Final

Environmental Assessment Demolition of Fourteen Buildings at NASA Langley Research Center

Lead Agency: National Aeronautics and Space Administration, Langley Research Center (LaRC), Hampton, Virginia

Proposed Action: Demolition of fourteen buildings located at NASA LaRC

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Abstract: NASA LaRC is proposing to demolish fourteen buildings at LaRC, located in Hampton, VA. As a result of increased budget cuts, demolition and removal of the buildings is needed to enable LaRC to reduce operating costs and achieve maximum efficiency in performing its mission. The buildings are no longer essential for NASA LaRC to perform daily operations and all but two of the facilities were closed or shut down in the late 1990's. The demolition would involve razing the buildings down to slab with minimal ground disturbance. This Environmental Assessment (EA) identifies the key environmental issues and impacts of both the proposed demolition and the No-Action Alternative.

ENVIRONMENTAL ASSESSMENT DEMOLITION OF BUILDINGS AT NASA LaRC HAMPTON, VIRGINIA

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

This Environmental Assessment (EA) has been prepared to assess potential environmental impacts associated with National Aeronautics and Space Administration (NASA) Langley Research Center's (LaRC) proposal to demolish fourteen buildings located at LaRC. Information contained herein will be used by NASA and the appropriate regulatory agencies to determine if the proposed action is a major federal action significantly affecting the quality of the human environment. If the proposed action is determined to be major and significant, an Environmental Impact Statement will be prepared. If the proposed action is determined not to be major and significant, a Finding of No Significant Impact (FONSI) will be issued and the action can proceed. Criteria used to evaluate significance can be found in at 40 Code of Federal Regulations (CFR) Part 1508.27.

This EA was prepared in compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), and NASA's policy and procedures (14 CFR Subpart 1216.3).

A detailed description of the proposed action and the No-Action Alternative is provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected if the proposed action were implemented. Chapter 4.0 describes how those resources would be affected by implementation of the proposed action and the No-Action Alternative. Chapter 5.0 addresses the cumulative effects of the proposed action, as well as other recent past, current, and future actions that may be implemented in the region of influence for the proposed action.

1.2 Background

NASA LaRC is located in the northeastern portion of the City of Hampton, Virginia. The Center is situated near the southern end of the lower Virginia Peninsula, approximately 241 Km (150 miles) south of Washington, D.C. and 80 Km (50 miles) southeast of Richmond, Virginia. The Center is located within close proximity to several surface water bodies within the tidal zone of the Chesapeake Bay. The cities of Hampton, Poquoson, Newport News, Williamsburg, and York County form a major metropolitan statistical area around LaRC (Figure 1.1).

LaRC had its beginnings in 1917 when the War Department purchased land in what is now Hampton, Virginia for the joint use of the Army and the National Advisory Committee for Aeronautics (NACA), the forerunner organization for NASA. It was then designated the Langley Field after Professor Samuel Pierpont Langley, an early pioneer in flight. NACA was created to supervise and direct the scientific study of the problems of flight and the Langley Field served as an experimental airfield and proving ground for aircraft. The facility was named Langley Memorial Aeronautical Laboratory in 1920 with the dedication of the first wind tunnel. When NASA succeeded NACA in 1958, the Langley Laboratory was officially designated Langley Research Center.

INSERT FIGURE 1.1

Overview

Currently, approximately 70 percent of the work performed at NASA LaRC requires the use of computer modeling, wind tunnels, and other facilities and techniques used to perform aeronautical research; the remaining effort provides support to the national space program. With its size and large number of research facilities, LaRC is one of NASA's largest research centers.

LaRC occupies 327 hectares (808 acres) of federal government-owned land. The Center is divided into two areas commonly called the West Area and the East Area. The majority of the facilities are located on the West Area, 318 hectares (788 acres) of land to the west of Langley Air Force Base (LAFB). The West Area is bound by the Brick Kiln Creek to the north, State Route 172 to the west and LAFB to the south and east. The East Area is an 8-hectare (20-acre) area occupied by NASA on LAFB property (Figure 1.2).

Access to the West Area of LaRC is through one of three gates: the main gate is located off of State Route 172 and the back gate is located off of Wythe Creek Road. There is also a gate on East Durand Street at the common boundary between LAFB and NASA LaRC. The Center is surrounded by a ten-foot high chain link fence and each gate is manned 24-hours per day by security personnel. The Center has approximately 220 office and industrial type research facilities, the majority of which were built between 1958 and 1980. Large buildings, primarily brick, which house research laboratories, shops and offices, are interspersed among a number of large, wind tunnel facilities. Other property types include small, relatively recent office buildings, community/support buildings, and shed-type buildings used for small shops and storage. There are no housing or living accommodations at NASA LaRC.

1.3 Purpose and Need

In 1996, NASA Headquarters performed a "Zero Base Review" of all NASA installations and determined that due to administration budget cuts, all functions at NASA centers needed to be streamlined.

"Projected budget constraints are limiting the resources available to operate and maintain facilities. A closure plan with estimated savings for closures between FY96 and FY00 was transmitted to Headquarters as part of the FY96 Zero Base Review (ZBR). The estimated savings identified on that plan were removed from LaRC's operation plan. In addition, funding levels for utilities and maintenance are already declining significantly." Langley Policy Directive, LAPD 8800.16, Facilities Closure and Management of Closure Status, April 2000.

The structures proposed in this EA for demolition have been determined "under utilized" and are not essential to the NASA LaRC mission. Twelve of the 14 buildings were closed in the late 1990's and the other two are pending closure.

INSERT FIGURE 1.2 West and East boundary

The purpose of demolishing the fourteen buildings is to streamline the number of facilities that LaRC has to maintain to accomplish its mission. As stated in the background section, the Center has approximately 220 facilities, 18 of which are major research facilities and the rest, administrative and support facilities. In the late 1980's and early 1990's, the Center employed over 5,500 civil service and contractor employees. Since that time, LaRC has reduced its workforce by 32 percent, to 3,770 employees. The reduction in the number of facilities corresponds with the reduction in workforce as many of facilities are under-utilized or no longer needed.

NASA's budget for the maintenance of facilities has been significantly reduced over recent years. As a result, demolition and removal of the buildings is needed to enable LaRC to reduce operating costs and achieve maximum efficiency in performing its mission. NASA would be able to utilize the funds presently being used for the maintenance of these buildings to aid in funding the maintenance of other existing facilities considered to be essential in conducting research at the Center.

