UFC 3-810-01N
1 March 2016
Change 3, 1 December 2021

UNIFIED FACILITIES CRITERIA (UFC)

NAVY AND MARINE CORPS ENVIRONMENTAL ENGINEERING FOR FACILITY CONSTRUCTION

UNIFIED FACILITIES CRITERIA (UFC)

NAVY AND MARINE CORPS
ENVIRONMENTAL ENGINEERING FOR FACILITY CONSTRUCTION

U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER CENTER

Record of Changes (changes are indicated by **1**\ ... /**1**/)

Change No.	Date	Location
1	7/1/2017	• Added paragraph 1.5 Safety. • Minor revisions to paragraphs 1-4, 2-4.1, 2-5, 2-5.3, 2-6.3, 2-6.3.1, 2-12, 2-17, 3-1, 3-2.5 and Appendix A, B-6 and C-1. • Added requirements for final drawings and specifications to be attached to Design Build RFP. See paragraphs 3-2.1 and 3-2.2. • Added requirements and best practices as they relate to Beryllium. See paragraphs 2-6.3, Section 2-7, 2-15.1.1, 3-1, 3-1.6, 3-2.3, 3-2.4.1, Section 3-2.7, and Appendix B-4.
2	7/1/2021	• Added reference to EM 385-1-1 in paragraph 2-3 Design Criteria. • Minor revisions to paragraphs 2-6.3, 3-2.4.1, 3-2.5, 3-2.5.1, 3-2.5.2, 3-2.6, 3-2.6.1, 3-2.6.2, and Appendix A. • Minor revisions to the titles of paragraphs 3-2.5 and 3-2.6 in the Table of Contents. • Added additional certified professionals that meet the requirements to prepare final drawings and specifications for paint in industrial and commercial facilities. See paragraph 3-2.6.
3	12/1/2021	• Added reference to DoD Environmental Laboratory Accreditation Program in paragraph 2-17.2.

This UFC supersedes UFC 3-800-10N, Final Draft dated July 2006.

FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with USD (AT&L) Memorandum dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the most stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Systems Command (NAVFAC), and Air Force Civil Engineer Center (AFCEC) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: Criteria Change Request. The form is also accessible from the Internet sites listed below.

UFC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide web site http://dod.wbdg.org/.

Hard copies of UFC printed from electronic media should be checked against the current electronic version prior to use to ensure that they are current.

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UNIFIED FACILITIES CRITERIA (UFC)
NEW SUMMARY SHEET

Document: UFC 3-810-01N, *Navy and Marine Corps Environmental Engineering for Facility Construction*

Superseding: UFC 3-800-10N, Final Draft, *Environmental Engineering for Facility Construction.*

Description: This UFC provides specific criteria on environmental engineering design topics as they relate to project development of demolition, renovation and site development projects. In these situations, it is primarily intended to address hazardous waste management. It is organized into technical requirements and design deliverables. Requirements for design deliverables beyond or in more detail of what is already required by a Core UFC or by FC 1-300-09N and are provided for NAVFAC-only.

Reasons for Document:

- Provide criteria for meeting \1\ DoDI 6055.01 and applicable Occupational Safety and Health Act (OSHA) Standards/1/, U.S. Environmental Protection Agency (EPA) requirements, and other Federal, state, and local laws and regulations.
- Provide technical requirements for hazardous waste field investigation and design criteria in the development of reports, specifications, and drawings.
- Establish minimum technical requirements and deliverables, including environmental reports, specifications and drawings, in support of design activities.
- Define minimum requirements for specifications and contract drawings as they relate to hazardous materials.

Impact: By providing standardized criteria for the identification of hazardous materials during design it is expected that construction schedules and cost for change orders will be reduced by having adequate hazardous waste information included in the contract documents during the bidding process.

Unification Issues: Requirements in this FC conform to Navy instructions and manuals. These requirements include NAVY specific requirements that have not been unified. These Navy requirements may not work for Army and Air Force operations because of their organizational and operational differences.

TABLE OF CONTENTS

TABLES

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CHAPTER 1 INTRODUCTION

1-1 BACKGROUND.

Environmental Engineering combines the principles of engineering and science to protect the environment, preserve resources, and enhance public health. Congress has enacted various acts to improve or protect the natural environment, clean up polluted sites, and protect human health by providing requirements for drinking water, wastewater management, clean air, and various other issues that affect public health. This legislation establishes conditions requiring Federal agencies to implement projects in a manner that maintains or enhances the environment and public health.

1-2 PURPOSE AND SCOPE.

This document provides technical criteria and outlines technical requirements for the more typical aspects of the Environmental Engineering. It is not intended to cover all aspects of Environmental Engineering. It is primarily intended for building demolition and building renovation projects. It does introduce other topics such as cultural resources preservation, wetlands protection, and remediation of contaminated soil and groundwater. While topics such as contaminated soil and groundwater are introduced, this UFC is not intended to cover the remediation of all hazardous materials. Where remediation of specific hazardous materials not covered in this criteria is warranted, contact the appropriate Environmental Engineering media manager. Many of these topics are considered during the National Environmental Policy Act (NEPA) process. This UFC assumes that appropriate NEPA actions have been accomplished prior to committing resources to any proposed activity. Many facilities were constructed with materials that are now considered hazardous to worker safety and the environment. Removal and disposal of these materials requires a complex analysis of Federal, state, and local regulations to determine the appropriate methods for removing and disposing of these hazardous materials. Use this UFC to determine the minimum environmental engineering design requirements. State and local regulations may be more stringent. Where other state or local criteria regulatory requirements exist, comply with the more stringent requirements.

1-3 APPLICABILITY.

This UFC applies to all military service elements and contractors involved in the planning, design, and construction of Navy and Marine Corps facilities worldwide.

1-4 GENERAL BUILDING REQUIREMENTS.

Comply with UFC 1-200-01, \1\DoD Building Code (*General Building Requirements*)/1/. UFC 1-200-01 provides applicability of model building codes and unique government criteria for typical design disciplines and building systems, as well as for accessibility, antiterrorism, security, high performance and sustainability requirements, and safety. Use this UFC in addition to UFC 1-200-01 and other UFCs and Government criteria referenced therein.

1-5 SAFETY.

\1\All DoD facilities must comply with DoDI 6055.01 and applicable Occupational Safety and Health Administration (OSHA) safety and health standards./1/

1-6 REFERENCES.

Appendix A contains a list of references used in this document. The publication date of the code or standard is not included in this document. In general, the latest available issuance of the reference is used.

1-7 GLOSSARY.

Appendix C contains acronyms and abbreviations used in this document.

CHAPTER 2 TECHNICAL REQUIREMENTS

Identification and compliance with all Federal, state and local environmental regulations requires comprehensive environmental investigations, analysis, design and engineering. A lack of these comprehensive environmental tasks and efforts leads to increased project schedules and costs, and potential Notices of Violations (NOV) and fines.

2-1 PERMITS.

Identify, assist or provide, as applicable, all permits, approvals and fees required for the design, construction and operation of the proposed project from Federal, state and local regulatory authorities or overseas equivalent. Comply with FC 1-300-09N for professional registration requirements. Licensure in the state where the project is located may be required to obtain permits and approvals. Coordinate with the Installation Environmental (EV) staff to obtain the project NEPA documentation, as applicable, for project specific requirements. For areas outside of the United States and its territories and possessions with host nation agreements, follow design approval procedure as directed in project scope and by the Government Project Manager. For areas outside of the United States and its territories and possessions without Host nation agreements, the Government will review and approve environmental plans.

2-2 REGULATORY NOTIFICATIONS.

Identify all regulatory notification requirements in accordance with Federal, state, and local regulations. Where the Navy needs to provide public notification, coordinate with the Government Project Manager and the Installation EV staff. Require the Contractor to provide copies of all regulatory notifications to the Government Project Manager and the Installation EV staff. Typically, regulatory notifications are provided for the following (this listing is not all inclusive): demolition, renovation, national pollutant discharge elimination system defined site work, or remediation of hazardous materials (such as asbestos, hazardous waste, and lead-based paint).

2-3 DESIGN CRITERIA.

Contact the Installation EV program staff for specific environmental requirements for the project location. Design projects in accordance with applicable requirements of the local regulatory agency with jurisdiction over the installation and the criteria in this UFC; whichever is more stringent.

Provide design in accordance with the following criteria precedence:

- Federal regulations required for installations in the United States, U.S. Territories, and U.S. Possessions governed by U.S. law
- Department of Defense Policies
- Department of the Navy Policies

- State and local regulations for the project location
- \2\EM 385-1-1 *Safety and Health Requirements*/2/
- Final Governing Standards (FGS) and Overseas Environmental Baseline Guidance Document (OEBGD)
- Protection of natural resources and minimization of potential environmental impacts

2-4 FIELD INVESTIGATION.

Comply with EM 385-1-1 and all safety and environmental regulations during field investigations, surveys, sampling, abatement and removal procedures, material management, and waste management. Take precautions to protect human health and the environment as required by Federal, state, and local regulations and DoD policy. Ensure that the contract documents include information and survey data sufficient to identify and quantify the materials listed in the following paragraphs.

Complete all field investigations (e.g., information gathering, surveys, sampling and testing), for the environmentally sensitive materials indicated below. Each Installation maintains record files pertaining to the environmental aspects of previously constructed projects. Contact the Installation EV program staff and obtain all existing surveys, test reports and drawings prior to beginning field investigations.

2-4.1 Safety.

Comply with \1\DoDI 6055.01 and the applicable Occupational Safety and Health (OSHA) Standards./1/ Verify that all preconstruction work performed and construction contract requirements, such as facility surveys, sampling, testing, and field investigations, comply with \1\ DoDI 6055.01 /1/ for respiratory protection, noise exposure, permit-required confined-space entry, personal protective equipment, protection of building occupants, and similar.

2-5 ASBESTOS-CONTAINING MATERIALS.

\1\These requirements apply to sites and projects where existing buildings or structures will be renovated, altered, repaired, or demolished as part of the scope of work. /1/Navy policy requires elimination of the asbestos hazard. Refer to OPNAV M-5090.1 Section Asbestos.

Do not remove installed RACM that are in good condition for the sole purpose of eliminating asbestos. Identify RACM that will not be disturbed or do not have the potential to be disturbed during the construction activities, and manage in place.

2-5.1 Conducting Field Investigations, Surveys and Sampling – Asbestos-Containing Materials.

Perform facility asbestos investigation, survey and sampling in accordance with 40 CFR 763 prior to any renovation, alteration, repair, or demolition project that will disturb building materials regardless of the age of the existing construction. For Federal requirements, refer to http://www2.epa.gov/asbestos/building-owners-and-managers#renovations. Data from previous asbestos surveys may be available from the Installation EV staff. Earlier surveys may not have included all suspect RACM that will be impacted by the project. This may include, but is not limited to, roofing materials, crawl-space soils, and confined utility chases. Provide personnel who are currently Environmental Protection Agency (EPA) accredited asbestos inspectors to perform ACM sampling.

2-5.2 Laboratory – Asbestos-Containing Materials.

Use laboratories that are fully equipped and proficient in conducting analyses of suspect RACM bulk samples in accordance with 40 CFR 763, are accredited by the National Institute of Standards and Technology/National Voluntary Laboratory Accreditation Program (NIST/NVLAP), and are a successful participant and maintain proficiency in the NIST/NVLAP sponsored quality assurance program for asbestos identification.

2-5.3 Control of Regulated Asbestos-Containing Materials.

Federal law defines demolition activities and renovation activities, and establishes different requirements for each one. Identify what requirements apply to the project, based on the National Emission Standards for Hazardous Air Pollutants (NESHAP) compliant survey, and\1\ include in the specifications. Before beginning any demolition or renovation activities, determine the potential for releasing asbestos. /1/ Identify the requirements for notification to the regulatory agency and include in the specifications.

2-6 PAINT.

2-6.1 Lead-Based Paint in Target Housing and Child-Occupied Facilities.

These requirements apply to projects involving the renovation, alteration, or repair of any target housing or child-occupied facility. Child-occupied facilities may include, but are not limited to, daycare centers, preschools, or kindergarten classrooms.

Federal regulations include specific requirements for any work in a child-occupied facility under EPA Title X and EPA RRP Rule. EPA Title X is not limited to residential units, and also applies to child-occupied facilities. Design and perform all phases of work relating to Lead-Based Paint in accordance with EPA Title X and EPA RRP Rule.

