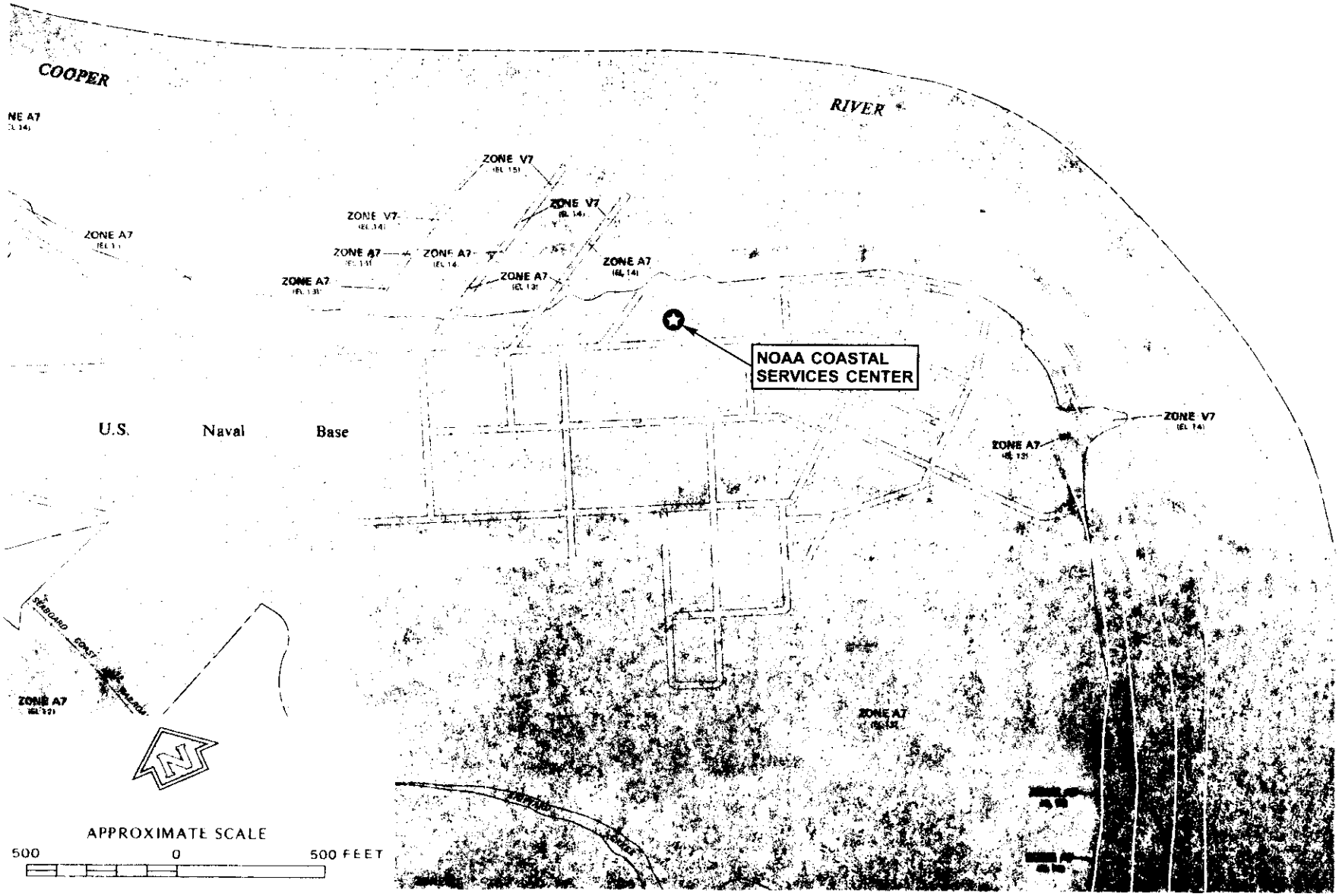


FEMA FLOODPLAIN MAP (1 OF 2)

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
NORTH
CHARLESTON,
SOUTH CAROLINA
CHARLESTON COUNTY

PANEL 14 OF 18
(SEE MAP INDEX FOR PANELS NOT PRINTED)

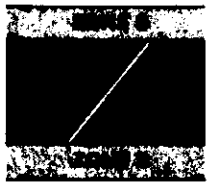
COMMUNITY-PANEL NUMBER
450042 0014 C

MAP REVISED:
NOVEMBER 5, 1986

Federal Emergency Management Agency

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary



Base Flood Elevation Line With Elevation In Feet** — 513
Base Flood Elevation in Feet Where Uniform Within Zone** (EL 987)
Elevation Reference Mark RM7×
Zone D Boundary
River Mile •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100 year flood and 500 year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100 year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Map Index.

INITIAL IDENTIFICATION:
APRIL 27, 1971 MAY 25, 1973
JANUARY 17, 1975
FLOOD HAZARD BOUNDARY MAP REVISIONS:
JULY 1, 1974

FLOOD INSURANCE RATE MAP EFFECTIVE
OCTOBER 8, 1976

FLOOD INSURANCE RATE MAP REVISIONS:

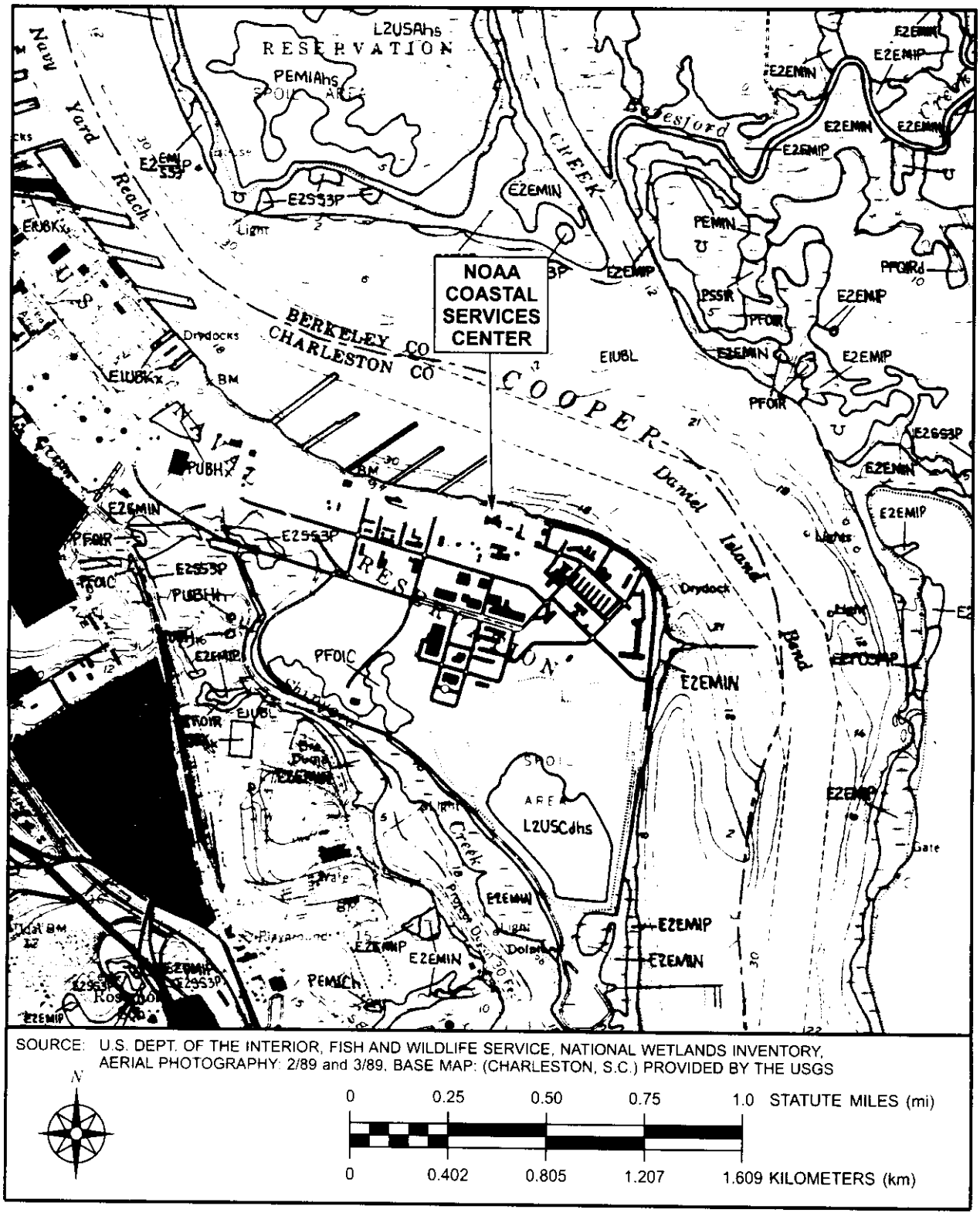
Map revised November 12, 1976
to reflect curvilinear flood boundary