			Square Meters
Building 1120	Space Environment Interactions Laboratory	1980	256
Building 1247G	Support Operations Office	1952	108
Building 1157	Electrical Equipment Staging Area	1968	13
Building 1279	Insulation Storage Building	1958	55
Building 1207	General Storage (Parts) Building	1968	93
Building 1270A	Composite Preparation Building	1977	125
Building 1270B	Composite Storage Building	1965	17
Building 1270C	Chemical Treatment Facility	1988	52
Building 1270D	Chemical Storage Facility	1960	31

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The proposed action involves demolition of fourteen buildings at NASA LaRC. The buildings identified in Table 2.1 are grouped according to where they are located at the Center. The location of the buildings is shown in Figure 2.1. Photographs of the buildings are included at Appendix B.

Table 2.1 – Buildings Proposed for Demolition

All but one of the buildings is less than fifty years old and all of the buildings are located on disturbed ground. None are considered essential for LaRC to conduct research. The proposed action would be phased over time according to the different groups of buildings. The proposed demolition would involve complete dismantling and removal of all building structures, equipment and machinery. All utilities would be capped or disconnected and only the concrete slab would remain. The demolition would involve minimal ground disturbance and any landscaped areas that may be disturbed by the demolition would be restored to prevent any long-term soil erosion. Any asbestos or lead-based paint would be removed during the first phase of demolition and properly disposed of in accordance with applicable federal, state, and LaRC requirements. Some of the equipment, machinery and building materials may be salvaged or recycled. Other demolition debris would be sent to a local landfill. Demolition contractors would use an established haul route for equipment delivery and debris removal. The total amount of debris generated from the demolition of the fourteen buildings would be approximately 1,098 cubic meters (1,436 cubic yards).

INSERT FIGURE 2.1 Location of the buildings

All contractors performing work at NASA LaRC are required to comply with all applicable safety and health regulations, including Occupational Safety and Health Administration (OSHA) and NASA regulations. Contractors involved in the demolition project would be contractually obligated to prepare and follow a Health and Safety Plan that complies with the regulations to ensure the safety of human health and the environment during the project.

NASA LaRC carries out its operations in compliance with federal, state and local environmental laws and requirements. Since the proposed action would involve handling asbestos, demolition contractors would obtain a permit from the LaRC Safety Office and follow approved procedures and requirements as directed in 40 CFR Parts 61 and 763. In addition, in accordance with 16VAC 25-20-30, notification of the asbestos and demolition work would be sent to the Virginia Department of Labor and Industry and where applicable, EPA Region III Office. It is expected that no other permits would be needed for demolition of the buildings.

The proposed action would follow pollution prevention requirements under Executive Order 122856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements. The proposed action would comply with other environmental requirements in a manner acceptable to the relevant regulatory agency for handling, recycling, salvaging and disposing of all materials, including asbestos and lead, as well as disposal of inert and demolition wastes, as applicable.

2.2 No-Action Alternative

Under the no-action alternative, NASA would not demolish the buildings. The Center would leave the buildings in "abandoned" status, maintaining only the fire suppression system of each building. The interior and exterior structural integrity and appearance of the buildings would deteriorate over time.

2.3 Alternatives Considered But Not Carried Forward

Several alternatives were considered but eliminated from detailed analysis as they would not meet the need for NASA LaRC to reduce its operating costs and achieve maximum efficiency.

One alternative is for the Center to lease the buildings to outside tenants. This alternative was eliminated due to security issues and the age and poor condition of the buildings. Access to NASA LaRC is very limited due to matters of national security. Allowing large numbers of people from outside NASA access to the Center could compromise that security. In addition, it is not economically feasible for the Center to increase or modify its security force to accommodate leasing the buildings. Moreover, most of the buildings are very small with limited utilities and office space and it is highly unlikely that anyone would want to lease them.

Another alternative would keep the buildings in surveillance and maintenance mode indefinitely. The exterior façade and appearance of each of the buildings would be maintained in addition to the fire suppression system. This alternative was eliminated as the Center would continue using funds to maintain the facilities and would not be able to divert the funds to aid in maintaining essential facilities at an acceptable level. Over time, this could affect the safety and operation of the Center's essential research facilities.

3.0 AFFECTED ENVIRONMENT

This chapter describes relevant environmental conditions at LaRC for resources potentially affected by the proposed action and the No-Action alternative described in Chapter 2.0. In compliance with guidelines contained in NEPA and CEQ regulations, and NPG 8580.1, the description of the existing environment focuses on those environmental resources potentially subject to impacts.

For the environmental impact analysis process, the resources to be analyzed are identified and the expected geographic scope of potential impacts, known as the region of influence, is defined. The environment includes all areas and lands that might be affected, as well as the natural, cultural, and socioeconomic resources they contain or support.

3.1 Resources Eliminated From Detailed Consideration

Several resources were not evaluated in this EA because it was determined that implementation of the proposed action is unlikely to have any impacts to these areas of concern. These resources include Soils and Geology, Recreation, Transportation, Socioeconomic, Climate, and Terrestrial and Aquatic Vegetation. A brief explanation of the reasons why each resource has been eliminated from further consideration in this EA is provided below.

Soils and Geology. Implementation of the proposed action would not involve any excavation or removal of soils. With the exception of minimal ground disturbance caused by heavy machinery and falling debris during the demolition process, the areas around the buildings would not be disturbed and no topographic features would be modified or otherwise altered. Therefore, these resources were eliminated from further analysis.

Recreation. The overcrowding of recreational facilities as a result of a proposed action is the typical issue raised in an environmental analysis. With the implementation of this proposed action, no increase in personnel would occur and no expansion would occur affecting a recreational facility at LaRC. Therefore recreational resources were eliminated from further analysis.

Transportation. Implementation of the proposed action would not change the use of transportation resources in the region. Local highways currently accommodate the traffic generated by the 3,770 employees and other individuals traveling the roads on a daily basis. Removal of the demolition debris would be along an established haul route leading off the Center. The increase in truck traffic would be minimal because the demolition would be phased over time and the quantity of demolition debris would be relatively small. Therefore, this resource was eliminated from further analysis.

Socioeconomic. The proposed action would occur over a period of six months to a year. There would be no increase in the number of NASA employees as a result of this project. The work would be performed by demolition contractors from the regional work force or from elsewhere in Virginia. Because these are temporary jobs that would be filled by existing regional work force, there would be no effect on area population or increase in the demand for housing or public services in the region. Therefore, the proposed action would have a negligible effect on the socioeconomic character of the surrounding communities and this resource was eliminated from further analysis.