2-6.1.1 Conducting Field Investigations, Surveys, and Sampling – Lead-Based Paint in Target Housing and Child-Occupied Facilities.

Evaluate all surfaces impacted by the project for lead-based paint, including, but not limited to, painted surfaces (interior and exterior), dust, and soil. Perform all sampling and testing in accordance with EPA Title X and EPA RRP Rule. Sampling and testing will include x-ray fluorescence (XRF), bulk, wipe, water, and soil sampling as required by EPA Title X and EPA RRP Rule. Provide EPA accredited professionals to perform the lead-based paint field work, sampling, and risk assessment.

2-6.1.2 Laboratory – Lead-Based Paint in Target Housing and Child-Occupied Facilities.

Use laboratories that meet all the requirements of EPA Title X, EPA RRP Rule, and laboratories performing analysis for lead-based paint chip, air, water, soil, or wipe samples. Laboratories must be fully accredited by the EPA National Lead Laboratory Accreditation Program (NLLAP) and rated proficient in the EPA Environmental Lead Proficiency in Analytical Testing (ELPAT) Program. The EPA list of accredited laboratories is available on the following website: http://www2.epa.gov/lead/national-lead-laboratory-accreditation-program-nllap.

2-6.1.3 Removal of Lead-Based Paint in Target Housing and Child-Occupied Facilities.

Abatement is a lead-based paint hazard-reduction method that is designed to permanently eliminate lead-based paint or lead-based hazards. Permanent removal is defined as having a 20-year expected life. Require abatement to be performed by certified abatement workers who successfully completed an EPA accredited abatement worker course and who are supervised by an abatement supervisor certified under EPA or under a state program authorized by EPA. Abatement activities include:

- Removing lead-based paint and its dust.
- Permanently encapsulating or enclosing the lead-based paint.
- Replacing components with lead-based paint.
- Removing or permanently covering lead-contaminated soil.

Prior to clearing an area in which lead-based paint abatement has been performed, collect and analyze a representative clearance sample by a certified individual and an accredited laboratory, in accordance with the EPA RRP Rule. Require the Contractor to comply with the EPA RRP Rule in the specifications.

Residential lead-based paint may be disposed of in construction and demolition (C&D) landfills in accordance with 66 FR 53535 in addition to being disposed of in municipal solid waste landfills.

2-6.2 Lead-Based Paint in Commercial or Industrial Facilities.

In order to dispose of lead-based paint waste from industrial or commercial sources, take a representative sample of the waste material and require analysis using the toxicity characteristic leaching procedure (TCLP). Samples equal to or greater than 5.0 milligrams per liter (mg/L) TCLP are considered hazardous and need to be disposed of in an approved hazardous waste landfill. Samples less than 5.0 mg/L TCLP are considered nonhazardous and may be disposed of in a municipal solid waste landfill or a C&D landfill. Indicate final disposition of the waste material in accordance with the test results.

2-6.3 Paint – Lead, Cadmium, Chromium, and Other Hazardous Metals.

\2\ Refer to 2-6.1 Lead-Based Paint in Target Housing and Child-Occupied Facilities for any work being performed in target housing or child-occupied facilities/2/. Paints containing lead, cadmium and chromium are often found as protective coatings on structural steel, tanks, piping, metal building components, or exterior coatings on metal surfaces and are used in current operational processes in various facilities, such as aircraft maintenance hangars, ship maintenance and repair facilities, and similar types of facilities. Require control and management of dust and particulates containing lead, cadmium, chromium, and other hazardous metals generated from construction activities in accordance with \2\29 CFR 1926.62, 1910.1026, and 1910.1027 and OPNAVINST 5100.23G/2/, to avoid contaminated indoor air or contaminated dust on building surfaces.

Identify the potential factors that affect the thresholds and exposures to building occupants and construction workers in accordance with \1\DoDI 6055.01/1/ and state codes and laws. Require facility engineering controls, building occupant protection, construction activity requirements for worker protection, and any additional requirements for safe environmental conditions in the specifications.

2-6.3.1 Conducting Field Investigations, Surveys, and Sampling – Paint.

Monitor worker exposure in accordance with \1\DoDI 6055.01/1/. Use ASTM Standards and EPA or HUD Guidelines for air monitoring criteria. Evaluate anticipated waste materials as part of the field investigation and sampling. Refer to paragraph entitled “Control and Management of Solid and Hazardous Waste” for additional requirements.

2-6.3.2 Laboratory – Paint.

Use laboratories that are fully accredited by the EPA NLLAP and rated proficient in the National Institute for Occupational Safety and Health; EPA ELPAT to perform analysis for air samples. Refer to the paragraph entitled “Laboratory - Lead-Based Paint in Target Housing and Child-Occupied Facilities” for a link to the EPA website to verify the list of accredited laboratories.

2-7 BERYLLIUM.

\1\These requirements apply to sites and projects where any existing buildings or structures will be renovated, altered, repaired, or demolished. Beryllium can be found in the air and on surfaces where beryllium is used as either a pure metal, as beryllium oxide, as an alloy with copper, aluminum, magnesium, or nickel and in certain types of slags. Facilities that have the potential to contain beryllium include:

- Primary Beryllium Production,
- Processing Beryllium Metal/Alloys/Composites,
  - Foundries,
  - Furnace Shops,
  - Machine Shops,
  - Metal Fabricating Shops,
  - Welding Shops,
  - Dental Labs,
- Secondary smelting and refining work areas (recycling electronic and computer parts, metals),
- Abrasive Blasting Shops (slags).

If not properly controlled and managed, dust or particulates containing beryllium may be deposited on building surfaces. Facility types that may contain beryllium (dust and particulates) include areas such as aircraft maintenance hangars, ship maintenance and repair facilities, automotive repair facilities, dental labs and similar types of facilities.

2-7.2 Conducting Field Investigations and Surveys – Beryllium.

Perform a beryllium investigation and survey where beryllium is known to have been used or processed. Where beryllium has been used or processed, test all surfaces impacted by the project for beryllium dust. Perform all sampling and testing in accordance with applicable ASTM and industry standards.

When investigation and sampling are performed, there are hazards associated with the generation of dust. OSHA Standards cite action levels and exposure limits with regard to worker protection. Wherever employees are, or can reasonably be expected to be, exposed to airborne beryllium at levels above the time weighted standard permissible exposure limits or short-term exposure limit; monitor worker exposure and designate a competent person to perform the investigation and sampling in accordance with 29 CFR 1910.1024, 29 CFR 1915.1024 and 29 CFR 1926.1124.

2-7.3 Laboratory – Beryllium.

Use laboratories that are fully accredited by Industrial Hygiene Laboratory Accreditation Program.

2-7.4 Management – Beryllium.

Require control and management of beryllium during construction in accordance with 29 CFR 1910.1024, 29 CFR 1915.1024 and 29 CFR 1926.1124. Areas with beryllium dust may be cleaned by high-efficiency particulate air (HEPA) filter vacuuming in accordance with 29 CFR 1910.1024./1/

2-8 RADON.

2-8.1 Radon Mitigation.

Implement a radon mitigation system design in new or renovated, altered, or repaired occupied facilities as described in UFC 3-101-01. For any occupied building renovation, alteration, or repair, identify the levels of indoor radon. In addition, comply with ASTM E2121, Navy Radon Assessment and Mitigation Program – Guidance Document for Navy Family Housing, Navy Radon Assessment and Mitigation Program – Guidebook for Naval Shore Installations, and state specific documents from the EPA for additional information concerning radon zones, and level of risk (low, medium, high), whichever is more stringent.

2-8.2 Conducting Field Investigations, Surveys, and Sampling – Radon.

Use short-term testing detectors or long-term alpha tracking detectors to determine if radon is present at the project site. The short-term test is typically 90 days and the long-term test can be up to one year. Confirm with the Installation's EV staff that the radon detection devices and the sampling strategies and procedures comply with the Navy Radon Assessment and Mitigation Program (NAVRAMP). Obtain all existing radon test information from Installation EV staff.

2-9 POLYCHLORINATED BIPHENYLS.

Eliminate Polychlorinated Biphenyls (PCB) containing materials from all Navy equipment and all electrical distribution systems. Refer to OPNAV M-5090.1, Section, Polychlorinated Biphenyls.

2-9.1 Conducting Field Investigations, Surveys, and Sampling – Polychlorinated Biphenyls.

Obtain a current environmental survey from Installation EV staff that indicates the status of PCB in the building to be renovated, repaired, altered, or demolished. Provide an inspector who is familiar with the various uses of PCB. Based on the age of the facility and the extent of the project, determine the potential PCB sources. During the field survey, the inspector is to examine the potential PCB sources for labeling and manufacturer information. If there is no label that states "non-PCB", contact the manufacturer for more information or assume the source contains PCB.

2-9.2 Management of Polychlorinated Biphenyls.

Manage and dispose of PCB in accordance with the Toxic Substance Control Act (TSCA) and with state and local requirements. Dispose of PCB materials at facilities meeting the requirements of incineration or in a chemical waste landfill as required by 40 CFR 761 Subpart D. Contractors are required to comply with all Navy-applicable PCB requirements while performing work onsite.

2-10 LOW-LEVEL RADIOACTIVE COMPONENTS.

Components that may contain low-level radioactive (LLR) material include thermostats, switches, smoke detectors, High Intensity Discharge (HID) lamps and exit signs. If there is no label or a warning on the label that states the contents of the source, assume it contains LLR material.

2-10.1 Conducting Field Investigations and Surveys – Low-Level Radioactive Components.

Obtain a current environmental survey from Installation EV staff that indicates the status of LLR components in the building to be altered, renovated, repaired, or demolished. Provide an inspector familiar with the various building components that could contain LLR material. Based on age of the facility and the extent of the project, determine potential sources. During the field survey, the inspector is to examine the potential sources for labeling. If there is no label that states the contents contain potential LLR material, contact the manufacturer for more information or assume the source contains LLR material.

2-11 ANIMAL DROPPINGS.

2-11.1 Conducting Field Investigations and Surveys – Animal Droppings.

Testing soil and air samples for Histoplasma is not likely to be useful because the fungus is thought to be common in the environment in certain areas, and positive or negative results in soil samples does not mean the soil is a source of infection or that the fungus is not there. Treat soils, buildings, or other areas with bat droppings or bird manure as containing the Histoplasma virus. Use best practice document DHHS 2005-109 when conducting surveys or preparing specification for building renovation, alteration, or demolition projects. Do not stir up dust by sweeping or vacuuming areas containing rodent droppings or nesting material as it may contain Hantavirus. Use Centers for Disease Control and Prevention (CDC) cleaning up after rodents for cleanup requirements. http://www.cdc.gov/rodents/index.html

2-12 MOLD AND SPORES.

These requirements apply to sites and projects where any existing building(s) or structure(s) will be renovated, altered, repaired, or demolished. \1\/1/ Design moisture

barriers and retarders as defined in UFC 3-101-01. Additional requirements can be found in EPA 402-K-01-001.

2-12.1 Conducting Field Investigations, Surveys and Sampling – Molds and Spores.

During field investigations for hazardous constituents, areas with chronic moisture may be found and recognized as potentially containing harmful molds. Renovations, alterations, or repairs that involve unoccupied areas of a building often include significant water damage and fungal growth, which could pose a hazard to construction workers, the design team, and to occupants of other parts of the building. Complete the Microbial Assessment Survey and Report prior to the preparation of the project specifications. Provide a qualified microbial assessor that meets at least one of the following criteria to complete the survey:

- Bachelor's degree from an accredited university or college with a major in engineering, architecture, building construction, occupational health, microbiology, occupational safety, or a related natural or physical science. An additional 2 years' experience in conducting microbial investigations is required.

- Associates degree from an accredited university or college with a concentration in environmental, natural, or physical sciences. An additional 4 years' experience in conducting microbial investigations is required.

- Certification as an industrial hygienist as certified by the American Board of Industrial Hygienists, safety professional as certified by the Board of Certified Safety Professionals or engineer. An additional one year of experience in conducting microbial investigations is required.

- Certification by the American Council for Accredited Certification as a Council-Certified Indoor Environmental Consultant, Council-Certified Indoor Environmentalist, Council-Certified Mold Consultant, Council-Certified Microbial Investigator, Council-Certified Residential Mold Inspector, Council-Certified Mold Remediation Supervisor, or Council-Certified Mold Remediator.

