Department of Energy
Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
(859) 219-4000

APR 2 4 2020

Mr. Shawn Cooper
Site Coordinator
Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, Ohio 43138

PPPO-03-10005977-20

Dear Mr. Cooper:

REVISED WASTE ACCEPTANCE CRITERIA IMPLEMENTATION PLAN FOR THE ON-SITE WASTE DISPOSAL FACILITY AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO (DOE/PPPO/03-0728&D3)

References:

1. Letter from S. Cooper to K. Wiehle and J. Bradburne, "Ohio EPA Review and Response to DOE Submittal of Revised On-site Waste Disposal Facility Operations and Maintenance Plan Final Design and Response to Comment Letter," dated October 28, 2019
2. Letter from J. Bradburne to A. Tegethoff, "Waste Acceptance Criteria Implementation Plan for the On-Site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio (DOE/PPP0/03-0728&D2)," (PPPO-03-5122530-18), dated September 7, 2018

Enclosed please find the U.S. Department of Energy's (DOE's) transmittal of the revised *Waste Acceptance Criteria Implementation Plan for the On-site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (WAC IP). The WAC IP was prepared in accordance with *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto* (DFF&O). While we understand that Ohio Environmental Protection Agency (Ohio EPA) is still completing its review of this document and some associated information, DOE is providing an updated version for the reasons listed below for your review.

The prior WAC IP revision (Reference 2), submitted September 7, 2018, stated: "Following Ohio EPA concurrence with the On-site Waste Disposal Facility (OSWDF) Operations and Maintenance Plan (O&M Plan), the three remaining components of the waste acceptance criteria (WAC) will be incorporated into this WAC IP by revision and resubmittal to Ohio EPA." Ohio EPA concurred with the OSWDF O&M Plan on October 28, 2019 (Reference 1). The approved waste physical characteristic standards, waste packaging standards, and waste transportation standards WAC from the OSWDF O&M Plan have therefore been incorporated into the WAC IP enclosed with this transmittal.

The prior WAC IP also stated that example forms contained in the appendices were preliminary and would be updated prior to WAC IP finalization. The enclosed WAC IP includes the updated forms developed by the Waste Acceptance Organization.

While some editing changes have been made, most of the changes to the WAC IP have been made for the following reasons:

- Incorporation of the approved components of the OSWDF O&M Plan WAC as described in the September 7, 2018, submittal of the WAC IP.
- Updating of the Waste Acceptance Organization forms that have matured since the September 7, 2018, submittal of the WAC IP.
- Incorporation of some minor updates to reflect work completion since the prior WAC IP transmittal (e.g., reflects the submittal and approval of some documents).

No changes have been made to other aspects of the WAC IP, including the waste evaluation and characterization standards and safe handling standards WAC. These standards will be incorporated into the WAC upon Ohio EPA concurrence/approval, as applicable.

If you have any questions or require additional information, please contact Kristi Wiehle of my staff at (740) 897-5020.

Sincerely,

Jeffrie A. Bettinger
Portsmouth Site Lead
Portsmouth/Paducah Project Office

Enclosure:
Waste Acceptance Criteria Implementation Plan for the On-site Waste Disposal Facility

cc w/enclosure:
amy.lawson@pppo.gov, PPPO
bobby.smith@ports.pppo.gov, FBP
cindy.hafner@pppo.gov, ETAS
dennis.dalga@pppo.gov, ETAS
ets.support@pppo.gov
frank.johnston@ports.pppo.gov, FBP
frank.miller@ports.pppo.gov, FBP
ginger.mullins@ports.pppo.gov, FBP
joel.bradburne@pppo.gov, PPPO
james.sferra@epa.ohio.gov, Ohio EPA
jonathan.dowell@ports.pppo.gov, FBP
johnny.reising@pppo.gov, PPPO
jud.lilly@pppo.gov, PPPO
jyh-dong.chiou@ports.pppo.gov, FBP
karen.price@ports.pppo.gov, FBP
kristi.wiehle@pppo.gov, PPPO
kristy.hunt@epa.ohio.gov, Ohio EPA
ohio epa file share
randy.tormey@emcbc.doe.gov, EMCBC
rmdciss@ports.pppo.gov, (DFF&O WD Post-Decision AR File)
robert.schulten@pppo.gov, ETAS
rosemary.richmond@pppo.gov, ETAS
scott.bergreen@epa.ohio.gov, Ohio EPA
thomas.schneider@epa.ohio.gov, Ohio EPA
timothy.christman@epa.ohio.gov, Ohio EPA

WASTE ACCEPTANCE CRITERIA IMPLEMENTATION PLAN FOR THE ON-SITE WASTE DISPOSAL FACILITY AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO

U.S. Department of Energy
DOE/PPPO/03-0728&D3

April 2020

This document is approved for public release per review by:

Sam Eldridge (signature on file)	11-21-2019
PORTS Classification Office/Export Controlled Information Officer	Date

This page is intentionally left blank.

WASTE ACCEPTANCE CRITERIA IMPLEMENTATION PLAN FOR THE ON-SITE WASTE DISPOSAL FACILITY AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO

U.S. Department of Energy
DOE/PPPO/03-0728&D3

April 2020

Prepared for
U.S. Department of Energy

Prepared by
Fluor-BWXT Portsmouth LLC, Under Contract DE-AC30-10CC40017
FBP-ER-OSDC-WD-PLN-0071, Revision 16

This page is intentionally left blank

CONTENTS

Page

Page

FIGURES

Page

TABLES

This page is intentionally left blank.

ACRONYMS

ACM	asbestos-containing material
ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
CFR	*Code of Federal Regulations*
COC	contaminant of concern
D&D	decontamination and decommissioning
DFF&O	*The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
ELS	equivalent level of safety
FBP	Fluor-BWXT Portsmouth LLC
HDPE	high-density polyethylene
HLW	high-level waste
IMPP	Impacted Material Placement Plan
IMTA	Impacted Material Transfer Area
IP	Implementation Plan
ISMS	Integrated Safety Management System
LLW	low-level (radioactive) waste
NCS	Nuclear Criticality Safety
NDA	nondestructive assay
O&M	operation and maintenance
OAC	*Ohio Administrative Code*
Ohio EPA	Ohio Environmental Protection Agency
OSWDF	On-site Waste Disposal Facility
PCB	polychlorinated biphenyl
PGE	process gas equipment
PHC	principal hazardous constituent
PORTS	Portsmouth Gaseous Diffusion Plant
PPE	personal protective equipment
PSVP	Performance Standards Verification Plan
RAWP	removal action work plan
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RD/RA	remedial design/remedial action
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SADQ	Sample Analysis Data Quality Assurance Project Plan
TCE	trichloroethene
TRU	transuranic
TSCA	Toxic Substances Control Act of 1976
VOC	volatile organic compound
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

This page is intentionally left blank.

EXECUTIVE SUMMARY

The Ohio Environmental Protection Agency (Ohio EPA) and the U.S. Department of Energy (DOE) have entered into a Record of Decision (ROD) for the disposition of waste generated during the decontamination and decommissioning (D&D) of the Portsmouth Gaseous Diffusion Plant (PORTS). An on-site waste disposal facility (OSWDF) has been designed and is being constructed at the northeast corner of the PORTS property boundary and will be operated to safely and compliantly dispose of waste generated during the D&D and cleanup of PORTS.

Ohio EPA and DOE entered into *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto* (DFF&O), establishing that a waste acceptance criteria (WAC) shall be developed for any OSWDF, approved by Ohio EPA, and will be comprised of seven components. The Waste Disposition Proposed Plan defined the approach to gain Ohio EPA review and approval of each of these seven components of the WAC. Two of these components (prohibitions/ exclusions and activity and chemical concentration criteria) were developed in the Site-Wide Waste Disposition Evaluation (Waste Disposition) Remedial Investigation and Feasibility Study, presented in the Waste Disposition Proposed Plan, and included in the Waste Disposition ROD. The Waste Disposition ROD was approved by Ohio EPA following a 90-day public comment period on the Waste Disposition Proposed Plan.

The remaining five components are necessarily an outgrowth of the engineering design and operational planning process for the OSWDF. These five components are:

- Waste Evaluation and Characterization Standards
- Waste Physical Standards
- Waste Packaging Standards
- Waste Safe Handling Standards
- Waste Transportation Standards.

The Waste Disposition ROD established that two of the seven components of the WAC will be refined through Ohio EPA approval of/concurrence with this *Waste Acceptance Criteria Implementation Plan for the On-site Waste Disposal Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (WAC Implementation Plan [IP]). These are the Waste Evaluation and Characterization Standards and the Waste Safe Handling Standards. The final three components of the WAC are to be refined in the *OSWDF Operations and Maintenance Plan* (OSWDF O&M Plan) (DOE 2019a) in parallel with design finalization for the OSWDF. Ohio EPA concurred with the OSWDF O&M Plan in October 2019. The approved waste physical standards, waste packaging standards, and waste transportation standards WAC from the OSWDF O&M Plan have therefore been incorporated into this document.

An estimated 1.47 million cy of waste is anticipated to be generated from response actions at PORTS, including the D&D of the buildings at PORTS. The vast majority of this waste (approximately 76 percent) will originate from the three large gaseous diffusion process buildings: X-326, X-330, and X-333. The waste volumes include the structure of each facility, process (subject to limitations by the approved WAC) and industrial equipment within the facilities, facility slabs, and soil that will be generated incidental to removal of the facility slabs. The balance of the waste volume will come from hundreds of smaller buildings and structures and is expected to be 0.35 million cy of waste, or approximately 24 percent of the total PORTS D&D waste forecast.

To properly dispose of the contaminated debris generated from the demolition of the former gaseous diffusion plant facilities, large quantities of engineered fill will be required to properly place the debris and ensure the long-term geotechnical stability of the OSWDF capping system. DOE will be exhuming soil from the existing landfills and groundwater plumes within the Perimeter Road at PORTS as the source of this engineered fill. The exhumed debris removed during landfill excavation will also be placed into the OSWDF subject to a WAC compliance determination.

This WAC IP is designed for use by waste generators (projects generating D&D or remediation wastes at PORTS) and the PORTS organization charged with the design, safe construction, and operation of the OSWDF. The WAC IP defines the documentation that will be produced and the processes that will be followed by the waste generators to demonstrate full compliance with the WAC prior to waste acceptance into the OSWDF. This WAC IP also defines the role of the PORTS Waste Acceptance Organization (WAO), as well as the role of waste generators and OSWDF operational organizations. The WAO is an independent internal organizational that provides verification that the WAC compliance documentation is completed satisfactorily and the approved processes have been followed to support waste acceptance at the OSWDF. The WAO will serve in the gate keeper role within the PORTS organization, providing the single and final authority within PORTS for waste acceptance into the OSWDF. Consistent with the DFF&O, Ohio EPA has access and oversight authority on the waste placement process. This WAC IP also defines some possible opportunities within the waste generation and placement processes for Ohio EPA to access and review the planning and ongoing work as part of its oversight role.

The WAC IP will be maintained and remain a living document throughout the D&D of PORTS and operation of the OSWDF. Through implementation of Integrated Safety Management System principles, this WAC IP will be updated as appropriate based on ongoing PORTS-specific D&D and disposal experiences and lessons learned. Revisions to the WAC IP will be submitted to Ohio EPA for approval/concurrence, as applicable.

1. INTRODUCTION

The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto (DFF&O) (Ohio Environmental Protection Agency [Ohio EPA] 2012) establishes the framework under which the decontamination and decommissioning (D&D) of the DOE Portsmouth Gaseous Diffusion Plant (PORTS) will be conducted. The DFF&O adopts the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA) as the regulatory structure under which decisions for D&D and waste disposition will take place. The Waste Disposition Record of Decision (Waste Disposition ROD) (DOE 2015a) was issued in June 2015 consistent with the provisions of the DFF&O and defines the overall technical approach and regulatory requirements for the management of waste generated by the D&D of PORTS. The Process Building and Complex Facilities D&D ROD (Process Buildings ROD) (DOE 2015b) that describes controlled demolition of the process buildings and complex facilities was signed in July 2015.

The DFF&O (Section VI.15.c) requires a Waste Acceptance Criteria (WAC) Implementation Plan (IP) for the On-site Waste Disposable Facility (OSWDF) at PORTS. Additionally, the DFF&O specifies that the WAC IP must include a Waste Acceptance System Requirements Document, Waste Form Compliance Plan, and Waste Acceptance Delivery Schedule. This WAC IP addresses these DFF&O requirements and provides technical support for implementing the OSWDF WAC, as approved in the Waste Disposition ROD.

1.1 PURPOSE, SCOPE, AND OBJECTIVES OF THE IMPLEMENTATION PLAN

The purpose of the WAC IP is to define the requirements and processes used by the organizational elements at PORTS to ensure that waste disposed in the OSWDF meets the approved WAC. This plan is applicable to waste generated at PORTS and destined for disposal at the OSWDF. The scope of the WAC IP includes:

- Defining waste profiles for each engineering waste type to be disposed in the OSWDF
- Establishing a waste acceptance delivery schedule for the OSWDF
- Outlining the process for waste generators to certify that their waste meets the OSWDF WAC
- Specifying documentation required to inventory and track waste disposed at the OSWDF
- Establishing roles and responsibilities for the project-specific waste generators, the OSWDF Operations Manager, the Waste Acceptance Organization (WAO), and the associated support functions (e.g., Waste Management; Environment, Safety, and Health; Quality Assurance; Data Management; Nuclear Criticality Safety; Nuclear Safety; Nuclear Material Control and Accountability; and Security).

This plan is intended to serve as a bridge between waste generators and the OSWDF Operations Manager and will be supported by detailed procedures. The term 'waste generator' refers to the collective team of personnel responsible for the safe and compliant collection, characterization, packaging and shipping of wastes generated from a defined PORTS D&D or remediation project. The team shall include technical support personnel from areas including, but not limited to, waste management, radiation protection control, and security. The waste generators are responsible for applying the requirements specified in this document using project-specific plans such as remedial design/remedial action (RD/RA) work plans

and the removal action work plans (RAWPs). Consistent with the requirements of this plan, PORTS will charter a new internal, independent organization called the WAO. The WAO will provide independent oversight from the point of waste generation to final disposition and serve as the gatekeeper with final internal authority on whether a given waste load has met all the requirements of the WAC and can be received into the OSWDF.

1.2 RELATIONSHIP TO OTHER DOCUMENTS

The WAC IP, along with the OSWDF Operations Plan, is a component of the integrated OSWDF remedial design package required by the DFF&O. (Note that the OSWDF Operations Plan referenced in the Waste Disposition ROD has been submitted as the OSWDF Operations and Maintenance [O&M] Plan.) Since this WAC IP ensures compliance with regulatory requirements by providing specific direction on how to prepare wastes generated by the D&D activities for disposal in the OSWDF, it will be used by the internal waste generating projects within PORTS for dispositioning D&D wastes generated under remedial activities conducted under the DFF&O.

Additional plans are being developed to support waste generating activities and will be submitted to Ohio EPA for review and approval/concurrence, as applicable. Due to the size and complexity of the former gaseous diffusion process facilities at PORTS, the D&D process for these former facilities is, in general, being conducted in two phases for individual process buildings: Phase 1 – Deactivation, and Phase 2 – Demolition. Each of these phases will be guided by work plans submitted for Ohio EPA review and approval/concurrence, as applicable, for those facilities directly involved in uranium enrichment and maintaining process gas equipment (PGE). The planned interface between these documents, the WAC IP, and WAC compliance requirements are addressed below.

Process Buildings (X-326, X-330, X-333) Deactivation RD/RA Work Plan

The *Remedial Design/Remedial Action Work Plan and Remedial Design for the Process Buildings Deactivation at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio, Deactivation of X-326, X-330, X-333, X-111A, X-111B, X-232C1, X-232C2, X-232C3, X-232C4, and X-232C5* (Process Buildings Deactivation RD/RA Work Plan) (DOE 2016) was developed to address the three main uranium enrichment buildings at PORTS (i.e., X-326, X-330, and X-333) to document the planned approaches to complete the deactivation and ready the facilities for demolition. The Process Buildings Deactivation RD/RA Work Plan documents the planned steps to characterize and remove, to the extent required, residual quantities of radioactive and other hazardous materials remaining within the process gas or other systems of the facilities to render them amenable to open air demolition and the generated debris safe for placement in the OSWDF.

The Process Buildings Deactivation RD/RA Work Plan also defines the steps that will be taken during deactivation to proactively remove prohibited items for treatment, if necessary, and/or off-site shipment when they are not compliant with the OSWDF WAC. The Process Buildings Deactivation RD/RA Work Plan documents the anticipated characterization of the debris waste streams when the facility is ready for demolition and the resultant demolition debris will be acceptable for on-site disposal in the OSWDF, once properly handled, size reduced, packaged (if necessary), and transported. The Process Buildings Deactivation RD/RA Work Plan was submitted to Ohio EPA for review and approval/concurrence was received in April 2016.

Comprehensive Process Buildings Deactivation, Demolition, and Disposition RD/RA Work Plan

The *Comprehensive Deactivation, Demolition, and Disposition Remedial Design/Remedial Action Work Plan for the Process Buildings and Complex Facilities Remedial Action Project and Remedial Design for Deactivation of Complex Facilities at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*

(Comprehensive Process Buildings RD/RA Work Plan) (DOE 2018a), which was submitted to Ohio EPA for review in August 2018 and concurred upon in October 2018, provides a plan for the deactivation of all remaining facilities listed in Attachment H of the DFF&O and identifies the documentation of project-specific demolition plans. The Comprehensive Process Buildings RD/RA Work Plan identifies the approaches to remove WAC-based prohibited items from the facilities during deactivation or as part of the demolition process. The Comprehensive Process Buildings RD/RA Work Plan describes the characterization approach that will be undertaken in the remaining former uranium process facilities (i.e., other than the three main process buildings which were covered in the Process Buildings Deactivation RD/RA Work Plan) to identify and remove the necessary uranium compounds held up in the processing systems, and render the facility amenable to open air demolition and the generated debris safe for placement in the OSWDF.

General Facilities Deactivation Removal Action Work Plan

A General Facilities Deactivation RAWP was submitted to Ohio EPA for review (DOE 2020) and concurred upon in March 2020, to document the planned approach for the deactivation of the plant support facilities listed in Attachment G of the DFF&O and within the scope of the *Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (DOE 2011) and the *Action Memorandum for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (DOE 2012). The General Facilities Deactivation RAWP identifies the documentation of project-specific plans for demolition of these facilities. The General Facilities Deactivation RAWP references the requirements of the WAC IP and the implementation approach to achieve these requirements. The General Facilities Deactivation RAWP identifies the approaches to remove WAC-based prohibited items from the facilities during deactivation or as part of the demolition process. The General Facilities Deactivation RAWP describes the planned approach to remove any remaining liquid or gaseous hazardous materials from the facility prior to open air demolition.

Deactivation Field Work Completion Reports

Deactivation Field Work Completion reports will be submitted to Ohio EPA for review and concurrence and will document the actions taken to complete deactivation and render the primary hazard facilities listed in the DFF&O Appendix H (i.e., three main processing facilities, X-700/700A, X-705/705E/705D, X-710, X-720) ready for demolition. The Deactivation Field Work Completion reports will document the efforts taken to remove the necessary quantities of radioactive and hazardous materials to render the facility safe for open air demolition and for the safe and compliant transport and placement of the generated demolition debris into the OSWDF. DOE, either within the Deactivation Field Work Completion reports or in separate correspondence, will summarize to Ohio EPA the efforts taken to characterize the remaining inventories of radioactive materials in a given facility and the basis of their decision to reduce the hazard category of a given facility and establish its acceptability for open air demolition. The Deactivation Field Work Completion reports will document the items, equipment, and inventories removed from the facility that were not WAC compliant, and will specifically identify any remaining non-WAC-compliant items that remain in the facility for removal during the demolition process.

Project-specific Demolition Remedial and Removal Action Design Plans

Project-specific Demolition Design plans will be submitted to Ohio EPA for review and concurrence to document the planned actions that will be undertaken to safely and compliantly demolish a given facility or group of facilities, both above and below grade. Plans for the removal of building slabs and foundations will address any soil removed incidental to the excavation of the building foundations. The Demolition Design plans will reference the requirements of this WAC IP and define the planned

approach to ensure the requirements of the WAC IP are achieved. Project-specific Demolition Remedial Action Design Plans and Removal Action Design Plans will be submitted for the facilities identified in Attachments H and G of the DFF&O, respectively. The Demolition Design plans will identify the expected quantities and types of waste to be generated by demolition. The Demolition Design plans will identify what actions will be taken to safely remove the remaining prohibited items from the D&D waste stream for possible treatment or direct off-site disposal. The Demolition Design plans will identify the steps that will be taken during demolition to render the debris acceptable for safe packaging (if necessary), transport, and disposal in the OSWDF, including size reduction, the application of spray encapsulating agents, or other targeted demolition practices. Any remaining characterization requirements necessary for completion during the demolition process to demonstrate WAC compliance will be identified in the Demolition Design plans.

The Project-specific Demolition Design plans will identify, either prior to or during removal of the building slabs and foundations and during excavation of the soil incidental to foundation removal to characterize and/or screen materials, any required characterization to ensure the exhumed soil and debris will meet the OSWDF WAC, including the alternate treatment standard for trichloroethene (TCE), and also to ensure no materials with concentrations of volatile organic compounds (VOCs) deleterious to the synthetic liners are transferred to the OSWDF. The Demolition Design plans will reference the approach to be taken to progressively evaluate collected data to determine whether the quantity and concentrations of an unexpected contaminant found across an investigation area exceeds the defined thresholds requiring its identification as a principal hazardous constituent (PHC). The Demolition Design plans will identify that DOE will engage with Ohio EPA to establish the appropriate treatment standards for any newly identified PHC.

Project-specific Demolition Field Work Completion Reports

Demolition Field Work Completion reports will be submitted to Ohio EPA for review and concurrence. The Demolition Field Work Completion reports will document the efforts taken to safely and compliantly demolish a facility or group of facilities, including management of generated wastes and collected water. The Demolition Field Work Completion reports will also document the efforts taken during demolition to segregate any remaining non-WAC-compliant materials from the D&D waste streams sent for on-site waste disposal. The Demolition Field Work Completion reports will provide a summary of the actions taken to comply with the requirements of this WAC IP, summarize the quantity and types of waste generated through the demolition process, the disposition path for this generated waste, and a delineation of the final end state achieved.

Excavation Work Plans

In accordance with the *Directors Final Findings & Orders for CERCLA Actions to Restore Natural Resources*, excavation work plans will be submitted for review and concurrence from Ohio EPA for the excavation of individual or groups of closed landfills and groundwater plume areas. These materials are being excavated to provide engineered fill to support debris placement in the OSWDF. The excavation work plans will define the goals of excavation, the expected limits of excavation, and the processes to be employed to manage and monitor the excavation areas, exhumed materials, and collected water. The excavation work plans will identify any required characterization either prior to or during excavations to further define the limits of excavation and to ensure the exhumed materials meet the OSWDF WAC. The excavation work plans will identify the steps to be undertaken to preclude exhumed landfill materials exceeding the PHC alternate treatment standard of 5,000 mg/kg (ppm) TCE from being transferred to the OSWDF. The excavation work plans will also identify the steps to be taken during the excavation process to preclude quantities of other high concentration (i.e., pure product phase) VOCs that could be deleterious to the OSWDF synthetic liners from being received into the disposal facility. The *Supplement*

No. 1 to the Remedial Investigation and Feasibility Study Report for the Site-wide Waste Disposition Evaluation Project: Proposed Corrective Action Management Unit and Area of Contamination Designations for Alternative 2 at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio (Corrective Action Management Unit [CAMU] Supplement to the Waste Disposition RI/FS) (DOE 2014a) outlines the approach for identifying additional PHCs for future uncharacterized waste streams, such as the existing landfills.

The excavation work plans will reference the approach to be taken to progressively evaluate collected data to determine whether the quantity and concentrations of an unexpected contaminant found across an investigation area exceeds the defined thresholds necessitating its identification as a PHC. The excavation work plans will identify that DOE will engage with Ohio EPA to establish the appropriate treatment standards for any newly established PHC.

Annual Report

An annual report on waste placement activities will be provided by DOE to Ohio EPA. This annual report will provide a summary, by waste type, of the materials placed into the OSWDF for a given year and cumulatively since placement activities were initiated in the OSWDF. This report will provide a running total of the amount of decomposable materials (i.e., Type 4, as defined in Section 2.3) placed in the OSWDF and each individual cell.

