

Kentucky Division of Waste Management *Annual Report* Fiscal Year 2009



Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management

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FROM THE DIRECTOR



This is the fourth edition of our annual report and the information provided within represents activities and accomplishments for Fiscal Year 2009 (July 1, 2008, to June 30, 2009). While there are from time to time new tasks added to our list of responsibilities, our challenges remain to be much the same from year to year: 1) be a leader and assist others in the minimization of waste generation and land disposal of wastes, 2) increase recycling and the beneficial reuse of materials that might otherwise be disposed, 3) continue the closure and remediation of historic landfills, Superfund sites, hazardous waste sites and underground storage tank facilities, and 4) conduct timely review of permit applications for solid waste and hazardous waste facilities.

In calendar year 2009, the Division finalized regulations for the cleanup of clandestine methamphetamine labs. These regulations became effective July 6, 2009. Division staff is devoting significant efforts to reviewing and updating the solid waste regulations that may lead to some proposed changes to the regulations that are currently in place. Also, the Underground Storage Tank Branch is updating its regulations to be consistent with the requirements of the Federal Energy Act of 2005.

This report helps to show the progress made regarding the management of solid and hazardous waste and cleanup of releases to the environment. Also, the report identifies areas where we need improvement or additional focus. These are highlighted under the branch sections. These highlights will show accomplishments and progress made towards improvements in those areas.

I trust that the report provides useful information to interested stakeholders, and I look forward to continued progress and success in 2010.

Sincerely,

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

Division of Waste Management Annual Report

Fiscal Year 2009

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EXECUTIVE SUMMARY

The largest division of the Department for Environmental Protection with 250 staff positions, the Division of Waste Management 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 Fiscal Year 2009:

- *Curbside collection* – Participation in curbside garbage collection has remained steady following legislation in 2002 requiring waste haulers and recycling haulers to register and report to each county in which they provide service. The 2008 statewide household participation rate for all collection types was 86.7 percent.
- *Recycling* – Kentuckians recycled 34.6 percent of common household recyclables (aluminum, cardboard, steel, plastic, newspaper, glass, and paper) in 2008. Kentuckians recycled 39 percent of all municipal solid waste in 2008, which included sludge, concrete, compost, and asphalt in addition to the common household recyclables.
- Thirty-one entities received recycling grants from the Kentucky Pride Fund in 2008 totaling \$1.6 million.
- *Fewer illegal dump sites identified* –The number of new dump sites identified has declined 32 percent since 2003. More than 24,400 illegal open dumps have been cleaned since 1993 at a cost of over \$62.9 million dollars, an average cost of \$2,572.43 per dump site.
- *Litter along public roads decreases* – There has been a 5 percent decline in litter along public roadways since 2005. The Kentucky Pride Fund, Eastern Kentucky PRIDE, Bluegrass PRIDE, Transportation Cabinet, Adopt-A-Highway, and cities and counties contributed to the cleanup of 11,025,500 pounds of litter at a cost of \$6.2 million during 2008. The average cost per pound of litter picked up decreased 13 cents, from 71 cents in 2007 to 58 cents in 2008.
- The Kentucky Recycling Interest Group (KRIG), in association with the Division of Waste Management, Kentucky Recycling and Marketing Assistance (KRMA) staff, and the Kentucky Pollution Prevention Center, began actively facilitating programs to further develop the commonwealth's recycling infrastructure.
- *Waste Tire Program* –During 2008, Kentucky used funding from the Waste Tire Trust fund to recover more than 1.3 million passenger-tire-equivalents during waste tire "amnesties" across the state.
- *Crumb rubber grants awarded* – In 2008, the Waste Tire Trust Fund awarded 42 grants totaling \$994,133 to assist schools and communities in projects using crumb rubber from waste tires for athletic fields, gyms, parks, and community playgrounds.

- *The Division of Waste Management's state government office paper recycling program thrives* – The government office paper recycling program serves more than 115 agencies in Frankfort collecting office paper, computer paper, newsprint, and cardboard. State employees recycled 3,572,596 pounds of waste paper in 2008, approximately 313 pounds per state employee. Confidential document destruction provides a zero cost alternative to state and local governments.
- The cabinet is working with the Finance and Administration Cabinet to eliminate outsourcing of governmental waste paper for recycling. The Government Recycling Section gives presentations to all new Energy and Environment Cabinet (EEC) employees on the importance and benefits of recycling waste paper.
- There are approximately 2,100 known underground storage tank cleanup projects to be completed in Kentucky.
- 202 Superfund sites, of varying sizes and complexities, have been characterized and/or remediated within the last fiscal year.
- The Division implemented new regulations effective, July 6, 2009 for the cleanup of residential properties contaminated by methamphetamine production.
- The Division is in the process of performing a comprehensive review of its regulations in two major program areas: solid waste and underground storage tanks. In Fiscal Year 2010, the Division plans to propose new regulatory amendments to update these programs. Solid waste regulations amendments will introduce information that has been changed since the last promulgation effort and will update the regulations to conform to the current statutes. The UST program plans to incorporate changes in response to the Federal Energy Policy Act of 2005.

Division of Waste Management Highlight

Vapor Intrusion

By Sarah Jon Gaddis, PG – Kentucky Division of Waste Management

Most citizens of Kentucky are keenly aware of the problems associated with contaminated soil, groundwater, rivers and streams. However, few consider subsurface contaminants that can move through the soil in the form of vapor, providing another pathway for human exposure. Vapor in the subsurface can be swept into structures that overlie contaminant plumes. The resulting condition is called vapor intrusion. Vapor intrusion can affect indoor air quality and may pose health risks, including increased cancer risk due to chronic exposure.

The evaluation of vapor intrusion requires a multidisciplinary approach. Geologists and engineers are needed to evaluate the subsurface transport of contaminants in order to determine the source of contamination as well as to consider the entry points of vapor into overlying structures. Risk assessors aid in the process by quantifying the risk of human exposure to vapors present within the structures. Other sets of technical skills are needed to assess heating and cooling systems, air exchange rates, building construction and remedial technologies to prevent the entry of vapor into structures.

Presently, 24 states have published regulations or regulatory guidance regarding vapor intrusion. In this emerging environmental field, vapor intrusion experts are still in the process of researching methods for assessment of the vapor pathway, determining the levels at which various contaminants pose health risks and finding new and innovative ways to remediate impacted indoor air. The Division of Waste Management is focused on these efforts, as well, in an effort to protect the citizens of Kentucky from the threat of vapor intrusion resulting from subsurface contamination.

To this end, the Division established the Vapor Intrusion Workgroup in 2008 as the first step toward establishing a division-wide approach for addressing vapor intrusion. The workgroup is comprised of staff from the Superfund Branch, Field Operations Branch, Hazardous Waste Branch and Underground Storage Tank Branch as well as members of the Department for Environmental Protection's Emergency Response Team. The goals of the Vapor Intrusion Workgroup are straight-forward, with division-wide consistency being key.

Vapor Intrusion Workgroup Goals

- Determine the volume and distribution of sites regulated by the Division where vapor intrusion is being actively assessed.
- Develop action levels for emergencies and investigations.
- Identify values that are representative of background contaminant values.
- Develop a consistent approach for identifying sites that should be assessed for vapor intrusion.
- Developing a consistent approach for vapor intrusion investigations and remediation.
- Provide training to technical staff within the Division.

The Vapor Intrusion Workgroup has found that the majority of the sites where vapor has been addressed are regulated by the Underground Storage Tank Branch. In addition, a few sites that have undergone redevelopment under the direction of the Superfund Branch have implemented measures to prevent vapor intrusion in newly constructed facilities. The Superfund Branch is also experiencing an increase in the number of reports that include assessments for a potential Vapor Intrusion Condition (pVIC) in response to the 2008 issuance of ASTM E2600-08 Standard Practice for Assessment of Vapor Intrusion into Structures on Property Involved in Real Estate Transactions.

The Vapor Intrusion Workgroup continues to work on the development of standard procedures for identifying potential vapor sites as well as vapor intrusion investigations and remedial strategies. In addition, the Risk Assessment Section of the Superfund Branch has been instrumental in the process of researching ambient air contaminant values and emergency threshold values. In the coming months, the workgroup hopes to finalize these efforts.

In August 2008 the Vapor Intrusion Workgroup offered training that introduced the subject of vapor intrusion to staff from the Hazardous Waste Branch, Underground Storage Tank Branch, Superfund Branch, Field Operations Branch and members of the Emergency Response Team. The Division was fortunate to host Mrs. Louise Adams, president of H&P Mobile Geochemistry in Carlsbad, CA, who provided an overview of many issues surrounding vapor intrusion investigations. H&P Mobile Geochemistry is an industry leader in vapor intrusion investigations and laboratory methods. In the future, the workgroup plans to provide training to staff and the regulated community regarding vapor intrusion.

In summary, vapor intrusion is a complex, multidisciplinary exposure pathway that is gaining national attention and is actively being addressed by the Division. The foundation has been laid for an effective approach to addressing vapor intrusion sites in Kentucky, and the Vapor Intrusion Workgroup will continue to develop standard practices and training that will address the challenges of vapor intrusion in order to protect the citizens of Kentucky.

INTRODUCTION

The Division of Waste Management (Division) is one of six divisions of the Department for Environmental Protection in the Energy and Environment Cabinet (EEC). The department strategic plan, developed in June 2008, describes the mission of the agency:

“Protect and enhance Kentucky's environment to improve the quality of life for all Kentuckians.”

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

Department Goal #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.

Department Goal #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.

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

Tactic 2.3: Assure proper management and disposal of waste.

Therefore, the approach is to first minimize waste generation. Secondly, emphasis is placed on the reclamation and recycling of waste that is generated. Lastly, requirements are designed to assure that the remaining waste is disposed of properly.

Also, the strategic plan is geared towards the restoration of lands that are impacted from releases when wastes are *not* managed properly. In the report sections that follow, Division activities designed to address these primary issues—waste generation, recycling, collection/disposal, and site remediation—are highlighted.

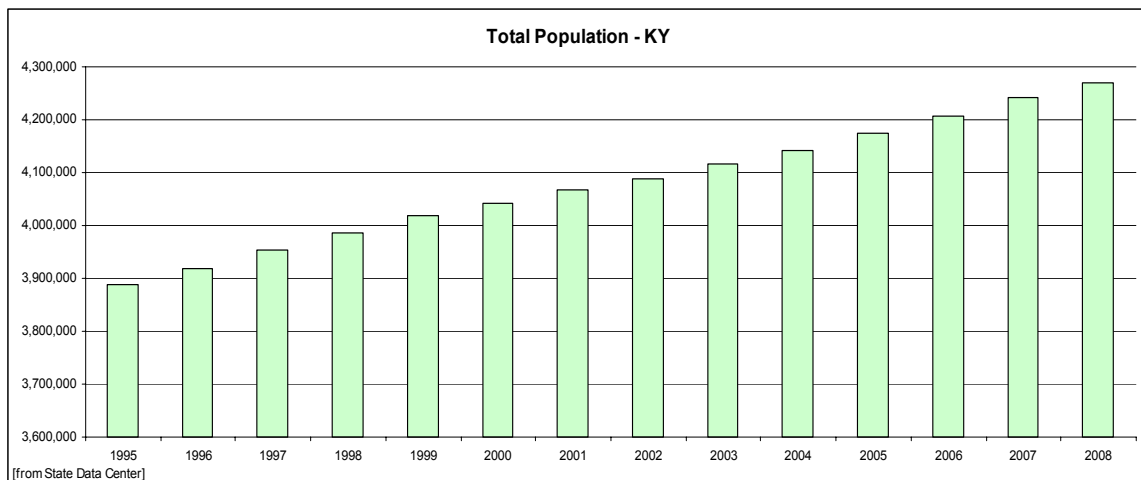
SOLID WASTE

<http://www.waste.ky.gov/branches/sw/>

The mission of the Solid Waste Branch is to assure proper solid and special waste management practices through the implementation of comprehensive permitting, monitoring and training.

