**Department of Energy**

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

OCT 0 8 2015

Ms. Julie Corkran
Federal Facility Agreement Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

PPPO-02-3184312-16

Ms. April Webb
Acting Interim Federal Facility Agreement Manager
Division of Waste Management
Kentucky Department for Environmental Protection
200 Fair Oaks Lane, 2nd Floor
Frankfort, Kentucky 40601

Dear Ms. Corkran and Ms. Webb:

**TRANSMITTAL OF THE REVISED OPERATION AND MAINTENANCE PLAN FOR THE SURFACE WATER OPERABLE UNIT AT THE PADUCAH GASEOUS DIFFUSION PLAN, PADUCAH, KENTUCKY (DOE/OR/07-1904&D1/R2)**

Please find enclosed for your approval the subject document, *Operation and Maintenance Plan for the Surface Water Operable Unit at the Paducah Gaseous Diffusion Plan, Paducah, Kentucky,* DOE/OR/07-1904&D1/R2. The comment from the Kentucky Department for Environmental Protection received on October 2, 2015, which was to include a referenced figure, has been incorporated. This figure has been added to Appendix A, page A-13, and has been listed on page A-3, Table of Contents. The document number has been updated along with the cover page information. No other changes have been made to the document.

If you have any questions or require additional information, please contact Tracey Duncan at (270) 441-6862.

Sincerely,

Jennifer Woodard
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosures:

1. Operation and Maintenance Plan for the Surface Water Operable Unit
2. Redline Operation and Maintenance Plan for the Surface Water Operable Unit

e-copy w/enclosures:
april.webb@ky.gov, KDEP/Frankfort
brian.begley@ky.gov, KDEP/Frankfort
corkran.julie@epa.gov, EPA/Atlanta
ffscorrespondence@ffspaducah.com, FFS/Kevil
gaye.brewer@ky.gov, KDEP/PAD
jennifer.woodard@lex.doe.gov, PPPO/PAD
leo.williamson@ky.gov, KDEP/Frankfort
mark.duff@ffspaducah.com, FFS/Kevil
mike.guffey@ky.gov, KDEP/Frankfort
myrna.redfield@ffspaducah.com, FFS/Kevil
pad.dmc@swiftstaley.com, SSI/Kevil
reinhard.knerr@lex.doe.gov, PPPO/PAD
richards.jon@epamail.epa.gov, EPA/Atlanta
stephaniec.brock@ky.gov, KYRHB/Frankfort
teresa.overby@ffspaducah.com, FFS/Kevil
tracey.duncan@lex.doe.gov, PPPO/PAD

**DOE/OR/07-1904&D1/R2**
**Secondary Document**

# Operation and Maintenance Plan for the Surface Water Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky


**CLEARED FOR PUBLIC RELEASE**

**THIS PAGE INTENTIONALLY LEFT BLANK**

**DOE/OR/07-1904&D1/R2**
**Secondary Document**

# Operation and Maintenance Plan for the Surface Water Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

Date Issued—October 2015

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FLUOR FEDERAL SERVICES, INC.,
Paducah Deactivation Project
managing the
Deactivation Project at the
Paducah Gaseous Diffusion Plant
under Task Order DE-DT-0007774

# CLEARED FOR PUBLIC RELEASE

# CONTENTS

**THIS PAGE INTENTIONALLY LEFT BLANK**

# FIGURES



# TABLES

**THIS PAGE INTENTIONALLY LEFT BLANK**

# ACRONYMS

| | |
|---|---|
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| DMC | Document Management Center |
| DOE | U.S. Department of Energy |
| EI | environmental indicator |
| EPA | U.S. Environmental Protection Agency |
| FFA | Federal Facility Agreement |
| GPRA | Government Performance and Results Act |
| ICM | interim corrective measures |
| KPDES | Kentucky Pollutant Discharge Elimination System |
| MW | monitoring well |
| NSDD | North-South Diversion Ditch |
| O&M | operation and maintenance |
| PGDP | Paducah Gaseous Diffusion Plant |
| ROD | record of decision |
| SWMU | solid waste management unit |
| SWOU | Surface Water Operable Unit |
| WAG | waste area group |

**THIS PAGE INTENTIONALLY LEFT BLANK**

# EXECUTIVE SUMMARY

This document is an Operation and Maintenance Plan related to response actions taken at the Surface Water Operable Unit (SWOU). The plan implements the Surface Water Institutional Controls and the Waste Area Groups 1 and 7 remedial action. These actions were incorporated into the SWOU as documented in the *Operation and Maintenance Plan for the Surface Water Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1904&D1 (DOE 2000). This revision incorporates changes to the plan that have been agreed to and implemented since September 2000. It should be noted that "operating" equipment is not being used in the surface water response actions. Instead, stationary structures with no moving components were constructed. The result is that this document focuses largely on maintenance, rather than operations. Maintenance on all of the response actions is largely in the form of mowing around structures and conducting inspections to assure postings are legible. Additional activities include inspecting the Surface Water Institutional Controls fences for structural integrity.

**THIS PAGE INTENTIONALLY LEFT BLANK**

# 1. INTRODUCTION

The U.S. Department of Energy (DOE) is conducting environmental restoration activities at the Paducah Gaseous Diffusion Plant (PGDP) under the Federal Facility Agreement (FFA) (EPA 1998). As part of its efforts, this Operation and Maintenance (O&M) Plan was developed for previously implemented response actions related to the Surface Water Operable Unit (SWOU). The O&M Plans contained in this document address Surface Water Institutional Controls and the Waste Area Groups (WAGs) 1 and 7 remedial action. This plan follows the general outline for O&M Plans found in Appendix D of the FFA. However, the FFA O&M outline was developed for response actions that employed full-time remediation equipment such as a pump-and-treat system or a vapor extraction system. No "operating" equipment is being used in the surface water response actions. Instead, stationary structures with no moving components were constructed. The result is that portions of the FFA-defined O&M outline are not applicable and are labeled as such in the following plans.

