Kansas Environment 2008

Opening Remarks

Secretary, Department of Health and Environment

Dear Fellow Kansans,

Protecting the health and environment of all Kansans by promoting responsible choices is the mission of the Kansas Department of Health and Environment. This mission has many different meanings, from regulating facilities and industries to providing the educational information that Kansans rely upon for making those responsible health and environmental choices.

The Division of Environment supports the agency mission by engaging in remedial activities, pollution reduction efforts and environmental evaluations, all of which serve to reduce environmental exposure to harmful substances. Six bureaus within the division administer educational campaigns and regulatory programs that preserve natural resources and help to ensure a safe and sustainable environment for Kansas families.

Recently, Kansans faced record-breaking winter storms, devastating tornados, widespread flooding and industrial disasters. In service to our neighbors, KDHE responded to these unprecedented challenges. Many KDHE employees selflessly left their families for days or even weeks at a time to help in the disaster stricken areas. Yet through all of the stress, hard work and long hours, KDHE remained committed to our fellow Kansans in their time of need.

Kansans are becoming increasingly aware of the impact we have on our environment, and of the importance of managing that impact for the future of our state. Through education, policy development and enforcement, we are promoting responsible choices that protect the health and environment for all Kansans for generations to come.

Be well,

Roderick L. Bremby
Secretary, Kansas Department of Health and Environment

Director, Division of Environment

Dear Reader,

The publication of the 2008 Kansas Environment report represents the return to a biennial report for the Division of Environment at the Kansas Department of Health and Environment. The mission of this agency is to protect the health and environment of all Kansans by promoting responsible choices. This report begins with a discussion of the missions of the various programs within the Division of Environment. What follows is a discussion of environmental media and our approach to protecting each as well as the challenges currently faced in each area.

The last year brought a number of natural disasters and major environmental challenges to our state and the final chapter of this report discusses each of those and the division's approach to providing assistance to our affected citizens.

We began 2008 with a transition, the retirement of our long-time director of the Division of Environment, Dr. Ronald F. Hammerschmidt. Ron left the agency on Feb. 15 and ably served as division director for over 13 years and contributed to agency operations in multiple capacities since 1980. We wish Ron the best in his future endeavors.

While we continue the publication of this report in printed format, it is being simultaneously published on the agency Web site, www.kdheks.gov. We invite readers to obtain additional information through the Web site or by contacting the specific environmental program for additional information. Special thanks also goes to the employee committee responsible for preparation of the report. Their efforts are greatly appreciated.

John W. Mitchell
Interim Director

Front Cover: Tributary of Cedar Creek taken at the Olathe Prairie Center
Photo by: Craig Thompson

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As the state's environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans.

Through education, direct services and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent illness, injuries and foster a safe and sustainable environment for the people of Kansas.

Photos by
Diana Chamberlain

The Bureau Missions within the Division of Environment

Air and Radiation

The Bureau of Air and Radiation (BAR) is divided into four sections: Air Compliance & Enforcement, Air Operating Permits & Construction, Monitoring & Planning, and Radiation, Asbestos, & Right to Know. Our common mission is: To protect the public and the environment from radiation and air pollution. Our goals address issues commonly known to cause serious potential harm to public health, our environment and threaten our economic stability. Our efforts, to conserve air quality, control air pollution, and protect the public health and safety from radiation, begin by providing quality service to our customers because we can only accomplish our mission if Kansans understand the importance of air quality and safety from radiation and asbestos.

Environmental Remediation

The mission of the Bureau of Environmental Remediation (BER) is to manage environmental contamination through pollution source control, containment, or remedial actions and to respond to emergencies of an environmental nature. In addition to remedial work, the bureau also regulates coal mining, storage tanks, and drycleaners. This is accomplished through the use of four sections: Assessment & Restoration, Remedial, Storage Tank, and Surface Mining.

Environmental Field Services

The mission of the Bureau of Environmental Field Services is to gather and analyze data in order to identify environmental conditions and trends for regulatory, technical and pollution prevention purposes. The bureau maintains six district offices and an office in Topeka. Activities include inspections and investigations of air, water, waste and remediation sites. Routine and investigative monitoring of water quality is also conducted. The district offices serve as a local point of contact for the Department's programs.

Water

The mission of the Bureau of Water (BOW) is to protect and improve the health and environment of Kansas through wise regulation of waters of the state. The Bureau of Water is responsible for carrying out programs under the Federal Clean Water Act and the Safe Drinking Water Act. The various program activities include: permitting discharges; ensuring public water supplies provide safe, clean drinking water; water well construction; underground injection control; infrastructure financial assistance; livestock waste management; nonpoint source pollution control; training for water and wastewater plant operators; and developing total maximum daily loads.

Waste Management

The mission of the Bureau of Waste Management is to minimize the health and environmental impacts associated with the generation, storage, transportation, treatment, and disposal of all solid and hazardous waste in Kansas. The bureau combines traditional regulatory activities such as permitting and inspections with technical and financial assistance. Conferences, workshops, and technical newsletters target businesses and local governments that generate or manage waste at landfills, transfer stations, incinerators, compost sites, recycling centers, and private businesses. Solid waste grant programs provide financial aid to stimulate recycling, composting, and household hazardous waste collection. The bureau also administers the "Kansas Don't Spoil It" public education campaign to increase awareness regarding proper waste management methods.

Laboratory Services

The Kansas Health and Environmental Laboratory's (KHEL) mission is to provide timely and accurate analytical information for public health benefit in Kansas and to assure the quality of statewide laboratory services through certification and improvement programs. The public health laboratory provides services touching the lives of virtually all Kansas citizens through analysis of environmental samples for water, air, and soil. In keeping drinking water safe for consumption, the laboratory performs analyses on over 50,000 samples annually. These data are used to assure water consumed meets all state and federal regulations. In helping the agency evaluate environmental conditions across the state, the public health laboratory provides analyses on ambient water for contaminants that could pose a threat to human health or aquatic life.

Photo courtesy of Diana Chamberlain.

Kansas Air Quality

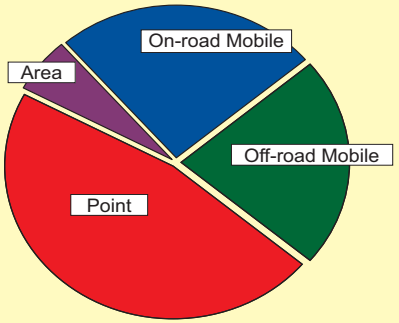
Kansas is fortunate to experience good overall air quality. Our central location in the country and prevailing southerly winds mean that we need to be concerned about transported pollution as well as home grown air pollution impacting the air we breathe.

It is easily observed that conditions change in Kansas, moment to moment. There isn't much we can do about crazy Kansas weather, however, an awareness of air pollution and what we can do to reduce it goes a long way to protect public health and sustain our quality of life in Kansas. We, for the most part, enjoy our changing seasons even when summer ushers in hot, dry weather. Along with the hot weather come conditions that lead to the formation of ground-level ozone.

Air pollution is generated by our modern day-to-day activities and can be categorized into four types of sources. Industrial sources of air pollution, those that are regulated by the Kansas Department of Health and Environment (KDHE), are known as point sources. Area sources are smaller, generally more numerous sources such as household paints and cleaning solvents. On-road mobile sources are typically from cars, trucks, buses, and motorcycles. Non-road mobile sources include lawnmowers, locomotives, and construction equipment. It is important to know where each pollutant comes from, and in what quantities, to assess and conserve the quality of our air.

