

**ENVIRONMENTAL ASSESSMENT
FOR THE NASA FIRST RESPONSE FACILITY**

**JOHN C. STENNIS SPACE CENTER
HANCOCK COUNTY, MISSISSIPPI**

Lead Agency: National Aeronautics and Space Administration, John C. Stennis Space Center

Proposed Action: The proposed action requiring this environmental assessment is to construct a facility that will co-locate emergency dispatch and operations together with all responder and emergency management functions allowing tight integration of emergency response coordination.

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Abstract: NASA intends to construct a First Response Facility for integrated emergency response and health management. This facility will consolidate the Stennis Space Center fire department, medical clinic, security operations, emergency operations and the energy management and control center. The alternative considered is the "No Action Alternative". The proposed action will correct existing operational weaknesses and enhance capabilities to respond to medical emergencies and mitigate any other possible threats. Environmental impacts include air emissions, wetlands disturbance, solid waste generation and storm water control.

Executive Summary

NASA plans to construct a 4,082 square meter (43,940 square foot) First Response Facility at the John C. Stennis Space Center on the northeast corner of Saturn Drive and Trent Lott Boulevard. The facility would be used for consolidation of the SSC fire department, medical clinic, security operations, emergency operations and the energy management and control center. This new facility is needed in order to co-locate emergency response units and to facilitate emergency communications and planning.

The alternative considered is the "No Action Alternative." The "No Action Alternative" would have no environmental impact.

Environmental impacts for this project include air emissions, wetlands disturbance, solid waste generation and storm water control. Other aspects that require consideration are energy conservation, water conservation, native plant landscaping, and the purchase of materials under comprehensive procurement guidelines for using materials with recycled content.

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Acronyms/Abbreviations/Unit Conversions

CFR	Code of Federal Regulations
COE	U.S. Army Corps of Engineers
CPG	Comprehensive Procurement Guidelines
EO	Executive Order
kW	kilowatt
LEED	Leadership in Energy & Environmental Design
mBTU/hr	million British Thermal Units per hour
mg/L	milligrams per liter
MDEQ	Mississippi Department of Environmental Quality
pH	measure of acidity/alkalinity
PM ₁₀	particulate matter, 10 micron
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
SSC	Stennis Space Center
USGS	U.S. Geological Survey

1.0 Purpose and Need

The National Aeronautics and Space Administration (NASA) John C. Stennis Space Center (SSC) is located near the Gulf of Mexico in western Hancock County, Mississippi, approximately 89 kilometers (55 miles) northeast of New Orleans, Louisiana and approximately 48 kilometers (30 miles) west of Biloxi/Gulfport, Mississippi. The facility is situated 30.38 north latitude (30° 22' 48") and 89.60 west longitude (89° 36' 0") at its center point. In May 1962, the Federal government acquired approximately 56 square kilometers (13,800 acres) that constitute the "Fee Area", or confines within the gates of SSC. Within this area, NASA along with numerous federal and state agencies have constructed administrative, research, remote sensing, and propulsion testing facilities.

Rocket testing operations necessitated development of a "Buffer Zone" for safety and acoustic considerations. A perpetual restrictive easement on 506 square kilometers (125,001 acres) was acquired, which extends six miles in all directions of the Fee Area. The majority of the Buffer Zone is located in Hancock County, Mississippi, although portions extend into Pearl River County, Mississippi and St. Tammany Parish, Louisiana (Figure 1). The region is bounded on the east and west by the Pearl River and Jourdan River watersheds, respectively.

NASA plans to construct a 4,082 square meter (43,940 square foot) First Response Facility at SSC on the northeast corner of Saturn Drive and Trent Lott Boulevard (Figure 2). The Center would be used for consolidation of the SSC fire department, medical clinic, security operations, emergency operations and the energy management and control center. This new facility is needed in order to co-locate emergency response units and facilitate emergency communications and planning.

The fire department is currently located in Building 2201, near SSC shops such as the plumbing shop, machine shop and welding shop. The activities in these shops are often impacted by exhaust fumes from fire department maintenance activities associated with the fire trucks and medical emergency response vehicles. The new facility will have a maintenance and storage garage designed to prevent vehicle emissions from impacting indoor air quality. Additionally, the centralized location proposed for the First Response Facility will greatly reduce emergency response time, especially with respect to the NASA rocket engine test stands.

