

Kentucky Research Consortium for Energy and Environment



www.uky.edu/KRCEE



United States Treasury

May 25, 2004

\$5,000,000.00

Pay to UNC/CoG/MSU for FGD Environmental Assistance

Five Million & 00/100

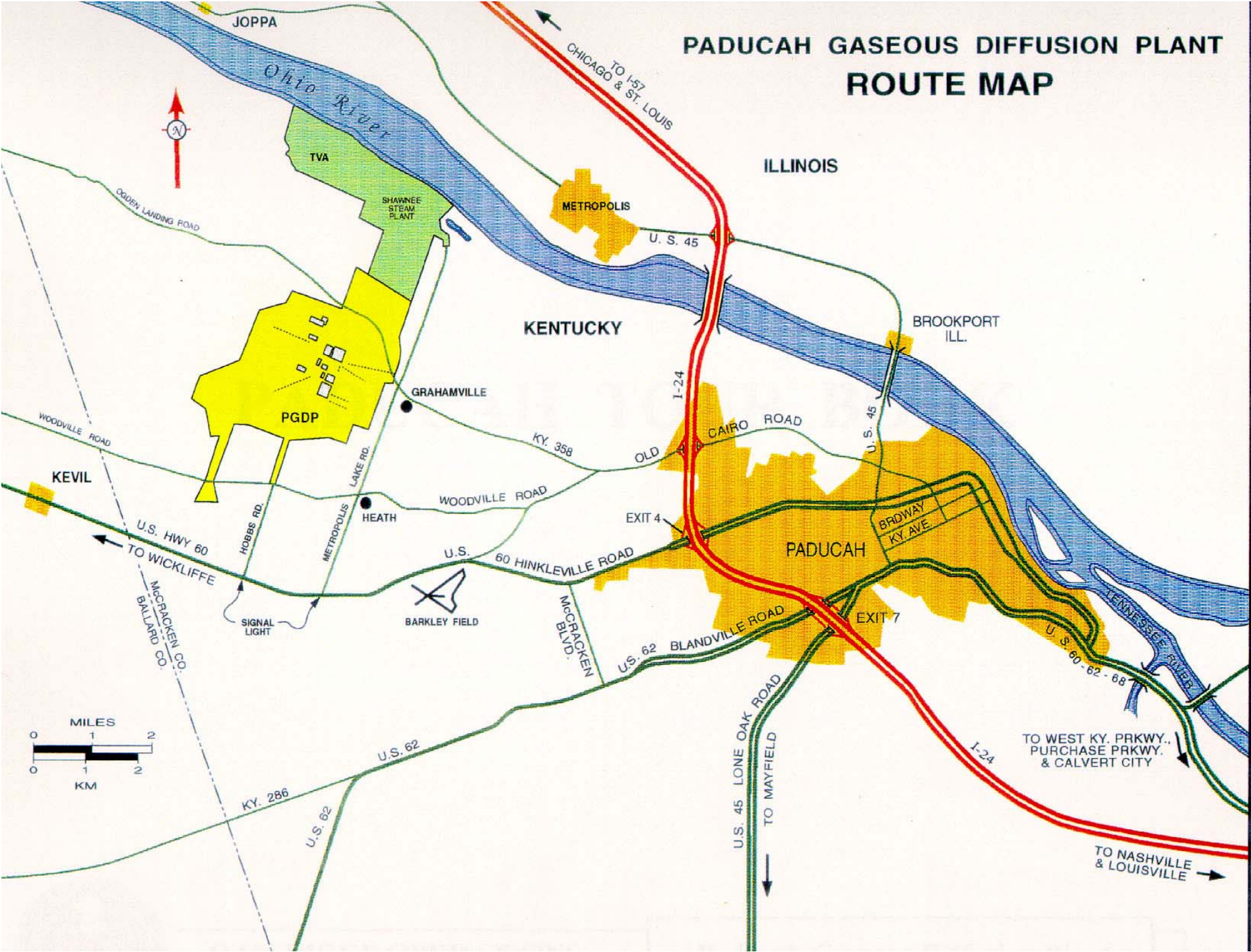
For Technical Assistance

STANDARD CHECK SYSTEMS, INC.