Map revised January 5, 1984
to change zone designations and base flood elevations reflecting wave effects, to change corporate limits, and add special flood hazard areas from Charleston County dated November 12, 1976

Map revised November 5, 1986
to change special flood hazard areas, base flood elevations and zone designations, and add streets and street names

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

FEMA FLOODPLAIN MAP (2 OF 2)



SOURCE: U.S. DEPT. OF THE INTERIOR, FISH AND WILDLIFE SERVICE, NATIONAL WETLANDS INVENTORY, AERIAL PHOTOGRAPHY: 2/89 and 3/89. BASE MAP: (CHARLESTON, S.C.) PROVIDED BY THE USGS

N

0 0.25 0.50 0.75 1.0 STATUTE MILES (mi)

0 0.402 0.805 1.207 1.609 KILOMETERS (km)

EXISTING FACILITIES — 1:24,000 SCALE

NATIONAL WETLANDS INVENTORY MAP (Page 1 of 3)

SYSTEM — **M -- MARINE**

SUBSYSTEM — **1 -- SUBTIDAL** | **2 -- INTERTIDAL**

CLASS	Subclass
RB ROCK BOTTOM	1 Bedrock 2 Rubble
UB UNCONSOLIDATED BOTTOM	1 Cobble Gravel 2 Sand 3 Mud 4 Organic
AB AQUATIC BED	1 Algal 3 Rooted Vascular 5 *Unknown Submergent*
RF REEF	1 Coral 3 Worm
OW *OPEN WATER Unknown Bottom*	
AB AQUATIC BED	1 Algal 3 Rooted Vascular 5 *Unknown Submergent*
RF REEF	1 Coral 3 Worm
RS ROCKY SHORE	1 Bedrock 2 Rubble
US UNCONSOLIDATED SHORE	1 Cobble Gravel 2 Sand 3 Mud 4 Organic

SYSTEM — **R -- RIVERINE**

SUBSYSTEM — **1 -- TIDAL** | **2 -- LOWER PERENNIAL** | **3 -- UPPER PERENNIAL** | **4 -- INTERMITTENT** | **5 -- *UNKNOWN PERENNIAL***

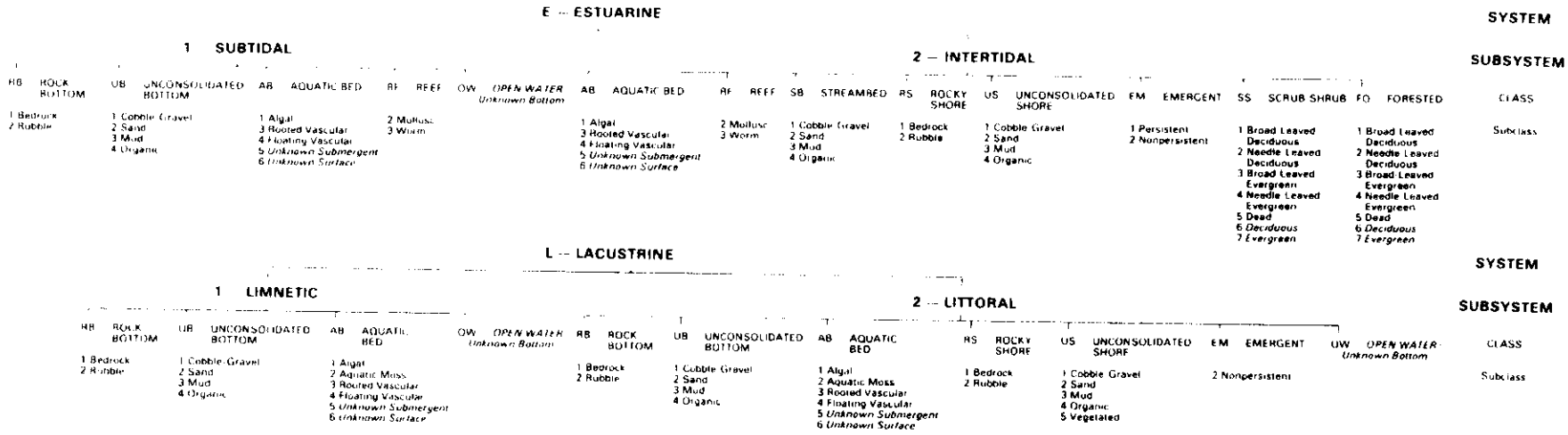
CLASS	Subclass
RB ROCK BOTTOM	1 Bedrock 2 Rubble
UB UNCONSOLIDATED BOTTOM	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic
*SB - STREAMBED	1 Bedrock 2 Rubble 3 Cobble Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated
AB AQUATIC BED	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 *Unknown Submergent* 6 *Unknown Surface*
RS ROCKY SHORE	1 Bedrock 2 Rubble
US UNCONSOLIDATED SHORE	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated
**EM EMERGENT	2 Nonpersistent
OW -- *OPEN WATER, Unknown Bottom*	

*STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS

SYSTEM — **P -- PALUSTRINE**

CLASS	Subclass
RB - ROCK BOTTOM	1 Bedrock 2 Rubble
UB - UNCONSOLIDATED BOTTOM	1 Cobble Gravel 2 Sand 3 Mud 4 Organic
AB -- AQUATIC BED	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 *Unknown Submergent* 6 *Unknown Surface*
US -- UNCONSOLIDATED SHORE	1 Cobble Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated
ML -- MOSS LICHEN	1 Moss 2 Lichen
EM EMERGENT	1 Persistent 2 Nonpersistent
SS -- SCRUB-SHRUB	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 *Deciduous* 7 *Evergreen*
FO - FORESTED	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 *Deciduous* 7 *Evergreen*
OW -- *OPEN WATER Unknown Bottom*	

NATIONAL WETLANDS INVENTORY MAP (Page 2 of 3)



MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

WATER REGIME

Non-Tidal

- A Temporarily Flooded
- B Saturated
- C Seasonally Flooded
- D *Seasonally Flooded/Well Drained*
- E *Seasonally Flooded/Saturated*
- F Semipermanently Flooded
- G Intermittently Exposed
- H Permanently Flooded
- J Intermittently Flooded
- K Artificially Flooded
- W Intermittently Flooded/Temporary
- Y Saturated/Semipermanent/Seasonal
- Z Intermittently Exposed/Permanent
- U *Unknown*

Tidal

- K *Artificially Flooded*
- L Subtidal
- M Irregularly Exposed
- N Regularly Flooded
- P Irregularly Flooded
- *S Temporary Tidal
- *R Seasonal Tidal
- *T Semipermanent Tidal
- *V Permanent Tidal
- U *Unknown*

*These water regimes are only used in tidally influenced freshwater systems

WATER CHEMISTRY

Coastal Salinity

1 Hyperhaline
2 Euhaline
3 Mixohaline *(Brackish)*
4 Polyhaline
5 Mesohaline
6 Oligohaline
0 Fresh

Inland Salinity

7 Hypersaline
8 Eusaline
9 Mixosaline
0 Fresh

pH Modifiers for all Fresh Water

a Acid
h Circumneutral
i Alkaline

SOIL

g Organic
m Mineral

SPECIAL MODIFIERS

- b *Beaver*
- d *Partially Drained/Ditched*
- f Farmed
- h *Diked/Impounded*
- r *Artificial Substrate*
- s *Spoil*
- x Excavated

NATIONAL WETLANDS INVENTORY MAP (Page 3 of 3)