Security services are now located in three separate buildings: Building 2201, Building 3101 and Building 7001. All security activities will take place at one location in the new First Response Facility except for those associated directly with access to the Fee Area.

The medical clinic, currently located in Building 1100, is very limited in space, especially storage space and there are access and maneuverability problems for the ambulance. The new facility will provide the space and access that is needed. A heliport will be constructed adjacent to the facility for extraction of injured personnel to hospitals. Current locations of first response

operations are provided in Figure 2.

This environmental assessment of the proposed project has been conducted to comply with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and NASA's policies and procedures (14 CFR 1216.7).

2.0 Description of Proposed Action and Alternatives

The proposed action is to clear and grub a 3.99 hectare (9.86 acre) site and construct a 4,082 square meter (43,940 square foot) First Response Facility on the northeast corner of Saturn Drive and Trent Lott Boulevard. The facility will accommodate the SSC fire department, medical clinic, security services, emergency operations and energy management. A concept drawing of the facility is provided in Figure 3.

This project would require a Mississippi Department of Environmental Quality storm water permit for construction, a wetlands disturbance authorization from the U.S. Army Corps of Engineers – Vicksburg District, and a revision to the Title V Permit to Operate Air Emissions.

Early in the project planning process two alternatives were considered. One alternative was to refurbish the currently used spaces but this would not have accomplished the goal of co-location of emergency response units and facilitation of emergency communications and planning. Another alternative considered was to locate the First Response Facility further to the east of the proposed location; however, this alternative was not selected because the traffic from the First Response Facility was thought to have a potentially adverse impact on the traffic patterns around the Stennisphere Visitors Center and the administrative building areas. Neither alternative is discussed further in this environmental assessment.

Inclusion of the "No Action Alternative" is prescribed by the Council on Environmental Quality guidelines implementing the National Environmental Policy Act. The "No Action Alternative" provides the benchmark against which the proposed actions are evaluated.