Mission

- To support DOE's efforts to obtain an expeditious and economically viable environmental remediation of the Paducah Gaseous Diffusion Plant, WKWMA, and surrounding areas while insuring the protection of human health and the environment.

PADUCAH GASEOUS DIFFUSION PLANT ROUTE MAP





Land Use

Legend



TVA Property



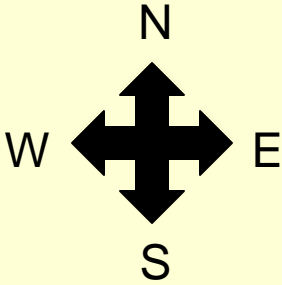
KWMA Property



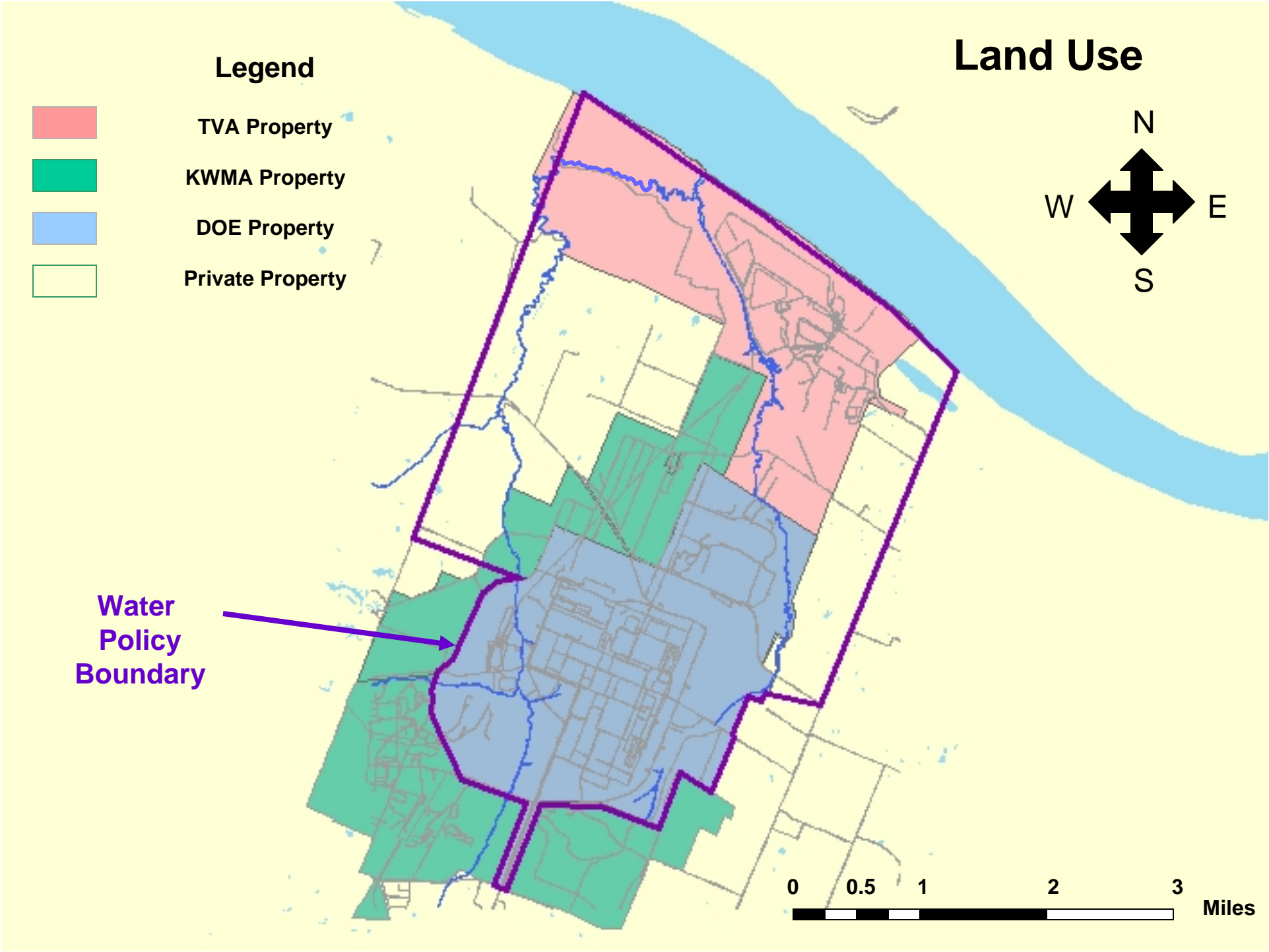
DOE Property



Private Property







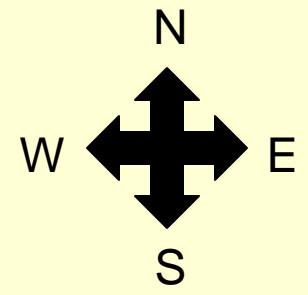
Water Policy Boundary



Tc-99 Plume - 2004

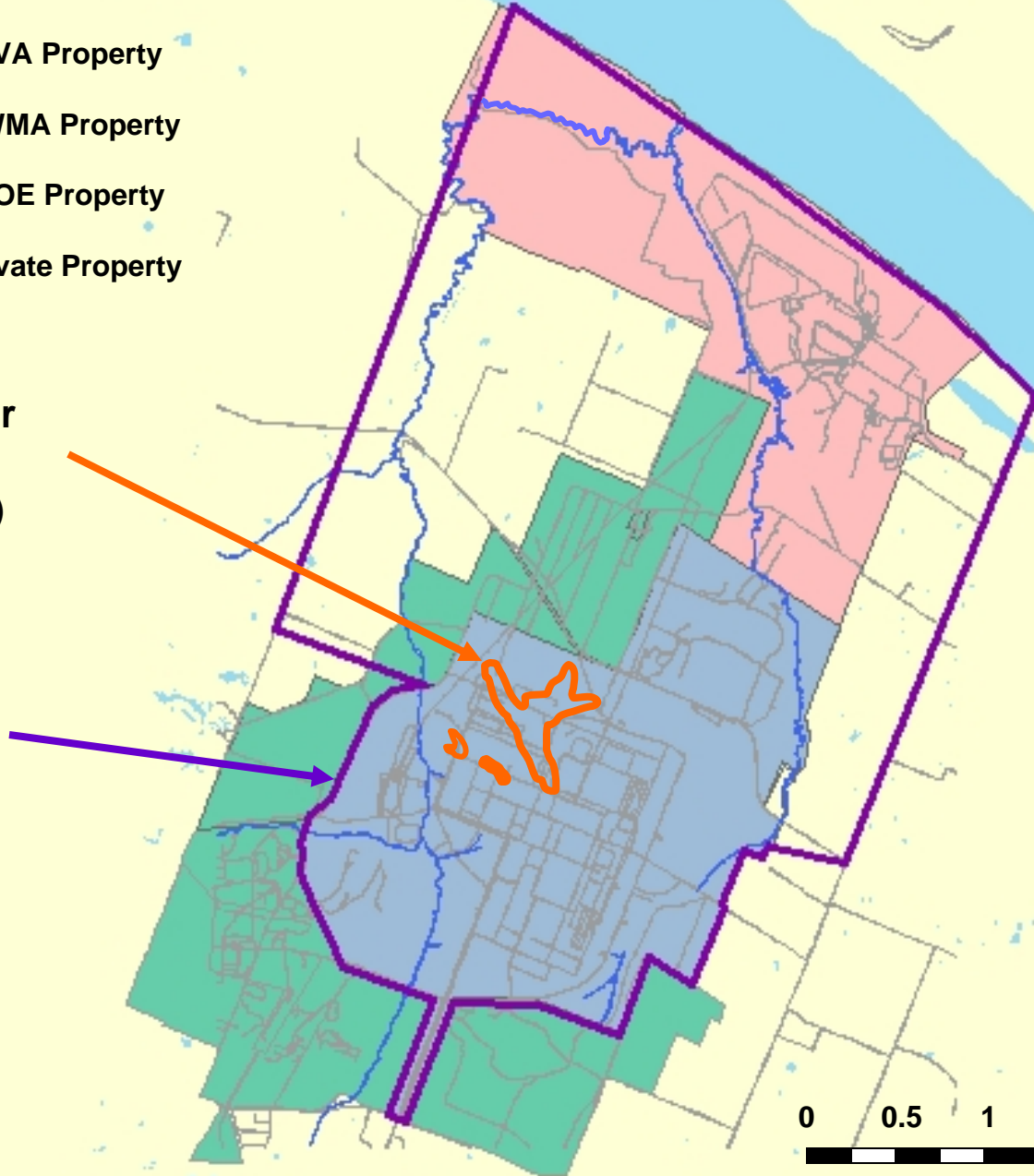
Legend

-  TVA Property
