

DIVISION OF WASTE MANAGEMENT ANNUAL REPORT

Fiscal Year 2023

Kentucky Energy & Environment Cabinet

The Division of Waste Management's mission is to protect human health and the environment by minimizing adverse impacts on all Kentuckians through fair, equitable, and effective waste management programs.



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EXECUTIVE SUMMARY

Dear Reader,

On behalf of the Division of Waste Management (DWM), I am pleased to present the 18th edition of our annual report. This report highlights division activities and accomplishments for the 2023 Fiscal Year (July 1, 2022, through June 30, 2023). Thank you for taking time to read this report of the division's important accomplishments during this reporting period.

In July 2022, Kentucky residents endured another natural disaster. Multiple rounds of thunderstorms impacted counties in Eastern Kentucky resulting in catastrophic flooding. Initially 13 counties were declared an emergency and more than 25 counties were impacted. Hazardous materials such as transformers, drums, and other items had been scattered along roadways and streams; and household debris and spills were impacting waterways or causing potential threats to human health and the environment. DWM staff responded quickly in the aftermath to provide assistance to the damaged communities and help begin the cleanup of tons of debris left by the storm.

While the storm response activities were ongoing and challenging, staff also assisted the affected communities with other efforts. The flooding brought an interest in developing historical surface mining sites for new housing locations. In addition to the flood relief actions, DWM assembled a team to collect data and evaluate potential redevelopment areas. The team performed Phase I environmental site assessments and limited site investigations to determine if the properties were suitable for residential subdivisions outside of the region's floodplain.

During this report period, DWM excelled at accepting new responsibilities. One example is the staff's research and planning for EPA's new regulations. On August 26, 2022, EPA proposed regulations to include fluorinated chemicals from the group of Per- and Polyfluoroalkyl Substances (PFAS) as hazardous substances under CERCLA. Once the proposed rule becomes final, Kentucky will regulate releases of these substances. In anticipation of the final regulations, staff collected environmental data on approximately thirty PFAS constituents at various locations across Kentucky.

In addition to planning for the upcoming PFAS regulations, staff prepared regulations for three other programs:

- *Underground Storage Tanks* – increase reimbursement funding to owners and operators of tank systems in order to properly compensate them for their work;
- *Merchant Electric Generating Facilities* – regulate the decommissioning of merchant electric generating facilities, and monitor and enforce the construction certificate issued by Public Service Commission;
- *Landfarming Biosolids* – regulate the land application of biosolids in conformance with federal regulations found in 40 CFR Part 503.

My favorite highlight story in this year's report is the Solid Waste Branch's write-up for land application of biosolids. Biosolids are the residual materials resulting from the treatment of sewage sludge. Biosolids can be applied to agricultural fields as fertilizer to improve and maintain soils, rather than disposed in a landfill. Land application of biosolids is one small step toward sustainability, and future generations are relying on the decisions we make today to reduce impacts to our environment and protect our natural resources. These types of small changes now will have positive effects on the lives of generations to come.

Tammi Hudson, Director.
Kentucky Division of Waste Management

PERSONNEL AND FUNDING

PERSONNEL SUPPORT

The division provides support to its personnel by identifying needs and providing tools for staff to accomplish their jobs. Examples include: evaluating workspace requirements, coordinating employee training and development, organizing in-state and out-of-state travel logistics, and procuring goods and services such as uniforms, office supplies, equipment, and furniture.

PERSONNEL

The division's fiscal year 2023 (FY23) budget supported the employment of 228 full-time positions and nine (9) Federally Funded-Time Limited (FFTL) positions. No changes were noted in budgeted positions from the previous fiscal year (Figure 1). The average number of filled full-time positions within the division in FY23 was 216 and six FFTL. The division continues to face the awareness of Tier 1 employees approaching retirement age, which can affect the program priorities and efficiencies (Figure 2). The profile of division employment shows that 28% of employees are eligible for retirement within the next 5 years. Actions are being taken at the cabinet level to address ongoing personnel concerns. A recruitment and retention initiative was created, and since then, the cabinet has become more active in recruiting new talent by attending job fairs, offering internships, providing reimbursement for continuing education, and paying for professional licenses.

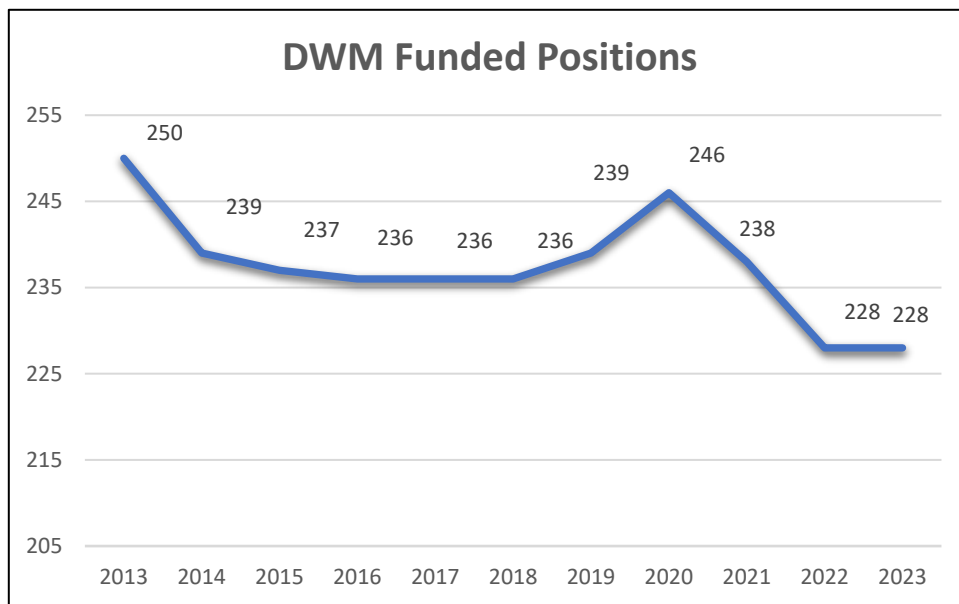


Figure 1: Division of Waste Management Funded Positions

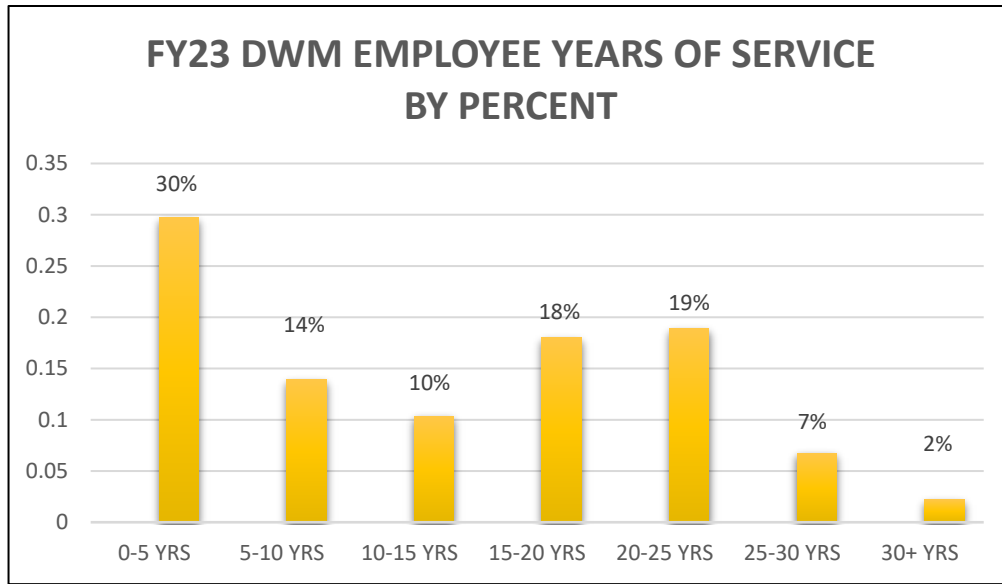


Figure 2: Employee Years of Service by Percent

BUDGET

The budget for the division encompasses numerous programs and activities. The division is financially supported by general funds, federal grants, and restricted-agency funds (Figure 3). Restricted-agency funds are received from various organizations, individuals, non-governmental agencies, and other governmental agencies. DWM restricted-agency fund receipts include: fees collected for permits and registration activities; Petroleum Storage Tank Environmental Assurance Fund fuel receipts; waste tire fee receipts; Environmental Remediation Fees; assessment and application fees; paper recycling receipts; tank registration fees; interest income; and a transfer to the Kentucky Pride Fund from Kentucky Transportation Cabinet's Highway Construction Contingency Fund.

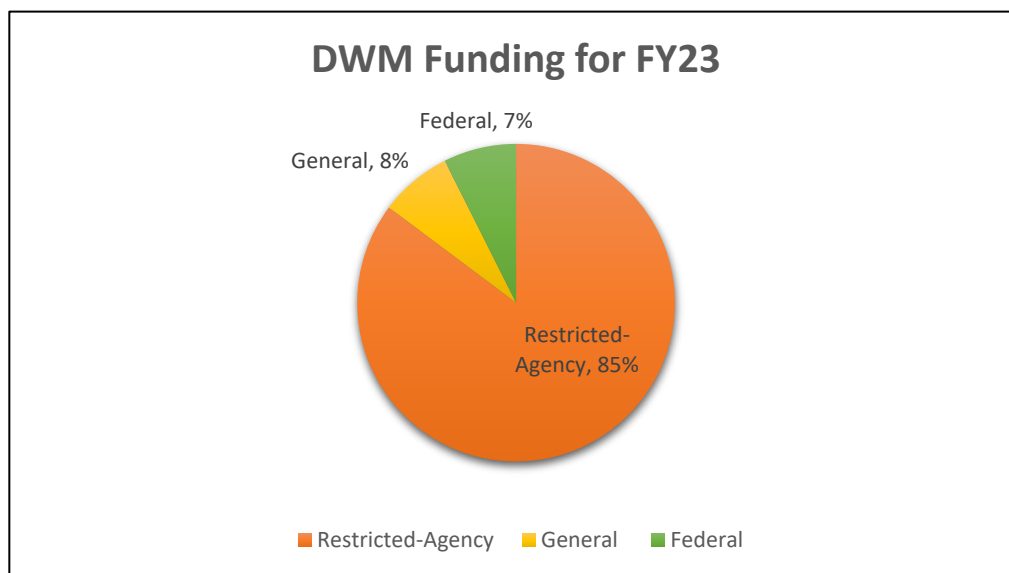


Figure 3: Division of Waste Management Funding Sources

FEDERAL FUNDS

Currently, the division receives funding from a total of 15 federal grants and cooperative agreements. Federal funds make up approximately 7% of DWM's total funding. The financial grant and cooperative agreement support programs include:

- The Chemical Demilitarization ACWA Cooperative Agreement with the U.S. Department of Defense provides financial support for the division's efforts at the Bluegrass Chemical Agent-Destruction Pilot Plant and the Explosive Destruction Technology facility.
- The Agreement in Principle with the U.S. Department of Energy allows the division to conduct independent and impartial assessments of ongoing remediation activities at the Paducah Gaseous Diffusion Plant.
- The B.F. Goodrich Facility Agreement outlines the technical work to be performed at its Calvert City, Kentucky facility and provides funds for field oversight support, meetings, and travel cost.
- The Core Program Cooperative Agreement funds are used for identifying, investigating, and addressing environmentally contaminated sites in accordance with the division's Superfund Program as established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980.
- The US Department of Defense (DoD) and State Memorandum of Agreement provides funding to ensure environmental restoration at DoD installations occurs consistently with state and federal law, and to improve coordinated initiatives between DoD and the division.
- The Federal Facilities Agreement is a three-way agreement between US Department of Energy, the EPA, and Kentucky that outlines regulatory structure and directs work at the Paducah Gaseous Diffusion Plant site. The agreement ensures compliance with, but avoids duplication of work between, the corrective action provisions of the Resource Conservation and Recovery Act (RCRA) permitting program and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).
- The Five-Year Review Cooperative Agreement provides funding from the EPA to the Superfund Program to perform five-year reviews of remedial action at National Priority List sites in Kentucky. The purpose of a five-year review is to determine whether sites' ongoing or completed remedial actions will remain protective of human health and the environment.
- The Support Agency Cooperative Agreement provides additional financial support to the Superfund Program to perform five-year reviews of remedial action at CERCLA National Priority List sites in Kentucky.
- Performance Partnership Grants (PPG) are the cornerstone of the National Environmental Performance Partnership System – EPA's strategy to strengthen partnerships and build a results-based management system. PPGs can reduce administrative transaction costs, provide the flexibility to direct resources toward the highest priority environmental problems, and support cross-media approaches and initiatives.
 - i. The RCRA grant provides the division's Hazardous Waste Management Program with the financial support necessary to implement RCRA permitting, corrective action, closure, compliance, and enforcement in accordance with the EPA's performance expectations.
 - ii. Superfund Brownfields Cooperative Agreement provides financial support to the Brownfield Redevelopment Program to conduct assessment, direct cleanup, and guide redevelopment of brownfield sites.

- iii. Toxic Substances Control Act Compliance Monitoring Cooperative Agreement provides financial support to the division to implement the compliance-monitoring program for polychlorinated biphenyls (PCBs) and track facility information in the PCB Transformer Registration Database.
- The Leaking Underground Storage Tank Prevention Assistance Agreement with the EPA provides financial support for the development, implementation, and maintenance of the Underground Storage Tank (UST) program. The program’s purpose is to identify leaking USTs in Kentucky, bring all USTs into compliance with release detection and release prevention requirements, and minimize future releases.
- The Leaking Underground Storage Tank Cleanup Cooperative Agreement with the EPA provides financial assistance to oversee remediation and cleanup of leaking USTs by responsible parties and to ensure the cleanup at sites where an owner is unable to take necessary corrective action.
- The Preliminary Assessment/Site Investigation Cooperative Agreement provides funds to assist the EPA in identifying candidate sites for the National Priority List – waste sites that represent the most significant risk to human health and the environment due to releases of hazardous substances, pollutants, or contaminants. The division characterizes sites, plans remedial actions, and implements cleanup of identified waste sites.
- The Brownfields Assessment and Cleanup Grant provides funding from the EPA to communities that wish to address brownfield properties in order to protect and/or improve water resources. This grant is used to target rural areas impacted by coal mining, but it may also be used to assess approved sites throughout the Commonwealth.