Other Documents

Additionally, as required by the DFF&O, the OSWDF O&M Plan has been submitted to Ohio EPA for review and approval/concurrence, as applicable. Ohio EPA concurrence was received in October 2019. The OSWDF O&M Plan, among other requirements, defines the approach for the transportation of waste from the generating areas to the OSWDF and waste staging, handling, and placement activities conducted at the OSWDF. The OSWDF O&M plan refines the requirements for three of the seven components of the WAC, as previously discussed:

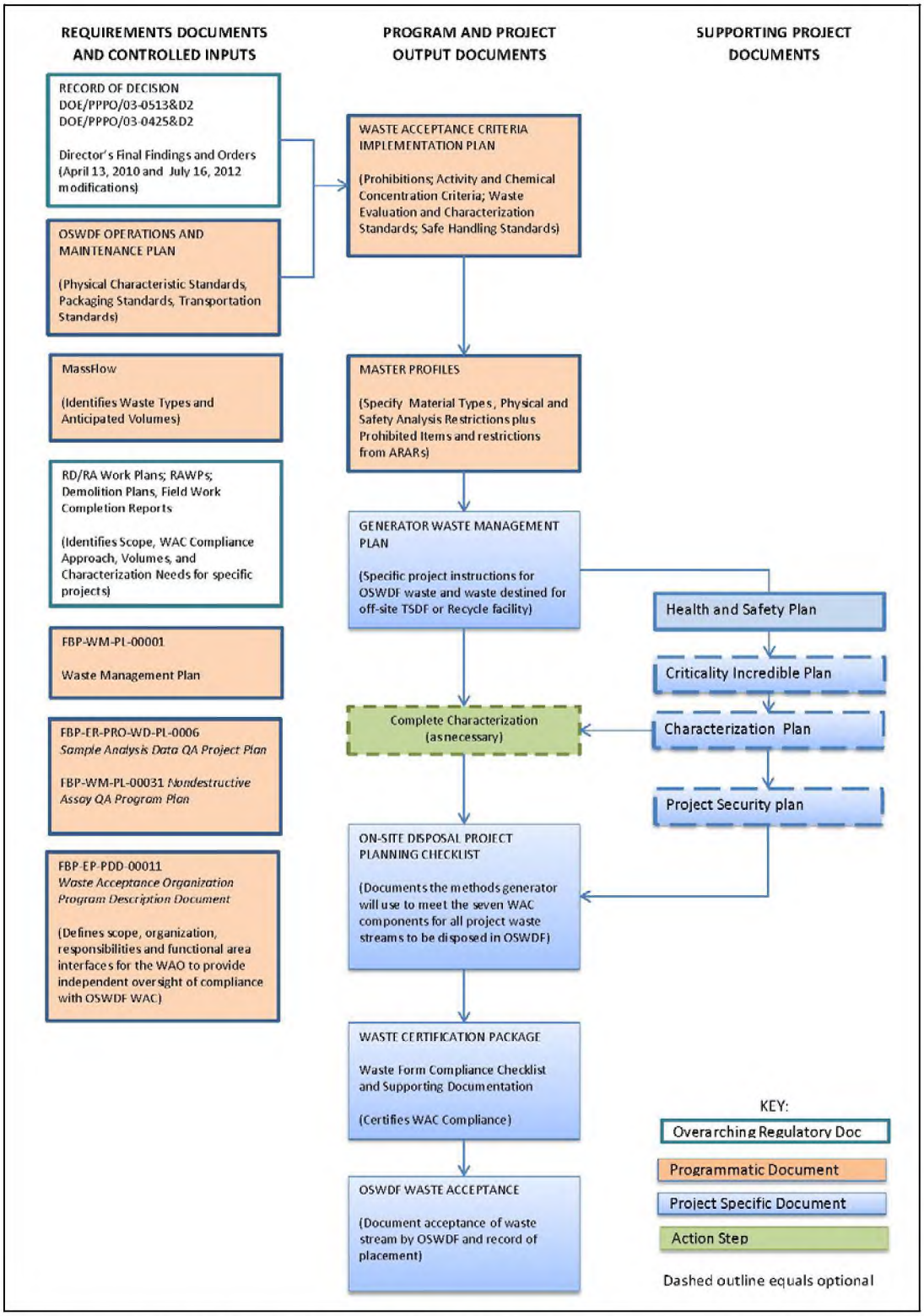
- Waste Physical Standards
- Waste Packaging Standards
- Waste Transportation Standards.

A number of other plans, procedures, and implementing documents may be developed to relay requirements to the generators and to assist the generator in documenting compliance. Figure 1.1 provides a representation of this documentation flow.

1.3 PLAN MODIFICATIONS AND REVISIONS

This WAC IP will support waste placement activities across the lifecycle of the D&D Project. Changes are anticipated to be required to this WAC IP to accommodate identified program efficiencies, lessons learned, and unanticipated field conditions.

The DFF&O establishes that the WAC be defined by seven discrete components. These components are defined in detail in Section 3.1. As reflected in Section 3.1, three of these components are an outgrowth of the OSWDF engineering design and operational planning process and have been refined through the submittal and approval/concurrence, as applicable, of the OSWDF O&M Plan. This WAC IP has been updated to incorporate those approved WAC components.



Note: The ROD, OSWDF O&M Plan, RD/RA work plans, RAWPs, Field Work Completion Reports and WAC IP are subject to the review and approval/concurrence, as applicable, by Ohio EPA. All other documents are available to Ohio EPA upon request.

Figure 1.1. Flow of Controlling Documents

This document provides guidance for compliance with the RODs. Detailed operating procedures and personnel training requirements for implementation of waste handling, packaging, transportation, tracking, and reporting activities will be authorized as necessary by DOE to ensure sitewide compliance with the requirements of this plan. These implementing procedures and training requirements are required, in addition to this WAC IP, to fulfill DOE conduct of operations obligations and other DOE Orders for material handling and on-site disposal. The generator organization, the WAO, and OSWDF operating procedures will be reviewed on a regular basis in accordance with performance document requirements and updated or refined where necessary to ensure that the requirements in this plan are consistently implemented throughout the project. Based on implementation of Integrated Safety Management System (ISMS) principles, procedures and governing documents will be revised based on lessons learned from D&D activities, waste disposition, and other PORTS-specific waste experiences.

1.4 OHIO EPA OVERSIGHT

Consistent with the requirements of the DFF&O, Ohio EPA will provide oversight of compliance activities including those associated with waste acceptance into the OSWDF. Consistent with the terms of the DFF&O, DOE will continue to provide Ohio EPA access to the site and project data and information. Many opportunities will be available to Ohio EPA, associated with the waste generation and acceptance process in the OSWDF, to provide this oversight. These opportunities include, but are not limited to, the following:

- Characterization
    - Review and concurrence with Deactivation and Demolition Field Work Completion reports as identified in Section 1.2
    - Review and approval/concurrence, as applicable, with Deactivation and Demolition RD/RA work plans as identified in Section 1.2
    - Participate in a walkdown for confirmation of WAC-compliance status for deactivated facilities (at Ohio EPA's discretion)
    - Collect and analyze split samples, as Ohio EPA deems appropriate, for sampling activities conducted under the DFF&O (Section XI)
    - Review of sampling results completed, tests, or other data collected by DOE related to implementation of the DFF&O (Section XI)
    - Direct oversight of waste generation, loading, transport, and placement activities (at Ohio EPA's discretion).
- Oversight of the WAO
    - Participation of Ohio EPA in WAO training
    - With DOE involvement, direct access to WAO reporting/information, functions, and personnel
    - Structured routine calls between DOE, WAO, and Ohio EPA (at Ohio EPA's discretion).

- Status and Reporting
    - Routine status review meetings with Ohio EPA, DOE, and DOE's D&D Contractor on WAC Implementation (at Ohio EPA's discretion)
    - Direct notification from DOE on the occurrence of anomalous conditions (e.g., wood, aerosol can, oversized debris receipt) in the OSWDF
    - Review of an annual OSWDF waste placement report (including the updates of tracked limits)
    - Review of monitoring reports per the OSWDF Performance Standards Verification Plan (PSVP) and applicable PORTS remedial action plans.
- Work Authorization or Hold Point
    - All changes to the OSWDF WAC or WAC IP must be approved/concurred with, as applicable, by Ohio EPA prior to implementation.

Many of these opportunities are discussed in this WAC IP.

1.5 WAC IMPLEMENTATION PLAN ORGANIZATION

The remainder of the WAC IP is organized as follows:

Section 2 – Overview of the OSWDF
Section 2 provides an overview of the OSWDF and the Impacted Material Transfer Area (IMTA) and explains the meaning of the CAMU designation. This section also discusses the Waste Acceptance Delivery Schedule.

Section 3 – OSWDF WAC
Section 3 explains the rationale for, and the seven components of, the OSWDF WAC: (1) Prohibited Items, (2) Activity and Concentration Criteria, (3) Waste Evaluation and Characterization Standards, (4) Waste Physical Characterization Standards, (5) Waste Packaging Standards, (6) Waste Safe Handling Standards, and (7) Waste Transportation Standards.

Section 4 – WAC Implementation
Section 4 describes the process for WAC implementation. This section discusses the Waste Acceptance System Requirements and presents the Waste Form Compliance Checklist.

Section 5 – Organization Roles and Responsibilities
Section 5 presents the different organizations that will be involved with generation of waste to be disposed of in the OSWDF, including the oversight organizations. This section also discusses the various support organizations that will interface with the waste generators and OSWDF Organization.

Section 6 – Training and Qualifications
Section 6 provides information on the training and qualifications required for personnel associated with the WAC implementation process.

2. OVERVIEW OF THE OSWDF

The OSWDF is designed for disposition of waste that will be generated as a result of the PORTS D&D Project. Demolition at PORTS is expected to generate 1.47 million cy of waste, most of which is intended for disposal in the OSWDF. Wastes not intended for disposal at the OSWDF will be transported off site for treatment and/or disposal. This section describes the OSWDF and the IMTA, including the meaning of the CAMU designation; the origin and nature of waste streams to be generated at PORTS; the requirements for waste types to be disposed in the OSWDF; waste characterization requirements; and the Waste Acceptance Delivery Schedule.

2.1 OSWDF AND IMTA DESCRIPTION

The function of the OSWDF is to isolate waste from the environment throughout the facility design life.

2.1.1 Corrective Action Management Unit

A CAMU is an area located within a facility that is used for managing remediation waste generated by the implementation of a corrective action or remediation at the facility. The Waste Disposition ROD, approved by Ohio EPA, allowed for designation of the OSWDF as a treatment, storage, and disposal CAMU and the IMTA as a treatment and storage CAMU. The CAMU designation, along with other authorizations such as *Ohio Revised Code* 3745.O2G, allows for the excavation, consolidation, and on-site disposal of Resource Conservation and Recovery Act of 1976, as amended (RCRA) and/or CERCLA remediation wastes and D&D wastes into the OSWDF, provided the wastes meet all WAC limits. At PORTS, the OSWDF CAMU provides an expeditious and safe mechanism to potentially remove and consolidate facility-wide contamination from various areas (e.g., closed landfill units within Perimeter Road) into the OSWDF.

All waste materials generated pursuant to the implementation of response actions conducted under the DFF&O are considered CAMU-eligible wastes. Supplement No. 1 to the Waste Disposition RI/FS, which is referenced in the Waste Disposition ROD, provides further insight on the definition of CAMU-eligibility and specifically identifies known CAMU-eligible waste streams that will be generated. The Supplement states that all waste resulting from building demolition as part of the remediation of PORTS, contaminated soil or groundwater remediation, and landfill excavation is considered CAMU-eligible, whether or not it is a hazardous waste. Personal protective equipment (PPE) and other secondary waste streams (including leachate treatment wastes) are also considered CAMU-eligible as they are generated during remediation efforts and not during industrial operations.

All waste materials generated pursuant to the implementation of response actions conducted under the DFF&O are considered CAMU-eligible wastes. Those remediation wastes considered CAMU eligible pursuant to the Waste Disposition ROD include: inventoried wastes, except as identified below, within, or on facilities designated under the DFF&O; demolition debris and other wastes generated by the implementation of D&D of the designated facilities; wastes from the excavation of closed pre-existing landfills; and wastes generated consequential to the implementation of these response actions and other contaminated materials generated from the treatment, transport, or staging of CAMU-eligible wastes (including leachate treatment wastes). Contaminated environmental media from the excavation of the closed land disposal units, groundwater plumes, and deferred corrective action units, are also considered CAMU-eligible wastes, as are any contaminated soil excavated incidental to building D&D and wastes generated consequential to the implementation of these response actions and other contaminated materials generated from the treatment (including wastewater treatment), transport, or staging of these CAMU-eligible wastes. Authorization for placement of excavated environmental media from contaminated areas, including closed landfills and existing groundwater plumes, in the

OSWDF as remediation waste and fill material is provided by the *Directors Final Findings & Orders for CERCLA Actions to Restore Natural Resources* (Ohio EPA 2018) in conjunction with the ARARs contained in the Waste Disposition ROD. As also stated in the Order, waste materials interred in areas to be excavated will be managed according to the substantive requirements of all applicable laws and regulations and will be placed in the OSWDF, assuming it meets the WAC under the Waste Disposition ROD.

The waste materials at PORTS that are not considered to be CAMU eligible are: (1) containerized inventories of hazardous or mixed waste stored in designated hazardous waste management units under the facility hazardous waste permit that were generated prior to issuance of the Waste Disposition ROD, and (2) containerized inventories of hazardous or mixed waste stored in designated satellite accumulation areas with generation dates prior to issuance of the Waste Disposition ROD.

Available historical sitewide characterization data, hazardous materials inventories, and the characteristics of CAMU-eligible wastes present at PORTS were evaluated as part of the CAMU-designation process. This process concluded that TCE represents the single PHC at PORTS present in sufficient concentration, volume, and areal distribution. Consistent with the requirements of the CAMU rulemaking, all CAMU-eligible wastes at PORTS are not subject to the land disposal treatment requirements in the *Ohio Administrative Code (OAC)* 3745-270, but shall not contain concentrations of TCE exceeding 5,000 ppm. Additionally, while CAMU-eligible, uncharacterized wastes from the excavation of the pre-existing closed landfills, foundations, and other locations will be subject to field screening and potentially other characterization prior to transfer to the OSWDF to ensure that no other contaminants are present in concentrations and volume across an investigation area warranting identification as a PHC. The CAMU Supplement to the Waste Disposition RI/FS outlines the approach for identifying additional PHCs for future uncharacterized waste streams, such as the existing landfills. Waste generation project managers will be briefed to the CAMU Supplement and the PHC process. Should a contaminant other than TCE be identified as qualifying for identification as a PHC, DOE will confer with Ohio EPA relative to the establishment of an appropriate treatment standard for the contaminant. DOE will define the approach to identifying any such contaminants in the Demolition Design plans and the Excavation RD/RA work plans for the excavation of building foundations and landfills and plumes.

Regardless of whether a given contaminant exceeds the threshold criteria for the establishment as a PHC, DOE will conduct pre-excavation screening and/or field screening during excavations to identify the presences of TCE exceeding the 5,000 ppm treatment standard or any other VOC in sufficient concentrations to be deleterious to the synthetic lining systems of the OSWDF. As previously identified, the Demolition Design plans and the Excavation RD/RA work plans will document the approach to characterized and/or screen the exhumed landfill and foundation materials for both TCE and other high concentration (i.e., free product concentration) VOCs.

2.1.2 On-site Waste Disposal Facility

The OSWDF is located in the northeast corner of PORTS. The OSWDF is designed to be resistant to degradation during its design life due to wind, precipitation, temperature, runoff, run-on, erosion, and other natural influences. It is also designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or any unplanned sudden or nonsudden release of waste to air, soil, groundwater, or surface water which could threaten human health or the environment. Active maintenance after closure will include surveillance, monitoring, and minor custodial care. Design and operation of the OSWDF are based on the applicable or relevant and appropriate requirements (ARARs), which are derived from landfill requirements under the Toxic Substances Control Act

of 1976 (TSCA); RCRA Subtitles C and D; state requirements under the *OAC* for solid and hazardous waste landfills; DOE Manual 435.1-1; Ohio Department of Health Radiation Control Program requirements for radioactive waste disposal facilities; and disposal requirements for asbestos, construction, and demolition debris. These requirements are detailed in the ARARs table presented in the Waste Disposition ROD.

The major components of the OSWDF include the liner system, final cover system, leachate management system, surface water management system, roads, support facilities, and utilities. Since the OSWDF design does not include a gas collection or venting system, the maximum volume of putrescible waste accepted into the facility is limited. The OSWDF is designed so that it can be progressively built in phases, utilizing adjacent cells that can be constructed, filled, and closed on a flexible schedule consistent with the final schedule for completion of the PORTS D&D Project.

Operation of the OSWDF is intended to:

- Support disposition of response action project waste
- Protect the OSWDF liner system, leachate management system, and final cover system
- Result in an OSWDF waste mass that is stable and does not undergo unacceptable levels of differential settlement
- Provide acceptable management of the generation of fugitive dust and the containment and routing of leachate and potentially impacted surface water
- Result in the disposal of impacted material in a manner that prevents unacceptable hazards to human health and the environment
- Achieve the long-term performance goals of the OSWDF.

The design features of the OSWDF, in conjunction with the underlying hydrogeology, were demonstrated to be protective for at least the 1,000-year performance period consistent with the requirements of DOE Order 435.1 and its implementing guidance.

Generators of classified material will be responsible for developing and implementing a project-specific Security Plan that will govern the management of this waste stream before it arrives at the OSWDF. The generator also is responsible for coordination with the OSWDF Organization during the project planning phase to ensure security controls are in place to meet all requirements for the compliant transfer and disposal of the waste. The OSWDF Organization will dispose of classified waste in accordance with OSWDF security protocols.

2.1.3 Impacted Material Transfer Area

The IMTA is an approximately 7-acre area, located adjacent to and managed by the OSWDF Operations Manager, which will be used when deemed necessary by the OSWDF Operations Manager to temporarily stage impacted material accepted for disposal at the OSWDF. The OSWDF Operations Manager is responsible for directing waste to this area for the temporary staging of impacted material that is not able to go directly from the project site to the OSWDF. Waste will be tracked as it is transferred through the IMTA, including waste for which ARARs specifically require three-dimensional final disposal coordinates to be recorded (e.g., polychlorinated biphenyl [PCB] waste). Prior to final closure of

the OSWDF, the IMTA will be remediated and impacted material from the IMTA remediation will be disposed in the OSWDF.

2.2 ORIGIN AND NATURE OF WASTE

The majority of waste generated will originate from the demolition of the three large gaseous diffusion process buildings (X-326, X-330, and X-333). The waste volumes from these process buildings include the structure of each facility, all process and industrial equipment within each facility, and facility slabs. However, large PGE (e.g., convertors, compressors, and coolers) from the X-326 Process Building will be shipped off site for disposal. Additional sources of waste will originate from the demolition of support buildings, parking lots, and roads, excavation of plumes and landfills within Perimeter Road, and wastes generated consequential to the implementation of the response actions (including contact wastes, spent PPE, and WAC-compliant wastewater treatment residues). This waste will include low-level (radioactive) waste (LLW), hazardous waste, TSCA waste, mixed waste (combinations of LLW, hazardous waste, and/or TSCA waste), and solid waste. The estimated waste volume and fill requirements summary from Appendix B of the *Comprehensive On-site Waste Disposal Facility Remedial Design/Remedial Acton Work Plan for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio; Phase III Balance of the On-site Disposal Remedy* (Comprehensive OSWDF RD/RA Work Plan) (DOE 2018b) is provided as Table 2.1.

Table 2.1. Waste Volume Summary

Description	Volume Estimate (cy)
D&D debris waste	1,100,000
Landfill debris not suitable for use as fill	242,000
Total Debris Waste	**1,340,000**
Residual soil from D&D	55,000
Total Ohio Consent Decree Soils	725,000
Total Engineered Fill Requirements from Landfills and Plumes	2,450,000
Total Engineered Fill Requirements	**3,230,000**

Source: DOE 2018b

D&D = decontamination and decommissioning
DOE = U.S. Department of Energy

The volumes presented in Table 2.1 include an estimate of the contaminated soil that will be excavated from landfills and plumes and used as engineered fill in the OSWDF. Additional debris will also be excavated from some of the landfills and will need to be dispositioned according to the OSWDF WAC. Engineered fill is required for the placement of waste in the OSWDF and will be obtained from contaminated site sources identified in the Waste Disposition Remedial Investigation/Feasibility Study (RI/FS) Report (DOE 2014b), the Waste Disposition Proposed Plan (DOE 2014c), the Waste Disposition ROD, and the Comprehensive OSWDF RD/RA Work Plan. Appendix B of the Comprehensive OSWDF RD/RA Work Plan includes relevant information from the *Business Case for the Excavation of Select Landfills and Impacted Soil Associated with the Groundwater Plumes for Use As Fill in an Engineered On-Site Disposal Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (Fluor-BWXT Portsmouth LLC [FBP] 2013). Excavation of this contaminated fill will occur under the following authorizations:

- Directors Final Findings and Orders for CERCLA actions to restore natural resources (X-740 Plume and X-231B Oil Biodegradation Plot)

- RD/RA work plans for excavation of contaminated fill under the Waste Disposition ROD for the X-701B Area, X-749/120 Area, 7-Unit Area, 5-Unit Area, X-749 Landfill, X-749A Landfill, X-749B (Peter Kiewit) Landfill, and X-231A Oil Biodegradation Plot

- Ohio EPA-issued Decision Document for the Deferred Units under the Ohio EPA Consent Decree

- Authorization for placement of excavated environmental media from contaminated areas, including closed landfills and existing groundwater plumes, in the OSWDF as remediation waste and fill material is provided by the *Directors Final Findings & Orders for CERCLA Actions to Restore Natural Resources* in conjunction with the ARARs contained in the Waste Disposition ROD. As also authorized in the Order, waste materials interred in areas to be excavated will be managed according to the substantive requirements of all applicable laws and regulations and will be placed in the OSWDF assuming it meets the WAC under the Waste Disposition ROD.

When practical, recycling and/or reuse of materials generated through D&D of the process buildings will be performed; such recycling will be performed in compliance with ARARs and DOE commitments and shall adhere to current procedures. Prior to implementing additional recycling programs, DOE will evaluate and document the benefits (including disposal volume savings) against the additional costs of completing the action, implementing issues, and efforts with implementing associated policy issues.

Some wastes are prohibited from disposal in the OSWDF. These wastes will be transported off site for treatment and/or disposal. Prohibited wastes are discussed in more detail in Section 3.

All facilities/structures that have been identified for D&D, along with contaminated soil areas, have been assigned a preliminary pre-D&D waste categorization to support project planning. The waste has been assigned category codes to identify engineering waste types (waste types 1 to 5) and regulatory waste types (radiological, hazardous, universal, etc.). Approximate volumes have been assigned and these volume estimates are housed in a living database (e.g., Mass Flow). This database is updated as new estimates are performed, as new facilities are added to the D&D scope, and as facilities undergo D&D, to track remaining waste volumes. The waste volume estimates were used to design the OSWDF capacity and will interface with the Waste Acceptance System Requirements (Section 4).

2.3 WASTE TYPE REQUIREMENTS FOR THE OSWDF

The waste type requirements for the OSWDF are defined in the *Impacted Material Placement Plan* (IMPP) (DOE 2019b), which is an appendix to the OSWDF O&M Plan and are summarized in this section. The OSWDF has been designed to accept five engineering waste types: soil, debris, large debris, decomposable, and special handling.

OSWDF operations are geared toward receiving roll-offs, dump trucks, and flat-bed trailers. Containers that cannot be shredded or crushed should be identified early in the project planning phase to facilitate placement as Special Handling waste. Additional details regarding container restrictions and the engineered waste types are provided in the IMPP. The generators must, therefore, prepare the waste in accordance with the waste types in order to be placed at the OSWDF.

The following impacted material types (as identified in Section 4 of the Ohio EPA-concurred IMPP) shall be used to classify each load of impacted material to be brought to the OSWDF for placement.

Type 1 – Soil and Soil-like Material: Type 1 materials are soils and soil-like materials that do not contain hard agglomerations greater than 12 in. in the greatest dimension. An example of a soil-like material which may be placed as Type 1 material is crushed concrete, because crushed concrete would behave like gravel. Type 1 materials may also contain a mixture of soil and non-soil-like material, as long as the mixture is compactable using standard construction equipment. The Type 1 impacted materials may be supplemented with clean soil and soil-like materials, obtained from OSWDF excavations, trenching, on-site stockpiles, or on-site borrow area excavations for use in placing other impacted materials such as D&D debris, PGE, etc., as described below. The physical characteristic requirements of Type 1 material are as follows:

- Type 1 impacted materials shall contain no hard agglomerations greater than 12 in. in the greatest dimension. All Type 1 material must be graded so as to permit compaction with standard construction equipment and measurement using the Standard Proctor test in accordance with the IMPP.

- Type 1 material used in the Select Materials layers of the OSWDF (a special Type 1 material) shall have a maximum particle size not exceeding 6 in. (per American Society for Testing and Materials [ASTM] C136 or D6913); for material other than impacted soil, at least 80 percent of the material shall be finer than a 1-in. particle size.

- Type 1 materials used in the Protective Layer of the OSWDF (a special Type 1 material) shall be either on-site soil material with a maximum particle size not exceeding 4 in. (per ASTM C136 or D6913) or granular drainage material meeting the material requirements of the Technical Specifications (Section 02240).

