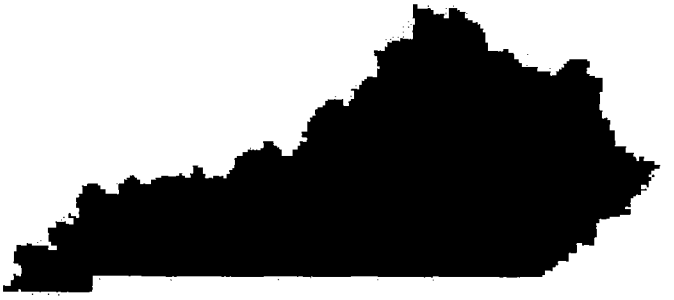
KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0004049
AI NO.: 3059

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

United States Department of Energy (DOE)
P.O. Box 1410
Paducah, Kentucky 42001-1410

Paducah Remediation Services, LLC
P.O. Box 340
Kevil, Kentucky 42053

Uranium Disposition Services, LLC
1020 Monarch Street, Suite 100
Lexington, Kentucky 40513

is authorized to discharge from a facility located at

Paducah Gaseous Diffusion Plant
Depleted Uranium Hexafluoride Conversion Facility
5600 Hobbs Road
West Paducah, Kentucky 42086

to receiving waters named

Outfalls 001, 015, and 017 discharges to Bayou Creek at mile points 5.6, 6.2, and 7.1, respectively.

Outfall 019 discharges to an Unnamed Tributary of Little Bayou Creek at mile point 0.25

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in PARTS I, II, III, IV, and V hereof. The permit consists of this cover sheet, and PART I 13 pages, PART II 6 page, PART III 2 page, PART IV 6 pages, and PART V 3 pages.

This permit shall become effective on NOV 1 2006

This permit and the authorization to discharge shall expire at midnight,
OCT 3 1 2011

SEP 2 9 2006
Date Signed

David W. Morgan, Director
Division of Water

Lloyd R. Cress
Commissioner

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/day	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Week	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Week	Grab
Total Residual Chlorine (mg/l)	N/A	N/A	0.011	0.019	1/Week	Grab
Temperature (°F)	N/A	N/A	Report	89	1/Week	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Week	Grab
Trichloroethylene (mg/l)	N/A	N/A	0.0308	Report	1/Week	Grab
Total Phosphorus (mg/l)	N/A	N/A	1.0	1.0	1/Week	Grab
Total Alpha (pCi/l)	N/A	N/A	Report	15	1/Week	Grab
Total Beta (pCi/l)	N/A	N/A	Report	50	1/Week	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Week	Grab
Chronic Toxicity (TU_c)	N/A	N/A	N/A	1.00	1/Quarter	3 24-Hr Composites
Technetium-99 (pCi/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.
The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_A)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Temperature[1] (°F)	N/A	N/A	Report	89	1/Month	Grab
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Month	Grab
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	0.120	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_C)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Chronic Toxicity[1] (TU_A)	N/A	N/A	N/A	1.00	1/Month	3 24 Hr Composites
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

[1]The limits for Temperature and Chronic Toxicity for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (lbs/day)(mg/l)	N/A	0.0	0.000000065	Report	1/Month	Grab
BOD_5 (mg/l)	N/A	N/A	37	140	1/Month	Grab
Ammonia (as mg/l N)	N/A	N/A	3.36	10	1/Month	Grab
a-Terpineol (mg/l)	N/A	N/A	0.016	0.033	1/Month	Grab
Benzoic Acid (mg/l)	N/A	N/A	0.071	0.12	1/Month	Grab
p-Cresol (mg/l)	N/A	N/A	0.014	0.025	1/Month	Grab
Phenol (mg/l)	N/A	N/A	0.015	0.026	1/Month	Grab
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	0.120	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_A)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.
The abbreviation BOD_5 means Biochemical Oxygen Demand, 5-day.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

B. Schedule of Compliance

Permittee shall comply with the effluent limitations by the effective date of the permit with the following exceptions.

The effluent limitations for Total Alpha, Total Beta, and Uranium shall become effective three years after the effective date of this permit.

C. Responsible Parties

The United States Department of Energy (DOE), Paducah Remediation Services, LLC (PRS), and Uranium Disposition Services, LLC (UDS) are co-permittees. The DOE and PRS are jointly responsible for all outfalls addressed by this permit. UDS responsibility is limited to Outfall 017 only.

STANDARD CONDITIONS FOR KPDES PERMIT

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

The following KPDES permit conditions apply to all discharges authorized by this permit pursuant to 401 KAR 5:065, Section 1.

(1) Duty to comply.

(a) General requirement.
The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of KRS Chapter 224, among which shall be the following remedies: enforcement action, permit revocation, revocation and reissuance, or modification; or denial of a permit renewal application.

(b) Specific duties.
1. The permittee shall comply with effluent standards or prohibitions established under 40 CFR Part 129 as of July 1, 2001, as adopted without change, within the time provided in the federal regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
2. Any person who violates a permit condition as set forth in the KPDES administrative regulations shall be subject to penalties under KRS 224.99-010(1) and (4).

(2) Duty to reapply.
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit as required in 401 KAR 5:060, Section 1.

(3) Need to halt or reduce activity not a defense.
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate.
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance.
The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also shall include adequate laboratory controls, and appropriate quality assurance procedures. This provision shall require the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only if the operation is necessary to achieve compliance with the conditions of the permit.

(6) Permit actions.
The permit may be modified, revoked and reissued, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, shall not stay any permit condition.

(7) Property rights.
This permit shall not convey any property rights of any kind, or any exclusive privilege.

(8) Duty to provide information.
The permittee shall furnish to the cabinet, within a reasonable time, any information which the cabinet may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the cabinet, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry.
The permittee shall allow the cabinet, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records pertinent to the KPDES program are or may be kept;
(b) Have access to and copy, at reasonable times, any records that are required to be be kept under the conditions of this permit;
(c) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and
(d) Sample or monitor at reasonable times, for the purposes of assuring KPDES program compliance or as otherwise authorized by KRS Chapter 224, any substances or parameters at any location.

(10) Monitoring and records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the cabinet at any time.
(c) Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
2. The individuals who performed the sampling or measurements;
3. The dates analyses were performed;
4. The individuals who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of the analyses.

(d) Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.
(e) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(11) Signatory requirement.
All applications, reports, or information submitted to the cabinet shall be signed and certified as indicated in 401 KAR 5:060, Section 9. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(12) Reporting requirements.

(a) Planned changes.
The permittee shall give notice to the cabinet as soon as possible of any planned physical alteration or additions to the permitted facility. Notice shall be required only if:
1. The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in 401 KAR 5:080, Section 5; or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification only applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 401 KAR 5:080, Section 5.

(b) Anticipated noncompliance.
The permittee shall give advance notice to the cabinet of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Transfers.
The permit shall not be transferable to any person except after notice to the cabinet. The cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate other requirements as may be necessary under KRS Chapter 224.

(d) Monitoring reports.
Monitoring results shall be reported at the intervals specified in the permit.
Monitoring results shall be reported as follows:
1. Monitoring results shall be reported on a Discharge Monitoring Report (DMR).
2. If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the cabinet in the permit.

(e) Compliance schedules.
Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

(f) Twenty-four (24) hour reporting.
The permittee shall follow the provisions of 401 KAR 5:015 and shall orally report any noncompliance which may endanger health or the environment, within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. This report shall be in addition to and not in lieu of any other reporting requirement applicable to the noncompliance. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The cabinet may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours. The following shall be included as events which shall be reported within twenty-four (24) hours:
1. Any unanticipated bypass which exceeds any effluent limitation in the permit, as indicated in subsection (13) of this section.
2. Any upset which exceeds any effluent limitation in the permit.
3. Violation of a maximum daily discharge limitation for any of the pollutants listed by the cabinet in the permit to be reported within twenty-four (24) hours, as indicated in Section 2(7) of this administrative regulation.

(g) Other noncompliance.
The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this subsection, when monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this subsection.

(h) Other information.
Where the permittee becomes aware that it failed to submit any relevant fact in a permit application, or submitted incorrect information in a permit application or in any report to the cabinet, it shall promptly submit these facts or information.

(13) Occurrence of a bypass.

(a) Bypass not exceeding limitations.
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. This type of bypass shall not be subject to the provisions of paragraphs (b) and (c) of this subsection.

(b) Notice.

1. Anticipated bypass.
If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 1.
2. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in subsection (12)(f) of this section, twenty-four (24) hour notice. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 4.

(c) Prohibition of a bypass.
1. Bypassing shall be prohibited, and the cabinet may take enforcement action against a permittee for bypass, unless:
a. The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition shall not be satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
c. The permittee submitted notices as required under paragraph (b) of this subsection.
2. The cabinet may approve an anticipated bypass, after considering its adverse effects, if the cabinet determines that it will meet the three (3) conditions listed in subparagraph 1a, b, and c of this paragraph.

(14) Occurrence of an upset.

(a) Effect of an upset.
An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of paragraph (b) of this subsection are met.

(b) Conditions necessary for a demonstration of an upset.
A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed, contemporaneous operating logs, or other relevant evidence that:
1. An upset occurred and that the permittee can identify the causes of the upset;
2. The permitted facility was at the time being properly operated;
3. The permittee submitted notice of the upset as required in subsection (12)(f) of this section; and
4. The permittee complied with any remedial measures required under subsection (4) of this section.

(c) Burden of proof.
In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset shall have the burden of proof.

(15) Additional conditions applicable to specified categories of KPDES permits. The following conditions, in addition to others set forth in this administrative regulation, shall apply to all KPDES permits within the categories specified below:

(a) Existing manufacturing, commercial, mining, and silvicultural dischargers. In addition to the reporting requirements under subsections (12), (13), and (14) of this section, any existing manufacturing, commercial, mining, and silvicultural discharger shall notify the cabinet as soon as it knows or has reason to know:
1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
a. 100 micrograms per liter (100 µg/l);
b. 200 micrograms per liter (200 µg/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one (1) milligram per liter (1 mg/1) for antimony;
c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7);
d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.
2. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
a. 500 micrograms per liter (500 µg/l);
b. One (1) milligram per liter (1 mg/l) for antimony;
c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7); or
d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.

(b) POTWs.
1. POTWs shall provide adequate notice to the cabinet of the following:
a. Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to the KPDES administrative regulations if it were directly discharging those pollutants; or
b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
2. For purposes of this paragraph, adequate notice shall include information on the quality and quantity of effluent introduced into the POTWs and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water
Paducah Regional Office
130 Eagle Nest Drive
Paducah, Kentucky 42003

Environmental & Public Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
ATTN: Supervisor Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:086, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

C. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

PART III

OTHER REQUIREMENTS

D. Bayou Creek and Little Bayou Creek Watershed Monitoring Program

During the reissuance of the previous permit this program was imposed as permit condition to gauge the success of the DOE remediation of the Paducah Gaseous Diffusion Plant. Over the interim period the two watersheds have been extensively sampled to the point that further collection of aquatic organisms could result in a deleterious effect on the aquatic community. Therefore biological sampling will not be required as part of these programs, the permittee shall however continue with the physical/chemical assessment of these watersheds. The permittee shall submit a revised monitoring program for the 2007 calendar year by December 1, 2006.

E. Required Detected Limits For Selected Pollutants

The following MDLs are required to demonstrate compliance of the listed pollutant with water quality based limitations.

Pollutant	MDL (µg/l)	Pollutant	MDL (µg/l)
Polychlorinated Biphenyls	0.065	Total Recoverable Zinc	1.0
1,1,2,2-Tetrachloroethane	0.03	1,1-Dichloroethylene	0.05
1,2-Diphenylhydrazine	0.028	2,4,6-Trichlorophenol	0.64
2,4-Dinitrotoluene	0.02	3,3-Dichlorobenzidine	0.13
4,4'-DDD	0.004	4,4'-DDE	0.004
4,4'-DDT	0.004	Acrylonitrile	0.5
Aldrin	0.007	alpha-BHC	0.0053
alpha-Endosulfan	0.006	Benzidine	0.08
Benzo(a)anthracene	0.002	Benzo(a)pyrene	0.029
Benzo(k)fluoranthene	0.002	Beta-BHC	0.0036
Beta-Endosulfan	0.001	Bis(2-ethylhexyl)phthalate	0.46
Carbon Tetrachloride	0.12	Chlordane	0.014
Chrysene	0.063	Dibenzo(a,h)anthracene	0.019
Dieldrin	0.004	Endrin	0.007
Free Cyanide	5.0	gamma-BHC (Lindane)	0.003
Heptachlor	0.005	Heptachlor epoxide	0.001
Hexachlorobenzene	0.002	Hexachloroethane	0.03
Ideno(1,2,3-cd)pyrene	0.011	N-Nitrosodimethylamine	0.15
N-Nitrosodi-n-Propylamine	0.15	N-Nitrosodiphenylamine	0.81
Pentachlorophenol	0.25	Tetrachloroethylene	0.03
Total Recoverable Cadmium	0.01	Total Recoverable Copper	1.0
Total Recoverable Lead	1.0	Total Recoverable Mercury	0.0002
Total Recoverable Selenium	1.0	Total Recoverable Silver	1.0
Total Recoverable Thallium	1.0		

PART IV
CHRONIC CONCERNS
Biomonitoring

In accordance with PART I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 001 and 017[1].

1. Test Requirements

A. The permittee shall perform one (1) short-term fathead minnow (Pimephales promelas) growth test and one (1) short-term daphnid (Ceriodaphnia sp.) life-cycle test. Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. If the permit limit is less than 100% effluent and greater than or equal to 75% effluent, then one (1) concentration should be 100%. If the permit limit is less than 75% effluent, the permit limit concentration shall be bracketed with two (2) concentrations above and two (2) concentrations below. The selection of the effluent concentrations is subject to revision by the Division. Controls shall be tested concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met (i.e.≥80% survival; 60% adults with 3 broods and 15 or more young/surviving female for the Ceriodaphnia test; an average 0.25 mg weight for the minnow growth test). Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the IC_{25} (inhibition concentration) for reproduction or growth is less than 100% effluent

B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

A minimum of three (3) twenty-four hour composite samples will be collected at a frequency of one (1) sample every other day, or at a frequency to be determined by the permitting authority. For example, the first sample would be used for test initiation, day 1, and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation, or for test solution renewal shall not exceed 36 hours. Composite samples shall be refrigerated during collection and maintained at 6°C until used.

If after at least six (6) tests, it can be determined that Ceriodaphnia or the Fathead minnow is more sensitive, a request for testing of only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

[1]These requirements for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Chronic Toxicity

If noncompliance with the toxicity limit occurs (IC_{25} for reproduction or growth is less than 100% effluent), the permittee must conduct a second test within 15 days of the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxicity reduction evaluation (TRE).

If the second test demonstrates noncompliance with the toxicity limit, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional tests within 90 days of failure of the second test to evaluate the frequency and degree of toxicity. The results of the two (2) tests specified above and of the four (4) additional tests will be used for purposes of this evaluation.

If results from two (2) of any six (6) tests show a significant noncompliance with the chronic limit ($\geq$1.2 times the TU_c), or results from four (4) of any six (6) tests show chronic toxicity (as defined in 1.A), a Toxicity Reduction Evaluation (TRE) will be required.

The permittee shall provide written notification, within five (5) days of the completion of accelerated testing to the Division of Water, that toxicity persisted and that a TRE would be initiated or that toxicity did not persist and the normal testing would resume.

Should toxicity not prove persistent during the accelerated testing, but reoccur within 12 months of the initial failure at a level = 1.2 time the TU_c, then a TRE shall be initiated without further accelerated testing.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition), EPA-821-R-02-013, or the most recent edition of this publications.

PART IV
ACUTE CONCERNS
Biomonitoring
Precipitation Dependant Discharges

In accordance with Part I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 015, 017, and 019.

1. Test Requirements

   A. The permittee shall perform a 48-hour static toxicity test with Ceriodaphnia sp. and a 48-hour static toxicity test with fathead minnow (Pimephales promelas). Tests shall be conducted on each of two (2) grab samples taken over the period of discharge (e.g. discrete sample 1 taken at commencement of discharge, sample 2 taken prior to cessation of discharge). Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. The selection of the effluent concentrations is subject to revision by the Division. Testing of the effluent shall be initiated within 36 hours of each sample collection. Controls shall be conducted concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if control survival is 90% or greater in test organisms held in synthetic water. Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the LC_{50} is less than 100% effluent.

   B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

      If after at least six (6) tests, it can be determined that Ceriodaphnia or the fathead minnow is more sensitive, a request for testing only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

2. Reporting Requirements

   Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Acute Toxicity

Due to the discharge being precipitation dependant, if noncompliance with the toxicity limit occurs (the LC_{50} is less than 100% effluent), the permittee must conduct a second test as soon as possible but no later than 30 days after the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxics reduction evaluation (TRE). If a second sample cannot be obtained within this timeframe, then routine sampling shall continue.

If the second test demonstrates noncompliance with the toxicity limit, or any one of the next two routine samples, or any of the samples show a significant noncompliance with the acute limit (=1.2 times the TU_a), the permittee will be required to perform a Toxicity Reduction Evaluation (TRE). The permittee shall provide written notification, within five (5) days of such an event to the Division of Water also indicating that a TRE would be initiated.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions, including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012 (5th edition) or the most recently published edition of this publication.

PART V

BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

4. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."

d. Include any special conditions established in part b of this section.

e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security
j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water
Louisville Regional Office
9116 Leesgate Road
Louisville, Kentucky 40222-5084
ATTN: Supervisor

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Periodically Discharged Wastewaters Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

SEP 29 2006

Mr. William E. Murphie
United States Department of Energy
P.O. Box 1410
Paducah, Kentucky 42001-1410

Re: Paducah Gaseous Diffusion Plant
KPDES No.: KY0004049
McCracken County, Kentucky

Dear Mr. Murphie:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility. This action constitutes a final permit issuance under 401 KAR 5:075, pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075, unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing, pursuant to KRS 224.10-420(2), within thirty (30) days from the date of the issuance of this letter. Two (2) copies of request for hearing should be submitted in writing to the Environmental and Public Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Vickie L. Prather, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 470.

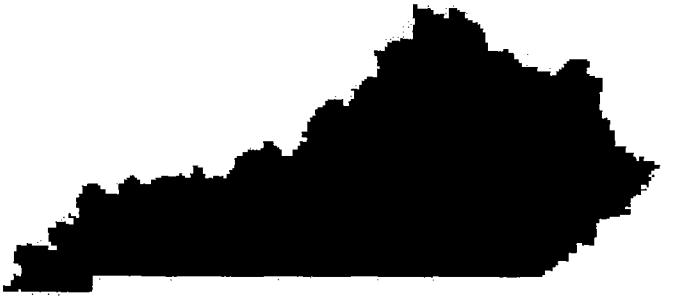
Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

David W. Morgan, Director
Division of Water

DWM:NG:ng
Enclosure
c: Paducah Regional Office
Division of Water Files

KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0004049
AI NO.: 3059

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

United States Department of Energy (DOE)
P.O. Box 1410
Paducah, Kentucky 42001-1410

Paducah Remediation Services, LLC
P.O. Box 340
Kevil, Kentucky 42053

Uranium Disposition Services, LLC
1020 Monarch Street, Suite 100
Lexington, Kentucky 40513

is authorized to discharge from a facility located at

Paducah Gaseous Diffusion Plant
Depleted Uranium Hexafluoride Conversion Facility
5600 Hobbs Road
West Paducah, Kentucky 42086

to receiving waters named

Outfalls 001, 015, and 017 discharges to Bayou Creek at mile points 5.6, 6.2, and 7.1, respectively.

Outfall 019 discharges to an Unnamed Tributary of Little Bayou Creek at mile point 0.25

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in PARTS I, II, III, IV, and V hereof. The permit consists of this cover sheet, and PART I 13 pages, PART II 6 page, PART III 2 page, PART IV 6 pages, and PART V 3 pages.

This permit shall become effective on NOV 1 2006

This permit and the authorization to discharge shall expire at midnight,
OCT 3 1 2011

SEP 2 9 2006
Date Signed

David W. Morgan, Director
Division of Water

Lloyd R. Cress
Commissioner

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/day	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Week	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Week	Grab
Total Residual Chlorine (mg/l)	N/A	N/A	0.011	0.019	1/Week	Grab
Temperature (°F)	N/A	N/A	Report	89	1/Week	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Week	Grab
Trichloroethylene (mg/l)	N/A	N/A	0.0308	Report	1/Week	Grab
Total Phosphorus (mg/l)	N/A	N/A	1.0	1.0	1/Week	Grab
Total Alpha (pCi/l)	N/A	N/A	Report	15	1/Week	Grab
Total Beta (pCi/l)	N/A	N/A	Report	50	1/Week	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Week	Grab
Chronic Toxicity (TU_c)	N/A	N/A	N/A	1.00	1/Quarter	3 24-Hr Composites
Technetium-99 (pCi/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.
The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_A)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Temperature[1] (°F)	N/A	N/A	Report	89	1/Month	Grab
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Month	Grab
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	0.120	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_C)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Chronic Toxicity[1] (TU_A)	N/A	N/A	N/A	1.00	1/Month	3 24 Hr Composites
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.

[1]The limits for Temperature and Chronic Toxicity for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		DISCHARGE LIMITATIONS Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (lbs/day)(mg/l)	N/A	0.0	0.000000065	Report	1/Month	Grab
BOD_5 (mg/l)	N/A	N/A	37	140	1/Month	Grab
Ammonia (as mg/l N)	N/A	N/A	3.36	10	1/Month	Grab
a-Terpineol (mg/l)	N/A	N/A	0.016	0.033	1/Month	Grab
Benzoic Acid (mg/l)	N/A	N/A	0.071	0.12	1/Month	Grab
p-Cresol (mg/l)	N/A	N/A	0.014	0.025	1/Month	Grab
Phenol (mg/l)	N/A	N/A	0.015	0.026	1/Month	Grab
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	0.120	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU_A)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l $CaCO_3$)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
The abbreviation PCBs means Polychlorinated Biphenyls.
The abbreviation BOD_5 means Biochemical Oxygen Demand, 5-day.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

B. Schedule of Compliance

Permittee shall comply with the effluent limitations by the effective date of the permit with the following exceptions.

The effluent limitations for Total Alpha, Total Beta, and Uranium shall become effective three years after the effective date of this permit.

C. Responsible Parties

The United States Department of Energy (DOE), Paducah Remediation Services, LLC (PRS), and Uranium Disposition Services, LLC (UDS) are co-permittees. The DOE and PRS are jointly responsible for all outfalls addressed by this permit. UDS responsibility is limited to Outfall 017 only.

STANDARD CONDITIONS FOR KPDES PERMIT

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

The following KPDES permit conditions apply to all discharges authorized by this permit pursuant to 401 KAR 5:065, Section 1.

(1) Duty to comply.

(a) General requirement.
The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of KRS Chapter 224, among which shall be the following remedies: enforcement action, permit revocation, revocation and reissuance, or modification; or denial of a permit renewal application.

(b) Specific duties.
1. The permittee shall comply with effluent standards or prohibitions established under 40 CFR Part 129 as of July 1, 2001, as adopted without change, within the time provided in the federal regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
2. Any person who violates a permit condition as set forth in the KPDES administrative regulations shall be subject to penalties under KRS 224.99-010(1) and (4).

(2) Duty to reapply.
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit as required in 401 KAR 5:060, Section 1.

(3) Need to halt or reduce activity not a defense.
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate.
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance.
The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also shall include adequate laboratory controls, and appropriate quality assurance procedures. This provision shall require the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only if the operation is necessary to achieve compliance with the conditions of the permit.

(6) Permit actions.
The permit may be modified, revoked and reissued, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, shall not stay any permit condition.

(7) Property rights.
This permit shall not convey any property rights of any kind, or any exclusive privilege.

(8) Duty to provide information.
The permittee shall furnish to the cabinet, within a reasonable time, any information which the cabinet may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the cabinet, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry.
The permittee shall allow the cabinet, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records pertinent to the KPDES program are or may be kept;
(b) Have access to and copy, at reasonable times, any records that are required to be be kept under the conditions of this permit;
(c) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and
(d) Sample or monitor at reasonable times, for the purposes of assuring KPDES program compliance or as otherwise authorized by KRS Chapter 224, any substances or parameters at any location.

(10) Monitoring and records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the cabinet at any time.
(c) Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
2. The individuals who performed the sampling or measurements;
3. The dates analyses were performed;
4. The individuals who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of the analyses.

(d) Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.
(e) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(11) Signatory requirement.
All applications, reports, or information submitted to the cabinet shall be signed and certified as indicated in 401 KAR 5:060, Section 9. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(12) Reporting requirements.

(a) Planned changes.
The permittee shall give notice to the cabinet as soon as possible of any planned physical alteration or additions to the permitted facility. Notice shall be required only if:
1. The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in 401 KAR 5:080, Section 5; or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification only applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 401 KAR 5:080, Section 5.

(b) Anticipated noncompliance.
The permittee shall give advance notice to the cabinet of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Transfers.
The permit shall not be transferable to any person except after notice to the cabinet. The cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate other requirements as may be necessary under KRS Chapter 224.

(d) Monitoring reports.
Monitoring results shall be reported at the intervals specified in the permit.
Monitoring results shall be reported as follows:
1. Monitoring results shall be reported on a Discharge Monitoring Report (DMR).
2. If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the cabinet in the permit.

(e) Compliance schedules.
Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

(f) Twenty-four (24) hour reporting.
The permittee shall follow the provisions of 401 KAR 5:015 and shall orally report any noncompliance which may endanger health or the environment, within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. This report shall be in addition to and not in lieu of any other reporting requirement applicable to the noncompliance. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The cabinet may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours. The following shall be included as events which shall be reported within twenty-four (24) hours:
1. Any unanticipated bypass which exceeds any effluent limitation in the permit, as indicated in subsection (13) of this section.
2. Any upset which exceeds any effluent limitation in the permit.
3. Violation of a maximum daily discharge limitation for any of the pollutants listed by the cabinet in the permit to be reported within twenty-four (24) hours, as indicated in Section 2(7) of this administrative regulation.

(g) Other noncompliance.
The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this subsection, when monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this subsection.

(h) Other information.
Where the permittee becomes aware that it failed to submit any relevant fact in a permit application, or submitted incorrect information in a permit application or in any report to the cabinet, it shall promptly submit these facts or information.

(13) Occurrence of a bypass.

(a) Bypass not exceeding limitations.
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. This type of bypass shall not be subject to the provisions of paragraphs (b) and (c) of this subsection.

(b) Notice.

1. Anticipated bypass.
If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 1.
2. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in subsection (12)(f) of this section, twenty-four (24) hour notice. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 4.

(c) Prohibition of a bypass.
1. Bypassing shall be prohibited, and the cabinet may take enforcement action against a permittee for bypass, unless:
a. The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition shall not be satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
c. The permittee submitted notices as required under paragraph (b) of this subsection.
2. The cabinet may approve an anticipated bypass, after considering its adverse effects, if the cabinet determines that it will meet the three (3) conditions listed in subparagraph 1a, b, and c of this paragraph.

(14) Occurrence of an upset.

(a) Effect of an upset.
An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of paragraph (b) of this subsection are met.

(b) Conditions necessary for a demonstration of an upset.
A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed, contemporaneous operating logs, or other relevant evidence that:
1. An upset occurred and that the permittee can identify the causes of the upset;
2. The permitted facility was at the time being properly operated;
3. The permittee submitted notice of the upset as required in subsection (12)(f) of this section; and
4. The permittee complied with any remedial measures required under subsection (4) of this section.

(c) Burden of proof.
In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset shall have the burden of proof.

(15) Additional conditions applicable to specified categories of KPDES permits. The following conditions, in addition to others set forth in this administrative regulation, shall apply to all KPDES permits within the categories specified below:

(a) Existing manufacturing, commercial, mining, and silvicultural dischargers. In addition to the reporting requirements under subsections (12), (13), and (14) of this section, any existing manufacturing, commercial, mining, and silvicultural discharger shall notify the cabinet as soon as it knows or has reason to know:
1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
a. 100 micrograms per liter (100 µg/l);
b. 200 micrograms per liter (200 µg/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one (1) milligram per liter (1 mg/1) for antimony;
c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7);
d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.
2. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
a. 500 micrograms per liter (500 µg/l);
b. One (1) milligram per liter (1 mg/l) for antimony;
c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7); or
d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.