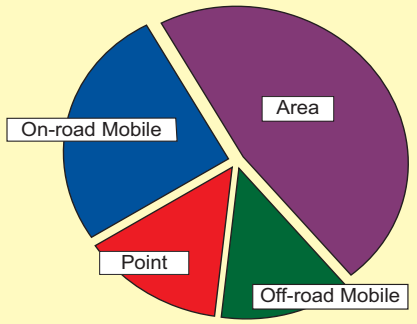
KDHE monitors and tracks five air pollutants at 21 sites across Kansas, to assure that health-based air quality standards, set by the Environmental Protection Agency (EPA), are not exceeded. These pollutants include oxides of nitrogen (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM), and ground-level ozone. Monitors throughout Kansas demonstrate that air pollutant readings are within the EPA's health-based air quality standards. Johnson and Wyandotte counties, along with three Missouri counties, are part of the greater Kansas City Metropolitan Area that has had a history of violating the ground-level ozone standard. Three monitors in this area recorded ground-level ozone violations of the health-based standard in summer 2007. These violations triggered actions designed to reduce ground-level ozone concentrations. Ozone, at ground level, forms in the presence of high temperatures and sunlight when volatile organic compounds (VOCs) and NO_x emissions are present. Figures 1 and 2 show the relative percentages of NO_x and VOC emissions for the different source categories for the respective pollutants. Such data are used to develop the appropriate regulatory or outreach strategies to reduce air pollution levels and improve our air quality.

Figure 1
Statewide NOx Emissions by Source



Source: 2002 National Emission Inventory Data

Figure 2
Statewide VOC Emissions by Source



Source: 2002 National Emission Inventory Data

Many regulatory or outreach strategies that reduce ground-level ozone and other pollutants can also reduce excess greenhouse gases that are contributing to global climate change. Actions

that communities take to reduce emissions from day-to-day activities, like engine idling reduction and energy efficiency, are win-win choices that reduce these pollutants of concern, improve our air quality, protect the health of the public and improve our quality of life. KDHE establishes and enforces programs and regulations which prevent or reduce air pollution. This is accomplished through issuing permits for construction of new sources, conducting inspections of sources of air pollution, maintaining and updating a state plan that ensures the conservation of air quality, and increasing public awareness of how their actions can contribute to air pollution.

Photo courtesy of Craig Thompson.

Radiation Control Program

The Bureau of Air and Radiation's (BAR) radiation control functions ensure compliance with state and federal standards and promote adherence to the guidelines that allow radiation exposures to humans within acceptable health limits. These functions include the licensing, registration and inspection of x-ray machines, radioactive materials, and mammography facilities throughout Kansas, and the monitoring of registrants and licensees to ensure that their actions involving radioactive material are conducted in a safe and legal manner. Additional functions include outreach to increase awareness of radiation issues to ensure as low as reasonably achievable (ALARA) exposures.

In FY2006, the agency completed the transition of BAR radiation licensing, registration, and inspection activities from State General Fund support to full fee fund support. This transition allowed BAR to expand its program to comply with federal requirements. In May 2006, a Nuclear Regulatory Commission (NRC) audit determined that the expanded Kansas program is adequate to protect public health and safety, and is compatible with the NRC Program, which is the highest level attainable by a state.

Environmental radiation program activities include the management of the Kansas Radon Program and the monitoring of any materials released to the environment from the Wolf Creek nuclear generating station or from any other site. Emergency preparedness activities include providing training for, planning for, and participation in radiological emergency response drills and exercises, and responding to actual radiological events.

Asbestos Program

BAR's asbestos program monitors the removal of asbestos from buildings during renovation and demolition projects and approves work practices to prevent asbestos fibers from becoming airborne and released into the environment. BAR issues licenses to asbestos abatement contractors and certifies abatement workers to ensure that proper procedures are used and trained personnel conduct removal activities. This program is paid for with fees received from asbestos licensing, abatement, and certification of workers.

Right-to-Know Program

The BAR Right-To-Know program collects and maintains extensive databases of Tier II and Toxic Release Inventory (TRI) Chemical data for Kansas. Sections 311 and 312 of the Federal Emergency Planning and Community Right-To-Know Act (EPCRA) require businesses to report the locations and quantities of chemicals stored on-site in order to help communities prepare to respond to chemical spills and similar emergencies. The owner or operator of a facility where extremely hazardous substances are used, produced, or stored must submit Tier II information if the quantity of hazardous chemicals on hand exceeds specific thresholds. EPCRA Section 313 requires data to be reported annually on releases and transfers of certain toxic chemicals from industrial facilities. The Right-To-Know program collects and maintains the Tier II and TRI data and makes it available to the public for the state of Kansas. Reporting facilities for both types of data are required to pay fees to KDHE which support the Right-To-Know program.

Air Challenges

Mercury Deposition Monitoring

Airborne mercury can fall to the ground in raindrops, in dust, or simply due to gravity. Mercury ends up in streams and lakes where it can be transformed to methylmercury through microbial activity. Methylmercury accumulates in fish at levels that may harm the fish and the other animals that eat them. Mercury deposition in a given area depends on mercury emitted from local, regional, national, and international sources.

During the 2007 legislative session, the Kansas Legislature passed House Bill 2526 (HB 2526), which requires the Bureau of Air and Radiation (BAR) to conduct mercury deposition monitoring. Governor Kathleen Sebelius signed the bill into law, and BAR will implement a Kansas Mercury Deposition Network incorporating six monitoring sites. These sites will be located across the state and will be included in the national Mercury Deposition Network. BAR has identified these site locations based on language contained in HB 2526. The specific goals of the network are:

1. Determine the amount and distribution of mercury contained in precipitation from across the state;
2. Evaluate potential transport of mercury into the state;
3. Evaluate potential sources of mercury across the state;
4. Establish trends of mercury wet deposition across the state; and
5. Establish a correlation between atmospheric deposition and mercury levels in surface water.

Mercury deposition is measured in precipitation samples (rain, mist, snow, etc.). Data collected at the six sites will be posted to a national database, and data reports will also be provided on a public Web site. The development of the network calls for the six sites to be operational by mid-2008.

Outreach and Education

We can be proud of the fact that Kansas has good air quality. This fact does not exempt us from making a good situation great. The Bureau of Air and Radiation (BAR) at the Kansas Department of Health and Environment assures that the regulated community is in compliance with state and federal air quality standards. The community, including electrical power plants, industries, and many small businesses, is continuing to reduce air pollution. Unregulated sources of air pollution are more difficult to tackle. Educational outreach to the general public about improving our air quality is a continuing challenge.

BAR provides outreach programs to educate Kansans about how they can improve air quality by making informed choices during their day-to-day activities. The "Help us all breathe easier" campaign has evolved to include, "Clean Air Lawn Care" and "Change a Light, Change Kansas." These programs provide information about air-friendly lawn care practices and energy savings. Adopting suggestions from these programs have benefits beyond air quality improvement, such as water quality improvement, fuel cost savings, and lower electric bills.

Radon Legislation

Legislation to require certification of contractors who provide radon measurement and/or radon remediation services in Kansas, and to require radon testing in conjunction with residential real estate transactions is scheduled to be introduced during the 2008 legislation session by Senator Jim Barnett. Though KDHE does not currently regulate contractors in the radon measurement and remediation fields, this has been a long-term goal of the Kansas Radon Program, and is encouraged and supported by the U.S. EPA, which funds the program through the State Indoor Radon Grants.

