Approved Thomas F. Walker
Date

MINUTES OF THE HOUSE COMMITTEE ON GOVERNMENTAL ORGANIZATION.

The meeting was called to order by REPRESENTATIVE THOMAS F. WALKER at
Chairperson

9:00 a.m./p.m. XXXX on FRIDAY, JANUARY 20, 1989 in room 522-S of the Capitol.

All members were present except:

Committee staff present:

Avis Swartzman - Revisor
Carolyn Rampey - Legislative Research
Jackie Breymeyer - Committee Secretary

Conferees appearing before the committee:

Ellyn Rullestad - Legislative Post Audit
Jim Power- Director, Division of Environment, DHE

The meeting of the House Governmental Organization Committee was called to order by Representative Thomas F. Walker, Chairman. He stated the minutes would stand approved at the end of the meeting if there were no corrections or additions. The agenda for the day's meeting was Ellyn Rullestad, Legislative Post Audit, who was present to speak on the audit entitled "State Agencies' Handling of Water Contamination and Pollution Problems in Kansas". (Attachment 1) Another handout, "1988 Summary of Bureau of Environmental Remediation Sites in Kansas", was also made part of the presentation. (Attachment 2)

Ms. Rullestad asked the committee to turn to page three of the audit where a statistic showed an agricultural usage of 87.1%. This is the greatest use of water in Kansas. The graphic, "Hydrology of a Typical Aquifer" was also shown on this page.

Pages 6 and 7 showed the major river basins and the types of contamination in Kansas.

On page 9, the duties and authority of the various agencies was discussed.

Pages 14 and 15 contained the information on how the water problems are being handled. This drew several questions and comments from committee members.

Page 16 showed the contaminated sites in the state.
It was stated the state does have a great deal of discretionary power as to the handling of a particular water problem.

Page 28 stated several reasons why state agencies have not used this discretionary authority, particularly in the cleanup of contaminated sites. These reasons entail responsibility, unclear and restrictive laws and differences of opinion on the type of response the state should make.There are also limited staff and funding problems.

Ms. Rullestad turned to page 32 which contained the recommendations. The DHE & KCC would like to provide testimony to the Legislature as to how they should respond with regard to water contamination problems. Consideration whould be given to establishing a clear policy as to priorities, strengthen the law, and providing more staff and resources.

The Chairman called on Representative David Miller. Representative Miller is the new Chairman of the Post Audit Committee, who explained how the audit procedure works.

Ms. Rullestad introduced Jim Power, Director, Division of Environment, DHE, who, in turn, introduced members of his staff. Mr. Power gave an overview of the remediation sites in Kansas. He explained several leaking underground storage tank sites (LUST) and non-leaking underground storage tank sites (NON_LUST).

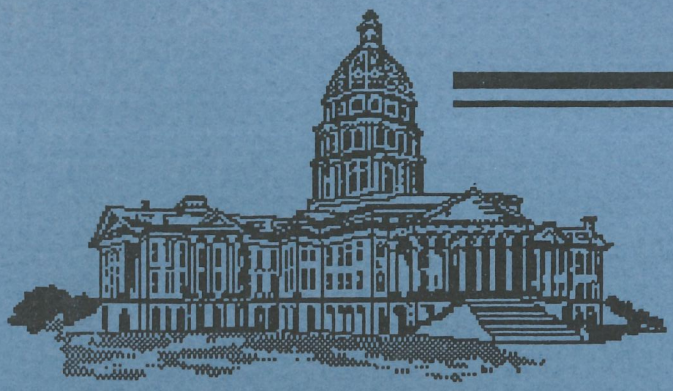
Chairman Walker thanked all who appeared and took part in the presentation with their questions and comments.

The meeting was adjourned.

GUEST LIST

COMMITTEE: GOVERNMENTAL ORGANIZATION DATE: JANUARY 20, 1989

NAME	ADDRESS	COMPANY/ORGANIZATION
Carla Fromm		K.Dept Health + Environ.
Ron Hammerschmidt	Bureau Env. Resp.	Ks. Dept. Health & Env.
Allyn Pulliam	Post Audit	Post Audit
Tom Kittaar	Topeka	Post Audit
Joe Harkins	TOPEKA	KWO
James Power	Topeka	KDHE
DAVID M. TRASTER	Topeka	KDHE
Gary K. Hulett	Topeka	KDHE
Mike Torrey	Topeka	KGFA/KFCA
Dale Lambley	Topeka	KSBA
KEVIN J. CARRICO	TOPEKA	INTERN John D McClure
Rob Hodges	Topeka	KTA
MIKE BEAM	"	Ks. Lvstk. Assn.
John Strickler	"	Governors Office
Anne Smith	Topeka	Heinz Ebert — Mesa
Warren Parker	Topeka	Ks. Farm Bureau



PERFORMANCE AUDIT REPORT

State Agencies' Handling of Water Contamination and Pollution Problems in Kansas

A Report to the Legislative Post Audit Committee
By the Legislative Division of Post Audit
State of Kansas
July 1988

88-51

G. O.
Attach. 1
1/20/89

Legislative Post Audit Committee

Legislative Division of Post Audit

THE LEGISLATIVE POST Audit Committee and its audit agency, the Legislative Division of Post Audit, are the audit arm of Kansas government. The programs and activities of State government now cost about $4 billion a year. As legislators and administrators try increasingly to allocate tax dollars effectively and make government work more efficiently, they need information to evaluate the work of governmental agencies. The audit work performed by Legislative Post Audit helps provide that information.

As a guide to all their work, the auditors use the audit standards set forth by the U.S. General Accounting Office and endorsed by the American Institute of Certified Public Accountants. These standards were also adopted by the Legislative Post Audit Committee.

The Legislative Post Audit Committee is a bipartisan committee comprising five senators and five representatives. Of the Senate members, three are appointed by the President of the Senate and two are appointed by the Senate Minority Leader. Of the Representatives, three are appointed by the Speaker of the House and two are appointed by the Minority Leader.

Audits are performed at the direction of the Legislative Post Audit Committee. Legislators or committees should make their requests for performance audits through the Chairman or any other member of the Committee. Copies of all completed performance audits are available from the Division's office.

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LEGISLATIVE DIVISION OF POST AUDIT

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Topeka, Kansas 66612-1285
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PERFORMANCE AUDIT REPORT

STATE AGENCIES' HANDLING OF WATER CONTAMINATION AND POLLUTION PROBLEMS IN KANSAS

OBTAINING AUDIT INFORMATION

This audit was conducted by Ellyn Rullestad, Senior Auditor, and Rick Riggs and Tom Vittitow, Auditors, of the Division's staff. If you need any additional information about the audit's findings, please contact Ms. Rullestad at the Division's offices.

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STATE AGENCIES' HANDLING OF WATER CONTAMINATION AND POLLUTION PROBLEMS IN KANSAS

Summary of Legislative Post Audit's Findings

What fresh water resources in Kansas have become unusable because of contamination or pollution in recent years? Kansas relies on both groundwater and surface water. Groundwater is the primary water source in the western two-thirds of the State, while surface water is more prevalent in the eastern third. Water experts indicate that water quality in Kansas is good overall, but numerous human activities contibute to the water contamination sites found throughout the State. The Department of Health and Environment has prepared a list of 332 contaminated sites in Kansas. In addition, State studies have found that contaminants are present in about two percent of the State's public water supply wells, and that as many as one-quarter of farmstead wells may be contaminated with nitrates.

Several State agencies have some responsibility for maintaining the quality of the State's water. The Department of Health and Environment and the Kansas Corporation Commission have regulation and enforcement responsibilities as well as clean-up authority. The Board of Agriculture plays a much smaller role and is primarily involved as a regulatory body. In addition, other State agencies and some local entities play a limited role in protecting Kansas' water quality.

How well are State agencies handling Kansas' water contamination and pollution problems? Kansas' system for protecting water quality imposes many requirements on State agencies before contamination is identifed, but allows for a substantial amount of discretion afterward. To examine how well the system works, seven cases of water contamination were extensively reviewed. These included the Brewster, Eudora, and Albert public water supplies, Western Petrochemical/Warwick Wax company, Hydro-flex Corporation, the Riley County sanitary landfill, and a private well in Ellis County.

An examination of these seven cases showed that the pollution was caused by poor past disposal practices that were unregulated at the time. With one exception, the State has generally done what it was required to do to minimize or prevent water pollution at the seven sites. Once contamination has been identified, State agencies have a great deal of discretionary authority to take action, but they generally did not use that authority. For example, in the cases reviewed, no fines were ever levied against the parties responsible for polluting, and none of the contaminants at the sites have ever been cleaned up. The audit identifies several reasons why State agencies have not used the discretionary authority they have, particularly in cleaning up contaminated sites.

STATE AGENCIES' HANDLING OF WATER CONTAMINATION AND POLLUTION PROBLEMS IN KANSAS

Legislative concerns have been raised recently over the increasing contamination of Kansas' fresh water supply. In 1982, the Legislature amended the Protection of Surface and Groundwater Act to provide for improved protection from water pollution resulting from oil and gas well operations. Water supplies can also be contaminated by agricultural or feedlot practices, solid waste disposal practices, chemical spills or dumping, and the like.

Several agencies play a role in managing the State's water resources. The Kansas Water Office and Water Authority are responsible for the State Water Plan and administer the sale of water from State-owned storage in federal reservoirs. The Board of Agriculture's Division of Water Resources administers water rights, approves and inspects dams and levees, and oversees local water districts. The Department of Health and Environment enforces water quality standards. The Corporation Commission regulates the drilling, completion, production, and abandonment of oil and gas wells, as well as the protection of water from pollution resulting from oil and gas activities. And the Conservation Commission administers the Conservation Districts Law to protect the State's soil and water resources. In addition, local and regional entities such as groundwater management districts, river basin advisory committees, and watershed districts are involved in water resource activities.

Legislative concerns have been raised that these agencies are not responding effectively to prevent or minimize contamination of the State's water resources, or that such problems are simply not being addressed. In addition, a 1986 performance audit disclosed serious deficiencies in the State's ability to identify and regulate abandoned unplugged oil and gas wells, which can cause pollution by allowing oil and saltwater to flow into fresh water formations. This audit addresses the following specific questions:

1. **What fresh water resources in Kansas have become unusable because of contamination or pollution in recent years?**

2. **How well are State agencies handling Kansas' water contamination and pollution problems?**

To answer these questions, the auditors interviewed State and local officials, reviewed literature relating to water pollution problems, reviewed statutes, rules and regulations, and analyzed budget data. Seven sites identified as having contaminated water were chosen for an in-depth review by the auditors.

In general, the auditors found that Kansas' water quality is relatively good, but that incidents of water contamination exist in all areas of the State. The auditors found that the Department of Health and Environment and the Corporation Commission are the agencies with primary responsibilities for water pollution control. Based on an in-depth review of seven cases of water contamination, most of which were caused by past poor disposal practices, the auditors found that these two agencies

have generally done what they were required to do to minimize or prevent water pollution at the seven sites. Once contamination has been identified, State agencies have a great deal of discretionary authority to take action, but they generally did not use that authority. A number of other factors may inhibit the State's ability to respond fully to pollution. This audit discusses these and other findings in some detail.

What Fresh Water Resources in Kansas Have Become Unusable Because of Contamination or Pollution in Recent Years?

To answer this question, the auditors reviewed available literature on water pollution and contamination problems in Kansas. They interviewed State and local officials about the quality of the State's water resources, and reviewed a number of studies by water-quality experts that have been conducted to examine the incidence of contamination in various types of water resources.

Kansans must rely on both groundwater and surface water for their water, the most common use of which is for agricultural purposes. Groundwater is the primary water source in the western two-thirds of the State, while surface water is more prevalent in the eastern third.

Overall, water quality in Kansas is good, but numerous human activities have contributed to the water contamination sites found throughout the State. The Department of Health and Environment has prepared a list of 332 known and potentially contaminated sites in Kansas. In addition, Department studies have found contaminants in about two percent of the State's public water supply wells, and as many as one-quarter of the State's farmstead wells may be contaminated with nitrates. These and other findings are discussed in the following sections.

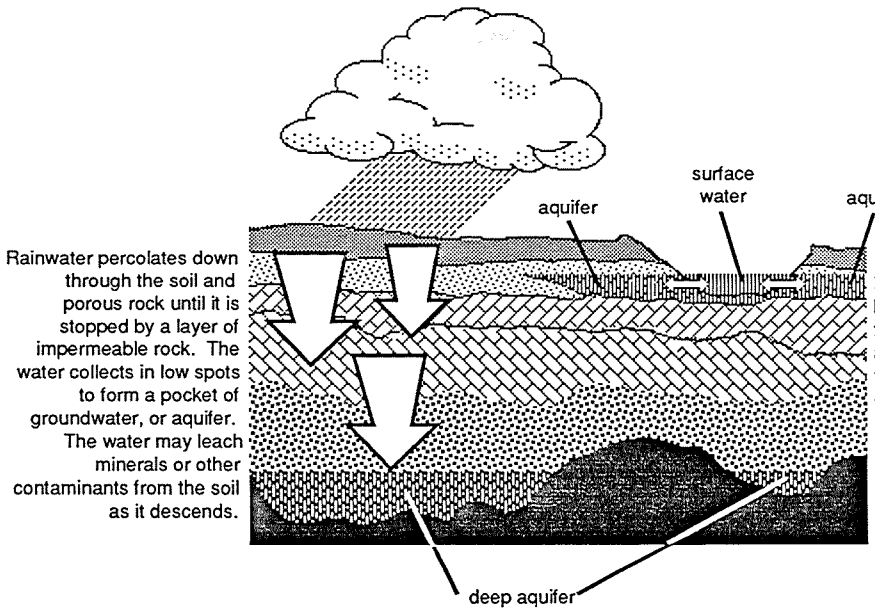
Kansans Rely on Both Surface Water and Groundwater To Meet Their Fresh Water Needs

K.S.A. 82a-702 says that "All water within the state of Kansas is hereby dedicated to the use of the people of the State, subject to the control and regulation of the State..." This means that both groundwater and surface water are subject to the control of State law and a number of State agencies.

The State has 24 major reservoirs and 12 major river basins. However, a far larger amount of the State's water is contained in groundwater aquifers. These underground geologic formations of sand, gravel, or porous rock are estimated to hold the equivalent of three to seven years of normal Statewide precipitation, or about 35 times the storage capacity of the State's major reservoirs. The graphic at the top of the next page illustrates a typical aquifer.

Groundwater is a more important source of water in the western part of the State than in the east. According to a 1984 study conducted for the Kansas Rural Center, counties with the greatest number of irrigated acres are in the western part of the State; groundwater storage provides 98 percent of the water supplies in the western

The Hydrology of a Typical Aquifer



As this graphic shows, rain water seeping into the ground descends until it is stopped by impermeable rock, forming deposits of saturated sand, gravel, or rock, called aquifers. Wells can be drilled into these aquifers and the water pumped out. Any liquids poured on the ground, such as gasoline or solvents, or solids that can be dissolved by water, can also enter and pollute the water in the aquifer. Similarly, pollution in surface water can migrate into adjoining groundwater. Pollution in groundwater adjoining surface water can also migrate outward, polluting the surface water.

part of Kansas. Moving east across the State, surface water begins to replace groundwater in importance. In eastern Kansas, groundwater provides only about 60 percent of all water supplies, mostly in relatively small, shallow aquifers. Surface water makes up the rest.

Agriculture uses the greatest amount of water each year by far, and most of the water used is groundwater. In 1986, the most recent year for which figures are available, Kansans used 1.5 trillion gallons of water for agricultural, municipal, industrial, and recreational purposes. The following table shows the State's water use that year, by type of category.

Water Use by Type of Water and Category of Use, 1986

CATEGORY OF USE	% OF TOTAL WATER USED	% OF CATEGORY THAT IS GROUNDWATER	% OF CATEGORY THAT IS SURFACE WATER
Agricultural (a)	87.1%	94.2%	5.8%
Municipal (b)	7.7	49.6	50.4
Industrial	3.5	63.4	36.6
Recreation	1.7	10.4	89.6
Percent of Total	**100.0%**	**88.3%**	**11.7%**

Source: data reported to the Board of Agriculture's Division of Water Resources
(a)"Agricultural" equals irrigation plus stockwatering; irrigation accounted for 99.4 percent of the total.
(b)"Municipal" water generally consists of public water supplies.

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Public Water Supplies

About eight percent of all water used in Kansas is used by public water supplies. As the table shows, groundwater is the sole water source for 602 community water supplies that serve about 747,000 people. Although groundwater supplies the majority of community water systems (67 percent), groundwater systems are generally small: the average system serves1,240 people. In total, 35 percent of all people served by public water supplies depend on groundwater only.

Surface water, on the other hand, serves as the sole source of supply for 230 public water supplies, supplying water for 709,000 people. Public water supplies that use both surface and groundwater account for only eight percent of the total number of systems, but they are the largest. These mixed systems include Wichita, which serves 280,000 people, and Kansas City, which serves 212,000 people.

Number of People Served and Water Supplies by Type

Water	Supplies		People	
Source	No.	%	No.	%
ground	602	67%	747,000	35%
surface	230	25	709,000	33
mixed	74	8	689,000	32
TOTAL	906	100%	2,145,000	100%

As the table shows, agriculture was the biggest single user of water, accounting for 87 percent of the total, and 94 percent of all agricultural water used in 1986 was groundwater. Municipal uses—generally public water supplies—are the second largest water user, accounting for about eight percent of total annual water use. About half of the municipal water comes from surface supplies, such as rivers and reservoirs, and half from groundwater.

According to figures provided by the Department of Health and Environment, 906 regulated public water supplies serve about 2.1 million Kansans, about 86 percent of the State's population. The profile to the left describes these public water systems in more detail.

Industrial uses, accounting for 3.5 percent of total annual water consumption in 1986, include water used in manufacturing processes. About two-thirds of this water comes from groundwater sources. Recreational water use includes water consumed by bodies of water that are primarily recreational in nature, such as the Cheyenne Bottoms and the Marais des Cygnes Waterfowl Refuge. It accounts for only 1.7 percent of all water used each year, mostly from surface water sources.

In addition to the above uses, water from private wells is also used for domestic purposes, such as individual household use or watering small numbers of livestock. No State agency regulates or keeps records on these wells, but Division of Water Resources officials estimate that they number in the tens of thousands.

Water Quality Experts Say That Kansas' Water Quality Is Generally Good, But Some Water Contamination Exists Across the State, and the Problem Is Growing

The auditors reviewed a number of studies relating to water quality in Kansas. Most dealt with groundwater. For the most part, the authors of these studies concluded that groundwater quality in Kansas is generally good. One 1986 study, written by two University of Kansas law professors under the sponsorship of the Department of Health and Environment and the federal Environmental Protection Agency, stated that Kansas does not appear to face an immediate groundwater quality crisis. The Kansas Rural Center study cited earlier noted that groundwater in Kansas is naturally of good quality.

While each of these studies indicated that Kansas groundwater was of good quality and that no immediate crisis exists, each also said that groundwater quality problems do exist, and that the instances and volumes of known contamination are increasing. For instance, according to 1984 Kansas Water Office estimates provided in one study, the percentage of the groundwater supply that is of acceptable quality ranges from as high as 95 percent in some parts of eastern and western Kansas to as little as 25 percent in Russell County. In other words, water quality varies dramatically across the State.

The Kansas Rural Center study noted that nitrate pollution (from septic tanks, feedlot waste, and heavy applications of nitrogen fertilizer) affects the water in eastern and northcentral Kansas. Salt contamination is a serious problem in some areas of central and western Kansas: more than one-third of the documented groundwater contamination sites in Kansas are caused by chlorides or salts. This salt contamination may be a result of either human activities or natural processes. Because of improved detection methods, contamination by pesticides and other toxic substances is being found more and more often in groundwater and surface water across the State.

Surface water quality problems also exist. According to the Department of Health and Environment, all Kansas streams and lakes are vulnerable to pollution from oxygen-demanding substances, nutrients, dissolved and suspended solids, bacteria, metals, and pesticides.

In January 1987, the Department of Health and Environment Prepared a Report Identifying 274 Contaminated Sites

To determine the extent of water contamination across the State, the auditors reviewed data compiled by the Department of Health and Environment and other State agencies. They also contacted other groups involved in water issues, including groundwater management districts and river basin advisory committees. In addition, they contacted the State's four largest cities to find out if officials in those cities were aware of any water contamination problems. Because most of the groups contacted indicated that they inform the Department of Health and Environment of any contaminated sites they identify, the auditors determined that the Department had the most comprehensive information about water contamination sites.

In addition to the 274 known water contamination sites, the list also included 54 potential water contamination sites and four soil contamination sites that were not examined. The cases on the list range from such large and seriously contaminated sites as the Furley hazardous waste site and the Galena mining area (which contains many contaminated sub-sites), to individual domestic wells that may be only slightly salty.

As of the date of the report, some of the sites had been investigated by the Department, and some had not. The list is somewhat out-of-date, and a new list is being prepared for release sometime later this year. Nevertheless, the existing list is the best source for identifying water contamination problems across Kansas. It is also useful for describing the types of contaminants and the sources of those contaminants. The complete list of sites is contained in Appendix A.

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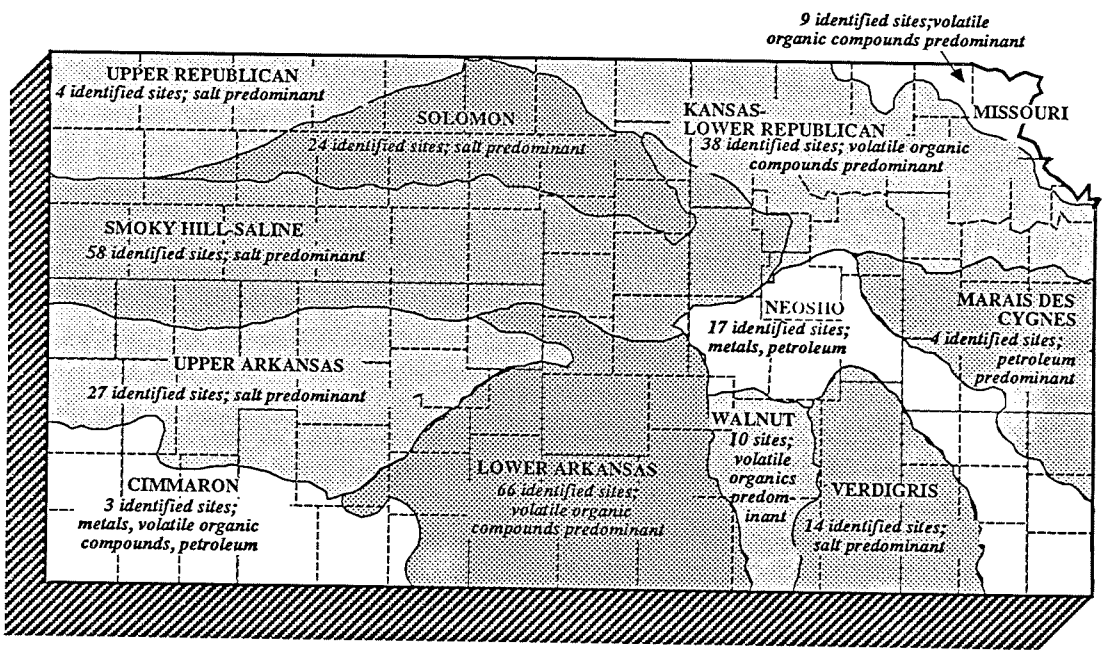
The Kansas Water Office has classified the Department of Health and Environment's list of contaminated sites by river basin. All of Kansas is contained in the 12 river basins. This is a useful method of categorizing the pollution sites because each river basin generally has a common hydrology. The following map delineates the State's river basins and indicates the number and types of contaminated sites in each basin. As it shows, one type of contamination generally predominates in a particular river basin.



The map shows the number of known water contamination sites in each of the river basins. It also indicates the predominant type of pollution in each basin. In all, 274 sites are identified. Of those, 92 are contaminated with chlorides, salt, or brine, 86 with volatile organic compounds, 47 with petroleum, 24 with heavy metals, four with nitrates, five with pesticides, and 16 with miscellaneous or unknown types of contaminants.

Chlorides and brine are the most frequently identified contaminants. Of the 274 identified contamination sites, 92 (33.6 percent) are contaminated with chlorides or brine. The vast majority of the contamination at these sites occurs in the groundwater.

As the map shows, this type of contamination is most common in the river basins in the northwest quarter of the State, where there is a great deal of oil and gas activity. Saltwater occurs naturally in oil or gas deposits. When petroleum is pumped to the surface, saltwater is also unavoidably pumped up. Pumping oil can produce as many as 27 barrels of salt water for every barrel of oil. State law regulates the handling of this salt water, and most of it gets safely re-injected deep into the ground. However, saltwater occasionally contaminates underground fresh water through mechanical failures or through poor disposal practices.

Volatile organic compounds and petroleum are the next most frequent types of contamination. These types of contamination come from fuels, solvents, and the like. Again, most of the identified sites involve contaminated groundwater. As the map shows, these types of contaminants predominate in the Lower Arkansas, Kansas-Lower Republican, and Missouri River Basins. These areas, which have relatively shallow groundwater, include the cities of Wichita, Topeka, and Kansas City. When the source of contamination is known for the sites in these river basins, it is usually found to be a leaking underground storage tank or an industrial facility.

However, it is often difficult to pinpoint the source of these kinds of groundwater contamination. For example, in years past when a filling station went out of business, the operator may have found it cheaper to simply abandon the underground tank, often with gasoline still in it, rather than to salvage and sell the fuel. In a few years no above-ground trace of the filling station might remain, but the tank would begin to deteriorate until it started to leak gasoline into the surrounding soil. Eventually, the leaking fuel would reach and contaminate the groundwater. Thus, the source of the contamination is unknown nearly as often as it is known, as shown in the following table. The table summarizes the information available about the 274 known contamination sites identified by the Department of Health and Environment.

Type of Contamination

Source of Contamination	Metals	Salt	Nitrates (fertilizer, manure)	Volatile Organic Compounds (a)	Pesti-cides	Petro-leum	Misc.	Totals
Industry	16	3		17		7	1	44
Oil Field		71						71
Leaking Tank	1	1		14	2	27	3	48
Misc. Spills	1		1	1		3	1	7
Landfills				9			2	11
Agricultural	1	2	1	1				5
Mining	4			1				5
Unknown		10		38	1	3	2	54
Miscellaneous	1	5	2	5	2	7	7	29
Totals	**24**	**92**	**4**	**86**	**5**	**47**	**16**	**274**

(a) For ease of presentation, the auditors included the following substances in this category: dichloroethane, carbon tetrachloride, toluene, PCB's, benzene, solvents, and acids.

As the table shows, in 54 of 274 cases (19.7 percent) the source of contamination was unknown. Of those, 38 were cases of volatile organic compound contamination, for which the source could not be determined.

The Department of Health and Environment Has Identified Unsafe Levels of Volatile Organic Compounds In About Two Percent of the Public Water Supply Wells Tested

Volatile organic compounds include substances such as gasoline, carbon tetrachloride, and the like. They are also used or produced in the manufacturing of such products as detergents, pharmaceuticals, dyes, and insecticides.

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In 1982, the federal Environmental Protection Agency tested wells that were located near potential sources of contamination. More than 21 percent of the wells tested in Kansas had detectable amounts of volatile organic compounds. Based on these results, the Department decided to sample all public water supply wells in Kansas begining in 1985.

As of November 1987, the Department had tested about 80 percent of Kansas' approximately 2,100 public water supply wells. Of these, 38 wells used by 26 public water supplies (2.3% of the total wells tested) had levels of volatile organic compounds above the level recommended for long-term consumption. Most of the wells with this high level of contamination have been removed from service and alternative sources have been established. However, four of these wells remain in operation, and the public continues to use them because no alternative sources have been developed.

About 10 percent of the public water supply wells that have been tested for pesticides have detectable levels of pesticides. The Department also tested public water supply wells known to be susceptible to pesticide contamination. Of 123 wells tested, 12 (10 percent) had detectable levels of one or more pesticides. Three of the water supply wells were found to be contaminated with pesticides at levels exceeding established drinking water standards. The Department requires that persons using water contaminated above that level be notified of the presence of contamination.

Recent Department Tests Suggest That As Many As One-Fourth of All Farm Wells May Have Poor-Quality Water

Based on a random sample of farmstead wells, the Department of Health and Environment estimated in 1987 that 11,000 farm families—about one-fourth of all farm families—were drinking unsafe water.

This study was conducted to estimate the number of farmstead wells in Kansas that were contaminated by volatile organic compounds, pesticides, and inorganic compounds. Of 104 randomly selected farm wells tested, 28 percent had nitrate levels that exceeded the safe drinking water standard, eight percent had detectable levels of pesticides, and two percent were contaminated with volatile organic compounds.

Using the information found in the study, the auditors further estimate that 3,200 families are drinking water containing detectable amounts of pesticides, and 800 farm families' water supplies contain volatile organic compounds. Although some of these contaminated wells have been identified, it is clear that most of them have not, in part because domestic wells are not subject to State regulation.

Conclusion

Although water experts say that the quality of Kansas' water is generally good, they note that water contamination problems exist in all parts of the State. The Department of Health and Environment's listing of 274

contaminated sites showed that most are contaminated with salt, volatile organic compounds like gasoline and other petroleum compounds, and metals. The Department has also found that about two percent of the State's public water supply wells have high levels of volatile organic compounds, and about ten percent are contaminated with pesticides. In addition, recent Department studies estimate that a large number of farmstead wells, which are not covered by State regulations, may be contaminated with nitrates. Most of these wells have not yet been tested and identified.

Several State Agencies Have Some Responsibilities Over The Quality of the State's Water

Before addressing the second question, it is important to understand which agencies play roles in the regulation of the State's water quality. Three State agencies—the Department of Health and Environment, the Corporation Commission, and the Board of Agriculture—have some role in the regulation and enforcement of State laws protecting water quality. As the accompanying table shows, only the first two have responsibilities for cleaning up water contamination.

	———DUTIES AND AUTHORITY———	
AGENCY	Regulation/ Enforcement	Investigation/ Cleanup
Health and Environment	X	X
Corporation Commission	X	X
Board of Agriculture:		
—Division of Plant Health	X	
—Division of Water Resources	X	

The Department of Health and Environment Has Primary Regulatory Authority Over the State's Water Quality

Three bureaus of within the Division of Environment—Water Protection, Waste Management, and Environmental Remediation—carry out the Department's federal and State water-protection mandates.

The Bureau of Water Protection regulates public drinking water supplies and waste water treatment. It administers the federal Safe Drinking Water Act and the Clean Water Act. The Safe Drinking Water Act is designed to assure safe public water supplies and protect drinking water sources from contamination from underground injection wells. (Underground injection control of oil and gas wells under this

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act is administered by the Corporation Commission). Bureau officials approve all new injection systems and modifications to existing systems. The Bureau requires public water supplies to submit water samples on a periodic basis for testing for various contaminants.

The Clean Water Act regulates industrial discharges into surface water. Bureau officials issue permits for all discharge points in the State, and collect water samples to monitor water quality throughout the State.

The Bureau of Water Protection has, in some cases, delegated regulatory responsibilities to local units of government. For example, it has delegated responsibilites for wastewater pretreatment to some cities. In those cases, State officials oversee the local program and monitor its compliance with applicable laws through testing procedures and the like. In fiscal year 1988, this Bureau had 101 authorized full-time-equivalent positions, 21 of which were district office field staff.

The Bureau of Waste Management regulates hazardous waste, solid waste, and underground storage tanks. It administers the federal Resource Conservation and Recovery Act, which includes standards that apply to hazardous waste generators and transporters and establishes a permitting system for hazardous waste treatment, storage, and disposal facilities. The Act also regulates underground storage tanks.

The Bureau is also responsible for permitting and regulating the disposal of solid wastes, encouraging the reclamation and recyling of solid waste, and providing assistance to counties in the development of solid waste management plans. It does not operate any disposal sites itself, but oversees local operations through the permitting process. In fiscal year 1988, this bureau had 33 authorized full-time-equivalent positions, eight of which were district office field staff.

In fiscal year 1989, the staff and functions of the Mined Land Board, which regulates coal mining and reclamation operations in Kansas, were transferred to the Department from the Corporation Commission as mandated by 1988 House Bill 3009. The Department has made this function a section within the Bureau of Waste Management. This section may designate certain areas as unsuitable for mining if mining would adversely affect water supplies. The section grants permits to underground mining operators. It also administers the Kansas Mined Land Conservation and Reclamation Act as well as programs under the National Surface Mining Conrol and Reclamation Act. In fiscal year 1988, this section—when under the Corporation Commission—had 14 authorized full time equivalent positions.

The Bureau of Environmental Remediation is responsible for all activities relating to environmental contamination. The mission of this Bureau is to respond to environmental emergencies and to manage long-term environmental contamination through control, containment, or cleanup. Bureau staff respond to reports of spills, do pollution field investigations and cleanup, and coordinate with the Corporation Commission on cleanup related to oil and gas activities. This Bureau houses all the Department's cleanup activities. Before fiscal year 1987, these activities had been dispersed throughout the Division of Environment.

The Bureau also administers the federal Comprehensive Environmental Response, Compensation, and Clean-up Liability Act (Superfund). This federal law is designed to clean up sites that were polluted because of past disposal practices. In fiscal year 1988, this bureau had 34.5 authorized full-time-equivalent positions, 10 of which were district office field staff.

Overall, the Department spent $7.8 million for water protection-related activities in fiscal year 1988. As the table below shows, about $3.2 million of this total (42 percent) was from State sources. The other $4.6 million was federal money. In fiscal year 1989, the Division's budget will grow by nearly $6.5 million, to $14.3 million. The addition of the staff and functions of the Mined Land Board to the Division of Environment in fiscal year 1989 accounts for $3.7 million of this increase. Most of the remaining increase is caused by higher State and federal funding of the Bureau of Environmental Remediation, whose funding grew nearly 200 percent between 1987 and 1989. Those increased funds will be used to clean up specific contaminated sites, such as the Galena mining area in southeast Kansas. More detailed financial data appear in Appendix B. Additional information is also available from the auditors.

Department of Health and Environment
Water-Related Expenditures(a)
Fiscal Years 1987-1989

Fiscal Year	State Sources	Federal Sources	Total
1987	$2,742,493	$3,867,435	$6,609,928
1988	3,254,286	4,555,605	7,809,890
1989(appropriated)	5,368,078	8,967,108	14,335,186
% change, 1987-1989:	95.74%	131.86%	116.87%

(a) Includes expenditures of the Bureaus of Waste Management, Water Protection, and Environmental Remediation, as well as expenditures for water tests performed by the Division of Laboratory Services. For fiscal year 1989, expenditures for the Mined Land Board are included.

It is important to note that these dollars do not all represent direct expenditures for water protection activities. For example, the engineering and permitting of sanitary landfills, controlled by the Bureau of Waste Management, clearly can affect the quality of nearby groundwater or surface water, but water protection is not that bureau's only purpose. The activities of each of the bureaus included in the above table have some direct impact on water issues, but the exact expenditures just for water activities could not be determined given the time constraints and purpose of this audit.

The Kansas Corporation Commission Primarily Regulates Oil and Gas Activities

The Corporation Commission's Conservation Division is responsible for preventing and cleaning up pollution from oil and gas activities. It enforces statutes,

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rules, and regulations pertaining to the conservation of crude oil and natural gas, plugging of wells, underground disposal of salt water used in production, prevention of waste, and the like.

According to State law, cleanup of pollution is to be conducted in cooperation with the Department of Health and Environment's Division of Environment. The Conservation Division is also required to investigate pollution complaints and abandoned wells, determine responsibility for remedial action if necessary, and order the plugging, replugging, or repairing of wells. In fiscal year 1988, this Division had 97 authorized full-time-equivalent positions.

