

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NASA CONTRACT NO. NASW-4598
NASA TASK ASSIGNMENT NO. 64**

**ENVIRONMENTAL ANALYSIS
CLOSURE OF PLUM TREE ISLAND MODEL DROP SITE**

**LANGLEY RESEARCH CENTER
HAMPTON, VIRGINIA**

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LANGLEY RESEARCH CENTER
HAMPTON, VIRGINIA**

MARCH 1995

**Prepared by
Ebasco Services Incorporated
Arlington, Virginia**

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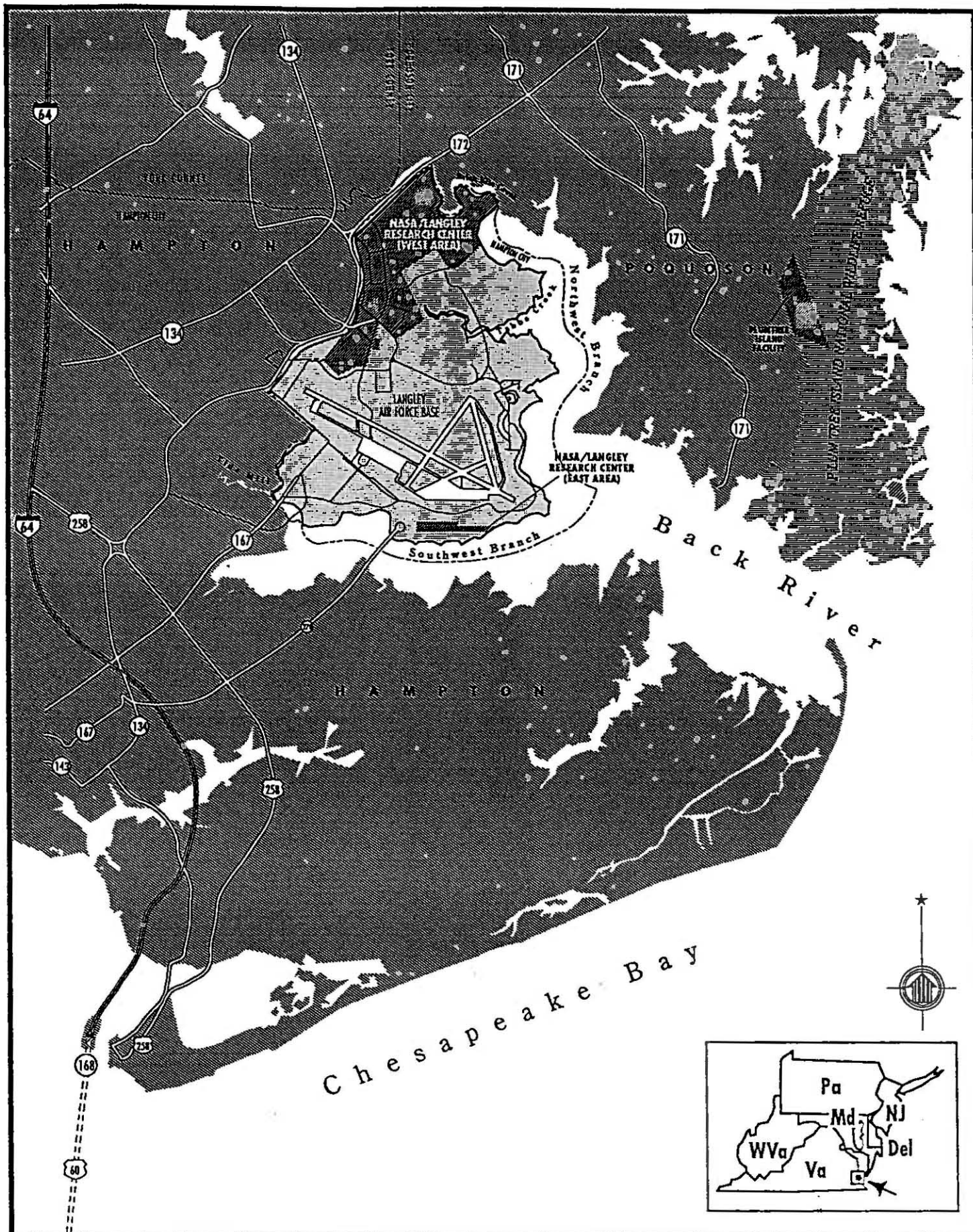
1.0 SUMMARY AND CONCLUSIONS

As part of the National Aeronautics and Space Administration's (NASA) aerospace technology research, Langley Research Center (LaRC) has conducted unpowered aircraft model flight testing at the Plum Tree Island model drop site since the early 1960s. NASA held an operating lease for the 105-hectare (260-acre) site, located in the city of Poquoson, Virginia, and approximately 10 kilometers (6 miles) to the northeast of LaRC in Hampton, Virginia (see Figure 1). NASA has identified the need for powered (self-propelled) models for testing sophisticated designs of future aircraft. Because the existing facility is too close to populated areas for powered model testing, NASA plans to relocate the operations to its facility in Wallops Island, Virginia. All testing operations at the Plum Tree Island site have been terminated since July 30, 1994.

