RESULTS OF MONITORING SHALLOW GROUNDWATER IN MISSOURI FOR FOUR AGRICULTURAL PESTICIDES, 2001 - 2006

FINAL REPORT

State Fiscal Year 2006

Prepared by
Scotty D. Baumgartner, Hydrologist
Missouri Department of Natural Resources
Water Resources Center

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Department of Natural Resources
PO Box 176
Jefferson City, Missouri 65102-0176

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INTRODUCTION

In recent years, pesticides in the environment and human exposure to pesticides have received an increase in government and public attention. In response, both the federal Safe Drinking Water Act enacted in 1974 and the Food Quality Protection Act enacted in 1996 include measures to study and mitigate human exposure to pesticides in drinking water derived from surface water and groundwater sources.

In Missouri, groundwater is the source of drinking water for approximately 42 percent of the population. Thirty-two percent of the drinking water supplied by public water systems and almost 100 percent of the self-supplied domestic drinking water is obtained from groundwater sources (Hutson and others, 2005). Much of the self-supplied drinking water is provided by shallow private wells that are located in agricultural areas.

The most vulnerable areas of the state, such as the southeastern lowlands (Bootheel) and along major rivers and streams, are characterized by permeable surficial and subsurface materials, a shallow water table within 20 feet of the land surface, and intense row-crop agriculture. These factors are conducive for contaminant migration into the groundwater. However, previous investigations of Missouri's groundwater by the Missouri Department of Natural Resources, Missouri Department of Health, U.S. Geological Survey (USGS), and University of Missouri-Columbia have shown that pesticides are present in groundwater in areas with relatively impermeable surficial and subsurface materials (Sievers and Fulhage, 1992; Wilkison and Maley, 1994; Bell and others, 1996; and Kolpin and others, 1993.

In 1991, the U.S. Environmental Protection Agency (EPA) proposed a groundwater strategy in response to detections of commonly used corn and soybean pesticides in the nation's groundwater. In June 1996, as part of the strategy, the EPA published the proposed rule "Pesticides and Ground Water State Management Plan." This proposed rule implements a key component of the Agency's 1991 "Pesticides and Ground Water Strategy". Through the development and use of State and Tribal Pesticide Management Plans (PMPs), the EPA proposed to restrict the use of certain pesticides by providing States with the flexibility to protect groundwater in the most appropriate way for local conditions. A PMP outlines, in detail, how a state will manage a given pesticide such that its use will not cause an unreasonable impact on groundwater. There are two types of PMPs: generic and specific. Since 1990, the EPA has provided funds to States to help develop "generic" PMPs. The "generic" PMPs are designed to help States and Tribes prepare for the development of "specific" PMPs by providing basic, generalized information for each of the twelve components required in a Specific Pesticide Management Plan (SPMP).

Pesticide is a general term used to describe chemicals used to control pests and includes herbicides, insecticides, and fungicides. Specifically, herbicides are used to control weeds, insecticides are used to control insects, and fungicides are used to control fungi. The EPA designated the triazine herbicides atrazine, simazine, cyanazine, and the acetanilide herbicides alachlor and metolachlor as the first five pesticides that would require a SPMP. Cyanazine was removed from the list because the manufacturer announced plans to cancel the product by the year 2002. All five of these herbicides are used primarily for weed control on agricultural crops. The EPA determined that without proper management this group of herbicides posed a significant risk of groundwater contamination.

The Missouri Department of Agriculture (MDA) is responsible for the regulation of pesticides in the State of Missouri and has been designated by the EPA to coordinate the development of a SPMP for Missouri. The MDA submitted a generic PMP to, and received concurrence from, the EPA Region VII. In 1999, MDA began developing SPMPs for five pesticides (the current specific pesticides plus cyanazine) that the proposed rule indicated would require an SPMP. The MDA, with assistance from the Missouri Department of Natural Resources' Water Resources Center (WRC), developed and submitted to the EPA Region VII the Monitoring Component (Baumgartner and Brookshire, 2001) of the SPMP for the current specific pesticides. In anticipation of the EPA adopting the proposed SPMP rule as federal regulation in the future, the MDA in cooperation with the department began to monitor shallow groundwater for the current specific pesticides in the spring of 2002 (Baumgartner, 2002; Baumgartner, 2003; Baumgartner, 2004; Baumgartner, 2005). This report summarizes the results of monitoring shallow groundwater in Missouri for the specific pesticides over the past five years.

Purpose and Scope

The purpose of this project is to determine if agricultural pesticides are present in Missouri's groundwater. If present, this report will describe which pesticides were detected, where they were detected, and at what concentrations they were detected. The data collected for and discussed in this report is intended to provide information necessary to develop and implement an effective statewide pesticide management plan.

The groundwater monitoring data presented in this report were collected from February 20, 2002 through June 6, 2006. Monitoring focused primarily on the distribution and occurrence of atrazine, simazine, alachlor, and metolachlor. These herbicides are used primarily on corn, but are also used on grain sorghum, soybeans, and for other purposes. The frequencies of detection, concentration, and spatial distribution of these herbicides are shown in this report. The analytical method used to detect these herbicides also detects the presence of four additional pesticides. The four additional pesticides are cyanazine, metribuzin, propachlor, and butachlor. Data sets are available for these four pesticides; however, the data is not presented in this report.

The information and data in this report is intended to be a screening tool to identify areas in the state where pesticides have entered the groundwater system as a result of normal field usage. Data presented in this report are not solely adequate, nor intended, to evaluate the state's groundwater with respect to federal and state drinking water or other human health standards. Groundwater from wells used as potable supplies (private or public) must still be tested to determine if they meet drinking water and human health standards.

Location

The study area for this report includes the seventy-six counties shown in Figure 1. Shallow groundwater in these counties is vulnerable to contamination from pesticide usage (Baumgartner and Brookshire, 2001). This study focuses on aquifers near the surface that are sensitive to surface activities. Several different aquifer types underlie the area of investigation. The

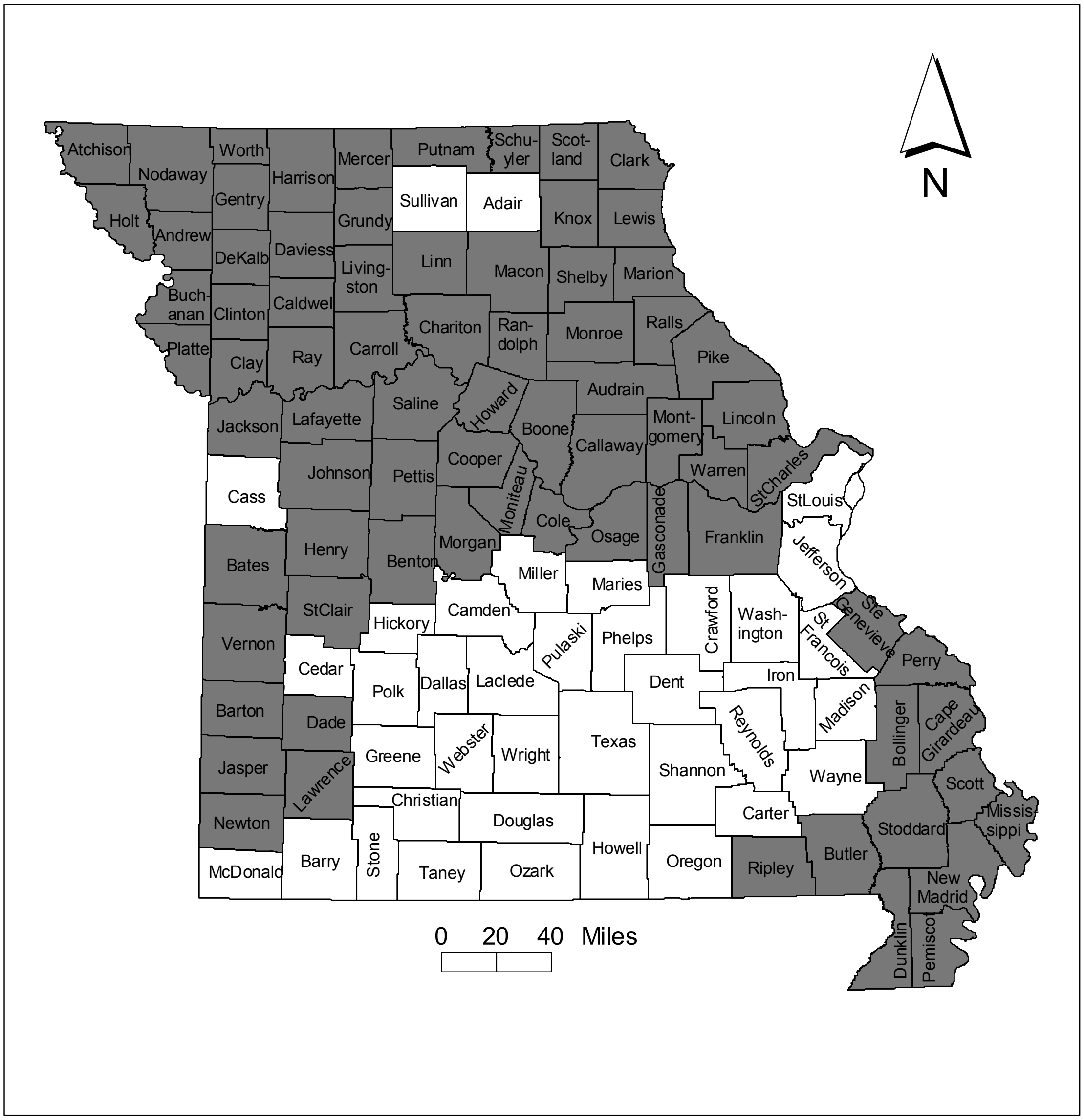

Figure 1. Location of study area shaded gray.

Missouri Aquifer Classification Map (Miller and others, 1994) is shown in Figure 2. This map classifies the various aquifers in the state based on their susceptibility to contamination. Three aquifer areas, with subdivisions, are delineated using the hydrologic and geologic parameters of the surficial materials, shallow bedrock, recharge potential for the aquifers, presence or absence of an aquaclude, and the natural or existing groundwater quality. These major areas are designated by Roman numerals I, II, and III. Area I has the highest vulnerability or potential for contamination and area III has the lowest. Alphabetic designations are used to identify the subdivisions within each major area. A fourth aquifer area (IV) is shown in Figure 2, however, it is an undifferentiated area of aquifer types IB and IIID. See Appendix I of Baumgartner and Brookshire (2001) for a complete description of the aquifer areas. Table 1 presents a brief description of the geologic formations and their hydrologic characteristics.