Overall, the Commission spent $7.3 million in fiscal year 1988 for water protection-related activities. A total of $3.8 million (52 percent) of this money came from State sources. The remaining 48 percent came from federal sources. The following table shows actual and anticipated Commission expenditures for water-related activities. The expenditures for fiscal years 1987 and 1988 include those for the Mined Land Board, the staff and functions of which were transferred to the Department of Health and Environment in fiscal year 1989.

Corporation Commission Water-Related Expenditures
Fiscal Years 1987-1989 (a)

Fiscal Year	State Sources	Federal Sources	Total
1987	$4,566,945	$1,311,324	$5,878,269
1988	$3,772,923	$3,484,321	$7,257,244
1989	$3,455,658	$334,700	$3,790,358
% change, 1987-1989:	(24.33%)	(74.48%)	(35.52%)

(a) Includes expenditures of the Conservation Division and, for fiscal years 1987 and 1988, the Mined Land Board

As the table shows, expenditures for the divisions that perform water protection activities are expected to shrink from $5.9 million in fiscal year 1987 to $3.8 million in fiscal year 1989 (a decrease of $2.1 million, or 36 percent). About $1.5 million of this drop can be attributed to the transfer of the staff and activities of the Mined Land Board to the Department of Health and Environment. The difference between the $1.5 million dropped from the Commission budget, and the $3.7 million added the Department budget consists of new construction grants and the anticipated State takeover of some previously federally administered activities. More detailed financial data appear in Appendix B. More information is also available from the auditors.

Again, not all the activities of the Commission are directly related to water protection; for example, Conservation Division personnel also regulate oil and gas production among leaseholders who pump from a common pool. But as with the bureaus of the Division of Environment, the auditors could not determine the exact expenditures just for water activities, given the purposes and time constraints of this audit.

The State Board of Agriculture Has a Much Smaller Role Relating to Water Protection

The Division of Water Resources conserves and regulates the distribution of water resources. Its main emphasis is on water supply, but State law permits the Division to establish intensive groundwater use control areas. One basis for establishing these areas is deteriorating water quality caused by intensive groundwater use.

The Division of Plant Health is responsible for two programs that directly affect water quality. One program requires that pesticide applicators be trained and licensed to ensure that they do not apply pesticides in a manner detrimental to groundwater or surface water. The Division also administers the State's Chemigation Act. This act regulates the application of pesticides and fertilizers through irrigation systems. It generally requires that check valves be installed on irrigation equipment to prevent chemicals from being drawn back down the well in the event of pump failure.

Because it has a relatively small role in water protection as compared with the Department of Health and Environment and the Corporation Commission, the Board of Agriculture is generally not dealt with in the rest of the audit.

Other State Agencies and Some Local Entities Also Play a Limited Role In Protecting the Quality of the State's Water

The Kansas Water Office and Water Authority develop the State's water plan, which serves as a planning guide for the Legislature and State water agencies. Recent plans have incorporated water quality issues. The Water Office also manages the sale of water from federal reservoirs.

The State Conservation Commission administers programs that address water quality and quantity concerns. These cost-share programs are operated at the local level by conservation districts, watershed districts, and drainage districts. One of the primary objectives of the Commission programs is control of soil erosion to prevent sedimentation and pollution problems.

Local entities involved with water quality issues include groundwater management districts and river basin advisory committees. Groundwater management districts are overseen by the Board of Agriculture's Division of Water Resources. These districts, comprising area landowners, have been formed in five areas of the central and western parts of Kansas to advise the Division on water supply issues in their areas. At least two of the districts have taken an active role in water quality issues. For instance, one district has instituted a program to identify abandoned water wells and to order them plugged. The purpose of this well-plugging program is to prevent contaminants from entering the groundwater through these abandoned wells. The other district actively supports and encourages State efforts to respond to groundwater contamination issues within the district.

River basin advisory committees have been established in each of the State's 12 river basins. These committees, comprising area citizens, provide input to the Kansas

Water Authority and the Water Office on water quality and other water-related issues in their basins.

How Well Are State Agencies Handling Kansas' Water Contamination And Pollution Problems?

To answer this question, the auditors reviewed State and federal laws and interviewed staff of the State water agencies. They reviewed agency contamination files and budget data for those agencies found to have a major role in ensuring water quality. Finally, the auditors selected seven sites for an in-depth review to determine how well those cases were handled.

In general, the auditors found that Kansas' system for protecting water quality imposes many requirements before contamination is identified, but that it allows for a substantial amount of discretion afterward. Based on an in-depth review of seven cases of water contamination, the auditors found that most pollution was caused by past poor disposal practices. They found that the State has generally done what it was required to do to minimize or prevent water pollution at the seven sites. Once contamiation has been identified, State agencies have a great deal of discretionary authority to take action, but they generally did not use that authority. A number of other factors may inhibit the State's ability to respond fully to pollution. These findings are discussed in the following sections.

Kansas' System For Protecting Water Quality Imposes Many Requirements But Also Allows A Substantial Amount of Discretion

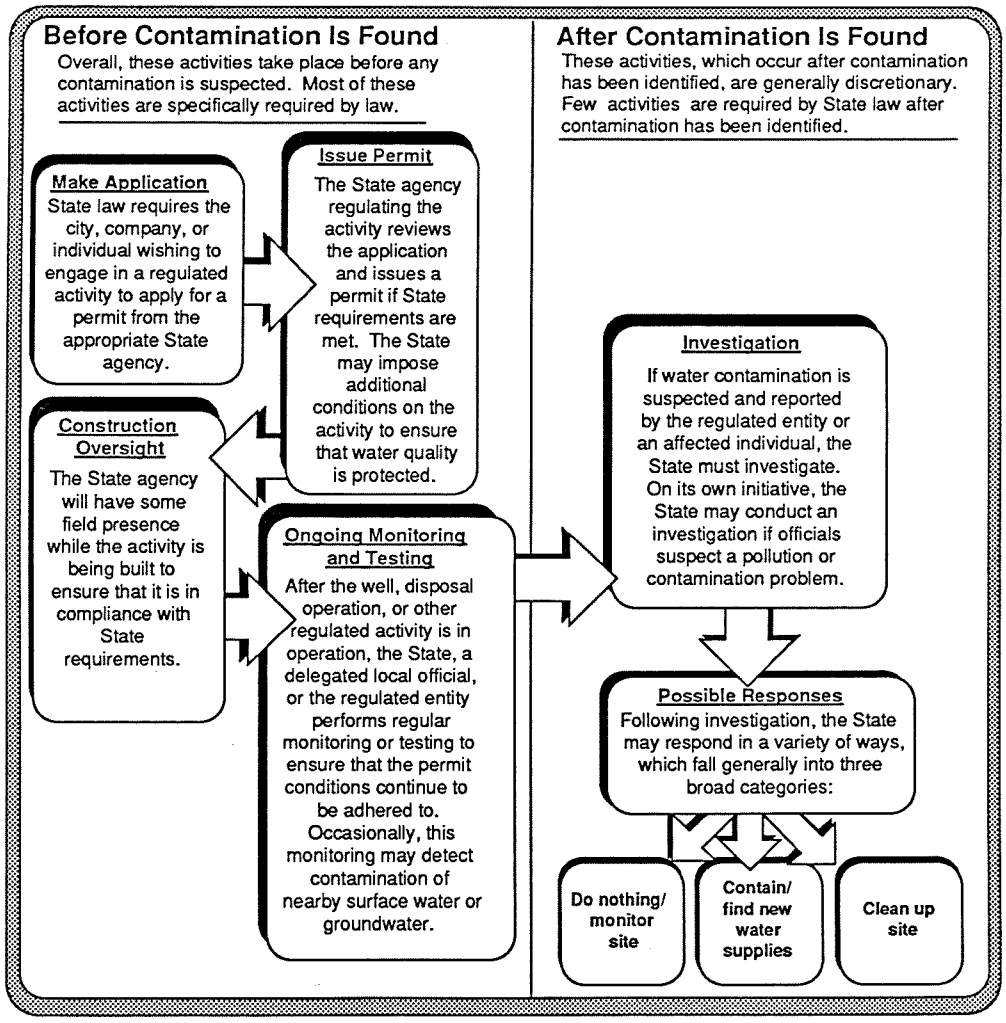
In general, the system for protecting water quality is described in the graphic at the top of the next page.

As the chart shows, when an entity, such as a city, private individual, or industrial concern, wants to undertake a regulated activity (such as constructing a public water supply or sanitary landfill), the entity is required to apply to the appropriate State agency for a permit. Once the activity is approved, the State issues a permit to the entity.

The next step is for the entity to begin construction of the public water supply, landfill, disposal system, or whatever. During this period, the appropriate State agency monitors the construction to ensure that it is done in accordance with the permit requirements.

After the regulated activity begins operation, the State, a delegated local official, or the requesting entity perform the required monitoring and testing to make sure that the regulated activity is meeting all State or federal requirements. For public water supplies, for example, State law requires that public water systems test their water periodically, according to a prescribed schedule, for various contaminants.

The Regulatory System for Protecting Water Quality in Kansas



Typically, a landowner, industrial concern, local government, or other entity wishing to drill a well, dispose of industrial waste, or conduct some other regulated activity, applies to the State for a permit. The State reviews the application and grants a permit if all requirements are met. The State then performs or requires periodic monitoring to ensure that all applicable regulations are being followed.

If contamination is suspected, the State may investigate. If the investigation confirms that contamination has occurred, statutes authorize State officials to respond in a variety of ways. These responses can range from simple monitoring of the contamination site, to containing the contamination and finding new water supplies, to cleaning up the site and restoring the water to its former quality. Nothing in State law prohibits localities or individuals from taking independent action to manage or clean up the contamination.

Water contamination is suspected or identified through monitoring and testing or complaints. The State's next action depends on the level of contamination found. For example, in the case of a public water supply, if the degree of contamination exceeds a specified level, known as the Kansas Notification Level, Department policy requires the city to notify water users. If the contamination is found to be at an even higher concentration, Department policy generally is to take some action, such as ordering a city to close the contaminated public water supply well. This level is called the Kansas Action Level.

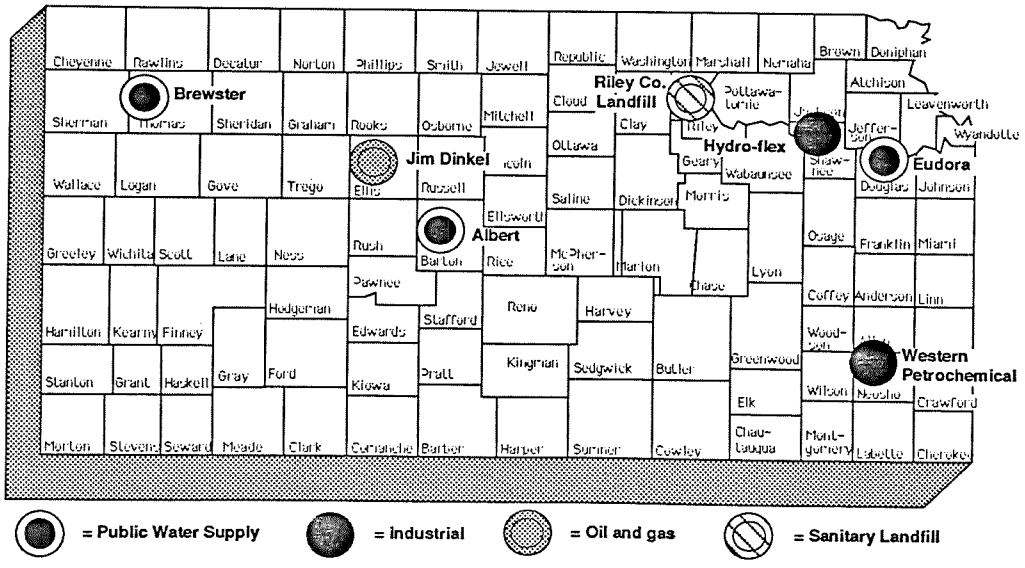
Beyond these definite notification and action requirements, State law gives State agencies broad authority to investigate, monitor, and clean up contamination, but does not require them to do so. State officials also have broad authority to impose fines or other penalties for violations of pollution statutes. For example, the Department may require the party responsible for the site to assist in cleanup, although this may delay the process. If the State does not act, others could, but nothing in State law requires them to do so; as a result, no one has responsibility for many of these areas.

To examine how well this system works, the auditors selected seven specific water contamination sites from Department of Health and Environment and Corporation Commission records. They also looked at two sites that have the potential to become contaminated. Using a case-study approach, they visited each sampled site, reviewed the data on file with State agencies, and interviewed state and local officials. The seven contaminated sites are the following:

Site	Type of Contaminant
• Brewster Public Water Supply	volatile organic compounds
• Eudora Public Water Supply	volatile organic compounds
• Albert Public Water Supply	chlorides
• Western Petrochemical, Chanute	petroleum byproducts
• Hydro-flex Corporation, Topeka	heavy metals
• Riley County Sanitary Landfill	volatile organic compounds
• Jim Dinkel private well, Ellis County	chlorides

The map below shows that the seven sites are widely distributed around the State. On the next several pages, a series of brief profiles of the seven cases the auditors examined are presented. Following these brief descriptions, the report will discuss what they show about how the water protection system is operating in Kansas.

Locations of the Seven Contaminated Sites Reviewed by the Auditors



SUMMARY OF CASE STUDY:
BREWSTER PUBLIC WATER SUPPLY

Brewster is a small town (population 340) in western Thomas County, just west of Colby. Benzene and other volatile organic compounds were first detected in significant quantities on March 3, 1987, during routine tests of the city's public water supply wells. According to standard Department procedure, a finding of contamination in a public water supply well requires a second, confirming, test. This second test was conducted July 8, 1987, about four months after the first test. In the second test, even higher levels of contamination were found. On September 4, 1987, Department staff wrote a letter to city officials describing the contamination found, and noting that the levels exceeded the Kansas Notification Level and that by State regulation, users of the water supply would have to be notified of the contamination. The Department further noted that at the level found, the contamination posed no short-term toxicity threat. The Department also told the city it could continue to use the water but should start immediately to investigate a new contamination-free water source. The letter noted that the particular combination of compounds found is often the result of gasoline contamination. The letter said that "Our Bureau of Environmental Remediation will be studying the area to determine possible groundwater pollution sources."

The Department did conduct an investigation of the site. Department officials contacted the superintendent of the Brewster school district and asked him to have the school's gasoline storage tank tested. That tank was excavated and examined, but was found not to be leaking. Several other tanks were also inspected, with negative results. One suspect, according to some officials, was a local grain elevator; so far, no State officials have made or required tests of the elevator's underground tanks. In a memorandum to officials in Topeka on October 5, 1987, the Hays district official responsible reported on his review of a number of possible leaking tanks in Brewster. He also recommended that the Department give "strong consideration" to placing the Brewster site as a high priority in the Underground Storage Tank program to locate an alternate water supply, locate the sources and extent of contamination, and clean it up. The Department has submitted a workplan and draft contracts to federal officials for leaking underground storage tank funds. Department officials said that when funding is approved, they will go ahead with the project. However, the source of the contamination remains uncertain, and the city has not yet begun to identify a contamination-free water source. (See pictures on page 18.)

CASE SUMMARY:
EUDORA PUBLIC WATER SUPPLY

Eudora is a small city (population 3,113) in eastern Douglas County. On February 18, 1986, the Department of Health and Environment district office in Lawrence conducted a routine volatile organic compound test of the city's three public water supply wells. Slight contamination was found. Consequently, the Department resampled the three wells and the city treatment plant on April 21, 1986, two months later. This second test found dangerously high levels of benzene, xylene, and other contaminants in one well.

After the contamination was identified and confirmed, Department staff wrote a letter to the city requiring that the contaminated well be shut down and not used. Subsequent testing of the well has shown no further evidence of contamination. Several sources of possible gasoline contamination, such as underground gasoline storage tanks in the vicinity of the wells, were checked with negative results. The cause has never been determined. Because the benzene contamination found in the April test was 79.8 parts per billion (the Kansas Action Level for benzene is 6.7 parts per billion), and no benzene was found in subsequent tests, Department staff theorize that a "slug" or plume of contamination may have passed through the well area on its way to the river.

At the time of the finding of contamination, the city was in the process of drilling two new water wells to provide better quality and quantity of water. As a result, the closing of the contaminated well apparently never posed a serious threat to the city's drinking water supply.

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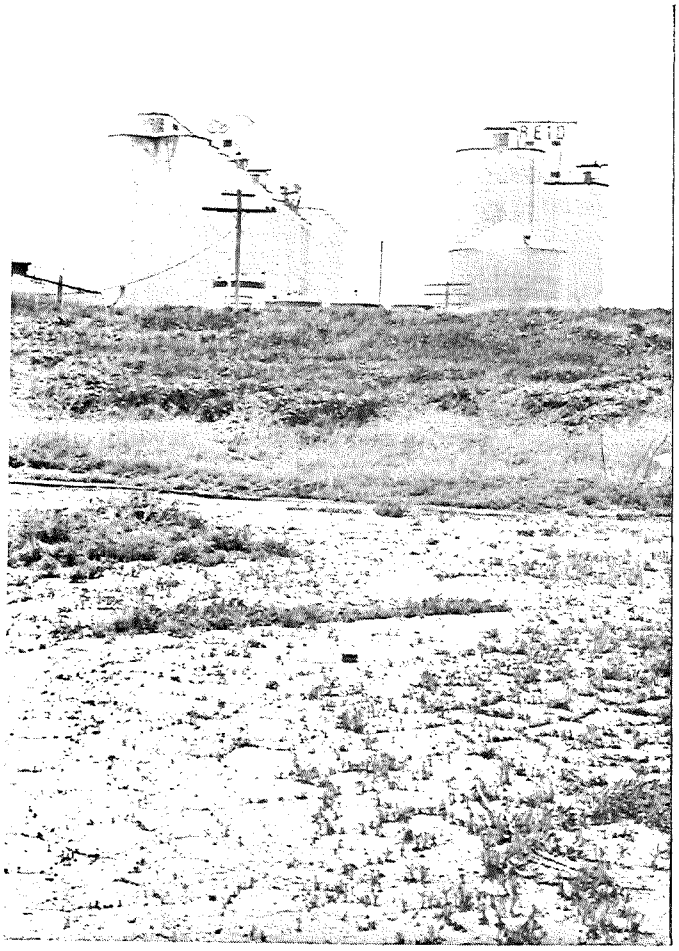


(Left) Grain elevators in Brewster, Kansas. Local officials told the auditors that when the grain elevator washes out its equipment, the runoff flows along the street and under the road (at the top of the embankment at the middle of the picture at left). This runoff collects in a low spot in the neighboring field (lower part of picture at left, and below as seen from the road), in which almost nothing will grow. Although this practice has not been shown to be responsible for the contamination of the Brewster water supply, the pictures illustrate what can happen when agricultural or other chemicals are allowed to run out onto the ground.

Because the contaminated well has since been found to be clear of contamination, in January 1988 the Department modified its instructions to the city to allow occasional use of the well as long as water from it is diluted with water from the newer wells. If the well is used only enough to keep it serviceable, the city is not obligated to test the water. If used more than two days a month, the city is required to sample the water from the previously contaminated well. The Department will continue to do a limited amount of monitoring.

The Eudora city superintendent, who said that Eudora was one of the first cities to have to comply with the new volatile organic compound testing requirements, has argued that, in his opinion, all the contamination found in Eudora was the result of errors in the State's sampling procedures. State officials, however, said that because benzene was found both in the well and the treatment plant, it is unlikely that the contamination finding was a mistake.

CASE SUMMARY: ALBERT PUBLIC WATER SUPPLY

The city of Albert is a small community located in the western part of Barton County. During the 1930s and 1940s, oil production was quite active in the Albert area. Since then, the area has experienced contamination from chlorides (saltwater), which is often a byproduct of oil production. The first complaint that a private well had saltwater contamination was in 1964. Since then, several private wells in the south part of the city have become contaminated. As a result, the city constructed a public water supply well in 1976 with the assistance of a loan through the Farmers Home Administration.

Between 1980 and 1987, tests at the city's public water well showed that the chloride level had increased from 54 parts per million to 72 parts per million. However, the level of chloride in the water is well below the Department's maximum level of 250 parts per million.

In 1985, the Department notified Albert city officials of the rising chloride level in the public water supply. The city was advised that the chloride level should be monitored to ensure that the level did not exceed the safe drinking water standard. The Department assumes that the pollution of the public water supply for the city of Albert was caused by past oil activities in the area. A second possible source of the contamination is the wastewater lagoon that is located a short distance from the water supply well. No action has been taken to identify any specific source, nor has the State taken any action to clean up the contamination. The State is continuing to monitor the well.

CASE SUMMARY: WESTERN PETROCHEMICAL/WARWICK WAX PLANT

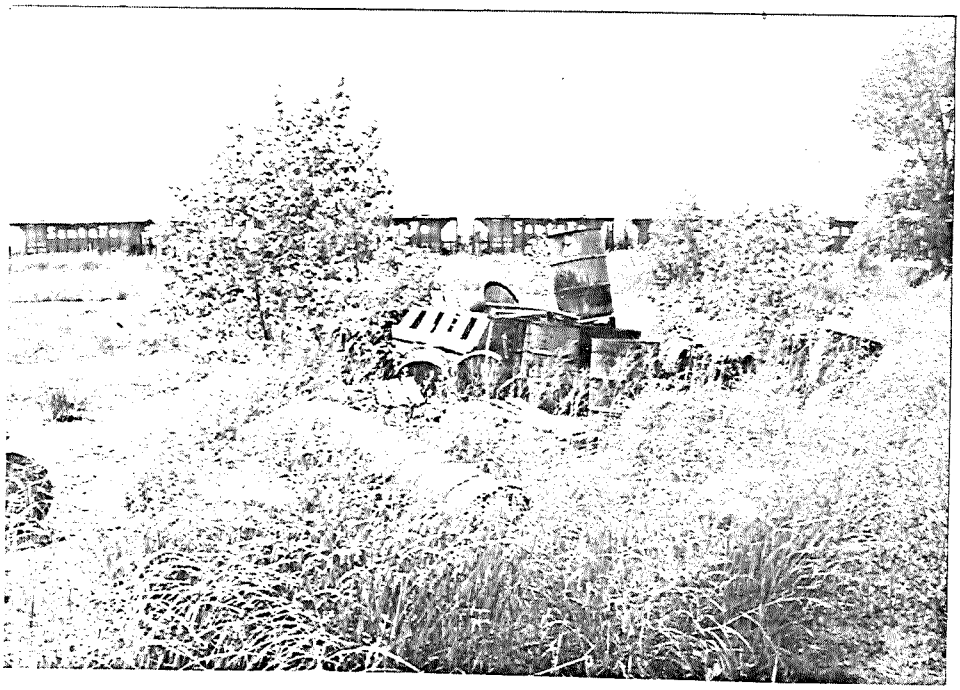
Western Petrochemical and Warwick Wax were industrial firms located on adjacent tracts of land in Chanute. The first facilities at the plant site were built in about 1907; the first reference in Department of Health and Environment files to pollution caused by the facilities is dated September 1938. A handwritten note on a 1938 file memo say that "This refinery has been a sore spot for years." Before the facilities closed in 1960 and 1979, respectively, they produced a variety of chemical waste products, including oil residue and acid sludge.

Apparently, Board of Health staff made an on-site inspection of the site in March 1948 and discovered the companies' practice of disposing of sludge by spreading it on the ground. This practice allowed rainwater to run over the sludge and the resulting runoff contaminated nearby Little Turkey Creek. Groundwater in the area was also contaminated by rainwater leaching through the sludge.

Over the years, Department officials did succeed in getting the company to install holding ponds, oil separators, a dike, and other pollution-abatement measures. In at least four different places in the file, Department staff have suggested more vigorous enforcement action, but it appears that no fines were ever levied, nor were formal orders issued to clean up the sludge causing the pollution.

The Warwick/Western Petrochemical site was subject to Kansas' solid waste disposal statutes for about the last three years of its operation (1976-1979), but it was never permitted by the Department because the solid waste disposal staff did not know about the site and devoted their efforts to issuing permits for sanitary landfills. Officials said that an operation such as the Warwick one would never be permitted today.

(Above) Sludge pit at the Western Petrochemical/Warwick Wax Plant, Chanute. This pit is one of several at the site, filled with a black, semi-solid, asphalt-like substance that was the waste product of various petroleum refining and wax-making operations. (Below) A pile of barrels on the site. According to Department records, some of the barrels have been corroded or opened, and their contents have not been identified.



No clean-up action has been taken to date, but the Department has been negotiating with the party responsible for the site in the hope that that firm will undertake cleanup. Although a recent site survey by an engineering consultant showed that only localized contamination of groundwater had been observed, a 1986 survey by Department staff found that contamination of groundwater has occurred and is migrating in a northeasterly direction. The review also showed that uncontrolled runoff and leaching of improperly capped lagoons is occurring, and is contributing to the contamination of Little Turkey Creek; the disposal sites are located within 200 feet of private residences; contamination of Santa Fe Lake exists; there are six known domestic wells within one mile of the site; and containment of wastes is inadequate.

CASE SUMMARY: HYDRO-FLEX CORPORATION

Hydro-flex, Incorporated is an industrial firm located in Topeka, Kansas. The company makes specialized valves and fittings. Before 1981, the company discharged wastes from its industrial processing into an underground "silo" system. These wastes included metal sludges and wastewater, which apparently went directly into the groundwater. The silo system did not have a permit, and apparently neither State nor local officials were aware of the nature of the wastes going through the system.

In 1980, in accordance with federal regulations, Hydro-flex notified the federal Environmental Protection Agency that it might be a hazardous waste generator subject to regulation under the 1976 Resource Conservation and Recovery Act. To verify its status under the Act, the company's rinse tank was analyzed by a private lab in March 1981. The test results showed 43.7 parts per million of chromium, considerably higher than the maximum allowed level of 5.0 parts per million. Later in 1981, the Department of Health and Environment performed additional testing at the site. Although high levels of chrome were found, when the required extraction procedure toxicity test was performed, the waste did not meet the definition of a hazardous waste. As a result, the company was not subject to regulation by the Resource Conservation and Recovery Act.

Shortly after these tests were conducted, the company decided to connect to the city sewer system and discontinue discharging wastes into the silo system. As a result of this decision, the company became regulated under the federal Clean Water Act. This Act sets standards for discharges into municipal sewage treatment plants, and the City of Topeka enforces these federal standards through a local ordinance. The company is periodically in violation of these standards and is working to modify its industrial processes so it can comply with the pretreatment standards.

Even though the company connected to the city sewer system and the Department concluded that it was not a hazardous waste generator, Department officials were concerned about the quantity of poorly disposed-of wastes at the site and recommended that additional monitoring wells be drilled. In 1984, prompted by federal Superfund activity, Health and Environment officials sent a letter to Hydro-flex indicating that because of past disposal practices the site may be contaminated. Again, the State investigated the site. In July 1985, the State conducted another inspection of the site, and requested additional site sampling to determine if groundwater contamination existed.

In October 1986, the State began a pre-National Priority List investigation of the site. That investigation was conducted as part of the federal Superfund program. If a site receives a certain score, it may be placed on the federal list of priority sites. The investigation has been completed, and the site has tentatively been placed on the federal list. To date, no clean-up has been undertaken. As noted, the disposal system is no longer in use. In fact, the company has filled the silos with sand to help prevent further groundwater contamination. According to Department officials, the contamination has not migrated off-site.

CASE SUMMARY: RILEY COUNTY SANITARY LANDFILL

The Riley County landfill has been in operation since 1976. Before receiving a permit to operate as a sanitary landfill, the site was the Manhattan City Dump. Department of Health and Environ-

ment officials were concerned about the poor location of the dump. Because it was near the Kansas River, groundwater was shallow and leaching was likely to occur. Some effort was made to find an alternate site for the sanitary landfill, but these efforts were unsuccessful. As a result, in 1976, a sanitary landfill permit was issued for the site.

In 1981, trace amounts of pesticides were found in on-site monitoring wells. In late 1985, the first off-site contamination was found. The off-site contamination was identified after a nearby resident complained. This resident had recently purchased a home near the site. According to a Department district official, the water the resident was complaining about was discolored, full of sediment, and had an unpleasant smell. After the water from the old well was inspected, the resident was advised not to drink it or use it for cooking. The resident also was advised to construct a new well, because the old well was in poor repair. Tests of the water from the new well were completed in November 1985. The tests indicated the water from this well was contaminated with cancer-causing volatile organic chemicals. Upon that discovery, the advice to the resident was not to use the water from the new well for drinking, cooking, or bathing.

In November 1985, after the off-site contamination was found, Department of Health and Environment officials sent a letter to Riley County officials county advising them of the problem. That letter directed Riley County to undertake a groundwater monitoring program at the landfill to trace the groundwater flow. A suggestion was also made that the county consider acquiring the affected resident's property. The letter also suggested that making a public water supply available to the area was an attractive option. The agency also analyzed some water samples of other nearby residents and sent information to them about the results of those tests, which generally did not show any significant contamination problems.

In November 1986, Department officials sent a letter to the county indicating that testing showed continued contamination of the off-site wells. That letter again suggested that the county consider providing an alternate water supply for the area.

On July 17, 1987, the Department ordered Riley County to prepare a remediation or containment plan and an updated long-term groundwater monitoring plan, to provide nearby residents with a drinking water supply until city water was available to them, and to close the facility and relocate it to another site within three years. The County has addressed most of these requirements.

No specific cleanup activities have occurred at the site. Recently, a lawsuit seeking damages has been filed by one of the residents declaring the landfill a nuisance and in violation of federal law.

CASE SUMMARY: DINKEL FARM WELL

The Dinkel farm is located between Hays and Victoria in Ellis County. The farm is supplied with water from private, domestic wells.

Oil has been produced on the Dinkel property since the 1950s. The oil operation on the property currently has two active production wells. The saltwater produced by the wells is transported through a pipe to a disposal well located on the section to the west of the Dinkel property. In the past, the operation included a disposal evaporation pond that was used until 1959, followed by a disposal well that was used until 1970. After 1970, the well on the adjacent property has been used to dispose of the saltwater.

A test well was originally drilled by the property owner on the advice of the Department's district personnel because bacteria and nitrates had been identified in a September 1984 water sample from the house well. In November 1984 the owner brought a water sample to the Department of Health and Environment's district office. This water sample came from the test well that he had drilled on his farm property. When tested, the water sample had 1,625 parts per million of chloride. This level

is well above the action level for chloride established by the Department. The owner then had a total of 19 test wells drilled. Five of these test wells produced water and each of them had high levels of chloride.

Salt scar in a field on the Jim Dinkle farm, Victoria, Kansas. Apparently, the scar is the result of past dumping of saltwater on the ground during oil production on the property.

In January 1985, in an effort to identify the source of the contamination, the Department of Health and Environment requested the oil company to conduct a mechanical integrity test of the disposal line from the Dinkel property to a disposal well located on the section to the west of the Dinkel property. The company conducted the mechanical integrity test of the line in July 1985. The line failed the test and a leak was identified at the western edge of the Dinkel property which was then repaired.

The owner of the property told the auditors that a filtering system had been installed on the original house well to filter out the contaminants. The owner also has filed suit against the oil company to recover for damages.

The Dinkel farmsite was included with eight other sites to be cleaned up by the Department of Health and Environment in a request for funding to the 1988 Legislature. In its proposal, the Department indicated that of five possible sources of contamination, the most likely source is past oilfield activities.

The rest of the audit discusses the auditors' findings and conclusions about how well the State has handled water contamination problems based on their review of the seven case studies and interviews with State and other officials.

In general, it appears that that most pollution was caused by poor past disposal practices. The State has generally done what it was required to do to minimize or

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prevent water pollution at the seven sites. In addition, State agencies have a great deal of discretionary authority to take action once contamination has been identified, but they generally did not use that authority.

Most Contamination Problems in the Cases Reviewed Were Caused By Poor Disposal Practices That Were Unregulated at the Time

These disposal practices for all seven sites are briefly summarized in the following table.

Site	Disposal Practice	Was Practice Regulated When Disposal Occurred?	Is Practice Currently Regulated?
Brewster Public Water Supply	apparently volatile organic compounds were disposed of on ground or via an underground tank	no	yes-underground tanks must be registered and meet standards
Eudora Public Water Supply	apparently volatile organic compounds were disposed of on ground or via an underground tank	no	yes-underground tanks must be registered and meet standards
Albert Public Water Supply	apparently, oilfield brine disposed of in evaporation ponds	yes, but inadequate	yes-evaporation ponds not allowed
Western Petrochemical	petroleum sludge deposited on ground	no	yes-solid waste disposal is regulated
Hydro-flex	industrial wastewater with metals discharged into septic system	county regulated septic system, but county and State were unaware of the nature of the waste	yes-discharge into groundwater is prohibited
Riley Co. landfill	trash disposed of on site located near a river with shallow groundwater	no	yes-sanitary landfills must have permit
Jim Dinkel domestic well	apparently, oilfield brine disposed of in evaporation ponds or disposal wells	yes, but inadequate	yes-evaporation ponds not allowed

As the table shows, the disposal practices used by the Riley County landfill and by Western Petrochemical, and the practices that polluted the Brewster and Eudora public water supplies were not regulated at the time they were begun. In fact, these disposal practices were sometimes considered to be the most appropriate course of action. For example, trash dumps were frequently located on rivers in shallow ground-

water to allow the leachate and runoff from the dump to wash into the river. However, current statutes and regulations require sanitary landfills to be permitted. Landfills are also required to be designed to prevent leachate from occurring by careful design and operating standards. Similarly, the disposal practice at Western Petrochemical was initially not regulated, but current State landfill regulations would prohibit disposal of sludge on the ground.

At the Brewster and Eudora public water supplies, a possible cause of the contamination is a leaking underground storage tank. These tanks were not regulated or inventoried in the past. Current law requires new tanks to be registered with the State and to meet certain standards designed to minimize the chance of leakage.

In two cases, the disposal practice was regulated but the practice prescribed by the regulation later proved to be inadequate. The Albert public water supply and the Jim Dinkel domestic well were both contaminated with chlorides from oil and gas activities. Although the disposal practices thought to be responsible for the contamination at these sites were regulated at the time, and were properly carried out, recent evidence has shown that the past practices were inadequate. As a result, strengthened oil and gas regulations have been enacted in recent years.

In one case, the disposal practice would have been prohibited had the State been aware of the practice. The disposal practice of Hydro-flex could have been regulated under sewage discharge statutes prohibiting discharge of sewage directly into the groundwater, but neither the county (which regulated the installation of the septic system) nor the State were aware of the nature of the company's wastewater. Current State requirements would prohibit disposal of contaminated wastewater into septic tanks, seepage beds, or other methods of disposal that would allow contamination to go directly into the groundwater.

With One Exception, State Agencies Appear To Have Done What Was Required By State Law

State agencies have many requirements to follow to meet their regulatory responsibilities. As the chart on page 15 shows, these requirements generally apply before water contamination is identified. For example, the Department of Health and Environment is required to issue permits for landfills, public water supplies, and the like, specifying practices that will be employed and conditions that must be met. The Department is required to conduct periodic tests, or to require the operator to conduct such tests, to ensure that those conditions continue to be met. The Corporation Commission statutes likewise require that certain conditions be met before it will approve the construction of a well.

