PADUCAH GASEOUS DIFFUSION PLANT
SITE SPECIFIC ADVISORY BOARD

Chartered under the Federal Advisory Committee Act

CO-CHAIRS
Mark Donham
Route 1
Brookport, Illinois 62910
mandk@midwest.net

Vicki Jones
1131 Hamburg Road
Kevil, Kentucky 42053
jonesvw@oml.gov

BOARD MEMBERS
Nola Courtney
14299 Wickliffe Road
Kevil, Kentucky 42053

Tommy Fletcher
5420 Tuck Road
Paducah, Kentucky 42001

David Fuller
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Paducah, Kentucky 42001

Rev. W.G. Harvey, Sr.
1429 Reed Avenue
Paducah, Kentucky 42001

William L. Kressenberg
2517 Jefferson Street
Paducah, Kentucky 42001

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Linda Long
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Ray McLennan
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Connie J. Sykes
705 N. 24th Street
Paducah, Kentucky 42001

Bill Tanner
6072 Rosebud Road
Metropolis, Illinois 62960

Rev. Gregory Waldrop
701 Broadway
Paducah, Kentucky 42001

MEMORANDUM
SITE SPECIFIC ADVISORY BOARD

TO: SSAB Members
Ex Officio Members

FROM: Mark Donham
Vicki Jones

DATE: September 8, 1997

SUBJECT: **MEETING REMINDER**

The next SSAB meeting will be September 18, 1997, at 6:00 p.m. in the Heath High School. Included in this package is a corrected page from the Prioritization Presentation. The following is the tentative agenda and action items:

Tentative Agenda

Minutes
Information (Handouts)
EMEF Project Updates
Review of the Community Relations Plan
Review of the SSAB Draft Work Plan
An update on the new members
Administrative Plans for the board

Action Items

Myrna Redfield will provide detailed pages that explain each ranking on budget prioritization

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Meeting Minutes

September 18, 1997

The September 18, 1997, Site Specific Advisory Board (SSAB) meeting took place at Heath High School at 6:00 p.m.

The following board members were present: Nola Courtney, Mark Donham, W. G. Harvey, Vicki Jones, Ronald Lamb, Linda Long, Ray McLennan, Connie Sykes, and Bill Tanner. Ex Officio members present were: Wayne Davis, Carl Froede and Jimmie Hodges. Facilitator Present: Steve Kay. Also present were: Carlos Alvarado, Patricia Barnhill, Jeannie Brandstetter, Teresa Fields, Shelley Hawkins, Jimmy Massey, Craig Rhodes and Matt Vick.

A modified agenda was handed out to everyone.

Shelley Hawkins handed out copies of the EM Progress Publication. She also stated that she had a document pertaining to Prioritization that anyone was free to look at during the break.

A fact sheet was handed out on the Ruptured Waste Drum inside C-746-Q RCRA Waste Storage Facility at PGDP. Mark Donham asked what process did the waste come from. Jimmie Hodges stated that the investigation team is checking into it, and it appears that the material came from processes performed in C-400 to recover transuranic material or technetium material. Possibly in the late 50's or early 60's. Mark asked if anyone had taken radiation samples immediately after it was found. Jimmie stated that there were samples taken. He said that the drum had been opened, sampled and resealed on July 28. A Resource Conservation and Recovery Act (RCRA) inspection was conducted at C-746-Q on September 12, and conditions appeared normal. The transuranics in the drum were very low, too low to be classified as transuranic waste. A Department of Energy (DOE) Oak Ridge Operations Type B investigation team is conducting the investigation. Jimmie drew an illustration of the overpack drum and gave details of what was found. He explained what actions were being taken. Ray McLennan asked if they found any signs of leakage when they sampled the drum the first time. Jimmie stated that they did not find any signs of leakage when they sampled. Mark asked if the sampling event had anything to do with the incident. Jimmie stated that it was doubtful but they are investigating to determine what initiated the event. Mark asked if they had ruled out the possibility that some sort of nuclear reaction might have contributed to the event. Jimmie stated that there was not enough nuclear material to cause that kind of reaction. Ray McLennan asked about the treatment schedule for the waste that is stored there. Jimmie stated that it is in the 1999 timeframe.

The minutes from the July 17, 1997, meeting were approved by consensus. The August 21 informational meeting minutes were approved by consensus. Steve Kay asked for approval of the September 4, 1997, special meeting. Mark Donham requested that the record show that he had concerns and that those concerns should be interpreted as his abstention from the consensus approval to obligate $30,000 to the Jacobs SSAB support task. The amended minutes from the September 4, 1997, were approved by consensus.

The next item on the agenda was the Environmental Management and Enrichment Facilities (EMEF) updates. Ray McLennan asked about new maps showing the present location of the plumes. Carlos Alvarado stated he would check and let him know if there is a new one available. He will be mailed a new map, if available.

The next item on the agenda was the Community Relations Plan (CRP). The following comments were discussed and approved by consensus:

1. If DOE proposes an action that affects a particular group of citizens, then that group of citizens should be notified specifically.

2. The SSAB questions the plan's date given for the discovery of groundwater contamination.

3. The SSAB would like more publicity informing citizens how to get on the DOE mailing list for receiving Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) notices.

4. DOE should appoint a full-time public affairs officer for Paducah.

5. The first update to the CRP should include a valid survey method by an independent source. The scientific methodology used should be included in the results.

The draft SSAB Workplan was the next item on the agenda. Each item was discussed and dates for discussion were marked. The workplan will be updated and sent out with the minutes. The workplan will be on the October agenda.

Membership status was the next item for discussion. Carlos stated that the package had gone out in the mail that day. He stated that he felt approval would be given for the new members within a month. Carlos stated that he felt that the applications should be modified to include some additional questions. Mark stated that one of the potential members was called and asked questions that he (Mark) considered personal. Carlos stated that he had requested this. Craig Rhodes stated that they were biographical questions. He had assumed that it was a standard procedure. Jeannie Brandstetter stated that it had been done in the past for everyone but the original board members. Carlos stated that if the applications could be modified to ask these questions he would not have anyone call the potential members. Nola Courtney stated that the present applications were very sketchy. A recommendation was made that the Membership Committee review the application and present its draft to the board.

The next items on the agenda were administrative duties. Everyone was asked to let Teresa Fields or Jeannie know about any changes to phone numbers, addresses, fax numbers or e-mail addresses. Attendance was discussed and the current policy was read. Vicki Jones stated that she felt the

operating procedures needed to be changed. The current mission/scope only calls for quarterly meetings and the board is holding monthly meetings. The board felt that this should be reflected in the mission/scope. It was determined that no policy changes could be made due to the fact that less than 75% of the board were in attendance. It was suggested that board members with low attendance be called to see if they are still interested in participating on the board. There are three board members whose terms are up. It was suggested that a letter be sent to the three people to see if there is still interest. Nola Courtney stated that she would contact them to see if they are still interested and tell them that all appointments now are for three years. She will report on this at the next meeting. **Need to have at least 10 board members present at the next meeting in order to make changes to the mission/scope.**

The co-chairs are elected to either one year or six month terms. It was suggested that one of the co-chairs take the position for six months and the other one take the one year term. Motion was made and seconded that Mark Donham be elected as a co-chair for one year. He was elected by acclamation. The motion was made and seconded that Vicki Jones be elected for the six month co-chair term. She was elected by acclamation.

The next administrative duty discussed was the annual evaluation. The EM SSAB evaluation was done by questionnaire. It was suggested that the board think about how they want to do this. Mark Donham and Vicki Jones volunteered to do the evaluation. In the future the board might want to get an independent person to do the evaluation.

Meeting location was the next administrative duty on the agenda. Several different locations were discussed. It was suggested that sometime in the future that the board vary the meeting locations to include out lying communities. It was suggested that a notice be put in the paper. The away meetings might be considered a good time to bring in technical authorities. It was suggested that Bill Tanner talk to the Community Outreach Committee about establishing a home base for the monthly meetings. Jeannie Brandstetter explained to everyone the information she had gotten on office spaces. Carlos suggested that the Environmental Information Center/Jacobs building might have office space. It was suggested that a secretary be hired for this office and to take care of clerical matters. Carlos stated that Jacobs could provide these services through the $30,000 that was put in the Jacobs SSAB task order. Vicki suggested that a cost estimate be prepared and presented to the board at the next meeting. It was also suggested that an estimate be prepared from another agency outside of DOE. Bill Tanner will check into this and present the board with his findings.

The next meeting will be held on October 16, 1997, at the Heath High School at 6:00 p.m. The meeting was adjourned.

Tentative Agenda for the October 16, 1997, meeting:

Minutes
Information (Handouts)
EMEF Project Updates
Review of the Water Policy
Review of the SSAB Draft Work Plan
An update on the new members
Administrative Plans for the board

Action Items

DOE will provide Ray McLennan with an updated map showing the present location of the groundwater plumes.
Membership committee will review application and present a draft modified application to the board for consideration.
Nola Courtney will contact the three board members whose terms are up and see if they are still interested in participating.
Mark Donham and Vicki Jones will perform the annual evaluation.
Bill Tanner will check into cost estimates for providing clerical help.

PADUCAH GASEOUS DIFFUSION PLANT
SITE SPECIFIC ADVISORY BOARD
CONSENSUS RECOMMENDATION

DATE: Sept. 30, 1997

NUMBER: 97-3

RESPONSE REQUESTED BY (date):

REGARDING: Community Relations Plan

TO: Jimmie Hodges, DOE

CC: Carl Froede Jr., EPA
Tuss Taylor, KDEP
Dr. John Volpe, Radiation Control Branch
Wayne Davis, Kentucky Department of Fish & Wildlife Resources
Regular members — Nola Courtney, Tommy Fletcher, David Fuller, Rev. W. G. Harvey, William Kressenberg, Ronald Lamb, Linda Long, Ray McClennan, Connie Sykes, Bill Tanner, Rev. Gregory Waldrop

---

At a regular meeting of the Site Specific Advisory Board (SSAB) held Sept. 18, 1997, the board identified comments on the PGDP's "Community Relations Plan for the Environmental Management and Enrichment Facilities Program."

COMMENTS:

1. If DOE proposes an action that affects a particular group of citizens, then that group of citizens should be notified specifically.

2. The SSAB questions the plan's date given for the discovery of groundwater contamination.

CONTINUED...

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Mark Donham
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jonesvw@ornl.gov

3. DOE should place ads or articles in media around the region giving an address and phone number where citizens can get on the mailing list to receive notices about the cleanup at the plant.

4. DOE should appoint a full time public affairs officer at Paducah.

5. The CRP should indicate the methodology used to do the community interviews and to make them statistically accurate in representing the community point of view. Also, when the CRP is updated next year, the community interviews should be done in a scientifically accepted methodology to accurately reflect the community's attitude toward the cleanup.

PLEASE SIGN IN

Paducah Gaseous Diffusion Plant
Site Specific Advisory Board

NAME	AFFILIATION
Jeannie Brandstetter	EA Safe/LMES/Pub Affairs
Kiski Jones	~~EA~~ SSAB
Aferera Fields	EAST/DOE
Steve Kay	~~[illegible]~~
Shelley Hawkins	Jacobs
Patricia Barnhill	[illegible]
Carl Froede Jr.	EPA
Bill Tanner	SSAB
[illegible] Massey	LMES
[illegible]	SSAB
~~[illegible]~~ Connie Sykes	SSAB
~~[illegible]~~	
Ronald Lamb	SSAB
Nola Courtney	SSAB
Wayne S. Davis	KDFWR
Matt Vick	UK-AIP
W. G. Harvey	SSAB
Gary McKennan	SSAB
Craig Rhodes	
Carlos Alvarado	DOE

September 18, 1997

FIFTH RECORD OF DECISION COMPLETED FOR PGDP

Environmental Management & Enrichment Facilities at the Paducah Gaseous Diffusion Plant is celebrating its fifth Record of Decision (ROD), completed with U.S. EPA signature September 29 for Waste Area Group (WAG) 17. WAG 17 consists of 37 Areas of Concern (AOCs) in McCracken and Ballard counties derived from demolition of sidewalks, parking lots and other concrete structures at PGDP during the 1970s, and used as construction material in the Ballard County Wildlife Management Area, McCracken County Wildlife Management Area and on Department of Energy property.

A small amount of contaminated material was removed from one area in 1996. After further sampling, an additional removal action at this site was undertaken this summer. Following that removal action, the state's Radiation Control Branch verified that no further action was needed at the area, and issued a letter to that effect.

A public meeting and 45-day public comment period on the Proposed Plan were held prior to DOE's issuance of the ROD, which specifies a "No Further Action" status for 28 of the 37 AOCs. Final decisions on the remaining AOCs have been deferred to the Surface Water Integrator Unit (WAGs 18 and 25) ROD because they are located in ditches or creeks adjacent to the plant. WAG 17 is the site's first ever No Further Action ROD.

Site officials say the ROD is a definite positive for the program and the public. Because the investigation helped recognize there wasn't risk that warranted further expenditure of public funds, the site's efforts and dollars can be directed to areas of greater need.

SSAB ATTENDANCE

	Nola 3	Mark 2	Tommy 1	David 1 or 3	Vicki 3	Ronnie 2	Linda 2	Bill K. 1	Greg 1	W.G. 3	Connie 2	Ray 3	Bill T. 3
Sept 96	X	X	X		X	X	X		X	X	X	---	---
Oct	X	X			X	X	X	X		X	X	---	---
Nov	X	X		X	X	X				X	X	---	---
Dec	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan 97	X	X	X	X	X	X		X	X			---	---
Feb	X	X			X	X				X		---	---
Mar		X		X	X	X	X	X	X	X	X	---	---
Apr	X	X			X	X	X			X		---	---
May	X	X	X		X		X					---	---
June		X		X	X	X	X			X		---	---
July	X	X			X	X	X		X			X	X
Aug	X	X			X	X			X				X
Sept													
	9	11	3	4	11	10	7	3	5	7	4		

SSAB FACT SHEET (September 18, 1997)

Ruptured Waste Drum inside C-746-Q RCRA Waste Storage Facility at PGDP
DOE/Lockheed Martin Energy Systems EMEF

Summary of Incident: Preparations are under way for full-scale cleanup inside the area of the C-746-Q RCRA Waste Storage Facility at Paducah where an overpacked drum (HC-1093) containing a radioactive nitric acid waste mixture ruptured. No injuries or exposure to people resulted from the incident, and the spill was contained within the facility.

Updates:
* The incident was upgraded to an Unusual Occurrence after further review.
* The site team chartered by LMES to investigate the incident started interviews, but the DOE Oak Ridge Operations Type B investigation team, which arrived on site September 17, will now conduct the investigation.
* A representative of the LMES EMEF business unit in Oak Ridge arrived September 17 to provide support to the site.
* A representative of the Kentucky Division of Waste Management was on site September 17 to conduct the annual unannounced RCRA inspection.
* Representatives of the Kentucky Agreement in Principle have been briefed.
* A fact sheet was issued to employees September 16.
* A news release was issued September 16.

Details: The drum ruptured inside the southwest corner of the C-746-Q RCRA Waste Storage Facility at Paducah, spilling contents over an inside area of up to 400 square feet, based on conditions discovered the morning of September 15. A RCRA inspection was conducted at C-746-Q on September 12, and conditions appeared normal. The waste in drum HC-1093 contained uranium, technetium-99 and transuranic materials, although quantities are too low to be classified as transuranic waste. The drum was one of 16 with similar contents. The other 15 appear to be intact with no bulging, based on observations of response teams daily since the incident was discovered.

Response/Monitoring:
* A plant haz/mat team dressed in "Level B" PPE neutralized the spill area with a soda ash and water mixture on the evening of September 15 after an earlier re-entry team observed an apparent ongoing reaction between the nitric acid and concrete floor areas where it spilled.
* Results indicate no employee exposure based on bioassay samples taken on 20 LMES subcontractor/LMUS employees who entered the facility the morning of September 15 prior to discovery of the incident. Radiological monitoring of personnel who have been entering the contamination area within C-746-Q shows no contamination.
* Monitoring conducted September 16 indicated no airborne chemical contamination.
* Available results on radiological monitoring conducted September 16 indicate that contamination from the incident is confined to the spill area.

teleconference with University of Kentucky Agreement in Principle personnel is scheduled for Sept. 23.

Vortec Vitrification Project
DOE is currently conducting an Environmental Assessment before continuing construction on the project.

Federal Facility Agreement (FFA)
Under CERCLA, a Federal Facility Agreement is required between the state, EPA and DOE to set forth guidelines on how the site cleanup is to be managed.

The FFA has been approved by DOE, state and federal regulators and has been issued for public comment. Responses to those comments are still under review.

The Community Relations Plan, due 60 days after signature of the FFA, was issued for public comment July 18.

Drum Mountain Scrap Removal
Drum Mountain must be moved from its present location before Oct. 1, 1998 to support Remedial Action activities at the Northwest Corner burial yards. Planning for this project consists of identifying the most cost-efficient method of packaging the wastestream.

March 15, 1998, is the deadline to have a contract in place to remove/characterize/package the waste.

Technology Park in Kevil, Ky. was attended by five members of the general public. Comments included concern that removal of the rubble and placement in a waste storage area would be contributing to risk by adding to the inventory of waste already stored at PGDP. DOE's immediate concern, however, was to remove all risk to members of the general public by bringing the material inside the PGDP security fence.

The Record of Decision (ROD) for the selected action being prepared by DOE was delivered to the regulatory agencies today, and is tentatively scheduled to be approved by those agencies by Sept. 23, following signature from DOE by Sept. 25 and the Commonwealth by Sept. 30. The Proposed Remedial Action Plan is available at:

Waste Area Group 22/Burial grounds
This project includes the investigation of burial grounds in the northwest corner of the plant (SWMUs 7 & 30) and in the west-central portion of the plant (SWMU 2). Original plans included installation of a cap at SWMU 2, the C-749 Uranium Burial Ground, but investigation activities have determined that the buried material was saturated in the water table, indicating a cap would have limited effect.

The development of a Remedial Investigation Report is ongoing at SWMUs 7 & 30 (the C-747-A Uranium Burial Ground and C-747-A Burn Area). This RI report was submitted to the regulatory agencies in July 1997, with comments due October 1997.

Waste Area Group 23/Polychlorinated Biphenyls (PCBs) Spill Sites
Past use of PCBs and subsequent accidental spills and leaks of oils that contain PCBs caused surface soil contamination at several Solid Waste Management Units inside the PGDP security fence.

The preferred option in the original Proposed Plan was the excavation and treatment of the soil containing PCBs greater than 25 ppm using a thermal treatment technology known as vitrification. This process destroys organics, such as PCBs, and produces a glass which will bind any radioactive compounds.

The DOE recently sought public comment on an Engineering Evaluation/Cost Analysis Summary (EE/CA Summary) for the cleanup of PCB sites. The summary describes the Non-Time-Critical Removal Action that DOE is considering — the excavation and temporary on-site storage of the contaminated soil. The focus of this removal action is the elimination of risk to workers from contact with soil. The final disposition of the soil would be determined at a later date, consistent with applicable laws and regulations.

Following incorporation of public comments, DOE issued an Action Memorandum for the selected action on Sept. 8, 1997, with the reveiw period extended to Sept. 15, 1997. The Action Memo was transmitted to EPA for their information, but will not be signed by the agency. DOE signed the Action Memo on Sept. 12, 1997. LMES has submitted the Statement of Work for the removal action to Oak Ridge procurement, and proposals are expected back by Sept. 29, 1997.

Waste Area Group 27/Potential trichloroethylene sources
WAG 27 consists of potential or known sources of TCE on the west side of the Paducah Gaseous Diffusion Plant. A second draft Remedial Investigation/Feasibility Study Work Plan is being developed for submittal to regulatory agencies on June 2, 1997.

The Remedial Investigation/Feasibility Study was transmitted to regulators June 30, 1997. Appendix H of this document is the first draft Sampling and Analysis Plan for the C-720 building. The EPA granted its approval of both on July 22. KDWM comments were received Aug. 11, 1997, and a comment response summary was prepared for KDWM. A comment resolution

The current proposed plan includes continued controlled access, groundwater monitoring and deed restrictions in the preferred alternative. Field work to make riprap repairs at the landfill was completed Aug. 12, 1997.

The current tentative schedule has DOE signing the Record of Decision in late September, with regulator signings projected for mid- to late October 1997.

Waste Area Group 3/burial grounds
WAG 3 is composed of three burial grounds within the PGDP security fence. The FY 97 scope of this project include the development of a work plan scoping document and work plan. The draft scoping document was submitted to the regulators on March 27, 1997.

The D0 Remedial Investigation/Work Plan was issued Sept. 2.

Waste Area Group 6/Trichloroethylene spill site
The C-400 TCE spill site is a major source of TCE in the groundwater and soil. The Industrial Hydrogeologic Study focused on piping, utilities and building foundations in the C-400 building area to determine how these man-made structures and systems influence groundwater infiltration and flow.

The data from this investigation was used to prepare a WAG 6 Remedial Investigation Work Plan which focuses on contaminant distribution and movement. Treatability studies to get data necessary to remediate contaminants expected to be found during the investigation have been completed.

To date, 133 of 201 borings for the remedial investigation have been completed. Following completion of the RI/FS, a Proposed Plan and Record of Decision for the preferred remedial action will be developed. The selected action will be designed and implemented following the signing of the ROD.

Waste Area Groups 9 & 11
WAGs 9 & 11 are composed of seven below ground liquid containment vessels.

The scope of work for this project includes development of an SAP, field sampling and development of a Site Evaluation Report. Historical analytical data was transmitted electronically to the Kentucky Division for Waste Management, and the data assessment report completed and delivered to DOE and KDEP.

A new schedule has been established for the Site Evaluation, including field work in August and September 1997.

Waste Area Group 17/Rubble piles
The piles of concrete rubble that make up Waste Area Grouping 17 have been investigated for contamination. The rubble, derived from demolition of sidewalks, parking lots and other concrete structures at PGDP during the 1970s, was used as construction material in the Ballard County Wildlife Management area, McCracken County Wildlife Management Area and on Department of Energy property.

A small amount of contaminated material was removed from SWMU 124 in 1996. After further sampling, an additional removal action at this SWMU was planned for April 1997. Following that removal action, the state's Radiation Control Branch verified that no further action was needed at SWMU 124, and has issued a letter to that effect.

