

# Division of Waste Management



## Energy & Environment Cabinet

Our mission is to provide regulatory guidance, environmental awareness and implement an energy strategy that will bring economic benefits to the Commonwealth while protecting the environment and improving the quality of life for Kentucky businesses, workers and the public in general.

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## EXECUTIVE SUMMARY

Dear Reader,

*On behalf of the Division of Waste Management (DWM), I am pleased to present the 16<sup>th</sup> edition of our annual report. This report highlights division activities and accomplishments for the 2021 Fiscal Year (FY21) (July 1, 2020, through June 30, 2021). Thank you for taking time to read this report of the important achievements the staff have accomplished during this period.*

*The division faced a few challenges due to the continued presence of Covid-19. While the pandemic persistently challenged our efforts, staff quickly adjusted and never stopped working to preserve and restore Kentucky's land. The dedication of the administrative staff, scientists, specialists, geologists, and engineers, and the unflinching effort within each of the eight branches of the division was steadfast before my appointment as Director in September 2020.*

*When the winter and spring storms in FY21 brought natural disaster to many counties, DWM personnel provided onsite assistance to multiple county cleanups and funded nearly \$745,000 in grants for collection and disposal of debris. During the year, Field Operations Branch staff completed a total 8,330 inspections and investigations across the Commonwealth. The Underground Storage Tank Branch applied for and received State Program Approval from EPA giving Kentucky the lead role in program enforcement. Recycling and Local Assistance Branch staff worked with 20 counties to remove 120 dumpsites. The Hazardous Waste Branch and Solid Waste Branch improved permitting with eForms and electronic submittal processes. Staff within the Program Planning and Administration Branch worked in the office during off-hours and weekends to minimize potential risk of Covid-19 while processing payments received via paper checks. Our Emergency Response Team is on call 24-7-365 and responded to more than 500 requests for assistance.*

*One of my favorite articles in this year's report is the Superfund Branch's work with the Louisville Urban League to redevelop a former industrial site. The "once-vacant West End block" of Louisville is now the new Norton Health Care Sports and Learning Center – a world-class facility that is recognized by local, regional, and national track and field communities <https://slc.lul.org/about>.*

*Over the years, we have gained more awareness that protecting our environment is inclusive of realizing the limit of natural resources. We continue to become better at recycling and reusing, improving technology, and passing our knowledge to the next generation. The catch phrase for being protective of the environment was once "from cradle-to-grave" but is now "circular". The words are different but the meaning is similar – we have the responsibility to pay it forward.*

*Tammi Hudson, Director.  
Kentucky Division of Waste Management*

## PERSONNEL AND FUNDING

### 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 1). 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.

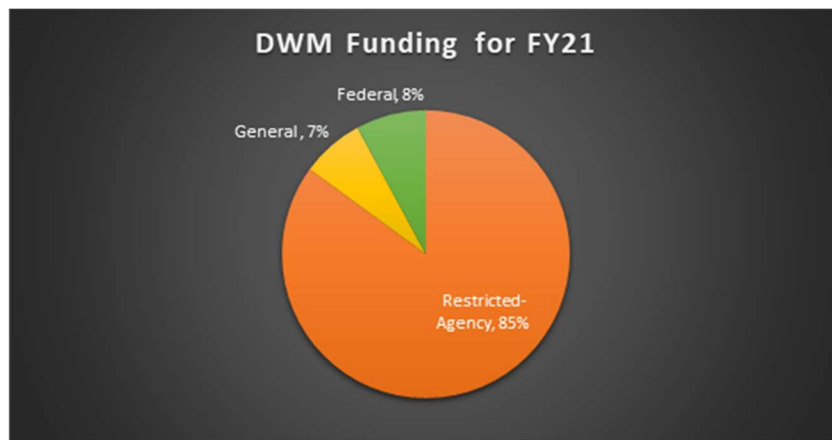


Figure 1: Division of Waste Management Funding Sources

### PERSONNEL

The division's FY2021 budget supported the employment of 238 full-time positions (Figure 1). However, the average number of filled positions within the division in FY21 was 224. This was due in part to a position reduction initiative that resulted in 8 full time positions lost. Reductions in personnel positions and rehiring turn-around time continue to challenge the division when addressing and evaluating program priorities and efficiencies. (Figure 2).



Figure 2: Division of Waste Management Funded Positions

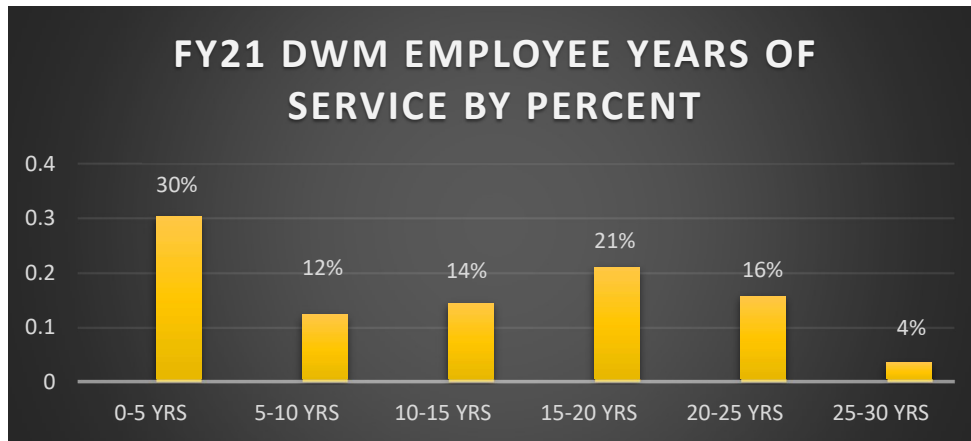


Figure 3: Employee Years of Service by Percent

### PERSONNEL SUPPORT

The division provides support to its personnel by identifying needs and providing tools for staff to accomplish their jobs. Some examples are 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.

### FEDERAL FUNDS

Currently, the DWM receives funding from a total of 15 federal grants and cooperative agreements. Federal funds make up approximately 8% 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 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 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 permitting program and the Comprehensive Environmental Response, Compensation and Liability Act.
- 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.
- 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. Resource Conservation and Recovery Act 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 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 identify 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 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.
- 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

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

### LEGISLATION:

During the 2021 Legislative Session, staff completed 29 bill reviews, which involved evaluating and commenting on how the proposed bills might affect the DWM at structural or fiscal level.

### ADMINISTRATIVE REGULATIONS:

The regulation 401 KAR 39:060 establishes the general requirements for hazardous waste management systems. It was amended to revise and add additional waste codes for the treatment and disposal of nerve agent munitions. This administrative regulation was filed with LRC and is scheduled to become effective October 5, 2021. All administrative regulations related to DWM are listed on the Legislative Research Commission website at <https://apps.legislature.ky.gov/law/kar/TITLE401.HTM>.

### REPORTS:

The Waste Tire Trust Fund (WTF) CY2020 Annual Report was submitted in January 2021, 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 website, at <https://eec.ky.gov/Environmental-Protection/Waste/Pages/division-reports.aspx/>.

During FY21, staff prepared the Division's Strategic Operational Plan and mid-year status updates of planning initiatives for CY2020. Staff also reported in EPA's FY2021 Grant Workplan Priorities and Commitments, and Mid-Year Update Reports to meet requirements for federal grants.

## COMPLIANCE AND INSPECTIONS

DWM performs inspections at sites managing solid waste, hazardous waste, Underground Storage Tanks (USTs), and polychlorinated biphenyls (PCBs). The primary duty of regional staff is to inspect regulated facilities for compliance. The Field Offices include the Frankfort central office, Richmond satellite office, and 10 regional offices located throughout Kentucky. The regional staff is familiar with the local waste management issues and responds to questions and concerns.

During FY21, the Field Office staff (FOS) conducted 5,636 total inspections of UST, solid waste, and hazardous waste facilities. This was a decrease of 5% compared to inspections completed in FY20. This is attributed to the limitations of in-person and inside-facility inspections during the months of July 2020 through February 2021 due to the COVID-19 pandemic.



	Inspections FY21	Inspections FY20	Compliance Rate FY21	Compliance Rate FY 20
<b>UNDERGROUND STORAGE TANKS</b>	3037	3085	57%	54%
<b>HAZARDOUS WASTE</b>	1089	1351	80%	80%
<b>SOLID WASTE</b>	1510	1532	68%	65%

Table 1: Summary of Inspections

The staff inspectors worked with facilities, and implemented creative ways to complete virtual inspections during the pandemic, but hazardous waste inspections were much lower from August, November, and December as COVID-19 cases surged and locations placed limitations on entry into their buildings. Overall, all compliance rates appear to be trending up or remaining steady. Below is a breakout of the inspections for FY21. FOS also completed 2694 investigations in addition to compliance inspections.