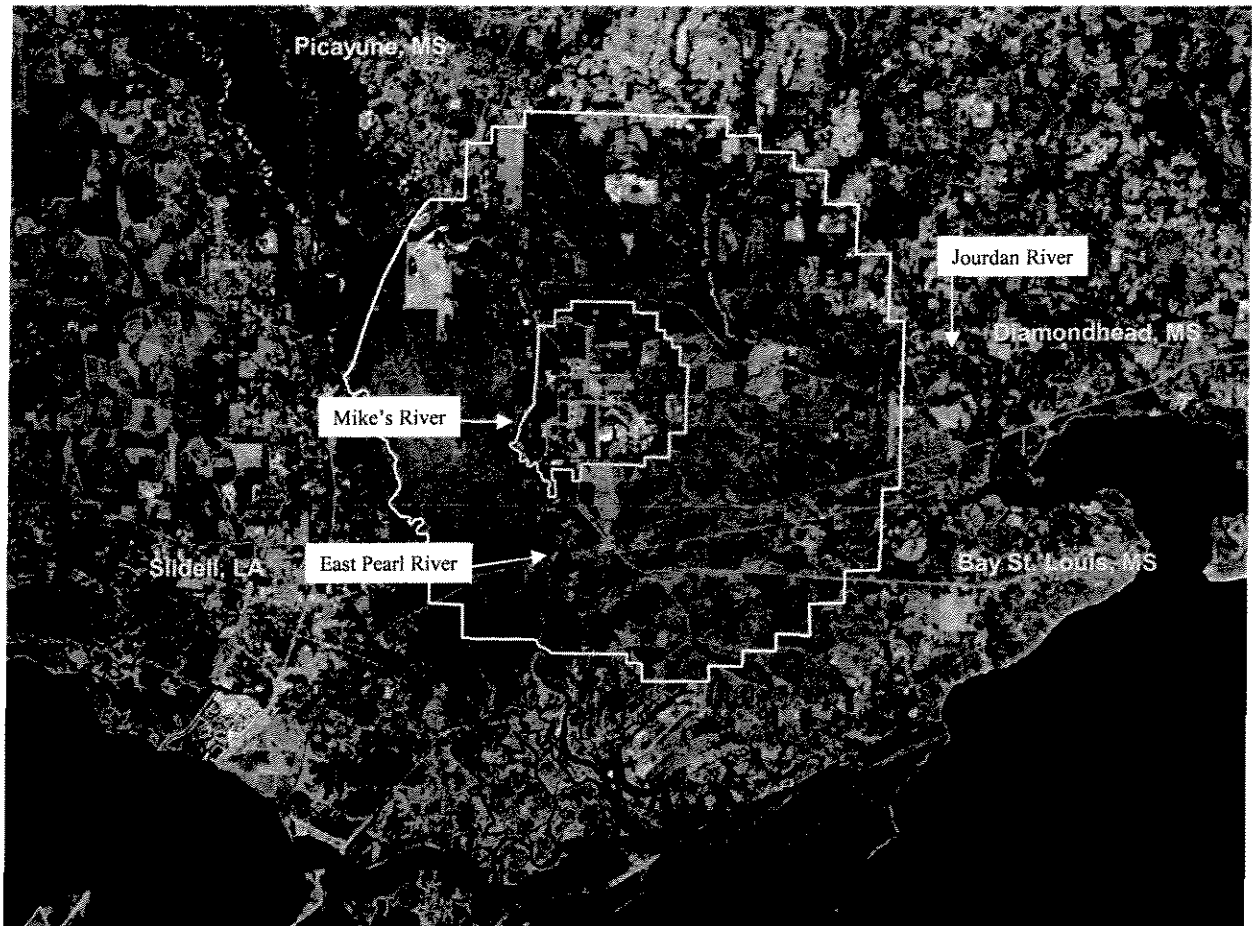


Figure 1
Stennis Space Center Location Map
The Fee Area is marked in yellow and the Buffer Zone is marked in white.

