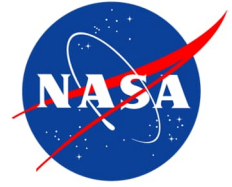


National Aeronautics and Space Administration



Final

**Action Memorandum
Non-Time Critical Removal Action
Excavation and Offsite Disposal
Operable Unit 7
Formerly Used Defense Site
Project 15 Construction Debris Landfill**

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia

March 2023

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Acronyms and Abbreviations

AM	Action Memorandum
AAOC	Administrative Agreement on Consent
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirement
BERA	Baseline Ecological Risk Assessment
BTEX	benzene, toluene, ethylbenzene, and xylene
CDL	Construction Debris Landfill
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPEC	chemical of potential ecological concern
CSM	conceptual site model
CTE	Central Tendency Exposure
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DPT	direct push technology
EE/CA	Engineering Evaluation / Cost Analysis
ELCR	excess lifetime cancer risk
ESV	Ecological Screening Value
FUDS	Formerly Used Defense Site
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	hazard index
IEUBK	Integrated Exposure Uptake Biokinetic
LSI	limited site investigation
LUC	Land Use Controls
MADEP	Massachusetts Department of Environmental Protection
MIP	membrane interface probe
MOA	Memorandum of Agreement
NASA	National Aeronautics and Space Administration
NCP	National Contingency Plan
NTCRA	Non-Time-Critical Removal Action
OSWER	Office of Solid Waste and Emergency Response
PRG	Preliminary Remediation Goal
RAO	Removal action objective
RI	Remedial Investigation
RME	reasonable maximum exposure
SFI	Supplemental Field Investigation

SLERA	Screening Level Ecological Risk Assessment
TEQ	toxicity equivalence
U.S.	United States
USEPA	United States Environmental Protection Agency
UFP-SAP	Uniform Federal Policy for Sampling and Analysis Plan
USACE	United States. Army Corps of Engineers
USATEC	United States Army Topographic Engineering Center
VDEQ	Virginia Department of Environmental Quality
VI	Vapor Intrusion
WFF	Wallops Flight Facility

I. Purpose

This Action Memorandum (AM) documents the decision by the National Aeronautics and Space Administration (NASA) to conduct a non-time-critical removal action (NTCRA) at Operable Unit 7, Formerly Used Defense Site (FUDS) Project 15, Construction Debris Landfill (CDL) site at the NASA Goddard Space Flight Center's Wallops Flight Facility (WFF), located in Wallops Island, Virginia. The NTCRA activities include excavation and offsite disposal of waste and affected soil. The decision to excavate the waste at the CDL was presented in the Engineering Evaluation / Cost Analysis (EE/CA) for the CDL (AECOM, 2022).

FUDS Project 15 is one of several projects identified under the FUDS Program at NASA WFF. In 2015, the Army and NASA entered into a Memorandum of Agreement (MOA) for the purpose of transferring Environmental Restoration, FUDS funds from the Army to NASA to conduct necessary response actions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), consistent with the Defense Environmental Restoration Program and the National Contingency Plan (NCP). Prior to the MOA, the United States (U.S.) Army Corps of Engineers (USACE) was responsible for the management and implementation of environmental remedial activities at FUDS.

In 2021, NASA entered into an Administrative Agreement on Consent (AAOC) with the U.S. Environmental Protection Agency (USEPA), which applies to past releases of hazardous substances, waste, and/or constituents at WFF, and identified CERCLA response requirements, policies, and guidance as the primary process for planning and performing work necessary to complete remedial and corrective actions at FUDS located at WFF (USEPA Docket No. RCRA- 03-2021-0022TH).

The objective of this NTCRA is to excavate and dispose offsite the waste and affected soil at the CDL. The purpose of the excavation and offsite disposal is to reduce or eliminate direct exposures to waste and Chemicals of Concern (COCs) in soil by human and ecological receptors.

II. Site Conditions and Background

NASA WFF is located in Accomack County, on the Eastern Shore of the Commonwealth of Virginia, approximately 5 miles south of the Maryland/Virginia boundary, and just to the west of Chincoteague Island. The facility consists of three separate properties on which facilities have been constructed: Main Base, Mainland, and Wallops Island. The CDL is located on the Main Base at the northern end of runway 22 (see **Figure 1**).

A. Site Description

1. Removal Site Evaluation

2007 Remedial Investigation (Versar, 2011): Remedial Investigation (RI) activities included: electromagnetic and ground penetrating radar geophysical surveys; membrane interface probe (MIP) survey; excavating, logging, and soil sampling of 10 test pits; installing and sampling six shallow monitoring wells and collecting two rounds of groundwater samples; collecting 10 sediment samples and 10 surface water samples; and measuring water levels, hydraulic gradients, and hydraulic conductivity of the shallow surficial aquifer (**Figure 3**). The geophysical investigation identified five anomalies located in either the Central or Southern AOCs. Elevated detector values were found in one of the eight MIP borings. No waste was encountered in the test pits located in the Northern or Western AOCs. Surface soil from the Northern and Western AOCs did not contain any organic compounds above background.

Draft Feasibility Study (Versar 2012): Additional information and analytical data were needed to allow a refinement of the remedial alternatives presented in the draft Feasibility Study (FS), so an SFI was completed. Data from the RI also informed the planning of the SFI field activities and are used with the SFI data to refine the Conceptual Site Model (CSM).

2022 Supplemental Field Investigation (SFI) (AECOM, 2022): Field activities included trenching, collecting soil samples from trenches and from DPT borings, sampling shallow and deep temporary wells, collecting two rounds of surficial aquifer groundwater samples from monitoring wells, collecting a Yorktown Aquifer groundwater sample from water supply well TOC-06, and collecting pore water and sediment samples from Little Mosquito Creek (**Figure 3**). A 3-dimensional model was used to calculate the volume of waste debris at 7,450 cubic yards.

2. Site Layout

The CDL consists of open fields and wooded areas. Prior to development of the Site by the U.S. government, the current WFF property was farmland and marshland. The Department of Navy acquired the property in 1942 and established a World War II training facility. The Navy discontinued naval training operations at the facility in 1959, when NASA took custody of the Main Base as well as the northern portion of Wallops Island and the Mainland. NASA excised approximately 397 acres of the Main Base to the U.S. Fish and Wildlife Service in 1975.

3. Historical Site Use

Analysis of historical aerial photographs, as reported in the RI, documents a series of ground scars indicative of waste disposal in areas at the northeast corner of WFF that are visible in 1949, 1954, 1959, and 1963 aerial photographs. By 1963, some of these features are no longer visible, and by 1974, none of them remained visible (USATEC, 2000). Based on the aerial photographic analysis, four areas of concern (AOCs) within the CDL were defined and named with respect to their geographic position to each other: Northern, Central, Southern, and Western AOCs (**Figure 2**). Investigations of the site confirmed that the area had been used for disposal of construction debris and ash.