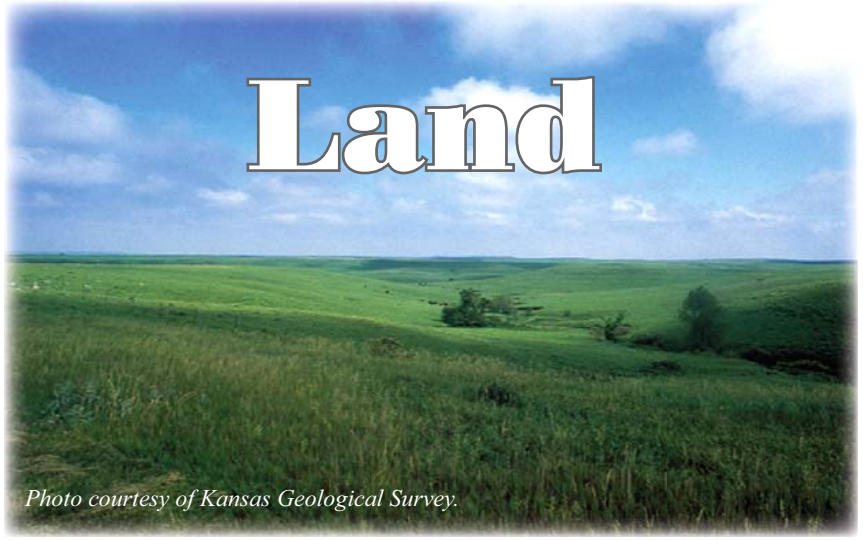


Photo courtesy of Kansas Geological Survey.

Whether it be part of a wheat field in Logan County, an industrial tract in Wichita, or a residential area in Ottawa, each of Kansas' more than 50 million acres is a valuable resource. To maintain the quality and productivity of the land in Kansas, KDHE focuses on both protecting the land from harm and repairing damaged land.

Protection of Kansas Land

The Bureau of Waste Management (BWM) administers programs which protect the land by preventing pollution through the proper management of solid and hazardous wastes.

Waste Generation in Kansas

Millions of tons of waste are generated and managed in Kansas each year. These wastes fall into two categories: "hazardous wastes" which exhibit one or more hazardous characteristics (ignitability, corrosiveness, reactivity, or toxicity) and non-hazardous "solid wastes." Solid wastes can be broken down into several other waste categories including municipal solid waste (MSW), construction and demolition waste, industrial waste, waste tires, special waste, and medical waste. BWM administers the regulatory and technical assistance programs designed to ensure that hazardous and solid wastes are properly managed by generators and a large network of transporters, processors, treatment facilities, and disposal facilities.

"Solid waste" is generated by every person, business, institution, etc. On the other hand, "hazardous waste," as defined in state law, is generated by a much smaller number of entities because the generated quantity must exceed a regulated threshold of 25 kg per month. In addition, all wastes generated by households are by definition, non-hazardous. Thus, Kansas only has about 1,700 registered generators of hazardous waste, but millions of generators of solid waste. The number of hazardous waste generators has continually decreased for more than a decade as non-hazardous products are substituted for formerly used hazardous materials.

The estimated amounts of regulated hazardous waste and non-hazardous solid waste generated in Kansas are difficult to accurately estimate because of the following reasons: (1) small hazardous waste generators do not report their annual generation to the state; (2) solid waste recycling is voluntarily reported to the state; and (3) import data for both types of waste is likely imprecise. Despite data limitations, KDHE estimates total generation in 2006 to have been:

- Hazardous waste generation – 187,000 tons
- Solid waste generation – 5,900,000 tons

Waste Management Methods

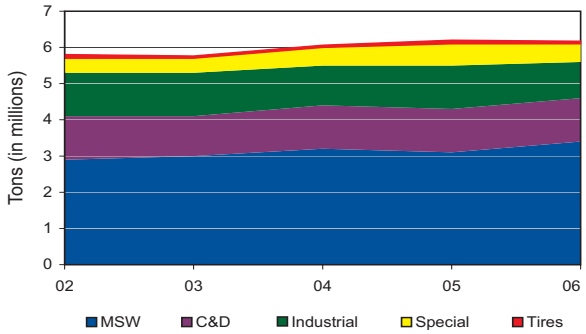
Solid Waste

Solid waste management occurs at various types of permitted processing and disposal facilities (see Table 1). In addition, there are nearly 2,000 locations that are classified as recycling programs that do not require state permits. Recycling programs range from small drop-off boxes placed at various locations to large material recovery facilities where recyclables are sorted and processed for marketing. Despite the growing trend in recycling and composting, most solid waste continues to be landfilled (about 80 percent). Figure 1 shows the amounts of waste landfilled since 2000, by waste type. Imports in 2006 were nearly 1,000,000 tons, mostly from Missouri. Figure 2 shows the amount of Kansas generated MSW landfilled per person per day over

Table 1
Permitted Solid Waste Facilities

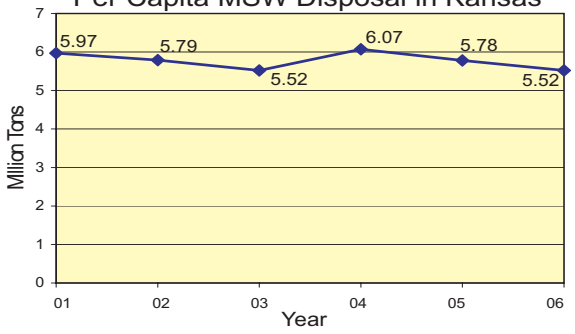
Municipal Solid Waste Landfills (MSW)	51
Construction & Demolition Landfills (C&D)	103
Industrial Landfills	43
Waste Tire Monofills	23
Composting Facilities	133
Incinerators	2
Landfarms	3
Solid Waste Processors	9
Transfer Stations	66
Household Hazardous Waste Facilities	57
Total	490

Figure 1
Waste Landfilled in Kansas



the past several years. These figures show that the total amount of solid waste landfilled has remained fairly constant even though the amount landfilled per person is slowly decreasing. This is because the population is slowly growing and more waste is being imported to Kansas.

Figure 2
Per Capita MSW Disposal in Kansas



Hazardous Waste

All hazardous waste must be recycled, treated to eliminate the hazard (including incineration with or without energy recovery), or disposed of in a special "Subtitle C" landfill which are prohibited in Kansas by state law. The nearest Subtitle C landfill is in Oklahoma. Any facility which manages hazardous waste is classified as a "treatment, storage, or disposal facility," commonly referred to as a TSDF. There are only 10 active TSDFs in Kansas, eight of which receive waste from off-site. There are also 18 TSDFs that are in some stage of "post-closure care."

Many organic hazardous wastes, such as solvents and contaminated hydrocarbons, are burned for energy recovery in one of two cement kilns in Kansas that have been authorized to operate as hazardous waste combustors. These include the Ash Grove plant in Chanute and the LaFarge plant in Fredonia. The only commercial hazardous waste incinerator (Aptus/Safety Kleen) closed several years ago. The two cement kilns burned a total of 150,000 tons of hazardous waste in 2006, much of which was imported from other states. Kansas generators also export waste which requires specialized treatment, incineration, or landfill disposal.

A significant amount of used solvent bypasses the hazardous waste regulatory system because it is directly used without treatment for processes such as cleaning. This practice is growing because it lessens the disposal cost for waste generators.

Waste Reduction, Recycling and Composting

Recycling and composting have grown steadily in Kansas over the past 15 years largely as a result of grants to fund waste reduction projects, increased public education and awareness, higher disposal costs, and the closure of local landfills. The voluntary survey of recyclers for 2006 activity indicates that at least 650,000 tons of MSW were diverted from landfills. This equals about 19 percent of generation - far below some states, but higher than most states that do not have any statewide recycling mandates or landfill bans.