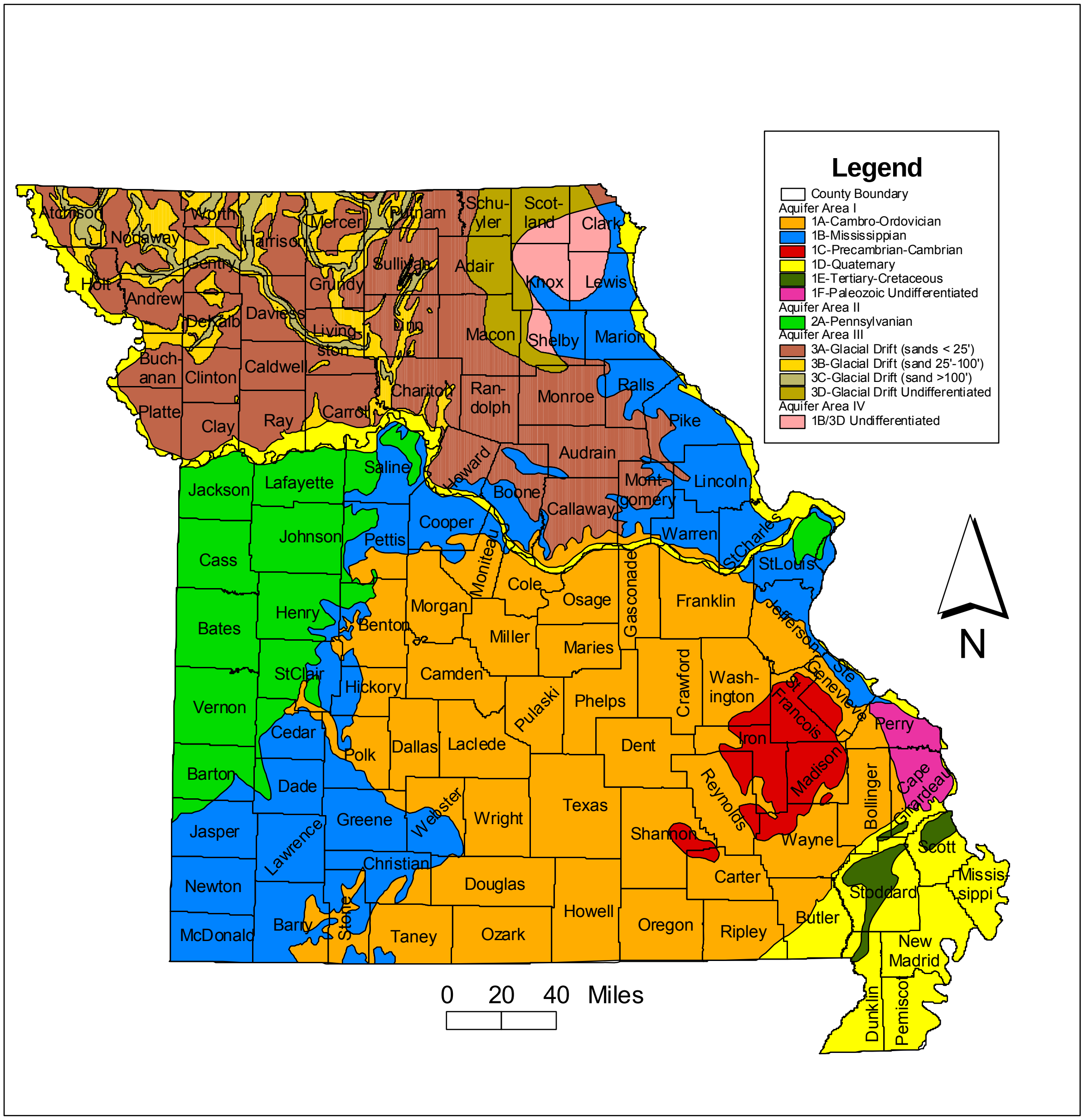

Figure 2. Missouri Aquifer Classification Map

System	Group or Formation	Lithology	Hydrology
Quaternary	Alluvium	Clay, silt, sand and gravel	Missouri and Mississippi River alluvium yields >1000 gpm. Southeastern lowland alluvium can yield up to 3000 gpm.
	Glacial drift and preglacial valley fill	Mixture of clay, silt, sand, gravel to boulder material	3-50 gpm available where clean, permeable sand and gravel is present. Preglacial valley alluvium may yield as much as 500 gpm
Tertiary	Wilcox	Sand, some clay. Contains thin beds of lignite.	A major aquifer used mainly for municipal supply.
	Porter's Creek Clay	Clay, light gray when dry, dark gray when wet.	Does not yield significant quantities of water to wells. Act as barriers to groundwater movement.
	Clayton Formation	Calcareous, glauconitic sand & clay to fossiliferous limestone.	
Cretaceous	Owl Creek Formation	Bluish-gray to brown sandy clay.	Generally impedes groundwater flow.
	McNairy Formation (Ripley Sand)	Sand, sandy clay, and clay.	A significant aquifer widely used for municipal supplies.
Pennsylvanian	Kansas City Group	Massive limestone formations with intervening shale formations.	Small amounts of water (1-3 gpm) available from limestone near the outcrop line.
	Pleasanton Group	Thick clastic shale with a basal siltstone or very fine-grained sandstone. Locally, there are two other thick channel sandstones in the upper half.	Not considered to be water bearing. Locally, may yield very small amounts of water from sandstone beds. Water may be poor in quality.
	Marmaton Group	Fewer sandstone bodies than preceeding group, with more thin limestone and thick shale sequences.	
	Cherokee Group and Krebs Subgroup	Thin sandstones and siltstones with intervening shales. The shales locally have coal seams. Thin limestone beds occur at widely scattered intervals.	May yield small amounts of water from sandstones (3-20 gpm). Water may be poor in quality.
Mississippian	Ste. Genevieve, St. Louis, Salem, Warsaw Formations	Limestone and shale	May yield 5-10 gpm where units are not deeply buried.
	Burlington –Keokuk Limestone, Elsey/Reeds Spring Formations, Pierson Limestone	Limestone and cherty limestone	Yield small amounts of water to wells locally. In northeast, may contain highly mineralized water if deeply buried.
Ordovician	Kimmswick, Decorah Group, Plattin, and Joachim.	Dolomite, limestone, and shale.	Kimmswick yields generally adequate for domestic supplies. 5-10 gpm.
	St. Peter Sandstone	Sandstone and dolomite	Good production for domestic, farm and small industry. 25-75 gpm
	Powell, Cotter, Jefferson City, and Roubidoux	Dolomite, chert, and sandstone	Produces sufficient water locally for domestic and farm use. Up to 25 gpm.
Paleozoic Era (not a system)		Limestone, sandstone, and dolomite	Used for domestic supplies and municipal supplies when close to the Ozarks.

Table 1. Geologic formations in the areas monitored.
(modified from Vandike, 1997).

Agricultural Pesticide Use

Corn and soybeans are the dominant row-crops grown in Missouri and are especially important to the northern and southeastern portions of the state. The Bootheel is the most intensively cropped region of the state due to its high percentage of tillable, level land, long growing season and abundant irrigation water. Nationally, Missouri ranks seventh in soybean production, fifth in grain sorghum production, and ninth in corn production (Missouri Agricultural Statistics Service (MASS, 2004). In 2003, approximately 41 percent (18,178,200 acres) of Missouri's total land area (44,594,262 acres) was used for crop production. About 27 percent (4,950,000 acres) of those acres used for crop production were planted with soybeans, about 16 percent (2,880,000 acres) were planted in corn, and only 1 percent (210,000) was used for grain sorghum (MASS, 2004).

All of the current specific pesticides are herbicides used to control grass and broadleaf weeds. According to National Agricultural Statistics Service (NASS) estimates of chemical usage for crop years 2003 and 2004, all four specific pesticides were used on corn , three (atrazine, alachlor, and metolachlor) of the four specific pesticides were used on sorghum, and none of the four specific pesticides were used on soybeans. Since all of the specific pesticides are used on corn and there is much more acreage in corn production than sorghum production, corn production by county was used to determine where to monitor groundwater for the specific pesticides. Table 2 shows the percentage of land area planted in corn that received an application of one or more of the specific herbicides.

Herbicide Name	Percent of Corn Crop Applied in 2003
Atrazine	89
Alachlor	5
Metolachlor	15
Simazine	3

Table 2. Percentage of corn crop applied with each specific pesticide.

Ninety-nine percent (3,057,000 acres) of the corn grown in Missouri during 2005 was planted in the seventy-six counties that comprise the study area (MASS, 2004). Figure 3 shows the distribution of corn production by county.

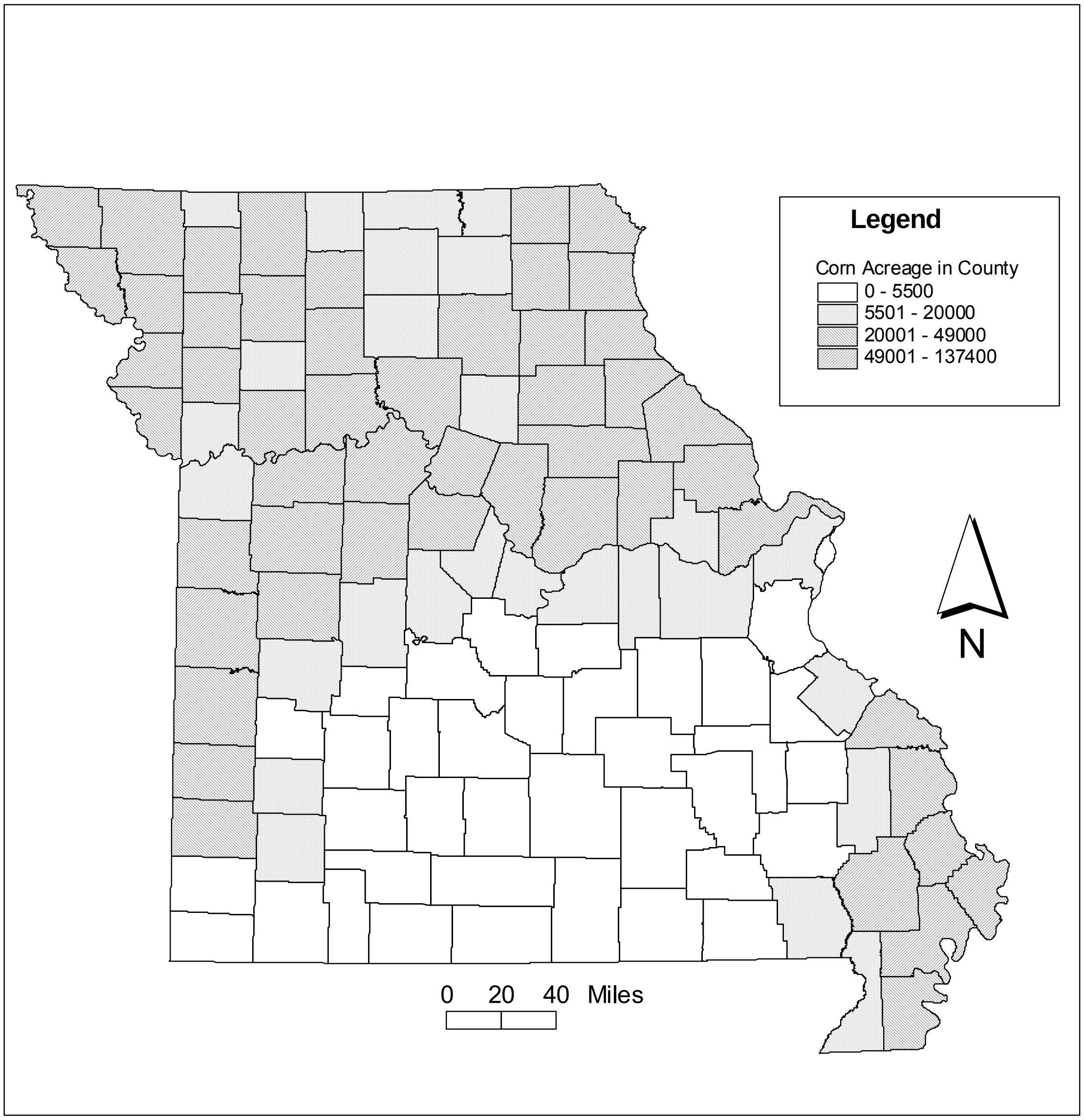

Figure 3. Distribution of corn production by county.

