KENTUCKY
DIVISION OF
WASTE MANAGEMENT

Annual Report

Fiscal Year 2013

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management
waste.ky.gov

Kentucky
UNBRIDLED SPIRIT

FROM THE DIRECTOR

Anthony R. Hatton, P.G., Director
Kentucky Division of Waste Management

This is the eighth edition of our annual report and the information provided within represents activities and accomplishments for fiscal year 2013 (July 1, 2012 to June 30, 2013). During fiscal year 2013, the division continued to make progress in its mission of the protection of human health and the environment. Division staff continues to perform at a high level in terms of both being efficient and becoming more engaged as problem solvers. I would like to take this opportunity to commend them. Also, during the fiscal year the division made progress in several program areas, including the area of Brownfield's redevelopment, moving towards the final closure of Maxey Flats, preparations for soil cleanup at the former Black Leaf property in Louisville, and cleanup of leaking underground petroleum storage tanks. These and the many other division accomplishments are discussed in this annual report.

Anthony R. Hatton, P.G., Director
Kentucky Division of Waste Management

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SELECTED FIGURES

(31) "Waste" means:

(a) "Solid waste" means any garbage, refuse, sludge, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining (excluding coal mining wastes, coal mining by-products, refuse, and overburden), agricultural operations, and from community activities, but does not include those materials including, but not limited to, sand, soil, rock, gravel, or bridge debris extracted as part of a public road construction project funded wholly or in part with state funds, recovered material, tire-derived fuel, special wastes as designated by KRS 224.50-760, solid or dissolved material in domestic sewage, manure, crops, crop residue, or a combination thereof which are placed on the soil for return to the soil as fertilizers or soil conditioners, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923):

1. "Household solid waste" means solid waste, including garbage and trash generated by single and multiple family residences, hotels, motels, bunkhouses, ranger stations, crew quarters, and recreational areas such as picnic areas, parks, and campgrounds, but it does not include tire-derived fuel;

2. "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other service and nonmanufacturing activities, excluding tire-derived fuel and household and industrial solid waste;

3. "Industrial solid waste" means solid waste generated by manufacturing or industrial processes that is not a hazardous waste or a special waste as designated by KRS 224.50-760, including, but not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer or agricultural chemicals; food and related products or by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products, except tire-derived fuel; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment; and

4. "Municipal solid waste" means household solid waste and commercial solid waste; and (b) "Hazardous waste" means any discarded material or material intended to be discarded or substance or combination of such substances intended to be discarded, in any form which because of its quantity, concentration or physical, chemical or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed;

Kentucky Revised Statutes, Chapter 224.1-010

EXECUTIVE SUMMARY

With 246 staff positions, the Kentucky Division of Waste Management is the second largest division in the Department for Environmental Protection. It consists of seven branches:

- Solid Waste Branch
- Recycling and Local Assistance Branch
- Hazardous Waste Branch
- Field Operations Branch
- Underground Storage Tank Branch
- Superfund Branch and
- Program Planning and Administration Branch.

Selected achievements and challenges for calendar year 2012 and state fiscal year 2013:

- ***Household municipal solid waste (MSW) collection*** – Participation in household MSW collection has remained steady since legislation in 2002 began requiring waste haulers and recycling haulers to register and report to each county in which they provide service. The 2012 statewide household participation rate for MSW collection was 85.5 percent.

- ***Recycling*** – Kentuckians recycled 32.2 percent of common household recyclables (aluminum, cardboard, steel, plastic, newspaper, glass, and paper) in 2012. Kentuckians recycled 36.8 percent of all municipal solid waste in 2012, which includes sludge, concrete, compost, and asphalt in addition to the common household recyclables.

- ***Illegal open dumpsites*** – More than 25,400 illegal open dumpsites have been cleaned up since 1993. In 2012, counties cleaned up 238 illegal open dumps at a cost of $2.3 million. The average cost to clean up each dumpsite was $9,654.

- ***Litter along public roads*** – The Kentucky Pride Fund, Eastern Kentucky PRIDE, Bluegrass Greensource, Transportation Cabinet, Adopt-A-Highway, and cities and counties contributed to the cleanup of 14,324,940 pounds of litter at a cost of $7.55 million during 2012. The average cost of litter picked up in 2012 was 53 cents per pound.

- ***Waste Tire Program*** – In FY 2013, tire amnesties were conducted in 35 counties in Bluegrass, Lake Cumberland and Lincoln Trail Area Development Districts (ADDs). Standard passenger car tires weigh approximately 20 pounds, thus 20 pounds of waste tire material is considered a "passenger-tire-equivalents" or PTE. The equivalent of 891,886 waste tires was recovered through FY 2013 amnesties at a cost of $1,012,737. This represents a 36 percent decrease in PTEs recovered in the amnesties conducted in the same ADDs in 2009 and 2010.

- ***Crumb rubber grants awarded*** – The Waste Tire Trust Fund awarded 19 grants in 2012 totaling $269,547 to assist schools and communities in projects using crumb rubber from waste tires for athletic fields, gym floors, parks, and community playgrounds.

- ***The Division of Waste Management's State Government Office Paper Recycling Program thrives*** – This program serves more than 115 agencies in Frankfort. Office paper, computer paper, newsprint, and cardboard are collected, sorted, shredded, baled and sold to a paper mill, allowing this program to operate on its own receipts. State employees recycled 2.8 million pounds of waste paper in 2012, approximately 222 pounds per state employee. Confidential document destruction provides a zero cost alternative to state and local governments, adding to the economic benefit of this program.

- ***Brownfield Redevelopment Program, KRS 224.1-415*** – The program has achieved early success. Over the last year the Division of Waste Management has been communicating with representatives of approximately 20 properties which have expressed an interest in the program. The division has already issued six Notification of Concurrence letters to applicants who have entered the program.

- ***Maxey Flats Project Final Closure Period*** – The site was placed into the final closure period and plans for final capping are moving forward. Funding was secured and a design and oversight consultant was selected for the Maxey Flats Project in FY13. The cabinet is developing a tentative schedule for the final cap installation.

- ***Black Leaf Chemical Site*** – In Louisville, Ky., the division and U.S. EPA conducted soil sampling of residential properties in February 2012 and November 2012 because of concerns that contamination may have migrated onto these properties from the Black Leaf Chemical property. The sampling conducted at the residential properties detected the presence of contamination. The division and EPA made preparations to conduct shallow soil remediation at several residential properties located physically adjacent to the former Black Leaf property located in west Louisville. This is the largest residential superfund cleanup in the state's history.

- ***Underground Storage Tank Program Success –*** As a direct result of changes in the regulatory process in 2006 and 2011, the total number of UST cleanups remaining has decreased substantially over the last few years. The number of UST cleanups remaining decreased from 1,517 in FY12 to 1,117 in FY13. The number of no further action letters increased, translating into 658 UST cleanups completed in FY13.

- ***Methamphetamine Lab Cleanup Program –*** Through the division's Superfund Branch, 300 contaminated residences were reported and 113 residences were decontaminated through the Methamphetamine Lab Cleanup Program in FY13.

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INTRODUCTION

The Division of Waste Management is one of six divisions of the Department for Environmental Protection in the Energy and Environment Cabinet. The 2013 departmental strategic operational plan for state fiscal year 2013 describes the mission of the agency:

Preserve and restore Kentucky's land through the development and implementation of fair, equitable and effective waste management programs.

To accomplish this mission, the department has developed a set of objectives to be implemented by each division. The objectives, tactics and measures germane to this division are:

Objective 1 - Reduce and/or maintain elimination of division permit and data entry backlogs.

Tactic 1.1 Maintain progress towards reducing and/or maintaining zero permit and data entry backlogs.

Measures

- The total number of permits pending.
- The total number of permits pending which exceed regulatory timeframes.
- The percentage of permit reviews completed within regulatory timeframes.
- The percentage of permit reviews completed that exceed regulatory timeframe.

Objective 2 - Protect human health and enhance Kentucky's land resources.

Tactic 2.1 Restore or manage contamination at sites with known or suspected releases to soil or groundwater.

Measures

- The number of sites with known or suspected releases with potential human exposures where no further action is required or otherwise controlled as a result of implementing a management in place technique.
- Number of underground storage tank cleanups conducted and number remaining.
- Number of hazardous waste program corrective actions completed and number remaining.
- Number of historic landfills characterized, number remediated and number remaining.
- Number of illegal dumps remediated under the Kentucky PRIDE Program and number remaining.
- Number of state Superfund sites characterized and number remediated.

- Number of state-lead sites remediated utilizing the Hazardous Waste Management Fund.
- Number of methamphetamine contaminated properties received and number released.
- Number of emergency or incident responses made and number of cases closed.
- Number of cleanups conducted under state oversight via the Voluntary Environmental Remediation Program.

Tactic 2.2 Encourage reduced waste generation and disposal by promoting beneficial reuse, recycling, waste minimization and pollution prevention.

Measures

- The tons of solid and special waste recycled or reused, by type.
- The tons of material recycled through the State Government Recycling program.
- The number of waste tires used in tire-derived fuel projects, crumb rubber grants and other beneficial reuse purposes.
- The tons of hazardous waste recycled or reused (example: mercury collection efforts).
- The tons of waste recycled as a result of recycling grant programs.

Tactic 2.3 Assure proper management and disposal of waste.

Measures

- The compliance rates for authorized solid waste management facilities.
- The amount, by weight, of litter, open dump waste, recycled municipal solid waste and household hazardous waste collected by counties through the Kentucky Pride Program.
- The compliance rates for authorized hazardous waste facilities.
- The compliance rates for registered underground storage tanks.

In the report sections that follow, division activities designed to address these primary issue are highlighted.

New Provisions of HB 465 Encourage Property Reuse

By Tim Hubbard, P.G., Assistant Director

Brownfields are those real properties, the expansion, redevelopment, or reuse of which is complicated due to releases or potential or perceived releases of petroleum or hazardous substances, pollutants, or contaminants. Since the late 1990s the Kentucky General Assembly passed several laws which were intended to help facilitate voluntary cleanup and redevelopment of "brownfield" properties in the Commonwealth. Despite these efforts, there remained insufficient liability protection to potential buyers and developers which would move redevelopment forward, particularly with financing from banks, to more widely redevelop the brownfield properties in Kentucky.

In January 2002, Congress passed the Small Business Liability Relief and Brownfields Revitalization Act which amended the federal Superfund law to provide important liability limitations for property owners who qualify as bona fide prospective purchasers (BFPP). In order to qualify, the prospective purchasers must complete an All Appropriate Inquiry, primarily consisting of a Phase I environmental site assessment prior to purchasing the property and must have not caused the contamination or be affiliated with the responsible parties. In addition, a BFPP must take appropriate continuing care. A few years later Kentucky adopted the BFPP provision in its state Superfund statute, KRS 224.1-400. The drawback to the BFPP protections is that they are an affirmative defense in that the U.S. EPA and the division would typically not issue letters to the BFPP stating the parties do not have liability for federal or state Superfund cleanup. However, the BFPP could use its status as a defense if the agencies took action against the party to require cleanup.

House Bill 465 was passed during the 2012 Legislative Session and became effective on July 12, 2012. The bill, which is now codified as KRS 224.1-415, is titled the Brownfield Redevelopment Program and it takes the BFPP protections a step further in Kentucky. The bill extends liability provisions that already exist in KRS 224.1-400 to petroleum and provides a clearer path for redevelopment by outlining specific requirements for property owners to meet to maximize their liability protection. The bill was intended to remove some of the additional obstacles to property redevelopment in Kentucky based on feedback from banks, citizens, and consultants. Under the new provisions, existing cleanup standards and corrective action requirements remain the same for those responsible. The difference, however, is that innocent parties can purchase properties that have environmental concerns and use or redevelop them with a new "peace of mind" by having documented reassurance from the state that parties responsible for any environmental issues will remain responsible. If the conditions are met, the buyer will not be liable for investigating or correcting historical releases. Applicants can enter a property in the program and certify they meet the requirements in the law and with the technical assistance of an environmental professional, prepare a Property Management Plan which will describe how the applicant will use the property in a manner which will be safe for public health and the environment. The invention of a Property Management Plan also allows some clarification of what constitutes appropriate continuing care. The division will review the

information submitted and if it finds it is acceptable, the division will issue a Notice of Eligibility to the prospective purchaser and a Notification of Concurrence letter to the property owner concurring with the applicant that they do not have liability for cleanup under the state Superfund law.

The program has achieved early success as over the last year the Division of Waste Management has been communicating with representatives of approximately 20 properties which have expressed an interest in the program. The division has already issued six Notification of Concurrence letters to applicants who have entered the program.

One of the most important results of the new law is that it seems to be effective in facilitating redevelopment of properties in the Commonwealth, thus far including properties in Versailles, Nicholasville, Winchester, Lexington and Louisville. Redevelopment of formerly vacant properties in smaller towns can be positive as new jobs are created or additional jobs from an expansion may be created which improves the tax base, raises property values of surrounding properties and has a ripple effect throughout the area.

The division began drafting regulations to implement the new law in early 2013 and began to vet the regulations with outside stakeholders in August 2013. It is anticipated that the new regulations will be filed with the Legislative Research Commission in September 2013.

The former Kuhlman Electric property in Versailles, Ky., was the first to change hands under the new provisions of HB 465. *Photo by Virginia Lewis*

The mission of the Solid Waste Branch is to assure Kentucky's waste is managed properly. This is accomplished by implementing a comprehensive program for solid and special waste disposal facilities. The branch reviews permit applications, issues permits and monitors construction and operational activities at solid waste facilities.

The Solid Waste Branch is responsible for reviewing technical applications and reports for all types of landfills, including residential garbage, construction debris, industrial waste and coal ash, in addition to land application and composting facilities. The branch issues or denies construction and operation permits based on information provided by the applicant and verified by its own personnel. The branch is also responsible for the registration of solid waste permit-by-rule facilities and closure of abandoned historic landfills.

As the total population in Kentucky has increased, so has waste generation. The charts below show these trends. In 2012, Kentucky's population reached 4,380,415. This makes it imperative for residents to have easy collection services, disposal facilities and recycling facilities. An encouraging trend is that Kentucky's recycling rate is increasing, too.