(b) POTWs.
1. POTWs shall provide adequate notice to the cabinet of the following:
a. Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to the KPDES administrative regulations if it were directly discharging those pollutants; or
b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
2. For purposes of this paragraph, adequate notice shall include information on the quality and quantity of effluent introduced into the POTWs and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water
Paducah Regional Office
130 Eagle Nest Drive
Paducah, Kentucky 42003

Environmental & Public Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
ATTN: Supervisor Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:086, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

C. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

PART III

OTHER REQUIREMENTS

D. Bayou Creek and Little Bayou Creek Watershed Monitoring Program

During the reissuance of the previous permit this program was imposed as permit condition to gauge the success of the DOE remediation of the Paducah Gaseous Diffusion Plant. Over the interim period the two watersheds have been extensively sampled to the point that further collection of aquatic organisms could result in a deleterious effect on the aquatic community. Therefore biological sampling will not be required as part of these programs, the permittee shall however continue with the physical/chemical assessment of these watersheds. The permittee shall submit a revised monitoring program for the 2007 calendar year by December 1, 2006.

E. Required Detected Limits For Selected Pollutants

The following MDLs are required to demonstrate compliance of the listed pollutant with water quality based limitations.

Pollutant	MDL (µg/l)	Pollutant	MDL (µg/l)
Polychlorinated Biphenyls	0.065	Total Recoverable Zinc	1.0
1,1,2,2-Tetrachloroethane	0.03	1,1-Dichloroethylene	0.05
1,2-Diphenylhydrazine	0.028	2,4,6-Trichlorophenol	0.64
2,4-Dinitrotoluene	0.02	3,3-Dichlorobenzidine	0.13
4,4'-DDD	0.004	4,4'-DDE	0.004
4,4'-DDT	0.004	Acrylonitrile	0.5
Aldrin	0.007	alpha-BHC	0.0053
alpha-Endosulfan	0.006	Benzidine	0.08
Benzo(a)anthracene	0.002	Benzo(a)pyrene	0.029
Benzo(k)fluoranthene	0.002	Beta-BHC	0.0036
Beta-Endosulfan	0.001	Bis(2-ethylhexyl)phthalate	0.46
Carbon Tetrachloride	0.12	Chlordane	0.014
Chrysene	0.063	Dibenzo(a,h)anthracene	0.019
Dieldrin	0.004	Endrin	0.007
Free Cyanide	5.0	gamma-BHC (Lindane)	0.003
Heptachlor	0.005	Heptachlor epoxide	0.001
Hexachlorobenzene	0.002	Hexachloroethane	0.03
Ideno(1,2,3-cd)pyrene	0.011	N-Nitrosodimethylamine	0.15
N-Nitrosodi-n-Propylamine	0.15	N-Nitrosodiphenylamine	0.81
Pentachlorophenol	0.25	Tetrachloroethylene	0.03
Total Recoverable Cadmium	0.01	Total Recoverable Copper	1.0
Total Recoverable Lead	1.0	Total Recoverable Mercury	0.0002
Total Recoverable Selenium	1.0	Total Recoverable Silver	1.0
Total Recoverable Thallium	1.0		

PART IV
CHRONIC CONCERNS
Biomonitoring

In accordance with PART I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 001 and 017[1].

1. Test Requirements

A. The permittee shall perform one (1) short-term fathead minnow (Pimephales promelas) growth test and one (1) short-term daphnid (Ceriodaphnia sp.) life-cycle test. Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. If the permit limit is less than 100% effluent and greater than or equal to 75% effluent, then one (1) concentration should be 100%. If the permit limit is less than 75% effluent, the permit limit concentration shall be bracketed with two (2) concentrations above and two (2) concentrations below. The selection of the effluent concentrations is subject to revision by the Division. Controls shall be tested concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met (i.e.≥80% survival; 60% adults with 3 broods and 15 or more young/surviving female for the Ceriodaphnia test; an average 0.25 mg weight for the minnow growth test). Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the IC_{25} (inhibition concentration) for reproduction or growth is less than 100% effluent

B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

A minimum of three (3) twenty-four hour composite samples will be collected at a frequency of one (1) sample every other day, or at a frequency to be determined by the permitting authority. For example, the first sample would be used for test initiation, day 1, and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation, or for test solution renewal shall not exceed 36 hours. Composite samples shall be refrigerated during collection and maintained at 6°C until used.

If after at least six (6) tests, it can be determined that Ceriodaphnia or the Fathead minnow is more sensitive, a request for testing of only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

[1]These requirements for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Chronic Toxicity

If noncompliance with the toxicity limit occurs (IC_{25} for reproduction or growth is less than 100% effluent), the permittee must conduct a second test within 15 days of the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxicity reduction evaluation (TRE).

If the second test demonstrates noncompliance with the toxicity limit, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional tests within 90 days of failure of the second test to evaluate the frequency and degree of toxicity. The results of the two (2) tests specified above and of the four (4) additional tests will be used for purposes of this evaluation.

If results from two (2) of any six (6) tests show a significant noncompliance with the chronic limit ($\geq$1.2 times the TU_c), or results from four (4) of any six (6) tests show chronic toxicity (as defined in 1.A), a Toxicity Reduction Evaluation (TRE) will be required.

The permittee shall provide written notification, within five (5) days of the completion of accelerated testing to the Division of Water, that toxicity persisted and that a TRE would be initiated or that toxicity did not persist and the normal testing would resume.

Should toxicity not prove persistent during the accelerated testing, but reoccur within 12 months of the initial failure at a level = 1.2 time the TU_c, then a TRE shall be initiated without further accelerated testing.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition), EPA-821-R-02-013, or the most recent edition of this publications.

PART IV
ACUTE CONCERNS
Biomonitoring
Precipitation Dependant Discharges

In accordance with Part I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 015, 017, and 019.

1. Test Requirements

   A. The permittee shall perform a 48-hour static toxicity test with Ceriodaphnia sp. and a 48-hour static toxicity test with fathead minnow (Pimephales promelas). Tests shall be conducted on each of two (2) grab samples taken over the period of discharge (e.g. discrete sample 1 taken at commencement of discharge, sample 2 taken prior to cessation of discharge). Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. The selection of the effluent concentrations is subject to revision by the Division. Testing of the effluent shall be initiated within 36 hours of each sample collection. Controls shall be conducted concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if control survival is 90% or greater in test organisms held in synthetic water. Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the LC_{50} is less than 100% effluent.

   B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

      If after at least six (6) tests, it can be determined that Ceriodaphnia or the fathead minnow is more sensitive, a request for testing only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

2. Reporting Requirements

   Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Acute Toxicity

Due to the discharge being precipitation dependant, if noncompliance with the toxicity limit occurs (the LC_{50} is less than 100% effluent), the permittee must conduct a second test as soon as possible but no later than 30 days after the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxics reduction evaluation (TRE). If a second sample cannot be obtained within this timeframe, then routine sampling shall continue.

If the second test demonstrates noncompliance with the toxicity limit, or any one of the next two routine samples, or any of the samples show a significant noncompliance with the acute limit (=1.2 times the TU_a), the permittee will be required to perform a Toxicity Reduction Evaluation (TRE). The permittee shall provide written notification, within five (5) days of such an event to the Division of Water also indicating that a TRE would be initiated.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions, including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012 (5th edition) or the most recently published edition of this publication.

PART V

BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

4. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."

d. Include any special conditions established in part b of this section.

e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security
j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water
Louisville Regional Office
9116 Leesgate Road
Louisville, Kentucky 40222-5084
ATTN: Supervisor

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Periodically Discharged Wastewaters Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

SEP 29 2006

Mr. William E. Murphie
United States Department of Energy
P.O. Box 1410
Paducah, Kentucky 42001-1410

Re: Paducah Gaseous Diffusion Plant
KPDES No.: KY0004049
McCracken County, Kentucky

Dear Mr. Murphie:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility. This action constitutes a final permit issuance under 401 KAR 5:075, pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075, unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing, pursuant to KRS 224.10-420(2), within thirty (30) days from the date of the issuance of this letter. Two (2) copies of request for hearing should be submitted in writing to the Environmental and Public Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Vickie L. Prather, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 470.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

David W. Morgan, Director
Division of Water

DWM:NG:ng
Enclosure
c: Paducah Regional Office
Division of Water Files

Ernie Fletcher
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION
CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LaJuana S. Wilcher
SECRETARY

FACT SHEET

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE TREATED WASTEWATER
INTO WATERS OF THE COMMONWEALTH

KPDES No.: KY0004049 **Permit Writer:** Larry Sowder **Date:** September 29, 2006
AI No.: 3059

1. **SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

United States Department of Energy (DOE)
P.O. Box 1410
Paducah, Kentucky 42001-1410

Paducah Remediation Services, LLC
P.O. Box 340
Kevil, Kentucky 42053

Uranium Disposition Services, LLC
1020 Monarch Street, Suite 100
Lexington, Kentucky 40513

b. Facility Location

Paducah Gaseous Diffusion Plant
Depleted Uranium Hexafluoride Conversion Facility
5600 Hobbs Road
West Paducah, Kentucky 42086

c. Description of Applicant's Operation

DOE is the owner of the Paducah Gaseous Diffusion Plant, and along with Paducah Remediation Services, LLC conduct cleanup activities including wastewater treatment, waste management, etc. Uranium Disposition Services, LLC will manage the conversion of depleted uranium hexafluoride (DUF_6) to uranium oxide powder, aqueous hydrogen fluoride (HF) and calcium fluoride.

d. Production Capacity of Facility

Not Applicable

pg

e. Description of Existing Pollution Abatement Facilities

Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) are combined for discharge through this outfall.

The C-752-A Waste Storage and Treatment Facility wastewaters include sump collections, recovered spilled water, decontamination water, landfill leachate, and groundwater purge and development water. Those wastewaters which are contaminated with trichloroethylene (TCE) and polychlorinated biphenyls (PCBs) are treated by carbon adsorption. A photocatalytic reactor treatment unit provides chemical oxidation and electrochemical treatment of wastewaters, utilizing ultraviolet radiation in the presence of a catalyst. Both processes are batch treatment operations.

The C-752-C Decontamination Pad wastewaters include groundwater monitoring well purge and development waters, and equipment decontamination which, includes an isopropyl alcohol rinse. Treatment consists of physical separation, air sparging, and/or carbon adsorption. Treatment of these wastewaters may also take place at C-752-A and C-612.

The C-753 Waste Storage and Treatment Facility receives similar wastewaters and utilizes similar treatment processes as the C-752-A Waste Storage and Treatment Facility.

The C-612 Northwest Groundwater Plume System receives TCE and Technetium-99 (^{99}Tc) contaminated groundwaters from the Northwest Plume, well development, well purging, equipment contamination, and filter back wash waters for treatment. Treatment includes sedimentation, air stripping, ion exchange, carbon adsorption, and recycling.

The C-613 Northwest Corner Storm Water Collection Basin receives runoff from C-746-A Metals Recovery, C-746-B Waste Storage, C-747-A Burial Grounds and the C-746 and C-747 Scrap Yards. Treatment provided includes sedimentation, chemical addition, and recirculation.

The C-614 Northeast Plume Containment System recovers TCE contaminated groundwater from the Northeast Plume and conveys it to the C-637-2A Cooling Tower for where the TCE is stripped from the groundwater.

e. Description of Existing Pollution Abatement Facilities

Outfall 001 - The C-616 Wastewater Treatment Facility treats cooling tower blowdown to reduce phosphates. Treatment processes include chemical precipitation in a clarifier with the supernatant and sludge being discharged to the full-flow lagoon (C-616-F) where sedimentation takes place and acid treatment is available. The North-South Diversion Ditch also conveys a number of wastewaters to the C-616-F full flow lagoon for treatment. Wastewaters conveyed by the North-South Diversion Ditch include surface runoff, C-600 Steam Plant wastewaters (Ash transfer water, demineralizer regeneration, boiler blowdown, and coal pile runoff.), and Miscellaneous wastewaters (C-335 air plant cooling water and condensate blowdown, C-335 and C-337 units, 1,4,5, and 6 cascade building steam condensate, once through pump cooling water, drinking fountain drains, eyewash bath drains, safety shower drains, air conditioners, roof and floor drains, C-535 and C-537 switch house roof and floor drains, and surface runoff.)

Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Outfall 019 - Storm water runoff from the C-746-U landfill is treated by a sediment basin. Leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, the C-404 closed hazardous waste landfill will be treated by a wastewater treatment system similar to the one used at the C-752-A Waste Storage and Treatment Facility or by the C-615-H sanitary treatment plant operated by USEC.

f. Permitting Action

Reissuance of a major KPDES permit for a Department of Energy remediation site and associated facilities. The United States Department of Energy (DOE), Paducah Remediation Services, LLC (PRS), and Uranium Disposition Services, LLC (UDS) are co-permittees. The DOE and PRS are jointly responsible for all outfalls addressed by this permit. UDS responsibility is limited to Outfall 017 only.

2. **RECEIVING WATERS**

a. Receiving Water Name

Outfalls 001, 015, and 017 discharges to Bayou Creek at mile points 5.6, 6.2, and 7.1, respectively.

Outfall 019 discharges to an Unnamed Tributary of Little Bayou Creek at mile point 0.25

b. Stream Segment Use Classifications

Bayou Creek and Little Bayou Creek are classified as Warmwater Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation, and Domestic Water Supply.

c. Stream Segment Antidegradation Categorization

The segment of Bayou Creek from the mouth, mile point 0.0, to mile point 6.5 is listed as impaired on the 2004 303(d) List of Waters For Kentucky. Impairments include nonsupport of aquatic life, nonsupport of swimming, and partial support of minimum criteria. Pollutants of concern are Mercury, Radiation, and Metals. Suspected sources are industrial point sources and land disposal. Bayou Creek is listed as a 1st Priority. Bayou Creek has been delisted as being impaired for pH and Thermal modifications.

The segment of Little Bayou Creek from the mouth, mile point 0.0, to mile point 6.5 is listed as impaired on the 2004 303(d) List of Waters For Kentucky. Impairments include nonsupport of aquatic life, nonsupport of fish consumption, and partial support of minimum criteria. Pollutants of concern are PCBs, Radiation, and Metals. Suspected sources are industrial point sources and land disposal. Little Bayou Creek is listed as a 1st Priority. A Total Maximum Daily Load (TMDL) has been developed and approved for PCBs.

d. Stream Low Flow Condition

At the point of discharges, the 7Q10 and the Harmonic Mean for the Bayou Creek are 0.00 and 0.50 cfs, respectively.

At the point of discharges, the 7Q10 and the Harmonic Mean for the Little Bayou Creek are 0.00 and 0.10 cfs, respectively.

At the city of Cairo, Illinois intake, the nearest downstream public water supply intake, the 7Q10 and the Harmonic Mean for the Ohio River are 46,300 and 198,238 cfs, respectively.

3. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	2.27	36.65	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	N/R	<25	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	BDL	6.05	10	15	401 KAR 5:080, Section 1(2)(c)2
Total Residual Chlorine (mg/l)	0.054	0.29	0.011	0.019	401 KAR 5:031, Section 4(k)
Temperature (°F)	66	91	Report	89	401 KAR 5:031, Section 4(k)
PCBs (mg/l)	BDL	0.007	0.000000065	Report	401 KAR 5:031, Section 6
Trichloroethylene (mg/l)	BDL	BDL	0.0308	Report	401 KAR 5:031, Section 6
Total Phosphorus (mg/l)	0.19	0.57	1.00	1.00	401 KAR 5:080, Section 1(2)(c)2
Total Alpha (?Ci/l)	N/R	19.5	Report	15	401 KAR 5:031, Section 2
Total Beta (?Ci/l)	N/R	35.7	Report	50	401 KAR 5:031, Section 2
Uranium (ug/l)	24	24	Report	30	401 KAR 5:031, Section 2
Chronic Toxicity (TU_C)	N/R	2.09	N/A	1.00	401 KAR 5:029, Section 4 401 KAR 5:031, Section 4
Technetium-99 (?Ci/l)	33	97	Report	Report	401 KAR 5:065, Section 2(8)
Hardness (as mg/l $CaCO_3$)	253	464	Report	Report	401 KAR 5:065, Section 2(8)
pH (Standard Units)	6.74 (min)	9.2 (max)	6.00 (min)	9.0 (max)	401 KAR 5:031, Section 4
1,1,2,2-Tetrachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,1-Dichloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,2-Diphenylhydrazine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4,6-Trichlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4-Dinitrotoluene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
3,3-Dichlorobenzidine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.
The abbreviation PCBs means Polychlorinated Biphenyls.

The data in the Reported Discharge columns for Flow, Oil & Grease, Total Residual Chlorine, Temperature, PCBs, Trichloroethylene, Total Phosphorus, Uranium, Chronic Toxicity, Technetium-99, Hardness, and pH was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

3. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
4,4'-DDD (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDE (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDT (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Acrylonitrile (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Aldrin (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-Endosulfan (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzidine (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(k)fluoranthene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Beta-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Beta-Endosulfan (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Bis(2-ethylhexyl)phthalate (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Carbon Tetrachloride (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Chlordane (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Chrysene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dibenzo(a,h)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dieldrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Endrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Free Cyanide (µg/l)	N/R	<20.0	Report	Report	401 KAR 5:065, Section 2(8)
gamma-BHC (Lindane) (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor epoxide (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Hexachlorobenzene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Hexachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.

3. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Ideno(1,2,3-cd)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodimethylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodi-n-Propylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodiphenylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Pentachlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Tetrachloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Cadmium (µg/l)	N/R	<1.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Copper (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Lead (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Mercury (µg/l)	N/R	<0.20	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Selenium (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Silver (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Thallium (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Dissolved Alpha (?Ci/l)	39	119	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Alpha (?Ci/l)	4.4	6.74	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Dissolved Beta (?Ci/l)	36	106	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Beta (?Ci/l)	15	34	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Total Recoverable Metals (mg/l)	1.8	206	Removing from permit		401 KAR 5:080, Section 1(2)(c)2

The abbreviation N/R means Not Reported.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

b. Effluent Characteristics

Flow	Total Suspended Solids
Oil & Grease	Total Residual Chlorine
Temperature	Polychlorinated Biphenyls
Trichloroethylene	Total Phosphorus
Total Alpha	Total Beta
Uranium	Chronic Toxicity
Technetium-99	Hardness
pH	1,1,2,2-Tetrachloroethane
1,1-Dichloroethylene	1,2-Diphenylhydrazine
2,4,6-Trichlorophenol	2,4-Dinitrotoluene
3,3-Dichlorobenzidine	4,4'-DDD
4,4'-DDE	4,4'-DDT
Acrylonitrile	Aldrin
alpha-BHC	alpha-Endosulfan
Benzidine	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(k)fluoranthene
Beta-BHC	Beta-Endosulfan
Bis(2-ethylhexyl)phthalate	Carbon Tetrachloride
Chlordane	Chrysene
Dibenzo(a,h)anthracene	Dieldrin
Endrin	Free Cyanide
gamma-BHC (Lindane)	Heptachlor
Heptachlor epoxide	Hexachlorobenzene
Hexachloroethane	Ideno(1,2,3-cd)pyrene
N-Nitrosodimethylamine	N-Nitrosodi-n-Propylamine
N-Nitrosodiphenylamine	Pentachlorophenol
Tetrachloroethylene	Total Recoverable Cadmium
Total Recoverable Copper	Total Recoverable Lead
Total Recoverable Mercury	Total Recoverable Selenium
Total Recoverable Silver	Total Recoverable Thallium
Dissolved Alpha	Suspended Alpha
Dissolved Beta	Suspended Beta
Total Recoverable Metals	

c. Pertinent Factors

The Environmental Protection Agency (EPA) has not developed an Effluent Limitations Guidelines for point source discharges associated with CERCLA or National Priority Superfund site cleanups.

On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

c. Pertinent Factors

A summarization of the water quality standards, assumptions, and calculations can be found in Attachment A - Fact Sheet Addendum and Attachment B - SSTWAM2004 for KY0004049 Outfall 001.

d. Monitoring Requirements

Flow shall be monitored instantaneously once per day.

Oil & Grease, pH, Polychlorinated Biphenyls (PCBs), Temperature, Total Alpha, Total Beta, Total Phosphorus, Total Residual Chlorine, Total Suspended Solids, Trichloroethylene, and Uranium shall be monitored weekly by grab sample.

Chronic Toxicity shall be monitored quarterly by three (3) 24 hour composite samples collected every other day.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, 3,3-Dichlorobenzidine, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, alpha-Endosulfan, Benzidine, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Endrin, Free Cyanide, gamma-BHC (Lindane), Hardness, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Technetium-99, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Thallium shall be monitored quarterly by grab samples.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow, Hardness, and Technetium-99
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8)(a).

Oil & Grease, Total Phosphorus, and Total Suspended Solids
The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c) 2. These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants.

pH, Temperature, and Total Residual Chlorine
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 4.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

Total Alpha, Total Beta, and Uranium
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 2.

Polychlorinated Biphenyls and Trichloroethylene
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 6.

Chronic Toxicity
The requirements for this parameter are consistent with the requirements of 401 KAR 5:029, Section 4 and 401 KAR 5:031, Sections 2 and 4.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, 3,3-Dichlorobenzidine, Alpha-Endosulfan, Benzo(a)anthracene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Endrin, Free Cyanide, gamma-BHC (Lindane), Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Thallium
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and has determined that analytical methods do exist that are sufficiently sensitive to determine compliance with the calculated limits, i.e. the method detection limit of the analytical method is lower than the calculated limit. The calculated limits for these pollutants can be found in Attachment B - SSTWAM2004 for KY0004049 Outfall 001.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, Benzidine, Benzo(a)pyrene, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Heptachlor, and Heptachlor epoxide

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and was unable to identify analytical methods with method detection limits lower than the calculated limits, however more sensitive analytical methods did exist, than those used by the permittee for the renewal application. These more sensitive analytical methods are necessary to insure compliance with the water quality derived effluent requirements. The calculated limits for these pollutants can be found in Attachment B - SSTWAM2004 for KY0004049 Outfall 001.

Dissolved Alpha, Suspended Alpha, Dissolved Beta, and Suspended Beta

The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective. These revised water quality standards replaced these pollutants with Total Alpha and Total Beta, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Metals

The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. In developing the permit the Division of Water has imposed specific metals monitoring, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

5. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.58	0.62	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	N/R	<10	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	BDL	10	10	15	401 KAR 5:080, Section 1(2)(c)2
PCBs (mg/l)	0.0009	0.075	0.000000065	Report	401 KAR 5:031, Section 6
Total Alpha (?Ci/l)	N/R	19.5	Report	15	401 KAR 5:031, Section 2
Total Beta (?Ci/l)	N/R	35.7	Report	50	401 KAR 5:031, Section 2
Uranium (ug/l)	24	24	Report	30	401 KAR 5:031, Section 2
Acute Toxicity (TU_A)	N/R	2.09	N/A	1.00	401 KAR 5:029, Section 4 401 KAR 5:031, Section 4
Technetium-99 (?Ci/l)	37	58	Report	Report	401 KAR 5:065, Section 2(8)
Hardness (as mg/l $CaCO_3$)	164	436	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Iron (mg/l)	0.85	1.24	Report	Report	401 KAR 5:065, Section 2(8)
pH (Standard Units)	6.77 (min)	8.31 (max)	6.00 (min)	9.0 (max)	401 KAR 5:031, Section 4
1,1,2,2-Tetrachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,1-Dichloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,2-Diphenylhydrazine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4,6-Trichlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4-Dinitrotoluene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
3,3-Dichlorobenzidine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.
The abbreviation PCBs means Polychlorinated Biphenyls.

The data in the Reported Discharge columns for Flow, Oil & Grease, Total Residual Chlorine, Temperature, PCBs, Trichloroethylene, Total Phosphorus, Uranium, Chronic Toxicity, Technetium-99, Hardness, and pH was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

5. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
4,4'-DDD (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDE (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDT (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Acrylonitrile (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Aldrin (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-Endosulfan (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzidine (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(k)fluoranthene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Beta-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Beta-Endosulfan (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Bis(2-ethylhexyl)phthalate (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Carbon Tetrachloride (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Chlordane (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Chrysene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dibenzo(a,h)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dieldrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Endrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Free Cyanide (µg/l)	N/R	<20.0	Report	Report	401 KAR 5:065, Section 2(8)
gamma-BHC (Lindane) (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor epoxide (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Hexachlorobenzene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Hexachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.

5. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Ideno(1,2,3-cd)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodimethylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodi-n-Propylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodiphenylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Pentachlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Tetrachloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Cadmium (µg/l)	N/R	<1.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Copper (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Lead (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Mercury (µg/l)	N/R	<0.20	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Selenium (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Silver (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Thallium (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Dissolved Alpha (?Ci/l)	63	230	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Alpha (?Ci/l)	5.0	13.4	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Dissolved Beta (?Ci/l)	60	228	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Beta (?Ci/l)	19	52.5	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Total Recoverable Metals (mg/l)	2.4	2.94	Removing from permit		401 KAR 5:080, Section 1(2)(c)2

The abbreviation N/R means Not Reported.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

b. Effluent Characteristics

Flow	Total Suspended Solids
Oil & Grease	Polychlorinated Biphenyls
Total Alpha	Total Beta
Uranium	Acute Toxicity
Technetium-99	Hardness
Total Recoverable Iron	pH
1,1,2,2-Tetrachloroethane	1,1-Dichloroethylene
1,2-Diphenylhydrazine	2,4,6-Trichlorophenol
2,4-Dinitrotoluene	3,3-Dichlorobenzidine
4,4'-DDD	4,4'-DDE
4,4'-DDT	Acrylonitrile
Aldrin	alpha-BHC
alpha-Endosulfan	Benzidine
Benzo(a)anthracene	Benzo(a)pyrene
Benzo(k)fluoranthene	Beta-BHC
Beta-Endosulfan	Bis(2-ethylhexyl)phthalate
Carbon Tetrachloride	Chlordane
Chrysene	Dibenzo(a,h)anthracene
Dieldrin	Endrin
Free Cyanide	gamma-BHC (Lindane)
Heptachlor	Heptachlor epoxide
Hexachlorobenzene	Hexachloroethane
Ideno(1,2,3-cd)pyrene	N-Nitrosodimethylamine
N-Nitrosodi-n-Propylamine	N-Nitrosodiphenylamine
Pentachlorophenol	Tetrachloroethylene
Total Recoverable Cadmium	Total Recoverable Copper
Total Recoverable Lead	Total Recoverable Mercury
Total Recoverable Selenium	Total Recoverable Silver
Total Recoverable Thallium	Dissolved Alpha
Suspended Alpha	Dissolved Beta
Suspended Beta	Total Recoverable Metals

c. Pertinent Factors

The Environmental Protection Agency (EPA) has not developed an Effluent Limitations Guidelines for point source discharges associated with CERCLA or National Priority Superfund site cleanups.

On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective.

A summarization of the water quality standards, assumptions, and calculations can be found in Attachment A - Fact Sheet Addendum and Attachment C - SSTWAM2004 for KY0004049 Outfall 015.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

d. Monitoring Requirements

Flow shall be monitored instantaneously once per month.

Oil & Grease, pH, Polychlorinated Biphenyls (PCBs), Total Alpha, Total Beta, Total Phosphorus, Total Residual Chlorine, Total Suspended Solids, Trichloroethylene, and Uranium shall be monitored monthly by grab sample.

Acute Toxicity shall be monitored monthly by two (2) grab samples collected during the period of discharge.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, 3,3-Dichlorobenzidine, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, alpha-Endosulfan, Benzidine, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Endrin, Free Cyanide, gamma-BHC (Lindane), Hardness, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Technetium-99, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Iron, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Thallium shall be monitored quarterly by grab samples.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow, Hardness, Technetium-99, and Total Recoverable Iron
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8)(a).