Type 2 – Debris: Type 2 impacted materials are materials that can be transferred, placed, spread, and compacted en masse. These materials can be spread in loose lifts of 21 in. ±3 in. thick and are compactable using a Caterpillar 826 landfill compactor or approved similar equipment. Type 2 impacted materials include concrete, metal, debris, and other miscellaneous waste resulting from D&D activities at the PORTS site. Examples include broken-up concrete foundations, bagged PPE, impacted soil mixed with broken-up concrete, crushed or size-reduced containers, and size-reduced piping and equipment. Type 2 impacted materials also include general building rubble and debris consisting of irregularly shaped metals and other components of the superstructure or substructure with a maximum length of 10 ft and a maximum width and/or thickness of 18 in. The physical characteristic requirements of Type 2 impacted material are as follows:

- Materials including, but not limited to general building rubble consisting of drywall; heating, ventilation, and air conditioning systems; electrical and plumbing systems; size-reduced compressors from X-330 and X-333; and minor equipment, shall be sufficiently reduced in size to be gradable into a 21 in. ± 3 in. lift by a Caterpillar D-8 bulldozer or equivalent.

- The maximum length and width of irregularly shaped metals or other components of a building superstructure or finish component shall be 10 ft, with a maximum thickness of 18 in. While this is not the intent of Type 2 material, it is acceptable as maximum dimensions for occasional individual pieces. These large pieces of debris would require careful manipulation during placement to be placed such that they minimize voids (i.e., lying flat on the grid subgrade). The Type 3 placement methodology is preferred for these larger items.

- Piping and cylinders with a nominal diameter larger than 12 in., except piping containing asbestos (Type 5), shall be split in half lengthwise or crushed to reduce void space and have a maximum length of 10 ft. Cylinders shall be visibly identifiable as empty and free of pressure (e.g., breached and clearly marked empty).

- Whole, shredded, or sheared scrap tires that meet one of the following conditions specified in *OAC* 3745-27-19(E)(8)(g): (i) burned and partially burned scrap tires, pyrolytic oil, and contaminated soils provided that those materials meet the definition of solid waste in *OAC* 3745-27-01; (ii) scrap tire pieces from a scrap tire recovery facility that are the byproduct of the processing of scrap tires; (iii) authorized beneficial uses of scrap tires pursuant to *OAC* 3745-27-78; or (iv) whole scrap tires which could not be processed by a scrap tire recovery facility. In the latter instance, the owner or operator of the scrap tire recovery facility shall complete a scrap tire shipping paper and record on the shipping paper why the scrap tires are not processable at the scrap tire recovery facility. This includes but is not limited to aircraft tires and forklift tires that are not processable due to their construction or scrap tires contaminated with mud or other materials that render the tires unsuitable for processing. Whole, shredded, or sheared scrap tires that meet one of these requirements but do not meet the size and void space limits for Type 2 material shall be classified according to Type 3 or Type 5 physical standards.

Type 3 – Large Debris: Type 3 impacted materials are large impacted materials that must be individually handled and placed in the OSWDF, and are suitable for having Type 1 material placed around and against them. These impacted materials are essentially incompressible using standard compaction equipment. Type 3 materials may include equipment or material such as block valves, bundles of transite panels, construction equipment parts, and broken concrete foundation members that can be placed no more than 4 ft high. Type 3 materials exclude equipment or material requiring specialized placement; such equipment or material will be classified as Type 5 impacted material, as indicated below. The physical requirements of Type 3 impacted material are as follows:

- Items must be suitable for having Type 1 material placed around and against them. The specific configuration of an item may make this difficult; in such cases, fill used around and against these items may be augmented with flowable, cohesionless materials, grout, or similar materials as approved by Nuclear Safety to assure no excessive voids will exist. While these items are acceptable to be placed as Type 3 impacted material, they should not be sent to the OSWDF without authorization from the OSWDF Operations Manager.

- The maximum cross-sectional dimension of an individual concrete member or other component of a building slab or substructure shall be 4 ft when the item is handled individually and is a regular rectangular shape having no concrete protrusions greater than 18 in.

- Transite panels should be bundled with like sizes. For instance, one bundle would contain transite panels that are 4 ft wide by 4 ft long and stacked up to 4 ft high, while another bundle might consist of transite panels that are 4 ft wide by 12 ft long stacked up to 4 ft high.

- In accordance with *OAC* 3745-54-14, containerized waste shall have no more than 10 percent internal voids (i.e., at least 90 percent full) or shall be very small containers (e.g., ampules).

- Intact (i.e., not split) tanks and cylinders with a maximum cross-sectional dimension of 4 ft may be placed as Type 3 if the internal void space is reduced per Section 8.2.1 of the IMPP.

- PCB containers and PCB articles that must be placed in a manner that prevents damage to either the container or the article shall be clearly identified.

- Containers holding free liquids cannot be placed in the OSWDF unless freestanding liquid has been removed, mixed with sorbent, solidified, or otherwise eliminated, or the container otherwise complies with *OAC* 3745-57-14. Sorbents used to treat free liquids must be nonbiodegradable.

Type 4 – Decomposable: Type 4 impacted materials are those that are subject to decomposition. Examples are vegetative waste from clearing and grubbing operations that has been determined to be contaminated as well as large quantities of wooden debris such as bulk paper products, pallets, utility poles, tree root structures, sewage plant waste, and railroad ties. Vegetative waste that is not contaminated shall not be placed in the OSWDF to the extent practicable. The total quantity of Type 4 impacted material acceptable for placement in the OSWDF shall be limited to 5,744 cy, and 479 cy per cell under a 12-cell configuration. The physical requirement of Type 4 impacted material is as follows:

- Materials shall be sized such that they can be placed within a 1-ft-thick lift with minimal voids.

Diligence should be exercised in excluding Type 4 materials from entering the OSWDF. The OSWDF design includes an 80-mil high-density polyethylene (HDPE) geomembrane as a component of the capping system. As Type 4 materials decay they generate gases, primarily methane, with a specific gravity less than that of air. These lighter-than-air gases have the potential to migrate upward through the waste column and create an uplift pressure on this confining geomembrane. The design of the OSWDF does not include a gas venting system, thereby minimizing penetrations through the cap and potential points of water infiltration.

Sections 2.4, 4.2, and 4.3 of this plan establish the roles and responsibilities of involved organizations in the characterization, segregation, classification, tracking, and acceptance of waste into the OSWDF. These responsibilities include the need to conservatively identify and segregate Type 4 materials from the bulk waste materials destined for placement in the OSWDF and to exercise care in tracking the quantity of Type 4 materials purposefully released for placement in the OSWDF. Generators and the WAO are to exercise diligence during demolition, excavation, and waste loading processes to exclude Type 4 materials from entering other waste types destined for OSWDF placement.

Prior to open air facility demolition, effort shall be expended by the waste generators with WAO oversight to identify and mark any Type 4 materials remaining in a facility to enable proper segregation prior to bulk debris waste loading and transportation to the OSWDF. Similarly, during landfill and foundation excavation, care shall be exercised by the waste generators and the WAO in a best efforts approach to segregate Type 4 materials from entering the waste materials loaded for transportation to the OSWDF. Excavation efforts shall include safely setting aside suspect Type 4 materials during bulk excavation for closer examination by field personnel.

OSWDF personnel and the WAO shall exercise similar best efforts within the footprint of the OSWDF in identifying and segregating for removal (and/or quantifying the amount) of incidental Type 4 waste materials present within loads of other waste types (i.e., Types 1, 2, 3, or 5) received into the OSWDF. Examples of Type 4 materials known to be present at the site and potentially within the site landfills include bulk paper products, wood framing, railroad ties, wood pallets, utility poles, tree root structures, sewage plant wastes, and other potential methane-generating materials.

Finally, the OSWDF Project Organization and the WAO shall exercise diligence and conservatism in the tracking of any compliant Type 4 waste purposefully released for placement within the OSWDF to ensure the established, albeit conservative, limits of 5,744 cy total for the entire OSWDF and 479 cy per cell (under a 12-cell configuration) are not exceeded.

Type 5 – Special Handling: Type 5 impacted materials are materials that require special handling, placement, and compaction. Examples include large PGE such as compressors, containerized waste, asbestos-containing material (ACM), broken pieces of transite panels, double-bagged asbestos, and asbestos-covered piping. Each item identified as Type 5 impacted material has special requirements related to size and placement methodology as identified in Section 10 of the IMPP. The description of Type 5 material in this section does not attempt to capture all possible Type 5 materials, as the Type 5 materials category is a catch-all for items that need special handling or do not fit another impacted material type. Additional clarification of sizing and specific Type 5 impacted materials follows:

- Whole compressors are included in this type. However, the IMPP does not currently provide placement requirements for whole compressors (either unfilled or partially filled) as they are not expected to be placed in this manner. If, however, placement of whole compressors is expected, then the placement methodology will be developed and detailed through the Engineering Change Request process. The placement requirements for whole compressors will then be incorporated into the IMPP as Type 5 Impacted Material. This change will then be submitted to Ohio EPA for concurrence as described in Section 10 of the IMPP.

- Converters will be segmented. Each segmented converter shell shall be appropriately size-reduced to meet the WAC as Type 5, Type 3, or Type 2 waste, balancing the costs to the project, the risks to workers, and the efficiency of final waste placement.

- Asbestos-containing pipe with a nominal diameter of 18 in. or less does not need to be split lengthwise. Asbestos-containing pipes 18 in. and less in diameter are encouraged to be nested (i.e., smaller diameter pipes placed inside larger diameter pipes). (Note: nesting of uranium-bearing pipe must be approved by Nuclear Safety).

- Asbestos-containing pipe with a nominal diameter of greater than 18 in. must be split lengthwise or internal void spaces must be filled prior to placement in the OSWDF. If asbestos is removed from the pipe and the pipe can be determined to be non-ACM pipe, it can be split lengthwise and placed as Type 2 impacted material.

2.4 WASTE CHARACTERIZATION

As previously defined in Section 1.2, DOE will be submitting work plans, design plans, and completion reports that will identify the characterization, prohibited item segregation, and other actions planned and undertaken during the deactivation and/or demolition of each facility listed in Attachments G and H of the DFF&O or existing land disposal units or plume excavations to demonstrate compliance with the WAC IP requirements. These plans and reports will be submitted to Ohio EPA for review and approval/concurrence, as applicable. Consistent with Section XI of the DFF&O, collected characterization data will be made available to Ohio EPA.

Deactivation, demolition, and excavation activities conducted consistent with the approved/concurred with RD/RA work plans and design plans, including characterization, will be executed by a prime contractor under the direction and oversight of DOE. The prime contractor will operate under a projectized organizational structure with stand-alone project execution teams staffed to execute

discrete D&D projects. These project teams will serve as the waste generating organization. Also, within the contractor organization will be project support organizations, such as the Waste Management Organization, that provide specialty services to all project teams. Finally, the Contractor organization will have independent oversight organizations outside the line reporting authority of the project execution or project support organizations. An example of an independent oversight organization is the WAO that will serve as the gatekeeper for the OSWDF, charged with the responsibility of ensuring only WAC-compliant materials enter the OSWDF.

Within the Contractor organization, discrete project-level documentation will be created to serve as both a communication tool to individual project organizations of waste acceptance requirements and as a basis in documentation for internal and external reviewers attesting to full compliance with the requirements of the WAC and this WAC IP. This documentation will include upfront planning documentation to ensure a clear understanding of the WAC requirements by the waste generating project organizations and documents attesting that all necessary internal approvals have been attained prior to generating a waste stream planned for placement in the OSWDF. The documentation will also include load-by-load tracking systems that will release and track each WAC-compliant load into the OSWDF and a tracking record of the placement location of each load in the OSWDF. This documentation will be available for inspection by the Ohio EPA consistent with the provisions of the DFF&O.

As part of this documentation process, waste generating organizations will work closely with the Waste Management Organization as part of the initial project planning phase of each project to complete a project-specific generator's waste management plan and the Project Planning Checklist for disposal of waste in the OSWDF. This process includes identification of each anticipated waste stream, identification of available process knowledge and quantitative data, and identification of the methods that will be used to meet WAC requirements (e.g., segregation and off-site disposal of prohibited items, size reduction of waste, uranium-235 activity limits), and any special requirements that are unique to the waste stream (e.g., health and safety, security). The WAO provides WAC guidance to project generators during this process and verifies the final checklist.

Existing facility, waste stream, or site-specific data will be evaluated to determine if it contributes information that will improve the understanding and characteristics of the waste generated. A Master Waste Profile Form is also selected for each waste stream as part of the Project Planning Checklist. The Profiles typically are broadly written as a collaborative effort by the OSWDF and projects, including the Waste Management Organization to accommodate similar wastes from multiple projects. As described above, guidance and oversight by the WAO will also be part of this effort. Each Profile specifies an OSWDF Waste Type (1 – 5), the acceptable range for chemical concentrations and radiological activity, and other limiting factors that are relevant to each OSWDF WAC Component.

It will be the generator's responsibility to ensure adequate characterization information has been obtained for a waste stream profile to accurately represent and verify the contents of each load of that waste stream transported to the OSWDF. To support characterization of a waste stream, generators will identify existing data and process knowledge information that can be applied to characterization of each identified waste stream. Additional information and data will be collected, as needed, when existing information is not sufficient to demonstrate compliance with the OSWDF WAC for the waste stream. Examples of additional information that may be necessary include intrusive sampling and analysis results, field measurement data such as nondestructive assay (NDA), visual inspection reports, and information from existing records as described in further detail in Section 3.2.3.3. The characterization will only be complete when the waste stream can be certified by the generator, and verified by the WAO, as meeting the OSWDF WAC. The WAO has the authority to require generators to obtain any

additional information it deems necessary to properly verify WAC compliance for the waste stream at any time in the planning and waste generation process.

While the scope of WAO's responsibilities begin in the project planning phase, they continue through final placement, including waste generation, packaging, transfer to the OSWDF, staging in the IMTA, and final placement in OSWDF cells. The WAO's signature is a hold point for releasing waste transport vehicles from the project generator location to the OSWDF; vehicles will not be released without this WAO authorization that the waste load meets WAC requirements. The responsibilities of the WAO Organization also include conducting second-tier verification at the OSWDF, consisting of the following:

- Field verification of waste loads sent to the OSWDF or IMTA, including visual verification of the load and load documentation
- Acceptance of each waste load for placement in an OSWDF disposal cell
- Acceptance of each waste load for staging at the IMTA for future cell placement.

The WAO will also monitor the waste to verify they do not include visually identifiable anomalies. If an anomaly is identified upon receipt at the OSWDF, the WAO confers with the OSWDF Operations personnel to determine the necessary corrective actions consistent with Section 4.4 of this plan. The WAO documents anomalous wastes and actions taken to address them.

The entire process of characterization, verification for WAC compliance, and anomaly management is further described in Section 4.

2.5 WASTE ACCEPTANCE DELIVERY SCHEDULE

The generators will coordinate with the OSWDF Organization to align waste delivery schedules and logistics, including providing staging options at the IMTA when the OSWDF is not receiving wastes (e.g., due to inclement weather). The construction, operation, and closure of the OSWDF are currently scheduled to occur continuously; however, this schedule is subject to change based on a number of constraints. Therefore, the OSWDF has been designed to be modular, that is, constructed, operated, and closed in phases. The IMTA will be used for staging wastes accepted for disposal at the OSWDF only.

This page is intentionally left blank.

3. OSWDF WAC

The WAC were developed to protect the workers, the public, and the environment during generation, transportation, handling, and placement of waste into the OSWDF, and also to protect the public and the environment over the long term after the OSWDF is closed. They include requirements that waste must meet before being placed in a disposal cell to ensure protection of human health, safety, and the environment. They include lists of waste prohibited from disposal based on regulations or agreements, radioactivity and chemical concentration criteria, and requirements for the size and shape of waste. The WAC also ensure that there is no unacceptable release through the engineered features of the OSWDF and protect the integrity of the final cap so it can function as designed for the long term.

3.1 OVERVIEW OF THE WAC DEVELOPMENT PROCESS

The WAC are derived based on the geology and hydrogeology of the OSWDF site; the engineered design of the OSWDF, including a multiple-layer cap and liner system; the type and amount of waste to be disposed; fate and transport modeling results; and regulatory requirements specifically addressed in ARARs.

The WAC consists of seven components which are outlined in the DFF&O. WAC Components 1 and 2 were developed in the Waste Disposition ROD and have been approved by Ohio EPA. WAC Components 3 and 6 have been refined in the WAC IP for Ohio EPA approval. WAC Components 4, 5, and 7 were refined in the OSWDF final design and O&M Plan for Ohio EPA approval/ concurrence, as applicable. The OSWDF O&M Plan received Ohio EPA concurrence in October 2019. The WAC components approved through the OSWDF O&M Plan have been incorporated into this document. Table 3.1 summarizes the basis and originating requirements document for each WAC component.

Table 3.1. WAC Development

	WAC Component	Basis	Requirements Document
1)	Prohibited Items	ARARs DOE Operational Decisions	Waste Disposition ROD
2)	Activity Criteria and Concentration Criteria	Fate and Transport Modeling DOE Order 435.1 Establishment of adjusted treatment standards for CAMU-eligible hazardous waste	RI/FS – Appendix I Performance Assessment Waste Disposition ROD
3)	Waste Evaluation and Characterization Standards	Waste Form Compliance Checklist	DFF&O WAC IP
4)	Waste Physical Characterization Standards	ARARs/TBCs OSWDF Design	OSWDF O&M Plan
5)	Waste Packaging Standards	DOE Orders 435.1-1, 460.1C, 460.2A 49 *CFR* *OAC* 3745.20-05	OSWDF O&M Plan
6)	Waste Safe Handling Standards	DOE Order 458.1 10 *CFR* 835	WAC IP
7)	Waste Transportation Standards	DOE Orders 460.1C, 460.2A 49 *CFR*	OSWDF O&M Plan

ARAR = applicable or relevant and appropriate requirement
CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
IP = Implementation Plan
O&M = operation and maintenance
OAC = Ohio Administrative Code
OSWDF = on-site waste disposal facility
RI/FS = Remedial Investigation/Feasibility Study
ROD = Record of Decision
TBC = to-be-considered (guidance)
WAC = waste acceptance criteria

Waste must satisfy each component of the WAC before it is disposed in the OSWDF. If a waste cannot meet one or more of the WAC components, it must either be treated and/or reconfigured to satisfy the WAC or disposed of off site. The generator is responsible for demonstrating compliance with each component of the WAC.

3.2 WASTE ACCEPTANCE CRITERIA

3.2.1 WAC Component 1: Prohibited Items

WAC Component 1 is a series of prohibitions that forbid waste from being disposed in the OSWDF unless associated requirements are met, and is divided into two parts:

- WAC Component 1A: Formal regulatory prohibitions that result from ARARs
- WAC Component 1B: DOE-elected prohibitions that result from DOE operational decisions to make the disposal facility even more protective or easier to operate.

The list of prohibited items as presented in the ROD is provided in Table 3.2.

Table 3.2. WAC Component 1: Prohibited Items

Prohibition/Exclusion	Rationale
Prohibitions (Component 1A)	
A prohibition on the acceptance of CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards.	40 *CFR* 268.40(a) *OAC* 3745-270-40(A)
A prohibition on the acceptance of CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards.	40 *CFR* 268.45(a) (for hazardous debris) 40 *CFR* 268.49(a) (for hazardous soil) *OAC* 3745-270-45(A) (for hazardous debris) *OAC* 3745-270-49(A) (for hazardous soil)
A prohibition on CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for the Principal Hazardous Constituent of TCE.	40 *CFR* 264.552(e)(4) *OAC* 3745-57-72(E)(4)
A prohibition on the acceptance of ignitable and reactive waste per RCRA.	40 *CFR* 264.312(b) *OAC* 3745-57-12(B)
A prohibition on the acceptance of TRU waste or HLW.	DOE Order 435.1 design constraints
A prohibition on the acceptance of refrigeration equipment with remaining refrigerant per Ozone Standards.	40 *CFR* 82.154(b)
A prohibition on the placement of acid batteries.	40 *CFR* 273.31 *OAC* 3745-273-31
A prohibition on the placement of bulk used oils in liquid form.	40 *CFR* 279.81 *OAC* 3745-279-81
Prohibition on the disposal of PCB-contaminated electrical equipment (except capacitors) containing free-flowing liquids.	40 *CFR* 761.60(b)(4)
Prohibition on the disposal of PCB-contaminated articles containing free-flowing liquid.	40 *CFR* 761.60(b)(6)(ii)
Prohibition on the disposal of PCB liquids drained from electrical equipment.	Must be disposed in an incinerator or high-efficiency boiler depending on concentration.
Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.	*OAC* 3701:1-54-10(B)(6)
Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.	*OAC* 3701:1-54-10(B)(4)

Table 3.2. WAC Component 1: Prohibited Items (Continued)

Prohibition/Exclusion	Rationale
Prohibitions (Component 1A) (continued)	
Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste.	*OAC* 3701:1-54-10(B)(5)
Prohibition on the acceptance of RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added).	40 *CFR* 264.314(a) *OAC* 3745-27-19(E)(8)(b) and (h)(i) *OAC* 3745-57-14(A)(E)
Prohibition on the placement of bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) in any CAMU except where placement of such wastes facilitates the remedy selected for the waste. (This prohibition applies to CAMU-eligible waste.)	40 *CFR* 264.552(a)(3) *OAC* 3745-57-72(A)(3)
Prohibitions (Component 1B)	
Off-PORTS generated waste.	A prohibition on the acceptance of waste from off-PORTS generating sources (excluding lab returns and treatability testing wastes and material currently stored on the Facility).
Compressors, Converters, and Coolers from X-326.	Components in-place within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O.
Enriched materials.	Containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
HLW = high-level waste
LDR = land disposal restriction
OAC = Ohio Administrative Code
PCB = polychlorinated biphenyl
PORTS = Portsmouth Gaseous Diffusion Plant
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic

3.2.2 WAC Component 2: Activity Criteria and Chemical Concentration Criteria

WAC Component 2, as defined within the DFF&O, requires that any waste considered for on-site disposal be evaluated against activity and chemical concentration criteria. The activity and chemical concentration criteria were developed as part of the Waste Disposition RI/FS and approved as part of the Waste Disposition ROD. The activity and chemical concentration criteria established as part of the WAC are defined as the maximum permissible activity or concentration level for a given contaminant of concern (COC) that may be placed into the OSWDF so as to ensure the long-term protectiveness of the facility. The long-term protectiveness requirements for the OSWDF are defined by the approved ARARs listed in the Waste Disposition ROD and include demonstrating that the OSWDF, when filled with waste and capped, will meet the acceptable exposure levels for carcinogenic and systemic toxicants to the reasonably maximally exposed individual as established by federal statute for a period of 1,000 years, as defined by the implementing guidance to DOE Order 435.1. To define the activity and concentration

criteria for each COC, numerical transport models were conservatively applied as a predictive tool to evaluate the movement, if any, of water and contaminants over a 1,000-year period or longer within the OSWDF and the underlying geologic formations to potential human and environmental receptors conservatively placed near the boundary of waste placement. This modeling took into consideration all observed and measured properties of the underlying formations, as well as the design features of the OSWDF, including the multilayered cover and liner systems.

On the basis of this modeling, it was determined that the protective features of the OSWDF and the underlying geology restrict the movement of the placed waste contaminants such that no measurable concentrations of any contaminant present in the waste will be detected above natural background levels at any location outside the OSWDF across the full 1,000-year performance period. On the basis of this modeling alone, no concentration- or activity-based limits are necessary to be imposed as part of the OSWDF WAC to meet any federal, state, or DOE Order-based regulation, standard, or guidance for the protection of human health or the environment related to the long-term performance of the OSWDF.

Other considerations, not associated with the waste containment design features of the OSWDF and the hydrogeological properties of the formation underlying the OSWDF, were further evaluated under this component of the WAC and under other WAC components (i.e., Components 1 and 6). As a result of these further evaluations, limitations have been established on the quantities or concentrations of certain radiological and chemical constituents permissible for disposal in the OSWDF. It should be noted that DOE has also restricted specific waste streams regardless of activity, concentration, or quantity that are present at PORTS from being considered for on-site waste disposal. DOE and Ohio EPA have established the restriction on receipt of these specific waste streams into the OSWDF as enforceable requirements through the approval/concurrence, as applicable, of the Waste Disposition ROD or this WAC IP. Specifically, as further discussed above and in Section 3.2.6, DOE has elected to exclude from consideration for on-site disposal uranium residues removed and containerized from PGE during the building deactivation process, Uranium Management Center lots, containerized nuclear material product inventories, full cylinder inventories, bulk contaminated nickel barrier materials generated from converter segmentation, and large PGE (i.e., converters, compressors, and coolers) from the X-326 Process Building. Additionally, as identified in Section 3.2.6, DOE has defined within this plan to exclude from receipt at the OSWDF the bulk depleted uranium oxides generated by the depleted uranium hexafluoride (DUF_6) conversion facility at PORTS.

As a result of this decision by DOE to limit the D&D waste streams present at PORTS from being considered for on-site disposal, there is at least a five order of magnitude (100,000 times) safety factor for the quantities of radioactive elements that will be placed into the OSWDF and the quantity of radioactive elements that could be safely received into the facility while attaining all federal, state, and DOE Order-based requirements for the long-term protection of human health and the environment.