Figure 1

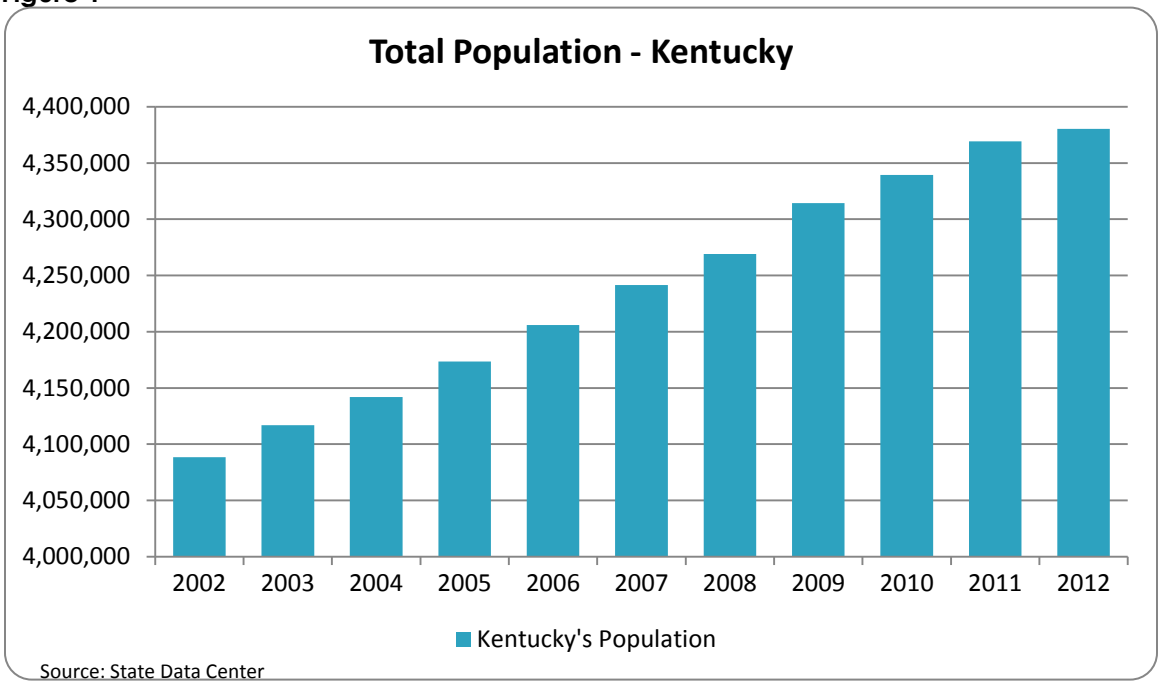
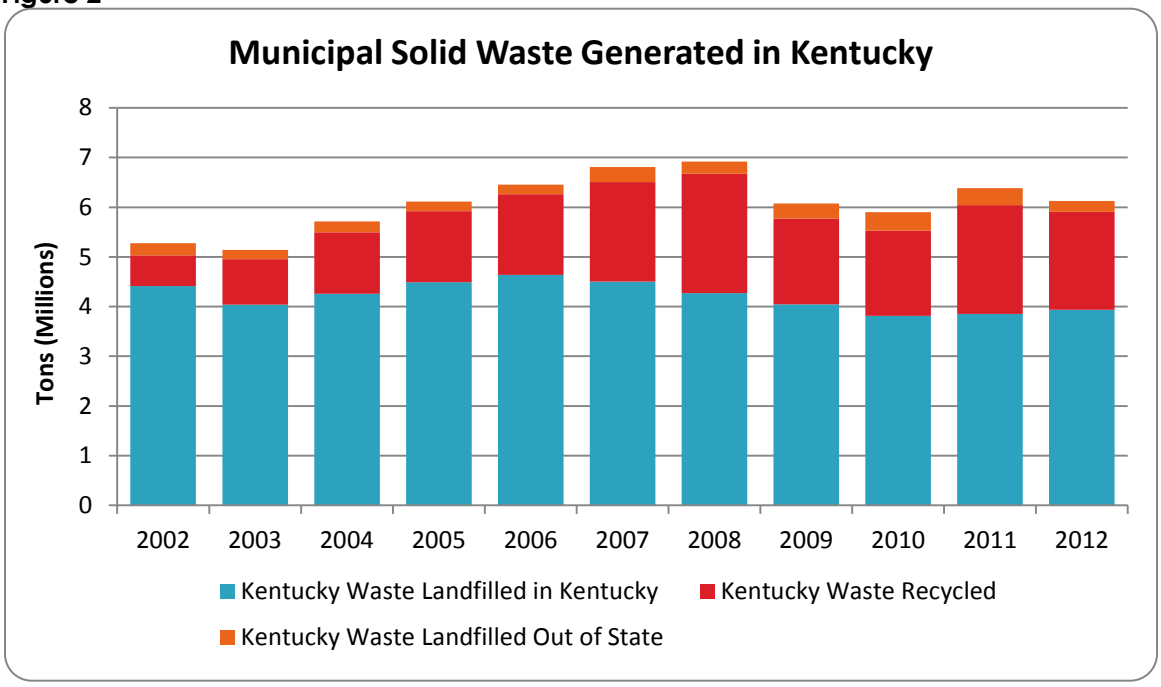


Figure 2



The following table shows data about Kentucky's municipal solid waste disposal and recycling per calendar year.

Year	Kentucky Waste Landfilled in Kentucky (tons)	Out of State Waste Landfilled in Kentucky (tons)	Total Waste Landfilled in Kentucky (tons)	Kentucky Waste Landfilled Out of State (tons)	Total Kentucky Waste Landfilled (tons)	Recycled (tons)	Total Waste Generated in Kentucky (tons)	National Recycling Rate	Kentucky Recycling Rate
1994	3,621,623	191,742	3,813,365	133,505	3,755,128	191,684	3,946,812	*	4.9%
1995	4,207,071	269,833	4,476,904	210,728	4,417,799	529,423	4,947,222	25.7%	10.7%
1996	3,429,983	270,849	3,700,832	277,638	3,707,621	474,415	4,182,036	*	11.3%
1997	3,543,196	429,550	3,972,746	165,866	3,709,062	685,650	4,394,712	*	15.6%
1998	3,615,890	373,291	3,989,181	496,424	4,112,314	1,150,620	5,262,934	*	21.9%
1999	3,734,798	395,998	4,130,796	136,739	3,871,537	739,136	4,610,673	*	16.0%
2000	3,860,516	515,136	4,375,652	202,029	4,062,545	742,398	4,804,943	28.6%	15.5%
2001	3,982,260	701,442	4,683,702	233,617	4,215,877	644,925	4,860,802	*	13.3%
2002	4,415,859	598,548	5,014,407	247,002	4,662,861	615,476	5,278,337	*	11.7%
2003	4,036,800	605,760	4,642,560	184,159	4,220,959	919,802	5,140,761	*	17.9%
2004	4,259,181	702,295	4,961,476	217,761	4,476,942	1,237,294	5,714,236	*	21.7%
2005	4,493,499	663,686	5,157,185	191,923	4,685,422	1,429,490	6,114,912	31.6%	23.4%
2006	4,636,351	681,414	5,317,765	193,948	4,830,299	1,626,778	6,457,078	*	25.2%
2007	4,500,843	851,055	5,351,897	299,852	4,800,695	2,005,249	6,805,944	*	29.5%
2008	4,273,781	870,637	5,144,418	248,408	4,522,189	2,398,863	6,921,052	*	34.7%
2009	4,048,176	851,541	4,899,717	304,842	4,353,018	1,722,157	6,075,157	*	28.3%
2010	3,815,858	986,031	4,801,889	375,208	4,191,066	1,712,242	5,903,307	34.1%	29.0%
2011	3,850,689	1,194,345	5,045,034	344,672	4,195,361	1,748,356	5,943,717	*	29.4%
2012	3,935,559	1,182,040	5,117,599	221,672	4,157,231	1,970,490	6,127,721	*	32.2 %

* National data is not available for 2001, 2003, 2004, 2010 and 2011 percentages.

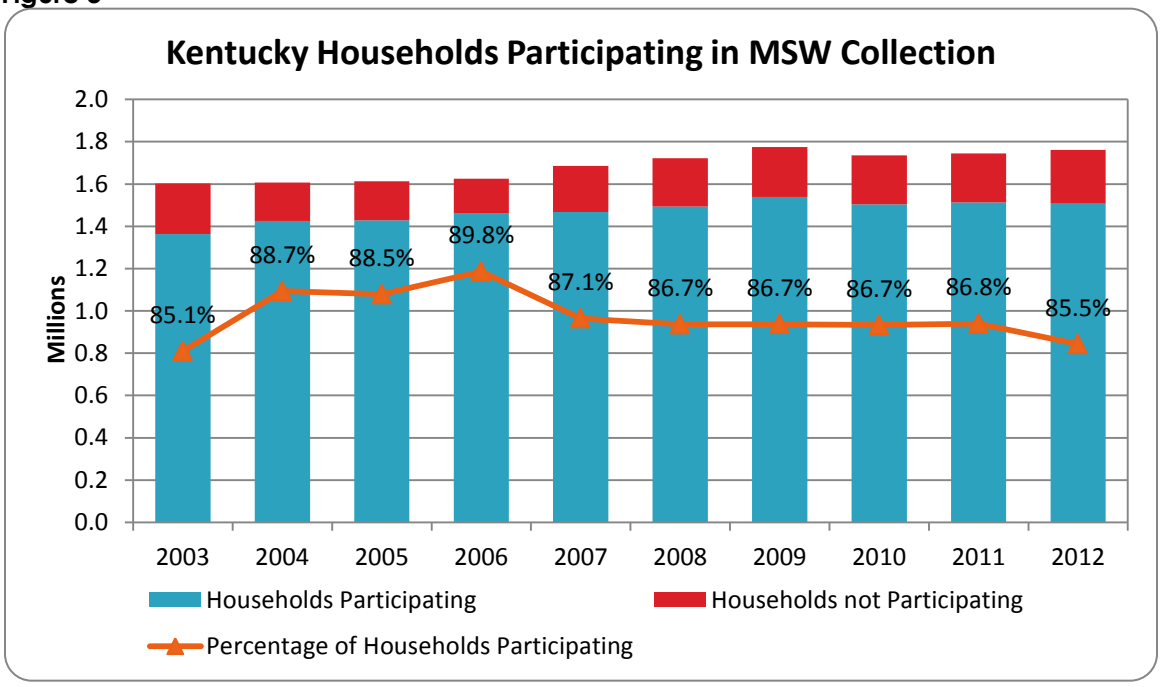
The average cost of MSW disposed of in Kentucky landfills in 2012 was $34.20 per ton. In 2012, Kentucky experienced a 2.2 percent increase in Kentucky MSW disposed of in Kentucky landfills and a 1 percent decrease in the amount of out-of-state MSW disposed of in Kentucky landfills. Kentucky disposed of 4,157,231 tons of MSW in 2012, a decrease of 38,130 tons from 2011.

All counties in Kentucky offer a system of universal waste collection through the form of curbside collection, drop-off centers, collection centers, or transfer stations.

> "Universal collection" is defined by KRS 224.1-010 (45) as:
>
> … a municipal solid waste collection system which is established by ordinance and approved by the cabinet and requires access for each household or solid waste generator in a county. A commercial or industrial entity which transports or contracts for the transport of the municipal solid waste it generates or which operates a solid waste management facility for its exclusive use may be excluded from participation.

Household participation in MSW collection has remained relatively level since 2003 with an average of 86 percent participation. Since 2003, waste haulers and recyclers have been required to register and report annually to each county the number of households using the collection services they provide to the county.

Figure 3



In 2012, 1,507,032 Kentucky households participated in MSW collection. The average household participation rate for MSW collection systems in 2012 was 85.5 percent, which means approximately 14.5 percent of households (254,943 households) disposed of their MSW illegally or were not accounted for by current tracking methods. Self-haul to transfer stations and convenience centers is a legal method of disposal but is often not tracked. Multiunit apartments comprise approximately 17.7 percent of the total Kentucky households. Most of these are serviced by dumpsters via commercial accounts and consequently do not show up as individual house counts. As a result of these tracking limitations, actual participation rates could be five to ten percentage points higher than what is

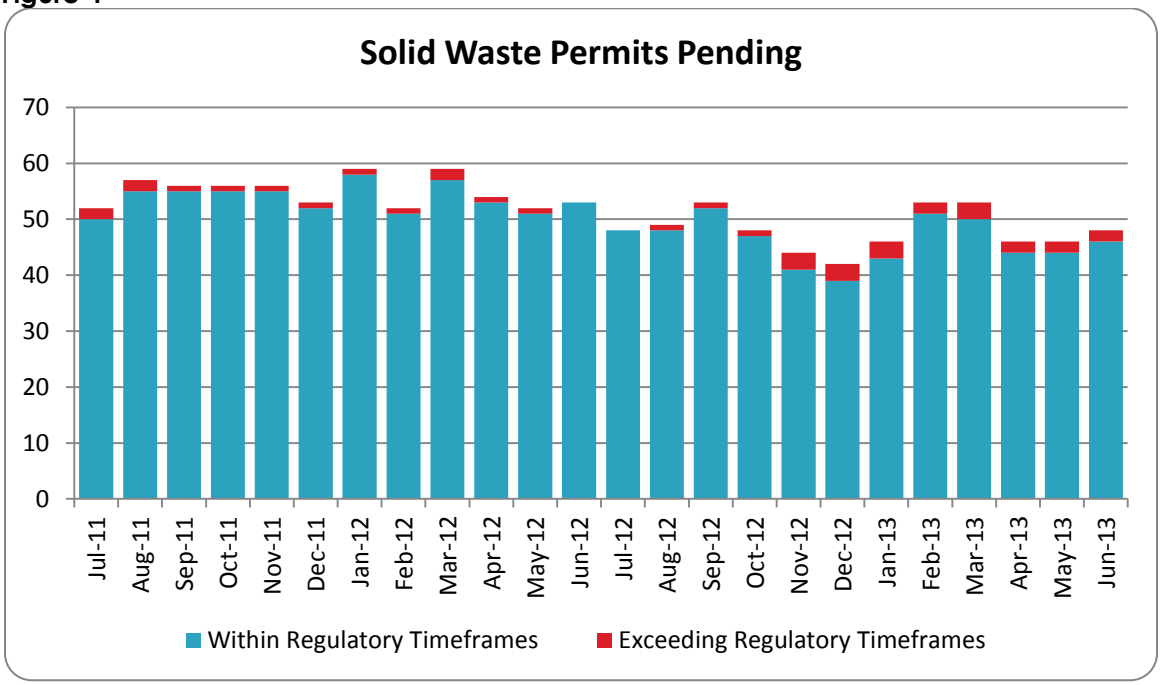
reflected by county reporting. The average cost per month for household curbside MSW collection was $15.16 in 2012.

Solid Waste Permitting

The Solid Waste Branch continues to issue the majority of permits within regulatory timeframes. This includes permits for new landfills, permit modifications for existing landfills, and permits for land application and composting facilities.

There were 48 solid waste permits pending at the end of FY13, with 46 within regulatory timeframes and two exceeding regulatory timeframes. In FY13, 96 percent of solid waste permit reviews were completed within the regulatory timeframe.

Figure 4



Historical Landfills

A total of 44 historic landfills have been closed through construction and remediation projects or by no further action due to intensive site studies. Total costs associated with the closure projects exceed $47 million, excluding branch personnel direct and indirect expenses.

One landfill closure project, the Billy Glover Landfill in Jessamine County, is presently under construction. Total cost for site characterization, design and construction is estimated at $4.5 million.

Four historical landfill closure projects are in the design phase and will be scheduled for construction. Construction and engineering oversight costs are estimated to be approximately $6 million.

- Johnson County Landfill
- Trigg County Landfill

- Butler County Landfill
- FIVCO Landfill

Initial characterization of 266 landfills is complete. The landfills are being prioritized based on the perceived threat to human health and the environment. The approximate cost for the initial site characterization of these sites is $3.9 million. There are 584 historical landfills remaining to be closed.

SOLID WASTE BRANCH HIGHLIGHT

Springs uncovered at orphaned Jessamine County landfill

By Tammi Hudson, P.E.

The use of Kentucky PRIDE fund monies by DWM to close an orphaned Jessamine County landfill resulted in a surprising find. The site, first opened in 1965, has naturally occurring springs under it, which could lead to offsite environmental problems.

The 100-acre site was initially permitted to William Glover by the Jessamine County Board of Health with the goal of serving the landfill needs of Nicholasville, Wilmore, Asbury College, Asbury Seminary, the county school system and everyone living in Jessamine County. Landfill operations ceased in 1983 after having been leased by Glover to a private company six years earlier.