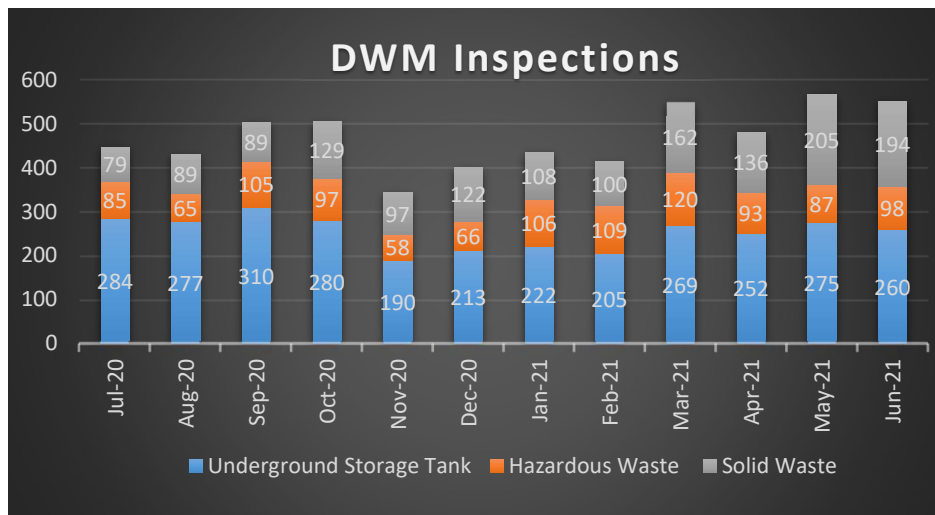


Figure 4: Division of Waste Management Inspections

- The total number of UST inspections were approximately the same as FY20. UST compliance rates<sup>1</sup> stayed in the mid to upper 50<sup>th</sup> percentiles, but trended upward, ending with an overall increase of 3% from the previous year at 57%. UST Notices of Violations increased from FY20 by 29%.
- Hazardous waste inspections decreased of 20% from the previous year. The decrease in inspections is attributed to the in-person/in-building inspection limitations implemented to slow the spread of COVID-19. The compliance rate for hazardous waste facilities averaged at 80% remaining the same as FY20.
- Solid waste inspections were approximately the same as the previous year. This reduction is attributed to the continuation of the COVID-19 pandemic. The average compliance rate for solid waste facilities was at 68%. Compliance rates increased by 3% from FY20.

<sup>1</sup> "Compliance Rate" means the percent of total inspections where an inspector noted that no violation had occurred. This does not include investigations triggered by citizen complaints.

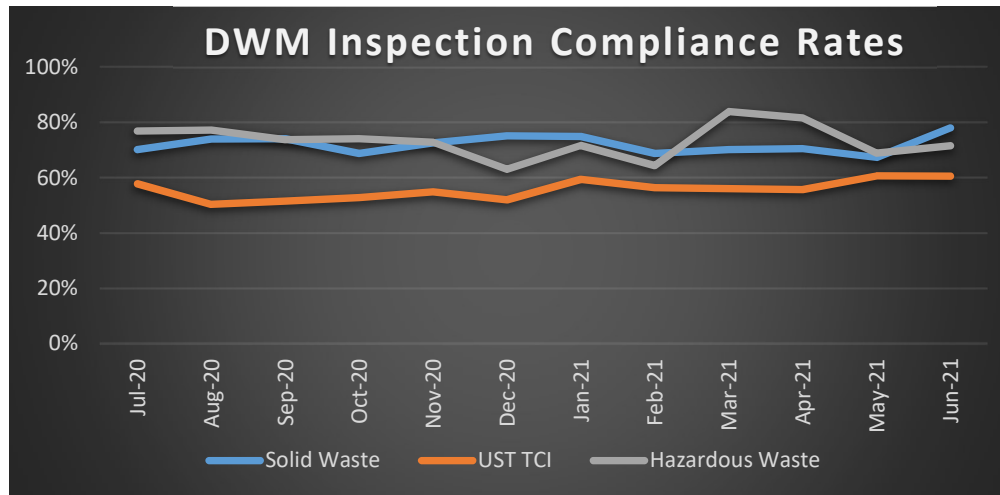


Figure 5: Division of Waste Management Inspection Compliance Rates

## FIELD OPERATIONS BRANCH HIGHLIGHT

### WORKING WITH TECHNOLOGY:

The Division of Waste Management’s Field Operations staff (FOS) tackled many hurdles during the past year due to the COVID-19 pandemic. Not only the social aspects that everyone around the world was feeling (isolation and contact restrictions) but also challenges to keep workflow consistent, accomplishing work tasks such as inspections and report writing that require access to internal databases.

When the Governor’s Work-at-Home mandate was initiated and the DWM transitioned from an in-office presence to 100% telework, FOS inspectors already had the tools to work effectively from the field without needing an office. In years leading up to the pandemic, the DWM had been investing in technology upgrades to make the inspection staff more mobile and flexible in the field. Those upgrades included mobile workstation tablets, cellular telephone hotspots for quick database access from anywhere, and Virtual Private Network accounts to ensure database work was safe and secure. In addition to these upgrades, mobile printers were assigned to inspection staff to help with job completion in the field. With all the technology in place, the Field Operations Staff were able to conduct inspections and produce reports without any downtime or lapse due to the “work from home” mandate. Staff have easily transitioned back to an in-office presence, and the FOS continue to use the tools we already have in place to ensure the protection of human health and the environment.



Photo 1: Field Office Staff performing inspection

## 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 Statutes Chapter 224](#) and [Kentucky Administrative Regulations Title 401](#).

- The hazardous waste program includes facilities that generate hazardous waste, those that treat, store and/or dispose of hazardous waste, as well as 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 for disposal household, commercial, and industrial waste.
- Special waste is a subset of solid waste specifically defined by KRS 224.50-760, and examples include 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 treatment, storage, and disposal facilities (TSDF) permitted in Kentucky. There are approximately 2,500 generators of hazardous waste registered in Kentucky as large, small or very small generators.

Hazardous Waste Branch has continued to make progress in meeting Environmental Indicators (EIs), which are measures developed by the EPA to track remediation achievements. The most significant indicators include “Remedy Constructed”, “Performance Standards Attained” and “Ready for Anticipated Use.” The ultimate goal indicator is “Corrective Action Process Terminated” which is considered 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.

#### ENVIRONMENTAL INDICATORS DETERMINATIONS COMPLETED:

In FY21, three EIs were completed, which involved the evaluation and documentation of the meeting of certain requirements such as selection and/or implementation of remedial measures, achievement of clean up goals, institutional controls put into place, or overall performance standards attained. These included two “Ready for Anticipated Use” and one “Performance Standards Attained”.

Staff also continued to conduct groundwater monitoring program inspections and assessments, and completed a total of 13 groundwater monitoring inspections during FY21.

#### PERMITS REVIEWED/RENEWED/ISSUED:

For the Federal Fiscal year 2021, ending September 30, 2021, DWM committed to three Permit Renewals for TSDFs. As of June 30, 2021, two of those renewals were completed. Two others were on public notice

and on schedule for completion before the end of the Federal Fiscal year. This will be an accomplishment of four renewals, exceeding Kentucky's commitments for funding.

Staff in the Permit Review and Corrective Action Section also completed three permit modifications, public participation process for two permit renewals, and initiated the public notice process for two additional permit renewals.

#### BLUEGRASS ARMY DEPOT (BGAD):



Photo 2: BGCAPP Aerial View

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) and VX nerve agents, and H mustard (blister agent). A large industrial plant, called the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) was constructed on the BGAD facility to destroy the chemical weapons.

It is the responsibility of DWM to ensure that all regulatory and safety requirements are met under BGAD's hazardous waste permit. Over 30% of the entire BGAD stockpile has been destroyed as of August 13, 2021. The remaining weapons are VX projectiles, VX rockets, GB rockets, and the remainder of the H-mustard projectiles.

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, the detail of arising issues continue to be worked out during systemization, requiring a large number of permit modifications. During FY21, the division issued 47 permit modifications to the facility, including four Class 3 modifications undergoing full public participation periods with two Virtual Public Meetings held through Microsoft Teams format. Because of the complexity and short deadlines within the project, working together as a team with the Army and contractors has been critical to success. The Army is obligated under treaty and funding deadlines to complete destruction of all chemical weapons by the end of CY2023.

#### PADUCAH GASEOUS DIFFUSION PLANT:

The C-400 building site at the Paducah Gaseous Diffusion Plant in Paducah is the main source of 2 four-mile long Trichloroethene (TCE) ground-water contamination plumes, commonly identified as the Northeast and Northwest Plumes. The groundwater plumes are the largest known sources of contamination at the site and are therefore the main risk to human health and the environment. In order to clean up contamination at PDGP, a comprehensive investigation is being conducted to define the extent of contamination. This is needed to set the parameters necessary to evaluate and choose the most effective treatment options.

Initial field activities at the C-400 building site included gamma walkover surveys, redevelopment of existing monitoring wells, obstacle removal at designated sampling locations, and ground survey marking of drill locations and underground utilities. Installation of new monitoring wells began on March 3, 2020. Four

monitoring wells were installed at three locations prior to the suspension of field activities on March 24, 2020 due to the COVID-19 pandemic. Cleanup progress at the site is made possible, in part, by active participation by site stakeholders, regulators, workers, elected officials, and other members of the public.

### HAZARDOUS WASTE HIGHLIGHT

#### BGAD and COVID:

During FY21 the Hazardous Waste staff showed a dedication to completing program commitments in the face of unprecedented circumstances. The Blue Grass Army Depot's Chemical Weapons Demilitarization project continued to operate even amongst global shutdowns and steady progress was realized. Permits continued to be shared through public participation and comment periods in new ways as we adapted to quarantine conditions. Forms and applications underwent changes to standardized federal forms and were brought into a new technology era – with fully electronic payments, submittals and communications with immediate results now possible.



