

**Best Management Practices Plan,  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

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**Best Management Practices Plan,  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

Date Issued—June 2023

U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

Prepared by  
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,  
managing the  
Deactivation and Remediation Project at the  
Paducah Gaseous Diffusion Plant  
under Contract DE-EM0004895

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**Best Management Practices Plan,  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

**CP2-ES-0500/FR1**

June 2023

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**REVISION LOG**

<b>REVISION NUMBER</b>	<b>DATE</b>	<b>DESCRIPTION OF CHANGES</b>	<b>PAGES AFFECTED</b>
FR0	04/25/2022	Initial issue as CP2 plan. Previous document number was PAD-REG-1006. General revision includes updates for current conditions and organizational names. Erosion and Sediment Control Checklist relocated to CP4-ES-0041.	All
FR1	06/07/2023	Updated for C-615 Sewage Treatment Plant primary disinfection change and current Paducah Site conditions, and revisions for consistency with the style guide.	All

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## ACRONYMS

AST	aboveground storage tank
BMP	best management practice
CAT	Consolidated Annual Training
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
<i>CFR</i>	<i>Code of Federal Regulations</i>
D&R	deactivation and remediation
decon	decontamination
DOE	U.S. Department of Energy
DUF <sub>6</sub>	depleted uranium hexafluoride
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Right-to-Know Act
FFA	Federal Facility Agreement
HWMFP	Hazardous Waste Management Facility Permit
IC	incident commander
<i>KAR</i>	<i>Kentucky Administrative Regulations</i>
KEEC	Kentucky Energy and Environment Cabinet
KPDES	Kentucky Pollutant Discharge Elimination System
<i>KRS</i>	<i>Kentucky Revised Statutes</i>
LLW	low-level waste
NEPCS	Northeast Plume Containment System
NWPGS	Northwest Plume Groundwater System
O&M	operation and maintenance
OSHA	Occupational Safety and Health Act
PA	public address
PGDP	Paducah Gaseous Diffusion Plant
PSS	plant shift superintendent
RCRA	Resource Conservation and Recovery Act
RCW	recirculating cooling water
SPCC	spill prevention control and countermeasures
SPO	security police officer
SWMU	solid waste management unit
TSCA	Toxic Substances Control Act
TVA	Tennessee Valley Authority
TWSA	temporary waste staging area
UL <sup>®</sup>	Underwriters Laboratories Inc.
WPC	work planning and control

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## EXECUTIVE SUMMARY

The Best Management Practices (BMP) plan is required per Section 3 of the Kentucky Pollutant Discharge Elimination System Permit No. KY0004049, Agency Interest No. 3059, for the Paducah Gaseous Diffusion Plant (PGDP). The KPDES Permit requires a BMP plan for all permittees who use, manufacture, store, handle, or discharge any pollutant listed as (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to *KRS 224.1-010* and who have operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in *KRS 224.1-400*, as amended, or any regulation promulgated pursuant thereto. These operations include material storage areas; Paducah Site runoff; in-plant transfer, process, and material handling areas; loading and unloading operations; and sludge and waste disposal areas.

Per Section 3.2 of the KPDES Permit, the plan must be maintained consistent with 401 *KAR 5:065* § 2(4) pursuant to *KRS 224.70–110*, which requires the prevention or minimization of the potential for the release of “BMP pollutants” at PGDP. The BMP plan has general requirements for all operations and specific requirements for individual operations. The plan discusses a required BMP committee, the reporting of BMP incidents, and risk identification and assessment. The plan also discusses employee training; inspections and records; preventive maintenance; good housekeeping; materials compatibility; security; and materials inventory.

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# 1. INTRODUCTION

## 1.1 REGULATORY BACKGROUND

This Best Management Practices (BMP) plan implements the regulatory requirements promulgated pursuant to the Federal Water Pollution Control Act and subsequent amendments, which generally is referred to as the Clean Water Act. Kentucky Pollutant Discharge Elimination System (KPDES) Permit No. KY0004049, Section 3, establishes requirements for a BMP plan. The BMP plan has general requirements per Section 3.4 of the Permit and specific requirements outlined in Section 3.5 of the Permit. Nothing in this BMP plan alters or supersedes obligations imposed in the KPDES Permit and deviations from Appendix A guidelines would not constitute a noncompliance with the KPDES Permit. References herein to any plan or procedure refer to the most recent version of the plan or procedure in effect as of the date of this BMP plan or, if subsequently revised, to the revised version of such plan or procedure.

## 1.2 PGDP BACKGROUND AND INTERFACE

The Paducah Gaseous Diffusion Plant (PGDP) is a former uranium enrichment facility located on a reservation consisting of approximately 3,556 acres. The Paducah Site consists of the inactive uranium enrichment facilities and accompanying extensive support facilities, in addition to the Depleted Uranium Hexafluoride (DUF<sub>6</sub>) Conversion Facility. The Paducah Site is located in a generally rural area of McCracken County, Kentucky, 10 miles west of Paducah, Kentucky, and 3.5 miles south of the Ohio River. The U.S. Department of Energy (DOE) owns the reservation and facilities at PGDP. The current KPDES Permit KY0004049 was issued by the Kentucky Division of Water, with an effective date of February 1, 2023.

Four Rivers Nuclear Partnership, LLC, was awarded a contract that began in October 2017. The contractor was tasked to furnish personnel, facilities, equipment, material, supplies, and services necessary to continue with the deactivation of PGDP facilities; prepare facilities for future activities; and perform environmental remediation activities required by the site Federal Facility Agreement (FFA) and the site management plan.

This document represents the BMP plan for the Deactivation and Remediation (D&R) Contractor and Infrastructure Support Services Contractor activities and their respective subcontractors. The DUF<sub>6</sub> Conversion Contractor is a co-permittee on KPDES Permit KY0004049, but has its own BMP plan that addresses discharges from the DUF<sub>6</sub> Conversion facilities.

DOE's activities at the Paducah Site are carried out through its prime contractors. A portion of the required work is accomplished through subcontractors via direction from these various DOE prime contractors. Requirements of this BMP plan are communicated to projects and subcontractors through the Activity Level Work Planning and Control (WPC) Program. The scope of work required for each contract, project, or other work activity is evaluated through the WPC process to ensure that environmental and safety controls, such as BMPs, are implemented. As a part of the WPC process, inspection schedules and recordkeeping associated with the BMP plan are established.

## 1.3 RECEIVING WATERS

The Paducah Site is located on a local drainage divide. Surface water from the east side of the Paducah Site flows east-northeast toward Little Bayou Creek, and surface water from the west side of the Paducah Site flows west-northwest toward Bayou Creek. Bayou Creek is a perennial stream that flows toward the

Ohio River along a 9-mile course. Little Bayou Creek is an intermittent stream that flows north toward the Ohio River along a 7-mile course. The two creeks converge 3 miles north of the Paducah Site before emptying into the Ohio River. The flow in the streams fluctuates greatly as a result of local precipitation. During a large part of the year, most of the flow in both streams is the result of Paducah Site effluents. With the exception of PGDP, the drainage basin from both creeks is mostly woodland and farmland.

Flooding in the area is associated with Bayou Creek, Little Bayou Creek, and the Ohio River. Maps developed in support of the National Flood Insurance Program show a flood hazard located within the DOE boundary at the Paducah Site, but only slightly within the industrialized area of the Paducah Site. This flood hazard defines the estimated area within the 100-year flood line. The Paducah Site is shown in Flood Map Firm Panels 21145C0105F, 21145C0110F, 21145C0040F, and 21145C0045F. Flood maps are available through the Federal Emergency Management Agency Flood Map Service Center website at <https://msc.fema.gov/portal/home>.

#### **1.4 BEST MANAGEMENT PRACTICES PLAN FORMAT**

The remainder of this BMP plan is structured so that it parallels as closely as possible the requirements in KPDES Permit No. KY0004049. This structure facilitates ease of demonstrating compliance. This format results in some redundant information throughout the plan, but ensures compliance with the content requirements of the KPDES Permit.



## **2. GENERAL CONDITIONS AND GENERAL REQUIREMENTS (SECTION 3 OF KPDES PERMIT KY0004049)**

### **2.1 DOCUMENTATION**

This BMP plan is documented in narrative form, and all necessary maps and drawings are included as appendices. The BMP plan is available on the D&R Contractor's electronic share drive with hard copy available upon request. The plan also is available electronically to the public at <https://fourriversnuclearpartnership.com/>.

### **2.2 BEST MANAGEMENT PRACTICES**

The following are general, Paducah Site BMPs.

#### **2.2.1 Training**

Consolidated annual training (CAT) is required and provided to all employees. Included in this training are instructions to report any spill or release to the plant shift superintendent (PSS). The PSS determines the level of effort needed to cleanup and or contain the spill and reportability of the spill. The training includes elements of this plan and other environmental training requirements. Additional training also is required for employees and their supervisors who work with Resource Conservation and Recovery Act (RCRA) hazardous waste, polychlorinated biphenyls (PCBs), asbestos, and/or radioactive/low-level waste (LLW). Employees who operate mobile industrial equipment also are trained in accordance with Occupational Safety and Health Act (OSHA) requirements. In addition, standard operating procedures include preoperational inspections of equipment to identify and investigate potential releases.

#### **2.2.2 Inspections/Walkthroughs**

Contractors are assigned responsibility to perform walkthroughs of DOE facilities, including those with the potential to release BMP pollutants. The walkthroughs are performed according to various procedures and include a walkthrough checklist that includes criteria for leaks or spills, proper drainage, and proper chemical containment and storage. These walkthroughs help identify conditions that could result in release of BMP pollutants. Furthermore, each DOE facility's operating procedures (if applicable) contain inspection and/or maintenance requirements.

#### **2.2.3 Engineered Controls**

Inverted pipe dams designed to permit the passage of water, but contain floating materials such as oil, have been constructed in the drainage ditches flowing to KPDES Outfalls 001, 002, 008, 009, 010, and 015. If it is determined that there is no longer a potential release of floating materials upstream from the outfalls, then these inverted pipe dams can be removed. Other engineered controls include retention and detention basins and secondary containment structures.

#### **2.2.4 Spill Reporting and Countermeasures**

Even small leaks and drips are to be reported to the PSS as described in CP3-ES-0003, *Environmental Incident Reporting*. These small leaks and drips are tracked to ensure they are adequately cleaned to prevent contamination of surface and/or groundwater.

All uncontained or emergency spills are to be reported immediately to the PSS, who then will activate the field emergency response organization. An incident commander (IC) will direct the containment of any spill that may egress the building or immediate area or enter the environment. The PSS will determine the reportability of the spill and will notify the environmental field compliance manager if regulatory advice is needed.