METHODS OF STUDY

The goal of the monitoring network design is to determine whether or not agricultural pesticides are impacting the quality of shallow groundwater. To make maximum use of resources, areas of the state were selected where agricultural pesticides are used most and where hydrogeology indicates shallow groundwater is sensitive to surface activities. The approach used to achieve this goal was to first identify areas in the state where groundwater should be most vulnerable to contamination from usage of the four specific pesticides. This assessment was completed in January 2001 by the department and is titled “A Plan for Monitoring Pesticides in Missouri Groundwater.” In this assessment, a numerical rating was assigned to the four Aquifer Areas shown on the MACM (Figure 1) and to the four groupings or patterns, similar to those shown in Figure 3, determined in the total row-crop acreage for each county. An overall aquifer sensitivity and vulnerability rating (OR) was generated for each aquifer type, including aquifer subdivisions, in each county by multiplying the numerical rating of the Aquifer Area (or aquifer sensitivity rating (ASR) by the corresponding row-crop acreage group (or row-crop rating (RCR). The rating scheme is designed to have the OR for an area with the highest ASR and lowest RCR similar to the OR for an area with the lowest ASR and the highest RCR.

The number of monitoring points originally proposed in each aquifer area of each county is based on the average size of aquifer subdivisions in the counties and the OR. Low OR areas have fewer monitoring points per average aquifer subdivision than those areas with higher ORs. Similar to the ASR and RCR, the ORs are divided into four groups as shown in Table 3.

Overall Rating	Number of Monitoring Points per Average Aquifer Subdivision Size
0	0
1 to 2	1
3 to 6	1.5
7 to 9	2

Table 3. Number of proposed monitoring points per average aquifer subdivision size based on the OR.

As shown in Table 9 of Baumgartner and Brookshire (2001), a total of 288 monitoring points were estimated to be needed statewide to ensure adequate coverage based on aquifer vulnerability and areal extent of various aquifer areas, including aquifer subdivisions. This table also shows the number of monitoring points proposed in each aquifer area of each county.

During the five year period from state fiscal year 2002 (FY02) to state fiscal year 2006 (FY06), the WRC used this assessment to identify and sample wells to be included in the pesticide monitoring network. The WRC submitted annual work plans to the MDA based on available funding. Wells in areas with the highest ORs were identified and sampled during the first year. Up to FY06, wells were identified and sampled in areas with lower ORs until at least one monitoring point was located in all areas vulnerable to pesticide usage. From FY04 to FY06, the WRC also re-sampled some of the wells. A total of 351 samples were collected from 190 wells over the five-year period. Locations of the 190 pesticide monitoring network wells are shown in Figure 4. The wells are referred to in this report by their map labels (or numbers) as shown in Figure 4 and Appendix 1.

Monitoring Point Selection

The monitoring network wells sampled for this study are all private wells. These wells were used because they were readily available, no cost was associated with their use, and the sample collected from them would be representative of the aquifer in the area. These wells were selected from either the department’s Well Information Management System (WIMS) or LOGMAIN databases, or during field reconnaissance. One hundred eighteen wells (62 percent) were

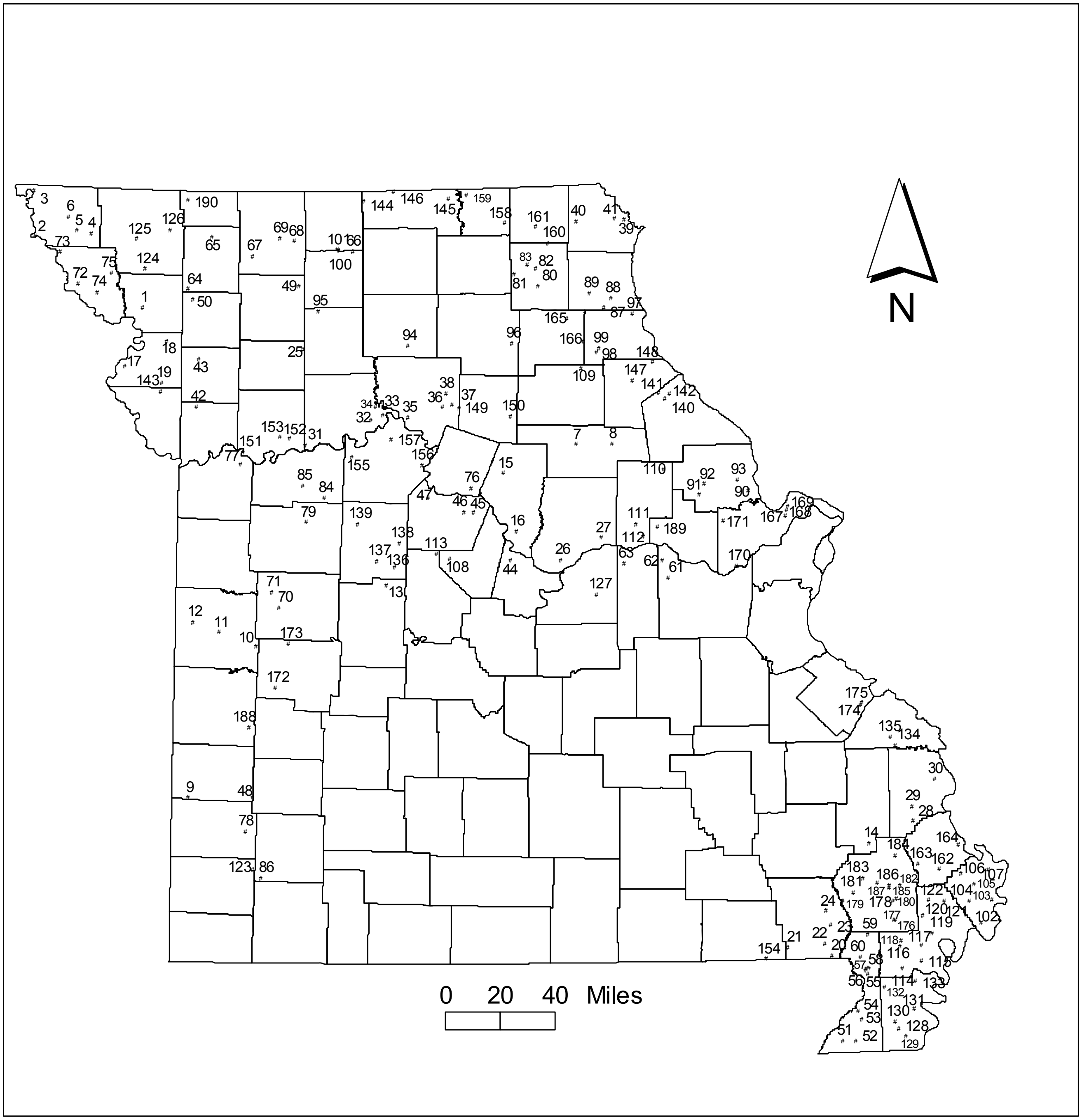

Figure 4. Location and report number of wells sampled.

selected from the WIMS database. These wells are constructed to standards required by Missouri Well Construction Rules (2001). Four wells (2 percent) were selected from the LOGMAIN database. Construction details are available for these wells, however they are not constructed to current department standards. Twenty-one wells (11 percent) are not in either database and construction details are unknown. Forty-seven wells (25 percent) in the alluvium of the Missouri River and Bootheel area are sand point type wells and are exempt from Missouri Well Construction Rules (2001), including reporting requirements. These wells were found by conducting house to house surveys.

Three hundred fifty-one samples were collected from 190 private wells during the five year period from spring 2002 to spring 2006. Eighty-six wells were sampled one time, 50 wells were sampled two times each, 51 wells were sampled three times each, and 3 wells were sampled four times each. The wells range in total depth from 12 to 446 feet. Twenty-six wells in the Ordovician bedrock aquifer (Aquifer Area IA) range in total depth from 100 to 340 feet. Thirty wells in the Mississippian bedrock aquifer (Aquifer Area IB) range in total depth from 17 to 290 feet. Two wells open to both the Ordovician and Mississippian bedrock aquifers are 200 and 446 feet in total depth. Sixty-six wells in the alluvial aquifer (Aquifer Area ID) range in total depth from 12 to 101 feet. Six wells in the Tertiary-Cretaceous aquifer (Aquifer Area IE) range in total depth from 70 to 176 feet. Four wells completed in the Paleozoic Undifferentiated bedrock aquifer (Aquifer Area IF) range from 35 to 165 feet in total depth. The twelve wells in the Pennsylvanian bedrock aquifer (Aquifer Area II) range from 60 to 290 feet in total depth and the thirty-one wells in the Glacial Drift aquifer (Aquifer Area III) range from 25 to 228 feet in total depth.

One hundred eleven wells are within 100 feet of a row-crop field. Ten of the wells are located within or immediately adjacent to row-crop fields. The wells ranged from 0 feet to about one-half mile from the nearest row-crop field. The average distance to the nearest field is about 291 feet. Appendix 1 shows the depths of the wells, distance to the nearest field, and the geologic units from which the well produces groundwater.

Water Sample Collection

Groundwater sample collection for this study began in spring 2002. Ideally, a well sampling program of this type would include sampling wells for pesticides multiple times a year or at least seasonally. However, to adequately characterize all groundwater in the state that is vulnerable to pesticide usage with the resources available, more wells will have to be sampled and fewer wells sampled frequently. The goal was to complete sampling activities for the new wells before the spring planting season. This would provide a sample that is more representative of background groundwater quality. Additionally, collecting samples before, or after, the spring planting season eliminates the possibility of samples being contaminated during collection due to drift of pesticides in the air.

Quality Assurance and Quality Control

The Missouri Department of Natural Resources' Environmental Services Program (ESP) has established comprehensive quality assurance protocols for ensuring quality environmental data, including groundwater data. All data generated by the department and presented in this report were collected according to these protocols. In addition, data were collected in accordance with the department's EPA-approved Quality Assurance Project Plan (QAPP) (Baumgartner, 2001) written specifically for this project. The QAPP includes quality assurance protocols for monitoring point selection, data collection, monitoring well installation, data storage, and sample handling. Quality control measures included the collection of trip blanks and field duplicates during sampling. In addition, all laboratory analyses performed by the department's ESP laboratory were in accordance with the laboratory's QAPP.

Laboratory Analyses for Pesticides

The department's ESP laboratory in Jefferson City performed all the pesticide analyses presented in this report. The laboratory used EPA-approved Drinking Water Method 507 to determine the concentration of pesticides in the samples. The Method Detection Limits (MDL) for all compounds detected by Method 507 are approximately 0.2 micrograms/liter (μg/L), however, the lab uses a Practical Quantitation Limit (PQL) of 0.5 μg/L (Lueckenhoff, 2001). Concentrations detected in the 0.2 to 0.5 μg/L range are reported as estimates and non-detects or concentrations less than 0.2 μg/L are reported as less than (<) 0.5 μg/L. All of these limits are well below the respective EPA drinking water standards (Table 3).

Pesticide	MDL/PQL (μg/L)	EPA MCL* or **HAL**** (μg/L)
Alachlor	0.2/0.5	2
Atrazine	0.2/0.5	3
Metolachlor	0.2/0.5	**70**
Simazine	0.2/0.5	4

*Maximum Contaminant Level (EPA, 2000)
**Lifetime Health Advisory Level (EPA, 2000)

Table 4. EPA drinking water standards, health advisories, and limits of the analytical method.