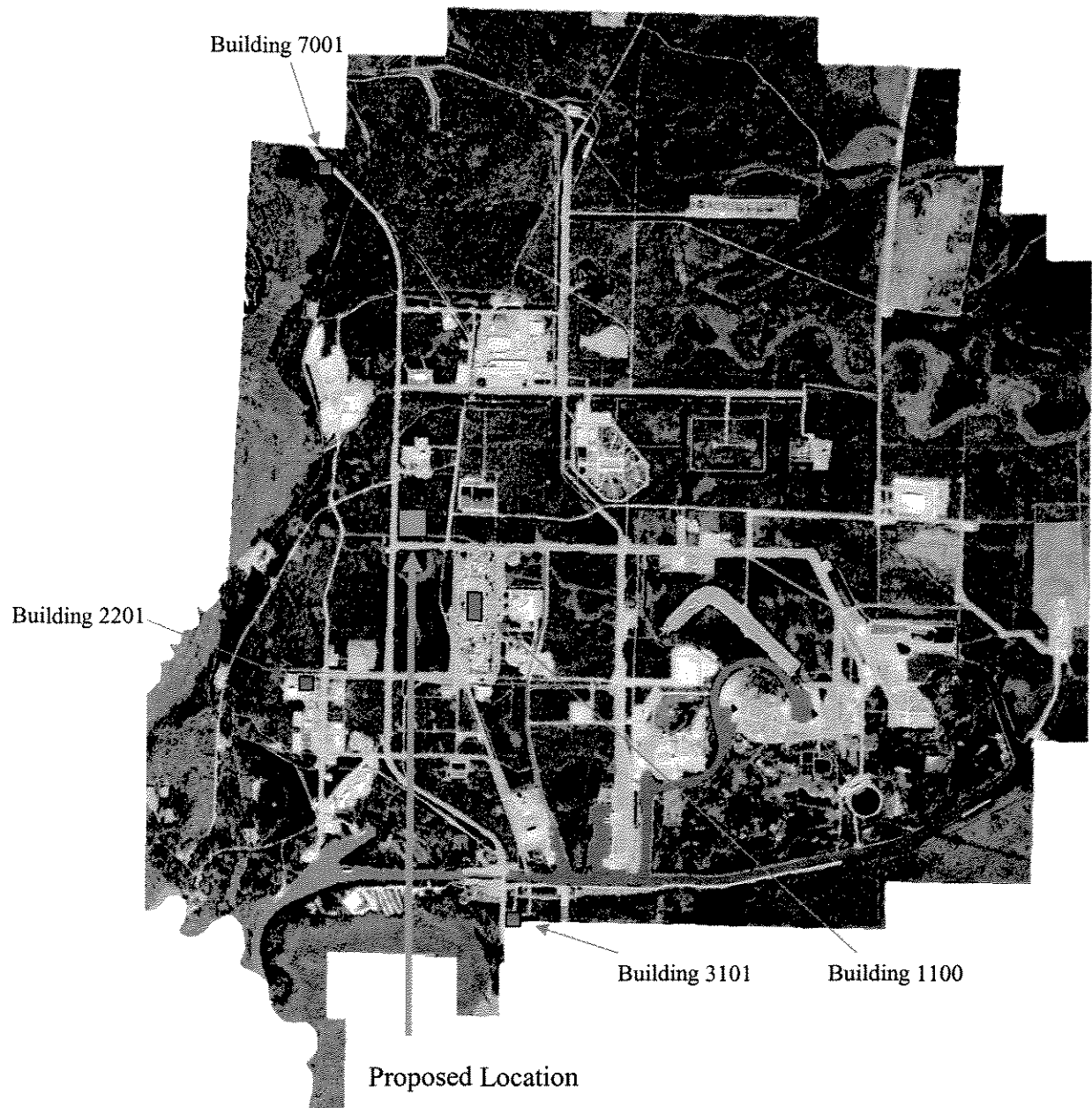


Figure 2
Stennis Space Center Fee Area with Current and Proposed Locations

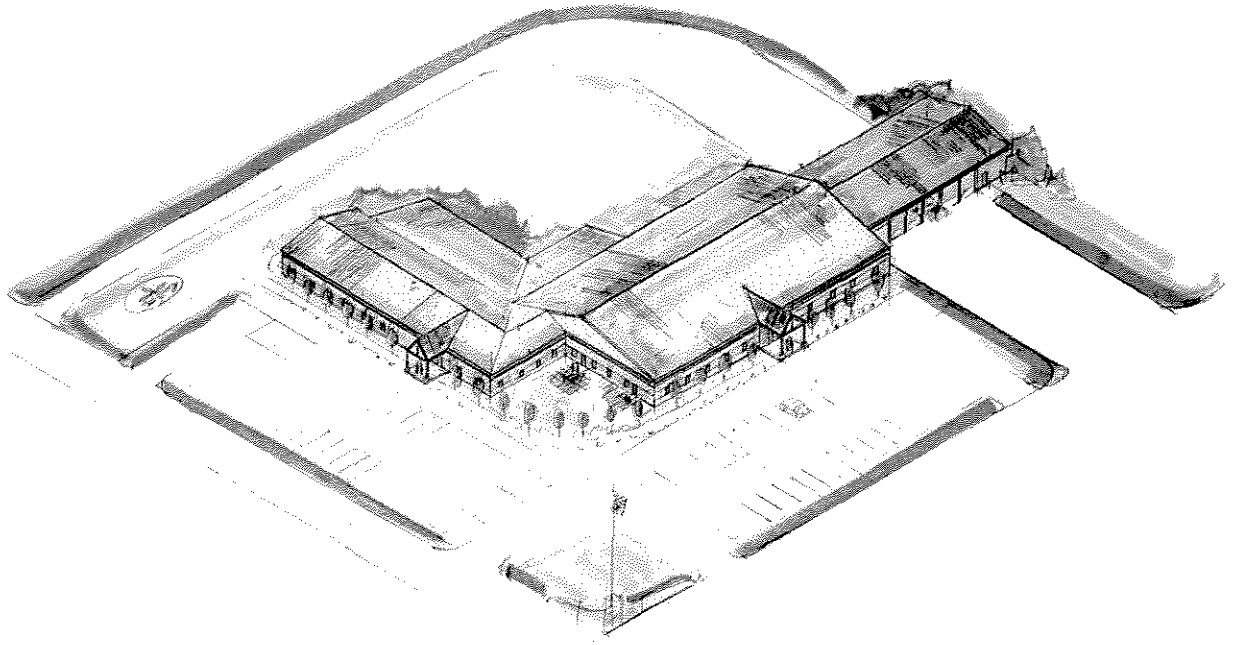


Figure 3

First Response Facility Concept Layout

3.0 Existing Environment and Environmental Consequences of Alternatives

There would be little impact on the existing environment at SSC. The following sections describe any possible impacts that may occur during construction or operation of the First Response Facility. The most notable impacts would be short-term fugitive air emissions, short-term intermittent noise from construction, wetlands disturbance, erosion, and waste generated from construction.

3.1 Air Quality

SSC is considered to be in a rural area for air quality. It will probably remain rural due to NASA's restrictive easement surrounding the facility. The ambient air quality of the three southern Mississippi counties (Hancock, Harrison and Jackson) is considered to be in attainment for PM₁₀, ozone, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead. SSC has maintained compliance with its Mississippi Title V Permit to Operate Air Emission Equipment, originally issued in February 1998 and renewed in 2003.