The Solid Waste Branch is responsible for the review and issuance or denial of permits for solid waste and special waste landfills, landfarming and composting facilities and registrations for permit-by-rule facilities.

All counties in Kentucky offer a system of universal waste collection. Universal waste collection means that collection service is made available to households, either through curbside collection or through drop-off centers/collection centers/transfer stations for use by households. The total population in Kentucky is increasing, so the amount of waste generated in the state is increasing. The charts below show these trends of increasing population as well as increasing amounts of waste being generated.



In 2008, Kentucky experienced a 5 percent decrease in Kentucky waste disposal in Kentucky landfills and a 2 percent increase in the amount of out-of-state waste disposed in Kentucky landfills. Kentucky exported 5 percent of its waste to out-of-state landfills, a decrease from 6 percent in 2007. Kentucky generated 4,522,189 tons of waste in 2008, a decrease of 278,506 tons from 2007.

Kentucky's recycling rate on common household items (aluminum, cardboard, steel, plastic, newspaper, glass, and paper) increased from 29.5 percent in 2007 to 34.6 percent in 2008. The average recycling rate in the Southeast Region in 2006 was 22 percent, while the national average was 28.5 percent. (*The national recycling rate for 2007 had not been released at the time of publication.*) In 2007 and 2008, recycling grants were awarded to help develop recycling infrastructure across the state. As these new recycling programs become more established, Kentucky's recycling rates should continue to increase and set an example for other states.

The average cost for waste disposed at Kentucky landfills in 2008 was \$31.62 per ton. Chart No. 1 illustrates the comparison of tonnages of in-state, out-of-state, and the combined total of municipal solid waste received at landfills and the amount in tons of recycled materials in Kentucky, beginning with the base year 1994. Table 1 displays the actual numbers referred to in Chart No. 1.

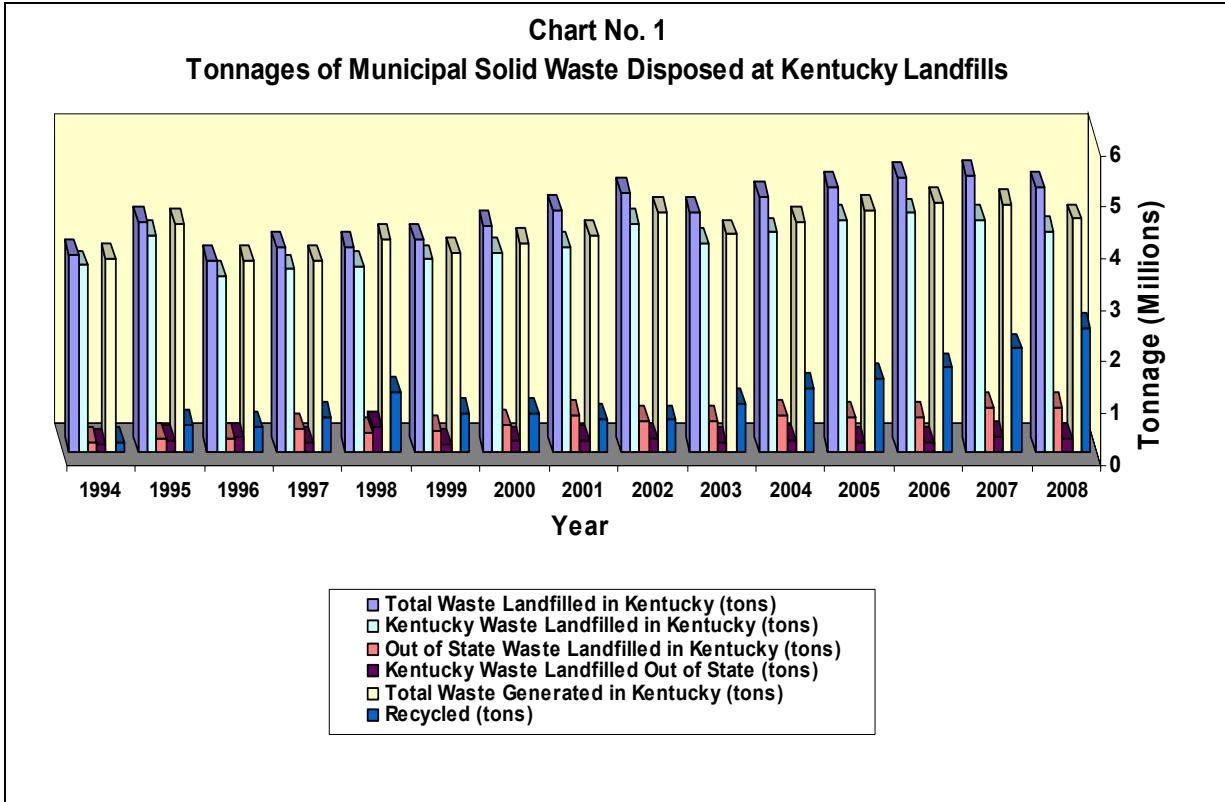


Table 1. Municipal Solid Waste Disposal in Kentucky (Tons).

Year	Total Waste Landfilled in Kentucky	Kentucky Waste Landfilled in Kentucky	Out of State Waste Landfilled in Kentucky	Kentucky Waste Landfilled Out of State	Total Waste Generated in Kentucky	Recycled	National Recycling Rate	Kentucky Recycling Rate
1994	3,813,365	3,621,623	191,742	133,505	3,755,128	191,684	23%	4.9%
1995	4,476,904	4,207,071	269,833	210,728	4,417,799	529,423	27%	10.7%
1996	3,700,832	3,429,983	270,849	277,638	3,707,621	474,415	28%	11.3%
1997	3,972,746	3,543,196	429,550	165,866	3,709,062	685,650	30%	15.6%
1998	3,989,181	3,615,890	373,291	496,424	4,112,314	1,150,620	31.5%	21.9%
1999	4,130,796	3,734,798	395,998	136,739	3,871,537	739,136	33%	16.0%
2000	4,375,652	3,860,516	515,136	202,029	4,062,545	742,398	32%	15.5%
2001	4,683,702	3,982,260	701,442	233,617	4,215,877	644,925	*	13.3%
2002	5,014,407	4,415,859	598,548	247,002	4,662,861	615,476	26.7%	11.7%
2003	4,642,560	4,036,800	605,760	184,159	4,220,959	919,802	*	17.9%
2004	4,961,476	4,259,181	702,295	217,761	4,476,942	1,237,294	*	21.7%
2005	5,157,185	4,493,499	663,686	191,923	4,685,422	1,429,490	30.0%	23.4%
2006	5,317,765	4,636,351	681,414	193,948	4,830,299	1,626,778	28.5%	25.2%
2007	5,351,897	4,500,843	851,055	299,852	4,800,695	2,005,249	*	29.5%
2008	5,144,418	4,273,781	870,637	248,408	4,522,189	2,395,819		34.6%

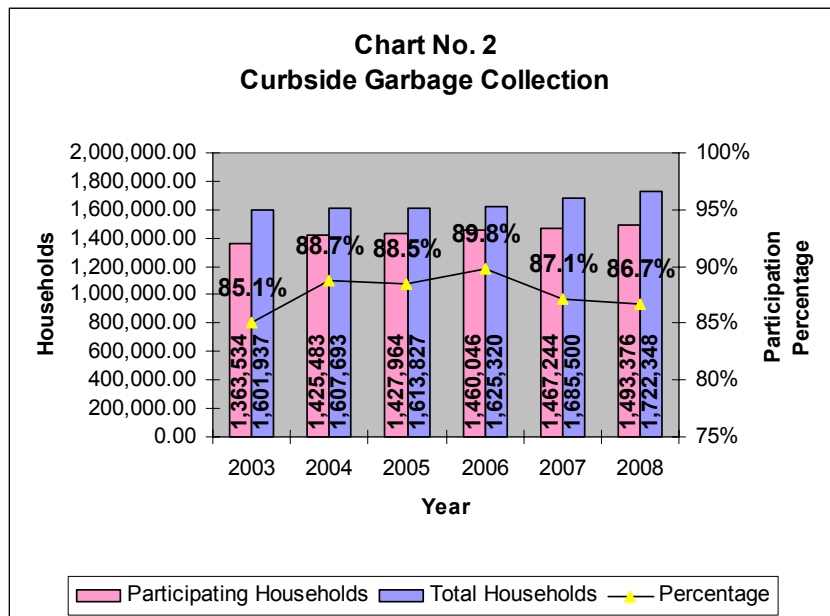
* National data is not available for 2001, 2003, 2004, 2007 and 2008 percentages.

** 2003 and 2004 Kentucky percentage increases are partially attributable to better data, due to a new state law that took effect mid-2002 requiring recyclers to register and report amounts and types of materials recycled. Kentucky municipal solid waste recycled figures are for: aluminum, cardboard, steel, plastic, newsprint, glass and paper.

Municipal Solid Waste Collection Programs

Participation in curbside garbage collection has remained relatively flat since 2003 with an average of 87.6 percent participation. Since 2003, waste haulers and recyclers have been required to register and report annually to the county the number of households utilizing collection service.

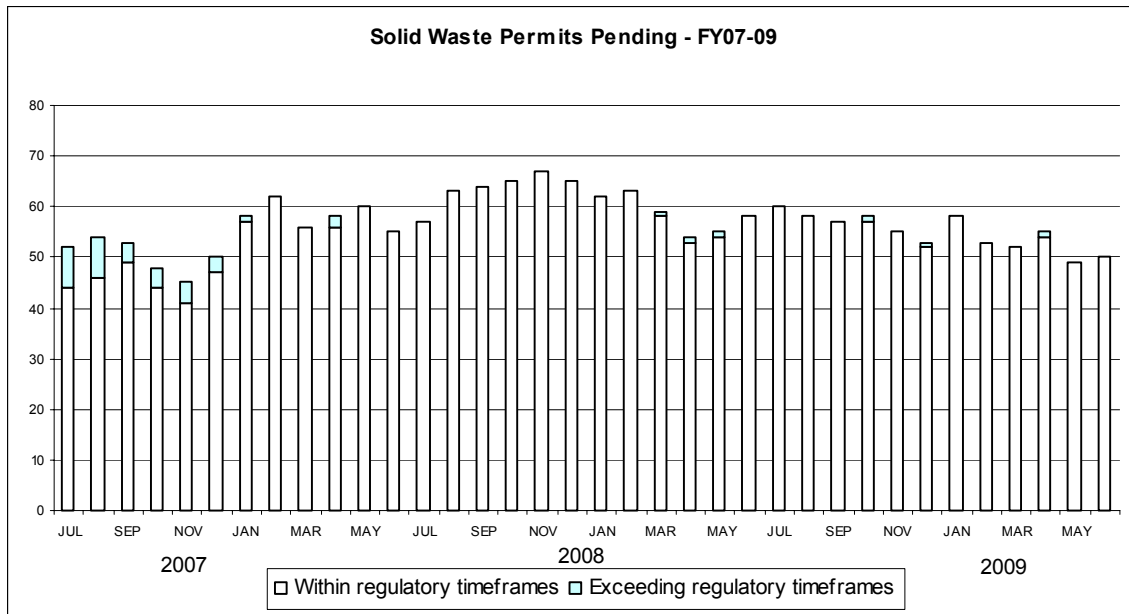
Chart No. 2 shows the number of households participating in collection systems from 2003 to 2008.