RESULTS AND DISCUSSION

Appendix 1 contains data for the wells. Identification numbers are based on the well's location. The latitude and longitude, in decimal degrees, of the well's location were combined to create a unique, 12-digit identification number. The number begins with the 6-digit latitude and ends with the 6-digit longitude. Appendix 1 also shows this report's map label (or number) for each well.

Three hundred fifty-one samples were collected from the 190 wells shown in Figure 4 and listed in Appendix 1. About 98 percent (344) of the samples collected showed no measurable level of pesticides. Also, samples collected from about 98 percent (186) of the wells contained no measurable level of pesticides. At least one sample collected from 4 of the 190 wells contained a measurable level of one of the specific pesticides. For quality control purposes, an additional seventy-five trip blanks and thirty-three field duplicate samples were also analyzed by the laboratory. Laboratory results for the three hundred fifty-one samples are shown in Appendix 1.

All but one of the analytical results for the quality control data are within the limits set forth in section B5 of the project QAPP. Analytical results for the trip blanks were all "not-detected". Analytical results for all but one of the duplicate samples were the same results shown for the respective true samples. This duplicate sample was collected from well (57), discussed below. See Baumgartner (2004) for a discussion of the analytical results of this quality control data.

Metolachlor was detected in three of the four samples collected from well (57) in Dunklin County. The concentration of metolachlor in the three samples ranges from 1.86 to 4.28 μg/l, below the EPA Health Advisory level. The last sample collected from this well on April 13, 2006 did not contain a measurable level of metolachlor. This well is 20 feet in total depth and only about 10 feet from the nearest row-crop field. This well is completed in the alluvial aquifer (Aquifer Area ID). It is uncertain whether metolachlor has been used on the fields adjacent to the well. However, this well is located on a farm and pesticides are stored and mixed at and near this well. Crop sprayers are also filled with water at this well.

Metolachlor was also detected in one of the three samples collected from well (182) in Stoddard County. The sample collected on September 23, 2003 contained metolachlor at a concentration of 3.74 μg/l, below the EPA Health Advisory level. This well is 28 feet in total depth and about 100 feet from the nearest row-crop field. This well is completed in the alluvial aquifer (Aquifer Area ID). Metolachlor has not been used on the fields adjacent to the well according to the well owner. Agricultural chemicals are not mixed or stored near this well. The sample that contained metolachlor was collected on the same date as the one duplicate sample, discussed above, that did match the results of its respective true sample. As mentioned above, see Baumgartner (2004) for a discussion of the analytical results of this quality control data and the wells in which they pertain.

Alachlor was detected in two of the four samples collected from well (120) in New Madrid County. The concentration of alachlor in the samples was 0.88 and 1.97 μg/l, just below the EPA MCL. Three of the four samples collected at this location were from a sand point well 20 feet in total depth. The fourth and last sample collected at this location was from a 31 feet deep sand point well located adjacent to the 20 feet deep well. The 20 feet deep well was not in use at the time the fourth sample was collected. For the purposes of this project, the two wells are considered to be a single monitoring point. These wells are completed in the alluvial aquifer (Aquifer Area ID). The two samples containing alachlor were collected during April and May when many of the crops, especially corn, are planted and sprayed with pesticides. These wells are shallow and only 10 feet from the nearest row-crop field. It is not known if alachlor is used on the field adjacent to the well; however, it is likely. Agricultural chemicals are not mixed or stored near these wells.

Atrazine, the most commonly used herbicide on corn, was only detected in one sample. Atrazine was detected in one of the four samples collected from well (142) in Pike county at a concentration of 0.78 μg/l, slightly below the EPA MCL. This well is 128 feet in total depth and about 20 feet from the nearest row-crop field. This well is completed in the Ordovician bedrock aquifer. It is not known if atrazine is used on the field adjacent to the well, however it is likely. Agricultural chemicals are not mixed or stored near this well. The sample that contained atrazine was collected on April 15, 2003, near the beginning of the spring planting season. Another sample obtained from this well on June 11, 2003, only two months later and near the end of spring planting season, did not contain a measurable concentration of any of the pesticides.

SUMMARY AND CONCLUSIONS

This report presents the results of monitoring shallow groundwater in Missouri for four agricultural pesticides over the five-year period from 2002 to 2006. The study focused on the four herbicides alachlor, atrazine, metolachlor, and simazine. These four herbicides are generally used on corn and soybeans, however in Missouri, estimates of usage indicate they are used primarily on corn.

Data show that about 98 percent of the samples collected during the course of this project did not have any detectable concentrations of any of the pesticides, including the four pesticides that are not the focus of this project. Pesticides were detected in only 4 of the 190 wells (Figure 5). Metolachlor, the second most common herbicide used on corn, was herbicide detected most often. Alachlor was the second most common detected herbicide. Atrazine, the most common herbicide used on corn in Missouri and one of the most frequently detected herbicides in ground water, was detected in only one sample. Simazine, as well as the four pesticides (cyanazine, metribuzin, propachlor, and butachlor) that are not the focus of this project, was not detected in any of the samples. None of the pesticide concentrations exceed EPA MCLs or Health Advisory.

Three of the four wells in which pesticides were detected are shallow (20 to 28 feet in total depth) and completed in an alluvial aquifer. The fourth well produces water from the Ordovician bedrock aquifer however it is relatively shallow for a bedrock well. All of the wells are completed in some of the most sensitive aquifer materials in Missouri, Aquifer Area I. All these wells are within one hundred feet of a row-crop field and all are located in counties that have a large amount of land area in row-crop production. In addition, Stoddard, New Madrid, and Pike are three of the top corn producing counties (see Figure 3).

Pesticide detections correlate most strongly with well depth, aquifer type (Aquifer Area), and proximity to the nearest row-crop field; that is, shallow wells that are near row-crop fields and completed in the most sensitive aquifer materials have more detections. The number of pesticide detections also appears to correspond with pesticide usage associated with major row-crop production. Additional work is needed to further evaluate how the concentration and distribution of pesticides are related to variables such as hydrogeology, soil characteristics, well depth, seasonal variations, land use, and pesticide use.

Figure 5. Map showing location of wells in which a specific pesticide has been detected.

ACKNOWLEDGMENTS

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APPENDIX 1

Data for wells.