Provide a microbial assessor familiar with signs of potential mold problems, including stains or discoloration of walls, ceilings, or carpets; swelling or sagging of building components; standing or dripping water; rot (wet or dry); and musty odors. Types of samples include air samples, bulk samples (chunks of carpet, wallboard, insulation, and similar), and water samples from drains and cooling pans. Collect samples using sterile materials and containers, and ship overnight for next day delivery in accordance with instructions provided by the laboratory. Use a laboratory with special expertise in mold analysis. Longer shipping time must be approved by the laboratory.

2-12.2 Laboratory – Molds and Spores.

Use laboratories that are fully accredited by the Environmental Microbiology Proficiency in Analytical Testing program of the American Industrial Hygiene Association to perform analyses for fungi (molds) or bacteria.

2-13 STORAGE TANKS.

These requirements apply to hazardous waste storage tanks regulated under 40 CFR 264 Subpart J and 40 CFR 265 Subpart J. UFC 3-460-01 covers the general environmental criteria and standards for storage tanks containing regulated substances subject to the provisions of the Resource Conservation and Recovery Act (RCRA) Part 280. Evaluate sites with known tanks, known soil, or groundwater contamination at the beginning of the design of facility renovations, repairs, demolition, and construction so appropriate precautions can be taken to protect workers and the environment prior to excavation.

2-13.1 Tank Installation.

Projects that include the installation of new storage tanks, including reinstalled tanks or replaced tanks, used to contain hazardous waste at treatment, storage, and disposal facilities are subject to Federal regulation and are to comply with the requirements set forth in 40 CFR 264 Subpart J and 40 CFR 265 Subpart J. Design storage tanks to meet Federal regulation for tank location, secondary containment, cathodic protection, leak-detection system, leak-detection testing, and similar.

2-13.2 Tank Removal.

These requirements apply to sites and projects where aboveground storage tanks (AST) or underground storage tanks (UST) are known to exist. Obtain copies of available reports, such as tank integrity assessment reports, groundwater sampling and testing, contaminated soil sampling and testing, and Closure Reports from the Installation EV staff. Coordinate with the Installation EV staff in order to determine the requirements to initiate a permanent closure process of the storage tank as applicable. Closure activities are regulated at the state level. Storage tanks and piping systems may be permanently closed by removing them from the ground, or by decontaminating and filling the empty tanks with an inert solid material, which is referred to as being “closed in-place”. Dispose of AST or UST following the hazardous waste requirements discussed in the paragraph entitled “Hazardous Waste”.

2-13.2.1 Conducting Field Investigations, Surveys, and Sampling – Storage Tanks.

Where the construction site contains tanks, a site inspection must be performed. Before performing field investigations and sampling, obtain all available information regarding AST and UST from the Installation EV staff. Develop a soil and groundwater sampling and testing plan. See paragraph entitled “Conducting Field Investigations,

Surveys and Sampling – Contaminated Soil and Groundwater". Encompass all tank system components. Include information such as the age of the unit, corrosions-protection measures in place, and results of prior leak tests or inspections of the tank. See information required in the paragraph entitled "Report - Tanks".

2-13.2.2 Laboratory – Storage Tanks.

Use laboratories to analyze potentially contaminated soils, free product, or sludge that are fully equipped and proficient in conducting analysis in accordance with EPA SW-846, EPA 540/R-99/008, EPA-540-R-014-002, EPA-540-R-04-004, and certified by the National Environmental Laboratory Accreditation Conference (NELAC).

2-14 CONTAMINATED SOIL OR GROUNDWATER.

These requirements apply to sites and projects where contaminated soil or groundwater is known to exist. Evaluate sites with known soil or groundwater contamination during the planning phase and before initiating any facility design work. Obtain copies of available reports, such as groundwater sampling and testing, contaminated soil sampling and testing, and remediation reports, from the Installation EV staff. Coordinate with the Installation EV staff to identify permit conditions applicable to soil, restrictions on land development, and other requirements that must be considered for the project. Prepare specifications and construction documents that accurately convey existing site conditions as they pertain to soil and groundwater contamination. Manage and dispose of contaminated soils and groundwater in accordance with the requirements described in the paragraph entitled "Hazardous Waste".

2-14.1 Conducting Field Investigations, Surveys, and Sampling – Contaminated Soil or Groundwater.

When the construction site is known to contain contaminated soil or groundwater and no determination actions have been started, perform a site inspection. Before field investigation and sampling, obtain all available information regarding contaminated soil or groundwater from the Installation EV staff. Develop a soil and groundwater sampling and testing plan that contains, at a minimum, the procedure for collecting samples, the frequency of the sampling events, the test methods that will be employed, type of sampling design and sampling density, error Type, confidence level and procedure for handling samples. Follow EPA Soil Screening Guidance (SSG). The SSG presents a framework for developing risk-based, soil screening levels (SSL) for protection of human health. Screening levels are not national cleanup levels; instead, they are intended to streamline the evaluation and cleanup of site soils by helping site managers eliminate areas, pathways and chemicals of concern at National Priority List sites. See information required in the paragraph entitled "Report - Contaminated Soil or Groundwater".

2-14.2 Laboratory – Contaminated Soil or Groundwater.

Use laboratories that are fully equipped and proficient in conducting analysis in accordance with EPA SW-846, EPA 540/R-99-008, EPA-540-R-04-004, and certified by the NELAC to analyze potentially contaminated soils or groundwater.

2-15 CONTROL AND MANAGEMENT OF SOLID AND HAZARDOUS WASTE.

Disposal or ultimate disposition of waste materials is performed on all projects. Waste reduction in the form of recycling or reuse is encouraged. Require the Contractor to develop a waste management and reduction plan to be used during construction. Coordinate with the Installation EV staff and identify materials suitable for recycling or reuse, taking into account the Installation's recycling program. If disposal or ultimate disposition of hazardous or contaminated materials, soils, or groundwater are part of the project a waste characterization is required. Consult regional, state, and local regulations for more stringent threshold levels. To determine whether a waste fails the toxicity characteristic, perform a TCLP analysis on the waste. Note the TCLP analysis differs from total constituent laboratory analysis; TCLP analysis is only for disposal needs. However, total analysis may also be needed. Solid or nonhazardous waste accumulation requirements can be found, if regulated, within state-specific regulations and should follow industry standard.

2-15.1 Hazardous Waste Accumulation.

Require accumulation and storage of contaminated media and any debris according to applicable requirements while awaiting transportation and disposal. Require coordination with the Installation EV staff to determine what quantity may be stored on-site. Accumulate and manage any hazardous waste generated in accordance with 40 CFR 262, 40 CFR 264, and 40 CFR 265, Installation, state-specific and local requirements, whichever are more stringent.

2-15.1.1 Hazardous Waste.

Federal regulations define waste as hazardous when it exhibits a hazardous characteristic (such as ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or when the waste contains a listed hazardous waste as identified in 40 CFR 261, Subpart D. RCRA requires that solid wastes be properly characterized at the point of generation. RCRA regulates "cradle to grave" control over hazardous wastes. Request recycling and reuse of waste classified as hazardous, in accordance with the requirements in 40 CFR 261.6.

Require treatment of hazardous wastes in accordance with 40 CFR 268. This section identifies treatment standards for hazardous waste that must be met before waste may be disposed (placed on the land). Follow the requirements of 40 CFR 262, 40 CFR 264, and 40 CFR 265 when accumulating hazardous waste onsite. Coordinate with the Installation EV staff for generator status of the Installation and applicability, including

instances when an EPA identification (ID) number is required, accumulation requirements regarding quantities and time allowed, inspections, required documentation and labeling, reporting, training, and contingency planning. Table 2-1 identifies regulatory references that provide requirements for each of these. States may have more stringent requirements than Federal regulations provide. Determine state requirements for hazardous wastes prior to generation, characterization, classification, and disposal to determine the most stringent requirement.

Table 2-1 Regulatory References

	Conditionally Exempt Small Quantity Generators	Small Quantity Generators	Large Quantify Generators
Quantity Limits	≤100 kilogram (kg) per month ≤1 kg per month of acute hazardous waste ≤100 kg per month of acute spill residue or soil §§261.5(a) and (e)	>100 <1,000 kg per month §262.34(d)	≥1,000 kg per month >1 kg per month of acute hazardous waste >100 kg/month of acute spill residue or soil Part 262 and §261.5(e)
EPA ID Number	Not required	Required §262.12	Required §262.12
On-Site Accumulation Quantity	≤1,000 kg ≤1 kg acute ≤100 kg of acute spill residue or soil §§261.5(f)(2) and (g)(2)	≤6,000 kg §262.34(d)(1)	No limit
Accumulation Time Limits	None	≤180 days or ≤270 days (if greater than 200 miles) §§262.34(d)(2) and (3)	≤90 days §262.34(a)
Storage Requirements	None	Basic requirements with technical standards for tanks or containers §§262.34(d)(2) and (3)	Full compliance for management of tanks, containers, drip pads, or containment buildings §262.34(a)

	Conditionally Exempt Small Quantity Generators	Small Quantity Generators	Large Quantify Generators
Sent To:	State-approved or RCRA permitted/ interim status facility §§261.5(f)(3) and (g)(3)	RCRA permitted/interim status facility §262.20(b)	RCRA permitted/ interim status facility §262.20(b)
Manifest	Not required	Required §262.20	Required §262.20
Biennial Report	Not required	Not required	Required §262.41
Personnel Training	Not required	Basic training required §262.34(d)(5)(iii)	Required §262.34(a)(4)
Contingency Plan	Not required	Basic plan §262.34(d)(5)(i)	Full plan required §262.34(a)(4)
Emergency Procedures	Not required	Required §262.34(d)(5)(iv)	Full plan required §262.34(a)(4)
Department of Transportation (DOT) Transport Requirements	Yes (if required by DOT)	Yes §§262.30-262.33	Yes §§262.30-262.33

2-15.1.2 Universal Waste.

The regulations govern the collection and management of batteries, pesticides, mercury-containing equipment, and lamps, thus facilitating environmentally sound collection and proper recycling or treatment. Comply with the Federal universal waste regulations set forth in 40 CFR 273. States may modify the universal waste rule and add additional universal waste(s) in individual state regulations. Coordinate with the Installation EV staff and research the specific state for additional regulations that apply.

Universal waste may be accumulated for up to one year from the date when the waste is generated. In most cases, universal waste (such as, lamps and batteries) are “generated” when they are removed from service.

2-15.1.3 Beryllium.

\1\Comply with 29 CFR 1910.1024, 29 CFR 1915.1024 and 29 CFR 1926.1124./1/

2-15.1.4 Used Oil.

Comply with EPA required practices in 40 CFR 270, called "management standards," developed for used oil. These include proper labeling, proper and maintained containers, spill and leak prevention, and proper recordkeeping. Comply with additional, more stringent state requirements, if applicable. States may have additional more stringent requirements.

2-15.2 Conducting Field Investigations, Surveys, and Sampling– Solid and Hazardous Waste.

Require a waste characterization study (including solid and liquids) before disposing of potentially unknown hazardous or contaminated wastes. In order to determine if anticipated construction waste (solid or liquid) is within regulatory limits for disposal and ultimate disposition as a nonhazardous material, request the analysis of a representative sample of the waste stream in accordance with Federal regulations using the appropriate EPA analytical methods. Perform this sampling in accordance with RCRA procedures, state, and local regulations and with EPA and state guidelines for avoiding exposure to human health and the environment. Establish a health and safety program to be followed during the sample collection process, select the statistical method to be followed, and set a quality control procedure for the data collection in accordance with EPA 530-D-02-002. Collect a representative sample of the anticipated waste stream; it may be necessary to collect subsamples of various materials to collect an accurate heterogeneous waste stream sample. To accomplish the analysis of a heterogeneous waste stream, collect a composite sample that can be analyzed in accordance with Federal regulations, EPA protocols, and ASTM Standards. The representative composite sample should be prepared from samples of each of the different building material categories, and then mixed in proportion to the percentage by weight of the different components in the anticipated waste stream. Patch and repair sample locations with suitable materials. Consult a qualified laboratory for required sample quantities to obtain accurate analysis. Should other sampling methodologies be used, request coordination with onsite personnel before sample collection and analysis.

2-15.3 Laboratory – Solid and Hazardous Waste.