An Aug. 26 public meeting at the Lockheed Martin Energy Systems facility in the West Kentucky

PADUCAH GASEOUS DIFFUSION PLANT SITE SPECIFIC ADVISORY BOARD
U.S. DEPARTMENT OF ENERGY
ENVIRONMENTAL MANAGEMENT & ENRICHMENT FACILITIES
PROJECT UPDATE
SEPTEMBER 18, 1997

ENVIRONMENTAL RESTORATION

Northwest Plume Interim Remedial Action Pilot Plant

More than 198.5 million gallons of water have been treated at the Northwest Plume Groundwater Treatment Facility since operations began Sept. 1, 1995. The facility operates to contain a high contamination zone of the degreaser trichloroethylene and the man-made radionuclide technetium-99.

Northeast Plume Interim Containment System

The Northeast Plume project includes extraction wells in the northeast quadrant of DOE property with an underground pipeline running to the existing PGDP cooling towers as part of the containment system.

Routine operations began in March 1997, with more than 47.5 million gallons of groundwater treated to date.

Lasagna demonstration

The Lasagna soil remediation technology tested at PGDP works by using buried electrodes to move water through contaminated soil. Applied current drives the water an inch a day from a positive to a negative electrode. Along the way, the water picks up contaminants from the soil which are removed by treatment zones containing iron filings.

Phase IIA installation was completed in August 1996 and the process was operational through Feb. 26, 1997, with post-demonstration sampling completed the week of March 3, 1997.

DOE EM-50 granted the Lasagna consortium another extension of the Phase IIA project, allowing it to operate through August 1997. The DOE now plans to propose its preferred remedial measures for SWMU 91, which is advancement into Phase IIB, full-scale remediation.

The public comment period for the Proposed Remedial Action Plan is Jan. 15-March 3, 1998. The following have been tentatively scheduled around those dates:

Jan. 14 — Public notice of availability published in Paducah Sun.

Feb. 12 — Public meeting if requested by Feb. 4

Feb. 10 — Notice of meeting cancellation in Paducah Sun if not requested.

If full-scale remediation is undertaken, the remediation will be funded by EM-40 (the office of the Deputy Assistant Secretary for Environmental Restoration), which funds the remainder of Paducah's Environmental Restoration and Waste Management program.

Waste Area Groups 1 & 7/C-746-K Landfill, Kentucky Ordnance Works

WAG 1 consists of a fire training area, the plant sewage treatment facility and a known trichloroethylene spill site inside the PGDP security fence. WAG 7 consists of five underground storage tanks at the plant water treatment facility, and an inactive sanitary landfill outside the security fence. Three SWMUs are connected with the former Kentucky Ordnance Works (KOW) and are located on the DOE reservation. They are the KOW sewage treatment facility, a known Toluene spill site and a burn area.

Action Items

DOE will provide Ray McLennan with an updated map showing the present location of the groundwater plumes.
Membership committee will review application and present a draft modified application to the board for consideration.
Nola Courtney will contact the three board members whose terms are up and see if they are still interested in participating.
Mark Donham and Vicki Jones will perform the annual evaluation.
Bill Tanner will check into cost estimates for providing clerical help.

operating procedures needed to be changed. The current mission/scope only calls for quarterly meetings and the board is holding monthly meetings. The board felt that this should be reflected in the mission/scope. It was determined that no policy changes could be made due to the fact that less than 75% of the board were in attendance. It was suggested that board members with low attendance be called to see if they are still interested in participating on the board. There are three board members whose terms are up. It was suggested that a letter be sent to the three people to see if there is still interest. Nola Courtney stated that she would contact them to see if they are still interested and tell them that all appointments now are for three years. She will report on this at the next meeting. **Need to have at least 10 board members present at the next meeting in order to make changes to the mission/scope.**

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Paducah Gaseous Diffusion Plant
Site Specific Advisory Board (SSAB)

MISSION, SCOPE AND OPERATING PROCEDURES

Mission Statement

The Paducah Gaseous Diffusion Plant (PGDP) Site Specific Advisory Board (SSAB) is an independent, nonpartisan, broadly representative organization consisting of a balanced mix of the diverse interests with concerns related to PGDP environmental restoration and waste management (ERWM) activities. The mission does not apply to ongoing production activities at the plant. The SSAB's primary mission is to provide informed recommendations and advice on major policy issues regarding environmental restoration and waste management and related PGDP activities to the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency, and the Kentucky Department for Environmental Protection (hereafter referred to as the "Agencies").

Goal

The goal of the PGDP SSAB (hereafter referred to as the "Board") is to ensure high quality, timely, meaningful, and effective public participation in decisions regarding environmental restoration, waste management and related DOE activities at PGDP.

Purposes

The Board's purposes include the following:

1. Review issues and make informed recommendations to the U.S. Department of Energy Paducah Site Office, the U.S. Environmental Protection Agency Region IV, and the Kentucky Department for Environmental Protection (hereafter collectively referred to as the "Agencies") on decisions to be made in the areas of environmental restoration, waste management, and related DOE activities at PGDP. Specific areas of focus will include, but not be limited to:

    a. cleanup of contaminated media (i.e. soil, groundwater, hazardous waste spills) including site characterization, remedy selection, and cleanup design;

    b. waste management issues, including the treatment, storage, and disposal of all solid, hazardous, radioactive, and mixed waste currently at the site;

    c. waste reduction targets and waste minimization plans, stressing pollution prevention over pollution controls;

    d. transportation of wastes and hazardous materials to and from the site;

e. the maintenance, restart, or decontamination and decommissioning of contaminated facilities;

f. determination of future land uses and the release of DOE lands for other uses;

g. economic impact on the community;

h. the protection and restoration of natural resources and ecological values;

i. protection of workers and local/regional public health and safety;

j. technology development and transfer;

k. strategies for effectively and meaningfully involving the public in decisions regarding ERWM at the site;

l. cost effectiveness.

2. Prioritize key and timely issues, with consideration to broad site programs and public concerns. Provide written recommendations to the Agencies on these issues.

3. Advise the Agencies and the public of Board and subcommittee deliberations and recommendations.

4. Review the budgeting and funding of specific Paducah ERWM activities.

Functions

The mission and purposes of the Board shall be achieved in the following ways.

1. On an annual basis and in conjunction with DOE's budget cycle, determine with the Agencies what issues the Board will consider, prioritize them and make recommendations. Coordinate with the Agencies in establishing the Board's meeting agendas and work program.

2. Coordinate with DOE in developing an annual board budget based on available funding. Request additional funding, if needed.

3. Work with the Agencies to identify and request information as needed.

4. Seek and receive information sufficiently early in the decision-making process to ensure that the Board's recommendation can actually influence the decision-making process.

5. Draw on subject experts and other knowledgeable sources as needed to obtain balanced and full information in areas of interest.

6. Provide for public involvement in the Board's advisory process in the following ways:

   a. Conduct regular Board meetings which are open to the public, and assure broad notification to encourage public participation. Provide opportunities for the public to comment at appropriate agenda points during meetings, including a provision for written comments. Incorporate all public comments into the written record of the Board minutes.

   b. Document Board and subcommittee activities and ensure that these records and pertinent information are maintained in repositories available to the public.

   c. Serve as an interface with other groups dealing with site issues to share information and avoid unwanted duplication of effort.

7. Develop specific operating procedures and undergo requisite training to ensure that there are constructive methods for resolving conflict, reaching consensus, and dealing with minority opinions.

8. Remain mindful of the various stakeholder interests and ensure that they continue to be adequately and equitably represented.

Responsibility and Accountability

The Agencies agree to make the following commitments.

1. Define and clearly communicate to the Board their respective decision-making processes.

2. Provide timely access to information pertinent to ERWM and related decision-making at the site.

3. Provide sufficient notice to the Board regarding processes, programs, projects, activities, emerging issues and imminent policy decisions to enable the Board to choose whether to provide recommendations and advice on the decision and/or the manner in which the broader public should be involved in the decision.

4. Review Board recommendations within 60 days, or other reasonable time period requested by the Board. Provide a written response, when requested, explaining the basis for the Agencies respective decisions and how accepted recommendations will be implemented. This explanation should include regulatory, technical, budgetary and all other relevant influences on the Agencies decision-making processes. It should also include the manner in which Board recommendations were incorporated into agency decision-making processes and, if applicable, the reason(s) why Board recommendations were not adopted or followed, and how that advice might be changed to become acceptable.

5. Designate one ex officio representative and one alternate from each Agency to attend Board meetings, participate in discussions, and serve as the point of contact for providing information.

6. DOE will designate a person and one alternate to assist the Board in administering its operations.

7. Establish with the Board a mechanism for recourse or conflict resolution, if actions or needs of the Board are not met or responded to within 60 days or other reasonable time period as specified by the Board.

8. Encourage employees who participate on the Board, subcommittees, or during the public portions of meetings to speak freely even if their opinions are not in accord with those of their management.

9. Work with the Board to provide funds for independent technical assistance, staff and other administrative support, facilitators, and access to information and agency personnel that the Board determines are needed to fulfill its mission.

10. Help Board members develop clear and understandable information to Board members constituents and to the general public.

The board, including each of its members, agrees to make the following commitments:

1. Devote the time necessary to attend meetings, review materials, receive training and fully participate in Board matters.

2. Respond to concerns and questions raised by the public.

3. Handle in a responsible manner information and materials provided by the Agencies, particularly early drafts developed for the Agencies in-house use which may need significant revision as part of the Agencies working practices.

4. Ensure establishment of an information distribution process to meet the diverse needs of the public.

5. Provide a written record of all Board and subcommittee meetings within 30 days of their occurrence. Publish an annual status report. Ensure that these records and pertinent information are maintained in repositories available to the public.

6. Work collaboratively with other members of the Board and in the best interests of the Board and the public.

7. Improve open communications between and among Board members, the sponsoring agencies, and the public.

8. Provide broader, more robust definitions of problems, priorities and alternatives.

9. Provide a forum that can compliment and help focus, but not duplicate or supplant other site public involvement activities.

10. Advise agencies on how to coordinate and carry out these activities in ways that maximize public involvement opportunities, minimize unnecessary duplication and conflicts in scheduling, and contribute to agency decisions that better reflect the principles and values of all of the diverse PGDP interests.

Operating Procedures

Quorum and Decisions

Over half of the full Board must be present to conduct a meeting and transact business. The Board will attempt to reach consensus on all issues considered. Failing consensus, recommendations shall be forwarded to the Agencies by vote of a majority of the members present. Dissenting views shall be included.

Meeting Frequency / Location

1. Meet quarterly and otherwise as needed.

2. Hold meetings in the affected communities to afford board public access to the Board and encourage Board members to gain an understanding of local concerns.

3. Accommodate public attendance and participation needs through a flexible meeting schedule. Explore alternatives for structuring meetings and agendas. Consider among the alternatives a partially-set, partially-flexible format.

4. At the request of six (6) participating members of the Board, or at the request of DOE, the co-chairperson shall call upon the Designated Federal Official (DFO) to schedule an extraordinary meeting of the Board.

5. Presence at an extraordinary meeting, while no less important than regularly scheduled meetings, may not be factored in determining a members' attendance record.

Attendance

Any member who misses two consecutive meetings or more than 25 percent of meetings in a calendar year shall be considered for dismissal. Dismissal for reasons of attendance shall be by vote of a majority of the Board.

Term of Service

A member shall be appointed to his or her office in accordance with the following provisions:

1. To provide continuity, terms for one-third of the members of the initial Board shall be one year, one-third shall be two years, and one-third shall be three years. Initial terms shall be determined by preference of each member if possible and otherwise by lot.

2. Terms for new members shall be three years.

Member Replacement

As a result of term expiration or other loss of a Board member, the following procedure shall be used to fill the vacancy:

1. The Nominations and Membership Subcommittee shall screen all applicants for eligibility.

2. The membership replacement process shall ensure that the cultural and geographic diversity and the stakeholder categories specified in the attached "Board Selection Criteria and Guidelines" be maintained.

3. Replacement members shall serve the unexpired portion of the term of the members they are replacing.

4. The Nominations and Membership Subcommittee shall propose at least two qualified candidates for each vacancy. The names of the candidates and their application forms shall be provided to the Agencies for review and comment. Additionally, public notification of the candidates shall be made at this time for comment. The Agencies' comments, membership application and other related information shall then be provided to the Board, which shall make the final decision on membership replacement.

5. If at least two candidates are not located by the subcommittee, the vacancy decision will revert to the board.

6. Applications for Board membership shall be retained for consideration for a two-year period. Public notices shall be made to solicit applications annually, at least 90 days before expiration of member terms. In addition, applicants on file shall be notified that they must submit a new application, if they wish to be considered for vacancies.

Board Expansion

The Board may choose to expand to include a maximum of 20 members.

Ex-officio Members

1. The term ex-officio herein refers to representatives of the following agencies: Department of Energy, Environmental Protection Agency, Kentucky Division of Waste Management, Kentucky Department of Fish and Wildlife Resources, and Kentucky Radiation Control Branch. They may participate in Board discussions and deliberations both substantive and procedural.

2. Ex-officio members may not participate in the formation of consensus when the Board is

determining what substantive advice it wishes to give or what procedural direction it chooses to take.

3. Each agency will designate its own representative and alternate, notify the Board of such designees, and give timely notice if a replacement will be required.

Board Structure

1. Co-Chairpersons: The Board shall appoint two co-chairpersons respecting diverse viewpoints. The co-chairpersons shall endeavor at all times to further the work of the Board in a balanced and unbiased manner, irrespective of their personal views on any particular issue.

   a. The term of co-chairperson shall be one year, with the terms of the two respective officeholders overlapping each other by six (6) months.

   b. The co-chairpersons shall serve as liaisons with the staff and facilitator(s), assisting in the preparation of agendas, minutes of the meetings, and other necessary arrangements.

   c. The co-chairpersons shall be responsible for assuring necessary administrative support and coordination for the work of subcommittees and task forces between regular meetings of the Board, providing a liaison for the respective chairpersons when called upon to do so.

   d. The co-chairpersons shall also serve between regular meetings of the Board as contacts for DOE as well as the participating and enforcement agencies.

2. Standing Subcommittees

   The following standing subcommittees of the Board shall be established; the membership of each committee will be determined by the board.

   a. Nominations and Membership: vacancies and nominations for regularly expiring terms.

   b. Budget and Finance: preparation of budgets as well as the fiscal policies of the Board;

   c. Policy and Personnel: personnel policy; the criteria and process for selection of facilitator(s); and a full range of non-fiscal policy matters;

   d. Training and Programs: research and evaluation for Board training as well as establishing procedures and information to meet the needs of new Board members;

   e. Community Outreach: arrangements for hearings and forums; promoting community

participation and involvement; communication with the public and grievances.

3. Other Subcommittees and Task Forces:

The Board may establish and set scope and timelines for standing subcommittees, ad hoc subcommittees or task forces as it deems necessary.

a. Subcommittees, whether standing or ad hoc, may appoint their own chairperson(s) and will generally deal with matters relative to the operations of the Board.

b. Task forces will be termed bodies established to address issues that are either time dependent or more narrowly focused than the routine work of the Board. Their work would generally relate to specific issues.

c. Membership of task forces may be drawn from individuals and organizations that do not directly participate as members of the Board. A task force must include at least one Board member, and the chairperson of any task force must be a Board member.

d. Standing subcommittees, ad hoc subcommittees, or task forces may not directly submit recommendations to DOE, the participating and enforcement agencies, or to any other entity outside the Board. They are solely responsible for producing draft proposals or information to be utilized and considered by the full Board.

Training

The Board shall as needed develop specific operating procedures and undergo requisite training as needed to ensure understanding of technical issues and to ensure that all views will be heard and that there are constructive methods for resolving conflict, reaching consensus, and dealing with minority opinions.

Role of the Facilitator

The board may employ a professional facilitator to help organize its work, prepare an agenda based in consultations with the Board and the co-chairpersons, conduct the Board meetings, and work with the staff to prepare the minutes of meetings. Assuming continuing contractual compliance, the facilitator shall at all times work at the direction and discretion of the Board.

Budget

The Board shall have the authority within its Charter to develop its own budget and to make revisions it deems necessary.

1. Within the bounds of applicable law, the Board shall have reasonable and timely access

to funds allocated for this operation.

2. Board members will serve without compensation, but reasonable arrangements shall be made for reimbursement of direct expenses related to the work of the Board and meeting attendance.

3. It shall be the responsibility of DOE to ensure prepaid arrangements are made for Board members' travel expenses unless members themselves opt to make independent arrangements and seek reimbursement in the standard manner.

Evaluation

There shall be an annual evaluation of the Board to assess how adequately it is representing its stakeholder interests and meeting the needs of the public. The Board will also evaluate the responsibilities of DOE and the other participating and enforcement agencies. The Board will develop the criteria for these mutual evaluations.

Conflict of Interest

Conflict of interest is defined as any instance when a member, anyone in his or her immediate family, or anyone or any entity with whom that member might be negotiating for employment, stands to make a direct or personal financial gain, or to gain an unfair competitive advantage, resulting from decisions made by the Board while being in a position to effect those decisions.

1. Employees of the management and operating contractors, the participating and enforcement agencies, and any employee of DOE notwithstanding the qualifying provisions of this paragraph, will be ineligible for membership, other than ex-officio, if his or her position includes policy making capacities.

2. If a Board member is aware that the Board is about to enter into any business transaction directly or indirectly with himself or herself, any member of his or her immediate family, or any entity in which she or he has an legal, equitable, or fiduciary interest or position, including but not limited to director, officer, shareholder, partner, beneficiary, trustee, or management employee, or if a Board member knows that the Board is about to make a recommendation to DOE or the other participating and enforcement agencies related to any of the above, that Board member shall immediately inform the Board of his or her interest and shall recuse himself or herself from participating in decisions in which a conflict of interest or potential conflict of interest exists.

3. Board members shall be also aware of and take care to abide by the following conflict of interest principles:

a. Members shall refrain from any use of their membership which is, or gives the appearance of being, motivated by the desire for private gain;

b. Members shall not use, either directly or indirectly for private gain, inside information obtained as a result of advisory committee service;

c. Members shall not use their positions in any way to coerce, or give the appearance of coercing, another person to provide a financial benefit to the member or any person with whom he or she has family, business, or financial ties;

d. Members shall not knowingly receive or solicit from persons having business with the DOE anything of value as a gift, gratuity, loan, or favor while serving on the Board or in connection with such service.

Amendments to the Operating Procedures

Amendments may be made in accordance with the following procedure:

1. Any member of the public, the Board or one of the Agencies may propose an operating procedures amendment. However, to be considered by the Board, the proposed amendment must be sponsored by a Board member.

2. Any meetings to consider an operating procedures amendment shall include discussion of the proposed amendment and its justification.

3. A vote of 75 percent of the full Board shall be required for acceptance of an operating procedures modification. Proxies will not be acceptable.

4. If an amendment is adopted, it shall be issued to Board members and the Agencies within 14 days and be made available to the public.

Board Selection Criteria and Guidelines

1. The Board members shall be selected in accordance with the criteria and guidelines listed below, which are designed to ensure that the Board's membership reflects the full range of stakeholders and the demographic composition of the communities surrounding and impacted by PGDP.

2. The Board shall consist of 12-20 regular members chosen by the Selection Panel, and five ex officio members: one representing each of the primary agencies (U.S. DOE, U.S. EPA, and the KY Division of Waste Management) and one representing each of the following (KY Radiation Control Branch and KY Department of Fish and Wildlife Resources). Other state and federal agencies may apply to the SSAB for ex officio membership.

3. Each of the Agencies shall designate one ex officio representative and one alternate. Agency representatives shall be expected to attend all meetings and have the right to participate in discussion. However, they shall not have voting privileges.

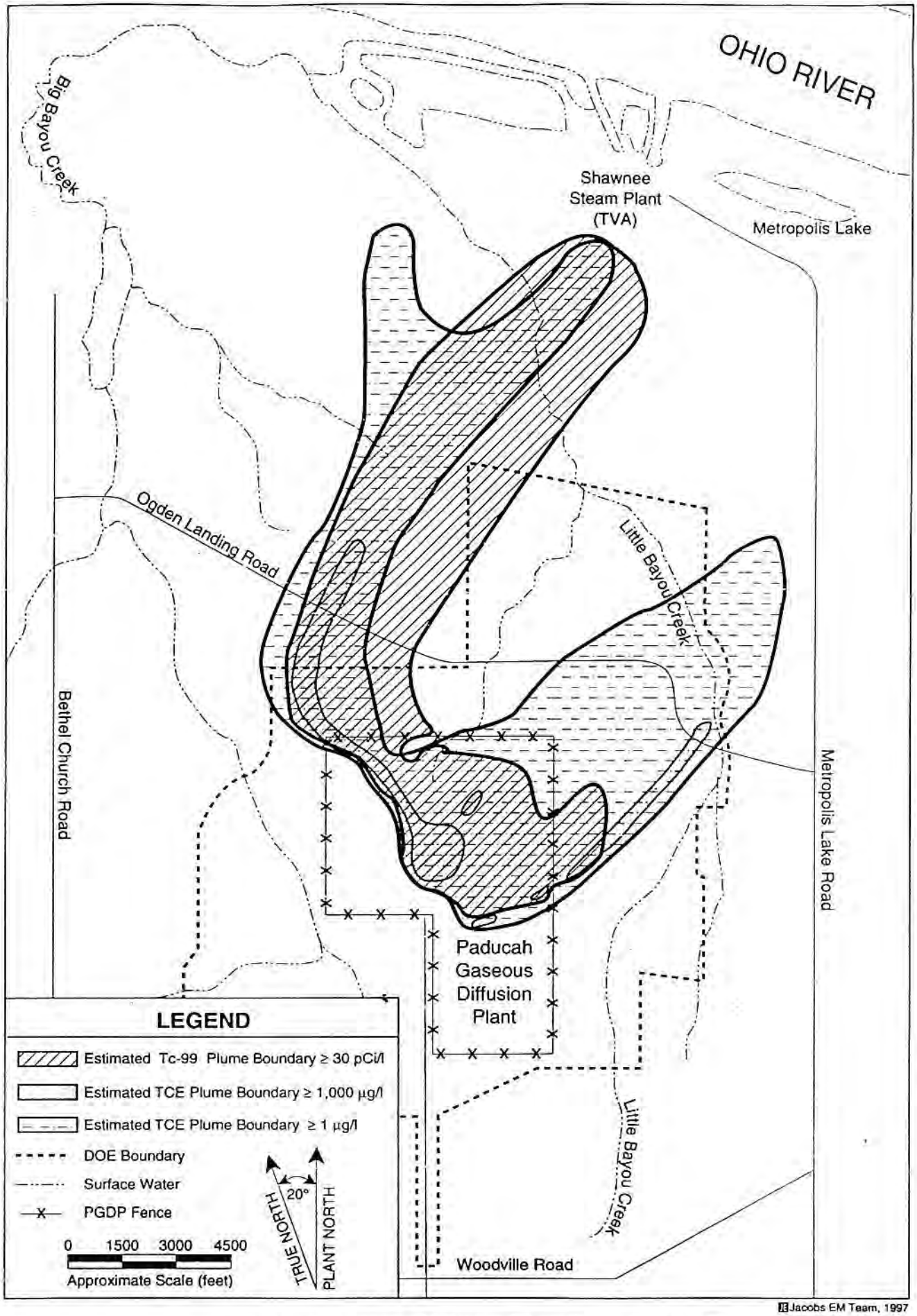
4. Each of the following category of stakeholders shall be represented with a minimum of one person on the Board. Numbers in parentheses indicate minimum representatives in that category.

   a. McCracken County public official
   b. Ballard County public official
   c. business person
   d. non-employee plant neighbor within a three-mile radius (2)
   e. OCAW 3-550 member (to be nominated by that group)
   f. organized labor, other than OCAW
   g. ethnic minority (2)
   h. environmental activist (2)
   i. PGDP non-management, non-union employee
   j. agricultural interests
   k. recreational users of the West Kentucky Wildlife Management Area
   l. PGDP contractors and subcontractors, not key management
   m. health professional
   n. public school representative

5. The Selection Panel will maintain diversity and balance among Board members with regard to gender, age, race/ethnicity, type of employment, area of residence, expertise, income, and education levels.