In all but one of the cases reviewed, the responsible State agency appeared to have done what was required. For example, the public water supplies were all properly permitted and were tested regularly for contaminants. The landfill also had the required permit and was inspected regularly. When problems were identified, the State required the landfill operator to take steps to alleviate them. In the case of Jim

Preventing Water Contamination is Cheaper and Easier Than Curing It

Cleaning up water contamination, when cleanup is even possible, is expensive and difficult—prevention is a cheaper and easier alternative. This audit yielded the following examples of knotty cleanup problems that could probably have been prevented:

- The source of contamination of the Brewster public water supply has not been pinpointed, but all indications are that it is a gasoline spill or a leaking underground tank. A systematic effort to test active tanks, locate abandoned tanks, and educate the public about the danger of spills would have been cheaper than the remediation effort now required. One area official estimates that the most cost-effective solution now could be installation of home treatment equipment, which might cost upwards of $600 per home for about 180 homes in the affected area.
- Similarly, although no one knows the source of the Eudora public water supply's brief but intense contamination, a likely source of contamination in another city well was a city crew that washed down an asphalting machine with a barrel of solvent. The site where the equipment was cleaned was near the city's wells. Breakdown products of the solvent were identified in the contaminated water. Training of city employees, and public awareness of the sensitivity of Eudora's groundwater to such pollution might have prevented the contamination.
- Pesticides and volatile organic compounds have been found in leachate from the Riley County Landfill. In general, officials say that solvents, pesticides, fuels, and similar substances should not be disposed of in sanitary landfills. Providing alternative disposal methods—and educating the public about those alternatives—might have prevented or lessened the contamination.
- One recent case cited by a groundwater management district official involved an overturned tank truck that spilled 1,500 gallons of diesel fuel along the roadside. The official said the Department was notified immediately but did not respond. After nine days, county officials decided to excavate the contaminated soil. Because so much time had elapsed, the amount of needed excavation was increased significantly from what would have been required if the remediation had taken place sooner. If the county had not cleaned up the spill, the fuel would have eventually entered the groundwater, necessitating an even more costly and extended cleanup.

Area officials told the auditors that prevention of contamination is of the utmost importance because of the great expense of remediation, but that the State does not have enough staff in the field to prevent contamination or to catch problems before they become very expensive to clean up. No one knows how much of the pollution represented by the Department's list of 332 actual and potential contamination sites could have been prevented through public education, providing alternative disposal methods, and the like. In addition, many of the disposal practices now recognized as faulty, such as evaporation pits and holding ponds, were the state of the art when they were introduced. However, as the above examples show, in some cases prevention might cost the State less in the long run than expensive and lengthy remediation efforts.

Dinkel's domestic well, the Corporation Commission appears to have followed its regulations. For instance, when poor disposal practices were no longer allowed, evaporation ponds were required to be closed. In addition, proper mechanical integrity tests were performed on the pipelines at the site. Finally, when the contamination in the Eudora public water supply was found to exceed the Kansas Action Level, the State appropriately required the well to be shut down.

Only at the Western Petrochemical site was the State not doing what it was required to do. That company was subject to the State's solid waste disposal statutes for about three years before it closed down. However, it was never issued a permit. The site could also have potentially been regulated under statutes requiring a permit for the storage of oil or refuse in surface ponds. Again, the company had no such permit. Statutes also prohibited the discharge or disposal of sewage into "the waters of the State." Although the State required the company to make some clean-up efforts, it apparently never fully enforced these statutes.

In the course of this audit, the auditors also found another instance in which a State agency did not do what it was required to do. As described in the profile below, the site has not yet become contaminated, but that potential exists because the State failed to do what was required.

State Agencies Have a Great Deal of Discretionary Authority To Take Action Once Contamination Has Been Identified, But They Generally Did Not Use That Authority

Once contamination has occurred and is identified, State law generally replaces firm requirements with discretionary powers. Thus, as the chart on page 15 indicates, the State may investigate contamination, may search for responsible parties, may impose fines on polluters, and may clean up contaminated water or the substance causing the contamination.

Although they have these discretionary powers, State agencies seldom use all of them. The following summarizes the actions taken after contamination was identified in the seven cases reviewed by the auditors:

1-Walker-B Oil Well Lease, McPherson County

This oil well was drilled in 1984. The drilling company failed to set the conductor pipe properly. (The conductor pipe is the large well pipe set from the surface to the bedrock through which a smaller exploration hole is drilled.) In approving the notice of intent to drill submitted by the drilling company, the Corporation Commission's Conservation Division staff should have specified the amount of conductor pipe required for drilling the well at the site, as called for by Division procedures. A staff technician from the Division's Salina office went to the drilling site the day the problem occurred. According to Division officials, this staff member should have stopped the drilling until the conductor pipe was properly set.

The problem with not setting the conductor pipe as required is that a potential exists for this well to cause contamination or loss of groundwater near the well. The area around the site is being monitored for these outcomes, but to date, no contamination or lowering of the groundwater level has been identified.

- In each of the three cases that involved a site or company that was causing pollution or contamination (the Riley County landfill, Hydro-flex, and Western Petrochemical), the Department of Health and Environment acted to monitor and test water sources around the site to determine whether the pollution was travelling "off-site," and to determine the nature and extent of that pollution.

- In three of the four cases that involved a water source that was polluted or contaminated (the Albert, Brewster, and Eudora public water supply wells, and the Dinkel farm well), the Department acted to identify the source of the contamination and determine whether other nearby water sources were also contaminated. However, in none of the cases was the source of pollution identified.

- In none of the seven cases were fines imposed on the entity or company that was causing the pollution or contamination. For example, in the case of Western Petrochemical, no fines were imposed on the company even though 50 years of complaints are documented in the files. Similarly, Hydro-flex has never been fined for its past pollution practices.

- Although cleanup is complex and costsly, in none of the seven cases has cleanup of either the contaminant or the contaminated water been started. Six of the seven

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sites still have water contamination present. Cleanup action is being explored at Hydro-flex and Western Petrochemical, but nothing has yet taken place. At the Riley County landfill, an alternate source of water has been provided to affected residents. Nothing has been done yet to contain the source of pollution coming from the landfill, although the State has given the county about three years to close the landfill and find an alternate site. At the Dinkel farm, the landowner has installed a filtration system on his original house well, but the source of contamination has not been determined, and no clean-up has occurred. In the Brewster case, no cleanup has begun, nor has the source of the pollution been identified. Finally, in the Albert case, no investigation or cleanup has yet taken place.

The auditors talked with many interested people at each of the sites, as well as with State officials, to determine why more action has not been taken at these sites, and to obtain their perceptions as to the State's efforts and role in these areas. The auditors also assessed the State's handling of water contamination based on their own case studies. They identified several reasons why State agencies have not used the discretionary authority they have, particularly in cleaning up contaminated sites:

- **State laws and regulations provide no clear-cut responsibility for investigating or cleaning up contaminated sites.** State law does not assign final responsibility for cleaning up pollutants or polluted waters to the State or any other authority. Without clear-cut responsibilities, if the State does not clean up a site, other parties may not either. As a result, no cleanup will take place.

- **Department of Health and Environment officials think that the law granting them access to clean up contaminated sites is unclear and restrictive.** The law apparently gives Department employees the right of access, but does not clearly spell out their authority to perform clean-up operations without the owner's permission. Other agencies, notably the Corporation Commission, have considerably broader powers in these areas. Legislation passed during the 1988 legislative session addressed this concern to some degree. Officials said that they do not have enough experience with the new law to be sure, but they anticipate some problems with site access.

- **Differences of opinion exist about what the appropriate State response is or should be.** Brewster city officials expressed concern that the State was not providing them with sufficient technical expertise to allow them to solve their contamination problem. They told the auditors they wished the State would find and clean up the source of contamination in their water supply; otherwise, any new water supply well they drill may not be free from contamination. Thus, they have not taken "immediate action" as the State suggested to find an alternative source of water. State officials respond that their role is generally one of oversight and regulation. Because the water supply is owned by the city, they say, local officials have the primary responsibility for taking action to clean up their water.

In addition, some groundwater management district officials think the State should take stronger prevention and cleanup action. One official told the auditors that he

Most Local Officials and Other Interested Parties Are Not Satisfied With the State's Handling of Water Contamination Problems

The auditors interviewed a variety of people knowledgable about State water issues. These officials, and other interested parties generally had some concerns about the way the State responds to water contamination problems.

- There are too many water agencies whose actions are overlapping and uncoordinated, particularly the Department of Health and Environment and the Groundwater Management Districts.
- The [contamination] problem has been handled competently, but [the district office geologist] does not have enough time to devote to the problem.
- Chemigation is an area that the State needs to provide additional resources for. There is only one person monitoring this for the Board of Agriculture for the entire State. Also, district offices of the Kansas Department of Health and Environment need additional personnel. [The official has] submitted several complaints about open wells and has not even received acknowledgment of those complaints. Two of the more than 300 sites listed as contaminated are in [this] district and [the official has seen] no activity on them. In one case the owner was required to drill an observation well about five years ago and the State has not yet asked for a sample of the water.
- The Department is under-funded and understaffed in the field offices. The organization is top heavy in Topeka. The Dodge City district office [staff] are doing the best that they can with the available resources. Chemigation is used extensively in the district and one person from the Board of Agriculture is not enough to monitor the whole State. The State agencies need to pay more attention to the construction and plugging of wells. Not all requirements are being met in this area and the State is not monitoring them.
- The main problems boil down to money; Department district officials have no equipment for taking samples, and not enough field personnel to maintain a field presence in the district. Most local people would have no idea who to call at the Department if they had a water problem.
- The Department has some serious problems in the way it approaches its duties. For example, the Department takes the position that officials cannot do anything without specific statutory authorization. The Department is top-heavy, administratively, and has "too many chiefs and not enough Indians" in the field. It is not just a question of money; the Department is inefficient now, and if officials get more money, they will just spend it inefficiently. The Department needs to re-structure its environmental machinery.
- The Department seems to do planning at the expense of a fundamental preventive program and actual cleanup. Although planning is necessary, the Department does a great deal of Environmental Protection Agency-mandated planning and investigating, but no actual implementation of those plans. The Department should break those federal ties that require the Department to spend so much time and money on "planning for the sake of planning", and begin fundamental preventive programs aimed at specific sources.
- There is a need for increased enforcement by the State. There is also a need for the State to have more personnel in the field to control the water quality. There are too many chiefs in Topeka and not enough Indians in the field. The Topeka office of Health and Environment is primarily concerned with Environmental Protection Agency programs that keep those people forever in the planning stage of contamination cleanup without ever getting to the implementation stage.

sees a void in the State's water pollution control program. He said that because the State does not actively pursue the plugging of abandoned water wells in his district, which he thinks is an appropriate State activity, the district has undertaken such a program. In response, Department officials say that the districts have a single task, but the Department has "multi-tiered" tasks, and sometimes the districts do not appreciate the demands that those other responsibilities put on the Department.

- **The Department often defers to localities' decisions, particularly as related to sanitary landfill sites.** The file for the Riley County sanitary landfill showed that

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the State had concerns about the location of the site before it issued a permit. Although numerous attempts were made to locate another satisfactory site, the county still chose to locate its landfill at the site of the old city dump. The Department of Health and Environment gave the county a permit to operate the landfill at that site despite its concerns, which ultimately proved well-founded. Department officials told the auditors that it is up to a locality to find a site for a landfill. As long as the locally approved site meets State criteria, these officials said the Department has no choice but to issue a permit, unless an imminent public health threat can be shown. A similar situation has surfaced with the Quindaro landfill site being considered in Wyandotte County. As described in the accompanying profile, this site is located on the Missouri River above the intake for the Kansas City, Kansas, public water supply.

Quindaro Site - Wyandotte County Sanitary Landfill

In 1982, Kansas City, Kansas, officials issued a special use permit to allow the site of the old Quindaro commercial area to be operated as a sanitary landfill. Following that approval, this site received a permit from the Department of Health and Environment in 1983. The site is located about 3/4 of a mile upstream from the Kansas City, Kansas, public water supply intake. Residents and city utility officials are concerned that the location of the site poses too great a risk to the city's water supply. Their concern is that all landfills will eventually leak.

Because of the close proximity of the water intake, Health and Environment officials have attached numerous conditions to the permit to ensure that it will be as safe as possible. These officials acknowledge that the site poses some risk, but they also think that the conditions they have imposed will minimize the risks.

- **There are limited staffing and funding resources to address contamination and pollution problems.** For example, in Health and Environment's northwest district office, one person is responsible for pollution clean-up activities (including investigation and monitoring) in the entire 19-county area. In addition, the Kansas Board of Agriculture has only one person responsible for operating the State chemigation program, which is designed to prevent contamination of groundwater by irrigation chemicals. Department officials told the auditors that its Bureau of Remediation is not yet fully staffed nor fully funded. Several positions are not yet filled, and fiscal year 1989 will be the first year that substantial State money will be available for clean-up operations. Federal cleanup money, officials say, is just now starting to flow into the State. Much of that money will be directed toward cleanup of major contamination sites, such as the Galena area in southeast Kansas.

- **The Department of Health and Environment spends a considerable amount of time planning or investigating, in part to try to meet federal requirements.** A number of people the auditors talked with faulted the Department for this, and for spending too little time actually cleaning up contamination. The auditors noted, for example, that at least 15 separate site investigations, visits, or assessments have been conducted at the Western Petrochemical plant over the years, but the source of the pollution—petroleum sludge on the ground—has never been cleaned up. Department officials respond that much of the investigation and planning is done because of federal requirements, and because it is supported by federal funds. For example, the Hydro-flex site was investigated under two federal programs, the Resource Conservation and Recovery Act and the Superfund Act. Because cleanup can be so costly, Department officials say they need to try to obtain federal cleanup moneys whenever possible.

Conclusion

The contamination problems in the seven cases reviewed for this audit were caused by past disposal practices that were either unregulated at the time, were covered by what turned out to be inadequate regulations, or the State was not aware of them. In other words, the State had little opportunity to prevent contamination before it occurred. Although regulations have been enacted to address or prohibit most of these previously unregulated practices, many causes of pollution will still be beyond the State's ability to prevent or control. These include accidents, spills, inappropriate disposals of gasoline or pesticides by an uneducated public, unregulated domestic water wells, unplugged and abandoned oil and gas wells, and unregistered underground storage tanks. State agencies have begun to try to find and test these wells or tanks, but they may number in the thousands.

Much of the State's involvement in this area actually comes after contamination is suspected or has been identified. As this audit has shown, when State agencies were required to do something in the seven cases reviewed—such as review applications, approve permits after determining that the application meets State requirements, monitor or test sites, and the like—they generally did. However, when they were allowed but not required to act on something, they generally did not use much of their discretionary authority. In the seven cases reviewed, no fines were ever levied against the parties responsible for polluting, and none of the contaminants at the sites have ever been cleaned up.

Water quality is an important issue in Kansas, and becomes even more critical in times of low rainfall and increased irrigation, when pollutants can become concentrated in the groundwater, or can be drawn out into rivers and streams. Many of the people who are directly affected by water contamination want their problems to be resolved quickly, and see the State as the responsible party. Department officials say they are doing the best job they can within the limits imposed on them and while balancing available resources. They also see local officials as sharing in such responsibilities as selecting appropriate and safe disposal sites and cleaning up contaminated sites. These community problems do not fully become the State's problem unless they present an imminent public health threat.

If the Department of Health and Environment and the Kansas Corporation Commission are to take a more active role than they do now in helping communities clean up their contamination problems, changes may be needed in laws, regulations, and policies, and additional resources may need to be devoted to such activities.

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Recommendations

1. The Department of Health and Environment and the Kansas Corporation Commission should provide testimony to the Legislature about how they are responding to water contamination problems such as those illustrated in the case studies, their future plans for addressing these types of problems, and their suggestions for improving their response capabilities. As part of their testimony, these agencies should provide estimates of the funding and staff resources that might be needed to achieve their goals.

2. If the Legislature wants State agencies to take a more active role in addressing water contamination problems when they occur in Kansas, it should consider the following:

   a. Establishing a clear policy as to the Legislature's priorities in addressing the State's water contamination problems.

   b. Strengthening State law to more clearly define State agencies' responsibilities.

   c. Providing funding and staff resources to achieve the desired results.

APPENDIX A

The Department of Health and Environment's List of Contaminated Sites

Organized by River Basin

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County	Name	Contaminant	Source	Status
UPPER REPUBLICAN RIVER BASIN				
Decatur	Jennings PWS Well	brine	oil field	Oil field pollution has contaminated PWS well. No longer used.
Decatur	Paul Bremer	chloride	oil gas field	Faulty disposal well removed. Ponds redone and fluid removed.
Rawlins	McDonald	nitrates	cesspool	City is in process of installing municipal waste-water lagoon to eliminate use of cesspools.
Thomas	Ace Services Colby	chrome	ponds	Plant closed 1980; withdrawal well installed. Wastewater treated. Negotiations on municipal well.
SOLOMON RIVER BASIN				
Cloud	Glasco PWS Well	CC14	unknown	Well out of service. Water purchased from RWD #3.
Graham	Mulberry St. Area	chloride	PST leak	Five wells affected. Monitoring. Pumping for irrigation.
Graham	Bogue PWS Well	petroleum	PST Leak	Well no longer used.
Graham	Bogue Area	chloride	oil field	Needs further investigation.
Graham	Richmeier	brine	ponds	PRP plugged injection well, KDHE monitored. Affect 2 miles along Solomon River.
Graham	Gil Balthozor	brine	oil field	Flow. seep. Brine Lines tested. MITs on inject. wells. Monitoring conts. Affects over 400 acres.
Graham	Graham County unknown	brine	disposal well	Irrigation well contaminated. Disposal well plugged. New water well drilled.
Graham	Leon Fink stockwell	brine	well	PRP ran well logs 1980. KDHE monitoring.
Graham	Fred Keith	chloride	oil & leases	Leases improvements needed.
Graham	Eugene Johson	chloride	unknown	Isolated contamination, not detected in surroundings.
Graham	Wilbur Stites	brine & toluene	unknown	Drilled new well.
Osborne	Alton PWS Well	petroleum	(PST Leak)	Well contains petroleum products. City has drilled a new well.
Ottawa	Kaneb Pipeline	fuel oil	spill	Recovered approx. One third of product. Rechecked cleanup.
Phillips	Agra PWS Wells	CC14	unknown	Investigation needed. Well in service and periodic resampling to be conducted.
Phillips	CRA, Inc., Phillipsburg	metals	sludge pond	Remove and reclaim product. Continued PRP monitoring.
Rooks	Stockton	chloride	road salt	Road salt in snow probably source. Chlorides up to 500 ppm.
Rooks	Griebel, Foster Ray	chloride	pits	Partial closure of pits
Rooks	Pat Irey-Hrabe Area	brine	disposal well	Some MITs done. Disposal well repaired. Over 300 acres affected.
Rooks	Laton Area Several Landowners	chloride	oil field	MITs are requested on disposal wells.
Rooks	Mary Marcotte	chloride	drainage	MITs on disposal wells. Known leaks corrected. Private water well.
Rooks	Orville Garver, Natomy	brine	disposal	No action by landowner. Spent (PRP) $200,000 on cleaning up lease.
Rooks	Scattered Rooks County	brine	ponds, etc.	Alluvium along Elm Creek polluted. Increased efforts to perform MIT.
Rooks	Simons, Stockton	chloride	oil field	Oil Leases monitored.
Rooks	Carl Hilgens	brine	disposal	Well plugged. Overflows corrected.
Rooks	Schruben	chloride		Same as Stockton.
Rush	Raymond Oil	brine	disposal well	Recovery of saltwater ceased due to depletion of saltwater. Residual remains.
Smith	Kensington PWS Well	dichloroethane	unknown	Well out of service. Used for bulk hauling.
Thomas	High Plains Chem.	pesticides	storage & use	Waste removed. Investigation needed.
SMOKY HILL-SALINE RIVER BASIN				
Barton	Great Bend unnamed	brine	unknown old well?	35,000 ppm Cl water entering alluvial material discovered during investigation. Underlies roadway.
Cloud	Miltonvale Landfill	refuse	landfill	Initial investigation wells drilled and monitored.
Dickinson	Hope PWS	CC14	unknown	City well taken out of service except in case of emergency.
Dickinson	Abilene PWS Well #8	TCE	unknown	Well removed from service. Investigation potential source.
Dickinson	Stuckey's Talmage	spills	spills	Cleanup completed. Undetected in analysis of samples.
Ellis	Pepsi Cola Bottling	VOC	pipe leak	Water pumped to waste. VOC detected in recent sampling.
Ellis	Hays PWS	dichloroethane	various spills	No VOC detected in PWS after treatment. Some private wells closed, hooked to city supply.
Ellis	Leo Stramel Pfeifer	saltwater	unknown	Saltwater in private well.
Ellis	Cross Manufacturing Company	chrome	disposals pit	Chrome pile excavated and removed.
Ellis	Ellis PWS Wells #1	dichloroethane	PST leak	#2 well removed from service 8/81. #1 well in service periodic resampling to be done by KDHE.
Ellis	Ramada Inn Hays	VOC	PST leak	Recovered petroleum 10/78. VOC still detected.
Ellis	Short Stop	petroleum	PST leak	Leaking tank contaminated well at Hays Bowl and Pro shop. Connected to city water.

County	Name	Contaminant	Source	Status
Ellis	Nielson Sinkhole	brine	natural	Attempted pumping in 1978. KGS monitoring and measured in 1980. KDHE monitoring.
Ellis	Antonio Water supply wells	brine	disposal ponds	Contam. by saltwater ponds in use before 1959. Studied-1960. Water dist. formed. 40 acres affected.
Ellis	William Burr Compit.	misc	PST leak	Investigation needed.
Ellis	Cecilia Dreiling	chlordane	exterminator	Private well contaminated after application of pest control. New well considered.
Ellis	Jim Dinkel Well	brine	oil field	Oil field activity within area. Extensive chloride contamination. Uses bottled water.
Ellis	Fell Oil & Gas	chlorides	brine tank	Shallow aquifer seeps from hillside; contaminated water recovered in trenches.
Ellis	Leon Dinkel	saltwater	oil field	Found alternative water source.
Ellis	Marcellus Gross	brine	emergency pit	2450 ppm Cl at depth of 3 ft. Pit eliminated by KDHE. Affects one acre.
Ellis	R.J. Zimmerman	saltwater	disposal well	Disposal well tested. Affected well water disposed of at another well.
Ellis	Doris Lang	chlorides	unknown	High chlorides in private well. Drill pits over shallow sand may be cause. Need further investigation.
Ellis	Jim Maxwell	chlorides	unknown	Disposal well passed MIT. Surface seep from alluvial materials.
Ellis	Andrew Wasinger	salt water	tank battery	Trench dug but recovered very little brine.
Ellis	Doug Phillip, Hays	brine	disposal well	Disp. well was backflowed until pressure elimin. Pumped 2-3 years & plugged. Affected deep aquifer.
Ellis	Matador Pipeline	petroleum	pipeline leak	Observation holes installed, oil recovered from ditches.
Ellis	John Krause	salt water	improper well plug	Need to replug well.
Ellis	Frank Werth	brine	pits, disposal well	Springs in area carrying chlorides to surface. Input wells tested.
Ellis	Ellis Co. Feeders	nitrates	feedlot	Leaching from lagoon into limestone formation. Contaminated well and seven others were plugged.
Ellsworth	Ellsworth PWS Well #4	PCE	unkown	Investigation and resampling needed.
Geary	Grandview Plaza PWS #3	CC14	unknown	Both wells have been out of service, city constructing a replacement well.
Gove	Plum Creek area	chloride	injection well	Well plugged in 1985. Needs further investigation.
Gove	Quinter Coop Fire	pesticides	fire	Cleaned up. Area needs to be monitored.
Logan	Oakley PWS Well #11	benzene	unknown	Well in service. Periodic resampling; investigation needed.
Logan	Harry Unruh	chloride	oil field	Investigation pending.
McPherson	Columbia Industries	heavy metals	facility discharge	Contaminated soil removed.
Rooks	Plainville PWS #1	CC14	unknown	Well #1 disconnected from public water supply, not used for water supply.
Rooks	Plainsville	gasoline	unknown	Complaint from several landowners. Needs further investigation.
Rooks	APCO Service Station	gasoline	PST leak	Occasional KDHE monitoring.
Rooks	Codell Area	chloride	oil field activity	Needs updated monitoring data. Several water wells in drainage. Over 200 acres affected.
Rooks	Tom Houser	brine	dumping	Landowner drilling test holes to follow pollution.
Rooks	Peavey, Mowry, Vine & Bates Wells	brine	oil field activity	MIT's on wells and lines. Seasonal variation in Cl 100 to 1700 ppm.
Rooks	Foster Shepard	brine	old pond	Taking precautions with new potential source.
Rooks	Melvin Keller	brine	over flows	Monitoring MIT done on well. Overflow problem corrected.
Russell	Russell RWD	brine	unknown	Needs investigation to determine source.
Russell	Tittle Lease Unnamed	brine	unplugged well	KCC will plug well. Cedar Hills probably source.
Russell	Vernon Shaffer	brine	drillpit	Will not allow access to property. Water samples taken.
Russell	Dennis Dumler	brine	disposal wells	Two unplugged abandoned wells found. Affects City of Russell.
Russell	Les Wittman	saltwater	drill plate	KDHE determined source of contamination in fall 1985. Drill pits need to be removed.
Russell	Leland Nuss	brine	line leaks	Lease completely investigated. Lines and inputs tested.
Russell	KDOT I-70 Crawford	saltwater	misc	I-70 sinking about half a foot per year.
Russell	Louis Sander	chlorides	unknown	Field investigation in progress.
Russell	Fairport Sta.	petroleum	pipeline leak	Oil being recovered. Alluvial aquifer.
Russell	KDOT I-70	salt water	misc	Sink investigation and cementing complete; no movement in 3 months; continue to monitor.
Russell	Everett Dortland	chloride	disposal well?	Tested samples from spring and stock well. Source may be shallow disposal well plugged years ago.
Russell	Keir	salt water	unknown	Salt water in drainage way. MIT performed, brine source unknown.
Russell	Okmar Oil Company	salt water	tank battery	Tank removed and replaced.
Russell	Trapp Oil Co.	salt water	flowing aband well	Well has been plugged, still under investigation.
Saline	Salina PWS wells	PCE & others	unknown	Wells in service, variety of VOC detected. Confirmation needed. Resampling needed.
Saline	Solomon Electric Supply	PCB	salvage yard	Consent order issued by EPA.
Saline	Exline Salina	chrome	pond	PRP remedial action (inc. withdrawal). Pond closed.

County	Name	Contaminant	Source	Status
Saline	Roof Farm	PCB	storage site	Sampling and wells.
Saline	Wilgus well Salina	brine	oilfield activity	Extensively studied 1984 by KDHE. Recommended test holes be drilled in area. Affected 30 acres.
Saline	Swisher well	brine	oilfield activity	Test holes drilled on 8/82.
Saline	Salina Co., Landfill	metals	landfill	Preliminary site investigation.
Trego	Braum/Wynn	chloride		Investigation in progress.
Trego	Frank Schneller	chlorides	oil field	Pond and well contaminated. Considering new well.
UPPER ARKANSAS RIVER BASIN				
Barton	Phillips 66 & others	gasoline	PST leak	Some gasoline recovered at Phillips 66. Scattered contamination west of Main Street.
Barton	Albert PWS well	brine	oil field	Rising chloride levels in recent years may be from oil field activity in area.
Barton	Larry Panning	saltwater	misc	Sink/collapse area; monitored infrequently.
Finney	Iowa Beef Processors	brine	hide curing	Unlined storage lagoon received brines. Monitoring well 2760 mg/1 Cl.
Finney	Finney County LF	Leachate	landfill	Irrigation ditch leaked to landfill. Observation wells drilled. Irrigation canal sealed.
Finney	Kalvesta Restaurant	benzene	storage tank	Monitoring
Ford	Farmland Industries	chromium	acid spill	Remedial action continuing by PRP. Withdrawal wells.
Ford	MBPXL (Excel)	brine,chrome	lagoon	Lagoon was lined. Chlorides may have moved out of area. (alluvial aquifer).
Ford	Henry Strecker	brine	leaking	PRP installed new water well for land owner, but refused to monitor.
Ford	Stake Site	ethyl parathion	airplane crash	Resolved
Hamilton	Bill Burch Well	mineral water	drainage	Localized. Drainage down gravel pack of private well. Advised to seal.
Haskell	Mesa Petroleum/Kirby	salt water	disposal well	Cleanup plan developed, not implemented.
Haskell	Kirby Clawson	brine	disposal well	Same as Mesa.
Hodgeman	Raymond Smith	brine	oil field activity	Localized mineralization may be from old brine pond or improperly plugged well.
Hodgeman	Schrader Stockwell	brine	pit	Testing of disposal well integrity planned.
Kearny	Colorado Insterestate Gas Co.	VOC's	injection well	Sampled water well. VOC detected.
Ness	Jay Herron & others	gasoline	PST leak	Co-op station lost gasoline. Source was corrected.
Ness	Home Oil Co.	gasoline	PST leak	Source controlled. Investigation needed.
Ness	Bazine Co-op	gasoline	PST leak	Contaminated water well. Leak corrected.
Ness	Ramson Co-op	gasoline	PST leak	Wells installed to define contaminant area. Recovery effort failed.
Pawnee	L.E. Marlett	brine	drill pit	Contaminated well 80 ft. from oil well. New water well drilled. Working to install monitoring well.
Pawnee	Stanley Moffett	saltwater	core hole	No success locating source.
Pawnee	Enoch Thompson	brine	storage pits	Probably no active source, stock well at 1180 ppm Cl. Needs investigation.
Rush	Gene Avey	brine	unknown	Localized. House well at 580 ppm Cl.
Rush	Dale Ater	brine	oil field	Considerable work in past to identify source.
Rush	Bison	nitraties	natural?	Well 1&2 each exceed drinking water standards. New wells have been drilled, but production is poor.
Rush	Lacrosse	chlorides	oil field wells	Well no longer in use.
Scott	Scott City Shop	solvents	lagoon	Potentially for leakage from lagoon.
Scott	Shallow Water Refinery	petroleum	lagoon	Potential contamination from lagoons.
Wichita	Leoti PWS	CC14	unknown	Monitoring.
CIMARRON RIVER BASIN				
Grant	Ulysses Gas Processing Co.	KDH	misc	Lime used to neutralize potassium hydroides in pit by owner.
Meade	Meade PWS Wells	diesel oil	pipe line leak	Several thousand gal. diesel oil recovered. Interceptor wells installed, source repaired, monitor.
Morton	Helium Sales Inc.	heavy metals	lagoon	Use of lagoon waste water on agricultural land.
Seward	Panhandle Eastern	VOC	disposal	Cleanup plan approved. City to treat discharge. Recovery in operation.

County	Name	Contaminant	Source	Status
NEOSHO RIVER BASIN				
Allen	Prime Western Smelter	heavy metals	slag disposal	Abandoned lead and zinc smelter. Pre NPL investigation.
Allen	Mid America Refinery	petroleum products	refinery waste	Pre NPL investigation has begun.
Allen	Berg. Mfg. site	caustic waste liq.	drum disposal site	Owner issued cleanup directive; investigation pending.
Allen	Berg. Mfg. site	caustic waste liq.	drum disposal site	Owner issued cleanup directive; investigation pending.
Allen	Berg Mfg.	caustic waste liq.	disposal site	Soil samples taken; company directed to cleanup site; further investigation needed.
Allen	Berg Mfg. site #2	caustic waste liq.	disposal site	Soil samples taken; company directed to cleanup site; further investigation needed.
Chase	H.L. Roberts Fish Ponds	diesel fuel	spill	Cleanup of original spill in 1983. Still monitoring surface water/soils.
Chase	Burton Buckman Well	brine	line leak	Stored brine removed. Rains flushed aquifer. Samples at 50 ppm 10/20/81.
Cherokee	Cherokee County	lead zinc	mine tailings	NPL/EPA lead. Phase I & II remedial investigations at 1 of 6 subsites. 9 sq. mi. Superfund site.
Cherokee	Tar Creek Picher Field	metals	mine drainage	Feasibility study completed, 1984. Remedial action underway. KDHE assist Okla. Superfund site.
Cherokee	Allco Well #1	dichloroethane	PST	Pumped to waste, monitored by PRP. Well removed from service. Source detected and removed.
Cherokee	Gulf Oil Chemical Co.	nitrates	impoundment	Impoundment used for treatment and disposal. Water hauled off by farmers for spraying fields.
Cherokee	Brutus	PCB	coal shovel	Cleanup complete.
Cherokee	Lead/Zinc Mine Smelter	mine wastes	smelter	Same as Cherokee Co.
Labette	KS Army Ammunition Plant	explosive wastes	industrial operat.	Needs investigation
Lyon	Atchison,Topeka& Santa Fe RR	pipe leak	misc	PRP plan for recovery of product in effect.
Marion	Hillsboro Industries	metals	waste water dischg	Samples collected.
Marion	Mowat well	natural gas	gas well	Detected 12/81. Plugged nearby gas well. Gas detected occasionally.
Montgomery	Wayside Prod. Co.	salt water	leaking stor. pond	Pond emptied and covered. Monitoring.
Neosho	Chanute Landfill	VOC	landfill	Preliminary assessment complete.
Neosho	Western Petrochemical	petroleum products	sludge disposal	Pre NPL investigation.
Neosho	Neosho No. 2	acid	sludge waste	Monitoring wells installed.
Neosho	Washburn's Service Main & Forest	gasoline	leaking PST	All PST tested oil tank replaced. Fumes in adjacent basements stopped. Monitoring groundwater.
Neosho	59 Truck stop	gasoline	leaking PST	7000 gallon leak with only 50 to 100 gallons recovered. Leaked to creek. Monitoring groundwater.
Neosho	Ash Grove Cement Co.	acid waste	industrial disposal	Five groundwater observation wells; continuing to monitor.
MISSOURI RIVER BASIN				
Brown	Fairview RWD #1;PWS #3	CCL4	unknown	Investigation needed. Well in service. Periodic resampling to be conducted.
Brown	Morrill PWS Well #5	CCL4	unknown	Well out of service. Some water purchased from RWD. Investigation needed.
Doniphan	Bendena RWD #2 PWS well 1	CCL4	unknown	Engineer hired to locate new source. Single source.
Leavenworth	Select Products Leaven.	VOC	storage tanks	Operating low yield recovery wells, and discharging to sewer since June 1984.
Leavenworth	Doris' Market & Gas	petroleum	PST leak	Recovered over 800 gal. gasoline. Water discharged to city sewer for treatment.
Leavenworth	Quality Oil	petroleum	line leaks	Most of lost product confined to tank excavation and recovered. Est. 1000 gallons still missing.
Leavenworth	Kansas Penitentiary	metals	lagoons paint fact.	Monitoring well by KDHE/PRP. Delisting review.
Leavenworth	Sinclair Gas	petroleum	PST leak	Perched water table. Tanks abandoned and replaced. 4/86 report.
Leavenworth	Leavenworth Sanitary Landfill #3	unknown	unknown	EPA lead on investigation.
Leavenworth	GNB Batteries	petroleum	land disposal	EPA lead site.
Wyandotte	Phillips Petroleum	petroleum	barrel leaks	Recovery, source control, monitoring by PRP.
Wyandotte	Model Landfill	VOC	landfill	Observation wells installed.
Wyandotte	Fairfax Levee	primer solvent	drums	Cleanup completed by KDHE. Order to PRP.
MARAIS DES CYGNES RIVER BASIN				
Bourbon	Extrusions Inc.	caustics solvents	lagoon	Waste discharged to lagoon ceased. Lagoon excavated/graded/disced.
Crawford	Arcadia PWS Well #1	natural?	unknown	Well had long history of pumping crude oil and natural gas. Plugged in 1986.
Franklin	Rantoul	brine	pits	Closed pits shut down wells.