Photo 3: BGCAPP Destruction Progress

### SOLID WASTE DISPOSAL FACILITIES AND METRICS

Solid waste includes household, commercial, and industrial waste. Construction and operation permits are issued by based on information provided by the applicant and verified by Solid Waste staff. Regulatory Time Frame (RTF) is the allowed 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 FY21, the solid waste staff approved 112 permitting actions, and 107 (96%) were within the RTF.

- Over the past five years, staff have completed an average of 94% of permit application review approvals within the RTF.
- At the end of FY20 there were 74 pending actions and of those, nine exceeded the RTF which increased the actions required for FY21.

In addition, staff issued 16 denials for solid waste permitting activities, 8 withdrawal final actions, and 16 approvals for the closure and termination of solid waste permitted activities. Staff also coordinated the issuance of 17 public notices.

Solid Waste landfills submit waste quantity reports to the division on a quarterly basis. The table below summarizes the tonnage of waste received by 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
2Q 2020	1,639,149.70	224,984.8	13.7%	11,318.14
3Q 2020	1,650,777.2	224,300.2	13.6%	6,051.76
4Q 2020	1,660,642.8	210,636	12.7%	14,822.03
1Q 2021	1,528,358.6	194,309.3	12.7%	3,185.93

Table 2: 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 136 landfill disposal facilities of various types with active permits. Staff also issues 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: landfarms use waste to promote soil structure and fertility; and composting and sludge giveaway operations distribute processed waste for use. There are 86 special waste beneficial reuse facilities and at least 40 solid waste facilities authorized for beneficial reuse. There are 29 sites with active compost permits, 26 sites with active landfarm permits, and 36 sites with active sludge giveaway permits.

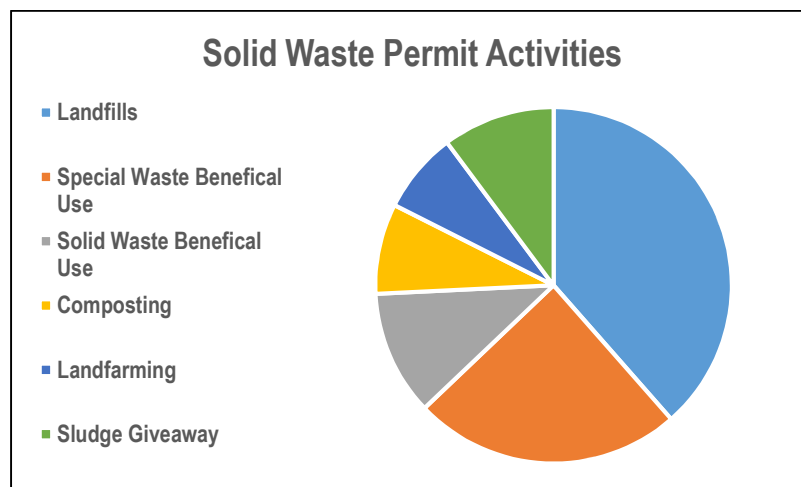


Figure 6: Solid Waste Permit Activities by Type

**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 disposal

facility. 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			
2020 2 <sup>nd</sup> Quarter	2020 3 <sup>rd</sup> Quarter	2020 4 <sup>th</sup> Quarter	2021 1 <sup>st</sup> Quarter
\$2,676,092.44	\$2,931,952.63	\$2,806,612.51	\$2,564,039.41

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.

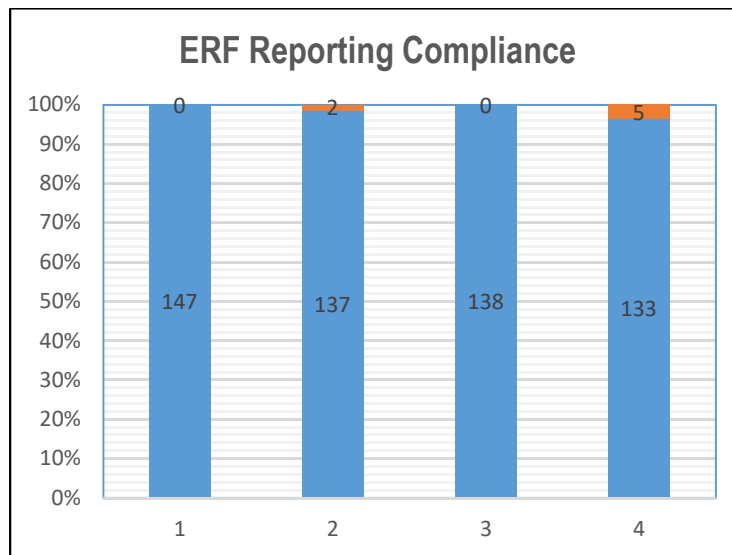


Figure 7: Environmental Remediation Fee Reporting Compliance

Solid waste facilities paid \$705,000.00 in FY21 in addition to the ERF. Of that, \$150,000.00 was collected for 44 solid waste and special waste permitting actions, and \$555,000.00 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 fees.

#### HISTORIC LANDFILL SITES:

A total of 99 historic landfills have been closed through construction and remediation projects or by no further action due to intensive site studies, and 522 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.

On July 20, 2020, staff began work at the Johnson County Landfill (A in the photo below) project. The historic landfill was closed under pre-1992 regulations and was hauling by truck 56,000 gallons per year of leachate to a wastewater treatment plant. The division developed a plan to improve the leachate collection system and construct a sewer line to the Honey Branch wastewater treatment plant (B in the photo below). The remedy consists of approximately 5240 linear feet of force main, 21,290 linear feet of gravity line, 86

manholes, in addition to air release valve assemblies, creek crossings, and electrical control panels with canopies. While installing the new sewer line, the county partnered with DWM and citizens to eliminate 48 straight pipes through the community of Van Lear by hooking onto the newly constructed sewer line. Construction is currently 90% complete and the estimated cost is \$3.3M.

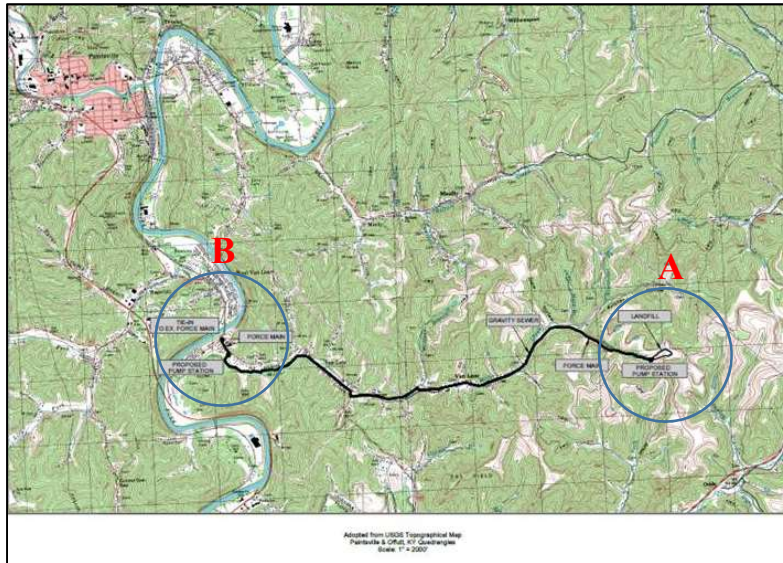


Photo 4: Johnson County Project

#### 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 77 facilities required to monitor groundwater, 19 are in groundwater assessment (25%).

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 six facilities (8%).

#### HERRINGTON LAKE REMEDIATION

The division continues to work with Kentucky Utilities and the local community to remediate the impacts from legacy storage of Coal Combustion Residual (CCR) on Herrington Lake and its aquatic life. In FY21 the division reviewed and approved the Facility's Corrective Action Investigation, Source Assessment, and Risk Assessment Report (ISARA) as required by an Agreed Order between the Utility and the Energy and Environment Cabinet. The ISARA Report has shown improvements in water quality resulting from the closure of the legacy CCR impoundments, dry-handling of CCR material, and through capture and treatment of impacted groundwater prior to it reaching the Lake. The division issued a Public Notice and held a Public Hearing on the report's findings, received input from local citizens and environmental groups, and considered the provided comments in its decision to approve the report. This action will be followed by the Utility proposing further remedial actions in a Supplemental Remedial Measures Alternatives Analysis which will propose final actions to ensure protection of human health and the environment.



## SOLID WASTE HIGHLIGHT

### NEW eFORM #203:

The Solid Waste staff implemented the use of a new eForm. The eForm, #203, is designed to facilitate any submittal related to the Solid Waste Branch regulatory program. The first conceptual meeting took place on February 1, 2021, and staff immediately went to work developing, testing, marketing, and implementing the new eForm. The quick and coordinated response of the team allowed for the first submittal on February 15, 2021. Unlike the previous two eForms for the program, the functionality of this eForm is broad, and it has been widely accepted by the regulated community. Since implementation the eForm has been used for an array of submittals, including various application types, compliance reports, annual surveys, progress reports, and notifications. As of August 8, 2021, the platform for this eForm successfully processed 375 submittals; this included 79 unique users from the regulated community. All feedback has been positive, including comments that the instructions are concise and clear, and the pre-population of some of the fields makes completion quick and easy. The benefits include an expedited processing of actions, reduction of paper, increased submittal quality, and reduced cost.