Oil & Grease, and Total Suspended Solids
The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c) 2. These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants.

pH
The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 4.

Total Alpha, Total Beta, and Uranium
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 2.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

Polychlorinated Biphenyls
The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 6.

Acute Toxicity
The requirements for this parameter are consistent with the requirements of 401 KAR 5:029, Section 4 and 401 KAR 5:031, Sections 2 and 4.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, Alpha-Endosulfan, Benzo(a)anthracene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Endrin, Free Cyanide, gamma-BHC (Lindane), Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, Total Recoverable Thallium, and 3,3-Dichlorobenzidine
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and has determined that analytical methods do exist that are sufficiently sensitive to determine compliance with the calculated limits, i.e. the method detection limit of the analytical method is lower than the calculated limit. The calculated limits for these pollutants can be found in Attachment C - SSTWAM2004 for KY0004049 Outfall 015.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, Benzidine, Benzo(a)pyrene, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Heptachlor, and Heptachlor epoxide

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and was unable to identify analytical methods with method detection limits lower than the calculated limits, however more sensitive analytical methods did exist, than those used by the permittee for the renewal application. These more sensitive analytical methods are necessary to insure compliance with the water quality derived effluent requirements. The calculated limits for these pollutants can be found in Attachment C - SSTWAM2004 for KY0004049 Outfall 015.

Dissolved Alpha, Suspended Alpha, Dissolved Beta, and Suspended Beta

The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective. These revised water quality standards replaced these pollutants with Total Alpha and Total Beta, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Metals

The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. In developing the permit the Division of Water has imposed specific metals monitoring, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

7. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	2.05	35.74	Report	Report	401 KAR 5:065, Section 2(8)
Temperature (°F)	N/R	N/R	Report	89	401 KAR 5:031, Section 4
Total Suspended Solids (mg/l)	N/R	23	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	BDL	BDL	10	15	401 KAR 5:080, Section 1(2)(c)2
PCBs (mg/l)	0.0043	0.415	0.000000065	Report	401 KAR 5:031, Section 6
Total Alpha (?Ci/l)	N/R	19.5	Report	15	401 KAR 5:031, Section 2
Total Beta (?Ci/l)	N/R	35.7	Report	50	401 KAR 5:031, Section 2
Uranium (ug/l)	3.0	7.0	Report	30	401 KAR 5:031, Section 2
Total Recoverable Zinc (µg/l)	147	263	0.120	0.120	401 KAR 5:031, Section 4
Acute Toxicity (TU_A)	N/R	2.09	N/A	1.00	401 KAR 5:029, Section 4 401 KAR 5:031, Section 4
Chronic Toxicity (TU_C)	N/R	N/R	N/A	1.00	401 KAR 5:029, Section 4 401 KAR 5:031, Section 4
Technetium-99 (?Ci/l)	21.5	26.6	Report	Report	401 KAR 5:065, Section 2(8)
Hardness (as mg/l $CaCO_3$)	97	527	Report	Report	401 KAR 5:065, Section 2(8)
pH (Standard Units)	7.00 (min)	8.90 (max)	6.00 (min)	9.0 (max)	401 KAR 5:031, Section 4
1,1,2,2-Tetrachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,1-Dichloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,2-Diphenylhydrazine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4,6-Trichlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4-Dinitrotoluene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
3,3-Dichlorobenzidine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.
The abbreviation PCBs means Polychlorinated Biphenyls.

The data in the Reported Discharge columns for Flow, Oil & Grease, Total Residual Chlorine, Temperature, PCBs, Trichloroethylene, Total Phosphorus, Uranium, Chronic Toxicity, Technetium-99, Hardness, and pH was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

7. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
4,4'-DDD (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDE (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDT (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Acrylonitrile (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Aldrin (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-Endosulfan (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzidine (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(k)fluoranthene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Beta-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Beta-Endosulfan (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Bis(2-ethylhexyl)phthalate (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Carbon Tetrachloride (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Chlordane (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Chrysene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dibenzo(a,h)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dieldrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Endrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Free Cyanide (µg/l)	N/R	<20.0	Report	Report	401 KAR 5:065, Section 2(8)
gamma-BHC (Lindane) (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor epoxide (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Hexachlorobenzene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Hexachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.

7. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 017 - Untreated storm water runoff, (distilled water treatment reject stream, and cooling tower blowdown - future wastestreams) from the depleted uranium hexafluoride cylinder yard and conversion facility.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Ideno(1,2,3-cd)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodimethylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodi-n-Propylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodiphenylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Pentachlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Tetrachloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Cadmium (µg/l)	N/R	<1.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Copper (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Lead (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Mercury (µg/l)	N/R	<0.20	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Selenium (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Silver (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Thallium (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Dissolved Alpha (?Ci/l)	4.4	11	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Alpha (?Ci/l)	1.95	1.95	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Dissolved Beta (?Ci/l)	16.22	40.26	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Beta (?Ci/l)	8.17	13.2	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Total Recoverable Metals (mg/l)	2.27	4.55	Removing from permit		401 KAR 5:080, Section 1(2)(c)2

The abbreviation N/R means Not Reported.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 017 - Untreated storm water runoff, (distilled water treatment reject stream, and cooling tower blowdown - future wastestreams) from the depleted uranium hexafluoride cylinder yard and conversion facility.

b. Effluent Characteristics

Flow	Total Suspended Solids
Oil & Grease	Polychlorinated Biphenyls
Total Alpha	Total Beta
Uranium	Total Recoverable Zinc
Acute Toxicity	Technetium-99
Hardness	pH
1,1,2,2-Tetrachloroethane	1,1-Dichloroethylene
1,2-Diphenylhydrazine	2,4,6-Trichlorophenol
2,4-Dinitrotoluene	3,3-Dichlorobenzidine
4,4'-DDD	4,4'-DDE
4,4'-DDT	Acrylonitrile
Aldrin	alpha-BHC
alpha-Endosulfan	Benzidine
Benzo(a)anthracene	Benzo(a)pyrene
Benzo(k)fluoranthene	Beta-BHC
Beta-Endosulfan	Bis(2-ethylhexyl)phthalate
Carbon Tetrachloride	Chlordane
Chrysene	Dibenzo(a,h)anthracene
Dieldrin	Endrin
Free Cyanide	gamma-BHC (Lindane)
Heptachlor	Heptachlor epoxide
Hexachlorobenzene	Hexachloroethane
Ideno(1,2,3-cd)pyrene	N-Nitrosodimethylamine
N-Nitrosodi-n-Propylamine	N-Nitrosodiphenylamine
Pentachlorophenol	Tetrachloroethylene
Total Recoverable Cadmium	Total Recoverable Copper
Total Recoverable Lead	Total Recoverable Mercury
Total Recoverable Selenium	Total Recoverable Silver
Total Recoverable Thallium	Dissolved Alpha
Suspended Alpha	Dissolved Beta
Suspended Beta	Total Recoverable Metals
Temperature	Chronic Toxicity
Total Recoverable Zinc	

c. Pertinent Factors

The Environmental Protection Agency (EPA) has not developed an Effluent Limitations Guidelines for point source discharges associated with CERCLA or National Priority Superfund site cleanups.

On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective.

A summarization of the water quality standards, assumptions, and calculations can be found in Attachment A - Fact Sheet Addendum and Attachment D - SSTWAM2004 for KY0004049 Outfall 017.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

d. Monitoring Requirements

Flow shall be monitored instantaneously once per month.

Oil & Grease, pH, Polychlorinated Biphenyls (PCBs), Temperature, Total Alpha, Total Beta, Total Recoverable Zinc, Total Suspended Solids, and Uranium shall be monitored monthly by grab sample.

Acute Toxicity shall be monitored quarterly by two (2) grab samples collected during the period of discharge.

Chronic Toxicity shall be monitored monthly by three (3) 24 hour composite samples collected every other day.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, 3,3-Dichlorobenzidine, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, alpha-Endosulfan, Benzidine, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Endrin, Free Cyanide, gamma-BHC (Lindane), Hardness, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Technetium-99, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Thallium shall be monitored quarterly by grab samples.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow, Hardness, and Technetium-99
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8)(a).

Oil & Grease, and Total Suspended Solids
The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c) 2. These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants.

pH, Temperature, Total Recoverable Zinc
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 4.

Total Alpha, Total Beta, and Uranium
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 2.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

Polychlorinated Biphenyls, and Total Recoverable Zinc
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 6.

Acute Toxicity
The requirements for this parameter are consistent with the requirements of 401 KAR 5:029, Section 4 and 401 KAR 5:031, Sections 2 and 4.

Chronic Toxicity
The requirements for this parameter are consistent with the requirements of 401 KAR 5:029, Section 4 and 401 KAR 5:031, Sections 2 and 4.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, Alpha-Endosulfan, Benzo(a)anthracene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Endrin, Free Cyanide, gamma-BHC (Lindane), Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, Total Recoverable Thallium, and 3,3-Dichlorobenzidine
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and has determined that analytical methods do exist that are sufficiently sensitive to determine compliance with the calculated limits, i.e. the method detection limit of the analytical method is lower than the calculated limit. The calculated limits for these pollutants can be found in Attachment D - SSTWAM2004 for KY0004049 Outfall 017.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, Benzidine, Benzo(a)pyrene, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Heptachlor, and Heptachlor epoxide

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and was unable to identify analytical methods with method detection limits lower than the calculated limits, however more sensitive analytical methods did exist, than those used by the permittee for the renewal application. These more sensitive analytical methods are necessary to insure compliance with the water quality derived effluent requirements. The calculated limits for these pollutants can be found in Attachment C - SSTWAM2004 for KY0004049 Outfall 015.

Dissolved Alpha, Suspended Alpha, Dissolved Beta, and Suspended Beta

The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective. These revised water quality standards replaced these pollutants with Total Alpha and Total Beta, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Metals

The removal of this parameter from the permit is consistent with the requirements of 401 KAR 5:080, Section 1(2)(c)2. In developing the permit the Division of Water has imposed specific metals monitoring, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

9. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.66	1.25	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	18.5	29	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	BDL	BDL	10	15	401 KAR 5:080, Section 1(2)(c)2
PCBs (mg/l)	0.0043	0.415	0.000000065	Report	401 KAR 5:031, Section 6
PCBs (lbs/day)	N/R	N/R	Report	0.0	40 CFR Part 130.7
BOD_5 (mg/l)	N/R	<10	37	140	401 KAR 5:080, Section 1(2)(c)2
Ammonia (as mg/l N)	N/R	<0.2	3.36	10	401 KAR 5:031, Section 4 401 KAR 5:080, Section 1(2)(c)2
a-Terpineol (mg/l)	N/R	N/R	0.016	0.033	401 KAR 5:080, Section 1(2)(c)2
Benzoic Acid (mg/l)	N/R	N/R	0.071	0.12	401 KAR 5:080, Section 1(2)(c)2
p-Cresol (mg/l)	N/R	N/R	0.014	0.025	401 KAR 5:080, Section 1(2)(c)2
Phenol (mg/l)	N/R	N/R	0.015	0.026	401 KAR 5:080, Section 1(2)(c)2
Total Alpha (?Ci/l)	N/R	19.5	Report	15	401 KAR 5:031, Section 2
Total Beta (?Ci/l)	N/R	35.7	Report	50	401 KAR 5:031, Section 2
Uranium (ug/l)	4.0	5.0	Report	30	401 KAR 5:031, Section 2
Total Recoverable Zinc (µg/l)	147	263	0.120	0.120	401 KAR 5:031, Section 4
Acute Toxicity (TU_A)	N/R	2.09	N/A	1.00	401 KAR 5:029, Section 4 401 KAR 5:031, Section 4
Technetium-99 (?Ci/l)	0.69	22	Report	Report	401 KAR 5:065, Section 2(8)
Hardness (as mg/l $CaCO_3$)	73	100	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Iron (mg/l)	0.83	2.03	Report	Report	401 KAR 5:065, Section 2(8)
pH (Standard Units)	7.10 (min)	8.82 (max)	6.00 (min)	9.0 (max)	401 KAR 5:031, Section 4
1,1,2,2-Tetrachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,1-Dichloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
1,2-Diphenylhydrazine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
2,4,6-Trichlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.
The abbreviation PCBs means Polychlorinated Biphenyls.
The abbreviation BOD_5 means Biochemical Oxygen Demand, 5-day.
The data in the Reported Discharge columns for Flow, Oil & Grease, Total Residual Chlorine, Temperature, PCBs, Trichloroethylene, Total Phosphorus, Uranium, Chronic Toxicity, Technetium-99, Hardness, and pH was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

9. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
2,4-Dinitrotoluene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
3,3-Dichlorobenzidine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDD (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDE (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
4,4'-DDT (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Acrylonitrile (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Aldrin (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
alpha-Endosulfan (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzidine (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(a)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Benzo(k)fluoranthene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Beta-BHC (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Beta-Endosulfan (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Bis(2-ethylhexyl)phthalate (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Carbon Tetrachloride (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Chlordane (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Chrysene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dibenzo(a,h)anthracene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Dieldrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Endrin (µg/l)	N/R	<0.1	Report	Report	401 KAR 5:065, Section 2(8)
Free Cyanide (µg/l)	N/R	<20.0	Report	Report	401 KAR 5:065, Section 2(8)
gamma-BHC (Lindane) (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Heptachlor epoxide (µg/l)	N/R	<0.05	Report	Report	401 KAR 5:065, Section 2(8)
Hexachlorobenzene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Hexachloroethane (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)

The abbreviation N/R means Not Reported.

9. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Ideno(1,2,3-cd)pyrene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodimethylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodi-n-Propylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
N-Nitrosodiphenylamine (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Pentachlorophenol (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Tetrachloroethylene (µg/l)	N/R	<5.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Cadmium (µg/l)	N/R	<1.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Copper (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Lead (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Mercury (µg/l)	N/R	<0.20	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Selenium (µg/l)	N/R	<10.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Silver (µg/l)	N/R	<25.0	Report	Report	401 KAR 5:065, Section 2(8)
Total Recoverable Thallium (µg/l)	N/R	<200.0	Report	Report	401 KAR 5:065, Section 2(8)
Dissolved Alpha (?Ci/l)	4.65	4.8	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Alpha (?Ci/l)	1.65	1.9	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Dissolved Beta (?Ci/l)	10.25	26.8	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Suspended Beta (?Ci/l)	6.1	8.2	Removing from permit		401 KAR 5:080, Section 1(2)(c)2
Total Recoverable Metals (mg/l)	2.16	2.85	Removing from permit		401 KAR 5:080, Section 1(2)(c)2

The abbreviation N/R means Not Reported.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

b. Effluent Characteristics

Flow	Total Suspended Solids
Oil & Grease	Polychlorinated Biphenyls
BOD_5	Ammonia
a-Terpineol	Benzoic Acid
p-Cresol	Phenol
Total Alpha	Total Beta
Uranium	Total Recoverable Zinc
Acute Toxicity	Technetium-99
Hardness	Total Recoverable Iron
pH	1,1,2,2-Tetrachloroethane
1,1-Dichloroethylene	1,2-Diphenylhydrazine
2,4,6-Trichlorophenol	2,4-Dinitrotoluene
3,3-Dichlorobenzidine	4,4'-DDD
4,4'-DDE	4,4'-DDT
Acrylonitrile	Aldrin
alpha-BHC	alpha-Endosulfan
Benzidine	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(k)fluoranthene
Beta-BHC	Beta-Endosulfan
Bis(2-ethylhexyl)phthalate	Carbon Tetrachloride
Chlordane	Chrysene
Dibenzo(a,h)anthracene	Dieldrin
Endrin	Free Cyanide
gamma-BHC (Lindane)	Heptachlor
Heptachlor epoxide	Hexachlorobenzene
Hexachloroethane	Ideno(1,2,3-cd)pyrene
N-Nitrosodimethylamine	N-Nitrosodi-n-Propylamine
N-Nitrosodiphenylamine	Pentachlorophenol
Tetrachloroethylene	Total Recoverable Cadmium
Total Recoverable Copper	Total Recoverable Lead
Total Recoverable Mercury	Total Recoverable Selenium
Total Recoverable Silver	Total Recoverable Thallium
Dissolved Alpha	Suspended Alpha
Dissolved Beta	Suspended Beta
Total Recoverable Metals	

c. Pertinent Factors

The Environmental Protection Agency (EPA) has developed effluent guidelines for landfill wastewaters from RCRA Subtitle C Hazardous Waste Landfills and RCRA Subtitle D Non-Hazardous Waste Landfills. Those landfills which receive wastes from on-site industrial or commercial activities are considered "captive landfills" and not subject to the requirements of this effluent guideline. However EPA recommends that the issuing authority use its Best Professional Judgment in developing appropriate conditions for "captive landfills".

On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

c. Pertinent Factors - continued

A Total Maximum Daily Load (TMDL) has been developed by the Kentucky Division of Water and approved by the Environmental Protection Agency for Polychlorinated Biphenyls in Little Bayou Creek. See Fact Sheet Attachment E - Total Maximum Daily Load (TMDL) Polychlorinated Biphenyls (PCBs) for Little Bayou Creek (McCracken County, Kentucky)

A summarization of the effluent guidelines, water quality standards, assumptions, and calculations can be found in Attachment A - Fact Sheet Addendum and Attachment F - SSTWAM2004 for KY0004049 Outfall 019.

d. Monitoring Requirements

Flow shall be monitored instantaneously once per month.

a-Terpineol, Ammonia, BOD_5, Benzoic Acid, Oil & Grease, pH, p-Cresol, Phenol, Polychlorinated Biphenyls (PCBs), Total Alpha, Total Beta, Total Recoverable Zinc, Total Suspended Solids, Trichloroethylene, and Uranium shall be monitored monthly by grab sample.

Acute Toxicity shall be monitored monthly by two (2) grab samples collected during the period of discharge.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, 3,3-Dichlorobenzidine, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, alpha-Endosulfan, Benzidine, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Endrin, Free Cyanide, gamma-BHC (Lindane), Hardness, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Technetium-99, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Iron, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Thallium shall be monitored quarterly by grab samples.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow, Hardness, Technetium-99, and Total Recoverable Iron
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8)(a).

Oil & Grease, and Total Suspended Solids
The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c) 2. These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants.

pH
The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 4.

Total Alpha, Total Beta, and Uranium
The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 2.

Total Recoverable Zinc
The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 6.

Polychlorinated Biphenyls
The concentration limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 6. The loading limitations are consistent with 40 CFR 130.7 - Total Maximum Daily Loads (TMDL) and individual water quality based effluent limitations.

Acute Toxicity
The requirements for this parameter are consistent with the requirements of 401 KAR 5:029, Section 4 and 401 KAR 5:031, Sections 2 and 4.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

a-Terpineol, BOD_5, Benzoic Acid, p-Cresol, and Phenol
The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c) 2. These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants. In establishing these effluent requirements the Division of Water used 40 CFR Part 445 Landfills Point Source Category, specifically the BPT and BAT requirements for RCRA Subtitle D Non-hazardous Landfills (40 CFR 455.21 and 455.24, respectively). As stated in Part 10 c. - Pertinent Factors "captive landfills" are not subject to the requirements of 40 CFR 445, however EPA has recommended the permit issuing authority use its BPJ to establish appropriate requirements. In the opinion of the Division of Water the landfills at the Paducah Gaseous Diffusion Plant are captive landfills. It is also the opinion of the Division of Water the wastewaters generated at the facility are sufficiently similar to those addressed by 40 CFR Part 445, therefore the Division of Water is exercising its BPJ determination by applying these requirements to the discharges from this outfall.

Ammonia
The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 4 and 401 KAR 5:080, Section 1(2)(c) 2. The monthly average limitation is consistent with the requirements for unionized ammonia as specified in 401 KAR 5:031, Section 4 (1)(i). These limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Practicable Technology Currently Available" (BPT) and "Best Available Technology Economically Achievable" (BAT) requirements for these pollutants. In establishing these effluent requirements the Division of Water used 40 CFR Part 445 Landfills Point Source Category, specifically the BPT and BAT requirements for RCRA Subtitle D Non-hazardous Landfills (40 CFR 455.21 and 455.24, respectively). As stated in Part 10 c. - Pertinent Factors "captive landfills" are not subject to the requirements of 40 CFR 445, however EPA has recommended the permit issuing authority use its BPJ to establish appropriate requirements. In the opinion of the Division of Water the landfills at the Paducah Gaseous Diffusion Plant are captive landfills. It is also the opinion of the Division of Water the wastewaters generated at the facility are sufficiently similar to those addressed by 40 CFR Part 445, therefore the Division of Water is exercising its BPJ determination by applying these requirements to the discharges from this outfall.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

Dissolved Alpha, Suspended Alpha, Dissolved Beta, and Suspended Beta
The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 5:031 became effective. These revised water quality standards replaced these pollutants with Total Alpha and Total Beta, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Metals
The removal of these parameters from the permit is consistent with the 401 KAR 5:080, Section 1(2)(c)2. In developing the permit the Division of Water has imposed specific metals monitoring, therefore it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-Diphenylhydrazine, 2,4,6-Trichlorophenol, 2,4-Dinitrotoluene, Alpha-Endosulfan, Benzo(a)anthracene, Benzo(k)fluoranthene, Beta-BHC, Beta-Endosulfan, Bis(2-ethylhexyl)phthalate, Carbon Tetrachloride, Endrin, Free Cyanide, gamma-BHC (Lindane), Hexachlorobenzene, Hexachloroethane, Ideno(1,2,3-cd)pyrene, N-Nitrosodimethylamine, N-Nitrosodi-n-Propylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Tetrachloroethylene, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Selenium, Total Recoverable Silver, Total Recoverable Thallium, and 3,3-Dichlorobenzidine
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and has determined that analytical methods do exist that are sufficiently sensitive to determine compliance with the calculated limits, i.e. the method detection limit of the analytical method is lower than the calculated limit. The calculated limits for these pollutants can be found in Attachment F - SSTWAM2004 for KY0004049 Outfall 019.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Acrylonitrile, Aldrin, alpha-BHC, Benzidine, Benzo(a)pyrene, Chlordane, Chrysene, Dibenzo(a,h)anthracene, Dieldrin, Heptachlor, and Heptachlor epoxide
The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8). During the review of the renewal application for this permit it was noted that typically two samples of the effluent were collected and analyzed for each of these pollutants and the resultant concentrations were reported as being less than a numerical value. This method of reporting indicates the pollutant was not detected at the reported concentrations which generally are assumed to represent the detection limit of the analytical method utilized for analysis. During the review of a permit the Division of Water performs a reasonable potential analysis whereby the reported data from the application or Discharge Monitoring Reports (DMRs) are compared to the expected water quality based effluent limits calculated using the Excel Workbook entitled SSTWAM2004. This analysis revealed that for these pollutants the reported levels exceeded the calculated limit. In such cases the calculated limits would be imposed, however due to the limited number of samples analyzed and apparent use of analytical methods insufficiently sensitive to demonstrate compliance the Division of Water has determined that further monitoring of these pollutants is necessary. The Division of Water searched the National Environmental Methods Index and was unable to identify analytical methods with method detection limits lower than the calculated limits, however more sensitive analytical methods did exist, than those used by the permittee for the renewal application. These more sensitive analytical methods are necessary to insure compliance with the water quality derived effluent requirements. The calculated limits for these pollutants can be found in Attachment F - SSTWAM2004 for KY0004049 Outfall 019.

11. ANTIDEGRADATION

The development of this permit commenced prior to the April 12, 2005 EPA approval of Kentucky's Antidegradation Regulation promulgated on September 8, 2004. Therefore, previous antidegradation requirements are applicable. The conditions of 401 KAR 5:029, Section 1(1) have been satisfied by this permit action. A review under Section 1(2), (3), and (4) is not applicable.

12. PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS

Permittee shall comply with the effluent limitations by the effective date of the permit with the following exceptions.

The effluent limitations for Total Alpha, Total Beta, and Uranium shall become effective three years after the effective date of this permit.

The limits for Temperature and Chronic Toxicity for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

13. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE

Bayou Creek and Little Bayou Creek Watershed Monitoring Program

During the reissuance of the previous permit this program was imposed as permit condition to gauge the success of the DOE remediation of the Paducah Gaseous Diffusion Plant. Over the interim period the two watersheds have been extensively sampled to the point that further collection of aquatic organisms could result in a deleterious effect on the aquatic community. Therefore biological sampling will not be required as part of these programs, the permittee shall however continue with the physical/chemical assessment of these watersheds. The permittee shall submit a revised monitoring program for the 2007 calendar year by December 1, 2006.

Best Management Practices (BMP) Plan

Pursuant to 401 KAR 5:065, Section 2(10), a BMP requirement shall be included: to control or abate the discharge of pollutants from ancillary areas containing toxic or hazardous substances or those substances which could result in an environmental emergency; where numeric effluent limitations are infeasible; or to carry out the purposes and intent of KRS 224. The facility has several areas where support activities occur which have a potential of the discharge of such substances through storm water runoff or spillage. Some of these areas will drain to present wastewater treatment plants, others will not.

Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

13. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE - continued

Required Detected Limits For Selected Pollutants
The following MDLs are required to demonstrate compliance of the listed pollutant with water quality based limitations.

Pollutant	MDL (µg/l)	Pollutant	MDL (µg/l)
Polychlorinated Biphenyls	0.065	Total Recoverable Zinc	1.0
1,1,2,2-Tetrachloroethane	0.03	1,1-Dichloroethylene	0.05
1,2-Diphenylhydrazine	0.028	2,4,6-Trichlorophenol	0.64
2,4-Dinitrotoluene	0.02	3,3-Dichlorobenzidine	0.13
4,4'-DDD	0.004	4,4'-DDE	0.004
4,4'-DDT	0.004	Acrylonitrile	0.5
Aldrin	0.007	alpha-BHC	0.0053
alpha-Endosulfan	0.006	Benzidine	0.08
Benzo(a)anthracene	0.002	Benzo(a)pyrene	0.029
Benzo(k)fluoranthene	0.002	Beta-BHC	0.0036
Beta-Endosulfan	0.001	Bis(2-ethylhexyl)phthalate	0.46
Carbon Tetrachloride	0.12	Chlordane	0.014
Chrysene	0.063	Dibenzo(a,h)anthracene	0.019
Dieldrin	0.004	Endrin	0.007
Free Cyanide	5.0	gamma-BHC (Lindane)	0.003
Heptachlor	0.005	Heptachlor epoxide	0.001
Hexachlorobenzene	0.002	Hexachloroethane	0.03
Ideno(1,2,3-cd)pyrene	0.011	N-Nitrosodimethylamine	0.15
N-Nitrosodi-n-Propylamine	0.15	N-Nitrosodiphenylamine	0.81
Pentachlorophenol	0.25	Tetrachloroethylene	0.03
Total Recoverable Cadmium	0.01	Total Recoverable Copper	1.0
Total Recoverable Lead	1.0	Total Recoverable Mercury	0.0002
Total Recoverable Selenium	1.0	Total Recoverable Silver	1.0
Total Recoverable Thallium	1.0		

14. PERMIT DURATION

Five (5) years. This facility is in the Tennessee/Mississippi/Cumberland Basin Management Unit as per the Kentucky Watershed Management Framework.

15. PERMIT INFORMATION

The application, draft permit fact sheet, public notice, comments received, and additional information is available by writing the Division of Water at 14 Reilly Road, Frankfort Office Park, Frankfort, Kentucky 40601.

16. **REFERENCES AND CITED DOCUMENTS**

All material and documents referenced or cited in this fact sheet are a part of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

17. **CONTACT**

For further information contact the individual identified on the Public Notice or the Permit Writer - Larry Sowder at (502) 564-2225, extension 472 or e-mail Larry.Sowder@mail.state.ky.us.

18. **PUBLIC NOTICE INFORMATION**

Please refer to the attached Public Notice for details regarding the procedures for a final permit decision, deadline for comments, and other information required by 401 KAR 5:075, Section 4(2)(e).