6. In selecting Board members, consideration shall be given to individuals with expertise that would make a useful contribution to the board's collective knowledge base, in areas such as issues of concern to local residents, public use, science, finance and economics, engineering, public health, law and consensus-building.

7. Membership on the Board will require a great deal of interest in issues the Board considers, as well as the time to study and discuss them. The need for commitment in these areas shall be stressed as specifically as possible at every opportunity during the selection process -- such as in press releases, advertisements, on the application form and at public meetings. The Selection Panel shall make a good faith effort to ensure Board members possess the ability and desire to devote the time membership will require.



Jacobs EM Team, 1997

Paducah Gaseous Diffusion Plant Ground Water Plumes

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94A0059* **Facility Code:** *PADUC* **Priority:** *40.0*

Title: *ON-SITE WASTE TREATMENT*

Summary:

This project includes the following activities: Wastewater Treatment - Wastewater treatment includes the operations of two small wastewater treatment units. These units provide treatment of water generated from Paducah EM&EF activities. VORTEC Demonstration - EM-50 VORTEC Vitrification Demonstration has been sited for the Paducah Plant. This demonstration could treat 80% of Paducah LLW, TSCA and RCRA waste streams. FY 1996 includes siting of the facilities LDR FFCA/FFCAct Site Treatment Plan - An Agreed Order was issued October 1995 by the Commonwealth of Kentucky to DOE for the treatment of Paducah mixed waste as proposed in the Paducah Site Treatment Plan. TCLP FFCA - TCLP FFCA requires Paducah Plant to characterize over 14,000 drums of Legacy waste that are presently being stored and were not characterized by the TCLP method.

Evaluation Scenario:

Before: On-site waste treatment occurs on the site. The site boundary is the most likely exposure location. Contaminants of concern include a variety of contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Characterization of drummed waste is part of this project and is required to be able to calculate risks. Given the nature of wastes at Paducah, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-03 and 1E-05. Hazard indices range from 1 to 10.

During: Remedial action (excavation, removal, or containment) will be taken during on-site waste treatment. Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants.

After: Contaminants present during on-site waste treatment will be remediated thereby significantly decreasing potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:

Before: Potential and likelihood for exposure to chemicals and radiation from on-site treatment by the

public exist. Tank or drum failure with moderate risk at the plant boundary is the event that could lead to exposures or injuries or both. Contaminants of concern include a variety of contaminants in surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of wastes, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-03 and 1E-05. Hazard indices range from 1 to 10. The unknown nature of waste is particularly troubling. Therefore, moderate to catastrophic injuries to individuals may be possible. As a result, the before condition was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and radiation from on-site treatment by the public are low. Generally, indications are that the project will reduce waste volume and waste streams. However, even with treatment a significant amount of waste will still be present. Risk posed by failure of containerization of reduced volume is still significant given quantity of waste currently stored. Unknown nature of waste is particularly troubling. As a result, this activity was rated PS 3D (marginal exposure or injury with low likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals and radiation from on-site treatment by the public are low. As a result, the after condition was rated PS 3D (moderate to low-level exposure with a low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from on-site treatment by general workers are low and for maintenance workers it is moderate. Maintenance performed by general workers and maintenance workers is the activity or event that could lead to exposures or injuries or both. Movement of storage containers could result in physical injury or exposure. Container failure is considered likely within 10 years. The material is low level waste regulated under RCRA and TSCA. The actual dose that might be received is unknown. However, exposure likelihood is moderate because maintenance of stored/drummed waste is required. Moderate to catastrophic injuries to individuals is possible. If the project is not undertaken, events may occur that cause injury or exposure. This score is based on a qualitative estimate of exposure due to maintenance activities and drum failure. As a result, the before condition was rated SP 1B (catastrophic impact with high likelihood of occurrence).

During: During remedial action the potential and likelihood for exposure to chemicals and radiation from on-site treatment by remedial action workers and maintenance workers increase. Remedial work performed by general workers and remedial action workers is the activity or event that could lead to exposures or injuries or both. Injuries to individuals are possible. These include the potential for physical injury to a remedial action worker resulting in partial or permanent disability. However, the likelihoods of these types of injuries or impacts can be mitigated by an increased health and safety program. Therefore, this activity was rated SP 3A (marginal - injuries/illness with very high likelihood of occurrence).

After: Following remediation, the potential and likelihood for exposure to chemicals and radiation from on-site treatment by general workers and for maintenance workers will decrease because the volume of contaminants contributing to exposure will have decreased. In addition, workers can handle waste with

greater certainty because they will know which substances they are dealing with. Surveillance performed by general workers and maintenance performed by maintenance workers are the activities or events that could lead to exposures or injuries or both. The main benefit of the project is considered reduction in volume leading to reduced chance of release or injury. The impact from injuries is expected to be negligible and the likelihood of occurrence low. As a result, the after condition was rated SP 4C (negligible impact with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment has been performed for on-site waste treatment. However, contaminants at some solid waste units may have potential to influence biota. As a result, conditions before remediation were rated EN 2B (significant damage to the environment with high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 3C (minor damage to the environment with medium likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem due to on-site waste treatment is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:

Before:
The funding of this project on the established schedule is critical to accomplish the Oak Ridge "2010 Vision" so a score of MI1A was assigned.

After:
The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Before:
Not funding this project would result in a loss of investment and an avoidance of cost >$5 million, score MR1A.

After:
Investment and cost avoidance would be realized, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0001* **Facility Code:** *PADUC* **Priority:** *39.0*

Title: *OFF-SITE WASTE TREATMENT*

Summary:
This project includes the following activities: LDR FFCA/FFCAct FFCA Site Treatment Plan - An Agreed Order was issued October 1995 by the Commonwealth of Kentucky to DOE for the treatment of Paducah mixed waste as proposed in Paducah Site Treatment Plan. TCLP FFCA - The TCLP FFCA requires Paducah to characterize over 14,000 drums of Legacy waste that are presently stored and were not characterized by TCLP method. K-25 Incinerator - Shipments of RCRA/PCB waste oil, wastewater, soft solids, and other miscellaneous liquid waste to the K-25 Incinerator. LLW treatment - The shipment of LLW to SEG for volume reduction.

Evaluation Scenario:
Before: Off-site waste treatment occurs off the site. The site boundary is the most likely exposure location. Contaminants of concern include a variety of contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Characterization of drummed waste is part of this project and is required to be able to calculate risks. Given the nature of wastes at Paducah, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-03 and 1E-05. Hazard indices range from 1 to 10.

During: Remedial action (excavation, removal, or containment) will be taken during off-site waste treatment. Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants.

After: Contaminants present during off-site waste treatment will be remediated thereby significantly decreasing potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: Potential and likelihood for exposure to chemicals and radiation from off-site treatment by the public exist. Tank or drum failure at the plant boundary is the event that could lead to exposures or injuries or both. Contaminants of concern include a variety of contaminants in surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of

wastes, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-03 and 1E-05. Hazard indices range from 1 to 10. Therefore, moderate to catastrophic injuries to individuals may be possible. As a result, the before condition was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and radiation from off-site treatment by the public are low. Generally, indications are that the project will reduce waste volume and waste streams. However, even with treatment a significant amount of waste will still be present. Risk posed by failure of containerization of reduced volume is still significant given quantity of waste currently stored. Unknown nature of waste is particularly troubling. As a result, this activity was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals and radiation from off-site treatment by the public are low. As a result, the after condition was rated PS 3D (moderate to low-level exposure with a low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from off-site treatment by general workers are low and for maintenance workers it is moderate. Maintenance performed by general workers and maintenance workers is the activity or event that could lead to exposures or injuries or both. Movement of storage containers could result in physical injury or exposure. Container failure is considered likely within 10 years. The material is low level waste regulated under RCRA and TSCA. The actual dose that might be received is unknown. However, exposure likelihood is moderate because maintenance of stored/drummed waste is required. Moderate to catastrophic injuries to individuals are possible. If the project is not undertaken, events may occur that cause injury or exposure. This score is based on a qualitative estimate of exposure due to maintenance activities and drum failure. As a result, the before condition was rated SP 1B (catastrophic impact with high likelihood of occurrence).

During: During remedial action the potential and likelihood for exposure to chemicals and radiation from off-site treatment by remedial action workers and maintenance workers increase. Remedial work performed by general workers and remedial action workers is the activity or event that could lead to exposures or injuries or both. Moderate to catastrophic injuries to individuals are possible. These include the potential for physical injury to a remedial action worker resulting in partial or permanent disability. However, the likelihoods of these types of injuries or impacts can be are mitigated by an increased health and safety program. Therefore, this activity was rated SP 2A (critical - injuries/illness with very high likelihood of occurrence).

After: Following remediation, the potential and likelihood for exposure to chemicals and radiation from off-site treatment by general workers and for maintenance workers will decrease because the volume of contaminants contributing to exposure will have decreased. In addition, workers will be able to handle waste with greater certainty because they will know which substances they are dealing with. Surveillance performed by general workers and maintenance performed by maintenance workers are the activities or events that could lead to exposures or injuries or both. The main benefit of the project is considered

reduction in volume leading to reduced chance of release or injury. The impact from injuries is expected to be negligible and the likelihood of occurrence low. As a result, the after condition was rated SP 4C (negligible impact with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment has been performed for off-site waste treatment. However, contaminants at some solid waste units may have potential to influence biota. As a result, conditions before remediation were rated EN 2B (significant damage to the environment with high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 2B (significant damage to the environment with high likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem due to off-site waste treatment is expected to be low. Therefore, the after condition was rated EN 3D (minor to moderate damage to the environment with low likelihood of occurrence).

Compliance:

Mission Impact:

Before:
The funding of this project on the established schedule is critical to accomplish the Oak Ridge "2010 Vision" so a score of MI1A was assigned.

After:
The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Before:
Not funding this project would result in a loss of investment and an avoidance of cost >$5 million, score MR1A.

After:
Investment and cost avoidance would be realized, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0002* **Facility Code:** *PADUC* **Priority:** *82.0*

Title: *STORAGE OPERATIONS*

Summary:
This project provides for day-to-day operations of the Waste Management Program, consisting of coordination and oversight of all Waste Management, data management, storage facility operations, waste packaging and transportation to storage, waste sampling and certification efforts for storage activities are RCRA Part B permit and DOE Order 5820.2A.

Evaluation Scenario:
Before: Waste operation storage occurs on the site. The site boundary is the most likely exposure location. Container failure is the most likely event that could lead to exposure. Contaminants of concern include a variety of contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of wastes, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be in range of 1E-02 to 1E-04. HI's range from 10 to 100.

During: Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants.

After: Contaminants present during waste storage will be remediated thereby significantly decreasing potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from waste operations storage by the public are moderate. Failure at the plant boundary is the event that could lead to exposures or injuries or both. Contaminants of concern include a variety of contaminants in surface water, sediment, and biota (Waste may be highly mobile - liquids.). Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of wastes, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to range from 1E-02 to 1E-04. HI's range from 10 to 100. Tank or drum failure is possible (with moderate chance) within 10 years. Therefore, moderate to catastrophic injuries to individuals may be possible. As a result, the before condition was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and radiation from waste operations storage by the public are moderate. As a result, this activity was rated PS 2D (excessive exposure or injury with low likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals and radiation from waste operations storage by the public are low. As a result, the after condition was rated PS 3D (moderate to low-level exposure with a low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category

Before: The potential and likelihood for exposure to chemicals and radiation from waste operations storage by general workers and maintenance workers are likely if containers fail. Maintenance of stored or drummed waste performed by general workers and maintenance workers is the activity or event that could lead to exposures or injuries or both. In addition, drum or container failure can result in release to uncontrolled areas. Contact by general workers and maintenance workers in these areas can result in exposure. Also, workers are exposed to physical hazards during drum handling. Hazardous material includes radioactive and chemically contaminated waste. The actual dose that might be received is unknown. Releases will occur without maintenance. Moderate to catastrophic injuries to individuals is possible. As a result, the before condition was rated SP 1B (catastrophic impact with high likelihood of occurrence).

During: During remedial action the potential and likelihood for exposure to chemicals and radiation from waste operations storage by remedial action workers and maintenance workers increase. Remedial work performed by general workers and remedial action workers is the activity or event that could lead to exposures or injuries or both. Moderate to catastrophic injuries to individuals is possible. These include the potential for physical injury to a remedial action worker resulting in partial or permanent disability. However, the likelihoods of these types of injuries or impacts are mitigated by an increased health and safety program. Therefore, this activity was rated SP 2A (Critical injuries/illness with very high likelihood of occurrence).

After: Following remediation, the potential and likelihood for exposure to chemicals and radiation from off-site treatment by general workers and for maintenance workers will decrease because contaminants contributing to exposure will have been removed. Surveillance performed by general workers and maintenance performed by maintenance workers are the activities or events that could lead to exposures or injuries or both. The impact from injuries is expected to be negligible and the likelihood of occurrence low. As a result, the after condition was rated SP 4C (negligible impact with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment performed on the site. However, contaminants may have potential to influence biota. As a result, conditions before remediation were rated EN 2B (significant damage to the environment with high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects

on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 3D (minor to moderate damage to the environment with low likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem due to waste storage is expected to be low. Therefore, the after condition was rated EN 3D (minor to moderate damage to the environment with low likelihood of occurrence).

Compliance:

Mission Impact:

Before:

The funding of this project on the established schedule is critical to accomplish the Oak Ridge "2010 Vision" so a score of MI1A was assigned.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Before:

Not funding this project would result in a loss of investment and an avoidance of cost >$5 million, score MR2A.

After:

Investment and cost avoidance would be realized, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0005* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *SOLID WASTE LANDFILL CONSTRUCTION*

Summary:
This project is the construction of a new solid waste landfill. Scope of activities include development of the first 5-acre phase, construction of support facilities, extension of utilities and closure of existing Cell 3.

Evaluation Scenario:

Public Health and Safety:
Failure to provide funding for the construction of the FY1995 Solid Waste Landfill will result in noncompliances with Federal and State Solid Waste Regulations. A moderate risk of environmental impacts does exist in 10 years due to the improper storage of solid waste. Continuing to fund this activity will reduce environmental impacts.

EXPOSURE LOCATION: Before: Plant boundary After: Same
MEDIA: Before: Groundwater, surface water, soil, sediment, air, and biota. After: Same
EXPOSURE LIKELIHOOD: Before: High. After: Low
RISK NUMBER: Before: Not available. However, because this project addresses solid waste only, the risk to the public will be minimal even with a release. After: Same
COCs: Before: Unknown. Because this is a solid waste landfill, the list of COCs should not contain hazardous materials. After: Same
SOURCE DOCUMENT(s): Project Prioritization Data Sheet

Score is based on a qualitative assessment of material in the project prioritization data sheet and information received during discussions with site personnel.

Site Personnel Safety and Health:
Site personnel exposures would be moderate from direct contact with solid waste stored on site. Funding

this activity will reduce site personnel exposure.

Pleas answer the following questions regarding personnel involved in S&M etc. if this project is not funded. List activities involved:
POTENTIAL FOR EXPOSURE: Before: Exposure could occur due to contact with improperly stored or handled waste materials. After: Reduced.
RADIATION EXPOSURE
EXPOSURE RISK (DOSE): Before: None, solid waste should not have an appreciable level of radioactive material present. After: Same
EXPOSURE LIKELIHOOD: Before: High After: Low
CHEMICAL EXPOSURE
EXPOSURE LEVEL: Before: Low , solid waste should not contain hazardous materials. After: Low
EXPOSURE LIKELIHOOD: Before: High After: Low
ACTIVITIES/EVENTS LEADING TO ESPOSURE/INJURIES: Before: Improperly stored solid waste will be accessible to general workers resulting in injury. After: Reduced, workers still face physical hazards during waste handling.
IMPACT LEVEL: Before: Moderate After: Low
IMPACT LIKELIHOOD: Before: If project does not occur, solid waste will be accessible. After: Low
SOURCE DOCUMENT(s): Project Prioritization Data Sheets

This is a qualitative assessment based on material in the project prioritization data sheet and information from site personnel.

Environmental Impact:
Failure to provide funding for the construction of the FY1995 Solid Waste Landfill will result in noncompliances with Federal and State Solid Waste Regulations. A moderate risk of environmental impacts does exist in 10 years due to the improper storage of solid waste. Continuing to fund this activity will reduce environmental impacts.

Has an ecological risk assessment been completed? No
If yes, were ecological impacts determined?

Compliance:

Mission Impact:
Mission:

Mortgage Reduction:
Cost-effectiveness: Not funding this project would result in a loss of investment and an avoidance of cost <$1-5 million. The previous investment in FY1994 would not be lost.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0006* **Facility Code:** *PADUC* **Priority:** *49.0*

Title: *LANDFILL OPERATIONS*

Summary:
This project provides for waste disposal operations including: (1) waste inspection; (2) methane gas monitoring; (3) leachate disposal; (4) erosion control; and, (5) grounds maintenance. Non-hazardous wastes disposed of in the landfill include wood, cooling tower redwood, construction demolition debris, asbestos, cardboard, paper, cafeteria wastes, waste soils, PCB waste (less than 50 ppm), and light duty metal.

Evaluation Scenario:
Before: Landfill Operations occur on DOE property. The landfill boundary is the most likely exposure location. Contact with groundwater and surface water at the landfill boundary is the most likely event that could lead to exposure. Contaminants of concern include a variety of radionuclide and chemical contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of wastes, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be in range of <1E-04 and HI's < 10.

During: Remedial and/or maintenance activities may increase the potential for receptors to be exposed to contaminants on the DOE property. Remedial and/or maintenance activities are not expected to increase the potential for receptors to be exposed to contaminants off the DOE property.

After: Contaminants present at the landfill will be remediated thereby significantly decreasing potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from landfill operations by the public are moderate. Failure to maintain current landfill operations will result in releases to groundwater and surface water. Therefore, contact at the landfill boundary is the event that could lead to exposures or injuries or both. Contaminants of concern include a variety of radionuclide and chemical contaminants in surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available but are assumed to be <1E-04 and <10, respectively. Therefore, injuries to individuals may be possible. As a result, the before condition was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and radiation from the landfill may increase during maintenance of the landfill. An increased health and safety program will help limit likelihood of occurrence. As a result, this activity was rated PS 1C (immediate or eventual loss of life/permanent injury with a medium likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals and radiation from the landfill by the public are low. As a result, the after condition was rated PS 3D (moderate to low-level exposure with a low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from the landfill by general workers and maintenance workers are moderate to high if the landfill fails. Failure is expected within 10 years. Maintenance workers and general plant workers may contact materials as the landfill degrades during work near the landfill. Contact by general workers and maintenance workers in these areas can result in exposure. The types of hazardous materials are not known but probably includes radioactive and chemically contaminated waste. The actual dose that might be received is unknown. Releases will occur without action. Moderate to catastrophic injuries to individuals is possible. As a result, the before condition was rated SP 2A (critical - injuries/illness with very high likelihood of occurrence).

During: During remedial action and/or maintenance the potential and likelihood for exposure to chemicals and radiation from the landfill by remedial action workers and maintenance workers increase. Remedial work performed by general workers and remedial action workers is the activity or event that could lead to exposures or injuries or both. Moderate to catastrophic injuries to individuals is possible. These include the potential for physical injury to a remedial action worker resulting in partial or permanent disability. However, the likelihoods of these types of injuries or impacts are mitigated by an increased health and safety program. Therefore, this activity was rated SP 4B (Negligible injuries/illness with high likelihood of occurrence).

After: Following remediation and/or maintenance, the potential and likelihood for exposure to chemicals and radiation from landfill operations by general workers and for maintenance workers will decrease because maintenance of the landfill will prevent releases and allow prompt response to any releases that might occur. Maintenance and general plant workers may contact released materials; however, maintenance of controls reduces chance of exposure. Maintenance work does increase chance of injury. In addition, surveillance performed by general workers and maintenance performed by maintenance workers is an activity or event that could lead to exposures or injuries or both. The impact from injuries is expected to be negligible and the likelihood of occurrence low. As a result, the after condition was rated SP 4C (negligible impact with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment performed on the site. However, contaminants may have potential to influence biota. As a result, conditions before remediation were rated EN 2B (significant damage to the environment with high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities or maintenance due to

increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. This activity was not rated.

After: After completion of remedial activities and/or maintenance, the risk to the ecosystem due to waste storage is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:

Before:

The funding of this project on the established schedule is critical to accomplish the Oak Ridge "2010 Vision" so a score of MI1A was assigned.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Before:

Not funding this project would result in a loss of investment and an avoidance of cost >$1 million, score MR2A.

After:

Investment and cost avoidance would be realized, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0007* **Facility Code:** *PADUC* **Priority:** *81.0*

Title: *OFF-SITE WASTE DISPOSAL*

Summary:
This project provides for contractor support for obtaining certification to ship wastes to Nevada Test Site for disposal. This project also includes the characterization, repackaging, shipping and disposal of RCRA LLW and PCB wastes.