Well Identifier	Report Map Number	County	Township	Range	Section	Quarter Section	Total Depth Depth (ft.)	Nearest Field (ft.)	Aquifer	Sample Date	Alachlor (µg/ L)	Atrazine (µg/ L)	Metolachlor (µg/ L)	Simazine (µg/ L)
399517948705	1	Andrew	59N	36W	7	NW NW NE	82	50	Glacial Drift	04/19/05	ND	ND	ND	ND
403146956224	2	Atchison	64N	42W	34	NW NE SE	79	50	Alluvial	05/05/03	ND	ND	ND	ND
405560956397	3	Atchison	66N	42W	11	NW NW NW	50	20	Alluvial	05/05/03	ND	ND	ND	ND
403358952389	4	Atchison	64N	39W	24	SW,SE,SE	42	300	Glacial Drift	04/27/04	ND	ND	ND	ND
403505953383	5	Atchison	64N	39W	18	SW,SW,SE	73	300	Glacial Drift	04/27/04	ND	ND	ND	ND
404227953947	6	Atchison	65N	40W	27	NW,NW,NE	63	300	Glacial Drift	04/28/04	ND	ND	ND	ND
392387919070	7	Audrain	52N	09W	34	NW,SE,SW	343	300	Mississippian	04/14/04	ND	ND	ND	ND
392387919070	7	Audrain	52N	09W	34	NW,SE,SW	343	300	Mississippian	09/20/05	ND	ND	ND	ND
392366916629	8	Audrain	51N	07W	2	NW NW NW	261	20	Mississippian	06/09/05	ND	ND	ND	ND
392366916629	8	Audrain	51N	07W	2	NW NW NW	261	20	Mississippian	06/06/06	ND	ND	ND	ND
373695945016	9	Barton	30N	33W	12	SE,SE,NE	364	100	Mississippian	03/09/04	ND	ND	ND	ND
381749940688	10	Bates	39N	29W	12	SW NW NW	145	100	Pennsylvanian	04/01/03	ND	ND	ND	ND
382448943166	11	Bates	40N	31W	26	NW SE NE	250	300	Pennsylvanian	04/01/03	ND	ND	ND	ND
382956944890	12	Bates	40N	32W	08	NW NE NW	128	100	Pennsylvanian	04/01/03	ND	ND	ND	ND
382956944890	12	Bates	40N	32W	08	NW NE NW	128	100	Pennsylvanian	09/22/04	ND	ND	ND	ND
384974931914	13	Benton	43N	21W	13	SE,SE,NW	210	150	Ordovician	03/22/04	ND	ND	ND	ND
384974931914	13	Benton	43N	21W	13	SE,SE,NW	210	150	Ordovician	10/27/05	ND	ND	ND	ND
370987900040	14	Bollinger	28N	09E	12	SW,SW,SE	27	50	Alluvial	11/12/03	ND	ND	ND	ND
370987900040	14	Bollinger	28N	09E	12	SW,SW,SE	27	50	Alluvial	04/25/06	ND	ND	ND	ND
390897923995	15	Boone	50N	13W	29	SW SE SE	425	1320	Mississippian	02/22/05	ND	ND	ND	ND
387812923183	16	Boone	46N	12W	7	NW,NW,SE	335	3000	Ordovician	05/10/04	ND	ND	ND	ND
387812923183	16	Boone	46N	12W	7	NW,NW,SE	335	3000	Ordovician	11/22/05	ND	ND	ND	ND
396376949851	17	Buchanan	56N	36W	30	SE,NE,SW	25	100	Alluvial	04/28/04	ND	ND	ND	ND
396376949851	17	Buchanan	56N	36W	30	SE,NE,SW	25	100	Alluvial	10/20/05	ND	ND	ND	ND
397765947007	18	Buchanan	57N	34W	10	NW NW NE	52	0	Glacial Drift	04/18/05	ND	ND	ND	ND
395579947318	19	Buchanan	55N	34W	21	SW SW SW	60	1320	Glacial Drift	04/18/05	ND	ND	ND	ND
365111902708	20	Butler	22N	07E	35	NW,SE,NE	80	50	Alluvial	02/20/02	ND	ND	ND	ND
365111902708	20	Butler	22N	07E	35	NW,SE,NE	80	50	Alluvial	09/09/03	ND	ND	ND	ND
365111902708	20	Butler	22N	07E	35	NW,SE,NE	80	50	Alluvial	09/27/05	ND	ND	ND	ND
365614905578	21	Butler	22N	05E	18	NE,NE,NE	23	100	Alluvial	02/20/02	ND	ND	ND	ND
365614905578	21	Butler	22N	05E	18	NE,NE,NE	23	100	Alluvial	09/09/03	ND	ND	ND	ND
365614905578	21	Butler	22N	05E	18	NE,NE,NE	23	100	Alluvial	09/27/05	ND	ND	ND	ND
365739903157	22	Butler	22N	07E	9	NW,NE,NW	70	100	Alluvial	09/09/03	ND	ND	ND	ND
366719902739	23	Butler	23N	07E	2	NE,SE,NW	16	50	Alluvial	02/20/02	ND	ND	ND	ND
366719902739	23	Butler	23N	07E	2	NE,SE,NW	16	50	Alluvial	09/09/03	ND	ND	ND	ND
366719902739	23	Butler	23N	07E	2	NE,SE,NW	16	50	Alluvial	09/27/05	ND	ND	ND	ND
367492902981	24	Butler	24N	07E	10	NW,NW,NW	20	100	Alluvial	02/20/02	ND	ND	ND	ND
397416937699	25	Caldwell	57N	26W	24	NE NE NW	40	150	Glacial Drift	03/21/05	ND	ND	ND	ND
386292920155	26	Callaway	45N	10W	35	NW NE SE	330	1320	Ordovician	06/07/05	ND	ND	ND	ND
387444917418	27	Callaway	46N	07W	19	NE,SE,NE	306	1200	Ordovician	04/21/04	ND	ND	ND	ND
387444917418	27	Callaway	46N	07W	19	NE,SE,NE	306	1200	Ordovician	09/20/05	ND	ND	ND	ND
372076897041	28	Cape Girardeau	29N	12E	02	NW NW SW	60	90	Alluvial	03/25/03	ND	ND	ND	ND
372076897041	28	Cape Girardeau	29N	12E	02	NW NW SW	60	90	Alluvial	09/28/04	ND	ND	ND	ND
372076897041	28	Cape Girardeau	29N	12E	02	NW NW SW	60	90	Alluvial	04/12/06	ND	ND	ND	ND
372860897145	29	Cape Girardeau	30N	12E	09	NW SE NE	120	100	Paleozoic Undiff.	03/25/03	ND	ND	ND	ND
372860897145	29	Cape Girardeau	30N	12E	09	NW SE NE	120	100	Paleozoic Undiff.	09/28/04	ND	ND	ND	ND
372860897145	29	Cape Girardeau	30N	12E	09	NW SE NE	120	100	Paleozoic Undiff.	04/12/06	ND	ND	ND	ND
374280895577	30	Cape Girardeau	32N	13E	25	SE NE NW	35	50	Paleozoic Undiff.	03/25/03	ND	ND	ND	ND
374280895577	30	Cape Girardeau	32N	13E	25	SE NE NW	35	50	Paleozoic Undiff.	09/28/04	ND	ND	ND	ND
374280895577	30	Cape Girardeau	32N	13E	25	SE NE NW	35	50	Paleozoic Undiff.	04/25/06	ND	ND	ND	ND
392389937450	31	Carroll	51N	25W	7	SE,NW,SE	71	50	Alluvial	05/23/02	ND	ND	ND	ND
392389937450	31	Carroll	51N	25W	7	SE NW SE	71	50	Alluvial	10/26/04	ND	ND	ND	ND
392389937450	31	Carroll	51N	25W	7	SE,NW,SE	71	50	Alluvial	04/04/06	ND	ND	ND	ND
393742933022	32	Carroll	53N	21W	30	SE,NE,SW	69	50	Alluvial	05/23/02	ND	ND	ND	ND
393742933022	32	Carroll	53N	21W	30	SE,NE,SW	69	50	Alluvial	04/26/06	ND	ND	ND	ND
393991932226	33	Carroll	53N	21W	13	NW,SW,SW	57	300	Glacial Drift	03/29/04	ND	ND	ND	ND
394422932704	34	Carroll	53N	21W	4	NE,NW,NW	60	300	Glacial Drift	03/29/04	ND	ND	ND	ND
393858930481	35	Chariton	53N	19W	21	SE, SW, NE	73	200	Alluvial	05/30/02	ND	ND	ND	ND
393869930465	35	Chariton	53N	19W	21	SE SW NE	73	200	Alluvial	10/26/04	ND	ND	ND	ND
393869930465	35	Chariton	53N	19W	21	SE SW NE	73	200	Alluvial	04/04/06	ND	ND	ND	ND
394393928178	36	Chariton	54N	17W	33	SW,SE,NE	60	300	Glacial Drift	03/29/04	ND	ND	ND	ND
394571927499	37	Chariton	54N	16W	30	SE,NE,NW	80	300	Glacial Drift	03/29/04	ND	ND	ND	ND
395095927918	38	Chariton	54N	17W	2	SW,NW,SW	57	150	Glacial Drift	03/29/04	ND	ND	ND	ND
404234915564	39	Clark	65N	06W	16	SW SW SE	60	100	Alluvial	04/30/02	ND	ND	ND	ND
404234915564	39	Clark	65N	06W	16	SW SW SE	60	100	Alluvial	09/13/04	ND	ND	ND	ND
404234915564	39	Clark	65N	06W	16	SW SW SE	60	100	Alluvial	05/12/06	ND	ND	ND	ND
404156918852	40	Clark	65N	09W	27	NW,NE,NW	281	300	Mississippian	04/13/04	ND	ND	ND	ND
404319916207	41	Clark	65N	07W	13	SE SW NW	285	600	Mississippian	04/30/02	ND	ND	ND	ND
404319916207	41	Clark	65N	07W	13	SE SW NW	285	600	Mississippian	09/13/04	ND	ND	ND	ND
404319916207	41	Clark	65N	07W	13	SE SW NW	285	600	Mississippian	05/12/06	ND	ND	ND	ND
394308944907	42	Clay	53N	32W	3	SW NW SW	100	1320	Glacial Drift	04/18/05	ND	ND	ND	ND
396822944791	43	Clinton	56N	32W	10	SW SW NE	48	100	Glacial Drift	03/22/05	ND	ND	ND	ND
386284923595	44	Cole	45N	13W	28	NW,NE,NW	130	1200	Ordovician	02/19/04	ND	ND	ND	ND
388823926071	45	Cooper	48N	15W	31	SE NW NW	182	150	Ordovician	04/02/03	ND	ND	ND	ND
388823926071	45	Cooper	48N	15W	31	SE NW NW	182	150	Ordovician	08/17/04	ND	ND	ND	ND
388823926071	45	Cooper	48N	15W	31	SE NW NW	182	150	Ordovician	11/01/05	ND	ND	ND	ND
388882926690	46	Cooper	48N	16W	28	SE SE SE	200	300	Miss./Ord.	04/02/03	ND	ND	ND	ND
388882926690	46	Cooper	48N	16W	28	SE SE SE	200	300	Miss./Ord.	08/10/04	ND	ND	ND	ND

APPENDIX 1 (cont)