4. Site Characteristics

Soil covers the majority of the waste at the CDL, and the site has limited access; a fence and gate restrict the general public from entering the site along with the marshlands along the eastern border of the site.

a. Site Topography and Drainage

Elevations on the WFF range from mean sea level to 42 feet above mean sea level (amsl), with slopes of 1 to 2% (Versar 2011). In general, the land surface at the CDL slopes from north to south and west to east. Elevations ranged from just over 1-foot amsl on the southeastern edge of the Southern AOC to just under 21 feet amsl west of the access road, across from the Central AOC. In the northern portion of the CDL, elevations decrease from about 19 feet west of the access road in the Northern AOC to about 10 feet, near the edge of the marsh east of the Northern AOC. In the southern part of the Site, elevations just west of the access road are about 12 to 13 feet amsl; near the edge of the marsh, elevations are 3 to 4 feet amsl.

The Site is bound on the east by a narrow tidal channel of Mosquito Creek; water flows north to south in the immediate vicinity of the CDL. The tidal channel turns eastward south of the Site and rejoins Mosquito Creek.

Drainage on and adjacent to the CDL is controlled by ditches on the west side of the access road as well as two concrete culverts that connect the drainage ditch to west-to-east drainage features: one located north of the Central AOC and the other located south of the Southern AOC. Another, smaller man-made drainage ditch receives surface water flow off the Southern AOC.

b. Wetlands

The eastern portion of the excavation abuts classified estuarine wetlands associated with Little Mosquito Creek/Chincoteague Bay (AECOM, 2022). Jurisdictional vegetated tidal wetlands in Virginia are defined as those lands containing vegetation that lie between mean low water and 1.5 times the local mean tide range (Section 28.2-1302 of the Virginia Code). The local tidal wetland boundary line was calculated to be 3.24 feet amsl.

c. Site Geology

The site geology is defined based on information collected during the RI completed by Versar (2011) as well as the boring logs completed during the Supplemental Field Investigation (SFI) From the surface downward, the materials present at the Site and investigated during the RI and SFI include fill (including waste); Pleistocene-age sands, silts, and clays; and the Yorktown Formation. Only fill and waste are further discussed since they are the object of this AM.

d. Fill and Waste

Fill is present in the Central and Southern AOCs and consists of both natural materials (predominantly sand) and man-made materials disposed of in the AOCs (waste). Natural material (sand) appears to have been used to grade the topography as well as to cover disposed waste material. The eastern extent of the waste is the western edge of the marsh in the Central AOC and the Southern AOC.

Within the Central AOC waste is found at the surface but is also buried beneath as much as 11 feet of sand fill. The waste includes empty metal drums, paint, scrap metal, rebar, glass bottles, bricks, cable, springs, tires, and broken concrete. During the SFI, waste was found at depths of up to 12 feet bgs; during the RI the maximum depth of waste in the Central AOC was about 13 feet bgs.

As in the Central AOC, waste in the Southern AOC is found both at the surface and buried beneath a layer of sand fill (up to 4 feet deep). Waste in the Southern AOC consists of cinders and burned rubbish (glass, cans, wires) (Versar, 2011) as well as plastic, plates, scrap metal, bathroom fixtures, railroad ties, and metal pipes. The maximum thickness of cover material (fill) was 4 feet of fine silty sand, but in most locations, only about 1 foot of cover sand was present. The maximum thickness of waste found during the SFI was 5 feet.

e. Cultural Interests

When informed of the proposed excavation, the Catawba Indian Nation responded they have no immediate concerns. The Pamunkey did not respond. Other federally recognized tribes in VA contacted during the public comment period include the Rappahannock Tribe, Chickahominy Tribe, Chickahominy Indians Eastern Division (CIED) Tribe, Umi Tribe, Nansemond Tribe, Monacan Indian Nation and Pamunkey Indian Tribe.

5. Release or threatened release into the environment of a hazardous substance, pollutant, or contaminant

The human health risk assessment (HHRA), completed for the SFI report identified COCs for ingestion or dermal contact with soil or inhalation of vapors from soil are 1,1,2-trichloroethane, 2-hexanone, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalence (TEQ), aluminum, arsenic, cadmium (diet), chromium (total), cobalt, copper, iron, manganese, thallium, and vanadium. The

Integrated Exposure Uptake Biokinetic (IEUBK) lead results were above the 5% probability thresholds for soil.

The Screening Level Ecological Risk Assessment (SLERA) and Baseline Ecological Risk Assessment (BERA) Step 3a evaluation indicates a potential for adverse ecological effects for Central AOC soil macroinvertebrates (nickel) and terrestrial wildlife (nickel); and Southern AOC soil macroinvertebrates (barium, chromium, copper, manganese, mercury, and zinc) and terrestrial wildlife (total dichlorodiphenyldichloroethane [DDD]/dichlorodiphenyldichloroethylene [DDE]/dichlorodiphenyltrichloroethane [DDT] and total TEQ [mammal]). The contaminants of potential ecological concern (COPEC) in soil are barium, chromium, copper, manganese, mercury, nickel, and zinc. The COPECs in sediment are bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, total DDD/DDE/DDT, total TEQ (dioxin/furan congener concentration), aluminum, and sodium.

6. National Priorities List Status

The NASA WFF is not on the NPL but is considered a Federal Facility Superfund Alternative site. NASA entered into an Administrative Agreement on Consent (AAOC) with the U.S. Environmental Protection Agency (USEPA) for the performance of work to ensure that the environmental impacts associated with past or present activities at select sites that are part of the Wallops Formerly Used Defense Sites (FUDS) Program at NASA WFF are thoroughly investigated and appropriate response actions are taken as necessary to protect human health, welfare and the environment (USEPA Docket No. RCRA- 03-2021-0022TH).

7. Maps, Pictures, and Other Graphic Representations

Referenced figures are provided at the end of this AM. Additional figures are provided in the EE/CA (AECOM, 2022).

B. Other Actions to Date

1. Previous Actions

No environmental cleanup actions or other removal response actions have occurred at the site.

2. Current Actions

After the planned interim removal action for waste and soil, additional CERCLA responses will occur at the site to address COCs in groundwater, surface water, and sediment.

C. Roles of State and Local Authorities

1. State and Local Actions to Date

Virginia Department of Environmental Quality (VDEQ) serves as the lead state regulatory agency for all actions being conducted under the CERCLA regulatory framework for FUDS at WFF. Although VDEQ is not included within the AAOC, VDEQ concurrence with site actions is necessary. No state/local enforcement orders or agreements have been issued that are relevant to this NTCRA.

2. Potential for Continued State and Local Response

VDEQ is expected to continue to provide technical advice, environmental regulatory oversight, and assistance until all remedial activities are complete

III. Threats to Public Health, or Welfare, or the Environment and Statutory and Regulatory Authorities

A. Introduction

Section 300.415(b)(2) of the NCP lists eight criteria to determine whether a removal action is appropriate. The factor most applicable to current conditions on the CDL is Section 300.415(b)(2)(i) - *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.* The situation at the CDL is the human and ecological exposure to buried waste and contaminated soils exposed on and near the surface of the CDL due to erosion. The action recommended in this AM is the excavation and offsite disposal of the buried waste and affected soils. If the exposed waste is left unabated, there is the potential for direct contact by human and ecological receptors.