Evaluation Scenario:
Before: Off-site waste disposal occurs off the site. The plant boundary is the most likely exposure location. Contaminants of concern include a variety of radionuclide and chemical contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. Given the nature of wastes at Paducah, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-05 and 1E-03. Hazard indices range from 1 to 10.

During: Remedial action (excavation, removal, or containment) will be taken during off-site waste disposal. Remedial activities may increase the potential for receptors to be exposed to contaminants on the DOE facility. Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants off the DOE facility.

After: Contaminants present during off-site waste disposal will be remediated thereby significantly decreasing potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from off-site disposal by the public are moderate. Failure at the plant boundary is the event that could lead to exposures or injuries or both. Contaminants of concern include a variety of contaminants in groundwater, surface water, sediment, and biota. Excess lifetime cancer risks and hazard indices (HI) are not available. However, the wastes are regulated under TSCA, RCRA, LDR, FFCA, FFCAct, TSCA, and FFCA. Given the nature of wastes at Paducah, the assumption is made that waste contains a variety of carcinogens that can cause an effect at very low doses. The risks to offsite receptors are assumed to be between 1E-05 and 1E-03. Hazard indices are assumed to range from 1 to 10. This is a qualitative assessment based on the material presented in the project prioritization data sheet. Therefore, moderate injuries to individuals

may be possible. As a result, the before condition was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and radiation from off-site disposal by the public could increase during remediation. However, risk to offsite receptors would probably remain the same due to health and safety programs. As a result, this activity was rated PS 2B (excessive exposure or injury with high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals and radiation from off-site disposal by the public are low. As a result, the after condition was rated PS 3D (moderate to low-level exposure with a low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from off-site disposal by general workers are low and for maintenance workers it is moderate to high. Maintenance performed by general workers and maintenance workers is the activity or event that could lead to exposures or injuries or both. In addition, maintenance and general plant workers may be exposed to releases from materials stored onsite after drum/container failure. Safety and maintenance workers also face physical hazards during maintenance activities. Moderate to catastrophic injuries to individuals is possible. As a result, the before condition was rated SP 1B (catastrophic impact with high likelihood of occurrence).

During: During remedial action the potential and likelihood for exposure to chemicals and radiation from off-site disposal by remedial action workers and maintenance workers increase. Remedial work performed by general workers and remedial action workers is the activity or event that could lead to exposures or injuries or both. Moderate to catastrophic injuries to individuals is possible. These include the potential for physical injury to a remedial action worker resulting in partial or permanent disability. However, the likelihoods of these types of injuries or impacts are mitigated by an increased health and safety program. Therefore, this activity was rated SP 2A (Critical - injuries/illness with very high likelihood of occurrence).

After: Following remediation, the potential and likelihood for exposure to chemicals and radiation from off-site disposal by general workers and for maintenance workers will decrease because contaminants contributing to exposure will have been removed or decreased in volume. Surveillance performed by general workers and maintenance performed by maintenance workers is an activity or event that could lead to exposures or injuries or both. The impact from injuries is expected to be negligible and the likelihood of occurrence low. As a result, the after condition was rated SP 4C (negligible impact with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment has been performed for off-site waste disposal. However, contaminants at some solid waste units may have potential to influence biota. As a result, conditions before remediation were rated EN 2B (significant damage to the environment with high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 2B (significant damage to the environment with high likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem due to off-site waste disposal is expected to be low. Therefore, the after condition was rated EN 3D (minor to moderate damage to the environment with low likelihood of occurrence).

Compliance:

Mission Impact:

Before:

The funding of this project on the established schedule could be deferred for 1 year without adversely impacting the Oak Ridge "2010 Vision", a score of MI1B was assigned.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Before:

Not funding this project would result in a loss of investment and an avoidance of cost >$5 million, score MR1A.

After:

Investment and cost avoidance would be realized, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0008* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *WASTE STORAGE FACILITY PHASE I*

Summary:
This project provides for the design and construction of a 42,000 square feet facility for the storage of RCRA/TSCA/low-level radioactive waste. The construction of the building includes utilities (electricity, gas heat), sprinkler system, and site preparation. Once the building is completed, it will be turned over to Waste Management for operation.

Regulatory Issues/Drivers: Since this building will be used to store waste that is created from Environmental Restoration activities, the loss of this building would result in possible noncompliances or Notices of Violation
(NOVs). Any projects with regulatory drivers that are creating waste may be stopped or delayed if the storage space is not available. Any potential fines related to noncompliances or NOVs must also be a consideration. In addition, the contract for the MK-Ferguson fixed-price subcontractor will also need to be cancelled if funding is not provided. This could result in additional legal costs.

Milestones/Scheduled Accomplishments: The contract for the project will be awarded on August 22, 1995. Construction will begin September 1995 and will end September 1996.

Public Health:

Exposure Location: Before: Plant boundary with release. After: Same

Exposure Media: Before: Groundwater, surface water, sediment, and biota. After: Same

Exposure Likelihood: Before: Consistent with other waste management projects considering stored waste, likelihood is moderate release will occur within 10 years. After: Reduced due to better waste storage and container maintenance.

Risk Number: Before: Unknown, assumed to be in range of 1E-04 to 1E-03 (HI 1 to 10) due to nature of waste being addressed. After: Same

COCs: Before: Variety of chemicals and radionuclides. After: Variety of chemicals and radionuclides.

Suggested Scores: 2B2C

Source Document(s): Project Prioritization Data Sheet

Notes: This is a qualitative assessment based on material in the project prioritization data sheets. Benefit of project seen to be reduced likelihood of release.

Environmental Protection: The loss of this project would greatly impact the program since the building will be used to store waste created from Environmental Restoration activities. Any projects that are creating waste may be stopped or delayed if the storage space is not available. These delays or stoppages could result in prolonged environmental exposures or additional damage.

Has an ecological risk assessment been completed? No
If yes, were ecological impacts determined?

EXTENT or LEVEL of IMPACT/EXPOSURE: 5
SPATIAL EXTENT:
ECOLOGICAL EXTENT:

DURATION or LIKELIHOOD of IMPACTS: B
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = 5B6C
SOURCE DOCUMENT:
NOTES: Score assumes moderately-spread impacts due to delays of unspecified projects in 1-10 years. That is, [insert current wppf justification]

Site Personnel Safety: NA

Potential for Exposure: Before: Moderate chance for container failure within 10 years without proper waste management. After: Lowered chance of container failure. Also, releases addressed promptly due to better monitoring.

Radiation Exposure

Exposure Risk (Dose): Before: Unknown, however have low level waste is regulated under RCRA and TSCA. After: Same

Exposure Likelihood: Before: Moderate will have failure within 10 years. After: Lower due to better storage and monitoring.

Chemical Exposure

Exposure Level: Before: Unknown, however have low level waste is regulated under RCRA and TSCA. After: Same

Exposure Likelihood: Before: Moderate will have failure within 10 years. After: Lower due to better storage and monitoring.

Activities/events leading to exposure/injuries: Before: S & M and general workers may be exposed if

release occurs. S & M workers during maintenance activities; general workers due to uncontrolled access. After: S & M workers may be exposed upon release. Controlled access reduces risk to general workers and S & M workers. S & M workers do face increased physical hazards due to project implementation.

Impact Level: Before: Moderate. After: Moderate

Impact Likelihood: Before: If project not implemented risk of release is moderate within 10 years. After: Low

Suggested Score: 8B8C
Source Document(s): Project Prioritization Data Sheet

Notes: This is a qualitative assessment made using information from the project prioritization data sheet.

Stakeholder Preference: The loss of this project would greatly impact the program since the building will be used to store waste created from Environmental Restoration activities. Any projects with regulatory drivers that are creating waste may be stopped or delayed if the storage space is not available. Since high profile projects could be impacted, the public would be very vocal in delaying or stopping these projects .

Suggested Score:

Mission: The loss of this project would greatly impact the program since the building will be used to store waste created from Environmental Restoration activities. Any projects with regulatory drivers that are creating waste may be stopped or delayed if the storage space is not available. Any potential fines related to noncompliances or NOVs must also be a consideration. The mission of the program would be adversely impacted.

Suggested Score:

Cost-effectiveness: Since the construction contract will be awarded in FY 1995, the loss of funding in FY 1996 would result in a partially completed building and a contract that will need to be cancelled. The effort and legal cost associated with a cancelled contract would be an inefficient use of funds. Note: Fines and cost of off-site storage.

Suggested Score: 16A

NOTE: PER THE JUNE 30, 1995 SCORING SESSION PREPARATION MEETING, THIS PROJECT IS NOT COMPLETE AND SHOULD BE RESCORED.

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0011* **Facility Code:** *PADUC* **Priority:** *272.0*

Title: *ENCLOSURE OF THE H3 PAD*

Summary:
This project provides for the design and construction of electrical lines and heaters at the C-746 H3 Pad. This pad is used for storing decontamination water, low-level radioactive soils, and 90 day storage area.

Evaluation Scenario:

Public Health and Safety:
EXPOSURE LOCATION: Before: Plant boundary After: Same
MEDIA: Before: Surface water, sediment, groundwater, and biota. After: Same
EXPOSURE LIKELIHOOD: Before: Low. After: Lowered chance of release but release still possible.
RISK NUMBER: Before: Not available; however, pad used to temporarily (90 day) store low-level radioactive soils and decontamination water. After: Same
COCs: Before: Variety of chemicals and radionuclides. After: Variety of chemicals and radionuclides.

This is a qualitative assessment made using material on the project prioritization data sheet.

Site Personnel Safety and Health:
Since this building is used to store waste that is created from Environmental Restoration activities, the lacking of permanent heat and power creates problems during the winter months. During the winter months, the temporary heaters have developed problems that have resulted in frozen pipes. These releases from the frozen pipes could result in exposure of the MMUS personnel who work at the pad. This exposure could be eliminated or greatly reduced if a permanent correction was made.

Please answer the following questions regarding personnel involved in S&M etc. if this project is not funded. List activities involved:

POTENTIAL FOR EXPOSURE: Before: Moderate due to releases due to frozen pipes and S & M activities. After: Low, frozen pipe problem solved if power maintained.
RADIATION EXPOSURE

EXPOSURE RISK (DOSE): Before: Unknown, however low level radioactive waste is in containers at the site. After: Same

EXPOSURE LIKELIHOOD: Before: Moderate After: Low

CHEMICAL EXPOSURE

EXPOSURE LEVEL: Before: Unknown, however chemically contaminated waste is in containers at the site. After: Same

EXPOSURE LIKELIHOOD: Before: Moderate After: Low

ACTIVITIES/EVENTS LEADING TO EXPOSURE/INJURIES: Before: S & M and unauthorized access. PPE is required at site. Physical injury is possible. After: Same

IMPACT LEVEL: Before: Moderate After: Moderate

IMPACT LIKELIHOOD: Before: Moderate After: Low

SOURCE DOCUMENT(s): Project Prioritization Data Sheets

This is a qualitative assessment based on information on the project prioritization data sheet.

Environmental Impact:

Since this building is used to store waste that is created from Environmental Restoration activities, the lacking of permanent heat and power creates problems during the winter months. During the winter months, the temporary heaters have developed problems that have resulted in frozen pipes. These releases from the frozen pipes could result in possible noncompliances or Notices of Violation (NOVs). These delays in making permanent corrections could result in prolonged environmental exposures or additional damage.

Has an ecological risk assessment been completed? No

If yes, were ecological impacts determined?

Compliance:

Mission Impact:

Mission: Not upgrading the H3 pad would hinder the program since the program's goal is to prevent releases to the environment.

Mortgage Reduction:

Cost-effectiveness: Since the cost of the project is small (<$300K), it would be cost-effective to correct the problem now instead of incurring the cost of cleanups, reporting, and possible noncompliances and NOVs.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0014* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *DOE WATER POLICY IMPLEMENTATION*

Summary:
This project includes the placement of the necessary well controls such that the existing private wells cannot be used for water production purposes. The objective of the project is to install public water lines necessary to provide residents located in the PGDP Water Policy service area with public water, and placing the necessary well controls on the private wells to prevent their further use by the residents.

Public Health: The remediation that will be performed in Water Policy Construction is the installation of the necessary public waterlines and well controls to allow all persons within the PGDP water policy area to be put on public water. Without continuing the project, there will be a very high likelihood of moderate exposure since public water could not be provided to impacted private wells. Following construction of the waterlines and placing the necessary well controls, there will be a high likelihood of low exposure since the contaminated groundwater will still be present until the NW and NE Plumes are remediated.

Exposure Location: Before: Offsite After: Same

Exposure Media: Before: Groundwater After: Same

Exposure Likelihood: Before: High After: Low

Risk Number: 1E-03 0, no complete pathway.

COCs: Trichloroethene and degradation products; technetium; metals. After: None
Suggested Scores:1A1C

Source Document(s): Before: Results of the Site Investigation, Phase I (KY/ER-4); Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/138-977777C-P03/1991/1); Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant (DOE/OR/07-1286&D1)

After: Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion PLANT, Paducah, Kentucky (DOE/OR/06-1356&D2); Engineering Evaluation/Cost Analysis for the Water Policy at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1142&D3); Record of Decision for Interim Remedial Action of the Northwest Plume at the Paducah Gaseous Diffusion

Plant, Paducah, Kentucky (DOE/OR/06-1143&D4).

Notes: This project was scored assuming public water supply was discontinued and residential well use resumed. This is considered to be highly likely, but current information indicates that DOE is not required to maintain the free water beyond this time. Water policy duration (5 years) was considered.

Environmental Protection: The remediation that will be performed in Water Policy Construction is the installation of the necessary public waterlines and well controls to allow all persons within the PGDP water policy area to be put on public water. Without continuing the project, there will be a very high likelihood of moderate exposure since public water could not be provided to impacted private wells. Following construction of the waterlines and placing the necessary well controls, there will be a high likelihood of low exposure since the contaminated groundwater will still be present until the NW and NE Plumes are remediated.

Has an ecological risk assessment been completed? Yes
If yes, were ecological impacts determined? Yes

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT: 5
ECOLOGICAL EXTENT: 5

DURATION or LIKELIHOOD of IMPACTS: B
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = 5B6C
SOURCE DOCUMENT: Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant (DOE/OR/07-1286&D1)
NOTES: Score assumes moderately-spread impacts to herbivores and piscivores, via crop irrigation and aquaculture activities using contaminated groundwater, in 1-10 years.

Site Personnel Safety: The only site personnel that may be exposured are well sampling crews. Without continuing this project, there will be a high likelihood of minor exposure to onsite personnel. After completion of the project, there will be a medium likelihood of minor exposure.

Potential for Exposure: Before: None After: Same

Radiation Exposure
Exposure Risk (Dose): Before: None After: Same

Exposure Likelihood: Before: None After: Same

Chemical Exposure
Exposure Level: Before: None After: Same

Exposure Likelihood: Before: None After: Same

Activities/events leading to exposure/injuries: Before: None After: Same

Impact Level: Before: None After: Same

Impact Likelihood: Before: None After: Same

Suggested Score: NA
Source Document(s): Project Prioritization Data Sheer

Notes: Because this project involves only the installation of the water lines and these lines are being installed offsite in uncontaminated areas. Site Personnel Safety is not impacted by this project.

Stakeholder Preference: There is a very high significant interest in this project since it will result in providing public water to potentially impacted wells. After completion of the project, there is a very high likelihood of minor interest in the project since stakeholders will turn their attention to actual remediation of the NW and NE Plumes.

Suggested Score:

Mission:

Suggested Score: NA

Cost-effectiveness: Failure to continue this project will result in a very high likelihood of having a significant impact on the DOE mission. Without this action, eventually additional private wells will become contaminated. There will be a significant loss in investment from not capitalizing on the data collected in the Phase I and Phase II Site Investigations. Implementation of the project will result in very high likelihood of having a minor cost savings in that the residential sampling program can be curtailed.

Potential for fines and penalties for PCB in effluent (25,000/day - NOV from state).

Suggested Score: 16A

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0015* **Facility Code:** *PADUC* **Priority:** *78.0*

Title: *SURFACE WATER OU*

Summary:
This project includes the annual development of the Surface Water Management Strategy Document which focuses the collection of data in the HSWA RFI investigations to collect the necessary samples for the surface water operable unit. The overall objective of the project will be to remediate as appropriate the ditches, outfalls, and drainageways that surround the PDGP facility.

Evaluation Scenario:

Public Health and Safety:
The remediation that will be performed in the Surface Water Operable Unit is the cleanup or remediation of the integrating ditches and streams at PGDP. Without continuing this project, there will be a high likelihood of low exposure to the Public. This would be due to contaminated sediments and soils in the drainage ditch and outfalls and streams surrounding the plant. If the project is completed, the contaminated sediment and soil will be remediated as appropriate thereby reducing the likelihood of low exposure to medium.

EXPOSURE LOCATION: Before: Offsite After: Same
MEDIA: Before: Surface water, sediment, biota, groundwater After: Same
EXPOSURE LIKELIHOOD: High, creeks are posted but access is not controlled. Lowered, questionable if actions exist to completely remediate the Surface Water OU
RISK NUMBER: Recreational Use BBC LBC & NSDD
Surface water 1E-06 & 0.002 9E-07 & 0.002
Sediment 1E-05 & 0.005 2E-05 & .-016
Fish ingestion 2E-03 & 23 1E-02 & 0.3

Ponds, Lakes, Marshes
Surface water 2E-07 & 0.002
Sediment 2E-06 & 0.007
Fish ingestion 7E-04 & 4.6

Deer
Chem. ELCR 6E-04; Rad ELCR 6E-05; HI 0.32 Lowered due to actions at "hot spots." Will return to

high levels if onsite sources are not addressed. Addressing these sources in not part of this project.

COCs: Before: Antimony, arsenic, barium, beryllium, cadmium, chromium, manganese, mercury, vanadium, PCBs, thorium-230, uranium-234, uranium-238, technetium-99, and plutonium-239 After: Unknown, list may be reduced.
SOURCE DOCUMENT(s): Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1.

Higher risk estimates would result of Commonwealth of Kentucky default exposure parameters are used. After score assumes remediation of media as indicated on the project prioritization data sheet. After score does not consider that risks would return to unacceptable levels if onsite sources are not addressed prior to cleanup.

Site Personnel Safety and Health:
The site personnel that may be exposed are sampling crews and maintenance crews that have to periodically work in the drainage ways. Without continuing this project, there will be a high likelihood of moderate exposure to onsite personnel. After completion of the project, there will be a medium likelihood of minor exposure since the drainageways will have been remediated as appropriate.

POTENTIAL FOR EXPOSURE: Before: High After: Same
RADIATION EXPOSURE
EXPOSURE RISK (DOSE): Before: Risk estimate not calculated; risks should be less than that for recreational user (see above). After: Same
EXPOSURE LIKELIHOOD: Before: High, areas are not controlled. After: Same
CHEMCIAL EXPOSURE
EXPOSURE LEVEL: Before: Risk estimate not calculated; risks should be less than that for recreational user (see above). After: Same
EXPOSURE LIKELIHOOD: High After: Same

ACTIVITIES/EVENTS LEADING TO EXPOSURE/INJURIES: Before: Maintenance activities. After: Same
IMPACT LEVEL: Before: Low, PPE not required. After: Same
IMPACT LIKELIHOOD: Before: High After: Same
SOURCE DOCUMENT(s): Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1.

This is a qualitative evaluation completed considering the results of recreational exposure to sediment and surface water.

Environmental Impact:
The remediation that will be performed in the Surface Water Operable Unit is the cleanup or remediation of the integrating ditches and streams at PGDP. Without continuing this project, there will be a high likelihood of low exposure to the Public. This would be due to contaminated sediments and soils in the

drainage ditch and outfalls and streams surrounding the plant. If the project is completed, the contaminated sediment and soil will be remediated as appropriate thereby reducing the likelihood of low exposure to medium.

Has an ecological risk assessment been completed? Yes
If yes, were ecological impacts determined? Yes

SOURCE DOCUMENT: Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1).
Report on the Biological Monitoring Program at paducah Gaseous Diffusion Plant December 1992 to December 1993 (ORNL/TM-1271'6)

Fish, benthic macroinvertebrates, and piscivores are impacted in multiple reaches of Big and Little Bayou Creeks and the North/South Diversion Ditch. Contaminants include metals (e.g., arsenic, chromium, copper, mercury, and zinc) and PCBs in water, sediment, and/or fish tissue. Exposure is on-going and long-term. the unspecified remediations are assumed to reduce the spatial extent, ecological extent, and likelihood of impacts to localized, one assessment endpoint, and 100+ years, respectively.

Compliance:

Mission Impact:
Mission: Watershed level.

Mortgage Reduction:
Cost-effectiveness: Failure to continue this project will result in a very high likelihood of having a significant impact on the DOE mission. There will be a significant loss in investment from not capitalizing on the data collected in the Phase II and HSWA WAG Site Investigations. Implementation of the project will result in high likelihood of having moderate cost savings since the size of the Surface Water Integrator Unit remedial investigation can be minimized by implementing the observational approach in the HSWA WAG investigations.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0016* **Facility Code:** *PADUC* **Priority:** *118.0*

Title: *WAG 23*

Summary:
This project includes development of detailed Treatability Study Work Plans and implementation of those work plans. The objective of the project is to remediate nine SWMUs that were identified in the Phase II Site Investigation as being likely sources of off-site groundwater contamination.

Evaluation Scenario:
Before: The WAG 23 contains eight solid waste management units (SWMUs): SWMU 32, SWMU 33, SWMU 56, SWMU 80, SWMU 74, and SWMU 79. Contaminated onsite soil is of concern because it may contaminate groundwater offsite. In addition, the Site Investigation identified WAG 23 as a source of offsite surface water contamination.

During: Remedial activities to mitigate exposures to contaminants will increase the potential for exposure during remedial activities for both human and ecological receptors at or near the area being remediated. Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants outside the DOE boundary.

After: Reduction of contaminant concentrations in remediated media will significantly decrease potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from WAG 23 are low for onsite and high offsite exposure. WAG 23 is considered a source for offsite surface water contamination. Soil is the medium of concern onsite; surface water and biota are media of concern offsite. Contaminants of concern include dioxins, PCBs, and furans.