Climate. Climate is the prevalent long term weather conditions in a particular area. Climatic elements include precipitation, temperature, humidity, sunshine and wind velocity and phenomena such as fog, frost, and hail storms. The minor demolition activity associated with the proposed action should have no measurable effect on the local climate and this resource was eliminated from further analysis.

Visual Resources. The aesthetic quality of an area or community is composed of visual resources. Physical features that make up the visible landscape include land, water, vegetation and man-made features, such as buildings, roadways and structures. The proposed demolition of the fourteen buildings would remove aging industrial facilities from the landscape and create open space near grassy areas and wetlands. Demolition of the buildings would provide enhanced visual quality at the Center. Since no negative impacts are expected on the visual resources from the proposed demolition, this resource was eliminated from further analysis.

Terrestrial and Aquatic Vegetation. Implementation of the proposed action would not remove or replace vegetation. No pollutants, including sediments and/or nutrients would be introduced as a result of the proposed action. Since all project activity would be restricted to previously developed areas of the Center that have already been disturbed, this resource was eliminated from further analysis.

Environmental Justice. Populations that are subject to environmental justice considerations are not located within or near the location of the proposed action. Therefore, this resource was eliminated from further analysis.

Wild and Scenic Rivers. None of the waterways within the NASA LaRC property qualify for the provisions of the Wild and Scenic Rivers Act, therefore, analysis of this resource was not carried forward in this EA.

In addition, since NASA LaRC does not have any *prime or unique farmland*, or *conservation areas*, these resources were eliminated from further analysis.

3.2 Human Environment

3.2.1 Land Use

Land uses are frequently regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable or protect specially designated or environmentally sensitive areas. Special use areas are identified by agencies as being worthy of more rigorous management. The region of influence for this resource is the LaRC West Area.

LaRC is located in the northern tip of the City of Hampton immediately adjacent to the City of Poquoson. The Langley Air Force Base (LAFB) dominates land use along the southern edge of LaRC. To the east of LaRC, is the northwest and southwest branches of the Back River, beyond which is the Chesapeake Bay. The area to the west of LaRC is one of the least developed areas of the City of Hampton, although office/research parks are in the early stages of development.

NASA LaRC has a current Facilities Master Plan that supports the Center's strategic approach to programmatic facility planning and prioritization. Figure 3.1 presents the ten functional zones identified in the Facilities Master Plan for the West Area of NASA LaRC. All of the buildings proposed for demolition are located within Zone 2 – General Research/Support/Community.

NASA LaRC is located within the coastal zone of the Commonwealth of Virginia. Federal agency activities within the coastal zone must be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies. All federal actions are subject to this consistency requirement if they would affect natural resources, land uses, or water uses in the coastal zone. The Chesapeake Bay Local Assistance Department regulates activities in the Chesapeake Bay Resource Management Areas (RMA's) and Resource Protection Areas (RPA's). These areas include tidal shores, tidal wetlands, and non-tidal wetlands that are contiguous to and connected by surface flow to tidal wetlands and perennial streams, and a 30meter (100-foot) buffer located landward of these features. Both RMA and RPA features exist on NASA LaRC property.

The Virginia Department of Environmental Quality (DEQ) oversees activities in the coastal zone of the Commonwealth through a number of enforceable programs. In reviewing the proposed action, DEQ may require agencies to coordinate with its specific divisions or other agencies for consultation or to obtain permits; they also may comment on environmental impacts and mitigation. Virginia DEQ enforceable programs and policies pertain to fisheries management, subaqueous lands management, wetlands management, dunes management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and costal lands management. Not all of these enforceable programs are applicable to the proposed action, as explained in the following sub-sections. The remaining programs (air pollution control, non-point source pollution control, point source pollution control, and wetlands management) are discussed in relevant resource sections (e.g., air quality, water resources, biological resources).

Fisheries Management. The proposed demolitions would have no adverse effect on the conservation and enhancement of finfish and shellfish resources or the promotion of commercial and recreational fisheries.

Subaqueous Lands Management. The proposed demolitions would not involve encroachment into, on or over state-owned subaqueous lands.

Dunes Management. There are no sand covered beaches or sand dunes in the vicinity of any of the buildings proposed for demolition.

Shoreline Sanitation. The proposed action would remove buildings that are connected to the Center's sanitary sewer system, thus having no effect on shoreline sanitation.

INSERT FIGURE 3.1

Functional zones

3.2.2 Noise

Sound levels are measured using a logarithmic scale expressed in decibels (dB) and the measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to humans. Most people are exposed to sound levels of 50 to 55 dBa or higher on a daily basis. For comparison purposes, normal conversation is approximately 60 dBA, a train approaching a subway platform 90 dBA, and at 120 dBA, sound can be intense enough to induce pain.

The aircraft operating from LAFB are the dominant and most wide spread noise source in the area. LAFB prepared an Air Installation Compatible Use Zone (AICUZ) report in 1997 that analyzed the existing noise environment at LAFB and the surrounding area. The report identified that noise levels at NASA LaRC resulting from the LAFB aircraft operations ranged from 65 to 85 dBA. Figure 3.2 shows the noise contours at LaRC.

Several NASA LaRC facilities located close to the Center's property line periodically produce noise levels higher than ambient levels outside the property line. Primary noise sources at NASA LaRC include wind tunnels, compressor stations, and substations. Most of the wind tunnels are closed-loop tunnels in which the test gas medium is re-circulated and the noise generated by the tunnel is contained largely within the building. In addition, many of the facilities operate only at certain times of the year, often for periods of ten minutes or less. Noise level surveys conducted on the various wind tunnels during peak operating mode have identified noise levels ranging from 45 to 80 dBA.

NASA conducts its research and testing operations with caution and awareness to restrict noise within the guidelines established by the Occupational Safety and Health Act of 1970 (29 CFR 1910 et. seq.) and minimizes environmental noise impacts to the maximum extent possible

The daily operation of motor vehicles in and around LaRC is considered a minor source of noise. Vehicles on the Center are driven at slow speeds (10-25 mph) and normal traffic flow is typically very light resulting in noise levels well below 50 dB (light traffic). The region of influence for noise is mainly the areas within and immediately adjacent to the building demolition sites that could potentially be affected by an increase in noise levels.

3.2.3 Cultural Resources

Cultural resources are defined as any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, or religious reasons. Cultural resources are typically divided into three categories: archaeological; architectural; and traditional. The region of influence for cultural resources is the area within which the proposed action has the potential to affect existing or potentially occurring archaeological, architectural (e.g., historical), or traditional resources.