Solid Waste Transfers are Common

Only half of all Kansas counties have MSW landfills. Most counties in eastern Kansas chose to close small MSW landfills when more stringent design and operating requirements went into effect in 1994. Federal and state solid waste laws allowed small landfills to remain open without fully upgrading to more strict standards as long as the rainfall was less than 25 inches per year, so 32 western counties continue to have small landfills.

Figure 3
Remaining Life of Kansas MSWLFs

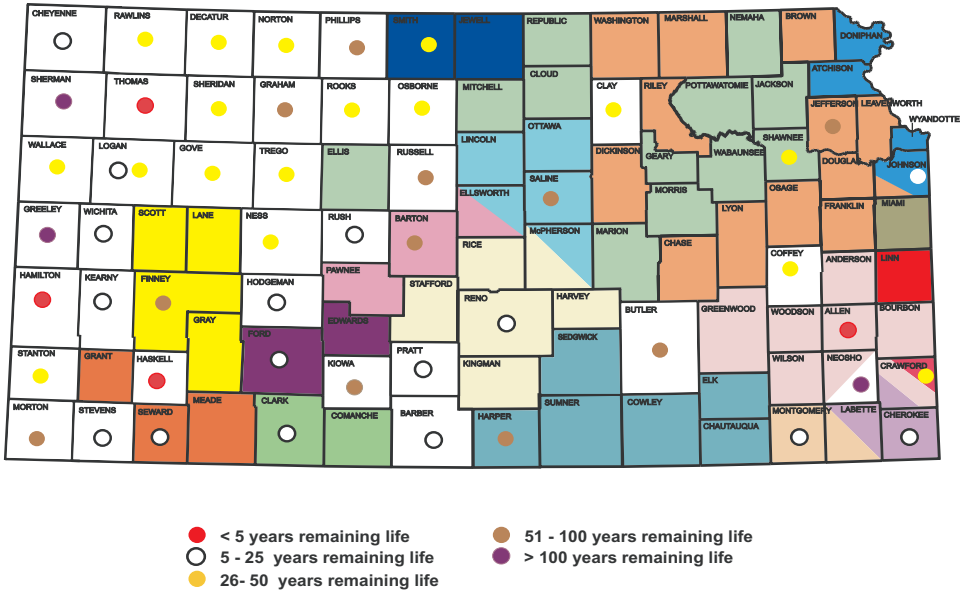


Figure 3 shows the counties which transfer MSW by coloring them the same as the county to which their waste flows. The county with the landfill has a dot within it and the color of the dot indicates the remaining capacity in years based upon the current disposal rate.

Public Education and Outreach

Because everyone generates solid waste, BWM administers a public outreach program designed to influence personal decision-making regarding waste management practices. Major public education initiatives have included "Kansas Don't Spoil It," "Get Caught Recycling," and now the new *Green Team* concept. Outreach efforts occur in schools, at the Kansas State Fair, Earth Day festivals, and numerous other local and statewide events. KDHE often partners with local public and private partners to reach people with important information about ways to improve waste management.

Waste Reduction Grants

Over the past decade, more than $20 million in grants have been awarded for projects related to recycling and composting. In 2007, two important new grant programs were initiated: (1) over $1.2 million was awarded to establish eight regional electronic waste (e-waste) collection centers, mostly in rural areas; and (2) 39 grants were awarded to assist local governments in the purchase of products made from recycled waste tires (mostly rubber playground cover).

Planning for Foreign Animal Disease

For the past two years, BWM has been working with the owners of confined animal feeding operations to pre-select burial sites for animal carcasses in the case of a foreign animal disease outbreak. To date, over 600 pre-selected sites have been approved covering the largest facilities in the state. This work places Kansas in the unique position nationally of being the most prepared state to handle such a disaster.

Waste Management Challenges

E-Waste Recovery

The number one waste management challenge over the next five years is to establish a statewide system to recover e-waste for recycling. While the number of private businesses and non-profits entering the marketplace are growing, and additional e-waste collection centers will become active in accordance with state financial aid, much of the state will still not have any convenient way for residents and businesses to recycle this growing waste stream. Until a statewide recovery program is in place, KDHE will continue to allow MSW landfill disposal to avoid illegal dumping. It appears that the development of a voluntary recovery program is working, but it will take more state aid, local government cooperation, and growth in the private sector processing industry to achieve success. Federal pressures may require Kansas to adopt more strict management requirements if the voluntary system does not adequately divert such waste from non-hazardous landfills.

Other Waste Management Challenges

- Improve the overall Kansas MSW recycling rate by helping local programs succeed. Help includes financial aid, technical assistance, and public education;
- Strengthen the new Kansas Organization of Recyclers so that they can provide technical assistance to recyclers and the general public;
- Spread the concept of *Green Teams* to all state agencies, to local governments, to schools and other institutions, and to private businesses;
- Coordinate with the U.S. EPA to ensure the completion of corrective action work at closed hazardous waste TSDFs;
- Help counties and regional solid waste planning authorities to address debris management resulting from natural disasters in local solid waste plans;
- Work with the Kansas Department of Emergency Management to develop a statewide debris management plan;
- Help counties in northeast Kansas develop a long-term solid waste plan to address the projected closure of the state's largest MSW landfill in Johnson County;
- Develop a plan to evaluate the training needs for solid waste facility managers and operators and incorporate appropriate training requirements into state regulations; and
- Expand the network of local household hazardous waste programs so that all Kansans have a place to dispose of such wastes.

Addressing Contaminated Land

Prior to the implementation of programs to properly manage solid and hazardous wastes, pollution resulted in contamination of the land at many sites in Kansas. Also, despite the best efforts at proper waste management today, some contamination of land and water still occurs. The Bureau of Environmental Remediation (BER) at the Kansas Department of Health and Environment (KDHE) directs, through a variety of programs described below, the investigation and cleanup of contaminated sites in Kansas. In addition to problems found on the surface, BER also addresses contamination of subsurface soils and groundwater.

Spills

Many hazardous and non-hazardous substances are routinely transported by railcar, truck, pipeline and other modes of transportation. State law requires spills to be reported to KDHE in a timely manner. KDHE coordinates with other state and federal agencies to respond to these spills to minimize the impact on the public and to prevent damage to the environment. This program is a very important mechanism used by BER to identify the sites of contamination and ensure the parties responsible address the sites before the releases impact the surface and groundwater of the state. This program is responsible for addressing about 600 to 700 spill notifications per year.

Photo courtesy of Kansas Geological Survey.

Site Assessment

The Site Assessment Program performs the initial investigation at many contaminated sites in Kansas. This program allows BER to document releases of chemical contaminants into the environment, identify potentially responsible parties, assess threats to public health and the environment, and prioritize sites for future response activities by an appropriate KDHE remedial program. This program evaluates approximately 70 sites per year.

State Cooperative Program

The State Cooperative Program was established in 1991 to address complex, higher priority contaminated sites in the state. BER works through legal consent orders with the party responsible for the contamination to reduce the threat to human health and cleanup the damage to the environment. At many of these sites, public and/or private drinking water wells have been impacted. In these instances, BER strives to remediate the contaminated groundwater so it may continue to be a source of drinking water.

Voluntary Cleanup and Property Redevelopment Program

The Voluntary Cleanup and Property Redevelopment Program (VCPRP), established in 1997 by statute, provides a mechanism for property owners, facility operators, prospective buyers and local governments to voluntarily address contaminated properties with technical and regulatory guidance from BER. Participants in the VCPRP can receive a No Further Action determination from BER that can limit potential environmental liabilities. This determination encourages productive use of the contaminated land. There are currently 324 active sites in the VCPRP.

