



## Department of Energy

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July 7, 2020

Mr. Brian Begley  
Federal Facility Agreement Manager  
Division of Waste Management  
Kentucky Department for Environmental Protection  
300 Sower Boulevard, 2nd Floor  
Frankfort, Kentucky 40601

PPPO-02-10006452-20

Mr. Victor Weeks  
Federal Facility Agreement Manager  
U.S. Environmental Protection Agency, Region 4  
61 Forsyth Street  
Atlanta, Georgia 30303

Dear Mr. Begley and Mr. Weeks:

**PADUCAH FEDERAL FACILITY AGREEMENT—SIGNED MEMORANDUM OF AGREEMENT FOR RESOLUTION OF THE INFORMAL DISPUTE CONCERNING U.S. ENVIRONMENTAL PROTECTION AGENCY AND KENTUCKY DEPARTMENT FOR ENVIRONMENTAL PROTECTION REQUIREMENTS FOR ADDITIONAL ACTIONS OR MODIFICATIONS REGARDING THE CY 2018 FIVE-YEAR REVIEW FOR REMEDIAL ACTIONS AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, DOE/LX/07-2426&D2**

Please find enclosed the signed *Memorandum of Agreement for Resolution of the Informal Dispute Concerning U.S. Environmental Protection Agency and Kentucky Department for Environmental Protection Requirements for Additional Actions or Modifications Regarding the CY 2018 Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2426&D2*. The enclosed Memorandum of Agreement memorializes the mutually acceptable resolution reached by the Federal Facility Agreement (FFA) parties on the disputed conditions associated with the calendar year (CY) 2018 Five-Year Review. The FFA parties consider the CY 2018 Five-Year Review complete, and all the additional actions that the U.S. Environmental Protection Agency (EPA) and Kentucky Department for Environmental Protection (KDEP) brought forth in letters dated September 30, 2019, and October 7, 2019, respectively, have been resolved or will be resolved upon completion of the actions set forth in this agreement.

The U.S. Department of Energy appreciates EPA's and KDEP's efforts to resolve the informal dispute.

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

Sincerely,



Tracey Duncan  
Federal Facility Agreement Manager  
Portsmouth/Paducah Project Office

Enclosure:

Signed Memorandum of Agreement

Administrative Record File—ARF ARR

cc w/enclosure:

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# MEMORANDUM OF AGREEMENT FOR RESOLUTION OF INFORMAL DISPUTE

Concerning U.S. Environmental Protection Agency and Kentucky Department for Environmental Protection Requirements for Additional Actions or Modifications Regarding the *CY 2018 Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2426&D2*

## Background

On September 30, 2019, and October 7, 2019, respectively, the U.S. Environmental Protection Agency (EPA) and the Kentucky Department for Environmental Protection (KDEP) identified additional actions regarding the U.S. Department of Energy (DOE) *CY 2018 Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2426&D2* (CY 2018 FYR), May 2019, pursuant to Section XXX, Five Year Reviews, of the Paducah Federal Facility Agreement (FFA). Specifically, EPA issued independent protectiveness determinations of “protectiveness deferred” for four Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions: 1) Northwest Plume Interim Remedial Action, 2) Northeast Plume Interim Remedial Action, 3) Water Policy Removal Action, and 4) Fire Training Area Interim Remedial Action. EPA also recommended multiple additional actions for those four response actions. KDEP issued one independent protectiveness determination of “protectiveness deferred” for the Water Policy Removal Action and requested multiple additional actions for the Water Policy Removal Action.

Pursuant to Section XXV.A, Informal Dispute, of the Paducah FFA, DOE invoked informal dispute resolution on December 2, 2019, regarding the assessment by EPA and the reassessment by KDEP. DOE disputed three of EPA’s independent protectiveness determinations (Northwest Plume Interim Remedial Action, Northeast Plume Interim Remedial Action, and Water Policy Removal Action), five of EPA’s additional actions, KDEP’s independent protectiveness determination for the Water Policy Removal Action, and five of KDEP’s additional actions.

The FFA parties, in good faith, conducted a period of informal dispute under Section XXV.A, Informal Dispute, and reached a mutually acceptable resolution on the disputed conditions associated with the CY 2018 FYR. The FFA parties consider the CY 2018 FYR complete, and all the additional actions that EPA and KDEP brought forth in letters dated September 30, 2019, and October 7, 2019, respectively, have been resolved or will be resolved upon completion of the actions set forth in this agreement.