INSERT FIGURE 3.2 AICUZ NOISE MAP

3.2.3.1 Archaeological and Architectural Resources

Archaeological resources are locations where prehistoric, historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). *Architectural resources* include standing buildings, dams, canals, bridges, and other structures of historic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP).

			Square Meters
Building 1120	Space Environment Interactions Laboratory	1980	256
Building 1247G	Support Operations Office	1952	108
Building 1157	Electrical Equipment Staging Area	1968	13
Building 1279	Insulation Storage Building	1958	55
Building 1207	General Storage (Parts) Building	1968	93
Building 1270A	Composite Preparation	1977	125

Archaeological surveys have been conducted at LaRC in conjunction with a number of specific projects. Twenty-one archaeological sites have been identified including both prehistoric and historic sites. The buildings proposed for demolition are not located on any of the archaeological sites.

Table 3.1 summarizes architectural resources at LaRC including NRHP-listed historic properties within or immediately adjoining the LaRC. None of these are within the area of affected environment for the proposed action.

Table 3.1 - National Register-Listed Historic Properties at NASA LaRC

Source: National Register Information Service 2000

3.2.3.2 Traditional Resources

Traditional resources are resources associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community.

No traditional resources or Native American issues have been identified at LaRC. No federally recognized Indian tribes or lands are located in Virginia. The Bureau of Indian Affairs (BIA) identifies Tribal Designated Statistical Areas for four tribes in eastern Virginia: the Mattaponi, the Pamunkey, the Chickahominy, and the Eastern

Chickahominy (BIA 1998). The Commonwealth of Virginia recognizes five tribes in eastern Virginia: the Chickahominy, the Eastern Chickahominy, the Pamunkey, the Mattaponi, and the Nansemond (Virginia Indian Council 1997).

3.2.4 Hazardous, Regulated and Solid Waste

NASA LaRC's policy is to minimize the volume and toxicity of wastes generated by mission operations to the extent technically and economically feasible. Source reduction, recycling, recovery and reuse are utilized whenever possible. The Center has a very active environmental program that includes the following areas: waste management, recycling, pollution prevention, air quality, water resources, affirmative procurement and a web-based chemical material and waste disposal tracking system.

LaRC is an EPA-permitted large quantity generator of hazardous waste. The Center is not authorized to transport hazardous waste off site, store hazardous waste beyond a 90-day accumulation period, or treat or dispose of hazardous waste on site. The LaRC Environmental Management Office (EMO) oversees the Center's waste management program. The EMO uses appropriately permitted contractors to transport and dispose of hazardous wastes. In addition, the EMO maintains all records of the Center's waste disposal including manifests and certificates of destruction.

LaRC has over 150 satellite waste accumulation areas located throughout the Center and the areas are managed in accordance with applicable environmental regulations. The wastes generated at LaRC include of a wide variety of items, such as solvents, fuels, oils, gases, photo chemicals, batteries, fluorescent lightbulbs and laboratory chemicals.

Waste generated from remediation projects such paint removal and spill cleanup are sampled and analyzed to ensure proper waste characterization and disposal. Wastes that are nonhazardous, nonregulated solid materials are consolidated and sent for disposal to a local landfill. Remediation and spill debris material that contain hazardous waste or exhibit hazardous characteristics are sent to a permitted hazardous waste disposal facility.

LaRC complies with all federal and state regulations applicable to asbestos. The LaRC EMO ensures appropriate disposal of all asbestos waste generated from facility remediation projects. Asbestos removal contractors are required to obtain applicable permits and use only permitted landfills for disposal. Asbestos waste is double-bagged and wetted and shipped in closed containers.

LaRC ensures the proper management and disposal of materials containing polychlorinated biphenyls (PCBs). All large transformers at the Center that contained PCBs have been retrofilled or removed. Many of the older facilities at the Center still have small PCB light ballasts or capacitors. The EMO ensures that PCB materials are properly packaged, transported and disposed of at an approved disposal facility.

NASA LaRC generates large volumes of municipal solid waste. The major items are paper, wood, metals, cardboard, plastics, grass and tree clippings, glass, and remediation and maintenance wastes.

Scrap metals such as aluminum, copper and steel, and excess materials having salvage value are recycled. Scrap materials of little or no value such as building materials, tree and shrub trimmings, and broken concrete are transported to a licensed landfill for disposal.

LaRC recycles more than 317,514 kilograms (700,000 pounds) of materials annually. This includes paper and cardboard; oil; oil filters; metal (scrap aluminum, copper, ferrous metals); organics and yard waste (which are composted); fluorescent bulbs; batteries (lead acid, nickel cadmium); and antifreeze.

3.3 Physical Environment

3.3.1 Air Quality

NASA LaRC is located in the Hampton Roads Intrastate Air Quality Control Region (AQCR) which is in attainment with all criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (S_2), particulate matter less than 10 microns in diameter (PM_{10}), and lead (Pb). The area remains a Clean Air Act maintenance area for ozone.

The VDEQ administers the state's air Operating Permit Program. LaRC has a State Operating permit that sets emissions limits for specific stationary air pollution sources as well as center-wide emission limits. The Center is not required to have a Title V Federal Operating Permit. LaRC qualifies as a synthetic minor because its air emissions are limited below the prescribed thresholds by its air permit.

The Center's air permit contains enforceable conditions that limit the amount of air pollutants that LaRC may emit. Specific permit requirements vary according to the air pollution source, but they generally include physical, operational, record keeping and reporting requirements.

3.3.2 Water Resources

Water resources include surface waters, groundwater and floodplains located at LaRC as well as the surrounding watershed areas potentially affected by runoff from the Center.

3.3.3 Surface Waters

NASA LaRC is located on the coastal basin of the Back River, which flows into the Chesapeake Bay. Approximately forty percent of the LaRC West Area drains into the Brick Kiln Creek, which runs along the northern boundary of NASA LaRC and joins the Back River Northwest Branch. Tabbs Creek, which drains most of the rest of the West Area, also flows north into the Back River Northwest Branch. A small portion of the West Area in the south drains to Tides Mill Creek, which joins the Back River Southwest Branch. The entire East Area drains to the Back River. All local waterways are influenced by tides in the Chesapeake Bay.

The Center operates under two water discharge permits. A permit from the Hampton Roads Sanitation District (HRSD) allows LaRC to discharge non-hazardous industrial wastewater and sanitary sewage to the HRSD sanitary sewer system. The Center's VPDES permit regulates industrial process wastewater and storm water discharges from the Center. LaRC has ten permitted outfalls and the VPDES permit requires frequent sampling and monitoring of the effluent from the outfalls to ensure compliance with permit limits. Figure 3.3 shows the locations of the West area outfalls and the sites of the proposed building demolitions.