During a site visit of the landfill in 1985, an inspector for the Kentucky Department for Environmental Protection (KDEP) found that uncontrolled dumping had occurred. Leaking drums were piled in a trench and one drum was labeled 1,1,1-trichloroethane, which can cause human health problems like hypotension, motor skill impairment, impaired balance, cardiac arrhythmia and respiratory arrest. KDEP removed the drums and other potentially hazardous wastes from the landfill, and it was abandoned at completion of the remedial actions.

In 2002, the landfill was placed on the priority list for assessment and closure because the landfill produced large quantities of leachate. Leachate, or water moving through the waste, can impact the environment as it removes soluble, suspended or miscible materials from the waste. Before the landfill could be properly closed, DWM had to determine if the source of water causing the leachate was surface water entering through the landfill cap or groundwater entering the landfill through springs.

Tetra Tech Inc., DWM's consultant on the project, conducted a survey within a one-mile radius of the landfill and found 33 naturally occurring springs. Subsequently, geologic maps of Glover's farm were also studied to locate areas within the footprint of the landfill that were the most probable for groundwater to emerge between rock layers.

Since the eastern portion of the landfill had been a valley before it was filled with trash it became the targeted study area. The area had features indicating spring development, such as rock formations with intermittent mud smears and sink holes within 400 feet of the landfill.

This is one of 33 springs found within a one-mile radius of the Glover landfill.

Viewing an aerial photograph dated 1950, DWM personnel used a mirrored stereoscope to identify a rock ledge exposed at the head of the valley and a flow path of water in the valley. The photo was then superimposed onto a USGS topographic map, allowing DWM personnel to interpret latitude and longitude of the potential spring location.

Perdue Environmental Contracting Co. Inc. (PECCO), contractor for the project, developed an excavation plan and after two days of digging through trash and rock, uncovered the hidden spring 26 feet below the surface. The spring fed about 15 gallons of water per minute into the landfill, equating to more than 20,000 gallons of water per day. Through further excavation, PECCO diverted the spring water to a rock-lined trench running parallel to the parameter of the landfill.

"Closure of this landfill is perhaps the best example of two branches within the Division of Waste Management working together for a common goal," said Tony Hatton, director of the Division of Waste Management. "The Superfund Branch initially addressed the worst of the hazardous waste buried at the site, and the Solid Waste Branch is finishing the job by intercepting naturally occurring groundwater and preventing further contamination from decades of trash disposal."

Closure activities at the Glover landfill are still ongoing, and construction is expected to be completed by December 2013. When the landfill is properly closed, the footprint of waste will be reduced from 37 acres to 17 acres.

Contractors spent two days digging through trash and rock before uncovering the hidden spring 26 feet below the surface.

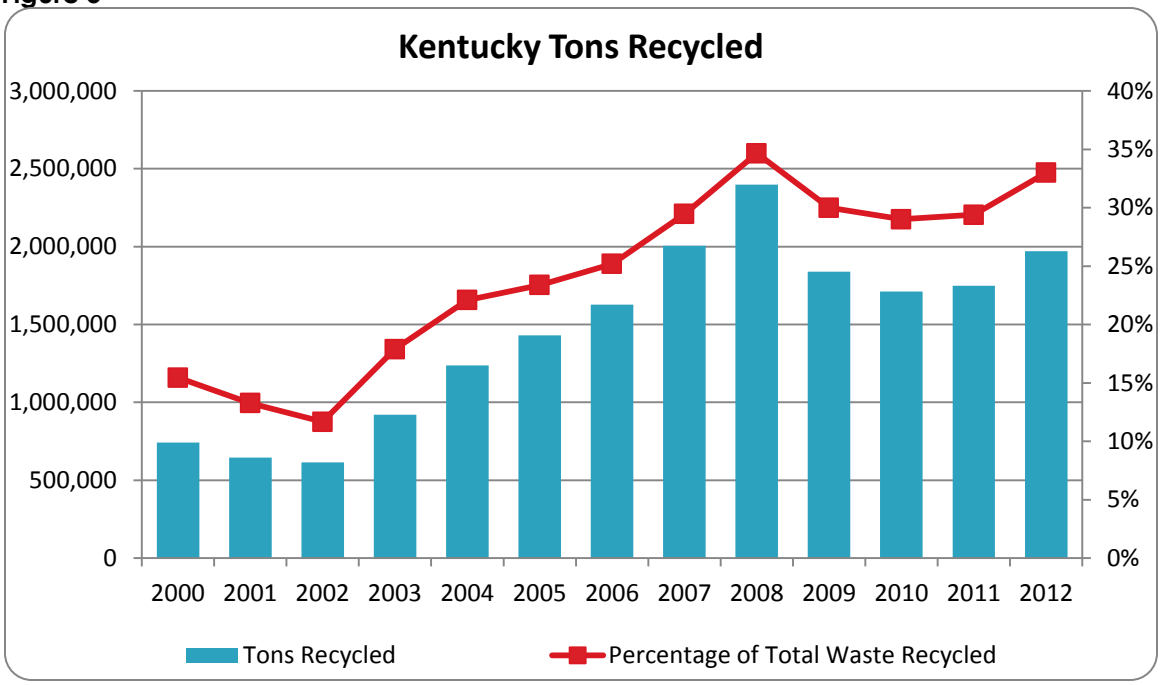
RECYCLING AND LOCAL ASSISTANCE

waste.ky.gov/RLA

The Recycling and Local Assistance Branch provides continuous technical assistance and training to public and private entities on solid waste issues and regulatory requirements and promotes individual responsibility and accountability for proper solid waste management.

In accordance with Kentucky Revised Statute (KRS) 224.43-315, beginning March 1, 2004, recyclers are required to report annually to the county the amount of municipal solid waste collected for recycling by volume, weight or number of items, and the type of items recycled. Kentucky's recycling rate on common household items (glass, paper, metal, and plastics) increased from 29 percent in 2011 to 32.2 percent in 2012. This is approaching the last known national rate of 34% in 2010.

Figure 5



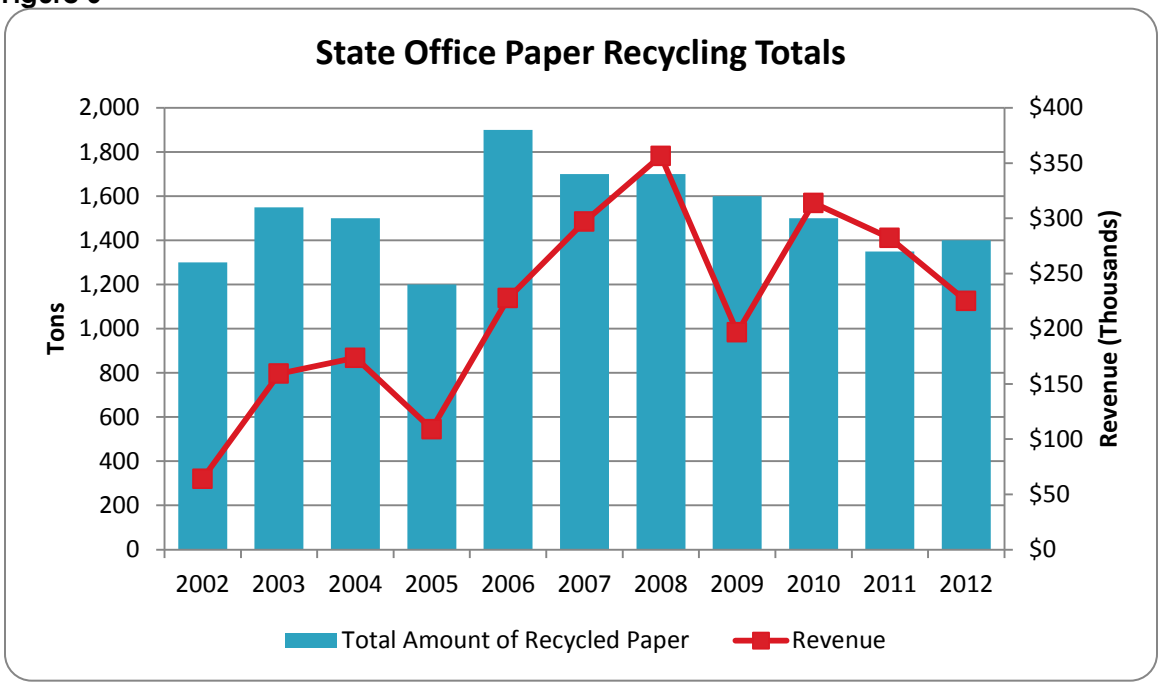
The State Office Paper Recycling Program

The Government Recycling Section continues to operate the State Office Paper Recycling Program, serving more than 115 agencies in Frankfort. This program continues to be self-supporting, funding eight full-time staff positions.

The program offers free pickup and free document destruction of governmental office paper. The Government Recycling Section's location on Northgate Drive offers a secure environment to address confidentiality issues. Office paper represents 80 percent of the waste stream in the office environment. The cabinet has been tracking the amount of governmental waste paper recycled since 1993, with more than 43 million pounds of

paper being recycled through this program. Since 2002, state employees recycled more than 16,650 tons of waste paper, generating more than $2.4 million in revenue. In 2012, state employees recycled 1,400 tons of waste paper – approximately 222 pounds per state employee.

Figure 6



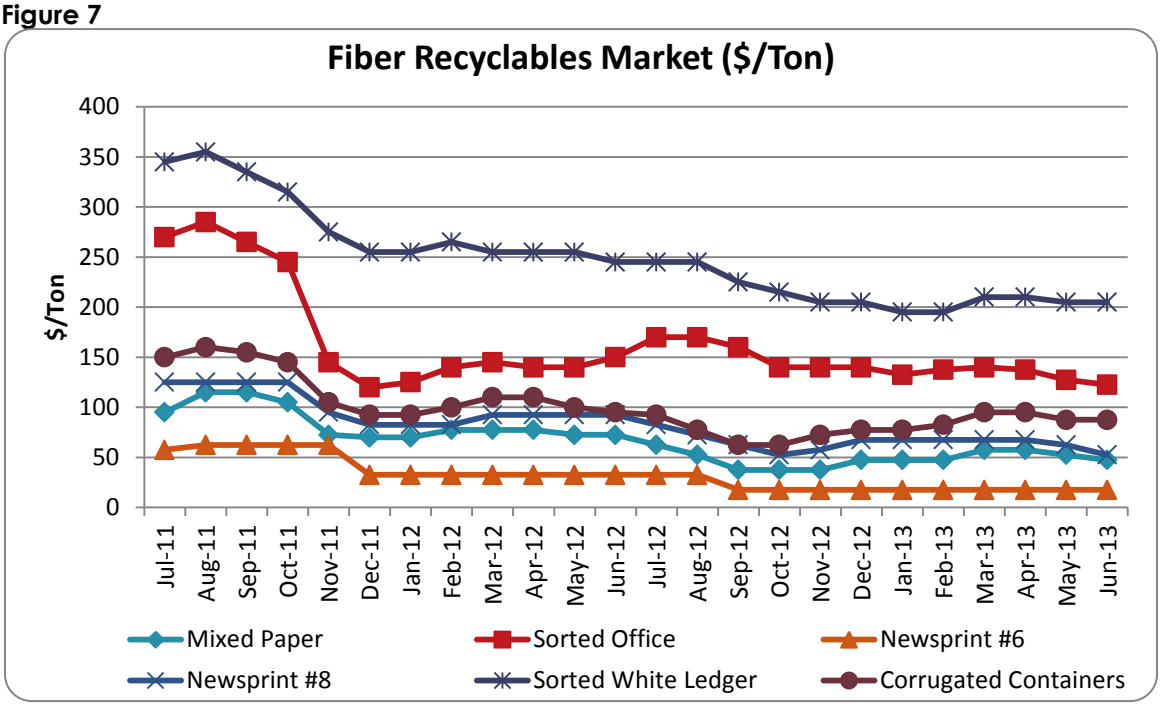
White office paper, collected from state government offices in Frankfort, awaits grinding and bailing. *Photo by Gary Logsdon*

The Marketplace

Through publication of its *Marketplace* newsletter, the division reports on the prevailing prices paid for aggregate recyclable materials. The following figures show the trends for various commodities:

The MARKETPLACE For Recycling Commodities

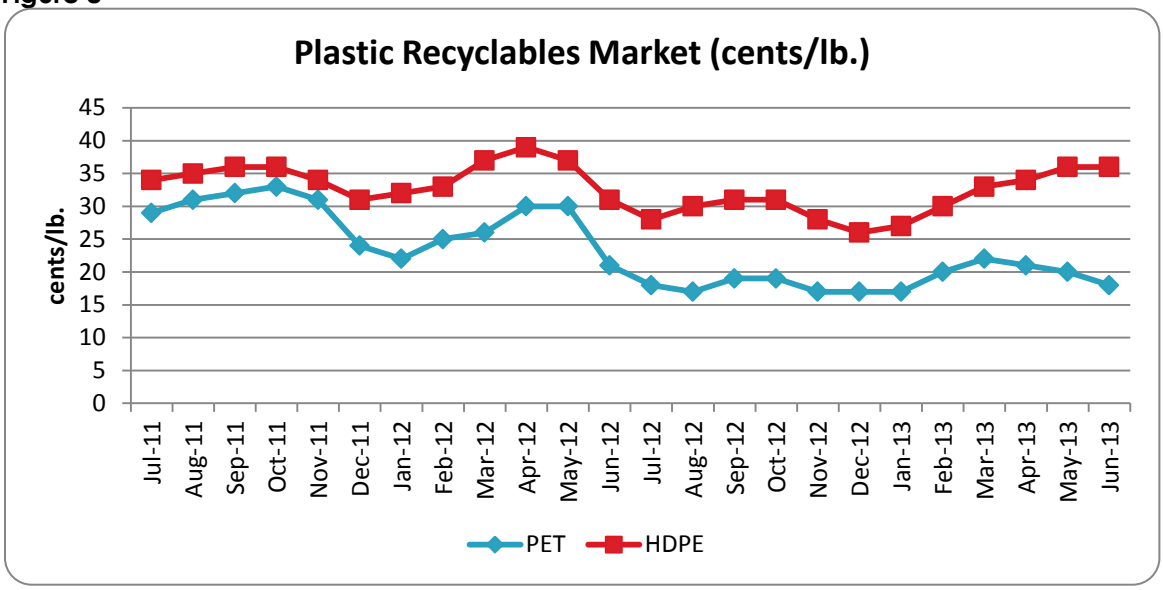
Figure 7



- "Newsprint #8" means baled sorted newspaper, with no sun exposure, with the typical amount of slick advertising inserts, as would be delivered to a home or at a news stand.
- "Newsprint #6" means baled newspaper that typically has more advertising slicks, paper and plastic bags, magazines, and types of paper other than newsprint.
- "Sorted Office" means an assortment of white, colored and coated, ground wood-free copier and printer paper.
- "Mixed Paper" means a lower grade of material that includes slick advertising inserts, junk mail, paperboard containers and other types of paper mixed together.
- "Sorted White Ledger" means white paper such as stationery, copy paper, book pages, and printing papers (free of ground wood fiber).
- "Corrugated Containers" means, typically, brown cardboard boxes.