County	Name	Contaminant	Source	Status
Linn	Kansas City Power & Light Co.	diesel oil	pipeline	30,000 gallons recovered; pipe replaced continuing to monitor.
Linn	Indian Creek	acid mine runoff	coal mines	Continue to monitor creek run-off.
Miami	Paola	petroleum	PST leak	Amoco station to test lines and tanks 5/86. Perched water table.
WALNUT RIVER BASIN				
Butler	Vickers Refinery	benzene lead	tank leaks	Cleanup plan has been developed by PRP.
Butler	Potwin PWS well #1	CCL4	unknown	Well out of service. Investigation needed.
Butler	Pester Refining Company	unknown	unknown	PRP doing investigation for Pre NPL and burn pond closure (RCRA).
Butler	Andover Drumsite	metal drums	misc	Cleanup by KDHE. Disposal completed.
Butler	Forrest Reavis	gasoline	pipeline	Two other pipelines tested tight. Continuing to monitor.
Butler	Mobil Oil Refinery	metals	waste lagoons	Closure plan under review by KDHE. Product recovered in 1982. Off-site investigation needed.
Butler	Getty Refinery	misc	pipe leaks	Recov. wells installed 1979-80 by PRP. Continue operating. Barrier wall to be installed. Invest. needed.
Clark	Ark City Dump Site	asphaltic sludges		Phase Ii remedial investigation approval and funded by EPA. Superfund site.
Clark	Strother Field Hackney	solvents	unknown	Withdrawal wells and air-stripping tower installed and tested by PRP. Superfund site.
Cloud	Nelson Machine Shop	corrosive solids	drums	KDHE cleanup disposal completed.
Harvey	Hackney Co-op	CCL4	unknown	Submitted as candidate for possible listing on NPL.
Sedgwick	NIES Furley	VOC	treatment lagoons	EPA assumed responsibility in 1984. Remedial work under way.
VERDIGRIS RIVER BASIN				
Greenwood	McCarthy Oil Co.	saltwater	leaking stor. pond	Monitoring storage pond no longer used.
Greenwood	Hamilton PWS Well #5	dichloroethane	unknown	Well out of service. Will be plugged.
Greenwood	Errett Lease	brine	disposal well	Disposal well plugged. Saltwater flowed through shallow confined aquifer into creek. Monitoring.
Greenwood	Greenwood Lease	saltwater	disposal well	Disposal well repaired and passed MIT. Seep of 42,000 ppm Cl from gravel deposits into ditch.
Greenwood	Douglass	brine	disposal well	Well no longer used. Seep from gravel deposits into creek contained 12,500 ppm Cl.
Greenwood	Tate Creek area	petroleum	unknown	Oil flowing from creek banks into creek from shallow aquifer. Over 250 bbls recovered.
Greenwood	Browning Lease	chloride	storage pond	June 1983, 1500 ppm chloride seep at Limestone outcrop. Pond emptied and covered. Monitoring.
Montgomery	Sherwin-Williams	metals	waste lagoons	Under administrative order, RCRA closure plans submitted for lagoons.
Montgomery	Woody Lease	saltwater	unknown	Saltwater found in tributary to Elk City reservoir. Monitoring wells drilled.
Montgomery	Sinclair Oil Ref.	acid	sludge materials	Needs further investigation.
Montgomery	Temple Oil Co.	saltwater	leaking stor. pond	Storage pond out of use monitoring.
Montgomery	National Zinc Company	zinc	settling pond	Site area reclaimed, 1981 slag and tailings encapsulated on-site.
Montgomery	Harriman complaint	fluoride	unknown	Scattered samples of high fluoride and sodium detected October 1983.
Wilson	Neodesha Ref.	lead	lagoon	Monitoring proposal submitted in 1984. On site sludge entombment. Pre NPL investigation.
LOWER ARKANSAS RIVER BASIN				
Barber	Kiowa PWS #2	CC14	elevator/railroad	PWS #2 taken out of production.
Barber	Wildboy's Cattle & Land Co.	brine	artesian flow	Monitoring ongoing PRP plugged well in 1980.
Barber	Hardtner PWS Well #1	metals	drilling	PWS Well #1 monitored.
Barber	Diel Farm	flammable liq.	drums	Cleanup of drums completed by KDHE. Groundwater monitoring needed.
Barton	Dresser Industries	misc	impoundment	Sample from drinking water well showed no contamination.
Barton	Henry Burmeister	saltwater	unknown	MIT requested on disposal well.
Butler	SDS El Dorado	unknown	metal drum recycle	PRP lead in cleanup
Cloud	Tot.Petro. Inc.	petroleum	spills leaks	Submitted closure plan for hazardous waste lagoons. Oil recovery ongoing.
Cowley	Co. Maintenance Yd.	unknown	pipe line	Source controlled. Periodic inspection KDHE. No remedial work implemented.
Ellsworth	IITI	brine	pits	Contaminant isolated by pumping. Consultant modeling system. Monitoring.
Harvey	Burrton Oil Field	brine	wells	Testing injection wells monitoring shallow aquifer; wells to monitor.
Harvey	Hollow-Nikkel	brine	ponds	Known sources controlled. Drilling to define contamination area planned. Probably about 40 acres.

County	Name	Contaminant	Source	Status
Harvey	Halstead PWS Well #5	TCE	unknown	Investigation needed. Well in-service and periodic resampling by KDHE to be conducted.
Harvey	Don Franz Complaint	petroleum	PST leak	Source eliminated 1978. Minimal attempt at recovery. PRP out of business.
Harvey	Full Vision	metals	lagoon	Observation wells drilled 1986.
Harvey	Atchison, Topeka & Santa Fe RR	unknown	pipe leak	PRP recovery plan in effect and on-going.
Harvey	Alta Mills Area pond	chlorides	pond	Source controlled, area being field checked.
McPherson	McPherson PWS Wells	PCE	unknown	Well #5 out of service. Well #2 in service. Periodic resampling to occur.
McPherson	Galva PWS well #4	CC14	unknown	Well removed from service. Observation wells drilled.
McPherson	Herb Tillock	chloride	oilfield activity	Began investigation 5/7/86, 1400 ppm C1.
McPherson	Conway	LPG	storage reservoirs	PRP monitoring. Water wells no longer used.
McPherson	Fayne Beattie Well	brine	brine reservoir	Well pumped as relief well. Minimal groundwater available. Monitoring.
McPherson	Burns Well	brine	brine reservoir	Burns well plugged, now on city water.
Reno	Highway Oil	petroleum	PST leak	Tank repaired. Observation wells installed.
Reno	Hayes Site & Sound	petroleum	PST leak?	Possible source had been replaced about nine months earlier (1/84). Gas in private well.
Reno	Hutchinson Salt Companies	brine	pits & intrusion	Pumping seems to contain contamination to site, yearly sampling KDHE.
Reno	Fourth & Carey St.	CCL4 PCE VOC	industrial	Candidate NPL site. Includes PWS 8 & 12. City looking for new source. #8 out of service.
Reno	Nickerson PWS Well #6	dichloroethane	unknown	Investigation needed. Well in service, periodic resampling scheduled by KDHE.
Reno	Obee Road	VOC	multiple sources	Submitted 9/85 to EPA for NPL consideration. KDHE monitoring continued. RWD #4 hooked to city.
Reno	Soda-Ash Waste Disposal	misc	waste pile	No significant contamination found. No further action warranted.
Reno	Turon PWS Well #3	CC14	unknown	Well in service pending new well construction. KDHE monitored.
Reno	Yoder Village	CC14	unknown	Contamination of private wells. Resampling scheduled. Residents notified.
Reno	Krause Plow, Corp.	metals	landfill	Onsite wells and soil sampled.
Rice	American Salt	brine	grainier pans	Installation of monitoring wells by PRP. Interceptor well in operation.
Rice	Brother's Lease	brine	reserve pits	Attempted to pump out contam. farm pond. KDHE requested contam. soil be removed. Affect 6 acres.
Rice	Bushton Grain & Elevator	nitrate	spill	Remove contaminated soil and water. Resolved.
Sedgwick	North Broadway	VOC	scattered	Order sent to possible responsible party. Proposal approved for site investigation.
Sedgwick	K-Line Plastics Area	VOC	unknown	Scattered contamination of private wells. Owners notified. Drilling/investigation planned.
Sedgwick	Boeing M.A.C.	TCE	degreaser units	Cleanup plan has been formulated by PRP.
Sedgwick	Barton Solvents	benzene	waste disposal	Site investigation, including monitoring underway by PRP.
Sedgwick	Gerald Blood Orchard	brine	inadequate	PRP plugged 32 wells 1984 KDHE monitoring.
Sedgwick	Wichita Brass & Aluminum	VOC solvents	sludge pits	Pre NPL investigation.
Sedgwick	Aero Sheet Metal	solvents	storage	PRP cleanup consider for delisting.
Sedgwick	Golden Rule	VOC	solvent sludgepits	Wells installed and monitored; Pre NPL.
Sedgwick	Radium Petroleum	unknown	unknown	No further investigation recommended.
Sedgwick	Cessna Aircraft Wallace	VOC	unknown	Investigation by private party in progress. Source areas to be defined.
Sedgwick	Cheney Private Well	unknown	unknown	Product recovered. Cleanup action ceased 1980 with removal of tank.
Sedgwick	James Catron comp.	chloride	waterflood operat.	C1 levels receded naturally. Disp. lines & operating wells proven integrity 1982.
Sedgwick	Park City PWS Wells	petroleum	pipeline leaks	Source repaired Product recovered and burned 1980. Presently monitoring PWS Wells.
Sedgwick	Barnsdall	VOC	multiple	Pre-NPL investigation.
Sedgwick	Cessna Aircraft	solvents	landfill	Investigation by private party in progress. Monitoring wells installed and sampled.
Sedgwick	Big River Sand Co.	VOC	barrel storage	Source removed NPL/EPA lead site. Superfund site. RI/FS initiated.
Sedgwick	Vulcan Materials	VOC	landfill disposal	Landfill encapsulated 1978. Cone of depression maintained. Continuous monitoring by PRP.
Sedgwick	Excell	VOC	unknown	Pre NPL investigation.
Sedgwick	Vim Trailer	VOC	unknown	KDHE monitored Pre NPL investigation.
Sedgwick	Architectural Metal Products	acids	barrel storage	Cleanup by PRP. KDHE drilled monitoring well, took soil samples. Recommend delisting.
Sedgwick	Levee Road	sludges	misc	Cleanup completed site inspection before delisting.
Sedgwick	Clearwater PWS Well #2	PCE	unknown	Well out of service.
Sedgwick	Air Products AKA Abbott Labs	VOC	waste pond	PRP monitoring and recovery in operation. BWM evaluating closure plan for barrel storage area.
Sedgwick	Cheney PWS Well #6	CCL4	unknown	Investigation needed. Well in service. Periodic resampling by KDHE.
Sedgwick	C&J Fina	petroleum	unknown	Owner of gas station notified that they contaminated own well.

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County	Name	Contaminant	Source	Status
Sedgwick	Aircraft Instrument & Development	VOC	stripping room	Fall 1984 purgable organics detected. Withdrawal well constructed by PRP. Monitoring.
Sedgwick	Al's Phillips 66	gasoline	PST Leak	Order sent to responsible parties (Case No. 86-E-115).
Sedgwick	Derby Refinery	gasoline	PST line leaks	Cleanup program established; continued recovery and monitoring by PRP.
Sedgwick	Dan's Fina	petroleum	PST leak	Tank was replaced 1986. No attempt at recovery.
Sedgwick	Certainteed	organic solvents	gravel pit	Three wells installed; removed three buried tanks; continued monitoring.
Sedgwick	Barachman Complaint	unknown	unknown	Investigated 1980. No product discovered. Presently inactive.
Sedgwick	Chapin Landfill	VOC	landfill	Closed site 1980. Cap being added to site. Monitoring.
Sedgwick	Schulte Field	chlorides	oil field	Field abandoned in 1961. Monitoring to keep track of pollution.
Sedgwick	Amoco	gasoline	PST	City flushed sewer. Amoco replace all tanks.
Sedgwick	Brooks Landfill	misc	landfill	Wells installed and being monitored.
Sedgwick	Johns' Refinery	VOC lead	waste disposal	EPA to conduct regional investigation to address contamination.
Sedgwick	Johns' Sludge Pond	petroleum	refinery	Remedial action Superfund site completed.
Sedgwick	Reid Supply Company	solvents	unknown	RCRA generator reviewing RCRA Part B application.
Stafford	Kent Rixon	chlorides	unknown	Irrigation well has 250-500 ppm Cl. Exploratory holes drilled to locate source. Unsuccessful.
Stafford	Kent Rixon	brine	drill pit	Drilled second well to find fresh water. Pollution is localized.
Sumner	Freund Complaint	petroleum	PST Leak	Source controlled 1980. Pumping to waste stopped prior to 6/84.
Sumner	Ivan Bruce	chloride	disposal well	Disposal well passed MIT 9/25/85. Isolated contamination. Investigation started 11/85.
KANSAS-LOWER REPUBLICAN RIVER BASIN				
Brown	Powhattan PWS	VOC	elevator	Monitoring.
Cloud	Concordia PWS Well #17	1,2 dichloroethane	unknown	Well out of service. Potential sources located.
Douglas	FMC	arsenic	pond	Recovery. Monitoring ongoing by PRP.
Douglas	Eudora PWS Well #2	benzene	unknown	City notified to discontinue use of well for consumption. Source to be determined.
Douglas	CFCA (Farmland)	chromium	lagoons	BWM reviewing closure plan for lagoons.
Douglas	Callery Chemicals	boron	past manfctr.	Monitoring complete by KDHE. Low levels of boron found.
Douglas	Sunflower Army Ammunition Plant	nitroguanidine	SAAP	Monitoring.
Jefferson	Perry PWS Wells 1&2	CCL4	unknown	Investigation needed. Both wells exceeded KAL.
Jewell	Randall PWS Well 2	CC14	unknown	Investigation needed. Two samples exceeded KAL.
Johnson	Deopke Disposal	leachate	landfill	EPA Superfund Site with RI/FS.
Johnson	AT&SE Holliday	petroleum	spill	No apparent follow up.
Johnson	Chemical Commodities	chemicals solvents	bulk storage	EPA enforcement action.
Johnson	K.U. Landfill (Sunflower)	dioxane	landfill	KDHE monitoring. Cover and slurry well system being designed.
Johnson	Genral Motors Corp.	heavy metals	lagoon	RCRA site lead.
Johnson	Kuhlman Diecasting	metals	lagoons	EPA review of proposed groundwater assessment plan.
Johnson	Cy Frazier	petroleum	PST leak	Pumping to waste. Removed soil and basement contaminated by fuel.
Johnson	Nat'l. Distillers & Chemical Corp.	acids	lagoons	EPA lead on site investigation.
Johnson	Hudson Oil	petroleum	residual spills	Tanks and lines tested. Planning investigation.
Johnson	Olathe City Landfill	heavy metals	landfill	PRP agreed to prepare cleanup plan.
Johnson	Victorian Marble	epoxy resin	storage	Owner advised to dispose of resin storage in landfill.
Johnson	Mark IV	solvents	drums	Cleanup completed by KDHE.
Johnson	Total Petroleum	petroleum	line leak	Recovery trench and monitoring wells installed. Project nearly complete.
Leavenworth	General Motors	VOC	unknown	Cleanup in process of negotiation.
Leavenworth	Brummett Oil	petroleum	PST leak	Recovery trench used. Second potential source found at site.
Leavenworth	G&R Construction	lead	barrel storage	No recent activity, state lead.
Marshall	Axtell PWS #2	1,2-dichloroethane	unknown	City is considering the construction of an additional well.
Pottawatomie	St. Mary's PWS Well #5	CCL4	unknown	Investigation needed. Well in service, periodic resampling by KDHE.
Republic	J-R Grain Co.	herbicides	uncertain	Dewatering well contained low level herbicides 2/10/86. Owner advised not to consume well water.
Republic	Fina Truck Stop	gasoline	pipe line	27,000 gasoline lost 3/82. No recovery or monitoring.
Riley	Kans State Univ.	radioactive mat'ls	burial storage	Monitoring/sampling RCRA closure plan.

County	Name	Contaminant	Source	Status
Riley	Oberhelmann Complaint	petroleum	PST Leak	Limited attempts at cleanup (e.g. pump to waste).
Riley	Deines Complaint	gasoline	PST Leak	Pumped to waste. Continued KDHE monitoring.
Riley	Riley County Landfill	benzene	landfill	Survey and monitoring by KDHE ongoing.
Riley	Riley Co. Asphalt Plant	diesel fuel	holding ponds	County reported (1986) fuel had to be removed from holding pond.
Shawnee	Industrial Chrome	chrome	industrial	Extent of pollution to be determined. Contaminated soil removed and disposed.
Shawnee	Hydro Flex Corp.	chrome	buried tanks	Monitoring wells, sampled. Pre NPL investigation 1986.
Shawnee	AT&SF	phenois,metals	sludge	Monitoring.
Shawnee	Shawnee County Landfill	benzene	landfill	Monitoring.
Wabaunsee	Co-op Station Alta Vista	petroleum	PST Leak	Recovery trenches dug. Tank replaced.
Wyandotte	Textilana Lease	xylene, toluene	ponds	Presently not monitored. Investigation needed.
Wyandotte	Thompson-Hayward	phenols	lagoons	PRP monitoring included in remedial action. Cleanup continuing.
Wyandotte	PBI-Gordon	chemicals	storage	PRP cleanup. No further action warranted at this time.
Wyandotte	Assoc. Wholesale Groceries, Inc.	petroleum	PST Leak	Recovery well in operation. Air stripping of volatiles.
Wyandotte	Arco Petroleum	petroleum products	refinery wastes	Pre NPL investigation 1986.
Wyandotte	S&G Metals 2nd & Riverview	chloride	slag piles	1980 high level arsenic and lead. 1981 well sampled at 1200 mg/1 Cl.
Wyandotte	National Guard Armory	solvents	dump site	Site covered by parking lot.
Wyandotte	Homer St.	Leachate	drum site	PRP cleanup underway under KDHE order.
Wyandotte	Coral Refinery	heavy metals,acids	sludge pits	Pre NPL investigation 1986.
Wyandotte	King's Disposal	unknown	barrels	Barrels removed.
Wyandotte	Macks	flammable liquids	drums	Cleanup completed by KDHE.
Wyandotte	BPU	unknown	pipe	Site excavated, product recovered, source repaired. PRP monitoring wells drilled 9/84.
Wyandotte	Nova Products	pesticides	barrels	Barrels removed. Site for delisting.

APPENDIX B

Detailed Financial Information: Department of Health and Environment and Corporation Commission

Fiscal Years 1987 through 1989

	STATE	1987 FEDERAL	TOTAL
HEALTH AND ENVIRONMENT			
BUREAU OF WATER QUALITY:			
--SURFACE WATER POLLUTION CONTROL:	$391,438	$2,002,551	$2,393,989
--PUBLIC DRINKING WATER:	271,494	755,258	1,026,752
TOTAL WATER QUALITY:	662,932	2,757,809	3,420,741
ENV. REMEDIATION	936,183	514,496	1,450,679
LABORATORY SERVICES	681,413	0	681,413
WASTE MANAGEMENT	461,965	595,130	1,057,095
MINED LAND	--	--	--
AGENCY SUBTOTAL:	**$2,742,493**	**$3,867,435**	**$6,609,928**
CORPORATION COMMISSION			
MINED LAND DIVISION			
--ADMIN./ENFORCEMENT	310,049	134,909	444,958
--ABANDONED MINED LAND	0	983,852	983,852
TOTAL MINED LAND	310,049	1,118,761	1,428,810
CONSERVATION	3,498,999	179,301	3,678,300
ADMINISTRATION	757,897	13,262	771,159
AGENCY SUBTOTAL:	**$4,566,945**	**$1,311,324**	**$5,878,269**
TOTAL EXPENDITURES:	**$7,309,438**	**$5,178,759**	**$12,488,197**

	1988 STATE	FEDERAL	TOTAL
HEALTH AND ENVIRONMENT			
BUREAU OF WATER QUALITY:			
--SURFACE WATER POLLUTION CONTROL:	$455,154	$2,220,601	$2,675,754
--PUBLIC DRINKING WATER:	308,309	776,840	1,085,149
TOTAL WATER QUALITY:	763,463	2,997,441	3,760,904
ENV. REMEDIATION	1,352,124	771,389	2,123,513
LABORATORY SERVICES	706,626	0	706,626
WASTE MANAGEMENT	432,073	786,776	1,218,848
MINED LAND	--	--	--
AGENCY SUBTOTAL:	**$3,254,286**	**$4,555,605**	**$7,809,890**
CORPORATION COMMISSION			
MINED LAND DIVISION			
--ADMIN./ENFORCEMENT	509,604	180,625	690,229
--ABANDONED MINED LAND	0	2,854,540	2,854,540
TOTAL MINED LAND	509,604	3,035,165	3,544,769
CONSERVATION	2,774,566	442,600	3,217,166
ADMINISTRATION	488,753	6,556	495,309
AGENCY SUBTOTAL:	**$3,772,923**	**$3,484,321**	**$7,257,244**
TOTAL EXPENDITURES:	**$7,027,209**	**$8,039,926**	**$15,067,134**

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	STATE	1989 FEDERAL	TOTAL
HEALTH AND ENVIRONMENT			
BUREAU OF WATER QUALITY:			
--SURFACE WATER POLLUTION CONTROL:	$454,753	$2,597,071	$3,051,824
--PUBLIC DRINKING WATER:	273,938	823,582	1,097,520
TOTAL WATER QUALITY:	728,691	3,420,653	4,149,344
ENV. REMEDIATION	2,801,859	1,441,700	4,243,559
LABORATORY SERVICES	748,328	0	748,328
WASTE MANAGEMENT	527,232	972,942	1,500,174
MINED LAND	561,968	3,131,813	3,693,781
AGENCY SUBTOTAL:	**$5,368,078**	**$8,967,108**	**$14,335,186**
CORPORATION COMMISSION			
MINED LAND DIVISION			
--ADMIN./ENFORCEMENT	--	--	--
--ABANDONED MINED LAND	--	--	--
TOTAL MINED LAND	0	0	0
CONSERVATION	3,015,594	314,000	3,329,594
ADMINISTRATION	440,064	20,700	460,764
AGENCY SUBTOTAL:	**$3,455,658**	**$334,700**	**$3,790,358**
TOTAL EXPENDITURES:	**$8,823,736**	**$9,301,808**	**$18,125,544**

	% CHANGE 1987-1989 STATE	FEDERAL	TOTAL
HEALTH AND ENVIRONMENT			
BUREAU OF WATER QUALITY:			
--SURFACE WATER POLLUTION CONTROL:			
--PUBLIC DRINKING WATER:			
TOTAL WATER QUALITY:	9.92%	24.04%	21.30%
ENV. REMEDIATION	199.29%	180.22%	192.52%
LABORATORY SERVICES	9.82%		
WASTE MANAGEMENT	14.13%	63.48%	41.91%
MINED LAND			
AGENCY SUBTOTAL:	**95.74%**	**131.86%**	**116.87%**
CORPORATION COMMISSION			
MINED LAND DIVISION			
--ADMIN./ENFORCEMENT			
--ABANDONED MINED LAND			
TOTAL MINED LAND	-100.00%	-100.00%	-100.00%
CONSERVATION	-13.82%	75.12%	-9.48%
ADMINISTRATION	-41.94%	56.09%	-40.25%
AGENCY SUBTOTAL:	**-24.33%**	**-74.48%**	**-35.52%**
TOTAL EXPENDITURES:	**21%**	**80%**	**45%**

APPENDIX C

Agency Responses

On July 25, 1988, copies of the draft audit report were sent to the Department of Health and Environment, the Kansas Corporation Commission, the Board of Agriculture, the Kansas Water Office, and the Conservation Commission, for review and comment. The Conservation Commission indicated that it had no written response. The written responses from the remaining four agencies are included in this appendix.

In addition to its formal response, the Water Office made a number of suggested changes on a copy of the draft report. Because of its length, the marked-up draft was not included in this appendix, but is available for review at the Division's offices.

1/28

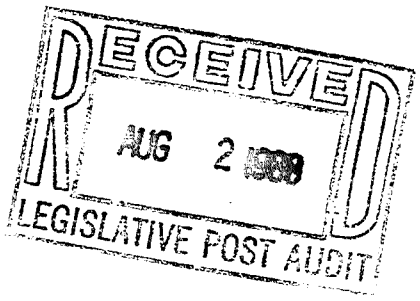
STATE OF KANSAS

DEPARTMENT OF HEALTH AND ENVIRONMENT
Forbes Field
Topeka, Kansas 66620-0001
Phone (913) 296-1500

Mike Hayden, *Governor*

Stanley C. Grant, Ph.D., *Secretary*
Gary K. Hulett, Ph.D., *Under Secretary*

August 2, 1988



Meredith Williams
Legislative Post Auditor
109 West 9th, Suite 301
Mills Building
Topeka, Kansas 66612-1285

Dear Mr. Williams,

I am writing in regard to the draft audit report, State Agencies' Handling of Water Contamination and Pollution Problems in Kansas prepared by your staff. We have reviewed the report in detail and have a number of comments. In addition there are a few technical and scientific corrections and clarifications that you may wish to consider in preparing the final report for the Post Audit Committee.

COMMENTS:

The report appears to be an accurate reflection of the data and records that the audit team reviewed. The department is in general agreement with the Recommendations of the report which in fact are similar to the position advocated by this agency during the recent debate over a proposed Environmental Response Act in the 1988 legislative session. However the case studies of the audit were limited to seven sites which are not representative of the entire range of contamination sites within the state.

First, none of the sites in the audit is one in which the Potentially Responsible Parties are actively involved in the site investigation and cleanup. It should be noted there are a number of such sites across the state including Boeing Military Aircraft, Cessna, Strother Field and NIES, in which the PRP has taken an active role in the response to contamination. The primary reason for the current approach used by the department in addressing contaminated sites is that the department attempts to involve the PRP's both financially and technically in the cleanup process. Such PRP involvement limits state expenditures where a responsible party is identified and makes most efficient use of the limited personnel available for performing the cleanups. This approach also limits the necessity for prolonged litigation and other legal action.

1/29

Second, there is no apparent recognition given in the report to the fact that there are 85 sites at which corrective actions currently are underway. Thus, to the uninitiated reader, the report implies that there is little or no activity at any of the sites on the Contaminated Sites List.

Third, the audit did not include any sites on the National Priority List that have progressed through the Federal Superfund process. The case study on the Hydro-Flex site only reflects the pre-listing investigations. Several NPL sites in the state, notably the Galena subsite in Cherokee County and the Strother Field site, are further along in the process.

Fourth, there is no discussion in the report that groundwater cleanups typically require many years, even decades to complete. One reason for the extensive investigations that are conducted at a contamination site, is that the design and implementation of these cleanups are dependent upon the data obtained in the investigation. In view of the environmental impacts and the considerable costs associated with contaminated site cleanups, it is imperative to assure that sufficient information is available to make the best decisions possible regarding corrective action. The need for exhaustive and detailed investigation is often misunderstood as evidenced by the remarks of a number of individuals cited by the auditors. This is complicated by the need to document all PRPs and their involvement at a site in case a cost-recovery action is necessary for state or federal cleanup costs.

CLARIFICATIONS AND CORRECTIONS:

Page One:

In the last sentence of the second paragraph, River Basin Advisory Committees are identified as a separate entity. These groups are advisory committees to the Kansas Water Authority and should be included as a part of that body.

Throughout the report the term "contaminated" is used in lieu of the phrase "exceeds the standards for a public water supply." Sometimes, particularly with farmstead wells, poor quality water may exceed these standards as the result of natural conditions. In these cases the term "contaminated" may be misleading. Public water supply standards are established using very conservative Federal and state criteria. Since standards do not exist for private well water quality, the public water supply standards are use for comparison and general guidance.

Page Four:

In the fourth paragraph, the regulation of private water wells is discussed. It should be noted that there is a requirement that any well drilled in the state must be recorded and a report filed with the state. However, compliance with this requirement is sporadic.

Page Five:

In the last sentence of the second paragraph, the implication is that the number of contamination sites is growing. While there may well be a number of contamination incidents each year, a significant number of the new discoveries are due to improved lab analytical detection limits and increased sampling and investigation activities. The improvement in detection limits allows the identification of contaminants at levels that were not available in past years. Therefore it may be more accurate to state that we are becoming more aware of instances of groundwater and surface water contamination across the state involving pesticides and hazardous substances.

Page Seven:

First paragraph: another reason for the higher occurrence of contamination in the South Central, North Central and Northeast districts is the abundance of readily available shallow groundwater in these areas.

Page Eight:

In the third paragraph, the statement that 10% of the public water supplies have detectable levels of pesticides is misleading. The first set of wells that were tested in this study were those with a known pesticide problem or those known to be most vulnerable to pesticide contamination. A statewide extrapolation from this first round may be inaccurate. The agency estimate is 5% or less.

The headline concerning farmwells refers to contamination. As discussed above, there are some areas of naturally occurring water quality problems in the state. The fact that the water contains a level higher than the standard means that long term consumption is not advised.

Page Fourteen:

The last sentence states that public water supplies are monitored for biological contamination. Since extensive chemical measurements are also made, either the word "biological" should be removed or "and chemical" should be added.

Page Fifteen:

The flow chart on the regulatory system contains no references to the participation of PRPs in the cleanup process. Although the focus of this report is state agencies' activities, as discussed above, this is an important part of this process.

The last paragraph implies that the KAL/KNL have the weight of regulation or statute. These levels were developed as guidelines for public drinking water supplies and contamination response and do not presently have the status of regulation or statute.

Page Seventeen:

Brewster Case Study- The department has submitted workplan and draft contracts related to Brewster to the Region VII USEPA office for approval as eligible for Leaking Underground Storage Tank funds. When approval is received, the department will proceed with procurement and the initiation of this project.

Page Twenty-one:

Western Petrochemical Study- The department is currently negotiating with a PRP on cleanup actions for the site. The department recently completed a contract for investigation and design of a remedial action at this site. This contract was performed using the state Hazardous Waste Cleanup Fund. It is hoped that the PRP will proceed with the necessary cleanup.

Hydro-Flex Case Study- In the second paragraph the units for the metals should be parts per million rather than parts per billion. This site has been recently proposed for listing on the National Priority List in the Seventh Update. In addition, the department recently completed a survey of area wells and found no indication of contamination.

Page Twenty-two:

Riley County Sanitary Landfill Case Study- In the first full paragraph on this page, a water sample was described as "discolored, full of sediment, and with an unpleasant smell". This type of problem is characteristic of an iron/manganese problem and poor well construction rather than a contamination by organic compounds. This paragraph may inadvertently mislead a reader on this point.

Dinkel Case Study- In the third paragraph in the case study, contamination with bacteria and nitrate are discussed. This type of contamination is not associated with oil recovery operations. Again the wording of the paragraph may be misleading to a reader unaware of this fact.

Page Twenty-eight:

Paragraph four discusses the impact of recently adopted statutes concerning site access. This statute was adopted in the 1988 legislative session. Since the statute became effective on July 1, 1988, the department does not have sufficient experience with the use of this statute to make a definitive statement. However, some problems with site access for PRPs and contractors is anticipated.

CONCLUSION:

As stated at the beginning of this letter, the department is in general agreement with the conclusions of the report. Our comments are intended to enhance the clarity of the report and to avoid potential misunderstandings by readers who will not have the benefit of the voluminous quantity of background information reviewed and analyzed by the audit team. An important basic policy question is raised by the conclusions and recommendations. That question is "What should the role of the State of Kansas and private parties be in environmental cleanups?". The resolution of this question and others raised by the report is important to the improvement of this agency's programs.

I wish to compliment your staff on their conduct during this audit. Each member of the audit team (Ellyn Rullestad, Rick Riggs and Tom Vittitow) exhibited very professional and courteous behavior during their dealings with the KDHE staff. Please contact James A. Power, Jr., Director of the Division of Environment if you have any questions concerning our comments, corrections and clarifications.

Sincerely,

Stanley C. Grant, Ph.D.
Secretary

SCG:cas

C - James A. Power

State of Kansas

MIKE HAYDEN GOVERNOR
KEITH R. HENLEY CHAIRMAN
RICH KOWALEWSKI COMMISSIONER
MARGALEE WRIGHT COMMISSIONER
JUDITH McCONNELL EXECUTIVE DIRECTOR
FRANK A. CARO, JR. GENERAL COUNSEL

Kansas Corporation Commission

Fourth Floor, Docking State Office Bldg.
Ph. 913-296-3355
TOPEKA, KANSAS 66612-1571

August 2, 1988

Meredith Williams
Legislative Division of Post Audit
109 West Ninth, Suite 301
Mills Building
Topeka, Kansas 66612-1285

Dear Mr. Williams: Meredith

Upon review of your draft performance audit report, I noted only a couple of areas which I believe require further clarification.

In paragraph two, page 1 of the report, I believe that the Commission's role in water contamination and pollution problems is more accurately stated as follows: The Corporation Commission regulates the drilling, completion, production, and abandonment of oil and gas wells as well as the protection of fresh and usable waters from pollution resulting from oil and gas activities.

The second aspect of the report that requires clarification is at page 12 in the discussion of Commission expenditures for water protection-related activities. The comparison presented in this discussion is somewhat misleading since the Commission's Conservation and Mined Land Division's are funded from different federal sources. Federal funding for the Commission's Class II Underground Injection Control program comes through the Environmental Protection Agency. This funding is granted independently from the Mined Land program grants which are generated through the Office of Surface Mining.

I appreciate this opportunity to comment on your draft report. If I may be of any further assistance, please do not hesitate to contact me.

Sincerely,

Keith R. Henley,
Chairman

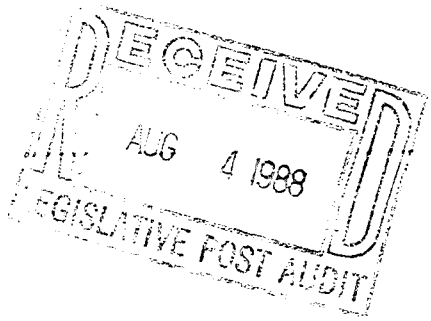
KRH:ps

STATE OF KANSAS

STATE BOARD OF AGRICULTURE

SAM BROWNBACK, Secretary

August 2, 1988



Mr. Meredith Williams, Legislative Post Auditor
Lesislative Division of Post Audit
109 West 9th, Suite 301
Mills Building
Topeka, Kansas 66612-1285

Dear Mr. Williams,

I appreciate the opportunity provided for review of the draft performance audit report, State Agencies' Handling of Water Contamination and Pollution Problems in Kansas. This agency has no formal comments which it deems necessary to make.

One item requiring editorial correction was noted, however. Page 13, paragraph 2, line 5 includes the following sentence: "This act regulates the application of pesticide through irrigation systems." It is recommended that the words and fertilizer be included after the word pesticide in that sentence. The Chemigation statute regulates both pesticide and fertilizer use.

Yours truly,

Sam Brownback

Sam Brownback, Secretary
Kansas State Board of Agriculture

109 S.W. 9th Topeka, Kan. 66612-1280 An Equal Opportunity Employer

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STATE OF KANSAS

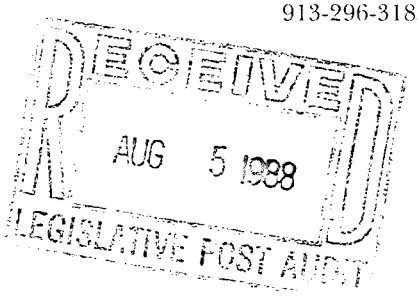
Mike Hayden, Governor

KANSAS WATER OFFICE
Joseph F. Harkins
Director

Suite 200
109 SW Ninth
Topeka, Kansas 66612-1215

913-296-3185

August 4, 1988



Mr. Meredith Williams
Legislative Post Auditor
Legislative Division of Post Audit
Suite 301, 109 SW 9th Street
Topeka, KS 66612-1285

Dear Mr. Williams:

Two members of my staff reviewed the draft audit report on "State Agencies Handling of Water Contamination and Pollution Problems in Kansas." They have made a variety of comments on the report, attached to this letter, suggesting areas for clarification.