### 2.2.5 Spill Containment and Cleanup Equipment

An emergency response vehicle maintained by Fire Services contains absorbent pads and socks, booms, sewer plugs, and sewer grating covers that may be used to contain and cleanup spilled chemicals or oil from the ground, drainage ditches, or surface waters. A dedicated, enclosed, emergency response trailer also is maintained at the Paducah Site, which contains additional spill containment and cleanup equipment. Floating plastic booms may be used to divert or contain the flow of floating material to facilitate cleanup. Inflatable pipe stoppers and small spill cleanup kits also are stored in the trailer. Various operating groups in the Paducah Site also stock spill cleanup supplies for smaller, localized spills or immediate response.

Following containment, the cleanup of spilled materials may be accomplished by using various portable pumps and containers or absorbent materials capable of handling most of the liquids used at the Paducah Site. Portable pumps are used by a number of Paducah Site operating maintenance support groups and may be used during cleanup operations. Storage capacity for spilled material is available in the form of a 420,000-gal tank formerly used to store No. 2 fuel oil east of C-600. In addition, several large poly tanks and other various containers are maintained for spill control operations and could be utilized in an emergency. Absorbent materials are stored in areas using chemicals and oils for use in containing and cleaning up small spills. A number of on-site treatment options for spilled material are available, such as neutralization, precipitation, or evaporation, as appropriate.

### 2.2.6 Communication Systems

In an emergency situation, effective and rapid communication must be maintained throughout the emergency response and control organization. The five forms of communications that are available at PGDP are (1) plant telephone system, (2) radios, (3) public address (PA) system, (4) cellular telephone, and (5) messenger.

**Plant Telephone System.** Plant telephones are located throughout the Paducah Site. An emergency situation can be reported to the PSS at the C-300 Central Control Facility by dialing the PSS emergency phone number at (270) 441-6333 or by dialing 333 from the plant's telephone system and stating, "This is an emergency."

**Radios.** Radios are used by the PSS, fire services members, environmental personnel, security, and other response personnel to aid in emergency communications. Any radio in the Paducah Site can be used to summon emergency assistance. The C-300 Central Control Facility monitors the dedicated emergency radio channel used to report emergencies.

**PA System.** The PA system is used to communicate emergency instructions to personnel who are located inside facilities with a PA system. The PSS is in charge of all announcements made on the PA system.

**Cellular Telephones.** Managers, technical staff, and supervisors who carry cellular phones are trained to call emergency numbers as needed.

**Messenger.** A messenger may be used to notify the C-300 Central Control Facility of an emergency if it is determined to be a faster means of notification.

## 2.3 DOE FACILITY COMPONENTS OR SYSTEMS

Much of the Paducah Site consists of the former uranium enrichment facilities and support operations. The facility components or system(s) were examined for potential to cause a release of BMP pollutants (as established in applicable laws and regulations). Many of the facilities listed in this document are solid waste management units (SWMUs) and will be addressed according to the Specific Conditions (Section 4) of this BMP plan.

The following existing facilities, components, or systems were examined for potential to cause a release of BMP pollutants. In addition to the general, Paducah Site BMPs noted previously, facility-specific BMPs are listed in this document per facility.

- C-612 Northwest Plume Groundwater System
- C-765 and C-765-A Northeast Plume Containment Systems
- Decontamination Facilities
- Hazardous Waste Storage and Treatment Facilities
- C-404 Hazardous Waste Landfill
- C-746-U Contained Landfill
- C-746-U Fuel Storage Tanks
- Runoff Due to Disturbance of Historic Release/Spill Sites
- Paducah Site Projects
- C-752-B Fuel Station
- Outfalls, Creeks, and Ditches
- SWMUs
- C-616-E Chromium Sludge Lagoon
- C-616-F Full Flow Lagoon
- Contaminated Scrap Yards
- PCB Waste Storage Areas
- Analytical and Field Laboratories
- C-600-A Package Boilers, and C-601 Fuel Oil Storage Tanks
- C-611 and C-616 Chemical Storage Tanks
- Garage Areas
- Switch yard Areas
- C-615 Sewage Treatment Plant
- C-333 and C-337 Fuel Storage Tanks

## 2.4 INDIVIDUAL FACILITIES

The following information outlines situations in which a reasonable potential for release of BMP pollutants from each DOE facility component or system could occur due to equipment failure, natural condition, or other circumstance. The engineering drawing C5E-19770-A01, Rev. 2, “Paducah Gaseous Diffusion Plant KPDES Permit Application Outfall Drainage Areas Site Map,” depicts each KPDES outfall’s current drainage area and is presented as Appendix B of this BMP plan.

### 2.4.1 C-612 Northwest Plume Groundwater System

Previous operations at PGDP resulted in contamination of groundwater with technetium-99 (Tc-99) and trichloroethene (TCE). Contamination has spread, resulting in contaminant plumes known as the Northwest Plume, Northeast Plume, and Southwest Plume. The purpose of the Northwest Plume Groundwater System

(NWPGS) is to control contamination and mitigate the spread of the highest TCE concentration portion of the northwest plume through groundwater extraction. The NWPGS consists of two active extraction wells in one wellfield; a groundwater treatment system, including sand filtration and an air stripper with carbon treatment for off-gas emissions; and ion exchange units.

The NWPGS is located outside the DOE Limited Area security fence at the northwest corner of PGDP.

The reasonable potential for release of BMP pollutants from the NWPGS arises with a release of untreated groundwater that is contaminated with TCE and/or Tc-99. Also, pumps, motors, and mobile industrial equipment in the facility contain lubricating oil. A small amount of waste is stored at the facility. Releases from NWPGS would discharge through KPDES Outfall 001.

**C-612 NWPGS BMPs.** The foundation of the C-612 facility acts as a secondary containment to the NWPGS operation. The perimeter of the facility includes an 8-inch raised curb for the containment of spills and releases. The foundation of the facility slopes toward a centralized sump, which utilizes a liquid level indicator and automatic sump pump. Leaks or releases within the facility flow to the sump and then transfer back through the treatment system. If the level in the sump overcomes a specified point, a system alarm triggers and operational shutdown occurs. Ion exchange vessels and an air compressor are located adjacent to C-612 in a trailer that has secondary containment and a sump. This sump transfers any leaked material to the C-612 sump, where it is contained as part of the facility's secondary containment system. The facility is equipped with a spill response kit to address the unlikely event of a release of the relatively small volume of lubricating oil. The extraction well vaults also act as secondary containment and contain sumps with level indicators and pumps. Leaks or releases within the vaults will flow into the sump. If the level in the sump overcomes a specified point, a system alarm triggers and operational shutdown occurs.

NWPGS utilizes a dedicated automatic telephone dialer (autodialer) for calling designated on-call personnel when system alarm conditions occur. Abnormal operating conditions also trigger alarms to the main system control panels. The autodialer, upon receipt of an alarm signal from the programmable logic controller, dials on-call personnel and delivers an alarm message.

Operation and maintenance (O&M) of NWPGS is governed by the *Operation and Maintenance Plan for the Northwest Plume Groundwater System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2469&D2.

#### **2.4.2 C-765 and C-765-A Northeast Plume Containment System**

The Northeast Plume Containment System (NEPCS) includes two TCE treatment systems that each have an extraction well, transfer pump, pipeline, and air stripping units. The treated groundwater is discharged through a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) outfall to Little Bayou Creek. The objective of this system is to retard the migration of the highest concentration of TCE in the Northeast Plume.

The potential for release from this system is associated with a release of untreated groundwater from the piping that connects the extraction wells and the air stripping units. A release from piping near the air stripping units would discharge to KPDES Outfall 002 or Outfall 010.

**C-765 and C-765-A NEPCS BMPs.** NEPCS is an automated system with failure alarms and interlocks that will shut down the system on the occurrence of certain alarm conditions. During normal operations, the system has the capability to operate with minimal operational support. The C-765 NE Plume Treatment Unit and the C-765-A NEPCS utilize secondary containment and sumps, which include level indicators and automatic sump pumps. Leaks or releases within the facility will flow to the sump and then transfer back

through the treatment system. If the level in the sump overcomes a specified point, a system alarm triggers and operational shutdown occurs. The extraction well vaults also act as secondary containment and contain sumps with level indicators and automatic sump pumps. Leaks or releases within the vaults will flow into the sump and transfer back into the system influent pipeline. If the level in the sump overcomes a specified point, a system alarm triggers and operational shutdown occurs. The operator conducts equipment inspections and system checks of key process variables, records system operational data, and ensures effective and safe system operation when the system is operating. NEPCS corrective and preventive maintenance and calibration are performed in accordance with manufacturer's recommendations, sound engineering practices, and applicable procedures. Process information can be accessed locally by the main system control panels when the system is operating in accordance with applicable procedures.

NEPCS utilizes a dedicated automatic telephone dialer (autodialer) for calling designated on-call personnel when system alarm conditions occur. Abnormal operating conditions trigger alarms to the main system control panels. The autodialer, upon receipt of an alarm signal from the programmable logic controller, dials on-call personnel and delivers an alarm message.

O&M of NEPCS is operated and governed by the *Operation and Maintenance Plan for the Northeast Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2470&D1.

### 2.4.3 Decontamination Facilities

DOE, through its contractors and subcontractors, operates several decontamination (decon) facilities at PGDP. The decon facilities consist generally of a concrete pad, a spray apparatus, and decon water storage. A decon pad sump collects decon water. The water is transferred to storage tanks, analyzed, treated (if needed), and appropriately disposed of in accordance with applicable requirements. The selection of the decon pad to be used during remediation projects is based on the location of the project, size of the facility, and available facilities, such as roof or water supply.

**C-752-C Decontamination Facility Pad.** The C-752-C decon pad is located outside the DOE Limited Area security fence near the southwest corner of PGDP, along Ohio Street, south of the C-743 trailer complex. The pad predominantly is used for decon purposes for various remediation projects around the Paducah Site. The C-752-C facility contains four sumps; each has an estimated 1,000-gal capacity. If any sump is full, the pad is designed so that some overflow from the sump can be contained on the pad itself. The fenced area surrounding the decon pad is used for supply and waste storage. Used decon water is stored in poly or frac tanks located on the concrete pad and double-walled frac tanks stored on the gravel pad adjacent to the concrete pad. The potential for release of BMP pollutants from this facility would increase with a leak or rupture from the storage tanks. Pollutants would be dependent on the remediation project, but the contaminants could include, but are not limited to, TCE, trichloroethane, lead, or PCBs. Discharges or releases from this facility could discharge to a ditch leading to Bayou Creek.