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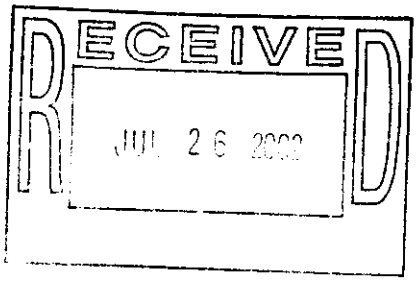
D H E C
PROMOTE PROTECT PROSPER
S.C. Department of Health and Environmental Control

Office of Ocean and Coastal Resource Management
1362 McMillan Avenue, Suite 400
Charleston, SC 29405
(803) 744-5838 FAX (803) 744-5847



July 22, 2002

Ms. Caren Wilhoit
SRI International
333 Ravenswood Avenue
Menlo Park, Ca 94025

Re: NOAA Coastal Services Center Proposed Facilities Expansion
Federal Consistency
Charleston County

Dear Ms. Wilhoit:

The staff of SCDHEC-OCRM has reviewed the information you sent to us in your July 1, 2002, package. As you described, this Federal Action involves construction of two new buildings adjacent to NOAA's existing buildings. You are preparing an Environmental Assessment of this proposed action. To assist you in preparing the EA, our comments on the project are as follows. The site is adjacent to a SCDHEC-OCRM critical area, but no construction within the critical area is proposed. Please contact Mr. Fred Mallett to have the critical line marked in the field. Your client should have this line surveyed and placed on the project construction plans. In addition, because construction will involve more than 2 acres of land disturbance, a Stormwater Management and Sediment Reduction Act Permit will be required from this office prior to construction. Please contact Neil Desai at ext. 123 for these requirements.

If you have any questions, please contact me.

Sincerely,

Fritz Aichele
Federal Consistency Coordinator

EFIS #7695

CC: Richard Chinnis, Neil Desai, Rob Mikell

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Table 2 Lead-in-Paint Results for NOAA1 and NOAA2 Buildings

Sample ID	Paint Color and Condition	Facility Component	Sample Location	Material Amount	Lead Sample Result by weight
NOAA1-PC-01	White, good condition	Gypsum board walls	Rm. 233, south wall	2000 ft^2	0.164%
NOAA1-PC-02	White, good condition	Door frame, metal	Rm. 233 access door	200 ft^2	0.017%
NOAA1-PC-03	Dark blue, good condition	Interior stair rails, metal	2F, East stairwell landing	100 ft^2	0.022%
NOAA1-PC-04	Green and white, poor condition	Brick chimney stub	Rm. 150	25 ft^2	0.79%
NOAA1-PC-05	Red and green, poor condition	Brick chimney stub	Rm. 150	25 ft^2	0.497%
NOAA1-PC-06	Black , fair condition	Exterior door frame, metal	East wing porch	25 ft^2	0.016%
NOAA1-PC-07	Red over yellow good condition	Exterior concrete steps	East wing porch steps	25 ft^2	0.103%
NOAA1-PC-08	Black over yellow	Exterior soffits, wood	Roof over 1F, northwest wing	>500 ft^2	3.89%
NOAA2-PC-09	Mauve, fair condition	Steel support frame	Roof over west wing	200 ft^2	1.04%
NOAA2-PC-10	White over yellow over green, good condition	Interior walls, concrete block	1F Corridor	>1000 ft^2	0.018%
NOAA2-PC-11	White over gray over green over orange, good condition	Interior steel door frames	1F Corridor	100 ft^2	1.67%
NOAA2-PC-12	Blue, good condition	Exterior porch steps, concrete	West wing porch steps	100 ft^2	0.022%
NOAA2-PC-13	Yellow, poor condition	Ceiling, plaster	1F Corridor ceiling	200 ft^2	0.116%

ft^2 = square feet
NA = Not available

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Subject: Re: Data from S. Hobson samples request
Date: Wed, 31 Jul 2002 13:26:52 -0500
From: "Charlie Vernoy" <CVernoy@ensafe.com>
To: <caren.wilhoit@sri.com>
CC: <HarrellRA@EFDSOUTH.NAVFAC.NAVY.mil>, <envtek@sri.com>, <john.chamberlain@sri.com>

Ms. Wilhoit:

In response to your request for the results of storm water effluent samples collected near the NOAA Services Center I am including a map of the area with the sample ID locations labeled as well as the analytical results. Please note that I have included sample # EFF044 which was collected behind the Service Center. In the data results spreadsheet I have included the compound name, sample ID, analytical method, validation qualifier, as well as the USEPA Region IV Saltwater/Surface Water Screening value to which the storm water effluent results will be compared to. This is for comparision purposes only and initially identifies potential contaminants of concern.

The validation qualifiers are: "U" means that there were no detections found for that particular compound at that detection limit. "J" means that the results are an estimated value, "UJ" means that though there was not a detection at the detection limit there was a quality control deviation from the analytical method. A result with no qualifier means that the result is true with no qualification.

If you should have any questions please feel free to contact me at 843-884-0029.

Charlie Vernoy
EnSafe Inc.
Zone J Task Order Manager
>>> Caren Wilhoit <caren.wilhoit@sri.com> 07/29/02 01:14PM >>>
Mr. Vernoy:

As mentioned in this morning's phone conversation, I am requesting for the results of the stormwater effluent samples from the two drop inlets
located directly south of the National Oceanic and Atmospheric Administration's (NOAA's) Coastal Services Center (Buildings RTC-1 and 200). The samples were collected early this year. The drop inlets are located at 2234 and 2224 South Hobson Ave, which are directly east of Pier Romeo (Pier R) and within Zone I.

I need to determine if the analytical tests detected the presence of contaminants of concern at significant levels. Did the samples undergo the screening process yet? Did any pollutants exceeded their respective
screening levels, or otherwise appear to be at a level of concern? This
information will assist NOAA in its proposed development at the Coastal
Services Center. Thank you for your time and consideration. Please email me or call me at 650.859.4829 if there are any questions or concerns.

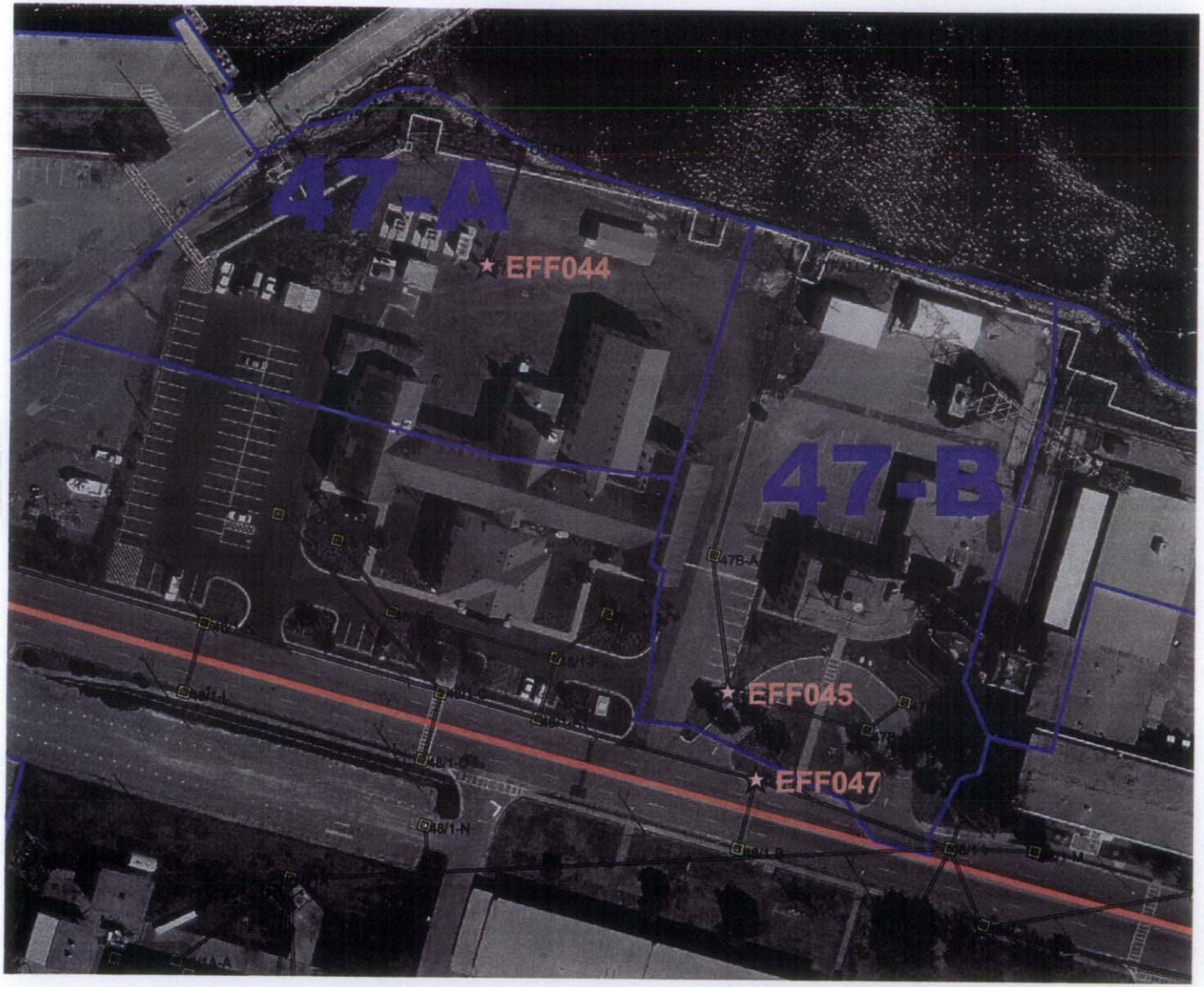
Sincerely,
Caren Wilhoit
Research Analyst
SRI International
333 Ravenswood Ave, G-228