REGULATORY REQUIREMENTS - EFFLUENT GUIDELINES

PART 445—LANDFILLS POINT SOURCE CATEGORY

Subsection 445.1 General Applicability

(a) As defined more specifically in each subpart and except as provided in paragraphs (b) through (h) of this section, this part applies to discharges of wastewater from landfill units.

(b) The provisions of this part do not apply to wastewater discharges from land application or land treatment units, surface impoundments, underground injection wells, waste piles, salt dome formations, salt bed formations, underground mines or caves as these terms are defined in 40 CFR 257.2 and 260.10.

(c) The provisions of this part do not apply to wastewater generated off-site of a landfill facility, including wastewater generated off-site from washing vehicles or from waste transfer stations.

(d) The provisions of this part do not apply to discharges of contaminated ground water or wastewater from recovery pumping wells.

(e) This part does not apply to discharges of landfill wastewater from landfills operated in conjunction with other industrial or commercial operations when the landfill only receives wastes generated by the industrial or commercial operation directly associated with the landfill.

(f) This part does not apply to discharges of landfill wastewater from landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes provided the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR subchapter N as the industrial or commercial operation or the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation.

(g) This part does not apply to landfills operated in conjunction with Centralized Waste Treatment (CWT) facilities subject to 40 CFR Part 437 so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills.

(h) This part does not apply to landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

REGULATORY REQUIREMENTS - EFFLUENT GUIDELINES

Subsection 445.1 General Definitions

In addition to the definitions set forth in 40 CFR 122.2, 257.2, 258.2, 264.10, 265.10, 401.11, and 403.3 the following definitions apply to this part:

(a) Contaminated ground water means water below the land surface in the zone of saturation which has been contaminated by activities associated with waste disposal.

(b) Contaminated storm water means storm water which comes in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in paragraph (f) of this section. Some specific areas of a landfill that may produce contaminated storm water include (but are not limited to): the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment or machinery that has been in direct contact with the waste; and waste dumping areas.

(c) Landfill directly associated with an industrial or commercial operation means:
(1) A landfill located on the same site as industrial or commercial operations; and
(2) A landfill not located on the same site as the industrial or commercial operations (off-site), but "wholly-owned" by the industrial or commercial facility and primarily dedicated to receiving waste from the related industrial or commercial facility.

(d) Facility means all contiguous property owned, operated, leased or under the control of the same person or entity.

(e) Landfill unit means an area of land or an excavation in which wastes are placed for permanent disposal, that is not a land application or land treatment unit, surface impoundment, underground injection well, waste pile, salt dome formation, a salt bed formation, an underground mine or a cave as these terms are defined in 40 CFR 257.2, 258.2 and 264.10.

(f) Landfill wastewater means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated storm water and contact washwater from washing truck, equipment, and railcar exteriors and surface areas which have come in direct contact with solid waste at the landfill facility.

(g) Non-contaminated storm water means storm water which does not come in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater that is defined in paragraph (f) of this section. Non-contaminated storm water includes storm water which flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

REGULATORY REQUIREMENTS - EFFLUENT GUIDELINES

Subsection 445.1 General Definitions

(h) Off-site means outside the boundaries of a facility.

(i) On-site means within the boundaries of a facility.

(j) Public service means the provision of landfill waste disposal services to individual members of the general public, publicly-owned organizations (schools, universities, government agencies, municipalities) and not-for-profit organizations for which the landfill does not receive a fee or other remuneration.

(k) The regulated parameters for this part, numbered (P) and listed with approved methods of analysis in Table 1B at 40 CFR 136.3, are defined as follows:
(1) Ammonia (as N) means ammonia reported as nitrogen. P4.
(2) BOD5 means 5-day biochemical oxygen demand. P9.
(3) Arsenic means total arsenic. P6.
(4) Chromium means total chromium. P19.
(5) Zinc means total zinc. P75.

(l) The regulated parameters for this part, numbered (P) and listed with approved methods of analysis in Table 1C at 40 CFR 136.3, are as follows:
(1) Naphthalene. P68.
(2) Phenol. P85.

(m) The regulated parameters for this part listed with approved methods of analysis in the attachments to Methods 625 and 1625B in Appendix A at 40 CFR Part 136 are as follows:
(1) Aniline.
(2) Benzoic acid.
(3) p-Cresol.
(4) Pyridine.
(5) a-Terpineol.

Subpart B—RCRA Subtitle D Non-Hazardous Waste Landfill

Subsection 445.20 Applicability

Except as provided in §445.1, this subpart applies to discharges of wastewater from landfills subject to the provisions of 40 CFR part 258, *Criteria for Municipal Solid Waste Landfills;* and 40 CFR part 257, *Criteria for Classification of Solid Waste Disposal Facilities and Practices.*

REGULATORY REQUIREMENTS - EFFLUENT GUIDELINES

Subsection 445.21 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Effluent Characteristic	Maximum Daily	Maximum Monthly Average
	mg/l	
Biochemical Oxygen Demand	140	37
Total Suspended Solids	88	27
Ammonia (as N)	10	4.9
a-Terpineol	0.033	0.016
Benzoic Acid	0.12	0.071
p-Cresol	0.025	0.014
Phenol	0.026	0.015
Zinc	0.20	0.11
pH	(1)	(1)
[1]Within the range of 6.0 to 9.0		

Subsection 445.23 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30-125.32, any existing point source subject to this subpart must achieve the following effluent limitations which represent the application of BAT: Limitations for ammonia (as N), a-terpineol, benzoic acid, p-cresol, phenol and zinc are the same as the corresponding limitations specified in §445.21.

REGULATORY REQUIREMENTS - WATER QUALITY STANDARDS

401 KAR 5:031, SECTION 4(h)5 (TABLE 2) - WARM WATER AQUATIC HABITAT CRITERIA

Pollutant or Pollutant Characteristic	Acute Criteria	Chronic Criteria	Human Health Fish & Water Consumption	Human Health Fi Only
Total Recoverable Cadmium	$e^{(1.0166\ (\ln Hard^*)-3.924)}$	$e^{(0.7409\ (\ln Hard^*)-4.719)}$	5	------
Hexavalent Chromium	16	11	------	------
Total Recoverable Copper	$e^{(0.9422\ (\ln Hard^*)-1.700)}$	$e^{(0.8545\ (\ln Hard^*)-1.702)}$	1,300	------
Total Recoverable Lead	$e^{(1.273\ (\ln Hard^*)-1.460)}$	$e^{(1.273\ (\ln Hard^*)-4.705)}$	15	------
Total Recoverable Nickel	$e^{(0.8460\ (\ln Hard^*)+2.255)}$	$e^{(0.8460(\ln Hard^*)+0.0584)}$	610	4,600
Total Recoverable Silver	$e^{(1.72\ (\ln Hard^*)-6.59)}$	------	------	------
Total Recoverable Zinc	$e^{(0.8473\ (\ln Hard^*)+0.884)}$	$e^{(0.8473\ (\ln Hard^*)+0.884)}$	7,400	26,000
Free Cyanide	22	5.2	700	220,000
pH (Standard Units)	Within the range of 6.0 to 9.0 at all times		------	------
The units for this table are µg/l				

LIMITS CALCULATIONS - WATER QUALITY STANDARDS

The calculation of water quality based effluent limitations requires the application of the water quality criteria specified in 401 KAR 5:031, Sections 3, 4 and 6 to the appropriate mixing zones. The aquatic life acute criteria apply at the end-of-the pipe. The aquatic life chronic criteria and human health fish only consumption criteria apply at the edge of the regulatory mixing zone. The human health domestic water suply criteria apply at the point of withdrawal of the nearest downstream public water supply.

The Division of Water developed Excel Workbook known as SSTWAM2004 is utilized in calculating the water quality based effluent limitations; see Attachments B, C, D, and F of this Fact Sheet for the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 001

Permit Writer	Larry Sowder
Date Entered	7/28/2006
Facility Name	USDOE Paducah Gaseous Diffusion Plant
KPDES Number	KY0004049
Outfall Number	001
Case Number	1
Status:	E

Is this an existing facility – Enter "E"
Is this an existing facility with an increase in pollutant load – Enter "I"
Is this a new facility – Enter "N"
Is this a regional facility with an approved up-to-date 201 plan – Enter "R"
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter "A"

Receiving Water Name	Bayou Creek	
Discharge Mile Point	5.6	
Public Water Supply Name	Cairo Illinois	
Intake Water Name	Ohio River	
Intake Mile Point	3.6 (977.8 USCOE)	
Total Effluent Flow (Q_T)	3.84	MGD
Receiving Water 7Q10 (Q_{RW7Q10})	0	cfs
Receiving Water Harmonic Mean (Q_{RWHM})	0.5	cfs
Receiving Water pH	7.5	
Receiving Water Temperature	20.00	°C
Intake Water 7Q10 (Q_{IW7Q10})	46300	cfs
Intake Water Harmonic Mean (Q_{IWHM})	198238	cfs
Effluent Hardness	255	(as mg/l CaCO3)
Receiving Water Hardness	100	(as mg/l CaCO3)
Zone of Initial Dilution (ZID)	1	
Mixing Zone (MZ)	0.333	
Acute to Chronic Ratio (ACR)	0.1	
Impaired	Yes	

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014 No

Calculation Methodology

Definitions

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q_T
Aquatic Life Acute Criteria	C_A	Receiving Water 7Q10	Q_{RW7Q10}
Aquatic Life Chronic Criteria	C_C	Receiving Water Harmonic Mean	Q_{RWHM}
Human Health Criteria - Fish Only	C_{HHFO}	Intake Water 7Q10	Q_{IW7Q10}
Human Health Criteria - Fish & Water	C_{HHFW}	Intake Water Harmonic Mean	Q_{IWHM}
End of Pipe Effluent Limit	C_T	Zone of Initial Dilution	ZID
Instream Background Concentration	C_U	Mixing Zone	MZ
Toxicity Units - Acute	TU_a	Toxicity Units - Chronic	TU_c
Effluent Hardness	H_T	Receiving Water Hardness	H_{RW}

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 001

Aquatic Life - Chemical Specific

Acute
NO ZID given $C_T = C_A$
ZID given $C_T = (C_A - C_U) \times (ZID)$

Chronic Mixing Zone / Complete Mix
$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$

Human Health - Chemical Specific

Fish Only: Mixing Zone / Complete Mix
Carcinogen / Non-Carcinogen: $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\}/Q_T$

Fish & Water Only: Mixing Zone / Applicable at point of withdrawal
Carcinogen: $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\}/Q_T$
Non-Carcinogen: $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\}/Q_T$

Aquatic Life - Whole Effluent Toxicity

Acute (Units TU_a)
NO ZID given CT = CA
ZID given $C_T = (C_A - C_U) \times (ZID)$

Chronic Mixing Zone / Complete Mix (Units TUc)
$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
Conversion of TU_c to TU_a: $TU_c \times ACR = TU_a$

Metal Aquatic Criteria

Pollutant	Acute Criteria	Chronic Criteria
Total Recoverable Cadmium	$e^{(1.0166\ (\ln Hardness) - 3.924)}$	$e^{(0.7409\ (\ln Hardness) - 4.719)}$
Chromium III	$e^{(0.8190\ (\ln Hardness) + 3.7256)}$	$e^{(0.8190\ (\ln Hardness) + 0.6848)}$
Total Recoverable Copper	$e^{(0.9422\ (\ln Hardness) - 1.700)}$	$e^{(0.8545\ (\ln Hardness) - 1.702)}$
Total Recoverable Lead	$e^{(1.273\ (\ln Hardness) - 1.460)}$	$e^{(1.273\ (\ln Hardness) - 4.705)}$
Total Recoverable Nickel	$e^{(0.8460\ (\ln Hardness) + 2.255)}$	$e^{(0.8460(\ln Hardness) + 0.0584)}$
Total Recoverable Silver	$e^{(1.72\ (\ln Hardness) - 6.59)}$	
Total Recoverable Zinc	$e^{(0.8473\ (\ln Hardness) + 0.884)}$	$e^{(0.8473\ (\ln Hardness) + 0.884)}$

Hardness (as mg/l $CaCO_3$)
Zone Initial Dilution (ZID): $H_{RW} + [H_T + H_{RW}]/ZID$
Mixing Zone: $[(Q_{RW7Q10})(MZ)(H_{RW}) +$
$(Q_T)(H_T)]/[(QRW7Q10)(MZ)+(QT)]$

Total Ammonia Criteria

Chronic - applies state wide - unionzed criteria of 0.05 mg/l
$[0.05*(1+10^{(pka-pH)})]/1.2$ $pka=(0.0902+(2730/(273.1+T))$ T = Temperature °C

Acute - applies to the Ohio River (ORSANCO Criteria)
$[0.411/(1+10^{(7.204-pH)})]+[58.4/(1+10^{(pH-7.204)})]$

Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concerned assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 001

Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 001

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
1,1,1-Trichloroethane	71556	No	No	1558.0021	mg/l	Human Health Fish & Water	N/A	mg/l	NA
1,1,2,2-Tetrachloroethane	79345	Yes	No	0.0041	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1,2-Trichloroethane	79005	Yes	No	0.0164	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1-Dichloroethylene	75354	Yes	No	0.0033	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.0011	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4-Trichlorobenzene	120821	No	No	0.9663	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichlorobenzene	95501	No	No	17.4762	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloroethane	107062	Yes	No	0.0380	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloropropane	78875	Yes	No	0.0154	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Diphenylhydrazine	122667	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Trans-Dichloroethylene	156605	Yes	No	144	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichlorobenzene	541731	No	No	0.9869	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichloropropene	542756	No	No	1.7476	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,4-Dichlorobenzene	106467	No	No	2.6728	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	5.2429E-12	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,5-TP (Silvex)	93721	No	No	77.9001	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4,5-trichlorophenol	95954	No	No	3.7008	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,6-Trichlorophenol	88062	Yes	No	0.0025	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-D	94757	Yes	No	2334.5289	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4-Dichlorophenol	120832	No	No	0.2981	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dimethylphenol	105679	No	No	0.8738	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrophenol	51285	No	No	5.4485	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrotoluene	121142	Yes	No	0.0035	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chloronaphthalene	91587	No	No	1.6448	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chlorophenol	95578	No	No	0.1542	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-methyl-4,6-dinitrophenol	534521	No	No	0.2878	mg/l	Human Health Fish Only	N/A	mg/l	NA
3,3-Dichlorobenzidine	91941	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDD	72548	Yes	Yes	3.1868E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDE	72559	Yes	Yes	2.2616E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDT	50293	Yes	Yes	2.2616E-07	mg/l	Human Health Fish Only	0.0011	mg/l	Acute
Acenaphthene	83329	No	No	1.0177	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrolein	107028	No	No	0.2981	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrylonitrile	107131	Yes	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Aldrin	309002	Yes	No	5.1401E-08	mg/l	Human Health Fish Only	0.0030	mg/l	Acute
alpha-BHC	319846	Yes	No	5.0372E-06	mg/l	Human Health Fish Only	N/A	mg/l	NA
Alpha-Endosulfan	959988	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Anthracene	120127	No	No	41.1204	mg/l	Human Health Fish Only	N/A	mg/l	NA
Asbestos	1332214	Yes	No	233452894.7917	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Benzene	71432	Yes	No	0.0524	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzidine	92875	Yes	No	2.0560E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)anthracene	56553	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)pyrene	50328	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 001

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Benzo(b)fluoranthene	205992	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(k)fluoranthene	205992	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-BHC	319857	Yes	No	1.7476E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-Endosulfan	33213659	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Bis(2-chloroethyl)ether	111444	Yes	No	0.0005	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-chloroisopropyl)ether	108601	No	No	66.8207	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-ethylhexyl)phthalate	117817	Yes	No	0.0023	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(chloromethyl)ether	542881	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bromoform	75252	Yes	No	0.1439	mg/l	Human Health Fish Only	N/A	mg/l	NA
Butylbenzyl phthalate	85687	No	No	1.9532	mg/l	Human Health Fish Only	N/A	mg/l	NA
Carbon Tetrachloride	56235	Yes	No	0.0016	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlordane	57749	Yes	Yes	8.3269E-07	mg/l	Human Health Fish Only	0.0024	mg/l	Acute
Chloride	16887006	No	No	600.0000	mg/l	Chronic	1200.0000	mg/l	Acute
Chlorobenzene	108907	No	No	21.5882	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlorodibromomethane	124481	Yes	No	0.0134	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloroform	67663	Yes	No	0.4832	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloropyrifos	2921882	No	No	0.0000	mg/l	Chronic	8.3000E-05	mg/l	Acute
Chromium (III)	16065831	No	No	0.1855	mg/l	Chronic	3.8812	mg/l	Acute
Chromium (VI)	18540299	Yes	No	0.0110	mg/l	Chronic	0.0160	mg/l	Acute
Chrysene	218019	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Color		No	No	584.2508	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Demeton	8065483	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Dibenzo(a,h)anthracene	53703	Yes	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dichlorobromomethane	75274	Yes	No	0.0175	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dieldrin	60571	Yes	Yes	5.5513E-08	mg/l	Human Health Fish Only	0.0002	mg/l	Acute
Diethyl phthalate	84662	No	No	45.2324	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dimethyl phthalate	131113	No	No	1130.8112	mg/l	Human Health Fish Only	N/A	mg/l	NA
Di-n-butyl phthalate	84742	No	No	4.6260	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dinitrophenols	25550587	No	No	5.4485	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endosulfan sulfate	1031078	No	No	0.0915	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endrin	72208	No	No	0.0000	mg/l	Chronic	0.0001	mg/l	Acute
Endrin aldehyde	7421934	No	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Ethylbenzene	100414	No	No	29.8123	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoranthene	206440	No	No	0.1439	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluorene	86737	No	No	5.4485	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoride		No	No	15580.0208	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Free Cyanide	57125	No	No	0.0052	mg/l	Chronic	0.0220	mg/l	Acute
gamma-BHC (Lindane)	58899	Yes	Yes	6.4765E-05	mg/l	Human Health Fish Only	0.0010	mg/l	Acute
Guthion	86500	No	No	1.0000E-05	mg/l	Chronic	N/A	mg/l	NA
Heptachlor	76448	Yes	No	8.1213E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Heptachlor epoxide	1024573	Yes	No	4.0092E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Hexachlorobenzene	118741	Yes	Yes	2.9812E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 001

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Hexachlorobutadiene	87683	Yes	Yes	0.0185	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	4.2560E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclopentadiene	77474	No	No	17.4762	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachloroethane	67721	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hydrogen Sulfide, Undissociated	7783064	No	No	0.0020	mg/l	Chronic	N/A	mg/l	NA
Ideno(1,2,3-cd)pyrene	193395	No	No	1.8504E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Isophorone	78591	No	No	0.9869	mg/l	Human Health Fish Only	N/A	mg/l	NA
Malathion	121755	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Methoxychlor	72435	No	No	0.0000	mg/l	Chronic	N/A	mg/l	NA
Methyl Bromide	74839	No	No	1.5420	mg/l	Human Health Fish Only	N/A	mg/l	NA
Methylene Chloride	75092	Yes	No	0.6065	mg/l	Human Health Fish Only	N/A	mg/l	NA
Mirex	2385855	Yes	Yes	1.0000E-06	mg/l	Chronic	N/A	mg/l	NA
Nitrate-Nitrite (as N)	14797558	No	No	77900.1042	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Nitrobenzene	98953	No	No	0.7093	mg/l	Human Health Fish Only	N/A	mg/l	NA
Nitrosamines, Other		No	No	1.2747E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodibutylamine	924163	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiethylamine	55185	Yes	No	1.2747E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodimethylamine	62759	Yes	No	3.0840E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodi-n-Propylamine	621647	Yes	No	0.0005	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiphenylamine	86306	Yes	No	0.0062	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosopyrrolidine	930552	Yes	No	0.0350	mg/l	Human Health Fish Only	N/A	mg/l	NA
Parathion	56382	Yes	No	1.3000E-05	mg/l	Chronic	0.0001	mg/l	Acute
Pentachlorobenzene	608935	Yes	Yes	0.0015	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pentachlorophenol	87865	Yes	No	0.0031	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phenol	108952	No	No	1747.6173	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phthalate esters			No	0.0030	mg/l	Chronic	N/A	mg/l	NA
Polychlorinated Biphenyls (PCBs)		Yes	Yes	6.5793E-08	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pyrene	129000	No	No	4.1120	mg/l	Human Health Fish Only	N/A	mg/l	NA
Sulfate (as SO4)		No	No	1947502.6042	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Surfactants		No	No	3895.0052	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Tetrachloroethylene	127184	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Toluene	108883	No	No	205.6020	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Alpha		No	No	N/A	pCi/l	Human Health Fish & Water	15.0000	pCi/l	Acute
Total Ammonia		No	No	3.3609	mg/l	Chronic	19.8902	mg/l	Acute
Total Beta		No	No	N/A	pCi/l	Human Health Fish & Water	50.0000	pCi/l	Acute
Total Dissolved Solids			No	5842507.8125	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Radium		No	No	N/A	pCi/l	Human Health Fish & Water	5.0000	pCi/l	Acute
Total Strontium-90		No	No	N/A	pCi/l	Human Health Fish & Water	8.0000	pCi/l	Acute
Total Recoverable Antimony	7440360	No	No	0.6579	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Arsenic	7440382	Yes	No	0.1500	mg/l	Chronic	0.3400	mg/l	Acute
Total Recoverable Barium	7440393	No	No	7790.0104	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Beryllium	7440417	No	No	31.1600	mg/l	Human Health Fish & Water	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 001

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Total Recoverable Cadmium	7440439	No	No	0.0005	mg/l	Chronic	0.0055	mg/l	Acute
Total Recoverable Chromium	7440439	No	No	779.0010	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Copper	7440508	No	No	0.0208	mg/l	Chronic	0.0338	mg/l	Acute
Total Recoverable Iron	7439896	No	No	1.0000	mg/l	Chronic	4.0000	mg/l	Acute
Total Recoverable Lead	7439921	No	No	0.0105	mg/l	Chronic	0.2688	mg/l	Acute
Total Recoverable Mercury	7439976	No	Yes	5.2429E-05	mg/l	Human Health Fish Only	0.0017	mg/l	Acute
Total Recoverable Nickel	7440020	No	No	0.1152	mg/l	Chronic	1.0358	mg/l	Acute
Total Recoverable Selenium	7782492	No	No	0.0050	mg/l	Chronic	0.0200	mg/l	Acute
Total Recoverable Silver	7440224	No	No	N/A	mg/l	Human Health Fish & Water	0.0189	mg/l	Acute
Total Recoverable Thallium	7440280	No	No	0.0065	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Zinc	7440666	No	No	0.2648	mg/l	Chronic	0.2648	mg/l	Acute
Total Residual Chlorine		No	No	0.0110	mg/l	Chronic	0.0190	mg/l	Acute
Toxaphene	8001352	Yes	Yes	2.0000E-07	mg/l	Chronic	0.0007	mg/l	Acute
Trichloroethylene	79016	Yes	No	0.0308	mg/l	Human Health Fish Only	N/A	mg/l	NA
Tritium		No	No	N/A	pCi/l	Human Health Fish & Water	20000.0000	pCi/l	Acute
Uranium		No	No	N/A	mg/l	Human Health Fish & Water	0.0300	mg/l	Acute
Vinyl Chloride	75014	Yes	No	0.5448	mg/l	Human Health Fish Only	N/A	mg/l	NA

Hardness	Chronic	Acute
Metal limitations are developed using the mixed hardness of the effluent and receiving waters	255.00	255.00

	Toxicity			
Type of Test	Maximum	Units	Justification	Percent Effluent
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 001

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
1,1,1-Trichloroethane	71556	No	No	0.00%	0.00%	Application	None	None
1,1,2,2-Tetrachloroethane	79345	Yes	No	121.59%	0.00%	Application	Monitoring Required	None
1,1,2-Trichloroethane	79005	Yes	No	30.40%	0.00%	Application	None	None
1,1-Dichloroethylene	75354	Yes	No	151.99%	0.00%	Application	Monitoring Required	None
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.00%	0.00%	Application	None	None
1,2,4-Trichlorobenzene	120821	No	No	0.52%	0.00%	Application	None	None
1,2-Dichlorobenzene	95501	No	No	0.03%	0.00%	Application	None	None
1,2-Dichloroethane	107062	Yes	No	13.15%	0.00%	Application	None	None
1,2-Dichloropropane	78875	Yes	No	32.43%	0.00%	Application	None	None
1,2-Diphenylhydrazine	122667	Yes	No	2431.88%	0.00%	Application	Monitoring Required	None
1,2-Trans-Dichloroethylene	156605	Yes	No	0.00%	0.00%	Application	None	None
1,3-Dichlorobenzene	541731	No	No	0.51%	0.00%	Application	None	None
1,3-Dichloropropene	542756	No	No	0.29%	0.00%	Application	None	None
1,4-Dichlorobenzene	106467	No	No	0.19%	0.00%	Application	None	None
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	0.00%	0.00%	Application	None	None
2,4,5-TP (Silvex)	93721	No	No	0.00%	0.00%	Application	None	None
2,4,5-trichlorophenol	95954	No	No	0.00%	0.00%	Application	None	None
2,4,6-Trichlorophenol	88062	Yes	No	202.66%	0.00%	Application	Monitoring Required	None
2,4-D	94757	Yes	No	0.00%	0.00%	Application	None	None
2,4-Dichlorophenol	120832	No	No	1.68%	0.00%	Application	None	None
2,4-Dimethylphenol	105679	No	No	0.57%	0.00%	Application	None	None
2,4-Dinitrophenol	51285	No	No	0.09%	0.00%	Application	None	None
2,4-Dinitrotoluene	121142	Yes	No	143.05%	0.00%	Application	Monitoring Required	None
2-Chloronaphthalene	91587	No	No	0.30%	0.00%	Application	None	None
2-Chlorophenol	95578	No	No	3.24%	0.00%	Application	None	None
2-methyl-4,6-dinitrophenol	534521	No	No	0.00%	0.00%	Application	None	None
3,3-Dichlorobenzidine	91941	Yes	No	17370.59%	0.00%	Application	Monitoring Required	None
4,4'-DDD	72548	Yes	Yes	31379.13%	0.00%	Application	Monitoring Required	None
4,4'-DDE	72559	Yes	Yes	44216.05%	0.00%	Application	Monitoring Required	None
4,4'-DDT	50293	Yes	Yes	44216.05%	9.09%	Application	Monitoring Required	None
Acenaphthene	83329	No	No	0.49%	0.00%	Application	None	None
Acrolein	107028	No	No	3.35%	0.00%	Application	None	None
Acrylonitrile	107131	Yes	No	3891.01%	0.00%	Application	Monitoring Required	None
Aldrin	309002	Yes	No	97275.30%	1.67%	Application	Monitoring Required	None
alpha-BHC	319846	Yes	No	992.61%	0.00%	Application	Monitoring Required	None
Alpha-Endosulfan	959988	No	No	89.29%	22.73%	Application	Monitoring Required	None
Anthracene	120127	No	No	0.01%	0.00%	Application	None	None
Asbestos	1332214	Yes	No	0.00%	0.00%	Application	None	None
Benzene	71432	Yes	No	9.54%	0.00%	Application	None	None
Benzidine	92875	Yes	No	2431882.59%	0.00%	Application	Monitoring Required	None
Benzo(a)anthracene	56553	Yes	No	27020.92%	0.00%	Application	Monitoring Required	None
Benzo(a)pyrene	50328	Yes	No	27020.92%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 001