REGULATIONS

Program Development staff perform a variety of functions, such as management of planning initiatives, development of regulations, coordination of proposed bill review during the legislative session, and preparation of the division’s reports.

LEGISLATION

During the 2023 Legislative Special Session, staff completed eight (8) bill reviews, which involved evaluating and commenting on how the proposed bills might affect the DWM at structural or fiscal level. Subsequently, House Bill 4 (HB-4) and Senate Bill 213 (SB-213), were passed into law, requiring the DWM to promulgate new administrative regulations.

ADMINISTRATIVE REGULATIONS:

House Bill 4, *AN ACT relating to merchant electric generating facilities and making an appropriation therefor*, became law June 9, 2023, requiring the cabinet to regulate the decommissioning of merchant electric generating facilities (MEGFs), as well as monitor and enforce measures set forth in the construction certificate, as approved by the Public Service Commission. It was passed in order to prepare for future decommissioning of MEGF sites as the demand for renewable energy continues to rise. This administrative regulation will be filed with LRC in September 2023 and is projected to become effective in May 2024. All administrative regulations related to DWM are listed on the Legislative Research Commission website at [Kentucky Administrative Regulations Title 401](#).

Senate Bill 213, *AN ACT relating to biosolids*, became law in March 2023, requiring the cabinet to regulate the land application of biosolids in conformance with 40 CFR Part 503. This administrative regulation will be

filed with LRC in September 2023 and are projected to become effective in May 2024. All administrative regulations related to DWM are listed on the Legislative Research Commission website at [Kentucky Administrative Regulations Title 401](#).

In addition to the promulgation of administrative regulations for HB-4 and SB-213, DWM filed amendments to administrative regulation 401 KAR 42:250, Petroleum Storage Tank Environmental Assurance Fund reimbursement. The amendment provides necessary updates to formulated task rates (Section 3.0 – UST PSTEAF) due to inflation and product availability. The updated rates will provide an increase in reimbursement funding to owners and operators in order to properly compensate eligible companies and partnerships for their work. This administrative regulation was filed with LRC on August 15, 2023, and will become effective in or prior to April 2024. All administrative regulations related to DWM are listed on the Legislative Research Commission website at [Kentucky Administrative Regulations Title 401](#).

REPORTS

The Waste Tire Trust Fund (WTF) annual report for calendar year (CY) 2021 was submitted in January 2022, as mandated by KRS 224.50-872. This report provides information relevant to Kentucky’s waste tire program – specifically expenditures, revenues, and effectiveness in developing markets. The report is available for review by accessing the [Division of Waste Management website](#).

During FY23, staff prepared the division’s Strategic Operational Plan and mid-year status updates of planning initiatives for CY22. Staff also reported in EPA’s FY23 Grant Workplan Priorities and Commitments, and Mid-Year Update Reports to meet requirements for federal grants.

COMPLIANCE AND INSPECTIONS

Division staff perform inspections at sites managing solid waste, hazardous waste, Underground Storage Tanks (USTs), and polychlorinated biphenyls (PCBs). The Field Operations Branch’s (FOB) primary duty is to inspect regulated facilities for compliance with applicable regulations. The field offices include the Frankfort central office, Richmond satellite office, and 10 regional offices located throughout Kentucky. The regional staff are familiar with the local waste management issues and respond to questions and concerns of citizens and public officials.

During FY23, the FOB regional staff conducted 5,723 total inspections of UST, solid waste, and hazardous waste facilities. This is comparable to number of inspections completed in FY22 (Table 1).

Inspection Type	Inspections FY23	Inspections FY22	Compliance Rate FY23	Compliance Rate FY22
UNDERGROUND STORAGE TANKS	2914	2854	59%	57%
HAZARDOUS WASTE	1178	1148	79%	83%
SOLID WASTE	1631	1752	81%	68%

Table 1: Summary of Inspections

FOB has hired many new staff in the regional field offices. Experienced staff have worked across regions to train new staff all while successfully meeting federal grant commitments. UST and hazardous waste inspections increased over 2%; solid waste inspections dropped nearly 7%. Overall, FOB exceeded annual and three-year grant commitments. Compliance rates for UST and hazardous waste rose 2% and 3%, respectively. The solid waste compliance rate increased 13%. FOB staff also completed more than 1,765 investigations in addition to the mandated compliance inspections. Below is a breakout of the inspections for FY23 (Figure 5).

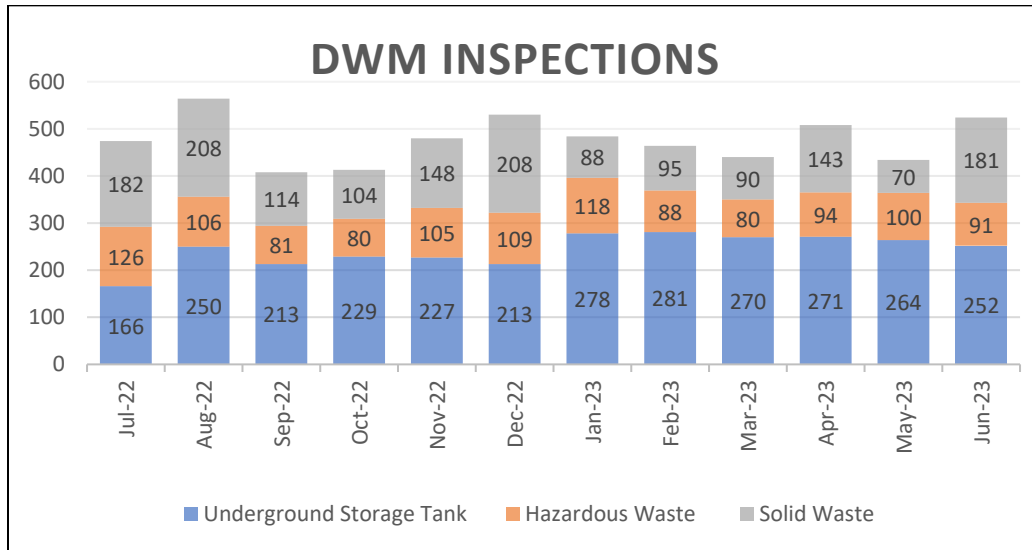


Figure 4: Division of Waste Management Inspections

- The total number of UST inspections rose approximately 2% in FY23. UST compliance rates (percent of total complaints, excluding those driven by citizen complaints, for which no violation is noted) stayed in the mid to upper 50th percentile but trended upward towards the end of the year. Overall, the average compliance rate increased from 56% in FY22 to 59% in FY23.
- Hazardous waste inspections increased nearly 3% from the previous year, as new inspectors became more familiar with the program and successfully conducted inspections with limited oversight. The compliance rates for hazardous waste facilities averaged 79%, decreasing 4% from FY22.
- Solid waste inspections fell nearly 7% in FY23. This is because fewer routine inspections were conducted as FOB staff monitored storm debris sites after the July flooding that impacted the eastern portion of the state. The average compliance rates for solid waste facilities increased to 81%, up from 68% in FY22. This is likely attributed to no identified violations during the 145 storm debris inspections conducted in FY23.

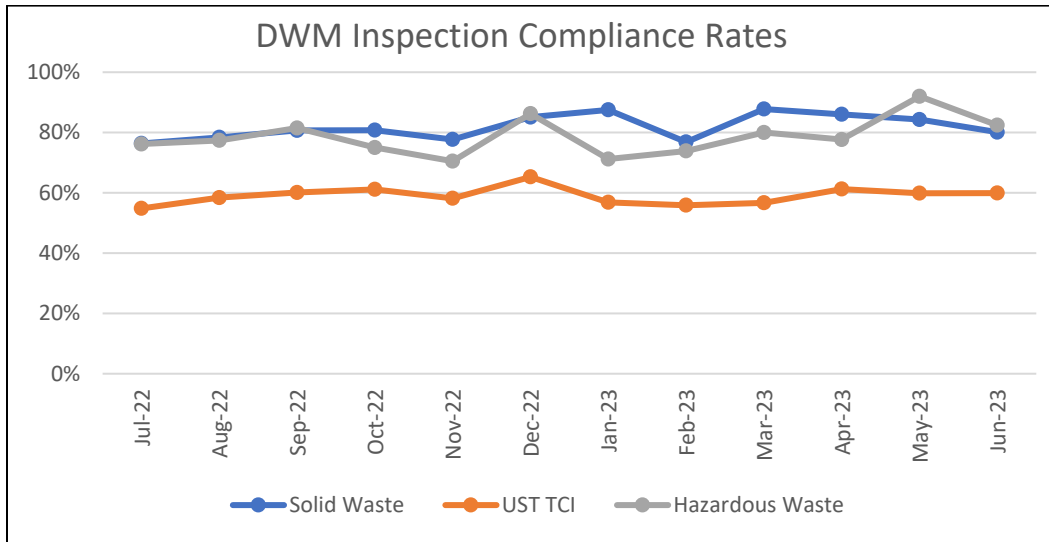


Figure 5: Division of Waste Management Inspection Compliance Rates

FIELD OPERATIONS BRANCH HIGHLIGHT

COORDINATING DISASTER DEBRIS MANAGEMENT WITH LOCAL AND STATE AGENCIES

The Field Operations Branch staff have been heavily involved in responding to the most recent disasters that hit both Western and Eastern Kentucky. FOB helped local government agencies find suitable and centrally located regional sites to stage disaster debris, ensuring a quick and efficient cleanup. While local officials were busy conducting life-saving emergency operations in the first few days of the disaster, FOB was coordinating with local property owners and solid waste facilities to set up FEMA-approved staging sites, ensuring that the infrastructure for collection and disposal was in place for efficient debris removal in the clean-up stage. FOB organized nearly 24/7 coverage to assist with all aspects of staging and disposal, managing 36 staging sites for the Western Kentucky disaster and 55 staging sites for the Eastern Kentucky disaster.



Photo 1: Starfire Vegetative Debris Staging, Knott County

PERMITS AND REGISTRATIONS

Staff in the Hazardous Waste Branch and Solid Waste Branch are responsible for reviewing and processing permit applications, registrations, technical reports, groundwater data, and fees for various types of waste management and disposal facilities. The regulatory requirements for each type of facility vary depending on the waste. The administrative and technical requirements can be found in the [Kentucky Revised Statues Chapter 224](#) and [Kentucky Administrative Regulations Title 401](#). Waste programs are divided into several broad categories, including:

- The hazardous waste program includes facilities that generate hazardous waste; facilities that treat, store and/or dispose of hazardous waste; facilities with environmental contamination from past mismanagement of hazardous waste. Hazardous waste is a subset of solid waste that is defined as being harmful to the environment and/or human health.
- The solid waste program includes facilities that manage and/or accept disposal of household, commercial, and industrial waste.
- The special waste program is a subset of solid waste, as specifically defined by KRS 224.50-760, and includes wastewater and water treatment sludge, coal combustion residuals, or coal combustion by-products.

Construction and operation permits are issued based on data and information provided by the applicant and verified by DWM personnel.

HAZARDOUS WASTE FACILITIES AND METRICS

There are 12 hazardous waste treatment, storage, and disposal facilities (TSDF) permitted in Kentucky (Blue Grass Army Depot and Paducah Gaseous Diffusion Plant are 2 of the 12 permitted sites), more than 1,500 generators of hazardous waste, and over 50 transporters of hazardous waste.

The Hazardous Waste Branch Administrative Support Section staff completed 1,524 hazardous waste generator registration reviews for facilities in all 120 Kentucky counties. These reviews include confirming the type of facility by utilizing the NAICs or SIC codes, assessing the types of hazardous waste each facility generates, and the types of hazardous waste transported in or through Kentucky. In FY23, registrations and associated fees generated \$478,612.89.

In addition to facilitating generator registrations and modifications and inactivation of EPA ID numbers, the section reviewed 705 Large and Small Quantity Generator Annual Reports, addendums, annual assessments, and 340 financial assurance reviews. Based on the annual assessment reviews, the Hazardous Waste Branch invoiced large and small quantity hazardous waste generators, totaling \$1,041,116.80 in FY23, which funds the Hazardous Waste Management Fund for state lead cleanup sites.

PERMITS REVIEWED/RENEWED/ISSUED

The Hazardous Waste Branch manages permits under the hazardous waste provisions of the Resource Conservation and Recovery Act (RCRA) for 30 individual facilities across the state (Figure 6). Twelve of these facilities are engaged in active treatment, storage, and/or disposal operations (“operating facilities”). Sixteen facilities are permitted for post-closure care operations and corrective action from prior life as operating facilities, and the remaining two have permits which cover only remaining corrective action. Five of the current

twelve operating facilities also have requirements for post-closure or corrective action in addition to the requirements governing their hazardous waste management operations.