Well Identifier	Report Map Number	County	Township	Range	Section	Quarter Section	Total Depth Depth (ft.)	Nearest Field (ft.)	Aquifer	Sample Date	Alachlor (µg/ L)	Atrazine (µg/ L)	Metolachlor (µg/ L)	Simazine (µg/ L)
388882926690	46	Cooper	48N	16W	28	SE SE SE	200	300	Miss./Ord.	11/01/05	ND	ND	ND	ND
389633929088	47	Cooper	48N	17W	05	NW NE NE	140	10	Mississippian	04/02/03	ND	ND	ND	ND
389633929088	47	Cooper	48N	17W	05	NW NE NE	140	10	Mississippian	08/17/04	ND	ND	ND	ND
389633929088	47	Cooper	48N	17W	05	NW NE NE	140	10	Mississippian	11/01/05	ND	ND	ND	ND
373749940769	48	Dade	30N	29W	1	SE,NW,NW	446	100	Miss./Ord.	03/09/04	ND	ND	ND	ND
400789938022	49	Daviess	61N	26W	14	SW NW SW	40	10	Glacial Drift	03/21/05	ND	ND	ND	ND
400022945291	50	Dekalb	60N	32W	19	NE NE SE	51	100	Glacial Drift	03/22/05	ND	ND	ND	ND
360606902111	51	Dunklin	16N	08E	4	NW,NW,NW	50	150	Alluvial	03/13/02	ND	ND	ND	ND
360606902111	51	Dunklin	16N	08E	4	NW,NW,NW	50	150	Alluvial	09/15/03	ND	ND	ND	ND
360606902111	51	Dunklin	16N	08E	4	NW,NW,NW	50	150	Alluvial	09/27/05	ND	ND	ND	ND
360614901325	52	Dunklin	17N	09E	31	SE,SE,SW	35	10	Alluvial	03/14/02	ND	ND	ND	ND
360614901325	52	Dunklin	17N	09E	31	SE,SE,SW	35	10	Alluvial	09/09/03	ND	ND	ND	ND
361696900876	53	Dunklin	18N	09E	28	NE,NE,SE	30	100	Alluvial	09/15/03	ND	ND	ND	ND
361696900876	53	Dunklin	18N	09E	28	NE,NE,SE	30	100	Alluvial	09/27/05	ND	ND	ND	ND
362153901078	54	Dunklin	18N	09E	8	SE,SE,NE	25	100	Alluvial	03/13/02	ND	ND	ND	ND
362153901078	54	Dunklin	18N	09E	8	SE,SE,NE	25	100	Alluvial	09/15/03	ND	ND	ND	ND
362153901078	54	Dunklin	18N	09E	8	SE,SE,NE	25	100	Alluvial	09/27/05	ND	ND	ND	ND
364082900367	55	Dunklin	20N	09E	1	SE,NW,SE	35	30	Alluvial	09/15/03	ND	ND	ND	ND
364082900367	55	Dunklin	20N	09E	1	SE,NW,SE	35	30	Alluvial	09/27/05	ND	ND	ND	ND
364305900498	56	Dunklin	21N	09E	26	SE NE SE	12	50	Alluvial	06/03/03	ND	ND	ND	ND
364305900498	56	Dunklin	21N	09E	26	SE NE SE	12	50	Alluvial	09/28/04	ND	ND	ND	ND
364305900498	56	Dunklin	21N	09E	26	SE NE SE	12	50	Alluvial	09/27/05	ND	ND	ND	ND
364406900481	57	Dunklin	21N	09E	25	NW,NW,NW	20	10	Alluvial	03/13/02	ND	ND	1.86	ND
364406900481	57	Dunklin	21N	09E	25	NW NW NW	20	10	Alluvial	03/25/03	ND	ND	2.28	ND
364406900481	57	Dunklin	21N	09E	25	NW,NW,NW	20	10	Alluvial	09/24/03	ND	ND	4.28	ND
364406900481	57	Dunklin	21N	09E	25	NW,NW,NW	20	10	Alluvial	04/13/06	ND	ND	ND	ND
364407900315	58	Dunklin	21N	09E	25	NE, NE, NE	15	100	Alluvial	05/24/06	ND	ND	ND	ND
366169900289	59	Dunklin	23N	10E	19	SW,SW,SW	50	100	Alluvial	03/07/02	ND	ND	ND	ND
366169900289	59	Dunklin	23N	10E	19	SW,SW,SW	50	100	Alluvial	05/24/06	ND	ND	ND	ND
365000900814	60	Dunklin	22N	09E	34	SE,SW,SW	70	1320	Tertiary	04/02/02	ND	ND	ND	ND
365000900814	60	Dunklin	22N	09E	34	SE,SW,SW	70	1320	Tertiary	09/27/05	ND	ND	ND	ND
385269912978	61	Franklin	44N	04W	30	SW,NE,SE	240	1200	Ordovician	02/18/04	ND	ND	ND	ND
385269912978	61	Franklin	44N	04W	30	SW,NE,SE	240	1200	Ordovician	09/20/05	ND	ND	ND	ND
386204913382	62	Franklin	45N	04W	26	NW,NW,SE	225	100	Ordovician	02/18/04	ND	ND	ND	ND
386204913382	62	Franklin	45N	04W	26	NW,NW,SE	225	100	Ordovician	09/20/05	ND	ND	ND	ND
386071915933	63	Gasconade	45N	06W	33	NW,NE,SE	270	150	Ordovician	02/18/04	ND	ND	ND	ND
386071915933	63	Gasconade	45N	06W	33	NW,NE,SE	270	150	Ordovician	09/20/05	ND	ND	ND	ND
400553945641	64	Gentry	61N	33W	25	SE SW SE	28	0	Glacial Drift	03/09/05	ND	ND	ND	ND
403298944057	65	Gentry	64N	31W	21	SW SW SW	52	150	Glacial Drift	03/22/05	ND	ND	ND	ND
402636934333	66	Grundy	63N	23W	13	SE NE NW	212	50	Glacial Drift	05/02/05	ND	ND	ND	ND
402320941220	67	Harrison	63N	29W	26	NE SE NE	40	100	Glacial Drift	03/21/05	ND	ND	ND	ND
403138938365	68	Harrison	64N	26W	28	NE NW SW	70	100	Glacial Drift	03/08/05	ND	ND	ND	ND
403273939366	69	Harrison	64N	27W	22	SW NW SW	35	100	Glacial Drift	03/08/05	ND	ND	ND	ND
383762939196	70	Henry	41N	27W	4	NW NW SW	230	1320	Pennsylvanian	05/17/05	ND	ND	ND	ND
384577939668	71	Henry	42N	28W	12	NW NE NW	250	200	Pennsylvanian	06/08/05	ND	ND	ND	ND
400708953216	72	Holt	61N	39W	29	SE NW NE	80	100	Alluvial	05/05/03	ND	ND	ND	ND
400708953216	72	Holt	61N	39W	29	SE NW NE	80	100	Alluvial	12/01/04	ND	ND	ND	ND
400708953216	72	Holt	61N	39W	29	SE NW NE	80	100	Alluvial	01/10/06	ND	ND	ND	ND
402347954457	73	Holt	63N	40W	29	SW SW SW	31	100	Alluvial	05/05/03	ND	ND	ND	ND
402347954457	73	Holt	63N	40W	29	SW SW SW	31	100	Alluvial	12/01/04	ND	ND	ND	ND
402347954457	73	Holt	63N	40W	29	SW SW SW	31	100	Alluvial	01/10/06	ND	ND	ND	ND
400275951847	74	Holt	60N	38W	8	SE SW SE	53	0	Glacial Drift	04/19/05	ND	ND	ND	ND
401299950928	75	Holt	61N	37W	5	NW NE NE	34	50	Glacial Drift	04/19/05	ND	ND	ND	ND
390120926244	76	Howard	49N	15W	29	NE,NE,SE	255	1200	Mississippian	05/10/04	ND	ND	ND	ND
390120926244	76	Howard	49N	15W	29	NE,NE,SE	255	1200	Mississippian	11/16/05	ND	ND	ND	ND
391340941849	77	Jackson	50N	30W	23	SE NW NE	101	1320	Alluvial	04/19/05	ND	ND	ND	ND
371958941256	78	Jasper	29N	29W	29	SW,SW,SW	200	100	Mississippian	03/08/04	ND	ND	ND	ND
388311937363	79	Johnson	47N	26W	36	SW NE NW	140	300	Pennsylvanian	08/17/04	ND	ND	ND	ND
400794921549	80	Knox	61N	11W	19	NE NE NE	100	10	Mississippian	04/30/03	ND	ND	ND	ND
401387923189	81	Knox	62N	13W	35	NE NE NW	302	200	Mississippian	03/28/05	ND	ND	ND	ND
401693921667	82	Knox	62N	11W	18	SW,SE,SW	162	1200	Mississippian	04/13/04	ND	ND	ND	ND
401901922234	83	Knox	62N	12W	10	NE NE SW	225	0	Mississippian	03/28/05	ND	ND	ND	ND
389584936172	84	Lafayette	48N	25W	13	SE NW NE	290	1320	Pennsylvanian	03/19/03	ND	ND	ND	ND
390224937616	85	Lafayette	49N	26W	27	NW NE NE	252	200	Pennsylvanian	03/19/03	ND	ND	ND	ND
369480940177	86	Lawrence	26N	28W	20	NE,SE,SW	156	1200	Mississippian	03/08/04	ND	ND	ND	ND
399616917057	87	Lewis	60N	07W	32	NW NE NW	200	1320	Mississippian	04/29/03	ND	ND	ND	ND
399616917057	87	Lewis	60N	07W	32	NW NE NW	200	1320	Mississippian	09/13/04	ND	ND	ND	ND
399616917057	87	Lewis	60N	07W	32	NW NE NW	200	1320	Mississippian	05/11/06	ND	ND	ND	ND
400070916550	88	Lewis	60N	07W	10	NE SE SE	90	100	Mississippian	04/29/03	ND	ND	ND	ND
400070916550	88	Lewis	60N	07W	10	NE SE SE	90	100	Mississippian	09/07/04	ND	ND	ND	ND
400354917995	89	Lewis	61N	08W	33	SW,SE,SW	204	150	Mississippian	04/13/04	ND	ND	ND	ND
400354917995	89	Lewis	61N	08W	33	SW,SE,SW	204	150	Mississippian	05/11/06	ND	ND	ND	ND
389751907399	90	Lincoln	49N	02E	25	SE SW SW	50	50	Alluvial	04/09/03	ND	ND	ND	ND
389751907399	90	Lincoln	49N	02E	25	SE SW SW	50	50	Alluvial	08/31/04	ND	ND	ND	ND
389624910780	91	Lincoln	49N	02W	36	SE SW SE	270	300	Mississippian	04/09/03	ND	ND	ND	ND
389624910780	91	Lincoln	49N	02W	36	SE SW SE	270	300	Mississippian	08/24/04	ND	ND	ND	ND
389624910780	91	Lincoln	49N	02W	36	SE SW SE	270	300	Mississippian	10/21/05	ND	ND	ND	ND
390190910380	92	Lincoln	49N	01W	17	NW NW NE	145	300	Mississippian	04/09/03	ND	ND	ND	ND

APPENDIX 1 (cont)