Menlo Park, CA 94025-3493
Fax: 650.859.4829

NOAA Sample Location Map.pdf	**Name:** NOAA Sample Location Map.pdf **Type:** Acrobat (application/pdf) **Encoding:** base64

NOAA Sample Data.pdf	**Name:** NOAA Sample Data.pdf **Type:** Acrobat (application/pdf) **Encoding:** base64

Charleston Naval Complex
Zone J, Drainage Basins around NOAA
Stormwater Effluent Sample Locations



Zone J, Charleston Naval Complex, Charleston, South Carolina
Stormwater Effluent Results for Drainage Basins Around NOAA

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater Surface
A	EFF044	3/2/02		E-10242	Salinity	2	U	mg/l	NL
A	EFF044	3/2/02	6010	7429-90-5	Aluminum	320		ug/l	NL
A	EFF044	3/2/02	6010	7440-36-0	Antimony	3.8	U	ug/l	NL
A	EFF044	3/2/02	6010	7440-38-2	Arsenic	2.7	U	ug/l	36
A	EFF044	3/2/02	6010	7440-39-3	Barium	3.4	J	ug/l	NL
A	EFF044	3/2/02	6010	7440-41-7	Beryllium	0.32	U	ug/l	NL
A	EFF044	3/2/02	6010	7440-43-9	Cadmium	0.5	U	ug/l	9.3
A	EFF044	3/2/02	6010	7440-70-2	Calcium	5700		ug/l	NL
A	EFF044	3/2/02	6010	7440-47-3	Chromium	0.7	U	ug/l	103
A	EFF044	3/2/02	6010	7440-48-4	Cobalt	0.8	U	ug/l	NL
A	EFF044	3/2/02	6010	7440-50-8	Copper	10	J	ug/l	2.9
A	EFF044	3/2/02	6010	7439-89-6	Iron	160		ug/l	NL
A	EFF044	3/2/02	6010	7439-92-1	Lead	2.2	U	ug/l	8.5
A	EFF044	3/2/02	6010	7439-95-4	Magnesium	1800		ug/l	NL
A	EFF044	3/2/02	6010	7439-96-5	Manganese	4.6	J	ug/l	NL
A	EFF044	3/2/02	6010	7440-02-0	Nickel	1.7	U	ug/l	8.3
A	EFF044	3/2/02	6010	7440-09-7	Potassium	4300		ug/l	NL
A	EFF044	3/2/02	6010	7782-49-2	Selenium	4.9	U	ug/l	71
A	EFF044	3/2/02	6010	7440-22-4	Silver	1.4	U	ug/l	0.23
A	EFF044	3/2/02	6010	7440-23-5	Sodium	9500	J	ug/l	NL
A	EFF044	3/2/02	6010	7440-28-0	Thallium	6.3	U	ug/l	21.3
A	EFF044	3/2/02	6010	7440-31-5	Tin	4.1	U	ug/l	NL
A	EFF044	3/2/02	6010	7440-62-2	Vanadium	1.6	J	ug/l	NL
A	EFF044	3/2/02	6010	7440-66-6	Zinc	16	J	ug/l	86
A	EFF044	3/2/02	7470	7439-97-6	Mercury	0.1	U	ug/l	0.025
A	EFF044	3/2/02	8081	72-54-8	4,4'-DDD	0.065	J	ug/l	0.025
A	EFF044	3/2/02	8081	72-55-9	4,4'-DDE	0.1	UJ	ug/l	0.14
A	EFF044	3/2/02	8081	50-29-3	4,4'-DDT	0.1	UJ	ug/l	0.001
A	EFF044	3/2/02	8081	309-00-2	Aldrin	0.05	UJ	ug/l	0.13
A	EFF044	3/2/02	8081	319-84-6	alpha-BHC	0.05	UJ	ug/l	1400
A	EFF044	3/2/02	8081	5103-71-9	alpha-Chlordane	0.05	UJ	ug/l	0.004
A	EFF044	3/2/02	8081	319-85-7	beta-BHC	0.05	UJ	ug/l	NL
A	EFF044	3/2/02	8081	57-74-9	Chlordane (technical)	0.5	UJ	ug/l	0.004
A	EFF044	3/2/02	8081	319-86-8	delta-BHC	0.05	UJ	ug/l	NL
A	EFF044	3/2/02	8081	60-57-1	Dieldrin	0.1	UJ	ug/l	0.0019
A	EFF044	3/2/02	8081	959-98-8	Endosulfan I	0.05	UJ	ug/l	0.0087
A	EFF044	3/2/02	8081	33213-65-9	Endosulfan II	0.1	UJ	ug/l	0.0087
A	EFF044	3/2/02	8081	1031-07-8	Endosulfan sulfate	0.1	UJ	ug/l	NL
A	EFF044	3/2/02	8081	72-20-8	Endrin	0.1	UJ	ug/l	0.0023
A	EFF044	3/2/02	8081	7421-93-4	Endrin aldehyde	0.1	UJ	ug/l	NL
A	EFF044	3/2/02	8081	53494-70-5	Endrin ketone	0.1	UJ	ug/l	NL
A	EFF044	3/2/02	8081	58-89-9	gamma-BHC (Lindane)	0.05	UJ	ug/l	0.016
A	EFF044	3/2/02	8081	5103-74-2	gamma-Chlordane	0.05	UJ	ug/l	0.004
A	EFF044	3/2/02	8081	76-44-8	Heptachlor	0.05	UJ	ug/l	0.0036
A	EFF044	3/2/02	8081	1024-57-3	Heptachlor epoxide	0.05	UJ	ug/l	0.0036
A	EFF044	3/2/02	8081	72-43-5	Methoxychlor	0.5	UJ	ug/l	0.03
A	EFF044	3/2/02	8081	8001-35-2	Toxaphene	5	UJ	ug/l	0.0002
A	EFF044	3/2/02	8082	12674-11-2	Aroclor-1016	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8082	11104-28-2	Aroclor-1221	2	UJ	ug/l	0.03