**C-416 Equipment Cleaning Pad.** The C-416 Equipment Cleaning Pad is located between the C-631 cooling towers and C-337 Process Building and is used for decon of equipment. It is not equipped with a sump; therefore, the decon water is collected in a small trough and transferred to holding tanks that are located on the pad. Discharges or releases from C-416 would flow to KPDES Outfall 002.

**Decontamination Facility BMPs.** The pads are designed so that releases on the pad will drain to the pad sumps and/or troughs. The pads are operated in accordance with procedures that comply with environmental protection requirements. Inspections also occur at the pads and usually are associated with the various projects that use the pads for decon purposes. Sump water is collected and characterized prior to discharge either by analytical data or process knowledge. Waters that meet KPDES requirements may be discharged

to an outfall conveyance. At the end of each project's use of the pads, collected decon water is characterized for proper disposition.

#### 2.4.4 Hazardous Waste Storage and Treatment Facilities

The following are permitted hazardous waste storage facilities [Hazardous Waste Management Facility Permit (HWMFP), KY8-890-008-982] at PGDP. This BMP plan hereby incorporates the policies, procedures, and BMPs established in the current revision of the contingency plan to prevent and mitigate releases from hazardous waste storage and treatment areas at PGDP.

**C-733 Hazardous Waste Storage Area.** This facility is located in the southwestern area of PGDP, west of C-744. It is used to store spent solvents, paint waste, mineral spirits, waste chemicals, and other hazardous waste. It is considered the flammable storage area. The facility is diked and contains a sump. The facility has limited sides to help any fumes that may be generated from the waste to dissipate quickly and not reach explosive levels if a leak were to occur. Rainfall that blows into the facility is collected in the sump. The sump is pumped to collection containers, sampled, and then the results are assessed for environmental effects prior to discharge to a KPDES outfall. PCB waste can also be stored here in container(s) within covered storage boxes that protect the waste from the weather and prevent any discharges if a drum were to rupture or develop a leak. The facility is inspected weekly, at a minimum. Leaks are cleaned promptly, and leaking containers are repackaged to contain the waste materials. Releases from C-733 would flow to KPDES Outfall 008.

**C-746-Q Hazardous Waste Storage and Treatment Area.** This area is located inside the western portion of the C-746-Q Hazardous and LLW Storage Facility and is permitted for batch chemical treatment of hazardous waste by neutralization, precipitation, oxidation, reduction, and stabilization. The permit also allows for the usage of a bulb crusher at C-746-Q. The facility is an enclosed building that is diked and protected from the weather. The facility is inspected at least weekly for leaking containers or loss of building integrity. Leaks are cleaned promptly, and leaking containers are repackaged to contain the waste materials. Releases from C-746-Q would flow to KPDES Outfall 012. The eastern area, C-746-Q1, of this facility is not included under the HWMFP.

**C-752-A Environmental Restoration Waste Storage Facility.** This facility is an enclosed building that stores environmental restoration derived waste as well as PCBs, LLW, and other miscellaneous waste. A bulb crusher is located here. Permitted treatment activities include batch chemical treatment of hazardous waste by neutralization, precipitation, oxidation, reduction, absorption, decanting, filtration, and stabilization. The facility is diked and protected from the weather. The facility is inspected at least weekly for leaking containers or loss of building integrity. Leaks are cleaned promptly, and leaking containers are repackaged to contain the waste materials. Discharges of treated wastewaters are characterized prior to discharge to an outfall. Releases from C-752-A would flow to KPDES Outfall 001.

**Hazardous Waste Storage Areas BMPs.** A HWMFP has been issued to allow storage and treatment of hazardous waste at PGDP at the facilities listed above. The permit is U.S. Environmental Protection Agency (EPA) ID No. KY8-890-008-982. In accordance with that permit and applicable state and federal regulations, a contingency plan was developed to provide for emergency responses at the hazardous waste facilities at the Paducah Site.

The contingency plan establishes policy and creates procedures for hazardous waste spills, containment, and countermeasures to minimize any adverse impact to the environment, to reduce safety and health hazards, and to meet standards that define the acceptable management of hazardous waste. The contingency plan uses past experience and BMPs to minimize hazards to human health or the environment from fires,

explosions, or any unplanned release of hazardous waste to air, soil, or surface water. This plan is revised as necessary in accordance with applicable requirements.

Refer to the contingency plan, Part G of the Hazardous Waste Management Permit Application, for additional information. Discharges of treated wastewaters are characterized prior to discharge.

BMPs for temporary waste staging areas (TWSAs) are addressed in CP2-ER-1125, *Contingency Plan for Temporary Staging Areas at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. TWSAs at the Paducah Site include temporary satellite accumulation areas, 90-day accumulation areas, or CERCLA staging areas.

#### **2.4.5 C-404 Hazardous Waste Landfill**

The closed C-404 Low-Level Radioactive Waste Burial Area landfill is located in the west-central portion of the Paducah Site secured area. The 1.2-acre facility operated as a surface impoundment from approximately 1952 until early 1957. During this time, influents to the impoundment originated from the C-400 Cleaning Building. In 1957, the impoundment was converted to a solid waste disposal facility for uranium-contaminated solid waste. When the impoundment was converted to a disposal facility, a sump was installed at the former weir to collect the leachate from the facility. Leachate is pumped from the sump, as needed, into a mobile tank. The leachate then is transferred to a permitted hazardous waste storage facility on-site prior to characterization and then is transferred off-site for treatment.

In 1986, the disposal of waste at the C-404 landfill was halted, and a portion of the disposed waste was found to be RCRA hazardous. The landfill was covered with a RCRA multi-layered cap and certified as closed in 1987. It currently is regulated under RCRA as a land disposal unit, and compliance is monitored under the current HWMFP. Releases from the C-404 landfill would flow to KPDES Outfall 015 and would be responded to in accordance with any applicable provisions of HWMFP KY8-890-008-982.

**C-404 Hazardous Waste Landfill BMPs.** Information and BMPs pertaining to the C-404 landfill are contained in Appendix I-2 (Post Closure Plan C-404 Landfill) of the HWMFP. These BMPs include a series of groundwater monitoring wells, a cap inspection schedule, and the requirements to maintain the cover. BMPs pertaining to the C-404 landfill listed in the current version of the HWMFP hereby are incorporated into this BMP plan. Leachate is pumped and moved to permitted storage. Leachate must be sampled and analyzed in accordance with the waste analysis plan prior to determining treatment and disposal options. Generally, the leachate is shipped off-site for treatment/disposal, but could be treated for contaminants and discharged to a KPDES outfall, if appropriate.

#### **2.4.6 C-746-U Contained Landfill**

The C-746-U Contained Landfill is a permitted solid waste contained landfill. This landfill is permitted to receive industrial, construction, and residential waste streams from the Paducah Site only as specified in the landfill permit (i.e., Solid Waste Permit No. SW07300015, SW07300045, SW07300014, Agency Interest No. 3059). The surface runoff at the landfill flows to a sedimentation basin and is discharged to Outfall 019. Leachate is collected from both C-746-U and C-746-S Landfills and is treated at the C-746-U15 Leachate Treatment Facility. Leachate treated at C-746-U15 is discharged to KPDES Outfall 020. Other leachate disposal options may be used as specified in the permit, if needed.

**C-746-U Landfill BMPs.** The burial area of the landfill where waste is disposed of is covered daily with Posi-Shell®, a synthetic cover equivalent to Belton 113, or 6 inches of soil to promote runoff. A minimum of an additional 6 inches of cover is placed over all areas that will not receive additional waste within 30 days. A minimum of an additional 18 inches of long-term cover shall be placed over all areas that will

not receive additional waste within four months by September 15 of each year. The landfill is inspected each day of operation and after each large storm event to ensure that erosion does not occur. Eroded areas are repaired and seeded to prevent further erosion. Other storm water management tools, as described in Appendix A, are utilized as necessary. The entire landfill drains to a large sedimentation basin. The basin has treatment capabilities and enough capacity to hold months of runoff under normal conditions. Water is treated/analyzed to ensure total suspended solids are in compliance prior to pumping to KPDES Outfall 019.

Water that penetrates the soil covering and percolates through the buried waste is collected through a leachate collection system. The landfill is lined to prevent leachate from escaping into the environment. Berms and diversion ditches are placed around the active area of the landfill where waste may be exposed to prevent surface runoff from entering that area. The leachate is treated prior to discharge. The leachate treatment system is located inside the C-746-U15 Leachate Treatment Facility. The C-746-U15 facility is an enclosed building with secondary containment to prevent discharge from the system or the associated storage tanks.

#### **2.4.7 C-746-U Fuel Storage Tanks**

Two fuel tanks are located at the C-746-U Contained Landfill, northeast of PGDP. There is one 1,000-gal diesel tank and one 500-gal gasoline tank. The 1,000-gal and 500-gal tanks located outside at C-746-U are manufactured by ConVault® and are Underwriters Laboratories Inc. (UL)®-listed. Each system consists of a primary steel tank and secondary containment consisting of a 30-mil (0.78-mm) thick polyethylene membrane enclosing the steel tank and insulation material. The primary steel tank and the secondary containment are encased in 6 inches of reinforced concrete, but no steel or insulating material comes in contact with the concrete. The tanks located at C-746-U landfill are provided with a UL®-listed spill containment system that includes a normally closed valve to release any spilled product from refilling into the primary steel tank.

**C-746-U Fuel Storage Tanks BMPs.** BMPs for these fuel storage tanks are established in the *Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Gaseous Diffusion Plant, McCracken County, Kentucky*, CP2-RA-0016 (SPCC Plan). BMPs for these tanks include secondary containment, administrative controls, integrity testing, and inspections. Releases from these tanks would flow to the C-746-U Basin. The basin discharges to KPDES Outfall 019 but is not discharged until sample analysis indicates compliance with applicable KPDES requirements.

This BMP plan hereby incorporates the policies, procedures, and BMPs established in the current revision of the SPCC Plan for these tanks to prevent and mitigate releases from this facility. Refer to the SPCC Plan for additional information.

#### **2.4.8 Runoff Due to Disturbance of Historic Release/Spill Sites**

Construction of PGDP began in 1951, and operation commenced in 1952. There have been a number of releases throughout the years of operation, and soil and groundwater within and around the vicinity of PGDP have experienced varying degrees of contamination with radionuclides, PCBs, TCE, polycyclic aromatic hydrocarbons, and other industrial chemicals. The potential of release arises when remediation or other projects disturb the soil in areas and the contaminated soil is carried by precipitation runoff to storm sewers and/or KPDES outfalls. The outfall affected is dependent upon the location of the project.