# 2. BACKGROUND

## 2.1 SURFACE WATER INSTITUTIONAL CONTROLS AND ENVIRONMENTAL INDICATORS

In July 1993, DOE implemented an interim measure under the facility's corrective action portion of the Hazardous Waste Facility Management permit to reduce potential for exposure to contamination in surface water and sediment in the vicinity of PGDP. The action was documented in the *Interim Corrective Measure Work Plan for Institutional Control of Onsite Contamination in Surface Water* (DOE 1992). DOE installed fencing and posted warning signs in eight location areas to prevent direct human contact with contaminated sediments. Following the erection of the fencing and signs in support of the Surface Water Interim Corrective Measures (ICM) Work Plan, another sign program was implemented in 2008. It was implemented through the Government Performance and Results Act (GPRA) of 1993. The GPRA holds federal agencies accountable for using resources wisely and achieving program results. The U.S. Environmental Protection Agency (EPA), under direction from Congress, established two environmental indicators (EIs) for the GPRA: (1) groundwater contaminant migration under control and (2) human exposure under control.

In order to help achieve the GPRA milestone of having human health exposures under control, DOE placed EI signs along Bayou and Little Bayou Creeks, as well as in off-site portions of Section 5 of the North-South Diversion Ditch (NSDD) in the spring of 2008.

Managing two sets of duplicative signs was inefficient, and the issue was identified in the 2008 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review. The *Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/0117&D2, (DOE 2009) evaluated the SWOU and identified the following issue: "Signs were erected under the scope of another project. Although the message content between the signs does not conflict with each other, an evaluation of the sign program is needed." The 2008 Five-Year Review provided the following recommended action for the issue: "Evaluate whether interim corrective measures signs should be removed or replaced with new signs with language approved for the Environmental Indicator signs."

An evaluation of both sign programs was conducted, and the FFA parties' agreement to combine the two sign programs was documented in the 2013 CERCLA Five-Year Review (DOE 2014). Specifically, the

Surface Water ICM signs will be removed leaving the EI signs where the signs were collocated. In those cases where no EI signs were located in close proximity to a Surface Water ICM signs, EI signs were erected to serve in place of the Surface Water ICM signs. This action removed all the Surface Water ICM signs and increased the overall number of EI signs within the program to 17 locations, with multiple signs in each location.

## 2.2 NSDD INTERIM REMEDIAL ACTION

This interim remedial action was replaced by a subsequent record of decision (ROD). The O&M for this subsequent action are detailed in the *Operation and Maintenance Plan for Sections 1 and 2 of the North-South Diversion Ditch at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2057&D2 (DOE 2005); therefore, O&M for the NSDD are no longer included in this O&M Plan.

## 2.3 WAGs 1 AND 7 REMEDIAL ACTION

The WAGs 1 and 7 ROD was signed by all FFA parties in 1988. WAGs 1 and 7 consist of eight solid waste management units (SWMUs) located in the southwest comer of the PGDP. WAG 1 consists of SWMUs 100 and 136, and WAG 7 consists of SWMUs 8, 130, 131, 132, 133, and 134. The WAGs 1 and 7 ROD specifies no further action for six of the eight SWMUs. Additional evaluation of potential risks at SWMU 100 indicated there are no unacceptable risks to current industrial workers based on current exposure assumptions and that it is reasonable to assume that the land use likely will remain the same in the future. Consequently, no further action, based on the current land use, is warranted at SWMU 100. Only SWMU 8 requires ongoing O&M activities.

Following is a listing of actions required by the WAGs 1 and 7 ROD for SWMU 8, with a current status provided.

- Install warning signs. Signs will be posted at the entrance to the landfill site and along the creeks, visible at any access point to the landfill, that clearly state the potential risks to human health posed by the leachate seeps and contaminated sediments in the creeks. The signs will be designed to be resistant to the elements.

  ***Status: Signs were installed and are maintained under this O&M Plan.***

- Riprap will be placed along the creek banks at the apparent seep locations along the unnamed tributary and Bayou Creek to minimize erosion. The riprap will be sized appropriately to reduce the potential to be displaced during high flow events.

  ***Status: Riprap was placed along the unnamed tributary and Bayou Creek. The grounds are maintained under this O&M Plan.***

- Institute a deed notice and restrictions. A deed notice and restrictions will be placed in the chain of title to the deed of the property to inform potential buyers and/or users of the potential risks to human health and the environment posed by the leachate seeps and the controls implemented at the site to minimize potential exposure. Additionally, the deed restrictions legally will bind the buyer to restricted uses of the property. DOE will continue to monitor four sampling points along Bayou Creek and the unnamed tributary adjacent to the landfill.

***Status: A notice of ownership record for restriction of future uses of land for SWMU 8 was filed. The referenced monitoring was satisfied with a revised discharge permit that addresses the landfill discharges as identified in the condition below.***

- Continue the existing surface water monitoring program. These measures will continue until such time as the Kentucky Division of Water implements a discharge permit that allows for monitoring of landfill discharges and protection of the environment afforded by the permit conditions. At that time, criteria set forth in the permit for monitoring will be adhered to, and current monitoring practices will be discontinued.

  ***Status: A revised discharge permit was issued that addresses the landfill discharges, and this surface water monitoring program was discontinued.***

- Modify the groundwater monitoring program. The parameters analyzed and frequency sampled will be reevaluated after one year, and any necessary modifications will be documented in the annual update to the Sampling and Analysis Plan addendum (superseded by the Environmental Monitoring Plan). Results will be reported on a semiannual basis in the FFA progress reports. The ROD also included that Monitoring Well (MW) 184 no longer will be monitored because of high quality wells that will be monitored near the landfill.

  ***Status: Groundwater monitoring continues for this unit as documented in the current Environmental Monitoring Plan as referenced in this O&M Plan.***

- The current landfill cap maintenance program will be continued.

  ***Status: The cap maintenance is ongoing and is covered by this O&M Plan.***

# 3. INSTITUTIONAL CONTROLS OF OFF-SITE CONTAMINATION IN SURFACE WATER

## 3.1 EQUIPMENT START-UP AND OPERATOR TRAINING

Not applicable to this action; no treatment system was installed.

## 3.2 DESCRIPTION OF NORMAL O&M

**Task for System Operation:** Not applicable to this action; no treatment system was installed.

**Task for System Maintenance:** Photographs of damaged areas will be taken as necessary. Observed deficiencies will be identified on an inspection form. An example inspection form is found in the Appendix as Figure A.1. Signs will be inspected and repairs will be performed to ensure signs do not become obstructed and the demarcations will be in good condition (erect, weed-controlled, legible printing). Mowing and trimming will occur as necessary to maintain visibility. Surplus signs are available for replacement purposes, as needed.

Sign coloring was selected to ensure that the EI signs stand out from the surrounding vegetation. Signs are large enough and high enough to be visible from a distance and each contains a contact number for

additional information. Current language for EI signs for Little Bayou Creek, Bayou Creek, and Section 5 of the NSDD areas are shown in the Appendix in Figures A.2, A.3, and A.4.