While not restricted by the required modeling conducted to assess attainment of the long-term effective requirements for the OSWDF, the measured maximum concentrations of contaminants present in PORTS groundwater, including VOCs, were used to develop a conservative characterization of OSWDF leachate for purposes of assessing the potential for this leachate to cause degradation of the HDPE geomembrane components of the liner system for the OSWDF. The HDPE geomembranes proposed for the OSWDF were shown in the OSWDF Geomembrane-Leachate Compatibility Study (DOE 2017) to be compatible with the chemicals that may be present in the worst-case OSWDF leachate, including VOCs (e.g., TCE) and PCBs. The concentrations of VOCs in the conservatively characterized OSWDF leachate are comparable to VOC concentrations often found in hazardous waste and mixed solid waste landfill leachates.

TCE is the most significant VOC in contaminated soil and groundwater found at PORTS. TCE was determined to be the only PHC present at PORTS based on available environmental and waste characterization data. This determination was based on the relative risk to human health presented by the concentrations and volume of TCE present at PORTS and upon its areal extent of contamination within the soil, groundwater, and closed landfills at the site. Recognizing the design features of the OSWDF and the relative impermeability of the underlying formation, it was determined that the primary objective of any alternate treatment standard for TCE would be based on the protection of the synthetic lining from degradation due to interaction with TCE at high concentrations. As a result, an alternate treatment standard of 5,000 ppm was established for TCE in soil to ensure that the liner HDPE materials will not be exposed to excessive concentrations of TCE, including free product that could be deleterious to the integrity of the synthetic lining materials. This standard was established as a maximum threshold criteria for the acceptance of any contaminated soil, debris, or other waste material into the OSWDF.

As previously discussed, uncharacterized wastes from the excavation of the pre-existing closed landfills, foundations, and other locations will be subject to field screening and potentially other characterization prior to transfer to the OSWDF to ensure that no other contaminants are present in concentrations and volume across warranting identification as a PHC. The CAMU Supplement to the Waste Disposition RI/FS outlines the approach for identifying additional PHCs for future uncharacterized waste streams, such as the existing landfills. Should a contaminant other than TCE qualify for classification as a PHC, DOE will confer with Ohio EPA relative to the establishment of an appropriate treatment standard for the contaminant.

Regardless of whether the concentration and volume of a detected contaminant exceeds the threshold for a PHC, it is the intent of DOE to preclude the acceptance of any concentrations of VOCs that could have deleterious impacts on the synthetic liners of the OSWDF. During the excavation process, field screening instruments such an organic vapor analyzers and/or flame ionization detectors will be used as necessary to detect locations where such conditions may be encountered. Should elevated concentrations potentially detrimental to the synthetic liner materials be encountered during excavation, the suspect organic-saturated soil or waste from the landfill or foundations will be set aside until it is further characterized and a determination is made as to whether the materials can be safely placed into the OSWDF. DOE will identify the approach to identifying any such contaminants in the Demolition Design plans and the Excavation RD/RA work plans for the excavation of building foundations and landfills and plumes.

While TCE is the only constituent with a numerical WAC, DOE implements internal procedures and protocols implemented by all waste generators to develop waste management plans that document waste stream characterization, sampling needs, and waste handling and disposal requirements.

Table 3.3 provides WAC Component 2, activity criteria and chemical concentration criteria, derived through the site-specific modeling conducted as part of the Waste Disposition RI/FS and approved as part of the Waste Disposition ROD. It should be noted that while the activity concentrations of radionuclides are not limited by the analytical WAC listed in Table 3.3, no high-level wastes (HLW) or transuranic (TRU) wastes are permitted for disposal in the OSWDF. HLW is defined as spent (used) nuclear reactor fuel when it is accepted for disposal or waste materials remaining after spent fuel is reprocessed. TRU waste is defined as waste containing more than 100 nCi of alpha-emitting transuranic isotopes per gram of waste with half-lives greater than 20 years. PORTS does not possess any inventories of HLW or TRU waste. It should also be noted that additional restrictions have been placed on the

quantity and concentration of radionuclides acceptable for receipt into the OSWDF under WAC Component 6, Waste Safe Handling Standards, discussed in Section 3.2.6.

Table 3.3. WAC Component 2: Activity and Chemical Concentration Criteria

Waste Stream	Requirement
Hazardous waste-CAMU ineligible.	Treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* rule 3745-270-40.
Hazardous waste contaminated debris	Alternate treatment standards are located in *OAC* rule 3745-270-45.
Hazardous waste contaminated soil	Alternate treatment standards are located in *OAC* rule 3745-270-49.
CAMU-eligible hazardous waste.	TCE – 5,000 ppm.

CAMU = Corrective Action Management Unit
OAC = *Ohio Administrative Code*
TCE = trichloroethene

3.2.3 WAC Component 3: Waste Evaluation and Characterization Standards

As previously defined in Section 1.2, DOE will be submitting work plans, design plans, and completion reports that will identify the characterization, prohibited item segregation, and other actions planned and undertaken during the deactivation and/or demolition of facilities listed in Attachments G and H of the DFF&O or existing land disposal units or plume excavations to demonstrate compliance with the WAC IP requirements. These plans and reports will be submitted to Ohio EPA for review and approval/concurrence, as applicable. Consistent with Section XI of the DFF&O, collected characterization data will be made available to the Ohio EPA.

Within the Contractor organization, as part of the planning process to determine what, if any, additional characterization information that may be required to ensure WAC compliance, the first step in waste evaluation and characterization for on-site disposal is to identify the waste streams to be generated by any individual deactivation, demolition, and/or excavation projects. These waste streams will be documented in a project-specific generator's waste management plan. Wastes identified for on-site disposal in the generator's waste management plan must meet the requirements of WAC Component 3.

WAC Component 3 requires that the waste meets waste evaluation and characterization standards for the OSWDF. These standards define requirements for determining the waste type and compliance with WAC Components 1 and 2, including chemical analysis, visual inspection, and/or information which must be known to treat, store, or dispose of the waste in accordance with the ARARs derived from state solid and hazardous waste requirements, RCRA, TSCA, and DOE LLW requirements. Specifically, this provides documentation that the waste does not contain any prohibited items and meets the activity criteria, chemical concentration criteria, and safe handling criteria.

Every generator is responsible for characterizing waste intended for disposal at the OSWDF. The Waste Form Compliance Checklist is used to document that prohibited items have been removed. Analytical data or process knowledge may be used to demonstrate that waste meets the WAC. It should be noted that characterization information is not solely obtained from sampling and analysis. For example, process knowledge data may be obtained from review of Standard Operating Procedures or interviews with long-term workers, safety data sheets, product literature, product specifications, etc. which can provide data regarding what chemicals were used in a process and at what concentrations. This information can be used to derive the concentrations one would expect to be left behind in process residues.

For radionuclides, the generator must also document the basis of characterization, which may include but are not limited to, process knowledge, surveys, NDA, intrusive sampling and analysis, or a combination of these. The characterization documentation includes the basis used to confirm compliance with limits imposed on the quantity of radioactive materials in the waste to meet the nuclear safety requirements contained in WAC Component 6, Waste Safe Handling Standards. As discussed in Section 1.2, DOE will summarize to the Ohio EPA, either within the Project-specific Deactivation Completion reports or in separate correspondence for the identified seven former uranium processing facilities in Appendix H of the DFF&O, the efforts undertaken to identify and remove the necessary uranium compounds held up in the former processing systems to render the facility amenable to open air demolition and the generated debris safe for placement in the OSWDF. In addition to determining nuclide concentrations, the generators of radioactive waste are required to document their basis for demonstrating the waste does not meet or exceed the definition of TRU waste (i.e., containing 100 nCi/g or greater of alpha-emitting isotopes with an atomic number greater than 92). Waste generators are responsible for ensuring that waste is authorized for on-site disposal and meets the requirements of all WAC Components prior to transport of the waste to the OSWDF. The Waste Form Compliance Checklist is used to document this certification by the waste generator.

3.2.3.1 Identification of prohibited items

During the development of prohibited items for the OSWDF WAC, existing site information, as outlined below, was carefully evaluated. Once the potential site contaminants were identified, a complete evaluation of the formal regulatory prohibitions resulting from ARARs was conducted to finalize the list of prohibited items. The following site-specific information considered as part of this process included:

- Process Knowledge
    - Staff experience
    - Design drawings
    - Historical samples taken during plant operation
    - Former landfill waste streams, disposal limits, and operating history
    - Field in situ qualitative methods
    - Past studies, reports, and records/logs
    - Data from DOE sites that have generated waste from the D&D of processes or buildings similar to PORTS, such as the Oak Ridge Reservation.
- Analytical Sampling Results
    - Analytical characterization sampling results from samples of buildings, soils, and groundwater plume areas
    - PCB analysis of samples under TSCA
    - Compliance sampling under RCRA

  - Monitoring results from Industrial Hygiene or Radiation Protection sampling
  - Process equipment characterization.

- Field Characterization Sampling Results
  - Direct radiological measurements (Radiation Protection)
  - Smears to quantify surface radiological contamination
  - NDA measurements
  - Chemical field characterization techniques.

- Nuclear Material Control and Accountability Inventory
  - Hold-up inventory in six buildings (X-326, X-330, X-333, X-705, X-710, and XT-847)
  - Containerized uranium inventory at PORTS.

As described in Section 2.2, Mass Flow was used during the RI/FS to inventory the potential waste volumes resulting from D&D of the process buildings and other support buildings. During preparation of deactivation RD/RA work plans, Mass Flow inventories, along with process knowledge, existing data, and visual inspections, will be used in part to identify prohibited items present. The Process Buildings Deactivation RD/RA Work Plan, Comprehensive Process Buildings RD/RA Work Plan, General Facilities Deactivation RAWP, Project-specific Deactivation Completion reports, or Demolition Design plans will document the efforts undertaken to remove prohibited items from the facilities prior to or during the demolition process. The waste generator will provide certification to the WAO that all such prohibited items have been successfully removed prior to approval of a facility D&D waste stream for on-site disposal. The WAO will conduct building inspections focused on the removal of prohibited items, as well as provide oversight during the waste generation and loading processes to provide further assurance that no prohibited items remain in the waste intended for on-site disposal. Finally, the WAO will conduct observations within the OSWDF at the waste unloading location as a final check that no prohibited items were accepted into the OSWDF.

3.2.3.2 Characterization of radiological activity

As discussed in Section 3.2.2, fate and transport modeling indicated that the radioactive elements present in PORTS waste that DOE is planning for disposal in the OSWDF are five orders of magnitude lower than what could be safely permitted into the OSWDF and remain compliant with all federal, state, and DOE Order-based requirements for the long-term performance of the OSWDF and the protection of human health and the environment. While additional characterization would generally not be required on low concentration waste streams (such as the superstructure of buildings, foundations and transite panels), additional characterization will be necessary prior to on-site disposal for waste streams such as process piping to ensure compliance with the safe handling WAC requirements and with DOE Nuclear Safety regulations and orders. Additional radiological WAC requirements related to safe handling and disposal of waste are provided in Section 3.2.6.

3.2.3.3 Characterization of chemical concentrations

Fate and transport modeling indicated that the range of concentrations for most chemical contaminants present in PORTS waste are much lower than what can be placed into the OSWDF. The CAMU designation in the Waste Disposition ROD established an adjusted standard of 5,000 ppm for TCE. The 5,000 ppm concentration represents the final maximum TCE contamination in PORTS waste for receipt at the OSWDF based on the large amount of existing soil data collected under the Ohio Consent

Decree investigation efforts since the early 1990s for over 100 potential contaminants at PORTS, providing nearly 400,000 analytical results. CAMU-ineligible hazardous waste must meet the treatment standards provided in WAC Component 2. The limit of 5,000 ppm for TCE is an adjusted waste acceptance limits for soil and soil-like materials and waste materials, like those from the closed landfills and the plume soil. Process knowledge and historical soil sampling results will be used to identify TCE source areas and TCE plume soils. Based on the groundwater concentrations of TCE and the assumed soil/liquid partition coefficient of 10, the highest TCE concentrations in soil are expected to be less than 5,000 ppm. However, additional soil sampling (e.g., geoprobe samples) will be needed to confirm the TCE concentrations underneath the buildings and in limited areas within the plumes. Waste generating organizations will be responsible to demonstrate that waste identified for disposal in the OSWDF either meets waste acceptance limits for soil or has undergone the appropriate treatment and characterization to confirm compliance with the WAC for that waste. Additionally, as previously stated in Section 3.2.2, DOE will employ field screening techniques during the excavation of building foundations, landfills, and plumes to identify any soil or waste exceeding 5,000 ppm and to determine if any other contaminants are present in concentrations and volumes so as to trigger the thresholds for designation as a PHC or to be segregated from transfer to the OSWDF to mitigate potential impacts to the synthetic lining systems.

The following ARARs from the Waste Disposition ROD provide requirements for characterization of waste that must be met.

- Solid Waste (for CAMU-ineligible waste streams)
    - Determine if solid waste is hazardous or is excluded under 40 *Code of Federal Regulations (CFR)* 261.4 (*OAC* 3745-51-04), and
    - Determine if waste is listed as a hazardous waste in 40 *CFR* 261 (*OAC* 3745-51-30 through 3745-51-35), or
    - Determine whether the waste is identified in Subpart C of 40 *CFR* 261 (*OAC* 3745-51-20 through 3745-51-24), characterizing the waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used.
- PCBs
    - Disposal records shall include the three-dimensional burial coordinates for PCBs and PCB items.
    - Any person must assume that a capacitor manufactured prior to July 2, 1979, whose PCB concentration is not established, contains > 500 ppm PCBs. If date of manufacture is unknown, any person must assume the capacitor contains > 500 ppm PCBs.

3.2.4 WAC Component 4: Waste Physical Characteristic Standards

WAC Component 4 is the waste physical characteristic standards approved in the OSWDF O&M Plan and associated IMPP. The IMPP establishes the operational requirements to receive, place, and compact impacted material in the OSWDF in a manner that will (1) be protective of the OSWDF liner system, leachate management system, and final cover system; (2) result in an OSWDF waste mass that is stable and does not undergo unacceptable levels of differential settlement; (3) result in the disposal of impacted material in a manner that prevents unacceptable worker exposure to health and safety hazards; and (4) achieve the long-term performance goals of the OSWDF. As described in Section 2.3 of this WAC IP, the IMPP classifies impacted materials as Types 1, 2, 3, 4, and 5 based on handling, placement, and

compaction requirements. Placement requirements are provided for each type of waste as well as size and waste form restrictions. The Waste Physical Characteristics Standards WAC for the OSWDF finalized by the OSWDF O&M Plan are provided in Table 3.4.

Table 3.4. WAC Component 4: Waste Physical Characteristic Standards

Materials shall be segregated by waste type prior to delivery to the IMTA or OSWDF and shall meet the physical characteristic standards associated with the waste type.
Type 1 – Materials shall contain no hard agglomerations greater than 12 in. in the greatest dimension.
Type 1 – Type 1 material must be graded so as to permit compaction with standard construction equipment and measurement using the Standard Proctor test, in accordance with the IMPP.
Type 2 – Materials including, but not limited to general building rubble consisting of drywall; heating, ventilation, and air conditioning systems; electrical systems; plumbing systems; size-reduced compressors from X-330 and X-333; and minor equipment shall be sufficiently reduced in size to be gradable into a 21 in. ±3 in. lift by equipment similar to a Caterpillar D-8 bulldozer or equivalent.
Type 2 – The maximum length (and width) of irregularly shaped metals or other components of a building superstructure or finish component shall be 10 ft, with a maximum thickness of 18 in. Occasional large pieces of debris with these maximum dimensions may be accepted for placement as Type 2 material with prior authorization by the OSWDF Operations Manager (or his/her designee).
Type 2 – Piping and cylinders with a nominal diameter larger than 12 in., except the piping containing asbestos, shall be split in half lengthwise or crushed to reduce void space and shall have a maximum length of 10 ft. (Note: piping containing asbestos is Type 5).
Type 2 – Pressurized cylinders shall be visibly identifiable as empty and free of pressure (e.g., breached and clearly marked empty).
Type 2 - Whole, shredded, or sheared scrap tires may be placed as Type 2 waste as long as they meet the exception requirements of *OAC* 3745-27-19(E)(8)(g)(i)-(iv) and the size and void space limitations for Type 2 material.
Type 3 – Transite panels should be bundled with like sizes (e.g., one bundle would contain transite panels that are 4 ft wide by 4 ft long and stacked up to 4 ft high, while another bundle might consist of transite panels that are 4 ft wide by 12 ft long stacked up to 4 ft high).
Type 3 – Containerized waste shall have no more than 10 percent internal voids (i.e., at least 90 percent full) or shall be very small containers (e.g., ampules).
Type 3 – Intact (i.e., not split) tanks and cylinders with a maximum cross-sectional dimension of 4 ft may be placed as Type 3 impacted material if the internal void space is reduced in accordance with the IMPP Type 3 placement requirements.
Type 3 – Items must be suitable for having Type 1 material placed around and against them. The specific configuration of an item may make this difficult; in those cases, filling around and against these items may be augmented with materials approved by Nuclear Safety to assure that excessive voids will not exist. While these items are acceptable to be placed as Type 3, they should not be sent to the OSWDF without authorization from the OSWDF Operations Manager (or his/her designee).
Type 3 – The maximum cross-sectional dimension of an individual concrete member or other component of a building slab or substructure shall be 4 ft when the item is handled individually and is a regular rectangular shape having no concrete protrusions greater than 18 in.
Type 3 – PCB containers and PCB articles that must be placed in a manner that prevents damage to the container or article shall be clearly identified.
Type 3 – Containers holding free liquids cannot be placed in the OSWDF unless free-standing liquid has been removed and mixed with sorbent or solidified, or the container otherwise complies with *OAC* 3745-57-14. Sorbents used to treat free liquids must be nonbiodegradable.
Type 4 – Uncontaminated vegetative waste (e.g., waste from clearing, stripping, grubbing, mowing) shall not be placed in the OSWDF to the extent practicable. Vegetative waste disposed of in the OSWDF shall be included in Type 4 disposal volume tracking.

Table 3.4. WAC Component 4: Waste Physical Characteristic Standards (Continued)

Type 4 – Decomposable materials (i.e., organic-based materials that produce methane gas upon decomposition) shall be sized such that they can be placed within a 1-ft-thick lift with minimal voids. The total quantity of Type 4 impacted material placed in the OSWDF shall be limited to 5,744 cy total and 479 cy per cell under a 12-cell configuration.
Type 5 – Asbestos-containing pipe with a nominal diameter of greater than 18 in. shall be split lengthwise or the internal void space filled prior to placement in the OSWDF.
Type 5 – Converters will be segmented. Each segmented converter shell shall be appropriately size-reduced to meet the WAC as Type 2, 3, or 5 waste, balancing the cost of size reduction, the risks to workers, and the efficiency of final waste placement.
Type 5 – Placement of Type 5 material not previously addressed in the IMPP (e.g., whole compressors, large containers) requires development of special placement and compaction requirements that are approved by the Architect-Engineer Contractor responsible for design of the OSWDF.

Source: DOE 2019a

IMPP = Impacted Material Placement Plan (DOE 2019b)
IMTA = Impacted Material Transfer Area
OAC = Ohio Administrative Code
OSWDF = On-site Waste Disposal Facility
PCB = polychlorinated biphenyl
WAC = waste acceptance criteria

The OSWDF Project will be responsible, with the independent oversight of the WAO, to track the ongoing and cumulative placement of Type 4 impacted materials within individual cells and in the overall OSWDF. OSWDF and WAO personnel will ensure that the quantity limits for Type 4 impacted materials are not exceeded.

3.2.5 WAC Component 5: Waste Packaging Standards

WAC Component 5 defines the minimum packaging requirements for waste acceptance and transfer to the OSWDF. The majority of the waste will be transported and disposed of as bulk waste in which the transport vehicle serves as the package or container. Packaging requirements are specified by U.S Department of Transportation (DOT), RCRA, and TSCA. Transfer of hazardous material to the OSWDF at PORTS will be performed in accordance with the ARARs and TBCs. The on-site transfer of waste to the OSWDF shall be performed in a manner that will provide a level of safety equivalent to that provided if transportation were conducted in accordance with DOT requirements, as discussed in Section 4 of the OSWDF O&M Plan.

Table 3.5 provides the Waste Packaging Standards WAC for the OSWDF as finalized in the OSWDF O&M Plan. It should be noted that containers disposed of in the OSWDF must comply with other WAC requirements (e.g., physical characteristic standards for void space and prohibited contents, such as liquids).

Quantities of regulated beryllium-containing waste will be generated during the deactivation and demolition of the PORTS facilities. Specific considerations for the health and safety of involved workers including OSWDF, WAO, Waste Management, and DOE and Ohio EPA oversight personnel will be addressed in project planning documentation including the Deactivation and/or Demolition RD/RA work plans, waste profiles, and in the project-specific waste management plans. These considerations will include any additional waste preparation, packaging, or transportation requirements in addition to any required changes in training requirements, medical monitoring, or placement controls.

Table 3.5. WAC Component 5: Waste Packaging Standards

Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream.
All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate-equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6).
Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1).
Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b).
Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD."
Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal.
Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) and *OAC* 3745-20-05(A).
Regulated asbestos-containing containers shall be labeled in accordance with 40 *CFR* 61.150(b)(1)-(3) and *OAC* 3745-20-05(A).
Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure.
Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

Source: DOE 2019a

CFR = *Code of Federal Regulations*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
OAC = *Ohio Administrative Code*
OSWDF = On-site Waste Disposal Facility
PCB = polychlorinated biphenyl
WAO = Waste Acceptance Organization

3.2.6 WAC Component 6: Waste Safe Handling Standards

WAC Component 6, Waste Safe Handling Standards, provides limitations on waste disposed in the OSWDF based on the safety basis established under 10 *CFR* 830, Subpart B, *Nuclear Safety Management*. The safety basis documents the hazard and accident analysis of a facility, determines the final nuclear hazard categorization for the facility, and establishes requirements for control and mitigation of nuclear hazards. The safety basis for the OSWDF and associated leachate treatment system is documented in the *Hazard Analysis for the Operations of the Portsmouth Gaseous Diffusion Plant X-780 On-Site Waste Disposal Facility and Interim Leachate Treatment Facility* (Hazard Analysis) (FBP 2017 [or the most recent revision]). The Hazard Analysis categorizes the OSWDF and the associated leachate treatment system as "Less than Category 3" nuclear facilities (also referred to as "radiological facilities").

The hazard category for a facility is determined by evaluation of the radiological inventory of the facility and associated hazards to workers, the public, or the environment that could result from a variety of significant accident scenarios (e.g., explosion, major fire, truck overturn, nuclear criticality, aircraft crash, high wind dispersion). A "Less than Category 3" determination means the radiological hazards of the facility are appropriately addressed by the requirements of 10 *CFR* 835, *Occupational Radiation Protection*.

The Hazard Analysis includes within its scope a Nuclear Criticality Safety (NCS) Determination for the OSWDF and associated leachate treatment system. To categorize each facility as a "radiological facility", fissile material placed in the OSWDF and generated leachate must be assured to remain subcritical during all phases of waste cell operations, including active waste disposal operations and inactive, postclosure periods. All waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the NCS Determination for establishing criticality incredible. Based on the NCS Determination, the OSWDF Hazard Analysis provides mass (gram) limits for on-site disposal of fissile materials contained in individual wastes such as piping, tubing, and equipment that must be met to declare the item criticality incredible. Characterizing waste to obtain a criticality incredible determination is accomplished by waste generators following a process approved by NCS and includes use of process knowledge, NDA measurements, physical sampling, and visual inspection. The determination that waste meets nuclear criticality requirements for on-site disposal is documented in accordance with site NCS Program requirements. WAC established to maintain compliance with the facility safety basis are provided in Table 3.6. As previously stated, DOE will summarize to the Ohio EPA, either within the Deactivation Completion reports or in separate correspondence, the efforts taken to characterize the remaining inventories of radioactive materials in a given facility and the basis of their decision to reduce the hazard category of the facility to establish its acceptability for open air demolition and for the safe placement of the generated debris in the OSWDF.

In addition to establishing Waste Safe Handling Standards for compliance with the OSWDF safety basis, DOE is electing to prohibit certain waste streams and waste forms from disposal in the OSWDF. These prohibitions provide further confidence in the safety of waste placement and the post-closure care activities of the OSWDF. These prohibitions are also included in Table 3.6.

Table 3.6. WAC Component 6: Waste Safe Handling Standards

Requirement of OSWDF Safety Basis
Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis.
Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible.
Prohibitions
Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size-reduced for placement, and lab sample returns.
Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

DUF_6 = depleted uranium hexafluoride
NCS = Nuclear Criticality Safety
OSWDF = On-site Waste Disposal Facility
UMC = Uranium Management Center

As previously identified in Section 3.2.5, quantities of regulated beryllium-containing waste will be generated during the deactivation and demolition of the PORTS facilities. Specific considerations for the health and safety of involved workers including OSWDF, WAO, Waste Management, and DOE and Ohio EPA oversight personnel will be addressed in project planning documentation, including the Deactivation and/or Demolition RD/RA work plans, waste profiles, and the project-specific generator waste management plans. These considerations will include any additional waste preparation, packaging, or transportation requirements in addition to any required changes in training requirements, medical monitoring, or placement controls.