NASA's lease on the property expired September 30, 1994, and NASA does not propose to renew the lease since NASA LaRC does not have a use for the site. NASA will have access to the site for remedial actions and removal of any structures for a reasonable period after expiration of the lease. NASA proposes to close the site and remove a single existing building structure, the helipad, and the runway strips along with water and wastewater systems. The electrical service, which belongs to Virginia Power, will be removed. NASA will demolish and remove the structures, regrade the site, and return the property to the owners.

NASA LaRC had developed a plan to remediate wetland areas on the site which were damaged by the operation of an all-terrain vehicle (marsh buggy) used to retrieve the models after testing (Ebasco, April 1994). On October 6, 1994, the city of Poquoson, which has jurisdictional authority over the site, determined that no remediation will be necessary given the extent of natural revegetation that has occurred in the area during the 1994 growing season.

The environmental analysis indicates that the proposed action will not have a significant impact on the local natural, cultural, and socioeconomic resources. Based on the evaluations presented in this environmental analysis, the potential environmental impacts associated with the proposed action to close the Plum Tree Island site with existing structures removed, will not individually or cumulatively be significant.



EBASCO ENVIRONMENTAL

LOCATION OF
NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

Figure 1

2.0 PURPOSE AND NEED

2.1 PROJECT BACKGROUND

NASA LaRC has been using the Plum Tree Island area on a regular basis for flight-testing aircraft models since 1960. In its earliest operations, NASA used the site only temporarily during flight-testing of the models. Model preparation and instrumentation was carried out in the LaRC facilities in Hampton, Virginia. Models were brought to the Plum Tree Island area on the day of testing. The model and test equipments were transported back to LaRC facilities after the testing was completed. A 1968 photograph shows the existing gravel road and a gravel parking area suggesting all equipment was clearly mobile. The access road appears to have been in existence since the early 1900s. Since 1964, the facility has been gradually improved to fully support model assembly and testing activities. Most of the model parts were fabricated at the LaRC facilities in Hampton.

NASA LaRC improved the access road for use by trucks around 1964. A gravel base was installed sometime in 1966 to facilitate personnel and vehicle movement on the site. On or around 1970, an asphalt helipad measuring approximately 2,200 square meters (20,000 square feet) was constructed and an instrumentation trailer was located at the site. In 1973, the road system was further improved and a military aircraft landing mat consisting of pierced steel planking was installed and overlain with additional gravel on a portion of the site covered by the existing facility. In 1975, NASA LaRC constructed two asphalt runway strips which are about 16 meters (50 feet) wide and approximately 60 meters (200 feet) long, each. According to facility personnel, the thickness of the runway mat is less than 0.3 meter (one foot).

The existing steel-frame structure with approximately 110 square meters (1,000 square feet) of usable floor area was constructed in 1974. The building is founded on a concrete pad overlain on gravel. The structure has fiber-glass insulation in the walls and roof to provide a working atmosphere for the personnel and equipment. A second trailer for flight control was installed in 1985 and the site operations were expanded. In 1990, a 90-square-meter (800-square-foot) extension to the building was made. At the same time, fencing was expanded to encompass the vehicle parking area inside the facility. A restroom trailer and self-contained wastewater holding tank system was installed. The structure has been maintained in a good condition and was in use until NASA LaRC operations ceased in July 1994. Figure 2 shows the approximate facility layout prior to dismantling of the trailers in 1994 and current site conditions.

The facility has a 2.2 kV electrical service connected to the local utility supply. The facility does not have any permanent water or sewer service. Potable water was brought in tankers and stored in a site water tank (see Figure 2). Water is distributed to drinking water fountains, wash sinks, and toilet facilities by a local piping system. All wastewater is collected in the wastewater holding tank. NASA LaRC employed a local contractor to empty the wastewater tank and to dispose of the wastewater off-site.

Operations at the facility included assembly of large-scale, highly instrumented, dynamically balanced aircraft models. The models were carried to altitude and launched from helicopters.