B. Threats To Public Health Or Welfare

The SFI Data Report (AECOM 2022) and the Final RI Report (USACE, 2011) of the Operable Unit 7, Project 15 CDL, NASA WFF FUDS identified, “Unacceptable risks associated with the Central and Southern [AOCs] are present at the site. Solid waste is clearly evident at the surface and persists to a depth of at least 13 feet in some areas.” The human health risk assessment (HHRA), completed for the SFI report, indicated that The HHRA results indicate that unacceptable risk is possible for the following exposure areas and human receptors:

- Central/Southern exposure area – Future outdoor worker, current/future outdoor recreator (adult/child) exposure to surface and total soil; indoor/outdoor commercial worker exposure to surface and total soil and indoor vapors (VI) from surficial groundwater; construction worker exposure to surface and total soil, and outdoor vapors (trench) from surficial groundwater; and future hypothetical resident (child/adult) exposure to surface and total soil and surficial groundwater (potable use, VI, and showering/bathing).
 - Adverse health effects could be possible from exposure to the following soil COCs at the Central/Southern exposure area: 1,1,2-Trichloroethane, 2-Hexanone, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, 2,3,7,8-TCDD TEQ, Aluminum, Arsenic, Cadmium (Diet), Chromium, Total, Cobalt, Copper, Iron, Lead, Manganese, Thallium, and Vanadium.
 - Lead modeling results for the southern portion the Central/Southern exposure area indicate that the future outdoor maintenance worker, teen trespasser, and construction worker results were above the 5% probability percent threshold for total soil indicating these receptors have a greater than 5% chance of having blood lead (PbB) levels over 5 micrograms per deciliter (µg/dL). The hypothetical child resident results were also above the 5% probability thresholds for surface and total soil. Adverse health effects from exposure to lead in soil are possible.
- Northern/Western exposure area – indoor/outdoor commercial worker exposure to indoor vapors (VI) from surficial groundwater; construction worker exposure to outdoor vapors

(trench) from surficial groundwater; future hypothetical resident (child/adult) exposure to surficial groundwater (potable use, VI, and showering/bathing). There are no soil related risks at the Northern/Western exposure area.

C. Threats To the Environment

The Screening Level Ecological Risk Assessment (SLERA) and Baseline Ecological Risk Assessment (BERA) Step 3a evaluation indicates a potential for adverse ecological effects for Central AOC soil macroinvertebrates (nickel) and terrestrial wildlife (nickel); and Southern AOC soil macroinvertebrates (barium, chromium, copper, manganese, mercury, and zinc) and terrestrial wildlife (total dichlorodiphenyldichloroethane [DDD]/dichlorodiphenyldichloroethylene [DDE]/dichlorodiphenyltrichloroethane [DDT] and total TEQ [mammal]). The contaminants of potential ecological concern (COPEC) in soil are barium, chromium, copper, manganese, mercury, nickel, and zinc. The COPECs in sediment are bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, total DDD/DDE/DDT, total TEQ (dioxin/furan congener concentration), aluminum, and sodium. Ecological risks at the Northern/Western AOC are negligible for soil macroinvertebrates and terrestrial wildlife (USEPA, 1997)

IV. Endangerment Determination and Project Action Limits

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action discussed in this AM, may present an endangerment to public health, welfare, or the environment.

The removal action will be complete when all visible waste and contaminated soil that can safely be removed without affecting the integrity of the roadway, underground drainage piping (Reinforced Concrete Pipe), or underground utilities, is excavated and shipped offsite for disposal.

V. Proposed Action and Estimated Costs

A. Proposed Actions

The following RAO was developed for the Project 15 CDL site: to reduce or eliminate direct exposures to waste and Chemicals of Concern (COCs) in soil by human and ecological receptors as well as mitigate transport of these COCs to surface water or sediment receptors.

1. Proposed Action Description

The proposed action, as presented in the EE/CA for the CDL (AECOM, 2022) is the excavation and offsite disposal of waste and affected soil utilizing conventional construction and excavation techniques. The proposed action is described below:

Site Preparation

Prior to excavation activities, personnel will mobilize to the site to remove trees and brush so that pre-excavation soil sampling can be completed. After all trees and brush have been removed, personnel will mobilize to the site to collect samples of the soil/waste for characterization for disposal and to verify that the waste is non-hazardous. Based on landfill analytical requirements, TCLP samples for characterization for disposal will be collected at the rate of one sample per 1,000 tons (approximately 1,400 cubic yards [yds³]) and total sulfur samples will be collected for material that contains ash (the southern portion of the excavation). No fly ash was observed on the northern half of the site.

Besides sampling for TCLP, the pre-excavation sampling will include the collection and analysis of samples from beneath the waste and along the sidewalls of the excavation. Sufficient pre-excavation soil samples will be collected and analyzed to assess the limits of excavation, thereby, eliminating the need for post-excavation sampling. Every pre-excavation sample will be analyzed for metals and a subset will be analyzed for VOCs, and/or SVOCs, and/or dioxins. The determination of which samples will be analyzed for these other compounds is based on the results of previous soil sampling in the area of that sample. Analytical results will be compared to the industrial PRGs and a decision will be made regarding the extent of the excavation.

Following completion of the required plans and permits, the project team will mobilize to the site. Specific activities include mobilizing equipment and materials to execute the work, verifying utility locations, and establishing material lay-down and stockpile areas. Erosion control measures will be implemented in accordance with the Erosion and Sedimentation Control Plan.

Waste and Soil Excavation

All visible waste and contaminated soil (soil with chemical concentrations above an industrial Preliminary Remediation Goal [PRG]) that can safely be removed without affecting the integrity of the roadway, underground drainage piping (Reinforced

Concrete Pipe), or underground utilities will be excavated. **Figure 7** shows the outline of the area proposed for excavation. The proposed excavation area will be adjusted based on the pre-excavation sampling results.

Transportation and Offsite Disposal

Approximately 3,600 cubic yards (CY) of waste will be excavated and transported off-site for disposal. Approximately 1,000 CY of overburden in the northern portion of the site will be staged onsite for reuse as backfill. The waste will be transported to the Accomack County landfill. General fill and topsoil will be imported for site restoration.

Backfilling and Site Restoration

Following completion of the excavation, the excavation will be backfilled with onsite overburden and clean fill obtained from offsite. Fill and topsoil from an offsite source will be sampled for Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), VOCs, SVOCs, metals, Per- and Polyfluorinated Substances, and TCLP, including ignitability, corrosivity, and reactivity to demonstrate that it is free of contamination prior to being brought on site. The analytical results will be compared to the EPA Region 3 BTAG Ecologically Protective Backfill Values (EPA, 2019) and Industrial Soil Regional Screening Levels based on HQ of 1 (EPA, 2022).

The area will be re-graded with fill and topsoil and the land surface contoured to achieve a desired slope. Grass seed and straw will be placed over the surface to minimize the potential for erosion. Land Use Controls (LUCs) may be implemented to prevent residential use of the site as part of a final site remedy.

2. Contribution to Remedial Performance

The selected action is an effective and efficient alternative that requires the physical removal and offsite disposal of accessible waste and affected soil. The proposed action will contribute to the efficient performance of any long-term remedial action selected at the CDL by removing waste and affected soil.

3. Description of Alternative Technology

The following removal action alternatives were developed and evaluated in the EE/CA (AECOM, 2022).

- Alternative 1 – No Action
- Alternative 2 – Excavation and Off-Site Disposal of Waste and Affected Soil
- Alternative 3 -- Standard Landfill Cap with Consolidation of Sediments below the Cap, Land-Use Controls, and Long-Term Monitoring

The three alternatives were evaluated based on their effectiveness, Implementability, and cost. The EE/CA describes each of the alternatives in more detail, in addition to the process which evaluated and compared each alternative.