The average participation rate for collection systems in 2008 was 86.7 percent, which means approximately 13.3 percent of households (229,072 households) are not accounted for by current tracking methods. Self-haul to a transfer station or convenience center is a legal method of disposal. However, most counties have difficulty tracking customers who dispose of waste at this type of facility. Increased reporting requirements from transfer stations and convenience centers is needed to ensure adequate tracking for households participating in proper disposal of municipal solid waste.

Solid Waste Permitting:

The Solid Waste Branch is continuing to maintain a zero permit backlog.



This chart shows that there continues to be compliance with permits reviewed within the regulatory timeframe.

Historic Landfills:

The following is a summary of the Historic Landfill program progress and results:

Nine landfill construction projects for closure/remediation have been completed. Three of the completed projects have been recognized with awards. Most recently, the City of Campbellsville Landfill project received a National Recognition Award from the American Council of Engineering Companies (ACEC) and also received a Grand Award from the Kentucky Chapter of the ACEC. Total costs associated with all nine closure projects, excluding Closure Section personnel direct and indirect expenses, was approximately \$31 million (\$30,871,128.17).

- o Briar Hill Landfill—Scott County
- o Sims Road Landfill—Scott County
- o Perry County Landfill
- o City of Campbellsville Landfill—Taylor County
- o Old City of Leitchfield Landfill—Grayson County
- o Floyd County Landfill

- City of Manchester Landfill—Clay County
- City of Leitchfield-Millwood Landfill—Grayson County
- City of Cynthiana Landfill—Harrison County

Three landfill closure projects are presently under construction. Total cost for all three projects including site characterization, design, and construction is projected at approximately \$6 million.

- Harland County Fiscal Court Landfill
- Winchester Municipal Utilities/Old Clark County Landfill—Clark County
- City of Richmond Landfill—Madison County

Two landfill closure projects have completed the design phase and are scheduled in the next budget cycle for construction. The total construction cost estimate, including site characterization, design and engineering oversight, for the projects is approximately \$4 million.

- FIVCO Landfill—Carter County
- Raven Run Landfill—Fayette County

Six landfill closure projects are in the design phase. Preliminary cost estimates for the projects including site characterization, design, and construction is approximately \$9 million.

- Marion County Landfill
- Mercer County Landfill
- Johnson County Landfill
- Billy Glover Landfill—Jessamine County
- Bullitt County Landfill
- Johnson County Landfill

Seven landfills are under contract for full site characterization. These sites are in various stages from waiting for additional site characterization work to waiting on final reports from the consultants. At an assumed average cost of \$1 million per site for site characterization, design and closure/remediation, an estimated total cost for these seven projects is \$7 million.

- Trigg County Landfill
- Barbourville Landfill—Knox County
- City of Fulton Landfill—Fulton County
- Marshall County Landfill
- City of Franklin Landfill—Simpson County
- City of Owensboro Landfill—Daviess County
- City of Bardwell Landfill—Carlisle County

Two landfill owners have completed closure with the cooperation, direction, and support of the Solid Waste Branch Closure Section. Permit termination letters were issued and final closure accepted. Total cost to the Historic Landfill program included direct and indirect personnel costs and is estimated at \$10,000.

- Wayne Hurst Landfill—Fleming County
- Happy Hollow Landfill—Bell County

Two landfill owners are currently working with the cooperation, direction and support of the Solid Waste Branch Closure Section to perform remediation and closure of their landfills. Total Cost to the Historic Landfill program is estimated at \$10,000 and includes direct and indirect personnel costs.

- o Shelby County Landfill—Shelby County Solid Waste Commission
- o Bell County Garbage & Refuse Disposal—Bell County Private Owners

Site characterization work at two sites has determined no further action is warranted.

- o City of Bowling Green Inert Landfill – Warren County
- o Letcher County Fiscal Court Landfill

Initial characterization of 159 sites is complete. The reports and data are reviewed. The sites have been ranked based on the perceived threat posed to human health and the environment. It is anticipated an additional three contracts will be advertised in fall 2009 or spring 2010 to fund the initial site characterization of an additional 85 sites in 16 counties.

Solid Waste Branch Highlight

From Environmental Liability to Community Asset Closing a Historic Landfill

The cleanup and closure of the City of Campbellsville's solid waste landfill site is a success story for the House Bill 174 Orphan Landfill Program. Prior to 2002, this "historic" landfill represented a potential threat to human health and the environment, with leachate seeping from groundwater springs into nearby streams. In that year, with new funding made available through House Bill 174, the site was placed on a priority list and the consulting firm of Malcolm Pirnie was retained to develop and implement a closure plan. Under the direction and supervision of Solid Waste Branch, Closure Section personnel, Malcolm Pirnie conducted field investigations to characterize site conditions, performed cost-benefit analysis of various closure options, and worked with staff to develop a conceptual closure plan. They then designed and oversaw construction of a cost-effective remediation that would protect local citizens and the environment.

Innovative and creative approaches were employed to remediate the complex site with design measures to reduce and manage leachate. The use of state-of-the-art technology for the geomembrane liner with a geocomposite drainage layer achieved significant savings. With an eye to sustainability, the plans included recycling and reusing scarce on-site soils and incorporated plans to capture landfill methane for possible future marketing. Working with the City of Campbellsville, a public recreational pond was created as a "side benefit" of this environmentally focused project.

To date this is the largest closure project completed under the House Bill 174 program. The project received a Grand Award in the 2009 American Council of Engineering Companies of Kentucky, Engineering Excellence Awards competition and a National Recognition Award when competing against projects from all across the nation. The City of Campbellsville has since signed an agreement with a third party to capture the landfill methane to generate and sell carbon credits to help offset future operation and

maintenance costs. Campbellsville has also cooperated with the Department of Fish and Wildlife to have the recreational pond stocked with game fish. An award winning project transformed an environmental liability into an asset for the community.



City of Campbellsville's solid waste landfill site post closure.

Recycling

<http://www.waste.ky.gov/branches/rla/>

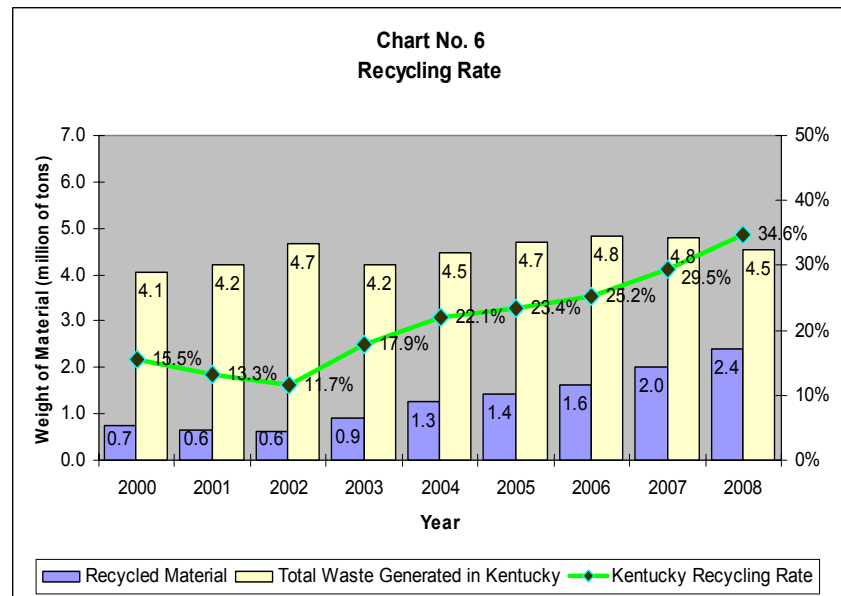
The Recycling and Local Assistance Branch (RLA) provides continuous technical assistance and training to public and private entities on solid waste issues and regulatory requirements and promotes individual responsibility and accountability for proper solid waste management.

County Recycling and Recycling Education Programs:

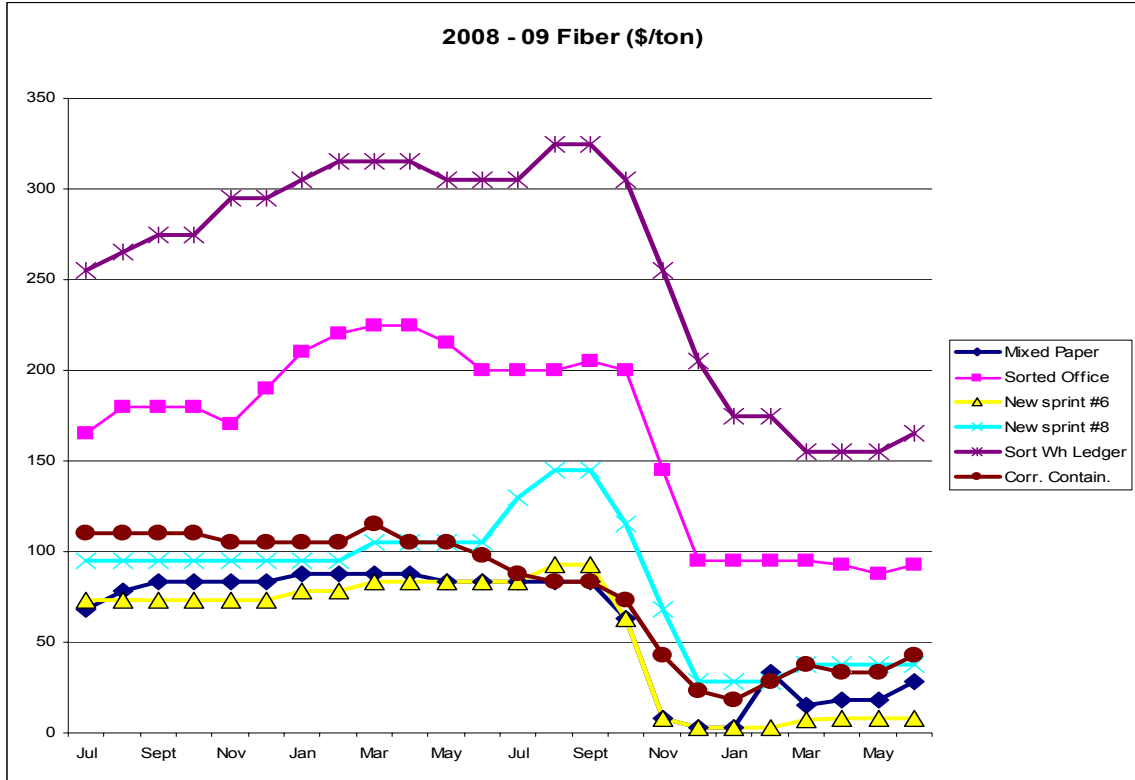
County recycling data illustrate a steady increase in the statewide recycling rates of common household items such as glass, aluminum cans, newspaper, mixed and white office paper, cardboard, metal, and plastics through 2008. Chart No. 6 reflects the amount in tons of common household items recycled in Kentucky since 2000.

Beginning March 1, 2004, recyclers were required to report the amount of municipal solid waste collected by volume, weight or number of items recycled to the county on an annual basis.