Air emissions expected from the construction of the First Response Facility include short-term fugitive air emissions from construction activities. Dust from the site can be controlled with water spray to minimize these emissions.

The new facility will require a 500 kW back-up emergency generator that will burn natural gas. Unless emergency conditions exist that require the use of this generator, the only usage will be during preventative maintenance activities. The generator will be listed in SSC's Title V Permit. This generator does not eliminate the need for two diesel emergency generators currently used by the medical clinic and the other emergency services located in Buildings 1100 and 2201. They will continue to be used for other operational needs and will remain in service for Buildings 1100 and 2201.

Additionally, there will be two 0.75 mBTU/hr natural gas boilers installed that will need to be listed in the Title V Permit as "insignificant" sources of air emissions.

The "No Action Alternative" would have no additional air emissions.

3.2 Noise

SSC is surrounded by an acoustic Buffer Zone which minimizes the impact of the noise and vibration generated by static rocket and shuttle main engine testing. Daily noise levels are due to landscape and building maintenance, boilers, cooling towers and traffic. Noise from construction activities associated with the First Response Facility would have a short-term intermittent impact.

Operational noise from the First Response Facility will include operation and maintenance of fire

trucks and other emergency response vehicles, sirens, helicopter operational noise and a public address system for the area surrounding the building. The operational noise will not be any different from present noise levels, except for the occasional noise from helicopter use.

The "No Action Alternative" would result in no additional noise.

3.3 Water Quality

Background surface water quality information is limited; however, discharge stations are maintained by the U.S. Geological Survey (USGS) on the Pearl River approximately 40 kilometers (25 miles) northwest of SSC. A USGS monitoring station on the West Pearl River also measures flow and is located approximately 11.3 kilometers (seven miles) west of SSC. The surface waters in the streams of the area are generally suitable for most uses. USGS analyses indicate that the water in freshwater streams is generally soft and slightly acidic (5.0 to 7.0 pH units), with low concentrations of dissolved solids. Dissolved solids concentrations are less than 100 mg/L and hardness is usually less than 50 mg/L. Amounts of dissolved oxygen are usually greater than 4 mg/L. Dissolved solids concentrations increase in the Pearl and Jourdan Rivers with the movement of saltwater during high tide. Water quality at SSC is similar to the regional surface water quality with the following exceptions:

- Water is slightly alkaline in the SSC Access Canal, between 7.0 and 8.0 pH units, and
- Dissolved solids concentrations range between 60 and 120 mg/L.

The First Response Facility will be connected to the existing sanitary sewer system that discharges to Outfall 001/Lagoon 1. Sewage treatment at SSC is accomplished by the use of artificial wetlands (lagoon system) utilizing aquatic plants. The system is permitted by the Mississippi Department of Environmental Quality (MDEQ) under National Pollutant Discharge Elimination System (NPDES) Permit #MS0021610. No adverse impact is expected to the lagoon system. The wash down area for emergency response vehicles will continue to be located at Building 2105. No new wash down facility or oil/water separator will be required at the new facility.

Construction activities will impact storm water runoff from an area that will include the First Response Facility building, parking lots and heliport. A storm water general permit for construction has been obtained from the MDEQ. The permit is included under the Mississippi General Construction Storm Water Coverage Number MSR102739. SSC will abide by the Storm Water Pollution Prevention Plan that was submitted under the requirements of the permit. Storm water runoff and erosion control will be accomplished by the use of straw bale barriers, silt fences, a storm water swale around the perimeter of the site and good housekeeping practices. Any area disturbed by construction will be graded to drain and seeded with grasses indigenous to the area upon completion of the project. Inspections will be performed weekly to verify that control devices are properly located and maintained.

The "No Action Alternative" results in no additional domestic waste water to Outfall 001 and no additional storm water runoff.

3.4 Groundwater Resources

Several aquifers can be traced through Hancock County, Mississippi. The area is underlain by fresh water-bearing, southward-tipping sands of the Miocene and Pliocene ages. Within these fresh water-bearing sands, one unconfined aquifer is found near the surface with ten or more confined aquifers at a greater depth. The fresh water-bearing zone is 600 to 900 meters (2,000 to 3,000 feet) thick in the area. Individual aquifers range from 30 to 140 meters (100 to 450 feet) in thickness, with most measurements closer to 30 meters. Groundwater at SSC is soft, containing sodium bicarbonate and exhibiting a high pH (above 8). Concentrations of chlorides range from 13 to 16 ppm and iron content is less than 0.3 ppm. Solids content does not exceed 315 ppm. The aquifers have plentiful, almost untapped supplies of fresh water.