3.2.7 WAC Component 7: Waste Transportation Standards

As described in Section 4 of the OSWDF O&M Plan, transfer of hazardous material to the OSWDF at PORTS is performed in compliance with DOE Order 460.1C and in a manner that provides a level of safety equivalent to that provided if transportation were conducted in accordance with DOT requirements. Waste packaging and conveyance requirements will be documented and approved by the D&D Contractor Transportation Manager based on the characteristics of the individual waste stream. Documentation of this evaluation and approval of the package and conveyance for a discrete waste stream will be included in the project documentation that accompanies the Waste Certification Package submitted by waste generators. The WAO verifies compliance with WAC Component 7 before the vehicle is released from the generating project. The Waste Transportation Standards WAC finalized in the OSWDF O&M Plan are provided in Table 3.7.

Table 3.7. WAC Component 7: Waste Transportation Standards

Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the D&D Contractor Transportation Department will verify and monitor compliance [49 *CFR* 171.1(4)].
Regulated asbestos-containing material that is transported and disposed of in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)].
Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).
Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Source: DOE 2019a

CFR = *Code of Federal Regulations*
D&D = decontamination and decommissioning
OAC = *Ohio Administrative Code*
OSWDF = On-site Waste Disposal Facility
WAO = Waste Acceptance Organization

4. WAC IMPLEMENTATION

4.1 PROCESS OVERVIEW

Waste will be certified by project generators and verified by the WAO that it meets all seven components of the WAC, as described in Section 3, prior to acceptance by the OSWDF. The WAO authorizes wastes for transfer from the generator projects to the OSWDF at both the waste stream and waste load levels. A Waste Form Compliance Checklist for each waste stream and an OSWDF Transfer Log for each waste load is prepared by the project generator and verified by WAO signature. The WAO signature of these documents is a hold point for releasing conveyances from the project generator location.

In order to transport waste to the OSWDF for disposal, the waste must be separated into one of five engineering waste types (Section 2.3). Each waste type must then meet each of the seven components of the OSWDF WAC (Section 3). The generator will utilize one of the five master profiles (example profiles are included in Appendix A), generate project planning checklists (Appendix B), and complete the Waste Form Compliance Checklist (example checklist is included in Appendix C) to certify that the waste stream meets each component of the OSWDF WAC. The WAO will verify the checklist and and the transfer log for each truck load of waste prior to authorizing shipment. Approved transport vehicles will move waste from the waste generation site to the OSWDF for disposal or to the IMTA for staging by OSWDF personnel based on operational considerations.

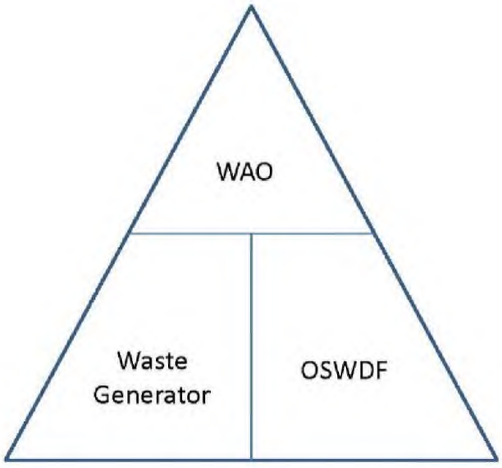
To ensure that WAC-approved waste is dispositioned in the OSWDF, the WAO will provide oversight from the point of generation to final disposition for each truck load of waste. The relationships and key responsibilities for the generator, the WAO, and the OSWDF Organization are depicted in Figure 4.1. This WAC IP is designed to bridge the gap between the generator and OSWDF Organization and define the process and interactions whereby the generator will document having met the requirement(s) of each of the seven components before acceptance at the OSWDF.

Waste must satisfy every component of the WAC before it is accepted at the OSWDF.

4.2 WASTE ACCEPTANCE SYSTEM REQUIREMENTS (DATA MANAGEMENT SYSTEMS AND PLAN)

The waste generator will conduct walkdowns and develop a project-specific generator waste management plan to be used in conjunction with project planning checklists. The project-specific generator waste management plans will contain the detailed instructions to the project for managing wastes in accordance with the WAC IP. Waste generating operations will also use input from various software systems to formulate waste projections that are provided to the WAO and OSWDF Organization for planning purposes. Waste generators are responsible for initiating tracking of waste upon generation to any interim staging locations outside the source area and to the OSWDF. Upon receipt of the waste, the OSWDF will be responsible for tracking during staging and final placement of waste. The WAO will verify that all wastes destined for the OSWDF are tracked from generation to disposition (lifecycle). Final waste disposition location coordinates and weights (or volumes) will be obtained from the OSWDF Operations Manager for each delivery and utilized to complete the lifecycle tracking of the waste. The software used to track waste inventory and waste placement in the OSWDF will meet the requirements of DOE Order 414.1D, *Quality Assurance*, and DOE Order 474.2, *Nuclear Material Control and Accountability*, as applicable.

Data and records management associated with waste generation, transport, and disposal at the OSWDF will be maintained per the site records management program.



Project Waste Generators	WAO "Eyes and Ears"	OSWDF Organization
Coordinate with Regulatory Planning and Waste Management to prepare RAWPs and RD/RA Work Plans Prepare Generator WM Plans and characterize waste Segregate waste not meeting OSWDF WAC for treatment and/or off-site disposal Certify waste compliance with OSWDF WAC Separate waste into one of five engineering waste types Generate waste tracking form at the point of generation	Verify RAWP and RD/RA response action with respect to waste characterization Visually inspect field operations and waste at point of generation for prohibited items Verify waste compliance with OSWDF WAC Verify waste is separated as one of five engineered waste types Track waste from point of generation to final disposal location Visually inspect field operations and waste at point of disposal for prohibited items Verify waste documentation meets the requirements of the WAC IP Monitor and track anomalous conditions and corrective actions	Prepare OSWDF Design Construct OSWDF and support facilities Operate and maintain OSWDF and support facilities, including transporting and disposing of waste in OSWDF Monitor OSWDF, support facilities, and environmental media Document waste volumes and cell placement locations Maintain OSWDF records Prepare OSWDF-specific reports, as required by DOE and Ohio EPA

DOE = U.S. Department of Energy
IP = Implementation Plan
Ohio EPA = Ohio Environmental Protection Agency
OSWDF = on-site waste disposal facility
RAWP = removal action work plan
RD/RA = remedial design/remedial action
WAC = waste acceptance criteria
WAO = Waste Acceptance Organization
WM = waste management

Figure 4.1. Relationship Between and Roles and Responsibilities of the Project Waste Generators, WAO, and OSWDF Organization

4.3 PROCESS FOR DEMONSTRATING WAC COMPLIANCE

This section presents the process required for generators to demonstrate they meet all seven components of the WAC prior to receipt at the OSWDF.

Any waste destined for the OSWDF will be adequately characterized and certified by the generator as meeting the OSWDF WAC using the Waste Form Compliance Checklist (Appendix C). This checklist serves as a tool to prompt the required supporting documentation or description of actions taken to fully characterize the waste stream and select the appropriate Master Waste Profile. The WAO is responsible for verifying generator and OSWDF compliance to the WAC; the Construction Quality Control representative will verify OSWDF compliance to the WAC and OSWDF waste placement design and operations standards (Section 7).

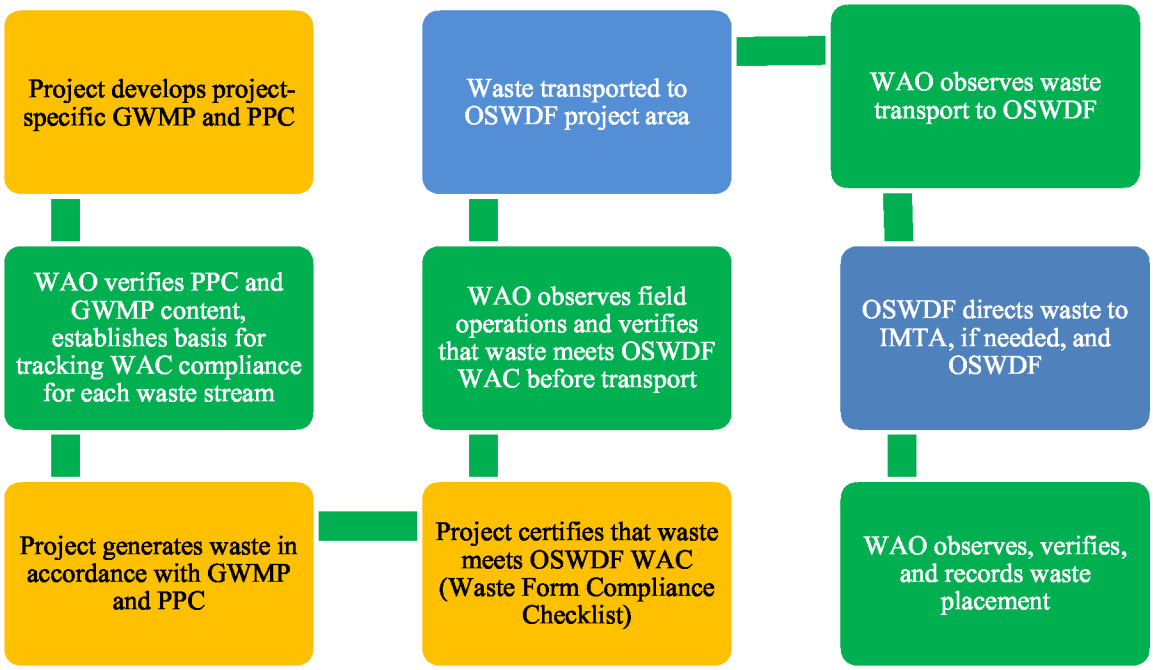
The IMTA is described in Section 2.1.3 and will be used as needed by the OSWDF Operations Manager to provide temporary storage capacity to allow staging for optimization of waste placement. Impacted material received at the OSWDF will have already been prepared and conditioned as necessary at the generator's site (e.g., size reduction) to meet OSWDF disposal requirements in accordance with the Master Waste Profiles (Appendix A).

The five waste types accepted at the OSWDF are defined in the IMPP and discussed in Section 2.3. A complete profile of each waste type is provided in Appendix A to aid the generator in classification of waste streams intended for final disposition at the OSWDF. Figure 4.2 shows the process for the generator in coordination with the WAO to plan for and track waste generation, prepare documentation to support waste characterization, and certify waste intended for disposal at the OSWDF.

The process for evaluating/documenting/verifying compliance with the seven WAC components is represented in the Waste Form Compliance Checklist. The generator must identify the applicable Master Waste Profile and complete the checklist with documentation certifying that the waste meets the requirements of the waste profile. This checklist, along with other required documentation, comprises the Waste Certification Package that is verified by the WAO as conforming to the requirements before waste is transported to the OSWDF. Figure 4.2 depicts the high-level steps of waste planning, generation, shipment, and disposal.

Diligence should be exercised in excluding Type 4 materials from entering the OSWDF. The OSWDF design includes the installation of a continuous heat-sealed 80-mil HDPE layer as part of the capping system. As Type 4 materials decay they generate gases, primarily methane, with a specific gravity of less than that of air. These light gases have the potential to migrate upward through the waste column and create an uplift pressure on this confining synthetic layer The design of the OSWDF does not include a gas venting system so as to minimize penetrations through the cap and possible points of water infiltration. Sections 2.4, 4.2, and 4.3 of this plan establish the roles and responsibilities of involved organizations in the characterization, segregation, classification, tracking, and acceptance of waste into the OSWDF. These responsibilities include the need to conservatively identify and segregate Type 4 materials from the bulk waste materials destined for placement in the OSWDF and to exercise care in tracking any Type 4 materials purposefully released for placement in the OSWDF. Generators and the WAO are to exercise diligence during demolition, excavation, and waste loading processes to exclude Type 4 materials from entering other waste types destined for OSWDF placement. Prior to open air facility demolition, effort shall be expended by the waste generators with WAO oversight to identify and mark any Type 4 materials remaining in a facility to enable proper segregation prior to bulk debris waste loading and transportation to the OSWDF. Similarly, during landfill and foundation excavation, care shall be exercised by the waste generators and the WAO in a best efforts approach to segregate

Type 4 materials from entering the waste materials loaded for transportation to the OSWDF. Excavation efforts shall include safely setting aside suspect Type 4 materials during bulk excavation for closer examination by field personnel. OSWDF personnel and the WAO shall exercise similar best efforts within the footprint of the OSWDF in identifying and segregating for removal of incidental Type 4 waste materials present within loads of other waste types (i.e., Types 1, 2, 3, or 5) received into the OSWDF. Examples of Type 4 materials known to be present at the site and potentially within the site landfills include bulk paper products, wood framing, railroad ties, wood pallets, telephone poles, tree root structures, sewage plant wastes, and other potential methane-generating materials. Finally, the OSWDF Project Organization and the WAO shall exercise diligence and conservatism in the tracking of any compliant Type 4 waste purposefully released for placement within the OSWDF to ensure the established, albeit conservative, limits of 5,744 cy total for the entire OSWDF and 479 cy per cell (based on a 12-cell configuration) are not exceeded.



Blue indicates an OSWDF-related step of the waste tracking process.
Green indicates a WAO-related step of the waste tracking process.
Yellow indicates a generating project-related step of the waste tracking process.

GWMP = Generator Waste Management Plan
IMTA = Impacted Material Transfer Area
OSWDF = On-site Waste Disposal Facility
PPC = Project Planning Checklist
WAC = waste acceptance criteria
WAO = Waste Acceptance Organization

Figure 4.2. Waste Tracking Process from Generation to OSWDF

4.4 MANAGEMENT OF UNEXPECTED CONDITIONS

Unexpected conditions may occur at any point during the course of a complex project, but the key to managing these anomalies effectively and efficiently is planning and establishing procedures to properly respond to these events in a way that mitigates risk. The detailed planning of the OSWDF has resulted in inherent safety features in the rigor of the design in addition to the added benefits of the geologic setting. The waste acceptance process, including oversight by the WAO, DOE, and Ohio EPA, builds in yet another safety factor to ensure that risk to human health and the environment remains well below

established limits. The remaining key factor in complying with the WAC and minimizing risks to personnel, facilities, or equipment is managing unexpected conditions.

Unexpected conditions occurring at the generator's site will be addressed in the project-specific generator waste management plan. Unexpected conditions occurring at the OSWDF are addressed in this plan and will predominantly take the form of receipt of anomalous waste at the OSWDF that does not meet the WAC. Once identified, the generator will be responsible for retrieving the anomalous item(s) for disposition in accordance with their project-specific waste management plan.

OSWDF personnel will respond to an unexpected condition using a graded approach that is commensurate with the risk or impacts (Section 4.4.2) and in accordance with applicable programs and procedures. DOE and Ohio EPA will be notified by WAO or OSWDF personnel of the detection of any anomalies in the OSWDF.

Application of this graded approach ensures that the generators and the WAO learn from these events and use the information to improve their process for anomaly detection at the point of generation, and that appropriate response action(s) are implemented.

4.4.1 Anomaly Detection and Graded Response Approach

Recognizing that elimination of the receipt of anomalous waste is in the best interest to OSWDF operations, it is acknowledged that some anomalies may get through even the best implemented anomaly prevention processes. The OSWDF Operations personnel will be trained to look for various anomalous waste items and conditions. Anomalies are anticipated to most likely occur in waste Type 2 (debris) given the varied nature of this waste profile. Type 2 impacted materials include concrete, metal, debris, and other miscellaneous waste resulting from D&D activities. Examples of these materials include broken-up concrete foundations, general building rubble and debris of irregularly shaped metals and other components of the superstructure or substructure, bagged PPE, and impacted soil mixed with broken-up concrete. When such a situation arises, the anomalous waste item or condition will be evaluated using a graded response approach. Each time an anomalous waste item or condition is encountered, the event will be investigated, as appropriate, under the direction of the OSWDF Operations Manager.

Based on the anomalous waste item or condition, the appropriate tier response will be implemented as described in Section 4.4.2; however, in most cases, the generator will be responsible for picking up the item(s) and dispositioning in accordance with the project-specific generator waste management plan if the item cannot be rendered acceptable at the OSWDF. This graded response approach offers flexibility in responding to such issues with varying degrees of impacts to the waste generator while maintaining appropriate safety to OSWDF Operations personnel. Additionally, this graded approach allows for protecting the physical structures associated with the OSWDF and ensuring regulatory compliance.

In the unlikely event that any of the PORTS internal review mechanisms discover that any waste not compliant with the OSWDF WAC was received into the OSWDF or disposed of incorrectly, DOE and Ohio EPA will be notified. DOE and Ohio EPA may mutually agree to modify the reporting obligations for identified anomalous conditions based on operational experience.

4.4.2 Risk-based Anomaly Response Plan

The graded response to anomalous waste items and conditions involves the assignment of the various WAC to a tier level based on a risk/impact priority. For example, the level of response to the discovery of debris exceeding physical WAC will be less than the discovery of a pressurized container. Risk or impact-based priorities include: (1) protection of human health, (2) safety, and (3) protection of the environment. Applying these priorities and matching them to a specific set of response actions, up to and including cessation of placement operations, allows for the various WAC to be placed in a tier from low to high impacts. Table 4.1 provides an explanation of the three tiers, examples of unexpected conditions, and appropriate response actions. Each tier is given a graded response that aligns with the actual or perceived severity of the anomaly. The intent is that the series of response actions associated with each tier level would be implemented following an incident in which a specific categorized WAC is violated. If recurrence of anomalies occurs, the tier response may be elevated to the next tier as a means to effect sufficient changes in anomaly detection by the waste generator.

A trend analysis will also be performed by the WAO as a means to ensure the necessary rigor required by a waste generator-established measurement period. Should the trend analysis show a continued negative trend, the tier response will be elevated for additional action. However, pending a demonstration that additional actions taken on the part of the waste generator have shown to be effective (i.e., by a marked reduction in incidence of anomalies), the response will return to the previous tier, as appropriate.

Table 4.1. Risk-based Graded Response Approach

Example Risk or Impact	Response Action
1 – Low Probability of Impacts to Personnel, Facilities, or Equipment	
Tier 1 applies to the WAC that may be associated with low probability of impacts to personnel, facilities, or equipment. Such anomalous conditions include, but are not limited to: • Physical parameters of waste being outside those that can be easily handled at OSWDF • Compactable containers being not amenable to compaction.	• Upon first incident, verbal or email notification from OSWDF Operations Manager to the waste generator, the WAO, DOE, and Ohio EPA • OSWDF Operations Manager logs the event on the Anomalous Waste Log (see Appendix D) • Waste observed at the OSWDF or IMTA that does not meet WAC is either corrected at the IMTA or OSWDF or returned to the point of origin, at the OSWDF Operations Manager's discretion. • Waste generator to communicate the issue to field staff and return documentation (e.g., email) to OSWDF Operations Manager within 1 business day indicating such action • Waste shipments may continue during implementation of actions, unless otherwise directed by OSWDF senior management, the WAO, or DOE potentially following consultation with Ohio EPA. • Additional Tier 1 response infractions per week trended with an increasing trend as measured over 4 consecutive weeks may lead to an elevation of response action to Tier 2 or 3, as appropriate

Table 4.1. Risk-based Graded Response Approach (Continued)

Example Risk or Impact	Response Action
2 – Moderate Probability of Risk or Exposure to Operations Personnel or Potential Impacts to the Facility	
Tier 2 applies to the WAC that may be associated with a moderate potential for unacceptable risk or exposure to OSWDF Operations personnel or have a potential for impacts to the facility. Such anomalous conditions include various administrative WAC in which violations would result in removal of the item. Such anomalous conditions include, but are not limited to: • Detection of a prohibited item such as a lead acid battery.	• Written notification from the OSWDF Operations Manager to waste generator and the WAO • Verbal or email notification from OSWDF Operations Manager to the waste generator, the WAO, DOE, and Ohio EPA • OSWDF Operations Manager logs the event on the Anomalous Waste Log • Waste observed at the OSWDF or IMTA that does not meet WAC is returned to the point of origin. • Waste generator to communicate the issue to field staff and return documentation (e.g., email) to OSWDF Operations Manager within 1 business day indicating such action • Nonconforming condition addressed and reported in a problem report and other reporting vehicles (as appropriate) in accordance with the applicable QAPD and other governing documents/procedures • Waste generator to take appropriate actions to close any open issues associated with the problem report and other reporting vehicles (as appropriate) in a timely manner, with notification provided to OSWDF Operations Manager • Waste shipments may continue during implementation of actions at the discretion of the OSWDF Operations Manager and the WAO, unless otherwise directed by OSWDF senior management, WAO, or DOE potentially following consultation with Ohio EPA. • Additional Tier 2 response infractions per week trended with an increasing trend as measured over 4 consecutive weeks may lead to an elevation of response action to Tier 3, as appropriate
3 – Immediate or High Probability of Risk or Exposure to Operations Personnel	
Tier 3 applies to the WAC that may be associated with or have a high potential for unacceptable risk or exposure to OSWDF Operations personnel, such as with an actual release. Such anomalous conditions include, but are not limited to, those that may result in: • Violations of the WAC that may result in injury due to fire, explosion, gaseous release, or other reaction (e.g., containers under pressure that have not been ruptured) • Violations of the WAC that may result in exposure of personnel to fumes/vapors, particulates, or fibers (e.g., noncontainerized friable ACM).	• Email notification from the OSWDF Operations Manager to waste generator and the WAO • Verbal or email notification from OSWDF Operations Manager to DOE and Ohio EPA • Waste placement and shipments suspended • OSWDF Operations Manager logs the event on the Anomalous Waste Log • Problem Report and NCR filed by OSWDF Quality Assurance • Waste generator to take appropriate actions to close NCR prior to restart of shipments, including submission of a CAP • OSWDF Project Director to approve CAP (corrective actions to include removal of anomalous item if safe to do so) • OSWDF Operations Manager to issue notice of restart of shipments • Placement will not resume until all CAP-identified pre-start items are verified as complete by the OSWDF Project and WAO. Restart subject to the discretion of DOE following consultation with Ohio EPA based on the severity and/or frequency of the anomalous condition.

ACM = asbestos-containing material
CAP = corrective action plan
DOE = U.S. Department of Energy
IMTA = Impacted Material Transfer Area
NCR = nonconformance report
Ohio EPA = Ohio Environmental Protection Agency
OSWDF = on-site waste disposal facility
QAPD = Quality Assurance Project Description
WAC = waste acceptance criteria
WAO = Waste Acceptance Organization

This page is intentionally left blank.

5. ORGANIZATION ROLES AND RESPONSIBILITIES

This section outlines the roles and responsibilities of the waste generator, the OSWDF Organization, and the WAO with respect to waste generation, waste transportation and acceptance, and waste disposal. As described in Section 1.1, the term "waste generator" refers to the collective team of personnel responsible for the safe and compliance collection, characterization, packaging, and shipping of wastes generated from a defined project. The WAO is organizationally distinct from both the waste generation project organizations and the OSWDF Organization. The organizational structure provides for a WAO project team that will be part of an organization that functions independently of both the waste generation project and the OSWDF to ensure it is independent of project delivery schedule and budget pressures. The waste generator, OSWDF Organization, and the WAO will be supported by numerous other support functional organizations such as waste management, radiological protection control, and security, which are needed to perform unique and/or specialized services/functions in support of WAC implementation. These functional organizations that will support the project team are discussed in more detail in Section 5.4.

The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto (Ohio EPA 2012) is the legal agreement between DOE and Ohio EPA regarding the D&D of PORTS, and that agreement establishes DOE as the lead agency and provides for Ohio EPA oversight of specific D&D activities. DOE has regulatory oversight for management of radiological constituents. These roles will continue through D&D of PORTS, including operation and eventual closure of the OSWDF once its volume capacity is reached. Collectively, these functions provide for an integrated process and the roles and responsibilities that are delineated are aimed at assuring compliance with this WAC IP.

5.1 WASTE GENERATION

Waste generation is the set of activities that will be performed by designated generator organizations (e.g., X-326 D&D Project) to dispense the soil, debris, or ancillary waste as prescribed in the applicable regulatory decision document and associated procedures. The waste generator is responsible for certifying that waste meets the OSWDF WAC and separating waste into the appropriate engineering waste type in accordance with the IMPP.

The waste generators are responsible for the following tasks during waste generation:

- Use existing, or develop new, procedures to describe and control the work processes necessary to execute the WAC implementation requirements as defined in Sections 3 and 4 of this document.
- Characterize waste using process knowledge or other data to identify waste, including potential anomalies to the WAC.
- Record and maintain documentation to establish the basis for generator certification that the waste meets the OSWDF WAC as defined by Master Waste Profiles (Section 4 and Appendix A).
- Certify waste compliance with the OSWDF WAC.
- Separate waste into one of five engineering waste types in accordance with the IMPP.
- Arrange with the OSWDF Organization for the transportation, staging, and security of waste.