Use laboratories that are fully equipped and proficient in conducting analysis in accordance with EPA SW-846, EPA 540/R-99-008, EPA-540-R-04-004, and NELAC certified to perform analysis for potential hazardous waste.

2-16 OTHER ENVIRONMENTAL REQUIREMENTS.

2-16.1 National Environmental Policy Act.

NEPA and 40 CFR Parts 1500-1508, require Federal agencies to assess and consider the potential impacts to the environment by their proposed actions that occur within the United States. Executive Order (EO) 12114, requires similar assessment and consideration as NEPA, but applies to proposed actions occurring outside the United States. A NEPA analysis should be completed prior to beginning design. NEPA is prepared based on previous findings, anticipated building use and planned building locations. NEPA documentation addresses the requirements in Federal statute or EO that applies to the resources found within the project area.

Obtain the NEPA documentation prepared for the project from the Installation EV staff. The NEPA documentation identifies any sensitive resources that exist within or adjacent to the site and any mitigation or avoidance measures that are required. Comply with measures identified in the NEPA documentation and include them as contract requirements. If conditions change from what was analyzed in the NEPA document, such as a change in use, location on the site, the addition of or change in location of supporting facilities, or discovery of new information about the site, contact the Installation EV staff to determine if a modification to the NEPA document is required.

2-16.2 Cultural Resources.

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to consider the effects of actions they fund or approve on any district, site, building, structure, or object that is listed in or eligible for listing in the National Register of Historic Places (NRHP). The primary agency for enforcement of NHPA is the State Historic Preservation Officer (SHPO). Federal agencies must comply with Section 106 of the NHPA by adherence to the regulations found at 36 CFR 800. The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA); 43 CFR 10 provides a process for Federal agencies and museums to return certain Native American cultural items -- human remains, funerary objects, sacred objects, or objects of cultural patrimony -- to lineal descendants and culturally affiliated Indian tribes. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking. NAGPRA outlines the treatment, repatriation, and disposition of such resources and ensures consultation with associated tribes or lineal descendants.

Obtain documentation from Installation EV staff regarding any known historic properties or the potential to discover historic properties within the project site and any mitigation required to avoid an adverse effect to historic properties. Comply with state and local preservation laws in addition to Section 106 of the National Historic Preservation Act (NHPA).

2-16.2.1 Archaeology.

Comply with the Archaeological Resource Protection Act of 1979; 16 U.S.C. 470aa-470mm. The Act defines regulations for excavating archaeological sites and requires that a permit be obtained from the Federal land manager when excavation or the removal of any archaeological resource occurs on public or Native American lands.

Obtain from Installation EV staff any measures, such as buffer areas, that were agreed upon during the Section 106 process. Include these measures and the necessary language to ensure protection of any archaeological resources, as contract requirements.

2-16.2.2 Architectural.

Obtain information on historic architectural resources from the Installation EV staff and include any mitigation measures as contract requirements. Refer to UFC 3-101-01 for projects involving historic architectural resources.

2-16.2.3 Inadvertent Discoveries.

These requirements apply to all projects that include ground disturbance. Include procedures for the Contractor to follow should an archaeological site be discovered during construction. If any previously unidentified prehistoric- or historic-period archaeological sites (for example, human skeletal remains or burials and artifacts) are discovered during construction activities, suspend all ground-disturbing activities and then notify the Installation EV staff and Contracting Officer. Consultation with SHPO, interested Native American tribes, and other interested parties should occur as appropriate regarding the site's eligibility for listing in the NRHP, project impacts, necessary mitigation, and other treatment measures.

2-16.2.4 Tribal Consultation.

Obtain from the Installation EV staff any measures, such as buffer areas that were agreed upon during tribal consultation. Include these measures as contract requirements.

2-16.3 Air Quality.

These requirements apply to sites and projects with new or existing facilities and with new or existing stationary air emissions sources. Comply with Clean Air Act (CAA) requirements and state and local regulations. Coordinate with the Installation EV staff and provide the necessary information and require purchased equipment meets the necessary regulations. The National Ambient Air Quality Standards (NAAQS) include air quality standards that are implemented at the state level in the State Implementation Plan required under Section 110 of the CAA. Verify whether the project is located in an EPA nonattainment area for criteria pollutants and identify in the construction documents how this affects the project construction schedule and cost. Provide the

Installation EV staff with the information necessary for obtaining a new or updating the existing air permits.

Verify whether asphalt pavement plants in the project area have production limitations due to what is called “summer ozone season” and design accordingly. These limitations will affect the Contractor’s schedule and construction phasing.

Permanent equipment such as new boilers and emergency power generators must be added to the Installation’s air permit as required by applicable regulations. Coordinate with the Installation EV staff to determine conditions that require adding emission sources used during construction to the air permit, and require the Contractor to comply with these requirements.

2-16.4 Wetlands/Waters of the United States.

These requirements apply to project sites where there are wetlands and other waters of the United States (streams, rivers, and bays). The discharge of dredged or fill material into waters of the United States is regulated under Section 404 of the Clean Water Act. Comply with Section 404 of the Clean Water Act. Obtain documentation from the Installation EV staff to identify the location of wetlands or other waters of the United States on or adjacent to the project area. Avoid impacts to jurisdictional wetlands or waters of the United States to the maximum extent practicable or minimize impacts if they are unavoidable. Coordinate with the Project Manager to determine if alternative sites may be explored to minimize wetland impacts. Notify the Installation EV staff to determine if the NEPA documentation requires an amendment. If impacts to the jurisdictional wetlands or waters of the United States cannot be avoided, obtain all Federal and state permits before initiating any land-disturbance activities. Require the Contractor to comply with all wetland permit conditions. Coordinate with the Installation EV staff to determine suitable mitigation options.

2-16.5 Natural Resources.

Obtain documentation from the Installation EV staff to identify what natural resources are located on or within the project area.

2-16.5.1 Threatened and Endangered Species/Critical Habitat.

Require compliance with the Endangered Species Act and protect threatened and endangered species and the habitat upon which these species rely. Obtain the documentation from Installation EV staff, to include mitigation measures, as contract requirements, to protect threatened and endangered species and critical habitat that could be located on or in the vicinity of the project area. Implement and monitor mitigation measures. Provide implementation or monitoring reports, as necessary, to the Installation EV staff.

2-16.5.2 Migratory Bird Treaty Act.

Design in compliance with the Migratory Bird Treaty Act (MBTA) between the United States, Canada, Japan, Mexico, and Russia. The MBTA makes it unlawful to take, kill, or possess listed birds, unless permitted by regulation. Implement measures identified by the Installation EV staff to ensure compliance with MBTA requirements.

2-16.5.3 Essential Fish Habitat.

The Magnuson-Stevens Fishery Conservation and Management Act requires Federal agencies to consider impacts to essential fish habitat (EFH) from projects they authorize, fund, or undertake. EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. These requirements apply to projects in or adjacent to EFH. In accordance with 50 CFR 600, Subpart J, Federal agencies must consider impacts to EFH from projects they authorize, fund, or undertake. Obtain the EFH assessment from the Installation EV staff and include the conservation recommendations made by the National Marine Fisheries Service as contract requirements.

2-16.5.4 Marine Mammal Protection Act.

The Marine Mammal Protection Act; 50 CFR 18 prohibits, with certain exceptions, the take of marine mammals in United States waters. These requirements apply to projects in or adjacent to the marine environment (oceans or seas). Obtain the documentation from Installation EV staff to determine what mitigation measures are required as contract requirements to protect marine mammals.

2-16.5.5 Bald and Golden Eagle Protection Act.

The Bald and Golden Eagle Protection Act; 50 CFR 22 requires the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of bald and golden eagles. Obtain the documentation from Installation EV staff to determine if bald or golden eagles are located on or in the vicinity of the project area and include the mitigation measures as contract requirements to ensure their protection.

2-16.5.6 Stormwater Management and Erosion and Sediment Control.

Projects with land disturbance activities greater than one acre require coverage under the National Pollutant Discharge Elimination System (NPDES) permit program. Most states are authorized to implement the NPDES permitting program. Refer to the EPA website for the list of states authorized to implement this permitting program: http://water.epa.gov/polwaste/npdes/basics/State-and-Tribal-Program-Authorization-Status.cfm. Obtain the NPDES permit through EPA for all other states. Obtain from the Installation EV staff the regional permitting requirements and copies of all existing stormwater and erosion and sediment control permits that affect or encompass the project site. Identify all permit conditions that affect the design and include them in the

specifications or on the drawings. Design stormwater management facilities and erosion and sediment controls in accordance with UFC 3-201-01.

2-17 CHLORDANE.

These requirements apply to sites and projects where existing building(s) or structure(s) will be renovated, altered, repaired, or demolished as part of the scope of work. \1\/1/ Specification preparation must comply with the applicable requirements of 40 CFR 260 – 40 CFR 270, Resource Conservation and Recovery Act.

2-17.1 Conducting Field Investigations, Surveys – Chlordane.

Prior to demolition of structures, it may be necessary to determine if chlordane was used to prevent termites. If adequate pesticide application records exist, it may be possible to confirm or rule out the use of chlordane or similar products. If adequate records do not exist, sample the soil around the foundation of a building scheduled for demolition. Chlordane was typically applied in a swath approximately 12-18 inches (300 to 450 mm) below the surface of the ground and approximately 12-18 inches (300 to 450 mm) away from the foundation. It may also have been injected through boreholes into the subsurface soil under concrete slab foundations. Sampling and analysis of the soil may be necessary along the foundation of suspect buildings.

2-17.2 Laboratory – Chlordane.

Laboratories performing analysis for chlordane in soil must be fully equipped and proficient in conducting analyses according to RCRA and SW-846, and accredited by \3\a recognized DoD Environmental Laboratory Accreditation Program /3/.

2-17.3 Control of Chlordane.

Chlordane is very stable and does not readily degrade or migrate in the environment. It is highly insoluble in water and if left undisturbed it will continue to serve its intended purpose for many years. Properly applied chlordane tends to only become a problem when disturbed, as in building demolition. Under RCRA regulations, as long as the soil remains undisturbed chlordane does not present a regulatory issue. It may even be acceptable to excavate chlordane contaminated soil to remove the foundation and place the soil back in the excavation site provided there is not subsequent disturbance or construction on the site. However, if the soil will be moved to another location or disturbed as part of new construction efforts, chlordane may present a hazardous waste disposal issue or costly environmental cleanup. It is very important that steps be taken prior to demolition to minimize the risk to the environment, site workers, or future users of the site.

CHAPTER 3 DELIVERABLES

This chapter identifies the expected level of detail and quality of all deliverables. The following information is critical to ensure contract documents are complete and biddable. Provide all deliverables in accordance with FC 1-300-09N and the following requirements.

3-1 FIELD INVESTIGATION REPORT.

Each Installation maintains record files pertaining to the environmental aspects of previously constructed projects. Utilize these resources and include applicable record files as an attachment to the required reports. Submit separate reports, including drawings, addressing each of the following environmentally sensitive materials:

- \1\Asbestos-Containing Materials/1/
- Paint - Lead-Based Paint in Target Housing and Child-Occupied Facilities
- Paint – Lead, Cadmium, Chromium, and other Hazardous Metals
- \1\Beryllium/1/
- Radon
- Polychlorinated Biphenyls
- Low-Level Radioactive Components
- Animal Droppings
- Molds and Spores
- Tanks
- Contaminated Soil or Groundwater
- Waste Characterization
- Chlordane

\1\When final drawings and specifications are not required for Design Build projects, provide field investigation reports in Part 6 of the Request for Proposal (RFP)/1/.

3-1.2 Drawings.

Provide scaled and dimensioned drawings, within the reports, showing existing site conditions and existing buildings or structures. Drawings must contain enough information to do quantity takeoffs for cost estimating purposes. Indicate project location and facility number. For buildings, provide drawings showing floor plans, and interior and exterior sections as applicable. Provide dimensions (e.g., building, rooms, halls) and room numbers to allow for easy alignment in the field. Include drawing notes indicating:

- type and location of the work associated with the project
- sample locations
- extents of environmentally sensitive materials
- condition, and form of environmentally sensitive materials
- extents of environmentally sensitive materials in poor condition requiring removal
- extents of environmentally sensitive materials in good condition that may remain if not disturbed
- components (e.g., mercury tubes, ballasts) containing environmentally sensitive materials; show locations and indicate the number of components to be removed
- access restrictions, utilities, and equipment that hinder access or egress (include dimensions for the restricted openings)
- components or environmentally sensitive materials to be removed or segregated prior to mass demolition

3-1.3 Report – Asbestos-Containing Materials.