**Runoff BMPs.** Various controls have been implemented to prevent pollutants from entering Paducah Site outfalls during rainfall events. Each project is required to provide BMPs that will be utilized during the project to the Environmental Field Compliance organization through the WPC process. The protective



BMPs are evaluated on a project by project basis to assure protection of the environment during rainfall events. Appendix A provides examples of storm water controls that may be used to prevent run off resulting in spread of contamination.

#### 2.4.9 Paducah Site Projects

The potential for release from Paducah Site projects and associated activities is unique to each project. Furthermore, any KPDES outfall that would be affected also would be dependent upon the location of the project.

**Paducah Site Projects BMPs.** Each Paducah Site project is unique; and effective BMPs should be established during the planning phase of the project; therefore, the Environmental Field Compliance organization will review each project during the planning phase and through the WPC process to ensure that BMPs are included in the project requirements. For projects accomplished by a subcontractor, appropriate BMPs are included in the requirements of the subcontract for the project. For self-performed work, the Environmental Field Compliance organization will ensure that appropriate BMPs are included in the work packages. In addition to storm water control BMPs identified in Appendix A, the project will take measures to minimize contact of storm water with associated project debris and minimize potential for contaminated run-off to reach storm drains/outfalls.

#### 2.4.10 C-752-B Fuel Station

Two aboveground storage tanks (ASTs) are located at the C-752-B facility south of PGDP, which serve as a satellite refueling station for mobile equipment. The two 4,000-gal UL<sup>®</sup>-listed, dual-wall tanks are located on the concrete-bermed C-752-B pad. Both tanks have a capacity of 4,000 gal; however, each tank is split internally into a 3,000-gal and a 1,000-gal tank to allow the tank to hold two different types of fuel at the same time. One tank contains E85 and E10 unleaded gasoline; the other tank contains on-road and off-road diesel.

**C-752-B Fuel Station BMPs.** The two 4,000-gal steel tanks at C-752-B are UL<sup>®</sup>-listed, dual wall, and staged on a bermed concrete pad. These two tanks are split internally into 1,000-gal and 3,000-gal sections. The second wall of the tanks is sufficiently impervious to contain oil per the 40 *CFR* § 112.7(c)(1)(i) requirement for secondary containment. Absorbent materials [40 *CFR* § 112.7(c)(1)(viii)] are available as a backup defense, if needed. A spill collection pan and spill collection devices (pans, pads, etc.) are used at the dispensing pumps to help ensure that oily products do not impact the environment if a spill occurs. Each tank contains an interstitial leak detection device, which is a continuous monitor with visible and audible alarms. BMPs for these storage tanks are established in the SPCC Plan. Releases from this area would flow to KPDES Outfall 009.

#### 2.4.11 Outfalls, Creeks, and Ditches

Although outfalls, creeks, and ditches are not facilities, BMPs associated with them can help prevent environmental harm due to the release of hazardous materials. The potential for release through the outfalls is dependent upon activities and facilities throughout the Paducah Site and the frequency and volume of precipitation events.

**Outfalls, Creeks, and Ditches BMPs.** KPDES Outfalls 001, 002, 008, 009, 010, and 015 have inverted pipe dams. Inverted pipe dams are engineered so that water is allowed to pass through the dam, but floating materials, such as oil and debris, are contained. Of these outfalls, only Outfalls 001 and 008 routinely discharge industrial wastewaters. If it is determined that there is no longer a potential release of floating materials upstream from the outfalls, then these inverted pipe dams can be removed. New discharges or

changes to existing discharges are evaluated to ensure they will not impact water quality criteria or KPDES Permit requirements.

KPDES Outfalls 002, 010, 011, and 012 receive discharge waters from portions of the former enrichment facilities and storm water runoff from a large portion of the eastern side of the Paducah Site. Given the type and reduction of discharges to Outfalls 002, 010, 011, and 012, the KPDES Permit with effective date of February 1, 2023, does not require discharges be lifted via outfall lift stations for treatment at the C-617-B Effluent Control Lagoon.

Outfall 004 is an internal compliance point source for C-615 Sewage Treatment Plant effluent that flows to Outfall 008. The operators of the C-615 Sewage Treatment Plant are certified in accordance with *Kentucky Administrative Regulations* to ensure proper operation of the plant.

Outfall 006 receives effluent from the C-611 water treatment facility. C-611 treats Ohio River water by filtration and sedimentation ponds to produce drinking water.

Outfall 009 drains mostly nonprocess storm water runoff from buildings, parking lots, and grass-covered fields.

Outfall 013 drains storm water from nearby uranium hexafluoride cylinder yards. The drainage ditch to Outfall 013 has a constructed wetland retention pond (i.e., C-617-C Wetland and Pond for Outfall 013) to minimize zinc concentrations from storm water runoff of the DUF<sub>6</sub> cylinder storage yards at the outfall.

Outfall 015 drains nonprocess storm water from grass-covered fields.

Outfall 016 includes surface drainage from a small portion of the Paducah Site near the C-615 Sewage Treatment Plant and the C-207 Fire Training Facility.

KPDES Outfall 017 drains storm water from uranium hexafluoride cylinder storage yards and noncontact cooling waters from the DUF<sub>6</sub> conversion facility, neither of which is expected to release any floating materials. The drainage ditch to Outfall 017 includes an in-line zinc treatment system to reduce zinc concentrations of storm water runoff from the oxidized coatings from the stored cylinders and a constructed wetland to minimize zinc concentrations further at the outfall.

Outfall 019 is designed to discharge surface water runoff from the C-746-U Contained Landfill during rainfall events, but BMP plans for the facility dictate holding the area runoff in a sedimentation pond until the pond is nearly full and the water meets KPDES discharge limits. At that time, the pond is pumped to Outfall 019.

Outfall 020 discharges landfill leachate treated to meet KPDES discharge criteria. Treatment process precludes introduction of oils or other floating material. It is administratively controlled and is discharged and sampled at the same location as Outfall 019.

All outfalls are regularly inspected by Environmental Field Compliance and Utilities Optimization, as specified by their respective procedures. These inspections look for excessive sediment build up, visual signs of a release, blockage of the discharge path, or any other unusual condition. Environmental Field Compliance personnel conduct documented outfall inspections as described in CP4-ES-0041, *Environmental Monitoring Inspections*. Power and Utilities Optimization personnel conduct documented outfall inspections during the day shift as described in CP4-UT-0405, *Utilities Routine Duties, Checks, and Inspections*.

#### 2.4.12 Solid Waste Management Units

A number of SWMUs have been identified at the Paducah Site. The potential for releases from SWMUs originates with the possibility of historic waste or other material located in these areas. A potential exists for leaks, such as lubricating or cooling liquids, from equipment or supplies utilized in the characterization and disposal of the materials located in the SWMUs.

**SWMU BMPs.** All work in SWMUs requires approval from the Environmental Field Compliance organization. Work approval is captured on the review of the work instructions, task instructions, and releases. The Environmental Field Compliance organization reviews work control documents to ensure that BMPs are followed based upon this plan. Field follow-ups and inspections are conducted if the work plans indicate the work has the potential to disturb contaminants in a SWMU. Requirements for SWMU inspections are identified in CP4-ES-0041, *Environmental Monitoring Inspections*, and its respective forms.

#### 2.4.13 C-616-E Chromium Sludge Lagoon

The lagoon is an L-shape lagoon with a clay floor placed at ground level and earth/clay walls. The lagoon formerly received treated wastewater from the recirculating cooling water (RCW) treatment facility (C-616 Liquid Pollution Abatement Facility). The C-616 facility previously treated RCW, which contained hexavalent chromium. Hexavalent chromium use as a corrosion inhibitor in RCW was discontinued in the early 1990s. Hexavalent chromium was replaced with phosphate as a corrosion inhibitor. The C-616 facility then was used to treat phosphate. In 1998, the RCW was rerouted from the C-616-E Sludge Lagoon to the C-616-F Full Flow Lagoon, no longer using the C-616-E Sludge Lagoon. The C-616-E Sludge Lagoon contains sludge and water from the C-616 RCW treatment facility. The sludge and water contain trivalent chromium that remains from hexavalent chromium reduction/treatment at C-616. The potential for release from this facility comes with a degradation of the lagoon walls through erosion or damage. Releases from this lagoon would travel through KPDES Outfall 001.

**C-616-E Chromium Sludge Lagoon BMP.** The heavy metals (e.g., trivalent chromium) that constitute the major potential pollutant from this facility do not readily migrate to groundwater. Because this is an elevated lagoon with no discharge into the C-616-F Full Flow Lagoon, it has no effluent. Evaporation maintains a fairly constant lagoon elevation. This lagoon is inspected at least annually, as required by CP4-ES-0041, *Environmental Monitoring Inspections*, to ensure integrity of the structure of the lagoon.

#### 2.4.14 C-616-F Full Flow Lagoon

The purpose of the C-616 facility was to reduce the phosphate concentration discharged in treated blowdown from PGDP cooling towers; the cooling towers no longer are operational. Phosphate treatment was accomplished by precipitation in a clarifier. The 400-L, 616-L, and C-616-H lift stations direct flow to the C-616-C lift station that discharges to the C-616-F Full Flow lagoon. The C-616-F Lagoon has a 26,000,000-gal capacity and a retention time of approximately 60 days. The lagoon also receives effluents from the North-South Diversion Ditch, which receives storm water from the central part of the Paducah Site.

**C-616-F Full Flow Lagoon BMPs.** Carbon dioxide may be fed to the effluent of the lagoon to control pH as necessary to comply with KPDES Permit limits. Daily checks of the carbon dioxide feed are performed as described in CP4-UT-0620, *Operation of CO<sub>2</sub> Feed Systems*.

#### 2.4.15 Contaminated Scrap Yards

The C-746-E and C-746-E1 contaminated scrap yards were located in the northwest corner of PGDP and contained many types of contaminated scrap. The scrap was removed for disposal with only small residual pieces of metal left in the soils beneath the scrap metal piles. Much of the scrap that was disturbed during the removal process was contaminated with radioactive components. The potential for contamination from these scrap yards is from runoff from precipitation events. Releases from these scrap yards would flow to KPDES Outfall 001.

**Contaminated Scrap Yard BMPs.** Scrap yard BMPs are contained in the *Operation and Maintenance Plan for the Northwest Storm Water Control Facility at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2044&D1/R4 (C-613 O&M Plan). Primary controls include the C-613 Sedimentation Basin that captures the runoff from the scrap yards and allows sedimentation and treatment, if necessary, of contaminants. The scrap yards were vegetated following removal of the scrap materials. The C-613 O&M Plan includes routine inspections of the facility. When sediment levels in the basin approach a level where discharge of the solids may occur, cleanout will be evaluated.

#### 2.4.16 PCB Waste Storage Areas

PCBs historically have been used at PGDP. PCBs are still used in electrical equipment and are present in ventilation gaskets in the process buildings and other site buildings. There are four areas where PCB waste is stored at PGDP.