 <p>Energy and Environment Cabinet Department for Environmental Protection Division of Waste Management</p> <p><small>(*) indicates a required field. (✓) indicates a field may be required based on user input or is an optionally required field</small></p>	<p style="text-align: center;"><b>Solid Waste Branch Submittal Form</b></p> <p>Please use this eForm to submit applications or reports to the Solid Waste Branch. It may be utilized by those sites required by regulation (401 KAR Chapters 45, 46, 47, and 48) or by statute (Kentucky Revised Statute Chapter 224) to submit applications, registrations, or compliance reports.</p> <p><b>Please do not combine multiple submittals in one eForm submittal; each permitting action or compliance report should be a unique eForm submittal. For example, please do not submit a minor modification for a landfill and a new tire application with the same eForm. You may submit multiple eForms for the same site on the same day if needed.</b></p> <p>If you have any questions regarding the submittal of this eForm, please contact Ms. Teresa Osborne or Ms. Jamie Nielsen in the Solid Waste Branch. Contact Jamie at <a href="mailto:Jamie.Nielsen@ky.gov">Jamie.Nielsen@ky.gov</a> or at (502)782-6426. Contact Teresa at <a href="mailto:Teresa.Osborne@ky.gov">Teresa.Osborne@ky.gov</a> or (502)782-6115.</p>
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Photo 5: Form Instructions

## 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 CY2020 (the most recently available data) was 26.9 percent, significantly lower than the 2019 rate of 31.7 percent.

There are several likely factors in the declining calculated recycling rates for 2020. First, commodity markets have been weak for several years, and lack of markets and low commodity prices cause county level recycling operations to struggle. Second, disruptions caused by the COVID-19 pandemic have continued to adversely affect recycling programs. Finally, although staff made a concerted effort to review, evaluate, and improve data collection and analysis during the past year, more work is needed to ensure that county level recycling information is provided in a consistent and reliable manner in order to achieve the highest level of confidence in the calculated recycling rate.

It does appear that markets for some commodities, including fiber and plastics, are on the uptick, which could have a positive effect on local recycling operations and increase the overall recycling rate going forward. New plant expansions in KY, such as Pratt Industries proposed \$400 million recycled paper mill and corrugating facility in Henderson, will increase the demand for recycled fiber materials and improve future market conditions.

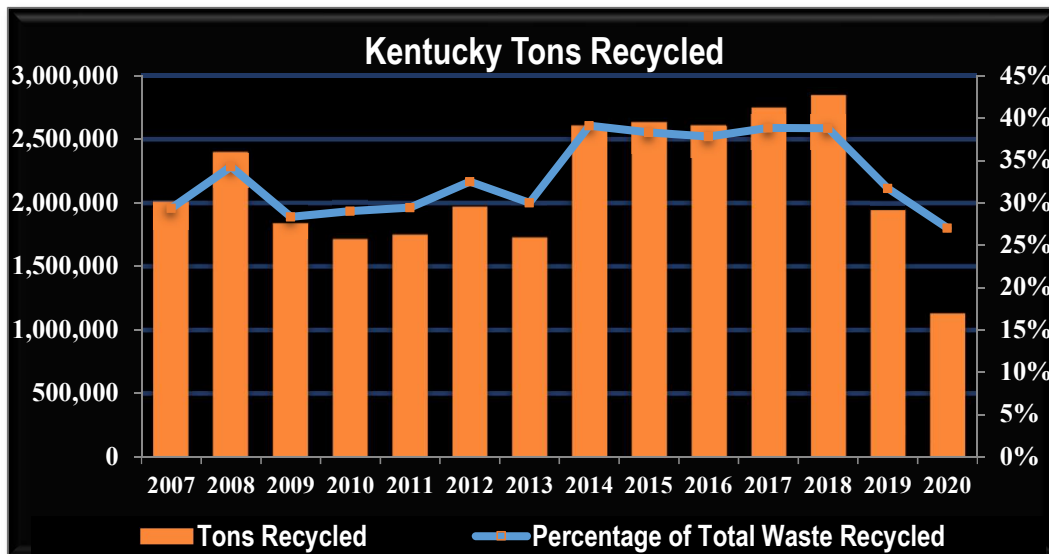


Figure 8: Kentucky Tons Recycled

## MARKET CONDITIONS

- Fiber commodities began their recovery in 2020 and cardboard, sorted office paper, sorted white ledger, news, and sorted residential prices have all continued to increase throughout this past year.
- Prices for most plastic grades have measurably increased. Global plastic markets influence petroleum prices; recent higher petroleum prices have inflated production costs of virgin material causing a surge in recycled plastics values to surge.
- Residential amber, clear and green glass recycling values remain unchanged due to single stream and curbside collections that often result in cross contamination of materials significantly diminishing increased market potentials.
- Most ferrous and non-ferrous metals prices remained low during the period of 2020-2021 but compared to many other commodities, still have decent markets. Scrap steel (including white goods, i.e., appliances), steel cans, aluminum, and copper bearing scrap continued to be in demand, and are very dependent on economic conditions. Most of these items require little or no processing, which makes them valuable additions to a community recycling program. White goods prices tend to have very little volatility. Aluminum prices have shown a steady increase for this past year.

## 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 WTTF 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 2020 and spring of 2021, waste tire collection events were conducted in the counties comprising the Buffalo Trace, FIVCO, Cumberland Valley, and Gateway Area Development Districts (ADDs). Events scheduled for KY River ADD counties were postponed due to the COVID-19 pandemic. These postponements resulted in a significant decrease in total tires collected. The equivalent of 217,293 waste tires were recovered through the FY2021 collection events at a cost of \$343,323.

#### CRUMB RUBBER/TIRE DERIVED PRODUCTS GRANT:

In 2021, the Division awarded 19 grants totaling \$529,800 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 2021 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 2021, the Division has awarded 529 grants totaling over \$9.9 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: Pending (ex-officio)
- Manager of RLA Branch: Darin Steen (ex-officio)
- KY Department of Agriculture representative: Harlan Hatter
- Solid Waste Coordinators (2): Sherri McDaniel (Woodford Co) and Brian Miles (Grant Co)
- Mayor: Vacant
- County Judge/Executive: Shane Gabbard, Jackson County
- 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 FY2021 totaling \$502,497. 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 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 2020 (the most recently available data), counties removed 368,681 bags of litter (an estimated 7,373,620 pounds) from 114,530.09 miles of Kentucky roadways at a total cost of \$6.04 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. During the COVID-19 pandemic, the number of bags removed, miles cleaned, and cost was less due to lack of workers to conduct the litter cleanups.

Litter collection is expensive, with an average cost of 65 cents per pound, or \$1,300 per ton, compared to an average landfill disposal rate of around \$42 per ton. Counties are encouraged to utilize some of their Grant funding 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 2020 (the most recently available data), counties cleaned 120 illegal open dumps at a cost of approximately \$1,030,675, and collected 5,685 tons of waste. The fifteenth round of grants was awarded in January 2021 for the remediation of 72 dumpsites at a projected cost of \$586,914. Since the Division's Open Grant program was updated in 2006, over 2,351 illegal open dumpsites have been addressed at a cost of \$23.7 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 FY2021, 78 entities were awarded grants totaling \$4.7 million. A total of 37 recycling grants and 13 composting grants were awarded to cities, counties, and universities. HHW grants were awarded to 28 counties in Kentucky, resulting the collection of over 300 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 115 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 20,417 tons of waste paper, generating approximately \$3.96 million in revenue.

In 2020 (the most recently available data), state employees recycled 796.4 tons of waste paper, generating more than \$92,000 in revenue. A decrease in tonnage and revenue in 2020 may reflect typical fluctuations in commodity prices over time, global developments such as China’s increasingly restrictive import policies, and market disruptions caused by COVID-19. Program revenue for 2021 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 6: Large Paper Shredder & Bailer at Paper Recycling Section warehouse in Frankfort*

### 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 202 tons of e-scrap in 2020. 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 1,462 tons of e-scrap collected in 2020. 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 was reintroduced by the division in the fall of 2020 as a quarterly release with a new look. Recycling articles of interest as well as relevant legislative or policy changing actions are featured in the newsletter. Commodity values continue to be shared with the recycling operations and stakeholders throughout the Commonwealth.



## RECYCLING HIGHLIGHT

### REINVIGORATING RECYCLING

In addition to the quarterly Marketplace newsletter, staff produce a weekly internal e-magazine with articles focused on recycling practices, trends, technological advances, and resource values. The articles have revealed technological advances in several recycling resource areas; chemical recycling, composting, and old corrugated cardboard (OCC).

The staff noticed upward trends in values and demands for several recycling streams, including plastics, OCC and composting. In response, the Division's recycling team developed a 12-question survey that was distributed to all counties, state universities, and several municipalities to determine the current and future plans for recycling programs. The survey will provide data that can be made accessible to companies via the Open Records Request act (ORR). Data specific to a company's needs may be selected and provided. The information will include factors such as the specific material, quantity, and contact information. Questions were included concerning willingness to regionalize efforts to minimize logistical challenges of product delivery.

## REMEDIATION AND ECONOMIC DEVELOPMENT

The Superfund staff ensure that contaminated sites are evaluated and remediated in a timely manner in order to reduce risks to human health and the environment. This may be accomplished by working with companies or individuals who take responsibility for contamination on their property. In other instances, the staff may take a direct role in cleaning up a site. This program handles oversight of cleanup of hazardous substances, pollutants, and contaminant releases and petroleum releases that are not from an underground storage tank.