Surface Water ICM fencing will be inspected and repairs performed to ensure fencing is in good condition (erect, weeds controlled). Mowing and trimming will occur as necessary.

**Prescribed Treatment or Operating Conditions:** Not applicable to this action; no treatment system was installed.

**Schedule:** DOE's contractor will conduct inspections of all signs and fences on a semiannual basis. An example of an inspection form is shown in the Appendix as Figure A.1.

### 3.3 DESCRIPTION OF POTENTIAL OPERATING PROBLEMS

Not applicable to this action; no treatment system was installed.

### 3.4 DESCRIPTION OF ROUTINE MONITORING AND LABORATORY TESTING

No sampling or laboratory testing is conducted as part of this action.

### 3.5 DESCRIPTION OF ALTERNATE O&M

Not applicable to this action.

### 3.6 SAFETY PLAN

Work activities covered in this O&M Plan shall be performed under approved work control by qualified workers where site-specific hazards and work controls are established for each task and location prior to performing work, including work performed at remote locations. These hazards and controls will be documented in the form of a site-specific health and safety plan, activity hazard assessments, work packages, and/or procedures. Personnel shall suspend any work activity or process that jeopardizes personnel or public safety, health, or the environment, or that cannot be performed in compliance with the approved work control for the activity.

### 3.7 DESCRIPTION OF EQUIPMENT

The maintenance contractor uses tractor mowers and rotary deck mowers, in conjunction with hand-held grass trimmers for mowing. This equipment is maintained by the maintenance contractor and replaced as necessary to perform the work. As noted previously, Surface Water ICM signs and fencing were designated by general location areas. Numerous signs (and fencing, where required) were erected in each of these general location areas. The eight location areas are designated in the *Interim Measure Report for Institutional Control of Off-site Contamination in Surface Water*, DOE/OR/07-1206&D1 (DOE 1993) (shown in Figure 1) and are defined as follows:

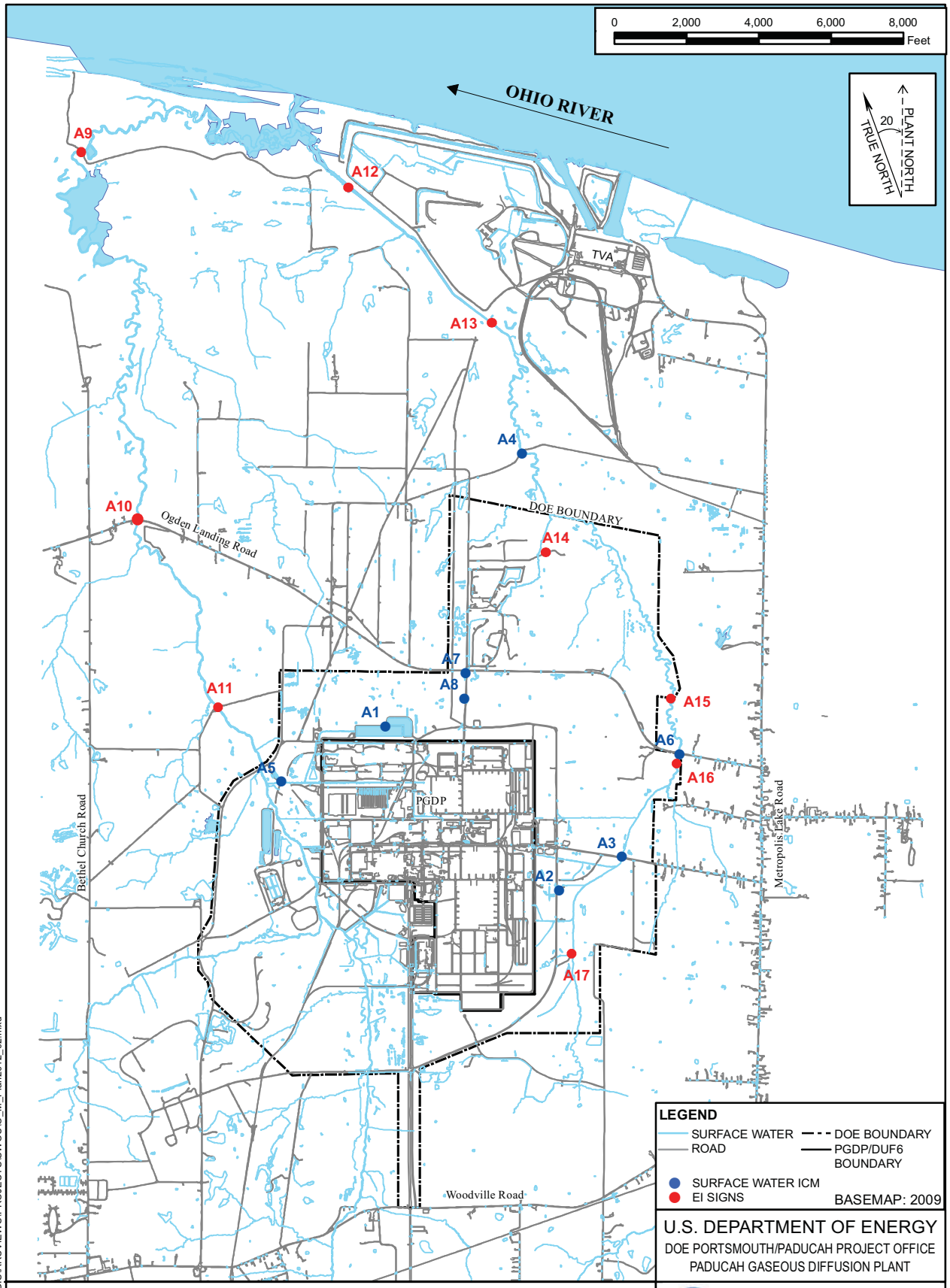


**Figure 1. Off-Site Institutional Control Location Areas**

A1 C-616 Lagoons
A2 KPDES Outfall 011 and Dykes Road
A3 Little Bayou Creek and McCaw Road
A4 Little Bayou Creek and Anderson Road
A5 KPDES Outfall 001 and New Water Line Road
A6 Little Bayou Creek and Ogden Landing Road
A7[1] NSDD and Ogden Landing Road
A8 NSDD—PGDP to Ogden Landing Road

The verbiage on the signs in these location areas has been changed since 1993, with the concurrence of the Kentucky Department for Environmental Protection and EPA. The current verbiage can be seen in Figures A.2, A.3, and A.4.