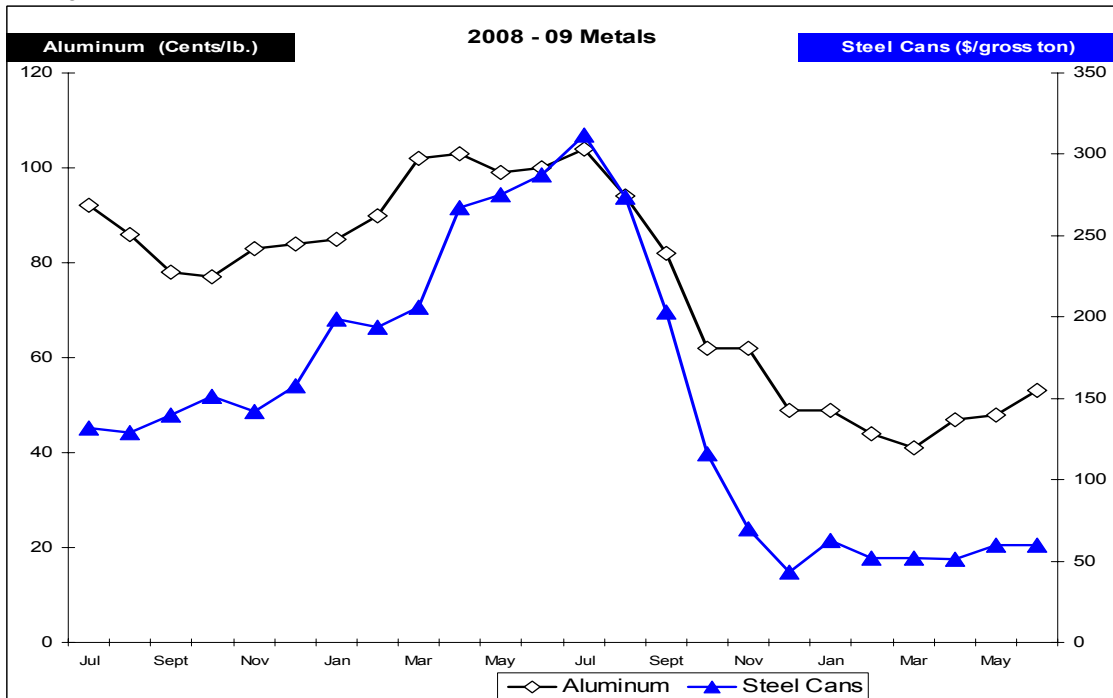
In 2006, the Kentucky Pride Fund was amended to provide grants for the development and expansion of recycling programs and household hazardous waste management. In 2008, 31 recycling grants were awarded for a total of \$1.6 million. The new recycling grants and education efforts by local governments should result in continuing increases in the recycling rates.



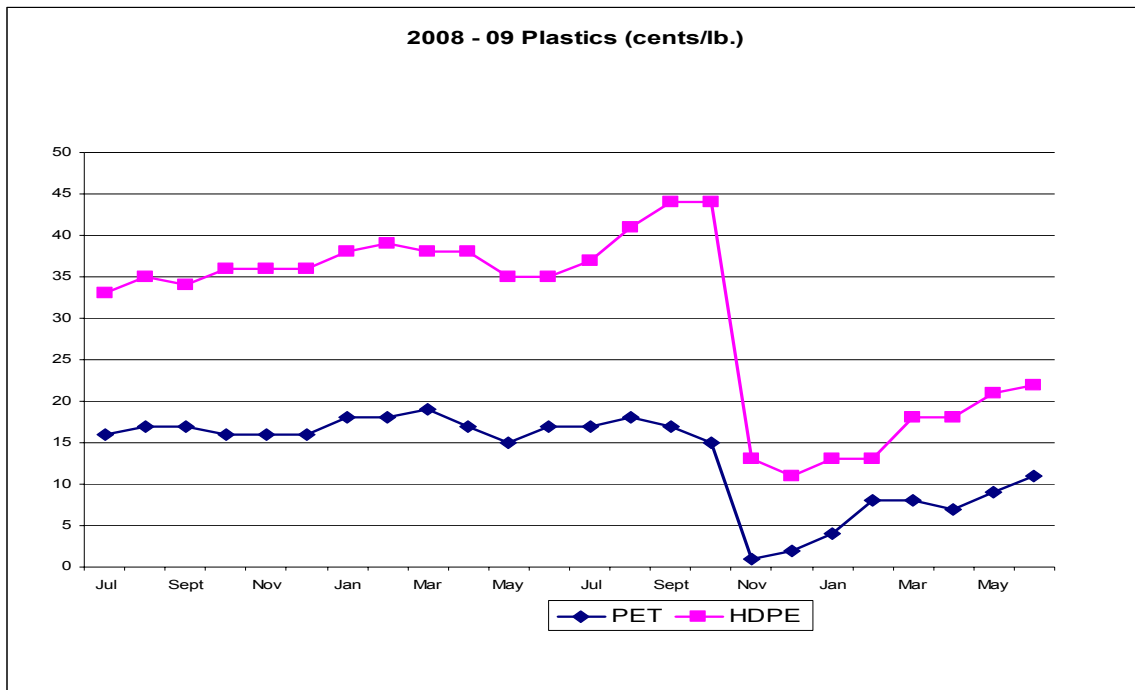
Through publication of its *Marketplace* newsletter, the Division reports on the prevailing prices paid for aggregate recyclable materials. The following charts show the trends for various commodities.



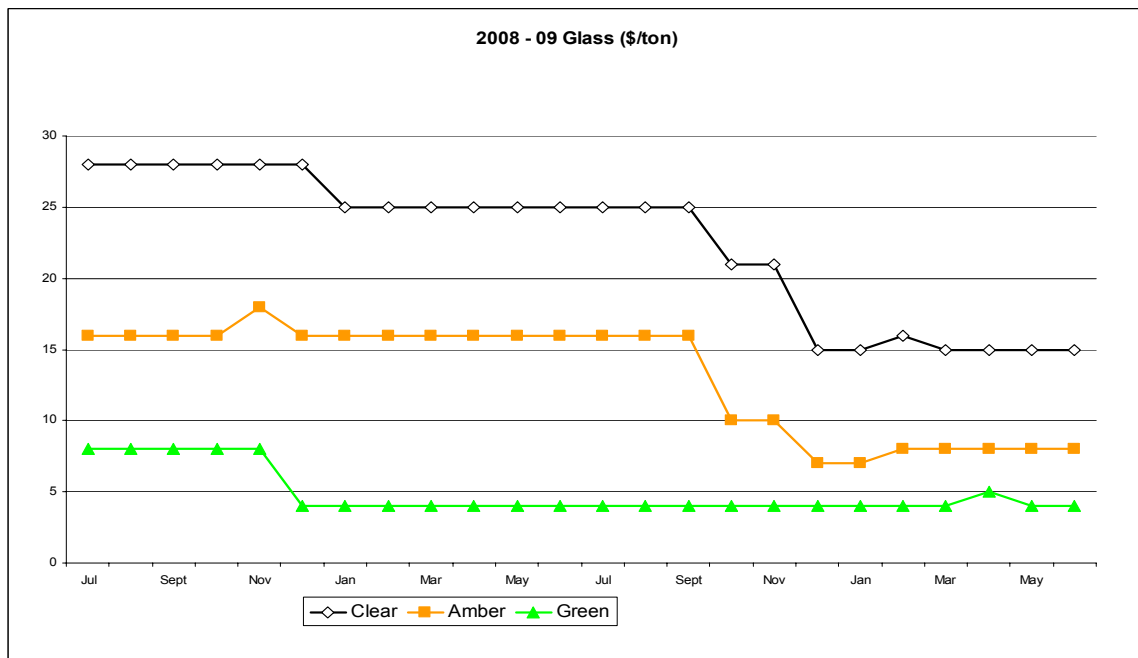
Note: "Newsprint #8" means baled sorted newspaper, with no sun exposure, with less slick advertising inserts.
 "Newsprint #6" means baled newspaper that typically has advertising slicks in it.
 "Sorted office" means mostly white and colored, groundwood-free copier and printer paper.
 "Mixed paper" means a lesser-grade of material that can include slick advertising inserts, envelopes and other things with gummy surfaces.
 "Sorted white ledger" means higher class white paper such as stationery (free of groundwood fiber)
 "Corrugated containers" means, typically, cardboard boxes.



Recycling prices for aluminum and steel cans have dropped from FY 08 to FY 09.



Number one and two plastics, PET typically known as soda bottles and HDPE typically known as milk jugs. Plastics have seen a drop in price starting in October and November 2008 but have increased into fiscal year 2009.

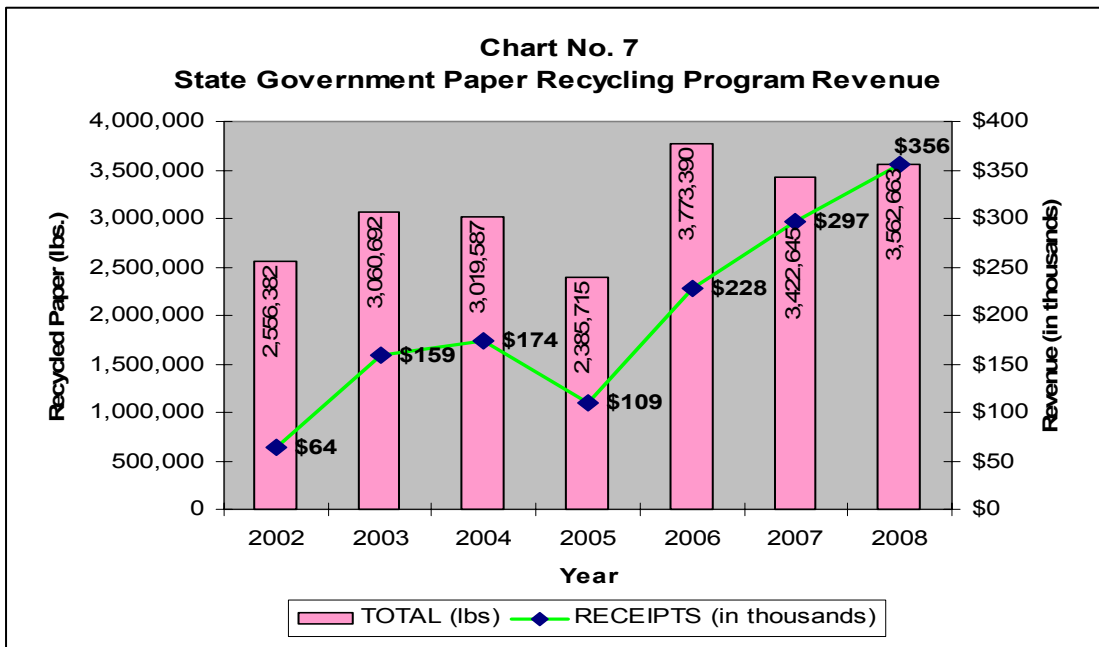


Glass prices, for amber glass and clear glass dropped between \$3 and \$6 per ton. Green glass held steady.

The State Government Recycling Program:

The Government Recycling Section of RLA continues to operate the state paper recycling program serving more than 115 agencies in Frankfort. The Government Recycling Section offers free pickup and free document destruction of governmental office paper. The Government Recycling Section moved to its new location on Northgate Drive in June 2006. The new facility offers a secured 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 34.5 million pounds of paper being recycled through this program.

In 2008, government offices recycled 3,562,663 pounds (1,781 tons) of paper, newsprint, and cardboard – approximately 313 pounds per state employee. Chart No. 7 reflects the pounds of governmental waste paper recycled for calendar years 2002–2008.



The recent dramatic price drops in recycle commodities (paper, plastic, metals) were in direct correlation with the world-wide economic downturn. When demand weakens; it creates excess supply causing prices to fall. Without demand from manufacturers' inventories of materials pile up causing a glut on the market, resulting in reduced prices.