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Benzo(b)fluoranthene	205992	Yes	No	0.00%	0.00%	Application	None	None
Benzo(k)fluoranthene	205992	Yes	No	27020.92%	0.00%	Application	Monitoring Required	None
Beta-BHC	319857	Yes	No	286.10%	0.00%	Application	Monitoring Required	None
Beta-Endosulfan	33213659	No	No	178.57%	45.45%	Application	Monitoring Required	None
Bis(2-chloroethyl)ether	111444	Yes	No	0.00%	0.00%	Application	None	None
Bis(2-chloroisopropyl)ether	108601	No	No	0.01%	0.00%	Application	None	None
Bis(2-ethylhexyl)phthalate	117817	Yes	No	221.08%	0.00%	Application	Monitoring Required	None
Bis(chloromethyl)ether	542881	Yes	No	0.00%	0.00%	Application	None	None
Bromoform	75252	Yes	No	3.47%	0.00%	Application	None	None
Butylbenzyl phthalate	85687	No	No	0.26%	0.00%	Application	None	None
Carbon Tetrachloride	56235	Yes	No	303.99%	0.00%	Application	Monitoring Required	None
Chlordane	57749	Yes	Yes	6004.65%	2.08%	Application	Monitoring Required	None
Chloride	16887006	No	No	16.17%	8.17%	Application	None	None
Chlorobenzene	108907	No	No	0.02%	0.00%	Application	None	None
Chlorodibromomethane	124481	Yes	No	37.41%	0.00%	Application	None	None
Chloroform	67663	Yes	No	1.03%	0.00%	Application	None	None
Chloropyrifos	2921882	No	No	0.00%	0.00%	Application	None	None
Chromium (III)	16065831	No	No	0.00%	0.00%	Application	None	None
Chromium (VI)	18540299	Yes	No	0.00%	0.00%	Application	None	None
Chrysene	218019	Yes	No	27020.92%	0.00%	Application	Monitoring Required	None
Color		No	No	0.00%	0.00%	Application	None	None
Demeton	8065483	No	No	0.00%	0.00%	Application	None	None
Dibenzo(a,h)anthracene	53703	Yes	No	27020.92%	0.00%	Application	Monitoring Required	None
Dichlorobromomethane	75274	Yes	No	28.61%	0.00%	Application	None	None
Dieldrin	60571	Yes	Yes	180139.45%	41.67%	Application	Monitoring Required	None
Diethyl phthalate	84662	No	No	0.01%	0.00%	Application	None	None
Dimethyl phthalate	131113	No	No	0.00%	0.00%	Application	None	None
Di-n-butyl phthalate	84742	No	No	0.11%	0.00%	Application	None	None
Dinitrophenols	25550587	No	No	0.00%	0.00%	Application	None	None
Endosulfan sulfate	1031078	No	No	0.11%	0.00%	Application	None	None
Endrin	72208	No	No	277.78%	116.28%	Application	Monitoring Required	Monitoring Required
Endrin aldehyde	7421934	No	No	32.43%	0.00%	Application	None	None
Ethylbenzene	100414	No	No	0.02%	0.00%	Application	None	None
Fluoranthene	206440	No	No	3.47%	0.00%	Application	None	None
Fluorene	86737	No	No	0.09%	0.00%	Application	None	None
Fluoride		No	No	0.00%	0.00%	Application	None	None
Free Cyanide	57125	No	No	384.62%	90.91%	Application	Monitoring Required	Monitoring Required
gamma-BHC (Lindane)	58899	Yes	Yes	77.20%	5.26%	Application	Monitoring Required	None
Guthion	86500	No	No	0.00%	0.00%	Application	None	None
Heptachlor	76448	Yes	No	61566.65%	9.62%	Application	Monitoring Required	None
Heptachlor epoxide	1024573	Yes	No	124711.93%	9.62%	Application	Monitoring Required	None
Hexachlorobenzene	118741	Yes	Yes	1677160.41%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 001

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Hexachlorobutadiene	87683	Yes	Yes	27.02%	0.00%	Application	None	None
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	0.00%	0.00%	Application	None	None
Hexachlorocyclopentadiene	77474	No	No	0.03%	0.00%	Application	None	None
Hexachloroethane	67721	Yes	No	147.39%	0.00%	Application	Monitoring Required	None
Hydrogen Sulfide, Undissociated	7783064	No	No	0.00%	0.00%	Application	None	None
Ideno(1,2,3-cd)pyrene	193395	No	No	27020.92%	0.00%	Application	Monitoring Required	None
Isophorone	78591	No	No	0.51%	0.00%	Application	None	None
Malathion	121755	No	No	0.00%	0.00%	Application	None	None
Methoxychlor	72435	No	No	0.00%	0.00%	Application	None	None
Methyl Bromide	74839	No	No	0.32%	0.00%	Application	None	None
Methylene Chloride	75092	Yes	No	0.82%	0.00%	Application	None	None
Mirex	2385855	Yes	Yes	0.00%	0.00%	Application	None	None
Nitrate-Nitrite (as N)	14797558	No	No	0.01%	0.00%	Application	None	None
Nitrobenzene	98953	No	No	0.70%	0.00%	Application	None	None
Nitrosamines, Other		No	No	0.00%	0.00%	Application	None	None
N-Nitrosodibutylamine	924163	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodiethylamine	55185	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodimethylamine	62759	Yes	No	162.13%	0.00%	Application	Monitoring Required	None
N-Nitrosodi-n-Propylamine	621647	Yes	No	953.68%	0.00%	Application	Monitoring Required	None
N-Nitrosodiphenylamine	86306	Yes	No	81.06%	0.00%	Application	Monitoring Required	None
N-Nitrosopyrrolidine	930552	Yes	No	0.00%	0.00%	Application	None	None
Parathion	56382	Yes	No	0.00%	0.00%	Application	None	None
Pentachlorobenzene	608935	Yes	Yes	0.00%	0.00%	Application	None	None
Pentachlorophenol	87865	Yes	No	162.13%	0.00%	Application	Monitoring Required	None
Phenol	108952	No	No	0.00%	0.00%	Application	None	None
Phthalate esters			No	0.00%	0.00%	Application	None	None
Polychlorinated Biphenyls (PCBs)		Yes	Yes	0.00%	0.00%	Application	None	None
Pyrene	129000	No	No	0.12%	0.00%	Application	None	None
Sulfate (as SO4)		No	No	0.02%	0.00%	Application	None	None
Surfactants		No	No	0.00%	0.00%	Application	None	None
Tetrachloroethylene	127184	Yes	No	147.39%	0.00%	Application	Monitoring Required	None
Toluene	108883	No	No	0.00%	0.00%	Application	None	None
Total Alpha		No	No	0.00%	130.00%	Application	None	Monitoring Required
Total Ammonia		No	No	0.00%	0.00%	Application	None	None
Total Beta		No	No	0.00%	71.40%	Application	None	Monitoring Required
Total Dissolved Solids			No	0.00%	0.00%	Application	None	None
Total Radium		No	No	0.00%	12.32%	Application	None	None
Total Strontium-90		No	No	0.00%	0.00%	Application	None	None
Total Recoverable Antimony	7440360	No	No	30.40%	0.00%	Application	None	None
Total Recoverable Arsenic	7440382	Yes	No	3.33%	1.47%	Application	None	None
Total Recoverable Barium	7440393	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Beryllium	7440417	No	No	0.02%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 001

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Total Recoverable Cadmium	7440439	No	No	184.68%	18.10%	Application	Monitoring Required	None
Total Recoverable Chromium	7440439	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Copper	7440508	No	No	120.43%	73.93%	Application	Monitoring Required	Monitoring Required
Total Recoverable Iron	7439896	No	No	45.10%	22.58%	Application	None	None
Total Recoverable Lead	7439921	No	No	1909.24%	74.40%	Application	Monitoring Required	Monitoring Required
Total Recoverable Mercury	7439976	No	Yes	381.47%	11.76%	Application	Monitoring Required	None
Total Recoverable Nickel	7440020	No	No	43.42%	4.83%	Application	None	None
Total Recoverable Selenium	7782492	No	No	200.00%	50.00%	Application	Monitoring Required	None
Total Recoverable Silver	7440224	No	No	0.00%	132.04%	Application	None	Monitoring Required
Total Recoverable Thallium	7440280	No	No	3088.10%	0.00%	Application	Monitoring Required	None
Total Recoverable Zinc	7440666	No	No	37.76%	37.76%	Application	None	None
Total Residual Chlorine		No	No	490.91%	326.32%	DMR	Limit Required	Limit Required
Toxaphene	8001352	Yes	Yes	0.00%	0.00%	Application	None	None
Trichloroethylene	79016	Yes	No	3.24%	0.00%	Application	None	None
Tritium		No	No	0.00%	0.00%	Application	None	None
Uranium		No	No	0.00%	0.00%	Application	None	None
Vinyl Chloride	75014	Yes	No	0.37%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 015

Permit Writer	Larry Sowder
Date Entered	7/28/2006
Facility Name	USDOE Paducah Gaseous Diffusion Plant
KPDES Number	KY0004049
Outfall Number	015
Case Number	1
Status:	E

Is this an existing facility – Enter "E"
Is this an existing facility with an increase in pollutant load – Enter "I"
Is this a new facility – Enter "N"
Is this a regional facility with an approved up-to-date 201 plan – Enter "R"
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter "A"

Receiving Water Name	Bayou Creek	
Discharge Mile Point	6.2	
Public Water Supply Name	Cairo Illinois	
Intake Water Name	Ohio River	
Intake Mile Point	3.6 (977.8 USCOE)	
Total Effluent Flow (Q_T)	0.62	MGD
Receiving Water 7Q10 (Q_{RW7Q10})	0	cfs
Receiving Water Harmonic Mean (Q_{RWHM})	0.5	cfs
Receiving Water pH	7.5	
Receiving Water Temperature	20.00	°C
Intake Water 7Q10 (Q_{IW7Q10})	46300	cfs
Intake Water Harmonic Mean (Q_{IWHM})	198238	cfs
Effluent Hardness	165	(as mg/l CaCO3)
Receiving Water Hardness	100	(as mg/l CaCO3)
Zone of Initial Dilution (ZID)	1	
Mixing Zone (MZ)	0.333	
Acute to Chronic Ratio (ACR)	0.1	
Impaired	Yes	
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	No	

Calculation Methodology

Definitions

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q_T
Aquatic Life Acute Criteria	C_A	Receiving Water 7Q10	Q_{RW7Q10}
Aquatic Life Chronic Criteria	C_C	Receiving Water Harmonic Mean Q_{RWHM}	
Human Health Criteria - Fish Only	C_{HHFO}	Intake Water 7Q10	Q_{IW7Q10}
Human Health Criteria - Fish & Water	C_{HHFW}	Intake Water Harmonic Mean	Q_{IWHM}
End of Pipe Effluent Limit	C_T	Zone of Initial Dilution	ZID
Instream Background Concentration	C_U	Mixing Zone	MZ
Toxicity Units - Acute	TU_a	Toxicity Units - Chronic	TU_c
Effluent Hardness	H_T	Receiving Water Hardness	H_{RW}

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 015

Aquatic Life - Chemical Specific

Acute	Chronic Mixing Zone / Complete Mix
NO ZID given $C_T = C_A$	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	

Human Health - Chemical Specific

Fish Only: Mixing Zone / Complete Mix	
Carcinogen / Non-Carcinogen	$C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\}/Q_T$

Fish & Water Only: Mixing Zone / Applicable at point of withdrawal	
Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\}/Q_T$
Non-Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\}/Q_T$

Aquatic Life - Whole Effluent Toxicity

Acute (Units TU_a)	Chronic Mixing Zone / Complete Mix (Units TUc)
NO ZID given CT = CA	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	Conversion of TU_c to TU_a: $TU_c \times ACR = TU_a$

Metal Aquatic Criteria

Pollutant	Acute Criteria	Chronic Criteria
Total Recoverable Cadmium	$e^{(1.0166\ (\ln Hardness) - 3.924)}$	$e^{(0.7409\ (\ln Hardness) - 4.719)}$
Chromium III	$e^{(0.8190\ (\ln Hardness) + 3.7256)}$	$e^{(0.8190\ (\ln Hardness) + 0.6848)}$
Total Recoverable Copper	$e^{(0.9422\ (\ln Hardness) - 1.700)}$	$e^{(0.8545\ (\ln Hardness) - 1.702)}$
Total Recoverable Lead	$e^{(1.273\ (\ln Hardness) - 1.460)}$	$e^{(1.273\ (\ln Hardness) - 4.705)}$
Total Recoverable Nickel	$e^{(0.8460\ (\ln Hardness) + 2.255)}$	$e^{(0.8460(\ln Hardness) + 0.0584)}$
Total Recoverable Silver	$e^{(1.72\ (\ln Hardness) - 6.59)}$	
Total Recoverable Zinc	$e^{(0.8473\ (\ln Hardness) + 0.884)}$	$e^{(0.8473\ (\ln Hardness) + 0.884)}$

Hardness (as mg/l $CaCO_3$)	
Zone Initial Dilution (ZID)	$H_{RW} + [H_T + H_{RW}]/ZID$
Mixing Zone	$[(Q_{RW7Q10})(MZ)(H_{RW}) +$
$(Q_T)(H_T)]/[(QRW7Q10)(MZ)+(QT)]$	

Total Ammonia Criteria

Chronic - applies state wide - unionzed criteria of 0.05 mg/l

$[0.05*(1+10^{(pka-pH)})]/1.2$ $pka=(0.0902+(2730/(273.1+T))$ T = Temperature °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$[0.411/(1+10^{(7.204-pH)})]+[58.4/(1+10^{(pH-7.204)})]$

Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concerned assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 015

Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 015

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
1,1,1-Trichloroethane	71556	No	No	9648.5226	mg/l	Human Health Fish & Water	N/A	mg/l	NA
1,1,2,2-Tetrachloroethane	79345	Yes	No	0.0047	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1,2-Trichloroethane	79005	Yes	No	0.0188	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1-Dichloroethylene	75354	Yes	No	0.0038	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.0013	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4-Trichlorobenzene	120821	No	No	1.1031	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichlorobenzene	95501	No	No	19.9492	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloroethane	107062	Yes	No	0.0434	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloropropane	78875	Yes	No	0.0176	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Diphenylhydrazine	122667	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Trans-Dichloroethylene	156605	Yes	No	164	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichlorobenzene	541731	No	No	1.1265	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichloropropene	542756	No	No	1.9949	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,4-Dichlorobenzene	106467	No	No	3.0511	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	5.9848E-12	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,5-TP (Silvex)	93721	No	No	482.4261	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4,5-trichlorophenol	95954	No	No	4.2245	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,6-Trichlorophenol	88062	Yes	No	0.0028	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-D	94757	Yes	No	14458.6545	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4-Dichlorophenol	120832	No	No	0.3403	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dimethylphenol	105679	No	No	0.9975	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrophenol	51285	No	No	6.2195	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrotoluene	121142	Yes	No	0.0040	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chloronaphthalene	91587	No	No	1.8776	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chlorophenol	95578	No	No	0.1760	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-methyl-4,6-dinitrophenol	534521	No	No	0.3286	mg/l	Human Health Fish Only	N/A	mg/l	NA
3,3-Dichlorobenzidine	91941	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDD	72548	Yes	Yes	3.6378E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDE	72559	Yes	Yes	2.5817E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDT	50293	Yes	Yes	2.5817E-07	mg/l	Human Health Fish Only	0.0011	mg/l	Acute
Acenaphthene	83329	No	No	1.1617	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrolein	107028	No	No	0.3403	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrylonitrile	107131	Yes	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Aldrin	309002	Yes	No	5.8674E-08	mg/l	Human Health Fish Only	0.0030	mg/l	Acute
alpha-BHC	319846	Yes	No	5.7501E-06	mg/l	Human Health Fish Only	N/A	mg/l	NA
Alpha-Endosulfan	959988	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Anthracene	120127	No	No	46.9393	mg/l	Human Health Fish Only	N/A	mg/l	NA
Asbestos	1332214	Yes	No	1445865445.1613	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Benzene	71432	Yes	No	0.0598	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzidine	92875	Yes	No	2.3470E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)anthracene	56553	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)pyrene	50328	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 015

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Benzo(b)fluoranthene	205992	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(k)fluoranthene	205992	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-BHC	319857	Yes	No	1.9949E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-Endosulfan	33213659	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Bis(2-chloroethyl)ether	111444	Yes	No	0.0006	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-chloroisopropyl)ether	108601	No	No	76.2763	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-ethylhexyl)phthalate	117817	Yes	No	0.0026	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(chloromethyl)ether	542881	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bromoform	75252	Yes	No	0.1643	mg/l	Human Health Fish Only	N/A	mg/l	NA
Butylbenzyl phthalate	85687	No	No	2.2296	mg/l	Human Health Fish Only	N/A	mg/l	NA
Carbon Tetrachloride	56235	Yes	No	0.0019	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlordane	57749	Yes	Yes	9.5052E-07	mg/l	Human Health Fish Only	0.0024	mg/l	Acute
Chloride	16887006	No	No	600.0000	mg/l	Chronic	1200.0000	mg/l	Acute
Chlorobenzene	108907	No	No	24.6431	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlorodibromomethane	124481	Yes	No	0.0153	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloroform	67663	Yes	No	0.5515	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloropyrifos	2921882	No	No	0.0000	mg/l	Chronic	8.3000E-05	mg/l	Acute
Chromium (III)	16065831	No	No	0.1299	mg/l	Chronic	2.7172	mg/l	Acute
Chromium (VI)	18540299	Yes	No	0.0110	mg/l	Chronic	0.0160	mg/l	Acute
Chrysene	218019	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Color		No	No	3618.1960	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Demeton	8065483	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Dibenzo(a,h)anthracene	53703	Yes	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dichlorobromomethane	75274	Yes	No	0.0199	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dieldrin	60571	Yes	Yes	6.3368E-08	mg/l	Human Health Fish Only	0.0002	mg/l	Acute
Diethyl phthalate	84662	No	No	51.6332	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dimethyl phthalate	131113	No	No	1290.8305	mg/l	Human Health Fish Only	N/A	mg/l	NA
Di-n-butyl phthalate	84742	No	No	5.2807	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dinitrophenols	25550587	No	No	6.2195	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endosulfan sulfate	1031078	No	No	0.1044	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endrin	72208	No	No	0.0000	mg/l	Chronic	0.0001	mg/l	Acute
Endrin aldehyde	7421934	No	No	0.0004	mg/l	Human Health Fish Only	N/A	mg/l	NA
Ethylbenzene	100414	No	No	34.0310	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoranthene	206440	No	No	0.1643	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluorene	86737	No	No	6.2195	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoride		No	No	96485.2258	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Free Cyanide	57125	No	No	0.0052	mg/l	Chronic	0.0220	mg/l	Acute
gamma-BHC (Lindane)	58899	Yes	Yes	7.3929E-05	mg/l	Human Health Fish Only	0.0010	mg/l	Acute
Guthion	86500	No	No	1.0000E-05	mg/l	Chronic	N/A	mg/l	NA
Heptachlor	76448	Yes	No	9.2705E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Heptachlor epoxide	1024573	Yes	No	4.5766E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Hexachlorobenzene	118741	Yes	Yes	3.4031E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA

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				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Hexachlorobutadiene	87683	Yes	Yes	0.0211	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	4.8582E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclopentadiene	77474	No	No	19.9492	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachloroethane	67721	Yes	No	0.0039	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hydrogen Sulfide, Undissociated	7783064	No	No	0.0020	mg/l	Chronic	N/A	mg/l	NA
Ideno(1,2,3-cd)pyrene	193395	No	No	2.1123E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Isophorone	78591	No	No	1.1265	mg/l	Human Health Fish Only	N/A	mg/l	NA
Malathion	121755	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Methoxychlor	72435	No	No	0.0000	mg/l	Chronic	N/A	mg/l	NA
Methyl Bromide	74839	No	No	1.7602	mg/l	Human Health Fish Only	N/A	mg/l	NA
Methylene Chloride	75092	Yes	No	0.6924	mg/l	Human Health Fish Only	N/A	mg/l	NA
Mirex	2385855	Yes	Yes	1.0000E-06	mg/l	Chronic	N/A	mg/l	NA
Nitrate-Nitrite (as N)	14797558	No	No	482426.1290	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Nitrobenzene	98953	No	No	0.8097	mg/l	Human Health Fish Only	N/A	mg/l	NA
Nitrosamines, Other		No	No	1.4551E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodibutylamine	924163	Yes	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiethylamine	55185	Yes	No	1.4551E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodimethylamine	62759	Yes	No	3.5204E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodi-n-Propylamine	621647	Yes	No	0.0006	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiphenylamine	86306	Yes	No	0.0070	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosopyrrolidine	930552	Yes	No	0.0399	mg/l	Human Health Fish Only	N/A	mg/l	NA
Parathion	56382	Yes	No	1.3000E-05	mg/l	Chronic	0.0001	mg/l	Acute
Pentachlorobenzene	608935	Yes	Yes	0.0018	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pentachlorophenol	87865	Yes	No	0.0035	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phenol	108952	No	No	1994.9198	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phthalate esters			No	0.0030	mg/l	Chronic	N/A	mg/l	NA
Polychlorinated Biphenyls (PCBs)		Yes	Yes	7.5103E-08	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pyrene	129000	No	No	4.6939	mg/l	Human Health Fish Only	N/A	mg/l	NA
Sulfate (as SO4)		No	No	12060653.2258	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Surfactants		No	No	24121.3065	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Tetrachloroethylene	127184	Yes	No	0.0039	mg/l	Human Health Fish Only	N/A	mg/l	NA
Toluene	108883	No	No	234.6965	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Alpha		No	No	N/A	pCi/l	Human Health Fish & Water	15.0000	pCi/l	Acute
Total Ammonia		No	No	3.3609	mg/l	Chronic	19.8902	mg/l	Acute
Total Beta		No	No	N/A	pCi/l	Human Health Fish & Water	50.0000	pCi/l	Acute
Total Dissolved Solids			No	36181959.6774	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Radium		No	No	N/A	pCi/l	Human Health Fish & Water	5.0000	pCi/l	Acute
Total Strontium-90		No	No	N/A	pCi/l	Human Health Fish & Water	8.0000	pCi/l	Acute
Total Recoverable Antimony	7440360	No	No	0.7510	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Arsenic	7440382	Yes	No	0.1500	mg/l	Chronic	0.3400	mg/l	Acute
Total Recoverable Barium	7440393	No	No	48242.6129	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Beryllium	7440417	No	No	192.9705	mg/l	Human Health Fish & Water	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 015

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Total Recoverable Cadmium	7440439	No	No	0.0004	mg/l	Chronic	0.0035	mg/l	Acute
Total Recoverable Chromium	7440439	No	No	4824.2613	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Copper	7440508	No	No	0.0143	mg/l	Chronic	0.0224	mg/l	Acute
Total Recoverable Iron	7439896	No	No	1.0000	mg/l	Chronic	4.0000	mg/l	Acute
Total Recoverable Lead	7439921	No	No	0.0060	mg/l	Chronic	0.1544	mg/l	Acute
Total Recoverable Mercury	7439976	No	Yes	5.9848E-05	mg/l	Human Health Fish Only	0.0017	mg/l	Acute
Total Recoverable Nickel	7440020	No	No	0.0797	mg/l	Chronic	0.7167	mg/l	Acute
Total Recoverable Selenium	7782492	No	No	0.0050	mg/l	Chronic	0.0200	mg/l	Acute
Total Recoverable Silver	7440224	No	No	N/A	mg/l	Human Health Fish & Water	0.0090	mg/l	Acute
Total Recoverable Thallium	7440280	No	No	0.0074	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Zinc	7440666	No	No	0.1831	mg/l	Chronic	0.1831	mg/l	Acute
Total Residual Chlorine		No	No	0.0110	mg/l	Chronic	0.0190	mg/l	Acute
Toxaphene	8001352	Yes	Yes	2.0000E-07	mg/l	Chronic	0.0007	mg/l	Acute
Trichloroethylene	79016	Yes	No	0.0352	mg/l	Human Health Fish Only	N/A	mg/l	NA
Tritium		No	No	N/A	pCi/l	Human Health Fish & Water	20000.0000	pCi/l	Acute
Uranium		No	No	N/A	mg/l	Human Health Fish & Water	0.0300	mg/l	Acute
Vinyl Chloride	75014	Yes	No	0.6219	mg/l	Human Health Fish Only	N/A	mg/l	NA

Hardness	Chronic	Acute
Metal limitations are developed using the mixed hardness of the effluent and receiving waters	165.00	165.00

	Toxicity			
Type of Test	Maximum	Units	Justification	Percent Effluent
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 015

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
1,1,1-Trichloroethane	71556	No	No	0.00%	0.00%	Application	None	None
1,1,2,2-Tetrachloroethane	79345	Yes	No	106.52%	0.00%	Application	Monitoring Required	None
1,1,2-Trichloroethane	79005	Yes	No	26.63%	0.00%	Application	None	None
1,1-Dichloroethylene	75354	Yes	No	133.15%	0.00%	Application	Monitoring Required	None
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.00%	0.00%	Application	None	None
1,2,4-Trichlorobenzene	120821	No	No	0.45%	0.00%	Application	None	None
1,2-Dichlorobenzene	95501	No	No	0.03%	0.00%	Application	None	None
1,2-Dichloroethane	107062	Yes	No	11.52%	0.00%	Application	None	None
1,2-Dichloropropane	78875	Yes	No	28.41%	0.00%	Application	None	None
1,2-Diphenylhydrazine	122667	Yes	No	2130.41%	0.00%	Application	Monitoring Required	None
1,2-Trans-Dichloroethylene	156605	Yes	No	0.00%	0.00%	Application	None	None
1,3-Dichlorobenzene	541731	No	No	0.44%	0.00%	Application	None	None
1,3-Dichloropropene	542756	No	No	0.25%	0.00%	Application	None	None
1,4-Dichlorobenzene	106467	No	No	0.16%	0.00%	Application	None	None
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	0.00%	0.00%	Application	None	None
2,4,5-TP (Silvex)	93721	No	No	0.00%	0.00%	Application	None	None
2,4,5-trichlorophenol	95954	No	No	0.00%	0.00%	Application	None	None
2,4,6-Trichlorophenol	88062	Yes	No	177.53%	0.00%	Application	Monitoring Required	None
2,4-D	94757	Yes	No	0.00%	0.00%	Application	None	None
2,4-Dichlorophenol	120832	No	No	1.47%	0.00%	Application	None	None
2,4-Dimethylphenol	105679	No	No	0.50%	0.00%	Application	None	None
2,4-Dinitrophenol	51285	No	No	0.08%	0.00%	Application	None	None
2,4-Dinitrotoluene	121142	Yes	No	125.32%	0.00%	Application	Monitoring Required	None
2-Chloronaphthalene	91587	No	No	0.27%	0.00%	Application	None	None
2-Chlorophenol	95578	No	No	2.84%	0.00%	Application	None	None
2-methyl-4,6-dinitrophenol	534521	No	No	0.00%	0.00%	Application	None	None
3,3-Dichlorobenzidine	91941	Yes	No	15217.22%	0.00%	Application	Monitoring Required	None
4,4'-DDD	72548	Yes	Yes	27489.18%	0.00%	Application	Monitoring Required	None
4,4'-DDE	72559	Yes	Yes	38734.75%	0.00%	Application	Monitoring Required	None
4,4'-DDT	50293	Yes	Yes	38734.75%	9.09%	Application	Monitoring Required	None
Acenaphthene	83329	No	No	0.43%	0.00%	Application	None	None
Acrolein	107028	No	No	2.94%	0.00%	Application	None	None
Acrylonitrile	107131	Yes	No	3408.66%	0.00%	Application	Monitoring Required	None
Aldrin	309002	Yes	No	85216.46%	1.67%	Application	Monitoring Required	None
alpha-BHC	319846	Yes	No	869.56%	0.00%	Application	Monitoring Required	None
Alpha-Endosulfan	959988	No	No	89.29%	22.73%	Application	Monitoring Required	None
Anthracene	120127	No	No	0.01%	0.00%	Application	None	None
Asbestos	1332214	Yes	No	0.00%	0.00%	Application	None	None
Benzene	71432	Yes	No	8.35%	0.00%	Application	None	None
Benzidine	92875	Yes	No	2130411.42%	0.00%	Application	Monitoring Required	None
Benzo(a)anthracene	56553	Yes	No	23671.24%	0.00%	Application	Monitoring Required	None
Benzo(a)pyrene	50328	Yes	No	23671.24%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 015