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 soil and water impacted media, air vapors with the potential to migrate into dwellings are also considered. Chemicals with high vapor pressures can affect occupants of dwellings that have been constructed over and adjacent to prior chemical releases. When reviewing redevelopment plans and due to potential background effects, the vapor exposure pathway is assessed if future property use includes occupancy in a building.

There are currently 297 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. The obligations to continue management of controls to remediate the releases are indefinite. Therefore, the number of total managed sites in Superfund will continue to increase as new sites are approved for closure. A site can be removed from the managed site list if additional cleanup is performed to restore the site to safely allow for unrestricted residential use of the land.

In FY21, staff issued a total of 59 closures, but there remains 491 sites without an approved closure plan and 39 new sites added during the year.

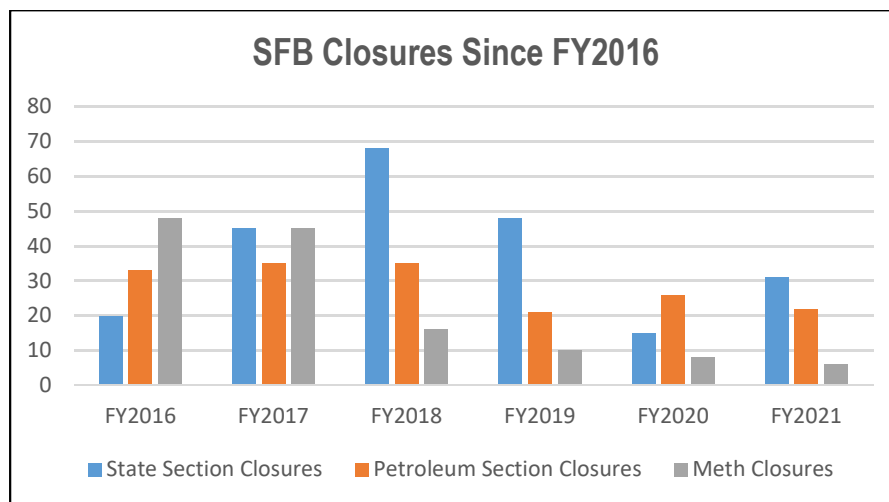


Figure 9: Superfund Program Closures

## PETROLEUM

Cleanup of petroleum releases from a source other than a petroleum storage tank provides an ever-increasing number of superfund sites. In FY21, 19 new petroleum sites entered the staff's workflow, and 18 sites were closed: nine of the new sites and nine historical sites. The current active site load is 64 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 division's Methamphetamine Lab Cleanup Program. Due to meth waste being toxic, 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 797 have been remediated. In FY21, there were not any contaminated residences reported.

## FEDERAL PROJECTS

The Superfund staff oversee federal projects that include CERCLA sites on the National Priorities List (NPL sites). Staff oversee work conducted under federal cooperative grants such as pre-remedial assessments and EPA's Hazard Ranking System evaluation, NPL sites' five-year reviews, and Phase I and Phase II environmental assessments for Targeted Brownfields applications in coordination with KDEP's Division of Compliance Assistance (DCA).

Under CERCLA (aka Superfund), a total of 20 sites in Kentucky were placed on the National Priorities List many years ago. As part of ensuring long-term protectiveness three NPL sites received the most attention over the past year: Caldwell Lace Leather; Lee's Lane Landfill; and A.L. Taylor (aka Valley of the Drums). Environmental sampling is ongoing at Caldwell Lace Leather to determine if the site is eligible for deletion. The assessment of Lee's Lane Landfill gas collection system was completed and system removal is anticipated. An Operations and Maintenance (O&M) plan for the gas collection system was developed and is near full implementation. For the A.L. Taylor NPL site, staff completed the state superfund contract and O&M plan.

Additionally, staff conducted five pre-CERCLA Screenings, two Preliminary Assessments, two Site Inspections, and one Expanded Site Inspection. These ten sites are Rank 1 - KDEP Superfund Site Ranking Initiatives that focus on former RCRA permitted facilities. Staff also conducted two Five-Year Reviews for National Southwire Aluminum and Green River Disposal. All of these sites mentioned require in-depth research and reporting as part of EPA grant obligations.

## STATE PROJECTS

Kentucky Superfund statutes require persons or parties responsible for contamination to investigate the extent and remediate or manage the contamination according to regulatory guidance. Sites requiring action to address contamination that are not associated with a financially viable responsible party are eligible to become state-lead sites. State Section staff allocate resources to collect environmental samples and to develop a strategy to remediate and/or manage the contaminants to restrict harmful exposure. The State Section provides oversight and guidance for these sites and their environmental activities.

There are over 200 state Superfund sites, and the staff oversee all non-federal superfund projects in Kentucky. These projects include ensuring regulatory compliance and guidance of responsible party lead investigations, remediation, and management of contaminated sites. In FY21, the State Section led and oversaw the closure of 31 sites. Six of the sites received clean, unrestricted closure and 25 were managed closures.

## RISK ASSESSMENT

In September 2020, the Superfund Branch's Risk Assessment area was finally staffed after nearly a year without a risk assessor. The employees have been busy reviewing several risk assessments including those associated with the CCMA Metals and Alloys facility located in Calvert City, Kentucky and the Bluegrass Army Depot located in Richmond, Kentucky. Staff are also re-evaluating potential risks associated with a managed closure site located in Mount Sterling, Kentucky.



## 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 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 the Division of Waste Management (DWM) and the Division of Compliance Assistance (DCA) work jointly to provide grant assistance and environmental assessment for redevelopment of properties for non-profit entities. Both DCA and DWM staff are trained to conduct environmental assessments known as Phase I assessments. These assessments are provided without charge to the non-profit. DWM staff can also provide further assistance by either performing or contracting Phase II work, which relies on verification sampling of environmental media. During FY21, staff were trained and conducted the first “in-house” Phase II Targeted Brownfield Assessment. By performing this work using DWM professional staff and equipment, the savings for the redeveloper is estimated to be ~ \$8,000.

The second program is for Brownfield Redevelopment. This allows prospective purchasers of property to utilize brownfield property that is environmentally impacted or perceived to be impacted, but not be held liable for cleanup of the property as an owner of an existing release. The redevelopment program requires the purchaser to certify that it has never been affiliated with prior property owners or caused or exacerbated releases on the property. Staff work with a redeveloper, a property management plan for a productive safe reuse of the brownfield is finalized, and the participating entity is not held responsible for prior releases while the plan is followed.

In FY21, two Targeted Brownfields Phase II Assessments were conducted. Multiple other sites have been reviewed and technical assistance was provided for recipients of various EPA 128(a) Brownfields Grants. Additionally 50 Brownfield sites were reviewed in accordance with KRS 224.1-415, 32 Notice of Eligibility letters issued, 36 Notification of Concurrence letters issued, and four sites were pending review at the end of FY21.

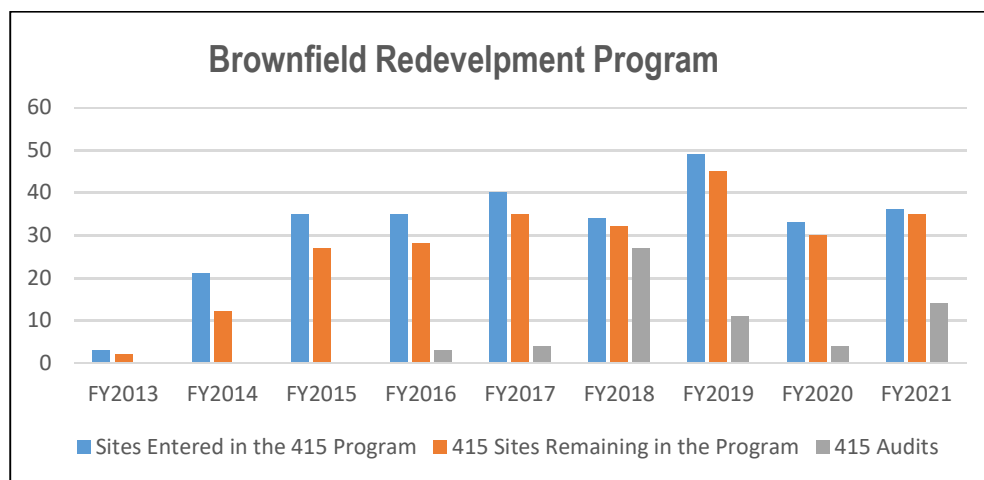
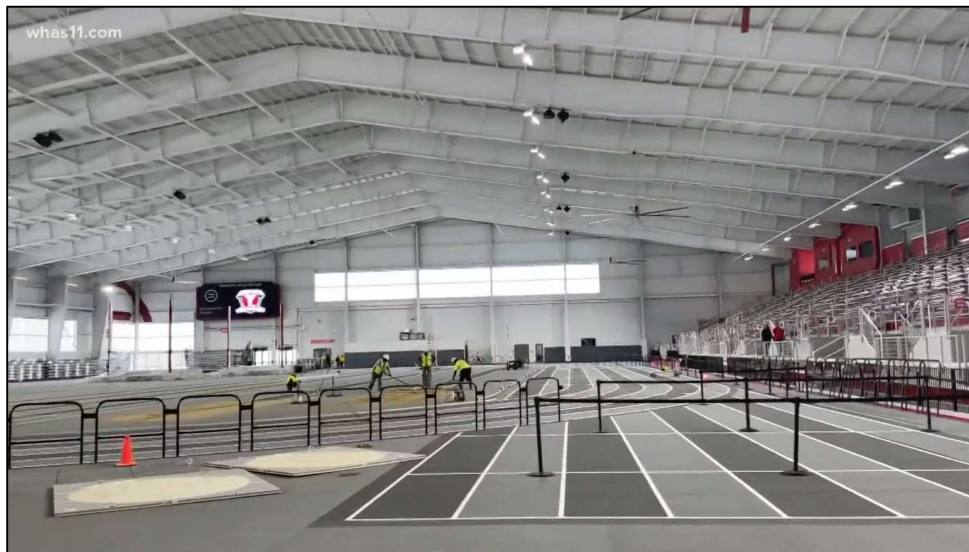


Figure 10: Brownfield Redevelopment Program

## Brownfield Redevelopment Profiles

**The Louisville Urban League** encompassed all aspects of DEP's Brownfield Programs. The 24-acre facility off Muhammad Ali Blvd, Louisville was formerly used as a tobacco product manufacturing and storage facility. The site was assessed through the targeted brownfield program. The primary environmental issue was polycyclic aromatic hydrocarbons in soil. The Property Management Plan approved in 2019 required capping and management of affected areas.