- C-746-Q Hazardous and LLW Storage Facility
- C-733 Waste Oil and Chemical Storage Facility
- C-752-A Waste Storage Facility
- C-753-A TSCA Waste Storage Facility

Additionally, temporary staging of PCB waste may occur in generator staging areas in the process buildings and CERCLA storage areas near the SWMU or area of concern where PCB waste was removed based upon applicable, relevant, and/or appropriate requirements.

**PCB Waste Storage Area BMPs.** PCB waste storage is diked per 40 *CFR* § 761.65(b) or protected from run-on/run-off per 40 *CFR* § 761.65(c). Regular inspections are performed and documented on PCB waste storage areas. Each storage facility is controlled by operating procedures. Stored PCB waste is protected from the weather, thus preventing runoff of PCB contaminants. Personnel assigned to work with PCB waste are required to complete PCB awareness training. The Toxic Substances Control Act (TSCA) Uranium Enrichment Federal Facility Compliance Agreement of February 1992 and modified in 1997 and May 30, 2017, establish requirements pertaining to PCB/TSCA compliance.

#### 2.4.17 Analytical and Field Laboratories

Environmental monitoring, remediation, waste characterization, and deactivation projects performed by DOE contractors include the use of off-site laboratories for analysis of soils, water, effluents, etc. An on-site analytical laboratory, located in the C-409 Stabilization Building, provides support for deactivation activities at the site. The environmental samplers utilize the C-730 Maintenance Service Building, also referred to as the C-730 field lab, for calibration of field instrumentation using standards and reagents, analysis of total residual chlorine, preparation of sample kits, preparation of sample shipments, and overnight storage of samples. Temporary laboratories may be established by subcontractors in trailers. The laboratories generate hazardous and nonhazardous waste.

**Analytical and Field Laboratories BMPs.** Laboratory procedures prohibit RCRA hazardous wastewater from being released into the sink drains. Nonliquid waste and RCRA hazardous wastewater generated in the laboratories are containerized for proper handling and/or disposal.

#### 2.4.18 C-600-A Package Boilers and C-601 Fuel Storage Tanks

There are two operational package boilers located at C-600-A. One of the two C-600-A package boilers can operate on fuel oil on an as needed or emergency basis. The fuel oil is provided by a 500-gal day tank that is dual-wall with no dike. The 500-gal day tank is connected to the package boiler that can operate on fuel oil.

Two 420,000-gal tanks (C-601-A and C-601-B) were built to American Petroleum Institute Standard 650. The C-601-B tank could be used to charge the 500-gal day tank for the C-600-A package boiler that can operate on fuel oil. The C-601-A tank no longer is used for oil storage.

**C-600 Package Boilers and C-601 Fuel Storage Tanks BMPs.** The 500-gal day tank used to fuel the C-600-A package boiler is a dual-wall tank. The C-601-A and C-601-B tanks are located within a 675,000-gal capacity containment structure consisting of an earthen dike lined with a synthetic material impervious to oil. In the event of a release from the C-601-A or C-601-B diked area, the oil could be trapped downstream at Outfall 008 that has a skimmer and inverted pipe dam. The skimmer at Outfall 008 dam consists of a dam, quiet zone, and weir. Adjacent to the dam is an oil containment pond. The dam creates a quiet zone with a three-hour retention time to allow oil and other buoyant materials to separate from the water. A skirt oil boom diverts floating materials to a slightly submerged float-controlled weir. Most of the ditch flow will underflow the floating boom and then overflow the dam. Diverted materials will flow to the containment pond and remain there for remediation. An underflow dam maintains the water level in the containment area. Should an oil or chemical spill reach the drainage ditch, inflatable pipe stoppers are available to fit any of the culverts in these ditches. BMPs for these fuel storage tanks are established in the SPCC Plan.

#### 2.4.19 C-611 and C-616 Chemical Storage Tanks

Chemicals used for water treatment are stored in bulk quantities at the treatment facilities located at C-611 and C-616.

**C-611 and C-616 Chemical Storage Tanks BMPs.** At C-611, all liquid drinking water treatment chemical feed tanks are diked, double-walled, or drain to a sump that pumps back into the system. Liquid and dry chemicals are stored in bins, tanks, and totes. If the bins/totes were to leak, the chemicals would go to drains that would wash to a storage basin, C-611-W basin, where treatment could occur. C-611-W overflows to basin C-611-Y, which has a large holdup capacity where further treatment could occur, if necessary. The basins flow to KPDES Outfall 006. If the tanks leak, the double-wall system will capture any chemical that escapes the main tank. Drains near the double-wall tanks will be covered to prevent sodium hypochlorite from harming outfall environments.

At the C-616 Liquid Pollution Abatement Facility that reduces phosphate, all liquid chemical tanks have been emptied and removed. There is a dry lime storage tank located at the facility. A leak from a storage tank would accumulate on the pad beneath the tank and could be detected and cleaned readily. If rain washed some of the spilled material into the adjoining ditch, it would flow to the C-613 Sedimentation Basin. The basin discharges to KPDES Outfall 001.

#### 2.4.20 Garage Areas

Maintenance on Paducah Site vehicles, mobile equipment, tow tractors, forklifts, etc., is performed at the C-750 Garage Building, C-755-A Maintenance Shop garage, C-724-B Carpenter Shop, and C-360-A Former Toll Transfer and Sampling Building Annex. Used fluids (e.g., used oil, coolant, etc.) are placed into storage containers for recycling and/or disposal at off-site facilities. In the C-750 Garage, debris (e.g., dirt and grass) is removed from Paducah Site vehicles and mowers (i.e., equipment) with water prior to performing maintenance.

**Garage Area BMPs.** Rinse water generated inside the C-750 Garage either collects in the wash bay pit, enters floor drain that feed to the C-615 Sewage Disposal Plant or flows to Outfall 008 through storm water drains. Small spills of oil and grease are controlled using an oil sorbent and good housekeeping practices. The majority of work performed at garage areas is done in enclosed facilities. Floor drain covers and other control measures, such as pads and socks, may be used if the potential exists for discharge to the storm water system. When it becomes necessary to do work outside, various absorbents, such as pads and socks, will be readily available. Oil and grease used outside are placed inside the facilities at the end of each day and in the event of rain.

#### 2.4.21 Switchyard Areas

The C-531, C-533, C-535, and C-537 switchyards no longer are operational. Transformers and oil circuit breakers located at C-531, C-533, C-535, and C-537 have been drained. Storage tanks and piping for the transformers and oil circuit breaker oils at C-540 and C-541 have been drained.

Tennessee Valley Authority (TVA) has constructed a substation on the Paducah Site, with the facility designation C-538. The substation includes two 5,054-gal capacity transformers and six 121-gal capacity metering transformer units.

**Switchyard Area BMPs.** The C-538 transformers have oil containment pits that drain to a 19,530 gal capacity oil containment pit. The C-538 substation drains to KPDES Outfall 010 that is equipped with an inverted pipe dam designed to permit the passage of water, but contain floating materials such as mineral oil. The dam is designed to overflow only during severe rainstorms and will provide effective oil containment during moderately heavy rains.

#### 2.4.22 C-615 Sewage Treatment Plant

The C-615 Sewage Treatment Plant is located in the southwest corner of the Paducah Site. The operation of the sewage treatment plant is described in CP4-UT-0618, *Operation of C-615 Sewage Treatment Plant*. The sewage treatment plant provides sewage handling and treatment for the Paducah Site with the exception of some remote facilities. The primary and alternate disinfection processes are performed using liquid sodium hypochlorite.

**C-615 Sewage Treatment Plant BMPs.** Secondary containment for the liquid sodium hypochlorite is provided to prevent releases to the environment in the event of a leak or rupture. Periodic inspections of the sewage treatment plant are addressed in CP4-UT-0618, *Operation of C-615 Sewage Treatment Plant*.

#### 2.4.23 C-333 and C-337 Fuel Storage Tanks

Two 1,000-gal gasoline ASTs are located at C-333 and C-337. The C-333 fuel storage tank is located west of the C-333 Process Building; the C-337 fuel storage tank is located to the south of the C-337 Process

Building. The tanks are designed with double-wall construction and leak-detection monitors for the interstitial space. Each AST is also equipped with an overfill prevention valve.

**C-333 and C-337 Fuel Storage Tanks BMPs.** The two 1,000-gal tanks at the C-333 and C-337 process buildings are designed with double-wall construction and leak-detection monitors for the interstitial space; they are also equipped with an overfill prevention valve. Site procedures control loading activities, which includes safety precautions such as the use of drip pans; continuous site personnel monitoring of loading operations; and leak inspection of valves, connections, and the ground surface during and after loading. Fuel facility personnel monitor the filling operations to ensure there are no overfills. Spills from the C-333 fuel storage tank would drain to KPDES Outfall 009; spills from the C-337 fuel storage tank would drain to Outfall 002. Outfalls 002 and 009 have inverted piped dams so that floating material, such as oil, is contained.

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### 3. BEST MANAGEMENT PRACTICES PLAN-SPECIFIC REQUIREMENTS AND GENERAL CONDITIONS

Section 3 of KPDES Permit KY0004049 establishes specific BMPs for the BMP plan at PGDP. The following BMPs establish the implementation of those requirements. This BMP plan was developed to be consistent with the general guidance in EPA 833-B-93-004, *Guidance Manual for Developing Best Management Practices*, and EPA-600/9-79-045, *NPDES Best Management Practices Guidance Document*.

#### 3.1 BEST MANAGEMENT PRACTICES COMMITTEE

The BMP committee is chaired by the Environmental Field Compliance Manager; and the Environmental Field Compliance organization serves to fulfill the requirements of the BMP committee. Plans required for environmental protection, such as the SPCC Plan and the facility response plan, are developed, implemented, and reviewed by Environmental Field Compliance personnel with necessary assistance from other organizations and subcontractors, thus minimizing impacts to the environment. Environmental Field Compliance personnel are assigned to projects, thereby providing environmental compliance oversight and feedback during project planning and execution. The BMP committee membership may include temporary members based on initiation, shutdown, or completion of projects that potentially could impact water quality. The BMP committee meets periodically as deemed necessary by new projects or the BMP chairperson. The BMP committee shall review proposed modifications to this plan.

Major responsibilities of the BMP committee include the following:

- Provide feedback to regulatory compliance regarding revisions to the BMP plan;
- Review the BMP plan as necessary;
- Determination of BMPs for DOE projects at PGDP;
- Reduce pollutant discharges (improve water discharge quality); and
- Review changes to KPDES discharges.