LaRC has few water pollution sources due to the relatively low level of industrial operations at LaRC. The major pollutants are the chemicals used to treat the boilers and cooling towers, and these are discharged in accordance with LaRC's permit from VDEQ. LaRC employs various Best Management Practices to prevent or mitigate storm water and/or sewer system pollution from facility activities. Land-clearing and construction activities are carried out in compliance with appropriate State requirements.

LaRC does not draw water from the surface water resources, nor does it have any collection or treatment facilities. LaRC receives all of its water from independent sources and the public water system, and it does not sell water or operate as an interstate commerce carrier. Therefore, LaRC is exempt from the Safe Drinking Water Act and Virginia Waterworks Regulations.

3.3.3.1 Groundwater

Groundwater at NASA LaRC is often brackish because of the close proximity to the Chesapeake Bay and marine deposits found in the soil. Local recharge of the water to the groundwater system is by precipitation that filters downward into the surface sediments. Groundwater movement at NASA LaRC is tidally influenced at locations near Brick Kiln Creek and Tabbs Creek. A total of 32 shallow wells have been installed to identify and monitor potential contamination of groundwater at NASA LaRC. Since 1995, samples collected from the monitoring wells at LaRC have not revealed contamination of the groundwater.

3.3.3.2 Floodplains

Floodplains are the flood-prone lowland areas adjoining inland and coastal waterways. The 100year floodplain is the area where it is estimated that there is a one percent chance of flooding in any given year. Approximately one-third of LaRC is within the 100-year floodplain. The stillwater elevation for the 100-year floodplain for the LaRC area is calculated at 2.6 meters (8.5 feet) above mean sea level (MSL). The stillwater level for the 500-year floodplain is 2.9 meters
(9.8 feet) above MSL. The 100-year floodwater level with accompanying waves has been estimated at about 3.3 meters (11 feet) above MSL near LaRC. All but one of the buildings proposed for demolition are in the 100-year and 500-year floodplain.

It is anticipated that a Category 2 hurricane could produce flooding at the 100-year floodplain level in the LaRC area. A Category 3 hurricane could raise water levels above the 500-year floodplain, which would result in the majority of the LaRC facility being damaged by floodwaters.

INSERT FIGURE 3.3 Outfalls and bldgs.

3.4 Biological Resources

3.4.1 Fish and Wildlife

LaRC supports a limited variety of fish and wildlife species with its unimproved lands providing habitat for fur-bearing (game) mammals, small mammals, birds, reptiles, amphibians, and fish. Furthermore, tall fencing surrounding LaRC property limits movement of many larger animals on and off the property from adjacent unimproved lands. The areas around the facilities proposed for demolition offer limited value to native wildlife. The areas are mostly mowed field or paved concrete road and parking areas.

Some species that would be expected in these areas would include common rodents, such as house mouse or white-footed mouse; birds such as American robin, blue jay, fish crow, and common grackle, and reptiles such as eastern box turtle. The Center also attracts some white-tailed deer, raccoons, and Virginia opossum that forage from the adjacent woods and wetland areas.

3.4.2 Threatened and Endangered Species

Due to the lack of suitable habitat and developed nature of the areas around the buildings proposed for demolition, no threatened or endangered species are known to occur within or immediately adjacent to the project sites. In addition, the project sites have not been designated as Critical Habitat Areas by the U.S. Fish and Wildlife Service for any Threatened or Endangered species. (Refer to Appendix A).

Table 3.2 lists three reptile and seven bird species that could potentially occur at the Center as rare transient visitors.

Table 3.2 - Potential Threatened and Endangered Species at NASA LaRC

			Square Meters
Building 1120	Space Environment Interactions Laboratory	1980	256
Building 1247G	Support Operations Office	1952	108
Building 1157	Electrical Equipment Staging Area	1968	13
Building 1279	Insulation Storage Building	1958	55
Building 1207	General Storage (Parts) Building	1968	93
Building 1270A	Composite Preparation Building	1977	125
Building 1270B	Composite Storage Building	1965	17
Building 1270C	Chemical Treatment Facility	1988	52
Building 1270D	Chemical Storage Facility	1960	31
Building 1271	Engineering Support Lab #1	1960	171

3.4.3 Wetlands

Wetlands delineation surveys were conducted at LaRC in 1994 by Old Dominion University and in 1999 by the U.S. Army Corps of Engineers (USCOE). The surveys were performed in accordance with the USCOE Wetland Delineation Manual (Technical Report Y-87-1) and subsequent revisions.

There are three types of wetlands in the NASA LaRC area. The predominant wetland areas in the vicinity are the tidal marsh wetlands associated with Brick Kiln Creek and Tabbs Creek. These wetland areas consist of an estuarine emergent marsh dominated by saltmarsh cordgrass, saltmarsh hay, salt grass, groundsel tree, rush, big cordgrass, marsh elder, and common reed. Most of these marsh areas are relatively undisturbed and provide habitat for a variety of wildlife. It is Center policy to prohibit development in the marsh wetlands. The forested wetlands at LaRC consist of three varieties: red maple swamp, sweetgum swamp, water oak pond and wetlands. These wetlands are located primarily along the upper reaches of the Brick Kiln Creek and Tabbs Creek marsh wetlands, and in the undeveloped portion of the LaRC West Area. Shrub-scrub wetlands occur in limited areas, mostly in ditches adjacent to the marsh wetlands. Young red maple, sweetgum, and willow characterize the shrub-scrub wetlands.

				Square Meters	
red	Building 1120	Space Environment Interactions Laboratory	1980	256	
	Building 1247G	Support Operations Office	1952	108	
and	Building 1157	Electrical Equipment Staging Area	1968	13	
	Building 1279	Insulation Storage	1958	55	

Six of the fourteen buildings proposed for demolition are within 30 meters (100 feet) of wetlands. Table 3.3 includes the distance between each building and the closest wetland area and Figure 3.4 shows the wetlands at LaRC and the sites of the proposed building demolition.

Table 3.3 - Buildings Proposed for Demolition Distance from Wetlands

INSERT FIGURE 3.4 Wetlands and bldgs.