## Resolution

The undersigned agree that the Informal Dispute invoked by DOE hereby is resolved. The terms of the dispute resolution agreement (DRA or Agreement) are set forth below.

The FFA parties have agreed that the protectiveness determinations for 1) Northwest Plume Interim Remedial Action, 2) Northeast Plume Interim Remedial Action, 3) Water Policy Removal Action, and 4) Fire Training Area Interim Remedial Action will be reevaluated as part of the FY 2023 FYR process. These actions and information shared during the dispute process and completion of the below actions satisfy the additional data needed for protectiveness determinations as related to the additional actions identified by EPA and KDEP regarding the CY 2018 FYR.

## Resolution of EPA Additional Actions Disputed by DOE

1. Water Policy Additional Action (EPA): DOE written commitment to expansion of the Water Policy Education Fact Sheet distribution list for the next (2Q FY2020) annual mailing, and in subsequent years (FY2020+), beyond the residents and businesses in the Water Policy Affected Area to include trusted individuals and information sources in the broader community.

Resolution: DOE established a revised distribution list for the Water Policy Education Fact Sheet that will be utilized for future updates of the fact sheet that included the following information. Additionally, a direct link to the most current Water Policy Education Fact Sheet has been added to the welcome page of the Online Environmental Information Center ([eic.pad.pppo.gov](http://eic.pad.pppo.gov)) to enhance accessibility for the public. The revised distribution list (effective 2Q FY2020) now includes:

- o All residences and businesses within the Water Policy affected area
  - o Owners of property within the Water Policy affected area who do not reside at the property
  - o Paducah Citizens Advisory Board (CAB) members contact list (provided through the CAB office)
  - o Local elected officials and city contacts (see 2018 Community Relations Plan, Appendix C)
  - o PGDP Reading File maintained by the McCracken County Library Special Collections desk
2. Water Policy Additional Action (EPA): DOE provision (as Official Use Only) of the annual Water Policy Due Diligence Report by December 30, 2019, to EPA and KDEP for review and subsequent DOE provision of a briefing on the report to the Regulator agencies not later than January 30, 2020.

Resolution: DOE developed a Water Policy section template within the FFA Semiannual Progress Report for communication and documentation of activities related to the Water Policy. The FFA Semiannual Progress Report is updated and submitted every 6 months (April and October) and will include Water Policy reporting starting in April 2020.

3. Water Policy Additional Action (EPA): DOE preparation and submittal of a Water Policy D1 Removal Action Work Plan proposing a revised residential well and monitoring well sampling proposal for EPA and KDEP review and comment.

Resolution: DOE will incorporate elements of Water Policy boundary monitoring currently conducted under the DOE Environmental Monitoring Plan (shown in Attachment 1) into the Northeast and Northwest Plume Operation and Maintenance Plans and submit the revised documents to EPA and KDEP in FY2020 in lieu of developing a D1 Removal Action Work Plan for the Water Policy. Data generated in support of Water Policy monitoring will be made available in PEGASIS and a summary reported in FFA Semi-Annual Progress Reports for use in evaluating continued protectiveness in support of future FYRs.

4. Fire Training Area (Solid Waste Management Unit 100) Additional Action (EPA): Per- and polyfluoroalkyl substances (PFAS) sampling in selected groundwater wells in FY2019 and the results reported in the FFA Semiannual Progress Report for the First Half of FY2020 for EPA and KDEP evaluation.

Resolution: DOE conducted groundwater sampling for PFAS at the Fire Training Area in 2019. The PFAS data associated with MW315 and MW330 were placed into PEGASIS on March 26, 2020, and provided to EPA and KDEP via formal letter on April 13, 2020. The submittal of the data via letter satisfied the condition.

5. Northwest Plume, Northeast Plume, and Water Policy Additional Action (EPA): Detailed lithologic plots are needed to manage the uncertainty regarding the potential for faulting and influences on the subsurface lithologic units potentially impacting Paducah site contaminant plume migration on-site and beyond the Paducah site boundaries, including the Water Policy area.