A	EFF044	3/2/02	8082	11141-16-5	Aroclor-1232	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8082	53469-21-9	Aroclor-1242	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8082	12672-29-6	Aroclor-1248	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8082	11097-69-1	Aroclor-1254	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8082	11096-82-5	Aroclor-1260	1	UJ	ug/l	0.03
A	EFF044	3/2/02	8270	120-82-1	1,2,4-Trichlorobenzene	10	U	ug/l	4.5
A	EFF044	3/2/02	8270	95-50-1	1,2-Dichlorobenzene	10	U	ug/l	19.7
A	EFF044	3/2/02	8270	541-73-1	1,3-Dichlorobenzene	10	U	ug/l	28.5
A	EFF044	3/2/02	8270	106-46-7	1,4-Dichlorobenzene	10	U	ug/l	19.9
A	EFF044	3/2/02	8270	108-60-1	2,2'-Oxybis(1-chloropropane)[bis(2-Chloroisopropyl)ether]	10	U	ug/l	NL
A	EFF044	3/2/02	8270	95-95-4	2,4,5-Trichlorophenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	88-06-2	2,4,6-Trichlorophenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	120-83-2	2,4-Dichlorophenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	105-67-9	2,4-Dimethylphenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	51-28-5	2,4-Dinitrophenol	50	U	ug/l	48.5
A	EFF044	3/2/02	8270	121-14-2	2,4-Dinitrotoluene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	606-20-2	2,6-Dinitrotoluene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	91-58-7	2-Chloronaphthalene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	95-57-8	2-Chlorophenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	534-52-1	2-Methyl-4,6-dinitrophenol	50	U	ug/l	NL
A	EFF044	3/2/02	8270	91-57-6	2-Methylnaphthalene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	95-48-7	2-Methylphenol (o-Cresol)	10	U	ug/l	NL
A	EFF044	3/2/02	8270	88-74-4	2-Nitroaniline	50	U	ug/l	NL
A	EFF044	3/2/02	8270	88-75-5	2-Nitrophenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	106-44-5	3&4-Methylphenol (m&p-cresol)	10	U	ug/l	NL
A	EFF044	3/2/02	8270	91-94-1	3,3'-Dichlorobenzidine	20	U	ug/l	NL
A	EFF044	3/2/02	8270	99-09-2	3-Nitroaniline	50	U	ug/l	NL
A	EFF044	3/2/02	8270	101-55-3	4-Bromophenylphenyl ether	10	U	ug/l	NL
A	EFF044	3/2/02	8270	59-50-7	4-Chloro-3-methylphenol	10	U	ug/l	NL
A	EFF044	3/2/02	8270	106-47-8	4-Chloroaniline	20	U	ug/l	NL
A	EFF044	3/2/02	8270	7005-72-3	4-Chlorophenylphenyl ether	10	U	ug/l	NL
A	EFF044	3/2/02	8270	100-01-6	4-Nitroaniline	50	U	ug/l	NL
A	EFF044	3/2/02	8270	100-02-7	4-Nitrophenol	50	U	ug/l	71.7
A	EFF044	3/2/02	8270	83-32-9	Acenaphthene	10	U	ug/l	9.7
A	EFF044	3/2/02	8270	208-96-8	Acenaphthylene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	120-12-7	Anthracene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	56-55-3	Benzo(a)anthracene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	50-32-8	Benzo(a)pyrene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	205-99-2	Benzo(b)fluoranthene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	191-24-2	Benzo(g,h,i)perylene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	207-08-9	Benzo(k)fluoranthene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	111-91-1	bis(2-Chloroethoxy)methane	10	U	ug/l	NL
A	EFF044	3/2/02	8270	111-44-4	bis(2-Chloroethyl)ether	10	U	ug/l	NL
A	EFF044	3/2/02	8270	117-81-7	bis(2-Ethylhexyl)phthalate	10	U	ug/l	NL
A	EFF044	3/2/02	8270	85-68-7	Butylbenzylphthalate	10	U	ug/l	29.4
A	EFF044	3/2/02	8270	86-74-8	Carbazole	10	U	ug/l	NL
A	EFF044	3/2/02	8270	218-01-9	Chrysene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	84-74-2	Di-n-butylphthalate	10	U	ug/l	3.4
A	EFF044	3/2/02	8270	117-84-0	Di-n-octylphthalate	10	U	ug/l	NL

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater Surface
A	EFF044	3/2/02	8270	53-70-3	Dibenzo(a,h)anthracene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	132-64-9	Dibenzofuran	10	U	ug/l	NL
A	EFF044	3/2/02	8270	84-66-2	Diethylphthalate	10	U	ug/l	75.9
A	EFF044	3/2/02	8270	131-11-3	Dimethylphthalate	10	U	ug/l	580
A	EFF044	3/2/02	8270	206-44-0	Fluoranthene	10	U	ug/l	1.6
A	EFF044	3/2/02	8270	86-73-7	Fluorene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	118-74-1	Hexachlorobenzene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	87-68-3	Hexachlorobutadiene	10	U	ug/l	0.32
A	EFF044	3/2/02	8270	77-47-4	Hexachlorocyclopentadiene	10	U	ug/l	0.07
A	EFF044	3/2/02	8270	67-72-1	Hexachloroethane	10	U	ug/l	9.4
A	EFF044	3/2/02	8270	193-39-5	Indeno(1,2,3-cd)pyrene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	78-59-1	Isophorone	10	U	ug/l	129
A	EFF044	3/2/02	8270	621-64-7	n-Nitrosodi-n-propylamine	10	U	ug/l	NL
A	EFF044	3/2/02	8270	86-30-6	N-Nitrosodiphenylamine	10	U	ug/l	33000
A	EFF044	3/2/02	8270	91-20-3	Naphthalene	10	U	ug/l	23.5
A	EFF044	3/2/02	8270	98-95-3	Nitrobenzene	10	U	ug/l	66.8
A	EFF044	3/2/02	8270	87-86-5	Pentachlorophenol	50	U	ug/l	7.9
A	EFF044	3/2/02	8270	85-01-8	Phenanthrene	10	U	ug/l	NL
A	EFF044	3/2/02	8270	108-95-2	Phenol	10	U	ug/l	58
A	EFF044	3/2/02	8270	129-00-0	Pyrene	10	U	ug/l	NL
A	EFF044	3/2/02	9012	57-12-5	Cyanide, Total	10	U	ug/l	1
A	EFF045	02/08/02		E-10242	Salinity	2	U	mg/l	NL
A	EFF045	02/08/02	6010	7429-90-5	Aluminum	84	J	ug/l	NL
A	EFF045	02/08/02	6010	7440-36-0	Antimony	3.9	U	ug/l	NL
A	EFF045	02/08/02	6010	7440-38-2	Arsenic	3.9	U	ug/l	36
A	EFF045	02/08/02	6010	7440-39-3	Barium	3.3	J	ug/l	NL
A	EFF045	02/08/02	6010	7440-41-7	Beryllium	0.1	U	ug/l	NL
A	EFF045	02/08/02	6010	7440-43-9	Cadmium	0.6	UJ	ug/l	9.3
A	EFF045	02/08/02	6010	7440-70-2	Calcium	9300		ug/l	NL
A	EFF045	02/08/02	6010	7440-47-3	Chromium	0.9	U	ug/l	103
A	EFF045	02/08/02	6010	7440-48-4	Cobalt	0.7	U	ug/l	NL
A	EFF045	02/08/02	6010	7440-50-8	Copper	5.4	J	ug/l	2.9
A	EFF045	02/08/02	6010	7439-89-6	Iron	95		ug/l	NL
A	EFF045	02/08/02	6010	7439-92-1	Lead	2.5	U	ug/l	8.5
A	EFF045	02/08/02	6010	7439-95-4	Magnesium	520		ug/l	NL
A	EFF045	02/08/02	6010	7439-96-5	Manganese	3.1	J	ug/l	NL
A	EFF045	02/08/02	6010	7440-02-0	Nickel	1.7	U	ug/l	8.3
A	EFF045	02/08/02	6010	7440-09-7	Potassium	670	J	ug/l	NL
A	EFF045	02/08/02	6010	7782-49-2	Selenium	3.3	U	ug/l	71
A	EFF045	02/08/02	6010	7440-22-4	Silver	0.5	U	ug/l	0.23
A	EFF045	02/08/02	6010	7440-23-5	Sodium	2600		ug/l	NL
A	EFF045	02/08/02	6010	7440-28-0	Thallium	5.1	U	ug/l	21.3
A	EFF045	02/08/02	6010	7440-31-5	Tin	4.5	U	ug/l	NL
A	EFF045	02/08/02	6010	7440-62-2	Vanadium	6.6	J	ug/l	NL
A	EFF045	02/08/02	6010	7440-66-6	Zinc	31	U	ug/l	86
A	EFF045	02/08/02	7470	7439-97-6	Mercury	0.1	U	ug/l	0.025
A	EFF045	02/08/02	8081	72-54-8	4,4'-DDD	0.1	UJ	ug/l	0.025
A	EFF045	02/08/02	8081	72-55-9	4,4'-DDE	0.1	UJ	ug/l	0.14
A	EFF045	02/08/02	8081	50-29-3	4,4'-DDT	0.1	UJ	ug/l	0.001