4.0 ENVIRONMENTAL IMPACTS

This Chapter describes the potential impacts or effects of the proposed action and the No-Action alternative on the selected environmental resources. Analysis of the impacts will follow the same sequence of environmental resources discussed in Chapter 3. The cumulative effects on the environment of the proposed action on other past, present, and reasonably foreseeable actions at NASA LaRC are presented in Chapter 5.

4.1 Human Environment

4.1.1 Land Use

4.1.1.1 Proposed Action

With the implementation of the proposed action, approximately 1,319 square meters (14,200 square feet) of office, laboratory, and support space would be demolished. These structures have been determined to be under utilized and 12 of the 14 buildings have been closed for over 5 years and two are pending closure. Demolition of these buildings would involve a change in land use from industrial to open space and assist in reducing operating costs at the LaRC. Since demolition of the buildings would involve no removal of vegetation and only minimal soil disturbance, water quality and non-point pollution sources would not be affected. Therefore, implementation of the proposed action would be consistent with the Virginia Coastal Zone Management Program goals and policies, and no significant environmental impacts to land use would occur. Implementation of the proposed action could have a positive impact. Demolition of the buildings would remove aging and deteriorating structures, making room for more beneficial use of the cleared land.

4.1.1.2 No-Action Alternative

Under the No-Action Alternative, the buildings would not be demolished and would remain in “abandoned” status. This action would not be consistent with the Center’s management plan and goal to streamline its operations, and make the most efficient use of its resources. Leaving the buildings as abandoned would preclude the use of the areas occupied by the buildings for other uses beneficial to the future of LaRC.

4.1.2 Noise

4.1.2.1 Proposed Action

Given the industrial nature of the Center and the location of the demolition sites in relation to the surrounding community, noise from the demolition projects would not be significant or unique. Demolition activities would be staggered, and short-term. Regular noise from heavy equipment and truck traffic would be more perceptible on site and less perceptible in nearby offsite areas. Demolition contractors would designate areas where hearing protection would be required at the demolition sites, and where possible, use best management practices to minimize noise levels. In addition, the majority of the demolition work will take place outside of the areas of the Center included in the LAFB Noise Contour Map. Implementation of the proposed action would not result in substantial impacts to noise levels in and around the demolition sites.

4.1.2.2 No-Action Alternative

Under the No-Action alternative, there would be no increase in traffic noise or surrounding noise from demolition activities. LaRC personnel would continue to be subject to the intermittent noise from wind tunnel operations, and the high noise levels generated by aircraft flyovers from LAFB. Implementation of this alternative would have no effect on the noise environment at LaRC.

4.1.3 Cultural Resources

4.1.3.1 Proposed Action

Impacts to cultural resources are not expected under the proposed action. None of the five facilities listed on the National Historic Register at LaRC would be impacted by the proposed action as they are not located near the buildings proposed for demolition. Reconnaissance Level Surveys were conducted on each of the fourteen buildings proposed for demolition and the surveys were submitted to the Virginia State Historic Preservation Office (SHPO) for review. None of the buildings were surveyed as being historically or architecturally significant.

Since the proposed action does not involve any ground disturbance activities, no impact to archaeological resources is expected. If unanticipated archaeological resources were encountered during demolition, they would be handled in compliance with NASA and federal regulations. Impacts are not expected to traditional resources under the proposed action since no traditional resources have been identified at LaRC. There are no federally recognized Indian lands or resources at LaRC, and no issues have been identified by federally recognized or other Indian groups in Virginia.

4.1.3.2 No-Action Alternative

Under the No-Action Alternative, the buildings would not be demolished and would remain in “abandoned” status. No impacts to cultural resources are expected under this alternative and existing resources would continue to be managed in compliance with NASA and federal regulations.

4.1.4 Hazardous, Regulated and Solid Waste

4.1.4.1 Proposed Action

Hazardous or toxic materials encountered during the demolition of the buildings would be removed and disposed of in accordance with applicable federal, state, and local regulations. As much as possible, all hazardous or toxic items have already been removed from the buildings proposed for demolition. The demolition contractor would inspect each building prior to demolition, and any hazardous or toxic substances would be removed and disposed of in accordance with LaRC’s waste management procedures.

Preliminary surveys of the buildings proposed for demolition show that some contain very small amounts of asbestos. (Table 4.1). Other items that may be present in the buildings include fluorescent lightbulbs, PCB light ballasts, lead paint and mercury switches. These items would be removed from the buildings and recycled or disposed of according to LaRC’s waste management procedures.

			Square Meters
Building 1120	Space Environment Interactions Laboratory	1980	256
Building 1247G	Support Operations Office	1952	108
Building 1157	Electrical Equipment Staging Area	1968	13
Building 1279	Insulation Storage Building	1958	55
Building 1207	General Storage (Parts)	1968	93

Table 4.1 - Location of Asbestos in Buildings

The demolition of the buildings would generate approximately 1,070 cubic meters (1,400 cubic yards) of non-hazardous, non-regulated debris material that would be disposed of according to LaRC policy for solid waste disposal. If possible, concrete, asphalt, and metal debris would be recycled. All other debris would be removed by the demolition contractor and disposed of offsite at a permitted landfill. The volume of debris generated from the proposed action should not have any significant impacts on any of the local landfills.

The implementation of the Proposed Action would result in a temporary increase in regulated and solid waste removed from NASA LaRC, but there would be no long-term environmental consequences associated with this resource.

4.1.4.2 No Action Alternative

Under the No Action Alternative, the buildings would not be demolished, and there would be no impact on hazardous, regulated or solid waste at the NASA LaRC facility.

4.2 Physical Environment

4.2.1 Air Quality

4.2.1.1 Proposed Action

Emissions resulting from the proposed demolition activities are expected to be staggered and short-term from fugitive dust and vehicle exhaust. Fugitive dust would be kept at a minimum by using control methods outlined in 9 VAC 5-50-60 et. seq. of the Regulations for the Control and Abatement of Air Pollution. These precautions would include, but are not limited to the use of water for dust control, covering of open equipment for conveying materials, and prompt removal of spilled or tracked dirt or other materials from paved streets, and removal of dried sediments resulting from soil erosion. The proposed action would not involve any open burning of debris.

To reduce the potential for asbestos to be released into the air, standard asbestos emission control procedures would be followed in accordance with NESHAPS Asbestos Regulations (40 CFR Subpart M: 61.140-61.156). All friable asbestos containing materials would be removed from a facility before any activity begins that would break up or disturb the material. Implementation of the proposed action would not result in significant impacts to air quality at the Center.