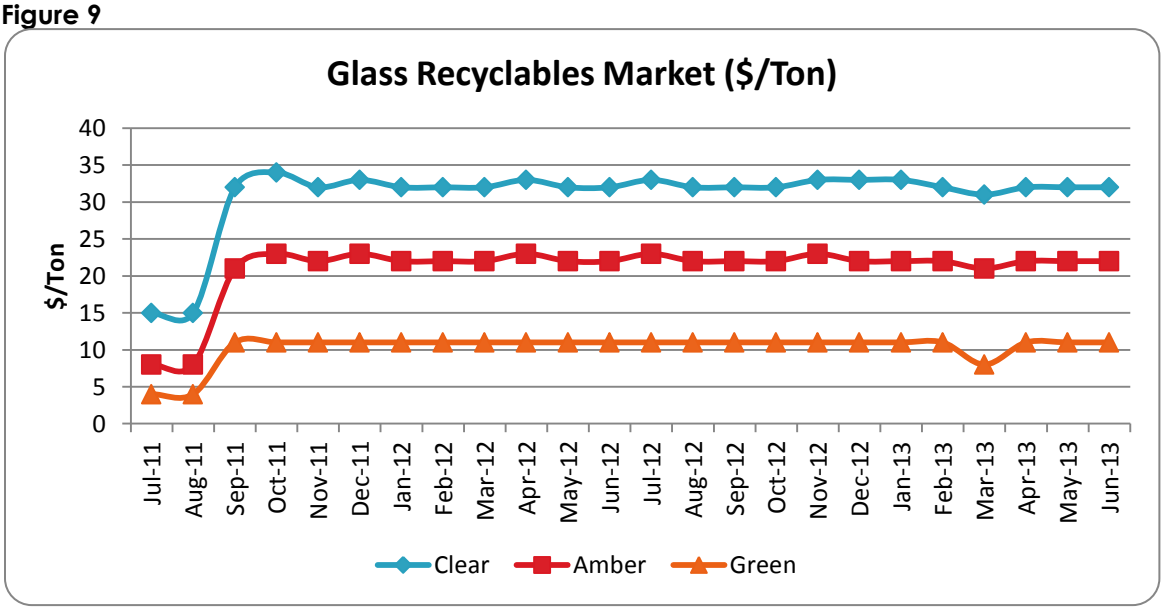
Recovered paper prices will continue to remain at lower levels until the worldwide economy shows more of a robust, sustaining recovery from the 2009 recession. Domestic paper manufacturing and use of recyclable fiber continues to decline, but is projected to increase 1 to 5 percent beginning in 2014.

Figure 8



The price paid for number one and two plastics, polyethylene teraphthalate (PET #1) typically known as soda bottles and high density polyethylene (HDPE #2) typically known as milk jugs, has generally held steady within acceptable ranges over the last fiscal year. Lower demand due to decreased production, both for domestic and export markets, have kept PET and HDPE prices lower than pre-2009 recession levels. The lower pricing end for the material will continue until the worldwide economy shows more robust recovery and the Chinese "Green Fence" program (requiring better quality for imported plastics) winds down, which is expected about November 2013.

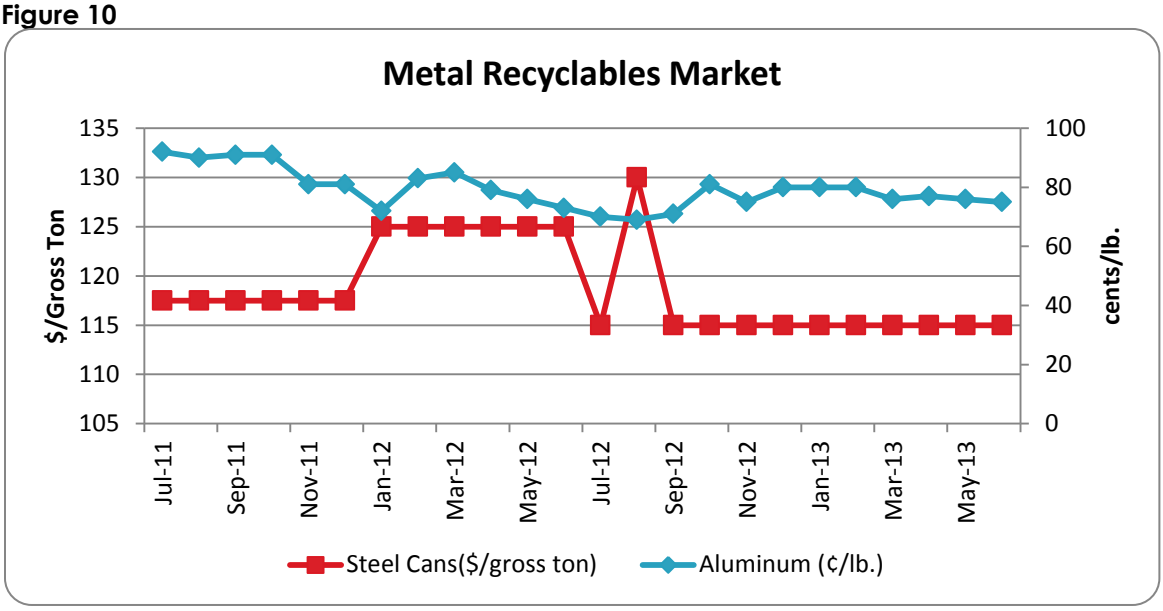
Figure 9



Glass prices have increased dramatically due to the combination of increased interest in recycled content in glass containers (particularly wine bottles) and the shortage of clean recyclable cullet available since the widespread advent of "single stream" recycling

collection. Cross contamination of all commodities, especially glass bottles and jars, has caused manufacturers that use recyclable cullet to increase pricing to stimulate the volume of clean material suitable for their use in making new glass containers.

Figure 10



Recycling prices for aluminum cans have fallen somewhat, as have all non-ferrous scrap metal prices, due to lower demand as economies remain stagnant worldwide. Solid growth in world markets will be necessary to advance prices to previous levels.

Steel prices have dropped back to previous price levels after experiencing dramatic increases, due primarily to decreased use of new steel worldwide for new construction, other than for automobiles. Sustaining growth of emerging economies, such as China, India, Brazil and Japan will be needed to drive pricing up, both domestically and for export markets.

Waste Tire Trust Fund

The Waste Tire Trust Fund was reauthorized in the 2012 special session of the General Assembly through HB 2 and is in effect until June 30, 2014. The cabinet submitted a report to the General Assembly on Jan. 13, 2012, recommending that the program continues to be reauthorized. Funding comes from a $1 fee on the sale of all new motor vehicles tires sold in Kentucky. The fund is used to conduct waste tire amnesty programs, provide annual funding directly to counties for waste tire management, award crumb rubber grants, facilitate market development for the use of waste tires, and clean up waste tires at sites where tires have been mismanaged. In 2011, the General Assembly passed House Bill 433, which established a Waste Tire Working Group to advise the cabinet on (among other things) administering and implementing alternative methods for controlling waste tires, developing a formula to apportion money in the Waste Tire Trust Fund, and preparing the report for the General Assembly. In 2012 and 2013, the cabinet also made a $3,000 grant available to counties for recycling or disposal of waste tires.

In FY 2013, tire amnesties were conducted in 35 counties in Bluegrass, Lake Cumberland and Lincoln Trail Area Development Districts (ADDs). Standard passenger car tires weigh approximately 20 pounds, thus 20 pounds of waste tire material is considered a "passenger-tire-equivalents" or PTE. The equivalent of 891,886 waste tires was recovered through FY 2013 amnesties at a cost of $1,012,737. This represents a 36 percent decrease in PTEs recovered in the amnesties conducted in the same ADDs in 2009 and 2010.


Garrard County Waste Tire Amnesty Fall 2012

Crumb Rubber Grants - From 2004–2012, the cabinet awarded 347 grants totaling more than $6.79 million to local governments, schools, daycares, churches and other entities for the use of crumb rubber made from recycled tires for athletic fields, playgrounds, walking trails, landscaping, gym floors, etc. In 2012, 19 grants totaling $269,547 were awarded to assist schools and communities in projects using crumb rubber from waste tires for athletic fields, gym floors, parks, and community playgrounds. Funding for the crumb rubber grants comes from the Waste Tire Trust Fund. A total of 799 tons of waste tires were used in tire-derived fuel projects, crumb rubber grants and other beneficial reuse purposes in FY13.

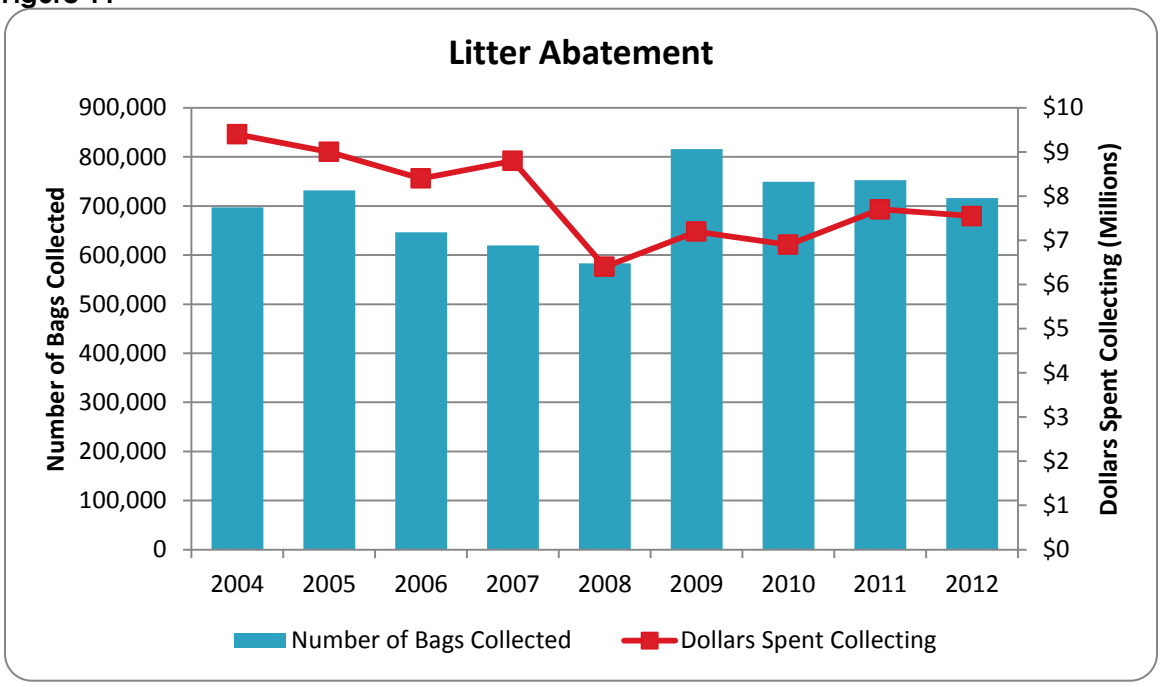
Kentucky Pride Fund

The environmental remediation fee of $1.75 per ton of waste disposed in Kentucky is placed into the Kentucky Pride Fund. This money is used for closure of historical landfills, debt service, recycling grants, household hazardous waste management grants and remediation of illegal open dumps.

Litter Abatement - The division began tracking the cost of litter activities and the number of bags of litter collected in 2001. State litter abatement grant funding through the Kentucky Pride Fund began in fiscal year 2002. The cabinet receives $5 million annually from the Transportation Cabinet for distribution to counties and incorporated cities for litter abatement activities. In 2012, counties cleaned up 716,247 bags of litter on 127,637 miles of roadways. A total of 14,324,940 pounds of litter was collected by counties through the Kentucky Pride Fund in 2012.

Litter collection costs totaled $7.55 million, an average cost of 53 cents per pound. Most of the items found on roadways are plastic bottles and food containers. Litter is costly at $1,054 per ton when compared to the average landfill disposal rate of $34.20 per ton.

Figure 11

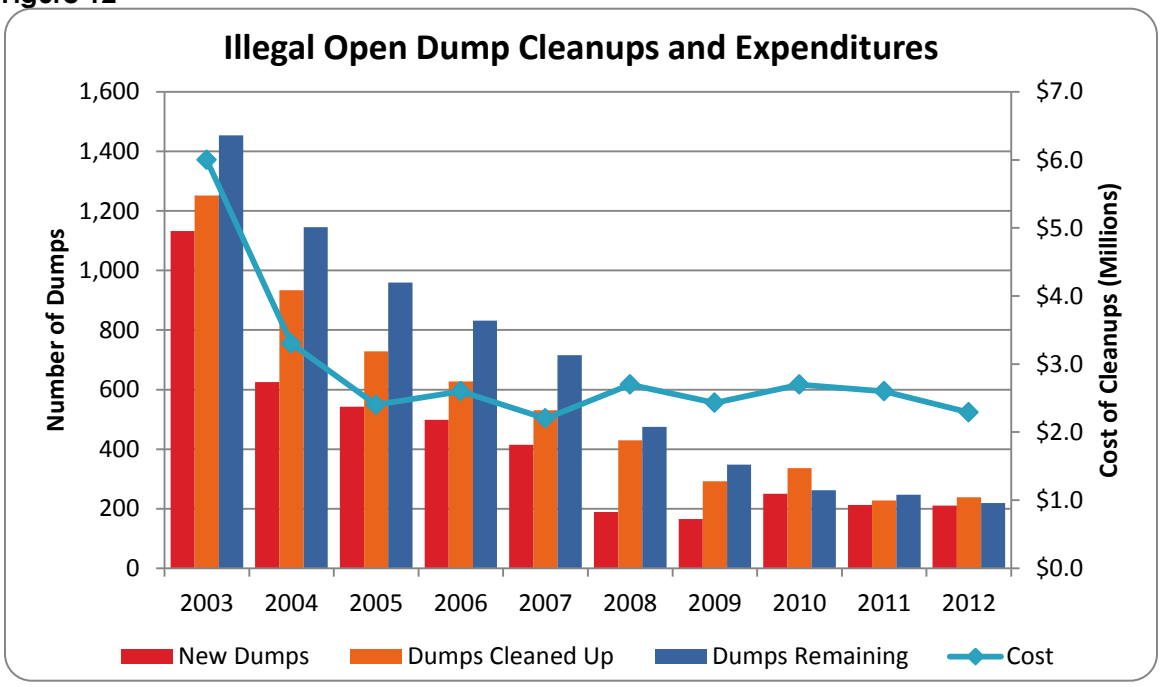


The amount of litter collected on public roads may not include litter collected by state road crews as part of the Department of Transportation's efforts to maintain state roads.

Recycling and Household Hazardous Waste - In 2006, the Kentucky Pride Fund was amended to provide grants for the development and expansion of recycling programs and household hazardous waste (HHW) management. In 2012, 70 entities were awarded grants for a total of over $1.5 million. Forty-eight recycling grants were awarded to cities, counties, and universities. These grants are to help fund the establishment or expansion of recycling operations. Twenty-two HHW grants were awarded. Materials collected during HHW events included e-scrap, pesticides, solvents, mercury and other HHW products found around the home. These events were made possible by the Kentucky Pride Fund. The grants require a 25 percent local match in the form of cash or "in-kind" personnel, educational activities/materials and advertising to promote the program from the cities or counties receiving the awards. The grants are funded through the $1.75 environmental remediation fee paid on each ton of waste disposed of in Kentucky landfills. The goal of the program is to build recycling infrastructure and fund HHW management collection events in areas where few of these opportunities for citizens exist, with an emphasis on regional cooperative efforts. In FY13, 386.9 tons of household hazardous waste was collected by counties through the Kentucky Pride Fund.

Cleanup of Illegal Open Dumps - More than 25,400 illegal open dumpsites have been cleaned at a cost of $73 million dollars since 1993. In 2012, counties cleaned 238 illegal open dumps at a cost of $2.3 million. Through the Kentucky Pride Fund, counties collected 10,991.67 tons of illegal open dump waste in 2012. The average cost to clean each dumpsite was $9,654. There were 219 known dumpsites remaining at the end of 2012 and the number of remaining illegal open dumps is decreasing.