-  KWMA Property
-  DOE Property
-  Private Property







**Tc-99 Contour
900 pCi
(SDWA MCL)**

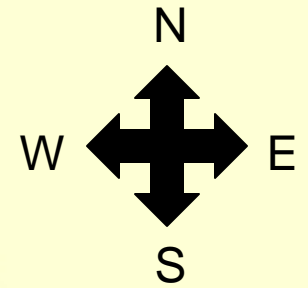
**Water
Policy
Boundary**



TCE Plume - 2004

Legend

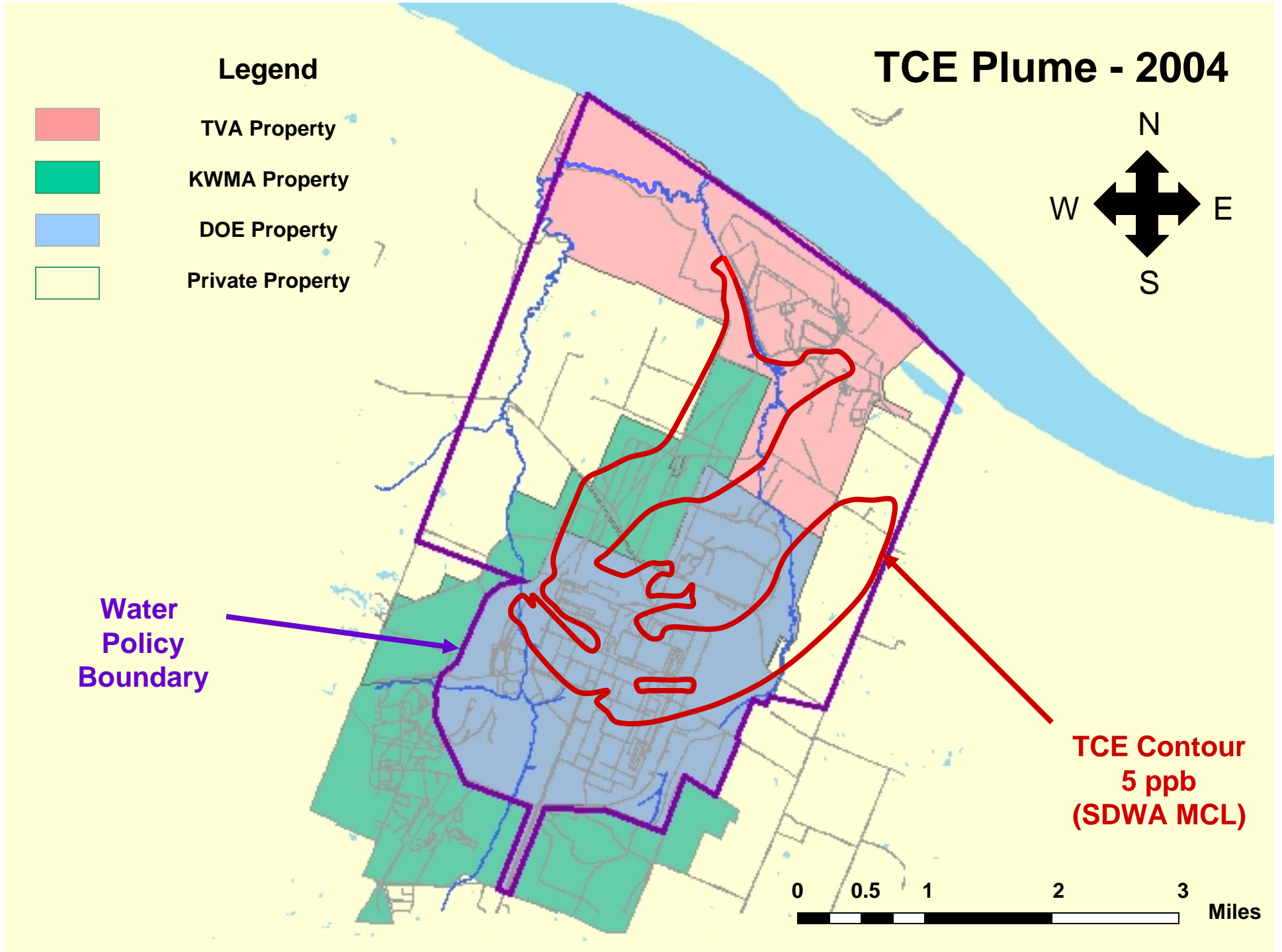
-  TVA Property
-  KWMA Property
-  DOE Property
-  Private Property