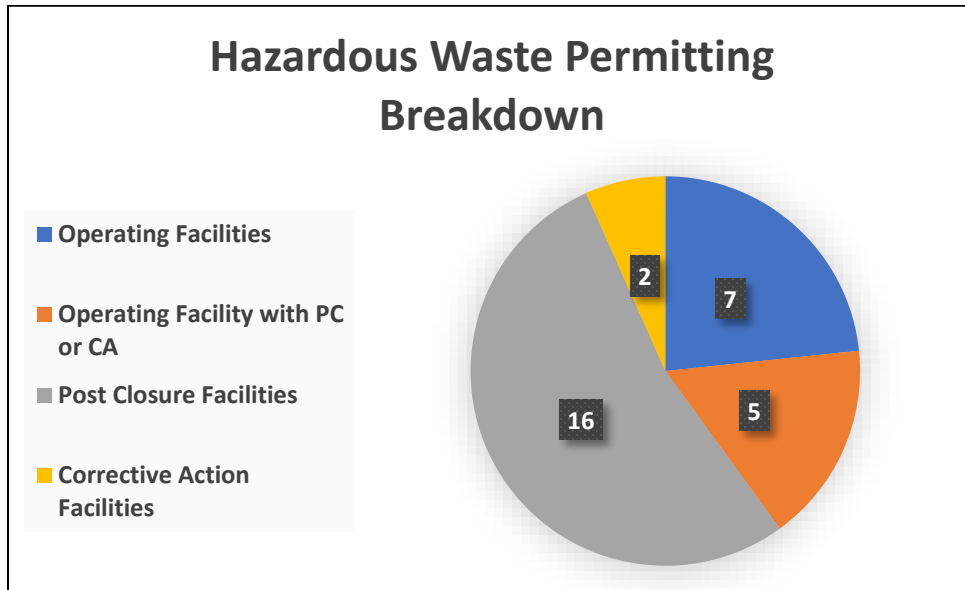


Figure 6: Hazardous Waste Permitting Breakdown

In FY23, the Permit Review and Corrective Action Section (PRCA) made 17 RCRA permitting program determinations including final permits, permit modifications, and notices of deficiency. Four projects (three major permit renewals and one major modification, all multi-year processes) were taken through final review and issuance. Table 3 shows the four major permit renewals accomplished in FY23:

Hazardous Waste Permit Renewals	
Facility	Date of Notice
University of Louisville	11/3/2022
Arkema	11/19/2022
Daicel	12/3/2022
Kidde-Fenwal	6/3/2023

Table 2: Hazardous Waste Permit Renewals

CORRECTIVE ACTION PROGRESS

Cleanup under RCRA is tracked by the U.S. EPA using certain Environmental Indicators (EIs), which are measures developed by the EPA to track states' remediation achievements. The most significant indicators include "Remedy Constructed," "Performance Standards Attained," and "Ready for Anticipated Use." The ultimate goal for EIs is "Corrective Action Process Terminated," which is fully accomplished when a facility has met all obligations under the Corrective Action regulation. For federal funding, the division makes a commitment to a number of EIs each year based on where various facilities are in the corrective action

process. The remaining RCRA Corrective Action facilities that continue to need remediation efforts consist of sites with complex geography and contamination that will require ongoing work for many years. The division typically commits to accomplishing two to three EIs per year and, in the FY23, the grant commitment of two EIs (two “Ready for Anticipated Use” CA 800) was met.

Additional significant Corrective Action work was conducted by the PRCA Section on the following projects:

- Oil Water Separator changes at General Electric Appliance Park (Haier) – Approval
- YKK Petition for Closure – Partial Approval for Closure, Call in for Site Management Plan for remainder
- Rail Services Interim Measures Pilot Study – Partial Approval and Call in for Confirmatory Sampling
- Former Naval Ordnance Station Louisville, Field Sampling and Analysis Plan – Approval
- Lexmark Park Assessment Report for Greenspace Project in and around existing cleanup areas – Approval
- Maverick Tube Closure Plan – Review, Noticed of Deficiency issued, eventual Approval
- Ashland Route 3 Landfill RCRA Facility Investigation – Multiple reviews and eventual Approval
- IPSCO Cooling Pond Closure Plan – Approval
- PMC Thermolite Investigation Report – Review, Notice of Deficiency, eventual Approval
- Rohm and Haas (Dow) SWMU 41 Repair Work Plan – Approval
- Continental Refining – Temporary Authorization for Staging Piles – Approval
- Fort Knox Camp Knox Dump Site RCRA Facility Investigation Revision – Approval
- Florida Tile – Corrective Measures Work Plan Review, Notice of Deficiency
- Fort Knox SWMU 45 Interim Measures Work Plan - Approval
- Kelley Technical Corrective Measures Plan – Review, Notice of Deficiency
- Avient Goodrich Permit Terminated by Agreed Order beginning full transition from RCRA Corrective Action to CERCLA Remedy
- Atkemix Ten – Work Plan to revise the 2012 Corrective Measures Study – Approval
- Fort Campbell – New Area of Concern Discovered
- Fort Knox – RCRA Facility Investigation Dye Trace Study Work Plan – Approval
- Arkema AOC L Investigation Work Plan – Approval
- Blue Grass Army Depot TNT Washout Facility Corrective Measures Study – Approval
- Federal Mogul Revised Site Management Plan – Review, Notice of Deficiency
- Lexington Blue Grass Army Depot (LBAD) Sampling and Analysis Plan – Review, Notice of Deficiency

INSPECTIONS AND GROUNDWATER MONITORING COMPLETED

Sites with a landfill or impoundment that was closed-in-place (post-closure sites), or which has contaminated soil or groundwater, are required to perform certain groundwater monitoring activities on a regular basis. Each facility with a groundwater monitoring program is inspected by Permit Review and Corrective Action Section staff at least every three years. During FY23, the Hazardous Waste Branch conducted 14 Operations and Maintenance Inspections for groundwater monitoring programs, which included split-sampling of groundwater samples with the regulated facilities and inspection of physical condition and practices in the facility as it relates to corrective action.

- Arkema
- Atkemix Ten
- Blue Grass Army Depot
- Chemours
- DOE Paducah GDP
- Dunaway Timber
- Federal Mogul
- Florida Tile
- Haier (G.E. Appliance Park)
- Lonza
- Owensboro Riverport Authority
- Philips Lighting
- Pregis
- Virtus (f. Luvata)

BLUEGRASS ARMY DEPOT (BGAD)

The U.S. Army's Blue Grass Army Depot in Richmond, Kentucky has stored 523 tons of chemical agent in rockets and projectiles. The chemical agent consists of GB (sarin), VX nerve agents, and H mustard (blister agent). The Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP), a large industrial plant, was constructed on the BGAD facility to destroy the chemical weapons.



Photo 2: BGCAPP Aerial View

It is the responsibility of DWM to ensure that all regulatory and safety requirements are met under BGAD's hazardous waste permit. 100% of the entire BGAD stockpile has been destroyed as of July 07, 2023.

Weapons destructions operations began in 2019 and to-date all VX projectiles, VX rockets, GB projectiles, GB rockets, and H-mustard projectiles have been destroyed. The Static Detonation Chamber 1200 is expected to begin operations in the fall of 2023 to destroy drained rocket warheads, over-packed leaker rockets, and problematic full M55 rockets that are not amenable to reverse disassembly. The Static Detonation Chamber 2000 is currently in operations. Destruction of drained containerized warheads and rocket motors is expected to continue through CY24.

The destruction processes are complex and utilize many steps that are first-of-a-kind or have not been used on a large scale previously. Therefore, arising issues continue to be worked out during systemization and these changes require a large number of permit modifications. During FY23, the division issued 84 permit modifications to the facility. Due to the complexity and short deadlines within the project, working together as a team with the Army and contractors has been and continues to be critical to success.

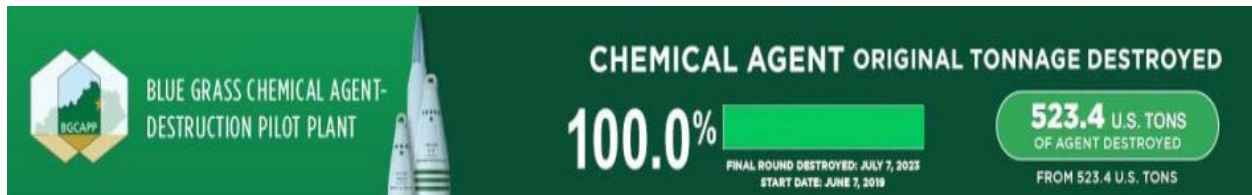


Photo 3: BGCAPP Destruction Process

PADUCAH GASEOUS DIFFUSION PLANT

The C-400 cleaning building at the U.S DOE Paducah Gaseous Diffusion Plant is the primary source of two 4-mile long Trichloroethene (TCE) groundwater contaminant plumes – commonly identified as the Northeast and Northwest Plumes. The groundwater plumes are the largest known sources of off-site contamination associated with the site and are therefore the primary risk to human health and the environment. In order to clean up contamination associated with the C-400 area, a comprehensive CERCLA remedial investigation was conducted to define the nature and extent of contamination. The remedial investigation feasibility study, which was presented to regulators in October 2022, summarizes and evaluates cleanup options.

HAZARDOUS WASTE HIGHLIGHT

REGULATORY RELIEF AFTER NATURAL DISASTERS

Between July 25th and 30th of 2022, several complexes of training thunderstorms developed south of I-64 and brought heavy rain, deadly flash flooding, and devastating river flooding to Eastern Kentucky and Central Appalachia. These thunderstorms, at times, caused rainfall rates in excess of 4 inches per hour across complex terrain that led to widespread, devastating impacts. In response, the Division of Waste Management issued a blanket episodic event for generators of Hazardous Wastes in the affected areas and sent representatives to assist in waste characterization and clean-up efforts. The episodic event allowed hundreds of very small quantity and small quantity hazardous waste generators in the affected areas to remain at their previous generator status and not incur the more stringent requirements for generation of additional hazardous waste. This promoted responsible clean-up of storm related wastes without imposing unfair penalties on an already heavily-impacted community. The Hazardous Waste Branch stands ready to assist regulated facilities that are affected by any future natural disasters.

SOLID WASTE DISPOSAL FACILITIES AND METRICS

Solid waste includes household, commercial, and industrial waste. Construction and operation permits are issued based on information provided by the applicant and verified by Solid Waste Branch staff. Regulatory Time Frame (RTF) is the allocated amount of time that the division is given to complete permit actions. The specific RTFs can be found in the regulations for both solid and hazardous waste permits. In FY23 the solid waste staff approved 124 permitting actions and 112 (90%) were within the RTF.

- Over the past five years, staff have completed an average of 92% of permit application review approvals within the RTF.
- At the end of FY23, there were 61 pending actions and, of those, 13 exceeded the RTF.

In addition, staff issued 23 denials for solid waste permitting activities, 7 withdrawal final actions, and 13 approvals for the closure and termination of solid waste permitted activities. Staff also coordinated the issuance of 15 public notices and issued 1 response to comments document.

Solid Waste landfills submit waste quantity reports to the division on a quarterly basis. The table below (Table 4) summarizes the tonnage of waste received by Kentucky’s landfills and provides a breakdown of waste origin. This table does not represent the tonnage of waste generated in Kentucky and sent to another state for disposal.

Quarter and Year	Tons of Waste Received for Disposal	Tons of Waste Received from Out of State for Disposal	% of Out of State Waste	Tons of Waste Received for Alternate Daily Cover
3Q 2022	1,852,720.80	310,319	16.7%	79,985.11
4Q 2022	1,800,632.60	361,391.60	20%	50,177.5
1Q 2023	1,684,588.20	358,828.20	21.3%	64,750.96
2Q 2023	1,606,728.10	271,287.7	16.9%	58,658.81

Table 3: Summary of Waste Quantity Reports

The last column in the table above represents additional tonnage of waste received by contained landfills and used for alternate daily cover (ADC) which reduces disposal tonnage. The staff reviews ADC applications on a case-by-case basis, and wastes are evaluated as acceptable for use as daily cover in lieu of, or in addition to, soil cover.

The Solid Waste staff oversee the permitting activities of 162 landfill disposal facilities of various types with active permits. Staff also issue permits to facilities that divert waste from disposal and reuse it in ways that preserve natural resources and prevent pollution. These facilities include locations where wastes are beneficially reused, such as landfarms, where waste is used to promote soil structure and fertility; or composting and sludge giveaway operations, which distributes processed waste for use. There are 93 special waste beneficial reuse facilities and at least 38 solid waste facilities authorized for beneficial reuse. There are 29 sites with active compost permits, 26 sites with active landfarm permits, and 35 sites with active sludge giveaway permits.

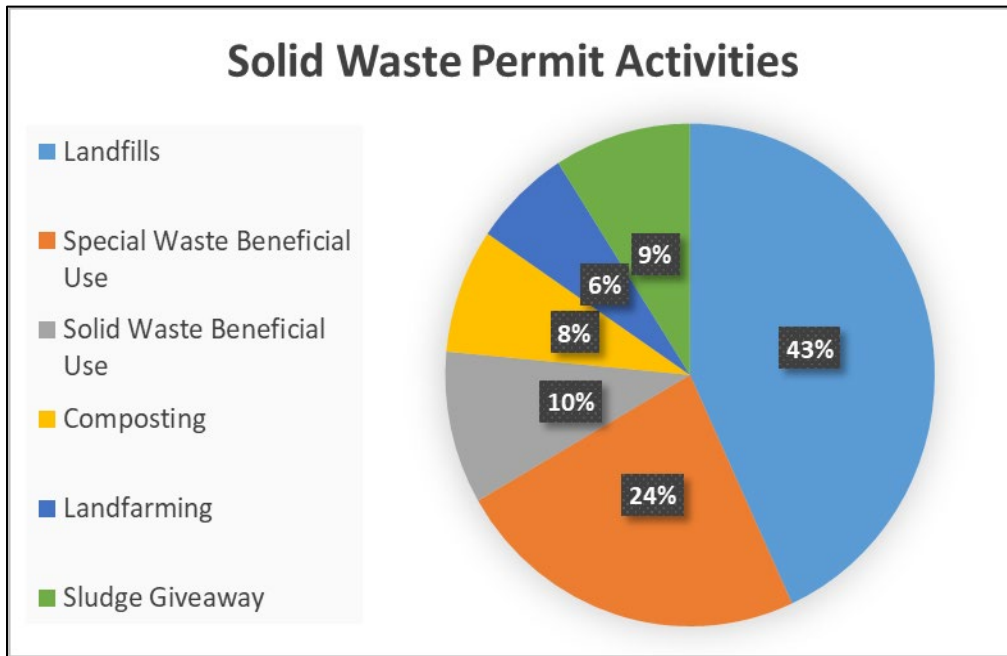


Figure 6: Solid Waste Permit Activities by Type

ENVIRONMENTAL REMEDIATION FEE AND OTHER FEES

The Environmental Remediation Fee (ERF) was established by KRS 224.43-500 and requires generators of waste in Kentucky to pay \$1.75 per ton of solid waste that is disposed in a municipal solid waste landfill. The ERFs are deposited into the Kentucky Pride Fund and used to support grants for the cleanup of illegal open dumps, recycling, and household hazardous waste management.

ENVIRONMENTAL REMEDIATION FEES COLLECTED			
2022 3 rd Quarter	2022 4 th Quarter	2023 1 st Quarter	2023 2 nd Quarter
\$3,220,667.77	\$3,097,253.66	\$2,882,944.50	\$1,590,054.71

Table 4: Environmental Remediation Fees (2Q 2023 incomplete at time of report)

Some ERF funds are also used to characterize, remediate, and close old historic residential landfills that were never properly closed (see Historic Landfill Sites Section). Compliance rates for submission of the ERF continue to be high.