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater Screen
A	EFF045	02/08/02	8081	309-00-2	Aldrin	0.05	UJ	ug/l	0.13
A	EFF045	02/08/02	8081	319-84-6	alpha-BHC	0.05	UJ	ug/l	1400
A	EFF045	02/08/02	8081	5103-71-9	alpha-Chlordane	0.05	UJ	ug/l	0.004
A	EFF045	02/08/02	8081	319-85-7	beta-BHC	0.05	UJ	ug/l	NL
A	EFF045	02/08/02	8081	57-74-9	Chlordane (technical)	0.5	UJ	ug/l	0.004
A	EFF045	02/08/02	8081	319-86-8	delta-BHC	0.05	UJ	ug/l	NL
A	EFF045	02/08/02	8081	60-57-1	Dieldrin	0.1	UJ	ug/l	0.0019
A	EFF045	02/08/02	8081	959-98-8	Endosulfan I	0.05	UJ	ug/l	0.0087
A	EFF045	02/08/02	8081	33213-65-9	Endosulfan II	0.1	UJ	ug/l	0.0087
A	EFF045	02/08/02	8081	1031-07-8	Endosulfan sulfate	0.1	UJ	ug/l	NL
A	EFF045	02/08/02	8081	72-20-8	Endrin	0.1	UJ	ug/l	0.0023
A	EFF045	02/08/02	8081	7421-93-4	Endrin aldehyde	0.1	UJ	ug/l	NL
A	EFF045	02/08/02	8081	53494-70-5	Endrin ketone	0.1	UJ	ug/l	NL
A	EFF045	02/08/02	8081	58-89-9	gamma-BHC (Lindane)	0.05	UJ	ug/l	0.016
A	EFF045	02/08/02	8081	5103-74-2	gamma-Chlordane	0.05	UJ	ug/l	0.004
A	EFF045	02/08/02	8081	76-44-8	Heptachlor	0.05	UJ	ug/l	0.0036
A	EFF045	02/08/02	8081	1024-57-3	Heptachlor epoxide	0.05	UJ	ug/l	0.0036
A	EFF045	02/08/02	8081	72-43-5	Methoxychlor	0.5	UJ	ug/l	0.03
A	EFF045	02/08/02	8081	8001-35-2	Toxaphene	5	UJ	ug/l	0.0002
A	EFF045	02/08/02	8082	12674-11-2	Aroclor-1016	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	11104-28-2	Aroclor-1221	2	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	11141-16-5	Aroclor-1232	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	53469-21-9	Aroclor-1242	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	12672-29-6	Aroclor-1248	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	11097-69-1	Aroclor-1254	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8082	11096-82-5	Aroclor-1260	1	UJ	ug/l	0.03
A	EFF045	02/08/02	8270	120-82-1	1,2,4-Trichlorobenzene	10	U	ug/l	4.5
A	EFF045	02/08/02	8270	95-50-1	1,2-Dichlorobenzene	10	U	ug/l	19.7
A	EFF045	02/08/02	8270	541-73-1	1,3-Dichlorobenzene	10	U	ug/l	28.5
A	EFF045	02/08/02	8270	106-46-7	1,4-Dichlorobenzene	10	U	ug/l	19.9
A	EFF045	02/08/02	8270	108-60-1	2,2'-Oxybis(1-chloropropane)[bis(2-Chloroisopropyl)ether]	10	U	ug/l	NL
A	EFF045	02/08/02	8270	95-95-4	2,4,5-Trichlorophenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	88-06-2	2,4,6-Trichlorophenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	120-83-2	2,4-Dichlorophenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	105-67-9	2,4-Dimethylphenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	51-28-5	2,4-Dinitrophenol	50	U	ug/l	48.5
A	EFF045	02/08/02	8270	121-14-2	2,4-Dinitrotoluene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	606-20-2	2,6-Dinitrotoluene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	91-58-7	2-Chloronaphthalene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	95-57-8	2-Chlorophenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	534-52-1	2-Methyl-4,6-dinitrophenol	50	U	ug/l	NL
A	EFF045	02/08/02	8270	91-57-6	2-Methylnaphthalene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	95-48-7	2-Methylphenol (o-Cresol)	5.2	J	ug/l	NL
A	EFF045	02/08/02	8270	88-74-4	2-Nitroaniline	50	U	ug/l	NL
A	EFF045	02/08/02	8270	88-75-5	2-Nitrophenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	106-44-5	3&4-Methylphenol (m&p-cresol)	10	U	ug/l	NL
A	EFF045	02/08/02	8270	91-94-1	3,3'-Dichlorobenzidine	20	U	ug/l	NL
A	EFF045	02/08/02	8270	99-09-2	3-Nitroaniline	50	U	ug/l	NL
A	EFF045	02/08/02	8270	101-55-3	4-Bromophenylphenyl ether	10	U	ug/l	NL

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater,Surface
A	EFF045	02/08/02	8270	59-50-7	4-Chloro-3-methylphenol	10	U	ug/l	NL
A	EFF045	02/08/02	8270	106-47-8	4-Chloroaniline	20	U	ug/l	NL
A	EFF045	02/08/02	8270	7005-72-3	4-Chlorophenylphenyl ether	10	U	ug/l	NL
A	EFF045	02/08/02	8270	100-01-6	4-Nitroaniline	50	U	ug/l	NL
A	EFF045	02/08/02	8270	100-02-7	4-Nitrophenol	50	U	ug/l	71.7
A	EFF045	02/08/02	8270	83-32-9	Acenaphthene	10	U	ug/l	9.7
A	EFF045	02/08/02	8270	208-96-8	Acenaphthylene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	120-12-7	Anthracene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	56-55-3	Benzo(a)anthracene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	50-32-8	Benzo(a)pyrene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	205-99-2	Benzo(b)fluoranthene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	191-24-2	Benzo(g,h,i)perylene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	207-08-9	Benzo(k)fluoranthene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	111-91-1	bis(2-Chloroethoxy)methane	10	U	ug/l	NL
A	EFF045	02/08/02	8270	111-44-4	bis(2-Chloroethyl)ether	10	U	ug/l	NL
A	EFF045	02/08/02	8270	117-81-7	bis(2-Ethylhexyl)phthalate	10	U	ug/l	NL
A	EFF045	02/08/02	8270	85-68-7	Butylbenzylphthalate	10	U	ug/l	29.4
A	EFF045	02/08/02	8270	86-74-8	Carbazole	10	U	ug/l	NL
A	EFF045	02/08/02	8270	218-01-9	Chrysene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	84-74-2	Di-n-butylphthalate	10	U	ug/l	3.4
A	EFF045	02/08/02	8270	117-84-0	Di-n-octylphthalate	10	U	ug/l	NL
A	EFF045	02/08/02	8270	53-70-3	Dibenzo(a,h)anthracene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	132-64-9	Dibenzofuran	10	U	ug/l	NL
A	EFF045	02/08/02	8270	84-66-2	Diethylphthalate	10	U	ug/l	75.9
A	EFF045	02/08/02	8270	131-11-3	Dimethylphthalate	10	U	ug/l	580
A	EFF045	02/08/02	8270	206-44-0	Fluoranthene	10	U	ug/l	1.6
A	EFF045	02/08/02	8270	86-73-7	Fluorene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	118-74-1	Hexachlorobenzene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	87-68-3	Hexachlorobutadiene	10	U	ug/l	0.32
A	EFF045	02/08/02	8270	77-47-4	Hexachlorocyclopentadiene	10	U	ug/l	0.07
A	EFF045	02/08/02	8270	67-72-1	Hexachloroethane	10	U	ug/l	9.4
A	EFF045	02/08/02	8270	193-39-5	Indeno(1,2,3-cd)pyrene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	78-59-1	Isophorone	10	U	ug/l	129
A	EFF045	02/08/02	8270	621-64-7	n-Nitrosodi-n-propylamine	10	U	ug/l	NL
A	EFF045	02/08/02	8270	86-30-6	N-Nitrosodiphenylamine	10	U	ug/l	33000
A	EFF045	02/08/02	8270	91-20-3	Naphthalene	10	U	ug/l	23.5
A	EFF045	02/08/02	8270	98-95-3	Nitrobenzene	10	U	ug/l	66.8
A	EFF045	02/08/02	8270	87-86-5	Pentachlorophenol	50	U	ug/l	7.9
A	EFF045	02/08/02	8270	85-01-8	Phenanthrene	10	U	ug/l	NL
A	EFF045	02/08/02	8270	108-95-2	Phenol	10	U	ug/l	58
A	EFF045	02/08/02	8270	129-00-0	Pyrene	10	U	ug/l	NL
A	EFF045	02/08/02	9012	57-12-5	Cyanide, Total	10	U	ug/l	1
A	EFF047	02/08/02		E-10242	Salinity	2	U	mg/l	NL
A	EFF047	02/08/02	6010	7429-90-5	Aluminum	36	J	ug/l	NL
A	EFF047	02/08/02	6010	7440-36-0	Antimony	3.9	U	ug/l	NL
A	EFF047	02/08/02	6010	7440-38-2	Arsenic	3.9	U	ug/l	36
A	EFF047	02/08/02	6010	7440-39-3	Barium	2.6	J	ug/l	NL
A	EFF047	02/08/02	6010	7440-41-7	Beryllium	0.1	U	ug/l	NL
A	EFF047	02/08/02	6010	7440-43-9	Cadmium	0.6	UJ	ug/l	9.3