The models were flown through their research maneuvers with ground controls. After completion of the tests, the models would drop to the ground with the aid of parachutes and would be recovered by the all-terrain vehicle (marsh buggy). Small quantities of ethanol and acetone in aerosol-type cans were used to clean model parts. Small amounts of can-spray paints were used. Excess solvents and paints including minor surface spills were cleaned with rags which were collected in a large waste dumpster located within the facility fence line. Wood and metal workings from model repair along with office wastes such as paper were collected in the dumpster. An outside contractor was employed to dispose of the waste at an appropriate off-site landfill. The schedule of model testing was dictated by research requirements. Fuel oil required for the marsh buggy was small due to infrequent testing and because the distance travelled by the vehicle was usually less than a few miles per model recovery. Fuel oil was brought in 5-gallon cans on an as-needed basis.

At its peak operation, the facility employed approximately 10 personnel. An additional 2 to 5 personnel would be brought in from other LaRC facilities for specific assignments during actual testing. With the operations terminated, all trailers have been removed from the site except for the trailer with restroom facilities. The only other remaining structures include the main building with electrical service, the water supply and wastewater systems, the helipad, and the runway strips.

2.2 ACTION OBJECTIVE

The objective of the proposed action is to close the Plum Tree Island model drop facility since NASA LaRC does not have a future use for the site. NASA's lease on the property expired on September 30, 1994, and NASA does not propose to renew the lease. NASA will demolish and remove all of its existing structures, regrade the site, and return the property to the owners.

2.3 SCOPE OF ENVIRONMENTAL ANALYSIS

This environmental analysis addresses environmental issues related to closure of the Plum Tree Island site as an operating NASA LaRC facility, demolishing and removing NASA structures from the property, and regrading the site for transfer to the owners. This environmental analysis has been prepared in accordance with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] Parts 1500 - 1508, 1978) and NASA's regulations implementing the provisions of NEPA (14 CFR Subpart 1216.3, 1988, as addressed in NASA Handbook [NHB] 8800.11, Implementing the Provisions of the National Environmental Policy Act, and Langley Handbook [LHB] 8800.1, LaRC Environmental Program Manual).

3.0 DESCRIPTION OF PROPOSED ACTION

3.1 NASA LANGLEY RESEARCH CENTER

NASA LaRC is located in the city of Hampton in southeastern Virginia (Figure 1). LaRC encompasses approximately 327 hectares (807 acres) and consists of numerous facilities providing specialty support to aerospace research and testing. The Plum Tree Island model drop site is a 105-hectare (260-acre) site located 10 kilometers (6 miles) to the northeast of LaRC in the city of Poquoson, Virginia.

3.2 PROPOSED ACTION

The proposed action involves permanent closure of the Plum Tree Island model drop site for NASA LaRC operations. Research and testing operations ceased in July 1994. NASA left the site permanently at the end of September 1994. NASA's access to the site will be restricted to any remedial work or removal of structures. NASA proposes to demolish and remove the existing building, helipad, and runway strips, and regrade the site for return to the owners.

4.0 ENVIRONMENTAL IMPACTS

4.1 PROPOSED ACTION

Since debris from demolition will be disposed off-site, no impact to local water bodies is anticipated from the proposed action. Historical NASA LaRC operations at the site did not involve any abstraction from or discharge to local water bodies or the groundwater. Therefore, permanent closure of the facility is not expected to impact local water bodies.

4.1.1 Water Quality

Closure of the Plum Tree Island site will not impact water quality in the local area since no change to existing conditions is anticipated.

4.1.2 Air Quality

During demolition, there will be minor and temporary impacts to the local area from dust. The demolition contractor would comply with the Virginia Rule 5-1, Fugitive Dust Emissions, by implementing standard construction dust-control measures such as spraying disturbed areas with water to minimize dust emissions.

The site is located in a State-designated non-attainment (marginal) area for ozone, which means that ozone concentration in the area exceeds National Ambient Air Quality Standards (NAAQS). Termination of NASA LaRC operations at the Plum Tree Island facility would result in elimination of minor emissions of pollutants from evaporating solvents used in the operations and fugitive emissions from personnel vehicles and the marsh buggy.

4.1.3 Noise

Demolition and off-site debris transportation activities, which will be confined to daylight hours, may result in a minor, temporary increase in local noise levels. Termination of NASA LaRC operations at the facility will result in elimination of all testing-oriented air traffic and associated noise.

4.1.4 Waste Generation, Treatment, Storage, and Disposal

Solid wastes and sanitary waste from operations were collected and disposed off-site by a contractor. No debris are left at the site. No hazardous waste was generated at the facility from NASA LaRC operations. Demolition and removal of existing structures and disposal of debris off-site in a State-approved landfill facility will not result in any adverse impact at the site. The demolition quantities will be small and are not anticipated to reduce landfill capacity in the local area. Therefore, no significant impact from the proposed action is anticipated in this regard.