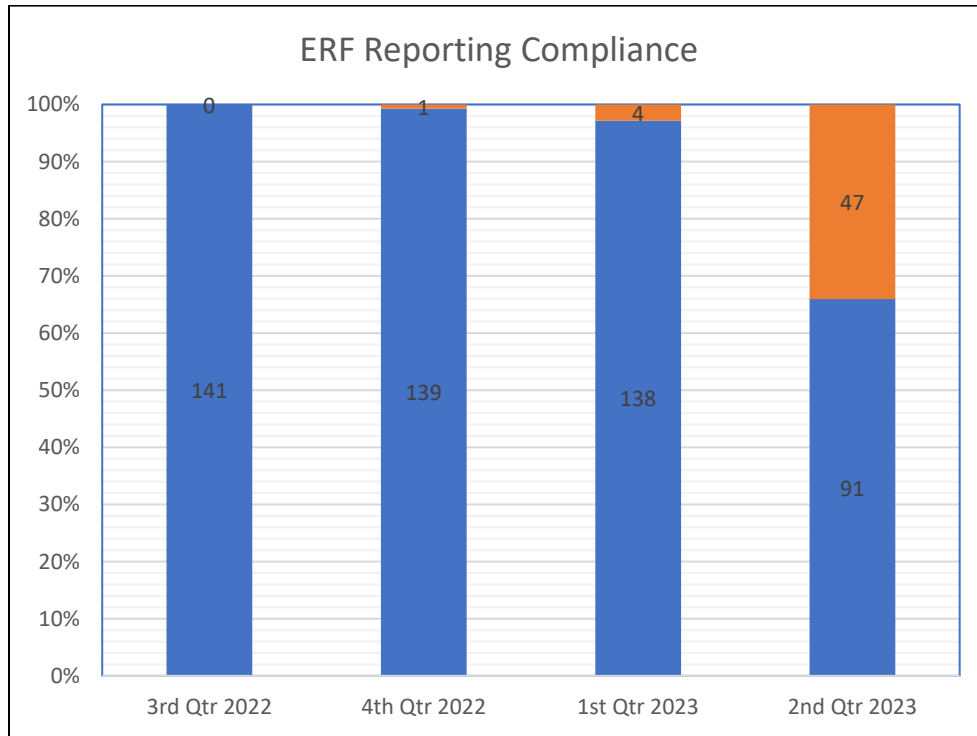


Figure 7: Environmental Remediation Fee Reporting Compliance (2Q 2023 incomplete at time of report)

In addition to the ERF, solid waste branch program facilities paid \$709,000.00 in FY23 in fees. Of that, \$173,000.00 was collected for 49 solid waste and special waste permitting actions, and \$536,000.00 was paid for the annual recurring fee for Coal Combustion Residual facilities and solid waste facilities. Compliance for payment is 100% for both types of non-ERF fees.

HISTORIC LANDFILL SITES

A total of 100 historic landfills have been closed through construction and remediation projects or by no further action due to intensive site studies, and 521 historic landfills remain to be closed. Total costs associated with the closure projects exceed \$74 million, excluding branch personnel direct and indirect expenses. To qualify for remediation under the Historic Landfill program, the landfill stopped accepting waste prior to July 1, 1992. Funding for historic landfill closure is from the Kentucky Pride account.

GROUNDWATER MONITORING AT SOLID WASTE FACILITIES

Groundwater assessment requires the owner or operator of a facility to determine the existence, extent, and depth of groundwater degradation, as well as the rate and direction of migration of contaminants in the groundwater. Of the 78 facilities required to monitor groundwater, 21 are in groundwater assessment (27%).

Corrective action requires the owner or operator of a facility to abate groundwater contamination, prevent further groundwater contamination from the facility, and restore or replace public or private water supplies affected by contamination from the special waste facility. Groundwater corrective action is currently being carried out by eight (8) facilities (10%).

SOLID WASTE HIGHLIGHT

2023 BIOSOLIDS REGULATORY UPDATE

Effective June 29, 2023, Kentucky Revised Statute (KRS) 224.50-765 authorized the promulgation of regulations by the Energy and Environment Cabinet for the purpose of ensuring that the management of biosolids in Kentucky was in conformance with 40 CFR 503, the federal sewage sludge regulation. As defined in KRS 224.50-765, "biosolids" means the nutrient-rich, organic, residual material that results from the treatment of domestic sewage or sewage sludge in a treatment facility that can be recycled and applied as a fertilizer to improve and maintain productive soils. Biosolids were previously managed under 401 Kentucky Administrative Regulation 45:100, which was promulgated in 1992, in part, due to concerns from the public regarding the importation of sewage sludge into Kentucky for disposal.

The new administrative regulation will incorporate the technical standards of 40 CFR 503 for land application of biosolids, which benefits regulated entities as they will now be managed under more consistent state and federal regulations. This will also provide for a Kentucky permitting program and siting requirements to ensure the management of biosolids can be safely implemented while protecting unique features of Kentucky's environment, like karst.

In recent years, many Kentucky municipal solid waste landfills have been restricting the amount of sludge from water and wastewater treatment plants that they will accept for disposal. This has led to increased interest in managing these materials through land application to farms and other rural areas. By providing a regulation specifically for biosolids, the permitting process for a facility to obtain a permit for the landfarming of biosolids should be more streamlined. This will have a positive effect for Kentucky wastewater treatment plants for permitting.

RECYCLING AND WASTE MINIMIZATION

In accordance with KRS 224.43-315, Kentucky recyclers are required to report annually to their counties the amount of municipal solid waste collected for recycling by volume, weight, or number of items, and the type of items recycled. DWM staff rely on individual counties and recycling operations to report accurate data. A strong effort to confirm and cross check these numbers ensures that entities are generally consistent and provide uniform data. An effort is also made to interpret the raw data in a way that allows useful comparison to recycling rates calculated by other states and by the EPA. Kentucky's calculated recycling rate for FY22 (the most recent available data) was 34.2%, a significant increase from the 2021 rate of 26%.

Although recycling rates normally fluctuate over time, such a large annual increase is somewhat unusual. However, a close review of county level raw data does in fact show a strong increase in recycling rates which may be due to a variety of factors. First, the COVID-19 pandemic had a significant detrimental effect on recycling operations such as lower budgets and reduced staffing, therefore, some of this increase is likely due to a post-pandemic rebound. Second, commodity prices have been healthy which generally leads to increased recycling volumes. In addition, the cabinet has continued to fund local recycling operations at a high level through our Recycling, Composting and Household Hazardous Waste Grant program, providing over \$4.6 million per year in recent years. This has allowed our counties with existing recycling operations to improve and expand and has also helped some counties with little or no recycling to begin recycling operations.

The cabinet will be receiving funds in FY24 from the federal Bipartisan Infrastructure Law, which provided a historic and unprecedented investment in our country’s waste management and recycling infrastructure. This is provided through a new source of EPA funding that is intended to improve and support the development and expansion of local waste management and recycling programs. One item the Cabinet plans to use these funds for is a review of our data collection and management processes to ensure that we are generating accurate and consistent recycling data that can be usefully compared to historic state and local data, as well as data from other states and the USEPA.

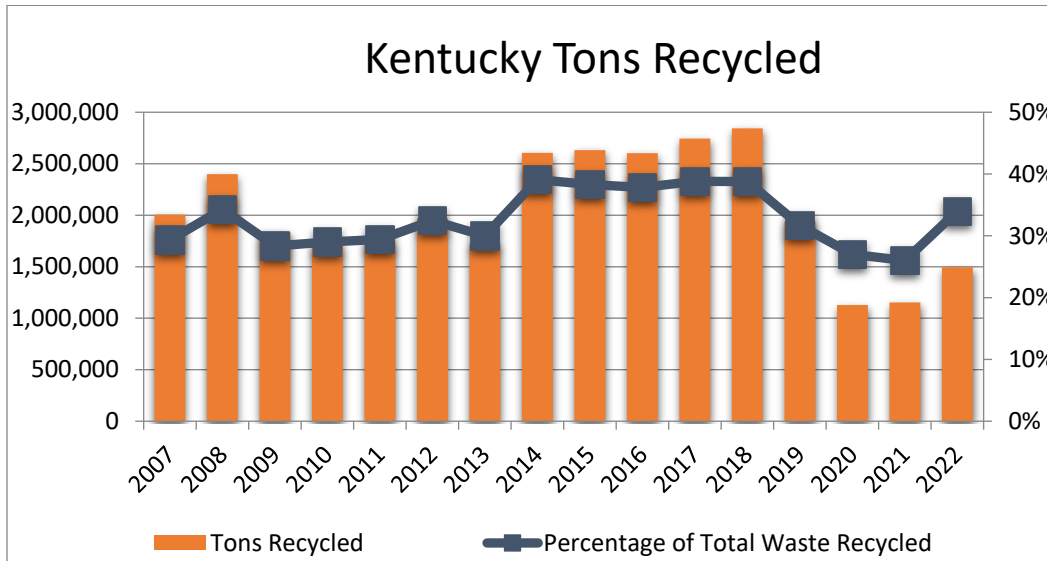


Figure 8: Kentucky Tons Recycled

MARKET CONDITIONS

While several commodities have exhibited little change or downward trends this year, the recycling economy is still showing resilience. Acquisition and improvement of recycling facilities across the nation are evidence of the continued investment and government support via the Bipartisan Infrastructure Law, which paints a promising future for the U.S. recycling market.

The following two pages display recent trends in market conditions of four commodities (fiber, plastic, metal, and glass).

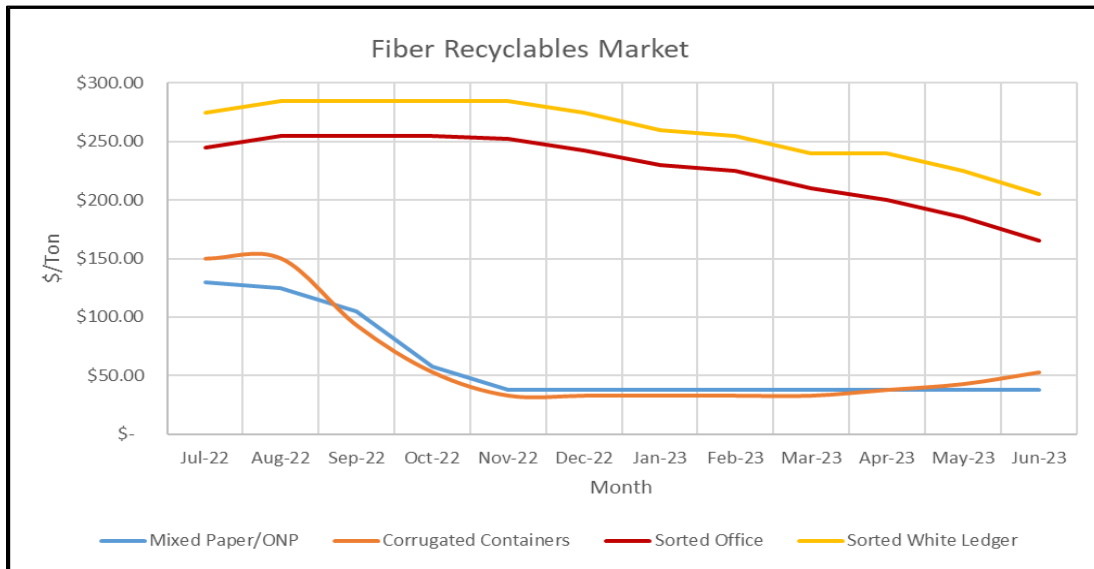


Figure 9: Fiber commodity values have gradually decreased over the past year. Cardboard prices have taken the steepest decline, dropping to less than half its original recovery value throughout the fall of 2022.

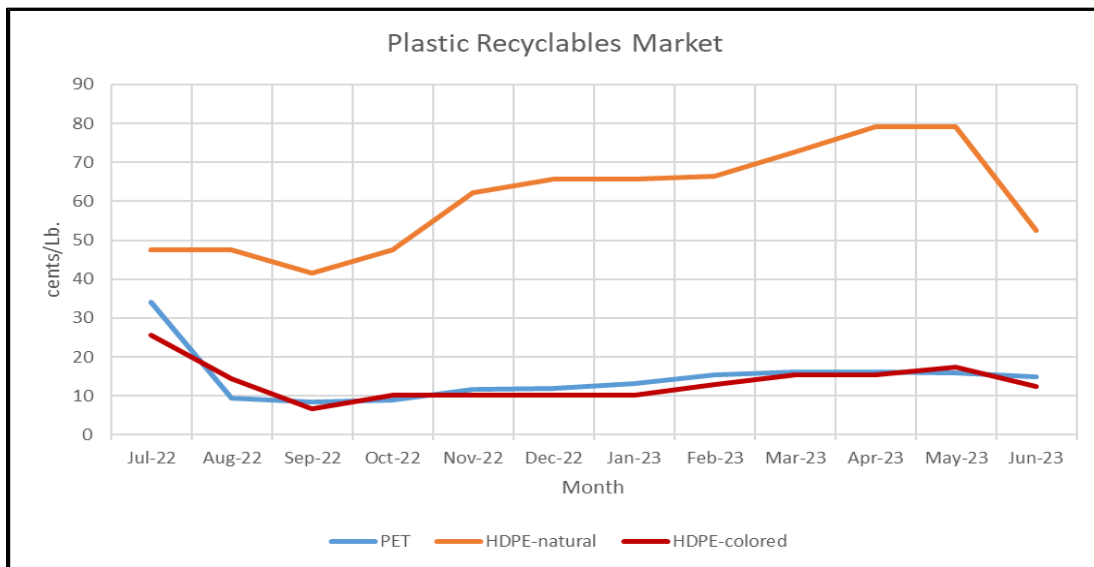


Figure 10: Prices for most plastic grades have shown gradual fluctuations throughout the year. Global plastic markets are specifically affected by petroleum prices, which are constantly oscillating and, consequently, have a direct influence on the cost of manufacturing virgin material.