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Benzo(b)fluoranthene	205992	Yes	No	0.00%	0.00%	Application	None	None
Benzo(k)fluoranthene	205992	Yes	No	23671.24%	0.00%	Application	Monitoring Required	None
Beta-BHC	319857	Yes	No	250.64%	0.00%	Application	Monitoring Required	None
Beta-Endosulfan	33213659	No	No	178.57%	45.45%	Application	Monitoring Required	None
Bis(2-chloroethyl)ether	111444	Yes	No	0.00%	0.00%	Application	None	None
Bis(2-chloroisopropyl)ether	108601	No	No	0.01%	0.00%	Application	None	None
Bis(2-ethylhexyl)phthalate	117817	Yes	No	193.67%	0.00%	Application	Monitoring Required	None
Bis(chloromethyl)ether	542881	Yes	No	0.00%	0.00%	Application	None	None
Bromoform	75252	Yes	No	3.04%	0.00%	Application	None	None
Butylbenzyl phthalate	85687	No	No	0.22%	0.00%	Application	None	None
Carbon Tetrachloride	56235	Yes	No	266.30%	0.00%	Application	Monitoring Required	None
Chlordane	57749	Yes	Yes	5260.28%	2.08%	Application	Monitoring Required	None
Chloride	16887006	No	No	1.10%	0.55%	Application	None	None
Chlorobenzene	108907	No	No	0.02%	0.00%	Application	None	None
Chlorodibromomethane	124481	Yes	No	32.78%	0.00%	Application	None	None
Chloroform	67663	Yes	No	0.91%	0.00%	Application	None	None
Chloropyrifos	2921882	No	No	0.00%	0.00%	Application	None	None
Chromium (III)	16065831	No	No	0.00%	0.00%	Application	None	None
Chromium (VI)	18540299	Yes	No	0.00%	0.00%	Application	None	None
Chrysene	218019	Yes	No	23671.24%	0.00%	Application	Monitoring Required	None
Color		No	No	0.00%	0.00%	Application	None	None
Demeton	8065483	No	No	0.00%	0.00%	Application	None	None
Dibenzo(a,h)anthracene	53703	Yes	No	23671.24%	0.00%	Application	Monitoring Required	None
Dichlorobromomethane	75274	Yes	No	25.06%	0.00%	Application	None	None
Dieldrin	60571	Yes	Yes	157808.25%	41.67%	Application	Monitoring Required	None
Diethyl phthalate	84662	No	No	0.01%	0.00%	Application	None	None
Dimethyl phthalate	131113	No	No	0.00%	0.00%	Application	None	None
Di-n-butyl phthalate	84742	No	No	0.09%	0.00%	Application	None	None
Dinitrophenols	25550587	No	No	0.00%	0.00%	Application	None	None
Endosulfan sulfate	1031078	No	No	0.10%	0.00%	Application	None	None
Endrin	72208	No	No	277.78%	116.28%	Application	Monitoring Required	Monitoring Required
Endrin aldehyde	7421934	No	No	28.41%	0.00%	Application	None	None
Ethylbenzene	100414	No	No	0.01%	0.00%	Application	None	None
Fluoranthene	206440	No	No	3.04%	0.00%	Application	None	None
Fluorene	86737	No	No	0.08%	0.00%	Application	None	None
Fluoride		No	No	0.00%	0.00%	Application	None	None
Free Cyanide	57125	No	No	384.62%	90.91%	Application	Monitoring Required	Monitoring Required
gamma-BHC (Lindane)	58899	Yes	Yes	67.63%	5.26%	Application	None	None
Guthion	86500	No	No	0.00%	0.00%	Application	None	None
Heptachlor	76448	Yes	No	53934.47%	9.62%	Application	Monitoring Required	None
Heptachlor epoxide	1024573	Yes	No	109251.87%	9.62%	Application	Monitoring Required	None
Hexachlorobenzene	118741	Yes	Yes	1469249.25%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 015

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Hexachlorobutadiene	87683	Yes	Yes	23.67%	0.00%	Application	None	None
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	0.00%	0.00%	Application	None	None
Hexachlorocyclopentadiene	77474	No	No	0.03%	0.00%	Application	None	None
Hexachloroethane	67721	Yes	No	129.12%	0.00%	Application	Monitoring Required	None
Hydrogen Sulfide, Undissociated	7783064	No	No	0.00%	0.00%	Application	None	None
Ideno(1,2,3-cd)pyrene	193395	No	No	23671.24%	0.00%	Application	Monitoring Required	None
Isophorone	78591	No	No	0.44%	0.00%	Application	None	None
Malathion	121755	No	No	0.00%	0.00%	Application	None	None
Methoxychlor	72435	No	No	0.00%	0.00%	Application	None	None
Methyl Bromide	74839	No	No	0.28%	0.00%	Application	None	None
Methylene Chloride	75092	Yes	No	0.72%	0.00%	Application	None	None
Mirex	2385855	Yes	Yes	0.00%	0.00%	Application	None	None
Nitrate-Nitrite (as N)	14797558	No	No	0.00%	0.00%	Application	None	None
Nitrobenzene	98953	No	No	0.62%	0.00%	Application	None	None
Nitrosamines, Other		No	No	0.00%	0.00%	Application	None	None
N-Nitrosodibutylamine	924163	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodiethylamine	55185	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodimethylamine	62759	Yes	No	142.03%	0.00%	Application	Monitoring Required	None
N-Nitrosodi-n-Propylamine	621647	Yes	No	835.46%	0.00%	Application	Monitoring Required	None
N-Nitrosodiphenylamine	86306	Yes	No	71.01%	0.00%	Application	Monitoring Required	None
N-Nitrosopyrrolidine	930552	Yes	No	0.00%	0.00%	Application	None	None
Parathion	56382	Yes	No	0.00%	0.00%	Application	None	None
Pentachlorobenzene	608935	Yes	Yes	0.00%	0.00%	Application	None	None
Pentachlorophenol	87865	Yes	No	142.03%	0.00%	Application	Monitoring Required	None
Phenol	108952	No	No	0.00%	0.00%	Application	None	None
Phthalate esters			No	0.00%	0.00%	Application	None	None
Polychlorinated Biphenyls (PCBs)		Yes	Yes	0.00%	0.00%	Application	None	None
Pyrene	129000	No	No	0.11%	0.00%	Application	None	None
Sulfate (as SO4)		No	No	0.00%	0.00%	Application	None	None
Surfactants		No	No	0.00%	0.00%	Application	None	None
Tetrachloroethylene	127184	Yes	No	129.12%	0.00%	Application	Monitoring Required	None
Toluene	108883	No	No	0.00%	0.00%	Application	None	None
Total Alpha		No	No	0.00%	352.00%	Application	None	Monitoring Required
Total Ammonia		No	No	0.00%	0.00%	Application	None	None
Total Beta		No	No	0.00%	109.60%	Application	None	Monitoring Required
Total Dissolved Solids			No	0.00%	0.00%	Application	None	None
Total Radium		No	No	0.00%	8.88%	Application	None	None
Total Strontium-90		No	No	0.00%	0.00%	Application	None	None
Total Recoverable Antimony	7440360	No	No	26.63%	0.00%	Application	None	None
Total Recoverable Arsenic	7440382	Yes	No	3.33%	1.47%	Application	None	None
Total Recoverable Barium	7440393	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Beryllium	7440417	No	No	0.00%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 015

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Total Recoverable Cadmium	7440439	No	No	254.98%	28.18%	Application	Monitoring Required	None
Total Recoverable Chromium	7440439	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Copper	7440508	No	No	174.69%	111.41%	Application	Monitoring Required	Monitoring Required
Total Recoverable Iron	7439896	No	No	85.00%	31.00%	Application	Monitoring Required	None
Total Recoverable Lead	7439921	No	No	3322.99%	129.49%	Application	Monitoring Required	Monitoring Required
Total Recoverable Mercury	7439976	No	Yes	334.18%	11.76%	Application	Monitoring Required	None
Total Recoverable Nickel	7440020	No	No	62.75%	6.98%	Application	None	None
Total Recoverable Selenium	7782492	No	No	200.00%	50.00%	Application	Monitoring Required	None
Total Recoverable Silver	7440224	No	No	0.00%	279.17%	Application	None	Monitoring Required
Total Recoverable Thallium	7440280	No	No	2705.28%	0.00%	Application	Monitoring Required	None
Total Recoverable Zinc	7440666	No	No	54.60%	54.60%	Application	None	None
Total Residual Chlorine		No	No	0.00%	0.00%	Application	None	None
Toxaphene	8001352	Yes	Yes	0.00%	0.00%	Application	None	None
Trichloroethylene	79016	Yes	No	2.84%	0.00%	Application	None	None
Tritium		No	No	0.00%	0.00%	Application	None	None
Uranium		No	No	0.00%	0.00%	Application	None	None
Vinyl Chloride	75014	Yes	No	0.32%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 017

Permit Writer	Larry Sowder
Date Entered	7/28/2006
Facility Name	USDOE Paducah Gaseous Diffusion Plant
KPDES Number	KY0004049
Outfall Number	017
Case Number	1
Status:	E

Is this an existing facility – Enter "E"
Is this an existing facility with an increase in pollutant load – Enter "I"
Is this a new facility – Enter "N"
Is this a regional facility with an approved up-to-date 201 plan – Enter "R"
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter "A"

Receiving Water Name	Bayou Creek	
Discharge Mile Point	7.1	
Public Water Supply Name	Cairo Illinois	
Intake Water Name	Ohio River	
Intake Mile Point	3.6 (977.8 USCOE)	
Total Effluent Flow (Q_T)	2.46	MGD
Receiving Water 7Q10 (Q_{RW7Q10})	0	cfs
Receiving Water Harmonic Mean (Q_{RWHM})	0.5	cfs
Receiving Water pH	7.5	
Receiving Water Temperature	20.00	°C
Intake Water 7Q10 (Q_{IW7Q10})	46300	cfs
Intake Water Harmonic Mean (Q_{IWHM})	198238	cfs
Effluent Hardness	100	(as mg/l CaCO3)
Receiving Water Hardness	100	(as mg/l CaCO3)
Zone of Initial Dilution (ZID)	1	
Mixing Zone (MZ)	0.333	
Acute to Chronic Ratio (ACR)	0.1	
Impaired	Yes	

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014 No

Calculation Methodology

Definitions

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q_T
Aquatic Life Acute Criteria	C_A	Receiving Water 7Q10	Q_{RW7Q10}
Aquatic Life Chronic Criteria	C_C	Receiving Water Harmonic Mean Q_{RWHM}	
Human Health Criteria - Fish Only	C_{HHFO}	Intake Water 7Q10	Q_{IW7Q10}
Human Health Criteria - Fish & Water	C_{HHFW}	Intake Water Harmonic Mean	Q_{IWHM}
End of Pipe Effluent Limit	C_T	Zone of Initial Dilution	ZID
Instream Background Concentration	C_U	Mixing Zone	MZ
Toxicity Units - Acute	TU_a	Toxicity Units - Chronic	TU_c
Effluent Hardness	H_T	Receiving Water Hardness	H_{RW}

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 017

Aquatic Life - Chemical Specific

Acute	Chronic Mixing Zone / Complete Mix
NO ZID given $C_T = C_A$	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	

Human Health - Chemical Specific

Fish Only: Mixing Zone / Complete Mix	
Carcinogen / Non-Carcinogen	$C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\}/Q_T$

Fish & Water Only: Mixing Zone / Applicable at point of withdrawal	
Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\}/Q_T$
Non-Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\}/Q_T$

Aquatic Life - Whole Effluent Toxicity

Acute (Units TU_a)	Chronic Mixing Zone / Complete Mix (Units TUc)
NO ZID given CT = CA	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	Conversion of TU_c to TU_a: $TU_c \times ACR = TU_a$

Metal Aquatic Criteria

Pollutant	Acute Criteria	Chronic Criteria
Total Recoverable Cadmium	$e^{(1.0166\ (\ln Hardness) - 3.924)}$	$e^{(0.7409\ (\ln Hardness) - 4.719)}$
Chromium III	$e^{(0.8190\ (\ln Hardness) + 3.7256)}$	$e^{(0.8190\ (\ln Hardness) + 0.6848)}$
Total Recoverable Copper	$e^{(0.9422\ (\ln Hardness) - 1.700)}$	$e^{(0.8545\ (\ln Hardness) - 1.702)}$
Total Recoverable Lead	$e^{(1.273\ (\ln Hardness) - 1.460)}$	$e^{(1.273\ (\ln Hardness) - 4.705)}$
Total Recoverable Nickel	$e^{(0.8460\ (\ln Hardness) + 2.255)}$	$e^{(0.8460(\ln Hardness) + 0.0584)}$
Total Recoverable Silver	$e^{(1.72\ (\ln Hardness) - 6.59)}$	
Total Recoverable Zinc	$e^{(0.8473\ (\ln Hardness) + 0.884)}$	$e^{(0.8473\ (\ln Hardness) + 0.884)}$

Hardness (as mg/l $CaCO_3$)	
Zone Initial Dilution (ZID)	$H_{RW} + [H_T + H_{RW}]/ZID$
Mixing Zone	$[(Q_{RW7Q10})(MZ)(H_{RW}) +$
$(Q_T)(H_T)]/[(QRW7Q10)(MZ)+(QT)]$	

Total Ammonia Criteria

Chronic - applies state wide - unionzed criteria of 0.05 mg/l

$[0.05*(1+10^{(pka-pH)})]/1.2$ pka=(0.0902+(2730/(273.1+T)) T = Temperature °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$[0.411/(1+10^{(7.204-pH)})]+[58.4/(1+10^{(pH-7.204)})]$

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 017

Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concerned assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 017

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
1,1,1-Trichloroethane	71556	No	No	2431.8911	mg/l	Human Health Fish & Water	N/A	mg/l	NA
1,1,2,2-Tetrachloroethane	79345	Yes	No	0.0042	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1,2-Trichloroethane	79005	Yes	No	0.0167	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1-Dichloroethylene	75354	Yes	No	0.0033	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.0011	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4-Trichlorobenzene	120821	No	No	0.9811	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichlorobenzene	95501	No	No	17.7433	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloroethane	107062	Yes	No	0.0386	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloropropane	78875	Yes	No	0.0157	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Diphenylhydrazine	122667	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Trans-Dichloroethylene	156605	Yes	No	146	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichlorobenzene	541731	No	No	1.0020	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichloropropene	542756	No	No	1.7743	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,4-Dichlorobenzene	106467	No	No	2.7137	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	5.3230E-12	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,5-TP (Silvex)	93721	No	No	121.5946	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4,5-trichlorophenol	95954	No	No	3.7574	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,6-Trichlorophenol	88062	Yes	No	0.0025	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-D	94757	Yes	No	3644.1035	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4-Dichlorophenol	120832	No	No	0.3027	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dimethylphenol	105679	No	No	0.8872	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrophenol	51285	No	No	5.5317	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrotoluene	121142	Yes	No	0.0035	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chloronaphthalene	91587	No	No	1.6700	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chlorophenol	95578	No	No	0.1566	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-methyl-4,6-dinitrophenol	534521	No	No	0.2922	mg/l	Human Health Fish Only	N/A	mg/l	NA
3,3-Dichlorobenzidine	91941	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDD	72548	Yes	Yes	3.2355E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDE	72559	Yes	Yes	2.2962E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDT	50293	Yes	Yes	2.2962E-07	mg/l	Human Health Fish Only	0.0011	mg/l	Acute
Acenaphthene	83329	No	No	1.0333	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrolein	107028	No	No	0.3027	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrylonitrile	107131	Yes	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Aldrin	309002	Yes	No	5.2186E-08	mg/l	Human Health Fish Only	0.0030	mg/l	Acute
alpha-BHC	319846	Yes	No	5.1142E-06	mg/l	Human Health Fish Only	N/A	mg/l	NA
Alpha-Endosulfan	959988	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Anthracene	120127	No	No	41.7489	mg/l	Human Health Fish Only	N/A	mg/l	NA
Asbestos	1332214	Yes	No	364410347.9675	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Benzene	71432	Yes	No	0.0532	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzidine	92875	Yes	No	2.0874E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)anthracene	56553	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)pyrene	50328	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 017

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Benzo(b)fluoranthene	205992	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(k)fluoranthene	205992	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-BHC	319857	Yes	No	1.7743E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-Endosulfan	33213659	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Bis(2-chloroethyl)ether	111444	Yes	No	0.0006	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-chloroisopropyl)ether	108601	No	No	67.8420	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-ethylhexyl)phthalate	117817	Yes	No	0.0023	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(chloromethyl)ether	542881	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bromoform	75252	Yes	No	0.1461	mg/l	Human Health Fish Only	N/A	mg/l	NA
Butylbenzyl phthalate	85687	No	No	1.9831	mg/l	Human Health Fish Only	N/A	mg/l	NA
Carbon Tetrachloride	56235	Yes	No	0.0017	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlordane	57749	Yes	Yes	8.4542E-07	mg/l	Human Health Fish Only	0.0024	mg/l	Acute
Chloride	16887006	No	No	600.0000	mg/l	Chronic	1200.0000	mg/l	Acute
Chlorobenzene	108907	No	No	21.9182	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlorodibromomethane	124481	Yes	No	0.0136	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloroform	67663	Yes	No	0.4905	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloropyrifos	2921882	No	No	0.0000	mg/l	Chronic	8.3000E-05	mg/l	Acute
Chromium (III)	16065831	No	No	0.0862	mg/l	Chronic	1.8030	mg/l	Acute
Chromium (VI)	18540299	Yes	No	0.0110	mg/l	Chronic	0.0160	mg/l	Acute
Chrysene	218019	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Color		No	No	911.9591	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Demeton	8065483	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Dibenzo(a,h)anthracene	53703	Yes	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dichlorobromomethane	75274	Yes	No	0.0177	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dieldrin	60571	Yes	Yes	5.6361E-08	mg/l	Human Health Fish Only	0.0002	mg/l	Acute
Diethyl phthalate	84662	No	No	45.9238	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dimethyl phthalate	131113	No	No	1148.0955	mg/l	Human Health Fish Only	N/A	mg/l	NA
Di-n-butyl phthalate	84742	No	No	4.6968	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dinitrophenols	25550587	No	No	5.5317	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endosulfan sulfate	1031078	No	No	0.0929	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endrin	72208	No	No	0.0000	mg/l	Chronic	0.0001	mg/l	Acute
Endrin aldehyde	7421934	No	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Ethylbenzene	100414	No	No	30.2680	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoranthene	206440	No	No	0.1461	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluorene	86737	No	No	5.5317	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoride		No	No	24318.9106	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Free Cyanide	57125	No	No	0.0052	mg/l	Chronic	0.0220	mg/l	Acute
gamma-BHC (Lindane)	58899	Yes	Yes	6.5755E-05	mg/l	Human Health Fish Only	0.0010	mg/l	Acute
Guthion	86500	No	No	1.0000E-05	mg/l	Chronic	N/A	mg/l	NA
Heptachlor	76448	Yes	No	8.2454E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Heptachlor epoxide	1024573	Yes	No	4.0705E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Hexachlorobenzene	118741	Yes	Yes	3.0268E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA

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				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Hexachlorobutadiene	87683	Yes	Yes	0.0188	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	4.3210E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclopentadiene	77474	No	No	17.7433	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachloroethane	67721	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hydrogen Sulfide, Undissociated	7783064	No	No	0.0020	mg/l	Chronic	N/A	mg/l	NA
Ideno(1,2,3-cd)pyrene	193395	No	No	1.8787E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Isophorone	78591	No	No	1.0020	mg/l	Human Health Fish Only	N/A	mg/l	NA
Malathion	121755	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Methoxychlor	72435	No	No	0.0000	mg/l	Chronic	N/A	mg/l	NA
Methyl Bromide	74839	No	No	1.5656	mg/l	Human Health Fish Only	N/A	mg/l	NA
Methylene Chloride	75092	Yes	No	0.6158	mg/l	Human Health Fish Only	N/A	mg/l	NA
Mirex	2385855	Yes	Yes	1.0000E-06	mg/l	Chronic	N/A	mg/l	NA
Nitrate-Nitrite (as N)	14797558	No	No	121594.5528	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Nitrobenzene	98953	No	No	0.7202	mg/l	Human Health Fish Only	N/A	mg/l	NA
Nitrosamines, Other		No	No	1.2942E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodibutylamine	924163	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiethylamine	55185	Yes	No	1.2942E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodimethylamine	62759	Yes	No	3.1312E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodi-n-Propylamine	621647	Yes	No	0.0005	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiphenylamine	86306	Yes	No	0.0063	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosopyrrolidine	930552	Yes	No	0.0355	mg/l	Human Health Fish Only	N/A	mg/l	NA
Parathion	56382	Yes	No	1.3000E-05	mg/l	Chronic	0.0001	mg/l	Acute
Pentachlorobenzene	608935	Yes	Yes	0.0016	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pentachlorophenol	87865	Yes	No	0.0031	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phenol	108952	No	No	1774.3294	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phthalate esters			No	0.0030	mg/l	Chronic	N/A	mg/l	NA
Polychlorinated Biphenyls (PCBs)		Yes	Yes	6.6798E-08	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pyrene	129000	No	No	4.1749	mg/l	Human Health Fish Only	N/A	mg/l	NA
Sulfate (as SO4)		No	No	3039863.8211	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Surfactants		No	No	6079.7276	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Tetrachloroethylene	127184	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Toluene	108883	No	No	208.7446	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Alpha		No	No	N/A	pCi/l	Human Health Fish & Water	15.0000	pCi/l	Acute
Total Ammonia		No	No	3.3609	mg/l	Chronic	19.8902	mg/l	Acute
Total Beta		No	No	N/A	pCi/l	Human Health Fish & Water	50.0000	pCi/l	Acute
Total Dissolved Solids			No	9119591.4634	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Radium		No	No	N/A	pCi/l	Human Health Fish & Water	5.0000	pCi/l	Acute
Total Strontium-90		No	No	N/A	pCi/l	Human Health Fish & Water	8.0000	pCi/l	Acute
Total Recoverable Antimony	7440360	No	No	0.6680	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Arsenic	7440382	Yes	No	0.1500	mg/l	Chronic	0.3400	mg/l	Acute
Total Recoverable Barium	7440393	No	No	12159.4553	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Beryllium	7440417	No	No	48.6378	mg/l	Human Health Fish & Water	N/A	mg/l	NA

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				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Total Recoverable Cadmium	7440439	No	No	0.0003	mg/l	Chronic	0.0021	mg/l	Acute
Total Recoverable Chromium	7440439	No	No	1215.9455	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Copper	7440508	No	No	0.0093	mg/l	Chronic	0.0140	mg/l	Acute
Total Recoverable Iron	7439896	No	No	1.0000	mg/l	Chronic	4.0000	mg/l	Acute
Total Recoverable Lead	7439921	No	No	0.0032	mg/l	Chronic	0.0816	mg/l	Acute
Total Recoverable Mercury	7439976	No	Yes	5.3230E-05	mg/l	Human Health Fish Only	0.0017	mg/l	Acute
Total Recoverable Nickel	7440020	No	No	0.0522	mg/l	Chronic	0.4692	mg/l	Acute
Total Recoverable Selenium	7782492	No	No	0.0050	mg/l	Chronic	0.0200	mg/l	Acute
Total Recoverable Silver	7440224	No	No	N/A	mg/l	Human Health Fish & Water	0.0038	mg/l	Acute
Total Recoverable Thallium	7440280	No	No	0.0066	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Zinc	7440666	No	No	0.1198	mg/l	Chronic	0.1198	mg/l	Acute
Total Residual Chlorine		No	No	0.0110	mg/l	Chronic	0.0190	mg/l	Acute
Toxaphene	8001352	Yes	Yes	2.0000E-07	mg/l	Chronic	0.0007	mg/l	Acute
Trichloroethylene	79016	Yes	No	0.0313	mg/l	Human Health Fish Only	N/A	mg/l	NA
Tritium		No	No	N/A	pCi/l	Human Health Fish & Water	20000.0000	pCi/l	Acute
Uranium		No	No	N/A	mg/l	Human Health Fish & Water	0.0300	mg/l	Acute
Vinyl Chloride	75014	Yes	No	0.5532	mg/l	Human Health Fish Only	N/A	mg/l	NA

Hardness	Chronic	Acute
Metal limitations are developed using the mixed hardness of the effluent and receiving waters	100.00	100.00

	Toxicity			
Type of Test	Maximum	Units	Justification	Percent Effluent
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 017

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
1,1,1-Trichloroethane	71556	No	No	0.00%	0.00%	Application	None	None
1,1,2,2-Tetrachloroethane	79345	Yes	No	119.76%	0.00%	Application	Monitoring Required	None
1,1,2-Trichloroethane	79005	Yes	No	29.94%	0.00%	Application	None	None
1,1-Dichloroethylene	75354	Yes	No	149.70%	0.00%	Application	Monitoring Required	None
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.00%	0.00%	Application	None	None
1,2,4-Trichlorobenzene	120821	No	No	0.51%	0.00%	Application	None	None
1,2-Dichlorobenzene	95501	No	No	0.03%	0.00%	Application	None	None
1,2-Dichloroethane	107062	Yes	No	12.95%	0.00%	Application	None	None
1,2-Dichloropropane	78875	Yes	No	31.94%	0.00%	Application	None	None
1,2-Diphenylhydrazine	122667	Yes	No	2395.27%	0.00%	Application	Monitoring Required	None
1,2-Trans-Dichloroethylene	156605	Yes	No	0.00%	0.00%	Application	None	None
1,3-Dichlorobenzene	541731	No	No	0.50%	0.00%	Application	None	None
1,3-Dichloropropene	542756	No	No	0.28%	0.00%	Application	None	None
1,4-Dichlorobenzene	106467	No	No	0.18%	0.00%	Application	None	None
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	0.00%	0.00%	Application	None	None
2,4,5-TP (Silvex)	93721	No	No	0.00%	0.00%	Application	None	None
2,4,5-trichlorophenol	95954	No	No	0.00%	0.00%	Application	None	None
2,4,6-Trichlorophenol	88062	Yes	No	199.61%	0.00%	Application	Monitoring Required	None
2,4-D	94757	Yes	No	0.00%	0.00%	Application	None	None
2,4-Dichlorophenol	120832	No	No	1.65%	0.00%	Application	None	None
2,4-Dimethylphenol	105679	No	No	0.56%	0.00%	Application	None	None
2,4-Dinitrophenol	51285	No	No	0.09%	0.00%	Application	None	None
2,4-Dinitrotoluene	121142	Yes	No	140.90%	0.00%	Application	Monitoring Required	None
2-Chloronaphthalene	91587	No	No	0.30%	0.00%	Application	None	None
2-Chlorophenol	95578	No	No	3.19%	0.00%	Application	None	None
2-methyl-4,6-dinitrophenol	534521	No	No	0.00%	0.00%	Application	None	None
3,3-Dichlorobenzidine	91941	Yes	No	17109.08%	0.00%	Application	Monitoring Required	None
4,4'-DDD	72548	Yes	Yes	30906.72%	0.00%	Application	Monitoring Required	None
4,4'-DDE	72559	Yes	Yes	43550.38%	0.00%	Application	Monitoring Required	None
4,4'-DDT	50293	Yes	Yes	43550.38%	9.09%	Application	Monitoring Required	None
Acenaphthene	83329	No	No	0.48%	0.00%	Application	None	None
Acrolein	107028	No	No	3.30%	0.00%	Application	None	None
Acrylonitrile	107131	Yes	No	3832.43%	0.00%	Application	Monitoring Required	None
Aldrin	309002	Yes	No	95810.85%	1.67%	Application	Monitoring Required	None
alpha-BHC	319846	Yes	No	977.66%	0.00%	Application	Monitoring Required	None
Alpha-Endosulfan	959988	No	No	89.29%	22.73%	Application	Monitoring Required	None
Anthracene	120127	No	No	0.01%	0.00%	Application	None	None
Asbestos	1332214	Yes	No	0.00%	0.00%	Application	None	None
Benzene	71432	Yes	No	9.39%	0.00%	Application	None	None
Benzidine	92875	Yes	No	2395271.15%	0.00%	Application	Monitoring Required	None
Benzo(a)anthracene	56553	Yes	No	26614.12%	0.00%	Application	Monitoring Required	None
Benzo(a)pyrene	50328	Yes	No	26614.12%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 017