The Louisville Urban League fully opened the Norton Health Care Sports and Learning Center in February 2021 on a "once-vacant West End block" of Louisville. The facility features 90,000 square feet of floor space, 4,100 seat-backed indoor running track, and 400 meter outdoor track and field stadium.



*Photo 7: Final Steps of Construction of Indoor Track*

**Spalding University's new athletic complex** located in downtown Louisville, Kentucky is one of many success stories linked to Kentucky's Brownfield Redevelopment Program. Among the facilities offered to students are a softball field and several soccer fields, all of which are covered with a realistic looking artificial turf. From time to time, the complex is also made available to other groups unaffiliated with the university, making it an asset to the community at large.

This site was once two contiguous properties located at 916 South 8<sup>th</sup> Street and 939 South 9<sup>th</sup> Streets. Historically, the site housed various industries including a compressor parts manufacturer, machine shop and automotive repair shop. Extensive soil sampling identified polycyclic aromatic hydrocarbons as well as arsenic and lead as contaminants of concern. Following the removal of various abandoned structures, the land was graded, new drainage lines were installed and several feet of clean soil was placed over the site.



*Photo 8: Softball Field: Part of Spalding University Athletic Complex*

Site access is now controlled by an attractive fence that surrounds the property. In addition to protecting the site from would be vandals, the fence also serves as an engineering control by helping to prevent possible inadvertent exposure to the now buried contaminated soils. Annual site inspections insure that all necessary controls remain in place.

**The former Black Leaf Chemical Site** in Louisville received a Notice of Completion letter and the new property owner entered the 415 Brownfield Redevelopment Program and received a Notice of Concurrence. The former Black Leaf Chemical site consists of 29 acres off of Dixie Highway in Louisville, Kentucky. As far back as 1905 the site was impacted by multiple industrial uses, including a coal yard, pesticide production, lumber kiln and cooperage, rail spurs and warehousing. The site has been vacant since approximately 2006 and is currently a grassy field with a gravel drive and some small wooded areas.

A Superfund Preliminary Assessment was performed in 1987 and the site was closed with No Further Remedial Action Planned (NFRAP). In 2009, as part of a long-term ongoing effort to revisit the approximately 600 historical NFRAP locations, the site was assessed by DWM. Containers and drums were observed onsite, and soil sampling confirmed the presence of arsenic, lead, polycyclic aromatic hydrocarbons, and pesticides. This led to a USEPA Removal Action in 2011 with DWM follow-up on several adjacent residential properties. The main property was fully characterized in 2014, and the buildings at the site were demolished. Additional characterization sampling of the previously inaccessible areas was carried out in 2019.

In 2020, the final cleanup plan was approved by Superfund staff, and over-excavation began. The long-term objective was to cover the entire site with a two-foot layer of clean soil to serve as a barrier. 36,000 tons of building slabs, foundations, and footers were removed along with 27,000 tons of soil. Groundwater monitoring was completed and the wells were properly abandoned. The final corrective action completion report was received in November of 2020, and the final Site Management Plan and Environmental Covenant were completed. A Notice of Completion Letter (managed closure letter) was issued by Superfund in January of 2021.

The new owner entered into the 415 Brownfield Development Program and received a Notice of Concurrence in April of 2021. The current plan for the property is the construction of a single large warehouse. The property owner is currently working with the Louisville Zoning and Planning Board and expects construction to begin in about three months.



*Photo 9: Pre-remediation of Black Leaf Chemical Site*



*Photo 10: During Remediation at the Black Leaf Chemical Site*



*Photo 11: Post-remediation at the Black Leaf Chemical Site*

## 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 662 acres of surrounding land 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 US Department of Defense, and the US 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:

<https://eec.ky.gov/Environmental-Protection/Waste/superfund/maxey-flats-project/Pages/MaxeyFlatsSection.aspx>



*Photo 12: 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 (4500 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 headquartered 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 FY20, 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.

## **SUPERFUND SITES NEAR YOU**

Historical Superfund sites are primarily perceived to be sprawling industrial complex sites, vast caches of illegally buried drums by large companies, or otherwise highly visible, newsworthy sites such as “Love Canal,” “Maxey Flats,” and the “Valley of the Drums”. Most of these sites’ concerns and liabilities are addressed by potential responsible parties with abundant, sustainable financial resources or by federal funding through the National Priorities List program. Although these types of sites still exist, they no longer reflect the greater number and pervasive threat to human health and the environment in the commonwealth. More common Superfund sites have less land area, and have geological, technical, or chemical/contaminant characteristics that are complex and financially difficult to address. There is a consensus among practicing remediation professionals in government and private industry that this substantial population of sites, which are being recognized throughout the United States, are unlikely to achieve restoration within the next 50 to 100 years. These types of sites pose the greatest increasing threat to human health and Kentucky’s natural resources. They encompass the largest growing number of sites entering the state Superfund program.

The human health and environmental concern for the impacts from these sites is increased by the close proximity of contaminated properties to areas people live, eat, and play – in commercial urban, suburban, and rural settings throughout the state where controlled or restricted access that is common to larger industrial locations is not available. Because of smaller lot sizes of many of these sites, contamination often extends off-site under neighboring properties, including residential homes, schools, recreational areas, and other locations that a person would not normally consider to be an environmental problem.

A few years ago, the Superfund program assessed, ranked, and performed field screening of four high priority categories of Recovery Conservation and Recovery Information System (RCRIS) generator sites in Kentucky. The four priority categories were Wood Treaters, Battery Operators, Plating Operations, and Dry Cleaners. It was determined that these sites had probable releases, and investigation was within the scope of existing statutes and regulations. The initial evaluation revealed the following: more than 11% of these 1,000 sites were within 0 to 0.25 mile of a residence, day care, school, and/or domestic, public, or municipal well field. Moreover, approximately 57% were within 0.25 to 0.5 mile; 8% were situated within 0.5 to 1.0 mile; 5% within 1 to 2 miles; and 28% were over two miles from these types of land uses.

Many of these sites are proprietary, small businesses with limited to no resources. Most do not have adequate assets or insurance to pay clean-up costs resulting from releases on their parcels. The ranking project is now a perpetual aspect of Superfund oversight, and only sites verified not to have had releases during field screening have been removed from the ranking list. To date, 39 of the targeted sites have been evaluated by staff for actual site conditions.

## STATUS OF SUPERFUND, HAZARDOUS WASTE MANAGEMENT FUND, AND COMMONWEALTH OF KENTUCKY'S LIABILITY

As mentioned in past annual reports, the DWM will incur more environmental liability as the lifetime of the superfund projects exceed that of the responsible parties. The responsibility for long-term actions, such as operations and maintenance (O&M) of a managed remedy or continuation of closure activities, will eventually become DWM's. A site can be closed only after the remedy has achieved the acceptable *de minimis* concentrations, which often results in long-term management, maintenance, and operations.

The state's sole source of funding for long-term O&M or expired Record of Decisions (ROD) for National Priority List (NPL) sites is the Hazardous Waste Management Fund (HWMF). The HWMF finances work including regulatory oversight of responsible party remediation efforts, emergency response actions, contracts for state-lead investigations, and time-critical remediation at sites across the commonwealth. These projects include large industrial sites, persistent dry cleaners' impacted groundwater plumes, and small projects such as roadside drums, orphan wastes, and transformer releases

The HWMF was created to provide the division with the necessary funds to implement its critical task to protect the health of the citizens and natural resources of the commonwealth from threats associated with releases of hazardous substances, pollutants, and contaminants. Presently, the available HWMF balance to perform state lead work is estimated to be \$450,000 per year. Recent emergency cleanup actions have exceeded this amount. Funding levels will challenge the DWM to meet initial remedial costs at sites in which responsible parties no longer exist, long term O&M is required, and other state long-term actions are needed.

### SUPERFUND BRANCH HIGHLIGHT

#### BF GOODRICH:

In 2019 the BFG Goodrich National Priority List site remedy was selected, as noted in the Record of Decision (ROD) for the site. The remedy combines management of waste in-place with active remediation of on- and off-shore Non-Aqueous Phase Liquid (NAPL) – dissolved (groundwater), and residual (soil) contamination. In general, a physical subsurface barrier will be engineered around the contamination with hydraulic/remedial control wells located within the contamination zone. In addition, contaminated sediments in the Westlake barge slip will be removed, and a network of recovery wells will be installed in the Tennessee River. Upon finalizing the ROD, the Responsible Party submitted work plans for gathering additional data to support the designing, engineering and implementation of the remedy.