In addition to the original eight ICM location areas, nine location areas have been added as a result of the EI sign program along Little Bayou Creek, Bayou Creek, and Section 5 of the NSDD, as discussed below. These sign location areas also are shown in Figure 1 and are defined as follows:

A9 Bayou Creek and the Low-Water Crossing
A10 Rossington Bridge and Bayou Creek
A11 West Side of Bayou Creek at Sampling Weir
A12 West Side of Little Bayou Creek in Tract No. 9
A13 Southwest Side of Little Bayou Creek downstream of Seeps
A14 NSDD and Gravel Road North of C-746-U Landfill
A15 West Side of Little Bayou Creek within West Kentucky Wildlife
A16 West Side of Little Bayou Creek at Ogden Landing Road
A17 Outfall 013 and Little Bayou Creek

EI signs, along with the remaining fencing that was erected under the Surface Water ICM Work Plan, act as land use controls for surface water. EI signs are labeled with a unique identifier, and an inspection form completed for each sign within the program.

### 3.8 RECORDS AND REPORTING

An inspection form (see Figure A.1) will be completed and filed with the Kevil Document Management Center (DMC). The inspection form will include the following information:

- Inspection Criteria
- Corrective Action (as necessary)
- General Remarks (as necessary)
- Photographic and Map Attachments (as necessary)
- Narrative Evaluation (as necessary)

Records shall be generated and maintained in accordance with the most current version of PAD-RM-1009, *Records Management, Administrative Record, and Document Control*. Records may be maintained in duplicate as a field operating record in a satellite area and in another media (i.e., electronic)

[1] The fencing at locations A7 and A8 was removed as part of the On-Site Surface Water Removal Action due to soil removal; the fencing has been found to no longer be needed and will remain down, as documented in the *Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX-1289&D2/R1.

in separate locations until transmittal for final repository to the DMC. Typical records that may be generated include completed walkthrough inspection checklists and any attachments.

### 3.9 PROJECTED O&M COSTS

The estimated costs associated with maintenance of signs and fencing for routine inspection, mowing, and routine and periodic repairs and replacement and are included in Table 1.

**Table 1. Estimated Annual Maintenance Cost for Surface Water Institutional Controls**

| TASK | COST |
|---|---|
| Routine inspection and monitoring | $18,300 |
| Vegetation control (mowing, spraying, etc.) | $36,600 |
| Routine and periodic repairs and replacement | $15,000 |
| TOTAL COST | $69,900 |

## 4. WAGs 1 AND 7/SWMU 8 REMEDIAL ACTION

### 4.1 EQUIPMENT START-UP AND OPERATOR TRAINING

Not applicable to WAGs 1 and 7; no treatment system was installed.

### 4.2 DESCRIPTION OF NORMAL O&M

**Tasks for System Operation:** Not applicable.

**Tasks for System Maintenance:** Tasks for system maintenance for SWMU 8 are as follows:

- Mowing the grass/weed control in and around the SWMU as appropriate;
- Maintaining warning signs and an entrance sign;
- Inspecting vegetative cover;
- Ensuring ditches are functioning properly and are not damaged; and
- Ensuring riprap is in place and not covered with debris or growth.

The verbiage and format of the signs posted at C-746-K are shown in Figures A.5, A.6, and A.7 in the Appendix. The location of SWMU 8 is shown in Figure 2.

**Prescribed Treatment or Operating conditions:** Not applicable.

**Frequency:** Mowing/weed control is performed monthly during April through September at C-746-K. Signs are inspected annually and replaced as needed. Vegetative cover, ditches, and riprap placement are inspected annually and repaired as needed.

**Schedule:** Inspections of the C-746-K Landfill/SWMU 8 will be conducted on an annual basis. An example of an inspection form is shown in the Appendix as Figure A.8.