Resolution: DOE will collect McNairy samples within the C-400 Complex Operable Unit (OU) in accordance with the approved C-400 Complex OU Remedial Investigation/Feasibility Study (RI/FS) Work Plan. The data and the correlation of the lithological areas within the C-400 Complex will be reported in the C-400 Complex OU RI/FS D1 Report.

DOE will develop a technical paper that addresses correlations between lithologic units across the entire Paducah Site, including the Water Policy area, using existing data that currently is available, along with the data that will be generated as part of the C-400 Complex OU RI/FS Work Plan implementation. The technical paper will be developed in accordance with Attachment 2 to this DRA. DOE will issue the technical paper within one month of submittal of the D1 C-400 Complex OU RI/FS Report to support the review and comment of the C-400 specific data interpretation as part of the C-400 Complex OU RI/FS Report review process and the performance of the FY 2023 Five-Year Review revised protectiveness determinations for the Northeast, Northwest, and Water Policy response actions

#### Resolution of KDEP Additional Actions Disputed by DOE

6. Water Policy Additional Action (KDEP): Provide appropriate documentation to demonstrate that efforts have been made to contact households in the Water Policy Area and to document well usage status. This documentation should be updated on a regular basis.

Resolution: DOE provided, and the FFA parties discussed, standard operating procedures to enhance DOE's implementation, and regulatory agency understanding, of the Water Policy, in support of future Five-Year Reviews. The documentation and discussion satisfied the condition.

7. Water Policy Additional Action (KDEP): Consider cost off-sets.

Resolution: During dispute resolution discussions, KY and EPA were advised that the DOE-Portsmouth-Paducah Project Office is actively pursuing license agreements for payment of monthly water bills to all residential and business addresses in the Water Policy Affected Area. It was also discussed that some residents refuse for DOE to pay their water bills and/or refuse to sign license agreements. These discussions satisfied the condition.

8. Water Policy Additional Action (KDEP): Implement a Public Awareness Campaign that employs multiple communication efforts (such as well lock contact tags), especially for residents that have not signed license agreements, to verify that existing wells are not being used for primary or secondary uses.

Resolution: DOE provided, and the FFA parties discussed, standard operating procedures to enhance DOE's implementation, and regulatory agency understanding, of the Water Policy and in support of future Five-Year Reviews. See, also, Resolutions to EPA Additional Actions 1 and 2, above. This documentation and discussion satisfied the condition.

9. Water Policy Additional Action (KDEP): Compile a consolidated Water Policy Occupant list that includes the property owner(s), licenses status, municipal water cost offset status, and shortest distance to the TCE plume by December 31, 2019.

Resolution: DOE compiled and shared lists of addresses and license status to enhance regulatory agency understanding of DOE's implementation of the Water Policy and in support of future Five-Year Reviews. This documentation and discussion satisfied the condition.

- 10. Water Policy Additional Action (KDEP): Develop a consolidated, management-approved, standard set of procedures that will be followed to ensure that exposure to contaminated groundwater is not occurring.

Resolution: DOE provided, and the FFA parties discussed, standard operating procedures to enhance DOE's implementation, and regulatory agency understanding, of the Water Policy and in support of future Five-Year Reviews. This documentation and discussion satisfied the condition.

**Other Terms and Conditions**

Pursuant to Section XXV.A of the Paducah Gaseous Diffusion Plant FFA, resolution of this dispute constitutes a final resolution of the dispute, which resolution is incorporated into, and becomes a term and condition of the Paducah Gaseous Diffusion Plant FFA. Nothing in this MOA modifies other FFA Terms and Conditions or other CERCLA projects at Paducah Gaseous Diffusion Plant, except as specifically stated above.

To the extent authorized under the Paducah Gaseous Diffusion Plant FFA, nothing in this MOA shall prevent any of the Parties from disputing any other matters related to the aforementioned projects.