4.2.1.2 No-Action Alternative

Under the No-Action Alternative, the buildings would not be demolished and they would remain in abandoned status. Some of the buildings have small amounts of asbestos that over time, could begin to disintegrate or crumble, potentially emitting asbestos fibers to the air. Therefore, implementation of the No-Action Alternative could result in very minor impacts to air quality in areas very localized to where the buildings are located.

4.2.2 Water Resources

4.2.2.1 Proposed Action

The Proposed Action would result in minimal direct and indirect impacts to water resources associated with the surface water, groundwater, and floodplains of the LaRC facility and the surrounding area. The demolition project would be consistent with all enforceable provisions of the Virginia Coastal Zone Management Act, and would comply with provisions of Executive Order 11990, Protection of Wetlands, Executive Order 11988, Floodplain Management, and the Chesapeake Bay Preservation Act.

The

			Square Meters
Building 1120	Space Environment Interactions Laboratory	1980	256
Building 1247G	Support Operations Office	1952	108
Building 1157	Electrical Equipment Staging Area	1968	13
Building 1279	Insulation Storage Building	1958	55

Proposed Action would result in a minor and temporary increase in suspended solids in the stormwater reaching the three outfalls that drain the affected areas. (Table 4.2). The demolition and disposal process would cause little ground disturbance, and soil erosion would be minimal. The demolition contractors would follow Best Management Practice (BMP) standards to minimize the impacts on stormwater. Because the proposed action would not include the removal of the building foundations, the completion of the project would result in no change to the surface area of impermeable material associated with the structures. Once the demolition has been completed, there would be no long-term impact to the quality or quantity of stormwater drainage to the outfalls.

Table 4.2 - Outfalls Associated with the Buildings Proposed for Demolition

The demolition project would involve no disturbance of lower soil strata or the water table and would have no impact on groundwater resources at LaRC or the surrounding area.

Eleven of the fourteen buildings proposed to be demolished are within the 100-year floodplain boundary, and only one building is above the 500-year floodplain. Since structures built within the floodplains are at increased risk for loss and damage due to flooding, the demolition of these buildings would reduce LaRC's vulnerability to natural disaster.

4.2.2.2 No Action Alternative

Under the No Action Alternative, the buildings would not be demolished, and there would be no environmental consequences to the water resources.

4.3 Biological Resources

4.3.1 Fish and Wildlife

4.3.1.1 Proposed Action

Disturbance for the proposed action would be limited to the local demolition areas on NASA LaRC property. The activity and noise generated from demolition activities may temporarily displace wildlife from the immediate vicinity of the project area. It is expected that no long-term impacts to animal species would occur.

4.3.1.2 No Action Alternative

If the buildings were not demolished, the baseline fish and wildlife resources would remain unchanged. No significant impacts to fish and wildlife would occur as a result of implementation of the No-Action Alternative

4.3.2 Threatened and Endangered Species

4.3.2.1 Proposed Action

Due to the lack of suitable habitat and developed nature of the areas around the buildings proposed for demolition, no threatened or endangered species are known to occur within or immediately adjacent to the project sites. Demolition of the buildings should not have an adverse impact on any threatened or endangered species. In the event that one of the species identified in Section 3.3 is encountered during the project, LaRC would immediately contact the Department of Game and Inland Fisheries.

4.3.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no impact to threatened or endangered species at the Center.

4.3.3 Wetlands

4.3.3.1 Proposed Action

Impacts to the wetlands are not expected under the proposed action. Demolition of the buildings would involve minimal ground disturbance and demolition contractors would be required to follow BMPs in order to avoid adversely affecting any wetlands adjacent to the project sites. The BMPs would include marking and roping off of areas, using erosion controls such as silt fencing, and using heavy machinery only on the landward side of the buildings. Any minor land disturbances would be restored by grading and seeding to establish a vegetative cover. Implementation of the proposed action would not have any significant impacts to the wetlands at LaRC.

4.3.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no impact to wetlands around the Center.

5.0 CUMULATIVE EFFECTS

This section provides a brief definition of cumulative effects, a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, and an evaluation of cumulative effects potentially resulting from these interactions.

5.1 Definition of Cumulative Effects

The Council on Environmental Quality (CEQ) regulations require that all federal agencies include cumulative impacts in their environmental analyses (40 CFR 1508.25(c)). Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). This includes those that may be "individually minor but collectively significant actions taking place over time" (40 CFR 1508.7).

Cumulative effects are most likely to arise when a relationship exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects. The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur.

In this EA, the region of influence is the NASA LaRC West Area and the time frame focuses on the timing of the proposed action (FY 04 or 05) and would continue into the foreseeable future. An effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the proposed action in this EA, these actions are included in this cumulative analysis.

5.2 Past, Present, and Reasonably Foreseeable Future Actions

Past actions have occurred at LaRC that have some relation to the buildings proposed for demolition. The actions include remediation of lead paint and asbestos, and removal of tanks from several of the buildings. In the case of lead paint and asbestos remediation projects, the waste materials were properly characterized through sampling and analysis and the waste was properly disposed of at appropriately permitted off-site disposal facilities. In the case of chemical and oil tank removals, the tanks were drained prior to removal and the product either recycled or disposed of off-site at an appropriately permitted disposal facility. Samples were obtained from the tank location site to ensure that no contamination of the surrounding soils had occurred.

At present, there are no actions occurring at the Center that would have an impact on the proposed action.

During the timeframe FY05 to FY07, LaRC has proposed a number of actions that are independent of the proposed action and would be implemented irrespective of a decision on the demolition of these 14 facilities. These actions include construction of a new facility to serve as temporary office space for employees during various office renovations scheduled throughout the Center and a large addition to and renovation of the Center's library. The location of the temporary office space and library projects is far removed from the location of the fourteen buildings proposed for demolition.

LaRC is listed on the National Priorities List for contamination caused by past activities at the Center. All but one of the sites has been successfully remediated under a Federal Facilities Agreement (FFA) with the EPA and DEQ. The last site, the Construction Debris Landfill is located near the location of two of the buildings proposed for demolition (Buildings 1157 and 1279). It is anticipated that through negotiations with the EPA, minor remediation in the form of soil removal and replacement would have to be performed to complete the cleanup. LaRC is working with the EPA to finalize remediation plans and this project should begin within the next few years.

5.3 Analysis of Cumulative Impacts

The following analysis examines how the impacts of the past and future actions might be affected by those resulting from the proposed action at LaRC and whether such a relationship would result in potentially significant impacts not identified when the proposed action is considered alone.