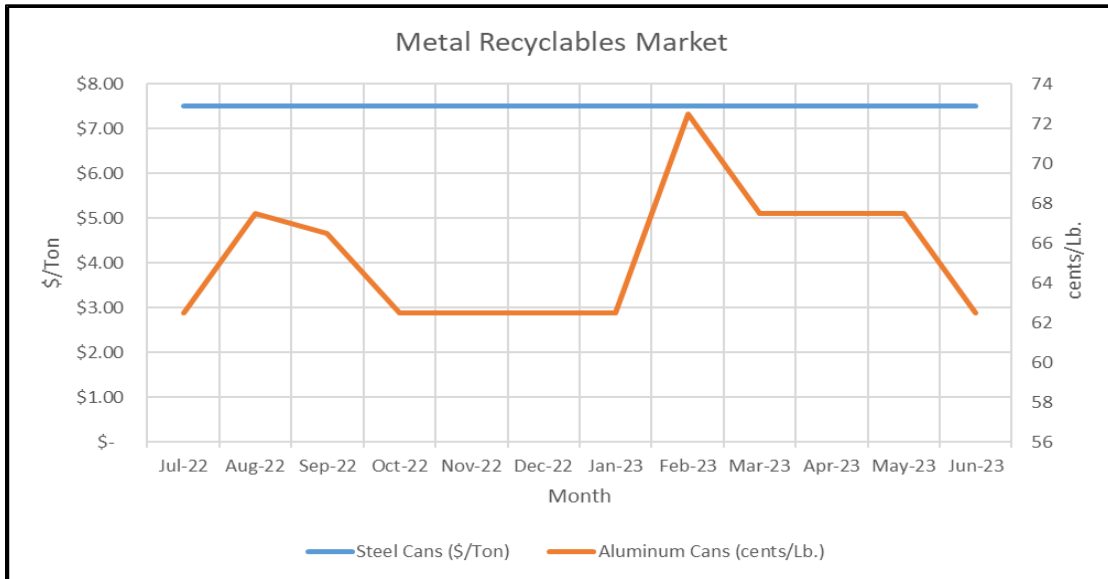


Figure 11: Steel cans have remained stagnant in value while aluminum cans seemed to fluctuate between high and low recovery values.

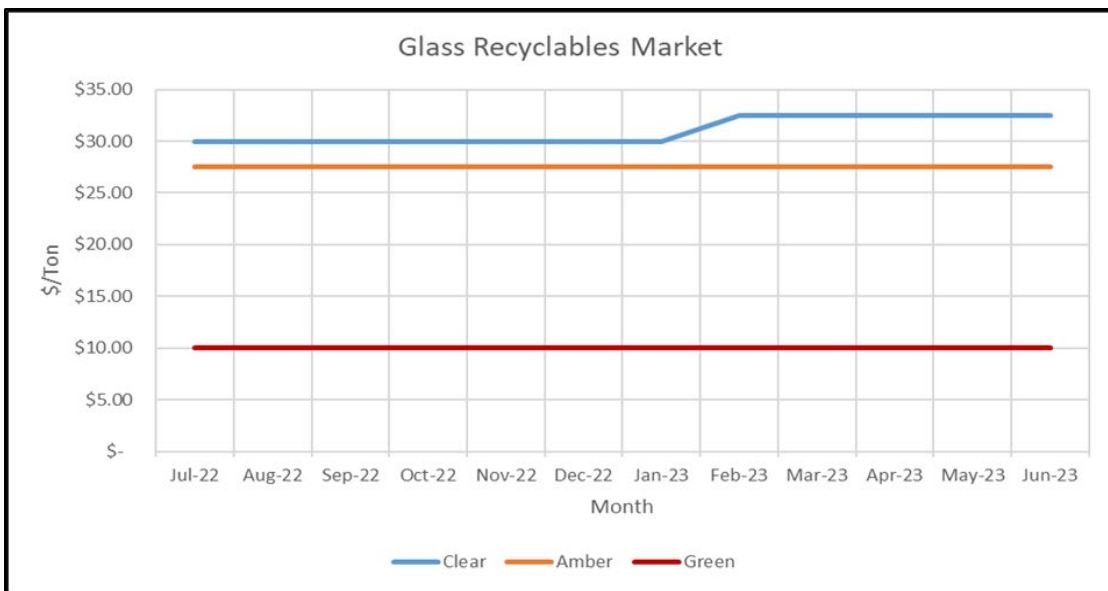


Figure 12: Residential glass recyclables typically show very little volatility in commodity value. This is due to single stream and curbside collections that result in cross-contamination, which greatly reduces the potential for market value increase. However, the “war on plastic” may cause these values to rise in the future.

GRANTS AND FUNDING

WASTE TIRE TRUST FUND

The Waste Tire Trust Fund (WTF) is generated through a fee on all new motor vehicle tires sold in Kentucky. It is used to conduct waste tire collection events, provide annual funding directly to counties for waste tire management, award crumb rubber and rubber-modified asphalt grants, facilitate market development for the use of waste tires, and to clean up waste tires at mismanaged sites. In the 2018 session of the General Assembly, the previous \$1 per tire fee was increased to \$2 per tire. However, it is expected that some of this increased revenue will be diverted from the WTF for other state budgetary needs going forward. The division offers a \$4,000 annual grant available to counties for recycling or disposal of waste tires.

WASTE TIRE COLLECTION EVENTS (FORMERLY KNOWN AS “TIRE AMNESTIES”)

During the fall of 2022 and spring of 2023, waste tire collection events were conducted in the counties comprising the Buffalo Trace, FIVCO, Cumberland Valley, Gateway, Big Sandy and KY River Area Development Districts (ADDs). The equivalent of 555,352 waste tires were recovered through the FY2023 collection events at a cost of \$1,379,688. Eastern Kentucky Flood Tire Cleanup during the Fall of 2022 / Spring 2023 accumulated 111,556 recovered tires at a cost of \$309,118.64.

CRUMB RUBBER/TIRE DERIVED PRODUCTS GRANT

In 2023, the division awarded 16 grants totaling \$585,150 for the application of crumb rubber used for landscaping or other tire-derived products, and poured-in-place rubberized pavement projects (used for walking trails, playgrounds, outdoor patios, or courtyards). Popular requests in the 2023 grant applications were picnic tables and benches made from recycled tires. This grant does not fund crumb rubber applied to athletic fields, or loose shredded playground mulch. From 2004 to 2023, the division has awarded 559 grants totaling over \$11 million to local governments, schools, daycares, churches, and other entities for projects that utilize products made from recycled tires.

WASTE TIRE WORKING GROUP

In 2011, House Bill 433 established the Waste Tire Working Group (WTWG). The WTWG is a committee appointed by the governor in accordance with KRS 224.50-855 to discuss and research topics in waste tire management, and make recommendations to the cabinet in efforts to improve Kentucky’s programs. The committee is tasked with meeting twice per year with all meetings open to the public. The WTWG consists of two ex-officio members and six appointed members. Current members of the WTWG:

- Director of the Division or designee: Darin Steen (ex-officio) – *WTWG Chairman*
- Manager of RLA Branch or designee: Donny Atha (ex-officio)
- KY Department of Agriculture representative: Harlan Hatter
- Solid Waste Coordinators (2): Sherri McDaniel (Woodford Co) and Brian Miles (Grant Co)
- Mayor: Tracy Neice (Hyden)
- County Judge/Executive: Pending
- Retail tire sales in private industry representative: Pending

RUBBER MODIFIED ASPHALT

In the spring of 2016, the division launched the Rubber-Modified Asphalt (RMA) Grant program. This grant funds the paving of approximately one mile of a county road with RMA, with the county then required to pave the same area of a similar road with standard asphalt, and to monitor both sections for a five-year period. The division awarded six RMA grants in FY23 totaling \$504,012. RMA is slowly becoming more common

across the U.S., and has been found in many applications to improve durability and performance of pavement at a competitive price. There are several different methods for incorporating recycled tire rubber into pavement and the grant is open to two different types of paving: chip seal (a process that combines one or more layers of asphalt with one or more layers of aggregate), and thin overlay (approximately 1.5 inch asphalt layer installed over existing asphalt pavement).

KENTUCKY PRIDE FUND

The Kentucky Pride Fund is supported by an environmental remediation fee of \$1.75 per ton of waste disposed in Kentucky landfills. This money is used for closure of historic landfills, recycling grants, household hazardous waste management grants, and remediation of illegal open dumps. Additionally, this fund receives \$5 million annually from the Kentucky Transportation Cabinet, specifically for distribution to counties and incorporated cities (who have a solid waste ordinance or a solid waste contract with a hauler) for litter abatement activities.

LITTER ABATEMENT

Since 2001, the division has been tracking the cost of litter activities and the amount of litter collected. Litter abatement grant funding through the Kentucky Pride Fund was initiated in FY02.

In 2022 (the most recently available data), counties removed 587,286 bags of litter (an estimated 11,745,720 pounds) from 155,639 miles of Kentucky roadways at a total cost of \$8.73 million. Counties report on all litter abatement activities, including activities conducted outside of the grant program. This data may not include litter collected by state road crews as part of the Transportation Cabinet's efforts to maintain state roads.

Litter collection is expensive, therefore, counties are encouraged to utilize some of their grant funding for education and outreach activities to help prevent littering. The most common items found on roadways are plastic bottles and food containers.

There has been a substantial variation of dollars spent per number of bags collected over the past 10 years. Collection and record keeping procedures might not be consistent among the counties. Expenses such as education and outreach, which do not contribute to the number of bags collected, can vary considerably from year to year.

ILLEGAL OPEN DUMPSITES

In 2022 (the most recently available data), counties cleaned 52 illegal open dumps at a cost of approximately \$650,041 and collected 5,324 tons of waste. The nineteenth round of grants was awarded in January 2023 for the remediation of 62 dumpsites at a projected cost of \$553,755. Since the division's Open Grant program was updated in 2006, over 2,457 illegal open dumpsites have been addressed at a cost of \$24.8 million.

RECYCLING, COMPOSTING, AND HOUSEHOLD HAZARDOUS WASTE GRANTS

The Kentucky Pride Fund provides funds for grants for the development and expansion of recycling programs and household hazardous waste (HHW) management. In recent years, this program has begun to provide grant funding for composting operations as well. The recycling and composting grants help fund infrastructure to promote a regional approach to decrease the amount of waste going to Kentucky landfills. The HHW grants fund county collection events that encourage proper management of such wastes as electronic scrap, pesticides, solvents, mercury, and other potentially hazardous products from residences.

During FY23, 71 entities were awarded grants totaling \$4.7 million. A total of 30 recycling grants and 11 composting grants were awarded to cities, counties, and universities. HHW grants were awarded to 30 counties in Kentucky, resulting the collection of over 350 tons of material. Recipients of these grants are required to provide a 25% local match in the form of cash or “in-kind” personnel, educational activities/materials, or advertising to promote the program.

STATE OFFICE PAPER RECYCLING

The State Office Paper Recycling Program serves more than 116 agencies in Frankfort. The program offers free pickup and document destruction of governmental office paper. Their location on Northgate Drive in Frankfort offers a secure environment to ensure proper processing of confidential documents. Office paper represents approximately 70% of the waste stream in the office environment. Since 2006, state employees have recycled more than 25,559 tons of waste paper, generating approximately \$4.05 million in revenue.

In 2022 (the most recently available data), state employees recycled 586.62 tons of waste paper, generating more than \$96,485 in revenue. A decrease in tonnage and revenue in 2022 may reflect typical fluctuations in commodity prices over time. Program revenue for 2023 is difficult to predict, as fiber prices overall appear to be trending up, but the paper sales contract recently expired and was re-bid, resulting in lower rates than in previous contracts. However, the Government Recycling Section is able to generate high quality, desirable bales through an emphasis on proper sorting and processing, so even in poor market conditions this material is in demand.



Photo 4: Large Paper Shredder & Baler at Paper Recycling Warehouse, Franklin County

ELECTRONIC SCRAP RECYCLING

Proper management of waste computer and electronic parts and equipment (e-scrap) continues to be a challenge throughout the state. Many counties offer some type of e-scrap collection, year-round drop-off programs, or periodic events.

The division holds a contract with Powerhouse Recycling who successfully collected and processed 408.47 tons of e-scrap in 2021 (the most recently available data). To date, the primary users of the contract have been state agencies and county school districts and Boards of Education. However, county governments have been encouraged to take advantage of this opportunity to properly manage their e-scrap. E-scrap generators continue to be reimbursed for certain items which should make this an attractive option for county governments, and it is expected that more of them will start utilizing the contract going forward. County governments reported 1,826.76 tons of e-scrap collected in 2022. The division also promotes proper management of e-scrap through the Household Hazardous Waste (HHW) Grant Program provided by the Kentucky Pride Fund.

THE MARKETPLACE

The Marketplace newsletter, reintroduced by the division in the fall of 2020 as a quarterly release continues to be distributed to over 200 municipalities, stakeholders, and other related entities. Recycling articles of interest as well as relevant legislative or policy changing actions are featured in the newsletter. Commodity values continue each quarter for the previous six-month period.

RECYCLING AND LOCAL ASSISTANCE HIGHLIGHT

DWM SUSTAINABLE T-SHIRT PROJECT

During FY23, staff from the Recycling and Local Assistance Branch (RLA) collected 7,850 clear plastic PET bottles from the 300 Sower Building in Frankfort and from Employee Appreciation Events in Madisonville and Pikeville. RLA staff removed all the caps and baled them into a 300 pound bale that was enough bottles for 600 t-shirts (13 bottles per shirt). A project was initiated to find a company that would allow the cabinet to donate the PET bale to them and make t-shirts from the collected bottles. The t-shirts would be given out at cabinet events along with educational information that would show how the bottles came full circle.

RLA staff researched companies that could recycle plastic bottles into clothing. They came across Last Bottle Clothing (LBC) that produces garments made from 100% PET bottles, along with their partner Unifi REPVEVE who recycles the bottles and produces the yarn at its facilities in Reidsville/Yadkinville North Carolina. LBC was a great fit as the CEO and founder, Stuart Wood, was born in Kentucky and has family residing in Kentucky. The company not only manufactures shirts from PET bottles, but the garments can be sent back to them to be recycled into garments again. This is circular sustainability (Photo 5).