**JULIE CORKRAN** Digitally signed by JULIE CORKRAN  
Date: 2020.06.22 07:24:52 -04'00'

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Julie Corkran  
Federal Facility Agreement Manager  
U.S. Environmental Protection Agency, Region 4

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Date

**April Webb** Digitally signed by April Webb  
DN: cn=April Webb  
Date: 2020.06.21 11:38:20 -04'00'

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Brian Begley  
Federal Facility Agreement Manager  
Division of Waste Management  
Kentucky Department for Environmental Protection

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Date

**Tracey L. Duncan** Digitally signed by Tracey L. Duncan  
Date: 2020.06.19 14:19:41 -05'00'

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Tracey Duncan  
Federal Facility Agreement Manager  
U.S. Department of Energy  
Portsmouth/Paducah Project Office

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Date

**Attachment 1**

**Water Policy Boundary Monitoring for Incorporation into the Northeast and  
Northwest Plume Interim Remedial Action Operations and Maintenance  
Plans**

Water Policy Boundary Monitoring Revisions to the *Operation and Maintenance Plan for the Northeast Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1535&D3/R6* and the *Operation and Maintenance Plan for the Northwest Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1253&D4/R5*.

***Operation and Maintenance Plan for the Northeast Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1535&D3/R6***

- 1) Revise Table 3 to include the following:

Question/Goal

Is the risk pathway to residents for NEPCS contaminants eliminated as a result of the current Water Policy Boundary?

Decision Rule

If the TCE levels exceed the MCL at the eastern boundary of the Water Policy, then reevaluate the boundary location. Tc-99 is addressed by other questions/goals and decision rules.

Data Needs

TCE samples will be collected from selected MWs and residential wells near the eastern boundary of the Water Policy.

- 2) Incorporate attached figure, *Water Policy Boundary Monitoring Wells, Northeast with TCE Plume Shown*

***Operation and Maintenance Plan for the Northwest Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1253&D4/R5***

- 1) Revise Table 3 to include the following:

Question/Goal

Is the risk pathway to residents for NWPGS contaminants eliminated as a result of the current Water Policy Boundary?