In general recycle commodities market fluctuations tend to lead the general economy by about 3 to 6 months, due to the time it takes to collect, process, convert into new products and get on retailers shelves the recovered materials. This is especially true for cardboard boxes as the sequence of events is:

- Old corrugated containers (OCC) are collected and sold or given to recycling operations (both commercial and community)
- The OCC is baled and shipped to kraft paper mills
- The OCC is pulped and made into kraft linerboard or medium rolls

- The rolls are shipped to box plants where they are cut, corrugated and glued into boxes
- The boxes are shipped to manufacturers to put their finished products into.
- The boxed goods are shipped to wholesalers' warehouses or retailers' stores.
- Items are unboxed and put on shelves for sale.
- The cycle begins again.

Prices for recycle commodities are rebounding, indicating that the general economy will begin recovering in the 4th quarter of this year as is being predicted by the Federal Reserve System.

Waste Tire Program:



Waste Tire Trust Fund-- The Waste Tire Trust Fund was created in 1998 to address waste tires in the state. Funding comes from a \$1 fee on the sale of all new motor vehicle tires sold in Kentucky. The fund is used to conduct waste tire amnesty programs, award crumb rubber grants, and facilitate market development for the use of waste tires.

In 2008, tire amnesties were conducted in thirty counties in the Big Sandy, Kentucky River, Barren River, and Purchase Area Development Districts (ADDs). A total of 888,859 waste tires ("passenger-tire-equivalents," or PTEs) were recovered through these 2008 amnesties at a cost to the fund of \$878,349. This represents a 7 percent increase in PTEs recovered for these same ADDs compared with the last amnesties, conducted in 2003-04.

In 2008, the cabinet conducted a pilot project in the Green River ADD to gather data on alternative methods of waste tire management. The project began in January of 2008 and generated the removal of 302,116 PTEs at a cost of \$301,228.

In addition to these activities, eight individual waste tire sites were addressed during the year, removing 142,696 PTEs at a cost of \$141,040.

Crumb Rubber Grants-- From 2004 – 2008, the cabinet awarded 204 grants totaling more than \$5.6 million to local government and schools for the use of crumb rubber made from recycled tires on athletic fields and playgrounds. In 2008, the cabinet awarded forty-two grants totaling \$1 million for crumb rubber projects to be completed during the year. Funding for the crumb rubber grants comes from the Waste Tire Trust Fund.

Kentucky Pride Program:

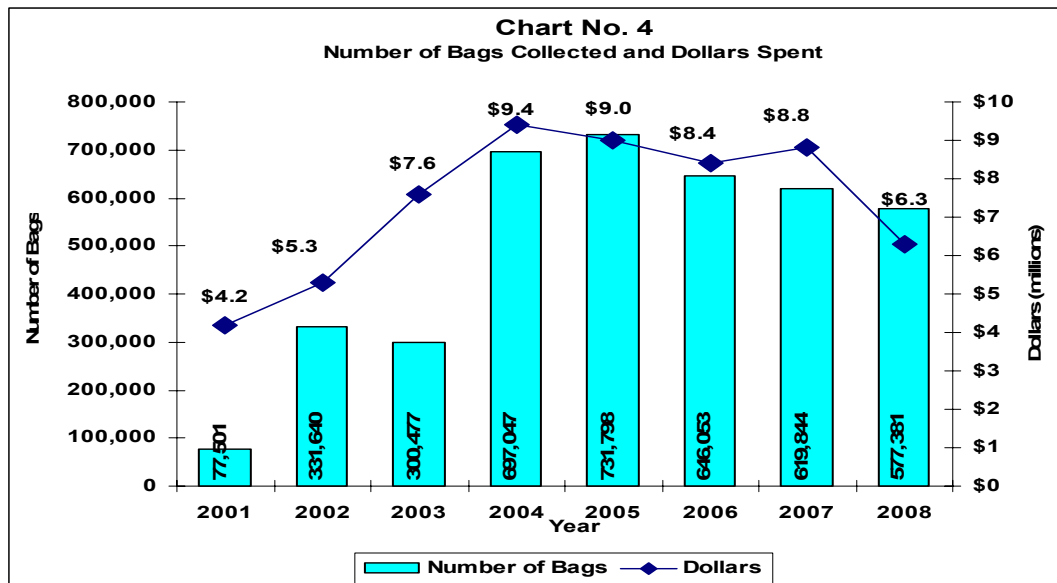
KRS 224.43-505 established the Kentucky Pride Fund. The Pride program is funded by the environmental remediation fee (ERF), which is \$1.75 per ton of waste disposed in Kentucky. The Pride program also receives \$5.0 million a year from the Transportation Cabinet to abate litter along public roads. The ERF generates approximately \$10 million per year. The historic landfill program receives \$2.5 million annually for projects (see page 12-14). Another \$2.5 million is used to pay off the debt service. The remaining \$5.0 million is awarded as open dump and household hazardous waste/recycling grants.

Litter Abatement — In 2001, the Division began tracking the cost of litter activities and the number of bags of litter collected. State litter abatement grant funding (Kentucky Pride Fund) began in fiscal year 2002. The \$5.0 million received annually from the Transportation Cabinet is distributed to counties and incorporated cities for litter abatement activities.

The success of litter abatement campaigns across the commonwealth is evident in the reduction of litter being picked up along roadways. Since 2005, there has been a 4.8 percent decline in the amount of litter collected from roadways. In 2008, counties cleaned 577,646 bags of litter on 154,960 miles of roadways.

Litter collection costs totaled \$6,358,415.21, an average cost of 55 cents per pound (\$1,099 per ton). Most of the items found on roadways are plastic bottles and food containers. Litter is costly at \$1,099 per ton compared to the average landfill disposal rate of \$31.62 per ton.

Chart No. 4 reflects the number of bags of litter collected and the amount spent on litter for calendar years 2001-2008.



Household Hazardous Waste Collection:

The Division coordinated local events to collect mercury and mercury-containing items. This is an effort by the agency to address household hazardous waste, an under-acknowledged waste stream.

Mercury collection events were held by 8 counties, with one event serving 3 counties. There was a total of 900.21 pounds of mercury collected. These events were made possible by the Kentucky Pride Fund.

The End of Life Vehicle Solutions – 2008 (ELVS), targets mercury-containing switches removed from automobiles before the autos are salvaged for scrap metal. The program collected 19.72 pounds of mercury from 8,964 switches from 57 participants.

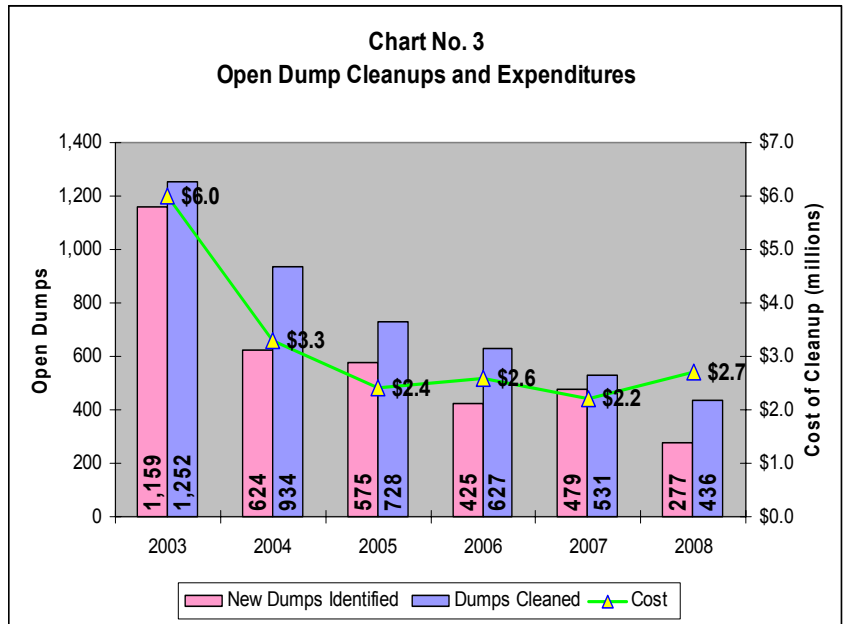
Cleanup of Illegal Open Dumps:

Since 1993, more than 24,436 illegal open dump sites have been cleaned at a cost of \$62.8 million. Chart No. 3 shows the number of dump sites cleaned since 2003. In 2008, counties cleaned 436 illegal open dumps at a cost of \$2.7 million. The average cost to clean each dump site was \$6,337. There were 483 known dump sites remaining at the end of 2008.

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 their old dump sites.

Since 2002, the Kentucky Pride Fund Illegal Open Dump Grant program has funded the cleanup of 1,064 dumpsites at a cost of more than \$5.5 million. The fifth round of illegal open dump grants was awarded in January 2009 for the remediation of 253 dump sites at a cost of \$2.9 million.

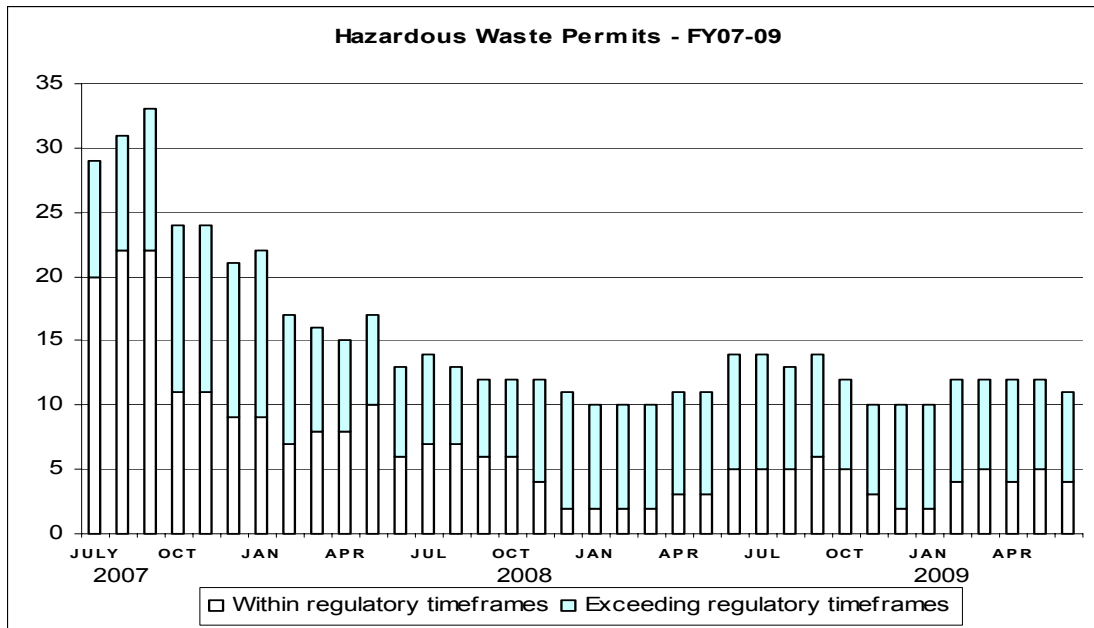


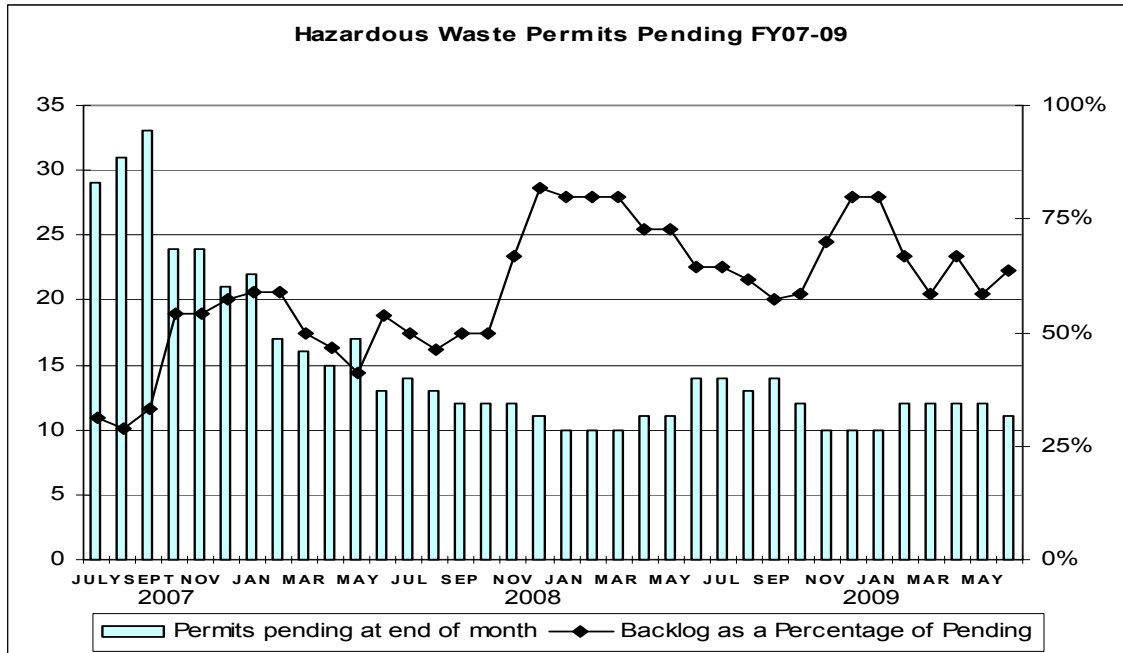
Hazardous Waste Branch

<http://www.waste.ky.gov/branches/hw/>

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 Permitting:





Procedures were changed for processing the permit applications. The number of pending permits at the end of each month declined steadily as the backlog declined. This resulted from the Division initiative to reduce or eliminate the number of permits exceeding the regulatory timeframe.

The American Recovery and Reinvestment Act (ARRA):

The American Recovery and Reinvestment Act (ARRA) provided \$78 million dollars for clean-up at the Paducah Gaseous Diffusion Plant (PGDP) located in Paducah, Kentucky.

In determining which projects would receive ARRA funds, the emphasis was placed on those projects which could start quickly and those which would have lasting value. In order to meet the first criteria, projects with defined existing scope, costs, and schedules were selected.

The Federal Facility Agreement parties (U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (USEPA), and Kentucky Division of Waste Management) selected to accelerate the demolition of three facilities at the PGDP, two large chemical processing facilities and one contaminated metals smelting facility. The specific accomplishments will be to complete the dismantlement and disposal of all major systems and large process equipment contained within the C-410 Uranium Hexafluoride Production Complex, and the complete structural demolition of the entire C-410 Complex to slab (200,000 square feet). This action will be completed about a year ahead of schedule. Additionally, the C-340 Uranium Metal Production Complex will be completely dismantled and all major systems and large process equipment contained within the building will be disposed. The entire C-340 Complex will be demolished to slab (77,000 square feet). The C-340 action will be five-years ahead of schedule. Finally, demolition of the C-746-A East End Smelter will be accelerated. The smelter and associated systems will undergo complete structural demolition to slab (21,000 square feet). All debris from the Smelter structure and all contents will be appropriately disposed. The smelter will be completed about 22 years ahead of schedule.

By demolishing these facilities before their scheduled date, money will be both saved and freed-up. A projected \$34 million savings will be available because the facilities do not have to be maintained, patrolled, etc. Part of this savings will be available to sustain clean-up schedules. Schedules which prior to stimulus funds were expected to slip. In fact, due to lack of funding, it was projected that scheduled clean-up would be extended to 2031 from the previous date of 2019. It is now expected that the 2019 schedule will be retained while freeing the public from the burden of maintaining antiquated, surplus facilities. Subtracting the dollars that will be spent preserving clean-up schedules from the \$34 million will leave about \$10 million as a net savings to the public.

The first recipient of ARRA funds will be the primary contractor for the DOE at the PGDP, Paducah Remediation Services, LLC (PRS). It is anticipated that modifications in the amount of \$36.1M will be made to the existing PRS contract for work to be completed through June 30, 2010. Funds remaining after completion of the PRS contract will be available to the next, follow-on DOE contractor. In addition to PRS, local businesses, vendors, and material suppliers will benefit by the increased purchases required to support ARRA work.

Hazardous Waste Branch Highlight

C-400 Groundwater Remedial Action

The primary objective of the C-400 Interim Remedial Action is to remove trichloroethene (TCE) present in the form of Dense Non-Aqueous Phase Liquid (DNAPL) from a maximum depth of 100 feet beneath the ground surface near the C-400 Building. The C-400 Building area is generally regarded as the most significant source of TCE to groundwater present at the Paducah Gaseous Diffusion Plant. The area continues to contribute TCE and technetium-99 contamination to off-site groundwater plumes. The interim remedial action will rely upon Electrical Resistant Heating (ERH) technology to heat the subsurface, vaporizing and mobilizing the TCE so that it can be captured above ground. ERH uses numerous subsurface electrodes to heat the surrounding soil and groundwater. Once temperatures reach the boiling point of TCE, the TCE vapors will be extracted from the subsurface using strategically located vacuum extraction wells. This vapor will be condensed (turned into a liquid) at the surface and will then be managed as hazardous waste. The action is to be implemented in two phases. Phase I will consist of installing electrodes, downhole sensors, and vacuum extraction wells at the southwest corner and to the east of C-400. Heating will be initiated first in these areas. Lessons learned during Phase I of the action will be used to improve system performance during Phase II. Phase II will consist of installing ERH elements at the southeast corner of C-400, the area known to harbor most of the TCE contamination. The treatment system will be deactivated once a point of diminishing returns is reached as determined through TCE vapor phase measurements and TCE levels in groundwater.

In FY 2009, the Division of Waste Management received the *D2/R1 Remedial Action Work Plan for the Interim Remedial Action for the Volatile Organic Contamination at the C-400 Cleaning Building (RAWP)*. In late FY 2008, the Division had requested that the U.S. Department of Energy (DOE) explicitly state in the RAWP that maximum allowable discharges of hazardous air pollutants, as presented in the work plan, were calculated so as to insure that an individual standing at the DOE property boundary and downwind of the emission point would not receive an unacceptable exposure. This request was made in

concert with the Kentucky Division of Air Quality. DOE made the requested change and resubmitted the D2/R1 RAWP on October 1, 2008. Kentucky approved the document without further comment on October 14, 2008. System installation began during the winter. Subsequently, DOE submitted the Operations and Maintenance Plan for this action for the Division's review and concurrence. An initial review of the document revealed that it did not contain a sampling and analysis plan as required in the RAWP. DOE was instructed to include a sampling and analysis plan in the document. This was done and the document was resubmitted in June 2009. After confirming that DOE had addressed the Division's concerns, the document was approved in late July 2009.

Installation of the ERH system is scheduled to be completed by the end of August 2009 at which point system testing and start-up will begin. Testing and start-up should be complete by the end of September thereby permitting full scale operation of Phase I to commence on October 1, 2009.

Field Operations Branch

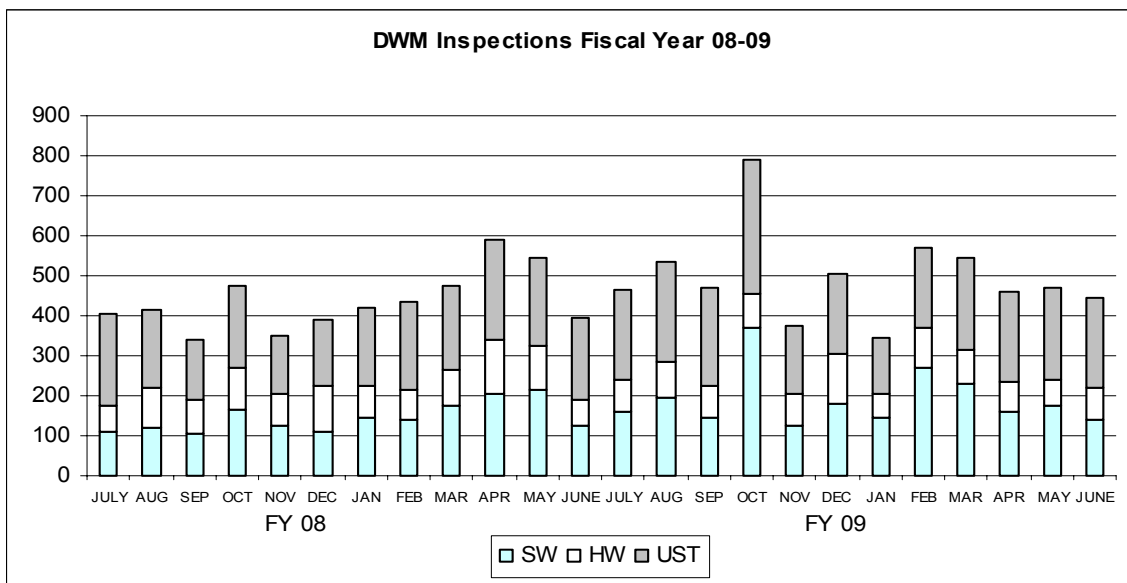
<http://www.waste.ky.gov/branches/fo/>

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

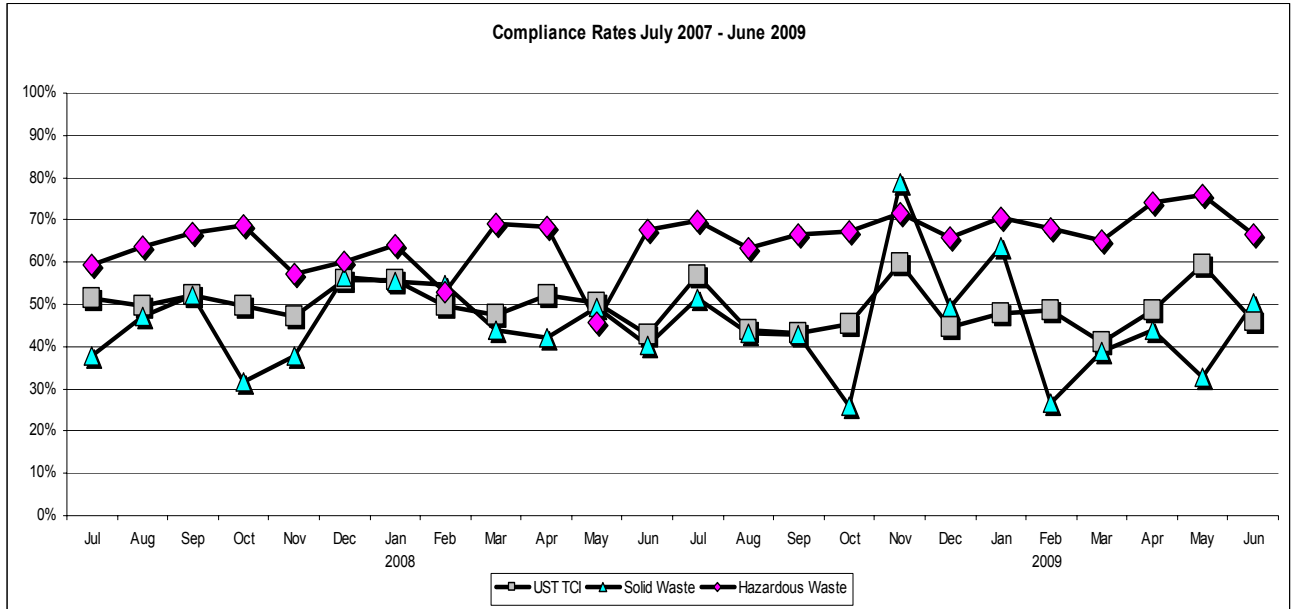
The branch performs inspections at sites managing solid waste, hazardous waste, underground storage tanks and PCBs. The primary duty of a regional inspector is to check the compliance of waste facilities.