4.1.5 Toxic Substances

An inspection of the existing structures at the facility was conducted by NASA LaRC personnel and their consultants on July 29, 1994. The inspection did not identify signs of any significant contamination of the site from past operations. NASA LaRC conducted tests on paint samples taken from the walls and doors of the structure to assess the presence of lead. The results of these tests indicated smaller concentrations of lead than permissible under OSHA/EPA limits (Appendix A).

NASA LaRC conducted tests of the roofing material and determined that the roofing materials contained up to 10 percent chrysotile asbestos. The remainder of the roofing material contained non-fibrous material (Appendix A). The fiber-glass insulation of the metal-frame structure is not considered toxic or hazardous. NASA LaRC will comply with all Federal and State regulations with respect to removal and disposal of friable and other asbestos or asbestos-containing materials. The demolition contractor will be required to follow procedures, permitting, and notification requirements detailed in Facility Safety Requirements, LHB 1740.2.

Based on a site inspection, interviews with operations personnel, and a review of historical records of operation, there is no evidence of contaminants such as polychlorinated biphenyls (PCBs) and radon in the structures. Also, there is no evidence of any discharge or release of contaminants to the local air, water, or land resources from NASA LaRC operations. Hence, no further remediation is considered necessary.

4.1.6 Radioactive Materials and Non-ionizing Radiation

Construction and operation of the facility did not involve generation or use of radioactive materials or non-ionizing radiation.

4.1.7 Biological Resources

NASA LaRC operations at the Plum Tree Island facility had no impacts on biological resources in the area except for disturbance of a tidal marsh area (see Section 4.1.9). Demolition of existing structures and regrading of the site is not likely to have any significant impact on these resources.

4.1.8 Endangered and Threatened Species

A review of the Virginia Natural Heritage Program database indicates that no Federal or State-listed endangered or threatened species have been documented to occur at LaRC (Letter from the Virginia Department of Conservation and Recreation's Division of Natural Heritage, June 17, 1994 - see Appendix B). The proposed action will not affect any listed or proposed endangered or threatened species, or their critical habitat.

4.1.9 Wetlands and Floodplains

NASA LaRC conducted a study of the Plum Tree Island site to assess the likely damage to the tidal wetlands resulting from repeated use of the marsh buggy (Ebasco, April 1994). The study was conducted in consultation with the city of Poquoson, Virginia, and the Virginia Marine Resources Commission. NASA LaRC had prepared a plan for in-kind mitigation of the affected wetlands which was discussed with the city of Poquoson. On October 6, 1994, the city of Poquoson, which has jurisdictional authority over the site, determined that no remediation will be necessary given the extent of natural revegetation that has occurred in the area during the 1994 growing season (Appendix C).

4.1.10 Coastal Resources Management

The city of Poquoson is a tidewater jurisdiction under the Commonwealth of Virginia's approved Coastal Resources Management Program (CRMP). The Virginia CRMP is a networked program based upon existing State licenses, permits, and approval requirements (Table 4-1). In implementing the CRMP, the Virginia Department of Environmental Quality (DEQ), Division of Public and Intergovernmental Affairs, considers an activity to affect the coastal zone if it requires a permit or approval under any of the networked programs, and considers the activity to be consistent with the CRMP if it is consistent with all applicable programs (i.e., receives all appropriate State licenses, permits, and approvals). The programs applicable to the NASA LaRC facility at Plum Tree Island are the wetlands management and point source and non-point source pollution control programs. As discussed in Section 4.1.9, closure of NASA LaRC operations at the site have resulted in revegetation of the wetland areas; no further mitigation measures will be necessary. NASA LaRC operations at the site did not require permits under the National Pollutant Discharge Elimination System (NPDES) for point-source pollution. NASA LaRC operations at the facility did not result in any significant non-point-source pollution of the area. The proposed action is not anticipated to result in such pollution; consequently, the proposed action is consistent with the Virginia CRMP.

4.1.11 Historic, Archeological, and Cultural Factors

NASA has a Programmatic Agreement among the National Conference of State Historic Preservation Officers (NCSHPO) and the Advisory Council on Historic Preservation (ACHP) (signed September 20, 1989) which addresses agency consultation and mitigative measures for projects which affect (e.g., through demolition, alteration, or new construction) facilities designated as National Historic Landmarks (NHLs). Existing structures at the Plum Tree Island facility are less than 25 years old and do not have any significant archeological or architectural features. Hence, the structures are unlikely to be historically significant or eligible for listing on the National Register of Historic Places (NRHP).