Figure 12



Financial assistance, through the Kentucky Pride Fund Illegal Open Dump Grant Program, has provided counties the incentive and the necessary financial help to identify and rid their communities of old dumpsites. Since 2002, this program has funded the cleanup of 2,200 dumpsites at a cost of more than $17 million. The ninth round of illegal open dump grants was awarded in November 2012 for the remediation of 171 dumpsites at a projected $2.4 million.

E-Scrap Recycling

Collection of waste computer and electronic parts and equipment (e-scrap) continues to grow in the state, with over 50 counties reported offering some type of e-scrap collection, whether year-round e-scrap drop-off programs or periodic or annual events. More than 3,947 tons of e-scrap was reported having been collected in 2012. Beginning in 2008, the Kentucky Pride Fund Program provided grant awards for the management of HHW, a category that includes e-scrap and mercury.

Also in 2008, the Finance and Administration Cabinet awarded an e-scrap recycling contract to a national vendor, Creative Recycling Services (www.crserecycling.com), which became effective Jan. 1, 2009. This "all-agency" contract allows the executive, judicial, and legislative branches of government, school districts, universities, and any other public not-for-profit organization convenient access to recycling. The contract provides for statewide pickup and recycling services with effectively zero percent of the scrap going to Commonwealth landfills. This contract is unique in that the vendor pays the agencies/school districts/universities/local governments for the majority of items aggregated for recycling. From January 2009 to January 2013, over 5,658 tons of e-scrap have been collected from over 600 agencies/locations and refurbished or recycled in an environmentally sound and data secure manner. Payments to generators have netted over $306,700.

RECYCLING AND LOCAL ASSISTANCE HIGHLIGHT

Simpson County Tire Cleanup

By Jessica Jones

In 1993, a waste tire facility in Simpson County, Kentucky caught fire, most likely due to spontaneous combustion of improperly stored tire shreds. The Department for Environmental Protection was involved in emergency response and preliminary cleanup at the time, and later the Division of Waste Management's Tire Amnesty Program was used to remove the whole tires that remained at the site. The site was a nuisance and a potential threat to public health and the environment (the fire temporarily impacted the City of Franklin's drinking water supply as a result of firefighting efforts), and posed an ongoing risk of additional tire fires. The owners of the facility had declared bankruptcy, and large piles of shredded tires remained at the site for years. The site contained of over 800,000 shredded "passenger tire equivalents" or PTEs. A PTE equals 20 pounds of waste tire material, which is the weight of a typical car tire.

Before

Finally, in August 2012, funding became available from the Division of Waste Management's Illegal Open Dump Grant program and a six-month remediation project was begun at the site. The Illegal Open Dump Grant program draws from the Kentucky Pride Fund, which is generated from a $1.75 per ton fee on all waste disposed of in Kentucky. The Kentucky Pride Fund is also used to properly close orphan landfills and to support other solid waste management programs.

"We are more than pleased with the outcome of this situation," says Tony Hatton, Director of the Division of Waste Management. "Our main concern is to eliminate any community health or environmental hazard, and we are happy to have been able to come up with a solution to this complex and long-term problem."

Of the 804,728 PTEs (8,000+ tons) of shredded tires removed, 1,200 tons were recycled, with the remaining shreds being landfilled since they were too contaminated for use. The total cost of cleanup of the site came to $814,482.95.

After

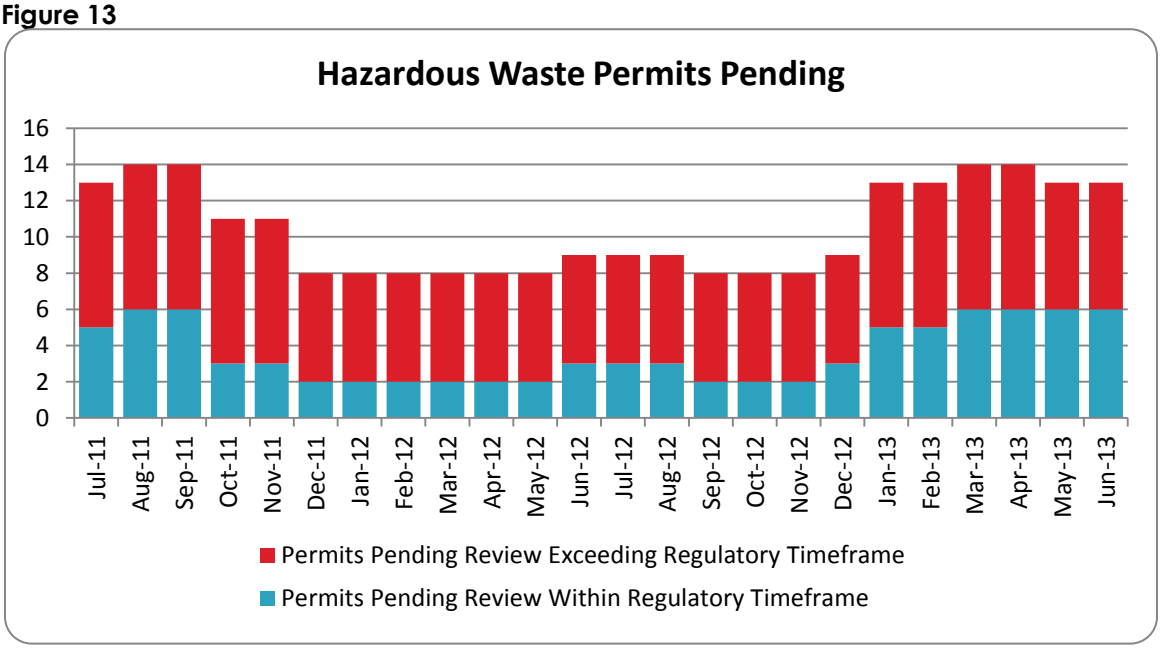
The Hazardous Waste Branch oversees the management of hazardous waste from generation to disposal. This involves the promotion of hazardous waste minimization, hazardous waste management and remediation of hazardous waste releases. These activities are accomplished through permitting, corrective action, registration and reporting requirements.

Hazardous Waste Corrective Actions

In FY13, the Hazardous Waste Branch completed 118 hazardous waste corrective actions (reviews, approvals, inspections, environmental indicators and meetings). At the end of the fiscal year, 20 hazardous waste corrective actions were remaining.

Hazardous Waste Permitting

Figure 13



The total number of pending permit applications has remained steady. At the end of FY13, there were six hazardous waste permits pending review within the regulatory timeframe and seven pending review that exceeded the regulatory timeframe. In FY13, 92 percent of hazardous waste permit reviews were completed within the regulatory timeframe while only 8 percent of reviews completed exceeded the regulatory timeframe.

HAZARDOUS WASTE BRANCH HIGHLIGHT

Paducah Gaseous Diffusion Plant

By Todd Mullins

The Paducah Gaseous Diffusion Plant (PGDP), an EPA Superfund site listed on the National Priorities List, was until recently an operating uranium enrichment facility. The facility is owned by DOE and leased and operated by the United States Enrichment Cor-

poration (USEC). In May 2013 USEC announced that it would no longer continue operating the PGDP. The PGDP was constructed in 1952 by the U.S. Atomic Energy Commission at the site of the former Kentucky Ordnance Works, a TNT production facility used during World War II. The original mission of the PGDP was production of highly enriched uranium to fuel military reactors used to produce nuclear weapons. In recent times, the PGDP has produced low enriched uranium fuel for commercial nuclear power plants.

During its operating lifetime, soils, sediments, groundwater and structures have become quite contaminated. Soils and sediments at the site have been found to contain PCBs, radionuclides, and some heavy metals. Groundwater is contaminated primarily with trichloroethene (TCE) and technetium-99, a radionulclide. Remediation efforts at PGDP are prioritized and managed according to an Operable Unit (OU) strategy. An OU includes contaminated or potentially contaminated areas that share a common media (e.g., groundwater, surface water, sediment, soil) and similar exposure pathways (ingestion, inhalation, dermal exposure). For example, the Surface Water OU includes all surface water and associated sediment on the site (common media) where human exposure to contamination may occur through ingestion, dermal exposure, or perhaps through the consumption of fish tissue. Other OUs currently being addressed at the site include the Groundwater OU, the Decontamination and Decommissioning OU, the Soils OU, and the Burial Grounds OU.

In 2013 the primary Groundwater OU initiatives were remediation of soils at the C-400 Cleaning Building and at the Oil Landfarm. A primary contaminant of concern at the PGDP is trichloroethylene (TCE), a chlorinated industrial solvent (and probable human carcinogen) that was often used as a degreaser for metal parts. TCE is a dense non-aqueous phase liquid (DNAPL) that is both denser than water and does not dissolve readily in water. TCE typically sinks when spilled onto the ground or discharged into subsurface soils. As it sinks, the DNAPL leaves residual traces of itself in the shallower soils. This is what occurred at both the C-400 Cleaning Building and at the Oil Landfarm.

The C-400 Cleaning Building is the source of much of the TCE that now contaminates over a billion gallons of groundwater at the site. TCE used to remove grease from parts leaked into the ground at this location and eventually made its way into the groundwater. The second phase of an Electrical Resistance Heating (ERH) remedy intended to address part an estimated 75,000 gallons of TCE thought to have been released to the environment was initiated during the summer of 2013. ERH is used to heat the soils near the C-400 Building which vaporizes the TCE so that it can be removed from the soil. Once this phase of the C-400 remedy is complete a final phase will be initiated to address TCE present at greater depths within an aquifer. A technology other than ERH will be used to address this contamination due to a confirmed inability of ERH to adequately heat the aquifer materials. A treatability study is being contemplated to identify which technology is best suited to addressing this problem.

The Oil Landfarm was historically used as a dumping ground for various waste oils and associated contaminates. These contaminants included TCE. Plans were being finalized in 2013 to implement a Deep Soil Mixing remedy at the landfarm. Deep Soil Mixing uses a large mixing apparatus to agitate the contaminated soil and volatilize TCE. Hot steam is injected into the soil while it is being mixed to better liberate the TCE from the soil. The liberated TCE vapor is then captured for later disposal. A design for this remedy should be completed by the end of 2013.

The Decontamination and Decommissioning (D&D) Operable Unit was created to address structures that have no further use at the site. In 2013, D&D activities involved the demolition of the C-340 Metals Reduction Plant and continuing preparations for eventual demolition of the former C-410/420 Feed Plant. Once the tallest building at the site, the C-340 building has been removed. Only the concrete slab remains. This is being sealed to prevent any attached contamination from migrating away from the site. Eventually the slab will be removed and the soils beneath it will be sampled to confirm that they are clean or require remediation. C-410/420 is scheduled to be demolished in 2014. Activities are still underway to remove certain contaminate materials from the structure prior to demolition. Once this structure has been removed, focus will likely shift to addressing buildings and structures that until recently were under USEC control.

The Burial Grounds OU consists of eleven solid waste management units or burial areas. During 2013, OU activities included characterization of the SWMU 4 Classified Burial Yard as well as review of feasibility studies for the SMWUs 5&6 and SWMUs 2,3,7 and 30 burial grounds. A Proposed Plan was also submitted for SWMUs 5&6 which describes DOE's preferred alternative for addressing these two units. Limited sampling has been performed at these two burial areas which are located in the northwestern portion of the site. To address the uncertainty regarding what contamination may actually be present, DOE has proposed placing a Subtitle D cap over the units to prevent infiltration of water and potential inadvertent intrusion into the buried waste. Remedial actions to address the SMWUs 2, 3, 7, and 30 burial grounds are being evaluated as alternatives in a feasibility study. An action to address SWMUs 5&6 will occur several years before any action to address the other burial grounds. It is anticipated that portions of SWMU 4 will be excavated at some point in the future since this unit is believed to be a contributor to groundwater contamination.

Assuming any of the burial grounds are eventually excavated, DOE will require a cost-effective solution for disposal of the wastes generated. Such a solution is even more important when the time comes to disposition wastes generated from the demolition of the site's large process buildings. The Waste Disposal Options (WDO) project is concerned with determining if building an on-site waste storage facility is a viable option at the PGDP. A feasibility study currently under review attempts to compare and contrast the various waste disposition options available. According to this study, approximately $500 million dollars could be saved if wastes were dispositioned within a newly constructed on-site landfill rather than being shipped out west for disposal. Kentucky is continuing to evaluate the efficacy of constructing a new landfill at the site.

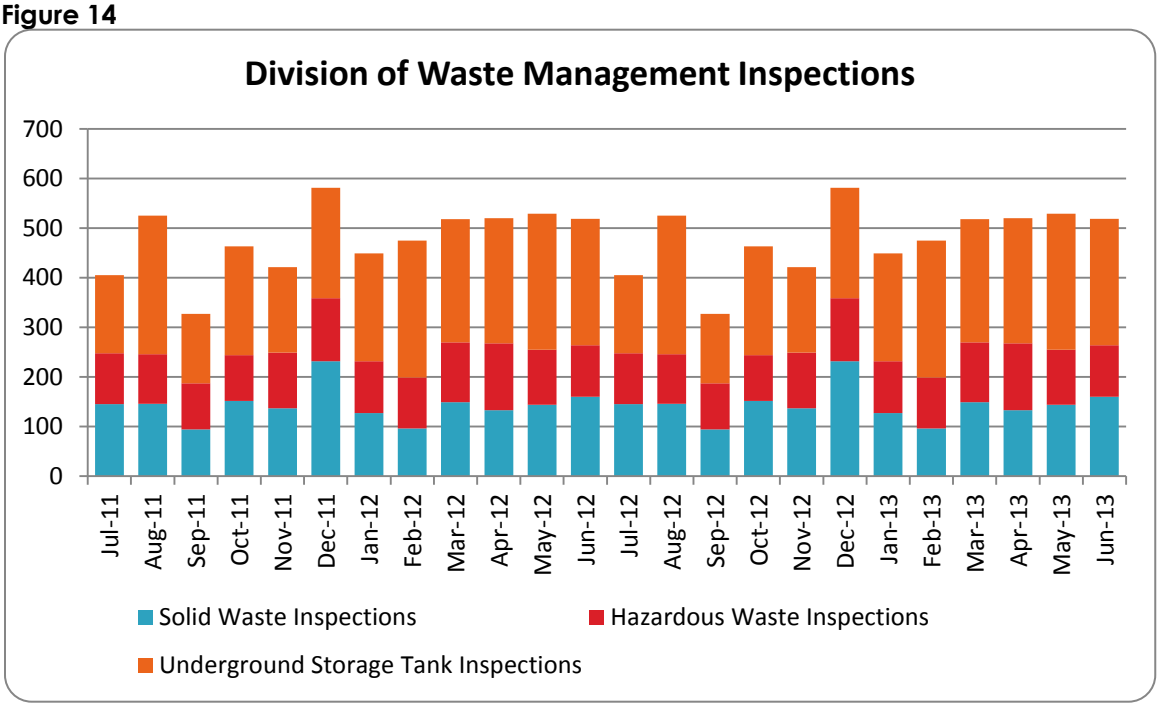
In 2013, Kentucky continued to conduct independent sampling at the PGDP in close proximity to known zones of groundwater contamination. The purpose of this sampling was to evaluate and substantiate DOE's sampling procedures and to verify the quality of their laboratory analysis. Split sampling was also conducted at select wells associated with the C-746-U Solid Waste Landfill and the C-404 Hazardous Waste Landfill to evaluate whether the landfills are releasing contaminants to the groundwater. In general, Kentucky's laboratory results were similar to those reported by DOE. Kentucky continues to sample private water wells to insure that groundwater contamination is not expanded beyond the area within which DOE supplies for municipal water to residents.