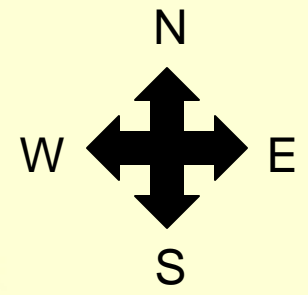
Water Policy Boundary







**TCE Contour
5 ppb
(SDWA MCL)**



Surface Water



Legend

-  TVA Property
-  KWMA Property
-  DOE Property
-  Private Property

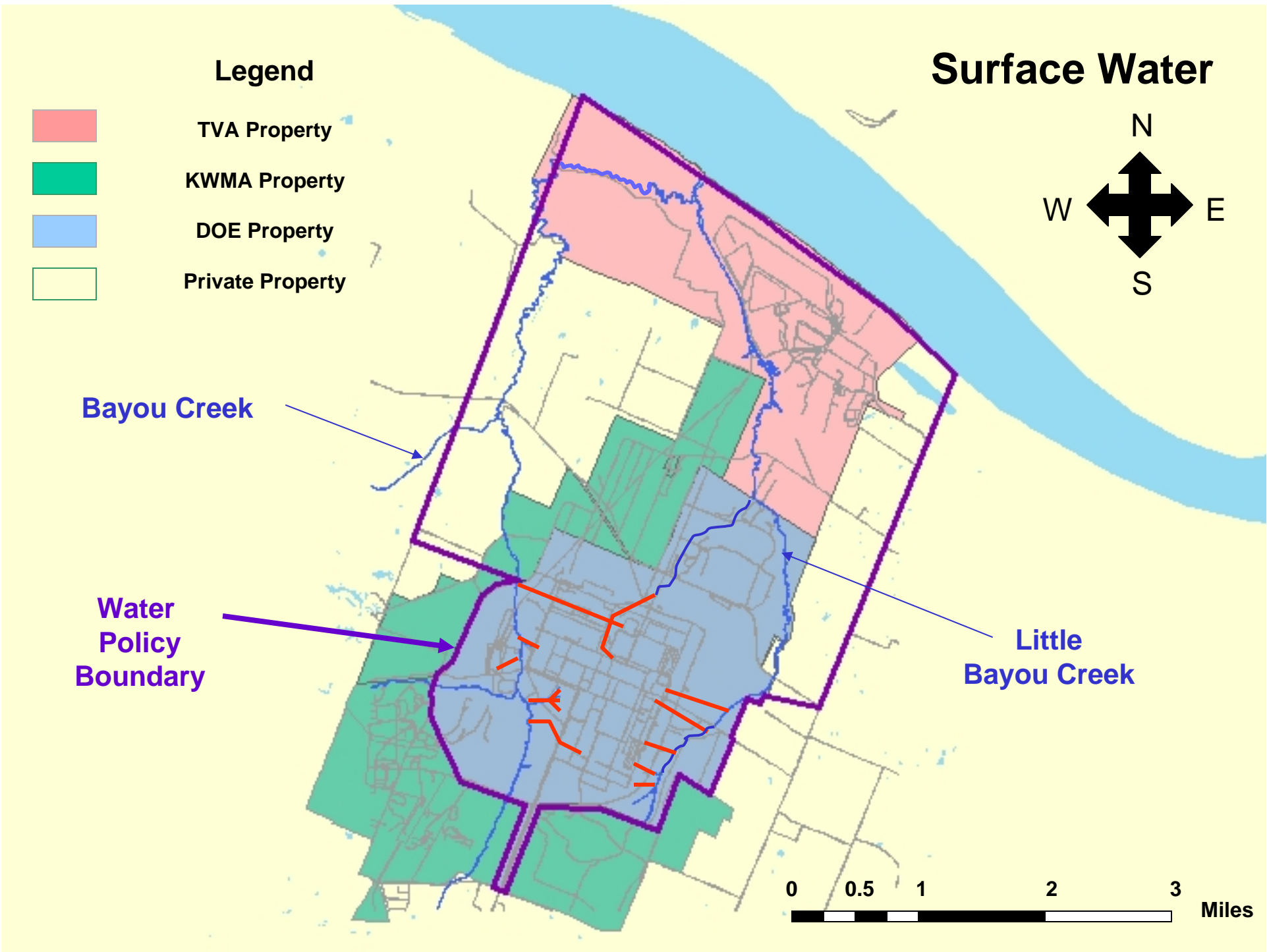
Bayou Creek



Water Policy Boundary



Little Bayou Creek



KRCEE Goals

- Provide an independent perspective on technical issues associated with the clean-up efforts at the PGDP.
 - University faculty/staff
 - Independent consultants
- Identify and investigate innovative technologies for possible application at Paducah.

KRCEE Projects

- Technology Development Projects
 - Metal Recovery Projects
- Seismic Projects
- Groundwater Projects
- Surface Water Projects
- Ecological Projects

Technology Development Projects

- Project 13: Bench and Field Scale Demonstration of Nano-Structured Bi-metallic systems
 - Dr. D.B. Bhattacharyya, UK Engineering
- Project 18: Field Demonstration Project for the Application of Non Destructive Real Time Remediation
 - Dr. John Volpe, Steve Hampson; UK KRCEE
- Project 20: GIS and Database for the PGDP
 - Steve Hampson, KRCEE; Steve Cordiviola, UK KGS

Metal Recovery Projects

- Project 1: Economic Analysis of Nickel Release
 - *David Silverstein, UK Engineering, Paducah*