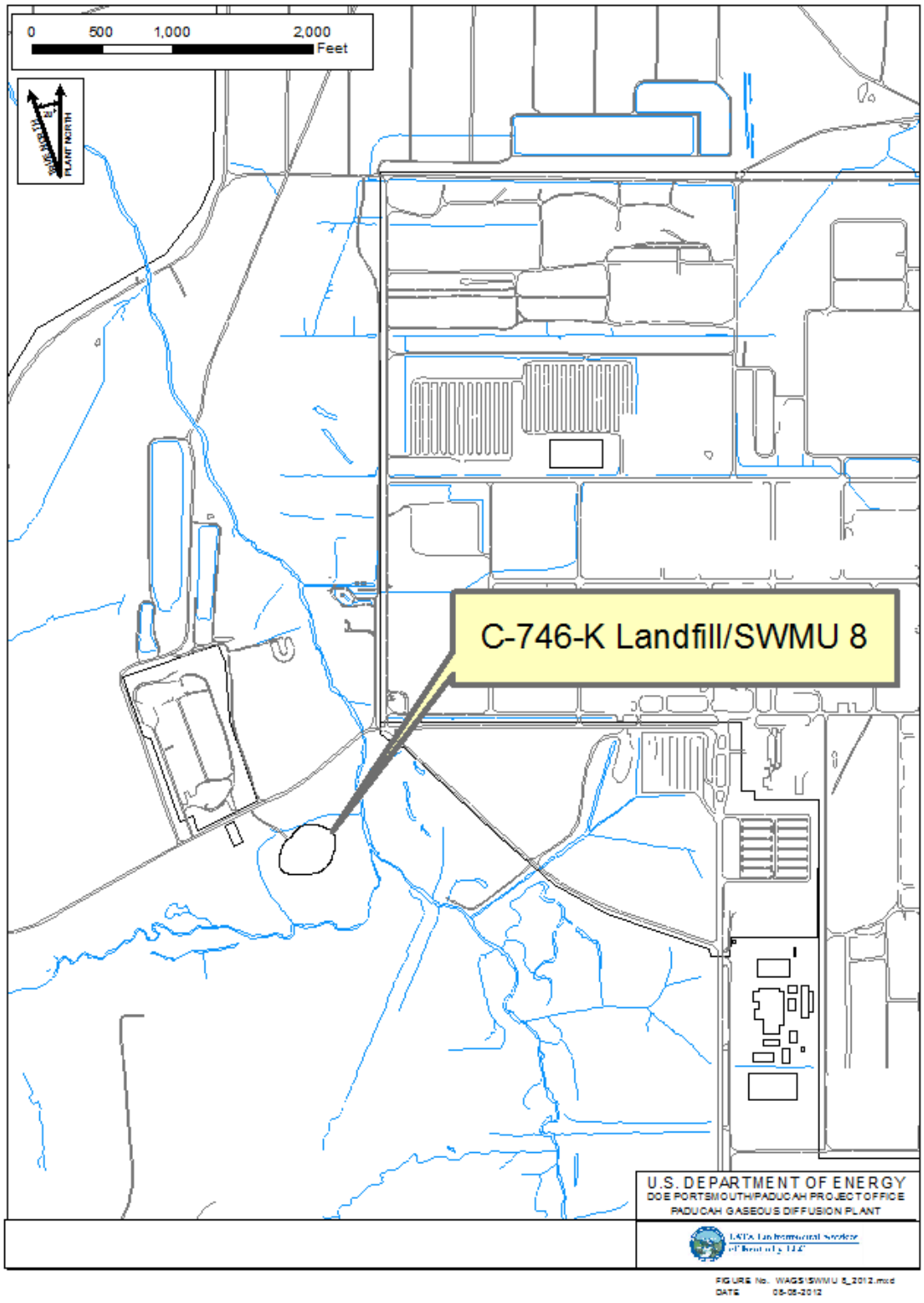


**Figure 2. C-746-K Landfill/SWMU 8 Location**

## 4.3 DESCRIPTION OF POTENTIAL OPERATING PROBLEMS

Not applicable to WAGs 1 and 7; no treatment system was installed.

## 4.4 DESCRIPTION OF ROUTINE MONITORING AND LABORATORY TESTING

### Groundwater Monitoring

Monitoring wells are sampled as specified in the most current version of the Environmental Monitoring Plan. Currently, MW300, MW302, and MW344 are sampled on a semiannual basis and analyzed for the relevant parameters as described in the current version of the site Environmental Monitoring Plan, which is updated annually.

## 4.5 DESCRIPTION OF ALTERNATE O&M

Not applicable to WAGs I and 7; no treatment system was installed.

## 4.6 SAFETY PLAN

Work activities covered in this O&M Plan shall be performed under approved work control by qualified workers where site-specific hazards and work controls are established for each task and location prior to performing work, including work performed at remote locations. These hazards and controls will be documented in the form of a site-specific health and safety plan, activity hazard assessments, work packages, and/or procedures. Personnel shall suspend any work activity or process that jeopardizes personnel or public safety, health, or the environment, or that cannot be performed in compliance with the approved work control for the activity.

## 4.7 DESCRIPTION OF EQUIPMENT

Tractor mowers and rotary deck mowers, in conjunction with hand-held grass trimmers, are used for mowing. This equipment is maintained by the maintenance subcontractor and replaced as necessary to perform the mission.

For groundwater sampling, dedicated well pumps are used for sample collection. Sample collection is performed to procedures for groundwater sample collection. Electric water-level readers and micro-purge pumps are used to measure and sample wells. The water-level readers are maintained by the environmental monitoring sampling organization and replaced as necessary to perform the mission. Bladder pumps are installed in the individual wells and are replaced as necessary to perform the mission.

## 4.8 RECORDS AND REPORTING

Records shall be generated and maintained in accordance with the most current version of PAD-RM-1009, *Records Management, Administrative Record, and Document Control.* Records may be maintained in duplicate as a field operating record in a satellite area and in another media (i.e., electronic) in separate locations until transmittal for final repository to the DMC. Typical records that may be generated include completed walkthrough inspection checklists and any attachments.

**Daily Operating Logs:** Kept by DOE's maintenance and environmental monitoring contractors as internal documents. Inspection reports are submitted to and maintained in the DMC in accordance with the most current version of PAD-RM-1009, *Records Management, Administrative Record, and Document Control*.

**Laboratory Records:** Recorded in the PGDP Oak Ridge Environmental Information System database and available to regulatory agencies. Results of routine groundwater monitoring are reported to regulatory agencies in the DOE PGDP FFA progress reports, and the Annual Site Environmental Reports. Inspections of the EI signs and fencing, as well as SWMU 8 (i.e., C-746-K Landfill), are submitted to the DMC and are reviewed as part of the Five-Year Reviews.

**Mechanism for Reporting Emergencies:** All personnel who perform inspections, mowing, and routine monitoring activities are required to maintain radio contact with the plant shift superintendent, who has the capability to respond to emergency requests.

### 4.9 PROJECTED O&M COSTS

The estimated costs associated with the inspection and maintenance of SWMU 8 (i.e., the C-746-K Landfill) are included in Table 2. Analytical sampling costs and mowing and repairs to the signs for this action also are estimated and included in Table 2.

**Table 2. Estimated Annual Maintenance Cost for C-746-K Landfill/SWMU 8**

| TASK | COST |
|---|---|
| Routine inspection | $3,000 |
| Vegetation control (mowing, spraying, etc.) | $6,000 |
| Routine and periodic repairs and replacement | $2,000 |
| Sampling and analytical laboratory | $15,000 |
| TOTAL COST | $26,000 |

## 5. REFERENCES


DOE (U.S. Department of Energy) 1992. *Interim Corrective Measure Work Plan for Institutional Control of Onsite Contamination in Surface Water*, DOE-OR-1057, U.S. Department of Energy, Paducah, KY, August.

DOE 1993. *Interim Measure Report for Institutional Control of Off-site Contamination in Surface Water*, DOE/OR/07-1206&D1, U.S. Department of Energy, Paducah, KY, October.

DOE 1998. *Record of Decision for Waste Area Groups 1 and 7 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/06-1470&D3, U.S. Department of Energy, Paducah, KY, February.

DOE 2000. *Operation and Maintenance Plan for the Surface Water Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1904&D1, U.S. Department of Energy, Paducah, KY, September.

DOE 2005. *Operation and Maintenance Plan for Sections 1 and 2 of the North-South Diversion Ditch at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2057&D2, U.S. Department of Energy, Paducah, KY, February.

DOE 2009. *Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/0117&D2, U.S. Department of Energy, Paducah, KY, May.

DOE 2010. Letter from R. Knerr to W. Ballard and E. Winner, "Federal Facility Agreement Project Managers Meetings Conducted May 20, June 17, June 30-July 1, and August 18, 2010," PPPO-02-1085988-11, U.S. Department of Energy, Paducah, KY, December 22.