Field work to support the remedy slowed down due to COVID-19 but geotechnical borings around the barge slip to support wall design and drilling cores to better define the extent of NAPL beneath the Tennessee River continued. The barge slip containment wall design is being used as a pilot test for the larger site-wide containment design. Concurrent to engineering design, certain areas of contamination that were characterized well enough to select a remedy, but not extensively enough to support remedial design, are being more fully characterized.



*Photo 13: Sampling off Shore on the Tennessee River (BF Goodrich NPL site)*

River NAPL characterization has begun and work is expected to continue into the fall of 2021. The NAPL characterization will be followed up by additional barge-based drilling to clearly defining the extent of groundwater contamination beneath the river. DWM has been instrumental in working with EPA to provide guidance and oversight to the Responsible Party through the drafting of workplans to gathering of field data. Workplans for various aspects of the remedy design and the field work to support them will continue throughout the remedy implementation process over the next five to ten years.

The ROD and a more detailed site history can be found here: [B.F. GOODRICH | Superfund Site Profile | Superfund Site Information | US EPA](#).



## UNDERGROUND STORAGE TANKS



*Photo 14: Storage Tank Installation*

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

The Administrative staff manages UST system registration and notification requirements, and 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 2021, a total of 464 new and amended registrations were received and processed. Invoices were mailed resulting in the collection of \$266,280 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 2021, more than 5,000 compliance tests were received and reviewed to ensure tank owners and operators maintain 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 of 2013 to assist tank owners in complying with the annual operator training requirement. Currently, 1,213 operators have successfully completed Kentucky's online operator training. 592 of these operators represent the 2,099 UST facilities that have a trained operator. That is 67.3% of Kentucky's UST facilities having at least one (1) employee who is responsible for compliance that has completed the KY TOOLS online training. This is a decrease of trained operators from past years, due to the discontinued support of Adobe Flash Player, the software utilized to view the online training. The Compliance staff are diligently working with developers to update KY TOOLS to a supported web-based software, which will also allow previously unsupported devices

to be used to complete the training, such as mobile devices, making it more readily accessible. The training is also being updated to include the amendments of Kentucky's 2019 UST Regulations.

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.

In FY21, the Corrective Action staff reviewed 81 closure assessments, and 10 site checks and phase II reports; issued 400 directives for site investigation/corrective action activities; and issued 80 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 were due, in part, to regulatory changes in FY07 and FY12. The slight increases in FY16, FY17, FY20, are associated with database cleanup efforts for pre-2006 closures.

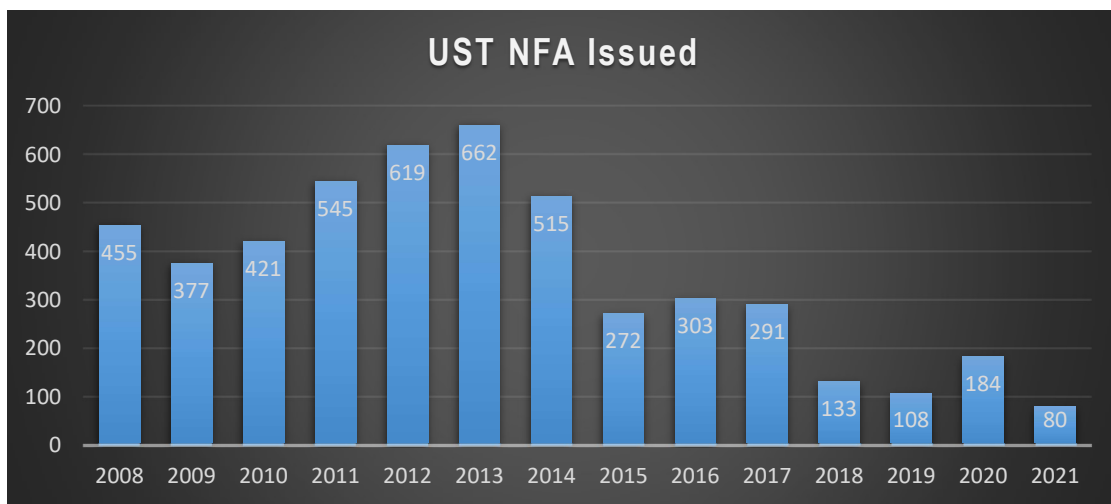


Figure 11: Underground Storage Tank No Further Action Letters Issued

As a direct result of changes in the regulatory process in 2006 and 2011, the total number of UST cleanups remaining has decreased substantially. There were 509 UST cleanups requiring additional work at the close of FY21.

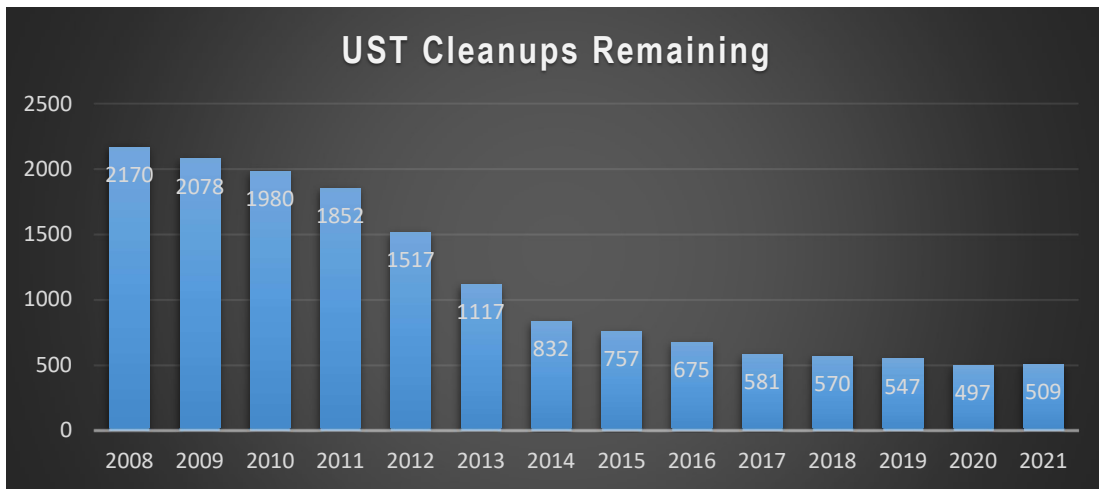


Figure 12: Underground Storage Tank Cleanups Remaining

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

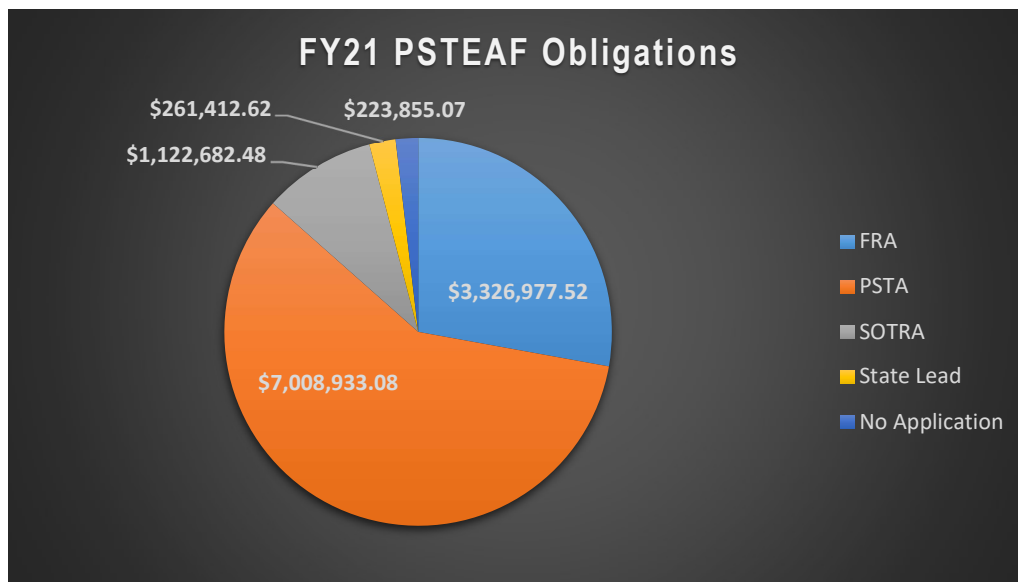


Figure 13: Petroleum Storage Tank Environmental Assurance Fund Obligations

In FY21, the Claims and Payment staff obligated a total of \$11,943,860.77 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 totaled \$13,392,399.76 from all accounts. Claims were reviewed and approved within an average of seventeen (17) days upon report approval.