The mission of the Field Operations Branch is to identify and abate imminent threats to human health and the environment through fair and equitable inspections, technical assistance and education.

The branch performs inspections at sites managing solid waste, hazardous waste, underground storage tanks (USTs) and polychlorinated biphenyls (PCBs). The primary duty of a regional inspector is to check the compliance of waste facilities.

The branch includes a central office and 10 waste management regional offices located throughout Kentucky. Staff from these offices are familiar with the local waste management issues and can respond to questions and concerns.

Figure 14



Note: Inspection totals include "complaint investigations" in addition to typical inspections of regulated entities.

During FY13 the Field Operations Branch conducted 6,239 UST, solid waste, and hazardous waste inspections. This was a 2.9 percent increase over FY12.

The UST program accounted for 47 percent of the total inspections in FY13. This was down almost 3 percent from the previous year. The compliance rate for UST inspections continued its upward trend for the fourth consecutive year to 57.2 percent. Notices of violations fell by 6 percent from FY12 to FY13. The increase in the compliance rate can be attributed in part to the passage of new regulations which incorporated provisions of the Energy Policy Act of 2005 that were implemented during the year and the continued issuance of facility requirement letters by the UST Branch compliance section.

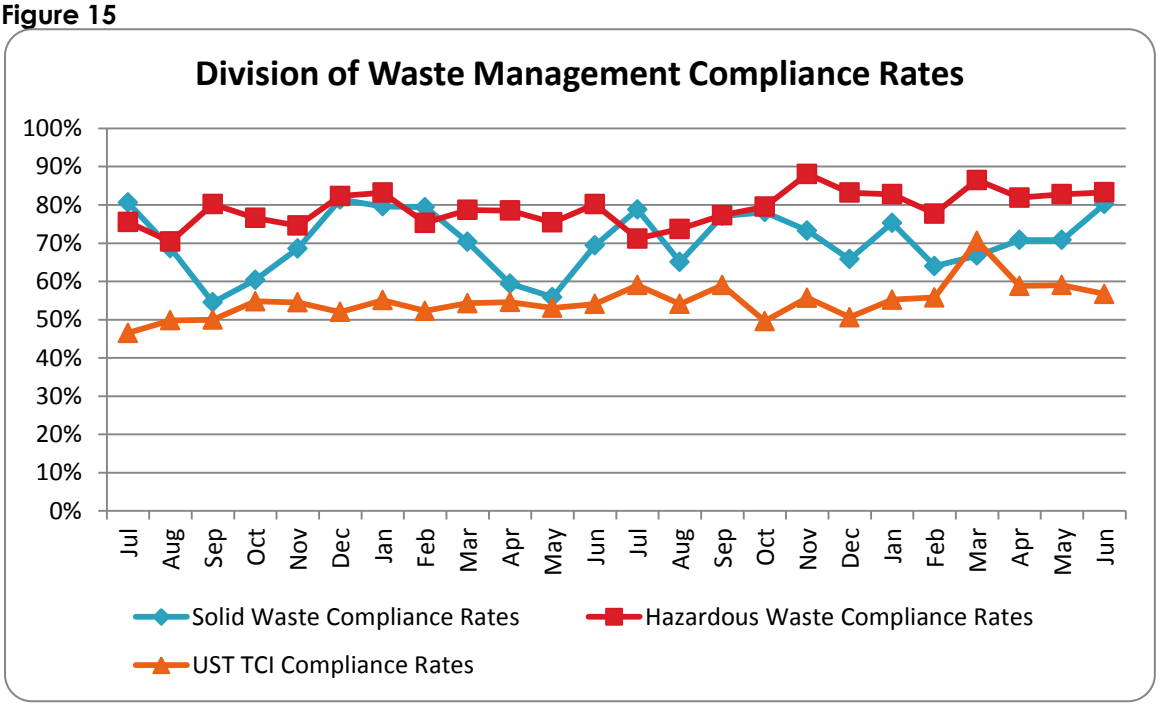
Field operations conducted 1,714 solid waste inspections in FY13. The compliance rate for solid waste inspections fell slightly from 73.7 percent in FY12 to 71.7 percent in FY13. The decline can be attributed to a 22 percent increase in open dump inspections and the increase in notices of violations issued for those inspections.

Field operations conducted 1,307 hazardous waste inspections during FY13 which was up by 6 percent over the previous year. The compliance rate for the year was 76.3 percent.

Field operations conducted 2,436 complaint investigations in FY13 which was up 11 percent, from the previous year.

A total of 8,675 inspections and investigations were conducted by the Field Operations Branch in FY13. This was an increase of 5 percent over the previous year.

Figure 15



Note: "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.
Note: "UST TCI" means a technical compliance inspection for a site's USTs.

Emergency Response

KRS 224.1-400 establishes the cabinet as the lead agency for hazardous substance, pollutant or contaminant emergency spill response. The Department for Environmental Protection maintains a roster of field staff who serve as part of the Environmental Response Team. They are the first to respond to environmental emergencies. In FY13, the Environmental Response Team had 12,999 incidents, 665 emergency responses, and 650 closed cases.

FIELD OFFICE BRANCH HIGHLIGHT

P&L Train Derailment Response

By Duke York

Emergency Response Team staff evaluate the P&L train derailment in Louisville, Ky.
Photo by Division of Waste Management staff.

In the early morning of Oct. 29, 2012 a Paducah & Louisville Railway train derailed in southwestern Jefferson County. Thirteen of the train's cars left the tracks. Seven of the derailed cars were transporting hazardous material. One of the derailed cars was a pressurized tank car that ruptured and released 25,000 gallons of 1, 3-butadine into the environment. 1, 3 Butadiene is listed as a known carcinogen. Another tank car was damaged and released 1,275 gallons of styrene to the surrounding soil. All other five tank cars were damaged but remained intact. Two contained 1, 3 Butadiene, one tank car contained a residual amount of methylisobutyl keytone and the remaining two tank cars contained anhydrous hydrogen fluoride. Anhydrous hydrogen fluoride is a highly dangerous gas. Upon contact with moisture, including human tissue, hydrogen fluoride immediately converts to hydrofluoric acid, which is highly corrosive and toxic.

Within 48 hours 11 Division of Waste Management inspectors were dispatched to the scene as part of the Department for Environmental Protection's Emergency Response Team. The primary goal in a dangerous situation like this was to make sure that the surrounding community and first responders' lives were safe. A coordinated effort was made within hours to assess the dangers. Air monitoring equipment was deployed within hours of the derailment to monitor air quality in the affected area. Area residents were evacuated or told to shelter in place depending on their proximity to the site. Once it was determined that everyone was safe the tasks of assessing the damage and the cleanup began. The Division of Waste Management responders worked with local government agencies from three counties, the Environmental Protection Agency, Kentucky National Guard, Paducah & Louisville Railroad personnel and their consultants and contractors.

Surface water of the Ohio River and Salt River in the vicinity of the derailment was sampled the second day of the incident and every other day thereafter until Nov. 7. Groundwater was sampled in several locations a mile or less from the incident scene.

Division of Waste Management personnel were on site 24 hours a day until Nov. 4 monitoring conditions to protect the public while the cars involved in the accident were stabilized. Division personnel continued to monitor conditions at the site on a reduced schedule until Nov. 12 when off loading of the hazardous materials began. Division inspectors

were again at the site 24 hours a day until the off loading was completed on Nov. 14. In December the site was turned over to the Superfund Branch for long term management.

Training, determination, and hard work made the inspectors from the Division of Waste Management part of a team that provided the protection to the public and the environment that the citizens of the Commonwealth have come to expect.

In the early morning of Oct. 29, 2012 a Paducah & Louisville Railway train derailed in southwestern Jefferson County. Thirteen of the train's cars left the tracks.

UNDERGROUND STORAGE TANKS

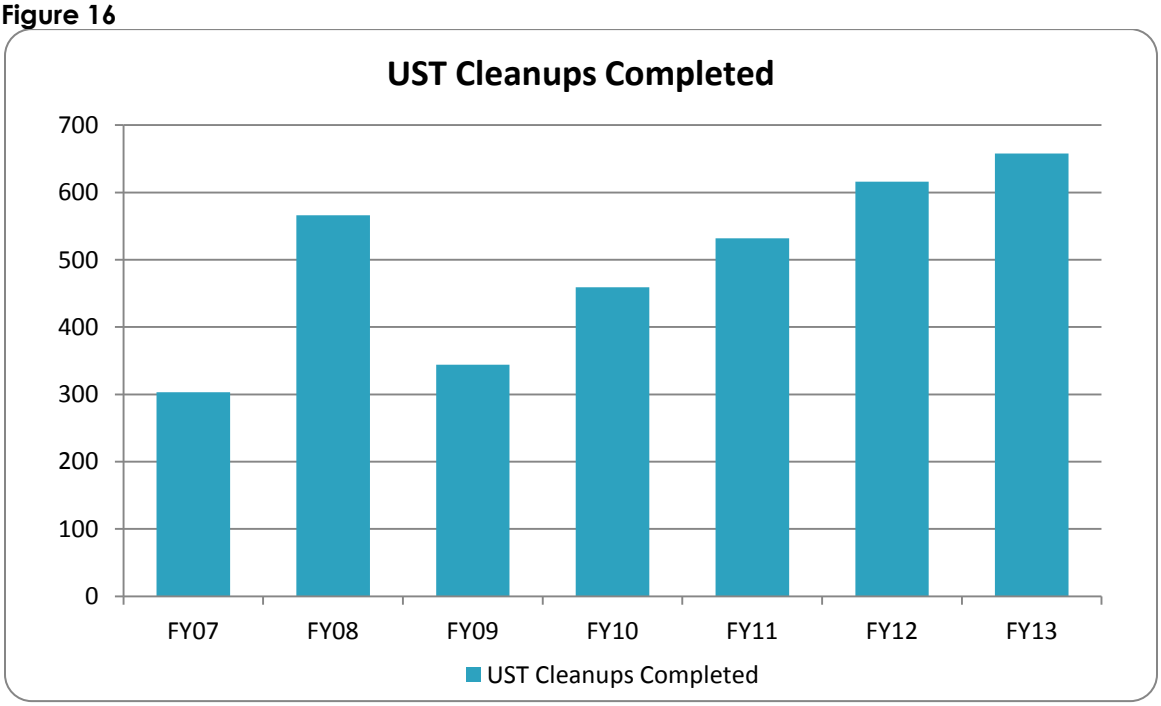
waste.ky.gov/UST

The mission of the Underground Storage Tank Branch is to provide for the prevention, abatement and control of contaminants from regulated underground storage tanks (USTs) that may threaten human health, safety and the environment. The Underground Storage Tank Branch regulates the registration, compliance, closure, inspections and corrective actions of UST systems.

Through cleanup, former UST sites become assets to their communities. Vacant UST properties in cities and towns are often on busy street corners and main thoroughfares, making them potential opportunities for economic development, community development, and neighborhood revitalization.

UST removal is taking place at a fueling station.
Photo by Division of Waste Management staff.

Figure 16



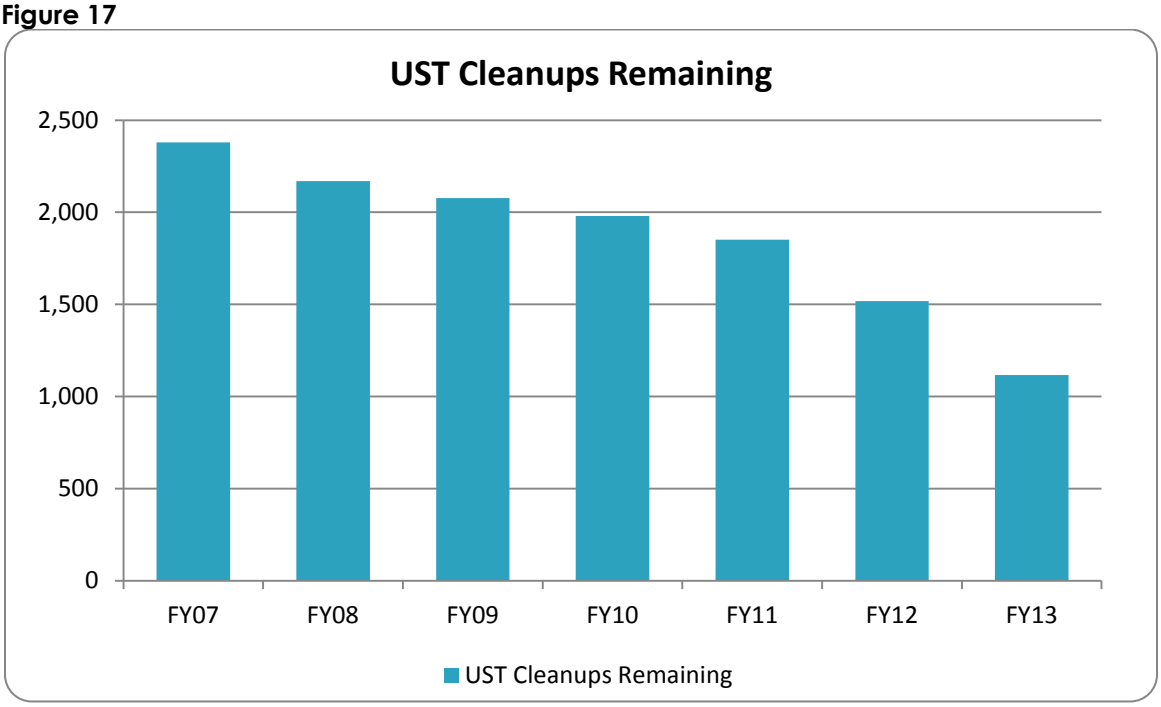
The above chart includes sites that have received a No Further Action letter from the Underground Storage Tank Branch (cleanups completed). There were regulatory changes in FY07 which in part account for the spike in FY08 NFA letters. In FY13, 658 NFA letters were issued to UST sites.

Kentucky is fortunate to have a funding mechanism that provides recurring financial assistance to eligible UST owners and operators for cleanup costs, and, in certain cases,

the removal of old UST systems. This facilitates cleanups that may not otherwise take place since it helps UST owners who in many cases do not have the financial viability to self-fund the cost of removal and cleanup. The funds come from the Petroleum Storage Tank Environmental Assurance Fund (PSTEAF) and are from an assurance fee of $0.014 assessed on each gallon of gasoline and special fuels imported to Kentucky.

As a direct result of changes in the regulatory process in 2006 and 2011, the total number of UST cleanups remaining has decreased substantially over the last few years. At the end of FY13, there were 1,117 UST cleanups remaining.

Figure 17



While these charts reveal the clear success of the changes in the UST cleanup program and regulatory process, it should also be noted that as long as USTs and piping have an opportunity to leak, there will continue to be new UST releases and the need for a UST cleanup program for the foreseeable future.

In fact, the number of new cases being added to the cleanup list average roughly 280 per year over the last seven years.

Outreach and education continue to be a primary focus of the UST Branch.

The UST Quarterly publication and the UST Branch website are focused on aiding UST owners, operators, contractors and companies with timely information regarding the regulatory aspects of owning and managing USTs and the cleanup of UST-related contamination.

UST QUARTERLY

The Kentucky Underground Storage Tank Operator Online Learning System (TOOLS) reached its final stages in development in FY13 and began beta testing. It is an online operator training crafted to: assist in satisfying state- and federal-mandated training requirements for UST operators; educate owners, operators, and designated compliance managers; and improve compliance at UST sites with active or temporarily closed tanks.