DOE 2013. Letter from J. Woodard to T. Mullins and J. Tufts, "Federal Facility Agreement Project Managers Meeting Conducted February 28." PPPO-02-2016370-13, U.S. Department of Energy, Paducah, KY, July 24.

DOE 2014. *Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/1289&D2/R1, U.S. Department of Energy, Paducah, KY, May.

EPA 1998. *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant*, U.S. Environmental Protection Agency, Region 4, Atlanta, GA, February 13.

**THIS PAGE INTENTIONALLY LEFT BLANK**

# APPENDIX

# FORMS AND SIGNS

**THIS PAGE INTENTIONALLY LEFT BLANK**

# FIGURES

**THIS PAGE INTENTIONALLY LEFT BLANK**

| **Sign Number:** | **Date:** |
|---|---|
| **Inspector:** | |

**Inspector(s):** Check "N/A" to indicate that the requirement does **not** apply to the area being inspected. Check "SAT" to indicate compliance with the requirement. Check "UNSAT" to indicate that **un**satisfactory condition(s) exist and describe the condition(s) under "Deficient Condition." If a condition was previously identified and has still **not** been corrected, report that condition under "Comments."

| **GENERAL REQUIREMENTS** | **N/A** | **SAT** | **UNSAT** | **Deficient Condition** | **Comments** |
|---|---|---|---|---|---|
| Posts are securely fastened in the ground or on a fence such that the integrity of the sign is **not** threatened. | | | | | |
| Signs are legible (including sign number). | | | | | |
| Vegetation does **not** impede visual examination of the sign. | | | | | |
| Length of grass/vegetation does **not** prevent adequate observation of signs. | | | | | |
| Length of grass/vegetation does not prevent observation of the fence. | | | | | |
| Tree trunks, roots, or branches do **not** threaten signs or conjoining fencing. | | | | | |
| A subjective evaluation of the overall site appearance indicates that it is in an acceptable condition considering the visual exposure of the area to the general public and site workers. | | | | | |