Provide an asbestos report when asbestos field investigation work has occurred or when a prior asbestos report has been used to identify ACM and include the following information: a narrative summary of the work that identifies the project description, location, previous survey data, and additional ACM identified. List the areas, types, locations, and quantities of ACM and any contamination that will affect the project. Provide sample descriptions, results, locations, location maps, and photographic documentation. Obtain a copy of the Asbestos Survey Data Template located at http://www.wbdg.org/references/pa_dod_ntools.php. Include copies of the EPA asbestos inspector and the laboratory accreditation that performed the work.

3-1.4 Report – Lead Based Paint in Target Housing and Child-Occupied Facilities.

Provide a lead-based paint report and include a narrative summary of the work that identifies the project description, test results (including negative results), location, previous survey data, components with lead-based paint, and rationale for removal or abatement. Include all the requirements of EPA Title X and EPA RRP Rule. Include copies of all EPA lead accreditation certificates for the professionals that performed the sampling and analytical work, including the risk assessor, lead workers, samplers, and laboratory.

3-1.5 Report – Paint.

Provide a paint report and include a narrative summary of the work that identifies the project description, location, previous survey data, additional lead, cadmium or chromium paint identified, sample descriptions, results, locations, location maps, and photographic documentation. Include a description and full characterization of all waste streams (that is, hazardous, to include all waste codes, or nonhazardous). List the areas, types, and locations of paint and any contamination that will affect the project, including soil and dust. Include copies of all accreditation certificates, licenses, certificates, sampling plans, and analyses and test reports identified above.

3-1.6 Report – Beryllium.

\1\ Provide a beryllium report and include a narrative summary of the work that identifies project description, location and location of beryllium identified. Provide sample descriptions including test results, locations, location maps, and photographic documentation of each sample taken. List the areas and locations of any beryllium that will affect the project, including airborne particles and dust. Include copies of laboratory accreditation certificate, sampling plans, method of analyses and test reports./1/

3-1.7 Report – Radon.

Provide a radon report and include a narrative summary of the work that identifies the project description, location, and test results provided by onsite personnel. Provide research on potential radon in the area in the report. Briefly summarize precautions that need to be taken to address radon. Refer to EPA Radon Mitigation Standards (RMS) and radon-resistant new construction techniques.

3-1.8 Report – Polychlorinated Biphenyls.

Provide a PCB report and include a narrative summary of the work that identifies the project description, location, previous survey data, and additional PCB identified. List the areas, types, and location of PCB-containing lighting ballasts and all other PCB-containing equipment and any contamination that will affect the project. Summarize state or local laws that affect PCB removal and disposal and ultimate disposition for the project, such as project size, limitations on removal methods, and monitoring requirements. Include notification requirements, permit fees, licensing, or other specialized requirements.

3-1.9 Report –Low-Level Radioactive Components.

Provide a LLR components report and include a list of the areas surveyed, types of LLR components, location of LLR components, method of disposal and any additional information that may impact the project. Provide photographic documentation of LLR components.

3-1.10 Report – Animal Droppings.

Provide animal droppings report and include a narrative summary of the work that identifies the project description, location, and conditions found at the site. Provide photographic documentation of contaminated areas. Briefly summarize precautions that need to be taken to protect workers, building occupants, and the environment.

3-1.11 Report – Molds and Spores.

Provide a mold (microbial) assessment survey report and include a narrative summary of the work that identifies the project description, location, previous survey data, and additional mold identified. Determine the quantities, classification, and location of mold and any contamination that will impact the project. Briefly summarize precautions that need to be taken to protect workers, building occupants, and the environment. Provide copies of laboratory testing and classification reports and laboratory certifications.

3-1.12 Report – Tanks.

Provide a tank report and include the following information: contents of tank, size of tank, approximate location of tank, associated pipelines (including construction, size, and linear footage per diameter), existing soil conditions associated with tank, age of tank, and tank construction material. Document the quantity of remaining hazardous or toxic waste products in AST and UST. Coordinate with Installation EV staff to determine all requirements associated with removal, disposal, and ultimate disposition of the remaining product in a tank. Provide copies of laboratory certification and state or local accreditation certificates with the report. Include copies of all certificates of analyses or test reports with the report, including but not limited to NELAC certification under EPA program.

3-1.13 Report – Contaminated Soil or Groundwater.

Provide a contaminated soil or groundwater report and include the following information: type of hazardous constituents, approximate location of the contamination on the site, approximate depth of contamination, existing soil and site conditions, approximate quantities of contaminated soil or groundwater, and calculations with assumptions made in determining the estimated quantities. Include copies of all certificates of analyses or test reports with the report, including but not limited to NELAC certification under EPA program.

3-1.14 Report – Waste Characterization.

Provide a waste characterization report and include the following information: sample methodology, descriptions, results, locations, location maps, and photographic documentation. Specifically itemize anticipated waste materials to be generated during construction and provide the method of disposal and ultimate disposition for hazardous and nonhazardous wastes. Provide copies of laboratory certification and state and local accreditation certificates with the report. Include copies of all certificates of analyses or

test reports with the report, including but not limited to NELAC certification under EPA program.

3-1.15 Report – Chlordane.

Provide a chlordane report when chlordane field investigation work has occurred or when a prior chlordane report has been used to identify contaminated soil and include the following information: a narrative summary of the work that identifies the project description, location, previous survey data, and additional contaminated areas identified. List the areas, types, locations, and quantities of contaminated soil that will affect the project. Provide sample descriptions, results, locations, location maps, and photographic documentation.

3-2 SPECIFICATIONS AND DRAWINGS.

3-2.1 Design Build Request for Proposal (Pre Award).

\1\Include final drawings and specifications for the control, removal, abatement, storage and disposal of:

- Asbestos-Containing Materials
- Paint - Lead-Based Paint in Target Housing and Child-Occupied Facilities
- Paint – Lead, Cadmium, Chromium, and other Hazardous Metals
- Polychlorinated Biphenyls
- Low-Level Radioactive Components
- Chlordane

For Design Build projects, provide field investigation reports in Part 6, specifications in Part 5 and drawings in Part 6 of the RFP./1/

3-2.2 Design Build Design Submittals (Post Award).

The Contractor's Designer of Record (DOR) is responsible for verifying all site information furnished in the Government issued Design Build RFP. The Contractor's DOR must verify existing site conditions and provide any additional field investigation needed to support the development of the final design and construction of the project. When the Contractor \1\conducts additional sampling, the Government furnished drawings and specifications provided in the RFP must be revised by the Contractor's DOR and used /1/ for final design and construction of the project.

3-2.3 Specifications.

Edit UFGS 01 57 19 to include paragraphs for asbestos, lead-based paint, \1\beryllium, /1/ polychlorinated biphenyls, or low-level radioactive components when those materials or components are part of the project. Specify disposal requirements based on project

location. Review Federal, state and local disposal regulations before specifying disposal of any type of waste and comply with the most stringent requirement.

UFGS 01 57 19.01 20 is a regional supplement to UFGS 01 57 19 and contains state and local requirements applicable to the project for specific project locations. Review and edit UFGS 01 57 19.01 20 as applicable.

3-2.4 Asbestos-Containing Materials.

Provide an EPA accredited Asbestos Project Designer to prepare asbestos specifications and drawings.

3-2.4.1 Specifications for Asbestos-Containing Materials.

\1\Prepare specifications in accordance with the applicable requirements of 40 CFR 61.145, Subpart M, for any project that involves disturbance or removal of regulated asbestos-containing materials (RACM). Describe the applicable RACM control methods, notification requirements, and workers' minimum certification requirements. NESHAP classifies RACM into three categories: friable, Category I nonfriable, and Category II nonfriable. Identify the NESHAP categories that apply to the project. Identify which non-friable RACM have a potential to become friable during demolition and renovation activities and require those materials to be removed using friable control methods./1/

Edit the guide specification for asbestos removal using \2\UFGS 02 82 00/2/. Indicate the type and location of the asbestos and to provide a description and rationale for removal. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility systems (HVAC, steam, electrical, and similar) required to be shut down during the project. Where the building is to remain partially occupied during construction, temporary utilities may be required. Where the building is to remain partially occupied by the Government during construction, specifically identify utility shutdowns to the project manager, in writing. Indicate work area isolation requirements. Indicate disposal and ultimate disposition requirements. Summarize conditions that affect asbestos removal and disposal or ultimate disposition for the project, such as project size, limitations on removal methods, and air monitoring requirements. Include notification requirements, permit fees, licensing, or other specialized requirements. Some jurisdictions may require third-party monitoring during the construction phase for asbestos abatement activities. Depending on the regulatory requirement, a separate contract to the third party (that is, a contact separate from the construction contract) may be required. Consult a local asbestos manager or regulatory expert. If replacement materials are required, coordinate with the architect.

3-2.4.2 Drawings for Asbestos.

Provide scaled and dimensioned drawings for floor plans or building sections showing all ACM. Provide building and room dimensions allowing easily established alignment in the field. If asbestos is present and will not be disturbed by the project, provide a drawing note indicating the type and location of the ACM with a note that the material is not to be disturbed by project work. For ACM impacted by the project, indicate location, condition, and form of all ACM to be removed, as well as the structures, utilities, and equipment that hinder access or egress. Provide dimensions for access or egress to crawl spaces, attics, chases, or restrictive areas that affect asbestos removal personnel or equipment. Identify rooms by name and number.

3-2.5 Lead-Based Paint \2\in Target Housing and Child-Occupied Facilities /2/.

Provide an EPA accredited Lead Paint Project Designer in accordance with EPA Title X and EPA RRP Rule to prepare the lead-based paint removal specifications \1\ and /1/ drawings.

3-2.5.1 Specifications for Lead-Based Paint \2\in Target Housing and Child-Occupied Facilities/2/.

Edit the guide specification for lead-based paint using \2\UFGS 02 83 00/2/. Indicate building components with lead-based paint that will be affected by the work. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility systems (HVAC, steam, electrical, and similar) that may require shutdown during the project. Where the building is to remain partially occupied by the Government during construction, identify utility shutdowns to the Government's project manager, in writing. Indicate work area isolation requirements. Summarize state or local laws that affect child-occupied facilities and lead-based paint removal, containment, disposal, or ultimate disposition for the project, such as project size, limitations on removal methods, and air monitoring requirements. Include notification requirements, permit fees, licensing, final clearance criteria (dust wipes, soil sampling, and similar), disposal and ultimate disposition requirements, or other specialized requirements. Indicate disposal and ultimate disposition requirements. If replacement materials are required, coordinate with architect.

3-2.5.2 Drawings for Lead-Based Paint \2\in Target Housing and Child-Occupied Facilities/2/.

Information regarding paint as it pertains to child-occupied facilities may be detailed on the demolition drawings by adding notes indicating that lead-based paint abatement activities be conducted in accordance with the appropriate corresponding specification section and EPA Title X and EPA RRP Rule. Indicate existing lead-based paint affected by the project on the drawings using a chart or some other method to display the laboratory results of the lead analysis. For abatement drawings, provide scaled and

dimensioned drawings and floor plans or building sections showing all items from which the hazardous paint will be removed, replaced, or encapsulated. Indicate all locations of hazardous paint to be removed, as well as structures, utilities, and equipment that hinder access or egress. Provide dimensions for access or egress to crawl spaces, attics, or restrictive areas that affect removal personnel or equipment.

3-2.6 Paint \2\in Commercial or Industrial Facilities/2/.

Provide \2\a certified industrial hygienist certified by the American Board of Industrial Hygiene, a certified safety professional certified by the Board of Certified Safety Professionals, or/2/ an EPA accredited, \2\or equivalent State certified/2/, Lead Project Designer to prepare lead, cadmium, and chromium specifications and drawings. \2\Refer to 3-2.5 Lead-Based Paint in Target Housing and Child-Occupied Facilities for any work being performed in target housing or child-occupied facilities./2/

3-2.6.1 Specifications for Paint \2\in Commercial or Industrial Facilities/2/.