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater Surface
A	EFF047	02/08/02	6010	7440-70-2	Calcium	2900		ug/l	NL
A	EFF047	02/08/02	6010	7440-47-3	Chromium	0.9	U	ug/l	103
A	EFF047	02/08/02	6010	7440-48-4	Cobalt	0.7	U	ug/l	NL
A	EFF047	02/08/02	6010	7440-50-8	Copper	7.1	J	ug/l	2.9
A	EFF047	02/08/02	6010	7439-89-6	Iron	55		ug/l	NL
A	EFF047	02/08/02	6010	7439-92-1	Lead	2.5	U	ug/l	8.5
A	EFF047	02/08/02	6010	7439-95-4	Magnesium	290	J	ug/l	NL
A	EFF047	02/08/02	6010	7439-96-5	Manganese	3.2	J	ug/l	NL
A	EFF047	02/08/02	6010	7440-02-0	Nickel	1.7	U	ug/l	8.3
A	EFF047	02/08/02	6010	7440-09-7	Potassium	360	J	ug/l	NL
A	EFF047	02/08/02	6010	7782-49-2	Selenium	3.3	U	ug/l	71
A	EFF047	02/08/02	6010	7440-22-4	Silver	0.5	U	ug/l	0.23
A	EFF047	02/08/02	6010	7440-23-5	Sodium	2100		ug/l	NL
A	EFF047	02/08/02	6010	7440-28-0	Thallium	5.1	U	ug/l	21.3
A	EFF047	02/08/02	6010	7440-31-5	Tin	4.5	U	ug/l	NL
A	EFF047	02/08/02	6010	7440-62-2	Vanadium	4.2	J	ug/l	NL
A	EFF047	02/08/02	6010	7440-66-6	Zinc	37	U	ug/l	86
A	EFF047	02/08/02	7470	7439-97-6	Mercury	0.1	U	ug/l	0.025
A	EFF047	02/08/02	8081	72-54-8	4,4'-DDD	0.1	UJ	ug/l	0.025
A	EFF047	02/08/02	8081	72-55-9	4,4'-DDE	0.1	UJ	ug/l	0.14
A	EFF047	02/08/02	8081	50-29-3	4,4'-DDT	0.1	UJ	ug/l	0.001
A	EFF047	02/08/02	8081	309-00-2	Aldrin	0.05	UJ	ug/l	0.13
A	EFF047	02/08/02	8081	319-84-6	alpha-BHC	0.05	UJ	ug/l	1400
A	EFF047	02/08/02	8081	5103-71-9	alpha-Chlordane	0.05	UJ	ug/l	0.004
A	EFF047	02/08/02	8081	319-85-7	beta-BHC	0.05	UJ	ug/l	NL
A	EFF047	02/08/02	8081	57-74-9	Chlordane (technical)	0.5	UJ	ug/l	0.004
A	EFF047	02/08/02	8081	319-86-8	delta-BHC	0.05	UJ	ug/l	NL
A	EFF047	02/08/02	8081	60-57-1	Dieldrin	0.1	UJ	ug/l	0.0019
A	EFF047	02/08/02	8081	959-98-8	Endosulfan I	0.05	UJ	ug/l	0.0087
A	EFF047	02/08/02	8081	33213-65-9	Endosulfan II	0.1	UJ	ug/l	0.0087
A	EFF047	02/08/02	8081	1031-07-8	Endosulfan sulfate	0.1	UJ	ug/l	NL
A	EFF047	02/08/02	8081	72-20-8	Endrin	0.1	UJ	ug/l	0.0023
A	EFF047	02/08/02	8081	7421-93-4	Endrin aldehyde	0.1	UJ	ug/l	NL
A	EFF047	02/08/02	8081	53494-70-5	Endrin ketone	0.1	UJ	ug/l	NL
A	EFF047	02/08/02	8081	58-89-9	gamma-BHC (Lindane)	0.05	UJ	ug/l	0.016
A	EFF047	02/08/02	8081	5103-74-2	gamma-Chlordane	0.05	UJ	ug/l	0.004
A	EFF047	02/08/02	8081	76-44-8	Heptachlor	0.05	UJ	ug/l	0.0036
A	EFF047	02/08/02	8081	1024-57-3	Heptachlor epoxide	0.05	UJ	ug/l	0.0036
A	EFF047	02/08/02	8081	72-43-5	Methoxychlor	0.17	J	ug/l	0.03
A	EFF047	02/08/02	8081	8001-35-2	Toxaphene	5	UJ	ug/l	0.0002
A	EFF047	02/08/02	8082	12674-11-2	Aroclor-1016	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	11104-28-2	Aroclor-1221	2	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	11141-16-5	Aroclor-1232	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	53469-21-9	Aroclor-1242	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	12672-29-6	Aroclor-1248	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	11097-69-1	Aroclor-1254	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8082	11096-82-5	Aroclor-1260	1	UJ	ug/l	0.03
A	EFF047	02/08/02	8270	120-82-1	1,2,4-Trichlorobenzene	10	U	ug/l	4.5
A	EFF047	02/08/02	8270	95-50-1	1,2-Dichlorobenzene	10	U	ug/l	19.7