- Project 2: Industrial Battery Applications for Depleted Uranium
 - *Dr. Paul Dunbar, UK Engineering, Paducah*
- Project 3: Purification and Recovery of Radiologically Contaminated Metals
 - *Dr. Eric Grulke and Dr. Tony Zhai, UK Engineering Lexington*

Seismic Projects

- Project 4: Development of a Conceptual Stratigraphic Model for the PGDP
 - *Dr. Alan Fryar, UK Geology; Dr. Stephen Greb, UK KGS*
- Project 8: Field Determination of S & P Wave Velocities for Ground Motion Model Input at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
 - *Dr. Ed Woolery, UK Geology*
- Project 11: Enhancing Earthquake Monitoring and Assessing Seismic Hazard for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
 - *Dr. Zhenming Wang, UK KGS; Dr. Ed Woolery, UK Geology*
- Project 16: Field Seismic and Groundwater Investigation to Identify Structural Features Relating to the Discharge of contaminated Groundwater to Little Bayou Creek through Seeps
 - *Dr. Alan Fryar, UK Geology; Dr. Stephen Greb*
- Project 17: Field Study and Peer Review for Determination of Holocene Displacement at the C-746-U Landfill
 - *Steve Hampson, UK KRCEE; Dr. Ed Woolery, UK Geology*
- Project 21: Deep Hole Project
 - *Dr. Ed Woolery, UK Geology; Dr. Zhenming Wang, UK KGS*