There are just a few points I would like to stress. First, the Kansas Department of Health and Environment has made significant progress in recent years by: a) creating a Bureau of Remediation; b) developing and maintaining a registry of pollution sites; c) initiating efforts, with some success, to obtain state support for clean-up; and d) making significant progress on clean-up efforts with responsible party funding. I believe the report needs to put these developments in temporal perspective to accurately reflect the state's recent initiatives to deal with the problem.

The issue of funding is well made. However, the financial data included in the report is incomplete and difficult to interpret. For example, the federal funds available to the Department of Health and Environment are all categorical. Thus, most cannot be used for remediation. Second, the data do not cover enough years to expose trends. The one I am particularly concerned about is the reduced percentage of state support as federal categorical funds increased. This limits administrative flexibility to the point of paralysis.

I contratulate you on the tone of your report. It reflects a high degree of objectivity.

Sincerely,

Joseph F. Harkins
Director

JFH:dk
Enclosure

1988 Summary of Bureau of Environmental Remediation Sites in Kansas

January 1989

Kansas Department of Health and Environment
Building 740, Forbes Field, Topeka, Kansas 66620

G. O.
Attach. # 2
1/20/89

Mike Hayden, Governor
Stanley C. Grant, Ph.D., Secretary
Gary Hulett, Ph.D., Under Secretary
James Power, Director, Division of Environment
Ron Hammerschmidt, Ph.D., Manager,
Bureau of Environmental Remediation
Julia M. Greene and Carla H. Fromm, editors

We would like to acknowledge the assistance of the following KDHE staff members:

Steve Brown -- for his dedicated effort in writing the computer program for the Identified Sites List,

Paula Schumacher -- for producing the graphs, and

Shelly Hawks and Ida Mae Hulsupple -- for contributing to the production of the final report.

TABLE OF CONTENTS

OVERVIEW OF BUREAU OF ENVIRONMENTAL REMEDIATION ACTIVITIES

SUMMARY

This report provides a basic overview of the activities conducted by the Bureau of Environmental Remediation (BER), Kansas Department of Health and Environment (KDHE). A brief description of the work conducted by BER is provided and followed by a summary of sites, presented as graphs and tables, which BER has identified as potentially contaminated or at which contamination is confirmed. The purpose of this report is to generate a fundamental understanding of the nature of contamination where it occurs in Kansas, and the role of BER in assuring that known contamination which poses a human health or environmental threat is addressed.

INTRODUCTION

The Bureau of Environmental Remediation was established in 1986. BER coordinates the Division of Environment's investigatory and remedial activities at sites in Kansas where contamination is suspected or has been detected, and provides a single point of contact to respond to questions relating to these sites.

BER also organizes and conducts state activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (P.L. 96-510), as amended by the Superfund Reauthorization Act of 1986 (SARA) (P.L. 99-499). The federal program established by these laws, referred to as Superfund, is administered by the United States Environmental Protection Agency (EPA) and provides money for the investigation and clean-up of sites meeting the program's requirements.

Within the bureau there are two sections, Technical Services and Remedial, which are responsible for performing different functions. A brief description of their respective functions follows.

TECHNICAL SERVICES SECTION

The Technical Services Section conducts pre-remedial investigations of sites potentially contaminated by hazardous substances. The purpose of these investigations, known as pre-NPL investigations, is to determine if a site qualifies for placement on the National Priorities List (NPL). The NPL consists of sites at which contamination poses an immediate threat to public health and the environment. Remedial activity (cleanup or containment of contaminants) at sites on the NPL may be funded by federal money under Superfund.

KDHE nominates sites in Kansas to be investigated under the pre-NPL program based on the following criteria: (1) The suspected contaminant at the site must be a hazardous substance as defined in CERCLA. Salt contamination, for instance, would not qualify for a pre-NPL investigation; (2) Sites which are regulated under other federal programs do not qualify. For example, sites associated with the oil and gas industry, hazardous waste facilities, and pesticide contamination resulting from agricultural practices all are regulated under other programs; and (3) Priority is given to sites at which contamination threatens a public drinking water supply, or which are near a population center.

The EPA provides funding for pre-NPL investigations conducted by states. The EPA and KDHE enter into annual cooperative agreements describing the work to be completed and the amount of money allocated for each site selected for pre-NPL investigation. Cooperative agreements are modified each year and reflect progress at sites investigated under previous agreements, and the selection of new sites to be investigated.

The main objective of a pre-NPL investigation is to determine the severity of the human health and/or environmental threat at a site. Technical Services staff conduct document research and field investigations in order to generate a score which reflects factors which are specific to each site. The EPA reviews the score and an accompanying report, then either recommends the site for placement on the NPL or refers the site to the State to conduct appropriate action. Both Superfund and State funded cleanups are directed by BER's Remedial Section.

The pre-NPL investigation consists of distinct phases. A preliminary assessment (PA) is completed first. Based on the results of the PA, a site inspection (SI) may be required. The following table summarizes the number of investigations which have been completed under three cooperative agreements between the EPA and BER. The completion date is the date on which all investigations under a single agreement must be complete.

Completion Date	No. of SIs	No. of PAs
March 31, 1987	11	0
September 30 1988	14	27
September 30. **1989**	20	14

In the first series of investigations, industrial sites and refineries were emphasized and three were eventually placed on the NPL. During 1988 public water supplies were given priority, and this emphasis will continue in 1989. EPA's recommendations for sites investigated in 1988 are not yet available.

REMEDIAL SECTION

Investigation of Suspected Contamination

The Remedial Section conducts investigations to identify contaminated sites using State funds, and oversees and approves remedial activities conducted by responsible parties at contaminated sites throughout Kansas. Sites where contamination is suspected may be brought to the attention of the Bureau through several common routes, including: private party complaints; information obtained from land use records; referral by other Federal or State agencies or bureaus; preliminary field investigations conducted by the Remedial Section; or self reporting when a person or business knows that a release has occurred. The Remedial Section investigates 200 to 250 cases of suspected contamination annually.

There is not a "typical" site description which characterizes the problems addressed by the Remedial Section. However, suspected or documented contamination frequently involves releases from the inappropriate storage or disposal of hazardous substances which results in environmental contamination. An investigation is conducted at sites where contamination is suspected. The investigation can consist of up to four phases which vary in extent from site to site.

A site investigation is conducted first to determine the degree and extent of contamination. Contamination which poses a threat to human health or the environment undergoes a more thorough remedial investigation, during which remedial alternatives are evaluated. The evaluation process may include additional field investigations, and possibly pilot removal or disposal projects. This information is used to select an appropriate program of remedial activity for the site.

Once the selected remedial program has been designed, it must be approved by BER and finally implemented by the responsible party. Remediation may involve clean-up (e.g. removal or on-site detoxification) or containment (e.g. capping) of the contaminant. Remediation at sites is frequently followed up by long term monitoring to measure the effectiveness of the remedial activity.

The Bureau encourages the party responsible for contamination to work on a cooperative basis with the Bureau towards remediation. A Consent Order may be negotiated to formalize the joint agreement regarding remedial action and monitoring. However, when a responsible party can not be identified or can not bear the financial burden of clean-up, the Bureau can administer the remediation and seek federal funding through Superfund, or state funding from the State Hazardous Waste Cleanup Fund or Environmental Response Fund.

Spill Response and Leaking Underground Storage Tank Programs

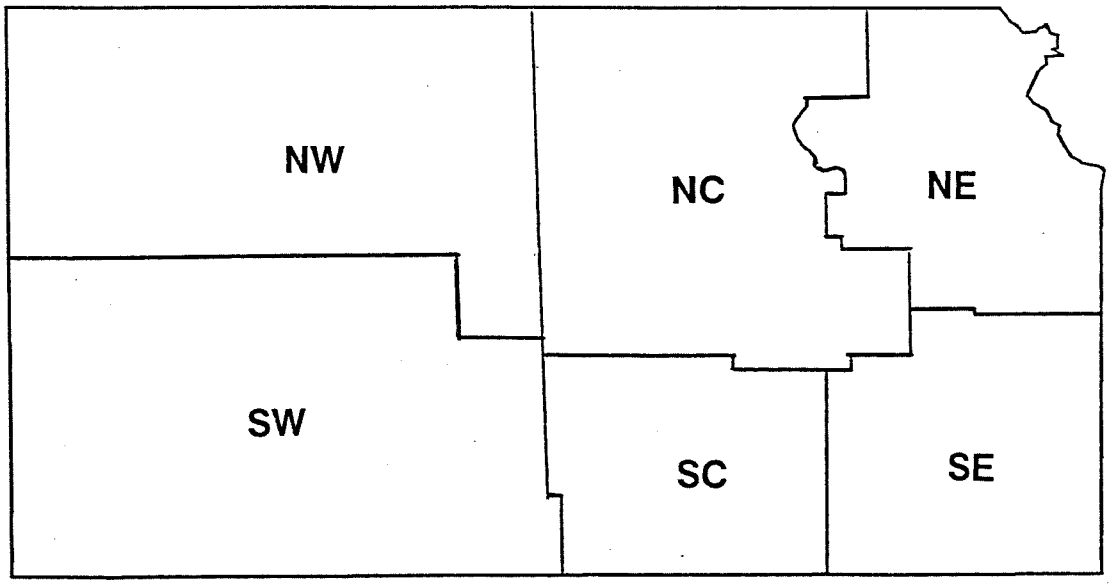
In addition to confirming suspected contamination and directing subsequent remedial activities, the Remedial Section provides immediate response to reports of substances being released into the environment through its Spill Response and Leaking Underground Storage Tank (LUST) programs.

According to Kansas law, the unpermitted discharge or accidental spill of any substance which may be detrimental to soil or water quality must be reported to KDHE by the responsible party. The state funded Spill Response program was developed to respond to these reports, which vary considerably in the quantity and type of substance which has been discharged or spilled. Between 800 and 1,000 "spills" are handled annually under the Spill Response Program. The specific release of refined petroleum products from underground storage tanks is administered by BER through the Leaking Underground Storage Tank (LUST) Program. Remediation of LUST sites is eligible for federal funding.

The primary objective of both of these programs is to insure that immediate remediation measures are implemented when spills or petroleum related leaks or odors are reported. BER field staff evaluate the situation on-site and determine what action is necessary to alleviate immediate health or safety threats, such as identifying and correcting the source of the release or preventing fire hazards. Field staff then advise the responsible party what further remedial action needs to be taken to prevent the recurrence of a spill or leak. The LUST program receives federal money for remediation from the LUST Trust Fund in the case that the responsible party can not be identified or is insolvent. After an immediate remedy to the situation is provided, a more thorough investigation may be conducted by the responsible party or the Remedial Section if there is reason to suspect that the release may have caused contamination which was not addressed by the immediate response to the problem.

Professional and technical staff assigned to six district offices across Kansas respond to all reports of spills or leaking underground storage tanks in their district. In addition, these BER staff members assist in planning and conducting investigations, and in the oversight of remedial activities.

1988 Summary of Bureau of Environmental Remediation Sites in Kansas



SUMMARY OF BUREAU OF ENVIRONMENTAL REMEDIATION SITES

Explanation of Data Presentation

Potential sites are identified through the activities of BER, as well as by other KDHE bureaus or agencies, or individuals. Upon completion of an initial investigation, a fact sheet is written on each site describing the origin of the problem, the stage of investigation or cleanup, and the nature of the suspected contamination. Periodically the fact sheets are updated to reflect changes in site status and new information gathered during investigations.

The bureau recently updated fact sheets for existing sites. These fact sheets were used to generate a list of sites for which the bureau has some responsibility. This list is referred to as the Identified Sites List, or ISL. (A similar list generated in the past was referred to as the Contaminated Sites List.) There currently are 489 sites on the ISL. The following table includes the number of non-LUST and LUST sites, as well as the total number of sites, identified in each district and the state as a whole.

	SW	SC	SE	NE	NC	NW	STATE
Non-LUST	31	75	33	63	44	81	327
LUST	9	32	29	56	18	18	162
Total	40	107	62	119	62	99	489

Several sites at which the BER has conducted activities have been transferred to the authority of the Kansas Corporation Commission (KCC). These sites have been included on the Identified Sites List; however, the available fact sheets were incomplete due to a lack of information regarding KCC activities at the sites. A tentative list of names of KCC sites and the district in which they are located is provided at the back of this report. The following table indicates the number of KCC sites in each district.

SW	SC	SE	NE	NC	NW	STATE
6	6	4	0	5	45	66

The site list was sorted by KDHE district office boundaries, then by Non-LUST and LUST sites. Leaking underground storage tank sites are listed separately since they are covered under a specific program within the bureau, and represent a distinct subset of sites. Non-LUST sites then were sorted by contaminant,

contaminated medium, source of the contaminant, and both non-LUST and LUST sites were sorted by status.

This information is presented in graphs for each district and the state as a whole. There may be more than one contaminant, contaminated medium, and source for a site. Therefore, this data is presented as the per cent of the total number of sites for which a contaminant, medium, or source was indicated.

Status refers to the stage of activity which has been completed, is underway, or is needed at a site. If any stage had been completed at a site, that is the stage which is recorded on the graph. If no stage had been completed, the stage currently underway was recorded. If no stage is underway, the activity which is needed is indicated. Data for status is presented as number of sites per stage of activity rather than as per cents.

It is not correct to conclude that each site on this list is "contaminated." Each site is considered on an individual basis before any conclusion is made regarding the relative significance of that site. Some sites have been identified as potentially contaminated and are currently under investigation. Other sites have been cleaned up and the problem is either being monitored to insure that the remediation was effective, or the problem is considered resolved. In other cases the problem presented no human health or environmental hazard, and no action was necessary.

Furthermore, the bureau is in the process of developing an efficient system for maintaining information on each site. The recent compilation of data for this report revealed that important information is lacking for many sites. Therefore, the information available in this report is incomplete. The development of a tracking system will allow us to provide the public with accurate and complete information on a more timely basis.

An explanation of the abbreviations used in the graphs and the list is provided on the following pages, and precedes the data summaries for the state and each district. In addition to the graphs, the list of sites which have been identified by the bureau within each district is provided. The graphs are organized by district. The ISL for each district follows the graphs.

LIST OF ABBREVIATIONS USED FOR GRAPHS AND TABLES

STATUS OF SITES AND STATUS OF LUST SITES:

INVESTIG	-- investigation
REM DESN	-- remedial design
CLEANUP	-- cleanup
MONITORING	-- monitoring (post cleanup)
NO ACT NEC	-- no action deemed necessary
RESOLVED	-- resolved
MISSING	-- status of site is unknown at this time
C	-- completed
U	-- underway
N	-- needed

CONTAMINANT:

ACID	-- acids, acid extractable compounds
BASE NTRL or BN	-- base neutral compounds
PEST	-- pesticides
VOC	-- volatile organic compounds
HM	-- heavy metals
INOR	-- inorganic compounds
OIL	-- crude oil
OTH	-- other
MISSING	-- contaminant unknown at this time

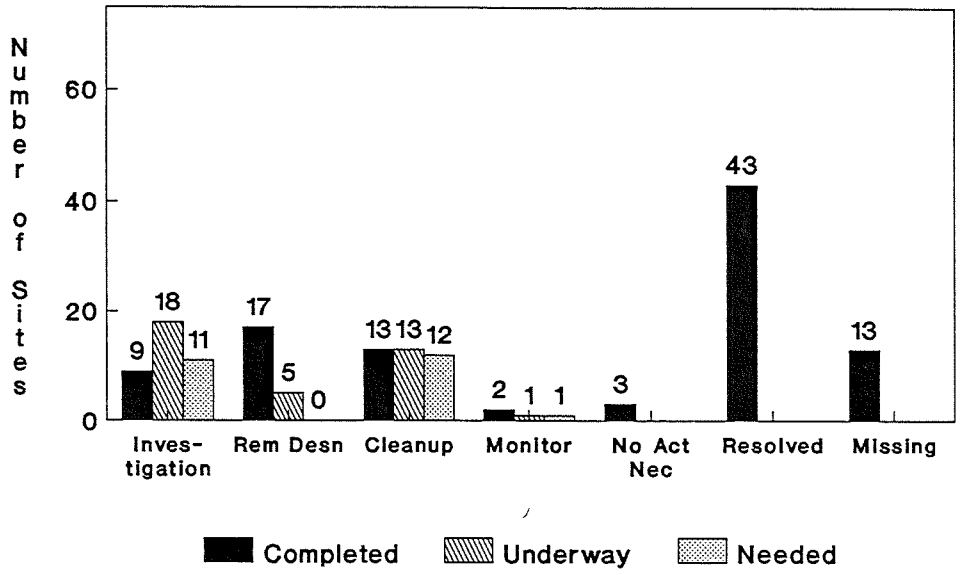
CONTAMINATED MEDIA SUMMARY:

GW	-- groundwater
SW	-- surface water
PWS	-- public water supply
SOIL	-- soil
INVESTIGATING	-- investigation underway; contaminated media unknown at this time
MISSING	-- data on contaminated media missing

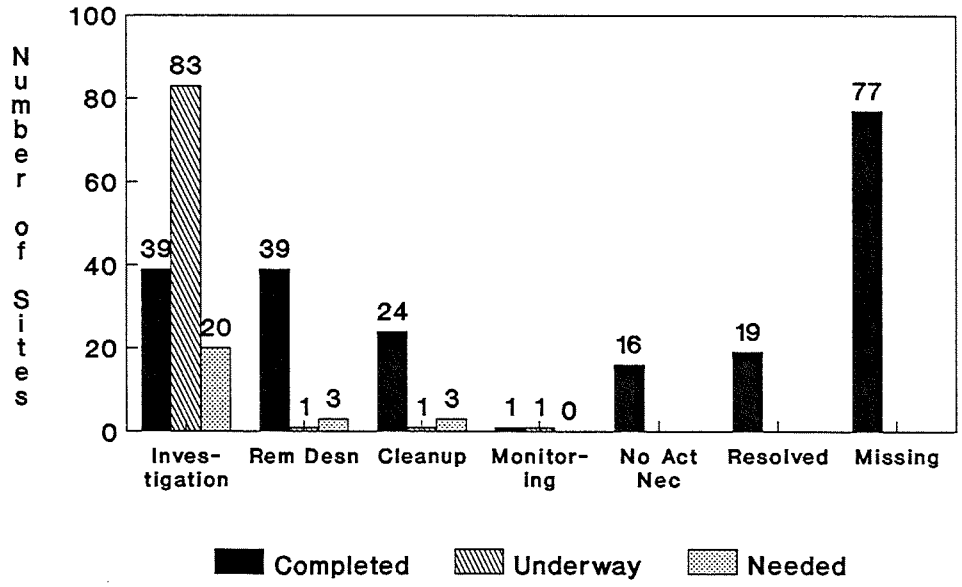
SOURCE:

SPILL	-- spill
PIPELN	-- pipeline
LAGOON	-- lagoon or impoundment
SEPTIC	-- septic tank
DMPING	-- dumping or abandoned drums
ABAND	-- abandoned facility
BRINE	-- brine from oil production or salt mining
LANDFL/LNDFL	-- landfill
OTHER	-- other
INVESTIGATING	-- investigation underway; source unknown
MISSING	-- data on source missing

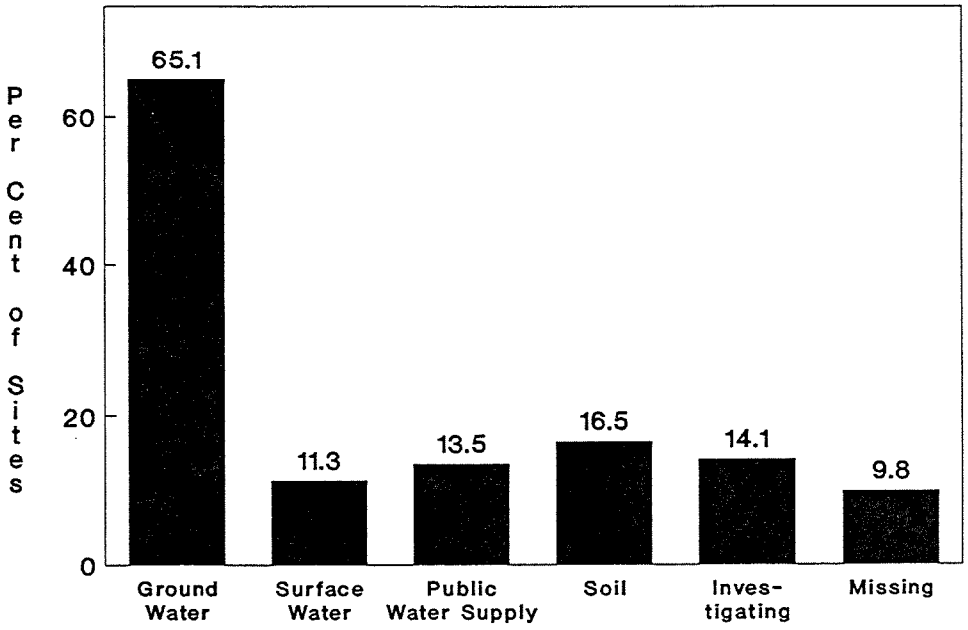
Statewide Status Summary
LUST



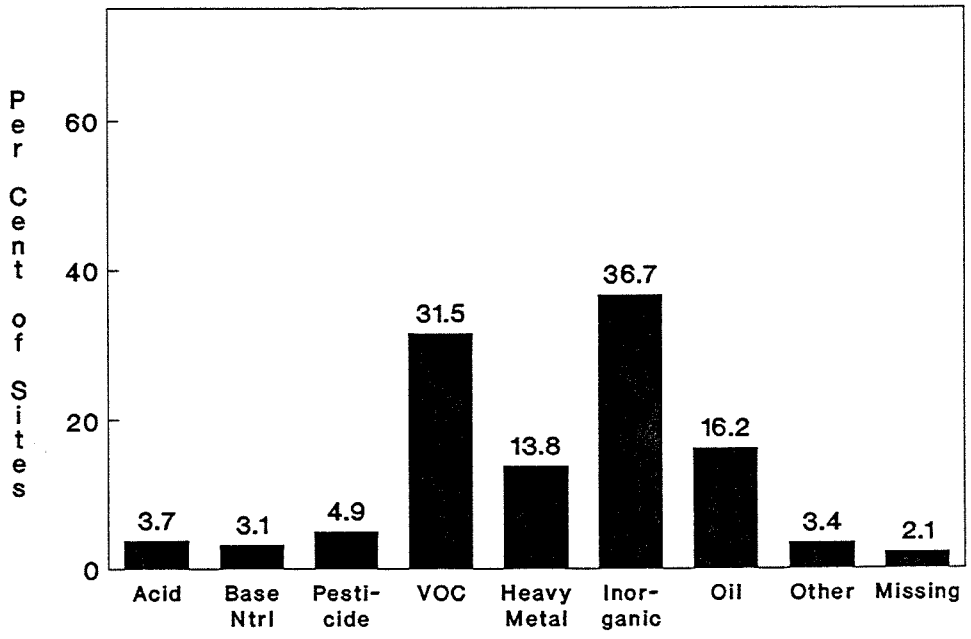
Statewide Status Summary
Non-LUST



Statewide Contaminated Media Summary



Statewide Contaminant Summary



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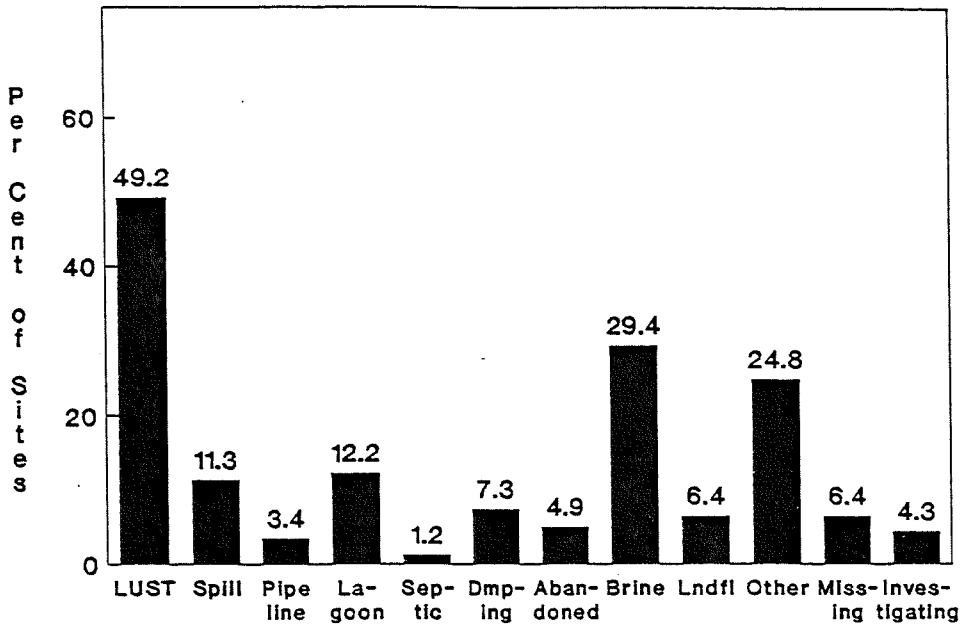
Statewide Source Summary

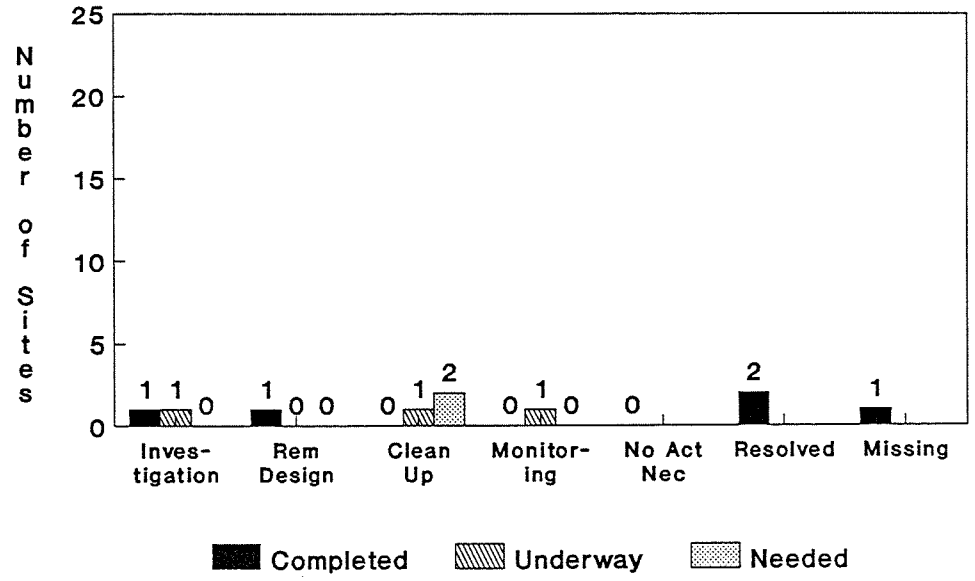


There are 327 non-LUST sites and 162 LUST sites on the Identified Sites List. Forty-three LUST sites have been resolved and the remainder are in various stages of investigation or remediation. In contrast, 142 non-LUST sites are in some stage of investigation. The remedial design has been completed at 39 sites; however, the cleanup has not been initiated. Cleanup has been completed at another 24 sites. A final site inspection will be performed on these sites before they are considered resolved. Information on status was missing for 77 sites; the majority (66) are KCC sites.

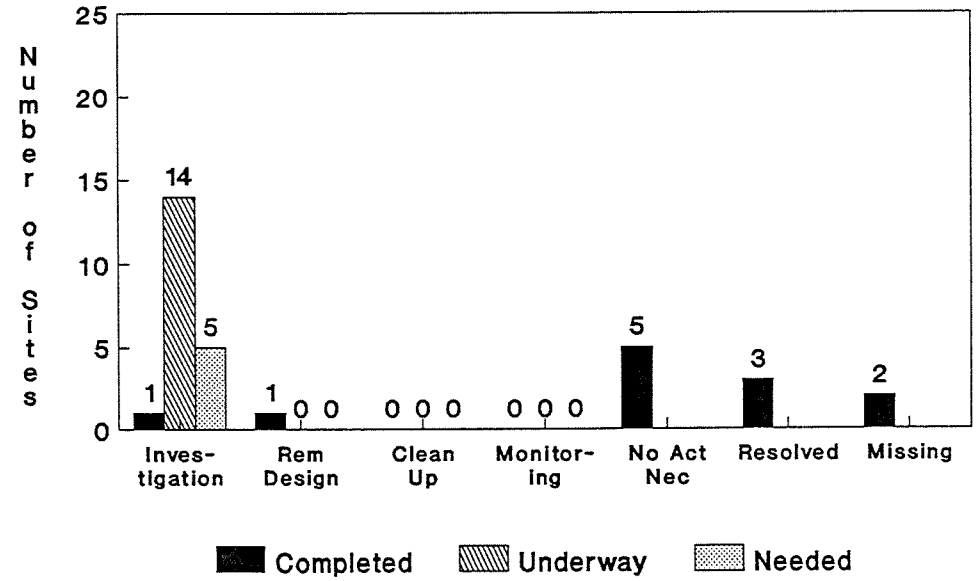
More than one contaminated medium may have been reported for a single site. Groundwater contamination has been reported at 65% of listed sites. Thirteen per cent of contaminated sites involve a public water supply. Surface water and/or soil are contaminated in 11 and 17% of sites, respectively.

VOCs and inorganic compounds are the principle contaminants, each detected at approximately one-third of listed sites. The inorganic constituent most frequently found was chloride contamination associated with brine from oil production. Brine is reported as the contaminant source at 39% of listed sites. Nearly one-half of listed sites are LUST sites at which the contaminant is almost always a refined petroleum product; however, this contaminant is not presented in the contaminant summary graph. The other contaminants found and sources identified may occur at sites in various combinations.

Status of LUST Sites
Southwest



Status of Non-LUST Sites
Southwest



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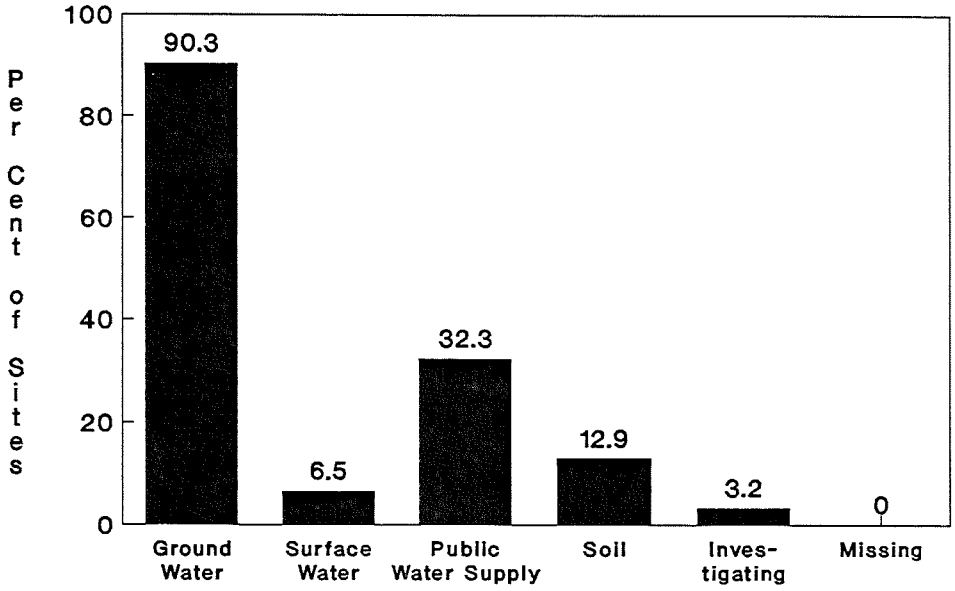
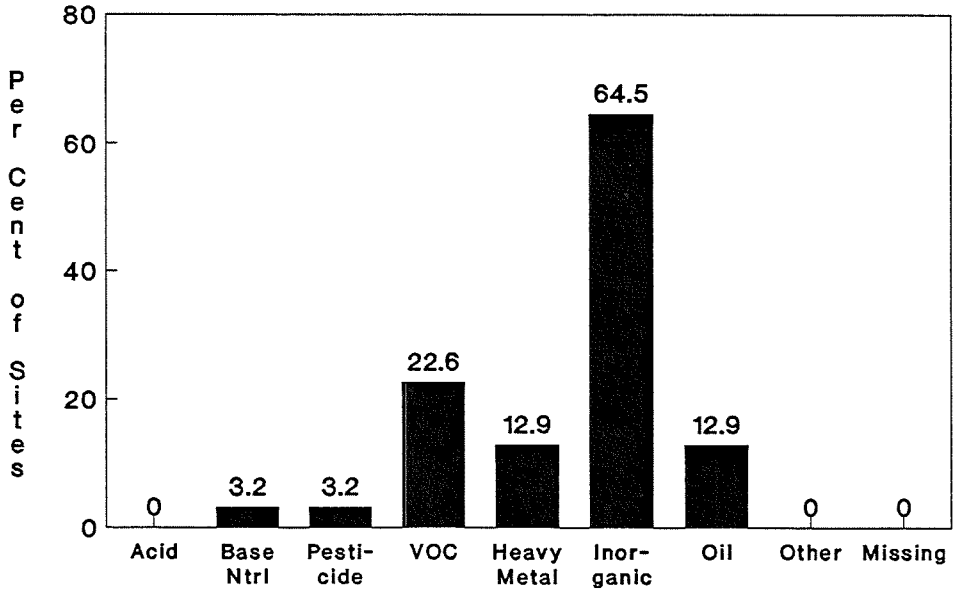
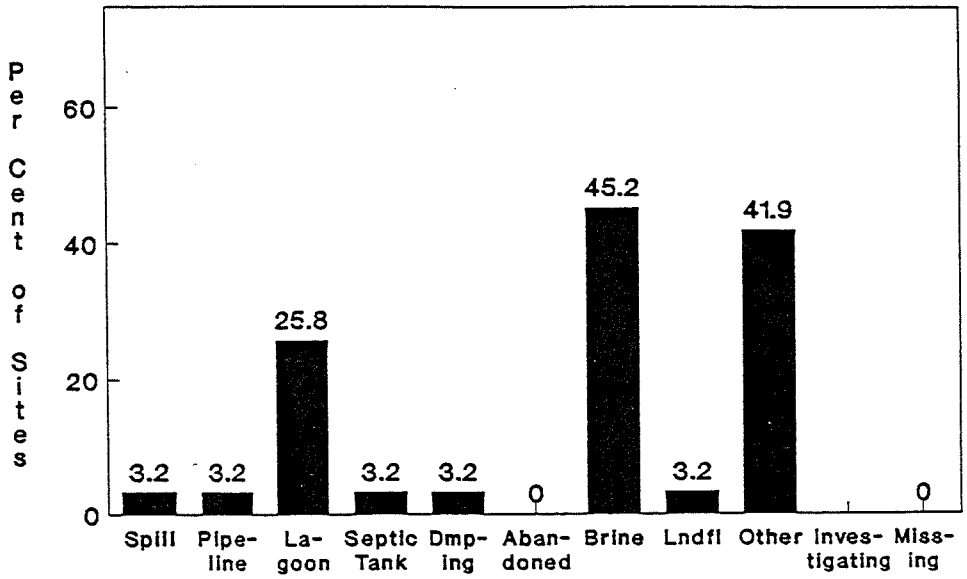
Contaminated Media Summary
Southwest



Contaminant Summary
Southwest



Source
Southwest



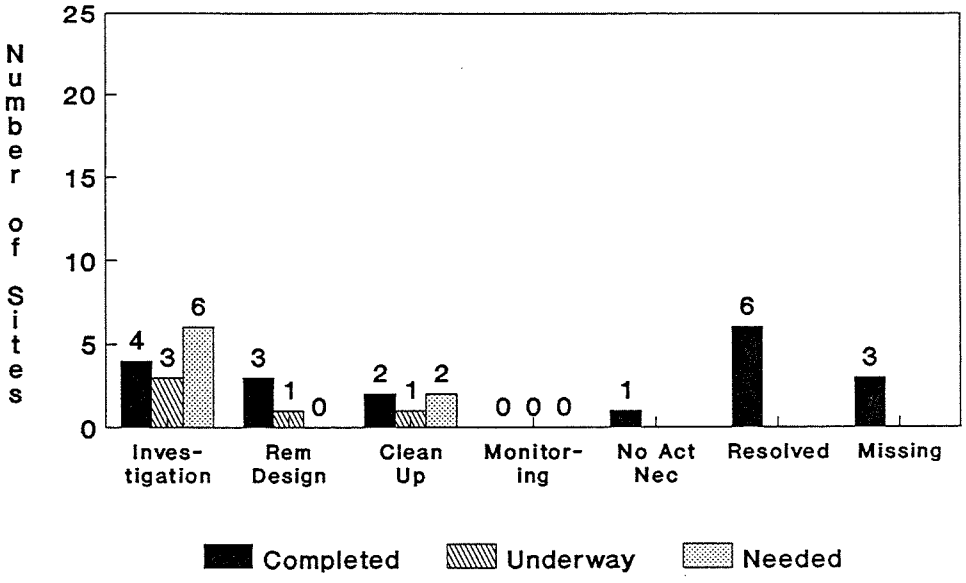
There are 31 non-LUST and nine LUST sites in the southwest district on the Identified Sites List. All LUST sites are in various stages of investigation or remediation, whereas most non-LUST sites are being investigated or are in need of investigation.