Possible future residential risks are discussed for each SWMU or SWMU group. The future residential risk scenario was not assessed for SWMUs 32 and 33. However, risk and hazard indices (HI) greater than risk to workers (3E-04 and 1.2, respectively) are expected for SWMUs 32 and 33. The future residential risk scenario was not assessed for SWMUs 56 and 80. However, risk and hazard indices (HI) greater than risk to workers (3E-03 and 35.4, respectively) are expected for SWMUs 56 and 80. The future residential risk scenario was not assessed for SWMUs 57 and 81. However, risk and hazard indices (HI) greater than risk to workers (9E-04 and 1.3, respectively) are expected for SWMUs 57 and 81. The future residential

risk scenario was not assessed for SWMU 74. However, risk and hazard indices (HI) greater than risk to workers (2E-05 and 0.01, respectively) are expected for SWMU 74. The future residential risk scenario was not assessed for SWMU 79. However, risk and hazard indices (HI) greater than risk to workers (3E-05 and 0.05, respectively) are expected for SWMU 79. Surface water presents the same risk as surface water for Big Bayou and Little Bayou Creeks. The before score assumes that materials currently migrating from these sites only pose a moderate risk to offsite receptors. Contamination already offsite is not addressed by this project. This information is presented in Remedial Investigation Addendum for Waste Area Grouping 23, PCB Sites, at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1149&D2). As a result, the before condition was rated PS 2A (excessive exposure with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals from WAG 23 may increase during remediation. However, risk to offsite receptors would probably remain the same due to health and safety programs. This evaluation considers control of migration from the source only. As a result, this activity was rated PS 2A (excessive exposure with very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from WAG 23 are expected to be low after the site has been remediated. Onsite exposures are expected to be low. The after score assumes that wastes will be left in place. As a result, the after condition was rated PS 3D (moderate to low-level exposure with low likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from WAG 23 by general workers and maintenance workers are moderate because areas are controlled but not fenced. Unauthorized access, maintenance, and excavation are the events that could lead to exposures or injuries or both. Excess lifetime cancer risk to workers due to exposure to radiation is low. For SWMUs 32 and 33 the risk is 2E-06 to 2E-07 with moderate potential for exposure. No excess lifetime cancer risk to workers due to exposure to radiation exists in SWMUs 56, 80, 57, 81, 74, and 79.

Excess lifetime cancer risk to workers due to exposure to chemicals is discussed for each SWMU or SWMU group. SWMUs 32 and 33 pose risks between 3E-04 and 3E-05 and hazard indices (His) between 1.2 and 0.12. SWMUs 56 and 80 pose risks between 3E-03 and 3E-04 and His between 35.4 and 3.5. SWMUs 57 and 81 pose risks between 9E-04 and 9E-05 and His between 1.3 and 0.13. SWMU 74 poses risks between 2E-05 and 2E-06 and HIs between 0.01 and 0.001. SWMU 79 poses risks between 3E-05 and 3E-06 and HIs between 0.05 and 0.005. Additional information is available in Remedial Investigation Addendum for Waste Area Grouping 23, PCB Sites, at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1149&D2). The before condition was rated SP 3A (marginal injuries/illnesses with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals from WAG 23 may increase for onsite receptors during remediation. However, the likelihood of these types of injuries or illnesses will be mitigated by an increased health and safety program. Evaluation considers action that addresses surface soil contamination such as soil removal or caps. As a result, this activity was rated SP 3A (marginal injuries/illnesses with very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from WAG 23 are expected to be low after the site has been remediated. As a result, the after condition was rated SP 4C (negligible exposure with medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment has been performed for WAG 23. However, contaminants may have potential to influence biota. As a result, conditions before remediation were rated EN 2A (significant damage to the environment with very high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 1A (catastrophic damage to the environment with very high likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem from WAG 23 is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:

Before:
The funding of this project on the established schedule could be deferred for 1 year without adversely impacting the Oak Ridge "2010 Vision", a score of MI1B was assigned.

After:
The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Failure to continue this project will result in a very high likelihood of having a significant impact on the DOE mission. The WAG 23 PCB contaminated soils will continue to migrate and spread impacting larger areas. There will be a significant loss of investment from not capitalizing on the data collected in the Phase II Site Investigation and development of the WAG 23 Remedial Investigation Addendum. Implementing this project will result in high likelihood of having a moderate cost savings since the contaminated soils will be stabilized or remediated and not allowed to contaminate clean areas and requiring additional remediation.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0017* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *N/S DITCH DESIGN/CONTRUCTION*

Summary:
To comply with the signed ROD by installation of a new lift station and pipeline bypassing the N/S Diversion Ditch as well as treatment of the C-400 effluent with an ion exchange system and emplacement of a gabion structure in the N/S Ditch to filter any water in the bypassed portion of the Diversion Ditch. Known contaminants are PCBs and Tc-99 in the sediments of the N/S Diversion Ditch.

Regulatory Issues/Drivers: 3/28/94 - Record of Decision (ROD) which specifies a project completion date of 8/20/95.

Milestones/Scheduled Accomplishments: Scheduled accomplishments - completion of the ROD date on 8/20/95.

Public Health: Contaminants in the ditch end up in offsite locations where public access does exist.

Exposure Location: Before: Offsite After: None

Exposure Media: Before: Surface water, sediment, biota, and groundwater After: None

Exposure Likelihood: Before: Moderate, this area acts as a continuing source of offsite contamination. After: None

Risk Number: Before: Recreational Use
Surface Water 9E-07 & 0.002
Sediment 2E-05 & 0.016
Fish Ingestion 1E-02 & 0.3
After: None

COCs: Before: Arsenic, barium, chromium, manganese, PCBs, uranium-234, uranium-238, and neptunium-237. After: None

Suggested Scores: 1A3D
Source Document(s):

Before: Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1.

After: Record of Decision for Interim Action Source Control at the North-South Diversion Ditch, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1213&D3);

Notes: This area acts as a continuing source of contamination to offsite. Offsite areas are posted but access is not controlled. This evaluation considers control of offsite migration; risk from materials presently in offsite are not addressed.

Environmental Protection: Contaminants are located in open ditches with a large area being affected.

Has an ecological risk assessment been completed? Yes
If yes, were ecological impacts determined? Yes

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT: 5
ECOLOGICAL EXTENT: 4

DURATION or LIKELIHOOD of IMPACTS:
DURATION OF EXPOSURES: A
RECOVERY RATE: C

SUGGESTED SCORE = 5A6C
SOURCE DOCUMENT: Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1).
NOTES: Current risks are indicated for fish and benthic macroinvertebrates from exposure to contaminants in surface water (copper, lead, and zinc) and sediments 9PCBs, arsenic, chromium, lead, mercury, nickel, and silver). PCBs and mercury are known to accumulate and may present a localized risk to piscivores.

Site Personnel Safety: Site workers are required to perform work activities near the ditch.

Potential for Exposure: Before: High, access is uncontrolled except for signs. After: Lowered due to posting.

Radiation Exposure

Exposure Risk (Dose): Before: ELCR for maintenance worker at N-S Diversion Ditch inside plant estimated to be 1E-04. After: ELCR lowered due to reduced rate of contact.

Exposure Likelihood: Before: Moderate After: Moderate

Chemical Exposure

Exposure Level: Before: Risk has not been calculated. However, PCB concentrations in one sediment sample (11 ppm) could result is a risk estimate up to 5E-05 under RME conditions.

After: ELCR lowered due to reduced rate of contact.

Exposure Likelihood: Before: Moderate After: Moderate

Activities/events leading to exposure/injuries: Before: S & M activities around ditches. Unauthorized access. After: S & M activities around ditch. Unauthorized access.

Impact Level: Before: Moderate After: Moderate

Impact Likelihood: Before: Moderate After: Moderate

Suggested Score: 9A 9B
Source Document(s): Record of Decision for Interim Action Source Control at the North-South Diversion Ditch, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1213&D3);

Notes: Risk estimates for unprotected S & M workers considered. Risks would be lower under non-RME conditions. Risks not appreciably lowered because action is to contain material. Action is not meant to clean-up site.

Stakeholder Preference: This work is associated with a ROD and has been identified and committed.

Suggested Score:

Mission: The completion of this project is associated with investigation activities on WAG 25.

Suggested Score: NA

Cost-effectiveness:

Suggested Score: NA

NOTE: THIS PROJECT HAD BEEN MARKED COMPLETE; HOWEVER, PER THE JUNE 30, 1995 SCORING SESSION PREPARATION MEETING, THIS PROJECT IS TO RESCORED DURING THE JULY 27 & 28, 1995 SCORING SESSION.

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0018* **Facility Code:** *PADUC* **Priority:** *77.0*

Title: *GROUNDWATER OU*

Summary:
Tasks included in this work package are updating of the Groundwater Strategy Document and Groundwater Protection Program Plan, focusing the collection of groundwater data in the HSWA RFI's, and integrating new geologic and groundwater data into the site conceptual model. Ultimate scope of the package is the coordinated remediation of contaminated groundwater at PGDP.

Evaluation Scenario:
Before:
The Groundwater Operating Unit is a groundwater investigative area that extends beyond the boundaries of the DOE property. This evaluation assumes that the PGDP Water Policy is not in effect because this policy is an integral part of this OU.

During:
Remedial activities to mitigate exposures to contaminants will increase the potential for exposure during remedial activities for both human and ecological receptors at or near the area being remediated.

After:
Reduction of contaminant concentrations in remediated media will significantly decrease potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment. The after scores assume that substantial risks will continue to exist no matter what is done; however, time of impact can be moved further into the future.

Public Health and Safety:
Before:
The potential and likelihood for exposure to chemicals and radiation from the Groundwater Operating Unit are high. High; source areas must be addressed. Groundwater is the medium of concern. Contaminants of concern include trichloroethene and degradation products, technetium-99, and potentially some metal species. Risks due to consumption of groundwater range up to 1E-03 under current concentrations at offsite locations. Risks are high for potential future onsite use. Continued migration from onsite sources to offsite plumes is known to occur; therefore, risks may increase to offsite. This information is presented in the Results of the Site Investigation, Phase I (KY/ER-4); Results of the Site Investigation, Phase II (KY/SUB/138-97777C P03/1991/1); Baseline Risk Assessment and Technical

Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1286&D1); Report of the Paducah Gaseous Diffusion Plant Groundwater Investigation, Phase III (KY/E-150); Northeast Plume Preliminary Characterization Summary Report (DOE/OR/07-1339&D2); Evaluation of the Proposed Pilot Groundwater Pump and Treat Demonstration for the Paducah Gaseous Diffusion Plant (KY/ER-15); Technical Memorandum for Interim Remedial Action of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE-OR 1031); Action Memorandum for the Water Policy at the Paducah Gaseous Diffusion Plant, Paducah Kentucky (DOE/OR/06-1201&D2); Engineering Evaluation/Cost Analysis for the Water Policy at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1142&D3); Technical Memorandum for Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1318&D1); Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1356&D1); Focused Feasibility Study and Environmental Assessment for Interim Action Containment of the Source of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1190&D2); Groundwater Strategy Document for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1145/R1); Groundwater Protection Program Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (KY/ER-30) As a result, the before condition was rated PS 2A (excessive exposure and/or injury with very high likelihood of occurrence).

During:
The potential and likelihood for exposure to chemicals from the Groundwater Operating Unit may increase during remediation. As a result, this activity was rated PS 1A (immediate or eventual loss of life/permanent injury with a very high likelihood of occurrence).

After:
The potential and likelihood for exposure to chemicals from the Groundwater Operating Unit are expected to be lower after the site has been remediated; however, no effective remedy exists for widespread groundwater contamination, but impact can be reduced through source control. Trichloroethene and degradation products, technetium-99, and some metals species are expected to remain as contaminants of concern in groundwater. Risks will be reduced because the exposure pathway will be interrupted by the water policy. Plume remediation and natural attenuation will be speeded by source identification and control. Additional information can be found in the Technical Memorandum for Interim Remedial Action of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE-OR 1031); Action Memorandum for the Water Policy at the Paducah Gaseous Diffusion Plant, Paducah Kentucky (DOE/OR/06-1201&D2); Engineering Evaluation/Cost Analysis for the Water Policy at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1142&D3); Technical Memorandum for Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1318&D1); Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1356&D1); Focused Feasibility Study and Environmental Assessment for Interim Action Containment of the Source of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1190&D2); and Groundwater Strategy Document for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1145/R1). As a result, the after condition was rated PS 3A (moderate to low-level exposure with a very high likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before:
The potential for exposure to chemicals and radiation is high. However, the likelihood for exposure to chemicals and radiation from the Groundwater Operating Unit by general workers and maintenance workers is low because the water source used at the plant is the Ohio River. Groundwater sampling is the event that could lead to exposures or injuries or both. Risk from radionuclides in groundwater is minimal (<1E-06). Risk due to workers from exposure to chemicals in plumes was determined to be minimal (<1E-06) if water is not used as a drinking water source. Additional information is found in Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1286&D1); Technical Memorandum for Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1318&D1); Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1356&D1); Focused Feasibility Study and Environmental Assessment for Interim Action Containment of the Source of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1190&D2). The before condition was rated SP 3A (marginal injuries/illnesses with very high likelihood of occurrence).

During:
The potential and likelihood for exposure to chemicals from the Groundwater Operating Unit may increase for on site receptors during remediation. However, the likelihood of these types of injuries or illnesses can be mitigated by an increased health and safety program. As a result, this activity was rated SP 2A (critical - injuries/illness with very high likelihood of occurrence).

After:
The potential and likelihood for exposure to chemicals from the Groundwater Operating Unit are expected to be low after the site has been remediated. This project was scored assuming groundwater use at PGDP continues as at present. If groundwater is used by the site, risks to workers will be higher. Also, the after score was derived assuming those sampling activities to monitor groundwater contamination will be continued as part of any action. Additional information can be found in Technical Memorandum for Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1318&D1); Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1356&D1); Focused Feasibility Study and Environmental Assessment for Interim Action Containment of the Source of the Northwest Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1190&D2). As a result, the after condition was rated SP 4C (negligible exposure with a medium likelihood of occurrence).

Environmental Impact:
Before: No ecological risk assessment performed on the site. However, contaminants have potential to influence biota. As a result, conditions before remediation were rated EN 1A (catastrophic damage to the environment with very high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. This activity was not

rated.

After: After completion of remedial activities, the risk to the ecosystem from the Groundwater Operating Unit is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:

Before:

The Groundwater Operable Unit integrates all geologic and hydrogeologic data gathered from all investigations, guides groundwater data acquisition by the WAG investigations with the goal of identifying and remediating contamination not addressed by the major systems associated with the Northwest and Northeast Plumes. Failure to support this activity would severely hamper the effectiveness of the groundwater remediation program at PGDP by promoting a piecemeal approach to site remediation. Score MI1A

After:

By fostering an integrated remediation effort, effort can be focussed on identifying and remediating those sources that will make the largest impact. Sources that would be caught by another down gradient system could be pushed down the priority list. Score MI2D

Mortgage Reduction:

Risk - Failure to continue the integration of site data will have a significant impact on program costs. WAG investigations may be prioritized and scoped improperly and unnecessary or excessive remediation systems may be installed while other areas of greater significance are neglected. Benefit - Continuing this work package will reduce individual projects costs and reduce the number of investigations and remediation systems required by ensuring a consistent and integrated path is taken during the evaluation of source areas and contaminant migration.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0019* **Facility Code:** *PADUC* **Priority:** *84.0*

Title: *NW PLUME-CONTAINMENT*

Summary:
This project provides for development of the Record of Decision (ROD) and remedial design work plan and subsequent review of proposed plan by the public. This project at completion will install a containment system that will control development of newly contaminated water through the containment of the DNAPL source.

Evaluation Scenario:
Before:
Groundwater contaminated with TCE and its associated degradation products is currently migrating off-site toward the Ohio River via a plume located in the northwest portion of the Paducah Plant. Concentrations of TCE and its degradation products are such that an exposure risks of 1E-03 are possible via ingestion of groundwater. A water use policy has been implemented by the DOE, EPA, and the state of Kentucky that restricts use of area groundwater for drinking water and agricultural purposes. If no plume remediation occurs and the water policy is stopped, additional public groundwater wells might be installed and could become contaminated over time. In addition, there is the potential for contaminated groundwater to eventually discharge to the Ohio River. No current threat to ecological receptors has been identified.

During:
The water policy will remain in effect during remediation of the NW plume. Remediation of the groundwater plume will involve containment of the DNAPL. Implementation of this system will result in an additional exposure pathway: inhalation of volatile organics. Thus, the potential risk to human health will increase during the remediation.

After:
The NW Plume will be remediated and the threat to human health and the environment from TCE and its degradation products will be mitigated. As such, the risks from exposure to groundwater will be reduced significantly. However, residual risks will be present because the groundwater pump and treat system cannot completely flush all interstitial contamination from the soil matrix.

Public Health and Safety:
Before:
The contamination present in the NW Plume, TCE and its degradation products, is currently (0-1 year)

migrating away from the main plant area toward residential areas. A water use policy has been in effect and will remain so until such a time that the groundwater is considered safe for public consumption. In addition, there is the potential that the contaminant plume will at some point reach the Ohio River. Concentrations of TCE in the NW plume indicate that the risks to the public are 1E-03 and the likelihood of exposure to contaminated groundwater resulting in excessive impacts is high. Thus, a score of PS 2A was chosen.

During:
During construction and operation of the NW plume remedial action, groundwater will be brought to the surface via a series of monitoring wells to be installed. This groundwater will then be pumped to existing cooling towers within the plant where an "air stripping" process will be implemented. The likelihood of significant concentrations of volatile organics reaching public receptors is moderate. However, the result of these activities is an increase in risk to the public from the addition of an exposure pathway: inhalation of volatile organics released by the "air stripping". As such, a score of 1B was selected.

After:
After completion of remedial activities, the risk to the public from the NW plume is considered to be moderate to low-level with a likelihood of occurrence as medium. As such a score of PS 3B was chosen.

Site Personnel Safety and Health:
Before:
The contaminants of concern that are present in the NW plume are confined to groundwater. Exposure to surveillance and maintenance workers could result from direct contact with or ingestion or inhalation of volatile organics. Groundwater monitoring wells located in the plume area are surveyed and maintained by plant employees who could be exposed to current levels of TCE and its degradation products given no remedial action. These exposures could result in marginal injuries/illnesses resulting in a slight overexposure or exposure near occupational limits. Therefore, a score of SP 3A was chosen.

During:
The likelihood for overexposure or physical injury increases during characterization activities. However, the likelihood of these types of injuries/impacts are mitigated by an increased health and safety program. Thus, the score of SP 3A is still considered appropriate.

After:
Following remediation of the area the likelihood of exposure to the routine surveillance and maintenance employee decreases as the contaminants contributing to the current risk would be removed or contained. As a result, the activity was rated a SP 4C.

Environmental Impact:
Before:
The NW Plume has migrated off-site and has affected the surrounding communities. Alternative water supplies were provided for nearby residents and the water use policy was implemented. Since groundwater is considered to be a significant public resource and the contamination that is present has negated the use of that resource, a score of EN 1A was chosen.

During:

During remediation, the water use policy will remain in effect and the public will not be able to use the groundwater. Thus, the score for this activity remains a EN 1A.

After:
Subsequent to remediation, the levels of contaminants in the groundwater should be reduced to levels that are protective of human health and the environment. However, some residual risk will remain as the effectiveness of the remedial alternative is not 100%. Thus, a score of EN 3C was chosen.

Compliance:

Mission Impact:

Mortgage Reduction:
Failure to continue this project will result in a very high likelihood of having a significant impact on the DOE mission. Without containment, the plume will potentially continue to migrate and spread impacting a larger area. There will be a significant loss of investment from not capitalizing on the data collected in the Phase I and Phase II Hydrogeological Investigations and the information developed from ROD 1. Implementing this project will result in medium likelihood of having a significant cost savings in the 10-100 year timeframe since the project will result in the plume concentration decreasing and spreading will be minimized.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0020* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *NW PLUME-DISSOLVE PHASE RI/FS*

Summary:
This project provides for completion of the Baseline Risk Assessment and the development of the FS. The objective of the project is to remediate, as appropriate, the portion of the NW Plume that is located between the contaminant system and the Ohio River.

Public Health: Currently, there is no one drinking contaminated water. However, if the dissolved phase plume project is not implemented, then the dissolved phase portion of the plume will continue to be present or possibly spread and there is the low potential that an additional well will become contaminated. To that end, the Dissolved Phase Plume will continue to pose a threat of exposure to future generations. Continuing with the project will result in the remediation of the dissolved phase portion of the plume as necessary. Following remediation there will remain a low risk of exposure in the medium likelihood of occurrence.

Exposure Location: Before: Offsite After: Same

Exposure Media: Before: Groundwater After: Same

Exposure Likelihood: Before: Low After: Low

Risk Number: Before: Once water policy stopped, risks to 1E-03 possible. After: Same

COCs: Before: TCE and degradation products. After:TCE and degradation products.

Suggested Scores: 1B3C
Source Document(s):

Before: Baseline Risk Assessment and Technical Investigation Report for the Northwest Plume Dissolved Phase Plume, Paducah Gaseous Diffusion Plant (DOE/OR/07-1286&D1)

Notes: This assessment was performed considering that the PGDP Water Policy is in effect. Therefore, all exposure pathways are eliminated for a five year period. Once the PGDP Water Policy ends, exposure pathways are no longer cut and risk offsite resumes. This scoring did consider the effect of continued migration of the plume. Finally, the after score is mostly concerned with the effect this project may have

concerning protection of individuals living at the periphery of the plume. Little can be done beyond the water policy for individuals whose wells are currently in the plume beyond the water policy.

Environmental Protection: Currently, there is no one drinking contaminated water. However, if the dissolved phase plume project is not implemented, then the dissolved phase portion of the plume will continue to be present or possibly spread and there is the low potential that an additional well will become contaminated. To that end, the Dissolved Phase Plume will continue to pose a threat of exposure to future generations. Continuing with the project will result in the remediation of the dissolved phase portion of the plume as necessary. Following remediation there will remain a low risk of exposure in the medium likelihood of occurrence.

Has an ecological risk assessment been completed? Yes
If yes, were ecological impacts determined? Yes

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT:5
ECOLOGICAL EXTENT:5

DURATION or LIKELIHOOD of IMPACTS: B
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = 5B6C
SOURCE DOCUMENT: Baseline Risk Assessment and Technical Investigation Report for the Northwest Dissolved Phase Plume, Paducah Gaseous Diffusion Plant (DOE/OR/07-1286&D1)

NOTES: Score assumes failure to prevent spread of plume may result in moderately-spread impacts to herbivores and piscivores, via crop irrigation and aquaculture activities using contaminated groundwater, in 1-10 years.