The WAO provides independent oversight of the waste generators and is responsible for verifying waste compliance with the OSWDF WAC. The WAO also verifies that waste documentation prepared during waste generation meets the requirements of the WAC IP. The WAO is responsible for the following tasks during waste generation:

- Verify that the RD/RA work plan, response action scope development, characterization basis, anomaly detection protocols and project handling plans will result in waste that can be verified to meet WAC components 1 through 3.

- Verify that information collected to satisfy WAC components 1 through 3 is assessable and documented to support certification.

- Verify field operations adhere to project-specific plans for collection, sizing, packaging, and loading, and that they result in waste shipments that comply with WAC components 4 through 6; and ensure no anomalous waste.

- Perform verification prior to release of transport vehicle to ensure all waste and documentation meet the requirements of WAC component 7.

5.2 WASTE TRANSPORTATION AND ACCEPTANCE

The OSWDF Organization is responsible for waste transportation and acceptance at the OSWDF. OSWDF transportation personnel will transport waste in dedicated trucks. OSWDF Operations personnel will temporarily stage waste at the IMTA, as needed, and transport the waste for disposal in the OSWDF. All waste intended for placement in the OSWDF will be tracked from point of generation to final placement at the OSWDF. It is DOE's intent to track waste materials released from the generating site to acceptance within the boundary of the OSWDF with an electronic manifesting system. This system will provide real-time capability through bar coding or radio frequency identification for the WAO to ensure that only waste approved for release is received at the OSWDF. In the event of a system failure or outage, a fall-back paper manifesting systems will be proceduralized and made available for use by the WAO.

A documented record (i.e., electronic tracking form) will be created and maintained. Copies of these records will be sent to the respective generator organization and to the OSWDF Organization for their record files.

Waste acceptance activities will include both a performance role and an oversight role. The combination of responsibilities provides additional surety that waste material intended for disposal in the OSWDF meets the WAC and is transported from the respective response action areas to the OSWDF in a manner that does not compromise the physical condition of the waste and description, data, and other records used to describe the waste material. The WAO is organizationally distinct from both the waste generation project organizations and the waste placement (i.e., OSWDF) organization. The organizational structure provides for a WAO project team that will be part of an organization that functions independently of both the waste generation project and the OSWDF to ensure it is independent of project delivery schedule and budget pressures.

The OSWDF Organization is responsible for the following tasks during waste transportation:

- Provide overall logistics and scheduling support to waste generators
- Ensure security controls are in place prior to transport of classified waste

- Transport waste to the OSWDF Project Area
- Record weight or volume of waste received
- Temporarily store waste at the IMTA, as needed
- Waste acceptance at the OSWDF.

The WAO is responsible for verifying that waste transported to the OSWDF is accompanied by the appropriate waste tracking documentation in accordance with the WAC IP. A WAO representative will review waste tracking documentation and complete portions regarding receipt of waste at the OSWDF prior to releasing the waste for placement in the OSWDF or staging at the IMTA. The WAO may reject waste that does not meet the OSWDF WAC or does not have the required documentation.

The WAO is responsible for the following tasks during waste transportation:

- Verify adherence to waste-tracking protocols from the point of waste generation to final disposal location

- Verify waste documentation is compliant with the WAC IP during waste transportation.

5.3 WASTE DISPOSAL

The OSWDF Organization is responsible for waste disposal. The OSWDF Organization will manage the construction of the OSWDF, place accepted waste within its boundaries, compact the waste after placement, cap waste with fill material as needed for debris, map the final OSWDF cell configuration, and coordinate all required environmental and worker safety and health monitoring activities associated with the OSWDF. The OSWDF Organization will also be responsible for surface water and leachate management and other support functions addressed in the OSWDF O&M Plan.

The OSWDF Organization is responsible for the following tasks during waste disposal:

- Placement of waste in designated areas within the OSWDF in accordance with the approved/ concurred with, as applicable, OSWDF design, OSWDF O&M Plan, including the IMPP, and applicable security requirements.

- Recording final location (coordinates) of the placed material

- Compaction and capping of the waste as required by OSWDF design specifications

- Maintaining waste disposal records.

The OSWDF Project will be responsible, with the independent oversight of the WAO, to track the ongoing and cumulative placement of Type 4 waste materials within individual cells and within the overall OSWDF. OSWDF and WAO personnel will ensure that the acceptance limits for Type 4 materials are not exceeded.

The WAO provides independent oversight of the OSWDF Organization and is responsible for verifying that waste documentation prepared during waste disposal meets the requirements of the WAC IP. The WAO has the authority to stop work at any point in the process for both safety and WAC compliance purposes.

The WAO is responsible for the following tasks during waste disposal:

- Verify waste placement within the designated cell at the OSWDF
- Visually inspect field operations and waste in the OSWDF for prohibited items
- Monitor, track, and trend anomalous conditions encountered and assess the effectiveness of corrective actions taken to address such situations
- Verify waste documentation is compliant with the WAC IP during waste disposal.

5.4 MISCELLANEOUS FUNCTIONAL SUPPORT

Building D&D, soil excavation, and other waste generating activities require a significant amount of contractor and subcontractor functional support to make the project successful and to ensure the safety and protection of human health and the environment. Functional organizations such as Radiological Protection Control, Safety and Health, and Quality Control are a few examples of the skills needed by generators to perform the work. Waste Management personnel will assist in characterization and classification of waste and will be responsible for dispositioning the waste that does not meet the OSWDF WAC and is being shipped off site to DOE and commercial treatment and disposal facilities.

Table 5.1 includes a listing of functional support organizations that will be required to support elements of this WAC IP, and therefore will be trained to the WAC IP and qualified to perform their specific functions.

Table 5.1. Functional Support Organizations Required to Execute the WAC IP

Waste Management
NMC&A
Nuclear Criticality Safety
Nuclear Safety
Radiation Control
Environmental, Safety, and Health
Security
Data Management
Records Management
Quality Assurance

NMC&A = Nuclear Material Control and Accountability

As field conditions, regulations, and other factors drive change in the WAC IP process, the functional support groups will maintain qualifications of personnel supporting waste generator, WAO, and OSWDF Operations activities.

Table 5.2 summarizes the roles and responsibilities of the key organizations responsible for executing the WAC IP.

Table 5.2. WAC IP Roles and Responsibilities Crosswalk

To: / From:	Generator Projects	WAO	OSWDF Organization	DOE	Ohio EPA
Generator Projects	– – –	• Develop waste type specific information • Certify waste to one of five Master Waste Profiles • Complete Waste Form Compliance Checklists	• Develop waste delivery schedule • Clarify mode of waste delivery and disposal equipment needs • Communicate delays • Share AHA, security, or any unique S&H hazards • Segregate Type 4 waste	• Execute D&D and other waste generation activities per the Ohio EPA-approved/concurred with RD/RA plans and RAWPs or other authorizing documents	• Provide project access to Ohio EPA and information as requested (with DOE approval)
WAO	• Verify waste profile information • Verify Waste Form Compliance Checklists • Verify shipments • Communicate anomaly detection methods and/or issues	– – –	• Verify waste disposal operations are compliant to the WAC • Support waste delivery schedule and OSWDF logistics • Verify Type 4 waste disposal volume tracking	• Fulfill mission to be the independent verification arm of the WAC IP process • Provide actual waste disposal metrics • Report anomalies	• Provide actual waste disposal metrics • Report anomalies
OSWDF Organization	• Accept compliant waste when delivered • Maintain staging area • Report any anomalous conditions	• Report any anomalous conditions	– – –	• Meet/exceed all IMPP objectives • Provide project access to DOE and information as requested	• Meet/exceed all IMPP objectives • Provide project access to Ohio EPA and information as requested (with DOE approval)
DOE	• Assess and oversee generator activities • Approved/concurred with RD/RA documents • Provide regulatory authority for radioactive waste	• Verify waste forms are correct. Audit and oversee WAO activities • Review reporting of anomalous conditions	• Audit and oversee OSWDF activities	– – –	• Propose new WAC or WAC changes to Ohio EPA • Provide project access to Ohio EPA and information as requested (with DOE approval)
Ohio EPA	• Oversee generator activities • Concurs with RD/RA documents	• Oversee WAO activities	• Oversee OSWDF activities	• Approve additions or changes to the WAC	– – –

AHA = activity hazards analysis
D&D = decontamination and decommissioning
DOE = U.S. Department of Energy
IMPP = Impacted Material Placement Plan
IP = Implementation Plan
Ohio EPA = Ohio Environmental Protection Agency
OSWDF = on-site waste disposal facility
RAWP = removal action work plan
RD/RA = remedial design/remedial action
S&H = safety and health
WAC = waste acceptance criteria
WAO = Waste Acceptance Organization

This page is intentionally left blank.

6. TRAINING AND QUALIFICATIONS

6.1 INTRODUCTION

In order to complete the D&D and cleanup mission at PORTS safely and compliantly, all site personnel are provided PORTS General Employee Training. This general training provides fundamental and essential information on PORTS site hazards, site postings, alarms, other alerting systems, and other general information necessary to keep workers safe and working in a compliant manner. Waste generation, waste disposal, and oversight activities require additional training to their specific task and generally require specific education, certifications, and other qualifications to effectively perform the scope of work outlined in the WAC IP. Sections 6.2 and 6.3 describe the requirements and systems necessary to implement and manage training and qualifications programs, respectively, at PORTS.

6.2 TRAINING

The PORTS D&D Contractor maintains a training database that tracks the minimum training requirements of all site employees consistent with DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. In addition, workers and their supervisors may agree on additional training for proficiency and employee development. To implement the requirements of this WAC IP, waste generators (e.g., D&D projects), WAO staff, and OSWDF operators will need additional training to meet their job responsibilities. Additional implementing procedures and the training requirements system (e.g., Greenlight©) will provide detailed information on WAC IP personnel training needs. Table 6.1 provides an example of expected training areas required for D&D/remediation workers, disposal facility operators, and WAO personnel.

Table 6.1. Potential Training Areas for WAC IP Personnel

• Radworker I or II (as applicable)	• PORTS General Employee Training	• HAZWOPER 40-hour
• Training on the PORTS WAC Implementation Plan	• Project-Specific Anomalous Waste Training	• Waste Certification Training
• RCRA Hazardous Waste	• TSCA Waste Training	• DOE Order 435.1 *Radioactive Waste Management* training
• Integrated Safety Management Systems	• 10 *CFR* Part 830 Subpart A *Quality Assurance*	• Project-Specific AHAs/JHAs

AHA = activity hazard analysis
CFR = *Code of Federal Regulations*
DOE = U.S. Department of Energy
HAZWOPER = Hazardous Waste Operations and Emergency Response
JHA = job hazard analysis
PORTS = Portsmouth Gaseous Diffusion Plant
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TSCA = Toxic Substances Control Act of 1976
WAC = waste acceptance criteria

6.3 QUALIFICATIONS

Similar to training requirements, the qualifications needed by individuals and organizations supporting the PORTS WAC implementation process will vary by individual and be specific to their role. The PORTS D&D Contractor maintains a qualifications database compliant to DOE Order 426.2 and DOE Order 414.1D, *Quality Assurance*. As gaps are identified, education, certifications, and/or training will be available to fill needs in the organizations and help employees meet the qualifications necessary to safely, compliantly, and efficiently perform the work.

For future new hires to support execution of the WAC IP, qualification requirements (or equivalent years of experience, as appropriate) will accompany job postings. Human Resources will post positions, including qualifications needed, and the contractor will fill positions as needed. Hiring practices will include consideration of applicant experience, qualifications, diversity, and other hiring metrics.

7. SUMMARY

This section summarizes the key concepts associated with WAC implementation at the OSWDF. This plan is intended to serve as a bridge between waste generators and the OSWDF Organization and will be supported by detailed procedures. As described in Section 1.1, the term "waste generator" refers to the collective team of personnel responsible for the safe and compliant collection, characterization, packaging, and shipping of wastes generated from a defined project. An overview of the generator, the WAO, and OSWDF Organization functions associated with waste disposition activities is illustrated in Figure 7.1 and described in the following sections.

7.1 WASTE GENERATION

Waste planning will begin with the waste generator conducting walkdowns and using input from various software systems to formulate waste projections to develop a project-specific generator waste management plan and project planning checklists. The waste generator will be responsible for maintaining appropriate documentation to objectively demonstrate compliance with this WAC IP; other applicable federal, Ohio EPA, or DOE regulatory requirements; the *Sample Analysis Data Quality Assurance Project Plan (SADQ) at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (SADQ) (DOE 2014d); and applicable functional area procedures. This objective evidence will support the generator's WAC compliance certification documentation (Appendix C, Waste Form Compliance Checklist) which must be accepted by the WAO before transport of the material to the OSWDF. The waste generator will be responsible for providing the appropriate controls to assure the integrity of the waste generation process and to generate and maintain appropriate certification documentation. Unexpected conditions and/or waste anomalies will be managed as described in Section 4.4.

7.2 WASTE TRANSPORTATION AND ACCEPTANCE

Waste generators will be required to demonstrate that characterization of waste intended for disposition in the OSWDF was accomplished in a manner consistent with regulatory and WAC requirements, and compliant with the site quality assurance program, the SADQ, and applicable site procedures. Documentation to demonstrate compliance with the OSWDF WAC will include, as appropriate, evidence that previous characterization data, sampling and analysis, and/or process knowledge is used to describe the waste and that it fits under any one of the five Master Waste Profiles that align with the five engineering waste types.

The WAO will independently review and verify the generator's objective documentation to assure it adequately supports certification of the waste in question. The WAO will also review the certification documentation and verify that the waste meets the OSWDF WAC.

Once waste generated by a D&D or remediation generator, project, or facility has been certified by the generator as containing only WAC-compliant waste and verified by the WAO, OSWDF personnel will schedule transportation from the waste generation site to the OSWDF. The OSWDF Organization will transport waste from the generating project sites to the IMTA and OSWDF in dedicated trucks. Nearly all PORTS waste will be transported in bulk by dump truck or flatbed truck and each truck will be tracked using a barcode (or other means) to facilitate electronic tracking of shipments and accountability. Waste transportation is addressed in the OSWDF O&M Plan.

The OSWDF Organization will accept waste once it has undergone the final verification by the WAO at the point of generation and packaging, or as otherwise directed by the WAO.

7.3 WASTE DISPOSAL

The OSWDF Organization will place accepted waste within its boundaries, compact the waste after placement, cap waste with fill material as needed for debris, map the final OSWDF cell configuration, and coordinate all required environmental and worker safety and health monitoring activities associated with the OSWDF.

The WAO will track waste from the point of generation to the final disposal location and verify that waste documentation meets the requirements of the WAC IP. A documented record (e.g., electronic tracking form) will be created and maintained in accordance with PORTS record management protocols.

7.4 SAFETY MECHANISMS

For OSWDF WAC implementation, there are many prohibited items and opportunities to create potential noncompliant generation, or disposal, activities. Specifically, the OSWDF WAC implementation process and this WAC IP have the following features:

- Clear WAC defined in the DFF&O and CERCLA decision documents
- WAC implementation process approved/concurred with, as applicable, by the regulators through this document
- OSWDF disposal facility design and operations approach concurred with Ohio EPA through supporting documentation
- Clear delineation of key waste management roles and responsibilities, which include:
    - Removal action, remedial action, and D&D projects are waste generators – they will certify that their waste meets the OSWDF WAC.
    - The WAO will provide on-the-ground oversight and independent verification that the waste generation, certification, transfer, and disposal process is compliant with the WAC, thus minimizing the impact to and being protective of human health, safety, and the environment.
    - OSWDF Operations accept the waste with completed documentation of WAC compliance (i.e., certified and verified).
    - DOE will provide management leadership and federal oversight of all waste generation and disposal operations to ensure contract and regulatory requirements are met.
    - Ohio EPA will provide external oversight of all waste management processes.

This WAC IP bridges the requirements of the OSWDF WAC with OSWDF operational parameters.

	Waste Planning	Waste Generation	Waste Characterization	Waste Conditioning	Waste Packaging/Handling	Waste Transportation	Waste Placement/Disposal
Generator Project Functions	Identify Project. Assemble Project Team (D&D, WM, Rad, NMC&A, Security, etc. Develop project-specific generator waste management plan. Complete walkdowns.	Remove prohibited items for off-site disposal. Segregate recyclables. Remove items that exceed activity and/or chemical concentration criteria. Separate into one of five engineered waste types.	Characterize waste using PK, operational history, analytical data, etc. Certify on Waste Form Compliance Checklist that waste meets OSWDF WAC Components 1-3.	Confirm that all wastes intended for OSWDF fit into one of five Master Profiles. Prepare waste to meet physical standards. Certify on Waste Form Compliance Checklist that waste meets OSWDF WAC Component 4.	Package waste. Certify on Waste Form Compliance Checklist that waste meets OSWDF WAC Components 5 and 6.	Certify on Waste Form Compliance Checklist that waste meets OSWDF WAC Component 7. Arrange for transportation with OSWDF. Load waste for transport to OSWDF scales.	
Quality Function WAO	Review project-specific generator waste management plan and associated checklists.	Oversee field operations at project site.	Verify on Waste Form Compliance Checklist that waste meets OSWDF WAC Components 1-3.	Verify on Waste Form Compliance Checklist that waste meets OSWDF WAC Component 4.	Verify on Waste Form Compliance Checklist that waste meets OSWDF WAC Components 5 and 6.	Verify on Waste Form Compliance Checklist that waste meets OSWDF WAC Component 7.	Oversee field operations at OSWDF including weighing, waste placement, and placement record.
Quality Function CQC							Verify waste placement location at OSWDF. Verify that performance testing is compliant and complete.
OSWDF Functions	Review project-specific generator waste management plan and supporting documentation for forecasting waste types/volumes.					Review completed Waste Form Compliance Checklist. Schedule transport and delivery.	Accept waste. Place waste at IMTA or cell (at discretion of OSWDF operations). Record disposal location.
OSWDF WAC Components		Component 1: Prohibited Items Component 2: Activity and Chemical Concentration Criteria	Component 3: Waste Evaluation and Characterization Standards	Component 4: Waste Physical Characteristic Standards	Component 5: Waste Packaging Standards Component 6: Waste Safe Handling Standards	Component 7: Waste Transportation Standards	

CQC = Construction Quality Control
D&D = decontamination and decommissioning
IMTA = Impacted Material Transfer Area
NMC&A = Nuclear Material Control and Accountability
OSWDF = on-site waste disposal facility
PK = process knowledge
Rad = radiological
WAC = waste acceptance criteria
WAO = Waste Acceptance Organization
WM = waste management

Figure 7.1. Sequence of Activities from Waste Planning to Disposition at OSWDF

This page is intentionally left blank.

8. REFERENCES

DOE 2020, *Removal Action Work Plan for Deactivation of Non-Time-Critical Removal Action Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio,* DOE/PPP0/03-0783&D2, U.S. Department of Energy, Piketon, OH, February.

DOE 2019a, *On-site Waste Disposal Facility Operations and Maintenance Plan, Final Design, Portsmouth Gaseous Diffusion Plant, Decontamination and Decommissioning Project, Piketon, Ohio,* DOE/PPPO/03-0701&D3, U.S. Department of Energy, Piketon, OH, September.

DOE 2019b, *On-site Waste Disposal Facility Impacted Material Placement Plan, Final Design, Portsmouth Gaseous Diffusion Plant, Decontamination and Decommissioning Project, Piketon, Ohio,* DOE/PPPO/03-0344&D3, July.

DOE 2018a, *Comprehensive Deactivation, Demolition, and Disposition Remedial Design/Remedial Action Work Plan for the Process Buildings and Complex Facilities Remedial Action Project and Remedial Design for Deactivation of Complex Facilities at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0758&D1, U.S. Department of Energy, Piketon, OH, July.

DOE 2018b, *Comprehensive On-site Waste Disposal Facility Remedial Design/Remedial Acton Work Plan for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio; Phase III Balance of the On-site Disposal Remedy*, DOE/PPPO/03-0751&D3, U.S. Department of Energy, Piketon, OH, March.

DOE 2017, *On-Site Waste Disposal Facility Cell (OSWDF) Geomembrane-Leachate Compatibility Study (GLCS) for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0346&D2, U.S. Department of Energy, Piketon, OH, May.

DOE 2016, *Remedial Design/Remedial Action Work Plan and Remedial Design for the Process Buildings Deactivation at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio, Deactivation of X-326, X-330, X-333, X-111A, X-111B, X-232C1, X-232C2, X-232C3, X-232C4, and X-232C5*, DOE/PPPO/03-0665&D2, U.S. Department of Energy, Piketon, OH, April.

DOE 2015a, *Record of Decision for the Site-Wide Waste Disposition Evaluation Project at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0513&D2, U.S. Department of Energy, Piketon, OH, June.

DOE 2015b, *Record of Decision for the Process Buildings and Complex Facilities Decontamination and Decommissioning Evaluation Project at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0425&D2, U.S. Department of Energy, Piketon, OH, July.

DOE 2014a, *Supplement No. 1 to the Remedial Investigation and Feasibility Study Report for the Site-wide Waste Disposition Evaluation Project: Proposed Corrective Action Management Unit and Area of Contamination Designations for Alternative 2 at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0646&D1, U.S. Department of Energy, Piketon, OH, October.

DOE 2014b, *Remedial Investigation and Feasibility Study Report for the Site-wide Waste Disposition Evaluation Project at the Portsmouth Gaseous Diffusion Plant*, DOE/PPPO/03-0246&D3, U.S. Department of Energy, Piketon, OH, February.

DOE 2014c, *Proposed Plan for the Site-wide Waste Disposition Evaluation Project*, DOE/PPPO/03-0312&D5, U.S. Department of Energy, Piketon, OH, October.

DOE 2014d, *Sample Analysis Data Quality Assurance Project Plan (SADQ) at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0278&D2, U.S. Department of Energy, Piketon, OH, February.

DOE 2012, *Action Memorandum for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0230&D4, U.S. Department of Energy, Piketon, OH, March.

DOE 2011, *Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0207&D4, U.S. Department of Energy, Piketon, OH, October.

FBP 2017, *Hazard Analysis for the Operations of the Portsmouth Gaseous Diffusion Plant X-780 On-Site Waste Disposal Facility and X-790 Interim Leachate Treatment Facility*, FBP-HA-780-00001, Revision 5, Fluor-BWXT Portsmouth LLC, Piketon, OH, November.

FBP 2013, *Business Case for the Excavation of Select Landfills and Impacted Soil Associated with the Groundwater Plumes for Use as Fill in an Engineered On-site Disposal Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, FBP-ER-RCRA-WD-RPT-0110, Revision 3, Fluor-BWXT Portsmouth LLC, Piketon, OH, October.

Ohio EPA 2018, *Director's Final Findings and Orders for CERCLA Actions to Restore natural Resources*, Ohio Environmental Protection Agency, Columbus, OH, July 30.

Ohio EPA 2012, *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*, Ohio Environmental Protection Agency, Columbus, OH, July 16.

APPENDIX A: EXAMPLE MASTER PROFILES

This page is intentionally left blank.

EXAMPLE Master Waste Profile: Type 1 – Soil/Soil-like Material

Section A: General Information	
1. Master Waste Profile Number	
2. Master Waste Profile Revision Number	
3. Waste Type Number (1 – 5)	1

Section B: Definition of the Waste Stream		
4. Physical Description Soils and soil-like materials that do not contain hard agglomerations greater than 12 in. in the greatest dimension. Includes crushed concrete that would behave like gravel. May contain a mixture of soil and non-soil-like material, as long as the mixture is compactable using standard construction equipment. May be supplemented with clean soil and soil-like materials, obtained from OSWDF excavations, trenching, on-site stockpiles, or on-site borrow area excavations for use in placing other impacted materials such as D&D debris, PGE, etc.		
5. Chemical Concentration Range	Table File Name (attach)	
6. Radiological Activity Range	Table File Name (attach)	
7. Regulatory Classification	Table File Name (attach)	

Section C: Evaluation of Compliance with WAC Components

8. WAC Component 1 – Prohibitions from WAC IP Table 3.2

Wastes assigned to this MWP do not include prohibited items or prohibited regulatory classifications identified in Table 3.2 of the WAC IP. Any prohibited wastes are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure absence of prohibited items are presented in their waste stream specific WFCC and verified by the WAO prior to releasing wastes from the project location to the OSWDF.