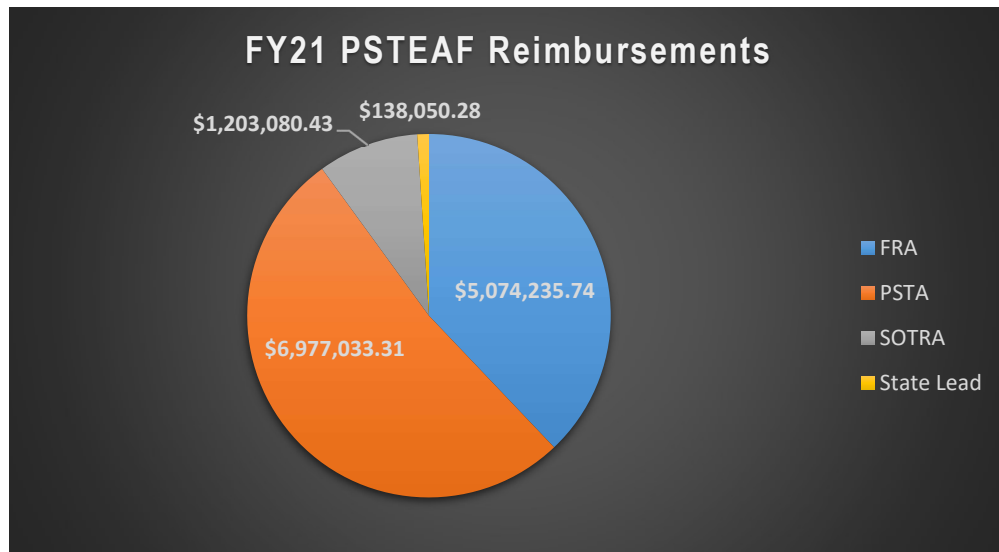


Figure 14: Petroleum Storage Tank Environmental Assurance Fund Reimbursements

### UNDERGROUND STORAGE TANK HIGHLIGHT

#### KENTUCKY'S UST PROGRAM IS SPA-APPROVED:

For the first time ever, the Kentucky Department for Environmental Protection, Underground Storage Tank (UST) Program has State Program Approval, otherwise known as SPA. This is a huge milestone for the UST Program as well as the regulated community.

#### What is SPA and why is it important?

The Federal UST Regulations (40 CFR Parts 280 & 281) were implemented in 1988 and amended in 2015, which include the requirements for State UST programs to apply for State Program Approval (SPA). By applying and receiving federal approval for SPA, it allows State UST programs to operate in lieu of the Federal program. This is beneficial for all parties involved with the UST program: the Environmental Protection Agency (EPA), the State, and the tank owners and operators. SPA ensures the EPA that the state's regulations are "no less stringent" and are regulating the same tank universe as the federal, and that the state can adequately enforce those regulations. In addition, SPA also allows states the legal authority and ability to enforce both the State and Federal UST Programs. Lastly, it eliminates confusion and duplication of having two sets of regulations (Federal & State) so tank owners and operators only have a single set of requirements. For more information on SPA and what states have an approved program visit <https://www.epa.gov/ust/state-underground-storage-tank-ust-programs>.

How did Kentucky become a SPA-Approved state? In order to apply, first Kentucky's UST Regulations were amended to incorporate the revised 2015 Federal UST Regulation. Beginning in 2016, the UST Branch began the long pain-staking process of reviewing and rewriting the existing UST regulation. The amendments to Title 401 Kentucky Administrative Regulations (KAR) Chapter 42 (Kentucky's UST Regulations) were effective April 5, 2019. However, months before the regulatory amendments were effective, UST Branch personnel began drafting the components for the SPA application. The SPA application was a great undertaking for the UST Branch and it should be noted Kentucky's SPA application was drafted and submitted to the EPA in record time, an estimated eight (8) months.

Parts of a SPA application include a:

- Letter from the Governor to EPA requesting SPA,
- Certification statement from either the State Attorney General, or attorney within the agency having independent legal counsel, indicating that the State UST Regulations are “no less stringent” than the Federal UST Regulations,
- Description of how we monitor compliance and enforce regulations to prove adequate enforcement of compliance,
- Draft Memorandum of Agreement that clearly outlines the responsibilities of EPA and the State,
- Description of the UST program that includes organization structure of the agency and how the State implements the program, and
- Copies of all applicable state statutes and regulations related to the State’s UST program.

On September 16, 2020, the EPA granted final approval for Kentucky’s UST SPA application. In doing so, EPA established that 401 KAR Chapter 42 is “no less stringent” and regulates the same tank universe as the Federal UST regulations. From this point forward, KDEP will be the lead implementing agency for the UST Program in the Commonwealth. EPA’s final determination approving Kentucky’s UST SPA is published in the Federal Register and can be found at <https://www.govinfo.gov/content/pkg/FR-2020-09-16/pdf/2020-18567.pdf>.

## EMERGENCY RESPONSE

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

- Responding to environmental emergencies
- Overseeing the many training needs and requirements and making sure they are met
- 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

The ERT is comprised of other 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 the public health or the environment.

## RESPONSES

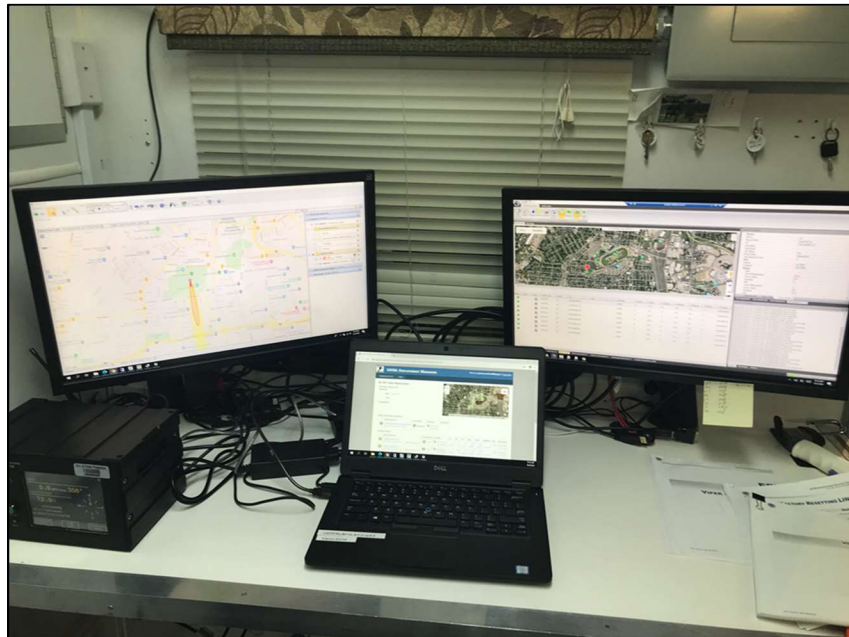
The ERT conducted 405 emergency responses for the fiscal year. The responses included, but were not limited to, emergency responses to rail car derailments and locomotive fuel spills, on-road chemical tanker incidents, underground storage tank petroleum releases, facility fires and natural disasters.

The Team conducted community monitoring in response to a February 23, 2021 fire at the Vogt Landfill located in Jefferson County. Due to the near proximity of the landfill and residential neighborhoods area air monitoring was conducted within the residential community through the month of March until the fire had been extinguished. Photos 15 and 16 depict the Vogt Landfill fire incident and the real time air monitoring data monitored remotely for the duration of the deployment.



Feb 23, 2021

*Photo 15: Vogt Landfill Fire*



*Photo 16: Real Time Air Monitoring Set-up Used During Fire*

The ERT assisted the Kentucky Emergency Operations Center during the February 2021 Winter Storm and coordinated assessment of regulated facilities impacted by the March 2021 flood event that impacted the southeastern region of the state.

## TRAINING

On-Scene responders and coordinators are required to complete training courses regarding many different safety and environmental topics. Many of these training courses also include hands-on technical training and practice exercises. Due to the pandemic, the ERT suspended in-person large-scale trainings and instead conducted online trainings to satisfy training requirements. ERT also developed a 6 part series of training modules that incorporates both virtual and in-person training designed for new On-Scene responders.

## 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. These must be replaced as soon as possible to prepare for the next emergency.

Equipment must also be maintained, operational, and calibrated so that it is ready to be used at a moment's notice. While the pandemic impacted the Team's procedures for maintaining equipment, a rotation of smaller number of staff was developed to provide for the continued maintenance of the equipment while allowing staff to retain familiarity with the equipment. The Team was able to replace legacy area monitoring equipment with the current model and obtained custody of an additional mobile GC/MS unit on loan from the Jefferson County Fire Department.

## DRONE USAGE

The ERT has access to multiple drones outfitted in unique ways. Camera drones give personnel the ability to see events occurring in potentially dangerous locations in real time without putting people in harm's way. They also give incident coordinators a "big picture" view of the event area to allow for better decision making. The camera drones can also record video and photos for later analysis.



*Photo 17: The EEC pilot team displayed three drones at the 300 Building for demonstration*

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. Multiple samples can be quickly collected from remote or unsafe locations without putting people in hazardous conditions.

#### DRONE SPECS AND CAPABILITIES:

Drones used by DWM include the DJI Mavic Pro 2. It 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 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 natural phenomena, such as ice storms and flood events, or can be a result of manmade origin, such as commercial chemical tanker roll-over incidents or an industrial facility fire.

An example of such an emergency occurred in January 2021 when a gasoline tanker overturned in Edmonson County releasing an estimated 8,000 gallons of gasoline threatening impact to nearby residences. ERT staff conducted area monitoring to insure conditions were safe for re-occupancy and provided oversight during the emergency containment of the release and subsequent replacement of an impacted drinking water main.



*Photo 18: Gasoline Tanker 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 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:

**Kentucky Division of Waste Management**  
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We acknowledge the contributions of management and personnel of the Division of Waste Management.

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