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Benzo(b)fluoranthene	205992	Yes	No	0.00%	0.00%	Application	None	None
Benzo(k)fluoranthene	205992	Yes	No	26614.12%	0.00%	Application	Monitoring Required	None
Beta-BHC	319857	Yes	No	281.80%	0.00%	Application	Monitoring Required	None
Beta-Endosulfan	33213659	No	No	178.57%	45.45%	Application	Monitoring Required	None
Bis(2-chloroethyl)ether	111444	Yes	No	0.00%	0.00%	Application	None	None
Bis(2-chloroisopropyl)ether	108601	No	No	0.01%	0.00%	Application	None	None
Bis(2-ethylhexyl)phthalate	117817	Yes	No	217.75%	0.00%	Application	Monitoring Required	None
Bis(chloromethyl)ether	542881	Yes	No	0.00%	0.00%	Application	None	None
Bromoform	75252	Yes	No	3.42%	0.00%	Application	None	None
Butylbenzyl phthalate	85687	No	No	0.25%	0.00%	Application	None	None
Carbon Tetrachloride	56235	Yes	No	299.41%	0.00%	Application	Monitoring Required	None
Chlordane	57749	Yes	Yes	5914.25%	2.08%	Application	Monitoring Required	None
Chloride	16887006	No	No	0.55%	0.28%	Application	None	None
Chlorobenzene	108907	No	No	0.02%	0.00%	Application	None	None
Chlorodibromomethane	124481	Yes	No	36.85%	0.00%	Application	None	None
Chloroform	67663	Yes	No	1.02%	0.00%	Application	None	None
Chloropyrifos	2921882	No	No	0.00%	0.00%	Application	None	None
Chromium (III)	16065831	No	No	0.00%	0.00%	Application	None	None
Chromium (VI)	18540299	Yes	No	0.00%	0.00%	Application	None	None
Chrysene	218019	Yes	No	26614.12%	0.00%	Application	Monitoring Required	None
Color		No	No	0.00%	0.00%	Application	None	None
Demeton	8065483	No	No	0.00%	0.00%	Application	None	None
Dibenzo(a,h)anthracene	53703	Yes	No	26614.12%	0.00%	Application	Monitoring Required	None
Dichlorobromomethane	75274	Yes	No	28.18%	0.00%	Application	None	None
Dieldrin	60571	Yes	Yes	177427.49%	41.67%	Application	Monitoring Required	None
Diethyl phthalate	84662	No	No	0.01%	0.00%	Application	None	None
Dimethyl phthalate	131113	No	No	0.00%	0.00%	Application	None	None
Di-n-butyl phthalate	84742	No	No	0.11%	0.00%	Application	None	None
Dinitrophenols	25550587	No	No	0.00%	0.00%	Application	None	None
Endosulfan sulfate	1031078	No	No	0.11%	0.00%	Application	None	None
Endrin	72208	No	No	277.78%	116.28%	Application	Monitoring Required	Monitoring Required
Endrin aldehyde	7421934	No	No	31.94%	0.00%	Application	None	None
Ethylbenzene	100414	No	No	0.02%	0.00%	Application	None	None
Fluoranthene	206440	No	No	3.42%	0.00%	Application	None	None
Fluorene	86737	No	No	0.09%	0.00%	Application	None	None
Fluoride		No	No	0.00%	0.00%	Application	None	None
Free Cyanide	57125	No	No	384.62%	90.91%	Application	Monitoring Required	Monitoring Required
gamma-BHC (Lindane)	58899	Yes	Yes	76.04%	5.26%	Application	Monitoring Required	None
Guthion	86500	No	No	0.00%	0.00%	Application	None	None
Heptachlor	76448	Yes	No	60639.78%	9.62%	Application	Monitoring Required	None
Heptachlor epoxide	1024573	Yes	No	122834.42%	9.62%	Application	Monitoring Required	None
Hexachlorobenzene	118741	Yes	Yes	1651911.14%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 017

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Hexachlorobutadiene	87683	Yes	Yes	26.61%	0.00%	Application	None	None
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	0.00%	0.00%	Application	None	None
Hexachlorocyclopentadiene	77474	No	No	0.03%	0.00%	Application	None	None
Hexachloroethane	67721	Yes	No	145.17%	0.00%	Application	Monitoring Required	None
Hydrogen Sulfide, Undissociated	7783064	No	No	0.00%	0.00%	Application	None	None
Ideno(1,2,3-cd)pyrene	193395	No	No	26614.12%	0.00%	Application	Monitoring Required	None
Isophorone	78591	No	No	0.50%	0.00%	Application	None	None
Malathion	121755	No	No	0.00%	0.00%	Application	None	None
Methoxychlor	72435	No	No	0.00%	0.00%	Application	None	None
Methyl Bromide	74839	No	No	0.32%	0.00%	Application	None	None
Methylene Chloride	75092	Yes	No	0.81%	0.00%	Application	None	None
Mirex	2385855	Yes	Yes	0.00%	0.00%	Application	None	None
Nitrate-Nitrite (as N)	14797558	No	No	0.00%	0.00%	Application	None	None
Nitrobenzene	98953	No	No	0.69%	0.00%	Application	None	None
Nitrosamines, Other		No	No	0.00%	0.00%	Application	None	None
N-Nitrosodibutylamine	924163	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodiethylamine	55185	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodimethylamine	62759	Yes	No	159.68%	0.00%	Application	Monitoring Required	None
N-Nitrosodi-n-Propylamine	621647	Yes	No	939.32%	0.00%	Application	Monitoring Required	None
N-Nitrosodiphenylamine	86306	Yes	No	79.84%	0.00%	Application	Monitoring Required	None
N-Nitrosopyrrolidine	930552	Yes	No	0.00%	0.00%	Application	None	None
Parathion	56382	Yes	No	0.00%	0.00%	Application	None	None
Pentachlorobenzene	608935	Yes	Yes	0.00%	0.00%	Application	None	None
Pentachlorophenol	87865	Yes	No	159.68%	0.00%	Application	Monitoring Required	None
Phenol	108952	No	No	0.00%	0.00%	Application	None	None
Phthalate esters			No	0.00%	0.00%	Application	None	None
Polychlorinated Biphenyls (PCBs)		Yes	Yes	0.00%	0.00%	Application	None	None
Pyrene	129000	No	No	0.12%	0.00%	Application	None	None
Sulfate (as SO4)		No	No	0.00%	0.00%	Application	None	None
Surfactants		No	No	0.00%	0.00%	Application	None	None
Tetrachloroethylene	127184	Yes	No	145.17%	0.00%	Application	Monitoring Required	None
Toluene	108883	No	No	0.00%	0.00%	Application	None	None
Total Alpha		No	No	0.00%	43.47%	Application	None	None
Total Ammonia		No	No	0.00%	0.00%	Application	None	None
Total Beta		No	No	0.00%	33.60%	Application	None	None
Total Dissolved Solids			No	0.00%	0.00%	Application	None	None
Total Radium		No	No	0.00%	8.88%	Application	None	None
Total Strontium-90		No	No	0.00%	0.00%	Application	None	None
Total Recoverable Antimony	7440360	No	No	29.94%	0.00%	Application	None	None
Total Recoverable Arsenic	7440382	Yes	No	3.33%	1.47%	Application	None	None
Total Recoverable Barium	7440393	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Beryllium	7440417	No	No	0.01%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 017

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Total Recoverable Cadmium	7440439	No	No	369.52%	46.88%	Application	Monitoring Required	None
Total Recoverable Chromium	7440439	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Copper	7440508	No	No	267.98%	178.58%	Application	Monitoring Required	Monitoring Required
Total Recoverable Iron	7439896	No	No	64.40%	19.03%	Application	None	None
Total Recoverable Lead	7439921	No	No	6286.16%	244.96%	Application	Monitoring Required	Monitoring Required
Total Recoverable Mercury	7439976	No	Yes	375.73%	11.76%	Application	Monitoring Required	None
Total Recoverable Nickel	7440020	No	No	95.85%	10.66%	Application	Monitoring Required	None
Total Recoverable Selenium	7782492	No	No	200.00%	50.00%	Application	Monitoring Required	None
Total Recoverable Silver	7440224	No	No	0.00%	660.60%	Application	None	Monitoring Required
Total Recoverable Thallium	7440280	No	No	3041.61%	0.00%	Application	Monitoring Required	None
Total Recoverable Zinc	7440666	No	No	122.69%	219.50%	Application	Monitoring Required	Monitoring Required
Total Residual Chlorine		No	No	272.73%	157.89%	Application	Monitoring Required	Monitoring Required
Toxaphene	8001352	Yes	Yes	0.00%	0.00%	Application	None	None
Trichloroethylene	79016	Yes	No	3.19%	0.00%	Application	None	None
Tritium		No	No	0.00%	0.00%	Application	None	None
Uranium		No	No	0.00%	0.00%	Application	None	None
Vinyl Chloride	75014	Yes	No	0.36%	0.00%	Application	None	None

TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT
for
POLYCHLORINATED BIPHENYLS (PCBs)

Little Bayou Creek, McCracken County, Kentucky

INTRODUCTION

Section 303(d) of the Clean Water Act and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for the water bodies that are not meeting designated uses under technology-based controls for pollution. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body based on the relation between pollution sources and in-stream water quality conditions. States can then establish water-quality based controls to reduce pollution from both point and nonpoint sources and restore the quality of their water resources.

PROBLEM DEFINITION

The Paducah Gaseous Diffusion Plant (PGDP) is one of two operational facilities in the United States that commercially enrich uranium for use in nuclear reactors. The PGDP is owned by the U.S. Department of Energy (DOE). Polychlorinated biphenyls (PCBs) are the result of spills or releases from capacitors or transformers and have been found in the soils and the streams adjacent to the PGDP and in fish tissue from the streams. Little Bayou Creek (Figure 1) from river mile 0.0 to 6.5 has been under a fish consumption advisory since 1992 because concentration values of PCBs greater than 2 parts per million (ppm) have been found in fish tissue. This value is the action level designated by the Food and Drug Administration (FDA) and was used by the Kentucky Division of Water (DOW) in the past to issue fish consumption advisories for Little Bayou Creek.

However, the DOW now uses risk-based protocols for fish tissue consumption advisories. Fish consumption advisories will be lifted when the PCB concentrations in fish tissue are consistently less than 0.06 mg/kg instead of when the FDA action level is no longer exceeded. Fish tissue sampling by DOE contractors and the University of Kentucky's Federal Facility Oversight Unit (UK-FFOU) have shown levels of PCBs in fish tissue that are unsafe for unlimited human consumption. Therefore, Little Bayou Creek has been listed as not supporting the designated use of fish consumption and is therefore included on the 1998 303(d) list of waters for TMDL development.

Historic industrial and waste management practices at the PGDP have resulted in PCB contamination throughout the facility, as well as contamination of drainage ditches and streams. The source of contamination is point source leaks and spills and nonpoint erosion and resuspension/mobilization of historically contaminated soils and sediments. The PGDP industrial complex is the source of PCB contamination to the Little Bayou Creek. This report characterizes the level of PCBs in fish tissue and the extent of PCB contamination of the sediments. The report also describes regulatory oversight and remedial actions at the facility.

Site Description

The PGDP is located on a 3,400-acre site in McCracken County approximately 15 miles west of Paducah, Ky., and approximately 3 miles south of the Ohio River. The PGDP was completed in 1953 with production starting as early as 1952. The facility enriches uranium through a diffusion cascade process that requires extensive support facilities. The diffusion process encompasses five buildings with approximately 740 acres fenced. Support facilities at the plant include cooling towers, a chemical cleaning and decontamination facility, water and wastewater treatment plants, a phosphate reduction facility, four electrical switchyards, a steam plant, and a laboratory. Including various contractors located on the site, the facility employed approximately 2,000 people at its peak. The PGDP is surrounded by a buffer of land owned by the DOE and leased to the Commonwealth of Kentucky.

The PGDP discharges treated wastewater and storm water runoff to Little Bayou Creek, which drains north through some privately owned land and the West Kentucky Wildlife Management Area (WKWMA) to the Ohio River. Effluent from the PGDP is a major source of flow in both Little Bayou Creek and Bayou Creek during low-flow periods and may constitute all of the flow in Little Bayou Creek and close to 85 percent of the flow in Bayou Creek during low-flow periods. Both streams have an estimated 7Q10 streamflow of 0.0 ft3/sec (refers to the natural stream condition). However, streamflow data collected in 1991 and 1994-97 (USGS; 1991, 1994-97) indicate that the annual 7-day minimum streamflow during these years ranged from 0.44 to 0.81 cfs. The lowest published minimum daily mean value is 0.02 cfs (5/25/95), but this value appears to be suspect. The value is an estimated value, and outside of the 3-day period containing this estimate (5/23/95 to 5/25/95), the next lowest daily minimum value is 0.38 cfs. Defining a 7Q10 streamflow value doesn't hold much significance for this TMDL (on PCBs) because the target load is zero and the PCB levels discussed are those found in the sediments and in fish tissue. However, the streamflow information presented here is for documentation purposes for consideration in subsequent TMDL development for Little Bayou Creek.

TARGET IDENTIFICATION

The endpoint or goal of the TMDL is to remove the fish consumption advisory from Little Bayou Creek. Fish consumption advisories will be lifted when the PCB concentrations in fish are consistently less than 0.06 mg/kg (full support of fish consumption use). To achieve this endpoint, a point and nonpoint source PCB load of 0.00 (zero) lbs/day is needed.

SOURCE ASSESSMENT

Regulatory requirements exist to eliminate additional PCB discharge to the waters of Little Bayou, and the final TMDL is the condition of no fish consumption restrictions for Little Bayou Creek. Restrictions and best management practices (BMPs) have been partially implemented to eliminate new PCB inputs from all sources or migration of PCBs (contaminated soil, wastes, transformers, etc.). Likewise, regulatory requirements are in place to limit the discharge of metals and radiation-contaminated effluent. Restrictions and BMPs that have been implemented to eliminate PCB inputs will also serve to eliminate metals and radiation contamination from all sources.

Table 1. Summary of Polychlorinated Biphenyl (PCB) Sources and Amounts at the Paducah Gaseous Diffusion Plant at the End of 1995.

Type	Number in Service	Volume (gallons)	PCBs (kilograms)
PCB transformers	67	96,636	281,280
PCB-contaminated transformers	25	7,679	4.3
PCB-contaminated electrical equipment	18	4,704	5.0
PCB capacitors	2,749*		
PCB open systems	3	235	10.9
Ventilation gaskets	19,200 kilograms of gaskets, 20% [PCB] by weight		3,840

Taken from DOE, Paducah Site 1995 Annual Report.
*As of December 1997, the number of PCB capacitors has been reduced to 2036.

LINKAGE BETWEEN NUMERIC TARGETS AND SOURCES MODEL DEVELOPMENT

The database of the UK-FFOU was utilized in developing this report. The UK-FFOU formerly worked under contract to the Kentucky Natural Resources and Environmental Protection Cabinet, Division of Waste Management. It oversaw ongoing remedial activities at the PGDP Superfund site. A GIS database contains sampling information from state sampling and sampling by past and present DOE contractors. The sampling data includes Phase I and II characterization, Army Corps of Engineers PCB source survey, and periodic monitoring. This TMDL report is limited to conditions presently found within the local streams and the discharging outfalls. There is a variety of PCB contamination throughout the facility, such as soils and sludges, that has the potential to add to present outfall and stream sediment contamination. Due to the uncertainty in the potential for this contamination to contribute to future sediment PCB loads, only PCBs found in the fish tissue and sediments will be addressed in this TMDL. Regulatory and technical controls are in place to minimize additional PCB contribution through spills, excavation, or other remedial activity.

Results from 134 samples for PCB analytes and sediment matrix at locations on Little Bayou Creek and Bayou Creek indicate that 28 sample locations had detectable concentrations of PCBs. The results for Little Bayou Creek are shown in Figure 1. Seven sample locations (Figure 2) had PCB concentrations above 1.0 part per million (ppm). There are two primary areas of sediment contamination by PCBs. They include

(1) outfall 011 and a stretch of Little Bayou Creek just downstream of this outfall and (2) the north-south diversion ditch, which drains to outfall 003 to the north. The PCB contamination has come from four major sources: leaks/spills of PCB-containing transformer oils from the number of switchyards within the facility, PCB-containing ventilation gaskets used throughout the facility, spills of PCB-containing oils, and oil land-farming of PCB-contaminated oils. Little Bayou Creek receives effluent from a variety of plant outfalls, including 010, 011, and 012. Historically, outfall 011 carried much of the plant effluent to the creek. Two actions taken at the facility were to divert process wastewater flow from outfall 011 to outfall 010 and to cover contaminated sediments with bentonite to reduce sediment mobilization. Currently, most of the discharge to the Little Bayou Creek flows through outfall 010 (with the exception of stormwater), which is less contaminated with PCBs or radionuclides.

Sampling performed by the UK-FFOU indicated that a portion of the Little Bayou Creek in close proximity to the PGDP remains contaminated with PCBs. Additionally, there is patchy sediment contamination of Bayou Creek as indicated in the report Analysis of Metals and PCBs in Environmental Samples from Bayou Creek Systems (Birge and Price, 1997). The report, Report to FFOU on Polychlorinated Biphenyl (PCB) Residues in Fish from the Bayou Creek System (Birge, et al, 1998) indicates that fish within Little Bayou Creek contain PCBs above the FDA action level and the risk-based protocol of 0.06 mg/kg. DOE contractor sampling (Oak Ridge National Laboratory) shows that the upstream stretch of Little Bayou Creek (LUK 9.0) shows the highest degree of fish PCB contamination (Fig. 3 and 4). Little Bayou Creek remains under a fish consumption advisory. Fish sampled from Bayou Creek occasionally contained PCBs, but at concentrations that were below the FDA action level. This is shown in Figure 4 (sites BBK 10.0, 9.1, 2.8, 12.5) and is indicated in the report by Birge and others (1998). Data are currently being evaluated to determine if a fish consumption advisory will be posted for Big Bayou Creek.

DOE contractor sampling has shown a downward trend in sunfish PCB contamination since 1992 (Fig. 3 and 4). This trend is likely to continue. These same data show that fish tissue concentrations of PCBs are elevated during spring sampling related to increased rainfall and mobilization of PCB contaminants. Additionally, the data indicate a pronounced reduction in PCB concentration in fish tissue in Little Bayou Creek as distance from the PGDP outfalls increases.

TMDL DEVELOPMENT

Total maximum daily loads (TMDLs) are comprised of the sum of individual wasteload allocations (WLAs) for point sources, and load allocations for both nonpoint sources and natural background levels for a given watershed and a margin of safety. The sum of these components must not result in the exceedance of water quality standards for that watershed. The TMDL is the total amount of pollutant that can be assimilated by the receiving stream without violating water quality standards. The TMDL document establishes the allowable stream loadings that are less than or equal to the TMDL and thereby provide the basis to establish water-quality based controls.

The TMDL goal is to improve water quality conditions in Little Bayou Creek and eventually reduce levels of PCBs within the sediments and fish. The source of PCBs to Little Bayou Creek is contamination of instream sediments, outfall sediments, and soil contamination of the PGDP. The impairment to Little Bayou Creek is caused by a pollutant that has been banned by the USEPA from manufacture or distribution in the United States, and there is no sustained allowable discharge of PCBs into waters of the Commonwealth of Kentucky. Therefore, the sustainable TMDL for PCBs into Little Bayou Creek is 0.00 lbs/day. The remaining PCB contamination from soils and sediments will degrade over time, and current levels are expected to decrease through biodegradation, potential excavation of sediments, and/or excavation of PCB-contaminated soils. The wasteload allocation and desired load allocation for PCBs to this stream is 0.00 lbs/day. In that the desired load of PCBs to Little Bayou Creek is 0.00 lbs/day, the margin of safety is 0.00 lbs/day, which is explicit.

For the Little Bayou Creek reach, the total allowable PCB load is 0.00 lbs/day. The current (1998) active permitted discharges can account for 0.00 lbs/day of PCB (WLAs). PCB load from nonpoint sources is expected to decrease over time as contaminated sediments are removed or flushed out due to runoff events.

The streams are currently being monitored for PCBs. As previously mentioned, DOE contractor sampling has shown a downward trend in sunfish PCB contamination since 1992 (Fig. 3 and 4). This trend is likely to continue. These same data show that fish tissue concentrations of PCBs are elevated during spring sampling related to increased rainfall and mobilization of PCB contaminants. Additionally, the data indicate a pronounced reduction in PCB concentration in fish tissue in Little Bayou Creek as distance from the PGDP outfalls increases.

The cleanup of historic contamination such as PCB-contaminated soils and sediment is the responsibility of DOE and its restoration management contractor. The DOE has contracted waste and restoration activities to a variety of companies. Much of the ongoing Kentucky Pollutant Discharge Elimination System (KPDES) and other compliance regulations are shared between USEC (currently operating the uranium enrichment facility) and DOE. The PGDP is also undergoing remedial actions as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and is a national Superfund site.

The DOE and U.S. Environmental Protection Agency signed the Toxic Substance Control Act, Federal Facilities Compliance Agreement (TSCA FFCA) in 1992 which provides a schedule to clean up, remove, and properly manage PCB wastes and other contaminated items addressed under TSCA regulations at the PGDP. PCB concentration in effluent to the Bayou and Little Bayou Creek is also monitored according to permit (KPDES Permit # KY0004049). DOE is required to continue to monitor sediment and fish tissue for levels of PCBs within Little Bayou Creek. Previous fish tissue sampling through the Biological Monitoring Program is shown in Figures 3 and 4. The KNREPC will continue to monitor conditions at the PGDP and PCB concentrations in sediments and fish from Little Bayou Creek.

The DOE has retained the responsibility for historic environmental contamination at the PGDP; this includes the ditch and stream sediment contamination. There is an ongoing radiological and nonradiological surveillance program to track sediment contamination through time. Sediment samples are taken at six locations annually through this effort for PCB and metals analysis. Regulatory requirements exist to eliminate additional discharges of PCBs to the waters of Little Bayou and Bayou Creek, and the final TMDL is the condition of no fish consumption restrictions in Little Bayou Creek. Restrictions and best management practices are to be implemented to eliminate new contaminant inputs from all sources (contaminated soil, wastes, transformers, etc.).

TSCA FFCA requirements:

- All motor exhaust gasket flanges be troughed to capture PCB-contaminated drips.
- All PCB historic disposal sites at PGDP to be investigated pursuant to separate
- permits, agreements, or orders.
- Air sampling to be conducted in process buildings with motor exhaust systems.
- The PGDP to inventory each lube oil system and define the PCB content.
- PCB and PCB-contaminated oil that may leak or spill to be cleaned in accordance with the EPA Spill Cleanup Policy.
- All PCB waste storage areas to meet regulatory requirements in accordance with 40
- CFR 761.65.
- Gasket removal program and ventilation duct management actions in 2005 or upon
- decommissioning date.
- PCB-contaminated electrical cables and equipment to be removed from the facility
- upon decommissioning.
- Inspection of PCB-contaminated hydraulic system components for leaks or accumulation of free liquid.
- Progress reports on PCB waste disposal.

Additional Remedial Actions Include:

- Excavation of PCB-contaminated soils from historic spills.
- Maintenance of vegetative cover over known PCB-contaminated soil and sediments.
- Effluent directed to less PCB-contaminated outfalls to reduce PCB mobilization.
- Protective clay cap placed in highly contaminated outfalls to reduce PCB mobilization.
- Routine removal of accumulated sediments from outfall lift stations.
- Preliminary evaluation of in-situ biodegradation products.
- Continued monitoring of effluents, sediments, fish, and other biota.

Continued Monitoring Includes:

- Fish monitoring under the site-wide Biological Monitoring Project.
- Routine inspections of outfalls.
- Continued confirmatory and independent water, sediment, and biota sampling by UKFFOU, in conjunction with Kentucky Department for Environmental Protection,
- Kentucky Department of Fish and Wildlife Resources, and U.S. Fish and Wildlife
- Service.

SUMMARY

The purpose of this report is to fulfill requirements for a TMDL specific to non-support of fish consumption use in Little Bayou Creek. The sustainable TMDL for PCBs into Little Bayou Creek is 0.00 (zero) lbs/day. Fish consumption advisories will be lifted when the PCB concentrations in fish are consistently less than 0.06 mg/kg (full support of fish consumption use). The source of impairment to fish consumption use in Little Bayou Creek has been identified and remedial activities are underway. The eventual reestablishment of the fish consumption use for stretches of Little Bayou Creek may be many years in coming. The facility is still operational, and some PCB-contaminated ditches contribute to stream contamination. The situation is further complicated by the presence of radiological contaminants. Whether some contaminated ditch sediments are to be excavated or not is yet to be determined. Much of this activity is postponed until other source waste areas (i.e., spill sites, buildings, lift stations) are remediated or eliminated. Recent sampling has shown improvement in the concentration levels of PCBs and in fish tissue from Little Bayou Creek.