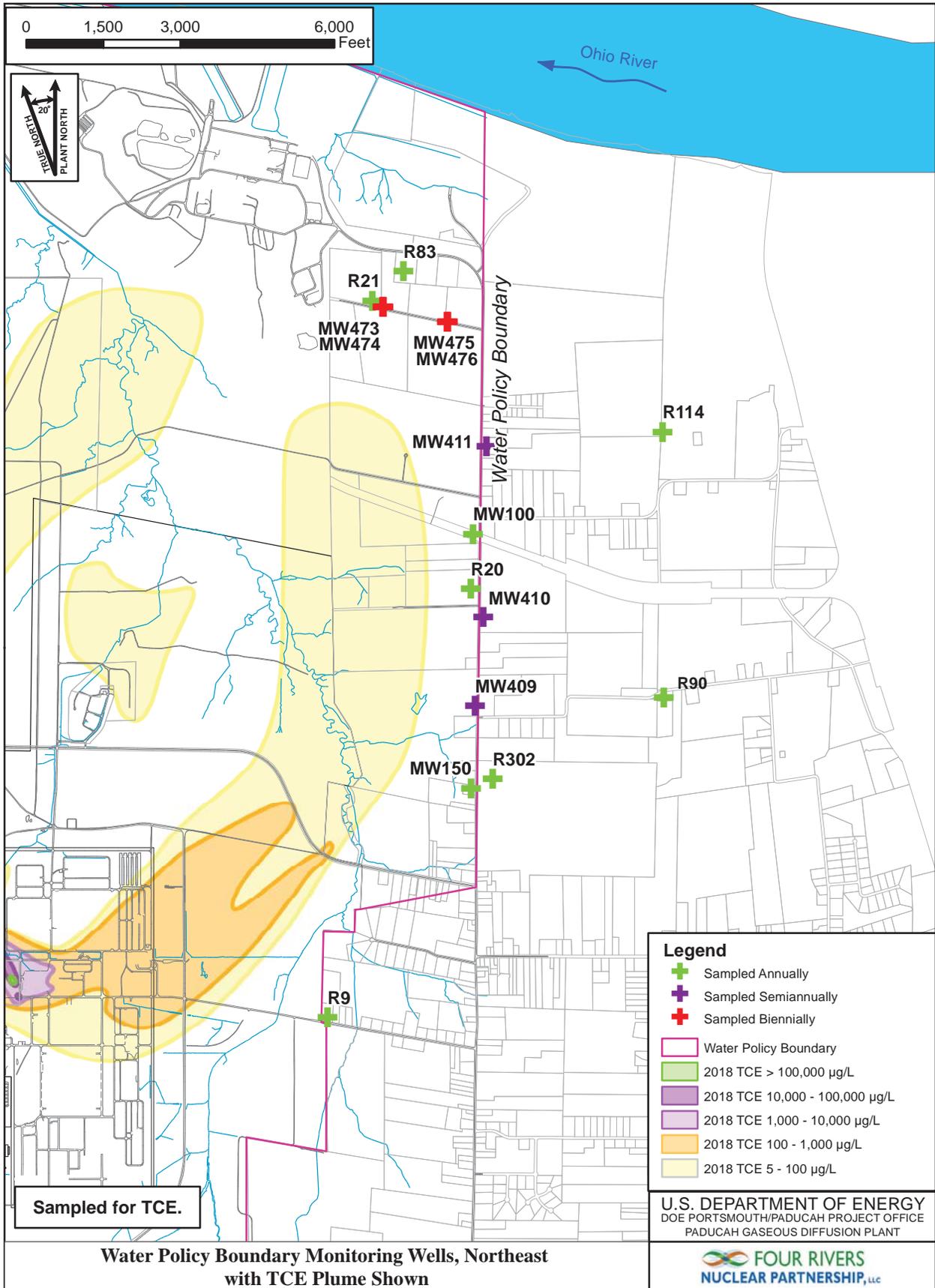
Decision Rule

If the TCE levels exceed 5 ppb and/or Tc-99 activity exceeds 25 pCi/L at the western boundary of the Water Policy, then reevaluate the boundary location.