4.1.12 Economic, Population, and Employment Factors

LaRC is located in the northern portion of the city of Hampton in the southern peninsula area of southeastern Virginia. LaRC lies in the central portion of the Hampton Roads Metropolitan

TABLE 4-1
PROGRAMS COMPRISING VIRGINIA'S COASTAL
RESOURCES MANAGEMENT PROGRAM

<u>Program</u>	<u>Administering Agency</u>
Fisheries Management	Marine Resources Commission Department of Game and Inland Fisheries
State Tri-Butyl Tin (TBT) Regulatory Program	Marine Resources Commission Department of Game and Inland Fisheries Department of Agriculture and Consumer Services
Subaqueous Lands Management	Marine Resources Commission
Wetlands Management	Marine Resources Commission
Dunes Management	Marine Resources Commission
Non-point Source Pollution Control	Department of Conservation and Recreation
Point Source Pollution Control NPDES Permit Program Water Quality Certification Under Section 401 of Clean Water Act	Department of Environmental Quality-Water Division
Shoreline Sanitation	Department of Health
Air Pollution Control	Department of Environmental Quality-Air Division

Statistical Area (MSA) which consists of the Virginia cities of Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg; the Virginia counties of Gloucester, Isle of Wight, James City, Matthews, and York; and Currituck County, North Carolina.

The population of the city of Hampton was approximately 135,000 in 1991, while the entire Hampton Roads MSA had a population of 1,431,088. The 1980 population for this area was 1,187,846, which represents a 19.4 percent increase in population in 10 years. The Hampton Roads MSA work force consisted of 643,120 civilian and 141,000 active duty military in 1991 (Hampton Roads Planning District Commission, 1993).

LaRC presently employs approximately 2,800 civil service employees and 2,200 contractor-personnel, with an annual payroll of \$153 million. LaRC contracts approximately \$409 million annually in goods and services both locally and nationally, thus performing an important role in the local economy.

NASA LaRC operations at the Plum Tree Island facility involved up to 10 personnel on a permanent basis. These personnel have been reassigned to the LaRC facilities in Hampton, Virginia. Hence, the proposed action should not have any impact on the local economy.

4.1.13 Traffic and Parking

There would be no impact on local traffic or transportation as a result of the proposed action.

4.1.14 Energy

No impact to local energy resources is anticipated from the proposed action.

4.1.15 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires Federal agencies to identify and address the potential for their programs, policies, and actions to have disproportionately high and adverse human health effects or environmental effects on minority or low-income populations. The companion Presidential Memorandum, signed February 11, 1994, directs Federal agencies to include in their NEPA documents an analysis of the effects of their actions on minority communities and low-income communities, along with mitigation measures for significant and adverse effects.

As addressed in the previous sections, the proposed action will comply with all applicable environmental statutes and regulations. Insofar as the proposed action is not anticipated to have significant environmental or socioeconomic effects, the proposed action will not have disproportionately high or adverse human health effects or environmental effects on minority or low-income populations.

5.0 REFERENCES

Ebasco, April 1994. Wetland Remediation Plan for Plum Tree Island, Langley Research Center, Hampton, Virginia.

Hampton Roads Planning District Commission (HRPDC), 1993. 1993 HRPDC Economic Outlook.

NASA/Langley Research Center. November 1991. LaRC Environmental Program Manual. LHB 8800.1.

NASA/Langley Research Center. September 1994. Facility Safety Requirements. LHB 1740.2.

NASA, April, 1980. Implementing the Provisions of the National Environmental Policy Act. NHB 8800.11.

APPENDIX A

**RESULTS OF TESTING FOR LEAD PAINT ON EXISTING STRUCTURES
AND FOR ASBESTOS IN ROOFING MATERIAL**



TC ANALYTICS, INC.

(A TC Group Company)

1200 Boissevain Avenue
Tel. (804) 627-0400

Norfolk, Virginia 23507
FAX (804) 627-1118

Sampling Site: Bldg 1400 Plum
Tree Facility

Sampling Date: 08/16/94

Date Received: 08/16/94

Date Reported: 08/17/94

Released By: STEVE LONG

Account Info: P.O. #C110-94-202/318

Bionetics-EH
NASA-LARC
MS 429
Hampton, VA 23681
Attn: Chip Quinn

c3

Data: The following are the results for the analysis of your paint samples, submitted for the determination of Lead.

<u>TCA #</u>	<u>Your #</u>	<u>Description</u>	<u>mg/kg</u>	<u>%</u>
	D1802G-			
94-29169	AMQ1400-422801	New Section Beige Ext.	250.	0.02
94-29170	AMQ1400-422802	Old Bldg Blk Paint On Door	4900.	0.49
94-29171	AMQ1400-422803	Old Bldg Ext.	570.	0.06
94-29172	AMQ1400-422804	Old Bldg Int. Gray	<100.	<0.01
94-29173	AMQ1400-422805	Old Bldg Int. Beige	<94.	<0.01
94-29174	AMQ1400-422806	Old Bldg Int. Red	6200.	0.62
94-29175	AMQ1400-422807	New Bldg Int. Red	<95.	<0.01

LEAD PAINT GUIDELINE LEVELS

EPA/OSHA 1.0 %
HUD 0.5 %

Please feel free to contact me if you have any questions concerning the analysis.