- No CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards
- No CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards
- No CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for PHC of TCE
- No ignitable and reactive waste per RCRA
- No TRU waste or HLW
- No refrigeration equipment with remaining refrigerant per Ozone Standards
- No acid batteries
- No bulk used oils in liquid form
- No PCB-contaminated electrical equipment (except capacitors) containing free flowing liquids
- No PCB-contaminated articles containing free-flowing liquid
- No PCB liquids drained from electrical equipment
- No pyrophoric waste; pyrophoric materials in waste shall be treated, prepared, & packaged to be nonflammable
- Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water
- Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste
- No RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added)
- No bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) except where placement of such wastes facilitates the remedy selected for the waste. (Applies to CAMU-eligible waste.)
- No waste from off PORTS generating sources (excludes lab returns, treatability testing wastes, material currently stored on the Facility)
- No compressors, converters, and coolers that were within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O
- No containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

EXAMPLE Master Waste Profile: Type 1 – Soil/Soil-like Material

Section C: Evaluation of Compliance with WAC Components (Continued)

9. WAC Component 2 - Activity Criteria and Chemical Concentration

Wastes assigned to this MWP do not exceed the activity criteria and chemical concentrations identified in Table 3.3 of the WAC IP. Wastes that fall outside the allowed limits are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes comply with limits are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF."

- CAMU ineligible hazardous waste meets treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* 3745-270-40
- Hazardous waste contaminated soil meets alternate treatment standards are located in *OAC* 3745 270-49
- CAMU-eligible hazardous waste meets the adjusted minimum treatment standard (5,000 ppm) for TCE.

10. WAC Component 3 - Waste Evaluation and Characterization Standards

Wastes assigned to this MWP are evaluated and characterized in accordance with the standards identified in Section 3.2.3 of the WAC IP. The evaluation addresses activity criteria and chemical concentrations specified under WAC Component 2, regulatory determinations, and verification that the wastes fall within the NCS determination of criticality incredible, the OSWDF Hazards Analysis, and the OSWDF Performance Assessment. Wastes unable to meet these standards are segregated and provided alternate disposition by project generators. Specific methods used by each project generator are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from projects to the OSWDF.

11. WAC Component 4 - Physical Characteristic Standards

Wastes assigned to this MWP meet the standards identified in Table 3.4 of the WAC IP. Any wastes that cannot be processed to meet these standards are segregated, addressed under a variance and separate MWP, or provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes meet Table 3.4 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Materials shall contain no hard agglomerations greater than 12 in. in the greatest dimension
- Material must be graded so as to permit compaction with standard construction equipment and measurement using the Standard Proctor test, in accordance with the IMPP.

12. WAC Component 5 - Packaging Standards

Packaging of wastes assigned to this MWP meet the standards identified in Table 3.5 of the WAC IP including, but not limited to, packaging requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to ensure that their waste packaging meets Table 3.5 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream
- All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer
- Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6)
- Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1)
- Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b)
- Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD."

EXAMPLE Master Waste Profile: Type 1 – Soil/Soil-like Material

Section C: Evaluation of Compliance with WAC Components (Continued)

12. WAC Component 5 - Packaging Standards (Continued)

- Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal
- Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Regulated asbestos-containing containers shall be labeled per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure
- Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

13. WAC Component 6 - Safe Handling Standards

Safe Handling requirements for wastes assigned to this MWP meet the standards identified in Table 3.6 of the WAC IP. The wastes have been determined to be criticality incredible and have been evaluated pursuant to the OSWDF Hazards Analysis and Performance Assessment. Specific methods used by each project generator to ensure safe handling of their wastes are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis.
- Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible.
- Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size reduced for placement, and lab sample returns.
- Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
- Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

14. WAC Component 7 - Transportation Standards

Transportation requirements for wastes assigned to this MWP meet the standards identified in Table 3.7 of the WAC IP including, but not limited to, requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to prepare waste shipments for transport to the OSWDF are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF. The OSWDF, which is responsible for actual transport of the waste stream from the project location, also adheres to Table 3.7 requirements while the waste is in transit.

- Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the Transportation Department will verify and monitor compliance [49 *CFR* 171.1(4)].
- RACM that is transported and disposed in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)]
- Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
- Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).

EXAMPLE Master Waste Profile: Type 1 – Soil/Soil-like Material

Section C: Evaluation of Compliance with WAC Components (Continued)
14. WAC Component 7 - Transportation Standards (Continued) • Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Section D: Approval of the Master Waste Profile		
15. Preparer	a. Name	
	b. Signature	
	c. Date	
16. Reviewer	a. Name	
	b. Signature	
	c. Date	

Section E: Addition of Project Inventory to the Master Waste Profile	
Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

EXAMPLE Master Waste Profile: Type 1 – Soil/Soil-like Material

SECTION E CONTINUATION SHEET

Master Waste Profile Number _____

Master Waste Profile Revision Number _____

Section E: Addition of Project Inventory to the Master Waste Profile	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
D&D = decontamination and decommissioning
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
DUF_6 = depleted uranium hexafluoride
HLW = high-level waste
IMPP = Impacted Material Placement Plan
LDR = land disposal restrictions
OAC = Ohio Administrative Code
OSWDF = On-site Waste Disposal Facility
NCS = Nuclear Criticality Safety
MWP = Master Waste Profile
PGE = process gas equipment
PCB = polychlorinated biphenyl
PHC = principal hazardous constituent
PORTS = Portsmouth Gaseous Diffusion Plant
RACM = regulated asbestos-containing material
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic
UMC = Uranium Management Center
WAC = waste acceptance criteria
WAC IP = Waste Acceptance Criteria Implementation Plan
WAO = Waste Acceptance Organization
WFCC = Waste Form Compliance Checklist

This page is intentionally blank.

EXAMPLE Master Waste Profile: Type 2 – Debris

Section A: General Information	
1. Master Waste Profile Number	
2. Master Waste Profile Revision Number	
3. Waste Type Number (1 – 5)	2

Section B: Definition of the Waste Stream		
4. Physical Description Materials that can be transferred, placed, spread, compacted en masse and spread in loose lifts of 21 in. ±3 in. thick and compacted using a Caterpillar 826 landfill compactor or similar. Includes concrete, metal, debris, and other miscellaneous waste resulting from D&D activities at PORTS (e.g., broken-up concrete foundations, bagged PPE, impacted soil mixed with broken-up concrete, crushed or size-reduced containers, size reduced piping and equipment). Includes general building rubble and debris consisting of irregularly shaped metals and other superstructure/substructure components with a maximum length of 10 ft and a maximum width and/or thickness of 18 in.		
5. Chemical Concentration Range	Table File Name (attach)	
6. Radiological Activity Range	Table File Name (attach)	
7. Regulatory Classification	Table File Name (attach)	

Section C: Evaluation of Compliance with WAC Components

8. WAC Component 1 – Prohibitions from WAC IP Table 3.2

Wastes assigned to this MWP do not include prohibited items or prohibited regulatory classifications identified in Table 3.2 of the WAC IP. Any prohibited wastes are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure absence of prohibited items are presented in their waste stream specific WFCC and verified by the WAO prior to releasing wastes from the project location to the OSWDF.

- No CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards
- No CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards
- No CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for PHC of TCE
- No ignitable and reactive waste per RCRA
- No TRU waste or HLW
- No refrigeration equipment with remaining refrigerant per Ozone Standards
- No acid batteries
- No bulk used oils in liquid form
- No PCB-contaminated electrical equipment (except capacitors) containing free flowing liquids
- No PCB-contaminated articles containing free-flowing liquid
- No PCB liquids drained from electrical equipment
- No pyrophoric waste; pyrophoric materials in waste shall be treated, prepared, & packaged to be nonflammable
- Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water
- Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste
- No RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added)
- No bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) except where placement of such wastes facilitates the remedy selected for the waste. (Applies to CAMU-eligible waste.)
- No waste from off PORTS generating sources (excludes lab returns, treatability testing wastes, material currently stored on the Facility)
- No compressors, converters, and coolers that were within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O
- No containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

EXAMPLE Master Waste Profile: Type 2 – Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

9. WAC Component 2 - Activity Criteria and Chemical Concentration

Wastes assigned to this MWP do not exceed the activity criteria and chemical concentrations identified in Table 3.3 of the WAC IP. Wastes that fall outside the allowed limits are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes comply with limits are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF."

- CAMU ineligible hazardous waste meets treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* 3745-270-40
- Hazardous waste contaminated soil meets alternate treatment standards are located in *OAC* 3745 270-49
- CAMU-eligible hazardous waste meets the adjusted minimum treatment standard (5,000 ppm) for TCE.

10. WAC Component 3 - Waste Evaluation and Characterization Standards

Wastes assigned to this MWP are evaluated and characterized in accordance with the standards identified in Section 3.2.3 of the WAC IP. The evaluation addresses activity criteria and chemical concentrations specified under WAC Component 2, regulatory determinations, and verification that the wastes fall within the NCS determination of criticality incredible, the OSWDF Hazards Analysis, and the OSWDF Performance Assessment. Wastes unable to meet these standards are segregated and provided alternate disposition by project generators. Specific methods used by each project generator are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from projects to the OSWDF.

11. WAC Component 4 - Physical Characteristic Standards

Wastes assigned to this MWP meet the standards identified in Table 3.4 of the WAC IP. Any wastes that cannot be processed to meet these standards are segregated, addressed under a variance and separate MWP, or provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes meet Table 3.4 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Materials including, but not limited to general building rubble consisting of drywall; heating, ventilation, and air conditioning systems; electrical systems; plumbing systems; size-reduced compressors from X-330 and X-333; and minor equipment shall be sufficiently reduced in size to be gradable into a 21 in. ±3 in. lift by equipment similar to a Caterpillar D 8 bulldozer or equivalent
- The maximum length (and width) of irregularly shaped metals or other components of a building superstructure or finish component shall be 10 ft, with a maximum thickness of 18 in. Occasional large pieces of debris with these maximum dimensions may be accepted for placement as Type 2 material with prior authorization by the OSWDF Operations Manager (or his/her designee).
- Piping and cylinders with a nominal diameter larger than 12 in., except the piping containing asbestos, shall be split in half lengthwise or crushed to reduce void space and shall have a maximum length of 10 ft. (Note: piping containing asbestos is Type 5).
- Pressurized cylinders shall be visibly identifiable as empty and free of pressure (e.g., breached and clearly marked empty)
- Whole, shredded, or sheared scrap tires may be placed as Type 2 waste as long as they meet the exception requirements of *OAC* 3745-27-19 (E)(8)(g)(i)-(iv) and the size and void space limitations for Type 2 material.

EXAMPLE Master Waste Profile: Type 2 – Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

12. WAC Component 5 - Packaging Standards

Packaging of wastes assigned to this MWP meet the standards identified in Table 3.5 of the WAC IP including, but not limited to, packaging requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to ensure that their waste packaging meets Table 3.5 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream
- All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer
- Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6)
- Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1)
- Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b)
- Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD"
- Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal
- Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Regulated asbestos-containing containers shall be labeled per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure
- Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

13. WAC Component 6 - Safe Handling Standards

Safe Handling requirements for wastes assigned to this MWP meet the standards identified in Table 3.6 of the WAC IP. The wastes have been determined to be criticality incredible and have been evaluated pursuant to the OSWDF Hazards Analysis and Performance Assessment. Specific methods used by each project generator to ensure safe handling of their wastes are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis
- Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible
- Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size reduced for placement, and lab sample returns.
- Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
- Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

EXAMPLE Master Waste Profile: Type 2 – Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

14. WAC Component 7 - Transportation Standards

Transportation requirements for wastes assigned to this MWP meet the standards identified in Table 3.7 of the WAC IP including, but not limited to, requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to prepare waste shipments for transport to the OSWDF are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF. The OSWDF, which is responsible for actual transport of the waste stream from the project location, also adheres to Table 3.7 requirements while the waste is in transit.

- Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the Transportation Department will verify and monitor compliance [49 *CFR* 171.1(4)].
- RACM that is transported and disposed in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)]
- Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
- Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).
- Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Section D: Approval of the Master Waste Profile		
15. Preparer	a. Name	
	b. Signature	
	c. Date	
16. Reviewer	a. Name	
	b. Signature	
	c. Date	

EXAMPLE Master Waste Profile: Type 2 – Debris

Section E: Addition of Project Inventory to the Master Waste Profile	
Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

EXAMPLE Master Waste Profile: Type 2 – Debris

SECTION E CONTINUATION SHEET

Master Waste Profile Number _____

Master Waste Profile Revision Number _____

Section E: Addition of Project Inventory to the Master Waste Profile	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
D&D = decontamination and decommissioning
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
DUF_6 = depleted uranium hexafluoride
HLW = high-level waste
LDR = land disposal restrictions
OAC = Ohio Administrative Code
OSWDF = On-site Waste Disposal Facility
PPE = personal protective equipment
NCS = Nuclear Criticality Safety
MWP = Master Waste Profile
PGE = process gas equipment
PCB = polychlorinated biphenyl
PHC = principal hazardous constituent
PORTS = Portsmouth Gaseous Diffusion Plant
RACM = regulated asbestos-containing material
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic
UMC = Uranium Management Center
WAC = waste acceptance criteria
WAC IP = Waste Acceptance Criteria Implementation Plan
WAO = Waste Acceptance Organization
WFCC = Waste Form Compliance Checklist

EXAMPLE Master Waste Profile: Type 3 – Large Debris

Section A: General Information	
1. Master Waste Profile Number	
2. Master Waste Profile Revision Number	
3. Waste Type Number (1 – 5)	3

Section B: Definition of the Waste Stream		
4. Physical Description Large materials that must be individually handled and placed in the OSWDF, and suitable for having Type 1 material placed around and against them. Materials is essentially incompressible using standard compaction equipment. May include equipment or material such as block valves, bundles of transite panels, construction equipment parts, and broken concrete foundation members that can be placed no more than 4 ft high. Exclude equipment or material requiring specialized placement.		
5. Chemical Concentration Range	Table File Name (attach)	
6. Radiological Activity Range	Table File Name (attach)	
7. Regulatory Classification	Table File Name (attach)	

Section C: Evaluation of Compliance with WAC Components

8. WAC Component 1 – Prohibitions from WAC IP Table 3.2

Wastes assigned to this MWP do not include prohibited items or prohibited regulatory classifications identified in Table 3.2 of the WAC IP. Any prohibited wastes are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure absence of prohibited items are presented in their waste stream specific WFCC and verified by the WAO prior to releasing wastes from the project location to the OSWDF.

- No CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards
- No CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards
- No CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for PHC of TCE
- No ignitable and reactive waste per RCRA
- No TRU waste or HLW
- No refrigeration equipment with remaining refrigerant per Ozone Standards
- No acid batteries
- No bulk used oils in liquid form
- No PCB-contaminated electrical equipment (except capacitors) containing free flowing liquids
- No PCB-contaminated articles containing free-flowing liquid
- No PCB liquids drained from electrical equipment
- No pyrophoric waste; pyrophoric materials in waste shall be treated, prepared, & packaged to be nonflammable
- Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water
- Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste
- No RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added)
- No bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) except where placement of such wastes facilitates the remedy selected for the waste. (Applies to CAMU-eligible waste.)
- No waste from off PORTS generating sources (excludes lab returns, treatability testing wastes, material currently stored on the Facility).
- No compressors, converters, and coolers that were within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O
- No containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

EXAMPLE Master Waste Profile: Type 3 – Large Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

9. WAC Component 2 - Activity Criteria and Chemical Concentration

Wastes assigned to this MWP do not exceed the activity criteria and chemical concentrations identified in Table 3.3 of the WAC IP. Wastes that fall outside the allowed limits are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes comply with limits are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF."

- CAMU ineligible hazardous waste meets treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* 3745-270-40
- Hazardous waste contaminated soil meets alternate treatment standards are located in *OAC* 3745 270-49
- CAMU-eligible hazardous waste meets the adjusted minimum treatment standard (5,000 ppm) for TCE.

10. WAC Component 3 - Waste Evaluation and Characterization Standards

Wastes assigned to this MWP are evaluated and characterized in accordance with the standards identified in Section 3.2.3 of the WAC IP. The evaluation addresses activity criteria and chemical concentrations specified under WAC Component 2, regulatory determinations, and verification that the wastes fall within the NCS determination of criticality incredible, the OSWDF Hazards Analysis, and the OSWDF Performance Assessment. Wastes unable to meet these standards are segregated and provided alternate disposition by project generators. Specific methods used by each project generator are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from projects to the OSWDF.

11. WAC Component 4 - Physical Characteristic Standards

Wastes assigned to this MWP meet the standards identified in Table 3.4 of the WAC IP. Any wastes that cannot be processed to meet these standards are segregated, addressed under a variance and separate MWP, or provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes meet Table 3.4 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Transite panels should be bundled with like sizes (e.g., one bundle would contain transite panels that are 4 ft wide by 4 ft long and stacked up to 4 ft high, while another bundle might consist of transite panels that are 4 ft wide by 12 ft long stacked up to 4 ft high)
- Containerized waste shall have no more than 10 percent internal voids (i.e., at least 90 percent full) or shall be very small containers (e.g., ampules)
- Intact (i.e., not split) tanks and cylinders with a maximum cross-sectional dimension of 4 ft may be placed as Type 3 impacted material if the internal void space is reduced in accordance with the IMPP Type 3 placement requirements
- Items must be suitable for having Type 1 material placed around and against them. The specific configuration of an item may make this difficult; in those cases, filling around and against these items may be augmented with materials approved by Nuclear Safety to assure that excessive voids will not exist. While these items are acceptable to be placed as Type 3, they should not be sent to the OSWDF without authorization from the OSWDF Operations Manager (or his/her designee).
- The maximum cross-sectional dimension of an individual concrete member or other component of a building slab or substructure shall be 4 ft when the item is handled individually and is a regular rectangular shape having no concrete protrusions greater than 18 in.
- PCB containers and PCB articles that must be placed in a manner that prevents damage to the container or article shall be clearly identified
- Containers holding free liquids cannot be placed in the OSWDF unless free-standing liquid has been removed and mixed with sorbent or solidified, or the container otherwise complies with *OAC* 3745-57-14. Sorbents used to treat free liquids must be nonbiodegradable.

EXAMPLE Master Waste Profile: Type 3 – Large Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

12. WAC Component 5 - Packaging Standards

Packaging of wastes assigned to this MWP meet the standards identified in Table 3.5 of the WAC IP including, but not limited to, packaging requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to ensure that their waste packaging meets Table 3.5 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream
- All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6)
- Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1)
- Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b)
- Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD."
- Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal
- Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Regulated asbestos-containing containers shall be labeled per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure
- Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

13. WAC Component 6 - Safe Handling Standards

Safe Handling requirements for wastes assigned to this MWP meet the standards identified in Table 3.6 of the WAC IP. The wastes have been determined to be criticality incredible and have been evaluated pursuant to the OSWDF Hazards Analysis and Performance Assessment. Specific methods used by each project generator to ensure safe handling of their wastes are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis
- Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible
- Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size reduced for placement, and lab sample returns.
- Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
- Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

EXAMPLE Master Waste Profile: Type 3 – Large Debris

Section C: Evaluation of Compliance with WAC Components (Continued)

14. WAC Component 7 - Transportation Standards

Transportation requirements for wastes assigned to this MWP meet the standards identified in Table 3.7 of the WAC IP including, but not limited to, requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to prepare waste shipments for transport to the OSWDF are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF. The OSWDF, which is responsible for actual transport of the waste stream from the project location, also adheres to Table 3.7 requirements while the waste is in transit.

- Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the Transportation Department will verify and monitor compliance [49 *CFR* 171.1 (4)].
- RACM that is transported and disposed in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)]
- Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
- Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).
- Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Section D: Approval of the Master Waste Profile

15. Preparer	a. Name	
	b. Signature	
	c. Date	
16. Reviewer	a. Name	
	b. Signature	
	c. Date	

EXAMPLE Master Waste Profile: Type 3 – Large Debris

Section E: Addition of Project Inventory to the Master Waste Profile	
Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

EXAMPLE Master Waste Profile: Type 3 – Large Debris

SECTION E CONTINUATION SHEET

Master Waste Profile Number _____

Master Waste Profile Revision Number _____

Section E: Addition of Project Inventory to the Master Waste Profile	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

CAMU = Corrective Action Management Unit
CFR = *Code of Federal Regulations*
D&D = decontamination and decommissioning
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
DUF_6 = depleted uranium hexafluoride
HLW = high-level waste
IMPP = Impacted Material Placement Plan
LDR = land disposal restrictions
OAC = *Ohio Administrative Code*
OSWDF = On-site Waste Disposal Facility
NCS = Nuclear Criticality Safety
MWP = Master Waste Profile
PGE = process gas equipment
PCB = polychlorinated biphenyl
PHC = principal hazardous constituent
PORTS = Portsmouth Gaseous Diffusion Plant
RACM = regulated asbestos-containing material
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic
UMC = Uranium Management Center
WAC = waste acceptance criteria
WAC IP = Waste Acceptance Criteria Implementation Plan
WAO = Waste Acceptance Organization
WFCC = Waste Form Compliance Checklist

EXAMPLE Master Waste Profile: Type 4 – Decomposable

Section A: General Information	
1. Master Waste Profile Number	
2. Master Waste Profile Revision Number	
3. Waste Type Number (1 – 5)	4

Section B: Definition of the Waste Stream		
4. Physical Description Materials subject to decomposition. Examples include contaminated vegetative waste from clearing and grubbing, large quantities of wooden debris such as bulk paper products, pallets, utility poles, tree root structures, sewage plant waste, and railroad ties. Vegetative waste that is not contaminated shall not be placed in the OSWDF to the extent practicable. The total quantity of Type 4 impacted material acceptable for placement in the OSWDF shall be limited to 5,744 cy, and 479 cy per cell under a 12-cell configuration.		
5. Chemical Concentration Range	Table File Name (attach)	
6. Radiological Activity Range	Table File Name (attach)	
7. Regulatory Classification	Table File Name (attach)	

Section C: Evaluation of Compliance with WAC Components

8. WAC Component 1 – Prohibitions from WAC IP Table 3.2

Wastes assigned to this MWP do not include prohibited items or prohibited regulatory classifications identified in Table 3.2 of the WAC IP. Any prohibited wastes are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure absence of prohibited items are presented in their waste stream specific WFCC and verified by the WAO prior to releasing wastes from the project location to the OSWDF.

- No CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards
- No CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards
- No CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for PHC of TCE
- No ignitable and reactive waste per RCRA
- No TRU waste or HLW
- No refrigeration equipment with remaining refrigerant per Ozone Standards
- No acid batteries
- No bulk used oils in liquid form
- No PCB-contaminated electrical equipment (except capacitors) containing free flowing liquids
- No PCB-contaminated articles containing free-flowing liquid
- No PCB liquids drained from electrical equipment
- No pyrophoric waste; pyrophoric materials in waste shall be treated, prepared, & packaged to be nonflammable
- Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water
- Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste
- No RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added)
- No bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) except where placement of such wastes facilitates the remedy selected for the waste. (Applies to CAMU-eligible waste.)
- No waste from off PORTS generating sources (excludes lab returns, treatability testing wastes, material currently stored on the Facility)
- No compressors, converters, and coolers that were within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O
- No containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

EXAMPLE Master Waste Profile: Type 4 – Decomposable

Section C: Evaluation of Compliance with WAC Components (Continued)

9. WAC Component 2 - Activity Criteria and Chemical Concentration

Wastes assigned to this MWP do not exceed the activity criteria and chemical concentrations identified in Table 3.3 of the WAC IP. Wastes that fall outside the allowed limits are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes comply with limits are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF."

- CAMU ineligible hazardous waste meets treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* 3745-270-40
- Hazardous waste contaminated soil meets alternate treatment standards are located in *OAC* 3745 270-49
- CAMU-eligible hazardous waste meets the adjusted minimum treatment standard (5,000 ppm) for TCE.

10. WAC Component 3 - Waste Evaluation and Characterization Standards

Wastes assigned to this MWP are evaluated and characterized in accordance with the standards identified in Section 3.2.3 of the WAC IP. The evaluation addresses activity criteria and chemical concentrations specified under WAC Component 2, regulatory determinations, and verification that the wastes fall within the NCS determination of criticality incredible, the OSWDF Hazards Analysis, and the OSWDF Performance Assessment. Wastes unable to meet these standards are segregated and provided alternate disposition by project generators. Specific methods used by each project generator are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from projects to the OSWDF.

11. WAC Component 4 - Physical Characteristic Standards

Wastes assigned to this MWP meet the standards identified in Table 3.4 of the WAC IP. Any wastes that cannot be processed to meet these standards are segregated, addressed under a variance and separate MWP, or provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes meet Table 3.4 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Uncontaminated vegetative waste (e.g., waste from clearing, stripping, grubbing, mowing) shall not be placed in the OSWDF to the extent practicable. Vegetative waste disposed of in the OSWDF shall be included in Type 4 disposal volume tracking.
- Decomposable materials (i.e., organic-based materials that produce methane gas upon decomposition) shall be sized such that they can be placed within a 1-ft-thick lift with minimal voids. The total quantity of Type 4 impacted material placed in the OSWDF shall be limited to 5,744 cy total and 479 cy per cell under a 12 cell configuration.

12. WAC Component 5 - Packaging Standards

Packaging of wastes assigned to this MWP meet the standards identified in Table 3.5 of the WAC IP including, but not limited to, packaging requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to ensure that their waste packaging meets Table 3.5 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream
- All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.
- PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6)
- Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1)
- Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b)
- Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD."