Potable water at SSC is supplied from three deep wells on site. This water is used for drinking, sanitation and fire protection. The First Response Facility will not require any more potable water usage than is presently required.

The "No Action Alternative" would have no change to groundwater usage.

3.5 Wetlands and Flood Plains

SSC lies within the watersheds of two rivers: the East Pearl River on the western Fee Area boundary and the Jourdan River on the eastern Fee Area boundary. Some tributaries at the facility flow west to Mike's River and eventually drain into the East Pearl River (Figure 1). The Pearl River empties into Lake Borgne, while the Jourdan River drains into the Bay of St. Louis. Both Lake Borgne and the Bay of St. Louis discharge into the Mississippi Sound.

As a result of the wetlands hydrology found at and around SSC and the presence of hydric soils and hydrophytic vegetation, a large portion of both the Fee Area and Buffer Zone are considered jurisdictional wetlands by the U.S. Army Corps of Engineers (COE).

The disturbance of wetlands at SSC is covered under an existing General Permit #CELMK-OD-FE 14-GPD (Vicksburg District)-53 issued by the COE. As required by the permit, a Final Mitigation Plan was developed by NASA and the COE. NASA mitigates the unavoidable impacts to wetland functions associated with construction projects through creation, restoration, or enhancement and continued management of wetlands on property owned by NASA in the SSC Buffer Zone area. Management of wetlands and mitigation areas is conducted in accordance with 14 CFR 1216.205, Procedures for evaluating NASA actions impacting floodplains and wetlands.

If a determination has been made that a project will impact a wetlands area, the area would be inspected and the compensatory mitigation credit factors would be calculated and charged against the "Mitigation Bank" of credits held by SSC. Calculations are based on the "Charleston Method" developed by the COE of the Charleston District. This method incorporates information about the project such as construction plans, parking areas, and fill material.

The First Response Facility building, parking lots, heliport, utility corridor and helicopter clearance require that 7.22 hectares (17.83 acres) be disturbed during the construction phase. The COE has issued an authorization under General Permit 53 for use of the 7.22 hectares (17.83 acres) of wetland area.

The floodplain at SSC, according to the Flood Insurance Rate Map for Hancock County, Mississippi, includes a 100-year floodplain along the East Pearl River at the western edge of the Fee Area, and a 100-year floodplain along the Wolf Branch and along the Lion Branch of Catahoula Creek in the northeast portion of the Fee Area. The line for the 500-year floodplain extends a little further into the site along the same boundaries. The majority of SSC is classified as Zone "C" meaning an area of minimal flooding. The First Response Facility would not be located in the 100-year or 500-year floodplain.

The "No Action alternative" would have no impact to wetlands.

3.6 Biotic Resources

The First Response Facility proposed location is in an area characterized as Pine Flatwoods. Pine Flatwoods account for the majority of the vegetation in the undeveloped portions of SSC and in the surrounding Buffer Zone. The dominant species in this community is slash pine (*Pinus elliottii*) interspersed with some cypress (*Taxodium distichum*), sweet bay (*Magnolia virginiana*) and black gum (*Nyssa sylvatica*). The under-story in this community includes red maple (*Acer Rubrum*), magnolia (*Magnolia gradiflora*), smaller cypress (*Taxodium distichum*), sweet bay (*Magnolia virginiana*) and black gum (*Nyssa sylvatica*) trees. The largest portion of marketable slash pine (*Pinus elliottii*) timber was removed from the site in May 2003.

The proposed construction site is located in a wooded area that may cause displacement of wildlife such as deer, turkey and quail into adjacent wooded areas. These species will likely be replaced in the proposed area by species that are often found in open areas such as various songbirds.

The "No Action Alternative" would result in no impact.