A	EFF047	02/08/02	8270	541-73-1	1,3-Dichlorobenzene	10	U	ug/l	28.5
A	EFF047	02/08/02	8270	106-46-7	1,4-Dichlorobenzene	10	U	ug/l	19.9
A	EFF047	02/08/02	8270	108-60-1	2,2'-Oxybis(1-chloropropane)[bis(2-Chloroisopropyl)ether]	10	U	ug/l	NL
A	EFF047	02/08/02	8270	95-95-4	2,4,5-Trichlorophenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	88-06-2	2,4,6-Trichlorophenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	120-83-2	2,4-Dichlorophenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	105-67-9	2,4-Dimethylphenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	51-28-5	2,4-Dinitrophenol	50	U	ug/l	48.5
A	EFF047	02/08/02	8270	121-14-2	2,4-Dinitrotoluene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	606-20-2	2,6-Dinitrotoluene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	91-58-7	2-Chloronaphthalene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	95-57-8	2-Chlorophenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	534-52-1	2-Methyl-4,6-dinitrophenol	50	U	ug/l	NL
A	EFF047	02/08/02	8270	91-57-6	2-Methylnaphthalene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	95-48-7	2-Methylphenol (o-Cresol)	0.8	J	ug/l	NL
A	EFF047	02/08/02	8270	88-74-4	2-Nitroaniline	50	U	ug/l	NL
A	EFF047	02/08/02	8270	88-75-5	2-Nitrophenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	106-44-5	3&4-Methylphenol (m&p-cresol)	10	U	ug/l	NL
A	EFF047	02/08/02	8270	91-94-1	3,3'-Dichlorobenzidine	20	U	ug/l	NL
A	EFF047	02/08/02	8270	99-09-2	3-Nitroaniline	50	U	ug/l	NL
A	EFF047	02/08/02	8270	101-55-3	4-Bromophenylphenyl ether	10	U	ug/l	NL
A	EFF047	02/08/02	8270	59-50-7	4-Chloro-3-methylphenol	10	U	ug/l	NL
A	EFF047	02/08/02	8270	106-47-8	4-Chloroaniline	20	U	ug/l	NL
A	EFF047	02/08/02	8270	7005-72-3	4-Chlorophenylphenyl ether	10	U	ug/l	NL
A	EFF047	02/08/02	8270	100-01-6	4-Nitroaniline	50	U	ug/l	NL
A	EFF047	02/08/02	8270	100-02-7	4-Nitrophenol	50	U	ug/l	71.7
A	EFF047	02/08/02	8270	83-32-9	Acenaphthene	10	U	ug/l	9.7
A	EFF047	02/08/02	8270	208-96-8	Acenaphthylene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	120-12-7	Anthracene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	56-55-3	Benzo(a)anthracene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	50-32-8	Benzo(a)pyrene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	205-99-2	Benzo(b)fluoranthene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	191-24-2	Benzo(g,h,i)perylene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	207-08-9	Benzo(k)fluoranthene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	111-91-1	bis(2-Chloroethoxy)methane	10	U	ug/l	NL
A	EFF047	02/08/02	8270	111-44-4	bis(2-Chloroethyl)ether	10	U	ug/l	NL
A	EFF047	02/08/02	8270	117-81-7	bis(2-Ethylhexyl)phthalate	10	U	ug/l	NL
A	EFF047	02/08/02	8270	85-68-7	Butylbenzylphthalate	10	U	ug/l	29.4
A	EFF047	02/08/02	8270	86-74-8	Carbazole	10	U	ug/l	NL
A	EFF047	02/08/02	8270	218-01-9	Chrysene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	84-74-2	Di-n-butylphthalate	10	U	ug/l	3.4
A	EFF047	02/08/02	8270	117-84-0	Di-n-octylphthalate	10	U	ug/l	NL
A	EFF047	02/08/02	8270	53-70-3	Dibenzo(a,h)anthracene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	132-64-9	Dibenzofuran	10	U	ug/l	NL
A	EFF047	02/08/02	8270	84-66-2	Diethylphthalate	10	U	ug/l	75.9
A	EFF047	02/08/02	8270	131-11-3	Dimethylphthalate	10	U	ug/l	580
A	EFF047	02/08/02	8270	206-44-0	Fluoranthene	10	U	ug/l	1.6
A	EFF047	02/08/02	8270	86-73-7	Fluorene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	118-74-1	Hexachlorobenzene	10	U	ug/l	NL

Zone J, Charleston Naval Complex, Charleston, South Carolina
Stormwater Effluent Results for Drainage Basins Around NOAA

SAMPLE TYPE	SAMPLE ID	DATE SAMPLED	ANALYSIS METHOD	CAS NUMBER	COMPOUND NAME	NUMERIC RESULT	VAL QUAL	UNITS	Region IV Saltwater Surface
A	EFF047	02/08/02	8270	87-68-3	Hexachlorobutadiene	10	U	ug/l	0.32
A	EFF047	02/08/02	8270	77-47-4	Hexachlorocyclopentadiene	10	U	ug/l	0.07
A	EFF047	02/08/02	8270	67-72-1	Hexachloroethane	10	U	ug/l	9.4
A	EFF047	02/08/02	8270	193-39-5	Indeno(1,2,3-cd)pyrene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	78-59-1	Isophorone	10	U	ug/l	129
A	EFF047	02/08/02	8270	621-64-7	n-Nitrosodi-n-propylamine	10	U	ug/l	NL
A	EFF047	02/08/02	8270	86-30-6	N-Nitrosodiphenylamine	10	U	ug/l	33000
A	EFF047	02/08/02	8270	91-20-3	Naphthalene	10	U	ug/l	23.5
A	EFF047	02/08/02	8270	98-95-3	Nitrobenzene	10	U	ug/l	66.8
A	EFF047	02/08/02	8270	87-86-5	Pentachlorophenol	50	U	ug/l	7.9
A	EFF047	02/08/02	8270	85-01-8	Phenanthrene	10	U	ug/l	NL
A	EFF047	02/08/02	8270	108-95-2	Phenol	10	U	ug/l	58
A	EFF047	02/08/02	8270	129-00-0	Pyrene	10	U	ug/l	NL
A	EFF047	02/08/02	9012	57-12-5	Cyanide, Total	10	U	ug/l	1

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APPENDIX C

DRAFT EA DISTRIBUTION LIST

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DRAFT EA DISTRIBUTION LIST

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North Charleston, SC 29418

Ms. Lynnette Ansell, Regional Environmental Compliance Officer (RECO)
NOAA HQTR OFA 74
Norfolk Federal Building
200 World Trade Center
Norfolk, VA 23510-1624

Mr. Roger Banks, Field Supervisor
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Mr. Jeff Biel, Region Director
National Civilian Conservation Corps, Southeast Region
2231 South Hobson Avenue
North Charleston, SC 29405-2430

Mr. Joseph T. Bryant, V.P., Terminal Development
South Carolina State Ports Authority
Planning and Business Development Office
176 Concord Street
Charleston, SC 29401

Mr. Robert E. Duncan, Environmental Programs Director
South Carolina Department of Natural Resources
Marine Resources Division
P.O. Box 12559
Charleston, SC 29422-2559

Mr. Wayne Fanning, District Director
South Carolina Department of Health and Environmental Control
Office of Environmental Quality Control
Trident District Office
1362 McMillan Avenue, Suite 300
North Charleston, SC 29405

Mr. Bill Gore, Director
City of North Charleston Department of Planning and Management
City Hall
4900 Lacross Road
North Charleston, SC 29406

Mr. Clarence H. Ham, Chief
U.S. Army Corps of Engineers
Charleston District
Regulatory Division (CESAC-CO-M)
69-A Hagood Avenue
Charleston, SC 29403-5107

Mr. Tony Hunt, Base Realignment and Closure Environmental Coordinator (BEC)
Department of the Navy, Southern Division, Naval Facilities Engineering Command
Naval Base Charleston
Caretaker Site Office
P.O. Box 190010
North Charleston, SC 29419-9010

Ms. Elizabeth Johnson, B-C-D Regional Representative
State Historic Preservation Office
Archives & History Center
8301 Parklane Road
Columbia, SC 29223

Mr. Scott Littlefield
NOAA HQTR OFA 74
Norfolk Federal Building
200 World Trade Center
Norfolk, VA 23510-1624

Ms. Beth McCandless, Resource Management Services Branch Chief
National Oceanic and Atmospheric Administration
Coastal Services Center
2234 South Hobson Avenue
North Charleston, SC 29405-2413

Mr. Sean P. McDonell, Operations Director
Charleston Naval Complex Redevelopment Authority
1360 Truxtun Avenue, Suite 300
North Charleston, SC 29405

Ms. Ginger McCartney
City of North Charleston
Community Development Office
4900 Lacross Road
North Charleston, SC 29406

Mr. Rob Mikell, Manager of Federal Certification Section
South Carolina Department of Health and Environmental Control
Office of Ocean and Coastal Resource Management
Charleston Office
1362 McMillan Avenue, Suite 400
North Charleston, SC 29405

Mr. Carl Richardson, Director
South Carolina Department of Health and Environmental Control
Bureau of Air Quality
Engineering Services Division
2600 Bull Street
Columbia, SC 29201

Ms. Ann K. Whitsett, Facilities Coordinator
National Oceanic and Atmospheric Administration
Coastal Services Center
2234 South Hobson Avenue
North Charleston, SC 29405-2413

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