Edit \2\UFGS 02 83 00/2/ to include requirements for the removal of paint containing lead cadmium, and chromium. Describe all the different scenarios that will be encountered in the project (that is, “tasks” per OSHA). Clearly identify all the areas with paint on the construction documents and outline the protocol for providing protection of workers and the environment during all construction activities \2\in accordance with DODI 6055.01, EM 385-1, and OPNAVINST 5100.23G/2/. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility systems (HVAC, steam, electrical, and similar) that may require shutdown during the project. Where the building is to remain partially occupied by the Government during construction, identify utility shutdowns to the Government’s project manager, in writing. Indicate work area isolation requirements. Include state and local regulations, notification requirements, permit fees, licensing, or other specialized requirements. Identify the appropriate clearance level required for the Contractor to attain when finishing the construction activities that generate dust, fumes, or debris. Thoroughly research the clearance level for each type of construction project and the differences established based upon the nature of the project. Indicate disposal and ultimate disposition requirements and any special waste segregation requirements.

3-2.6.2 Drawings for Paint \2\in Commercial or Industrial Facilities/2/.

Information regarding paint as it pertains to demolition work may be detailed on the demolition drawings by adding notes indicating that specific requirements and demolition activities must be conducted in accordance with the appropriate corresponding specification section and title. Indicate on the drawings all existing paint determined from the field survey to contain detectable levels of lead, cadmium, and chromium using a chart or some other method to display the laboratory results of the lead analysis. For abatement drawings, provide scaled and dimensioned drawings and floor plans or building sections showing all items from which the hazardous paint (lead, cadmium, or chromium containing) will be removed (and hence abated). Examples of this include wood molding or steel structures that are to be salvaged and reused in the

finished project but are coated with paints that contain the identified hazardous metal. Indicate all locations of hazardous paint to be removed, as well as structures, utilities, and equipment that hinder access or egress. Provide dimensions for access or egress to crawl spaces, attics, or restrictive areas that affect removal personnel or equipment.

3-2.7 Beryllium.

\1\Provide a Certified Industrial Hygienist to prepare beryllium specifications and drawings./1/

3-2.7.1 Specifications for Beryllium.

\1\Edit UFGS 01 57 19 to include requirements for beryllium abatement, containment, storage and disposal. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility systems (HVAC, steam, electrical, and similar) required to be shut down during the project. Where the building is to remain partially occupied during construction, temporary utilities may be required. Where the building is to remain partially occupied by the Government during construction, specifically identify utility shutdowns to the project manager, in writing. Indicate work area isolation and disposal requirements. Summarize conditions that affect beryllium abatement and disposal for the project, such as project size, removal method, and air monitoring requirements. Include any specialized requirements that may be applicable. Outline the protocol for providing protection of workers and the environment during all construction activities in accordance with 29 CFR 1910.1024, 29 CFR 1915.1024 and 29 CFR 1926.1124./1/

3-2.7.2 Drawings for Beryllium.

\1\Clearly identify all areas where beryllium is present on the drawings and indicate beryllium work isolation zones. Provide scaled and dimensioned drawings and floor plans or building sections showing all areas from which the beryllium will be abated. Indicate all locations where beryllium particles and dust must be abated, as well as structures, utilities, and equipment that hinder access or egress. Provide dimensions for access or egress to crawl spaces, attics, or restrictive areas that affect removal personnel or equipment./1/

3-2.8 Radon.

3-2.8.1 Specifications for Radon.

Edit the guide specifications for radon mitigation using UFGS 31 21 13. A licensed professional mechanical consultant must handle specifications for radon remediation. Develop specifications in accordance with EPA RMS and radon-resistant new construction techniques.

3-2.9 Polychlorinated Biphenyls.

3-2.9.1 Specifications for Polychlorinated Biphenyls.

Edit the guide specification for PCB removal using UFGS 02 84 16 or UFGS 02 84 33. Indicate existence of PCB and detail equipment that contains PCB. Provide description of how PCB containing materials will be handled. Indicate the disposal and ultimate disposition requirements, which may include recycling.

3-2.9.2 Drawings for Polychlorinated Biphenyls.

Provide drawings that indicate the PCB-containing component to be removed, including locations and quantities. Indicate in the notes how the Contractor is to distinguish between PCB and PCB-free components. For light fixtures, provide exact number of lighting fixtures to be removed. Drawing notes or symbols allow the Contractor to do an accurate takeoff of the number of ballasts to be removed. As an alternative, if Electrical Demolition drawings are part of the same contract and they have sufficient detail to show all electrical fixtures, then the lamps and ballasts may be shown on these drawings. Clearly indicate in the notes the components to be removed prior to any additional demolition.

3-2.10 Low-Level Radioactive Components.

3-2.10.1 Specifications for Low-Level Radioactive Components.

Comply with OPNAV M-5090.1 Low-Level Radioactive Waste Disposal Program and contact Naval Sea Systems Command Detachment (NAVSEADET), Radiological Affairs Support Office (RASO) to determine the requirements applicable to the project. Edit UFGS 01 57 19 to include requirements for LLR component removal, containment, storage and disposal. If any LLR components are indicated in the Low-Level Radioactive Components Report, provide requirements for removal, containment, storage and disposal. Indicate disposal and ultimate disposition requirements, including information such as notification requirements, permit fees, licensing, or other specialized requirements.

3-2.10.2 Drawings for Low-Level Radioactive Components.

If LLR components are indicated in the Low-Level Radioactive Components Report, provide drawings that indicate the LLR components to be removed, including locations and quantities. Indicate disposal and ultimate disposition requirements. As an alternative, use Electrical and Fire Protection Demolition drawings; provide sufficient detail on these drawings to show all components. Clearly indicate in the notes the LLR components to be removed prior to facility demolition.

3-2.11 Mercury.

3-2.11.1 Specifications for Mercury.

Edit the guide specification for mercury removal using UFGS 02 84 16. If mercury tubes or the other items listed are present, indicate their existence. Provide a description and the methodology for removal, containment, and sampling. Summarize state or local laws that affect removal and disposal or ultimate disposition for the project, such as project size, limitations on removal methods, and monitoring requirements. Include notification requirements, permit fees, licensing, or other specialized requirements. Indicate disposal and ultimate disposition requirements. Investigate companies that recycle used mercury-containing devices and require recycling to the extent practical.

3-2.11.2 Drawings for Mercury.

Provide drawings that indicate the mercury tubes to be removed, including locations and quantities. As an alternative, use Electrical Demolition drawings that have sufficient detail to show all components. Clearly indicate in the notes the components to be removed before any additional demolition.

3-2.12 Animal Droppings.

3-2.12.1 Specifications for Animal Droppings.

Edit UFGS 01 57 19 to include requirements to for the removal of animal droppings. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility systems (HVAC, steam, electrical, and similar), required to be shut down during the project. Where the building is to remain partially occupied during construction, temporary utilities may be required. Indicate work area isolation requirements. Include requirements for disposal, ultimate disposition, project size, and limitations on removal methods. A certified industrial hygienist must review the specifications.

3-2.12.2 Drawings for Animal Droppings.

If animal droppings are present, indicate their existence, location, and approximate quantity. Provide removal notes that describe equipment, precautions for removal personnel (such as using personal protection equipment), precautions for protecting occupants, and techniques for removal. Indicate disposal and ultimate disposition requirements.

3-2.13 Molds and Spores.

3-2.13.1 Specifications for Molds and Spores.

Edit the guide specification to address mold and spore remediation using UFGS 02 85 00.00 20. Identify conditions that affect access or egress for workers and equipment, such as confined spaces, crawl spaces, or elevated working surfaces. Identify utility

systems (HVAC, steam, electrical, and similar) required to be shut down during the project. Where the building is to remain partially occupied during construction, temporary utilities may be required. Indicate work area isolation requirements. Indicate disposal and ultimate disposition requirements. Summarize state or local laws that affect removal and disposal or ultimate disposition for the project, such as project size, limitations on removal methods, and air monitoring requirements. A certified industrial hygienist must review the specifications.

3-2.13.2 Drawings for Molds and Spores.

Indicate the areas where mold is located and include a description or listing of all affected building components. Provide removal notes that describe equipment, precautions for removal personnel (such as using personal protection equipment), precautions for protecting occupants, and techniques for removal.

3-2.14 Tank Removal.

The drawings and specifications together must provide the Contractor with sufficient information to determine quantities of materials, material classification (hazardous, nonhazardous, and special waste), and regulatory testing requirements.

3-2.14.1 Specifications for Tank Removal.

Edit the guide specification for tank removal using UFGS 02 65 00. Several environmental issues must be addressed when removing and disposing of AST or UST. Determine the correct collection and disposal and ultimate disposition procedures for items, such as cleaning water, rinse water, and existing sludge or product in the tank. Require that the Construction Contractor certify that the removed tanks were rendered unusable before transportation to the disposal or ultimate disposition site. Incorporate any specific confirmatory soil samples to prove clean conditions. Include state and local environmental requirements relative to tank closure and removal in the specifications. Describe tanks, including their type, size, contents, and piping. Describe how much product will be left in the tank and who will be responsible for removing any existing product. Describe all required construction activities, such as gas-free tank, cleaning, removing fuel lines, draining fuel lines, and testing of cleaning residue, sludge, water and product for disposal and ultimate disposition purposes. A registered Professional Engineer or Professional Geologist must prepare the specification.

3-2.14.2 Drawings for Tank Removal.

Provide separate Tank Removal drawings or use civil drawings to indicate aboveground storage tanks (AST) or underground storage tanks (UST) that are to be removed or cleaned. Clearly indicate tank contents and the quantity of remaining product, water, or sludge in the notes. Provide an overview of the steps to cleaning and removing the tank. Indicate the disposal and ultimate disposition requirements for the product in the tank. Coordinate closely with Installation EV staff to determine if the tank product may be disposed of on Base; if so, clearly indicate on the drawings where the disposal and

ultimate disposition facilities are located. Include photographs of the removed tank to show it has been rendered unusable, as contract requirements.

3-2.15 Contaminated Soil or Groundwater.

The drawings and specifications together must provide the Contractor with sufficient information to determine type and quantities of materials, disposal and ultimate disposition classification (hazardous, nonhazardous, special waste), and regulatory testing requirements.

3-2.15.1 Specifications for Contaminated Soil or Groundwater.

Edit the guide specification for contaminated soil or groundwater using UFGS 02 61 13, UFGS 02 61 23. Provide detailed requirements for worker protection, collecting groundwater, stockpiling contaminated soil, testing, and disposing of the wastes. For any new construction that requires dealing with contaminated soil or groundwater, clearly state all information pertaining to the existing conditions at the site. Comply with regulations regarding worker protection and additional requirements defined by EPA, the regulating authority for the site, or as applicable per EM 385-1-1. Indicate the existence of contaminated soil and groundwater and source of information. List all reports that contain existing analytical information on the existing site conditions. Describe which site controls will be used during construction (e.g. the use of organic vapor analytes or meters and equipment to test and monitor atmosphere), and all analytical requirements for testing and disposal and ultimate disposition of the contaminated material. Indicate the handling and disposal or ultimate disposition procedures.

3-2.15.2 Drawings for Contaminated Soil or Groundwater.

Provide separate drawings or use civil drawings that indicate the extent of known or suspected soil or groundwater contamination. Indicate the type and level of contamination.

3-2.16 Specifications for Waste.

Waste requirements are handled within various design specification sections. Refer to previous design specification requirements, see paragraph entitled “Control and Management of Solid and Hazardous Waste” and the applicable portions of this Chapter.

3-3 COST ESTIMATES.

Coordinate with the lead discipline to determine the extent of the work and develop cost estimates. Include estimated quantities, unit costs and total costs for each type of environmentally sensitive material, such as floor tile containing asbestos, insulation containing asbestos and lead-contaminated soil. Do not provide lump-sum quantities and costs. Provide unit pricing for each type of environmentally sensitive material

encountered during field investigation or previously known to exist in UFGS 01 20 00.00 20.

CHAPTER 4 HANDLING AND STORAGE

Use the following information to assist in the preparation of the project specifications.

4-1 HANDLING AND STORAGE OF HAZARDOUS MATERIAL.

Properly store, manage, and maintain hazardous materials, such as fuels. Provide storage in accordance with Safety Data Sheets. Storage and handling of hazardous materials are regulated under 29 CFR, National Fire Protection Association and the American Petroleum Institute. Small flammable containers must be stored within a proper flammable storage cabinet. Fuel storage at quantities greater than 1,320 gallons require the preparation and implementation of a Spill Prevention, Control, and Countermeasures Plan, as described in 40 CFR 112. Certain hazardous materials may also be regulated under the Department of Homeland Security, Title 6 CFR 27.