Installation of carbon units for treating contaminated groundwater.

Drycleaners

The Kansas Dry Cleaning Environmental Response Act of 1995 provides funding for remediation of contamination caused by dry cleaning facilities. This legislation was prompted by the Kansas dry cleaning industry to create a dry cleaning trust fund to protect their constituency from bankruptcy due to environmental contamination and clean-up costs. The law requires operating facilities to: 1) have secondary containment under or around all dry cleaning machines; 2) keep log books of inspections and maintenance activities; 3) deliver solvents to the

dry cleaning machines through a closed loop system; and 4) prohibits disposal of any dry cleaning waste down the sanitary sewer systems. These operating requirements will reduce the number of dry cleaning contaminated sites in the future. KDHE inspects about 20 to 25 drycleaners a year to verify all these requirements are being met.

KDHE is also responsible for the remediation of dry cleaning sites that have been accepted into the Dry Cleaning Trust Fund. To date, 66 dry cleaning facilities have been addressed through the Dry Cleaning Trust Fund and work will begin on five more sites this year.

Superfund Program

BER provides technical assistance and regulatory oversight for the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Defense (DOD) for their remediation programs. The EPA Superfund program and the DOD Environmental Restoration Program address some of the largest and most serious hazardous waste sites in the state. Remedial actions emphasize installing alternate water supplies for affected residents, removing, capping and/or treating contaminated soils to prevent human contact with pollutants, and abating sources of pollution that threaten the environment of the state. The EPA Superfund program and DOD remedial programs operated or completed remedial actions at 64 hazardous waste sites in Kansas during fiscal year 2007 with BER oversight.

State Orphan Sites Program

The State Orphan Sites Program was developed specifically to address sites where the party responsible for the contamination is not known or is not viable, and where there are no federal, state, or other funding sources available to complete required investigation and cleanup activities. The program is funded through the State Water Plan. The funding provided to the program assists in the evaluation, monitoring and remediation of contaminated groundwater or surface water sites. The program also provides funding to supply alternate water sources as an emergency response action to residences with contaminated drinking water sources. There are currently 134 sites in or resolved through this program.

Brownfields Program

The Brownfields Program encourages local governments and non-profit organizations to redevelop underutilized properties in their community. The program allows BER to conduct environmental assessments on properties in redevelopment areas of communities. These environmental assessments determine the presence of environmental contamination and necessity for remediation prior to redevelopment. In 2007, a total of 121 assessments were completed covering over 391 acres. Since 1999, KDHE has performed assessments on more than 300 properties, saving local communities valuable resources. Many of these properties have been successfully redeveloped for commercial, residential, recreational, or governmental purposes.

Photo courtesy of Karen Schmidt.

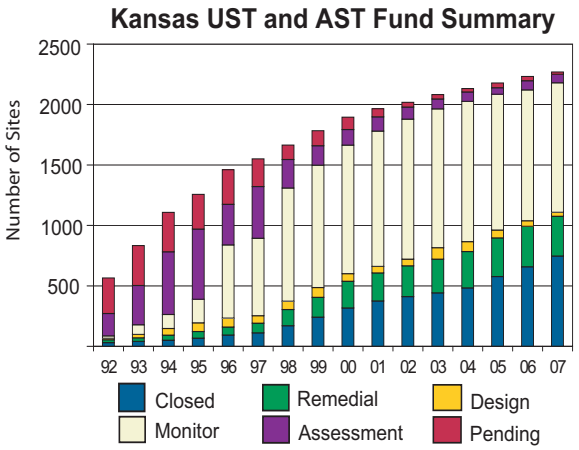
Environmental Use Control Program

An Environmental Use Control (EUC) is a legal mechanism for applying restrictions, prohibitions, and conditions on land use for a property with contaminant concentrations that exceed residential standards. EUCs are necessary when cleanup of contamination to levels allowing unrestricted use of the property is not economically or technically feasible. An EUC can be voluntarily applied to a property by the landowner, offering relief from environmental liability concerns and making property more attractive to redevelopment or prospective buyers. EUCs protect the seller of a property by informing future landowners of the use restrictions necessary to mitigate environmental liability concerns associated with a property. Since the inception of the program in 2003, KDHE has received a total of 66 EUC applications of which 40 EUC agreements have been approved by KDHE and recorded by the property owner.

Petroleum Storage Tank Program

Underground Storage Tank (UST) regulations were implemented in Kansas in 1990 requiring owners of USTs to comply with leak detection, corrosion protection, financial assurance and registration requirements. Nearly 2,600 facilities operating approximately 6,200 USTs have achieved a 99 percent compliance rate through an annual permitting program operated by KDHE.

Regulatory oversight and financial assistance are provided to tank owners to accomplish the needed remediation of contaminated sites through the Aboveground Storage Tank (AST) and UST



trust funds. Orphan USTs are addressed using federal funds allocated to the state by the EPA. The Essential Fuels Supply Trust Fund assists with the expenses of upgrades to AST facilities to comply with recent EPA Spill Control and Countermeasures Regulations. The UST and AST funds have addressed 2,280 sites since 1990. The emphasis of the program continues to be the protection of human health. Where drinking water wells have been contaminated by releases of petroleum from storage tanks, KDHE has provided clean water to approximately 141,000 Kansans through the installation of treatment systems on numerous public water supply wells, the replacement of public water supply wells, and the installation of water lines for residences and businesses to public water systems. The treatment systems on the public wells supply more than 13,000 gallons of potable water per minute while cleaning up the groundwater. The storage tank program continues to be a national leader with over 200 effective remedial systems in operation across the state. Kansas is routinely asked to present information and provide guidance to national audiences regarding innovative and effective treatment of petroleum contamination in soils and groundwater.

Oversight of Remediation at Catastrophic Events

Occasionally there will be a sudden and substantial release of contaminants into the environment. In these instances, KDHE personnel provide oversight of the assessment and remediation of the resulting contamination. The July 2007 explosion at Barton Solvents in Valley Center is an example of such a site.

Fire at Barton Solvents.

Kansas Mining Activities

BER, through its Surface Mining Section located in Frontenac, administers the federally mandated active mining program to ensure operator compliance with all applicable state regulations governing the mining and reclamation

Soil sampling at Barton Solvents.

of coal-bearing land. Program goals are achieved through permitting and monthly inspections to verify that no environmental damage is occurring through the active coal mining activities. Currently in Kansas there are three mining companies operating. The abandoned mine land program abates hazards to the health, safety and the general welfare of the public, and responds to situations of an emergency nature created by past coal mining activities. Coal mining lands eligible for reclamation are those left abandoned or inadequately reclaimed prior to Aug. 3, 1977. Since its inception, the Surface Mining Section has remediated 0.8 miles of clogged streams, 169,725 linear feet of dangerous highwalls, 1,350 coal vertical openings, and abated 987 emergencies. The Surface Mining Section is also working with the abandoned lead and zinc mining sites to resolve subsidence and safety concerns as funding allows. Since the inception of the Lead and Zinc Vertical Opening Project 70 vertical openings have been closed in the Kansas portion of the Tri-State Lead and Zinc District. Also, this year the Surface Mining Section was awarded the Excellence in Abandoned Mine Land Reclamation Mid-Continent Regional Award from the U.S. Office of Surface Mining for the reclamation work they did on the Overman Reclamation Project.