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

Compliance and Enforcement:



Note: SW=Solid Waste, HW=Hazardous Waste, UST=Underground Storage Tanks
 Note: Inspection totals include "complaint investigations" in addition to typical inspections of regulated entities



Note: "Compliance rate" means the percent of total inspections where an inspector noted that no violation had occurred; does not include investigations triggered by citizen complaints.

Note: "UST TCI" means a technical compliance inspection for a facility's underground storage tanks.

Kentucky's compliance rate for underground storage tanks has risen from 42% to 46% which is still below the 68 percent average compliance rate for other EPA Region 4 states. The Division is continuing to make strides in improving Kentucky's UST compliance rate. Compliance for USTs should increase when the regulations incorporating the Energy Act Policy of 2005 are passed. These regulations are intended to increase the requirements for leak prevention protection. There has also been an effort to work with UST owners during inspections to help improve compliance. This involves scheduling inspections at times the owner can be present.

Emergency Response:

KRS 224.01-400 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 (ERT). They are the first to respond to environmental emergencies.

There were 11,753 notifications reported to ERT between July 1, 2007 and June 30, 2008.

Field Office Branch Highlight

The Blue Grass Army Depot project is beginning to accelerate construction at the site. The Hazardous Waste Branch is staffing up to be able to handle the increased permitting load due to new construction, and the Field Operations Branch is planning to do the same. There will be an increasing amount of field staff necessary, due to Phases 1, 2 and 3 being completed on-site, and Phase 4 currently underway, to oversee the construction

of RCRA waste management units at the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) site in Richmond, in addition to the storage and facility wide inspection requirements already existing.

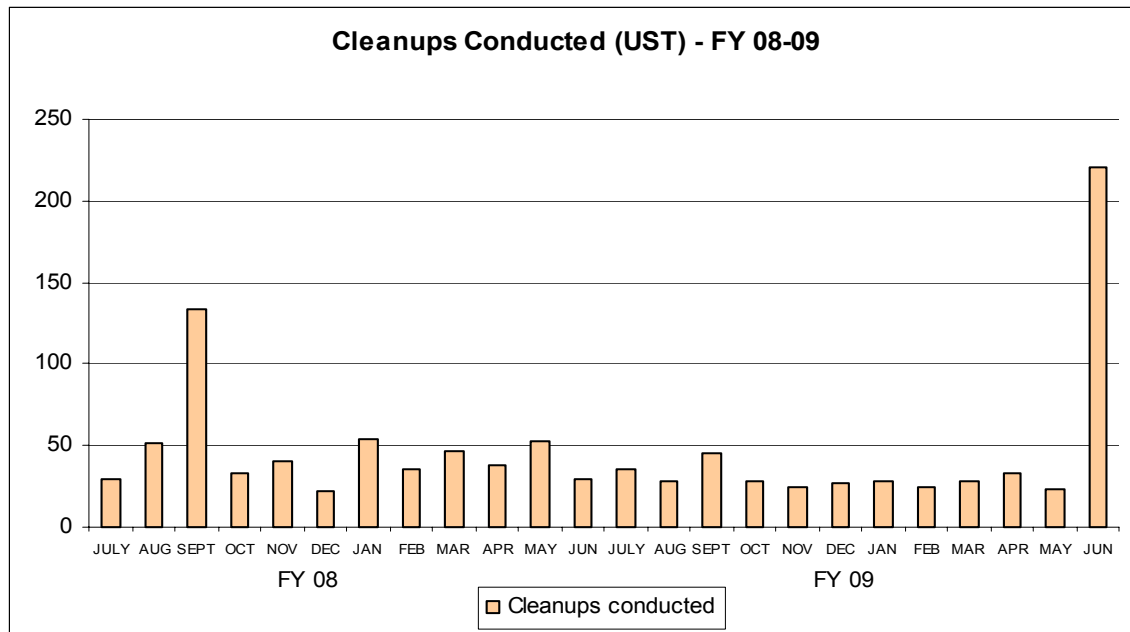
Assembled Chemical Weapons Agreement (ACWA) has indicated that space will be available in Richmond, which will be paid for by ACWA, to reduce the administrative burden on the Division; respective to acquiring office space. The life cycle cost estimate is due to be submitted by the Division to ACWA by Sept., 30, so more information will be available once the Division portion of the life cycle cost estimate is completed. This projection will provide out-years staffing and equipment needs throughout the project duration.

Underground Storage Tank Branch

<http://www.waste.ky.gov/branches/hw/>

The mission 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 (USTB) regulates the registration, compliance, closure, inspections and corrective actions of UST systems.



The above chart includes sites that have received a No Further Action letter from the Underground Storage Tank Branch. Currently, the UST program has funding and is issuing a significant number of directive letters requiring cleanup.

Underground Storage Tank Branch Highlight

The employees of the UST Branch worked together in FY 2009 to better serve the citizens of the commonwealth through the comprehensive program. Staff scanned 217,503 pages, completed 19,287 incoming document reviews, collected \$402,231 in tank fees, reimbursed \$16,765,423 in cleanup costs and continued to find ways to maximize efficiency and focus efforts.

Through the ongoing implementation of the changes in the 2006 regulations, a boost in the number of directives and amount of work on contaminated sites was realized. The cleanup process was able to move forward on many sites that had been stagnant for extended periods of time. Among the 2006 regulatory changes that contributed to the

increase in productivity was the fixed cost directive system. In this system unit costs to be reimbursed for specific tasks were established and were used to issue fixed cost directives for the cleanup of contaminated sites. The need for contractors to compile and submit time & material claims and the time required by the UST Branch to review those claims was greatly reduced. This translated into savings of dollars and time.

Another change instituted with the 2006 regulations was a ranking system that allowed for the focus of valuable resources on sites that pose a greater threat to human health and the environment. All facilities within the site investigation phase eligible to receive reimbursement from the Petroleum Storage Tank Environmental Assurance Fund (PSTEAF) were ranked within this system. Fixed-cost directive letters were then issued in sequential order on the basis of facility ranking to Rank 1, 2 and 3 facilities. In the next fiscal year the branch hopes to find ways to move on to lower ranked sites.

Enough time has not yet passed for the complete impact of the 2006 regulations to be known but the involved processes continue to be refined and results continue to be documented. In the meantime, additional amendments to the UST regulations are underway and will include the provisions of the Energy Act of 2005 which are aimed at reducing UST releases to our environment. In Kentucky, as cleanups of contaminated sites were being initiated and carried out in FY 2009, 284 new releases of petroleum products into the environment occurred. Although less than last year, there were 2,078 sites still in the cleanup phase at the end of this fiscal year.

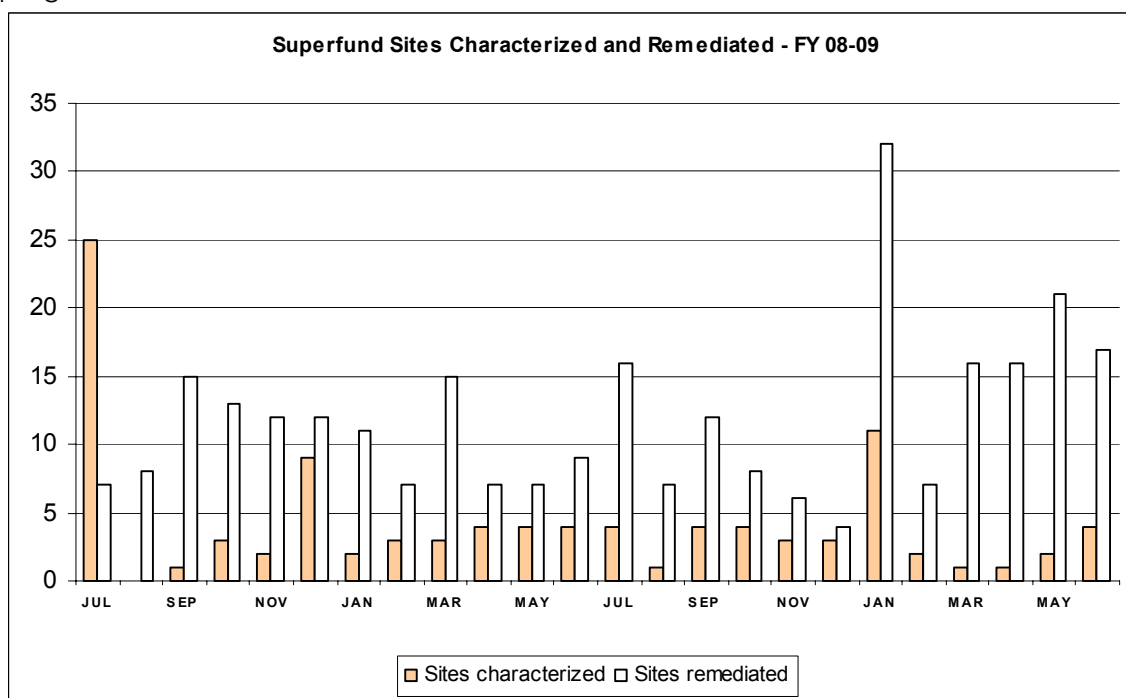
The state budget enacted by the legislature for fiscal year 2009 and 2010 appropriated \$25 million each year from bond sale revenues and fee receipts to the PSTEAF for the purpose of claim payments. It also includes additional fund diversions from PSTEAF to the General Fund. With 12,012 active tanks at 3,978 facilities, and a continuing demand for and use of petroleum products, new releases are inevitable and there remains much work to be done.

Superfund Branch

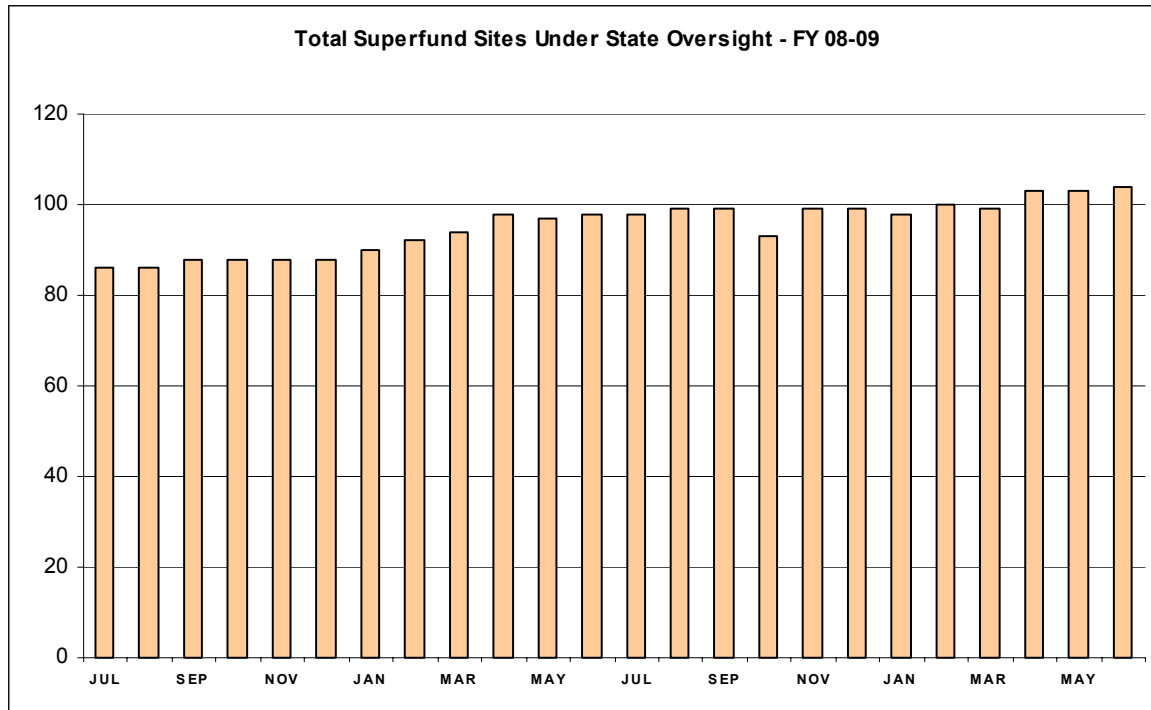
<http://www.waste.ky.gov/branches/sf/>

The program 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.