Well Identifier	Report Map Number	County	Township	Range	Section	Quarter Section	Total Depth Depth (ft.)	Nearest Field (ft.)	Aquifer	Sample Date	Alachlor (µg/ L)	Atrazine (µg/ L)	Metolachlor (µg/ L)	Simazine (µg/ L)
390190910380	92	Lincoln	49N	01W	17	NW NW NE	145	300	Mississippian	08/31/04	ND	ND	ND	ND
390190910380	92	Lincoln	49N	01W	17	NW NW NE	145	300	Mississippian	10/21/05	ND	ND	ND	ND
390346908184	93	Lincoln	49N	02E	05	NW SW SW	160	50	Ordovician	04/09/03	ND	ND	ND	ND
390346908184	93	Lincoln	49N	02E	05	NW SW SW	160	50	Ordovician	06/05/06	ND	ND	ND	ND
397644930466	94	Linn	57N	19W	8	SE SE SE	50	300	Glacial Drift	05/02/05	ND	ND	ND	ND
399434936641	95	Livingston	59N	25W	12	NE SW NW	60	100	Pennsylvanian	05/02/05	ND	ND	ND	ND
397733923358	96	Macon	57N	13W	3	SE SW NE	73	200	Glacial Drift	03/28/05	ND	ND	ND	ND
399255915053	97	Marion	59N	06W	12	SE SE NE	78	50	Alluvial	04/29/03	ND	ND	ND	ND
399255915053	97	Marion	59N	06W	12	SE SE NE	78	50	Alluvial	09/07/04	ND	ND	ND	ND
399255915053	97	Marion	59N	06W	12	SE SE NE	78	50	Alluvial	05/11/06	ND	ND	ND	ND
397243917578	98	Marion	57N	08W	23	SE SW NE	100	30	Mississippian	04/15/03	ND	ND	ND	ND
397243917578	98	Marion	57N	08W	23	SE SW NE	100	30	Mississippian	09/07/04	ND	ND	ND	ND
397243917578	98	Marion	57N	08W	23	SE SW NE	100	30	Mississippian	05/12/06	ND	ND	ND	ND
397467917377	99	Marion	57N	08W	12	NW SE SE	85	20	Mississippian	04/15/03	ND	ND	ND	ND
397467917377	99	Marion	57N	08W	12	NW SE SE	85	20	Mississippian	09/07/04	ND	ND	ND	ND
402681935270	100	Mercer	63N	23W	7	NW SW SE	130	100	Glacial Drift	05/17/05	ND	ND	ND	ND
402712935340	101	Mercer	63N	23W	7	NE NW SW	100	0	Glacial Drift	05/17/05	ND	ND	ND	ND
366587892825	102	Mississippi	23N	16E	12	NW,NW,NW	53	50	Alluvial	04/25/02	ND	ND	ND	ND
366587892825	102	Mississippi	23N	16E	12	NW,NW,NW	53	50	Alluvial	09/10/03	ND	ND	ND	ND
367767892103	103	Mississippi	25N	17E	27	SW,SW,SW	40	50	Alluvial	04/24/02	ND	ND	ND	ND
367786893564	104	Mississippi	25N	16E	29	NW,SW,SW	30	50	Alluvial	04/17/02	ND	ND	ND	ND
367786893564	104	Mississippi	25N	16E	29	NW,SW,SW	30	50	Alluvial	09/10/03	ND	ND	ND	ND
367786893564	104	Mississippi	25N	16E	29	NW,SW,SW	30	50	Alluvial	03/08/06	ND	ND	ND	ND
368623893192	105	Mississippi	26N	16E	34	NW,NW,NW	25	200	Alluvial	09/10/03	ND	ND	ND	ND
368623893192	105	Mississippi	26N	16E	34	NW,NW,NW	25	200	Alluvial	03/08/06	ND	ND	ND	ND
369217894072	106	Mississippi	26N	15E	2	SE,SW,SW	23	50	Alluvial	04/24/02	ND	ND	ND	ND
369217894072	106	Mississippi	26N	15E	2	SE,SW,SW	23	50	Alluvial	09/16/03	ND	ND	ND	ND
369217894072	106	Mississippi	26N	15E	2	SE,SW,SW	23	50	Alluvial	03/08/06	ND	ND	ND	ND
369394892208	107	Mississippi	27N	17E	33	NW,SW,SE	50	100	Alluvial	04/24/02	ND	ND	ND	ND
386393927672	108	Moniteau	45N	17W	27	NE,NE,NE	160	300	Ordovician	03/22/04	ND	ND	ND	ND
386393927672	108	Moniteau	45N	17W	27	NE,NE,NE	160	300	Ordovician	11/16/05	ND	ND	ND	ND
396388918664	109	Monroe	56N	09W	23	SE SE NE	116	200	Glacial Drift	03/01/05	ND	ND	ND	ND
391010913160	110	Montgomery	50N	04W	14	SE NE SE	179	100	Mississippian	04/09/03	ND	ND	ND	ND
387474914633	111	Montgomery	46N	05W	15	SW NW SE	340	300	Ordovician	06/06/05	ND	ND	ND	ND
387474914633	111	Montgomery	46N	05W	15	SW NW SE	340	300	Ordovician	06/05/06	ND	ND	ND	ND
388121915052	112	Montgomery	47N	05W	29	SE SW NW	230	1200	Ordovician	06/06/05	ND	ND	ND	ND
388121915052	112	Montgomery	47N	05W	29	SE SW NW	230	1200	Ordovician	06/05/06	ND	ND	ND	ND
386631928569	113	Morgan	45N	18W	13	SW,SW,NW	213	1200	Ordovician	03/22/04	ND	ND	ND	ND
386631928569	113	Morgan	45N	18W	13	SW,SW,NW	213	1200	Ordovician	11/16/05	ND	ND	ND	ND
364381898089	114	New Madrid	21N	12E	24	SE,SE,SE	30	100	Alluvial	04/17/02	ND	ND	ND	ND
364381898089	114	New Madrid	21N	12E	24	SE,SE,SE	30	100	Alluvial	09/24/03	ND	ND	ND	ND
364719896822	115	New Madrid	21N	13E	7	NE,SE,SE	43	40	Alluvial	04/02/02	ND	ND	ND	ND
364719896822	115	New Madrid	21N	13E	7	NE,SE,SE	43	40	Alluvial	03/21/06	ND	ND	ND	ND
365522898214	116	New Madrid	22N	11E	13	Nw,NE,NW	35	700	Alluvial	04/16/02	ND	ND	ND	ND
365522898214	116	New Madrid	22N	11E	13	NW,NE,NW	35	700	Alluvial	09/24/03	ND	ND	ND	ND
365522898214	116	New Madrid	22N	11E	13	NW,NE,NW	35	700	Alluvial	03/07/06	ND	ND	ND	ND
365547896783	117	New Madrid	22N	13E	17	NE,NW,NW	50	100	Alluvial	04/03/02	ND	ND	ND	ND
365838898096	118	New Madrid	22N	12E	6	NW,NW,NW	22	100	Alluvial	09/24/03	ND	ND	ND	ND
366128896047	119	New Madrid	23N	13E	25	NW,NE,NW	<50	100	Alluvial	04/16/02	ND	ND	ND	ND
367089896631	120	New Madrid	24N	13E	21	SW,SW,NW	20	10	Alluvial	04/16/02	0.88	ND	ND	ND
367089896631	120	New Madrid	24N	13E	21	SW SW NW	20	10	Alluvial	03/25/03	ND	ND	ND	ND
367089896631	120	New Madrid	24N	13E	21	SW,SW,NW	20	10	Alluvial	09/16/03	ND	ND	ND	ND
367089896631	120	New Madrid	24N	13E	21	SW,SW,NW	31	10	Alluvial	05/23/06	1.97	ND	ND	ND
367817895183	121	New Madrid	25N	14E	26	SW,SW,NW	22	50	Alluvial	04/16/02	ND	ND	ND	ND
367817895183	121	New Madrid	25N	14E	26	SW,SW,NW	22	50	Alluvial	09/16/03	ND	ND	ND	ND
367817895183	121	New Madrid	25N	14E	26	SW,SW,NW	22	50	Alluvial	03/21/06	ND	ND	ND	ND
367887896205	122	New Madrid	25N	13E	23	SW,SW,SE	25	100	Alluvial	09/16/03	ND	ND	ND	ND
367887896205	122	New Madrid	25N	13E	23	SW,SW,SE	25	100	Alluvial	03/07/06	ND	ND	ND	ND
369945940723	123	Newton	26N	29W	2	SW,NE,SW	140	200	Mississippian	03/08/04	ND	ND	ND	ND
401565948637	124	Nodaway	62N	35W	29	NE,NE,NW	48	300	Glacial Drift	04/27/04	ND	ND	ND	ND
403142949229	125	Nodaway	64N	36W	35	SE,NE,NW	57	100	Glacial Drift	04/27/04	ND	ND	ND	ND
403653946943	126	Nodaway	64N	34W	11	SE,SE,NW	25	100	Glacial Drift	04/27/04	ND	ND	ND	ND
384427917766	127	Osage	43N	08W	26	SW,SW,SE	150	150	Ordovician	02/18/04	ND	ND	ND	ND
360736898036	128	Pemiscot	17N	12E	31	NE,NW,NW	50	50	Alluvial	03/14/02	ND	ND	ND	ND
360736898036	128	Pemiscot	17N	12E	31	NE,NW,NW	50	50	Alluvial	09/15/03	ND	ND	ND	ND
360736898036	128	Pemiscot	17N	12E	31	NE,NW,NW	50	50	Alluvial	04/26/06	ND	ND	ND	ND
361174898450	129	Pemiscot	17N	11E	10	SW,SE,SE	47	200	Alluvial	09/15/03	ND	ND	ND	ND
361174898450	129	Pemiscot	17N	11E	10	SW,SE,SE	47	200	Alluvial	04/26/06	ND	ND	ND	ND
361533898703	130	Pemiscot	17N	11E	33	NE,NE,SW	20	30	Alluvial	03/27/02	ND	ND	ND	ND
361533898703	130	Pemiscot	17N	11E	33	NE,NE,SW	20	30	Alluvial	09/15/03	ND	ND	ND	ND
361533898703	130	Pemiscot	17N	11E	33	NE,NE,SW	20	30	Alluvial	03/07/06	ND	ND	ND	ND
362206897383	131	Pemiscot	18N	12E	3	SE,SE,SE	<50	10	Alluvial	04/02/02	ND	ND	ND	ND
363400899343	132	Pemiscot	20N	10E	26	NE,SE,SE	20	20	Alluvial	03/26/02	ND	ND	ND	ND
363400899343	132	Pemiscot	20N	10E	26	NE,SE,SE	20	20	Alluvial	09/24/03	ND	ND	ND	ND
363400899343	132	Pemiscot	20N	10E	26	NE,SE,SE	20	20	Alluvial	03/07/06	ND	ND	ND	ND
363636897292	133	Pemiscot	20N	12E	23	NE,NE,NW	25	100	Alluvial	03/27/02	ND	ND	ND	ND
363636897292	133	Pemiscot	20N	12E	23	NE,NE,NW	25	100	Alluvial	04/26/06	ND	ND	ND	ND
376106898109	134	Perry	34N	11E	34	NE,SW,NW	125	1200	Paleozoic Undiff.	02/25/04	ND	ND	ND	ND

APPENDIX 1 (cont)