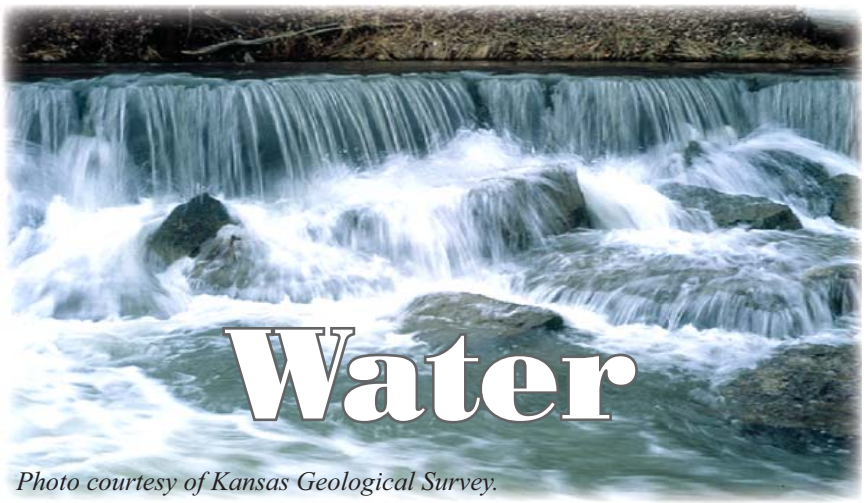


Photo courtesy of Kansas Geological Survey.

Public Water Supplies

Over 2.5 million Kansans receive their drinking water from a public water supply which is usually operated by a city or water district. Drinking water quality standards continue to become stricter and in general Kansas suppliers are responding well to the challenge. Kansas has 1,053 public water supplies. Most water supplies are small with about 60 percent serving less than 500 people. This small customer base presents a challenge in raising funds for construction and in operations. However, even with this challenge Kansas water supplies have a good compliance record. The most common drinking water violation is a failure to collect the required number of samples for bacteria, or the detection of bacteria. Another common violation is nitrate, although the level of nitrate measured is now generally less than 15 mg/l. An additional concern for drinking water system operators is compliance with disinfection by-product regulations. Disinfection by-products are compounds formed from the use of disinfectants such as chlorine. Water suppliers have been making changes to their treatment systems and modifying their operations to provide for adequate disinfection while limiting the formation of by-products. About 10 percent of the supplies still have work to do to meet the by-products rule.

Kansas drinking water systems often find that by joining together they can provide better and more reliable service to their customers. This is possible by expanding the customer base, improving cost efficiencies, sharing sources of water to assure reliable supplies during droughts, and allowing for more professional operations staff to oversee water treatment. Consolidation and regionalization are terms commonly used to describe this approach. Over the past three decades Kansas has seen the formation of 14 active wholesale districts combining 85 separate water supplies serving a population of 126,000. There have also been 136 interconnections between water supplies which allow for alternate or supplemental sources of drinking water. Most of the regionalization work has occurred in the eastern part of the state as the population centers are closer together than in western Kansas. During the recent years of low rainfall and drought, followed by floods in 2007, the benefit of these regional systems was clearly evident. Fewer water supplies were impacted during these extreme events than would have been without the regional systems. There are still opportunities for regional drinking water systems through both physical connection and through shared management or operation.


Photo courtesy of Craig Thompson.

Water Quality in Kansas

When evaluating the condition of water in Kansas, one of the Division of Environment's largest concerns includes water quality. As a result, KDHE follows guidelines required by the Clean Water Act and developed by the Environmental Protection Agency (EPA). In accordance with section 303(d) of the Clean Water Act, the Bureau of Water develops a list of impaired water bodies where state water quality standards are not being met. The list is updated every two years and the most recent list, the 2006-303(d) list, has been submitted to EPA. In an effort to address those water bodies listed as impaired, Total Maximum Daily Loads (TMDLs) will be developed for water bodies on the 303(d) list within a specified time, up to 8-13 years, in order to attain the water quality standards. A TMDL is a plan to address water quality violations in water bodies with the goal

Photo courtesy of Diana Chamberlain.

being compliance with water quality standards. The process of developing TMDLs considers the existing quality of the water body, the appropriate standard, the sources of the pollution, and laying out an approach to reduce the pollution and meet standards. TMDL development priority is assigned to each water body on the list based on water quality analysis and discussions with the Basin Advisory Committees and other stakeholders within the state's 12 major river basins. The most recent 303(d) list identifies 148 water quality impaired lakes and wetlands and 1,032 water quality impaired stream segments in Kansas. The predominant stream impairments throughout the state include: atrazine, biological stressors, copper, chloride, selenium, sulfate, pH, dissolved oxygen depletion, and arsenic. The majority of the lake impairments within the state are associated with eutrophication and siltation. To date, there have been 267 stream watershed TMDLs and 182 Lake TMDLs developed.

In addition to the guidelines that outline the development of TMDLs, the state of Kansas is required to deliver a yearly water quality assessment report in accordance with section 305(b) of the federal Clean Water Act (33 USC 466 et seq.). The most recent 305(b) report, the 2006 Kansas Water Quality Assessment, presents a formal analysis of the state's overall water quality condition. The report considers four years of stream chemistry monitoring data (2002-2005), five years of stream biological monitoring data (2000-2004), six years of lake and wetland monitoring data (2000-2005), and three years of fish tissue contaminant data (2002-2004). Collectively, this information allows technical conclusions to be drawn concerning the water quality of 18,493 miles of streams and 245,227 acres of publicly owned (or publicly accessible) lakes and wetlands. This corresponds to approximately 60 percent of the state's classified stream mileage and 95 percent of the state's classified lake and wetland acreage.

A little over half of the streams assessed in this reporting cycle fully support all designated uses. The major causes of the streams that do not fully meet water quality standards include organic enrichment, high salinity, elevated pH, and elevated *E. coli* concentrations. Sources primarily responsible for the impairments in Kansas streams include agriculture (crop production and animal feeding operations), natural phenomena (e.g., mineralized groundwater intrusion), and habitat degradation. Approximately 75 percent of assessed lake acreage and 84 percent of wetland acres are impaired for one or more designated uses. Major causes for lake and wetland impairments include elevated nutrient levels, eutrophication, siltation, high turbidity, and taste and odor problems. Agriculture, municipal point sources, and natural phenomena are the primary factors contributing to water quality impairments in lakes.

In order to get a better overall picture of our water quality protection needs, Kansas developed an approach of connecting stream flow, or hydrology, with water quality data into a concept referred to as "load duration methodology." This approach was unique and allowed stream quality to be considered as a function of stream flow and has been embraced by the EPA and several other states. Therefore, in 2008, KDHE will submit to the EPA an integrated report that will meet the reporting requirements for the State of Kansas in accordance with the Clean Water Act sections 303(d), 305(b) and 314. The 2008 Integrated Report will detail the water quality status and trends within the state, including the detailed list of impaired waters. The overall conditions of all waters within the state will be estimated and the water quality trends will be assessed to determine if conditions are improving or degrading. The Integrated Report will be utilized to prioritize water quality assessments, restoration and protection projects, TMDL development, and implementation tasks within the agency. The development of the Integrated Report is a collaborative effort between the Bureau of Water and the Bureau of Environmental Field Services.