EXAMPLE Master Waste Profile: Type 4 – Decomposable

Section C: Evaluation of Compliance with WAC Components (Continued)

12. WAC Component 5 - Packaging Standards (Continued)

- Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal
- Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Regulated asbestos-containing containers shall be labeled per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure
- Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

13. WAC Component 6 - Safe Handling Standards

Safe Handling requirements for wastes assigned to this MWP meet the standards identified in Table 3.6 of the WAC IP. The wastes have been determined to be criticality incredible and have been evaluated pursuant to the OSWDF Hazards Analysis and Performance Assessment. Specific methods used by each project generator to ensure safe handling of their wastes are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis.
- Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible
- Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size reduced for placement, and lab sample returns.
- Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
- Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

14. WAC Component 7 - Transportation Standards

Transportation requirements for wastes assigned to this MWP meet the standards identified in Table 3.7 of the WAC IP including, but not limited to, requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to prepare waste shipments for transport to the OSWDF are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF. The OSWDF, which is responsible for actual transport of the waste stream from the project location, also adheres to Table 3.7 requirements while the waste is in transit.

- Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the Transportation Department will verify and monitor compliance [49 *CFR* 171.1(4)].
- RACM that is transported and disposed in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)].
- Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
- Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).

EXAMPLE Master Waste Profile: Type 4 – Decomposable

Section C: Evaluation of Compliance with WAC Components (Continued)
14. WAC Component 7 - Transportation Standards (Continued) • Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Section D: Approval of the Master Waste Profile		
15. Preparer	a. Name	
	b. Signature	
	c. Date	
16. Reviewer	a. Name	
	b. Signature	
	c. Date	

Section E: Addition of Project Inventory to the Master Waste Profile	
Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

EXAMPLE Master Waste Profile: Type 4 – Decomposable

SECTION E CONTINUATION SHEET

Master Waste Profile Number _____

Master Waste Profile Revision Number _____

Section E: Addition of Project Inventory to the Master Waste Profile	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

CAMU = Corrective Action Management Unit
CFR = *Code of Federal Regulations*
D&D = decontamination and decommissioning
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
DUF_6 = depleted uranium hexafluoride
HLW = high-level waste
IMPP = Impacted Material Placement Plan
LDR = land disposal restrictions
OAC = *Ohio Administrative Code*
OSWDF = On-site Waste Disposal Facility
NCS = Nuclear Criticality Safety
MWP = Master Waste Profile
PGE = process gas equipment
PCB = polychlorinated biphenyl
PHC = principal hazardous constituent
PORTS = Portsmouth Gaseous Diffusion Plant
RACM = regulated asbestos-containing material
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic
UMC = Uranium Management Center
WAC = waste acceptance criteria
WAC IP = Waste Acceptance Criteria Implementation Plan
WAO = Waste Acceptance Organization
WFCC = Waste Form Compliance Checklist

This page is intentionally blank.

EXAMPLE Master Waste Profile: Type 5 – Special Handling

Section A: General Information	
1. Master Waste Profile Number	
2. Master Waste Profile Revision Number	
3. Waste Type Number (1 – 5)	5

Section B: Definition of the Waste Stream		
4. Physical Description Materials that require special handling, placement, and compaction. Examples include large PGE such as compressors, containerized waste, ACM, broken pieces of transite panels, double-bagged asbestos, and asbestos covered piping. Type 5 impacted material has special requirements related to size and placement methodology. The Type 5 materials category is a catch-all for items that need special handling or do not fit another impacted material type.		
5. Chemical Concentration Range	Table File Name (attach)	
6. Radiological Activity Range	Table File Name (attach)	
7. Regulatory Classification	Table File Name (attach)	

Section C: Evaluation of Compliance with WAC Components

8. WAC Component 1 – Prohibitions from WAC IP Table 3.2

Wastes assigned to this MWP do not include prohibited items or prohibited regulatory classifications identified in Table 3.2 of the WAC IP. Any prohibited wastes are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure absence of prohibited items are presented in their waste stream specific WFCC and verified by the WAO prior to releasing wastes from the project location to the OSWDF.

- No CAMU-ineligible RCRA hazardous waste that does not meet LDR treatment standards
- No CAMU-ineligible RCRA hazardous debris and/or soil that does not meet Alternate Treatment Standards
- No CAMU-eligible waste that does not meet the adjusted minimum treatment standard (5,000 ppm) for PHC of TCE
- No ignitable and reactive waste per RCRA
- No TRU waste or HLW
- No refrigeration equipment with remaining refrigerant per Ozone Standards
- No acid batteries
- No bulk used oils in liquid form
- No PCB-contaminated electrical equipment (except capacitors) containing free flowing liquids
- No PCB-contaminated articles containing free-flowing liquid
- No PCB liquids drained from electrical equipment
- No pyrophoric waste; pyrophoric materials in waste shall be treated, prepared, & packaged to be nonflammable
- Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.
- Waste must not contain or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste.
- No RCRA hazardous waste containing bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added)
- No bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) except where placement of such wastes facilitates the remedy selected for the waste. (Applies to CAMU-eligible waste.)
- No waste from off PORTS generating sources (excludes lab returns, treatability testing wastes, material currently stored on the Facility)
- No compressors, converters, and coolers that were within the X-326 Process Building as of April 15, 2010, the initial date of the DFF&O
- No containerized nuclear material inventories of uranium compounds exhibiting enrichments greater than 20 percent (excludes items such as miscellaneous parts, pipes, valves, empty containers, etc., with only residual contamination which were packaged for ease of handling and safety reasons).

EXAMPLE Master Waste Profile: Type 5 – Special Handling

Section C: Evaluation of Compliance with WAC Components (Continued)

9. WAC Component 2 - Activity Criteria and Chemical Concentration

Wastes assigned to this MWP do not exceed the activity criteria and chemical concentrations identified in Table 3.3 of the WAC IP. Wastes that fall outside the allowed limits are segregated and provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes comply with limits are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF."

- CAMU ineligible hazardous waste meets treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in *OAC* 3745-270-40
- Hazardous waste contaminated soil meets alternate treatment standards are located in *OAC* 3745 270-49
- CAMU-eligible hazardous waste meets the adjusted minimum treatment standard (5,000 ppm) for TCE.

10. WAC Component 3 - Waste Evaluation and Characterization Standards

Wastes assigned to this MWP are evaluated and characterized in accordance with the standards identified in Section 3.2.3 of the WAC IP. The evaluation addresses activity criteria and chemical concentrations specified under WAC Component 2, regulatory determinations, and verification that the wastes fall within the NCS determination of criticality incredible, the OSWDF Hazards Analysis, and the OSWDF Performance Assessment. Wastes unable to meet these standards are segregated and provided alternate disposition by project generators. Specific methods used by each project generator are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from projects to the OSWDF.

11. WAC Component 4 - Physical Characteristic Standards

Wastes assigned to this MWP meet the standards identified in Table 3.4 of the WAC IP. Any wastes that cannot be processed to meet these standards are segregated, addressed under a variance and separate MWP, or provided alternate disposition by project generators. Specific methods used by each project generator to ensure that their wastes meet Table 3.4 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Converters will be segmented. Each segmented converter shell shall be appropriately size-reduced to meet the WAC as Type 2, 3, or 5 waste, balancing the cost of size reduction, the risks to workers, and the efficiency of final waste placement
- Placement of Type 5 material not previously addressed in the IMPP (e.g., whole compressors, large containers) requires development of special placement and compaction requirements that are approved by the Architect-Engineer Contractor responsible for design of the OSWDF.

12. WAC Component 5 - Packaging Standards

Packaging of wastes assigned to this MWP meet the standards identified in Table 3.5 of the WAC IP including, but not limited to, packaging requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to ensure that their waste packaging meets Table 3.5 standards are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Hazardous materials must be transferred to the OSWDF in a DOT–approved package, a DOT-equivalent package, or in accordance with DOT packaging equivalency requirements developed per DOE Order 460.1C requirements and approved by the Transportation Manager for the discrete waste stream
- All hazardous material transfers in roll-offs and open top truck beds shall be covered (e.g., tarped) unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer
- Tight fitting, leak resistant tailgates are required on all equipped truck beds, roll-off boxes, or other gate equipped conveyances unless otherwise approved by the Transportation Manager. This approval shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer
- PCB waste other than PCB bulk product or PCB remediation waste such as PCB articles, PCB items, and PCB equipment shall be containerized in accordance with 40 *CFR* 761.65(c)(6)
- Containerized PCBs and PCB items at concentrations greater than or equal to 50 ppm will be labeled in accordance with 40 *CFR* 761.40(a)(1)
- Regulated beryllium-containing waste and beryllium-contaminated equipment must be packaged and disposed of in sealed, impermeable bags, containers, or enclosures per 10 *CFR* 850.32(b)
- Packages of regulated beryllium-containing waste and beryllium-contaminated equipment must be labeled with the following information in accordance with 10 *CFR* 850.38(b): "DANGER, CONTAMINATED WITH BERYLLIUM, DO NOT REMOVE DUST BY BLOWING OR SHAKING, CANCER AND LUNG DISEASE HAZARD."

EXAMPLE Master Waste Profile: Type 5 – Special Handling

Section C: Evaluation of Compliance with WAC Components (Continued)

12. WAC Component 5 - Packaging Standards (Continued)

- Waste lacking long-term structural stability that has not otherwise been processed to provide structural stability must be placed in a disposal container or structure that provides stability after disposal
- Regulated asbestos-containing material shall be managed per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Regulated asbestos-containing containers shall be labeled per 40 *CFR* 61.150(b)(1)-(3) & *OAC* 3745-20-05(A)
- Containerized waste shall be evaluated prior to containerization, provided with an appropriate vent, and marked if there is potential to generate gas pressure
- Containers shall be marked to indicate if waste requires continued management in containers and whether the container must remain intact during placement.

13. WAC Component 6 - Safe Handling Standards

Safe Handling requirements for wastes assigned to this MWP meet the standards identified in Table 3.6 of the WAC IP. The wastes have been determined to be criticality incredible and have been evaluated pursuant to the OSWDF Hazards Analysis and Performance Assessment. Specific methods used by each project generator to ensure safe handling of their wastes are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF.

- Waste streams designated for placement into the OSWDF must be evaluated and authorized for disposal by the OSWDF Hazard Analysis
- Waste streams designated for placement into the OSWDF containing fissile isotopes (uranium-235) must comply with the requirements of the OSWDF Hazard Analysis and NCS Determination for establishing criticality incredible
- Cylinders containing DUF_6 oxides or DUF_6 oxides removed from cylinders are prohibited from disposal in the OSWDF. This prohibition applies to DUF_6 cylinders and removed oxides disposed in bulk or in containers. Includes converted oxides resulting from the DUF_6 conversion operations. This prohibition does not include waste contaminated by contact with the depleted oxides such as contact waste, empty cylinders that have been size reduced for placement, and lab sample returns.
- Uranium residues removed and containerized from the process gas equipment and piping systems during the building deactivation process, regardless of enrichment, are prohibited from disposal in the OSWDF. This prohibition for disposal at the OSWDF also applies to the UMC lots and containerized nuclear material product inventories. This prohibition does not include contaminated contact waste, lab sample returns, and demolition waste such as contaminated equipment, piping, and building materials.
- Barrier material from the X-330 and X-333 converters are prohibited from disposal in the OSWDF. This prohibition applies only to the contaminated nickel barrier materials that are removed during converter segmentation. The prohibition does not apply to lab sample returns, waste/spent personal protective equipment contaminated by contact with barrier material, or other components of the converters containing small quantities of barrier material following segmentation.

14. WAC Component 7 - Transportation Standards

Transportation requirements for wastes assigned to this MWP meet the standards identified in Table 3.7 of the WAC IP including, but not limited to, requirements specified in either DOT regulations or an approved Equivalent Level of Safety issued under the PORTS Transportation Safety Document. Specific methods used by each project generator to prepare waste shipments for transport to the OSWDF are presented in their waste stream specific WFCC and verified by WAO prior to releasing wastes from the project location to the OSWDF. The OSWDF, which is responsible for actual transport of the waste stream from the project location, also adheres to Table 3.7 requirements while the waste is in transit.

- Waste transfer to the OSWDF will be conducted exclusively within the Department of Energy facility boundary and out of commerce. Public access will be restricted. If movement crosses a public road, then that crossing will be restricted by signals, lights, gates, or similar controls. The OSWDF Project and the Transportation Department will verify and monitor compliance [49 *CFR* 171.1 (4)].
- RACM that is transported and disposed of in bulk shall be handled in a manner that causes no visible emissions [*OAC* 3745-20-05(B)(2)]
- Each motor vehicle used to transport waste materials to the OSWDF must, when transporting hazardous materials, be secured to prevent the cargo from leaking, spilling, blowing, or falling from the motor vehicle. The load must be contained, immobilized, or secured to prevent shifting upon or within the vehicle to the extent that the vehicle's maneuverability is not adversely affected. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer (49 *CFR* 393 Subpart I).
- Waste transport vehicles must be equipped and operated to the standards for commercial motor vehicles per the Federal Motor Carrier Safety Regulations. The D&D Contractor Transportation Department will verify and monitor all motor vehicles used for transport to ensure compliance with this standard (49 *CFR* 393 Subpart I).

EXAMPLE Master Waste Profile: Type 5 – Special Handling

Section C: Evaluation of Compliance with WAC Components (Continued)
14. WAC Component 7 - Transportation Standards (Continued) • Radiation protection requirements established in 10 *CFR* 835 must be met prior to transfer of the waste stream. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Waste streams will be evaluated to be compatible prior to loading and transfer to the OSWDF. Separation and segregation of hazardous materials will be evaluated by D&D Contractor Transportation per 49 *CFR* 177.848. These requirements shall be documented, available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer. • Transfer of waste will be conducted in accordance with approved control measures (e.g., speed limits, weather restrictions, public accessibility) established for the waste streams. On-site transfer or movement conditions historically are less hazardous than those encountered in commerce. Deviations will be accomplished through approved equivalent levels of safety documents. When operations deviate from 49 *CFR* requirements, the equivalent safety requirements will be addressed in work packages, procedures, and other forms of peer reviewed written instructions available for inspection, and utilized by the WAO to verify loads are in compliance and ready for transfer.

Section D: Approval of the Master Waste Profile		
15. Preparer	a. Name	
	b. Signature	
	c. Date	
16. Reviewer	a. Name	
	b. Signature	
	c. Date	

Section E: Addition of Project Inventory to the Master Waste Profile	
Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

EXAMPLE Master Waste Profile: Type 5 – Special Handling

SECTION E CONTINUATION SHEET

Master Waste Profile Number _____

Master Waste Profile Revision Number _____

Section E: Addition of Project Inventory to the Master Waste Profile	
17. Material Source Location	
18. Date Group Number	
19. Project Planning Checklist Number	
20. Project Planning Checklist Revision Number	
21. Material Interim Location Number	
22. Project Planning Checklist WAO Verification Date	
23. Waste Form Compliance Checklist Number	
24. Waste Form Compliance Checklist Revision Number	
25. Waste Form Compliance Checklist WAO Verification Date	
26. OSWDF Transfer Log Number	
27. OSWDF Transfer Log WAO Verification Date	
28. Estimated Waste Volume	
29. Actual Waste Volume	

ACM = asbestos-containing material
CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
D&D = decontamination and decommissioning
DFF&O = *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto*
DOE = U.S. Department of Energy
DOT = U.S. Department of Transportation
DUF_6 = depleted uranium hexafluoride
HLW = high-level waste
IMPP = Impacted Material Placement Plan
LDR = land disposal restrictions
OAC = Ohio Administrative Code
OSWDF = On-site Waste Disposal Facility
NCS = Nuclear Criticality Safety
MWP = Master Waste Profile
PGE = process gas equipment
PCB = polychlorinated biphenyl
PHC = principal hazardous constituent
PORTS = Portsmouth Gaseous Diffusion Plant
RACM = regulated asbestos-containing material
RCRA = Resource Conservation and Recovery Act of 1976, as amended
TCE = trichloroethene
TRU = transuranic
UMC = Uranium Management Center
WAC = waste acceptance criteria
WAC IP = Waste Acceptance Criteria Implementation Plan
WAO = Waste Acceptance Organization
WFCC = Waste Form Compliance Checklist

This page is intentionally blank.

APPENDIX B: EXAMPLE PROJECT PLANNING CHECKLIST

This page is intentionally left blank.

EXAMPLE Project Planning Checklist

Section A: General Information	
1. Project Planning Checklist Number	
2. Project Planning Checklist Revision Number	
3. Project Name	
4. Project Contact Name	
5. Project Contact Phone Number	

Section B: Anticipated OSWDF-Bound Waste Streams							
Complete Section B for each anticipated waste stream. Enter information for the first waste stream below, and use Section B Continuation Sheets for the balance of waste streams.							
6. Master Waste Profile Number							
7. Master Waste Profile Revision Number							
8. Waste Type (1 – 5)							
9. Waste Stream Description							
10. Planned Waste Stream Volume	Number		Unit		Conversion Factor		
11. Actual Waste Stream Volume	Number		Unit				
12. Material Source Location Number							
13. Data Group Number(s)							
14. Material Interim Location Number or NA							
15. Methods the project will use to segregate or render compliant OSWDF prohibited materials	a. GWMP Document #		File Name (attach)				
	b. GWMP Section #						
	c. GWMP Page#						
	d. Or Description						
	e. Supplementary Information File Name (attach)						
16. Methods the project will use to meet OSWDF size and form requirements	a. GWMP Section #						
	b. GWMP Page#						
	c. Or Description						
	d. Supplementary Information File Name (attach)						
17. Type of container required for staging or NA							

EXAMPLE Project Planning Checklist (Continued)

Section B: Anticipated OSWDF-Bound Waste Streams (Continued)		
18. Type of package required for shipment to the OSWDF		
19. Waste packaging instructions	a. GWMP Section #	
	b. GWMP Page#	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
20. Type of conveyance required for transport to OSWDF		
21. Transportation instructions	a. GWMP Section #	
	b. GWMP Page#	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
	e. Equivalent Level of Safety File Name (attach)	
22. Special Considerations:	a. Safety, health, environment	
	i. GWMP Section #	
	ii. GWMP Page #	
	iii. Or Description	
	iv. Supplementary Information File Name (attach)	
	b. Security	
	i. GWMP Section #	
	ii. GWMP Page #	
	iii. Or Description	
	iv. Supplementary Information File Name (attach)	
	c. Criticality incredible	
	i. GWMP Section #	
	ii. GWMP Page #	
	iii. Or Description	

EXAMPLE Project Planning Checklist (Continued)

Section B: Anticipated OSWDF-Bound Waste Streams (Continued)		
23.	iv. Supplementary Information File Name (attach)	
	v. Criticality Incredible Determination File Name (attach)	
	d. OSWDF Hazards Analysis	
	i. GWMP Section #	
	ii. GWMP Page #	
	iii. Or Description	
	iv. Supplementary Information File Name (attach)	
	v. Hazard Analysis File Name (attach)	
	e. OSWDF Performance Assessment	
	i. GWMP Section #	
	ii. GWMP Page #	
	iii. Or Description	
	iv. Supplementary Information File Name (attach)	
	v. No Impact Determination File Name (attach)	

Section C: Anticipated Off-Site Waste Streams				
Complete Section C for each waste stream. Enter information for the first waste stream on this form, and use Section C Continuation Sheets for the balance of the waste streams.				
24. Waste stream description				
25. Planned waste stream volume	Number		Units	
26. Container number(s)				
27. Actual waste stream volume	Number		Units	
28. Planned off-site facility				
29. Actual off-site facility				

EXAMPLE Project Planning Checklist (Continued)

Section D: Approvals		
30. Project Representative PPC Certification	a. Name	
	b. Signature	
	c. Date	
31. OSWDF Operations Manager PPC Concurrence	a. Name	
	b. Signature	
	c. Date	
32. WAO Project Representative PPC Verification	d. Name	
	e. Signature	
	f. Date	

GWMP = Generator's Waste Management Plan
NA = not applicable
OSWDF = On-site Waste Disposal Facility
PPC = project planning checklist
WAO = Waste Acceptance Organization

APPENDIX C: EXAMPLE WASTE FORM COMPLIANCE CHECKLIST

This page is intentionally left blank.

EXAMPLE Waste Form Compliance Checklist

Section A: General Information				
1. Waste Form Compliance Checklist Number				
2. Waste Form Compliance Checklist Revision Number				
3. Waste Form Compliance Checklist Submittal Date				
4. Project Planning Checklist Number				
5. Project Planning Checklist Revision Number				
6. Project Name				
7. Project Contact				
8. Project Contact Phone Number				
9. Date First Load will be Available				
10. Anticipated Total Volume	Number		Units	

Section B: Waste Stream Information	
11. Master Waste Profile Number	
12. Master Waste Profile Revision Number	
13. Project Waste Stream Description	

Section C: WAC Component 1 – Prohibitions				
14. Methods Used To Segregate Prohibited Wastes	a. GWMP Document # (attach)		Attachment File Name	
	b. GWMP Section #			
	c. GWMP Page #			
	d. Or Description			
	e. Supplementary Information File Name (attach)			

EXAMPLE Waste Form Compliance Checklist (Continued)

Section C: WAC Component 1 – Prohibitions (Continued)		
15. Project Certification	a. Name	
	b. Signature	
	c. Date	
16. WAO Verification	a. Name	
	b. Signature	
	c. Date	

Section D: WAC Component 2 – Radiological Activity and Chemical Concentration				
17. Material Source Location Number				
18. Material Interim Location Number				
19. Data Group Number(s)				
20. Data Summary Table (attach)	Attachment File Name			
21. Project Certification	a. Name			
	b. Signature			
	c. Date			
22. WAO Verification	a. Name			
	b. Signature			
	c. Date			

Section E: WAC Component 3 – Waste Evaluation and Characterization Standards			
23. Description of Waste Evaluation and Characterization Methods and Standards (attach)		Attachment File Name	
24. Project Certification	a. Name		
	b. Signature		
	c. Date		
25. WAO Verification	a. Name		
	b. Signature		
	c. Date		

EXAMPLE Waste Form Compliance Checklist (Continued)

Section F: WAC Component 4 – Waste Physical Characterization Standards			
26. Methods Used by the Project to Meet Size and Physical Form Requirements		a. GWMP Section #	
		b. GWMP Page #	
		c. Or Description	
		d. Supplementary Information File Name (attach)	
27. Project Certification	a. Name		
	b. Signature		
	c. Date		
28. WAO Verification	a. Name		
	b. Signature		
	c. Date		

Section G: Component 5 – Waste Packaging Standards			
29. Type of Package:			
30. Packaging Requirements:		a. GWMP Section #	
		b. GWMP Page #	
		c. Or Description	
		d. Supplementary Information File Name (attach)	
31. Project Certification:	a. Name		
	b. Signature		
	c. Date		
32. WAO Verification	a. Name		
	b. Signature		
	c. Date		

EXAMPLE Waste Form Compliance Checklist (Continued)

Section H: Component 6 – Waste Safe Handling Standards		
33. Safety Health, and Environment	a. GWMP Section #	
	b. GWMP Page #	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
34. Security	a. GWMP Section #	
	b. GWMP Page #	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
35. Criticality Incredible	a. GWMP Section #	
	b. GWMP Page #	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
	e. Criticality Incredible Determination File Name (attach)	
36. OSWDF Hazards Analysis	a. GWMP Section #	
	b. GWMP Page #	
	c. Or Description	
	d. Supplementary Information File Name (attach)	
	e. Hazards Analysis File Name (Attach)	

EXAMPLE Waste Form Compliance Checklist (Continued)

Section H: Component 6 – Waste Safe Handling Standards (Continued)			
37. Performance Assessment		a. GWMP Section #	
		b. GWMP Page #	
		c. Or Description	
		d. Supplementary Information File Name (attach)	
		e. Determination of No Impact File Name (attach)	
38. Project Certification	a. Name		
	b. Signature		
	c. Date		
39. WAO Verification	a. Name		
	b. Signature		
	c. Date		

Section I: Component 7 – Waste Transportation Standards			
40. Type of Transport Vehicle:			
41. Transportation Requirements		a. GWMP Section #	
		b. GWMP Page #	
		c. Or Description	
		d. Supplementary Information File Name (attach)	
		e. Equivalent Level of Safety File Name (attach)	
42. Project Certification	a. Name		
	b. Signature		
	c. Date		
43. WAO Verification	a. Name		
	b. Signature		
	c. Date		

GWMP = Generator's Waste Management Plan
OSWDF = On-Site Waste Disposal Facility
WAO = Waste Acceptance Organization

This page is intentionally left blank.

APPENDIX D: EXAMPLE OSWDF ANOMALOUS WASTE LOG

This page is intentionally left blank.

EXAMPLE On-Site Waste Disposal Facility Anomalous Waste Log

Section A: General Information							
Report Preparer Name		Date Prepared		Start Date		End Date	

Section B: Anomalous Waste Incident Table									
Discovery Date	OTL #	WFCC #	Responsible Project	Rejection Tier	Anomaly Type	Anomaly Description	Action Taken	Tier #	NCR #

NCR = non-conformance report
OTL = On-site Waste Disposal Facility Tracking Log
WFCC = Waste Form Compliance Checklist

This page is intentionally left blank.