Groundwater contamination is reported at over 90% of non-LUST sites. Nearly one-third of listed sites involve public water supplies. The principle contaminants detected are inorganic compounds and VOCs. The inorganic constituent of concern is chloride as brine associated with oil field activities. Brine is reported as the source of contamination at 45% of sites in the southwest district. Lagoons are also a common source of contamination.

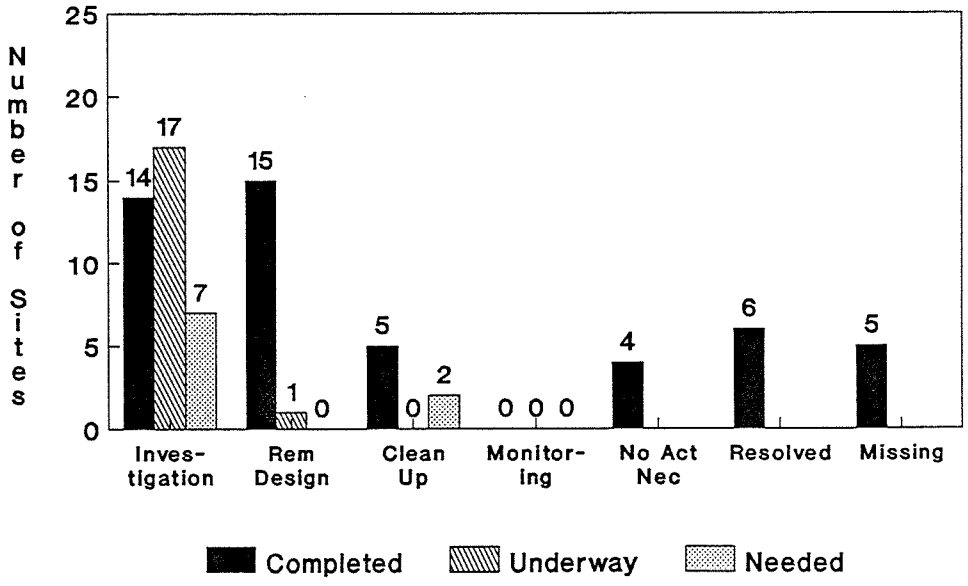
IDENTIFIED SITES LIST -- SOUTHWEST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
DIEL FARM	BA	LA	OIL	SOIL	DMPING/OTHER	INVESTIG-U
HARDTNER PWS WELL #1	BA	LA	HM	GW/PWS		RESOLVED-C
WILDBOY'S LAND & CATTLE CO.	BA	LA	INOR	GW/SW	BRINE	INVESTIG-U
CITY OF ALBERT	BT	UA	INOR	GW/PWS	BRINE	INVESTIG-U
FINNEY COUNTY LANDFILL	FI	UA	INOR	GW	LANDFL	INVESTIG-U
IOWA BEEF PROCESSORS	FI	UA	INOR	GW	LAGOON/OTHER	INVESTIG-U
KALVESTA RESTAURANT	FI	UA	VOC	GW	LUST/SPILL	INVESTIG-C
FARMLAND INDUSTRIES NITROGEN PLANT	FO		HM	GW	PIPELN/OTHER	INVESTIG-C
HENRY STRECKER	FO	UA	INOR	GW/PWS	BRINE	NO ACT NEC-C
KENWORTH	FO		OTH	SOIL	LUST	RESOLVED-C
MBPXL (EXCEL)	FO	UA	INOR/OIL	GW	LAGOON/OTHER	INVESTIG-U
STAKE SITE	FO	UA	PEST	SOIL	SPILL/OTHER	RESOLVED-C
ULYSSES GAS PROCESSING CO. (AMOCO PRODUCTION)	GT	CI	BN/VOC	GW	LAGOON/OTHER	INVESTIG-U
ABANDONED SERVICE STATION, JETMORE	HG		OTH	SOIL	LUST	RESOLVED-C
RAYMOND SMITH	HG	UA	INOR	GW	BRINE	INVESTIG-U
SCHRADER STOCK WELL	HG	UA	INOR	GW	BRINE	INVESTIG-U
BILL BURCH	HM	CI	INOR	GW/PWS	OTHER	NO ACT NEC-C
KIRBY CLAWSON	HS	UA	INOR	GW/PWS	BRINE	
MESA PETROLEUM COMPANY	HS		INOR	GW	OTHER	
COLORADO INTERSTATE GAS CO.	KE	UA	VOC	GW	LAGOON	INVESTIG-U
MEADE PWS WELLS #1 & #2	ME	UA	VOC	GW/PWS	OTHER	RESOLVED-C
HELIUM SALES, INC. (PHILLIPS PETROLEUM GREENW	MT	CI	VOC/HM/OIL	GW/SOIL	LAGOON	INVESTIG-U
BAZINE CO-OP	NS	UA	VOC	GW	LUST	CLEANUP-U
HOME OIL CO. - STA. #1	NS	UA	VOC	GW	LUST	CLEANUP-N
JAY HERRON & OTHERS	NS	UA	VOC	GW	LUST	CLEANUP-N
RANSOM CO-OP	NS	UA	VOC	GW	LUST	CLEANUP-C
ENOCH THOMPSON	PN	UA	INOR	GW	BRINE	INVESTIG-U
L.E. MARLETT	PN	UA	INOR	GW	BRINE	NO ACT NEC-C
STANLEY MOFFET	PN	UA	INOR	GW	BRINE/OTHER	INVESTIG-N
CITY OF BISON	RH	UA	INOR	GW/PWS	OTHER	NO ACT NEC-C
CITY OF LACROSSE	RH	UA	INOR	GW	BRINE	NO ACT NEC-C
DALE ATER	RH	UA	INOR	GW/PWS	BRINE	INVESTIG-N
GENE AVEY	RH	UA	INOR	GW/PWS	BRINE	INVESTIG-N
SCOTT CITY SHOP (WESTERN OIL TRANSPORTATION	SC	UA	VOC		LAGOON	INVESTIG-U
SHALLOW WATER REFINERY (EZ SERVE REFINING)	SC	UA	VOC/HM/OIL	GW/SW/SOIL	LAGOON	INVESTIG-U
KENT RIXON	SF	LA	INOR	GW	BRINE	INVESTIG-N
KENT RIXON	SF	LA	INOR	GW	LAGOON/BRINE	INVESTIG-N
ZENITH COOP	SF		OTH	GW/SOIL	LUST	INVESTIG-U
HUGOTON PWS	SV	CI	VOC	GW/PWS	LUST	REM DESIGN-C
PANHANDLE EASTERN PIPELINE	SW	CI	VOC	GW/PWS	SEPTIC/OTHER	REM DESIGN-C

Status of LUST Sites
South Central



Status of Non-LUST Sites
South Central



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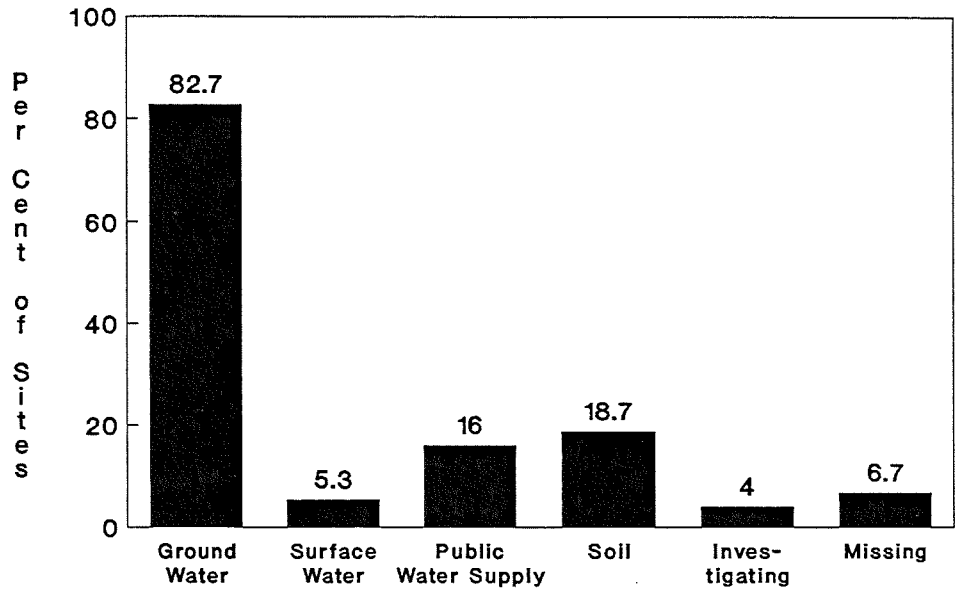
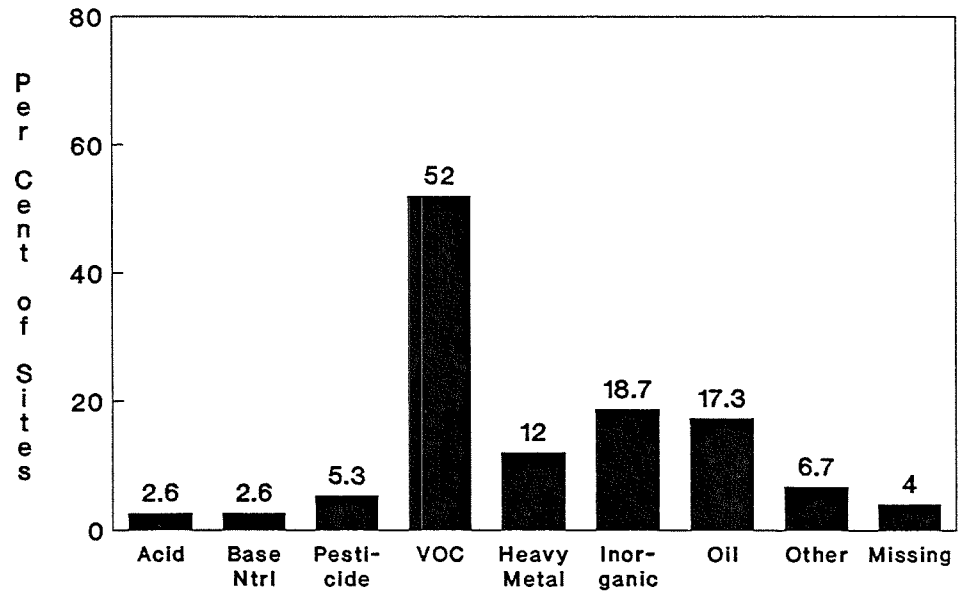
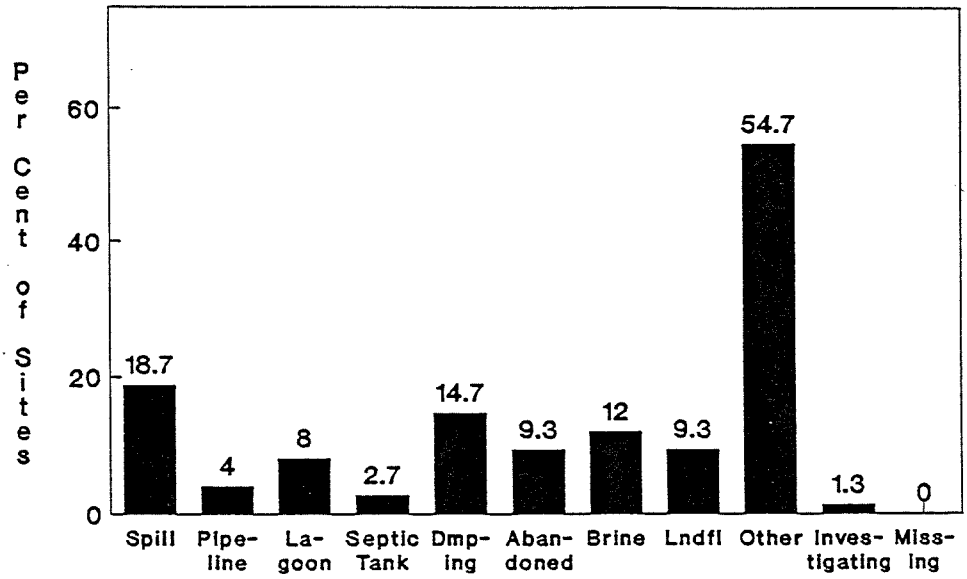
Contaminated Media Summary
South Central



Contaminant Summary
South Central



Source
South Central



There are 75 non-LUST and 32 LUST sites in the south central district on the Identified Sites List. The majority of all sites are under some stage of investigation. The remedial design has been completed for a number of non-LUST sites, but the clean-up has not yet been initiated.

Groundwater contamination is reported at over 80% of non-LUST sites. Sixteen per cent of listed sites involve public water supplies. VOCs are the principle contaminant detected. Oil, heavy metals and inorganic compounds are other common contaminants at sites in the south central district. Spills, dumping and drums, and brine are the three most frequently identified sources.

IDENTIFIED SITES LIST -- SOUTHCENTRAL DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
ANDOVER DRUM SITE	BU	WA	HM		DMPING/OTHER	RESOLVED-C
DALE'S SERVICE, EL DORADO	BU		VOC/OIL	GW	OTHER	CLEANUP-N
FORREST REAVIS	BU		VOC	GW	LUST/SPILL	INVESTIG-N
GETTY REFINING & MARKETING COMPANY (REFINERY)	BU	LA	VOC/HM	GW/SOIL	LUST/PIPELN	REM DESIGN-C
MOBIL OI REFINERY	BU		ACID/BN/OIL	SOIL	OTHER	REM DESIGN-C
OLD VICKERS REFINERY AND POTWIN TANK FARM	BU	WA	VOC/OIL	GW/PWS	SPILL/OTHER	REM DESIGN-C
PESTER REFINING COMPANY	BU	WA	VOC/HM	GW/SW/SOIL	SPILL/LAGOON	INVESTIG-C
POTWIN, PWS WELL #1 (HEFLIN WELL)	BU	WA	VOC	GW/PWS	OTHER	INVESTIG-U
SDS INCORPORATED	BU	LA	HM	SOIL	SPILL/OTHER	INVESTIG-C
ARKANSAS CITY DUMP SITE/OLD MILLIKEN REFINERY	CL		HM/INOR	GW	DMPING/ABAND	INVESTIG-C
COUNTY MAINTENANCE	CL		HM/INOR	GW	DMPING/ABAND	INVESTIG-U
HACKNEY GROUNDWATER CONTAMINATION PROBLEM	CL	WA	VOC	GW/PWS	OTHER	INVESTIG-C
NELSON'S MACHINE AND WELDING	CL	WA	OIL		OTHER	INVESTIG-N
STROTHER FIELD INDUSTRIAL PARK	CL	WA	VOC	GW/PWS	SPILL/DMPING	INVESTIG-C
TOTAL PETROLEUM INC. (ROXANNA PETROLEUM REFIN	CL	LA	OIL	GW	SPILL/PIPELN	REM DESIGN-C
ALTA MILLS AREA	HV	LA	INOR	GW	BRINE/OTHER	INVESTIG-N
ATCHISON, TOPEKA & SANTA FE RAIL ROAD	HV	LA	RPET	GW	SPILL/OTHER	REM DESIGN-C
BURRTON OIL FIELD	HV	LA	INOR	GW	LAGOON/BRINE	INVESTIG-C
BURRTON OIL FIELD #2	HV			GW/SOIL	OTHER	INVESTIG-U
CITIES SERVICE NGL PLANT	HV		VOC	GW	ABAND/OTHER	INVESTIG-C
FULL VISION, INC.	HV		ACID/INOR		LAGOON/OTHER	RESOLVED-C
HALSTEAD PUBLIC WATER SUPPLY	HV	LA	VOC	GW/PWS	OTHER	INVESTIG-U
HESSTON CORP.	HV		RPET	GW	LUST	CLEANUP-U
HOLLOW NIKKEL AREA	HV		INOR	GW	LAGOON/BRINE	INVESTIG-U
HORNER'S CORNER, NEWTON	HV		OTH	SOIL	LUST	CLEANUP-C
KSU AGRONOMY FARM	HV		PEST	GW/PVW	SPILL/SEPTIC	REM DESIGN-C
TUX'S STANDARD SERVICE	KM		VOC	SOIL	LUST	RESOLVED-C
4TH AND CAREY STREET	RN		VOC	GW/PWS	OTHER	INVESTIG-U
DELUXE SPECIALITIES MFG. CO.	RN		VOC	GW/SOIL	DMPING	INVESTIG-C
D.P. WAGGENER WELL	RN		OTH		OTHER	INVESTIG-N
HAYES SITE AND SOUND	RN	LA	VOC	GW	LUST	INVESTIG-N
HIGHWAY OIL	RN		RPET	GW	LUST	REM DESIGN-C
HUTCHINSON AREA (SOUTH)	RN	LA	INOR	GW	OTHER	INVESTIG-C
KRAUSE PLOW CORP (FOUNDRY DUMP)	RN		HM	GW	DMPING/LANDFL	INVESTIG-N
NICKERSON PWS WELL #6	RN	LA	VOC	GW/PWS	OTHER	RESOLVED-C
OBEE ROAD	RN		VOC	GW	LAGOON/LANDFL	INVESTIG-U
SODA-ASH-WASTE DISPOSAL	RN		INOR	GW	LANDFL/OTHER	NO ACT NEC-C
STRIKER OIL CORPORATION	RN	LA	INOR	GW	BRINE/OTHER	REM DESIGN-C
TURON PWS WELL #3	RN		VOC	GW/PWS	OTHER	INVESTIG-C
VICKERS, HUTCHINSON	RN		OTH	GW/SOIL	LUST	INVESTIG-C
VILLAGE OF YODER	RN	LA	VOC	GW/PWS	OTHER	INVESTIG-U
YODER GASOLINE CONTAMINATION	RN		OTH	GW	LUST	INVESTIG-N
AERO SHEET METAL, INCORPORATED	SG	LA	BN/VOC/OIL	GW/SOIL	OTHER	REM DESIGN-C
AIRCRAFT INSTRUMENT AND DEVELOPMENT, INC.	SG	LA	VOC	GW	SPILL	INVESTIG-C
AL'S PHILLIPS 66	SG		OTH	GW/SOIL	LUST	REM DESIGN-U
AMOCO	SG	LA	VOC	GW	LUST	RESOLVED-C

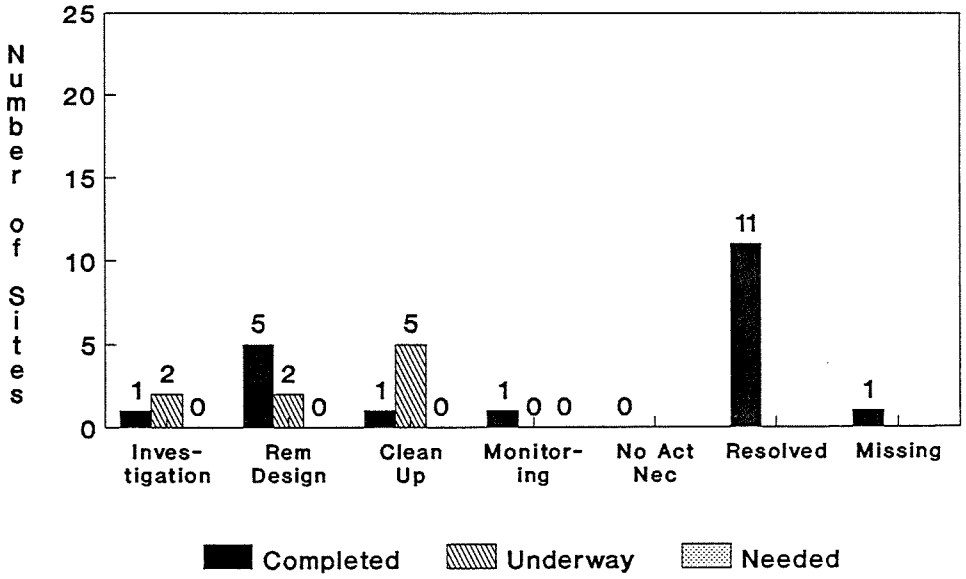
IDENTIFIED SITES LIST -- SOUTHCENTRAL DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
ARCHITECTURAL METAL PRODUCTS INC. ALSO KNOWN	SG	LA	ACID	GW/SW	DMPING	RESOLVED-C
BARACHMAN COMPLAINT	SG	LA	RPET	GW/SOIL	LUST	REM DESIGN-C
BARNSDALL (OLD REFINERY) 29TH AND MEADE	SG		VOC	GW	ABAND	INVESTIG-U
BIG RIVER SAND/EISENRING SITE (TWO SITES ADJA	SG		OIL	GW/SOIL	DMPING	NO ACT NEC-C
BMAC LANDFILL (1953)	SG		VOC	SOIL	DMPING/LANDFL	INVESTIG-C
BOEING MILITARY AIRPLANE CO.	SG	LA	VOC	GW	OTHER	CLEANUP-C
BROOKS LANDFILL	SG	LA	OIL		LANDFL	INVESTIG-C
CERTAINTEED, MAIZE	SG	LA	VOC	GW	OTHER	
CESSNA AIRCRAFT - PLANT #1	SG		HM	GW/SW	DMPING/LANDFL	REM DESIGN-C
CESSNA AIRCRAFT - WALLACE DIVISION	SG	LA	VOC	GW	SPILL/OTHER	REM DESIGN-C
CHAPIN LANDFILL	SG	LA	VOC/HM	GW/SOIL	LANDFL	INVESTIG-N
CHASE TRANSPORTATION	SG	WA	VOC	GW	OTHER	
CHENEY, PWS WELL #6	SG	LA	VOC	GW/PWS	OTHER	INVESTIG-N
CHENEY PRIVATE WELL	SG	LA	VOC	GW	LUST/ABAND	INVESTIG-N
CITIES SERVIE NGL PLANT	SG		VOC	GW	PIPELINE/OTHER	REM DESIGN-C
CITY OF DERBY	SG		OTH	GW	OTHER	INVESTIG-N
CLEARWATER PWS WELL #2	SG	LA	VOC	GW/PWS	OTHER	INVESTIG-U
COAST MART #9112, WICHITA	SG		OTH	SOIL	LUST	RESOLVED-C
C&J FINA	SG		VOC	GW	LUST	INVESTIG-N
DAN'S FINA	SG		VOC	GW	LUST	INVESTIG-N
DERBY REFINERY	SG	LA	VOC/HM	GW/SOIL	LUST/SPILL	REM DESIGN-C
DON FRANZ	SG	LA	VOC	GW	LUST	REM DESIGN-C
EXCEL	SG		VOC	GW	OTHER	INVESTIG-U
FINA, WICHITA	SG		OTH	GW	LUST	INVESTIG-C
FINA, WICHITA	SG		OTH	SOIL	LUST	RESOLVED-C
FINA, WICHITA	SG		OTH	SOIL	LUST	INVESTIG-C
FRANK MARCH 66	SG	LA	VOC/OIL	GW	LUST/OTHER	INVESTIG-C
FREUND COMPLAINT	SG	LA	VOC	GW/PWS	LUST	
GERALD BLOOD ORCHARD	SG	LA	INOR	GW	BRINE	REM DESIGN-C
GOLDEN RULE REFINERY (FORMER)	SG		VOC		ABAND/OTHER	INVESTIG-U
HILLS 66 SERVICE	SG		VOC	GW	LUST	CLEANUP-N
HOLMES FREIGHT LINE	SG		OTH	SOIL	SPILL	RESOLVED-C
IRVING'S SERVICE, WICHITA	SG		OTH	GW/SOIL/PVW	LUST	INVESTIG-U
JAMES CATRON	SG	LA	INOR	GW	BRINE	INVESTIG-U
JOHN'S REFINERY	SG	LA	VOC/OIL	GW/SOIL	DMPING/ABAND	CLEANUP-C
JOHN'S SLUDGE POND	SG	LA	HM/OIL/OTH	GW	LAGOON/ABAND	CLEANUP-C
KDOT MAINTENANCE, WICHITA	SG		OTH	SOIL	LUST	RESOLVED-C
K-LINE PLASTICS AREA	SG	LA	VOC	GW	OTHER	INVESTIG-U
LEGION COMPLAINT (ALS PHILLIPS 66)	SG	LA	VOC	GW	LUST	
LEVEE ROAD II	SG	LA	HM/OIL	SOIL		
NATIONAL INDUSTRIAL ENVIRONMENTAL SERVIES (N	SG	WA	VOC	GW/SW	OTHER	REM DESIGN-C
PARK CITY PWS WELLS	SG	LA	VOC	GW	PIPELINE	REM DESIGN-C
PHILLIPS 66 WICHITA	SG				OTHER	
PROSPECT PARK	SG		VOC	GW	OTHER	NO ACT NEC-C
PURINA MILLS	SG	LA	VOC/OIL	SOIL	LUST	RESOLVED-C
QUALITY MART, WICHITA	SG		OTH	GW		CLEANUP-N

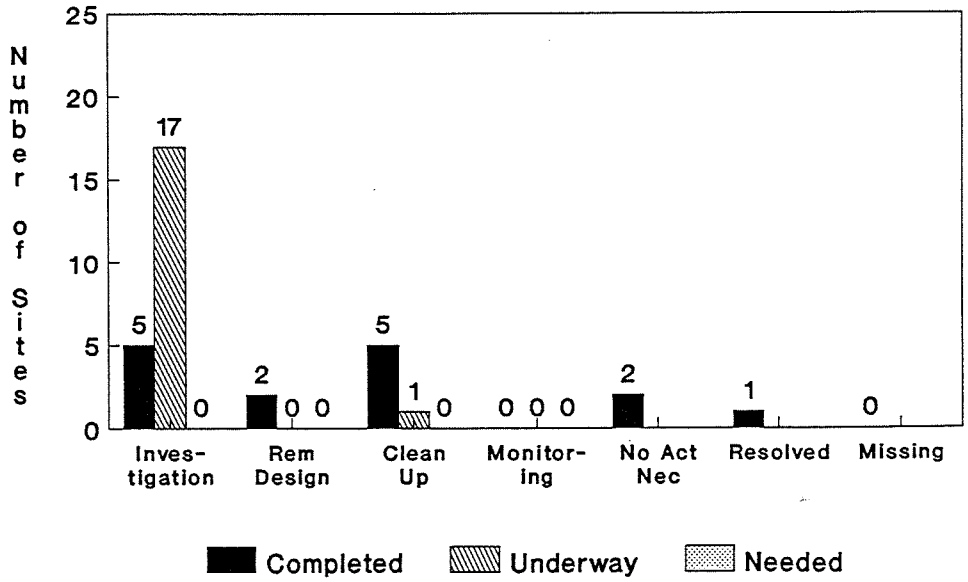
IDENTIFIED SITES LIST -- SOUTHCENTRAL DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
RADIUM PETROLEUM	SG	LA	VOC	GW	OTHER	
RAMODA PARKING GARAGE SITE	SG		VOC/OIL	SOIL	OTHER	
RAYMOND OIL	SG	UA	INOR	GW	BRINE	RESOLVED-C
REID SUPPLY COMPANY	SG	LA	VOC/OIL	GW/SOIL	DUMPING	INVESTIG-U
SCHULTE FIELD	SG	LA	INOR	GW	BRINE	INVESTIG-U
SEDGWEICK COUNTY COURTHOUSE	SG			PVW	SPILL	CLEANUP-C
SEDGWICK PWS #6	SG		PEST	GW	SPILL	NO ACT NEC-C
VALLEY CENTER GASOLINE CONT.	SG		VOC		LUST	CLEANUP-N
VIM TRAILER MGF. INC.	SG		VOC	GW	LUST/OTHER	INVESTIG-U
VULCAN MATERIALS COMPANY	SG	LA	PEST/VOC/IN	GW	SPILL/LAGOON	REM DESIGN-C
WICHITA BRASS AND ALUMINUM	SG		VOC	GW	ABAND	INVESTIG-U
WICHITA HEIGHTS (NORTH BROADWAY)	SG	LA	VOC/HM	GW/SOIL/PWS	SPILL/SEPTIC	INVESTIG-U
IVAN BRUCE	SU	LA	INOR	GW	BRINE	INVESTIG-C
KANSAS TURNPIKE AUTHORITY, SUMNER	SU		OTH	SOIL	LUST	CLEANUP-C
TERRY BETHEL	SU		PEST		OTHER	CLEANUP-C
WELLINGTON GASOLINE CONTAMINATION	SU		OTH		LUST	NO ACT NEC-C

Status of LUST Sites
Southeast



Status of Non-LUST Sites
Southeast



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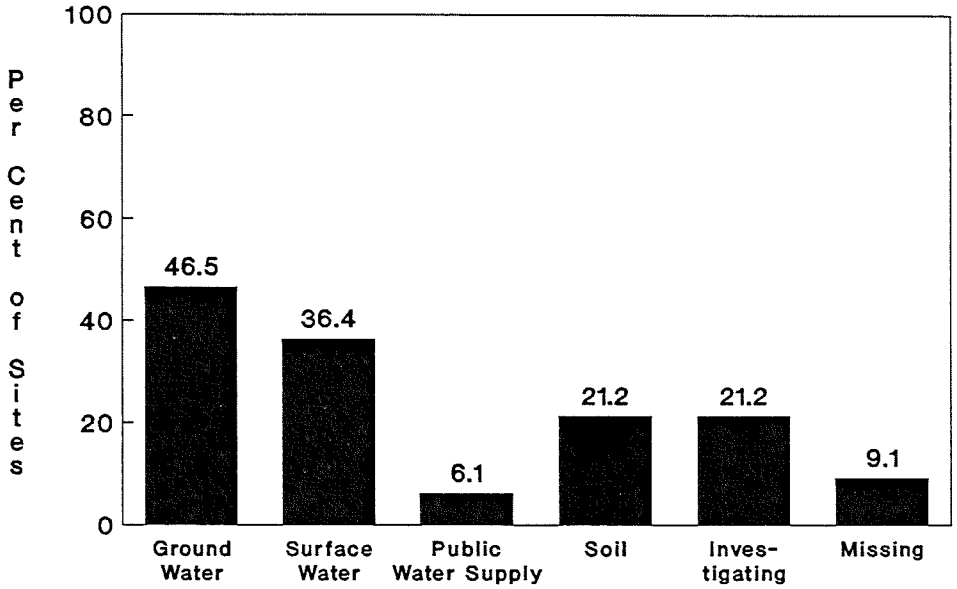
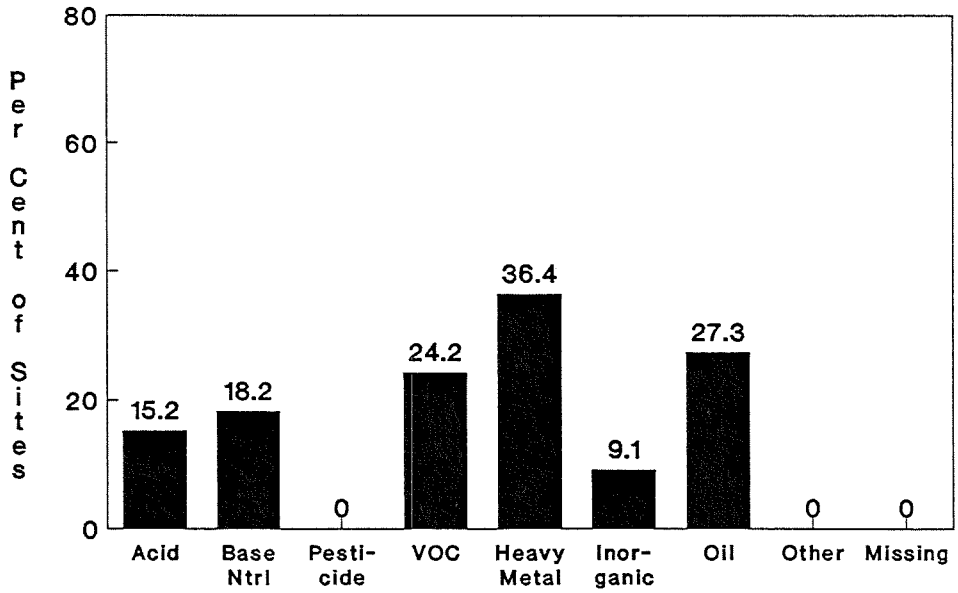
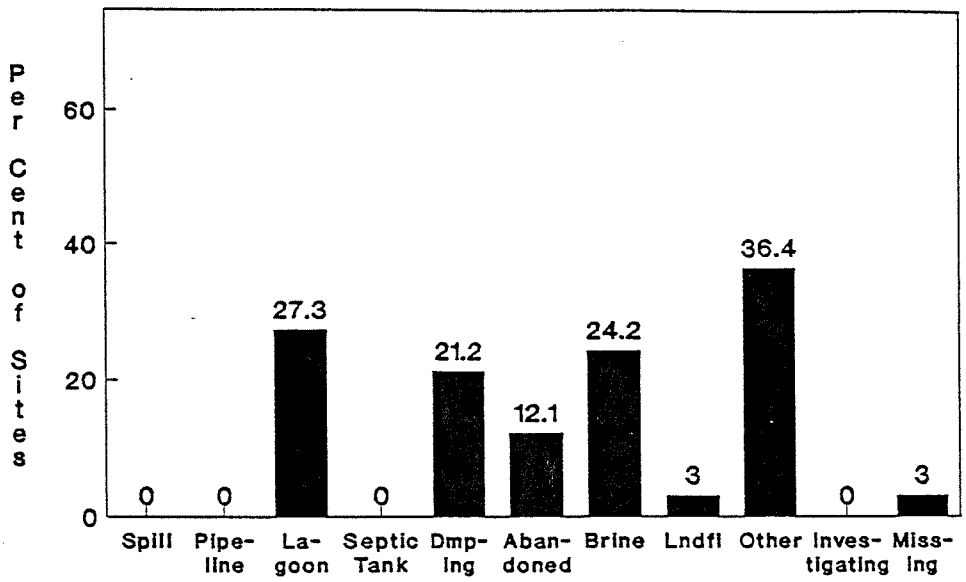
Contaminated Media Summary
Southeast



Contaminant Summary
Southeast



Source
Southeast



There are 33 non-LUST and 29 LUST sites in the southeast district on the Identified Sites List. Clean-up is complete at five LUST sites, and the remedial design is complete but has not yet been initiated at five other sites. Eleven LUST sites have been resolved. The majority of non-LUST sites are under investigation.