Assuming consistent and ongoing funding being provided for the UST cleanup program, coupled with the expected advancements in release prevention and enhancements in the cleanup and reimbursement processes, the agency is hopeful that the number of cleanups completed will continue to outpace the number of cleanups added to the list in the years to come.

UNDERGROUND STORAGE TANK BRANCH HIGHLIGHT

Benefits of Geophysics on UST Sites

By Larry D. Hughes, P.G.

Applying geophysics to challenging environmental projects provides an enhanced alternative and insight into the subsurface unlike conventional methods. Geophysics is a veteran and established technology that has been applied for 50+ years in other industries. Its use on environmental projects is relatively new but is maturing and establishing. Its value, relative to traditional assessment techniques, is realized in the concrete and cost-effective benefits it delivers short- and long-term.

Time and cost-saving benefits of using geophysical methods are immediately realized because these methods are noninvasive – they don't require direct access to the subsurface like excavation or drilling (with the exception being borehole methods). Think of it as imaging for the underground. In most cases it's similar to someone using a metal detector or utility companies marking underground utilities. There's minimal interruption to land owners, residences or businesses as their property is virtually untouched when geophysical methods are used.

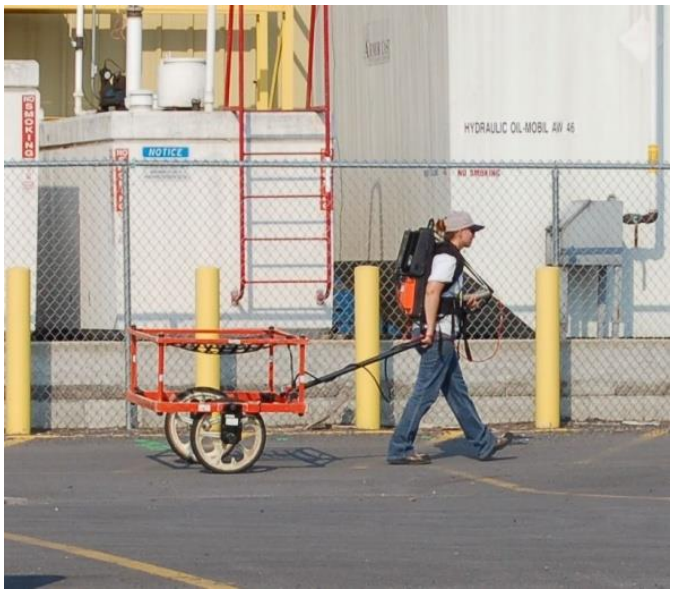
In addition, vast volumes of subsurface data can be gathered in a short time at far less cost than excavation or grid-drilling methods. For example, geophysics can typically be performed in less than one to three days on a UST site with preliminary results being in hand before leaving the site. Conventional methods typically take several days to weeks to complete in the field and results often come many weeks later. Geophysical methods typically cost $4,000 to $12,000 per site depending on the need and size of the project. In contrast to this, groundwater monitoring typically costs $12,000 to $70,000 over a 5-year lifespan for five to 10 monitoring wells and still leaves a lot of doubts as to the understanding of the subsurface.

The most significant time and cost savings aspect of geophysics is in the type and amount of the data generated. Geophysics is unequaled in providing fit data for the conceptual model of a UST site. Geophysics provides more data density per area than any traditional method. A typical geophysical study will produce 30,000 to 40,000 data points per acre as opposed to 30 to 40 data points using conventional techniques. That's 1,000 times

more information per area gathered for decision making whereby we can then make more accurate interpretations of complex environmental problems. It's comparable to using a geological version of an x-ray or MRI to determine the scope of an environmental problem, rather than exploratory surgery.

An accurate conceptual site model is the most significant part of an environmental project, as it is the basis for determining the best plan for cleaning up a site. An incomplete model of a site, based on inadequate data and methods, adversely affects all aspects of the project like compounding interest. What tends to drag a project out, escalate costs, and lead to apparent failure is generally not the remedy itself, but the type and methods of data acquisition. Suitable data and methods for gathering it facilitate a comprehensive conceptual model which helps develop the remedial objectives and implementation of the remedy toward those objectives in much shorter time frames and at less cost to the project. Geophysical methods precisely fit this need.

The use of geophysics on environmental projects is an effective tool to expedite all aspects of uncovering the site's problems and devising the best solution. It significantly helps identify site specific clean up objectives, deployment, and completion toward those objectives in much shorter time and at far less cost. By more clearly understanding a site's specific conditions and dynamics with geophysics, one can greatly reduce the number of unknowns that tend to cause over or under reaction to a specific site. This ultimately translates into properties being freed up and put back into good economic and beneficial use sooner than later as sensible remedies with balanced objectives are implemented properly.

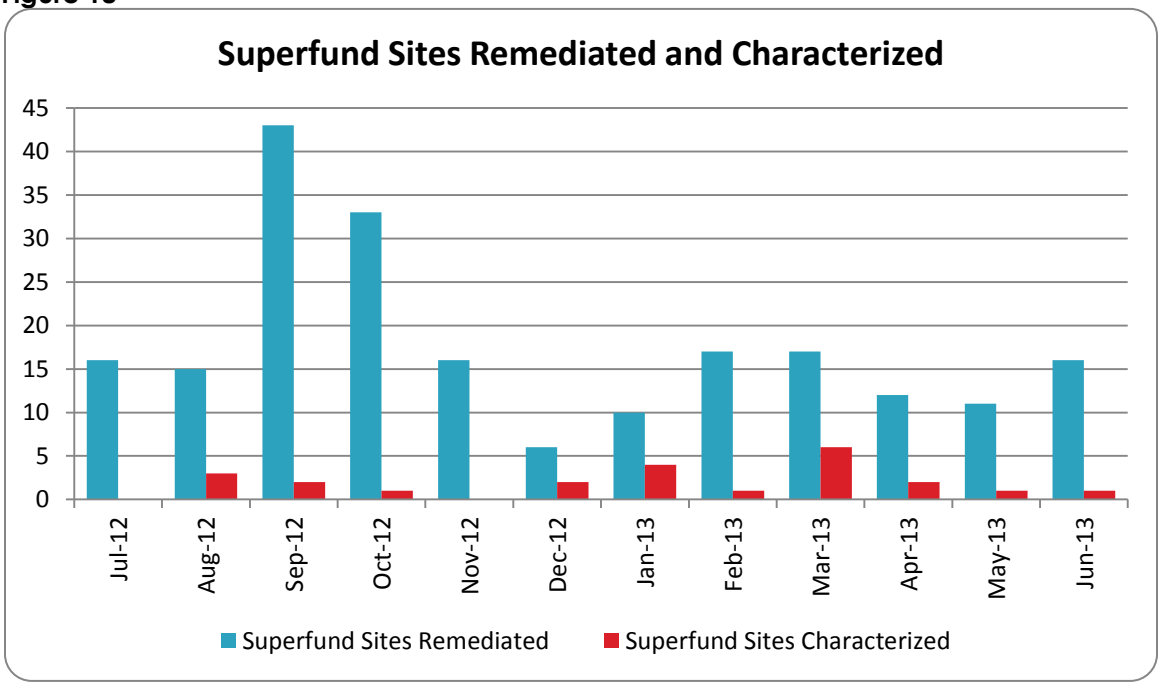


There's minimal interruption to land owners, residences or businesses as their property is virtually untouched when geophysical methods are used.
Photo courtesy of Mundell & Associates

The Superfund Branch seeks to ensure that contaminated sites are evaluated and cleaned up in a timely manner to reduce risks to human health and the environment. In most cases this means overseeing companies or individuals who have taken responsibility for cleaning up contamination found on their property. In cases where a responsible party cannot be found or is unable to act, the Superfund Branch may take a direct role in cleaning up a site. The program handles oversight of cleanup of hazardous substance releases and non-UST petroleum releases across the Commonwealth.

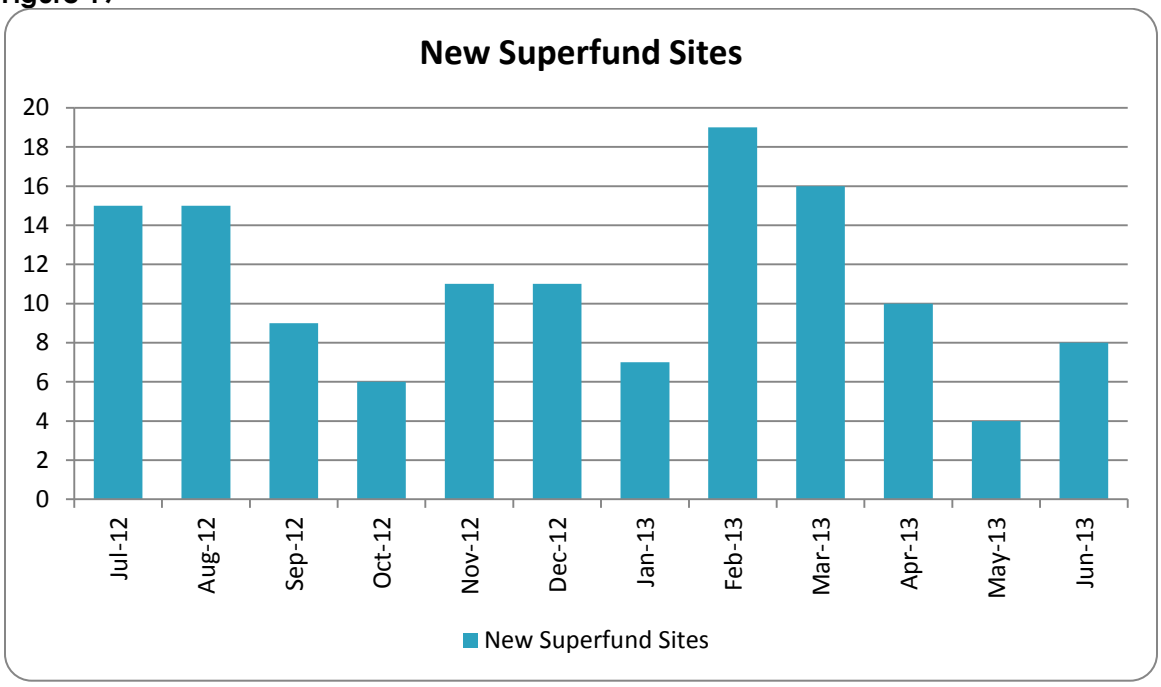
The Superfund Branch must maintain a list of sites where waste is managed on site through some form of engineering control (such as a cap or structure) or institutional control such as an environmental covenant or deed restriction. There are currently 175 sites where waste is managed on site. These sites require some form of reporting such as an annual report or five year review as established in statute. For sites that are being managed by using institutional and/or engineering controls, the obligations to continue to manage the releases are indefinite. Therefore, the numbers of total managed sites in Superfund will be constant or continue to increase as new sites are approved for closure under this option. As noted above, the only way a site can be removed from the managed site list is if additional cleanup is performed to restore the site to safely allow for unrestricted residential use.

Figure 18



In FY13, the Superfund Branch remediated 212 sites, characterized 23 sites and registered 131 new sites. Five state-lead sites were remediated utilizing the Hazardous Waste Management Fund. There were no cleanups conducted under state oversight via the Voluntary Environmental Remediation Program.

Figure 19



Brownfields

Brownfields are abandoned, idled, or under used 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. The Brownfield redevelopment is a joint effort between the Division of Waste Management and the Division of Compliance Assistance. For more information on the Division of Compliance Assistance, see the agency's website at http://dca.ky.gov/brownfields/Pages/default.aspx or call 800-926-8111.

Methamphetamine Lab Cleanup

In cases where homes are contaminated with meth waste, the Kentucky Division of Waste Management works in conjunction with law enforcement and health departments to remediate structures through the division's Methamphetamine Lab Cleanup Program. Because meth waste is so toxic, especially to small children, and absorbs into home surfaces and structures, it must be remediated by certified contractors. In FY13, 300 contaminated residences were reported and 113 residences were decontaminated through the Methamphetamine Lab Cleanup Program.

SUPERFUND BRANCH HIGHLIGHT

Final Closure of the Maxey Flats Project has Begun

By Tim Hubbard, P.G., Assistant Director and Acting Superfund Branch Manager

In January 2008, the United States Environmental Protection Agency (EPA), who has direct regulatory oversight of the facility, communicated to the Kentucky Department for Environmental Protection (KDEP) that data related to stabilization and subsidence of the site collected to date indicated that the parties should consider moving towards placement of the final cap at the Maxey Flats. After several years of extensive review of site data and discussions with EPA and other project stakeholders, in 2012, KDEP requested of EPA that the site be moved into the final closure period so that plans for final capping could proceed. The Maxey Flats Project was placed into the final closure period in November 2012.

Aerial photo of the Maxey Flats Project, Hillsboro, Ky.
Photo by Thomas Stewart.

The Maxey Flats Project, formerly known as the Maxey Flats Nuclear Disposal Site, is a 50-acre commercial disposal facility for radioactive waste that operated from 1962 to 1977. During its operations, solid and liquid low-level radioactive waste was buried in unlined earthen trenches. Upon the discovery of radioactive materials in off-site groundwater, the facility was closed to alleviate the environmental threat and protect human health. In 1978, the Commonwealth of Kentucky purchased the facility to ensure immediate closure and proper remediation. The Maxey Flats Project was place on the National Priorities List (NPL) in 1986.

Prior to officially entering into the final closure period, the Energy and Environment Cabinet (EEC) worked with the Governor's Office and key local legislators to secure funding to place the final cap at the site. The final phase of the closure of the Maxey Flats nuclear disposal facility is underway, thanks to $35.2 million in funding requested by Gov. Steve Beshear and approved by the 2012 Kentucky General Assembly. The funding sources for the project include approximately $18 million from the Capital and Emergency trust accounts and an additional $17 million in approved bonding. The allocation means the EEC can move forward with plans for final capping of the site. The state's Superfund Branch has had the primary role for the Commonwealth and has been responsible for operations and maintenance in the interim maintenance period, bringing the site to the point of entering the final closure period. The final closure plan will include installation of a permanent vegetative cap, installation of permanent surface water control features and installation of surface monuments to identify concerns and location of buried waste. Once the final closure period is completed, the cabinet and its agencies will enter into an institutional control period of 100 years which will include continued monitoring, maintenance and facility control.

A lot of progress has been made since entering the final closure period in November 2012, including:

a) Shawn Cecil, P.G., who formerly worked as manager of the Superfund Branch, was selected as departmental coordinator to be responsible for preparing and coordinating all phases of the final closure of the Maxey Flats Project including directing the work of the consultants and contractors, development and completion of the documents, plans, contracting activities, and communicating about the project internally within the cabinet, EPA, Radiation Control Branch in the Department for Public Health and to other interested stakeholders.
b) Scott Wilburn, former supervisor of the Maxey Flats Section, was selected as the division's on-site project coordinator. His primary responsibilities will be to coordinate the on-site work of the consultants and contractors throughout the final closure activities and to ensure their work is performed in accordance with the approved work plans and to communicate closely with the department's project coordinator and other division and department staff involved with the project.
c) URS was selected as the design and oversight consultant through the Finance Cabinet contractor selection process.
d) URS has drafted the remedial design work plan for the project and comments from the cabinet and other stakeholders are being reviewed.
e) URS has drafted a sump abandonment bid package which will be used to solicit bids for construction contractors to complete this activity.
f) The cabinet is in the process of purchasing two properties to increase the buffer zone around the Maxey Flats Project.
g) The cabinet has been developing a tentative schedule for the final cap installation.