4. Engineering Evaluation/Cost Analysis

The EE/CA supports an NTCRA for The CDL. The USEPA and the VDEQ reviewed the EE/CA report and provided comments prior to the public comment period. The USEPA and VDEQ comments were addressed and incorporated into the final EE/CA report. The final EE/CA report was made available to the public in the NASA Wallops information repository for a public comment period beginning on October 28, 2022 and ending on November 27, 2022. The document was also provided to the seven federally recognized tribes in Virginia in addition to the Catawba tribe in South Carolina. No comments on the EE/CA report were received from the public during this period. The Catawba tribe sent a letter to NASA dated July 12, 2022 which stated they have no immediate concerns within the proposed project areas.

5. Compliance with ARARS

NTCRAs should attain applicable or relevant and appropriate requirements (ARARs) to the extent practicable considering the exigencies of the situation. Tables 1, 2, and 3 contain an ARAR analysis of both Federal and State Regulations. These are the same tables that were presented in the EE/CA. The proposed action will, to the extent practicable considering the exigencies of the situation, attain the ARARs described in the Tables.

6. Project Schedule

Following approval of the Work Plan, it is anticipated that personnel will mobilize to the site for site preparation and waste excavation activities in spring to summer 2023. The project schedule will be adjusted as necessary throughout the project. The excavation of the waste will commence upon approval of this AM and completion and approval of a Design Plan for the excavation. It is anticipated that field components of the NTCRA will be conducted over a 6-month period.

B. Estimated Costs

The costs associated with implementing this NTCRA include planning document preparation, installing erosion and sediment control measures, excavating the waste and affected soil, backfilling with clean fill, adding topsoil and seed to establish grass growth, reporting, and project management. Costs include equipment rental and transportation as well as offsite disposal of the waste. No annual operation and maintenance costs are associated with this NTCRA. The cost estimate of \$3,163,060 was presented in the EE/CA.

VI. Expected Change in The Situation Should Action Be Delayed or Not Taken

Should the response action be delayed or not taken, the waste and affected soils will remain in place, posing a risk to human and ecological receptors, and areas where waste is exposed due to erosion will continue to expand. Thus, there will be a continuation of conditions that are likely to pose an imminent and substantial danger to public health, or welfare, or the environment.

VII. Public Involvement

Public participation was included as part of the EE/CA for the CDL (AECOM, 2022). The proposed action was published in the Eastern Shore Post and Eastern Shore Radio on October 28, 2022. Also, a public comment period extended from October 28, 2022 to November 27, 2022. The proposed action was presented as a poster at the August 23, 2022 public information session. There were no public comments.

The Administrative Record for sites addressed under the AAOC is available to the public at the Information Repositories located at the following:

Eastern Shore Public Library
23610 Front Street
Accomack, Virginia 23301
(757) 787-3400

Chincoteague Island Library
4077 Main Street
Chincoteague, Virginia 23336
(757) 336-3460

VIII. Outstanding Policy Issues

There are no outstanding policy issues for this NTCRA.

IX. Enforcement

As documented in the AAOC with USEPA, NASA will perform the voluntary proposed response promptly and properly. USEPA and VDEQ will remain in an oversight role for the duration of the removal action by reviewing the associated Uniform Federal Policy for Sampling and Analysis Plan (UFP-SAP), Design, and Completion Report. USEPA and VDEQ will be provided an opportunity to review and provide input on the UFP-SAP, Design, and the Completion Report.

X. Recommendation

This AM describes the selected action to address waste and affected soils at the CDL, developed in accordance with CERCLA as amended, and is consistent with the NCP. This decision is based on the administrative record for the CDL.

This AM was prepared in accordance with current USEPA and Department of Defense guidance documents for NTCRAs under CERCLA. This AM documents NASA's decision to undertake a NTCRA at the WFF CDL within OU 7, FUDS Project 15, at Wallops Island, Virginia. This decision has been developed in accordance with the AAOC and USEPA guidance (USEPA, 2009).

All accessible waste and affected soil will be excavated and disposed offsite. Clean fill will be brought in, the site will be graded per the design, topsoil will be added, and the site will be stabilized with grass. NASA, in cooperation with USEPA and VDEQ, recommends approval of the proposed removal action. NASA will implement, complete, and document this NTCRA.

XI. Approval

This AM represents the selected removal action for OU7, FUDS Project 15, CDL site at NASA WFF located in Accomack County, Virginia, developed in accordance with CERCLA, as amended, and is consistent with the AOC.

David A. Reth, Director
Management Operations
NASA Goddard Space Flight Center

Date


XII. References

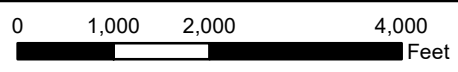
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Figures



Legend

 Extent of Waste (dashed where estimated)



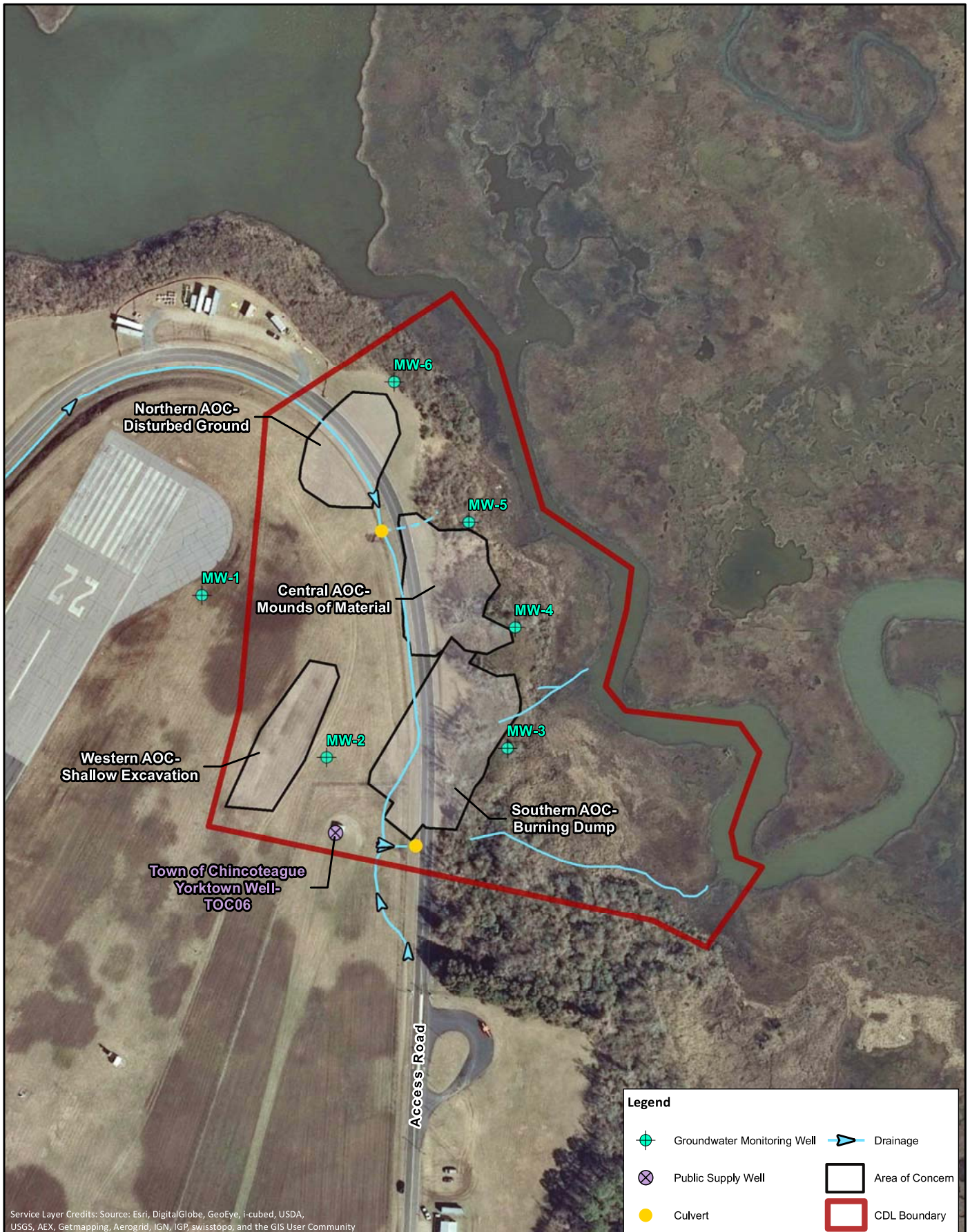
CLIENT	NASA WFF CDL SFI & NTCRA			
NOTES	Supplemental Field Investigation			
REVISED	8/5/2022	GIS BY	MS	8/5/2022
SCALE	1:24,000	CHK BY	JK	8/5/2022
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong).		PM	JK	8/5/2022