Representatives from DWM's Directors Office and RLA arranged to deliver the PET bale to UNIFI in Reidsville NC on June 7th, 2023, to have the bottles washed, cut into flake and made into pellets. Unifi's Yadkinville NC facility spun the pellets into yarn used to produce the t-shirts. DWM staff were able to tour both facilities while in NC, which were very impressive. DWM staff also had conversations with UNIFI management and provided them a list of KY plastic generators, volumes by KY County and KY Solid Waste Coordinator contact information for them to use in seeking future raw materials.

The cabinet ordered 150 T-shirts from LBC with an Energy and Environment Cabinet (EEC) logo them. The EEC Office of Communications produced a poster and video showing the entire process from the bottle being recycled to the garment being produced.

Team EEC T-Shirts How they're made



Photo 5: Team EEC T-Shirt Process

REMEDIATION AND ECONOMIC DEVELOPMENT

The Superfund Branch (SFB) staff ensure that contaminated sites are evaluated and remediated in a timely manner to reduce risks to human health and the environment by providing oversight of companies or individuals cleaning up releases or taking a direct role in cleaning up a site. In general, the branch handles oversight of releases of hazardous substances, pollutants, contaminants, and petroleum not associated with regulated underground storage tanks.

Traditionally, Superfund sites were assessed and characterized with the expectation that a person would incidentally ingest soil or drink water from a contaminated groundwater source. Now, equal attention is given to the future receptor that may develop and occupy a property. In addition to dermal and ingestion concerns, inhalation of vapors and their potential to migrate into dwellings are evaluated. Chemicals with high vapor pressures can migrate and off-gas into dwellings on or adjacent to release sites.

There are currently 311 managed Superfund sites. Management is an accepted closure plan using on-site engineered controls such as a cap or structure, and/or institutional controls such as an environmental covenant or deed restriction. These sites require inspections and an annual report or five-year review, as established by statute, KRS 224.1-400. The perpetual obligation to continue the management of controls in release remediation indicates that the total number of managed Superfund sites will continue to increase as new sites are approved for closure. A site can be later removed from the managed site list if additional cleanup is performed to restore the site to unrestricted residential use.

In FY23, staff issued a total of 44 closures. There remain 309 sites without an approved closure plan. Of these, 35 new sites were added during the year.

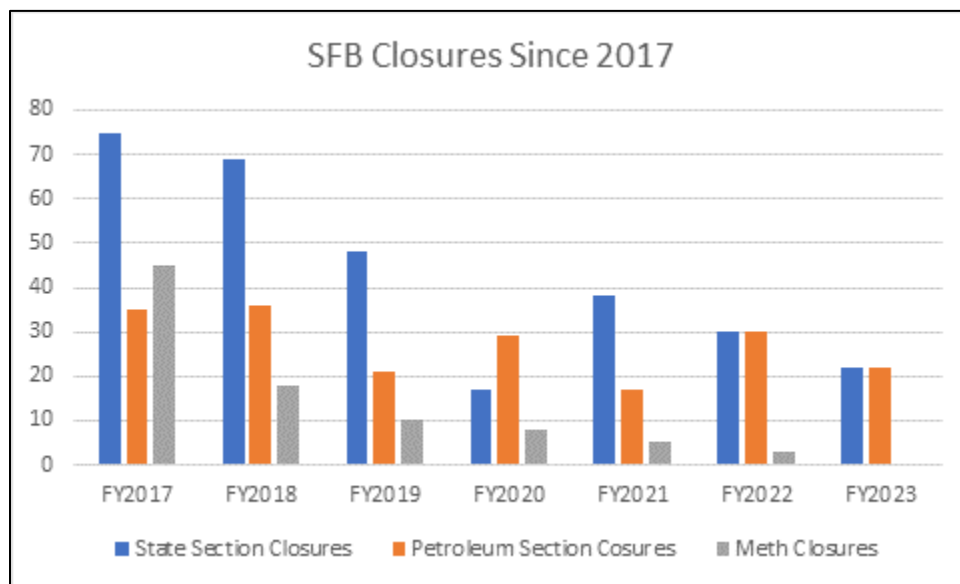


Figure 13: Superfund Program Closures

PETROLEUM

Cleanup of petroleum releases from a source other than a petroleum storage tank provides an ever-increasing number of superfund sites. In FY23, 25 new petroleum sites entered the staff's workflow, and 22 sites were closed. The current active site load is 56 petroleum sites.

METHAMPHETAMINE LAB CLEANUP

DWM staff work in conjunction with law enforcement and health departments to remediate structures and homes contaminated with illicit meth waste through the Methamphetamine Lab Cleanup Program. Due to the toxicity of meth waste, especially to small children, and its ability to absorb into home surfaces and structures,

methamphetamine must be remediated by certified contractors. Since this program began in 2007, there have been 2,170 reported meth properties and 799 have been remediated. In FY23, there were not any contaminated residences reported or properties cleaned.

FEDERAL PROJECTS

The Superfund staff oversee federal projects that include CERCLA (Superfund) sites on the National Priorities List (NPL). Staff conducted work under federal cooperative agreements such as pre-remedial site assessments including EPA's Hazard Ranking System evaluation, NPL sites' Five-Year Reviews, and NPL operation and maintenance activities.

Under CERCLA, a total of 20 sites in Kentucky were placed on the NPL many years ago. As part of ensuring long-term protectiveness, three NPL sites received the most attention over the past year: Fort Hartford, Distler Farm, and Lee's Lane Landfill. The Fort Hartford site is in the final stage of deletion from the NPL. Environmental sampling is ongoing at the Distler Farm site to determine if it is eligible for deletion from the NPL. The Lee's Lane Landfill site's gas collection system removal was completed this year.

Additionally, staff conducted two Pre-CERCLA Screening/Preliminary Assessments. These two sites are Rank 1 – KDEP Superfund Site Ranking Initiative sites that focus on former RCRA generator facilities. Staff also conducted three Five-Year Reviews for Brantley Landfill, A.L. Taylor, and Tri-City Landfill. All of these sites required in-depth research and reporting as part of EPA cooperative agreement obligations.

STATE PROJECTS

Kentucky statutes for releases of hazardous substances or pollutants require persons or parties responsible for contaminating land or groundwater to investigate the extent and remediate or manage the contamination according to regulatory guidance.

There are over 253 active (not fully characterized or remediated) state superfund sites in Kentucky. Staff oversee projects including the guidance of responsible party-lead investigations, remediation, management, and ensuring regulatory compliance. In FY23, the State Section oversaw the closure of 22 sites. Of these sites, 19 received unrestricted closures and 3 received managed closures. There were 30 state-lead (state funded) sites undergoing characterization or cleanup during the FY23. For three of these sites, all corrective action was completed. The state section also manages three sites on behalf of non-viable responsible parties. All other sites not specifically mentioned are still in investigation or remedial planning.

RISK ASSESSMENT

The Superfund Branch Risk Assessment Section currently consists of two staff members responsible for all risk related reviews or inquiries originating from either within the Branch or from within other branches of the Division of Waste Management. Risk Assessment Section staff also provide risk assessment related trainings, perform, and oversee audits of brownfield and managed sites, and oversee operation and maintenance of closed state lead sites. During FY23, section staff oversaw the completion of 40 brownfield and 21 managed site audits and performed nine document reviews. Sites for which documentation was reviewed included the Blue Grass Army Depot (BGAD), the Paducah Gaseous Diffusion Plant (PGDP), and Kentucky Utility's EW Brown Station. The section also participated in numerous conference calls with BGAD and PGPD project personnel.

BROWNFIELDS

Brownfields are abandoned, idled, or underutilized industrial and commercial facilities/sites where expansion or redevelopment is complicated by real or perceived environmental contamination. They can be located in urban, suburban, or rural areas. There are two types of Brownfield programs implemented by the Department.

The first program is the Targeted Brownfield Assessment where DWM and the Environmental Assistance Branch (EAB) of the Division of Enforcement work jointly to provide grant assistance and environmental assessment for redevelopment of properties for non-profit entities. Both EAB and DWM staff are trained to conduct environmental assessments known as Phase I assessments. These assessments are provided without charge to non-profit entities. Staff can also provide further assistance by either performing or contracting Phase II work, which relies on verification sampling of environmental media. During FY23, EAB did not request assistance for Phase I or Phase II assessments.

The second program is for Brownfield Redevelopment. This allows purchasers of property that follow federal Bona-fide Prospective Purchaser (BFPP) standards to utilize and redevelop property that is environmentally impacted or perceived to be impacted. The program works one of two ways: either the applicant presents certification, due diligence, and management options prior to purchase to receive a notice of eligibility, or the applicant enters the program retroactive of the purchase. If the latter, the owner must have met the standards of BFPP at the time of purchase. Once it is determined that the owner met all standards, a notice of concurrence is issued. At this point, the entity is entered into the program with assurance that liability for releases occurring prior to ownership will not be their responsibility as long as they remain in compliance with the property management plan.

In FY23, 60 brownfield redevelopment applications were reviewed; 35 notices of eligibility and 47 notices of concurrence were issued.

BROWNFIELD REDEVELOPMENT PROFILES

Paducah McCracken County Joint Sewer Agency

The new 15-million gallon aboveground combined sewer overflow tank operated by The Paducah & McCracken County Joint Sewer Agency (JSA) is a prime example of successful land redevelopment made possible by Kentucky's Brownfield Redevelopment Program. This tank allows for the storage of treatable water that would otherwise go un-sequestered in an area that is frequently affected by drought. The facility is located on a 4-acre lot at 1408 North 8th Street in Paducah and provides drinking water to the residents of Paducah and McCracken Counties.

The site was formerly used as an urban fill dumping ground (1940s through 1970s) and later as a storage and maintenance lot for tractor trailers (1970s through 2015). Urban fill at the site is an estimated 18 feet deep and Phase I testing revealed low levels of chromium III and lead. Furthermore, two underground storage tanks (USTs) were installed in 1983 and properly removed in 1998. The site entered Kentucky's Brownfield Program in 2017, and JSA development has been occurring since then. The property management plan for the site includes safe construction practices, stringent soil management protocols, perimeter fencing, and site cover (most of which is provided by the massive storage tank), which protects those on the site and on adjacent properties.



Photo 6: Paducah McCracken County, Joint Sewer Agency Tank



Photo 7: 330 Newton Development, LLC, Lexington-Fayette County

*330 Newtown Development, LLC;
Lexington Fayette County*

Since the early 1900s, the property at 330 Newtown Pike in Lexington has been the home of various businesses, including auto repair shops, a meat warehouse, a city refuse incinerator, and construction materials companies. Thistle Holdings, LLC purchased the property in March 2014. Contractors removed hazardous and special wastes that remained on the site and excavated and disposed of petroleum-impacted soil. Construction is currently underway for a multi-purpose complex, which will include apartments, retail, and restaurants.

STATE LEAD CLEANUPS

Sites requiring action that do not have a financially viable responsible party become state-lead sites. SFB staff allocate resources to collect environmental samples from soil and groundwater to develop a strategy to remediate and/or manage releases to restrict harmful exposures. Often the state has neither the

equipment nor the time to perform corrective action. In such cases, the state utilizes the Hazardous Waste Management Fund (HWMF) and allocated money from the legislature to complete corrective action. HWMF provides roughly \$800,000 per year to cleanup emergency and state lead sites. At the beginning of FY23, \$5.6 million was allocated to the Long Lane Southern Wood Treatment Project, and \$1.8 million was allocated to various other projects. These recent allocations were made to allow for cleanup on projects with expenses exceeding the normal balance of HWMF. Staff have worked with the Division of Engineering and Contract Assistance (DECA) to establish an efficient approval process for project management.

Southern Wood Treatment Mount Sterling Montgomery County

The estimated expenses for The Southern Wood Treatment project is in the tens of millions of dollars. As such, the project has been broken down into phases. Cleanup consists of removal and disposal of arsenic impacted media resulting from releases of ammoniacal copper arsenate pesticide used for wood treatment. The current phase of corrective action is occurring at the Tipton farm pond and drainage. The area was characterized for removal of arsenic contaminated pond sediment and soils. Remediation and reclamation of the pond and drainage is intended.

Bid specifications were drafted for proposed work in April 2023. The bid specifications are still pending approval from the cabinet’s Office of Administrative Services (OAS) and DECA. The goal for FY2024 is the selection of a removal contractor and the beginning of removal activities before the close of that fiscal year. Work plans will be developed on the other phases associated with Long Lane during the 2023-2024 winter months.

PETROLEUM PROPERTIES

The Rough River Youth Ranch site located at 470 J&D Lane in Breckinridge, Kentucky was one of the many petroleum projects addressed in the past fiscal year. Bethel Fellowship owns the property and uses it as an extension of their youth outreach program. It is located in a residential area that relies solely on well water. Two 500-gallon exempt farm tanks were identified on the residential property due to overflow issues reported in 2010. The 2010 release was addressed and the tanks were pumped, capped, and sampled, but never removed. Upon inspection in 2022, the tanks contained several gallons of product and exuded petroleum odors. Utilizing the allotted petroleum cleanup funds, the Superfund Branch hired a contractor to pump and remove the tanks to prevent any future releases. Additionally, utilizing state-owned equipment, the Superfund Branch collected confirmatory soil samples around the tanks to ensure all the contaminated material was removed.



Photo 8: Removal of farm tanks at Rough River Youth Ranch

The **Kentucky Processing Prep Plant**, located in Irvine, Kentucky, represents a large-scale petroleum cleanup project that is still underway. The site is an abandoned coal processing prep plant along the Kentucky River that the DEP TCSA group referred to Superfund. The Superfund Branch inspected the property and noted several drums, totes, and sumps full of used oil along with multiple PCB-containing transformers. One transformer, recorded containing 340,000 ppm PCB oil, was vandalized, resulting in a release of several hundred gallons of PCB oil. Upon discovery, the Department for Environmental Protection declared an Environmental Emergency. All PCB-containing transformers were pumped and removed from the property along with excavated contaminated soils. Gross cleanup and containment of the PCB release was successfully executed; however, additional remedial actions will need to be performed to reach appropriate cleanup standards.