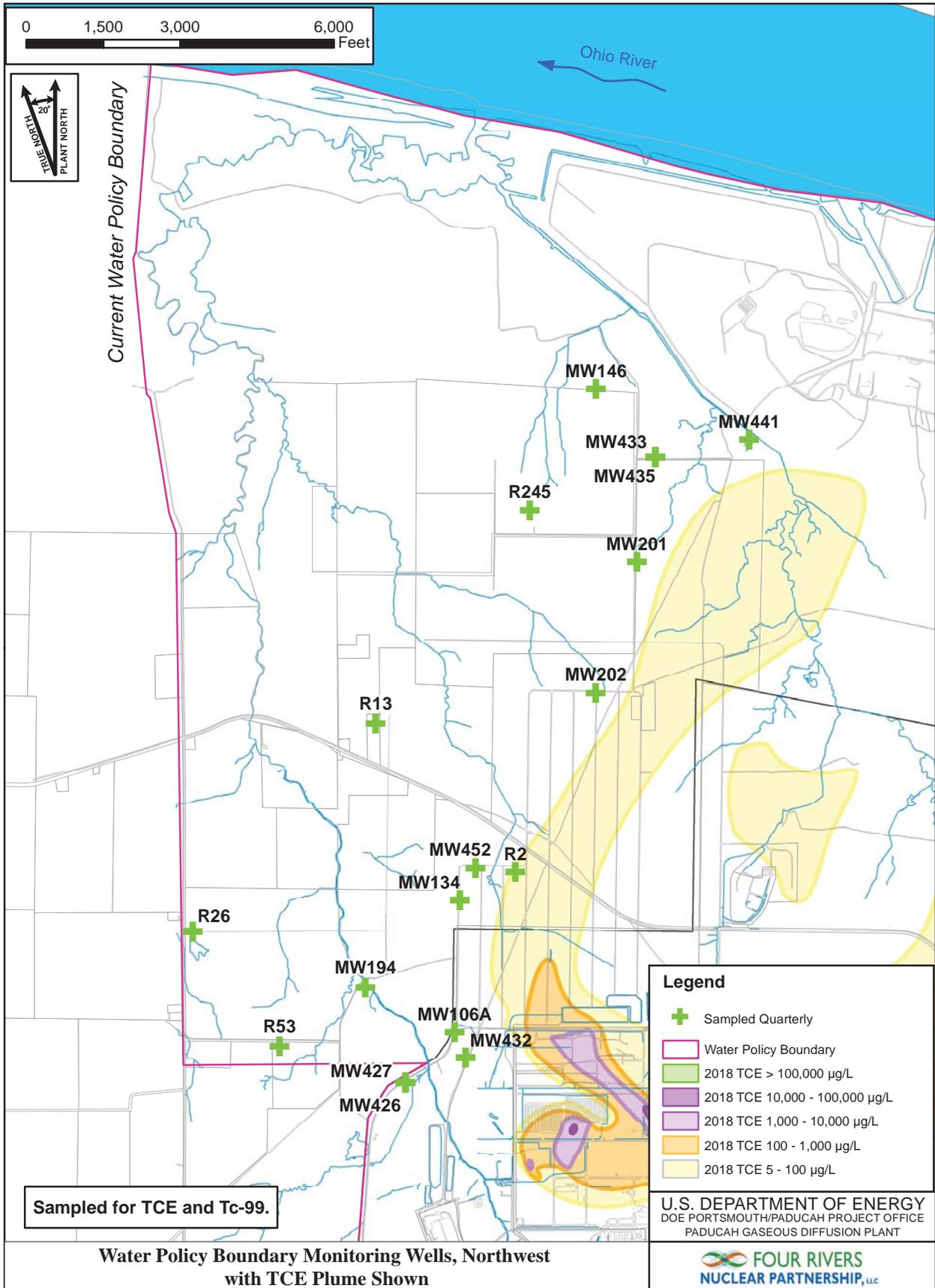
Data Needs

TCE and Tc-99 samples will be collected from selected MWs and residential wells between the Water Policy affected area and the western boundary of the Water Policy.

- 2) Incorporate attached figure, *Water Policy Boundary Monitoring Wells, Northwest with TCE Plume Shown*



**Water Policy Boundary Monitoring Wells, Northeast  
with TCE Plume Shown**



**Attachment 2**

**Plan to Address Detailed Correlations Between Lithologic Units in the  
McNairy Formation Across the Paducah Site**

## **GENERAL PRELIMINARY PLAN TO DEVELOP DETAILED CORRELATIONS BETWEEN LITHOLOGIC UNITS IN THE MCNAIRY FORMATION ACROSS THE PADUCAH SITE**

### **BACKGROUND**

As part of the U.S. Environmental Protection Agency's (EPA's) independent assessment of the FY 2018 Five-Year Review, EPA made a protectiveness deferred determination for the Northeast Plume, the Northwest Plume, and Water Policy response actions, until additional data are collected to verify that human exposures are not occurring. EPA determined additional actions are needed, specifically the collection of additional geological data at the C-400 Complex OU and the development of detailed correlations between lithologic units in the McNairy Formation across the entire Paducah Site, to support an accurate characterization of site faulting and the potential for fault-controlled plume migration across the Plant and beyond the Plant boundaries (including the Water Policy Affected Area). EPA requested that the detailed correlations of the McNairy Formation be reported not later than the C-400 Complex OU D1 Remedial Investigation/Feasibility Study (RI/FS) Report.

The following uncertainties were identified regarding protectiveness for the Northwest Plume, Northeast Plume, and Water Policy response actions:

- The presence of unknown contamination in off-site areas.
- The presence of unknown migration of contamination due to pathways not understood.

To help manage these uncertainties regarding protectiveness, EPA proposed additional characterization of site faulting and the potential for fault-controlled plume migration across the Paducah Site (including the Water Policy Affected Area) as part of the 2023 Five-Year Review.

### **PROPOSAL**

DOE will develop a technical paper discussing two lithological correlations of the McNairy Formation: one along a north-south transect and the other along an east-west transect (see Figure 1). The transects will be developed using the existing data from previously drilled 8 deeper soil borings and from 6 discrete locations, that extend near/through the base of the McNairy Formation (which occurs at elevations of -2 to 66 ft amsl beneath the Paducah Site).

- A north-south transect (relative to the Plant coordinate system) of 5 previously drilled soil borings/4 locations over ~ 19,200 ft (~ 3.6 miles), extending from immediately south of the Paducah Site industrial complex to near TVA's Shawnee Steam Plant.
- An east-west transect (relative to the Plant coordinate system) of 4 previously drilled soil borings/3 locations over ~ 5,500 ft (~ 1.0 miles) across the north side of the Plant.

Inputs into the lithological correlations will include a combination of the historical soil boring logs from both the deeper and shallower McNairy Formation within the Paducah Site and the adjacent TVA Shawnee Steam Plant and soil boring logs of the McNairy Formation from the C-400 Complex OU RI/FS (currently underway) that fall along the north-south and east-west transects.