Location of Project 15, Construction Debris Landfill on Wallops Flight Facility

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

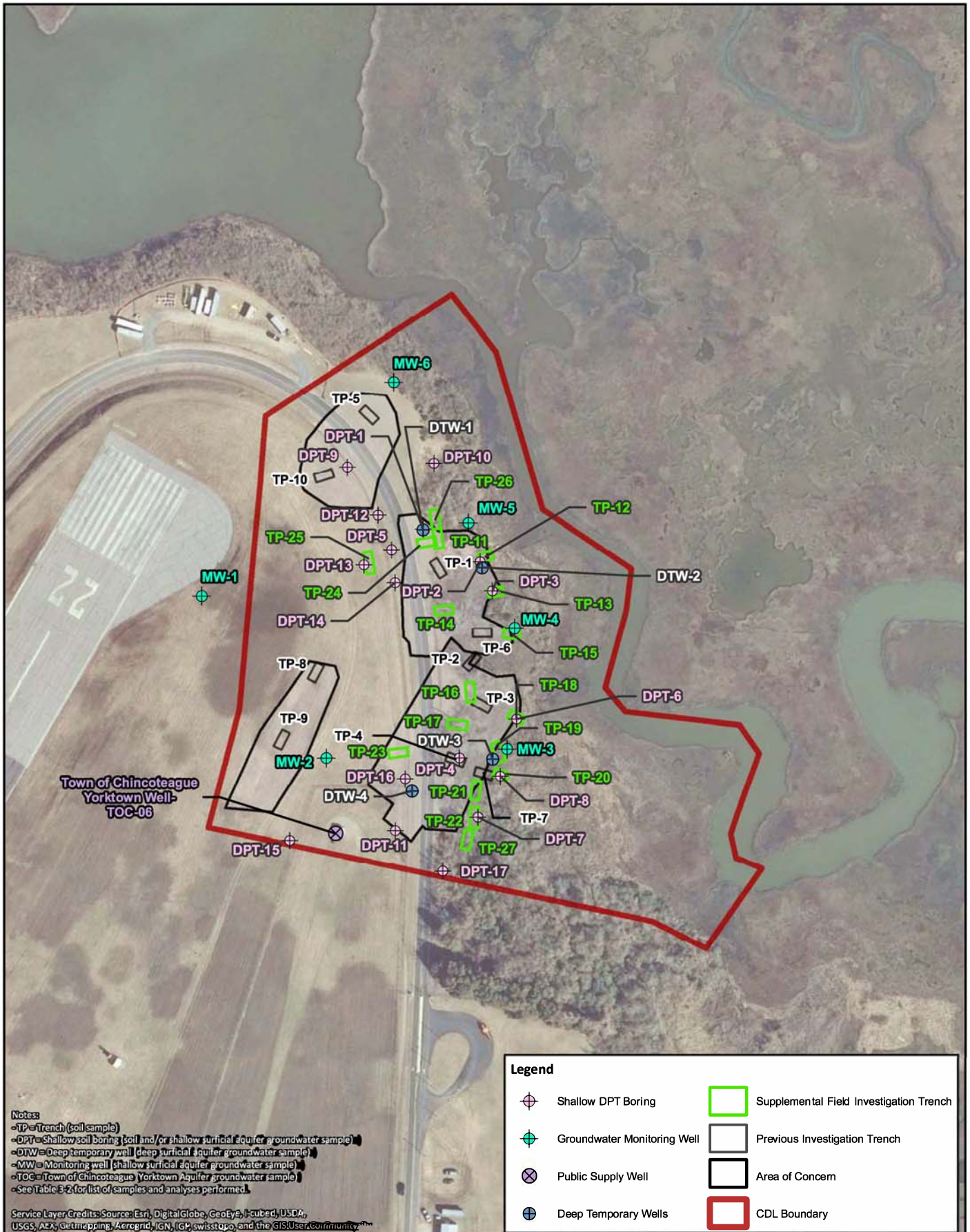


Site Features



Project 15 CDL FS
WFF FUDS

Figure 2



Notes
 -TP=Trench (soil sample)
 -DPT=Shallow soil boring (soil and/or shallow surficial aquifer groundwater sample)
 -DTW=Deep temporary well (deep surficial aquifer groundwater sample)
 -MW=Monitoring well (shallow surficial aquifer groundwater sample)
 -TOC=Town of Chincoteague Yorktown Aquifer groundwater sample
 -See Table B-2 for list of samples and analyses performed.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, ACX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

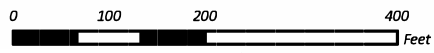
	Shallow DPT Boring		Supplemental Field Investigation Trench
	Groundwater Monitoring Well		Previous Investigation Trench
	Deep Temporary Wells		Public Supply Well
	Area of Concern		CDL Boundary



Field Investigation Soil and Groundwater Sample Locations

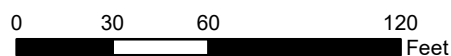
Project 15 CDL FS
WFF FUDS

Figure 3





- Legend**
- Extent of Waste
 - Wetland



Proposed Excavation Area, Construction Debris Landfill

CLIENT		NASA WFF CDL SFI & NTCRA		
PROJECT		Supplemental Field Investigation		
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:720	CHK BY	JK	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	JK	8/22/2022

AECOM 12420 Milestone Center Drive
Germantown, MD 20876

FIGURE 4

Tables

**Table 1: Chemical-Specific ARARs and TBC Guidance
for the NTCRA at the Construction Debris Landfill, Wallops Flight Facility, Virginia**

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Federal Requirements			
USEPA Ecological Soil Screening Level (Eco-SSL)	USEPA	Eco-SSLs are guidance values used to evaluate ecological risk caused by exposure to contaminants. These are not ARARs because they are not promulgated regulations. Eco-SSLs are the geometric mean of eligible toxicity values protective of growth and reproduction; in cases where a geometric mean could not be calculated, the minimum eligible toxicity value was used as a refined ESV.	To be considered
USEPA Region 4 Ecological Risk Assessment Supplemental Guidance.	Scientific Support Section, Superfund Division, USEPA Region 4.	EPA Region 4 ESVs are guidance values used to evaluate ecological risk caused by exposure to contaminants. These are not ARARs because they are not promulgated regulations.	To be considered

Acronyms:

ARAR - Applicable or Relevant and Appropriate Requirement

CFR - Code of Federal Regulations.