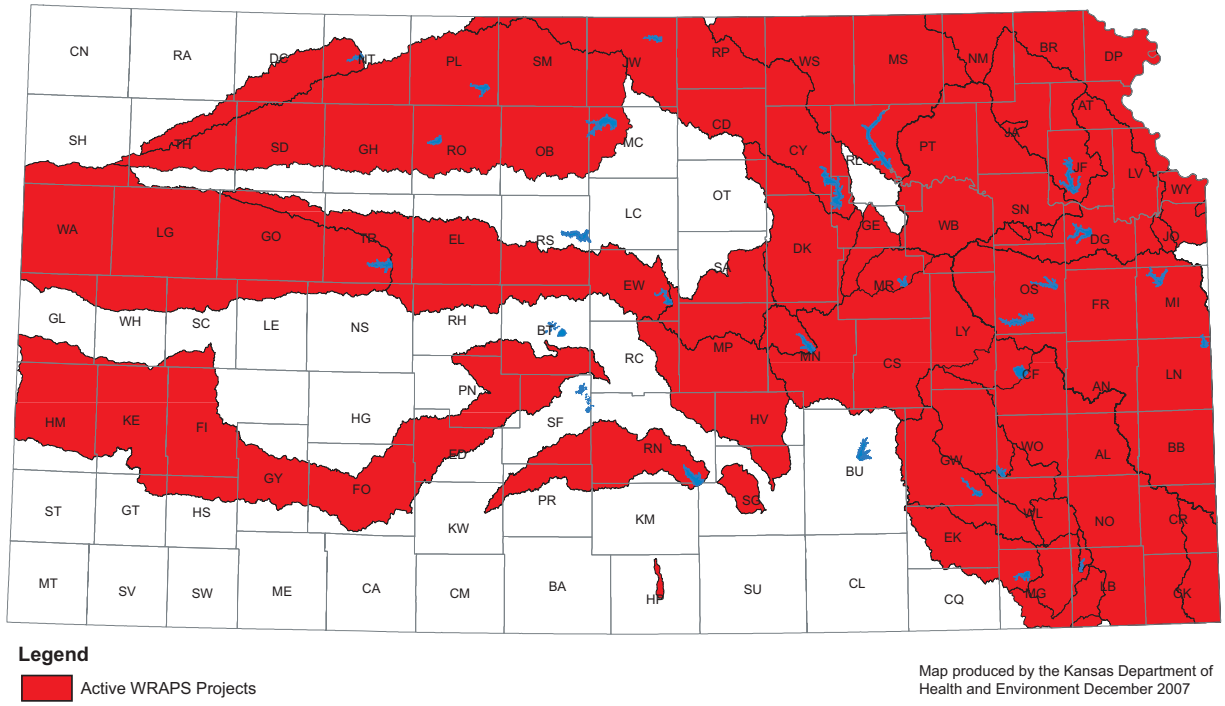
Photo courtesy of Kansas Geological Survey.

Improving Water Quality

With the intention of encouraging local initiatives of water quality improvement projects, Kansas initiated an effort called Watershed Restoration and Protection Strategy, or WRAPS. Through funding assistance to local water initiatives, Kansas hopes to foster the development of water quality improvement projects with significant local support which also have a positive impact on the watershed. Local interests might range from flood protection to recreation that is not necessarily driven exclusively by water quality. By bringing together local interests, identifying needs and programs for potential assistance, Kansas hopes to create a more grass roots support base for all water programs. Through this work Kansas believes water quality and the environment will benefit while local supporters will see progress. All 20 of the Kansas Water Plan priority reservoirs are subject to watershed management activities, and 19 are engaged in the WRAPS program. Demand for state funds is very strong with approximately $12 million requested annually for WRAPS projects, with $2 million available.

In addition to grass roots efforts to address water quality problems caused by nonpoint source pollution, the renovation of many wastewater treatment facilities across the state continues to produce noticeable improvements in surface water quality. As the number of point sources contributing to water quality impairments declines, attention will increasingly shift to nonpoint sources. It is anticipated that watershed pollution control efforts, predicated largely on the development and implementation of total maximum daily loads (TMDLs), will play an increasingly important role in the abatement of nonpoint source pollution in Kansas.

Watershed Restoration and Protection



Legend

Active WRAPS Projects

Map produced by the Kansas Department of Health and Environment December 2007

Approximately 60% of Kansas is being served by an active WRAPS project.

Water Challenges

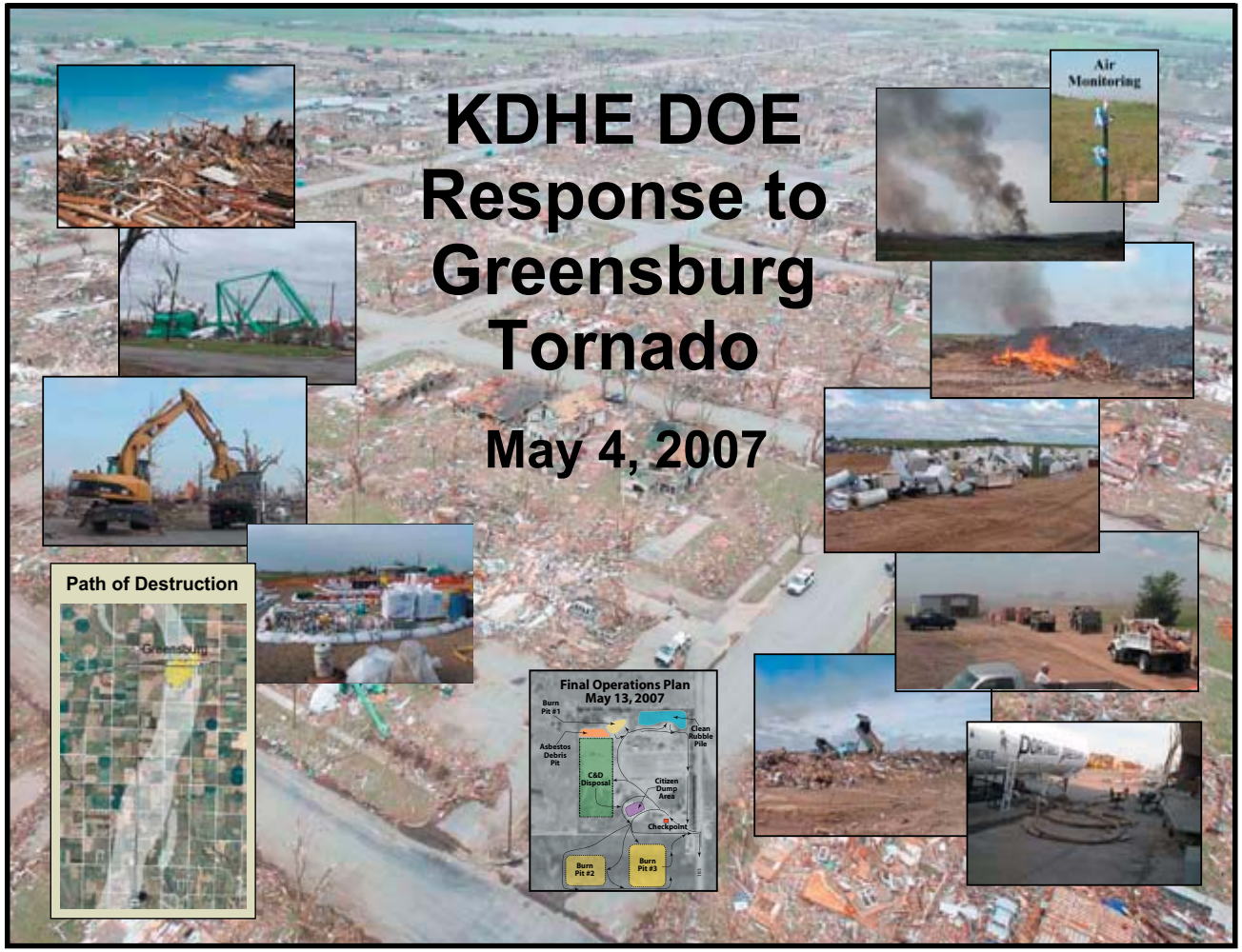
Future challenges for water supplies include meeting stricter limits for quality as well as providing enough raw water to meet demand. Many areas of Kansas are fully appropriated, that is, there are no new available sources of raw water. Some areas of the state have water available but find it is too salty for use without expensive treatment. Suppliers have been turning to reuse and recycle systems and other unique approaches to stretch water supplies. Groundwater cleanup systems are being operated with the cleansed water being used as a source for drinking water. Hutchinson is installing a groundwater cleanup system which also will serve as a source of clean drinking water, and will reduce salt loading to the Arkansas river. Another novel project is Wichita's system to skim high flows from the Little Arkansas River to recharge the Equus Beds aquifer. This project will eventually result in underground storage of a volume of water equal in size to Cheney Reservoir and meet the city's need for 40 years.