Groundwater Projects

- Project 3: Groundwater Modeling
 - *Dr. Sirinivasa Lingireddy, Dr. Chandramouli Viswanathan; UK Engineering*
- Project 7: Groundwater Technology Assessment
 - *Dr. Joe Haggerty, Dr. Jim Watters; UofL Engineering*
- Project 12: Groundwater Sensitivity Analysis
 - *Dr. Sirinivasa Lingireddy, Dr. Chandramouli Viswanathan; UK Engineering*
- Project 15: Landfill Waste Characterization and Source Evaluation
 - *Dr. Joe Haggerty, Dr. Jim Watters; UofL Engineering*
- Project 22: Assessment of Natural Attenuation of TCE
 - *Steve Hampson, Dr. John Volpe; UK KRCEE*

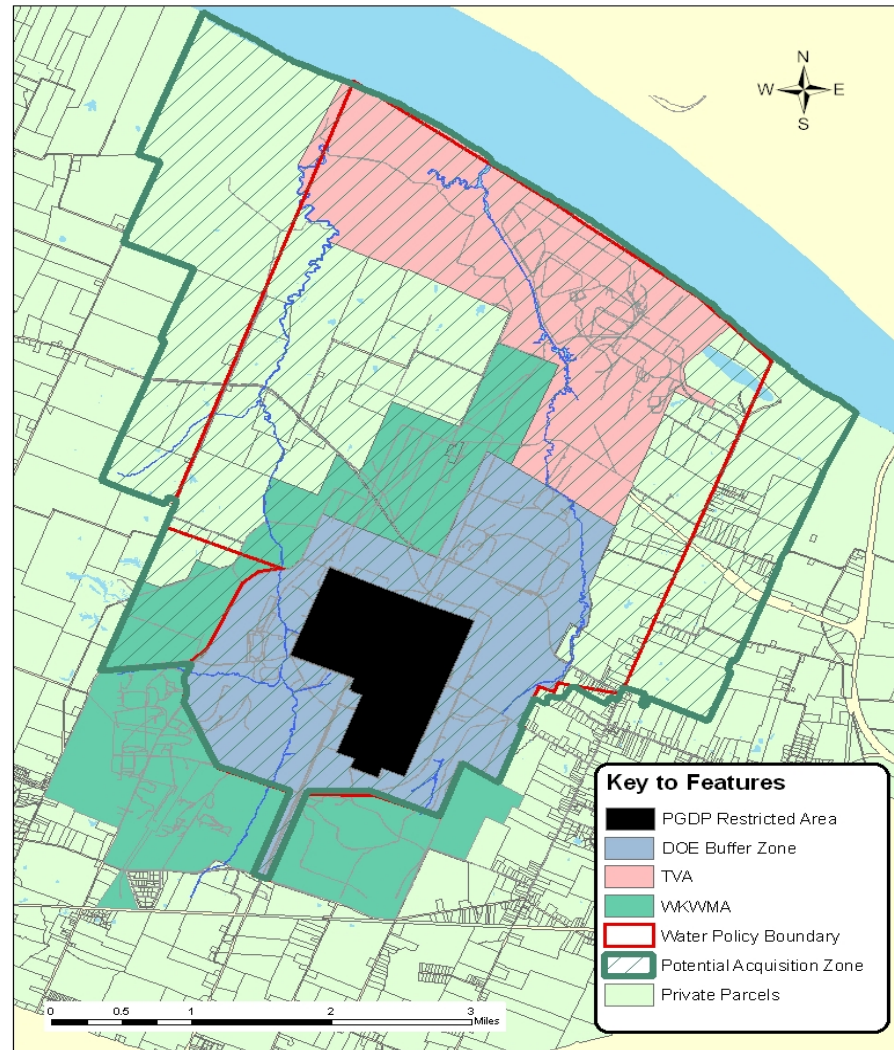
Surface Water Projects

- Project 5: Evaluation of Sediment Technologies for the PGDP
 - *Dr. Richard Warner, UK Engineering*
- Project 6: Surface Water Assessment and Management of the PGDP Facility and the Surrounding Wildlife Management Area
 - *Dr. Mike Kemp, Andy Kellie, MSU*
- Project 14: TMDL Implementation for the PGDP Facility and the Surrounding Wildlife Management Area
 - *Dr. Mike Kemp, Andy Kellie, MSU*

Ecological Projects

- Project 19: Ecological Monitoring at the Paducah Gaseous Diffusion Plant: Historical Evaluation and Guidelines for Future Monitoring
 - *Dr. Richard Halbrook, SIU; Dr. Howard Whiteman, MSU; Lenn Roberts*

Land Study Project



Energy and Water Development Appropriation Bill, 2006 (Senate Report 109-084)

Companies

- Bechtel Jacobs
- CDM
- Beavers Consultants
- Dummer Engineering
- Gus Drilling
- Jacobs Engineering
- Layne Drilling
- Lettis and Associates
- Navarro
- Northwind Environmental
- Miller Drilling
- PAEA
- PRS
- SAIC
- Surface Mining Institute
- Tricord
- Tuttle and Associates

Individuals

- Individuals
 - Leon Reiter
 - Ken Campbell
 - John Volpe

Universities

- University of Kentucky
 - Kentucky Geological Survey
 - Kentucky Water Resources Research Institute
 - College of Arts and Sciences
 - College of Engineering
 - Lexington Campus
 - Paducah Campus
 - College of Agriculture