E&SC - Erosion and Sediment Control

TBC - To Be Considered

U.S.C. - United States Code

USEPA - United States Environmental Protection Agency

VAC - Virginia Administrative Code

**Table 2: Location-Specific ARARs and TBC Guidance
for the NTCRA at the Construction Debris Landfill, Wallops Flight Facility, Virginia**

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
		Federal Requirements	
Resource Conservation and Recovery Act (RCRA) Flood Plain Regulations	40 Code of Federal Regulations (CFR) 264.18(b)	<p>Requires that any treatment, storage, and disposal (TSO) facility be designed, constructed, operated, and maintained to avoid washout. For existing surface impoundments, waste piles, land treatment units, landfills, and miscellaneous units, no adverse effects on human health and the environment will result if washout occurs.</p> <p>Relevant and appropriate to a remedial action that leaves waste in place to protect against washout because the site is an existing landfill that is at least partially located within a 100-year floodplain.</p>	Relevant and Appropriate
Executive Order (EO) on Floodplain Management	EO 11988, 40 CFR 6 Appendix A, excluding Sections 6(a)(2), 6(a)(4) and 6(a)(6); 40 CFR 6.302[a]	<p>Requires federal agencies to evaluate the potential effect of actions taken in a floodplain and to avoid long- and short-term adverse Impacts associated with direct and indirect development of a floodplain.</p> <p>Part of the CDL Site Is located within a floodplain on a federal facility, and remediation will be federally financed. Potentially applicable to capping and excavation activities. Capping would likely require work in the floodplain to achieve a proper grade. In addition, capping would require identification of impacts of the proposed action, an evaluation of whether those actions can be avoided, and development of measures to minimize the impacts and restore and preserve the floodplain. Appendix A public notification requirements are excluded because they are not substantive requirements</p>	Applicable

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Executive Order on Protection of Wetlands	EO 11990, 40 CFR Part 6, Appendix A, excluding Sections 6(a)(2), 6(a)(4) and 6(a)(6); 40 CFR 6.302[a]	<p>Sets forth direction for avoidance of adverse impacts associated with the distinction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.</p> <p>The CDL Site is located partially within a wetland and on a federal facility. Potentially applicable to capping and excavation activities. Capping would likely require some filling of the wetlands to achieve a proper grade. Capping also would require the identification of impacts of proposed action, an evaluation of whether those actions can be avoided, and development of measures to minimize the impacts and restore and preserve the wetland. Appendix A public notification requirements are excluded because they are not substantive requirements. Nationwide Permit no. 38 will be used for any activities undertaken in the wetland areas of the CDL Site and incorporates coordination with natural resource and historical resource trustees regarding the potential to adversely impact threatened and endangered species and/or sites protected under the National Historical Preservation Act.</p>	Applicable

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
National Historic Preservation Act (NHPA)	36 CFR Part 62 and 65; 16 U.S. Code (U.S.C.) 469-470; 36 CFR 800	<p>Requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. Federal agencies are required to initiate consultation with the State Historic Preservation Office (SHPO), informing them of the planned action and requesting their submittal of any comments or concerns.</p> <p>The U.S. Army Corps of Engineers, Baltimore District, conducted archaeological monitoring of trenches conducted as part of a remedial investigation of the Central AOC and Southern AOC in May and June 2015. The Virginia Department of Historic Resources (VDHR), in a letter dated April 29, 2016, determined that archaeological monitoring for additional investigative trenching and borings was not warranted.</p> <p>Under Section 106 of the National Historic Preservation Act and Title 36, Part 800 of the Code of Federal Regulations, NASA WFF has determined the proposed NTCRA of waste and soil removal, as well as future remedial actions for groundwater, sediment, and surface water at the CDL, will not affect historic resources. NASA WFF submitted the determination to the Virginia Department of Historic Resources (VDHR) on May 25, 2022, and has requested their concurrence. On June 22, 2022, VDHR concurred that no further identification efforts are warranted. VDHR and appropriate Native American tribes will be notified of any artifacts and/or human remains encountered during ground disturbance activities.</p>	Applicable
Clean water Act (CWA)	40 CFR 230.2(b), .10-.12, .20-.32, .41-42,.53, 60I-.77; 33CFR 320.4, 328.2, 330.I(c),330.4	<p>Regulates discharge of dredged or fill material into wetlands. During the identification, screening, and evaluation of alternatives, the effects on wetlands must be evaluated, and adverse impacts on wetlands are to be avoided. No activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available. If there is no other practicable alternative, impacts must be mitigated.</p> <p>Substantive aspects of the Section 404 regulations are applicable. Potentially applicable to sediment remediation (excavation, removal, and stream restoration) and capping alternatives that require placement of materials into the wetland areas to achieve a proper grade for the cap.</p>	Applicable

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Coastal Zone Management Act	Section 307(c) of 16 U.S.C.1456(c); 15 CFR 930.30 to 34; .36(c), and .39(b-d)	Requires adequate provision for protection of fish and wildlife resources when any modification of any stream, wetland, or other water body is proposed. Applicable to sediment remediation if treatment or excavation is selected. Under Section 301(c)(l)(A), a federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of approved state management programs.	Not Applicable
Endangered Species Act	16 U.S.C.1531 50 CFR 200 and 402	Protects endangered species and threatened species and preserves their habitat. Requires coordination with federal agencies for migration of impacts. These requirements are not applicable because threatened and endangered species or critical habitats have not been found at the CDL Site, but threatened and endangered species (e.g., Delmarva Peninsula Fox Squirrel and piping plover) are known to exist nearby. The CDL site is also overflowed by numerous migratory birds that may temporarily use this area. The coordination aspects of this act are relevant and appropriate.	To be considered
Fish and Wildlife Coordination Act	16 U.S.C. 661-663; 40 CFR Part 6, Appendix A. excluding Sections 6(a)(2), 6(a)(4), and 6(a)(6); 40 CFR 6.302[a]	Establishes provisions for protection of fish and wildlife resources and requires consultation with federal authorities if modifications of streams or other water bodies are required. Activities conducted for the CDL Site, including capping, may impact fish or wildlife resources or modify streams or other water bodies. This regulation is directly applicable to potential sediment remedies for the CDL Site. Excavation or treatment of sediment will have temporary impacts, and construction of a cap/cover for the CDL site will require fill to be placed over some parts of the wetland to achieve a proper grade. This regulation is not applicable to excavation of the landfill and soil activities.	To be considered
Migratory Bird Treaty Act	16 U.S.C. 703	Provides protection for migratory bird species, including many passerines. Prohibits killing or taking of any bird or any part, nest, or egg of any such bird. Protects almost all species of native birds in the United States from unregulated taking, which can include poisoning at hazardous waste sites. Migratory birds are known to frequent the area surrounding the CDL Site, and the CDL Site is located within the Atlantic Migratory Flyway. Destruction of habitat can be viewed as taking, and any site area undergoing construction activities must be determined to be free of the nest of the applicable species.	To be considered