#### 3.2 REPORTING OF BEST MANAGEMENT PRACTICES INCIDENTS

As established in CAT, it is the responsibility of every employee on-site to report spills or releases of oil or suspected pollutants. This is established in the Paducah Site “See and Flee” policy that requires employees to ensure their personal safety if any release or danger is seen, and then report the incident. All leaks and drips are reported to the PSS. The PSS serves as the Paducah Site emergency director, the OSHA on-scene IC, and as the IC or fire ground commander by the National Fire Protection Association.

The PSS, with support from the Emergency Operations Center cadre, determines if spills are reportable such as those that enter or have the potential to enter the environment and/or are above the reportable quantity under CERCLA and the Emergency Planning and Right-to-Know Act (EPCRA). In the event of a reportable spill, DOE, appropriate contractor/subcontractor personnel, the Kentucky Department for Environmental Protection, and other agencies will be notified. DOE Order 232.2A Chg 1, *Occurrence Reporting and Processing of Operations Information*, also requires a system for notification, investigation, and reporting of unusual occurrences, such as BMP incidents. Procedures (e.g., CP3-ES-0003, *Environmental Incident Reporting*) also implement requirements for employees to report release of hazardous substances as required by CERCLA and EPCRA.

### **3.3 RISK IDENTIFICATION AND ASSESSMENT**

Effluent discharges from PGDP have been reduced significantly due to deactivation activities. Changes to effluent discharges from specific work scopes that result from site cleanup and/or maintenance activities are reviewed by the Environmental Field Compliance organization as part of WPC process. These activities are administered through the WPC process, discharge approval process, and/or PGDP shared site process.

Work instructions/procedures are reviewed for the potential for the scope to cause a release of BMP pollutants. If a potential exists, appropriate controls from this plan are incorporated into the work instruction.

New or periodic discharges are approved on a case-by-case process using available analytical data and process knowledge to ensure compliance with in stream water quality criteria under 401 *KAR* 10:031. This approval obtained in accordance with contractor procedures.

The PGDP shared site process is used to coordinate activities between various groups and contractors. Work is evaluated to determine the potential to affect the discharges from each of the PGDP outfalls.

Weekly, monthly, and quarterly sampling of outfalls provides a verification of the effectiveness of this BMP. Additionally, DOE and DOE contractors perform periodic assessment of work controls and projects to ensure BMPs are being implemented and remain effective. If issues are identified, DOE contractors will implement additional BMPs necessary to prevent/minimize impacts to the environment.

### **3.4 INSPECTIONS AND RECORDS**

Inspections of areas with a potential for BMP release are conducted under various programs. For example, hazardous waste storage area inspections are conducted in accordance with regulatory and permit requirements. Emergency response equipment used in response to RCRA emergencies is required to be inspected regularly. Facilities are inspected by the designated contractor on a periodic basis pursuant to the contractor's procedure. Results of the inspections are recorded on a walkthrough checklist. Mobile industrial equipment trucks are inspected on a regular basis to help prevent releases of fuels and lubricating fluids. Inspection checklists are maintained at the facility/location for at least three years.

### **3.5 PREVENTIVE MAINTENANCE**

DOE contractors have pieces of equipment associated with site remediation, deactivation, waste handling, and maintenance that require a preventive maintenance program. Requirements also exist for a preventive maintenance program in contract requirements between DOE contractors and subcontractors. Each subcontractor is responsible contractually for implementing or adopting a preventive maintenance program, if applicable, to reduce the potential for release of pollutants.

### **3.6 GOOD HOUSEKEEPING**

Good housekeeping practices are essential for maintenance of a clean and orderly working environment. The potential for accidents and spills for employees is reduced greatly by a clean and orderly work area that ultimately reduces safety hazards and potential release of BMP pollutants. Good housekeeping practices include prompt response and cleanup of spills, leaks, and drips, and proper storage of drums, containers, and bags. Implementation of good housekeeping for DOE facilities is included in DOE contractors'

procedures. Additionally, the walkthrough checklist used in the monthly inspection of DOE facilities contains criteria for good housekeeping. Compliance inspections are conducted on a nonroutine basis, and, as a part of the inspections, housekeeping is reviewed. CAT informs all personnel of the BMP management strategies that include good housekeeping measures.

### 3.7 MATERIALS COMPATIBILITY

Procedures implementing requirements for long-term and temporary storage of hazardous waste require that waste be compatible with the container and the surrounding containers. To prevent mixing of incompatible materials, procedures also implement labeling requirements of containers that contain hazardous materials or hazardous waste. Procedures also address proper packaging of hazardous materials for transport. RCRA regulations establish specific prohibitions for mixing of incompatible waste. These prohibitions are implemented in the HWMFP. The compatibility of waste is to be determined using EPA-600/2-80-076, *A Method for Determining the Compatibility of Hazardous Wastes*. If a spill of hazardous waste occurs, the contingency plan for hazardous waste at PGDP requires the PSS to ensure that no other waste is introduced into the spill area until cleanup procedures are completed.

### 3.8 SECURITY

The Paducah Site is a controlled access facility with fencing, gates, and numerous other features that contribute to the safety and security of the site. The public is excluded from the Paducah Site, except for special occurrences such as tours, media events, etc. This exclusion limits the possibility of accidental or malicious incidents due to public interactions with environmentally significant materials at the Paducah Site.

Employees, contractors, subcontractors, and visitors are processed through C-104 Access Control Facility, before authorization is granted to enter the Paducah Site. Entry into the Paducah Site is allowed only to authorized personnel through entry portals located at various locations around the Limited Area security fence and inside buildings. Employees, contractors, subcontractors, and visitors are required to display identification badges.

DOE and DOE contractors are responsible for facilities with a potential to release BMP pollutants at the Paducah Site. Security police officers (SPOs) perform regular inspections, both inside and outside the Limited Area. SPOs have direct communications with D&R emergency response personnel at all times. Security restrictions at the Paducah Site reduce the possibility of release of BMP pollutants, and the regular inspections performed by SPOs enhance the ability to detect and respond to incidents that may occur.

### 3.9 MATERIALS INVENTORY

Materials at PGDP are stored either as a usable product, such as fuel oil, or as waste. Hazardous waste is stored in permitted areas in accordance with regulatory requirements and the RCRA Permit. Hazardous and mixed wastes are stored in the following areas.

- C-733 Waste Oil and Chemical Storage Facility
- C-746-Q Hazardous and LLW Storage Facility
- C-752-A Waste Storage Facility

- Other temporary 90-day accumulation areas (i.e., C-757 Solid and LLW Process Facility)
- Satellite accumulation areas

In accordance with the HWMFP, when waste is received at a permitted storage area, the waste type, date to storage, and amount, are entered into a log sheet and a computer file. When waste is removed from the permitted storage areas, this also is noted in a log sheet and computer file; therefore, the waste inventory at permitted hazardous waste storage areas is maintained and available.

DOE also submits an annual Superfund Amendment and Reauthorization Act 312 report, required by EPA regulations. This report outlines the hazardous materials, as defined in applicable regulations that are present under DOE purview at PGDP above certain thresholds.

Fuel storage tanks and chemical storage areas are inventoried on a regular basis.

### **3.10 SPCC PLAN**

DOE and DOE contractors are responsible for spill prevention, control, and countermeasures at PGDP. The SPCC Plan provides controls and measures designed to prevent the unauthorized discharge of oil and oil products into the waterways, air, soil, and groundwater. The SPCC Plan is applicable to the D&R and Infrastructure Support Services Contractors. Extensive guidelines have been established in the plan to prevent releases of oil and to contain spills that do occur in a manner that best protects personnel and the environment. The DUF<sub>6</sub> Contractor is not required to have an SPCC Plan because it does not meet the capacity requirement for oil storage.

The SPCC Plan is required to be reviewed and evaluated at least every 5 years per 40 *CFR* § 112.5(b) or otherwise when necessary due to permit revisions, changes in construction, operation, etc., at the facility. When conditions change, such as the addition of new fuel storage tanks, the changes may be included in a revised SPCC Plan, or a separate SPCC Plan may be developed to address the new facility.

This BMP plan incorporates by reference all the spill control countermeasures and contingencies in the SPCC Plan.

### **3.11 HAZARDOUS WASTE MANAGEMENT**

DOE and its contractors operate hazardous waste management facilities at PGDP under EPA Permit ID No. KY8-890-008-982. DOE and the D&R Contractor have developed a contingency plan for responding to hazardous waste spills, releases, leaks, and emergencies in the permitted storage areas.

All hazardous waste in permitted storage is stored under roof with secondary containment to prevent run-on or run-off if a spill were to occur.

### **3.12 DOCUMENTATION**

This BMP plan is available on the D&R Contractor's electronic share drive with hard copies available upon request. The plan is available electronically to the public at <https://fourriversnuclearpartnership.com/>. A copy will be forwarded to DOE and other site contractors at PGDP, as appropriate. This BMP plan will be provided to representatives of the Kentucky Energy and Environment Cabinet (KEEC) upon request.

### **3.13 BEST MANAGEMENT PRACTICES PLAN MODIFICATION**

This BMP plan shall be amended or modified whenever there is a change in the facility or change in the operation of the facility that materially increases the potential for the ancillary activities to result in the release of “BMP pollutants.” Modification of the plan will be evaluated and determined by the BMP committee and Regulatory Compliance.

### **3.14 MODIFICATION FOR INEFFECTIVENESS**

The goal of this BMP plan is to prevent the release of pollutants. If this plan proves to be ineffective in its goal, the plan shall be revised to include new or revised BMPs. Effectiveness shall be determined by an annual assessment to determine if BMP pollutants are being released. These assessments shall determine documentation of administrative compliance with requirements established in the plan. This BMP plan will be revised if found to be inadequate pursuant to a state or federal site inspection or plan review. The revision will incorporate changes necessary to resolve the inadequacies identified in the inspection or review.

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## 4. SPECIFIC CONDITIONS

### 4.1 SOLID WASTE MANAGEMENT UNITS

DOE and its contractors are actively involved in cleanups of a number of SWMUs at the Paducah Site. These cleanups are being accomplished in accordance with the HWMFP and *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant*, DOE/OR/07-1707 (PGDP FFA). The FFA requires that DOE submit to KEEC information regarding investigation and remediation of the SWMUs. This information is contained in (1) remedial investigation/feasibility study work plans for investigations of SWMUs and (2) removal action work plans and remedial action work plans for cleanup/remediation of the SWMUs. These work plans are submitted to EPA and KEEC for approval prior to the investigations, removals, or remediations. These work plans contain the scope of the project and provisions (e.g., project-specific BMPs, in which DOE outlines measures to be taken during the investigation, removal, or remediation to prevent further migration of the SWMU pollutants and subsequent environmental degradation). The submittal of these work plans shall fulfill DOE's obligation to address as separate sections under the BMP plan the scope of the activity and the steps taken to prevent further migration of the pollutants to local watersheds and subsequent degradation.