 - College of Law

Universities

- University of Louisville
- Murray State University
- Southern Illinois University
- University of Memphis
- University of Oklahoma
- University of Ontario

Paducah Organizations

- City of Paducah
- PGDP Citizens Advisory Board
- PACRO

State Agencies

- Kentucky
 - Kentucky Geological Survey
 - Division of Waste Management
 - Division of Fish and Wildlife
 - Division of Water
- Illinois
 - Illinois Geological Survey

Federal Agencies

- US DOE
 - PPPO
 - Savannah River National Laboratory
 - Argonne National Laboratory
 - Environmental Management
- USFWS
- USEPA
 - Region 4
 - Environmental Laboratory
- USGS

Web Site

- WWW.UKY.EDU/KRCEE

- Events
- History
- Partners
- Projects
- Reports
- Regulatory
- Glossary
- Links

UK Superfund Basic Research Program



- The UK-SBRP is part of a national network of universities funded by the National Institutes of Environmental Health Sciences
- The UK -SBRP has two primary focuses:
 - Novel techniques for detecting and removing chlorinated organic pollutants from the environment.
 - Potential methods of modulating the health effects of exposure through such intrinsic factors as genetics and such extrinsic factors as nutrition.

UK Superfund Basic Research Program



- Bio Medical Projects
 - Project 1: Superfund Chemicals, Nutrition, and Endothelial Cell Dysfunction, Dr. Bernhard Henning:
 - Project 3: Vascular Mechanisms of PCB-induced Brain Metastases, Dr. Michal Toborek,
 - Project 4: The Impact of Obesity on PCB Toxicity, Dr. Lisa Cassis:
- Non Biomedical Projects
 - Project 6: Sensing Superfund Chemicals with Recombinant Systems, Dr. Sylvia Daunert:
 - Project 7: Chloro-organic Degradation by Nanometals and Oxidation, Dr. Dibakar Bhattacharyya:



Potential Future Projects

- GWDIS Data and Tool Development
- Seismic Issues
- Ecological Monitoring
- TCE Fate and Transport
- Groundwater Modeling
- Groundwater Remediation
- Stormwater/Sediment Controls