Kentucky has a state Superfund program which handles oversight of cleanup of hazardous substance releases and non-UST petroleum releases across the commonwealth. The chart below shows the number of sites that the state Superfund program has characterized and remediated.



Note: There were 202 sites that were characterized and remediated in FY 09.



The Superfund Branch must maintain a list of any 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. The chart, Total Superfund Sites Under State Oversight, shows the number of sites currently in this category. 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.

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 and the Division of Compliance Assistance (DCA). For more information on DCA, see the agency's Web site at <http://www.dca.ky.gov/brownfields/> or call 800-926-8111.

This year, 13 applications were submitted by communities, of which 3 applications were successful. The total value of these grants was \$600,000.

Another outreach program has been to assist communities by providing free Target Brownfield Assessments (TBA), which is a program, designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with Brownfields. During this year, three properties have been chosen to receive this service.

Superfund Branch Highlight

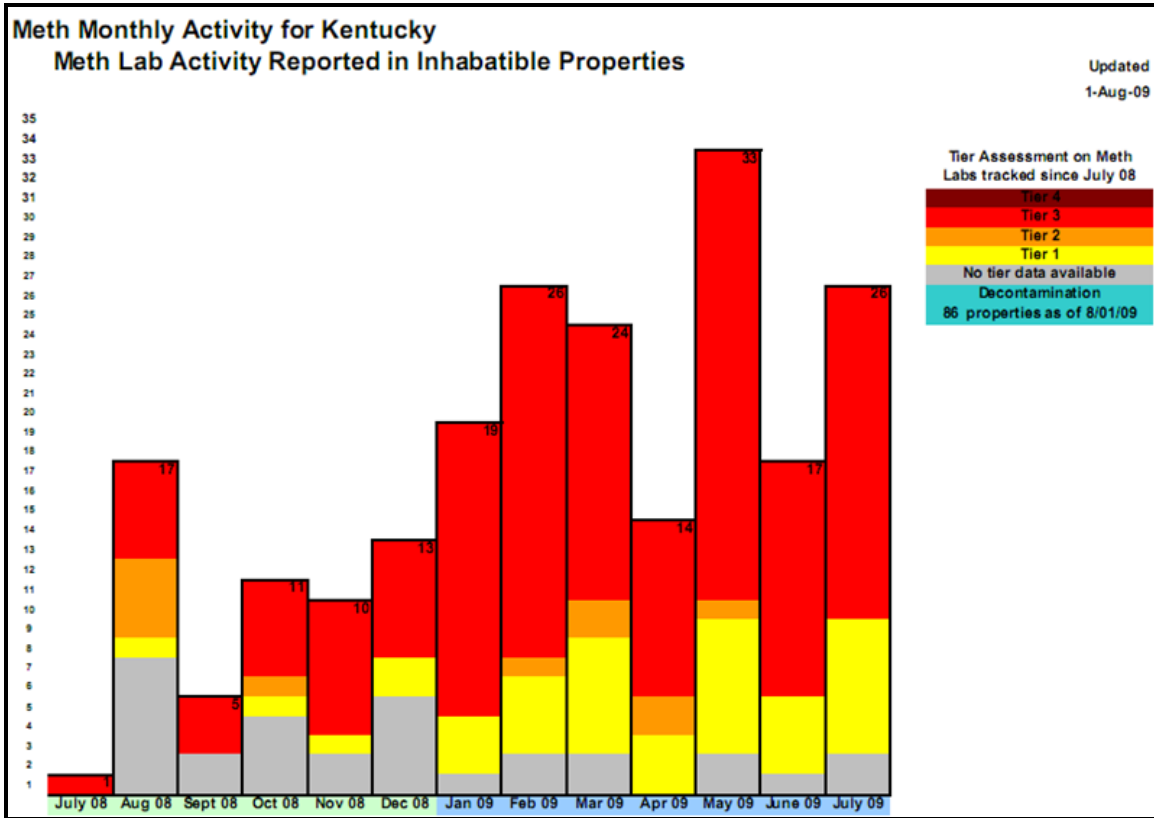
Methamphetamine Cleanup Program Regulations become effective July 6, 2009

The Superfund Branch's, Methamphetamine Cleanup Program, under authority of KRS 224.01-410, established a reasonable, appropriate and protective tiered response system to address the level of decontamination services required for a property contaminated by methamphetamine (meth) production. The tiered response system is based on the extent of meth production and the degree of potential contamination resulting from meth production.

This program works as a liaison between the cleanup contractors, state and local law enforcement and the local health departments. Superfund staff is in constant communication with law enforcement and health departments, providing guidance on remediation. Numerous calls from property owners are received daily regarding requests for remediation guidance. Time is spent talking with property owners, educating them about the dangers of meth contamination and how to properly remediate their contaminated property. Superfund's web page explains meth dangers, as well as the process required to cleanup their property. This program also provides guidance to the certified contractors on meth lab remediation. At properties where clandestine methamphetamine labs were operated, waste from the lab may be dumped into burial or burn pits. These wastes impact water, the environment and human health. The Meth Cleanup Program is also involved in addressing environmental crimes that involve meth lab wastes.

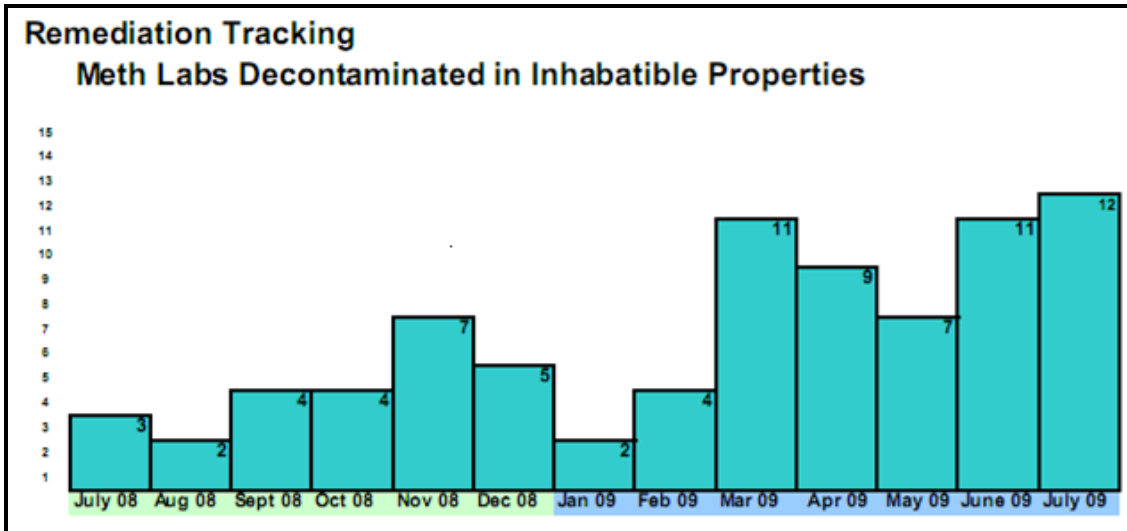
During the 2009 fiscal year the Meth Cleanup Program within the Superfund Branch developed methamphetamine regulations related to: definitions; contractor certification; financial requirements; the Tier Response system; and cleanup and sampling requirements. These regulations became effective July 6th, 2009. Since an existing data tracking system was not in place, Superfund Branch staff created the Tier Assessment Intel/Remediation Database. This data base is compiled from reported meth lab activities in the Commonwealth of Kentucky since July of 2008. The data base is a quick reference for staff to assist property owners with various questions about remediation of their meth contaminated property. Detailed information is collected from the Tier Assessment Form. Information tracked in the database include; the chemicals, type of meth lab, observations and evidence of hazardous materials spills, contamination inside the property made by law enforcement and logistical information on the meth lab. This data base is very beneficial for the cleanup contractors to be able to obtain that information from DWM staff very quickly, adapt their cleanup plan and focus their remediation efforts on the meth lab cleanup itself, keeping the overall costs of remediation down for the property owner. The ongoing database tracking receives 15-30 meth lab reports monthly and has 216 properties recorded for the FY08 and in total, 272 since the beginning of the program. The number of meth labs that have been remediated to habitable conditions or demolished is 92, with 82 of those recorded in FY08. The trend in meth lab contaminated properties reported to the Division has increased over the last two years, presumably due to the depressed economy and increased efforts by law enforcement to control the manufacture of the illegal drug. Various aspects of the cleanup documentation information; decontamination reports,

release letters is also stored in TEMPO, with the public being able to access the addresses of locations of properties decontaminated thru a Kentucky Open Records Act (KORA) list. These reporting mechanisms aid in the graphical representation of meth lab activity (see chart below), both contaminated and remediated, in the Commonwealth of Kentucky and are updated weekly.



The Superfund Branch operates the Meth Cleanup Program with limited funding. The Branch also collaborates on a national level by providing input to NAMSDL (National Alliance for Model State Drug Laws) developing the *National Voluntary Guidelines for Methamphetamine Laboratory Cleanup*. The program assists other states by providing guidance, and valuable experience for other developing meth clean up programs. The Superfund Branch staff provides outreach and training on the dangers associated with meth contamination to the employees of the Cabinet through various training sessions such as the Leadership Development Series, and by safety and awareness presentations throughout the year. Together, Superfund and the Field Operations Branch, work to train the field staff that is likely to come into contact with meth contamination and provide them with warnings of the associated hazards. The Superfund Branch has created a detailed standard operating procedure for field staff to be able to safely respond to external meth lab burn pits and waste dumps. Through these combined efforts, attention to detail and empathetic assistance to property owners, Superfund Branch staff has been able to emphasize fairness, equity and concern while achieving the core goal of our division: to protect human health and the environment. The Meth Cleanup Program

has successfully remediated homes back to habitable conditions that protect the health of future occupants.



Program Planning and Administration Branch

<http://www.waste.ky.gov/branches/ppa/>

The mission of the Program Planning and Administration (PPA) Branch 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.

Regulation Development:

The regulations relating to decontamination standards and cleanup requirements for methamphetamine contaminated properties became effective July 6, 2009.

The Division is in the process of performing a comprehensive review of its regulations in the areas of underground storage tanks. In 2010 the Division plans to propose new regulatory amendments to update underground storage tanks as well as solid waste. The solid waste regulation are currently being completed and updated in chapters 47 and 48 and are on track to be amended to introduce information that has been changed since the last promulgation effort.

The Hazardous waste authorization is still in progress and in review with the EPA.

Legislative:

The Division is proposing to extend the Waste Tire Trust Fund and the fee associated with the fund. The Division is also proposing to extend the registration deadlines for the Petroleum Storage Tank Environmental Assurance Fund.

ACKNOWLEDGMENTS

Governor Steve Beshear

Secretary Leonard K. Peters
Deputy Secretary Henry "Hank" List

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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Program Planning and Administration:	Allan Bryant
Underground Storage Tanks:	Robert H. Daniell

Compiled by: Kelli Reynolds

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