Thank you,


Steven J.E. Long

Marine
Chemist
Service
Inc.



P.O. BOX 6257
11850 TUG BOAT LANE
NEWPORT NEWS, VIRGINIA 23606
N.N. (804) 873-0933; NORF. (804) 627-9933

Lab. Report No. 22762

Date August 12, 1994

Customer:

Bionetics Environmental Health
1162T/MS-429
NASA Langley Research Center
Hampton, VA 23681-0001
Attn: Chip Quinn

Method of Analysis:

EPA Interim Method for the Determination
of Asbestos in Bulk Insulation Samples
(40 CFR 763, Appendix A to Subpart F).

Sample Description:

Building 1400 Plum Tree Facility
P.O. #C110-202-94/244

REPORT OF ANALYSIS

(1) Sample #422401, Roof mastic.

Macroscopic: (1) 100% of this sample is black, tar material with paint.

Microscopic: (1) Approximately 15% of this sample contains chrysotile asbestos.
The remaining 85% is non-fibrous material.

Total Asbestos Percentage = 15%.

(2) Sample #422402, Silver roof paint.

Macroscopic: (1) 100% of this sample is silver, paint material.

Microscopic: (1) Approximately 10% of this sample contains chrysotile asbestos.
The remaining 90% is non-fibrous material.

Total Asbestos Percentage = 10%.

(3) Sample #422403, Roof mastic.

Macroscopic: (1) 100% of this sample is black, mastic material with paint.

Microscopic: (1) Approximately 10% of this sample contains chrysotile asbestos.
The remaining 90% is non-fibrous material.

Total Asbestos Percentage = 10%.

NOTE: SAMPLES TAKEN BY CLIENT. TEST REPORT RELATES ONLY TO THE ITEMS TESTED.

SIGNED: 

CHEMIST

ENVIRONMENTAL TESTING LABORATORY AND INDUSTRIAL HYGIENE SERVICES

MARINE CHEMIST CERTIFICATIONS, ASBESTOS, OIL, WATER, WASTEWATER, LEAD, SOIL, HAZARDOUS WASTE SAMPLING AND
ANALYSIS, NONDESTRUCTIVE TESTING, FEED-WATER SUPPLY AND ANALYSIS, TRAINING CLASSES.

APPENDIX B NATURAL HERITAGE RESOURCES WITHIN LARC REGION

NASA/TONG4/pdea.100

March 30, 1995



ADMINISTRATION
NATURAL HERITAGE
PLANNING AND RECREATION RESOURCES
SOIL AND WATER CONSERVATION
STATE PARKS

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF NATURAL HERITAGE

Main Street Station, 1500 East Main Street — Suite 312

TDD (804) 786-2121 Richmond, Virginia 23219 (804) 786-7951 FAX: (804) 371-2674

June 17, 1994

Richard G. Taylor
Ebasco Environmental
2111 Wilson Boulevard, Suite 435
Arlington, Virginia 22201-3058

re: NASA Langley Research Center, Resources Management Document

Dear Mr. Taylor:

Thank you for contacting the Division of Natural Heritage for current information on the Langley Research Center, and natural heritage resources in the local area.

According to information in our files, there are no natural heritage resources documented from within the Langley Research Center. The absence of data does not necessarily mean that natural heritage resources do not exist on or adjacent to the study site, but rather that our files do not currently contain information to document their presence.

I have enclosed updated lists of natural heritage resources that have been documented on the Poquoson West, Newport News North, and Hampton USGS Quadrangles. All of these resources could occur at Langley in appropriate habitat, however, their presence can only be verified through field surveys. There are no natural heritage resources documented on the Poquoson East Quadrangle.

No fee has been assessed for providing this information update. DNH's Biological and Conservation Data System is constantly growing and being revised. Please contact DNH for an update on this natural heritage information if a significant amount of time passes before it is utilized.

An explanation of species rarity ranks and legal status abbreviations is enclosed for your reference.

Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sarah H. Holbrook".