The past actions involving remediation and tank removals at several of the proposed demolition sites are expected to have a positive contribution to the cumulative impacts of the proposed action. Less hazardous and toxic materials would need to be handled by the demolition contractor, which reduces the current risk of harm to human health and the environment. Removal of the tanks eliminated the potential for spills and contamination of the surrounding soil and water as the integrity of the tanks became worse over time.

Although it is not known exactly when the remediation will begin at the Construction Debris Landfill, there is the potential for the remediation project to overlap the proposed demolition project. Both projects could generate increased truck traffic and emissions in a very localized area. The result could be minor congestion of construction-related traffic on the main road leading off the Center.

None of the past or future actions described above would be expected to result in more than negligible impacts either individually or cumulatively. All actions affect very specific, circumscribed areas, and the magnitude of the actions is minimal. Given that the proposed action would likewise have a minimal effect within NASA Langley, the combined impacts of these actions would remain well below the threshold of significance for any resource category.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

For the proposed action, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences are short term and temporary (such as minor soil disturbance from demolition) or longer lasting but negligible (e.g., consumption of landfill space).

Demolition of the 14 facilities would require use of fossil fuel in construction vehicles. The loss of this nonrenewable resource would be irretrievable however the effect of this loss on future generations would not be significant.

The proposed action would require consumption of limited amounts of landfill space for disposition of demolition debris. The amount of landfill space used is not expected to significantly decrease the availability of the local resources. Implementation of a program to recycle materials from the demolition would further reduce the negligible effect associated with this action.

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8.0 LIST OF PERSONS CONTACTED

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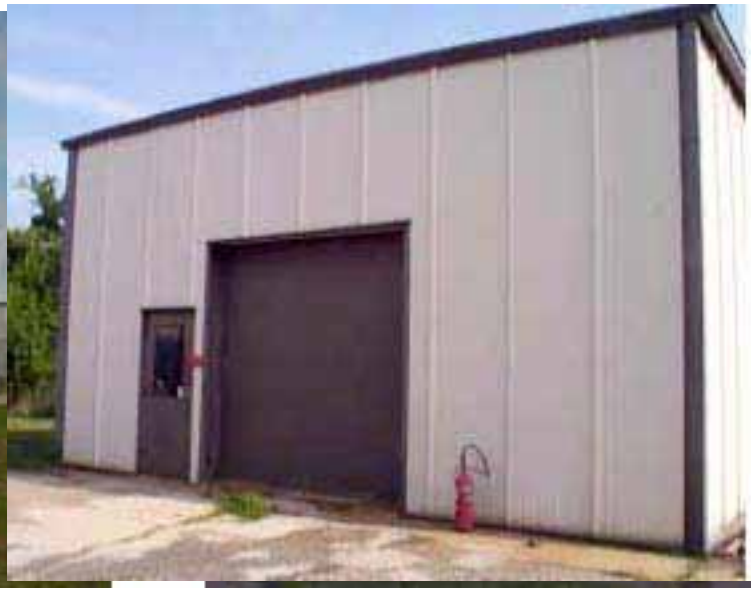
APPENDIX A REGULATORY CORRESPONDENCE

APPENDIX B PHOTOGRAPHS OF BUILDINGS PROPOSED FOR DEMOLITION

B-2

Building 1120 -Space Environment Effects Lab Building 1157 – Electrical Equipment Staging Area

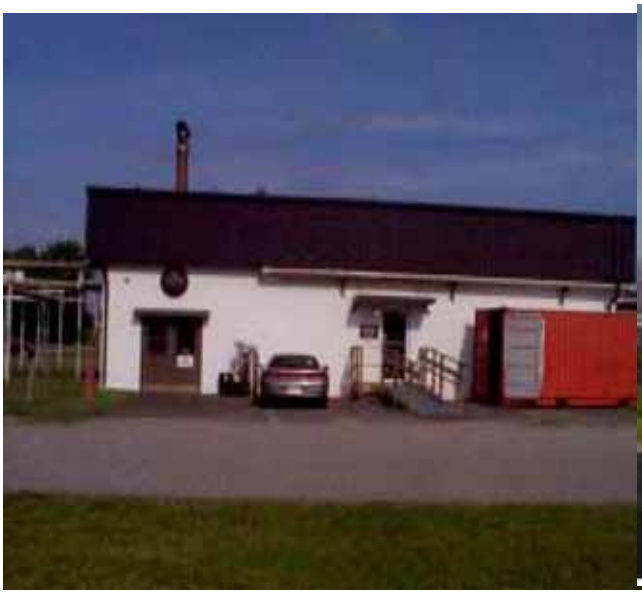
Building 1207 – General Storage (Parts) Building Building 1247G – Support ons Office

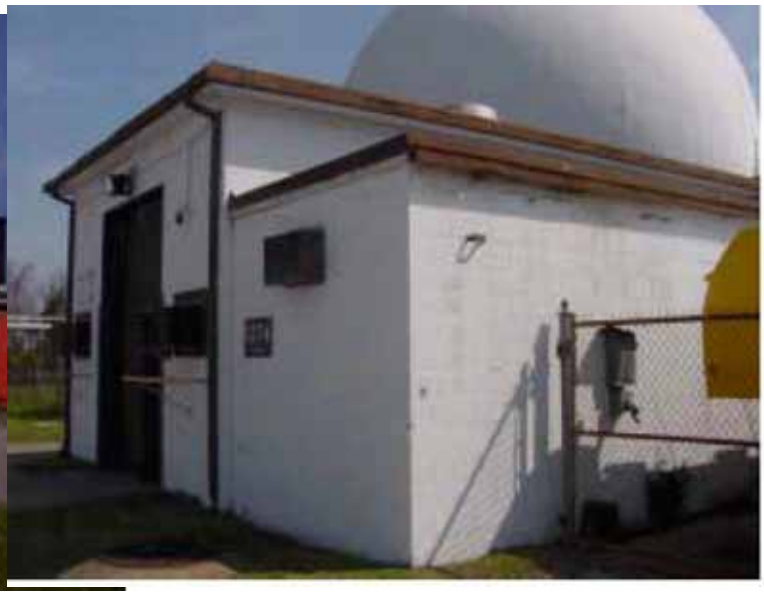


B-3

Building 1270A – Composite Preparation Building Building 1270B – Composite Storage Building Building 1270C – Chemical Tr

eatment Facility Building 1270D – Chemical Storage Facility





Building 1271 – Engineering Support Laboratory #1 Building 1272 – Engineering Support Laboratory #2
Building 1274 – Crane/Elevator Maintenance
Building

1294 – Systems Engineering Support Lab

Support Facility