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
		State Requirements	
Wetlands Management Program/ Wetlands Mitigation- Compensation Policy	Virginia Administrative Code 28.1-1300 to 1320; 4VAC20-390-10 to 50	This policy encourages, where appropriate, the compensation of all permitted tidal wetland losses, especially vegetative losses, provided that all mitigative measures have been considered to avoid any impact. Requires preservation of tidal wetlands, prevention of their destruction, and accommodation of necessary economic development in a manner consistent with wetlands preservation goals. The capping alternative has the potential for sediment disturbance. To mitigate ecological risk would include restoration strategies so there is no net loss of wetlands. This regulation is not applicable to excavation of the landfill and soil.	Not Applicable
Wetlands Policy	9VAC25-380	<p>These regulations contain procedures and restrictions for siting wastewater treatment plants, controlling construction activities, and controlling nonpoint sources to prevent discharges that impair the quality of a wetland area. Alteration in quantity or quality of the natural flow of water, which nourishes the ecosystem, should be minimized.</p> <p>Portions of 9VAC25-380 pertaining to wastewater treatment siting and operations are not applicable. Portions pertaining to impacts from construction and restoration activities in or near wetlands are potentially applicable. Direct discharges are not part of any of the considered remedial alternatives. This regulation is not applicable to excavation of the landfill and soil.</p>	Not Applicable
Water Resources Policy	9VAC25-390	<p>This policy restricts construction in floodplains and requires minimizing the destruction, loss, or degradation of wetlands and surface water resources to assure water quality and quantity (i.e., Virginia's water resources) needs are met at all times.</p> <p>Portions of 9VAC25-390 pertaining to groundwater, navigable waters, and potable use reservoirs and surface water bodies are not applicable. Portions pertaining to impacts on wetlands from remedial action construction and restoration activities are potentially applicable. Also see evaluation of Virginia's Wetland Policy, above. This regulation is not applicable to excavation of the landfill and soil.</p>	Not Applicable

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Endangered Species Act Regulations	4VAC15-20-130 to 140	<p>These regulations from the Department of Game and Inland Fisheries prohibit the taking of endangered species. The cited regulations provide listings of endangered species and definitions of actions that constitute taking.</p> <p>If remediation could potentially affect an endangered species, these regulations would apply. However, threatened and endangered species or critical habitats have not been found at the CDL Site, but threatened and endangered species (e.g., Delmarva Peninsula fox squirrel and piping plover) are known to exist nearby. The CDL Site is also overflowed by numerous migratory birds that may temporarily use this area. Requirements to coordinate with state agencies to confirm that these species are not impacted are applicable and relevant. Virginia regulates more species than do federal regulations.</p>	To be considered
Endangered Plant and Insect Species Act Regulations	2VAC5-320-10	<p>These regulations from the Department of Game and Inland Fisheries prohibit the taking of endangered plant and insect species.</p> <p>If a site investigation or remediation could potentially affect an endangered species, these regulations would apply. However, threatened and endangered species or critical habitats have not been found at the CDL Site, and no endangered plants or insects have been recognized nearby (except Seabeach Amaranth Plant, which only occurs as a barrier island plant). Requirements to coordinate with state agencies to confirm that these species are not impacted are applicable and relevant. Virginia regulates more species than do federal regulations.</p>	To be considered

Acronyms:

ARAR - Applicable or Relevant and Appropriate Requirement

CFR - Code of Federal Regulations.

E&SC - Erosion and Sediment Control

TBC - To Be Considered

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USEPA - United States Environmental Protection Agency

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**Table 3: Action-Specific ARARs and TBC Guidance
for the NTCRA at the Construction Debris Landfill, Wallops Flight Facility, Virginia**

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
		Federal Requirements	
National Ambient Air Quality Standards	40 Code of Federal Regulations (CFR) 50.4-50.12	<p>Establishes standards for ambient air quality to protect public health and welfare (Including particulate matter and lead).</p> <p>Not applicable because only "major sources" are subject to requirements related to attainment of National Ambient Air Quality Standards (NAAQS). Emissions from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities are not expected to qualify as "major." Each state has the primary responsibility for assuring that NAAQS are attained and maintained through the state implementation plan (SIP). State SIP requirements become federal requirements by means of the SIP approval process. Therefore, federal NAAQS are not relevant and appropriate. State requirements approved through the SIP process are potentially applicable or relevant and appropriate requirements (ARARs). Moreover, states may delegate authority to regional or local air programs for SIP requirements. Any regional or local air program requirements that are a part of a SIP under the Clean Air Act (CAA) are considered potential ARARs.</p>	Not Applicable, Relevant or Appropriate
National Pollutant Discharge Elimination System (NPDES)	40 CFR 122	<p>Establishes permitting requirements for the discharge of pollutants from any point source into waters of the United States and establishes criteria and standards for technology-based treatment of discharges.</p> <p>Potentially applicable for on-site remedies that use treatment and discharge because these types of cleanup activities could be considered "direct discharges" from a point source under the Clean Water Act (U.S. Environmental Protection Agency [EPA] 1988, pp. 3-6 to 3-7). Also, man-made drainage ditches at the CDL Site (e.g., SD-2 to SD-9) are point sources, and site run-off following remedial action would trigger the requirements. The compliance point is at the mouth of the drainage ditch where it leaves the site; substantive NPDES requirements include discharge limitations, monitoring requirements, and best management practices.</p>	To be Considered

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Technology-based effluent limitations	Clean Water Act (CWA) part 301(b)	<p>Establishes guidelines to determine effluent standards based on the best available technology (BAT) that is economically achievable.</p> <p>Potentially applicable for on-site remedies that use treatment and discharge because these types of cleanup activities could be considered "direct discharges" from a point source under the Clean Water Act (EPA 1988, pp. 3-6 to 3-7).</p>	To be Considered
Ocean Discharge Regulations	40 CFR Part 227, Subpart G	<p>Establishes limiting permissible concentrations for solid, liquid, and suspended particulate phase of a discharge at the mixing zone boundary.</p> <p>Potentially applicable for on-site remedies that use treatment and discharge because these types of cleanup activities could be considered "direct discharges" from a point source under the Clean Water Act (EPA 1918, pp. 3-6 to 3-7).</p>	To be Considered
Resource Conservation and Recovery Act (RCRA) Flood Plain Regulations	40 Code of Federal Regulations (CFR) 260-264	<p>Regulates the operation, transportation, and the treatment, storage, and disposal of hazardous material. Also regulates construction, design, monitoring, operation, and closure of hazardous waste facilities. The regulations restrict these activities from occurring on floodplains.</p> <p>Remedial activities will not constitute operation of a treatment, storage, and disposal (TSD) facility. There is no potential for hazardous wastes to be generated as a result of implementing a remedy for the site and so is not applicable. Site activities for remedial alternatives are not expected to generate hazardous materials requiring transportation or require the operation of a TSD facility and no hazardous wastes were identified during the remedial investigation.</p>	Not Applicable
RCRA Regulations, Land Disposal Restrictions (LDRs)	40 CFR Part 268	<p>This regulation prohibits the land disposal of untreated hazardous wastes and provides criteria for treatment of hazardous waste prior to land disposal.</p> <p>Applicable to off-site disposal of soil or sediment that meets the definition of a hazardous waste. Remedial actions that involve treating and re-depositing hazardous soils and sediment or by-product of treatment process must comply with LDRs.</p>	To be considered
Municipal Solid Waste Landfill Regulations	40 CFR 258	<p>Establishes design and operating criteria for solid waste (nonhazardous) landfills.</p> <p>These criteria do not apply to municipal solid waste landfill units that do not receive waste after October 9, 1991. These requirements would be relevant and appropriate for landfill closure and post-closure care.</p>	To be considered