Groundwater contamination is reported at over 45% of non-LUST sites. Six per cent of the sites involve public water supplies. Surface water contamination also is frequently reported. Heavy metals, oil and VOCs are the predominant contaminants found at sites in the southeast district. Lagoons, dumping and drums, and brine are the three most frequently reported sources.

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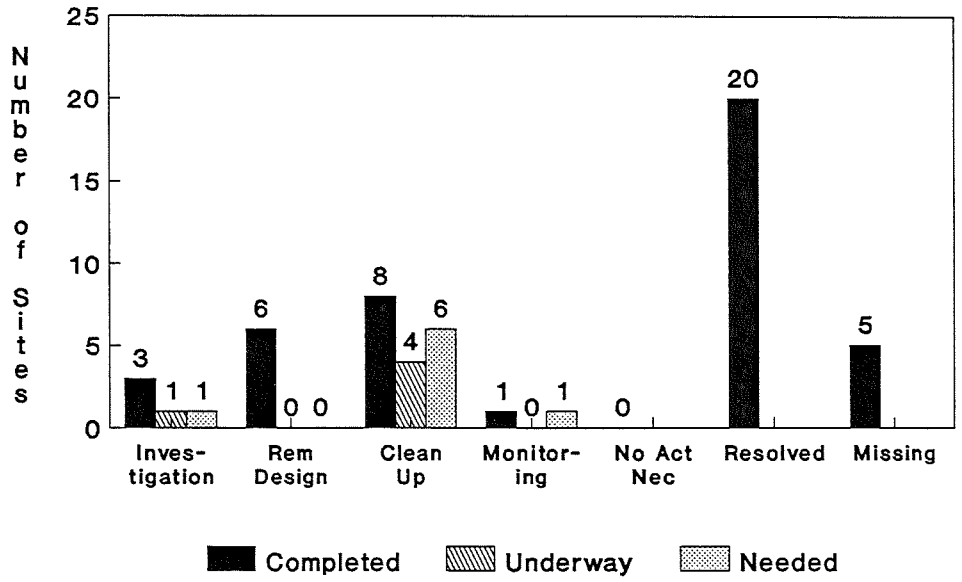
IDENTIFIED SITES LIST -- SOUTHEAST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
BERG MANUFACTURING COMPANY	AL	NE	BN		DMPING/OTHER	INVESTIG-U
BERG MANUFACTURING COMPANY	AL	NE	BN		DMPING/OTHER	INVESTIG-U
BERG MANUFACTURING COMPANY	AL	NE	BN		DMPING/OTHER	INVESTIG-U
BERG MANUFACTURING COMPANY	AL	NE	BN		DMPING/OTHER	INVESTIG-U
PRIME WESTERN SMELTER (OLD); GAS CITY, KS	AL	NE	HM	SOIL	DMPING	NO ACT NEC-C
WOOD OIL CORP.	AN	MC	VOC	SOIL	LUST	MONITORING-C
EXTRUSIONS, INC.	BB	MC	BN/VOC/OIL		LAGOON	INVESTIG-U
CASEY'S GENERAL STORE, LEBO	CF		OTH	SOIL	LUST	RESOLVED-C
ALLCO CHEMICAL CORPORATION, WELL #1	CK	NE	VOC	GW/PWS	OTHER	INVESTIG-U
BAXTER LEAD-ZINC SMELTER	CK		HM	GW/SOIL	ABAND	INVESTIG-U
BRUTUS	CK	NE	VOC		OTHER	RESOLVED-C
CHEROKEE COUNTY SITE	CK	NE	ACID/HM			CLEANUP-C
GULF OIL CHEM. CO., HALLOWELL FACILITY; COLUM	CK	NE	HM/INOR		LAGOON	INVESTIG-U
TAR CREEK SITE	CK	NE	HM	GW/SW	OTHER	NO ACT NEC-C
66 FOOD MART, GIRARD	CR		OTH	SOIL	LUST	REM DESIGN-C
AMOCO, PITTSBURG	CR		OTH		LUST	RESOLVED-C
ARCADIA PWS WELL #1	CR	NE	OIL	GW/PWS	LUST	INVESTIG-U
BURK OIL COMPANY	CR	NE	VOC	GW	LUST	RESOLVED-C
BURNS SERVICE	CR		VOC	GW	LUST	CLEANUP-U
THE YARD CART	CR	NE	VOC	SOIL	LUST	INVESTIG-U
TYRELL'S SERVICE	CR	NE	VOC	SOIL	LUST/OTHER	REM DESIGN-C
BROWNING LEASE	GW	VE	OIL	GW	BRINE	CLEANUP-C
CASEY'S GENERAL STORE	GW	NE	VOC	GW	LUST	REM DESIGN-U
DOUGLASS LEASE	GW	VE	OIL	GW/SW	BRINE	INVESTIG-U
EVRETT LEASE	GW	VE	OIL	SW	BRINE	CLEANUP-C
GREENWOOD LEASE	GW	VE	OIL	SOIL	BRINE	INVESTIG-U
HAMILTON PWS WELL 3	GW	VE	VOC	GW/PWS	OTHER	INVESTIG-U
MCCARTHY OIL CO.	GW	VE	OIL	GW	BRINE	INVESTIG-U
RAY'S TEXACO	GW	VE	VOC	GW	LUST	CLEANUP-U
TATE CREEK	GW	VE	VOC	SW	BRINE/OTHER	CLEANUP-U
BROWN'S CONOCO	LB	NE	VOC	GW/SW	LUST	RESOLVED-C
B&G SERVIE	LB	NE	VOC	SW	LUST/OTHER	CLEANUP-C
E.V. HARRIS, PARSONS	LB		OTH	SOIL	LUST	RESOLVED-C
FROLICH 66 SERVICE	LB	NE	VOC	GW	LUST	REM DESIGN-C
KANSAS ARMY AMMUNITION PLANT	LB	NE	INOR	GW	LAGOON	INVESTIG-C
QUICK SHOP, PARSONS	LB		OTH		LUST	RESOLVED-C
TAYLOR PETROLEUM, PARSONS	LB		OTH		LUST	RESOLVED-C
INDIAN CR. PROJECT	LN	MC	ACID	SW	LAGOON/OTHER	INVESTIG-U
KANSAS CITY POWER & LIGHT	LN	MC	VOC	SOIL	LUST/PIPELN	REM DESIGN-C
NORTON OIL COMPANY	LY	NE	VOC	GW	LUST/OTHER	INVESTIG-C
CRESCENT OL CO., COFFEYVILLE	MG		OTH	SOIL	LUST	REM DESIGN-C
GUNNY SACK (606 NORTH MCGEE)	MG	VE	VOC	GW	LUST	CLEANUP-U
HARRIMAN	MG	VE	INOR		OTHER	INVESTIG-U
NATIONAL ZINC COMPANY (CHERRYVALE ZINC DIVISI	MG	VE	HM	GW/SW	LAGOON	REM DESIGN-C
SHERWIN-WILLIAMS CHEMICALS DIVISION	MG	VE	HM	GW/SOIL	ABAND/OTHER	CLEANUP-C

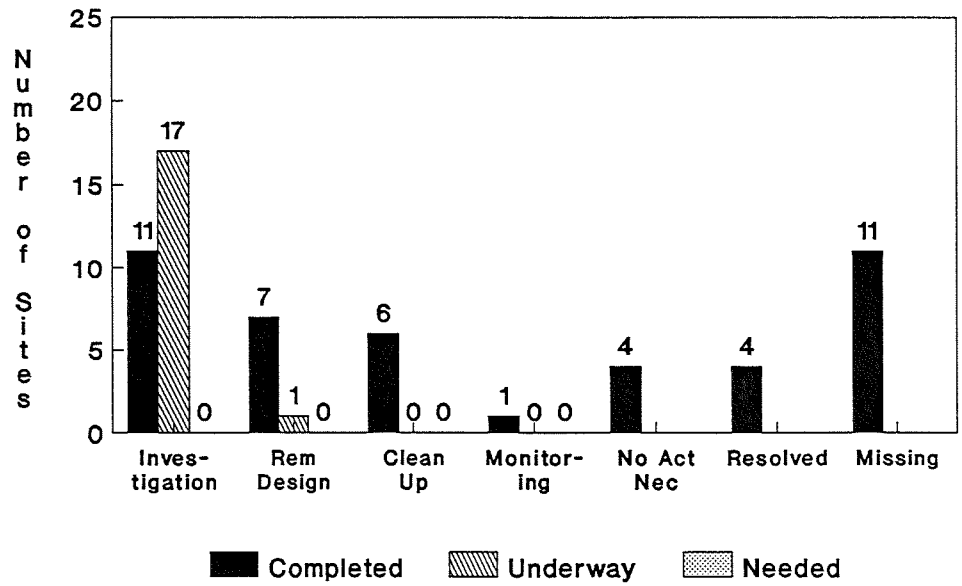
IDENTIFIED SITES LIST -- SOUTHEAST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
SINCLAIR OIL REFINERY	MG	VE	VOC	GW/SW	BRINE	INVESTIG-U
TEMPLE OIL CO.	MG	VE	OIL	SW	BRINE	INVESTIG-U
TOWN AND COUNTRY	MG	VE	VOC	GW	LUST	
WAYSIDE PROD. CO.	MG	NE	OIL		BRINE	CLEANUP-C
59 TRUCK STOP	NO	NE	VOC	SW/SOIL	LUST/SPILL	CLEANUP-U
ASH GROVE	NO	NE	ACID/HM	GW/SW	DMPING	INVESTIG-U
CARL GRIMM, CHANUTE	NO		RPET	GW/SOIL	LUST	RESOLVED-C
CHANDLER'S AMOCO	NO	NE	VOC	GW	LUST/SPILL	CLEANUP-U
CHANUTE LANDFILL	NO	NE	VOC/HM	GW	LANDFL	INVESTIG-C
JOHNSON'S GENERAL STORE, CHANUTE	NO		OTH	SOIL	LUST	RESOLVED-C
MID AMERICA REFINERY	NO	NE	VOC	GW/SOIL	ABAND	INVESTIG-C
NEOSHO #2	NO	NE	ACID/HM	GW/SW	LAGOON	INVESTIG-C
WASHBURN'S SERVICE	NO	NE	VOC	GW	LUST	RESOLVED-C
WESTERN PETROCHEMICAL CO.	NO	NE	VOC/HM/OIL	SW/SOIL	LAGOON/DMPING	INVESTIG-C
FORMER AMOCO REFINERY (SLUDGE POND)	WL	VE	ACID/BN/VOC/HM	GW/SW/SOIL	LAGOON/ABAND	REM DESIGN-C
SOUTHEAST MANUFACUTRING INC.	WL	NE	VOC	SW	LUST/OTHER	RESOLVED-C
CARDEN PHILMART	WO	NE	VOC	SW	LUST/OTHER	RESOLVED-C

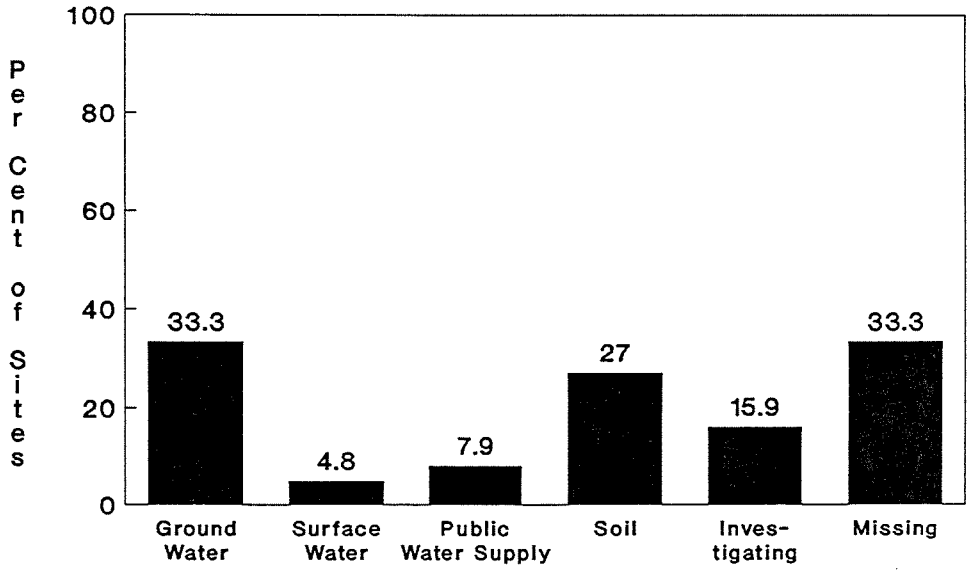
Status of LUST Sites
Northeast



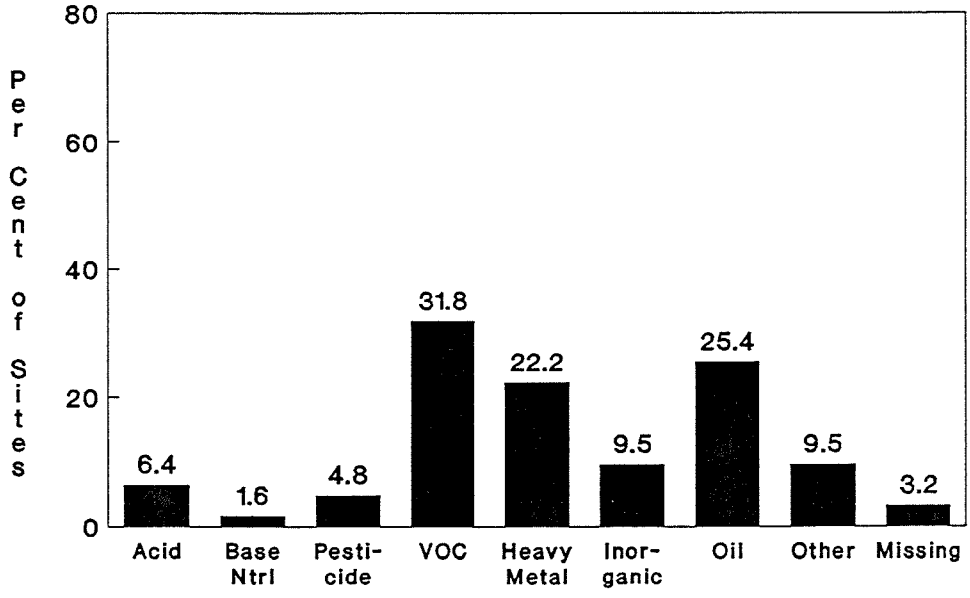
Status of Non-LUST Sites
Northeast



Contaminated Media Summary
Northeast



Contaminant Summary
Northeast



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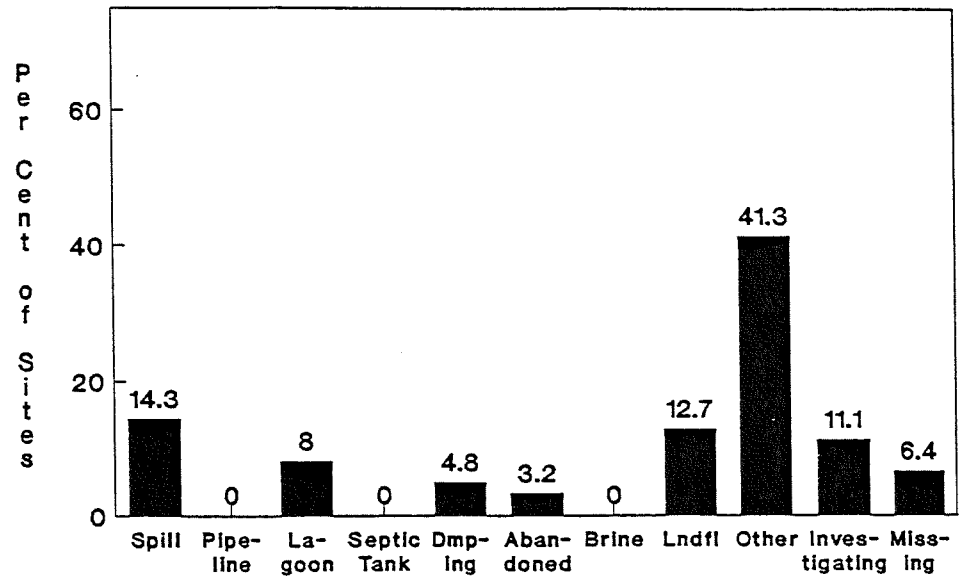
Source
Northeast



There are 63 non-LUST and 56 LUST sites in the northeast district on the Identified Sites List. Eighteen LUST sites are in some phase of clean-up and 20 are resolved. The investigation is complete or underway at the majority of non-LUST sites.

Groundwater contamination is reported at one-third of non-LUST sites. Eight per cent of the sites involve public water supplies. Soil contamination also is frequently reported. VOCs, oil, and heavy metals are the predominant contaminants. Spills and landfills are the most frequently reported sources.

IDENTIFIED SITES LIST -- NORTHEAST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
LINCOLN GRAIN, INC.	AT	MO	VOC	GW	OTHER	
BROWN COUNTY RWD #1	BR	MO	VOC/HM	BW/PWS	OTHER	
BROWN COUNTY SHOP	BR	KR	OTH	SOIL	LUST	CLEANUP-C
FAIRVIEW GASOLINE	BR	MO	VOC	GW	LUST/OTHER	CLEANUP-N
FAIRVIEW RWD #1, PWS #3	BR				LUST	INVESTIG-C
MORRILL PWS WELL #5	BR	MO	VOC	GW/PWS	OTHER	INVESTIG-U
POWHATTAN PUBLIC WATER SUPPLY	BR	KR	VOC	GW	ABAND	INVESTIG-U
19TH AND MASSACHUSETTS, LAWRENCE	DG	KR	VOC/OTH	SOIL	LUST/OTHER	MONITORING-C
CALLERY CHEMICALS	DG	KR	ACID	GW/SOIL	SPILL/OTHER	NO ACT NEC-C
EUDORA	DG	KR			LUST	RESOLVED-C
FARMLAND INDUSTRIES NITROGEN FERTILIZER PLANT	DG	KR	HM	GW	OTHER	INVESTIG-C
FMC CORPORATION	DG	KR	INOR	GW	OTHER	REM DESIGN-C
KANSAS UNIVERSITY DIESEL	DG	KR	OTH	SOIL	LUST	CLEANUP-N
KU POWER PLANT	DG	KR	OTH	SW	SPILL/OTHER	RESOLVED-C
QUIK SHOP	DG		VOC		LUST	
QUIK SHOP	DG	KR	VOC		OTHER	
SUNFLOWER ARMY AMMUNITION PLANT (SAAP)	DG	KR	INOR	GW/SOIL	OTHER	REM DESIGN-C
BENDENA RWD #2, PWS WELL #1	DP	MO	VOC	GW/PWS	OTHER	INVESTIG-C
FRANKLIN CO. RWD #6	FR	MC	INOR			INVESTIG-U
LOWERN'S GARAGE	JA	KR	OTH		LUST	INVESTIG-N
PERRY PWS WELLS	JF	KR	VOC	GW/PWS		INVESTIG-U
60TH AND MISSION ROAD	JO		VOC		LUST/SPILL	RESOLVED-C
82ND AND METCALF	JO		OTH		OTHER	RESOLVED-C
AQUINAS HIGH SCHOOL	JO	KR	ACID	SOIL	OTHER	
ATCHISON, TOPEKA & SANTA FE RAILROAD	JO	KR	OIL		SPILL	INVESTIG-C
BROOKRIDGE POST OFFICE	JO		OTH		LUST	
CHEMICAL COMMODITIES, INC.	JO	KR	PEST/VOC	GW	LUST	INVESTIG-U
COASTAL MART, SHAWNEE	JO		OTH	SOIL	LUST	CLEANUP-U
COLONIAL BREAD	JO		VOC	GW	LUST	CLEANUP-C
CY FRAZIER	JO	KR	VOC		OTHER	CLEANUP-C
C&C TANK WAGON, OLATHE	JO		OTH	SOIL	OTHER	REDOLVED-C
DOEPKE DISPOSAL, HOLLIDAY LANDFILL	JO	KR	OIL	GW	LANDFL	INVESTIG-C
GARDNER SHORT STOP	JO	MC	OTH	SOIL	LUST	
GENERAL MOTORS CORPORATION, DELCO REMY PLANT	JO	KR	HM		LAGOON	CLEANUP-C
HUDSON OIL	JO	KR	VOC	GW/SOIL	LUST/ABAND	CLEANUP-C
KANSAS UNIVERSITY-SUNFLOWER RESEARCH LANDFILL	JO	KR	VOC	GW/SOIL	LANDFL/OTHER	INVESTIG-C
KUHLMAN DIECASTING	JO	KR	HM		LAGOON/OTHER	REM DESIGN-C
MARK IV FIBERGLASS INCORPORATED	JO		OIL		DMPING/OTHER	CLEANLUP-C
NATIONAL DISTILLERS AND CHEMICAL CORP.	JO	KR	ACID		LAGOON	INVESTIG-U
OLATHE CITY LANDFILL	JO	KR	HM/OIL		LANDFL	INVESTIG-U
OLATHE SERVICE CENTER	JO		OTH	SOIL	LUST	CLEANUP-C
PRAIRIE VILLAGE AMOCO	JO		VOC		LUST	INVESTIG-C
SUBURBAN TIRE AND AUTO CENTER	JO	MO	VOC	GW	LUST/SPILL	CLEANUP-C
TEXACO	JO		OTH	SOIL	SPILL	NO ACT NEC-C
TOTAL PETROLEUM, MERRIAM	JO		VOC/OTH	GW/SOIL	LUST	REM DESIGN-C

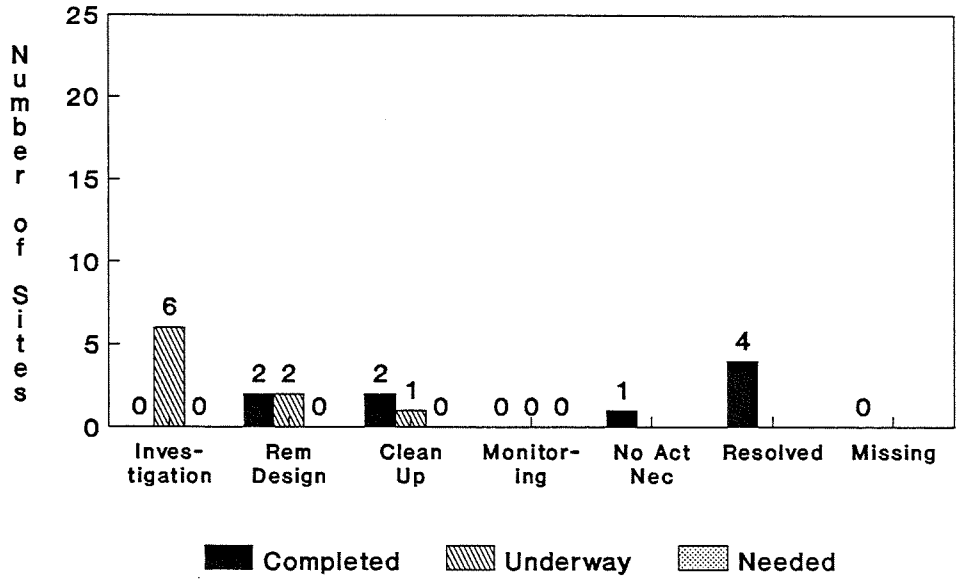
IDENTIFIED SITES LIST -- NORTHEAST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
USED CAR LOT	JO				OTHER	RESOLVED-C
VICKERS, SHAWNEE	JO		OTH	SOIL	LUST	RESOLVED-C
VICTORIAN MARBLE	JO	KR	OIL		DMPING/OTHER	INVESTIG-U
ZARDA DAIRY, SHAWNEE	JO		OTH	SOIL	LUST	RESOLVED-C
BOB ADAMS STANDARD	LV	KR	VOC	SW/SOIL	LUST	CLEANUP-U
BRUMMETT OIL	LV	KR	VOC	GW	LUST/OTHER	REM DESIGN-C
CARRIE DOEGE	LV		PEST/INOR		OTHER	
DORIS' MARKET & GAS	LV	MO	VOC	GW	LUST/OTHER	CLEANUP-C
GNB BATTERIES, INC.	LV	MO	HM		DMPING/OTHER	INVESTIG-U
KANSAS STATE PRISON	LV		VOC/HM		LAGOON/OTHER	INVESTIG-U
LEAVENWORTH SANITARY LANDFILL	LV	MO	OIL		LANDFL	INVESTIG-U
QUALITY OIL	LV	MO	VOC		LUST	REM DESIGN-C
SELECT PRODUCTS	LV	MO	VOC	GW	LUST/OTHER	CLEANUP-C
SINCLAIR GAS STATION	LV		VOC		LUST	RESOLVED-C
ARCO PIPELINE COMPANY	MI		OIL	SOIL	SPILL	
CITY OF PAOLA	MI	MO	VOC		LUST	REM DESIGN-C
BALDERSON'S MANUFACUTURING	PT	KR	OTH	SOIL	LUST	
ST. MARY'S PWS WELL #5	PT	KR	VOC	GW/PWS		INVESTIG-U
AMOCO, TOPEKA	SN	KR	VOC	SOIL	LUST	REM DESIGN-C
AMSOURCE AUTO PARTS, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
APCO, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
ATCHISON, TOPEKA & SANTA FE RAILROAD	SN	KR	HM		OTHER	MONITORING-C
AVONDALE WEST SCHOOL	SN	KR	OTH	SOIL	LUST	RESOLVED-C
COLMERY-O'NEIL V.A. HOSPITAL	SN	KR	OIL	GW/SW	SPILL	CLEANUP-C
EAST TOPEKA K-MART	SN	KR	OTH	SOIL	LUST	RESOLVED-C
EZ SHOP, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
FINA, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
FIRE STATION, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
FORBES FIELD, AIR NATIONAL GUARD	SN		OTH	SOIL	SPILL/OTHER	INVESTIG-C
HYDRO FLEX CORP., INC.	SN	KR	HM	GW/SOIL	DMPING	INVESTIG-U
INDUSTRIAL CHROME, INC.	SN	KR	HM/INOR	GW/INOR	SPILL	REM DESIGN-C
JIM'S CONOCO	SN	KR	OTH	GW/SOIL	LUST	MONITORING-N
KERR MCGEE, TOPEKA	SN	KR	OTH	SOIL	LUST	CLEANUP-U
METHODIST CHURCH	SN	KR	OTH	SOIL	LUST	RESOLVED-C
MIDWEST MACHINE WORKS	SN	KR	VOC	GW/SOIL	DMPING	REM DESIGN-U
NE TOPEKA	SN		VOC	GW	OTHER	INVESTIG-C
QUALITY MART	SN		VOC		LUST	CLEANUP-N
QUALITY MART, TOPEKA	SN	KR	OTH	OTH	GW/SOIL	CLEANUP-N
SHAWNEE COUNTY LANDFILL	SN		VOC		LANDFL	INVESTIG-U
STUEVES PHILLIPS 66, TOPEKA	SN	KR	OTH	SOIL	LUST	RESOLVED-C
TEXACO, TOPEKA	SN	KR	VOC	SOIL	LUST	RESOLVED-C
USD	SN	KR	OTH		LUST	RESOLVED-C
VAN VLECK APCO	SN	KR	VOC	SOIL	LUST	CLEANUP-N

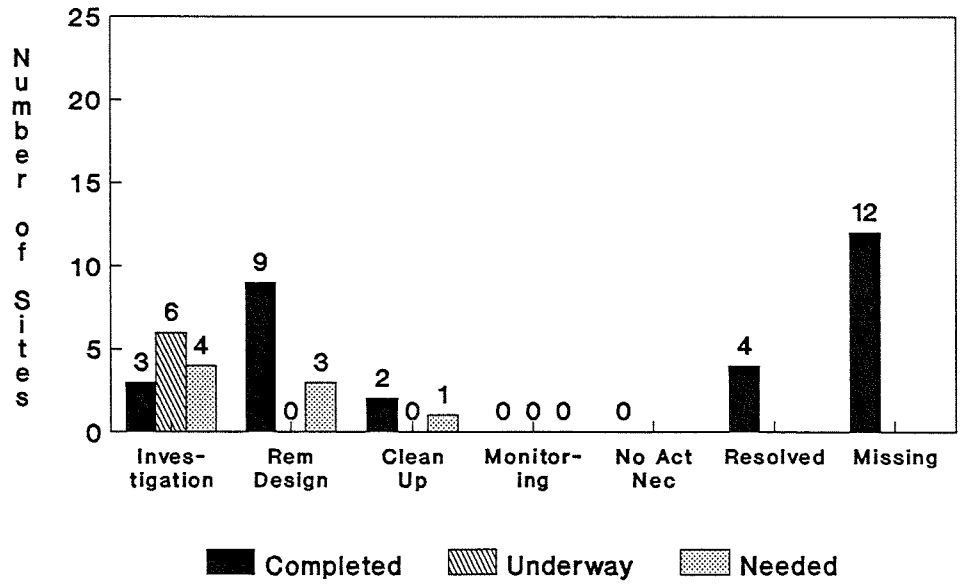
IDENTIFIED SITES LIST -- NORTHEAST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
WILLIAM DUNN, TOPEKA	SN	KR	OTH		LUST	RESOLVED-C
ALTA VISTA COOP	WB	NE	OTH	SOIL	LUST	CLEANUP-U
COOP STATION	WB		VOC		LUST/OTHER	INVESTIG-C
CO-OP STATION	WB		VOC	GW	LUST	
ARCO/SINCLAIR/DYMON, KC	WY				ABAND	INVESTIG-C
ARGENTINE - SANTA FE	WY	KR	HM	GW	OTHER	
ASSOCIATED WHOLESALE GROCERIES, INC.	WY	KR	VOC	GW	LUST	REM DESIGN-C
ASSOCIATED WHOLESALE GROCERS #2	WY	MO	OTH	SOIL	LUST	RESOLVED-C
BELL TEL. CO. REPAIR SHOP	WY		VOC		LUST	REM DESIGN-C
BPU-QUINDARD	WY	KR	VOC/OIL	SOIL	SPILL/OTHER	INVESTIG-C
CORAL REFINERY	WY		HN		OTHER	INVESTIG-C
ENVELOPE MACHINERY	WY		OTH	SOIL	LUST	RESOLVED-C
FAIRFAX LEVEE	WY	MO	OIL	SOIL	OTHER	NO ACT NEC-C
GENERAL MOTORS	WY	MO	VOC	GW	OTHER	INVESTIG-U
GROENDYCK	WY		VOC	SOIL	OTHER	
G&R CONSTRUCTION COMPANY	WY		OIL		DMPING	INVESTIG-U
HOMER STREET DUMP	WY	KR	OIL	SOIL	DMPING/OTHER	CLEANUP-C
INLAND QUARRIES	WY		VOC		LUST/OTHER	CLEANUP-N
KING'S DISPOSAL	WY	KR	OIL		DMPING/OTHER	INVESTIG-U
MACK'S	WY	KR	OIL		DMPING/OTHER	CLEANUP-U
MODEL LANDFILL	WY	MO	VOC/HM	GW/SW/SOIL	LANDFL	INVESTIG-U
NATIONAL GUARD ARMORY & PARKING LOT	WY	KR	ACID	GW	LANDFL	MONITORING-U
NOVA PRODUCTS	WY	KR	PEST		DMPING	CLEANUP-C
PBI-GORDAN	WY	KR	PEST/OIL		LAGOON	INVESTIG-C
PHILLIPS PETROLEUM	WY	MO	VOC	GW	SPILL/ABAND	REM DESIGN-C
REICHOLD CHEMICALS	WY		OTH	SOIL	OTHER	CLEANUP-C
SOUTHWEST STEAL FABRICATORS	WY		BN	GW	LANDFL	
S-G METALS INDUSTRIES, INC.	WY	KR	HM/INOR	GW/SOIL	DMPING	NO ACT NEC-C
TEXTILANA LEASE (HENKEL, INC.)	WY	KR	VOC	GW	OTHER	REM DESIGN-C
THOMPSON-HAYWOOD CHEMICAL COMPANY	WY		OIL			REM DESIGN-C
USD 500	WY		OTH	SOIL	LUST	RESOLVED-C

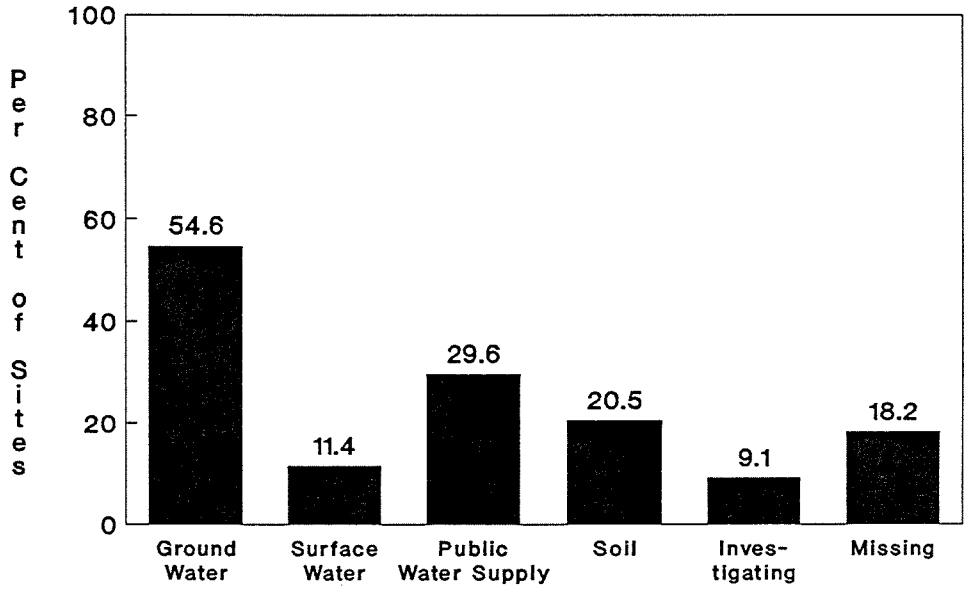
Status of LUST Sites
North Central



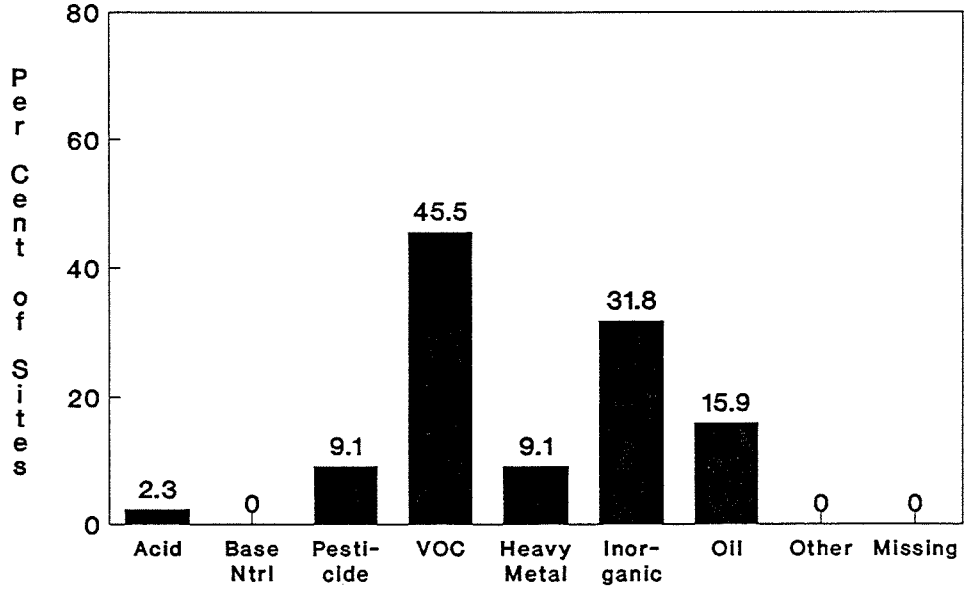
Status of Non-LUST Sites
North Central



Contaminated Media Summary
North Central



Contaminant Summary
North Central



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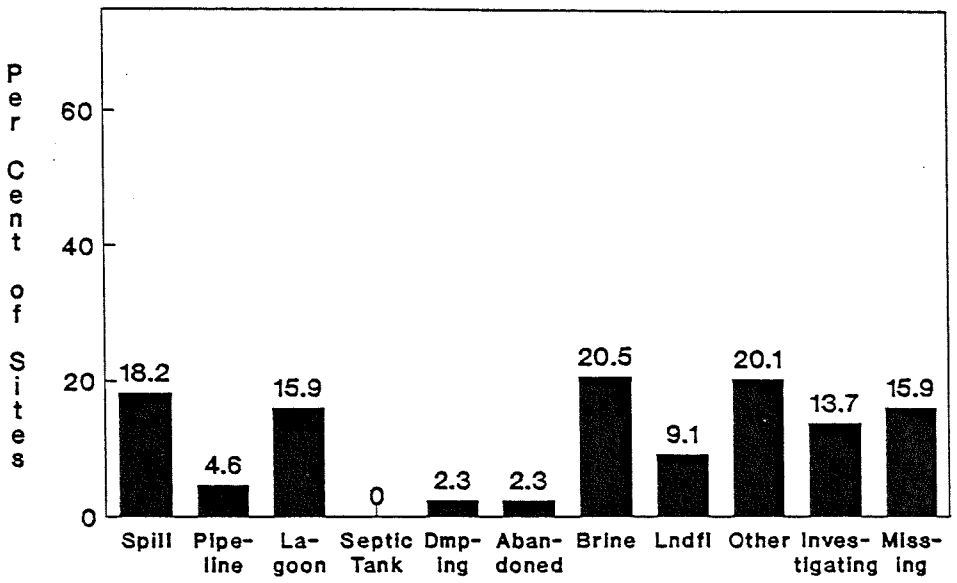
Source
North Central



There are 44 non-LUST and 18 LUST sites in the north central district on the Identified Sites List. Six LUST sites are under investigation and four are resolved. Thirteen non-LUST sites are in some phase of investigation, and the remedial design is complete for nine sites.