Milestones included in the current schedule are:

a) Abandoning the sumps that are currently in the landfill from October 2013 through February 2014.
b) Completing the design package for the final cap and securing a construction contractor by August 2014.
c) Begin construction of the final cap in August 2014 with plans to conclude the cap construction in late 2015.

Although the final closure activities are well underway much work is left to be done. The staff of the Maxey Flats Section will continue to play a key role in the successful implementation of the final closure work and will work closely with the contractors. The division's Superfund Branch takes great pride in working as a team with all of the staff and contractors and looks forward to completing the final closure at Maxey Flats in a manner which is protective for all of the citizens of the Commonwealth.

PROGRAM PLANNING AND ADMINISTRATION

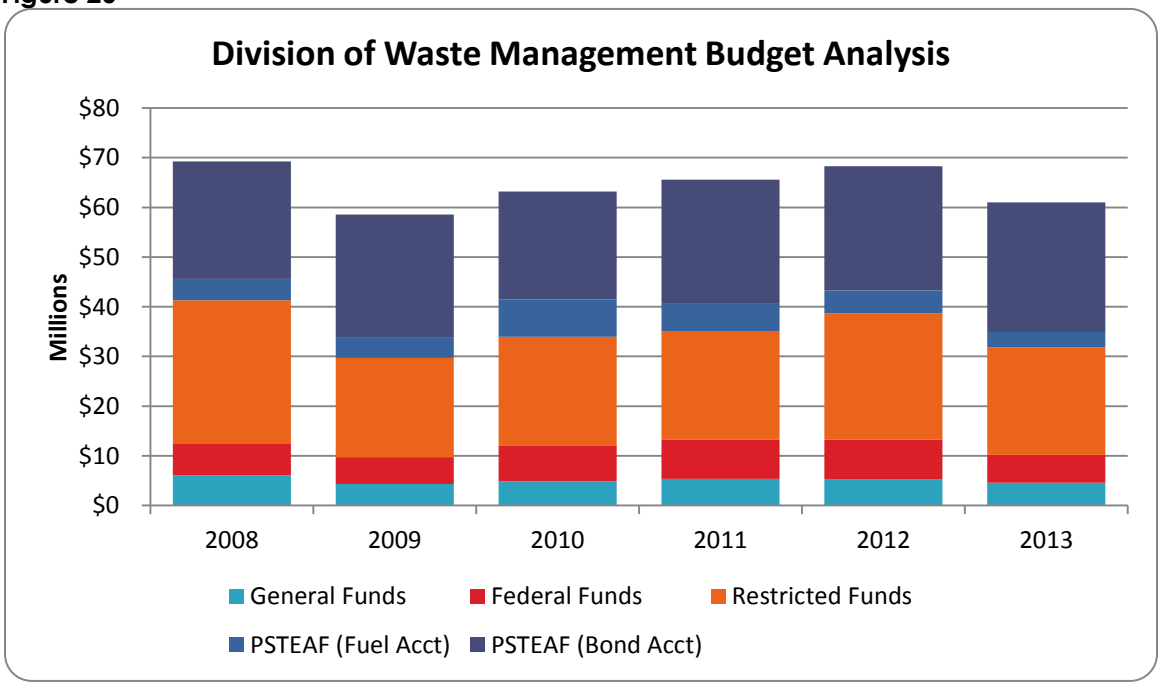
waste.ky.gov/PPA

The mission of the Program Planning and Administration Branch (PPA) is to promote sound waste management programs by providing administrative and operational support to all branches in the division through efficient and effective financial administration, personnel management and regulatory development.

Budget

The division's activities are financially supported by general funds, federal grants, and restricted funds, which include fees collected for permits and registration activities, PSTEAF, the new tire fee, the environmental remediation fee (ERF), and an annual appropriation from the road fund. The division must utilize available funding sources in the most resourceful and equitable manner possible, while striving to achieve the cabinet's environmental goals and division priorities.

Figure 20



After 2013, the PSTEAF account will only consist of receipt money, and will no longer be using a bond to cover expenses.

The division had the budget to employ 250 full-time permanent employees in 2013. The number of employees the division could fiscally maintain decreased nearly 11 percent since 2008. This reduction in personnel continues to challenge the division programs to operate more efficiently and identify program priorities.

Figure 21

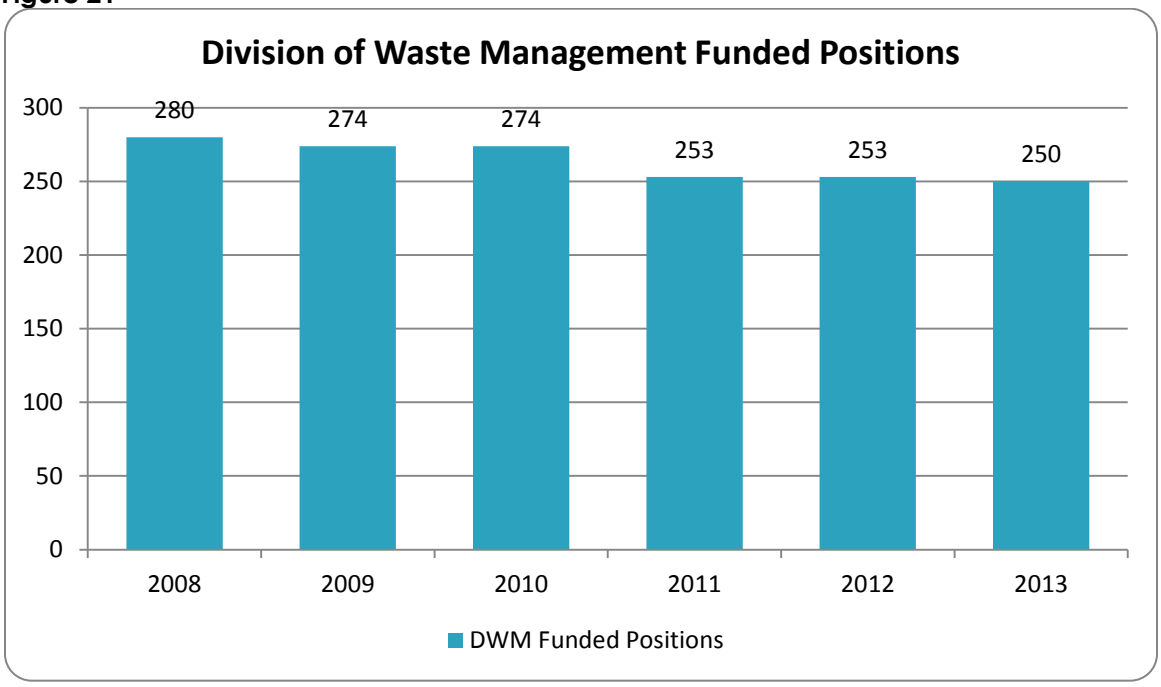
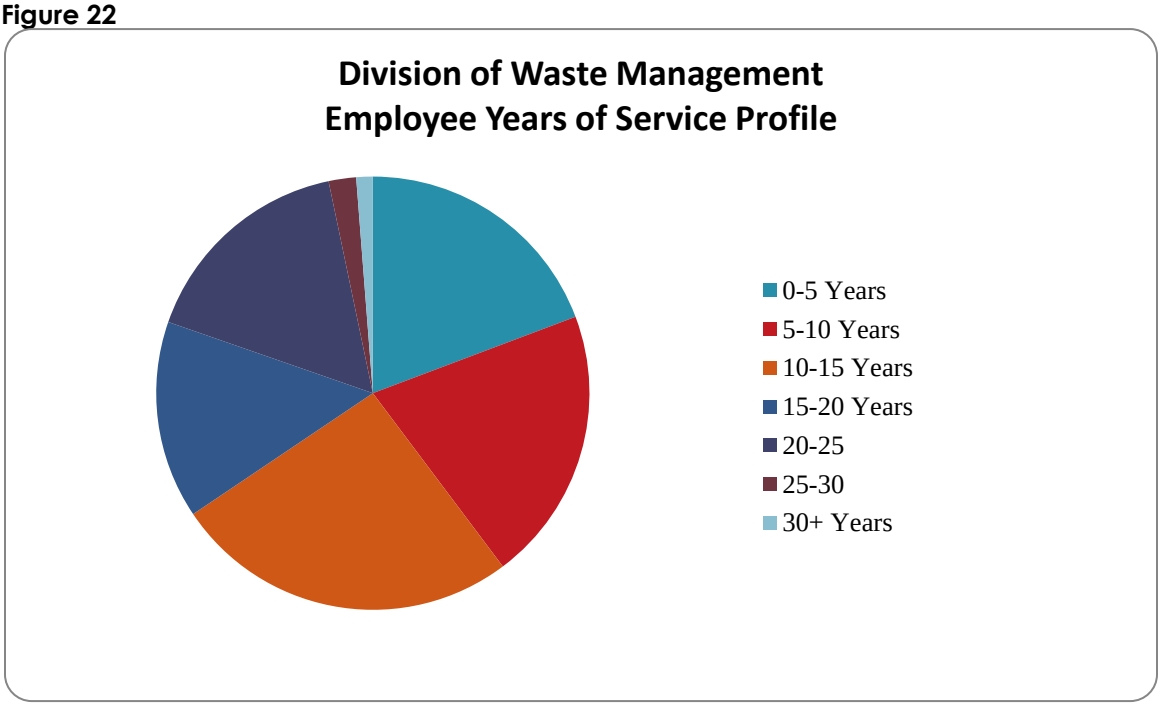


Figure 22



Project Administration Section

The Project Administration Section performs administration of purchasing, managing of grants received, memoranda of understanding and agreement by the division along with payments for major fee-supported programs.

Due to the way the division is organized, some programs are 100 percent federally funded, some are partially federally funded, and some receive no federal funding. This makes a cut in federal funding levels extremely detrimental to programs that are 100 percent federally funded, such as Brownfields, the Paducah Gaseous Diffusion Plant, and the chemical weapon demilitarization at the Bluegrass Army Depot.

Personnel and Administrative Support Section

The Personnel and Administrative Support Section performs personnel-related administration including training, travel logistics and reimbursement, coordination of new telephone hookups, and management of state issued cellular telephones, other human resource matters, and staffing the division's central switchboard.

Program Development Section

The Program Development Section performs a variety of functions related to the division's future such as managing planning initiatives and development of regulations along with coordinating review of proposed bills during legislative session.

New administrative regulations and amendments are currently being developed for the division as identified below.

- Incorporation of federal rulemakings in the Hazardous Waste Program. This includes 401 KAR Chapters 30-38, 41, 43, and 44. These changes will then be incorporated into a new authorization package for EPA submittal.

- Draft regulations for the Brownfield Redevelopment Program, 401 KAR Chapter 102 are underway. During the interim, Brownfield sites are being reviewed under the statutory authority of KRS 224.1-415.

- Regulation amendments concerning the annual report (401 KAR 49:080 and 401 KAR 49:011) and waste tire grants (401 KAR Chapter 46) utilized by the Recycling and Local Assistance Branch are in progress. These changes will reflect the current policy for the application and grant distribution process, and eliminate redundant reporting.

- Regulations relating to the use of Regional Screening Levels by various programs are being drafted. This will entail an amendment to 401 KAR 100:030 and the creation of 40 KAR 100:060.

Important legislative changes during the 2013 regular session are depicted below. In addition, potential legislative proposals for the 2014 regular session are presently being assembled for review.

- In the 2011 regular session, the legislature passed House Bill 433 which established the Waste Tire Working Group (WTWG). The purpose of the WTWG is to review numerous aspects of the Kentucky waste tire program and to provide advice to the cabinet for proposed changes to applicable statutes and regulations in an effort to improve the program.

  During the 2012 regular session of the General Assembly, the legislature passed House Bill 518 which amended KRS 224.50-855 to add three members to the WTWG. Governor Steve Beshear appointed the following new members to the group:

  (1) The Honorable James R. Townsend, Webster County Judge-Executive;
  (2) The Honorable Martin L. Voiers, Mayor of Flemingsburg; and
  (3) Mr. Joe T. Durkin, Assistant Manager for a large tire retailer in Lexington.

  With the addition of the new members, the WTWG statute (KRS 224.50-855) now consists of eight members.

- House Bill 126, commonly referred to as the PSTEAF extension, was passed during the 2013 regular session. This bill amended three statutes, including:

  - KRS 224.60-142 to extend the deadline for tank owners to register, submit affidavits and file applications for their tanks in the Petroleum Storage Tank Environmental Assurance fund from July 15, 2013 to July 15, 2016;

  - KRS 224.60-130 to require the cabinet to make reimbursements for those participating in the petroleum storage tank program before July 15, 2019 as opposed to July 15, 2015; and

  - KRS 224.60-145 to extend the small operator assistance account and small operator removal account programs for three years from July 15, 2013 to July 15, 2016.

- The Governor signed Senate Bill 2 which will significantly change the structure of the Kentucky Retirement Systems for any employee hired after Jan. 1, 2014. Newly hired employees will take part in a hybrid cash balance plan designed by the legislature, and may have their retirement benefits amended every five years as seen fit by the newly formed Public Pension Oversight Board. In addition to reviewing benefits, the Public Pension Oversight Board will be reporting annually on December 1 to the legislature on the status of the Kentucky Retirement Systems, including: legislative recommendations made by the board, a summary of the financial and actuarial condition of the Kentucky Retirement Systems, and an analysis of the adequacy of the current levels of funding.

- The Waste Tire Trust Fund Report was prepared as required by KRS 224.50-872 for the legislature. The report discusses the history, expenditures, revenues, and current status of the Waste Tire Program in Kentucky.

- The Legislative Research Commission renumbered KRS Chapter 224, Subchapter 01, to eliminate the leading zero, which were incorrectly numbered in 2006 in accordance with the Dewey Decimal System. The Chapter and Subchapter will now be referred to as KRS Chapter 224, Subchapter 1 for future regulations and other references in division material.

Other updates include the division's strategic operational plan (SOP) mid-year status update which was completed for state fiscal year 2013 and several new and updated planning initiatives drafted for the 2014 SOP.

Application Development

In support of the agency's mission, the Application Development Team has been working with DEP staff and the TEMPO vendor, CGI, on a major update to the current software. TEMPO software will be converted to a web-based software application that should be deployed in early 2014.

The Kentucky Underground Storage Tank Operator Online Learning System (TOOLS) reached its final stages of development in FY13. The online operator training presentations are an effort to educate owners, operators, and designated compliance managers (DCMs) and improve compliance. While the training system is still in its early stages, it has already been introduced to a handful of DCMs, and will be made available to several more groups over the course of the next year.

In addition to the information above, PPA manages the information in the division's central file room, coordinates and purchases supplies for each branch through Cardinal Office Systems, and conducts an annual inventory and surplus of all property.

ACKNOWLEDGEMENTS

Commonwealth of Kentucky
Governor Steve Beshear

Energy and Environment Cabinet
Secretary Leonard K. Peters

Kentucky Department for Environmental Protection
Commissioner R. Bruce Scott, P.E.
Deputy Commissioner Aaron Keatley

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 the contacts below:

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Field Operations Branch:	Jon Maybriar
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Cover: Aerial photo of the Maxey Flats Project in Hillsboro, Ky., by Thomas Stewart.

Compiled by: Virginia B. Lewis, D.C.

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Report an Environmental Emergency, 24-hour: 502-564-2380 or 800-928-2380