Sarah H. Holbrook
Acting Environmental Review Coordinator

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF THE POQUOSON WEST QUAD

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
* AMPHIBIANS					
AMBYSTOMA MABEEI	MABEE'S SALAMANDER	G4	S1		LT
AMBYSTOMA TIGRINUM	TIGER SALAMANDER	G5	S1		LE
HYLA GRATIOSA	BARKING TREEFROG	G5	S1		LT
* BIRDS					
IXOBRYCHUS EXILIS	LEAST BITTERN	G5	S2		
* COMMUNITIES					
ESTUARINE HERBACEOUS VEGETATION					
ESTUARINE SCRUB					
LOW HERBACEOUS WETLAND					
OLIGOTROPHIC SEASONALLY FLOODED					
HERBACEOUS VEGETATION					
OLIGOTROPHIC SEASONALLY FLOODED					
WOODLAND					
OLIGOTROPHIC SEMIPERMANENTLY					
FLOODED WOODLAND					
SUBMESOTROPHIC FOREST					
* NON-VASCULAR PLANTS					
SPHAGNUM MACROPHYLLUM VAR MACROPHYLLUM	LARGE-LEAF PEATMOSS	G3G4T3	S2		
* VASCULAR PLANTS					
BOLTONIA CAROLINIANA	CAROLINA BOLTONIA	G2Q	S2		
CUSCUTA INDECORA	PRETTY DODDER	G5	S2?		
ELEOCHARIS TENUIS VAR VERRUCOSA	SLENDER SPIKERUSH	G5T3T5	S1		
FIMBRISTYLIS PERPUSILLA	HARPER'S FIMBRISTYLIS	G2G3	S1	C2	LE
HOTTONIA INFLATA	FEATHERFOIL	G3G4	S2		
LYTHRUM ALATUM VAR LANCEOLATUM	LANCE-LEAVED LOOSESTRIFE	G5T?	SH		
SABATIA CAMPANULATA	SLENDER MARSH PINK	G5	S2		
TILLANDSIA USNEOIDES	SPANISH MOSS	G5	S2		

0 Records Processed

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF THE NEWPORT NEWS NORTH QUAD

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
* AMPHIBIANS					
AMBYSTOMA MABEEI	MABEE'S SALAMANDER	G4	S1		LT
* REPTILES					
CROTALUS HORRIDUS ATRICAUDATUS	CANEBRAKE RATTLESNAKE	G5TUQ	S1		LE
* VASCULAR PLANTS					
CAREX LUPULIFORMIS	FALSE HOP SEDGE	G3G4Q	S1		
CYPERUS DIANDRUS	UMBRELLA FLATSEDEGE	G5	SH		
QUERCUS SHUMARDII	SHUMARD'S OAK	G5	S2		
TRILLIUM PUSILLUM VAR VIRGINIANUM	VIRGINIA LEAST TRILLIUM	G3T2	S2	C2	

Records Processed

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF THE HAMPTON QUAD.

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
* BIRDS					
CASMERODIUS ALBUS	GREAT EGRET	G5	SB2SN4		SC
CHARADRIUS MELODUS	PIPING PLOVER	G3	S2	LT	LT
RYNCHOPS NIGER	BLACK SKIMMER	G5	S2		
STERNA ANTILLARUM	LEAST TERN	G4	S2		SC
* INVERTEBRATES					
CICINDELA DORSALIS DORSALIS	NORTHEASTERN BEACH TIGER BEETLE	G4T2	S2	LT	C
* OTHER					
CHAMPION TREE					
* VASCULAR PLANTS					
CUSCUTA INDECORA	PRETTY DODDER	G5	S2?		
DESMODIUM STRICTUM	PINELAND TICK-TREFOIL	G4	S2		
DESMODIUM TENUIFOLIUM	SLIM-LEAF TICK-TREFOIL	G3G4	S1		
IVA IMBRICATA	SEA-COAST MARSH-ELDER	G5?	S1S2		

Records Processed

Definition of Abbreviations Used on Natural Heritage Resource Lists
of the
Virginia Department of Conservation and Recreation

Natural Heritage Ranks

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The primary criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities. Also of great importance is the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals. Other considerations may include the quality of the occurrences, the number of protected occurrences, and threats. However, the emphasis remains on the number of populations or occurrences such that ranks will be an index of known biological rarity.

- S1 Extremely rare; usually 5 or fewer populations or occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.
- S2 Very rare; usually between 5 and 20 populations or occurrences; or with many individuals in fewer occurrences; often susceptible to becoming extirpated.
- S3 Rare to uncommon; usually between 20 and 100 populations or occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
- S4 Common; usually >100 populations or occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.
- S5 Very common; demonstrably secure under present conditions.
- SA Accidental in the state.
- SB# Breeding status of an organism within the state.
- SE Exotic; not believed to be native in the state.
- SH Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.
- SN# Non-breeding status within the state. Usually applied to winter resident species.
- SR Reported from the state, but without persuasive documentation to either accept or reject the report.
- SU Status uncertain, often because of low search effort or cryptic nature of the element.
- SX Apparently extirpated from the state.
- SZ Long distance migrant whose occurrences during migration are too irregular, transitory and/or dispersed to be reliably identified, mapped and protected.