Section IV of the PGDP FFA, "RCRA/CERCLA and KPDES Coordination," commits the regulatory agencies involved in the SWMU investigation/cleanup to ensure that information such as the work plans pertaining to the SWMU investigation and remediation is shared among the regulatory agencies.

### 4.2 PERIODICALLY DISCHARGED WASTEWATERS NOT SPECIFICALLY COVERED BY EFFLUENT CONDITIONS

DOE and DOE contractors perform certain activities, such as testing fire water systems, calibration of meters, and hydrostatic testing of containers, that produce wastewater. In addition, DOE and its contractors generate wastewater when pipes break or spills of collected wastewaters are picked up for analysis and discharge. Any suspect contaminated wastewater produced as a result of remediation or investigation activities is sampled for appropriate contaminants, treated, and analyzed again if necessary to ensure pollutant concentrations are within KPDES Permit limitations. If necessary suspended solids are settled in the C-613 Sedimentation Basin before the wastewater is introduced into KPDES Outfall 001.

Other sources of wastewater that may be discharged into the C-613 Scrap Yard Sedimentation Basin following characterization (and treatment, if necessary) include, but are not limited to, the following:

- Rainwater that collects in secondary containments;
- Treated wastewater in which suspended solids remain to be treated; and
- Other miscellaneous wastewaters as deemed appropriate.

### 4.3 ACCEPTANCE OF TENNESSEE VALLEY AUTHORITY SHAWNEE FOSSIL PLANT WASTEWATERS

Previous operations at PGDP have led to contamination of groundwater with TCE and Tc-99. In May 2006, DOE entered into an agreement with TVA Shawnee Fossil Plant concerning management and disposal of Tc-99 contaminated groundwater from TVA. Under this agreement, TVA agreed to analyze groundwater and drilling/purge waters for Tc-99 and TCE and to provide data to DOE. DOE agreed to accept groundwater and drilling/purge waters containing detectable levels of Tc-99 for treatment/disposal. TVA

agreed to manage any groundwater and drilling/purge waters not containing Tc-99 even if TCE were present.

Following review of the data, wastewaters that meet these acceptance criteria are received by PGDP and managed based upon the data. Due to the low concentrations of TCE and Tc-99, these wastewaters generally are received at the C-612 (NWPGS) for treatment and discharge under KPDES Permit KY0004049. PGDP maintains records of volumes and quality of wastewaters transferred, treatment of those wastewaters, and final disposition.

#### **4.4 USE OF HERBICIDES AND PESTICIDES AT THE PADUCAH SITE**

The Paducah Site uses only herbicides approved by DOE. New herbicides under consideration for application will be evaluated for toxicity prior to approval and use. Manufacturer recommendations and Paducah Site specific criteria for usage are followed for all applications of herbicides and pesticides.



**APPENDIX A**

**EXAMPLES OF STORM WATER CONTROLS USED AT  
THE PADUCAH SITE**

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## **A. EXAMPLES OF STORM WATER CONTROLS USED AT THE PADUCAH SITE**

This appendix provides examples of best management controls that are incorporated on a case-by-case basis into work control documents and/or instructions for projects that have a potential to disturb contaminated soils. This information is utilized as guidance in establishing such controls for individual projects during initial work planning. Controls that deviate from these guidelines may be established, as appropriate, for a project, but these deviations would not constitute a noncompliance with the KPDES Permit. BMPs described below are detailed in the current version of the *Kentucky Erosion Prevention and Sediment Control Field Guide* ([https://www.kyt2.com/sites/default/files/09fieldguide\\_final.pdf](https://www.kyt2.com/sites/default/files/09fieldguide_final.pdf)), and the *Best Management Practices (BMPs) for Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites* ([https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual\\_Final.pdf](https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf)).

### **A.1 EROSION AND SEDIMENT CONTROL MEASURES**

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to the project drawings and specifications. The following specific measures are identified for each project during initial work control planning sessions. The project scope is defined and the necessary storm water controls are evaluated and prescribed by the deactivation and remediation contractor's regulatory compliance organization. Once work on each project begins, the effectiveness of the prescribed controls is evaluated and the controls are modified as necessary to control the release of BMP pollutants.

### **A.2 STRUCTURAL PRACTICES**

#### **A.2.1 Silt Fences**

Silt fences are installed to intercept and detain sediment from the disturbed areas during demolition and construction operations in order to prevent sediment from leaving the site or entering storm drains. Silt fences are installed at the toe of all exterior slopes, before clearing and grubbing. Silt fences are placed around soil stockpiles until sufficient vegetation can be established to prevent erosion. Silt fence shall be installed with the filter fabric trenched in on the upstream side of the fence. Requirements for silt fence installation are dependent upon site conditions such as slope and soil type. Silt fencing will be installed consistent with the current versions of the *Kentucky Erosion Prevention and Sediment Control Field Guide*, and the *Kentucky Best Management Practices (BMPs) for Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites*.

#### **A.2.2 Straw Bale Barriers**

Straw bale barriers are not approved as stand-alone sediment barriers, but can be used to back-up silt fencing on the downhill side.

#### **A.2.3 Riprap Check Dams**

Riprap check dams are installed in grass lined swales or ditches where the maximum contributing drainage area is no greater than 10 acres. Riprap check dams are spaced so that the top of one check dam will be at the same approximate elevation as the bottom of the adjacent up stream check dam. Trapped sediments are removed from behind riprap check dams when the sediment level reaches one-half the height of the

structure. Riprap check dams are removed when the project area is stabilized and the drainage channel has an established armor of grass.

#### **A.2.4 Sediment Basins**

Sediment basins are used for projects that will expose more than 5 acres of soils. Sediment basins draining areas larger than 10 acres require an engineered design and often are designed to function as a permanent storm water treatment pond after construction is complete.

#### **A.2.5 Riprap Ditches**

Ditches with design velocity exceeding 2 ft per second that are not suitable for channel or ditch vegetation, even if rolled erosion control products are used, are lined with riprap in order to control velocities and thus erosion.

#### **A.2.6 Grass Lined Ditches**

All ditches with design velocity of 3 ft per second or less and slopes generally less than 10% will be grassed as soon as feasible.

#### **A.2.7 Stabilized Roadways**

Site and access roadways are stabilized with aggregate and filter fabric or paved with asphaltic concrete to prevent erosion.

#### **A.2.8 Discharge Control**

When discharges are controllable such as when fire water is used to practice firefighting or when contained water is released, the flow is controlled and the discharge location is controlled to prevent erosion or the spread of contamination to surface waters.

#### **A.2.9 Topsoil Stockpiles**

When excavation work is not occurring, topsoil stockpiles are to be covered completely with plastic unless another sediment control is in place.

### **A.3 VEGETATIVE PRACTICES**

To the extent feasible, appropriate cover is applied within 14 days on areas that are scheduled to remain as bare soil for more than 21 calendar days.

#### **A.3.1 Topsoil Stockpiling**

Any required topsoil stockpiling is protected by temporary seeding and mulching when the stockpile will not be redisturbed for 21 days or more.

#### **A.3.2 Temporary Seeding**

Topsoil stockpiles and any areas to be rough-graded during the initial phase of construction will be seeded with temporary vegetation. The appropriate seed mixture is specified in the construction documents.

### **A.3.3 Permanent Seeding**

As soon as possible following finished grading, permanent seeding is applied. All surfaces disturbed by construction and not replaced with aggregate, pavement, or other structures are sown with an appropriate grass to ensure a good growth of grass in a timely manner.

## **A.4 MANAGEMENT STRATEGIES**

Construction traffic is limited to access roads, demolition areas, areas to be graded, and areas designated by the project manager. Off-site vehicle tracking of sediments and the generation of dust is minimized. Clearing and earthwork is held to the minimum necessary for grading and equipment operation.

Construction is sequenced so that grading operations can begin and end as soon as possible after demolition operations.

Silt fences and other erosion and sediment control devices are installed as a first step in demolition and grading and maintained throughout the construction period. New vegetative areas are seeded and mulched immediately following completion of grading. Temporary measures may be removed at the beginning of the work day, but must be replaced at the end of the work day.

Areas which are not to be disturbed are clearly marked by flags, signs, etc.

All control measures are checked and repaired as necessary in accordance with the maintenance and inspection requirements described in Section A.8.

Accumulated silt deposits are removed as necessary to maintain the function and condition of all erosion control structures. Areas eroded during construction are promptly repaired as necessary.

Areas that are scheduled to remain unfinished for 21 days or more are vegetated.

When practicable, topsoil stockpiles are covered with plastic to the extent feasible, if temporary seeding is not required.

All pumping of accumulated water as may be required from graded areas is in accordance with the applicable, CP3-ES-0007, *Approval to Discharge Air or Water*.

## **A.5 STORM WATER DISCHARGE QUALITY**

Storm water releases to permitted outfalls from the project site must meet the effluent limitations and monitoring requirements of the KPDES Permit.

Muddy water to be pumped from excavation and work areas is treated by filtration or sedimentation prior to its discharge into surface waters.

Discharges to waters of the Commonwealth shall not produce floating solids, visible foam, or a visible sheen on the receiving surface waters per Section 1.3 of the KPDES Permit.

If the Discharge Quality, as discussed above, is not obtained, the storm water controls are modified to meet the standard.

## **A.6 PERMANENT STABILIZATION**

All areas disturbed by demolition and construction are stabilized with permanent seeding following finished grading. Seeding is done in accordance with the requirements of the project construction specifications.

## **A.7 STORM WATER MANAGEMENT**

Sediment basins, diversion ditches, silt fencing, and straw bales are installed as shown on the construction drawings and noted in storm water control plans utilized during construction operations to control erosion and the transport of sediment.

Rainfall run-on is directed away from sites where bare soils exist. Diversion ditches direct on-site rainfall runoff into the sediment basins and drainage ditches. Ditch slopes exceeding 2% will be lined with riprap to control sediment scour. Ditch slopes equal to 2% and less are seeded with grass. Ditch slopes up to 10% may be seeded with grass, provided other rolled erosion control products (e.g., temporary erosion control blankets) are used.

To control migration of silt from fill areas, silt fencing is installed at the toe of exterior slopes. Areas disturbed by construction and not surfaced with aggregate, pavement, or other structures are sown with grass as soon as possible to establish vegetation for erosion control.