**Figure A.1. Environmental Indicator Signs and Surface Water ICM Fencing Example Inspection Form**

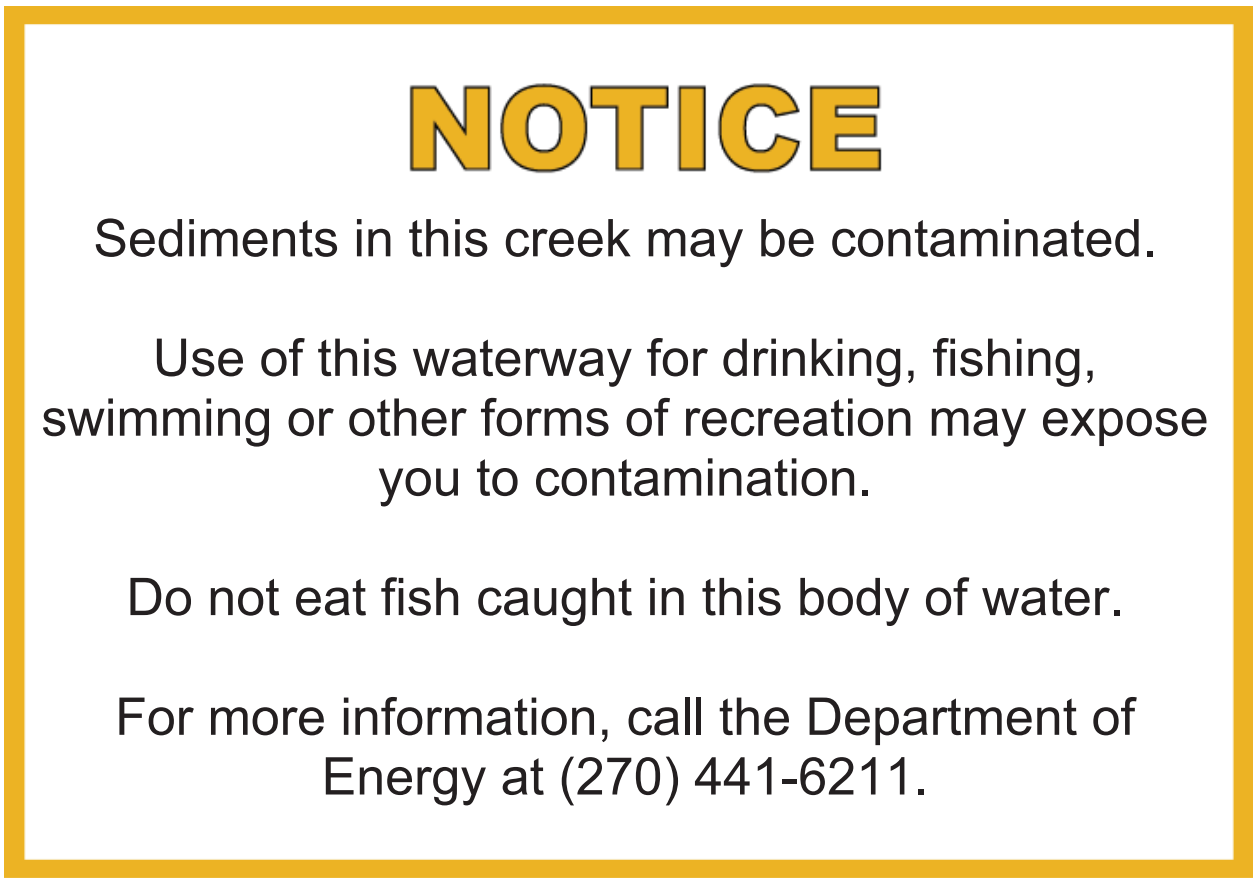


**Figure A.2. Environmental Indicator Sign --Little Bayou Creek**

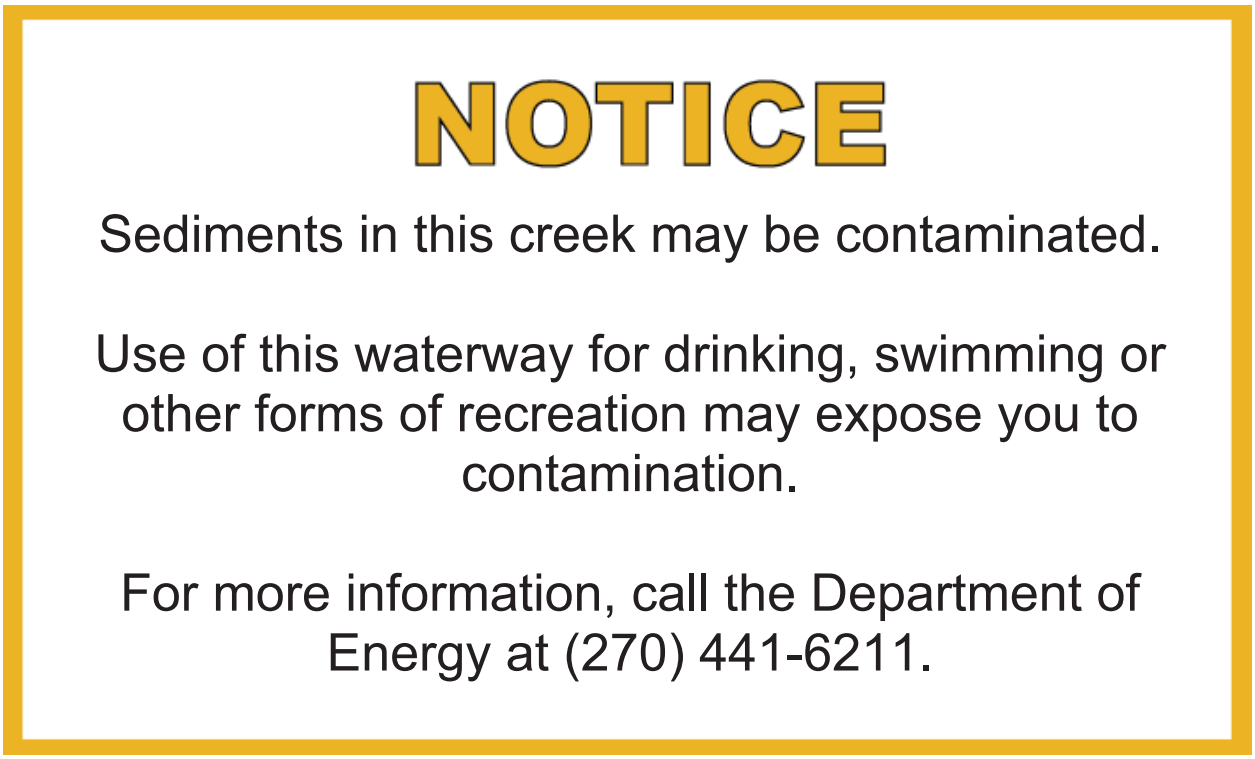


**Figure A.3. Environmental Indicator Sign --Bayou Creek**

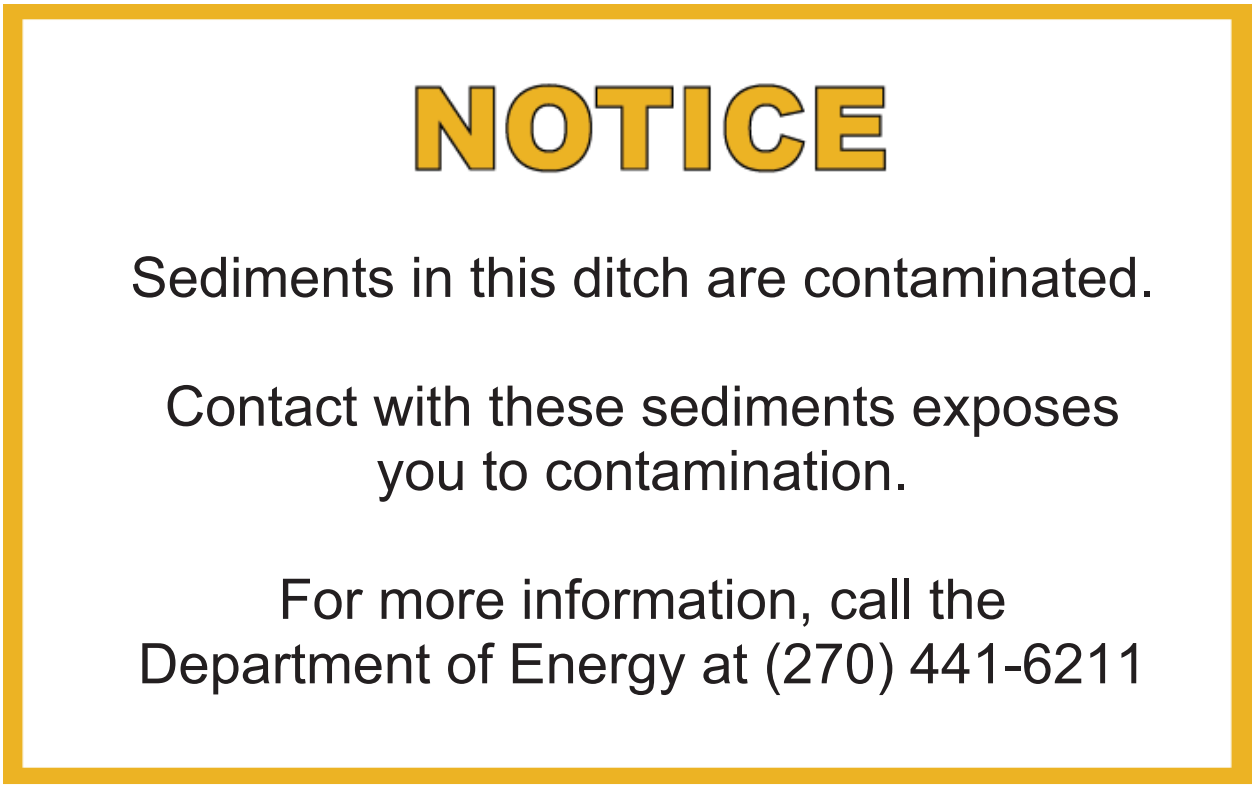


**Figure A.4. Environmental Indicator Sign --Section 5 of the North-South Diversion Ditch and Surface Water ICM Locations**

# C-746-K
# SANITARY LANDFILL

## C-746-K SOLID WASTE MANAGEMENT UNIT

OPERATOR: LATA ENVIRONMENTAL SERVICES OF KENTUCKY, LLC
STATUS OF OPERATION: CLOSED
PERMIT NO. KY8-890-008-982



**Figure A.5. Example of a C-746-K Landfill/SWMU 8 Entrance Sign**

# C-746-K
# FACILITY MANAGER APPROVAL REQUIRED FOR ENTRY OR INTRODUCTION OF ADDITIONAL RADIOLOGICAL OR CHEMICAL MATERIAL

# PLEASE CONTACT THE FACILITY MANAGER AT: 270-441-5219



**Figure A.6. Example of a C-746-K Landfill/SWMU 8 Access Control Sign**

# WARNING

# THIS STREAM BANK AND STREAM SEGMENTS ADJACENT TO THIS CLOSED LANDFILL HAVE BEEN DETERMINED TO BE UNFIT FOR DRINKING RECREATIONAL OR FISHING PURPOSES