Global ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note that GA and GN are not used and GX means apparently extinct. A "Q" in a rank indicates that a taxonomic question exists concerning that species. A "?" in a rank indicates uncertainty as to that species' rarity. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity.

These ranks should not be interpreted as legal designations.

Federal Legal Status

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

- | | |
|----------------------------|---|
| LE - Listed Endangered | 3A - Former candidate - presumed extinct |
| LT - Listed Threatened | 3B - Former candidate - not a valid species under current taxonomic understanding |
| PE - Proposed Endangered | 3C - Former candidate - common or well protected |
| PT - Proposed Threatened | NF - no federal legal status |
| C1 - Candidate, category 1 | |
| C2 - Candidate, category 2 | |

State Legal Status

The Division of Natural Heritage uses similar abbreviations for State endangerment.

- | | | |
|------------------------|----------------------------|----------------------|
| LE - Listed Endangered | PE - Proposed Endangered | SC - Special Concern |
| LT - Listed Threatened | PT - Proposed Threatened | |
| C - Candidate | NS - no state legal status | |

For information on the laws pertaining to threatened or endangered species, contact:

U.S. Fish and Wildlife Service for all FEDERALLY listed species
Department of Agriculture and Consumer Services Plant Protection Bureau for STATE listed plants and insects
Department of Game and Inland Fisheries for all other STATE listed animals

APPENDIX C

**CORRESPONDENCE WITH THE CITY OF POQUOSON
ON WETLAND REMEDIATION**



CITY OF POQUOSON

830 POQUOSON AVENUE, POQUOSON, VIRGINIA 23662
(804) 868-7151

October 6, 1994

+29
Mr. Jan Benson
Environmental Engineer
Office of Environmental Engineering, SEMA
NASA\Langley Research Center
Hampton, Virginia 23661-0001

Dear Mr. Benson:

Thank you for meeting with the Wetlands Board's staff on September 13, 1994 at the Plum Tree Island Site. As you know, the visit helped the Board's technical advisor, Ms. Julie Bradshaw, determine that artificial planting of wetland vegetation within the damaged wetland areas at the facility is unnecessary given the extent of natural revegetation that has occurred during the 1994 growing season. Consequently, the Wetlands Board, at its September 21, 1994 meeting, concurred with Ms. Bradshaw's findings by ruling that no remediation is required. Ms. Bradshaw's report on this matter, dated September 14, 1994, is attached for your review.

The Wetlands Board sincerely appreciates NASA's willingness to restore the wetlands at the facility. NASA's actions to abandoning use of the marshland in its test model airplane retrieval program confirms its commitment to preserve the City's environmentally sensitive areas.

Finally, it has been a pleasure working with you and other NASA officials in resolving this matter. Should you have any questions or need assistance in the future, please do not hesitate to call us.

Sincerely,

William K. Smith
Chairman, Wetlands Board

WKS:pmw

Attachments

cc: Mr. Robert Berg, ACOE
Mr. Chris Frye, VMRC

ACTION OF

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The College Of
WILLIAM & MARY

Wetlands Program

School of Marine Science
Virginia Institute of Marine Science
P.O. Box 1346
Gloucester Point, Virginia 23062
804/642-7380, FAX 804/642-7179

September 14, 1994

Debbie Vest
Planning Dept.
City of Poquoson
830 Poquoson Ave.
Poquoson, VA 23662


Dear Ms. Vest:

As requested, the following is a report of findings from our site visit on September 13, 1994 to the NASA Plum Tree Island site. Based on this and previous site visits in July 1993 and on June 14, 1994, it is my assessment that the natural marsh recovery process has continued, and at a faster pace than I would have expected. Many of the areas that were bare of vegetation on the June 14, 1994 site visit have now revegetated.

There are still some areas which appear lower in elevation and are not yet revegetating. Although, conceivably, fill material could be added in these areas to an appropriate elevation and planted with wetland vegetation, this additional disturbance would be expected to leave them highly vulnerable to colonization by reed grass (Phragmites australis), which would be undesirable from a marine environmental viewpoint. These areas are more valuable to the marine environment in their present condition than they would be if artificially filled and colonized by Phragmites. Based on the natural recovery observed thus far, I would expect these areas to revegetate on their own eventually, and I would not recommend further disturbance of these areas.

I hope this addresses your concerns on this project. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,


Julie G. Bradshaw
Senior Marine Scientist

c: NASA-Mr. Jan Benson