Photo 9: Kentucky Processing Prep Plant remediation

RESIDENTIAL HIGH GROUND RELOCATION INITIATIVE

SUPERFUND RAPID ASSESSMENT TEAM

In response to the Commonwealth of Kentucky's interest in various historical mine sites for the 2022 Eastern Kentucky flood relief efforts, the Superfund Branch assembled a few rapid assessment teams to evaluate potential redevelopment sites. The teams performed Phase I environmental site assessments and limited

site investigations to provide data concerning the properties' potential to be constructed into residential subdivisions outside of the region's floodplain. The sites were researched and analyzed for signs of acid mine drainage and recognized environmental conditions. The reports were submitted to the Commonwealth of Kentucky within a few weeks of the requests to help expedite the planning process.

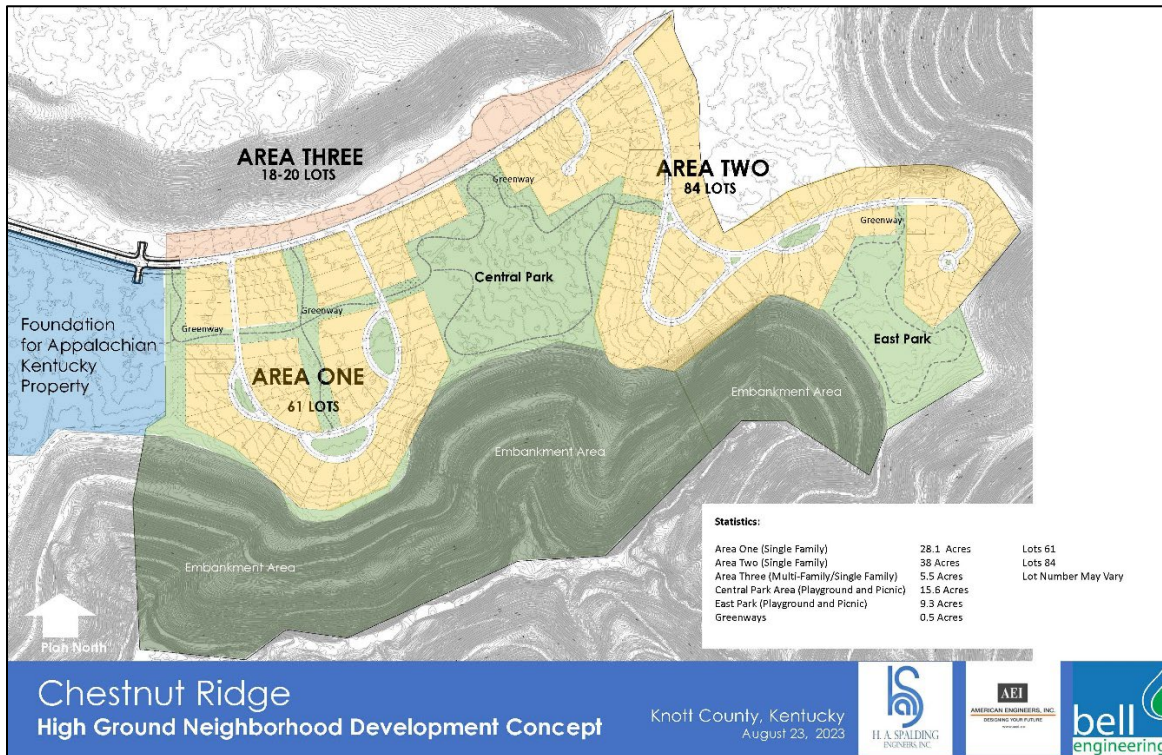


Photo 10: Eastern Kentucky Flood Recovery Master Plan

MAXEY FLATS PROJECT

The Maxey Flats Disposal Site (MFDS) is a NPL site that was originally established in 1962 as the nation's first low-level radioactive waste disposal operation. Presently, the site is comprised of the original 280-acre operation and an additional 662 acres of surrounding land that was purchased during remediation for a buffer zone to restrict land development and further protect the public. Many current operations are conducted within a 60-acre perimeter fence that encompasses the waste disposal area, office complex, site laboratories, and maintenance facilities. The 55-acre waste disposal area is covered by a highly protective, technologically enhanced vegetative cap.

From 1963 to 1977, the Commonwealth of Kentucky, under authorities granted by the U.S. government, licensed a private commercial operator to dispose of low-level radioactive waste. Some of the primary producers of this waste were hospitals, universities, the U.S. Department of Defense, and the U.S. Department of Energy. An estimated 4.7 million cubic feet of waste material was buried in shallow, unlined trenches during commercial operation. This waste material included approximately 242,000 kilograms of source material (uranium and thorium or ores containing them), 2.4 million curies of byproduct materials, and 431 kilograms of special nuclear material (plutonium and enriched uranium). Since commercial operations were discontinued in 1977, the Commonwealth has owned and maintained the MFDS through multiple

phases of closure and remediation. The Commonwealth will maintain control of the site in perpetuity. For a full summary of the site history, see here: [Maxey Flats Project](#).



Photo 11: Maxey Flats, Post-Capping

Since completion of the Final Cap in 2017, there have been no performance concerns with the vegetative cap and its components. The vegetative cover increases in density each year, erosion in the adjacent drains is stable as it relates to storm water management from the cap, and seepage contamination levels remain below conservative screening levels. Additionally, the MFDS laboratory operations are being adapted to accommodate new sampling and analysis procedures for gross alpha and gross beta detection to ensure effective contamination mobility monitoring. Tritium, the current indicator isotope, naturally decays over a relatively brief period (4,500-day half-life) and will progressively become a less representative indicator through the 100-year span of the Institutional Control Period.

The remediation at the MFDS was implemented under the guidance of the USEPA Region IV headquarters in Atlanta, Georgia, and in accordance with the 1996 Consent Decree. Environmental monitoring and site maintenance is the responsibility of the Commonwealth and is overseen by the Division of Waste Management. In FY23, the MFDS received permission from EPA to implement the Sampling, Analysis and Data Evaluation Plan, and the O&M Inspection Program from the Institutional Control Work Plan. Approval of the full Work Plan is pending EPA review.

The US EPA conducted its fifth MFDS Five Year Review in 2022. The Review will be available on the USEPA and Kentucky Division of Waste Managements' web pages. Day-to-day operations at MFDS are the responsibility of the Commonwealth, which is directed by DWM. Current operations include environmental monitoring, radiological compliance, and site maintenance.

EMERGING CONTAMINANTS PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of over 5,000 man-made, fluorinated chemicals that, because of their unique chemical characteristics, are used in a large number of consumer products and industrial applications. The widespread use of PFAS in many consumer, commercial, and industrial products over the last 70 years and recent concern about the health effects of PFAS create challenges for federal and state agencies to address these emerging contaminants. The PFAS compounds are ubiquitous and persistent in the environment and do not break down easily or within measurable timeframes. This group of chemicals are found at varying levels in air, soil, streams, groundwater, drinking water, various impacted crops, fish, and domestic and wild animal food sources throughout the United States and the Commonwealth of Kentucky.

On August 26, 2022, EPA proposed regulations to include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) as hazardous substances under CERCLA. These are the two most studied PFAS constituents and perhaps the most common. Once the rule becomes final, Kentucky will have clear authority to regulate releases of these constituents since our release statute references CERCLA hazardous substances. A total of six PFAS constituents have proposed drinking water standards. As toxicity data becomes available on the common PFAS constituents, it is likely that the hazardous substance list and the drinking water maximum contaminant level (MCL) constituents will expand.

In expectation of future regulations capturing more PFAS constituents, SFB staff have collected data on approximately thirty PFAS constituents. This groundwater sampling revealed that PFAS is often present in concentrations above the proposed MCLs or the existing health advisories. As we gain an understanding of where PFAS is present relative to industry type, we can more effectively target potential drinking water threats. It is anticipated that the Superfund Branch will increase staffing to account for the addition of sites.

UNDERGROUND STORAGE TANKS

The Underground Storage Tank (UST) Branch is divided into four (4) areas along broad functional lines: administrative, prevention and operational compliance, corrective action, and management of a fund to assist with the costs for corrective action.

The administrative staff manages UST system registration and notification requirements, along with the invoicing and collection of annual registration fees for regulated UST systems in the Commonwealth. Annual fees are assessed for each UST that contained product after July 1, 1990. A \$30 annual fee is assessed for every UST in the ground beginning on July 1 of each year. In 2023, a total of 401 new and amended registrations were received and processed. Invoices were mailed resulting in the collection of \$263,170.00 in annual fees.

The compliance staff provides outreach and educational services to UST system owners and operators to assist in the prevention of a release and maximize the rate of compliance. The section focuses on building relations with the regulated community and providing support to field inspectors. In 2023, more than 11,909 compliance tests were received and reviewed to ensure tank owners and operators maintained compliance. Compliance staff also manage the Kentucky Underground Storage Tank Operator Online Learning System (KY TOOLS), Kentucky's free online operator training course that has been utilized since May 2013 to assist tank owners in complying with the annual operator training requirement. The KY TOOLS program was

nonoperational for over a year while being upgraded to a web-based platform and also incorporating new lessons as a result of the amendments of Kentucky's UST Regulation in April 2019 (401 KAR Chapter 42). As of March 2022, the KY TOOLS program is operational and open for use. Currently, 1,373 operators have successfully completed Kentucky's online operator training. 858 of these operators represent the 2,789 UST facilities that have a trained operator. 90.4% of Kentucky's UST facilities have at least one (1) employee who is responsible for compliance that has completed the KY TOOLS online training.

The corrective action staff is responsible for cleaning up releases from UST systems. They plan and manage site characterization and remediation, direct fieldwork, review technical reports, and provide regulatory guidance to owners, operators, and contractors. In addition, they provide recommendations for no further action when deemed appropriate for sites that have had a confirmed release. The corrective action staff work closely with the Claims and Payment Section to establish the reimbursable amounts related to corrective action activities.



Photo 12: Underground Storage Tank Installation

In FY23, the corrective action staff reviewed 63 closure assessments and 18 site checks and Phase II reports. Staff also issued 461 directives for site investigation/corrective action activities and 170 No Further Actions (NFA) letters.

Overall, while the number of NFAs has been decreasing in the past few years, these totals are drawn from a smaller total number of ongoing cleanups. The surge of NFA letters issued in FY08 and FY13 was due, in part, to regulatory changes in FY07 and FY12. The slight increases in FY16, FY17, and FY20 are associated with database cleanup efforts for pre-2006 closures. Of the 170 NFA letters sent in FY23, there were 35 designated as unconfirmed tank removal status. These reviews are part of an initiative to properly close those tanks that have been incorrectly documented as removed.

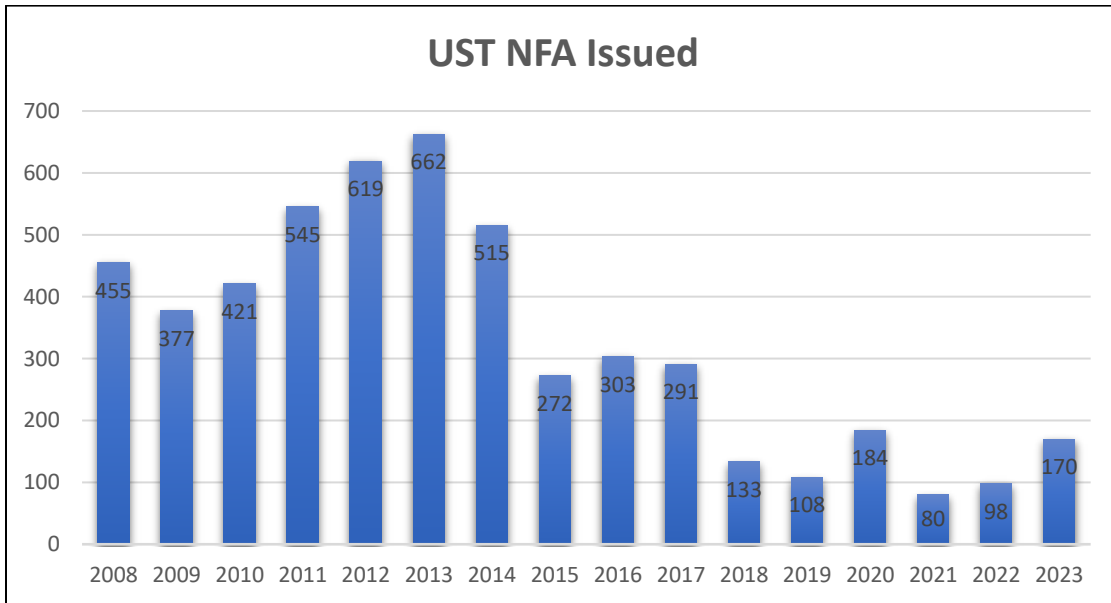


Figure 14: Underground Storage Tank No Further Action Letters Issued

As a direct result of changes to the regulatory process in 2006 and 2011, the total number of remaining UST cleanups has decreased substantially. There were 449 UST cleanups requiring additional work at the close of FY23.

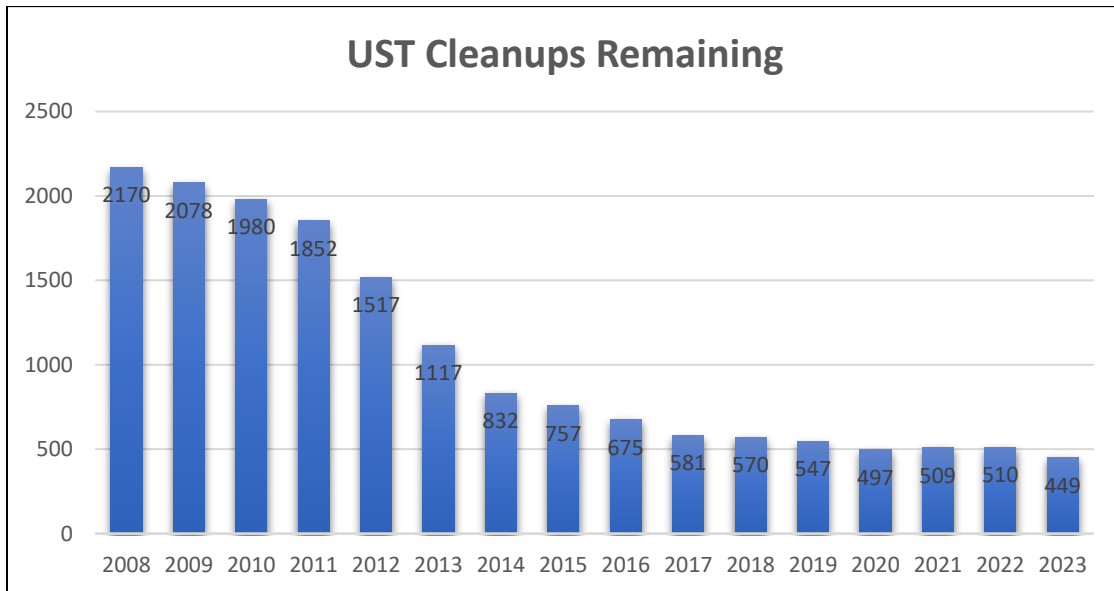


Figure 15: Underground Storage Tank Cleanups Remaining

The Claims and Payment staff manages the Petroleum Storage Tank Environmental Assurance Fund (PSTEAF). This staff approves applications, issues obligations for corrective action, and processes payments for reimbursement and third-party claims. Kentucky's UST Program requires that eligible companies, partnerships, and laboratories become certified through the UST Branch in order to have a contract or perform laboratory analysis for the tank owner or operator (applicant).