4-2 HAZARDOUS MATERIAL TRANSPORTATION.

Hazardous material; 49 CFR 171.8, is a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designation as hazardous under the Federal Hazardous Materials Transportation Law; 49 U.S.C. 5103. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table 49 CFR 172.101, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR 173.

4-2.1 Department of Transportation Requirements.

Requirements under 49 CFR 171-180 apply to all offsite shipments of hazardous materials. Provide a DOT-trained individual to verify that the requirements of 49 CFR 171-180 are met.

4-2.2 Shipping Name.

Material that exhibits one of the nine DOT hazard class characteristics (for example, explosives, gases, flammable liquids, flammable solids, oxidizing substances, toxics or poisons, radioactive materials, corrosive substances, or miscellaneous hazards) is regulated under DOT rules for the transportation of hazardous material. Provide a proper shipping name for each shipment of a suspected hazardous material using the Hazardous Materials Table in 49 CFR 172.101. DOT-trained personnel must make all determinations.

4-2.3 Packaging, Marking, and Labeling.

Mark the shipping name, hazard class, identification number, technical names (if applicable), EPA markings and waste code numbers, and consignee or consignor designations on packages for shipment 49 CFR 172.301. Once a waste is

characterized, determine the appropriate label in accordance with the Hazardous Materials Table in 49 CFR 172.101.

4-2.4 Placards.

Provide DOT-trained personnel to determine the appropriate placards. Specific placard descriptions are found starting at 49 CFR 172.521. If a placard is required, it must be affixed on each side and each end of the vehicle.

4-2.5 Proper Container.

Use the appropriate United Nations (UN) approved container in accordance with 49 CFR 172.101, 49 CFR 172.102, and 49 CFR 173.

APPENDIX A REFERENCES

EXECUTIVE ORDER

EO 12114, *Environmental Effects Abroad of Major Federal Actions*

CODE OF FEDERAL REGULATIONS

6 CFR 27, *Chemical Facility Anti-Terrorism Standards*

29 CFR 1910, *Occupational Safety & Health Standards*

\1\29 CFR 1910.1024, *Beryllium*

\2\29 CFR 1910.1026, *Chromium (VI)*/2/

\2\29 CFR 1910.1027, *Cadmium*/2/

29 CFR 1915.1024, *Beryllium*

29 CFR 1926.1124, *Beryllium*/1/

\2\29 CFR 1926.62, *Lead*/2/

36 CFR 800, *Protection of Historic Properties*

40 CFR 61.145, SUBPART M, *National Emission Standard for Asbestos*

40 CFR 112, *Oil Pollution Prevention*

40 CFR 260, *Hazardous Waste Management System: General*

40 CFR 261, *Identification and Listing of Hazardous Waste*

40 CFR 261, SUBPART C, *Characteristics of Hazardous Waste*

40 CFR 261, SUBPART D, Lists of Hazardous Wastes

40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*

40 CFR 264 Subpart J, *Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities*

40 CFR 264 Subpart J, *Tank Systems*

40 CFR 265, *Interim Status Standards For Owners And Operators Of Hazardous Waste Treatment, Storage, And Disposal Facilities*

40 CFR 265 Subpart J, *Tank Systems*

40 CFR 268, *Land Disposal Restrictions*

40 CFR 270, EPA Administered Permit Programs: *The Hazardous Waste Permit Program*

40 CFR 273, *Standards for Universal Waste Management*

40 CFR 745, *Lead Based Paint Poisoning Prevention in Certain Residential Structures*

40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing Process, Distribution in Commerce, and Use Prohibitions*

40 CFR 763, *Asbestos Model Accreditation Plan*

40 CFR Parts 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act

43 CFR 10, *Native American Graves Protection And Repatriation Regulations*

49 CFR 171-180, *Transportation*

50 CFR 18, *Marine Mammals*

50 CFR 22, *Eagle Permits*

50 CFR 600 Subpart J, *Essential Fish Habitat (EFH)*

\1\DEPARTMENT OF DEFENSE (DOD)

DoDI 6055.01, *DoD Safety and Occupational Health (SOH) Program,* http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf/1/

OTHER FEDERAL STANDARDS AND DOCUMENTS – GENERAL

16 U.S.C. 470aa-470mm, *Archaeological Resource Protection Act of 1979*

49 U.S.C. 5103, *General Regulatory Authority*

EPA Title X, *The Residential Lead Based Paint Hazard Reduction Act*

EPA RRP Rule, *Lead-Based Paint Renovation, Repair and Painting (RRP) Rule 2008* and associated amendments

EPA SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*

EPA 402-K-01-001, *Mold Remediation in Schools and Commercial Buildings*

EPA 530-D-02-002, *RCRA Waste Sampling Draft Technical Guidance*

EPA 540/R-99/008, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*

EPA-540-R-014-002, *National Functional Guidelines for Superfund Organic Methods Data Review*

EPA-540-R-04-004, *Institutional Controls: A Citizen's Guide to Understanding Institutional Controls at Superfund, Brownfields, Federal Facilities, Underground Storage Tank, and Resource Conservation and Recovery Act Cleanups*

HUD Guidelines, Second Edition, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*

FEDERAL REGISTER

66 FR 53535, *Criteria for Classification of Solid Waste Disposal Facilities and Practices and Criteria for Municipal Solid Waste Landfills: Disposal of Residential Lead-Based Paint Waste;* October 23, 2001

INDUSTRY STANDARDS

ASTM E2121, *Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Building*

US ARMY CORPS OF ENGINEERS

EM 385-1-1, *Safety and Health Requirements*

DEPARTMENT OF THE NAVY

Navy Radon Assessment and Mitigation Program – Guidance Document for Navy Family Housing

Navy Radon Assessment and Mitigation Program – Guidebook for Naval Shore Installations

OPNAV M-5090.1, *Chief of Naval Operations Environmental Readiness Program Manual*

\2\OPNAVINST 5100.23G, *Navy Safety and Occupational Health Program Manual*/2/

NAVAL SEA SYSTEMS COMMAND DETACHMENT

Radiological Affairs Support Office

https://www.nko.navy.mil/group/raso/low-level-rad-waste

FACILITIES CRITERIA

http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

FC 1-300-09N, Navy and Marine Corps Design Procedures

UNIFIED FACILITIES CRITERIA

http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

UFC 1-200-01, \1\DoD Building Code (*General Building Requirements)*/1/

UFC 3-101-01, *Architecture*

UFC 3-201-01, *Civil Engineering*

UFC 3-460-01, *Design Petroleum Fuel Facilities*

UNIFIED FACILITIES GUIDE SPECIFICATIONS

http://www.wbdg.org/ccb/browse_cat.php?c=3

UFGS 01 22 00.00 20, *Price and Payment Procedures*

UFGS 01 57 19, *Temporary Environmental Controls*

UFGS 01 57 19.01 20, *Supplemental Temporary Environmental Controls*

UFGS 02 61 13, *Excavation and Handling of Contaminated Material*

UFGS 02 61 23, *Removal and Disposal of PCB Contaminated Soils*

UFGS 02 65 00, *Underground Storage Tank Removal*

\2\UFGS, *02 82 00 Asbestos Remediation*/2/

\2\UFGS *02 83 00 Lead Remediation*/2/

UFGS 02 84 16, *Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury*

UFGS 02 84 33, *Removal and Disposal of Polychlorinated Biphenyls (PCBs)*

UFGS 02 85 00.00 20*, Mold Remediation*

UFGS 31 21 13, *Radon Mitigation*

APPENDIX B BEST PRACTICES

The best practices detailed herein apply to all sites and each project should be evaluated individually (if they are governed by regulation then they are a requirement and not a best practice). Neglecting to address the items listed below may result in unnecessary exposure to human health and the environment, changes in the project scope and be potentially subject the Government to regulatory notice of violations.

B-1 ASBESTOS.

RACM are commonly found in building materials and related products. Asbestos-containing products are available today and are often used in the form of tars, sealants, caulks, coatings, insulation, and roofing materials.

B-2 LEAD BASED PAINT IN TARGET HOUSING AND CHILD-OCCUPIED FACILITIES.

When dealing with target housing and child-occupied facilities, lead-based paint is defined by EPA and the U.S. Department of Housing and Urban Development (HUD) as any paint, varnish, shellac, or other coating that contains lead equal to or greater than 1.0 milligram per square centimeter (mg/cm^2) as measured by XRF analyzer or laboratory analysis, or 0.5 percent by weight as measured by laboratory analysis. This is not the OSHA definition of lead-containing paint.

A child-occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child (6 years of age or younger) on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours, the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours.

B-3 PAINT – LEAD, CADMIUM, CHROMIUM, AND OTHER HAZARDOUS METALS.

Many painted surfaces contain lead, cadmium, chromium, and other hazardous metals that may be regulated by the RCRA when these coated surfaces are disturbed by renovation, alteration, repair, or demolitions activities. These coatings are commonly found in buildings and steel structures, and on fuel piping and on every type of surface that can be painted or coated. Thresholds, exposures, and engineering controls for paint containing lead, cadmium, chromium, or other hazardous metals differ depending on a variety of factors including, but not limited to, whether or not these paints are used in operational processes, are painted surfaces of building components or exterior coatings, and are disturbed during construction activities. When investigation, sampling, renovation or demolition occurs, there are hazards associated with the generation of dust, debris, and fumes. The OSHA Standards cite requirements for work activities that can create an unsafe condition with regards to worker protection. These include, but are not limited to manual demolition, paint scraping, heat-gun applications, power tooling with dust collection, power tooling without dust collection, rivet busting,

cleanup activities with dry abrasives, movement or removal of enclosures, abrasive blasting, welding, cutting, and burning on steel structures.

B-4 BERYLLIUM.

\1\Beryllium is a grey metal that is stronger than steel and lighter than aluminum. Its physical properties of great strength-to-weight, high melting point, excellent thermal stability and conductivity, reflectivity, and transparency to X-rays make it an essential material in industry. Workers in industries where beryllium is present may be exposed to beryllium by inhaling beryllium dust in the air or by dermal contact. Workers who come in contact with beryllium are at an increased risk of developing cancer; lung effects (CBD and acute beryllium disease); beryllium sensitization; skin sensitization; and skin, eye, and respiratory tract irritation.

B-4.1 Beryllium Uses and Products.

Beryllium is used in:

- Aerospace (aircraft braking systems, engines, satellites, space telescope),
- Automotive (anti- lock brake systems, ignitions),
- Ceramic manufacturing (rocket covers, semiconductor chips)
- Defense (components for nuclear weapons, missile parts, guidance systems, optical systems),
- Dental labs (alloys in crowns, bridges, and dental plates),
- Electronics (x- rays, computer parts, telecommunication parts, automotive parts),
- Energy (microwave devices, relays),
- Medicine (laser devices, electro-medical devices, X-ray windows),
- Nuclear energy (heat shields, reactors),
- Sporting goods (golf clubs, bicycles),
- Telecommunications (optical systems, wireless base stations)./1/

B-5 RADON.

Radon is a colorless, odorless, tasteless gas that is a byproduct of naturally decaying uranium. The amount of uranium beneath the earth’s surface varies greatly with geographic location and soil type. As the uranium decays below a building surface, it creates a radon gas that may penetrate through cracks and openings in the building’s foundation or basement. Buildings that have a tight shell have increased chances for radon being trapped within the structure.

B-6 POLYCHLORINATED BIPHENYLS.

Polychlorinated biphenyls\1\, commonly referred to as PCB or PCBs,/1/ are a group of toxic substances with chlorinated compounds that are either oily liquids or solids. PCB are typically colorless or light yellow. Some common PCB manufacturer product trade names are as follows: Apirolio, Aroclor, Asbestol, Bakola 131, Chlorextol, Clophen, Inerteen, Kanechlor, No-Flamol, Pyralene, Pyranol, Saf-T- Kuhl and Sovol. PCB were used for many years in electrical equipment as coolants and lubricants because they are good insulators that tend not to burn. The EPA banned the manufacturing of PCB in 1977 and regulated PCB as a toxic substance under the Toxic Substance Control Act (TSCA). Current PCB regulations can be found in 40 CFR 761.