Site Personnel Safety: The only site personnel that may be exposed are sampling crews. Without this action, there is a minor potential for exposure to these crews. Continuing with this action will remediate the NW Dissolved Phase Plume as appropriate. The potential for exposure will be reduced due to remediation of the plume or reduced sampling work. This is considered to be a minor exposure in the medium likelihood of occurrence.

Potential for Exposure: Before: Low After: Same

Radiation Exposure
Exposure Risk (Dose): Before: Low After: Same
Exposure Likelihood: Before: Low, water source at plant is the Ohio River. After: Same

Chemical Exposure
Exposure Level: Before: Low After: Same
Exposure Likelihood: Before: Low, water source at plant is the Ohio River. After: Same

Activities/events leading to exposure/injuries: Before: Groundwater use. After: Same

Impact Level: Before: Low After: Same

Impact Likelihood: Before: Low After: Same

Suggested Score: 9D9D
Source Document(s): Baseline Risk Assessment and Technical Investigation Report for the Northwest Plume Dissolved Phase Plume, Paducah Gaseous Diffusion Plant (DOE/OR/07-1286&D1)

Notes: This project was scored assuming groundwater use at PGDP continues as at present. If groundwater was used by the site, risks would be higher.

Stakeholder Preference: There is a significant interest in this project since it will result in remediation, as appropriate, of the dissolved phase portion of the NW Plume. After completion of the project, there is a very high likelihood that there will be minor interest in the project since the NW Dissolved Phase Plume will no longer be an issue.

Suggested Score:

Mission: Watershed

Suggested Score: 14A

Cost-effectiveness: Failure to continue this project will result in a very high likelihood of having a significant impact on the DOE mission. The Dissolved Phase Plume will potentially continue to migrate and spread impacting a larger area. There will be a significant loss of investment from not capitalizing on the data collected in the Phase I and Phase II Hydrogeological Investigations and the information developed from ROD 1. Implementing this project will result in medium likelihood of having a significant cost savings in the 10-100 year timeframe since the plume will be remediated as appropriate earlier thus minimizing the need for additional remediation due to plume migration and spreading.

Suggested Score: NA

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0021* **Facility Code:** *PADUC* **Priority:** *42.0*

Title: *NE PLUME IRA ROD #1 CONSTR/OPER*

Summary:
The objective of the project is to remediate the NE groundwater plume as required in the Record of Decision. Scope of work includes construction of the treatment facility and Operation and Maintenance.

Evaluation Scenario:
Before:
Groundwater contaminated with TCE and its associated degradation products is known to currently be migrating off-site toward the Ohio River via a plume located in the northeast portion of the Paducah Plant. Concentrations of TCE and its degradation products are such that an exposure risks of 1E-03 are possible via ingestion of groundwater. A water use policy has been implemented by the DOE, EPA, and the state of Kentucky that restricts use of area groundwater for drinking water and agricultural purposes. If no plume remediation occurs and the water policy were stopped, additional groundwater wells might be installed by the public that could become contaminated over time. In addition, there is the potential for contaminated groundwater to eventually discharge to the Ohio River. No current threat to ecological receptors has been identified.

During:
The water policy will remain in effect during remediation of the NE plume. Remediation of the groundwater plume will involve a pump and treat system. Implementation of this system will result in an additional exposure pathway: inhalation of volatile organics. Thus, the potential risk to human health will increase during the remediation.

After:
The NE Plume will be remediated and the threat to human health and the environment from the TCE and its degradation products will be mitigated. As such, the risks from exposure to groundwater will be reduced significantly. However, residual risks will be present because the groundwater pump and treat system cannot completely flush all interstitial contamination from the soil matrix.

Public Health and Safety:
Before:
The contamination present in the NE Plume, TCE and its degradation products, is currently (0-1 year) migrating away from the main plant area toward residential areas. A water use policy has been in effect

and will remain so until such a time that the groundwater is considered safe for public consumption. In addition, there is the potential that the contaminant plume will at some point reach the Ohio River. Concentrations of TCE in the NE plume indicate that the risks to the public are 1E-03 and the likelihood of exposure to contaminated groundwater resulting in excessive impact is high. Thus, a score of PS 2A was chosen.

During:
During construction and operation of the NE plume remedial action, groundwater will be brought to the surface via a series of monitoring wells scheduled to be installed. This groundwater will then be pumped to existing cooling towers within the plant where a "air stripping" process will be implemented. The likelihood of significant concentrations of volatile organics reaching public receptors is moderate. However, the result of these activities is an increase in risk to the public from the addition of an exposure pathway: inhalation of volatile organics released by the "air stripping". As such, a score of PS 1B was selected.

After:
After completion of remedial activities, the risk to the public from the NE plume is considered to be moderate to low-level with a likelihood of occurrence as medium. Score is PS 3B.

Site Personnel Safety and Health:
Before:
The contaminants of concern that are present in the NE plume are confined to the groundwater. Exposure to surveillance and maintenance workers could result from direct contact with or ingestion or inhalation of volatile organics. Groundwater monitoring wells located in the plume area are surveyed and maintained by plant employees who could be exposed to current levels of TCE and its degradation products given no remedial action. These exposures could result in marginal injuries/illnesses resulting in a slight overexposure or exposure near occupational limits. Therefore, a score of SP 3A was chosen.

During:
The likelihood for overexposure or physical injury increases during characterization activities. However, the likelihood of these types of injuries/impacts are mitigated by an increased health and safety program. Thus, the score of SP 3A is still considered appropriate.

After:
Following remediation of the area the likelihood of exposure to the routine surveillance and maintenance employee decreases as the contaminants contributing to the current risk would be removed or contained. As a result, the activity was rated a SP 4C.

Environmental Impact:
Before:
The NE Plume has migrated off-site and has affected the surrounding communities. Alternative water supplies were provided for nearby residents and the water use policy was implemented. Since groundwater is considered to be a significant public resource and the contamination that is present has negated the use of that resource, a score of EN 1A was chosen.

During:
During remediation, the water use policy will remain in effect and the public will not be able to use the

groundwater. Thus, the score for this activity remains a EN 1A.

After:
Subsequent to remediation, the levels of contaminants in the groundwater should be reduced to levels that are protective of human health and the environment. However, some residual risk will remain as the effectiveness of the remedial alternative is not 100%. Thus, a score of EN 3C was chosen.

Compliance:

Mission Impact:

Mortgage Reduction:
Before:
The NE Plume will potentially continue to migrate and spread impacting a larger area. There will be a significant loss of investment from not capitalizing on the data collected in the Phase I, Phase II, and Phase IV Hydrogeological Investigations, score MR2A.

After:
Implementing this project will result in high likelihood of having a moderate cost savings since the plume will be remediated as appropriate earlier thus minimizing the need for additional remediation due to plume migration and spreading, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0024* **Facility Code:** *PADUC* **Priority:** *131.0*

Title: *WAG 17 RFI (CONCRETE RUBBLE PILES)*

Summary:
This project is a Remedial Investigation (RI) of WAG 17, consisting of 37 separate SWMUs located outside the security fence consisting of concrete rubble.

Evaluation Scenario:
Before:
This project is a remedial investigation of 37 separate SWMUs that are located outside of the security fence at Paducah. Each of these SWMUs is a concrete rubble pile that is contaminated with various radionuclides, PCBs, and metals. Data that is available for these areas indicates that under current conditions the risk to public health and the environment could be excessive. Because these rubble piles are located outside of the security fence, public access is a current possibility. Media of interest for this investigation are soil, surface water, sediment, and rubble.

During:
Characterization and the subsequent remedial actions to be undertaken should not result in any appreciable change in the risks to the public or site personnel.

After:
Remediation of these SWMUs will result in a decrease in the risk to the public and site personnel as the source of contaminants will be removed.

Public Health and Safety:
Before:
The SWMUs that comprise WAG 17 are located outside of the security fence, therefore, exposure to contamination by the public resulting in adverse/excessive health effects is probable under current conditions. The contamination present is not considered to be migrating from the various SWMUs, but is considered to be localized. Thus, a score of PS 2A was chosen.

During:
The risk to the public will not be affected by the characterization and subsequent remedial activities to be undertaken. Therefore, the score will remain a PS 2A.

After:

The remedial activities to be undertaken will remove or address any contamination detected at levels that would result in adverse exposure. The risk to the public will significantly decrease after implementation of the selected alternative. Thus, a score of PS 3D was chosen.

Site Personnel Safety and Health:

Before:

The contaminants of concern that are present at these SWMUs are believed to be present in soil, surface water, sediment, and rubble. Exposure to surveillance and maintenance workers could result from direct contact with or ingestion or inhalation of these media. These SWMUs are surveyed and maintained by plant employees who could be exposed to current levels of hazardous contamination given no remedial action. These exposures could result in marginal injuries/illnesses resulting in a slight overexposure or exposure near occupational limits. Therefore, a score of SP 3A was chosen.

During:

The likelihood for overexposure or physical injury for a sampler generally increases during characterization activities. However, these types of injuries/impacts are mitigated by an increased health and safety program. Thus, a score of SP 3A was chosen.

After:

Following remediation of the area the likelihood of exposure to the routine surveillance and maintenance employee decreases as the contaminants contributing to the current risk would be removed or contained. As a result, the activity was rated a SP 4C.

Environmental Impact:

Available data suggest that current (before) conditions pose little risk in this category. The planned activity could result in the identification and removal of isolated sources of risk, thereby further reducing risks.

Compliance:

Mission Impact:

Before:

The funding of this project on the established schedule could be deferred for 1 year without adversely impacting the Oak Ridge "2010 Vision", a score of MI1B was assigned.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

The planned activity will adequately address pertinent environmental issues consistent with the overall DOE/Oak Ridge Mission. Failure to perform the activity will not.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0043* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *C-400-C NICKEL STRIPPER*

Summary:
Complete the RCRA Closure of the C-400-C Nickel Stripper per the approved closure plan. Activities will include construction and removal of a decontamination facility, installation of a change house, scarifying and repair of existing concrete floor, removal, segregation, and dismantlement of existing process equipment, and all required waste management activities. Contaminants: Radionuclides

Regulatory Issues/Drivers: RCRA Part B Permit # KY8-890-008-982

Milestones/Scheduled Accomplishments: Upon approval of the clousre plan by KDEP

Public Health:

Exposure Location: Onsite (enclosed)

Exposure Media: None

Exposure Likelihood: None

Risk Number: None

COCs: Radionuclides

Suggested Scores: NA
Source Document(s): Project Prioritization Data Sheet

Notes: This is a closure of an area within the C-400 Building.

Environmental Protection:

Has an ecological risk assessment been completed?
If yes, were ecological impacts determined?

EXTENT or LEVEL of IMPACT/EXPOSURE:

SPATIAL EXTENT:
ECOLOGICAL EXTENT:

DURATION or LIKELIHOOD of IMPACTS:
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = NA
SOURCE DOCUMENT:
NOTES:

Site Personnel Safety: These units are located in a radiological contaminated area where site personnel perform work. Decontamination of the facility would remove contaminants thereby eliminating the potential for any exposure.

Potential for Exposure: Before: Moderate After: Low

Radiation Exposure
Exposure Risk (Dose): Before: Unknown, but Level C PPE is required to enter area. After: Low
Exposure Likelihood: Before: Moderate After: Low

Chemical Exposure
Exposure Level: Before: Unknown After: Low
Exposure Likelihood: Before: Moderate After: Low

Activities/events leading to exposure/injuries: Before: Work in area; unauthorized access After: Same

Impact Level: Before: Moderate (Level C PPE required) After: Low

Impact Likelihood: Before: Moderate After: Low

Suggested Score: 8A9A
Source Document(s): Project Prioritization Data Sheet

Notes: The decontamination of the facility is to "eliminate any potential for exposure." If this is true, then the after score may be lower.

Stakeholder Preference:

Suggested Score:

Mission:

Suggested Score: NA

Cost-effectiveness: This project is associated with the C-409 closure and not performing both closures concurrently would increase the cost of the closure.

See 409 Pilot Plant.

Suggested Score: 16A

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0044* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *C-409 PILOT PLANT*

Summary:
Complete the RCRA Closure of the C-409 Pilot Plant per the approved closure plan. Activities will include construction and removal of a decontamination facility, installation of a change house, scarifying and repair of existing concrete floor, removal, segregation, and dismantlement of existing process equipment, and all required waste management activities. Contaminants: TCA, Waste Oils, Lacquer thinner, mineral spirits, TCE, PCBs, and radionuclides.

Regulatory Issues/Drivers: RCRA Part B Permit # KY8-890-008-982

Milestones/Scheduled Accomplishments: Upon approval of the clousre plan by KDEP field work will be initiated.

Public Health:

Exposure Location: Onsite (Inside building)

Exposure Media: None

Exposure Likelihood: Low

Risk Number: None

COCs: Trichloroethane, waste oils, lacquer thinner, mineral spirits, trichloroethene, PCBs, and radionuclides.

Suggested Scores: NA NA
Source Document(s): Project Prioritization Data Sheet

Notes: This is a closure of an area within a building. If releases to environment, then before risk may be 2C or 3C depending on concentrations of materials in environmental media; however, after score would equal before score because this project does not address environmental media.

Environmental Protection:

Has an ecological risk assessment been completed?
If yes, were ecological impacts determined?

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT:
ECOLOGICAL EXTENT:

DURATION or LIKELIHOOD of IMPACTS:
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = NA
SOURCE DOCUMENT:
NOTES:

Site Personnel Safety: These units are located in a radiological contaminated area where site personnel perform work. Decontamination of the facility would remove contaminants thereby eliminating the potential for any exposure.

Potential for Exposure: Before: Moderate After: Low
Radiation Exposure
Exposure Risk (Dose): Before: Unknown, this is a rad site. After: Low
Exposure Likelihood: Before: Moderate After: Low

Chemical Exposure
Exposure Level: Before: Unknown, a variety of chemicals are present After: Low
Exposure Likelihood: Before: Moderate After: Low

Activities/events leading to exposure/injuries: Before: S & M activities; unauthorized access After: Same

Impact Level: Before: Moderate, Level C PPE required in area. After: Low

Impact Likelihood: Before: Moderate After: Low

Suggested Score: 8A9D
Source Document(s): Project Prioritization Data Sheet

Notes: If releases to environment occurred before score would not be affected because levels would not require PPE.

Stakeholder Preference:

Suggested Score:

Mission:

Suggested Score: NA

Cost-effectiveness: This project is associated with the C-400-C closure and not performing both closures concurrently would increase the cost of the closure.

Note: Fines of $25,000.00 per day for cost consideration. Cheaper on mobilization cost if this is done with the C-400-C Nickel Stripper project.

Suggested Score: 16A

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0045* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *PGDP RESIDENTS WATER*

Summary:
PROJECT SCOPE: This project provides for payment of monthly water bills for residents covered by the DOE Water Policy.

Public Health: This project consists of supplying water to residents impacted by the groundwater contamination.

Exposure Location:

Exposure Media:

Exposure Likelihood:

Risk Number:

COCs:

Suggested Scores: 1A3D
Source Document(s):

Notes: This is similar to DOE Water Policy Implementation (ER94F0014) except time limit on water policy (i.e., 5 years) not considered. Therefore, the before score is the same and the after score is lower. See DOE Water Policy Implementation for rationale and data.

Environmental Protection: This project consists of supplying water to residents impacted by the groundwater contamination.

Exposure Location:

Exposure Media:

Exposure Likelihood:

Risk Number:

COCs:

Suggested Scores: 1A3D
Source Document(s):

Notes: This is similar to DOE Water Policy Implementation (ER94F0014) except time limit on water policy (i.e., 5 years) not considered. Therefore, the before score is the same and the after score is lower. See DOE Water Policy Implementation for rationale and data.

Site Personnel Safety:

Potential for Exposure:

Radiation Exposure
Exposure Risk (Dose):
Exposure Likelihood:

Chemical Exposure
Exposure Level:
Exposure Likelihood:

Activities/events leading to exposure/injuries:

Impact Level:

Impact Likelihood:

Suggested Score: 9AA
Source Document(s):

Notes:This is similar to DOE Water Policy Implementation (ER94F0014). Therefore, it was scored the same. See DOE Water Policy Implementation for rationale and data.

Stakeholder Preference: There is a high stakeholder interest in this project since it provides water for residents impacted by the groundwater contamination.

Suggested Score:

Mission: Continuity - accelerate schedules of many RFIs.

Suggested Score: 13A

Cost-effectiveness: See the DOE Water Policy Implementation project.

Suggested Score: 16A

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94F0048* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *WELL ABANDONMENT*

Summary:
Project Scope: This work package would provide for the mobilization of a drilling subcontractor, abandonment of up to 10 monitoring wells and demobilization of the subcontractor. These services would be required on an urgent basis and would be in response to demands by state regulatory agencies.

Regulatory Issues/Drivers: State and federal law require that unused or improperly constructed wells be abandoned. EPA regulations, 40 CFR 264.92 - 264.99 require the implementation of an effective groundwater monitoring program. Kentucky regulation 401 KAR 6:310, Section 13, paragraph 6, requires monitoring wells to be abandoned within 30 days of the last sampling date or the determination is made that the monitoring well is unsuitable for use as a monitoring well. Failure to do so will result in a Notice of Violation.

Milestones/Scheduled Accomplishments:

Public Health: Risk - Failure to properly abandon damaged or improperly constructed wells could result in cross-contamination of aquifers and jeopardize residential water supplies. Benefit - Proper maintenance and timely abandonment of substandard or damaged wells will reduce the possibility of cross-contamination.

Exposure Location: Before: Future onsite and offsite After: None

Exposure Media: Before: Groundwater After: None

Exposure Likelihood: Before: High After: None

Risk Number: Before: Unknown, however if not implemented risks from contaminant migration down improperly abandoned wells may be significant. After: None

COCs: Before: Variety of chemicals, metals, and radionuclide contaminants After: None

Suggested Scores: 3BD
Source Document(s): Project Prioritization Data Sheet

Notes: This is a qualitative assessment.

Environmental Protection: Risk - Failure to properly abandon damaged or substandard wells could result in contamination of other geologic horizons and result in further degradation of the environment. Benefit - Proper and timely abandonment of damaged or substandard wells will reduce the inadvertent spread of contamination to previously uncontaminated horizons or surface media.

Has an ecological risk assessment been completed? No
If yes, were ecological impacts determined?

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT: 6
ECOLOGICAL EXTENT: 6

DURATION or LIKELIHOOD of IMPACTS: B
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = 6B6C
SOURCE DOCUMENT: WPPF

NOTES: Potential localized impacts to herbivores via crop irrigation using contaminated groundwater. Score is Comparable to score for the Northwest Plume, but assumes use of less contaminated groundwater at the periphery of the plume.

Site Personnel Safety:

Potential for Exposure: Before: High After: Same

Radiation Exposure
Exposure Risk (Dose): Before: Unknown After: Same
Exposure Likelihood: Before: High After: Same

Chemical Exposure
Exposure Level: Before: Unknown After: Same
Exposure Likelihood: Before: High After: Same

Activities/events leading to exposure/injuries: Before: Well sampling After: Well sampling

Impact Level: Before: Unknown, should be low with short duration exposure during sampling After: Same, well sampling will still occur in wells not abandoned.

Impact Likelihood:HighHigh

Suggested Score:9AA
Source Document(s):Project Prioritization Data Sheet

Notes:This is a qualitative assessment.

Stakeholder Preference: Risk - Failure to maintain an effective monitoring network jeopardizes stakeholder trust. Data collected from substandard or damaged wells are not defensible and cast a shadow on the validity of other data. Benefit - Proper and timely abandonment of damaged or substandard wells will improve stakeholder confidence in the quality and effectiveness of the program.

Suggested Score:

Mission: Risk - Use of data from substandard or damaged wells to plan investigations and remediation could result in improper design of the project. The result would be a project that did not meet the reality of the situation and either cost too much or not fully address the problem. Benefit - Eliminating sources of questionable data improves the basis for project design.

Suggested Score: NA

Cost-effectiveness: Risk - Regulatory penalties and faulty project design based on bad monitoring well data could cause significant program costs. Benefit - Timely and proper abandonment of damaged or substandard wells will eliminate regulatory penalties and prevent faulty project design based on questionable data.

Fines and penalty note.

Suggested Score: NA

NOTE: THERE WAS NOT A CHANGE IN SCOPE FOR THIS PROJECT (JUNE '95).

SITE:Paducah Gaseous Diffusion Plant
ERPP TITLE:Well Abandonment (ER94F0048)
BEFOREAFTER
PUBLIC HEALTH

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0049* **Facility Code:** *PADUC* **Priority:** *95.0*

Title: *PGDP RA ROUTINE S&M*

Summary:
This project covers all Routine Surveillance and Maintenance conducted on Remedial Action Facilities at PGDP. Activities include vegetation and lawn maintenance, routine inspections, and routine sampling of groundwater if necessary.

Evaluation Scenario:
Before:
If the activities described in the RDS summary are not performed, areas will not be maintained and monitored. Releases from contaminated sites may occur.

During:
During project implementation, all inspections, maintenance activities, and related activities will be performed to help mitigate the releases from contaminated sites through early detection and interim measures.

After:
After project completion, areas that necessitate surveillance and maintenance will help to reduce releases from contaminated areas.

Public Health and Safety:
Before:
Not maintaining and providing surveillance of contaminated sites as described in the RDS summary can potentially cause excessive exposure to the off-site public in the time frame of 1 to 10 years. Releases of contamination can occur which may impact the public located nearby. Score is PS 2B.

During:
Implementation of this project will ensure protection of public health and safety. The risk to the public would be low, and the probability of occurrence is < 0.01/year. By monitoring areas and maintaining inspection programs, any impacts will be reduced through early detection and interim measures. Score is PS 3C.

After:
Implementation of this project will ensure protection of the public health and safety. Risk to the public

will be low. Score is PS 3C.

Site Personnel Safety and Health:

Before:

Not maintaining and providing surveillance of contaminated sites can potentially cause an impact to site personnel. The impact of the exposure/physical hazards would be catastrophic in nature and could involve permanent total disability, chronic or irreversible disability, extreme overexposure, or death. The likelihood of occurrence is in 1 to 10 years. Score is SP 1B.

During:

During the performance of activities listed in the RDS summary description, remedial workers will be adequately protected under a health and safety program. Physical hazards associated with the performance of work will be marginal. The probability of occurrence will be < 0.01/year. Activities near rubble piles do present physical hazards (e.g., falls). Score is SP 3C.