Groundwater contamination is reported at more than one-half of non-LUST sites. Thirty per cent of the sites involve public water supplies. Soil contamination also is frequently reported. VOCs, inorganic compounds and oil are the predominant contaminants. Brine, spills and lagoons are the most frequently reported sources.

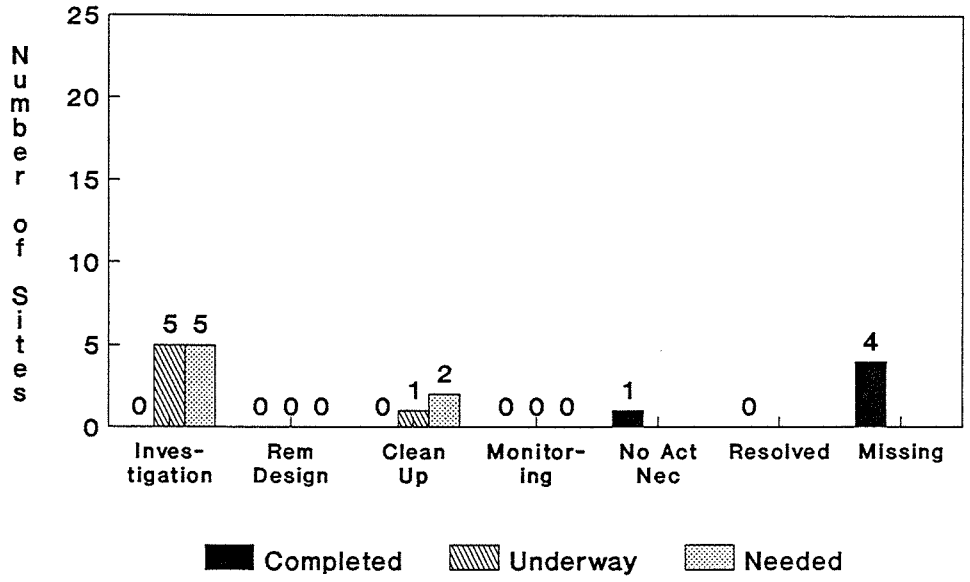
IDENTIFIED SITES LIST -- NORTH CENTRAL DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
CONCORDIA PUBLIC WATER SUPPLY (WELL # 17)	CD	KR	PEST/VOC	GW/PWS		REM DESIGN-N
CONCORDIA PUBLIC WATER SUPPLY (WELL #8)	CD	KR	PEST/VOC	GW/SOIL/PWS		
FARMERS UNION COOP ASSOC., CONCORDIA	CD		OTH	SOIL	LUST	RESOLVED-C
GLASCO PWS WELL #2	CD	SO	VOC	GW/PWS		
JAVCO INC	CD	KR	VOC	SOIL	SPILL/OTHER	
MILTONVALE LANDFILL	CD	KR	PEST/OIL		LANDFL	INVESTIG-U
MILTONVALE PWS WELL #5	CD	SO	VOC	GW/PWS	OTHER	INVESTIG-N
BURTON BUCKMAN	CS	NE	INOR	GW/PWS	BRINE	
H.L. ROBERTS FISH POND	CS	NE	VOC	SW/SOIL	SPILL/OTHER	RESOLVED-C
ABILENE PUBLIC WATER SUPPLY	DK	SS	VOC	GW/SOIL/PWS	DMPING/ABAND	INVESTIG-C
FINA (PUMP AND PANTRY)	DK		VOC	PWS	LUST	REM DESIGN-C
HOPE PUBLIC WATER SUPPLY	DK		VOC	GW/PWS		REM DESIGN-N
JACK HAMME, ABILENE	DK		OTH	SOIL	LUST	INVESTIG-U
ROOF FARM (SOLOMON ELECTRIC DUMP SITE)	DK	SS	OIL	SOIL		INVESTIG-N
STUCKEY'S	DK	SS	VOC	GW	LUST/SPILL	CLEANUP-C
ELLSWORTH PWS WELL #4	EW	SS	VOC	GW/PWS		INVESTIG-U
ENRON (HTI)	EW	LA	INOR	GW	LAGOON/BRINE	REM DESIGN-C
FINA, JUNCTION CITY	GE		OTH	GW/SOIL	LUST	REM DESIGN-C
GRANDVIEW PLAZA PWS WELLS #3 AND #4	GE	SS	VOC	GW/PWS		REM DESIGN-C
RANDALL PWS WELL #2 (STANDBY)	JW	KR	VOC	GW/PWS	OTHER	INVESTIG-N
ATS&F	LY	NE	VOC	GW	SPILL	
BURNS WELL	MN	LA	INOR	GW	LAGOON/BRINE	INVESTIG-U
FAYNE BEATTIE WELL	MN	LA	INOR	GW	LAGOON/BRINE	REM DESIGN-C
HILLSBORO INDUSTRIES, INC.	MN	NE	ACID/HM		OTHER	
MOWAT WELL	MN	NE	OIL	GW	OTHER	CLEANUP-C
CITY OF CONWAY	MP	LA	INOR/OIL	GW/PWS	OTHER	INVESTIG-U
COLUMBIA INDUSTRIES, INC., LINDSBORG	MP	SS	HM	SOIL	OTHER	REM DESIGN-C
FINA SERVICE STATION	MP	LA	VOC/OTH	GW/SOIL	LUST	REM DESIGN-U
GALVA PWS WELLS #3 AND #4	MP	LA	VOC	GW		REM DESIGN-C
HERB TILLOCK	MP	LA	INOR			
KOCH INDUSTRIES INC.	MP		INOR		LAGOON/OTHER	
K-MART, MCPHERSON	MP		OTH		LUST	NO ACT NEC-C
MCPHERSON PWS WELLS #2, #5	MP		VOC			INVESTIG-U
MID AMERICA PIPELINE COMPANY	MP	LA	INOR	GW	LAGOON/BRINE	REM DESIGN-C
NCRA REFINERY	MP	LA	VOC	GW	SPILL/PIPELN	CLEANUP-C
ADAM'S 66	MR	NE	VOC	GW	LUST	CLEANUP-C
BOLTON CHRYSLER DEALERSHIP, COUNCIL GROVE	MR		OTH	SOIL	LUST	RESOLVED-C
AXTELL PWS WELL #2	MS	KR	VOC	GW/PWS		INVESTIG-C
FIRST NATIONAL BANK, SUMMERFIELD	MS		OTH	GW/SOIL	LUST	INVESTIG-U
HERKIMER CO-OP	MS	KR	VOC	GW/SOIL/PWS	LUST	REM DESIGN-U
KANEB PIPELINE COMPANY	OT	MC	OIL	SW/SOIL	SPILL/PIPELN	RESOLVED-C
BROTHERS LEASE	RC	LA	INOR	GW/SW	SPILL/BRINE	
BUSHTON GRAIN & ELEVATOR	RC	LA	INOR	SW/SOIL	SPILL	RESOLVED-C
KP&L	RC	LA	VOC	SOIL		
RICHANO/NUCLEAR WASTE TECHNOLOGIES MINE	RC	LA	INOR	GW	LAGOON/BRINE	CLEANUP-N

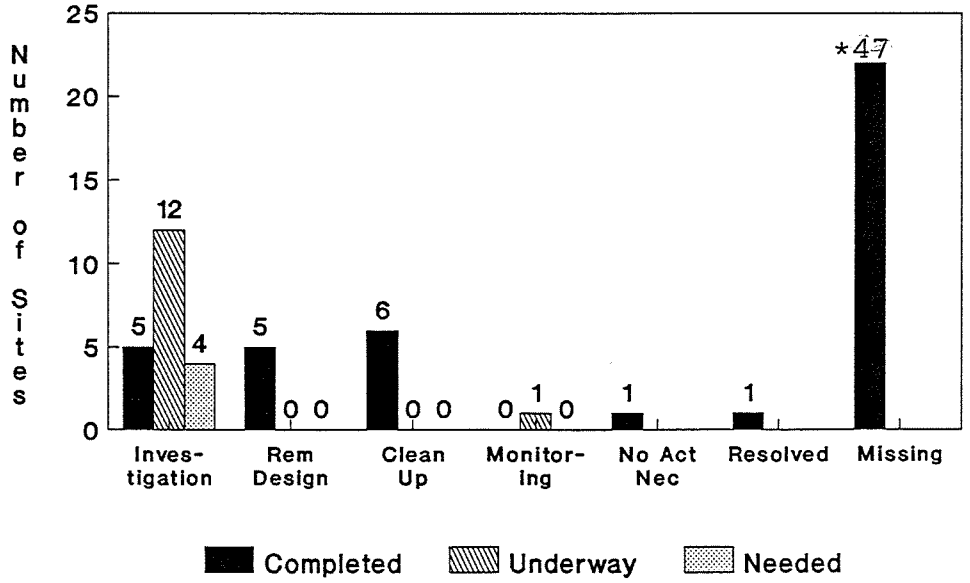
IDENTIFIED SITES LIST -- NORTH CENTRAL DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
ALVIN DEINES WATER WELL	RL	KR	VOC	GW	LUST	INVESTIG-U
BOB OBERHELMAN COMPLAINT	RL	KR	VOC	GW	LUST	INVESTIG-U
FT. RILEY UST LEAK	RL	KR	VOC		LUST/OTHER	RESOLVED-C
KSU BURIAL PLOT	RL	KR	OIL		LANDFL	INVESTIG-U
RILEY COUNTY ASPHALT PLANT	RL	KR	VOC	SW	SPILL/OTHER	RESOLVED-C
RILEY COUNTY LANDFILL	RL	KR	VOD	GW	LANDFL	REM DESIGN-C
UNIVERSITY AMOCO, MANHATTAN	RL		OTH	GW/SOIL	LUST	CLEANUP-C
FINA TRUCK STOP (NAT'L MKTG.)	RP		VOC		LUST/OTHER	INVESTIG-U
J-R GRAIN CO.	RP		PEST		OTHER	INVESTIG-N
EXLINE	SA		HM		LAGOON/OTHER	REM DESIGN-C
SALINA PWS WELLS	SA	SS	VOC	GW/PWS		INVESTIG-U
SALINE COUNTY LANDFILL	SA	SS	HM		LANDFL	INVESTIG-C
SMOKY HILL WEAPONS RANGE	SA	SS	INOR		OTHER	
SOLOMON ELECTRIC SUPPLY, INC.	SA	SS	OIL		OTHER	REM DESIGN-C
SWISHER WELL	SA	SS	INOR		BRINE	
WEST WOODLAND SITE, SALINA	SA		OTH		LUST	RESOLVED-C
WILGUS WELL	SA	SS	INOR		BRINE	REM DESIGN-N

Status of LUST Sites
Northwest



Status of Non-LUST Sites
Northwest



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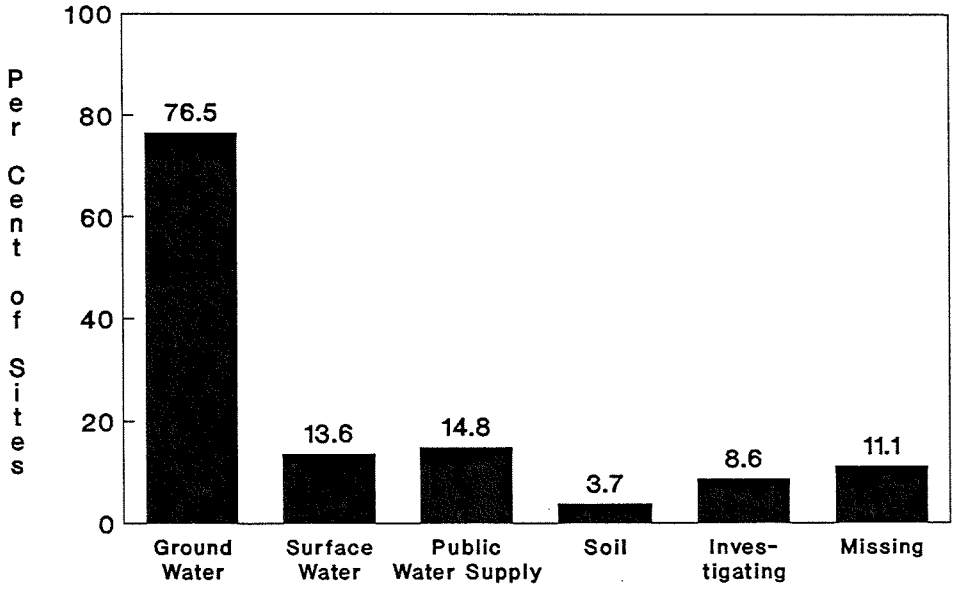
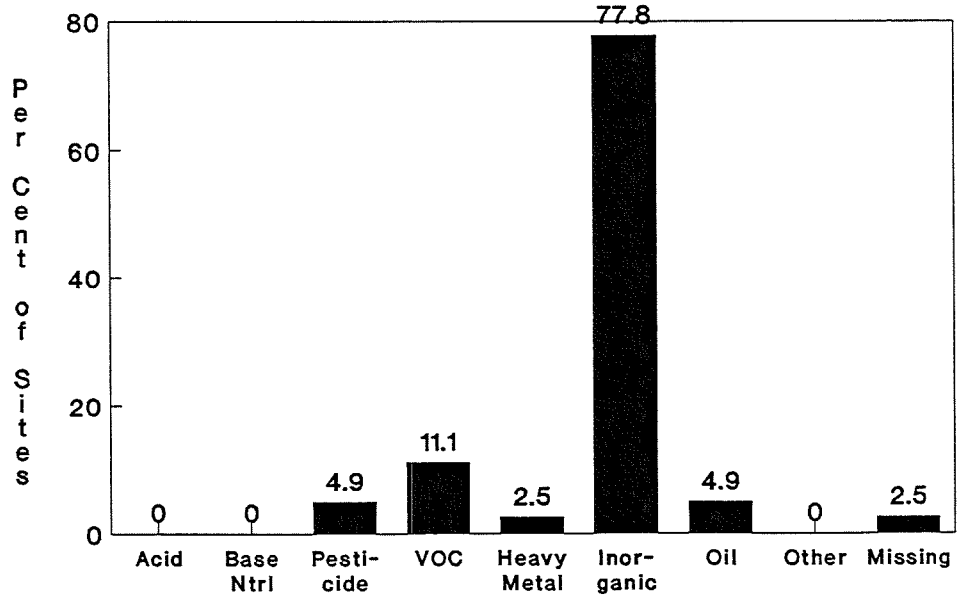
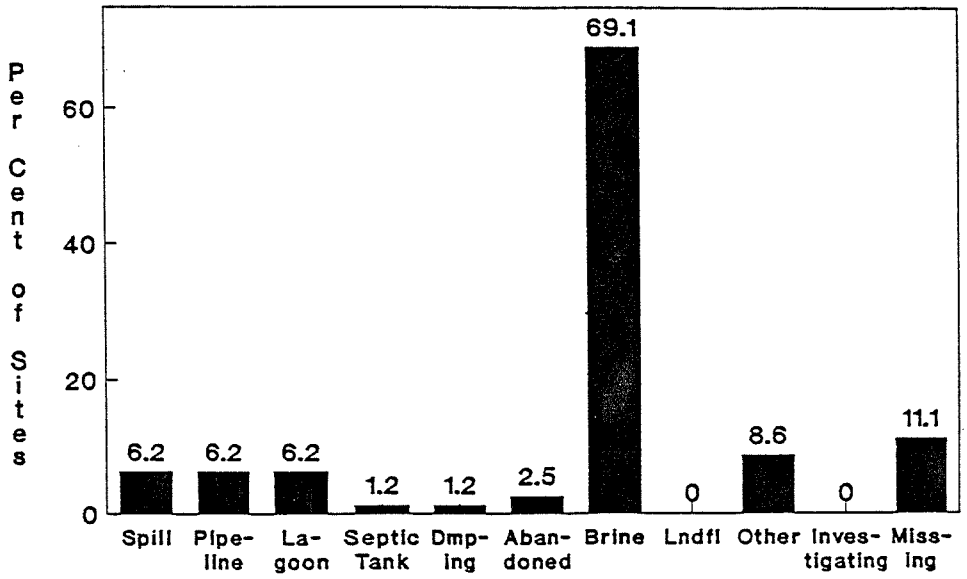
Contaminated Media Summary
Northwest



Contaminant Summary
Northwest



Source
Northwest



There are 81 non-LUST and 18 LUST sites in the northwest district on the Identified Sites List. Investigation is underway or needed at ten LUST sites. Twenty-one non-LUST sites are under some phase of investigation. Of the 47 sites for which information on status is missing, 45 are KCC sites.

Groundwater contamination is reported at over 75% of non-LUST sites. Fifteen per cent of the sites involve public water supplies. Inorganic compounds are the predominant contaminants. The inorganic constituent of concern is chloride as brine associated with oil field activities. Brine is reported as the source of contamination at 69% of sites in the northwest district.

IDENTIFIED SITES LIST -- NORTHWEST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
DRESSER INDUSTRIES, INC., (TITAN SERVICES)	BT	LA	VOC/OIL			REM DESIGN-C
GREAT BEND UNNAMED	BT	SS	INOR	GW	BRINE	
HARRY BUMEISTER	BT	LA	INOR	GW	BRINE	INVESTIG-U
HENRY STAUDINGER	BT		INOR		BRINE	INVESTIG-N
LARRY PANNING	BT	UA	INOR		BRINE	INVESTIG-U
LARRY WEATHERS	BT		INOR			
PHILLIPS 66 AND OTHERS	BT	UA	VOC	GW	LUST	INVESTIG-U
CITY OF JENNINGS	DC	UR	INOR	GW/PWS	LAGOON/ABAND	INVESTIG-U
MARION MOCKRY	DC	UR	PEST	GW/PWS	OTHER	
PAUL BREMER	DC	UR	INOR		BRINE	
ANDREW WASINGER	EL	SS	INOR	GW	BRINE	
CATHERINE HASCHENBERGER TOWNSITE	EL		INOR		BRINE/OTHER	INVESTIG-N
CECILIA DREILING	EL	SS	PEST	GW	OTHER	
CLARENCE SCHAEFER	EL	SS	INOR	GW	OTHER	
CROSS MANUFACTURING CO., INC.	EL	SS	HM	GW/PWS	BRINE	CLEANUP-C
DORIS LANG	EL		INOR	GW	BRINE	
DORTLAND	EL		INOR			
DOUG PHILLIP	EL	SS	INOR	GW	BRINE	
ELLIS COUNTY FEEDERS	EL	SS	INOR	GW		
FRANK WERTH	EL	SS	INOR	GW	BRINE	
HAYS FIRE DEPARTMENT	EL	SS	VOC	SOIL	LUST	INVESTIG-U
HAYS GASOLINE CONTAM.	EL	SS	OTH	GW/SOIL	LUST	CLEANUP-N
HAYS WELLS 20, 27, 28	EL		VOC		OTHER	INVESTIG-U
JIM DINKEL	EL	SS	INOR	GW/PWS	BRINE	INVESTIG-U
JIM MAXWELL	EL	SS	INOR	GW/SW	BRINE	
JOHN KRAUSE	EL	SS	INOR	GW	BRINE	
LED STRAMEL	EL	SS	INOR	GW	BRINE/OTHER	
LEON DINKEL & TONY SANDERS	EL	SS	INOR	GW	BRINE	
MARCELLUS GROSS	EL	SS	INOR		SPILL/BRINE	INVESTIG-N
MATADOR PIPELINE	EL	SS	VOC/OIL	GW/SW	PIPELN	CLEANUP-C
NIELSON SINKHOLE	EL	SS		GW	BRINE	REM DESIGN-C
PEPSI COLA BOTTLING	EL		VOC	GW	LUST	CLEANUP-U
PERMIAN OIL	EL		VOC	GW	LUST/LAGOON	INVESTIG-U
PWS WELL #1	EL		VOC	GW/PWS	SPILL	INVESTIG-U
RAMADA INN/TEXACO	EL	SS	VOC	GW	LUST	
R.J. ZIMMERMAN	EL	SS	INOR	GW	BRINE	
SHORT STOP	EL		VOC	GW/SOIL	LUST	
WATER SUPPLY WELLS	EL	SS	INOR	GW/PWS		
WILLIAM BURR COMPLAINT	EL	SS	VOC	GW/PWS	LUST	INVESTIG-N
FELL OIL AND GAS	EL	SS	INOR	GW	BRINE	
BOGUE AREA	GH	SO	INOR	GW	BRINE	
BOGUE PWS #2	GH	SO	VOC	GW	LUST	NO ACT NEC-C
EUGENE JOHNSON	GH	SO	VOC	GW	SPILL/BRINE	INVESTIG-C
E.L. RICHMEIER	GH	SO		GW/SW	BRINE/OTHER	INVESTIG-C
FRED KEITH	GH	SO	INOR	GW	BRINE	

IDENTIFIED SITES LIST -- NORTHWEST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
GIL BALTHAZOR, RAY BRAULT	GH	SO	INOR	GW/SW	BRINE	INVESTIG-U
GRAHAM COUNTY UNKNOWN	GH	SO	INOR	GW	BRINE	
HARRY CLINT MINIUM	GH		INOR	GW	ABAND/BRINE	INVESTIG-C
LEON FINK	GH	SO	INOR	GW/SW	LAGOON/BRINE	REM DESIGN-C
MULBERRY ST. AREA	GH	SO	VOC	GW	LUST	INVESTIG-N
WILBUR STITES	GH	SO	VOC	GW	SEPTIC/OTHER	NO ACT NEC-C
COOPER OIL	GO	SS	OTH		LUST	INVESTIG-N
PLUM CREEK AREA	GO	SS	INOR	GW	BRINE/OTHER	INVESTIG-N
QUINTER COOP FIRE	GO	SS	PEST/OIL	SW/SOIL	SPILL	
HARRY UNRUH	LG	SS	INOR	GW	BRINE/OTHER	INVESTIG-U
OAKLEY PWS WELL #11	LG	SS	VOC	GW/PWS	LUST	INVESTIG-N
PRAIRIE DOG TOWN	LG		VOC	GW/PWS	LUST	INVESTIG-U
CLAVERT MILL	NT		OTH	GW	LUST	INVESTIG-U
CITY OF ALTON	OB	SO	VOC		LUST	INVESTIG-N
CRA, INC. (AKA: FARMLAND INDUSTRIES)	PL	SO	VOC	GW/SW/SOIL	LAGOON	REM DESIGN-C
PWS WELL #3, #4	PL	SO	VOC	GW/PWS		
CITY OF MCDONALD	RA	UR	INOR	GW/PWS		
APCO SERVICE STATION	RO		VOC	GW	LUST	
CARL HILGENS	RO	SO	INOR	GW	BRINE	
CODELL, KS AREA	RO	SS	INOR	GW	OTHER	
FOSTER SHEPARD	RO	SS	INOR	GW	PIPELN	REM DESIGN-C
GRIEBEL, FOSTER, ROY	RO	SO	INOR	GW	BRINE	
HAROLD SIMONS	RO	SO	INOR		BRINE	
LATON AREA - SEVERAL LANDOWNERS	RO	SO	INOR	SW	BRINE	
MARY MARCOTTE	RO	SO	INOR	GW	BRINE	
MELVIN KELLER	RO	SS	INOR	SW	BRINE	
ORVILLE GARVER	RO	SO	INOR	GW/PWS	BRINE	
PAT IREY - HRABE AREA	RO	SO	INOR	GW/SW	PIPELN/LAGOON	CLEANUP-C
PEAVEY-MOWRY-VINE-BATES	RO	SO	INOR	GW	PIPELN/BRINE	INVESTIG-U
PLAINSVILLE	RO	SO	VOC	GW/PWS	LUST	
PLAINVILLE PWS #1	RO		VOC	GW	OTHER	INVESTIG-U
SCATTERED ROOKS COUNTY	RO	SO	INOR	GW	BRINE	
SCHRUBEN	RO	SO	INOR	GW	LAGOON/BRINE	CLEANUP-C
STOCKTON	RO	SO	INOR		BRINE	INVESTIG-C
TOM HOUSER	RO	SS	INOR	GW	BRINE	
DENNIS DUMLER	RS	SS	INOR	GW	BRINE	
EVERETT DORTLAND	RS		INOR		BRINE	INVESTIG-U
FAIRPORT STATION	RS	SS	OIL		SPILL/PIPELN	CLEANUP-C
KEIR	RS	SS	INOR	GW	BRINE	
LELAND NUSS	RS		INOR	GW	BRINE	
LES WITTMAN	RS	SS	INOR	GW	BRINE	
LOUIS SANDER	RS		INOR	GW	BRINE	
OKMAR OIL COMPANY	RS	SS	INOR		BRINE	
RUSSELL RWD #1	RS	SS	INOR	GW/PWS	BRINE/OTHER	INVESTIG-C
TITLE LEASE	RS	SS	INOR	GW	BRINE	

IDENTIFIED SITES LIST -- NORTHWEST DISTRICT

SITE NAME	CO	RB	CONTAMINANT	CONTAMINATED MEDIA	SOURCE	STATUS
TRAPP OIL COMPANY	RS	SS	INOR		BRINE	
VERNON SHAFFER	RS	SS	INOR	GW	BRINE	
PWS WELL #1	SM	SO	VOC	GW/PWS		
KANSAS DEPT. OF TRANSPORTATION	SN	SS	INOR		BRINE	INVESTIG-U
ACE SERVICES, INC.	TH	UR	HM	GW/PWS		
BREWSTER VOC PROBLEM	TH	UR	VOC	GW/PWS	LUST	CLEANUP-N
HIGH PLAINS CHEMICAL COMPANY (SCHMITT BROTHER	TH	SO	PEST	GW/SOIL	OTHER	
DEGGS, BRAUN-CAROLL WYNN	TR	SS	INOR	GW/SW	BRINE/OTHER	RESOLVED-C
FRANK SCHNELLER	TR	SS	INOR	GW	DMPING/BRINE	CLEANUP-C

Federal Superfund Sites

Kansas has seven sites on the Federal National Priorities List. Three additional sites are proposed for the seventh update of the NPL. Status of remediation for the NPL sites is provided below.

Doepke-Holliday Disposal	Holliday	Remedial Design-U
Arkansas City Dump (Milliken Refinery)	Arkansas City	Record of Decision-C* (on Operable Unit 1)
Cherokee County Site	Galena	Remedial Design-U (Galena Subsite)
John's Sludge Pond	Wichita	Post-Cleanup Monitor-U
Big River Sand	Wichita	Cleanup-C
Strother Field	Cowley County	Cleanup-U
Obee Road	Hutchinson	Investigation-U

Proposed Sites:

Hydro-Flex	Topeka	Remedial Design-N
29th and Mead	Wichita	Investigation-U
Pester Burn Pond	El Dorado	Remedial Design-N

*The remedial design has been chosen by EPA; however, remediation has not begun.

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SITES WITH KCC AS LEAD AGENCY

DISTRICT	SITE NAME
NC	Brothers Lease
NC	Burton Buckman
NC	Mowat Well
NC	Swisher Well
NC	Wilgus Well
NW	Andrew Wasinger
NW	Carl Hilgens
NW	Codell, KS Area
NW	Dennis Dumler
NW	Doris Lang
NW	Doug Phillip
NW	E.L. Richmeier
NW	Everett Dortland
NW	Fell Oil and Gas
NW	Frank Werth
NW	Fred Keith
NW	Gil Balthazor, Ray Brault
NW	Graham County Unknown
NW	Great Bend Unnamed
NW	Griebel, Foster, Roy
NW	Harry Bumeister
NW	Harry Clint Minium
NW	Jim Maxwell
NW	John Krause
NW	Kansas Dept. of Transportation
NW	Keir
NW	Larry Weathers
NW	Laton Area - Several landowners
NW	Leland Nuss
NW	Leo Stramel
NW	Leon Dinkel & Tony Sanders
NW	Les Wittman
NW	Louis Sander
NW	Marcellus Gross
NW	Mary Marcotte
NW	Melvin Keller
NW	Nielson Sinkhole
NW	Okmar Oil Company
NW	Orville Garver
NW	Pat Irey - Hrabe Area
NW	Paul Bremer
NW	Peavey-Mowry-Vine-Bates
NW	R. J. Zimmerman
NW	Scattered Rooks County
NW	Stockton
NW	Title Lease
NW	Tom Houser
NW	Trapp Oil Company

NW	Vernon Shaffer
NW	Water Supply Wells
SC	Burrton Oil Field
SC	Hollow-Nikkel Area
SC	Ivan Bruce
SC	James Catron
SC	Raymond Oil
SC	Striker Oil Corporation
SE	Browning Lease
SE	Evrett Lease
SE	Tate Creek
SE	Wayside Prod. Co.
SW	Diel Farm
SW	Enoch Thompson
SW	Henry Strecker
SW	Kent Rixon
SW	Kent Rixon
SW	Stanley Moffet

RESPONSIBLE PARTY CLEANUPS

Non-LUST Sites:

29th and Mead	Wichita
Air Products (Abbott Labs)	Wichita
American Salt	Lyons
Arco/Sinclair/Dyman	Kansas City
AT&SF	Emporia
AT&SF RR	Newton
AT&SF	Topeka
Barton Solvents (Drumco Inc.)	Valley Center
BMAC Landfill	Wichita
Boeing M.A.C.	Wichita
Boeing Military Airplane Co.	Wichita
BPU	Quindaro
Brother's Lease	Rice County
Browning Lease	Greenwood County
Brutus	West Mineral
Burn's Well	Conway
C & C Tank Wagon	Olathe
Cessna Aircraft Pawnee	Wichita
Cessna Aircraft Wallace	Wichita
CFCA (Farmland)	Lawrence
Cities Service	Burrton
City of Conway	Conway
Columbia Industries	Lindsborg
CRA, Inc.	Phillipsburg
Cross Manufacturing Company	Hays
Cross Manufacturing Co., Inc.	Hays
Cy Frazier	Gardner
Dresser Industries	Great Bend
Exline	Salina
Farmland Industries	Dodge City
Farmland Industries	Coffeyville
Fayne Beattie Well	Conway
FMC	Lawrence
Forbes Field	Topeka
Full Vision, Inc.	Newton
General Motors Corp.	Olathe
General Motors	Kansas City
Industrial Chrome	Topeka
K.U. Landfill (Sunflower)	Johnson County
Kansas Army Ammunition Plant	Parsons
Kirby Clawson	Satanta
Koch Industries	Conway
KSU Agronomy Farm	Hesston
KU Power Plant	Lawrence
Kuhlman Diecasting	Stanley
Manhattan Mall Site	Manhattan
Mark IV	Stanley
Mesa Petroleum/Kirby Clawson	Amarillo, TX
Midwest Machine Works	Topeka
National Zinc Company	Cherryvale

NCRA Refinery	McPherson
NCRA Refinery	McPherson
Neodesha Refinery	Neodesha
NIES	Furley
Olathe City Landfill	Olathe
Oxy Cities Service	Wichita
Panhandle Eastern	Liberal
Park City PWS Wells	Park City
PBI-Gordon	Kansas City
Phillips Petroleum (KC Refinery)	Kansas City
Quinter Coop Fire	Quinter
Raymond Oil	Wichita
Reichold Chemicals	Kansas City
Riley County Landfill	Manhattan
Riley County Asphalt Plant	Manhattan
S&G Metals	Kansas City
Salt Companies/Cargill Morton	Hutchinson
Sedgwick County Courthouse	Wichita
Sherwin-Williams	Coffeyville
Solomon Electric Supply	Solomon
Stake Site	Bloom
Strother Field	Hackney
Terry Bethel	Belle Plaine
Terry Bethel	Belle Plaine
Thompson Hayward	Kansas City
Vicker's Refinery	Potwin
Vulcan Materials	Wichita
Wayside Prod. Co.	Burden

LUST Sites:

19th & Massachusetts	Lawrence
59 Truck Stop	Erie
60th and Mission Road	Fairway
Adam's 66	Council Grove
Amoco	Wichita
APCO	Topeka
Associated Wholesale Groceries, Inc.	Kansas City
Associated Wholesale Grocers #2	Kansas City
Avondale West School	Topeka
B & G Service	Parsons
Bolton Chrysler Dealership	Council Grove
Brown County Shop	Overland Park
Brown's Conoco	Parsons
Burk Oil Company	Pittsburg
Carl Grimm	Chanute
Casey's General Store	Lebo
Coast Mart #9112	Wichita
Colonial Bread	Kansas City
Derby Refinery	Wichita
E.V. Harris	Parsons
East Topeka K-Mart	Topeka
Envelope Machinery	Kansas City
Farmer's Union Coop Association	Concordia

Fina	Wichita
Fina	Topeka
Fire Station	Topeka
Getty Refinery	El Dorado
Herkimer Co-op	Herkimer
Horner's Corner	Newton
Inland Quarries (Americold)	Kansas City
Jim's Conoco	Topeka
Johnson's General Store	Chanute
Kalvesta Restaurant	Kalvesta
Kansas City Power and Light Plant	La Cygne
Kansas Turnpike Authority, Sumner	Belle Plaine
KDOT Maintenance	Wichita
Kenworth	Dodge City
Legion Complaint	Wichita
Methodist Church	Topeka
Olathe Service Center	Olathe
Pepsi Cola Bottling	Hays
Purina Mills	Wichita
Purina Mills	Wichita
Quality Oil, 500 N. Main	Lansing
Ransom Co-op	Ransom
Select Products	Leavenworth
Stuckey's	Abilene
Stueve's Phillips 66	Topeka
Suburban Tire and Auto Center	Stanley
Texaco	Topeka
Tux's Standard Service	Kingman
U.S.D. 501	Topeka
U.S.D. 500	Kansas City
Vickers	Shawnee
Washburn's Service	Chanute
William Dunn	Topeka
Wood Oil Corp.	Garnett
Zarda Dairy	Shawnee
Zenith Co-op	Zenith