KDHE Responds to Natural Disasters in 2007

Over 60,000 homes and businesses in 39 western Kansas counties started 2007 covered in snow and/or ice and without power. On Dec. 30 - 31, 2006, a major snow and ice storm dumped as much as three feet of snow with drifts over 15 feet tall in the far western counties. The remaining counties affected by this storm were covered with one to three inches of ice. State and county roads were drifted shut for days and thousands of miles of power lines fell to the ground. Communities could not pump drinking water to residents nor could they pump and treat wastewater. Producers could not feed their livestock. KDHE staff responded to this disaster by locating emergency generators or additional water sources, investigating wastewater bypasses, locating emergency disposal sites for dead livestock, and reviewing and approving open burn requests for trees and brush.

Cow covered in snow and ice.
http://www.ksn.com/weather/weathergallery/wxphotos?st=12

On May 4, 2007, an EF-5 tornado struck Kiowa County and nearly destroyed the city of Greensburg. KDHE staff from the Southwest District Office were in Greensburg within hours after the tornado to assess the damage, offer assistance, and help determine the appropriate KDHE response. Over the next two months, various KDHE staff from all six district offices and the Topeka office assisted with the clean-up and recovery of Greensburg. There were many issues that KDHE staff assisted with including the disposal of the huge amount of debris and



household hazardous waste, repairing the public water supply (PWS) system, evaluation of the wastewater treatment system, proper removal and disposal of asbestos containing material, ambient air monitoring, and spill/release assessment and clean-up.

During the Greensburg response, one of KDHE's primary responsibilities was debris disposal. After a few meetings with local, state, and federal officials, KDHE determined the best method for disposal of the debris would be to burn as much as possible and dispose the remainder at the Kiowa County Construction and Demolition Landfill north of town. KDHE staff worked 12-14 hour days screening waste loads and monitoring the burning and disposal of the debris. A total of 388,453 cubic yards of debris (42,036 truck loads) was either burned, disposed, or recycled.

The storm system that produced the Greensburg tornado also created heavy flooding in central and northeast Kansas. KDHE staff also responded to this disaster by assisting community public water supply and wastewater treatment systems. Many boil water advisories were issued and KDHE staff assisted with the notification and sampling to ensure the water was safe to drink.

On June 29, 2007, another storm system began dumping heavy amounts of rain in central and eastern Kansas. From June 29 to July 1, as much as 21 inches of rain fell in Elk, Wilson, and Montgomery counties forcing the Verdigris River to flow out of its banks and causing widespread flooding in the rural areas and communities. Once again, KDHE staff were ready and willing to respond. Extensive damage to PWS and wastewater systems occurred in many of the communities along the Verdigris River. The flooding destroyed many houses and commercial businesses. KDHE staff were given the task of assisting the communities by helping them with their PWS and wastewater issues and disposal of the debris.

To make matters worse, the southeast Kansas flooding caused 71,000 gallons of crude oil to spill from the Coffeyville Resources, Inc. refinery in Coffeyville into the flood waters. The city of Tulsa, Okla. obtains its water supply from Lake Oolagah which is directly downstream of Coffeyville on the Verdigris River. KDHE staff worked with the state of Oklahoma and multiple EPA offices to protect the lake and the citizens of Tulsa. Once the flood waters receded, the crude oil coated vegetation, the inside and outside of houses and businesses, automobiles, and other items. KDHE continues to work with Coffeyville Resources, Inc. to clean-up the city of Coffeyville and the Verdigris River.

During 2007, all but two counties in Kansas were declared Federal Disaster areas. The natural disasters created many challenges for KDHE. Due to the dedicated staff, planning, and training, KDHE was able to conquer these challenges. KDHE staff from all offices and bureaus were able to work closely with many local, state, and federal agencies to ensure the maintenance of a safe and sustainable environment.

Crude oil and flood waters in Coffeyville. Photo courtesy of US EPA Region 7.

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Municipal Program 296-5525
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Livestock Management 296-6432

Bureau of Waste Management
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Compliance & Enforcement 296-1603
Permitting 296-1602
Waste Reduction, Grants, Outreach 296-1540

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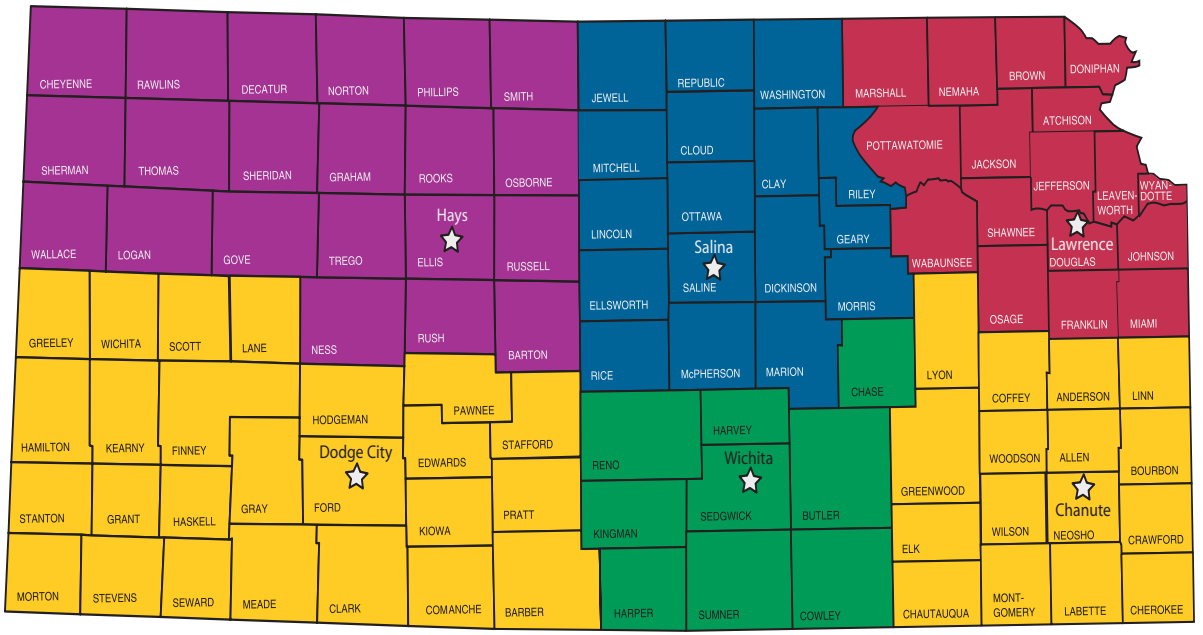

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