After:

If the activities listed in the RDS summary description are performed, areas will be properly maintained, inspections will continue, and risk and physical hazards to workers will be negligible. Score is SP 4C.

Environmental Impact:

Before:

Similar to the public health impacts for this project, not maintaining the contaminated areas can potentially have significant damage to the environment in 1 to 10 years; this impact could be localized and long-term or widespread and short-term depending on the type of contamination released. Score is EN 2B.

During:

During project implementation, activities will continue, and monitoring activities will be performed. Minor or moderate damage to the environment is expected to occur. Probability of occurrence is < 0.01/year. Any impacts will be reduced through early detection and interim measures. Score is EN 3C.

After:

After project implementation, impacts to the environment will be minor. Erosion control will be maintained, vegetation maintenance will continue, and monitoring activities will be performed. Score is EN 3C.

Compliance:

Mission Impact:

Before:

The funding of this project on the established schedule is critical to accomplish the Oak Ridge "2010 Vision" so a score of MI1A was assigned.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0057* **Facility Code:** *PADUC* **Priority:** *27.0*

Title: *WAG 6 RFI*

Summary:
This project will include characterization to determine nature and extent of possible contamination associated with the SWMUs in this WAG. After characterization remedial methods will be evaluated and selected. This WAG consists of SWMU 11 C-400 TCE Leak Site, SWMU 26 C-400 to C-404 Underground Transfer Line, SWMU 40 C-403 Neut. Pit, SWMU 47 C-400 Technetium Storage Tank Area, and SWMU 203 C-400 Sump.

Evaluation Scenario:
Before: WAG 6 contains five solid waste management units (SWMUs): SWMU 11 C-400 TCE Leak Site, SWMU 26 C-400 to C-404 Underground Transfer Line, SWMU 40 C-403 Neutralization Pit, SWMU 47 C-400 Technetium Storage Tank Area, and SWMU 203 C-400 Sump. Contaminated onsite soil and groundwater are of concern because they probably contaminate offsite groundwater. This project was scored as if the Paducah Gaseous Diffusion Plant (PGDP) Water Policy is not in effect because WAG 6 is a primary source of offsite groundwater contamination at the PGDP.

During: Remedial activities to mitigate exposures to contaminants will increase the potential for exposure during remedial activities for both human and ecological receptors at or near the area being remediated. Remedial activities are not expected to increase the potential for receptors to be exposed to contaminants outside the DOE boundary.

After: Reduction of contaminant concentrations in remediated media will significantly decrease potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from WAG 6 are low for onsite and high offsite exposure. The Site Investigation concluded that WAG 6 is a primary source of offsite groundwater contamination. Soil and groundwater are the media of concern. Contaminants of concern in soil include arsenic, PAHs, manganese, and vanadium. Contaminants of concern in groundwater include trichloroethene and degradation products, other volatile organic compounds, and technetium-99. Risks were not calculated for residential onsite use. Risks for workers exposed to soil are as follows (Residential risk would be higher.) The excess lifetime cancer risk to workers exposed to radionuclides is 1E-05. The excess lifetime cancer risk to workers exposed to

chemicals is 4E-05 and the hazard index is < 0.1. Risks from ingestion of groundwater are estimated using preliminary remediation goals. TCE concentrations to 890 mg/kg in the upper continental recharge system and 360 mg/kg in regional gravel aquifer results in excess lifetime cancer risk of >1E-02 for both. Technetium activities to 1,735J pCi/l in the regional gravel aquifer results in an excess lifetime cancer risk of 5E-05 from exposure to radionuclides. This information is presented in Work Plan for Phase I of the WAG 6 Remedial Investigation: Industrial Hydrogeologic Study at the Paducah Gaseous Diffusion Plant, Paducah. Kentucky (DOE/OR/07-1406&D1); Integrated Remedial Investigation/Feasibility Study Work Plan for Waste Area Grouping 6 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1243&D2); Results of the Public Health and Ecological Assessment at the Paducah Gaseous Diffusion Plant, Paducah Kentucky (KY/SUB/13B-97777C P-03/1991/1); and Northeast Plume Preliminary Characterization Summary Report (DOE/OR/07-1339&D2). As a result, the before condition was rated PS 2A (excessive exposure with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals from WAG 6 may increase during remediation. However, risk to offsite receptors would probably remain the same due to health and safety programs. This evaluation considers control of migration from the source only. As a result, this activity was rated PS 2A (excessive exposure with very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from WAG 6 are expected to be low after the site has been remediated. However, exposures are expected to remain the same as before for groundwater. Exposures for soil will be lower because soil can be addressed. As a result, the after condition was rated PS 3C (moderate to low-level exposure with medium likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential and likelihood for exposure to chemicals and radiation from WAG 6 by general workers and maintenance workers are low because areas are controlled. Groundwater sampling activities are the events that could lead to exposures or injuries or both. Note that SWUM 47, C-400, is an exclusion area and requires Level C personnel protective equipment when working on utility lines near this unit due to contamination from this unit. Risks for workers exposed to soil is as follows. The excess lifetime cancer risk to workers exposed to radionuclides is 1E-05. The excess lifetime cancer risk to workers exposed to chemicals is 4E-05 and the hazard index is < 0.1. Risks from ingestion of groundwater are estimated using preliminary remediation goals. TCE concentrations to 890 mg/kg in the upper continental recharge system and 360 mg/kg in regional gravel aquifer results in and excess lifetime cancer risk of >1E-02 for both. Technetium activities to 1,735J pCi/l in the regional gravel aquifer results in rad excess lifetime cancer risk of 5E-05. This information is presented in Work Plan for Phase I of the WAG 6 Remedial Investigation: Industrial Hydrogeologic Study at the Paducah Gaseous Diffusion Plant, Paducah. Kentucky (DOE/OR/07-1406&D1); Integrated Remedial Investigation/Feasibility Study Work Plan for Waste Area Grouping 6 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1243&D2); Results of the Public Health and Ecological Assessment at the Paducah Gaseous Diffusion Plant, Paducah Kentucky (KY/SUB/13B-97777C P-03/1991/1); and Northeast Plume Preliminary Characterization Summary Report (DOE/OR/07-1339&D2). The before condition was rated SP 3A (marginal injuries/illnesses with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals from WAG 6 may increase for onsite receptors during remediation. However, the likelihood of these types of injuries or illnesses will be mitigated by
an increased health and safety program. Evaluation considers action that addresses surface soil contamination such as soil removal or caps. As a result, this activity was rated SP 2A (critical - injuries/illnesses with very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from WAG 6 are expected to be low after the site has been remediated. As a result, the after condition was rated SP 4C (negligible exposure with medium likelihood of occurrence).

Environmental Impact:
Before: No ecological risk assessment has been performed for WAG 6. However, contaminants may have potential to influence biota. As a result, conditions before remediation were rated EN 1A (catastrophic damage to the environment with very high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the
ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 2B (significant damage to the environment with high likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem from WAG 6 is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:
Before:
By not implementing or delaying WAG 6, the priorities identified within the Site Management Plan would not be met. Specifically, the WAG 6 project pertains to the investigation of suspected sources of off-site contamination, score MI1A.

After:
Site Management Plan would be met, score MI2D.

Mortgage Reduction:
Before:
The WAG 6 Phase I - Industrial Study will be completed and information would be ready for incorporation into the WAG 6 RI/FS work plan. If WAG 6 was not implemented, some costs associated with the C-400 study would not be recovered; additionally, some cost associated with work plan development would not be recovered, score MR2A.

After:
Score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94F0058* **Facility Code:** *PADUC* **Priority:** *56.0*

Title: *WAGS 1 & 7 RI/FS*

Summary:
This project will prepare the Remedial Investigation (RI) Report on the nature and extent of contamination discovered during the conduct of the RI Work Plan fieldwork on WAG 1 (consisting of 3 SWMUs located inside the security fence) and WAG 7 (consisting of 5 underground storage tanks, an inactive sanitary landfill that has received an NOV, and 3 SWMUs associated with the former Kentucky Ordinance Works, all located outside the security fence and accessible by the general public). The fieldwork was conducted between December 1993 and June 1994. Development and issuance of the FS, PP, ROD and remedial design and action are also part of the scope.

Evaluation Scenario:
Before: WAGS 1 & 7 consists of 11 solid waste management units or other units. These units are designated units 94, 95, 157, 8, 38, 100, 136, 131, 132, 133, and 134. These units include solid waste management units located inside the security fence and underground storage tanks located outside the security fence.

During: Remedial activities to mitigate exposures to contaminants will increase the potential for exposure during remedial activities for both human and ecological receptors at or near the area being remediated. Remedial activities may also increase the potential for receptors to be exposed to contaminants outside the DOE boundary.

After: Reduction of contaminant concentrations in remediated media will significantly decrease potential for exposure. However, some residual risk will remain because it is not possible to clean up contaminants to levels below that which they are present in the surrounding (natural) environment.

Public Health and Safety:
Before: The potential and likelihood for exposure to chemicals and radiation from the WAGS 1 & 7 are high for onsite exposure and high for offsite exposure. Media of concern include soil, sediment, groundwater, surface water, and biota. Contaminants of concern (COCs) were selected using most recent EPA Region 4 guidance which directs selecting COCs within use scenarios. COCs are listed for each unit by media.

Unit 94 - COCs in soil in Unit 94 include arsenic, beryllium, benzo(a)pyrene, thorium-228, and uranium-

238. COCs in surface water in the creek in Unit 94 include arsenic and beryllium in sediment and uranium-234. No use scenarios (ECR>1E-04 or HI>1) were identified for the marsh in Unit 94 and for the headwall in Unit 94. Therefore, no COCs were selected for the marsh or headwall.

Unit 95 - COCs in soil in Unit 95 include arsenic, beryllium, plutonium-239, thorium-228, thorium-230, and uranium-238.

Unit 157 -COCs in groundwater include arsenic, beryllium, n-nitroso-di-n-propylamine, pentachlorophenol, thorium-228, uranium-238 in soil; uranium-234 and uranium-238.

Unit 8 - COCs in surface water in the creek include manganese, antimony, and vanadium. COCs in soil and groundwater include arsenic, beryllium, manganese, nickel, 1,1-dichloroethene, 1,2-dichloroethene, trichloroethene, benzo(a)pyrene, neptunium-237, thorium-228, thorium-230, uranium-234, uranium-235, and uranium-238.

Unit 38 - COCs in sediment in ditch 1 include beryllium. In ditch 2, no COCs were selected because no use scenario (ECR>1E-04 or HI>1) was identified. COCs in soil and groundwater in Unit 38 include arsenic, barium, beryllium, manganese, methylene chloride, Aroclor 1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, neptunium-237, thorium-228, uranium-235, and uranium-238.

Unit 100 - COCs in sediment in ditch 1 include arsenic and beryllium and COCs in sediment in ditch 2 include arsenic and beryllium. COCs in soil and groundwater in Unit 100 include arsenic, barium, beryllium, manganese, bis(2ethylhexyl)phthalate, thorium-228.

Unit 136 - COCs include arsenic, barium, beryllium, manganese, and trichloroethene.

Unit 130 - No COCs were selected for Unit 130 because no use scenario (ECR>1E-04 or HI>1) was identified.

Unit 131 - No COCs were selected for Unit 130 because no use scenario (ECR>1E-04 or HI>1) was identified.

Unit 132 - No COCs were selected for Unit 130 because no use scenario (ECR>1E-04 or HI>1) was identified.

Unit 133 - No COCs were selected for Unit 130 because no use scenario (ECR>1E-04 or HI>1) was identified.

Unit 134 - No COCs were selected for Unit 130 because no use scenario (ECR>1E-04 or HI>1) was identified.

The primary pathway driving risk values is dermal contact with metals in soils in several cases. However, this may not be realistic. Metals in soil are not screened against background concentrations because these were not available at the time the draft risk assessment was performed. Preliminary indications are that screening against soil background will reduce soil risks. Risks and hazard indices (HI's) in media for current and future recreational use are listed for each unit. The values are from a D0 document; some values may change during document revision.

Unit 94 - Risk from soil is <1E-06 and HI = 0.4, risk from sediment in the marsh is 9.5E-05 and HI = 0.2, risk from surface water in the creek is 2E-04 and HI = 0.1, risk at the headwall is 7E-05 and HI <0.1.

Unit 95 - Risk is <1E-06 and HI <0.1.

Unit 157 - Risk is <1E-06 and HI <0.1.

Unit 8 - Risk from surface water in the creek is 2E-04 and HI=120. Risk from sediment in ditch 1 is 2E-04 and HI =0.8.

Unit 38 - Risk from sediment in ditch 2 is 7E-05 and HI <0.1. Risk from ingestion of venison is <1E-06 and HI <0.1.

Unit 100 - Risk from sediment in ditch 1 is 1E-04 and HI = 0.2. Risk from sediment in ditch 2 is 1E-04 and HI <0.1. Risk from ingestion of venison is <1E-06 and HI <0.1.

Units 130, 131, 132, 133, and 134 - Risks in units 130, 131, 132, 133, and 134 are less than <1E-06; hazard indices are not available for these units.

Unit 136 - Risk from ingestion of venison is <1E-06 and HI <0.1.

Risks to future residents (adults) and hazard indices for children (HI's) in media are listed for each unit.

Unit 94 - Risks is 1.4E-03 and HI = 0.7.

Unit 95 - Risk is 1.1E-03 and HI = 0.7.

Unit 157 - Risk is 7E-03 and HI = 5.1.

Unit 8 - Risk from soil and groundwater is 3E-03 and HI = 980.
Unit 38 - Risk from soil and groundwater is 1E-03 and HI = 111.

Unit 100 - Risk from soil and groundwater is 6E-04 and HI = 46.

Units 130, 131, 132, and 134 - Risks in units 130, 131, 132, 133, and 134 are less than <1E-06; hazard indices are not available for these units.

Unit 133 - Risk is 9E-06 and HI is not available.

Unit 136 - Risk is 2E-04 and HI = 217.

This information is presented in Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Waste Area Groupings 1 and 7 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1404&D0); Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Kentucky Ordnance Works Solid Waste Management Units 94, 95, and 157 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1404&D0. As a result, the before condition was rated PS 2A (critical injuries/illnesses resulting in permanent or

partial disability with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals and from WAGS 1 & 7 may increase during remediation. However, risk to offsite receptors would probably remain the same due to health and safety programs. As a result, this activity was rated PS 2A (critical injuries/illnesses resulting in permanent or partial disability with very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from WAGS 1 & 7 are expected to be low after the site has been remediated. Contaminants of concern are not expected, except SWMU 8 where preventing releases to ground and surface water may be difficult. Additional information is presented in Feasibility Study/Corrective Measures Study Workplan for Waste Area Groups 1 and 7 and Kentucky Ordnance Works Solid Waste Management Units 94, 95, and 157 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/06-1320&D1). As a result, the after condition was rated PS 3C (moderate to low-level exposure with a medium likelihood of occurrence).

Site Personnel Safety and Health:

It is important that the reader distinguish between potential receptors (i.e., general employee versus a remedial worker) under this category.

Before: The potential for exposure by general workers and maintenance workers is high because some units are controlled but not fenced. The likelihood for exposure to chemicals and radiation from WAGS 1 & 7 by general workers and maintenance workers are moderate because the units are controlled. Unauthorized access is the event that could lead to exposures or injuries or both. Excess lifetime cancer risks to current workers due to external exposure to radiation are listed below for each unit. These values are taken from a draft document.

Unit 8 - Risk from surface water in the creek is <1E-06. Risk from soil is 1E-05.

Unit 38 - Risk from sediment in ditch 1 is <1E-06. Risk from sediment in ditch 2 is <1E-06 1E-05.

Unit 100 - Risk from sediment in ditch 1 is <1E-06 and risk from sediment in ditch 2 is <1E-06 and risk from soil is at Unit 100 is 1E-06 .

Units 136, 130, 131, 132, 133, 134 all have risks <1E-06.

Excess lifetime cancer risks and hazard indices for current workers due to chemicals are listed below for each unit. All values are for a current worker; future worker risks are higher if groundwater ingestion is assumed. Much of the chemical risk is from the dermal contact route. Values calculated for this route may not be realistic. These values are taken from a draft document.

Unit 8 - Risk from sediment in the creek is 2E-05 and HI = 6. Risk from soil is 7E-05 and HI <0.1.

Unit 38 - Risk from sediment in ditch 1 is 4E-05 and HI = 0.2. Risk from sediment in ditch 2 is 1E-05 and HI <0.1. Risk from soil is 5E-05 and HI <0.1.

Unit 100 - Risk from sediment in ditch 1 is 2E-05 and HI = 0.2. Risk from sediment in ditch 2 is 2E-05 and

HI <0.1. Risk from soil in Unit 100 is 8E-06 and HI <0.1.

Units 130, 131, 132, 133, and 134 - Risks are <1E-06 and HI are not available for these units.

Unit 136 - Risk is <1E-06 and HI <0.1.

The Kentucky Ordnance Works sites are not included because these are not currently industrial areas. Additional information is available in Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Waste Area Groupings 1 and 7 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1404&D0); Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report for Kentucky Ordnance Works Solid Waste Management Units 94, 95, and 157 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/OR/07-1404&D0. The before condition was rated SP 3A (marginal injuries/illnesses with very high likelihood of occurrence).

During: The potential and likelihood for exposure to chemicals from WAGS 1 & 7 may increase for onsite receptors during remediation. However, the likelihood of these types of injuries or illnesses will be mitigated by an increased health and safety program. This evaluation considers action that removes soil or caps the unit. As a result, this activity was rated SP 3A (marginal - injuries/illness with a very high likelihood of occurrence).

After: The potential and likelihood for exposure to chemicals from the WAGS 1 & 7 are expected to be low after the site has been remediated. As a result, the after condition was rated SP 4C (Negligible exposure with a medium likelihood of occurrence).

Environmental Impact:

Before: No ecological risk assessment has been performed for WAGS 1 & 7. However, contaminants may have potential to influence biota. As a result, conditions before remediation were rated EN 1A (catastrophic damage to the environment with very high likelihood of occurrence).

During: The risk of ecologic impact could increase during remedial activities due to excavation and removal that could increase bioavailability of contaminants. However, these potentially negative effects on the ecosystem would be restricted in geographic and temporal extent. Therefore, this activity was rated EN 1A (catastrophic damage to the environment with very high likelihood of occurrence).

After: After completion of remedial activities, the risk to the ecosystem from WAGS 1 & 7 is expected to be low. Therefore, the after condition was rated EN 3C (minor to moderate damage to the environment with medium likelihood of occurrence).

Compliance:

Mission Impact:

Before:

746K is on creek bank and releases to surface. Has been on NOV in past, score MI1B.

After:

The schedule will be met, a score of MI2D was assigned.

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R94H0052* **Facility Code:** *PADUC* **Priority:** *206.0*

Title: *WAG 15 RFI*

Summary:
This project will include the characterization to determine the nature and extent of possible contamination associated with the SWMUs in this WAG. After characterization remedial methods will be evaluated and selected. Remedial actions will be implemented. This WAG consists of 4 SWMUs: SWMU 24 C-750-D Underground Storage Tank, SWMU97 C-601 Diesel Spill, SWMU 139 C-746-A1 UST and SWMU 140 C-746-A2 UST. These units are suspected sources of on-site contamination.

Evaluation Scenario:
Before:
The purpose of the WAG 15 RFI is to determine the nature and extent of possible contamination associated with the following solid waste management units: SWMU 24, C-750-D Underground Storage Tank; SWMU 97, C-601 Diesel Spill; SWMUs 139 and 140, C-746 and C-746-A2 Underground Storage Tanks. These SWMUs were combined into one Waste Area Grouping because the contaminants of concern associated with each are the same and the potential remedial alternative will likewise be the same or similar. Contaminants associated with these SWMUs include PCBs, PAHs, chloroform, metals, and Tc-99. These SWMUs are located within the main plant boundary and are not considered to be accessible by the public. The contamination that is present is assumed to be limited to surficial soils and is not migrating away from the area. Thus, only direct exposure pathways are considered to be complete. Since these SWMUs are located within the main plant area, impact to the environment is considered to be negligible and the probability of any impact to the environment is considered to be low. A site investigation has been conducted on this area the results of which are contained in KY/SUB/13B-97777C P-03/1991/1.

During:
As previously stated, the primary objective of this activity is to further define the nature and extent of contamination present. These sampling and analysis activities should not result in an increased risk to site personnel or the public.

After:
Subsequent to the preparation of a report outlining the findings of the proposed activity, a determination as to the appropriate remedial action to be undertaken will be made. The result of any remedial action will be a decrease in the risk to human health.

Public Health and Safety:

Before:

Based on the location of the SWMUs, the health and safety of the off-site public are not directly threatened currently. The primary risk driver for this activity is the potential for future on-site exposure to surface soil contamination. The probability or likelihood that contamination is currently migrating off-site is low. If no remediation were to occur and individuals were allowed access to the area at some point in the future (i.e., 10-100 years) then the concentrations of contaminants present would be high enough to result in excessive exposure or injury. Thus, a score of PS 2C was chosen.

During:

The primary objective of this activity is to further characterize the SWMUs and determine the appropriate remedial actions to be undertaken, if any. The risk to the public during this characterization effort would remain the same. Thus, the activity was rated a PS 2C.

After:

Following the characterization and subsequent remediation of the SWMUs the likelihood of exposure decreases as the majority of the contaminants currently contributing to the excessive risk would be removed or contained. However, the residual risk that is associated with previous releases as well as the source materials that could still be present could result in a moderate to low-level exposure at some point in the future (i.e., >100 years). As a result, the activity was rated a PS 3D.

Site Personnel Safety and Health:

Before:

The contaminants of concern that are present at these SWMUs are believed to be confined to the surface soil. Exposure to surveillance and maintenance workers could result from direct contact with or ingestion or inhalation of surface soil. These SWMUs are surveyed and maintained by plant employees who could be exposed to current levels of radioactive and hazardous contamination present given no remedial action. These exposures could result in marginal injuries/illnesses resulting in a slight overexposure or exposure near occupational limits. Therefore, a score of SP 3A was chosen.

During:

The likelihood for overexposure or physical injury increases during characterization activities. However, the likelihood of these types of injuries/impacts are mitigated by an increased health and safety program. Thus, the score of SP 3A is still considered appropriate.

After:

Following remediation of the area the likelihood of exposure to the routine surveillance and maintenance employee decreases as the contaminants contributing to the current risk would be removed or contained. As a result, the activity was rated a SP 4C.