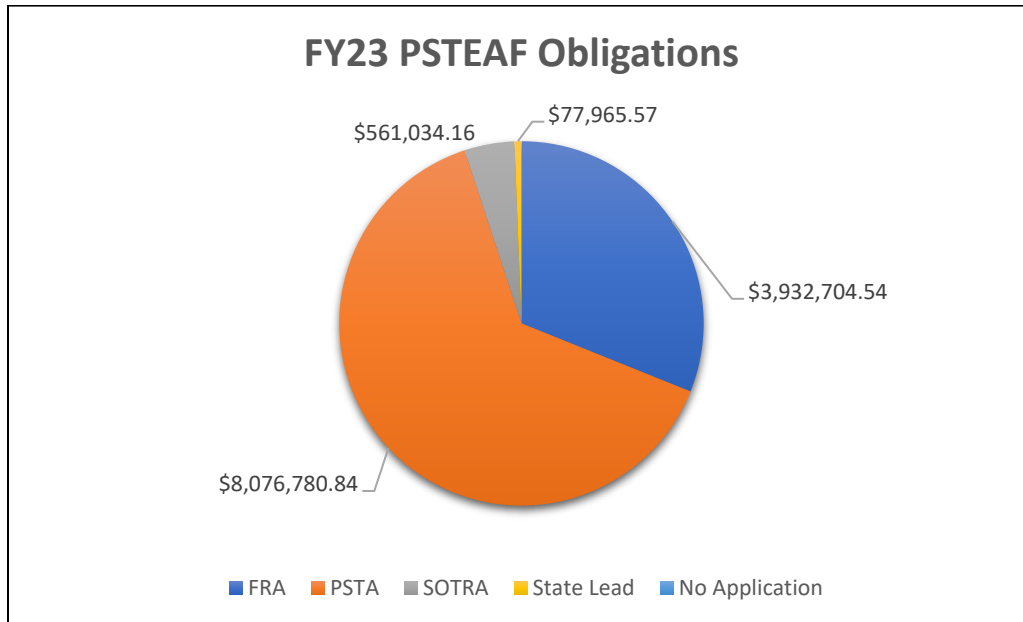


Figure 16: Petroleum Storage Tank Environmental Assurance Fund Obligations

In FY23, the Claims and Payment staff obligated a total of \$12,570,519.54 for Small Owner Tank Removal Account (SOTRA), Financial Responsibility Account (FRA), Petroleum Storage Tank Account (PSTA), State Lead projects, and sites without a current application. Claim reimbursements for completed work from all accounts totaled \$12,357,556.04. Upon report approval, claims were reviewed and approved within an average of twenty-one (21) days.

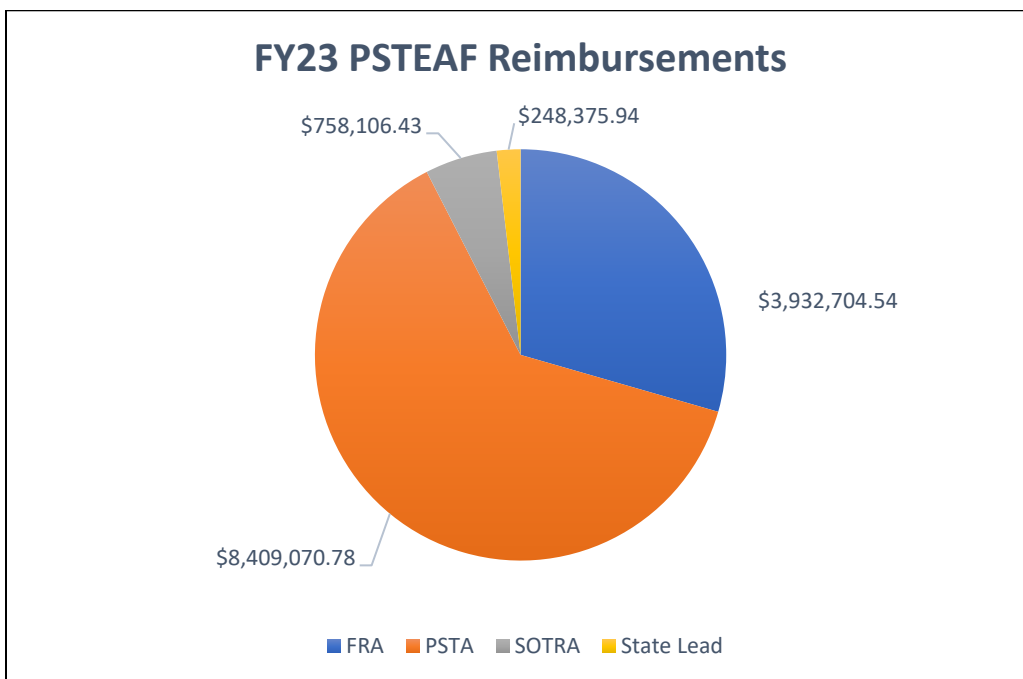


Figure 17: Petroleum Storage Tank Environmental Assurance Fund Reimbursements

UNDERGROUND STORAGE TANK HIGHLIGHT

TAKING ENVIRONMENTAL JUSTICE A STEP FURTHER

With the addition of the Environmental Justice requirement to the EPA grant, the UST Branch initiated a program to address Temporarily Out of Service tanks (TOS), focused on identifying and removing abandoned tank systems.

All TOS systems will be identified and the tanks that pose the greatest risk to human health and the environment will be prioritized. Criteria used to categorize the TOS systems include tank material, tank age, type of corrosion protection, compliance with corrosion protection requirements, and length of time in TOS. Once categorized, the UST Branch will communicate with property owners to evaluate and ensure that tanks are pumped to less than one (1) inch of product; if the property owner does not comply, a contractor will be hired to have the product removed.

Additionally, the UST Branch will educate these tank owners about SOTRA, a program which provides reimbursement to lower-income small business owners for tank removal activities. This reimbursement account provides assistance for those tank owners with financial hardship.

The UST Branch is also applying the EPA's Environmental Justice screening criteria to existing SOTRA applications to determine if they fall within an environmental justice area and, if so, will prioritize these applications. In regard to TOS systems, UST has identified 13 tank systems with potential environmental concerns. Three of the 13 tank systems that have been inspected contain product/water mixture. These three cases were referred to the Emergency Response Team to hire a contractor to remove the immediate concern.

EMERGENCY RESPONSE

There six dedicated staff to operate and coordinate the activities of the Emergency Response Team (ERT). Their tasks include:

- Responding to environmental emergencies;
- Staffing the State Emergency Operations Center during activations;
- Coordinating with federal and local government partners in development of response plans and exercises;
- Overseeing the many training needs and requirements and ensuring they are complete;
- Conducting time critical removal projects;
- Assisting the Department, as needed, with other projects;
- Purchasing, maintaining, and calibrating all equipment;
- Reviewing and revising ERT procedures and plans.

ERT is comprised of personnel from the Division of Waste Management (DWM), Division of Water (DOW), and Division for Air Quality (DAQ). The ERT's main responsibility is to respond immediately to any and all emergency events that threaten public health or the environment.

RESPONSES

ERT conducted 442 emergency responses in FY23. This included, but was not limited to, emergency responses to petroleum pipeline failures, marine tanker barge incidents, underground storage tank petroleum releases, facility fires and spills, oil and gas production incidents, and natural disasters.

The catastrophic flood event that impacted Southeastern Kentucky resulted in devastation across 12 Kentucky counties. A total of 31 ERT personnel from across the state provided support for emergency response activities associated with this natural disaster, including the coordination of assessing regulated facilities and release response efforts for impacted areas. ERT maintained permanent staffing in the State Emergency Operations Center (SEOC) to assist with emergency response actions related to flood-damaged drinking water, wastewater systems, and hazardous materials. ERT mobilized environmental emergency contractors to collect approximately 3,388 orphaned hazardous material containers from approximately 314 miles of watershed features and conducted three separate emergency spill response actions, which occurred as a result of the flooding. ERT staff also collected raw water samples at each water treatment plant following the flood and conducted in-field chemical analysis using a mobile GC/MS. Additionally, ERT staff aided in the distribution of potable water and portable drinking water treatment systems to critical infrastructure facilities and communities by procuring supplies and components required to restore water treatment system services.



Photo 13: Southeast KY Flooding – Spill Response

TRAINING

On-scene responders and coordinators are required to complete training courses regarding many different safety, environmental, emergency response, and incident command topics. Many of these training courses include hands-on technical training and practice exercises, such as the oil spill response training conducted by the United States Environmental Protection Agency in Erlanger, Kenton County. ERT also developed and

utilizes a six-part series of training modules for new On-Scene responders that incorporate both virtual and in-person lessons.



Photo 15: Monthly O&M and Training on Emergency Monitoring Equipment

EQUIPMENT

Keeping supplies and equipment fully stocked and operational for emergency response is a huge undertaking. Many supplies for response actions must be immediately available and will be utilized completely during a large emergency such as containment boom and absorbent materials. These must be replaced as soon as possible to prepare for the next emergency.

Equipment must also be maintained, calibrated, and exercised so that it is ready to be used at a moment's notice. ERT uses a remote water quality and petroleum monitoring buoy system to allow for real time assessment of petroleum plume migration along a flowing waterway. The team also uses an additional mobile GC/MS unit on loan from the Jefferson County Fire Department. Hazardous material monitoring and assessment equipment is now staged in two locations, Frankfort and Owensboro, providing an increased efficiency for both equipment deployment and performance of monthly maintenance and training.

Other assets, such as the mobile command post, mobile environmental monitoring trailer, watercraft, equipment trailers, generators, high volume water pumps, and UTVs also must be regularly maintained and repaired to ensure the equipment is fully operational and ready for deployment when emergency mobilization is required.



Photo 16: Maintenance of Solar and Propane Support Trailer

DRONE USAGE

ERT has access to multiple drones outfitted in unique ways through partnership with FOB. Drones with cameras give personnel the ability to see events occurring in potentially dangerous locations in real time without jeopardizing their safety, as well as the capability of recording video and photos for future review. They give incident coordinators a “big picture” view of the event area to allow for better decision making. Drones equipped with thermal imaging can assist coordinators in identifying “hot spots” during landfill fire response actions. The hazardous air pollutant monitoring drone carries a hazardous air pollutant sampling pump into contaminated air. The results can be analyzed within minutes to identify the contaminants and their concentrations. This information allows for informed decisions to be made to keep the public and first responders safe. The water sampling drone carries bailers to remotely collect water samples from locations where people cannot safely, or timely, access. Thanks to drones, multiple samples can be quickly collected from remote or unsafe locations without putting people in hazardous conditions.



Photo 17: EEC Drones Displayed for Demonstration

DRONE CAPABILITIES

Drones used by DWM include the DJI Mavic Pro 2, which has a five-mile travel range and can reach a speed of up to 45 mph. The DJI Matrice 300 RTK can travel 9.3 miles and reach a speed of 51 mph. The DJI Phantom 4 RTK Multispectral drone has a six-sensor camera that captures images that are used to evaluate soil moisture, plant health and growth of Harmful Algal Blooms (HABs).

MULTIPLE RESPONSE TYPES

The ERT Branch responds to many types of emergencies. In each case, the team must determine the best way to handle each situation to protect human health and to mitigate impacts to the environment. These emergencies may be caused by severe weather, such as ice storms, tornados, or flood events, or can be a result of manmade origin, such as commercial chemical transportation incidents, industrial facility fires or spills, petroleum pipelines failures, and oil and gas production incidents.

On March 28, 2023, one such manmade emergency occurred when ten barges broke free on the Ohio River, above the McAlpine Dam, resulting in three of the barges becoming lodged against the dam, including a barge loaded with 420,000 gallons of methanol. ERT deployed staff to act as the State On-Scene Coordinator (SOSC) within the established unified command incident response organizational structure. ERT utilized watercraft to obtain downstream water quality data and samples during the event and also utilized a drone to assist the unified command staff and salvage contractor in assessing the structural integrity of the lodged methanol barge.



Photo 18: McAlpine Dam – Methanol Barge Incident

Earlier in the 2023 calendar year, ERT dispatched personnel to a petroleum pipeline failure in a rural area of Christian County with a reported release of 36,498 gallons of trans-mix (diesel and gasoline mixture). ERT staff served as the SOSC within the unified incident command, and ERT air monitoring and surface

water monitoring teams and equipment were deployed to quickly assess impacts to the Buck Fork River and potential atmospheric exposure to the nearby residences. Numerous water and air samples were collected and analysis was performed using the mobile GC/MS which provided near real-time data that was utilized by incident command to direct operations.



Photo 19: BP Pipeline Incident

ACKNOWLEDGMENTS

Commonwealth of Kentucky

Governor Andrew B. Beshear

Energy and Environment Cabinet

Secretary Rebecca Goodman

Kentucky Department for Environmental Protection

Commissioner Anthony R. Hatton, P.G.

Deputy Commissioner Amanda W. LeFevre

Kentucky Division of Waste Management

Director Tammi Hudson, P.E.

Assistant Director Gary Logsdon

This annual report is intended to provide a concise set of facts and measurements to support environmental decision-making. We welcome your questions and comments to:

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