**Figure A.7. C-746-K Landfill/SWMU 8 Warning Sign**

## WALKTHROUGH CHECKLIST – C-746-K LANDFILL

| **Facility/SWMU:** | | **Date:** |
|---|---|---|
| **Lead Inspector:** | **Inspector #2:** | **Inspector #3:** |

**Inspector(s):** Check "N/A" to indicate that the requirement does **not** apply to the facility being inspected. Check "SAT" to indicate compliance with the requirement. Check "UNSAT" to indicate that **un**satisfactory condition(s) exist and describe the condition(s) under "Deficient Condition." If a condition was previously identified and has still **not** been corrected, report that condition under "Comments."

| WARNING AND ENTRANCE SIGNS | N/A | SAT | UNSAT | Deficient Condition | Comments |
|---|---|---|---|---|---|
| Signs are in place per map. | | | | | |
| Signs are in good condition and readable. | | | | | |

| VEGETATIVE COVER | N/A | SAT | UNSAT | Deficient Condition | Comments |
|---|---|---|---|---|---|
| Gully erosion depth is less than 6 inches. | | | | | |
| **No** unusual vegetative die-off exists. | | | | | |
| **No** evidence exists of varmint intrusion/burrowing by animals. | | | | | |
| **No** overgrowth. | | | | | |
| **No** depressions. | | | | | |

| DITCHES | N/A | SAT | UNSAT | Deficient Condition | Comments |
|---|---|---|---|---|---|
| Ditches are free of debris. | | | | | |
| Ditches are free of excessive sediments. | | | | | |
| Ditches allow for adequate drainage. | | | | | |
| Ditches are **not** damaged by erosion. | | | | | |

| RIP-RAP | N/A | SAT | UNSAT | Deficient Condition | Comments |
|---|---|---|---|---|---|
| Rip-rap cover locations are in place per map. | | | | | |
| **No** excessive debris or growth. | | | | | |



**Figure A.8. C-746-K Landfill/SWMU 8 Example Inspection Form**

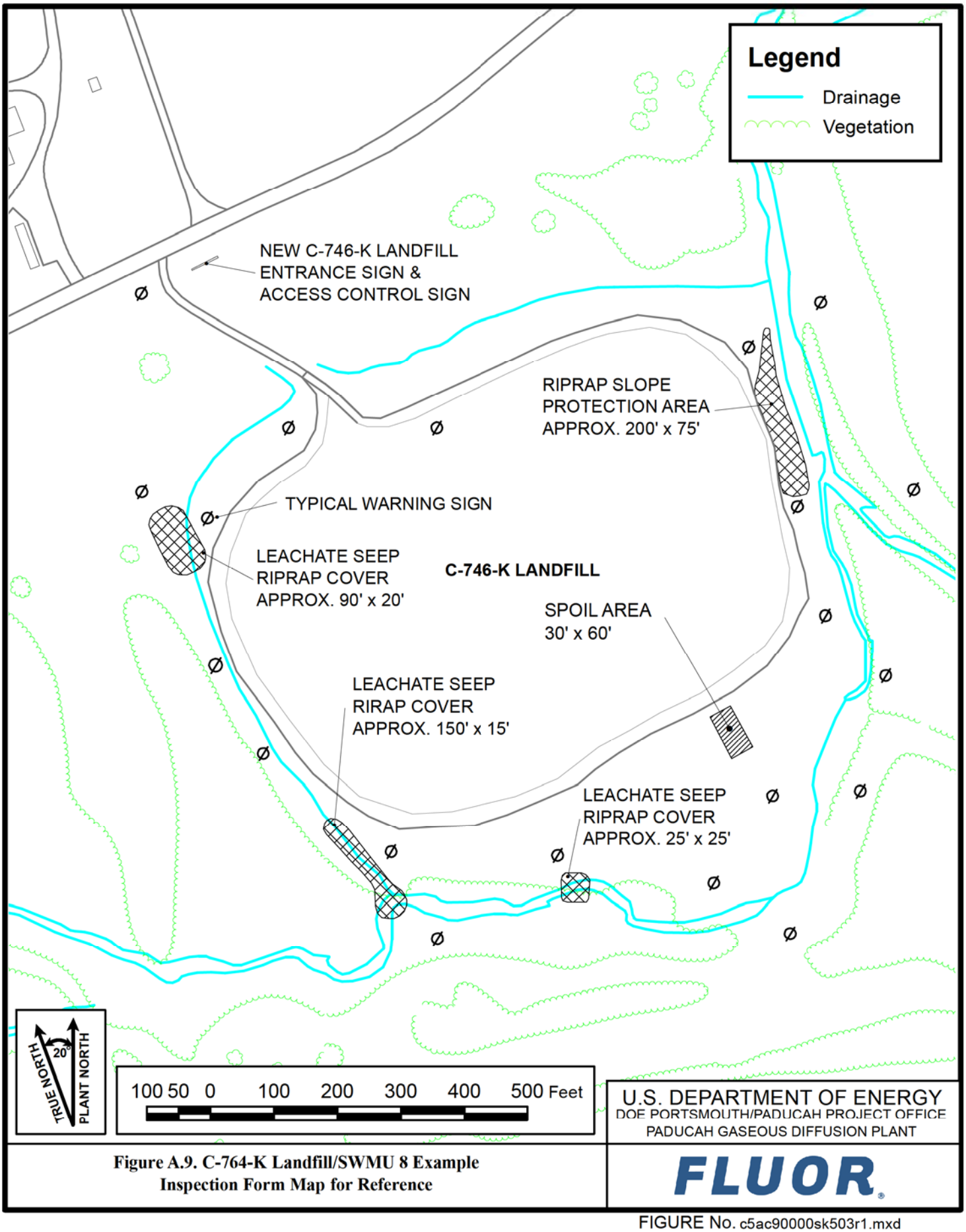


**Figure A.9. C-764-K Landfill/SWMU 8 Example Inspection Form Map for Reference**

**THIS PAGE INTENTIONALLY LEFT BLANK**