Well Identifier	Report Map Number	County	Township	Range	Section	Quarter Section	Total Depth Depth (ft.)	Nearest Field (ft.)	Aquifer	Sample Date	Alachlor (µg/ L)	Atrazine (µg/ L)	Metolachlor (µg/ L)	Simazine (µg/ L)
376106898109	134	Perry	34N	11E	34	NE,SW,NW	125	1200	Paleozoic Undiff.	04/25/06	ND	ND	ND	ND
376587898385	135	Perry	34N	11E	8	SW,SE,SE	165	200	Paleozoic Undiff.	11/13/03	ND	ND	ND	ND
376587898385	135	Perry	34N	11E	8	SW,SE,SE	165	200	Paleozoic Undiff.	04/25/06	ND	ND	ND	ND
385948931390	136	Pettis	44N	20W	09	NW SW SW	110	200	Ordovician	05/21/03	ND	ND	ND	ND
385948931390	136	Pettis	44N	20W	09	NW SW SW	110	200	Ordovician	08/17/04	ND	ND	ND	ND
385948931390	136	Pettis	44N	20W	09	NW SW SW	110	200	Ordovician	10/27/05	ND	ND	ND	ND
386260932569	137	Pettis	45N	21W	32	SE SE SW	100	300	Ordovician	05/21/03	ND	ND	ND	ND
386260932569	137	Pettis	45N	21W	32	SE SE SW	100	300	Ordovician	08/10/04	ND	ND	ND	ND
387218931099	138	Pettis	46N	20W	34	SW NE NW	155	100	Ordovician	05/21/03	ND	ND	ND	ND
387218931099	138	Pettis	46N	20W	34	SW NE NW	155	100	Ordovician	08/10/04	ND	ND	ND	ND
387218931099	138	Pettis	46N	20W	34	SW NE NW	155	100	Ordovician	10/27/05	ND	ND	ND	ND
388216933872	139	Pettis	47N	23W	25	SE,SE,SE	140	300	Pennsylvanian	03/22/04	ND	ND	ND	ND
394740912971	140	Pike	54N	04W	12	SE NE NW	261	300	Ordovician	04/15/03	ND	ND	ND	ND
394740912971	140	Pike	54N	04W	12	SE NE NW	261	300	Ordovician	08/31/04	ND	ND	ND	ND
394740912971	140	Pike	54N	04W	12	SE NE NW	261	300	Ordovician	11/22/05	ND	ND	ND	ND
395033913405	141	Pike	55N	04W	34	SE NW NW	100	600	Ordovician	04/15/03	ND	ND	ND	ND
395033913405	141	Pike	55N	04W	34	SE NW NW	100	600	Ordovician	08/31/04	ND	ND	ND	ND
395033913405	141	Pike	55N	04W	34	SE NW NW	100	600	Ordovician	11/22/05	ND	ND	ND	ND
394974912610	142	Pike	55N	03W	32	NW NW SE	128	20	Ordovician	04/15/03	ND	0.78	ND	ND
394974912610	142	Pike	55N	03W	32	NW NW SE	128	20	Ordovician	06/11/03	ND	ND	ND	ND
394974912610	142	Pike	55N	03W	32	NW,NW,SE	128	20	Ordovician	04/13/04	ND	ND	ND	ND
394974912610	142	Pike	55N	03W	32	NW,NW,SE	128	20	Ordovician	11/22/05	ND	ND	ND	ND
395129947402	143	Platte	54N	34W	8	NW NW NE	55	5	Glacial Drift	04/18/05	ND	ND	ND	ND
405287933606	144	Putnam	66N	22W	15	NW NE NE	60	100	Glacial Drift	05/03/05	ND	ND	ND	ND
405400927731	145	Putnam	66N	17W	11	NE SW NE	50	100	Glacial Drift	05/03/05	ND	ND	ND	ND
405784931525	146	Putnam	67N	20W	28	SE SW NE	30	0	Glacial Drift	05/03/05	ND	ND	ND	ND
395711915151	147	Ralls	55N	06/	01	SE SW SE	17	100	Mississippian	04/14/03	ND	ND	ND	ND
395711915151	147	Ralls	55N	06W	01	SE SW SE	17	100	Mississippian	09/13/04	ND	ND	ND	ND
395711915151	147	Ralls	55N	06/	01	SE SW SE	17	100	Mississippian	05/11/06	ND	ND	ND	ND
396696913727	148	Ralls	56N	04W	08	NW NE NW	62	300	Mississippian	04/14/03	ND	ND	ND	ND
396696913727	148	Ralls	56N	04W	08	NW NE NW	62	300	Mississippian	09/13/04	ND	ND	ND	ND
396696913727	148	Ralls	56N	04W	08	NW NE NW	62	300	Mississippian	05/11/06	ND	ND	ND	ND
394346926989	149	Randolph	54N	16W	34	SE NW SW	115	300	Glacial Drift	05/02/05	ND	ND	ND	ND
393922923533	150	Randolph	53N	13W	15	NE NW NE	346	100	Mississippian	03/01/05	ND	ND	ND	ND
391984941680	151	Ray	51N	29W	28	SE NE SW	23	100	Alluvial	04/02/03	ND	ND	ND	ND
391984941680	151	Ray	51N	29W	28	SE NE SW	23	100	Alluvial	10/26/04	ND	ND	ND	ND
391984941680	151	Ray	51N	29W	28	SE NE SW	23	100	Alluvial	10/20/05	ND	ND	ND	ND
392724938547	152	Ray	52N	26W	31	NW NE SE	30	50	Alluvial	04/02/03	ND	ND	ND	ND
392724938547	152	Ray	52N	26W	31	NW NE SE	30	50	Alluvial	10/26/04	ND	ND	ND	ND
392724938547	152	Ray	52N	26W	31	NW NE SE	30	50	Alluvial	04/04/06	ND	ND	ND	ND
392795939233	153	Ray	52N	27W	27	SE SW SW	100	100	Pennsylvanian	04/18/05	ND	ND	ND	ND
365043907017	154	Ripley	22N	03E	36	SW,NW,SE	35	200	Alluvial	11/12/03	ND	ND	ND	ND
365043907017	154	Ripley	22N	03E	36	SW,NW,SE	35	200	Alluvial	09/27/05	ND	ND	ND	ND
391747934275	155	Saline	51N	23W	27	SW,SW,SW	60	100	Alluvial	05/30/02	ND	ND	ND	ND
391747934275	155	Saline	51N	23W	27	SW,SW,SW	60	100	Alluvial	04/26/06	ND	ND	ND	ND
391325929531	156	Saline	50N	19W	12	NW,NW,NW	250	300	Mississippian	05/23/02	ND	ND	ND	ND
392736931667	157	Saline	52N	21W	24	NE,SW,SW	290	100	Mississsppian	05/30/02	ND	ND	ND	ND
404112923781	158	Schuyler	65N	13W	29	NW NW SE	188	0	Glacial Drift	03/28/05	ND	ND	ND	ND
405581926493	159	Schuyler	66N	16W	1	SW NE NW	60	300	Glacial Drift	05/03/05	ND	ND	ND	ND
403041920891	160	Scotland	64N	11W	35	SW SW SE	40	0	Glacial Drift	03/28/05	ND	ND	ND	ND
403907921688	161	Scotland	64N	11W	6	NE NE NW	228	0	Glacial Drift	03/28/05	ND	ND	ND	ND
369508895472	162	Scott	27N	14E	28	SW,SW,SE	35	1320	Alluvial	04/30/02	ND	ND	ND	ND
369508895472	162	Scott	27N	14E	28	SW,SW,SE	35	1320	Alluvial	04/12/06	ND	ND	ND	ND
369828896853	163	Scott	27N	13E	17	NW,NW,SW	35	100	Alluvial	04/30/02	ND	ND	ND	ND
369828896853	163	Scott	27N	13E	17	NW,NW,SW	35	100	Alluvial	11/12/03	ND	ND	ND	ND
369828896853	163	Scott	27N	13E	17	NW,NW,SW	35	100	Alluvial	04/12/06	ND	ND	ND	ND
370731894164	164	Scott	28N	15E	20	SW,NE,SE	40	20	Alluvial	04/25/02	ND	ND	ND	ND
370731894164	164	Scott	28N	15E	20	SW,NE,SE	40	20	Alluvial	09/23/03	ND	ND	ND	ND
370731894164	164	Scott	28N	15E	20	SW,NE,SE	40	20	Alluvial	04/12/06	ND	ND	ND	ND
399039919560	165	Shelby	59N	09W	24	NE,NE,NE	80	1200	Glacial Drift	04/14/04	ND	ND	ND	ND
399039919560	165	Shelby	59N	09W	24	NE,NE,NE	80	1200	Glacial Drift	05/11/06	ND	ND	ND	ND
397807918453	166	Shelby	58N	09W	36	NE NE SE	130	20	Glacial Drift	04/15/03	ND	ND	ND	ND
397807918453	166	Shelby	58N	09W	36	NE NE SE	130	20	Glacial Drift	05/11/06	ND	ND	ND	ND
388428904991	167	St. Charles	47N	05E	07	SW NW SE	28	50	Alluvial	04/08/03	ND	ND	ND	ND
388428904991	167	St. Charles	47N	05E	07	SW NW SE	28	50	Alluvial	11/16/04	ND	ND	ND	ND
388428904991	167	St. Charles	47N	05E	07	SW NW SE	28	50	Alluvial	11/02/05	ND	ND	ND	ND
388689904874	168	St. Charles	48N	05E	32	SE SW SW	50	100	Alluvial	04/08/03	ND	ND	ND	ND
388689904874	168	St. Charles	48N	05E	32	SE SW SW	50	100	Alluvial	08/24/04	ND	ND	ND	ND
388689904874	168	St. Charles	48N	05E	32	SE SW SW	50	100	Alluvial	11/02/05	ND	ND	ND	ND
388913904775	169	St. Charles	48N	05E	29	SW SE NE	78	200	Alluvial	04/08/03	ND	ND	ND	ND
388913904775	169	St. Charles	48N	05E	29	SW SE NE	78	200	Alluvial	08/24/04	ND	ND	ND	ND
388913904775	169	St. Charles	48N	05E	29	SW SE NE	78	200	Alluvial	11/02/05	ND	ND	ND	ND
385843908398	170	St. Charles	44N	02E	07	SE SW NE	170	1320	Ordovician	04/08/03	ND	ND	ND	ND
385843908398	170	St. Charles	44N	02E	07	SE SW NE	170	1320	Ordovician	06/05/06	ND	ND	ND	ND
388254909179	171	St. Charles	47N	01E	16	SW SE SW	118	300	Mississippian	04/08/03	ND	ND	ND	ND
388254909179	171	St. Charles	47N	01E	16	SW SE SW	118	300	Mississippian	11/02/05	ND	ND	ND	ND
379559939383	172	St. Clair	37N	27W	19	SW,SE,SE	225	100	Ordovician	06/03/04	ND	ND	ND	ND
381866938499	173	St. Clair	39N	27W	1	NW,NW,SW	210	200	Pennsylvanian	06/03/04	ND	ND	ND	ND

APPENDIX 1 (cont)

Well Identifier	Report Map Number	County	Township	Range	Section	Quarter Section	Total Depth Depth (ft.)	Nearest Field (ft.)	Aquifer	Sample Date	Alachlor (µg/L)	Atrazine (µg/L)	Metolachlor (µg/L)	Simazine (µg/L)
378307900271	174	Ste. Genevieve	36N	09E	15	NW,NW,NE	178	600	Ordovician	02/25/04	ND	ND	ND	ND
378453900218	175	Ste. Genevieve	36N	09E	10	NW,NE,NE	178	300	Ordovician	02/25/04	ND	ND	ND	ND
378453900218	175	Ste. Genevieve	36N	09E	10	NW,NE,NE	178	300	Ordovician	04/25/06	ND	ND	ND	ND
366869898489	176	Stoddard	24N	11E	27	SW,SE,SE	<50	50	Alluvial	03/07/02	ND	ND	ND	ND
366869898489	176	Stoddard	24N	11E	27	SW,SE,SE	<50	50	Alluvial	03/21/06	ND	ND	ND	ND
366869898589	177	Stoddard	24N	11E	27	SE,SW,SW	35	100	Alluvial	03/07/02	ND	ND	ND	ND
366869898589	177	Stoddard	24N	11E	27	SE,SW,SW	35	100	Alluvial	09/16/03	ND	ND	ND	ND
366869898589	177	Stoddard	24N	11E	27	SE,SW,SW	35	100	Alluvial	03/21/06	ND	ND	ND	ND
367912898622	178	Stoddard	25N	11E	21	NE,SE,SE	30	100	Alluvial	09/23/03	ND	ND	ND	ND
367912898622	178	Stoddard	25N	11E	21	NE,SE,SE	30	100	Alluvial	03/21/06	ND	ND	ND	ND
367961901878	179	Stoddard	25N	08E	22	NE,NW,SW	85	50	Alluvial	02/20/02	ND	ND	ND	ND
367961901878	179	Stoddard	25N	08E	22	NE,NW,SW	85	50	Alluvial	09/23/03	ND	ND	ND	ND
367961901878	179	Stoddard	25N	08E	22	NE,NW,SW	85	50	Alluvial	03/22/06	ND	ND	ND	ND
368031898350	180	Stoddard	25N	11E	14	SE,SE,SW	<50	50	Alluvial	03/07/02	ND	ND	ND	ND
368031898350	180	Stoddard	25N	11E	14	SE,SE,SW	<50	50	Alluvial	09/16/03	ND	ND	ND	ND
368031898350	180	Stoddard	25N	11E	14	SE,SE,SW	<50	50	Alluvial	03/21/06	ND	ND	ND	ND
368414901144	181	Stoddard	25N	09E	5	SW,NW,NW	<100	100	Alluvial	03/06/02	ND	ND	ND	ND
368414901144	181	Stoddard	25N	09E	5	SW,NW,NW	<100	100	Alluvial	09/23/03	ND	ND	ND	ND
368414901144	181	Stoddard	25N	09E	5	SW,NW,NW	<100	100	Alluvial	03/22/06	ND	ND	ND	ND
368733898067	182	Stoddard	26N	12E	30	SW,NW,NW	28	100	Alluvial	09/23/03	ND	ND	3.74	ND
368733898067	182	Stoddard	26N	12E	30	SW,NW,NW	28	100	Alluvial	12/02/03	ND	ND	ND	ND
368733898067	182	Stoddard	26N	12E	30	SW,NW,NW	28	100	Alluvial	08/30/05	ND	ND	ND	ND
369147900467	183	Stoddard	26N	09E	11	C,SW,NE	135	600	Cretaceous	04/30/02	ND	ND	ND	ND
369147900467	183	Stoddard	26N	09E	11	C,SW,NE	135	600	Cretaceous	09/23/03	ND	ND	ND	ND
369147900467	183	Stoddard	26N	09E	11	C,SW,NE	135	600	Cretaceous	08/30/05	ND	ND	ND	ND
370286898361	184	Stoddard	27N	11E	2	NE,SW,NW	170	1320	Cretaceous	04/30/02	ND	ND	ND	ND
370286898361	184	Stoddard	27N	11E	2	NE,SW,NW	170	1320	Cretaceous	04/12/06	ND	ND	ND	ND
368601898785	185	Stoddard	26N	11E	33	NW,NW,NW	94	300	Tertiary	09/23/03	ND	ND	ND	ND
368601898785	185	Stoddard	26N	11E	33	NW,NW,NW	94	300	Tertiary	05/24/06	ND	ND	ND	ND
368758898778	186	Stoddard	26N	11E	21	SW,SW,SW	97	50	Tertiary	04/30/02	ND	ND	ND	ND
368758898778	186	Stoddard	26N	11E	21	SW,SW,SW	97	50	Tertiary	05/24/06	ND	ND	ND	ND
368867899553	187	Stoddard	26N	10E	22	NW,SW,NE	176	600	Tertiary	04/30/02	ND	ND	ND	ND
368867899553	187	Stoddard	26N	10E	22	NW,SW,NE	176	600	Tertiary	09/23/03	ND	ND	ND	ND
368867899553	187	Stoddard	26N	10E	22	NW,SW,NE	176	600	Tertiary	08/30/05	ND	ND	ND	ND
377462941108	188	Vernon	34N	29W	4	NE,NW,NE	345	100	Mississippian	03/09/04	ND	ND	ND	ND
387984913601	189	Warren	47N	04W	33	SE,NE,NE	285	1200	Ordovician	04/21/04	ND	ND	ND	ND
387984913601	189	Warren	47N	04W	33	SE,NE,NE	285	1200	Ordovician	11/02/05	ND	ND	ND	ND
405226945751	190	Worth	66N	32W	18	NW NW SW	50	0	Glacial Drift	03/22/05	ND	ND	ND	ND

ND = Not Detected
(µg/L) = micrograms per liter
ft. = feet