Products manufactured prior to 1977 that may contain PCB include light ballasts, transformers, capacitors, heat transfer fluids, lubricants, hydraulic fluids, compressor oil, paints, plastics, asphalt roofing materials, paints, and caulk.

B-7 ANIMAL DROPPINGS.

B-7.1 Histoplasmosis.

Histoplasmosis is an infectious disease caused by inhaling the spores of a fungus called *Histoplasma capulatum*. The fungus is most associated with bird manure or bat droppings. The organism can be carried on the wings, feet, and beaks of birds and infected soil under roosting sites or manure accumulations inside or outside buildings. The fungus also grows in soils with high nitrogen content, especially those enriched with bird manure or bat droppings. Histoplasmosis is most commonly transmitted when the spores become airborne, often during cleanup or demolition projects. Areas with an increased number of infections are located in central and eastern states, along the valleys of the Ohio, Mississippi, and St. Lawrence Rivers and the Rio Grande.

B-7.2 Hantavirus.

Hantavirus is carried by rodents, especially mice and rats. The virus is found in their urine, droppings, and saliva. Potential sites where people may be exposed to the virus are outbuildings or sheds located in forests and fields that offer a suitable habitat for the virus’s rodent hosts. The virus is mainly transmitted to people when they breathe in air contaminated with the virus. When fresh rodent urine, droppings, or nesting materials are stirred up, tiny droplets containing the virus get into the air.

B-8 MOLDS AND SPORES.

Thousands of different types or species of fungi or "molds" are normally present in the environment, and many can grow within a building and cause occupants and workers discomfort or harm. Some fungi are toxic (that is, they secrete mycotoxins, which are harmful if inhaled or ingested), and many can cause allergic reactions of various types in susceptible people. Internal infections can also be caused by fungi, but are rare in people with normal immune systems. Fungi are commonly found in buildings that have

flooding or long-term water damage from broken pipes, roof leaks, sewage backups, poor drainage, condensation, or inadequate HVAC system design. Because leaks can occur inside walls, in crawl spaces, in ventilation systems, or in enclosed ceiling areas, they may not be visible to the occupants.

B-9 STORAGE TANKS.

The majority of AST or UST contain petroleum products or other hazardous substances. Until the mid-1980s, most UST were made of bare steel that could corrode over time and allow the contents to leak into the surrounding soils and groundwater, causing harm to the environment and human health. Similar conditions are associated with AST.

B-10 CONTAMINATED SOIL OR GROUNDWATER.

There are instances where construction will occur on sites that are known to have contaminated soil or groundwater. The area could also be classified as a “past hazardous waste site” or “Installation Restoration” (IR) site. IR is a comprehensive program to identify, investigate, and clean up hazardous substances, pollutants, and contaminants at Installations. Sites include those contaminated by past defense activities that require clean up under the Comprehensive Environmental Response, Compensation, and Liability Act as amended by Superfund Amendments and Reauthorization Act, and certain corrective actions required by RCRA.

B-11 SOLID AND HAZARDOUS WASTE.

Solid waste is defined as a solid, liquid, semi-solid, or contained gaseous waste. A solid waste may be a hazardous waste or a nonhazardous waste.

B-11.1 Nonhazardous Waste.

Nonhazardous waste is solid waste that does not meet the RCRA or state criteria for hazardous waste. Nonhazardous wastes are regulated for disposal and may contain toxic chemicals or physically hazardous components. Some materials may be assumed nonhazardous because of the nature of the waste and the waste generation process. Examples include petroleum-contaminated soil and C&D debris.

Nonhazardous waste is a broad category that includes a range of materials with various management requirements. Nonhazardous wastes are generally regulated under state solid waste regulations. Some states call nonhazardous waste solid waste, special waste, industrial waste, or non-RCRA regulated waste. Review state solid waste regulations and determine state specific definitions. Nonhazardous waste classifications include waste that is excluded from, or does not meet, hazardous waste criteria, waste containing contaminants at concentrations less than hazardous waste thresholds (for example, ignitability, corrosivity, reactivity, or toxicity), or wastes that are prohibited from being disposed of at a subtitle D municipal solid waste landfill.

Nonhazardous waste may consist of contaminated environmental media, debris, or wastes. These wastes generally have less stringent storage, transport, and disposal requirements than hazardous wastes. Consider managing these wastes through waste minimization, reuse or recycling, and cost control.

B-11.2 Universal Waste.

Prior to demolition, facility should be cleared of any potential universal wastes, specifically fluorescent lamps and mercury containing electrical equipment such as thermostats or switches. EPA universal waste regulations streamline hazardous waste management standards for federally designated "universal wastes," which include:

- Batteries: “Battery” means a device consisting of one or more electrically connected electrochemical cells that are designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed.
- Pesticides: “Pesticide” means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than any article that:
    - Is a new animal drug under Federal Food, Drug and Cosmetic Act (FFDCA) section 201(w), or
    - Is an animal drug that has been determined by regulation of the Secretary of Health and Human Services not to be a new animal drug, or
    - Is an animal feed under FFDCA section 201(x) that bears or contains any substances described by the paragraphs above.
- Mercury-containing equipment: “Mercury-containing equipment” means a device or part of a device (including thermostats, but excluding batteries and lamps) that contains elemental mercury integral to its function.
- Lamps: A “lamp” is the bulb or tube portion of an electrical lighting device that may contain hazardous materials such as mercury or lead. Examples of common types of lamps containing hazardous materials include fluorescent, high-intensity discharge (HID), neon, mercury vapor, high-pressure sodium, and metal halide. Many lighting companies produce "low-level" mercury-containing lamps and claim they do not constitute a hazardous waste for disposal. In accordance with Federal law, the generator must prove that the lamps are nonhazardous if they choose to manage and dispose of them as such. Testing of the lamps may be

performed if it will result in a cost-saving solution. Otherwise, consider the lamps as hazardous, and properly manage and dispose them. The ultimate responsibility lies in the waste generator to determine the proper management and disposal of this waste.

B-11.3 Used Oil.

Used oil is any petroleum-based or synthetic fluid that has been used and is regulated under 40 CFR 279. During normal use, impurities such as dirt, metal scrapings, water, or chemicals may get mixed in with the oil, so that in time, the oil no longer performs well. Eventually, this used oil is replaced with virgin or re-refined oil to perform correctly. To meet EPA's definition of used oil, a substance must meet three criteria:

Origin: The first criterion for identifying used oil is based on the origin of the oil. Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from EPA's definition of used oil.

Use: The second criterion is based on whether and how the oil is used. Oils used as lubricants, hydraulic fluids, heat transfer fluids, buoyants, and for other similar purposes are considered used oil. Unused oil such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill, do not meet EPA's definition of used oil because these oils have never been "used." EPA's definition also excludes products used as cleaning agents or solely for their solvent properties, as well as certain petroleum-derived products like antifreeze and kerosene.

Contaminants: The third criterion is based on whether or not the oil is contaminated with either physical or chemical impurities during use. In other words, to meet EPA's definition, used oil must become contaminated as a result of being used. This aspect of EPA's definition includes residues and contaminants generated from handling, storing, and processing used oil. Physical contaminants could include metal shavings, sawdust, or dirt. Chemical contaminants could include solvents, halogens, or saltwater.

B-12 CULTURAL RESOURCES.

The term “cultural resources” includes archaeological sites, Native American and other traditional cultural resources, historic buildings and structures, significant objects, planned landscapes, and historic districts. The term “historic properties” is a technical term from the National Historic Preservation Act of 1966 (NHPA) to denote properties that have recognized public significance. The NHPA, 54 United States Code U.S.C. 300101 et seq., is one of the primary Federal statutes designed to protect cultural resources. The implementing regulation for NHPA is the Protection of Historic Properties; 36 CFR 800. Historic properties are defined in 36 CFR 800.16 as places listed in or eligible for listing in the National Register of Historic Places (NRHP). These properties may include districts, sites, buildings, structures, objects, and landscapes significant in American history, prehistory, architecture, archaeology, engineering, and culture. They include properties that belong to the prehistoric era as well as the historic era. Generally, properties must be at least 50 years of age to be eligible for the NRHP,

unless they are proven to have exceptional importance. The NHPA also provides for consultation with Native American groups when a proposed project might affect cultural or traditional places or resources that have value to a Native American tribal group derived from the role the property plays in the community's historically rooted beliefs, customs, and practices.

B-12.1 Archaeology.

The Archaeological Resource Protection Act of 1979 recognizes that archaeological resources are an irreplaceable component of the heritage of the United States. Prehistoric archaeological resources are physical properties resulting from human activities that predate written records and generally are identified as isolated finds or sites. Prehistoric resources may include areas such as village sites, temporary camps, lithic scatters, roasting pits or hearths, milling features, petroglyphs, rock features, and burial sites. Historic archaeological site types, which result from human activities that occurred after European settlement, include town sites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military use of the land.

B-12.2 Architectural.

Historic architectural resources include fabricated, aboveground resources resulting from human activities that occurred after European settlement. These resources may include buildings such as houses, churches, barns, and lighthouses; early military buildings such as hangars, administration buildings, barracks, officers' quarters, warehouses, and guardhouses; and structures such as roads, bridges, and culverts.

B-13 CHLORDANE.

Chlordane was used extensively as an insecticide in the United States. It was sold from 1948 to 1988, both as a dust and an emulsified solution. The most common use of chlordane was for termite control. It was poured or injected around foundations to protect homes and buildings from termite damage. Its use was especially high in areas where termites caused structural damage, such as the southern U.S. Though banned for use on crops by 1978, its use for protection of buildings continued for another 10 years. In 1988, all commercial and domestic use of chlordane in the U.S. was banned by the EPA. Chlordane, heptachlor, and similar products can be expected to be found around the foundation of wooden (and possibly other) structures constructed prior to 1988. It is linked to various health effects on humans. Chlordane and similar products may still be in use in other countries.

B-14 REFERENCES.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

DHHS 2005-109, *Histoplasmosis Protecting Workers at Risk*

CODE OF FEDERAL REGULATIONS

36 CFR 800, *Protection of Historic Properties*

40 CFR 279, *Standards for the Management of Used Oil*

40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing Process, Distribution in Commerce, and Use Prohibitions*

APPENDIX C GLOSSARY

C-1 ACRONYMS

ACM	Asbestos-Containing Materials
AFCEC	Air Force Civil Engineer Center
AST	Aboveground Storage Tank
BIA	Bilateral Infrastructure Agreement
C&D	Construction and Demolition
CAA	Clean Air Act
CDC	Centers for Disease Control & Prevention
CFR	Code of Federal Regulations DHHS Department of Health and Human Services
DoD	United States Department of Defense
DOR	Designer of Record
EFH	Essential Fish Habitat
ELPAT	Environmental Lead Proficiency in Analytical Testing
EO	Executive Order
EPA	United States Environmental Protection Agency
EV	Environmental
FC	Facilities Criteria
FFDCA	Federal Food, Drug, and Cosmetics Act of 1938
FGS	Final Governing Standards
FR	Federal Register
HID	High Intensity Discharge
HUD	U.S. Department of Housing and Urban Development
ID	Identification

IR	Installation Restoration
kg	Kilogram
LLR	Low-Level Radioactive
MBTA	Migratory Bird Treaty Act
mg/cm^2	Milligrams per Square Centimeter
mg/L	Milligrams per Liter
NAAQC	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NIST/NVLAP	National Institute of Standards and Technology/National Voluntary Laboratory Accreditation Program
NAVRAMP	Navy Radon Assessment and Mitigation Program
NAVSEADET	Naval Sea Systems Command Detachment
NELAC	National Environmental Laboratory Accreditation Conference
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air
NHPA	National Historic Preservation Act of 1966
NLLAP	National Lead Laboratory Accreditation Program
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
\1\PCB or PCBs	Polychlorinated Biphenyls
/1/PPP	Pollution Prevention Plan
RACM	Regulated Asbestos-Containing Materials
RCRA	Resource Conservation and Recovery Act
RMS	Radon Mitigation Standards
RASO	Radiological Affairs Support Office

RFP	Request for Proposal
RRP	Renovation, Repair, and Painting
SHPO	State Historic Preservation Office
SOFA	Status of Forces Agreement
SSG	Soil Screening Guidance
SSL	Soil Screening Level
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substance Control Act
UFC	Unified Facilities Criteria
UFGS	Unified Facility Guide Specifications
UN	United Nations
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
UST	Underground Storage Tank
XRF	X-Ray Fluorescence