3.7 Threatened and Endangered Species

Threatened and endangered species that are suspected to have ranges or suitable habitats that include the SSC Fee Area are the eastern indigo snake (*Drymarchon corais couperi*), gopher tortoise (*Gopherus polyphemus*), American Peregrine Falcon (*Falco peregrinus*), Red-cockaded woodpecker (*Picoides borealis*), Louisiana black bear (*Ursus americanus luteolus*) and Louisiana quillwort (*Isoetes louisianensis*). The SSC Fee Area has been surveyed for the presence of these species on several occasions. The most recent faunal study was completed in 1998 by Dr. E.D. Keiser and Dr. P.K. Lago entitled "Survey for Five Endangered Animal Species at the Stennis Space Center, Hancock County, Mississippi." The study found no indications of the occurrence of indigo snakes, red-cockaded woodpeckers, peregrine falcons or black bear. One abandoned burrow was found that may have been dug by a gopher tortoise, but no individuals were sighted. Dr Jean Wooten has completed several vegetation surveys within the SSC Fee Area and has not found any species of quillwort present.

The U.S. Fish and Wildlife Service concurs with the opinions of Keiser, Lago and Wooten in a letter to NASA, February 1999, although they request a visual survey for federally listed species be conducted prior to any earth or vegetation disturbance. A visual inspection of the proposed site for the First Response Facility was conducted in October 2003 by a COE representative, a NASA contractor environmental representative and the NASA Natural Resources Manager. None of the federally listed species or species habitats was sighted.

Based on the Keiser and Lago report, the Wooten opinion, the concurrence by the U.S. Fish and Wildlife Service and a visual inspection of the proposed site for the First Response Facility, construction would not affect any threatened or endangered species that may exist in the SSC vicinity.

3.8 Archaeological Resources

Historically, the land at SSC has been severely disturbed by timber harvesting and the associated naval stores industry during the late nineteenth and early twentieth centuries. More recently, the land was disturbed by the construction of the SSC facility during the 1960s, making it unlikely that undisturbed archaeological sites would be found. In the Fee Area, only the townsite of Gainesville may require future archaeological considerations. This project is not located near the Gainesville townsite and is on previously disturbed land. There are no anticipated archaeological impacts resulting from this project. If items of potential archaeological interest are uncovered during construction, further construction in the immediate area would cease until the requirements of Section 106 of the National Historic Preservation Act have been satisfied.

The "No Action Alternative" would have no impact to archaeological resources.

3.9 Cultural and Historical Resources

The A-1, A-2 and B-1/B-2 Test Stands at SSC have been designated as National Historic Landmarks and appear on the National Register of Historic Places. These test stands and associated control centers have been so designated because of their importance in the testing of Saturn rockets and the importance of the Saturn rocket in landing men on the moon. The proposed construction will not alter the historical attributes of the test stands or affect their status as National Historic Landmarks.

3.10 Transportation

Interstates 10 and 59 (I-10 and I-59), U.S. Highway 90, and Mississippi 607 serve the SSC area. Direct access to and through SSC from I-10 and I-59 is provided by Mississippi Highway 607. Highway 607 also connects with U.S. Highway 90 approximately 13.5 kilometers (9 miles) southeast of SSC. There will not be any impact on surrounding public roads caused by this project.

Traffic patterns within the SSC area may be impacted due to increased activity around the new facility. The Fire Department and ambulance will have easier and quicker access to the rocket test stands where the greatest risk for emergency conditions exists.

The "No Action Alternative" would leave the Fire Department in its present location on the west side of the SSC area at a disadvantaged location for the most efficient emergency response.

3.11 Waste Generation and Treatment

SSC generates solid and hazardous waste from its research and development operations, laboratories, instrument repair, facility operations, and maintenance functions. The solid waste generated consists of household-type wastes and non-hazardous industrial waste. Solid waste is disposed of onsite in a State permitted solid waste landfill. Hazardous waste is transported offsite for treatment, storage, and disposal. NASA maintains "large quantity generator" status under RCRA subtitle C for generating hazardous waste and having it transported offsite.

SSC is committed to pollution prevention, including recycling and reuse activities to achieve waste minimization goals. SSC maintains ongoing recycling programs and identifies less hazardous substitutes for hazardous materials. Recycling collection areas will be established in the new facility for paper, cardboard, aluminum cans and plastic bottles.

For construction of the First Response Facility, construction waste, rubble, and vegetation will be disposed of in the SSC Class II rubbish site. Unacceptable wastes, such as hazardous waste, paint products, and solvents are excluded from disposal in the landfill and will be shipped offsite to pre-approved facilities for appropriate treatment or disposal.

The "No Action Alternative" would produce no construction wastes.