Environmental Impact:

Before:

The SWMUs to be investigated as part of this activity are located within the main plant area at Paducah. The contamination present at these SWMUs is not considered to have a measurable impact on the environment in this area. However, based on the types of contaminants present and their concentrations, minor to moderate damage to the environment resulting in localized and/or short-term effects to the ecosystems could occur in the event that no remediation is undertaken. The probability of such effects

occurring are considered low. Therefore, this activity was scored an EN 3D.

During:
The risk of ecological impact would remain the same during the sampling and analysis activities. Thus, this activity was scored an EN 3D.

After:
Since the likelihood of negative impact to the ecosystem is low for this activity, the characterization and subsequent remediation of these areas will not result in any change in the environment. Therefore, a score of EN 3D was selected.

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R94H0055* **Facility Code:** *PADUC* **Priority:** *101.0*

Title: *PGDP D&D ROUTINE S&M*

Summary:
This multi-year program includes the routine surveillance and maintenance (S&M) activities for the C-340 and C-410 buildings required to ensure protection of personnel health and safety and preclude containment
releases/damage to the environment. S&M activities ensure environmental, safety and health compliance by performing required TSCA FFCA inspections; fire and emergency system inspections; OSHA hazard/nonconformance abatement; air monitoring for asbestos and radiological constituents; small-scale hazard characterizations (asbestos, PCB's, RCRA); and, routine inspections of facility to ensure integrity of piping, process equipment, and facility
structures. In addition, the S&M program includes near term removal actions which help to reduce or eliminate hazards in D&D facilities that may pose risk to personnel health and safety such as small scale PCB cleanups, RCRA corrective actions, Histoplasmosis prevention, small scale decontamination, and proper dispositioning of radiological materials. These small scale projects are prioritized internally by the PGDP D&D Program in accordance with available funding and based on risk mitigation, abatement of hazards, and cost savings/avoidance.

Evaluation Scenario:
Before:
Not performing the necessary surveillance and maintenance and other activities discussed in the summary description will cause uncontrolled releases to surrounding areas and potentially to off-site receptors.

During:
During project implementation, all inspections, maintenance activities, and related activities will be performed to help mitigate the occurrence of releases from the buildings.

After:
After project completion, areas that necessitate surveillance and maintenance will help reduce releases from the buildings.

Public Health and Safety:
Before:
Not maintaining and providing surveillance of contaminated sites can potentially cause excessive exposure to the off-site public in the time frame of 1 to 10 years. Building degradation will result which

may contribute to release of contaminants to the environment. The releases of contamination that occur can impact the public located nearby. For example, if roofs are not maintained, washout events can occur from the buildings. Score is PS 2B.

During:
Implementation of this project will ensure protection of public health and safety. The risk to the public would be low, and the probability of occurrence is < 0.1/year or ò 0.01/year. By monitoring areas within the buildings and maintaining each building's integrity, impacts can be reduced through early detection and interim measures. Score is PS 3C.

After:
Implementation of this project will ensure protection of the public health and safety. Risk to the public will be low. Score is PS 3C.

Site Personnel Safety and Health:
Before:
Not maintaining and providing surveillance of contaminated sites can potentially have an impact on workers. The impact of the exposure/physical hazards would be catastrophic in nature and could involve permanent total disability, chronic or irreversible disability, extreme overexposure, or death. The likelihood of occurrence is in 1 to 10 years. Contamination areas may spread within the facilities if they are not properly monitored and maintained. In addition, physical hazards could result if the building's systems and structures are not properly maintained, and building access controls may be compromised. Furthermore, boundary control stations would not be maintained, and employee exposure monitoring would cease. Score is SP 1B.

During:
During the performance of activities listed in the RDS summary description, remedial workers will be adequately protected under a health and safety program. Physical hazards associated with the performance of work will be marginal. The probability of occurrence will be < 0.1/year or ò 0.01/year. Physical hazards will be kept at a minimum. In addition, site access will be controlled, and exposure of employees would be monitored. Score is SP 3C.

After:
If the activities listed in the RDS summary description are performed, areas within the facility will be properly maintained, inspections will continue, and risk and physical hazards to workers will be marginal. Score is SP 3C.

Environmental Impact:
Before:
Similar to the public health impacts for this project, not maintaining the facilities can potentially cause significant damage to the environment in 1 to 10 years; this impact could be widespread and short-term. If activities cease, buildings may become unstable, and releases of contamination may occur. In addition, documented internal environmental noncompliances will not be corrected. Score is EN 2B.

During:
During project implementation, facility maintenance and monitoring activities will be performed. Minor or moderate damage to the environment is expected to occur. Probability of occurrence is < 0.1/year or ò 0.001/year. Routine surveillance and maintenance activities are expected to reduce the possibility of widespread, short-term ecological effects through early detection and interim measures. Surveillance and maintenance activities for buildings can contain localized contamination and would therefore minimize exposure to the environment. Score is EN 3C.

After:
After project implementation, impacts to the environment will be minor. By monitoring areas within the building and maintaining building integrity, impacts to ecological receptors can be reduced through early detection and interim measures. Score is EN 3C.

Compliance:

Mission Impact:
Before:
Failure to provide S&M activities will result in not fulfilling mission to perform actions in accordance with all environmental regulations, regulatory agreements, and DOE orders, score MI1A.

After: Performing S&M would fulfill mission as defined in DOE orders, score MI2D.

Mortgage Reduction:
Before:
Costs will increase to correct a degraded condition if the facility is not maintained or a release occurs. Maintenance prevents pipes from freezing which would result in a release, score MR2A.

After:
Large expenditures to correct degraded conditions will be avoided, score MR2D.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R95B0089* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *DITCH 011 AND 012 ICM*

Summary:

Project Scope: This project is to perform interim corrective measures on ditch 011 and 012 to reduce and/or eliminate the PCBs and TCE which is currently being detected in the ditches. This project will consist of conducting an assessment of PCB and TCE sources contributing to surface water contamination of Outfalls 011 and 012. The project will culminate with the installation of permeable reactive treatment zone installed in the Outfalls 011 and 012 to destroy PCBs and TCE and prevent mobilzation of radionuclides (uranium and technetium) using palladized iron before reaching the compliance boundary. Another treatment to be evaluated will be utilization of palladized iron to treat the PCB contaminated soils. Preliminary laboratory data indicates the process is 99.9% effective for the destruction of PCBs. Contaminants: PCBs and TCE

Regulatory Issues/Drivers: This project is driven by on-going Notice of Violations from the Commonwealth of Kentucky in regards to PCBs and TCE detected in Outfalls 011 and 012 above accepted regulatory limits. Benefits include avoiding future non-compliances and possible fines. Continued discharges without action or treatment may result in violations of the CERCLA/ACO and the RCRA/HSWA Permits.

Milestones/Scheduled Accomplishments: Field sampling to identify hot spots by November 1995, with engineering design completed by February 1996 and final action, installation of permeable gate by April 1996.

Public Health: This project is associated with a possible source of off-site contamination of TCE and PCBs in ditch 011 which feeds little Bayou Creek.

Exposure Location: Before: Offsite After: None

Exposure Media: Before: Surface water, sediment, biota, and groundwater. After: None

Exposure Likelihood: Before: Moderate, this area acts as a continuing source of offsite contamination. After: None

Risk Number: Before: Recreational Use - Little Bayou Creek
Surface Water 9E-07 & 0.002

Sediment 2E-05 & 0.016
Fish Ingestion 1E-02 & 0.3 None

COCs: Before: Arsenic, barium, chromium, manganese, PCBs, uranium-234, uranium-238, and neptunium-237. After: None

Suggested Scores: 2A3D
Source Document(s): Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1.

Notes: This area acts as a continuing source of contamination to offsite. Offsite areas are posted but access is not controlled. This evaluation considers control of offsite migration; risk from materials presently in offsite are not addressed.

Environmental Protection:

Has an ecological risk assessment been completed? Yes
If yes, were ecological impacts determined? Yes

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT: 5
ECOLOGICAL EXTENT: 4

DURATION or LIKELIHOOD of IMPACTS:
DURATION OF EXPOSURES: A
RECOVERY RATE: B

SUGGESTED SCORE = 4A6D
SOURCE DOCUMENT: Results of the Public Health and Ecological Assessment, Phase II (KY/SUB/13B-97777CP-03/1991/1).
NOTES: On-going exposure of fish, benthic macroinvertebrates, and piscivores to toxic levels of PCBs, chromium, and zinc in sediments and food items.

Site Personnel Safety: Routine maintenance is performed in the ditches by plant personnel. Completion of this project would reduce the amount of contaminants thereby reducing the potential of exposure to the workers.

Potential for Exposure: Before: Moderate, area is posted but not controlled. After: Low, assume more effective control of access to location.

Radiation Exposure
Exposure Risk (Dose): Before: Unknown After: Unknown
Exposure Likelihood: Before: Moderate After: Low

Chemical Exposure
Exposure Level: Before: Unknown; however, contaminants of concern at this location are PCBs and TCE. Risk to S & M worker estimated to be in range of 1E-04 to 1E-06. After: Same, however,

lowered exposure rate should lead to reduction of risk.

Exposure Likelihood: Before: Moderate After: Low

Activities/events leading to exposure/injuries: Before: Maintenance activities. After: Maintenance activities will be increased.

Impact Level: Before: Moderate After: Moderate

Impact Likelihood: Before: Moderate After: Moderate

Suggested Score: 9A9A
Source Document(s):

Notes: Evaluation considers that the area is posted but not controlled. After score considers that this project is to control migration and not clean-up source. Information taken from project prioritization data sheet.

Stakeholder Preference: Fish have been identified as containing PCBs in the past. Completion of this project would reduce the potential for contamination of wildlife.

Suggested Score:

Mission:

Suggested Score: NA

Cost-effectiveness: Potential for fines and penalties for PCB in effluent (25,000/day NOV from state).

Suggested Score: 16A

Evaluation Scenario:

Public Health and Safety:

Site Personnel Safety and Health:

Environmental Impact:

Compliance:

Mission Impact:

Mortgage Reduction:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R95B0090* **Facility Code:** *PADUC* **Priority:** *241.0*

Title: *SWMU 12 SCRAP REMOVAL*

Summary:
This work will include the removal of scrap from the C-747-A UF4 Drum Yard. The scrap is considered a possible source of off-site contamination and is delaying the complete characterization of WAG 22 due to its location on top of SWMU 7.

Evaluation Scenario:

Public Health and Safety:
This project has been identified as an off-site source of contamination, the pathway being the ditches.

EXPOSURE LOCATION: Before: Future onsite, offsite (SI determined this SWMU was a potential contributor to offsite surface water contamination.) After: None
MEDIA: Before: Scrap, surface water, sediment, biota. After: None, scrap removal cuts all exposure pathways.
EXPOSURE LIKEKIHOOD: Before: Low, concentrations are low; migration should be minimal. After: Low
RISK NUMBER: Before: Not calculated; probably no risk or hazard because crushed drums will be removed prior to release to public. Soil below unit belongs to SWMUs 7 & 30. After: None
COCs: Before: Uranium, technetium, metals. After: None
SOURCE DOCUMENT(s): Results of the Site Investigation, Phase II (KY/SUB/138-97777C P03/1991/1)
Suggested score based on potential for contaminant migration to offsite.

Site Personnel Safety and Health:
POTENTIAL FOR EXPOSURE: Before: Moderate After: Low, scrap removed.
RADIATION EXPOSURE
EXPOSURE RISK (DOSE): Before: Unknown; however, area is posted. Potential area of external exposure. After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
CHEMICAL EXPOSURE

EXPOSURE LEVEL: Before: Unknown After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
ACTIVITIES/EVENTS LEADING TO ESPOSURE/INJURIES: Before: Unauthorized access. S & M work (There is physical hazard associated with "drum mountain.") Level C required at units. After: None
IMPACT LEVEL: Before: Low After: None
IMPACT LIKELIHOOD: Before: Moderate After: None
SOURCE DOCUMENTSs): Results of the Site Investigation, Phase II (KY/SUB/138-97777C P03/1991/1)

Environmental Impact:
The contamination from this unit is located in the the ditches and creeks which provide access to the public.

Has an ecological risk assessment been completed? No
If yes, were ecological impacts determined? No

SOURCE DOCUMENT:Results of the Site Investigation, Phase II (KY/SUB/138-97777C P03/1991/1) Moderately-spread contamination of sediment and surface water poses a risk to fish and benthic macroinvertebrates. Contaminated soils are on-going and long-term source.

Compliance:

Mission Impact:
Mission: The completion of the project will facilitate the initation and completion of WAG 22, surface water, and groundwater sources. The scrapyard is located on top of WAG 22 which is hindering further investigation at this site. Surface water and groundwqter sources work would be assisted by the removal of a source of contamination.

730, SWOU, on-site ditches and WAG 18 are affected by this project.

Mortgage Reduction:
Cost-effectiveness: Contract arrangement through Corp. of Eng., which is at a discounted rate.

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R95B0091* **Facility Code:** *PADUC* **Priority:** *161.0*

Title: *WAG 12*

Summary:
This project will include the characterization to determine the nature and extent of possible contamination associated with the SWMUs in this WAG. After characterization remedial methods will be evaluated and selected. Remedial actions will be implemented. This WAG consist of 3 SWMUs, SWMU 17 C-616-E Sludge Lagoon, SWMU 18 C-616-F Full Flow Lagoon, and SWMU 42 C-616 Chromate Reduction Facility. These units are curretnly operational.

Evaluation Scenario:

Public Health and Safety:
EXPOSURE LOCATION: Future Onsite (The SI concluded that SWMU 97 was not a source of offsite contamination). None, remedial action should address contamination.
MEDIA: Soil
At SWMU 97, in surface in near surface soil, PCBs (max 0.29J mg/kg), PAHs (max 7.9 mg/kg), chloroform (max 0.16 mg/kg), antimony (max 0.58 mg/kg), arsenic (max 40.8 mg/kg), barium (max 195 mg/kg), beryllium (max 21.2 mg/kg), cadmium (5.6 mg/kg), chromium (max 36.8 mg/kg), copper (max 47.8 mg/kg), lead (max 111 mg/kg), manganese (max 294 mg/kg), nickel (max 46.3 mg/kg), selenium (max 25 mg/kg), silver (max 4.1 mg/kg), thallium (max 1.1 mg/kg), vanadium (max 60.7 mg/kg), zinc (max 228 mg/kg), technetium-99 (max 16 pCi/g). None
EXPOSURE LIKEKIHOOD: Low None
RISK NUMBER: Estimated for SWMU 97 using residential PRGs, direct exposure.
ECR = 4E-04; HI = 0.7
None
COCs: PCBs, trichloroethene and degradation products at SWMU 24, fuel oil and components at SWMU 139 and SWMU 140, see above for SWMU 97. None
SOURCE DOCUMENT(s): Unit data sheets for SWMUs 24, 97, 139, and 140;Results of the Site Investigation, Phase II at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (KY/SUB/13B-97777C P-03/1991/1)

Risks estimated using direct exposure only; risks higher if gardening scenario considered.

Site Personnel Safety and Health:
POTENTIAL FOR EXPOSURE: Before: Moderate After: None, remedial action should address surface contamination.
RADIATION EXPOSURE
EXPOSURE RISK (DOSE): Before: Low; rad activities very low. After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
CHEMICAL EXPOSURE
EXPOSURE LEVEL: Before: Moderate, less than residential use at SWMU 97 (<4E-04). After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
ACTIVITIES/EVENTS LEADING TO EXPOSURE/INJURIES: Before: Casual access to area; S & M activities. After: None
IMPACT LEVEL: Before: Low After: None
IMPACT LIKELIHOOD: Before: Moderate After: None
SOURCE DOCUMENT(s): Unit data sheets for SWMUs 24, 97, 139 and 140; Results of the Site Investigation, Phase II at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (KY/SUB/13B-97777C P-03/1991/1)

Environmental Impact:
Has an ecological risk assessment been completed?
If yes, were ecological impacts determined?

SOURCE DOCUMENT:SWMU sheets and Results of the Site Investigation, Phase II (KY/SUB/138-97777C P03/1991/1)

WAG is source of contamination to surface water (Little Bayou and North/South Ditch) and groundwater.

Compliance:

Mission Impact:
Mission: This project has an impact on the integrator OUs.

Mortgage Reduction:
Cost-effectiveness:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix Ranking, Paducah Site

RDS Number: *R95B0092* **Facility Code:** *PADUC* **Priority:** *187.0*

Title: *WAG 16*

Summary:
This project will include the characterization to determine the nature and extent of possible contamination associated with the SWMUs in this WAG. After characterization remedial methods will be evaluated and selected. Remedial actions will be implemented. This WAG consist of 7 SWMUs, SWMU 78 C-420 PCB Spill Site, SWMU 137 C-746-A Inactive PCB Transformer Area, SWMU 153 C-331 PCB Soil Contamination (West), SWMU 155 C-333 PCB Soil Contamination (West), SWMU 156 C-310 PCB Soil Contamination (West Side), SWMU 161 C-743-T01 Trailer Site (Soil Backfill), and SWMU 164KPDES Outfall Ditch 017 (Soil Backfill). These units are suspected sources of on-site contamination.

Evaluation Scenario:

Public Health and Safety:
EXPOSURE LOCATION: Before: Onsite and offsite (The SI identified SWMU 78 as a source of offsite surface water contamination.) After: None
MEDIA: Before: Soils Afer: None, all contaminated media is surface soil.
EXPOSURE LIKEKIHOOD: Before: Low After: None
RISK NUMBER: Before: At SWMU 78 risk under residential soil exposure
- *Chem ECR ~ 1E-04*
- *Rad ECR ~ 3E-06*
- *HI < 0.1*

(Based on comparison to Residential PRGs.)
After: None
COCs: Before:

Location	Analyte	Conc.
SWMU 78	Aroclor 1260	12 mg/kg
	OCDD	0.002 mg/kg
	SVOCs	450 mg/kg
	Cobalt	16 mg/kg
	Lead	38.7J mg/kg
	Barium	177 mg/kg
	Np-237	0.27 pCi/g
	Pu-239	0.42 pCi/g

pCi/g	*Tc-99*	*65J*
SWMU 137	*PCBs*	*NA*
SWMU 153	*PCBs*	*0.6 mg/kg*
SWMU 155	*PCBs*	*17 mg/kg*
SWMU 156	*PCBs*	*0.3 mg/kg*
SWMU 161	*PCBs*	*0.6 mg/kg*
SWMU 164	*PCBs*	*0.3 mg/kg*

After: None
SOURCE DOCUMENT(s): Results of the Site Investigation, Phase II at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (KY/SUB/13B-97777C P-03/1991/1); Unit Data Sheets

Score based primarily on future residential use.

Site Personnel Safety and Health:
POTENTIAL FOR EXPOSURE: Before: Moderate After: None
RADIATION EXPOSURE
EXPOSURE RISK (DOSE): Before: Minimal - less than residential (< 3E-06) After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
CHEMICAL EXPOSURE
EXPOSURE LEVEL: Before: Less than residential (<1E-04) After: None
EXPOSURE LIKELIHOOD: Before: Moderate After: None
ACTIVITIES/EVENTS LEADING TO EXPOSURE/INJURIES: Before: S & M activities in area (No PPE required.) After: None
IMPACT LEVEL: Before: Low After: None
IMPACT LIKELIHOOD: Before: Moderate After: None
SOURCE DOCUMENT(s): Results of the Site Investigation, Phase II at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (KY/SUB/13B-97777C P-03/1991/1)

After score assumes action that reduces contamination to minimal levels. Waste not left in place.

Environmental Impact:
Has an ecological risk assessment been completed? No
If yes, were ecological impacts determined?

Compliance:

Mission Impact:
Mission:

Mortgage Reduction:
Cost-effectiveness:

Social/Cultural/Economic Impacts:

U.S. Department of Energy
Environmental Management Evaluation Matrix
Ranking, Paducah Site

RDS Number: *R95B0093* **Facility Code:** *PADUC* **Priority:** *0.0*

Title: *PADUCAH BACKGROUND LEVELS IN SOIL*

Summary:
Project Scope: This project provides for the fieldwork and report writing necessary to determine the naturally occuring background levels in soil for radionuclides of concern at PGDP. A work plan was developed and approved for this fieldwork in FY95. Determination of radiological background is ESSENTIAL as a baseline technical parameter of the EM & EF program at Paducah.

Regulatory Issues/Drivers: PGDP Federal Facilities Agreement, CERCLA, RCRA, DOE Orders

Milestones/Scheduled Accomplishments: A workplan was developed and approved during FY 95. Fieldwork can begin immediately in FY 96 with funding approval. Assuming fieldwork begins in October 1995, usable data from the effort will be available to the Paducah program by July 1996.

Public Health: This project determines the levels of naturally occuring radiological activity in the soil around PGDP. It will establish target cleanup levels, and provide a comparison against which a real determination of the risks to public health and the environment can be made. Without this project, public health and environmental protection risks are assumptions.

Exposure Location:

Exposure Media:

Exposure Likelihood:

Risk Number:

COCs:

Suggested Scores: NA
Source Document(s):

Notes: This project not scored under this criterion. However, this issue must be resolved to pick appropriate, cost effective remedial actions.

Environmental Protection: Same as Public Health.

Has an ecological risk assessment been completed?
If yes, were ecological impacts determined?

EXTENT or LEVEL of IMPACT/EXPOSURE:
SPATIAL EXTENT:
ECOLOGICAL EXTENT:

DURATION or LIKELIHOOD of IMPACTS:
DURATION OF EXPOSURES:
RECOVERY RATE:

SUGGESTED SCORE = N/A
SOURCE DOCUMENT:
NOTES

Site Personnel Safety: This project will determine the actual levels of radioactivity that can be considered background. Until then, all actions made concerning site personnel safety are conservative assumptions.

Potential for Exposure:

Radiation Exposure
Exposure Risk (Dose):
Exposure Likelihood:

Chemical Exposure
Exposure Level:
Exposure Likelihood:

Activities/events leading to exposure/injuries:

Impact Level:

Impact Likelihood:

Suggested Score: NA
Source Document(s):

Notes: This project not scored under this criterion. However, this issue must be resolved to pick appropriate, cost effective remedial actions.

Stakeholder Preference: The general public has made it known that we should not be spending money to restore a contamiantion area to "pristine conditions". Determination of background will provide an accurate assessment of target cleanup level, in accordance with the general public desires.