## **A.8 MAINTENANCE AND INSPECTION**

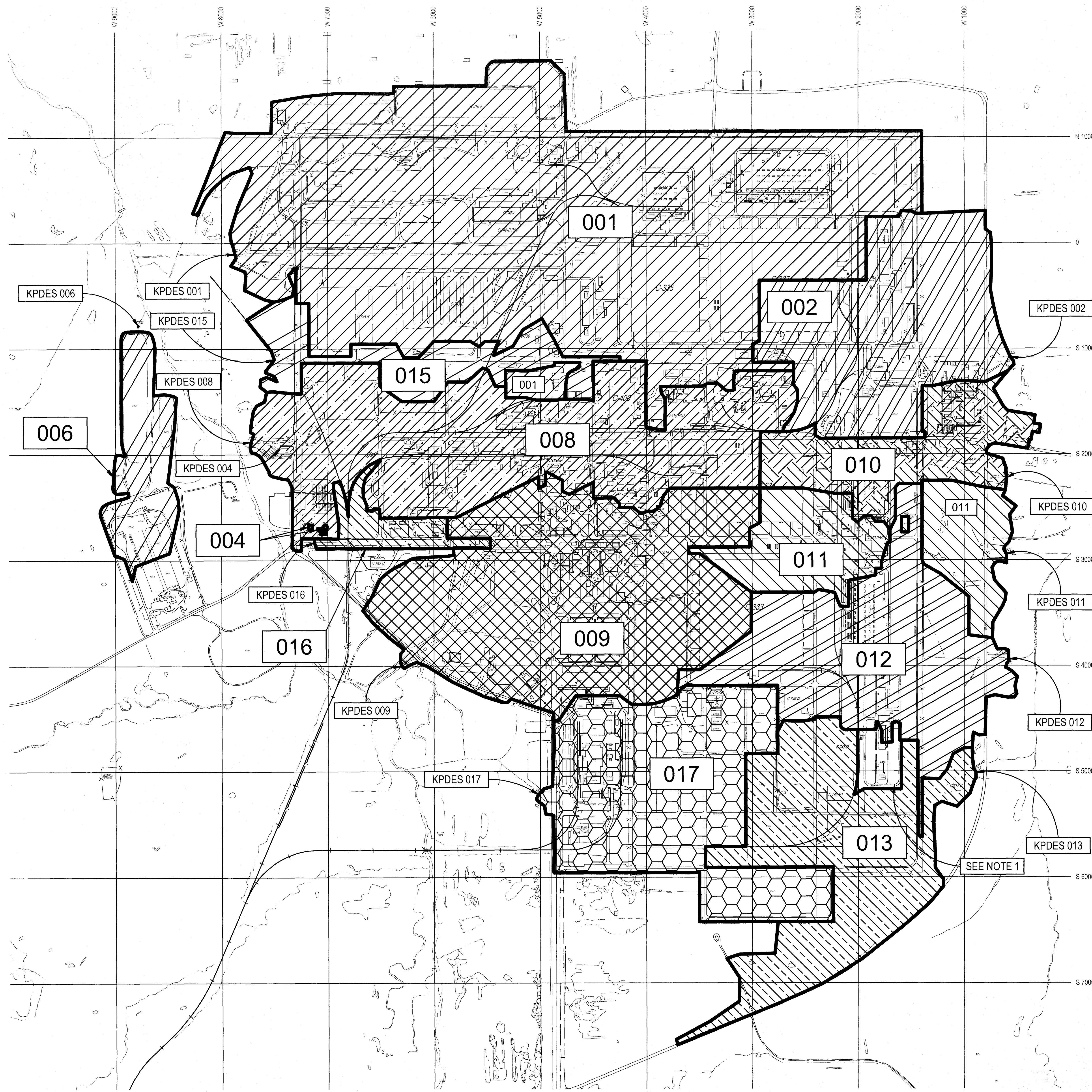
In general, erosion and sediment control measures are checked by Environmental Field Compliance personnel and are repaired, as necessary. BMP inspections generally are completed weekly during dry periods and within 24 hours after any rainfall of 0.5 inches or more during a 24-hour period using the BMP Erosion and Sediment Control Checklist in CP4-ES-0041, *Environmental Monitoring Inspections*. During prolonged rainfall, all control devices are checked daily and repaired as necessary. Repairs to erosion and sediment controls are completed as directed by the Environmental Field Compliance Manager. The Environmental Field Compliance Manager maintains records of checks and repairs. Projects with a total disturbance area less than 5 acres would be exempt from checks other than during normal Paducah Site working hours.

**APPENDIX B**

**PGDP KPDES PERMIT APPLICATION  
OUTFALL DRAINAGE AREAS SITE MAP**

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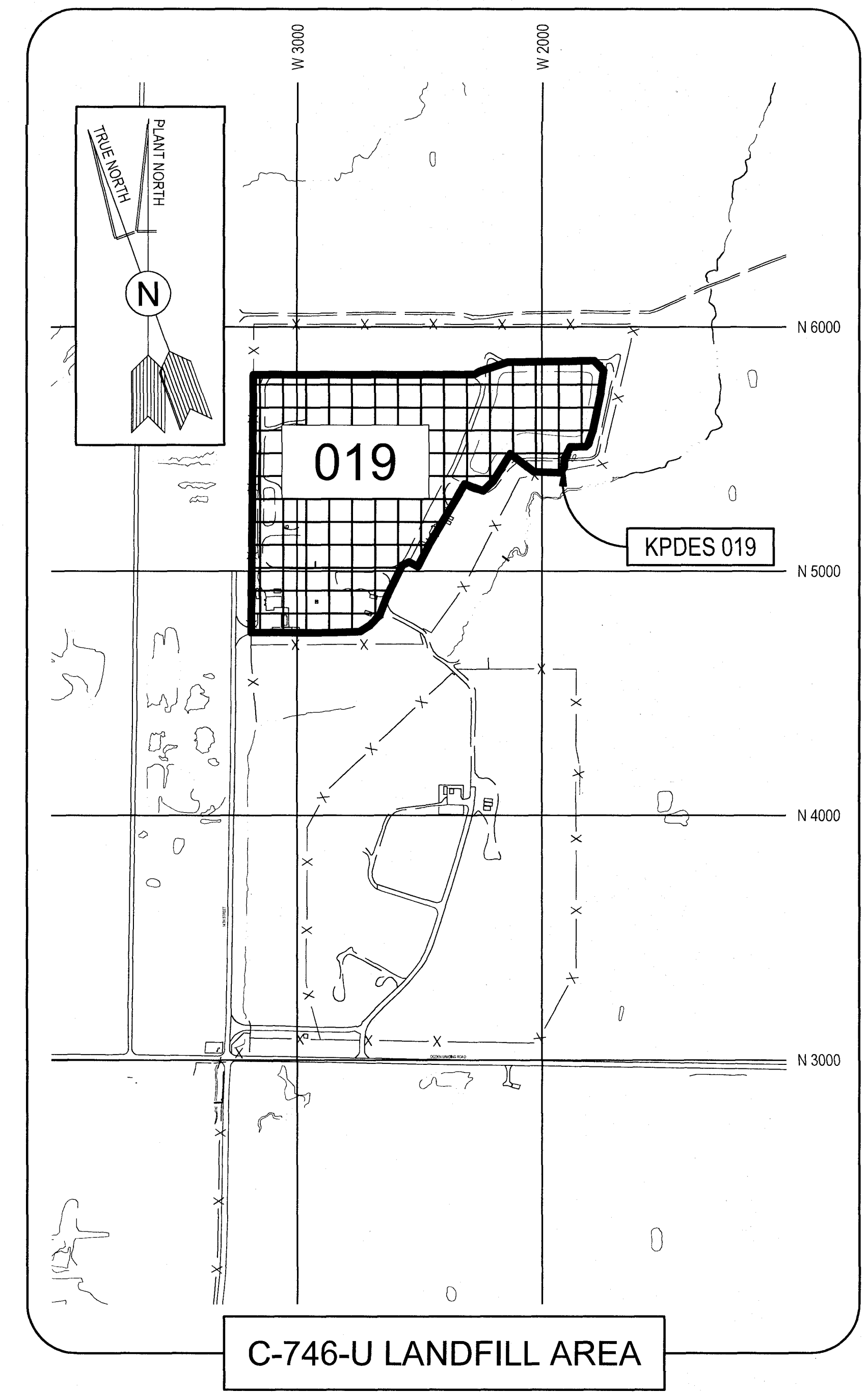


LEGEND:

AREA	PATTERN
001	[Diagonal lines /]
002	[Diagonal lines \]
004	[Horizontal lines]
006	[Vertical lines]
008	[Cross-hatch]
009	[Stippled]
010	[Wavy lines]
011	[Zig-zag lines]
012	[Diagonal lines /]
013	[Diagonal lines \]
015	[Diagonal lines /]
016	[Diagonal lines \]
017	[Hexagonal pattern]
019	[Grid pattern]

GENERAL NOTES:

1. THE STORM WATER LIFT STATION LOCATED ON THE SOUTH SIDE OF ARKANSAS AVENUE IS OUT OF SERVICE. STORM WATER IN THIS AREA (APPROX. 3 ACRES) DRAINS TO THE DITCHES ALONG ARKANSAS AVENUE AND WILL EVAPORATE OR INFILTRATE RATHER THAN FLOW TO AN OUTFALL.



SECTION NUMBER OR DETAIL LETTER	SECTION AND DETAIL KEY	TOLERANCES UNLESS OTHERWISE SPECIFIED
1	AS BUILT ENTIRE DRAWING FOR FA5480	FRACTIONS: XX DECIMALS
2	AS BUILT ENTIRE DRAWING FOR FA5480	ANGLES: BREAK SHARP EDGES MAX. FINISH

REV. NO.	ISSUE / REVISION DESCRIPTION	DATE	DRW	CHKR	RE	TR	APPD
1	AS BUILT ENTIRE DRAWING FOR FA5480	09/07/21	JW	KH	X	X	TW
0	AS BUILT FOR ESO Z99610 & Z40930	11/10/99	KTW	JDR	KAH	X	JAW
A1	APPROVED FOR RELEASE FOR ESO Z97700	4/28/97	JWB	KAH	JRB	X	RLP

DRW	CHKR	RE	TR	APPD

**FOUR RIVERS NUCLEAR PARTNERSHIP, LLC**  
 DOE PRIME CONTRACT # DE-EM0004895  
**PADUCAH GASEOUS DIFFUSION PLANT**  
**KPDES PERMIT APPLICATION**  
**OUTFALL DRAINAGE AREAS**  
**SITE MAP**  
 NON-ESSENTIAL

SCALE: 1:400	PLANT PGDP	BLDG AREA	FL N/A	SHEET U	CLASS U
ID: Z97700	DRAWING NO. C5E-19770-A01	REV: 2			

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