REFERENCES

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STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 019

Permit Writer	Larry Sowder
Date Entered	7/28/2006
Facility Name	USDOE Paducah Gaseous Diffusion Plant
KPDES Number	KY0004049
Outfall Number	019
Case Number	1
Status:	E

Is this an existing facility – Enter "E"
Is this an existing facility with an increase in pollutant load – Enter "I"
Is this a new facility – Enter "N"
Is this a regional facility with an approved up-to-date 201 plan – Enter "R"
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter "A"

Receiving Water Name	Little Bayou Creek	
Discharge Mile Point	0.25	
Public Water Supply Name	Cairo Illinois	
Intake Water Name	Ohio River	
Intake Mile Point	3.6 (977.8 USCOE)	
Total Effluent Flow (Q_T)	0.66	MGD
Receiving Water 7Q10 (Q_{RW7Q10})	0	cfs
Receiving Water Harmonic Mean (Q_{RWHM})	0.1	cfs
Receiving Water pH	7.5	
Receiving Water Temperature	20.00	°C
Intake Water 7Q10 (Q_{IW7Q10})	46300	cfs
Intake Water Harmonic Mean (Q_{IWHM})	198238	cfs
Effluent Hardness	100	(as mg/l CaCO3)
Receiving Water Hardness	100	(as mg/l CaCO3)
Zone of Initial Dilution (ZID)	1	
Mixing Zone (MZ)	0.333	
Acute to Chronic Ratio (ACR)	0.1	
Impaired	Yes	
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	No	

Calculation Methodology

Definitions

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q_T
Aquatic Life Acute Criteria	C_A	Receiving Water 7Q10	Q_{RW7Q10}
Aquatic Life Chronic Criteria	C_C	Receiving Water Harmonic Mean Q_{RWHM}	
Human Health Criteria - Fish Only	C_{HHFO}	Intake Water 7Q10	Q_{IW7Q10}
Human Health Criteria - Fish & Water	C_{HHFW}	Intake Water Harmonic Mean	Q_{IWHM}
End of Pipe Effluent Limit	C_T	Zone of Initial Dilution	ZID
Instream Background Concentration	C_U	Mixing Zone	MZ
Toxicity Units - Acute	TU_a	Toxicity Units - Chronic	TU_c
Effluent Hardness	H_T	Receiving Water Hardness	H_{RW}

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 019

Aquatic Life - Chemical Specific

Acute	Chronic Mixing Zone / Complete Mix
NO ZID given $C_T = C_A$	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	

Human Health - Chemical Specific

Fish Only: Mixing Zone / Complete Mix	
Carcinogen / Non-Carcinogen	$C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\}/Q_T$

Fish & Water Only: Mixing Zone / Applicable at point of withdrawal	
Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\}/Q_T$
Non-Carcinogen	$C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\}/Q_T$

Aquatic Life - Whole Effluent Toxicity

Acute (Units TU_a)	Chronic Mixing Zone / Complete Mix (Units TUc)
NO ZID given CT = CA	$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$
ZID given $C_T = (C_A - C_U) \times (ZID)$	Conversion of TU_c to TU_a: $TU_c \times ACR = TU_a$

Metal Aquatic Criteria

Pollutant	Acute Criteria	Chronic Criteria
Total Recoverable Cadmium	$e^{(1.0166\ (\ln\ Hardness)\ -\ 3.924)}$	$e^{(0.7409\ (\ln\ Hardness)\ -\ 4.719)}$
Chromium III	$e^{(0.8190\ (\ln\ Hardness)\ +\ 3.7256)}$	$e^{(0.8190\ (\ln\ Hardness)\ +\ 0.6848)}$
Total Recoverable Copper	$e^{(0.9422\ (\ln\ Hardness)\ -\ 1.700)}$	$e^{(0.8545\ (\ln\ Hardness)\ -\ 1.702)}$
Total Recoverable Lead	$e^{(1.273\ (\ln\ Hardness)\ -\ 1.460)}$	$e^{(1.273\ (\ln\ Hardness)\ -\ 4.705)}$
Total Recoverable Nickel	$e^{(0.8460\ (\ln\ Hardness)\ +\ 2.255)}$	$e^{(0.8460(\ln\ Hardness)\ +\ 0.0584)}$
Total Recoverable Silver	$e^{(1.72\ (\ln\ Hardness)\ -\ 6.59)}$	
Total Recoverable Zinc	$e^{(0.8473\ (\ln\ Hardness)\ +\ 0.884)}$	$e^{(0.8473\ (\ln\ Hardness)\ +\ 0.884)}$

Hardness (as mg/l $CaCO_3$)	
Zone Initial Dilution (ZID)	$H_{RW} + [H_T + H_{RW}]/ZID$
Mixing Zone	$[(Q_{RW7Q10})(MZ)(H_{RW}) +$
$(Q_T)(H_T)]/[(QRW7Q10)(MZ)+(QT)]$	

Total Ammonia Criteria

Chronic - applies state wide - unionzed criteria of 0.05 mg/l

$[0.05*(1+10^{(pka-pH)})]/1.2$ pka=(0.0902+(2730/(273.1+T)) T = Temperature °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$[0.411/(1+10^{(7.204-pH)})]+[58.4/(1+10^{(pH-7.204)})]$

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - INPUTS - OUTFALL 019

Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concerned assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 019

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
1,1,1-Trichloroethane	71556	No	No	9063.7758	mg/l	Human Health Fish & Water	N/A	mg/l	NA
1,1,2,2-Tetrachloroethane	79345	Yes	No	0.0041	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1,2-Trichloroethane	79005	Yes	No	0.0165	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,1-Dichloroethylene	75354	Yes	No	0.0033	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.0011	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2,4-Trichlorobenzene	120821	No	No	0.9706	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichlorobenzene	95501	No	No	17.5541	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloroethane	107062	Yes	No	0.0382	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Dichloropropane	78875	Yes	No	0.0155	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Diphenylhydrazine	122667	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,2-Trans-Dichloroethylene	156605	Yes	No	145	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichlorobenzene	541731	No	No	0.9913	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,3-Dichloropropene	542756	No	No	1.7554	mg/l	Human Health Fish Only	N/A	mg/l	NA
1,4-Dichlorobenzene	106467	No	No	2.6847	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	5.2662E-12	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,5-TP (Silvex)	93721	No	No	453.1888	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4,5-trichlorophenol	95954	No	No	3.7173	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4,6-Trichlorophenol	88062	Yes	No	0.0025	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-D	94757	Yes	No	13582.3766	mg/l	Human Health Fish & Water	N/A	mg/l	NA
2,4-Dichlorophenol	120832	No	No	0.2995	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dimethylphenol	105679	No	No	0.8777	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrophenol	51285	No	No	5.4727	mg/l	Human Health Fish Only	N/A	mg/l	NA
2,4-Dinitrotoluene	121142	Yes	No	0.0035	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chloronaphthalene	91587	No	No	1.6521	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-Chlorophenol	95578	No	No	0.1549	mg/l	Human Health Fish Only	N/A	mg/l	NA
2-methyl-4,6-dinitrophenol	534521	No	No	0.2891	mg/l	Human Health Fish Only	N/A	mg/l	NA
3,3-Dichlorobenzidine	91941	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDD	72548	Yes	Yes	3.2010E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDE	72559	Yes	Yes	2.2717E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
4,4'-DDT	50293	Yes	Yes	2.2717E-07	mg/l	Human Health Fish Only	0.0011	mg/l	Acute
Acenaphthene	83329	No	No	1.0223	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrolein	107028	No	No	0.2995	mg/l	Human Health Fish Only	N/A	mg/l	NA
Acrylonitrile	107131	Yes	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Aldrin	309002	Yes	No	5.1630E-08	mg/l	Human Health Fish Only	0.0030	mg/l	Acute
alpha-BHC	319846	Yes	No	5.0597E-06	mg/l	Human Health Fish Only	N/A	mg/l	NA
Alpha-Endosulfan	959988	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Anthracene	120127	No	No	41.3037	mg/l	Human Health Fish Only	N/A	mg/l	NA
Asbestos	1332214	Yes	No	1358237660.6061	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Benzene	71432	Yes	No	0.0527	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzidine	92875	Yes	No	2.0652E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)anthracene	56553	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(a)pyrene	50328	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 019

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Benzo(b)fluoranthene	205992	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Benzo(k)fluoranthene	205992	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-BHC	319857	Yes	No	1.7554E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Beta-Endosulfan	33213659	No	No	0.0001	mg/l	Chronic	0.0002	mg/l	Acute
Bis(2-chloroethyl)ether	111444	Yes	No	0.0005	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-chloroisopropyl)ether	108601	No	No	67.1186	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(2-ethylhexyl)phthalate	117817	Yes	No	0.0023	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bis(chloromethyl)ether	542881	Yes	No	0.0000	mg/l	Human Health Fish Only	N/A	mg/l	NA
Bromoform	75252	Yes	No	0.1446	mg/l	Human Health Fish Only	N/A	mg/l	NA
Butylbenzyl phthalate	85687	No	No	1.9619	mg/l	Human Health Fish Only	N/A	mg/l	NA
Carbon Tetrachloride	56235	Yes	No	0.0017	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlordane	57749	Yes	Yes	8.3640E-07	mg/l	Human Health Fish Only	0.0024	mg/l	Acute
Chloride	16887006	No	No	600.0000	mg/l	Chronic	1200.0000	mg/l	Acute
Chlorobenzene	108907	No	No	21.6845	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chlorodibromomethane	124481	Yes	No	0.0134	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloroform	67663	Yes	No	0.4853	mg/l	Human Health Fish Only	N/A	mg/l	NA
Chloropyrifos	2921882	No	No	0.0000	mg/l	Chronic	8.3000E-05	mg/l	Acute
Chromium (III)	16065831	No	No	0.0862	mg/l	Chronic	1.8030	mg/l	Acute
Chromium (VI)	18540299	Yes	No	0.0110	mg/l	Chronic	0.0160	mg/l	Acute
Chrysene	218019	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Color		No	No	3398.9159	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Demeton	8065483	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Dibenzo(a,h)anthracene	53703	Yes	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dichlorobromomethane	75274	Yes	No	0.0176	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dieldrin	60571	Yes	Yes	5.5760E-08	mg/l	Human Health Fish Only	0.0002	mg/l	Acute
Diethyl phthalate	84662	No	No	45.4341	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dimethyl phthalate	131113	No	No	1135.8530	mg/l	Human Health Fish Only	N/A	mg/l	NA
Di-n-butyl phthalate	84742	No	No	4.6467	mg/l	Human Health Fish Only	N/A	mg/l	NA
Dinitrophenols	25550587	No	No	5.4727	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endosulfan sulfate	1031078	No	No	0.0919	mg/l	Human Health Fish Only	N/A	mg/l	NA
Endrin	72208	No	No	0.0000	mg/l	Chronic	0.0001	mg/l	Acute
Endrin aldehyde	7421934	No	No	0.0003	mg/l	Human Health Fish Only	N/A	mg/l	NA
Ethylbenzene	100414	No	No	29.9452	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoranthene	206440	No	No	0.1446	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluorene	86737	No	No	5.4727	mg/l	Human Health Fish Only	N/A	mg/l	NA
Fluoride		No	No	90637.7576	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Free Cyanide	57125	No	No	0.0052	mg/l	Chronic	0.0220	mg/l	Acute
gamma-BHC (Lindane)	58899	Yes	Yes	6.5053E-05	mg/l	Human Health Fish Only	0.0010	mg/l	Acute
Guthion	86500	No	No	1.0000E-05	mg/l	Chronic	N/A	mg/l	NA
Heptachlor	76448	Yes	No	8.1575E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Heptachlor epoxide	1024573	Yes	No	4.0271E-08	mg/l	Human Health Fish Only	0.0005	mg/l	Acute
Hexachlorobenzene	118741	Yes	Yes	2.9945E-07	mg/l	Human Health Fish Only	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 019

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Hexachlorobutadiene	87683	Yes	Yes	0.0186	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	4.2749E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachlorocyclopentadiene	77474	No	No	17.5541	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hexachloroethane	67721	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Hydrogen Sulfide, Undissociated	7783064	No	No	0.0020	mg/l	Chronic	N/A	mg/l	NA
Ideno(1,2,3-cd)pyrene	193395	No	No	1.8587E-05	mg/l	Human Health Fish Only	N/A	mg/l	NA
Isophorone	78591	No	No	0.9913	mg/l	Human Health Fish Only	N/A	mg/l	NA
Malathion	121755	No	No	0.0001	mg/l	Chronic	N/A	mg/l	NA
Methoxychlor	72435	No	No	0.0000	mg/l	Chronic	N/A	mg/l	NA
Methyl Bromide	74839	No	No	1.5489	mg/l	Human Health Fish Only	N/A	mg/l	NA
Methylene Chloride	75092	Yes	No	0.6092	mg/l	Human Health Fish Only	N/A	mg/l	NA
Mirex	2385855	Yes	Yes	1.0000E-06	mg/l	Chronic	N/A	mg/l	NA
Nitrate-Nitrite (as N)	14797558	No	No	453188.7879	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Nitrobenzene	98953	No	No	0.7125	mg/l	Human Health Fish Only	N/A	mg/l	NA
Nitrosamines, Other		No	No	1.2804E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodibutylamine	924163	Yes	No	0.0002	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiethylamine	55185	Yes	No	1.2804E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodimethylamine	62759	Yes	No	3.0978E-03	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodi-n-Propylamine	621647	Yes	No	0.0005	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosodiphenylamine	86306	Yes	No	0.0062	mg/l	Human Health Fish Only	N/A	mg/l	NA
N-Nitrosopyrrolidine	930552	Yes	No	0.0351	mg/l	Human Health Fish Only	N/A	mg/l	NA
Parathion	56382	Yes	No	1.3000E-05	mg/l	Chronic	0.0001	mg/l	Acute
Pentachlorobenzene	608935	Yes	Yes	0.0015	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pentachlorophenol	87865	Yes	No	0.0031	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phenol	108952	No	No	1755.4092	mg/l	Human Health Fish Only	N/A	mg/l	NA
Phthalate esters			No	0.0030	mg/l	Chronic	N/A	mg/l	NA
Polychlorinated Biphenyls (PCBs)		Yes	Yes	6.6086E-08	mg/l	Human Health Fish Only	N/A	mg/l	NA
Pyrene	129000	No	No	4.1304	mg/l	Human Health Fish Only	N/A	mg/l	NA
Sulfate (as SO4)		No	No	11329719.6970	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Surfactants		No	No	22659.4394	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Tetrachloroethylene	127184	Yes	No	0.0034	mg/l	Human Health Fish Only	N/A	mg/l	NA
Toluene	108883	No	No	206.5187	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Alpha		No	No	N/A	pCi/l	Human Health Fish & Water	15.0000	pCi/l	Acute
Total Ammonia		No	No	3.3609	mg/l	Chronic	19.8902	mg/l	Acute
Total Beta		No	No	N/A	pCi/l	Human Health Fish & Water	50.0000	pCi/l	Acute
Total Dissolved Solids			No	33989159.0909	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Radium		No	No	N/A	pCi/l	Human Health Fish & Water	5.0000	pCi/l	Acute
Total Strontium-90		No	No	N/A	pCi/l	Human Health Fish & Water	8.0000	pCi/l	Acute
Total Recoverable Antimony	7440360	No	No	0.6609	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Arsenic	7440382	Yes	No	0.1500	mg/l	Chronic	0.3400	mg/l	Acute
Total Recoverable Barium	7440393	No	No	45318.8788	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Beryllium	7440417	No	No	181.2755	mg/l	Human Health Fish & Water	N/A	mg/l	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - OUTPUTS - OUTFALL 019

				Effluent Limitations					
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average	Units	Justification	Maximum	Units	Justification
Total Recoverable Cadmium	7440439	No	No	0.0003	mg/l	Chronic	0.0021	mg/l	Acute
Total Recoverable Chromium	7440439	No	No	4531.8879	mg/l	Human Health Fish & Water	N/A	mg/l	NA
Total Recoverable Copper	7440508	No	No	0.0093	mg/l	Chronic	0.0140	mg/l	Acute
Total Recoverable Iron	7439896	No	No	1.0000	mg/l	Chronic	4.0000	mg/l	Acute
Total Recoverable Lead	7439921	No	No	0.0032	mg/l	Chronic	0.0816	mg/l	Acute
Total Recoverable Mercury	7439976	No	Yes	5.2662E-05	mg/l	Human Health Fish Only	0.0017	mg/l	Acute
Total Recoverable Nickel	7440020	No	No	0.0522	mg/l	Chronic	0.4692	mg/l	Acute
Total Recoverable Selenium	7782492	No	No	0.0050	mg/l	Chronic	0.0200	mg/l	Acute
Total Recoverable Silver	7440224	No	No	N/A	mg/l	Human Health Fish & Water	0.0038	mg/l	Acute
Total Recoverable Thallium	7440280	No	No	0.0065	mg/l	Human Health Fish Only	N/A	mg/l	NA
Total Recoverable Zinc	7440666	No	No	0.1198	mg/l	Chronic	0.1198	mg/l	Acute
Total Residual Chlorine		No	No	0.0110	mg/l	Chronic	0.0190	mg/l	Acute
Toxaphene	8001352	Yes	Yes	2.0000E-07	mg/l	Chronic	0.0007	mg/l	Acute
Trichloroethylene	79016	Yes	No	0.0310	mg/l	Human Health Fish Only	N/A	mg/l	NA
Tritium		No	No	N/A	pCi/l	Human Health Fish & Water	20000.0000	pCi/l	Acute
Uranium		No	No	N/A	mg/l	Human Health Fish & Water	0.0300	mg/l	Acute
Vinyl Chloride	75014	Yes	No	0.5473	mg/l	Human Health Fish Only	N/A	mg/l	NA

Hardness	Chronic	Acute
Metal limitations are developed using the mixed hardness of the effluent and receiving waters	100.00	100.00

	Toxicity			
Type of Test	Maximum	Units	Justification	Percent Effluent
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 019

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
1,1,1-Trichloroethane	71556	No	No	0.00%	0.00%	Application	None	None
1,1,2,2-Tetrachloroethane	79345	Yes	No	121.05%	0.00%	Application	Monitoring Required	None
1,1,2-Trichloroethane	79005	Yes	No	30.26%	0.00%	Application	None	None
1,1-Dichloroethylene	75354	Yes	No	151.32%	0.00%	Application	Monitoring Required	None
1,2,4,5-Tetrachlorobenzene	95943	No	Yes	0.00%	0.00%	Application	None	None
1,2,4-Trichlorobenzene	120821	No	No	0.52%	0.00%	Application	None	None
1,2-Dichlorobenzene	95501	No	No	0.03%	0.00%	Application	None	None
1,2-Dichloroethane	107062	Yes	No	13.09%	0.00%	Application	None	None
1,2-Dichloropropane	78875	Yes	No	32.28%	0.00%	Application	None	None
1,2-Diphenylhydrazine	122667	Yes	No	2421.09%	0.00%	Application	Monitoring Required	None
1,2-Trans-Dichloroethylene	156605	Yes	No	0.00%	0.00%	Application	None	None
1,3-Dichlorobenzene	541731	No	No	0.50%	0.00%	Application	None	None
1,3-Dichloropropene	542756	No	No	0.28%	0.00%	Application	None	None
1,4-Dichlorobenzene	106467	No	No	0.19%	0.00%	Application	None	None
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	Yes	Yes	0.00%	0.00%	Application	None	None
2,4,5-TP (Silvex)	93721	No	No	0.00%	0.00%	Application	None	None
2,4,5-trichlorophenol	95954	No	No	0.00%	0.00%	Application	None	None
2,4,6-Trichlorophenol	88062	Yes	No	201.76%	0.00%	Application	Monitoring Required	None
2,4-D	94757	Yes	No	0.00%	0.00%	Application	None	None
2,4-Dichlorophenol	120832	No	No	1.67%	0.00%	Application	None	None
2,4-Dimethylphenol	105679	No	No	0.57%	0.00%	Application	None	None
2,4-Dinitrophenol	51285	No	No	0.09%	0.00%	Application	None	None
2,4-Dinitrotoluene	121142	Yes	No	142.42%	0.00%	Application	Monitoring Required	None
2-Chloronaphthalene	91587	No	No	0.30%	0.00%	Application	None	None
2-Chlorophenol	95578	No	No	3.23%	0.00%	Application	None	None
2-methyl-4,6-dinitrophenol	534521	No	No	0.00%	0.00%	Application	None	None
3,3-Dichlorobenzidine	91941	Yes	No	17293.49%	0.00%	Application	Monitoring Required	None
4,4'-DDD	72548	Yes	Yes	31239.84%	0.00%	Application	Monitoring Required	None
4,4'-DDE	72559	Yes	Yes	44019.78%	0.00%	Application	Monitoring Required	None
4,4'-DDT	50293	Yes	Yes	44019.78%	9.09%	Application	Monitoring Required	None
Acenaphthene	83329	No	No	0.49%	0.00%	Application	None	None
Acrolein	107028	No	No	3.34%	0.00%	Application	None	None
Acrylonitrile	107131	Yes	No	3873.74%	0.00%	Application	Monitoring Required	None
Aldrin	309002	Yes	No	96843.52%	1.67%	Application	Monitoring Required	None
alpha-BHC	319846	Yes	No	988.20%	0.00%	Application	Monitoring Required	None
Alpha-Endosulfan	959988	No	No	89.29%	22.73%	Application	Monitoring Required	None
Anthracene	120127	No	No	0.01%	0.00%	Application	None	None
Asbestos	1332214	Yes	No	0.00%	0.00%	Application	None	None
Benzene	71432	Yes	No	9.49%	0.00%	Application	None	None
Benzidine	92875	Yes	No	2421087.94%	0.00%	Application	Monitoring Required	None
Benzo(a)anthracene	56553	Yes	No	26900.98%	0.00%	Application	Monitoring Required	None
Benzo(a)pyrene	50328	Yes	No	26900.98%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 019

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Benzo(b)fluoranthene	205992	Yes	No	0.00%	0.00%	Application	None	None
Benzo(k)fluoranthene	205992	Yes	No	26900.98%	0.00%	Application	Monitoring Required	None
Beta-BHC	319857	Yes	No	284.83%	0.00%	Application	Monitoring Required	None
Beta-Endosulfan	33213659	No	No	178.57%	45.45%	Application	Monitoring Required	None
Bis(2-chloroethyl)ether	111444	Yes	No	0.00%	0.00%	Application	None	None
Bis(2-chloroisopropyl)ether	108601	No	No	0.01%	0.00%	Application	None	None
Bis(2-ethylhexyl)phthalate	117817	Yes	No	220.10%	0.00%	Application	Monitoring Required	None
Bis(chloromethyl)ether	542881	Yes	No	0.00%	0.00%	Application	None	None
Bromoform	75252	Yes	No	3.46%	0.00%	Application	None	None
Butylbenzyl phthalate	85687	No	No	0.25%	0.00%	Application	None	None
Carbon Tetrachloride	56235	Yes	No	302.64%	0.00%	Application	Monitoring Required	None
Chlordane	57749	Yes	Yes	5977.99%	2.08%	Application	Monitoring Required	None
Chloride	16887006	No	No	1.23%	0.62%	Application	None	None
Chlorobenzene	108907	No	No	0.02%	0.00%	Application	None	None
Chlorodibromomethane	124481	Yes	No	37.25%	0.00%	Application	None	None
Chloroform	67663	Yes	No	1.03%	0.00%	Application	None	None
Chloropyrifos	2921882	No	No	0.00%	0.00%	Application	None	None
Chromium (III)	16065831	No	No	0.00%	0.00%	Application	None	None
Chromium (VI)	18540299	Yes	No	0.00%	0.00%	Application	None	None
Chrysene	218019	Yes	No	26900.98%	0.00%	Application	Monitoring Required	None
Color		No	No	0.00%	0.00%	Application	None	None
Demeton	8065483	No	No	0.00%	0.00%	Application	None	None
Dibenzo(a,h)anthracene	53703	Yes	No	26900.98%	0.00%	Application	Monitoring Required	None
Dichlorobromomethane	75274	Yes	No	28.48%	0.00%	Application	None	None
Dieldrin	60571	Yes	Yes	179339.85%	41.67%	Application	Monitoring Required	None
Diethyl phthalate	84662	No	No	0.01%	0.00%	Application	None	None
Dimethyl phthalate	131113	No	No	0.00%	0.00%	Application	None	None
Di-n-butyl phthalate	84742	No	No	0.11%	0.00%	Application	None	None
Dinitrophenols	25550587	No	No	0.00%	0.00%	Application	None	None
Endosulfan sulfate	1031078	No	No	0.11%	0.00%	Application	None	None
Endrin	72208	No	No	277.78%	116.28%	Application	Monitoring Required	Monitoring Required
Endrin aldehyde	7421934	No	No	32.28%	0.00%	Application	None	None
Ethylbenzene	100414	No	No	0.02%	0.00%	Application	None	None
Fluoranthene	206440	No	No	3.46%	0.00%	Application	None	None
Fluorene	86737	No	No	0.09%	0.00%	Application	None	None
Fluoride		No	No	0.00%	0.00%	Application	None	None
Free Cyanide	57125	No	No	384.62%	90.91%	Application	Monitoring Required	Monitoring Required
gamma-BHC (Lindane)	58899	Yes	Yes	76.86%	5.26%	Application	Monitoring Required	None
Guthion	86500	No	No	0.00%	0.00%	Application	None	None
Heptachlor	76448	Yes	No	61293.37%	9.62%	Application	Monitoring Required	None
Heptachlor epoxide	1024573	Yes	No	124158.36%	9.62%	Application	Monitoring Required	None
Hexachlorobenzene	118741	Yes	Yes	1669715.82%	0.00%	Application	Monitoring Required	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 019

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Hexachlorobutadiene	87683	Yes	Yes	26.90%	0.00%	Application	None	None
Hexachlorocyclo-hexane-Technical	319868	Yes	Yes	0.00%	0.00%	Application	None	None
Hexachlorocyclopentadiene	77474	No	No	0.03%	0.00%	Application	None	None
Hexachloroethane	67721	Yes	No	146.73%	0.00%	Application	Monitoring Required	None
Hydrogen Sulfide, Undissociated	7783064	No	No	0.00%	0.00%	Application	None	None
Ideno(1,2,3-cd)pyrene	193395	No	No	26900.98%	0.00%	Application	Monitoring Required	None
Isophorone	78591	No	No	0.50%	0.00%	Application	None	None
Malathion	121755	No	No	0.00%	0.00%	Application	None	None
Methoxychlor	72435	No	No	0.00%	0.00%	Application	None	None
Methyl Bromide	74839	No	No	0.32%	0.00%	Application	None	None
Methylene Chloride	75092	Yes	No	0.82%	0.00%	Application	None	None
Mirex	2385855	Yes	Yes	0.00%	0.00%	Application	None	None
Nitrate-Nitrite (as N)	14797558	No	No	0.00%	0.00%	Application	None	None
Nitrobenzene	98953	No	No	0.70%	0.00%	Application	None	None
Nitrosamines, Other		No	No	0.00%	0.00%	Application	None	None
N-Nitrosodibutylamine	924163	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodiethylamine	55185	Yes	No	0.00%	0.00%	Application	None	None
N-Nitrosodimethylamine	62759	Yes	No	161.41%	0.00%	Application	Monitoring Required	None
N-Nitrosodi-n-Propylamine	621647	Yes	No	949.45%	0.00%	Application	Monitoring Required	None
N-Nitrosodiphenylamine	86306	Yes	No	80.70%	0.00%	Application	Monitoring Required	None
N-Nitrosopyrrolidine	930552	Yes	No	0.00%	0.00%	Application	None	None
Parathion	56382	Yes	No	0.00%	0.00%	Application	None	None
Pentachlorobenzene	608935	Yes	Yes	0.00%	0.00%	Application	None	None
Pentachlorophenol	87865	Yes	No	161.41%	0.00%	Application	Monitoring Required	None
Phenol	108952	No	No	0.00%	0.00%	Application	None	None
Phthalate esters			No	0.00%	0.00%	Application	None	None
Polychlorinated Biphenyls (PCBs)		Yes	Yes	0.00%	0.00%	Application	None	None
Pyrene	129000	No	No	0.12%	0.00%	Application	None	None
Sulfate (as SO4)		No	No	0.00%	0.00%	Application	None	None
Surfactants		No	No	0.00%	0.00%	Application	None	None
Tetrachloroethylene	127184	Yes	No	146.73%	0.00%	Application	Monitoring Required	None
Toluene	108883	No	No	0.00%	0.00%	Application	None	None
Total Alpha		No	No	0.00%	23.73%	Application	None	None
Total Ammonia		No	No	0.00%	0.00%	Application	None	None
Total Beta		No	No	0.00%	17.44%	Application	None	None
Total Dissolved Solids			No	0.00%	0.00%	Application	None	None
Total Radium		No	No	0.00%	9.38%	Application	None	None
Total Strontium-90		No	No	0.00%	0.00%	Application	None	None
Total Recoverable Antimony	7440360	No	No	30.26%	0.00%	Application	None	None
Total Recoverable Arsenic	7440382	Yes	No	3.33%	1.47%	Application	None	None
Total Recoverable Barium	7440393	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Beryllium	7440417	No	No	0.00%	0.00%	Application	None	None

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) - REASONABLE POTENTIAL ANALYSIS - OUTFALL 019

				Reasonable Potential				
Parameter	CAS Number	Carcinogen	Bioaccumulative or Persistent	Average Percentage	Maximum Percentage	Data Source	Average	Maximum
Total Recoverable Cadmium	7440439	No	No	369.52%	46.88%	Application	Monitoring Required	None
Total Recoverable Chromium	7440439	No	No	0.00%	0.00%	Application	None	None
Total Recoverable Copper	7440508	No	No	267.98%	178.58%	Application	Monitoring Required	Monitoring Required
Total Recoverable Iron	7439896	No	No	83.00%	50.75%	Application	Monitoring Required	None
Total Recoverable Lead	7439921	No	No	6286.16%	244.96%	Application	Monitoring Required	Monitoring Required
Total Recoverable Mercury	7439976	No	Yes	379.78%	11.76%	Application	Monitoring Required	None
Total Recoverable Nickel	7440020	No	No	95.85%	10.66%	Application	Monitoring Required	None
Total Recoverable Selenium	7782492	No	No	200.00%	50.00%	Application	Monitoring Required	None
Total Recoverable Silver	7440224	No	No	0.00%	660.60%	Application	None	Monitoring Required
Total Recoverable Thallium	7440280	No	No	3074.40%	0.00%	Application	Monitoring Required	None
Total Recoverable Zinc	7440666	No	No	83.46%	83.46%	Application	Monitoring Required	Monitoring Required
Total Residual Chlorine		No	No	272.73%	157.89%	Application	Monitoring Required	Monitoring Required
Toxaphene	8001352	Yes	Yes	0.00%	0.00%	Application	None	None
Trichloroethylene	79016	Yes	No	3.23%	0.00%	Application	None	None
Tritium		No	No	0.00%	0.00%	Application	None	None
Uranium		No	No	0.00%	0.00%	Application	None	None
Vinyl Chloride	75014	Yes	No	0.37%	0.00%	Application	None	None