3.12 Socioeconomics

Construction will require temporary employment of approximately 150 employees through construction contractors. The First Response Facility is designed to accommodate 65 employees all of whom are already employed at SSC. There is no anticipated socioeconomic impact.

3.13 Public and Employee Health and Safety

SSC adheres to Occupational, Health, and Safety Administration standards for protection of employees onsite. Procedures are in place to monitor and protect employees as necessary during construction. The SSC Safety and Health Procedures and Guidelines details specific emergency procedures for responding to natural and human-generated emergencies. There are ongoing training programs to ensure emergency preparedness.

The First Response Facility is expected to enhance emergency response and will provide improved training rooms for health and safety education as well as new upgraded medical clinic facilities.

3.14 Pollution Prevention and Environmental Justice

In accordance with Executive Order (EO) 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements," SSC has written a pollution prevention strategy into the *Pollution Prevention Plan*. This plan encourages elimination or reduction of the use and purchase of toxic chemicals, energy efficiency, solid waste reduction and recycling, water conservation, hazardous waste minimization, and oil spill prevention.

In accordance with EO 13101, "Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition," SSC prevents pollution by recycling and reusing materials whenever possible. SSC also complies with federal policies for acquisition and use of environmentally preferable products by purchasing items made from recycled materials such as carpet, insulation, and concrete.

In accordance with EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," SSC considers environmental justice issues during program and project planning consistent with the SSC *Environmental Justice Strategy*. Any disproportionately high and adverse effects of proposed programs at SSC on minority or low-income populations will be identified and action will be taken to resolve public concern. Because of the size of the SSC Buffer Zone surrounding the Fee Area, there are no environmental justice concerns associated with this project.

During the design phase of this facility, SSC will pursue Leadership in Energy and Environmental

Design (LEED) Green Building certification. This certification requires planners to consider issues related to sustainability such as water efficiency, energy efficiency, native plant landscaping, and conservation of materials and resources. By incorporating sustainability principles into the planning process, environmental impacts are minimized during new building construction.

4.0 Agencies and Individuals Consulted

No agencies or individuals have been consulted for this environmental assessment. Information on environmental concerns from agencies and individuals on SSC activities has been addressed in previous environmental assessments and environmental impact statements. No new impacts have been identified for the First Response Facility that require such consultations.

5.0 List of Preparers

Hugh V. Carr	NASA, SSC - Environmental Specialist	Natural Resources Management
Jenette B. Gordon	NASA, SSC - Environmental Specialist	Environmental Concerns
Carolyn D. Kennedy	NASA, SSC - Environmental Specialist	NEPA Management
Dana G. Matherly	NASA, SSC – Project Manager	Project Overview
Anne H. Peek	NASA, SSC - Environmental Officer	Environmental Officer

6.0 References

Federal Emergency Management Agency, Flood Insurance Rate Map, Hancock County, Revised Map, September, 1987.

Federal Interagency Committee for Wetlands Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S. Department of Agriculture Soil Conservation Service, Washington, D.C., Cooperative Technical Publication.

James, Curtis B. U.S. Fish and Wildlife letter dated February 23, 1999 regarding the presence of federally listed species within the Fee Area of the Stennis Space Center, Hancock County, Mississippi.

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Keiser, E.D. and P.K. Lago. 1998. Survey of Five Endangered Animal Species at the Stennis Space Center, Hancock County, Mississippi.

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Smith, W., P. Nichols Jr., and L. Walton. 1978. Soil Survey of Hancock County, Mississippi, United States Department of Agriculture, Soil Conservation Service.

Wooten, J.W. 1990. A Fall Botanical Survey of a portion of the National Aeronautics and Space Administration Installation Stennis Space Center Mississippi, John C. Stennis Space Center.

Wooten, J.W. University of Southern Mississippi letter dated April 21, 1998 regarding the presence of species of *Isoetes* within the SSC Fee Area.

7.0 Distribution List

Maury Oceanographic Library, Building 1003, Stennis Space Center, MS

Hancock County Library, Bay St. Louis, MS

Margaret Reed Crosby Library, Picayune, MS

St. Tammany Parish Library, Slidell, LA

U.S. Fish and Wildlife Service, 2524 South Frontage Road, Suite B, Vicksburg, MS

Mississippi Department of Archives and History, P.O. Box 571, Jackson, MS

National Aeronautics and Space Administration, Headquarters, Library, 300 E Street SW,
Washington, DC