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Occupational Safety and Health Administration (OSHA)	29 USC Sect. 651-678	Regulates worker health and safety. Requirements of the act apply to response actions under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). OSHA exposure limits are developed for 8-hour worker exposures. OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements also apply to field crews conducting remedial action activities. This regulation is applicable for the site activities during implementation of remedial alternatives.	Applicable
		State Requirements	
Erosion and Sediment Control	Section 4VAC50-30-40 of the Virginia Erosion and Sediment Control Regulations	This regulation is applicable when excavation, backfilling, and regrading of soil is contemplated. It establishes procedures to prevent erosion through runoff and discharge of sediment in water bodies. Construction projects that disturb in excess of 10,000 square feet or more than 100 cubic yards of earth must prepare (and apply controls in accordance with) an erosion and sediment control (E&SC) plan and retain a copy of the E&SC plan at the construction site (Section 4VAC50-30-40 of the Virginia Erosion and Sediment Control Regulations).	Relevant and Appropriate
Particulate Matter from Materials Handling and Construction	9VAC5-40-90	This regulation mandates that reasonable precautions (e.g., dust control measures) to prevent particulate matter from becoming airborne must be undertaken during construction.	Relevant and Appropriate
Virginia Waste Management Act and Solid Waste Management Regulation	9VAC20-81	These regulations establish standards and procedures pertaining to the management of solid wastes by providing the requirements for siting, design, construction, operation, maintenance, closure, and post-closure care of solid waste management facilities. These regulations would apply if waste on-site needed to be stored, transported, or disposed of.	To be considered

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Virginia Open Dump Regulations	9VAC20-81-45, 160 and 170	<p>Prohibits operation of an open dump on which any solid waste is placed, discharged, deposited, injected, dumped, or spilled so as to create a nuisance or present a threat of a release of harmful substances into the environment or present a hazard to human health.</p> <p>These criteria do not apply to waste sites that are undergoing a CERDA or RCRA remediation under Virginia Department of Environmental Quality (VDEQ) supervision per 9VAC20-81-45B, 2 (f). Closure and post-closure requirements are relevant and appropriate. Because the waste material is located at the groundwater discharge area to surface water, there is no further potential for migration of the contaminants to the uppermost aquifer, groundwater monitoring requirements under 9VAC20-81-250 are not ARARs.</p>	To be considered
State Water Control Law	Va. Code Ann. §62.1-44-2 to 62.1-44.34:28	<p>Prohibits discharges of waste to the waters of the state and excavation of a wetland or new activities that cause significant alteration or degradation of existing wetland acreage or functions, except as authorized by permit.</p> <p>Only applicable to potential sediment removal within wetlands and discharge of impacted groundwater to surface water.</p>	Not Applicable
Virginia Pollutant Discharge Elimination System Permit Regulation	9VAC25-31	<p>This regulation governs the discharge to surface waters that must meet site-specific effluent limits.</p> <p>These regulations would apply to potential remedial activities that involve discharges to surface water. Defines allowable concentrations of contaminant discharges to Little Mosquito Creek. May be relevant to capping the landfill.</p>	To be considered
Virginia Water Quality Standards - Anti-degradation Policy	9VAC25-260-30	<p>Mandates the protection of existing high quality state waters and provides for the restoration of all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life that might reasonably be expected to inhabit them.</p> <p>Remedial actions at the CDL Site address upland soil contamination, not wetland, sediment, or surface water. Engineering controls (e.g., erosion and sediment control, booms and temporary dams/dikes, off-site disposal of liquids from dewatering excavation areas, off-site disposal of decanted sediment water) will be used during any remedial action construction and restoration activities to prevent or minimize wetland surface water quality issues</p>	Relevant and Appropriate

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Virginia Storm Water Management Act Regulation	Va. Code Ann §10.1- 603.1 to 603.15 4VAC50-60-10 to 240	Establishes requirements for discharges of storm water that will protect surface water of the state. These regulations are applicable because NASA has a formal storm water management program under these regulations and the CDL Site is not exempt. Remedial actions would consider the impact of the discharge of storm water (e.g., runoff from a capped area).	Relevant and Appropriate
Virginia Erosion and Sediment Control Act Regulations	Va. Code Ann.§10.1- 560 to 571 4VAC50-30-10 to 110	Establishes requirements for erosion control to protect surface water of the state. These regulations are applicable because NASA has a formal erosion and sediment control management program under these regulations, and the CDL Site is not exempt. Remedial actions would consider the impact of soil erosion and sediment control during implementation of the remedy and afterwards.	Relevant and Appropriate
Virginia Water Protection Permit Regulation	9VAC25-210 to 260	This regulation delineates the requirements applicable to activities such as dredging, filling or discharging pollutants into, or adjacent to, surface waters (the Commonwealth's definition of surface waters includes wetlands). The requirements of the regulation are in addition to those that may be found in a U.S. Army Corps of Engineers § 404 permit. These regulations would apply to remedial activities that involve dredging or discharges, which will not occur during the removal of the waste at the CDL and do not apply.	Not Applicable
Virginia Wastewater Treatment Requirements	9VAC25-260-5 to 550	Establishes basic wastewater treatment requirements of effluent discharge on a site-by-site basis. Potentially applicable if the remedial actions involved point source discharges.	Not Applicable
Virginia Pollution Abatement (VPA) Discharge of Pollutants Requirements	9VAC25-32-10 to 300	Establishes standards for the discharge of pollutants adjacent to state waters including underground waters. Applicable to surface run-off, which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, such as culverts passing below the National Oceanic and Atmospheric Administration access road; and man-made drainages at the CDL Site.	Relevant and Appropriate

Standards, Requirements, Criteria, or Limitations	Citation	Synopsis	Status
Virginia Ambient Air Quality Standards	9VAC5-30-10 to 80	<p>These rules establish ambient air quality standards and air emission standards from disturbance of soil at a site or from treatment of soil or water or from other pollutant management activities.</p> <p>Although these regulations are only directly applicable to industrial polluters, these requirements are relevant and appropriate for a remedial action that could result in release of regulated contaminants to the atmosphere, such as may occur during air stripping or excavation.</p>	Relevant and Appropriate
Virginia Fugitive Dust Regulations	9VAC5-50-90	<p>These regulations require precautions to be taken to prevent particulate matter from becoming airborne during disturbance of soil or treatment activities.</p> <p>Applicable to excavation, grading, or other construction activities on-site.</p>	Relevant and Appropriate

Acronyms:

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