

**The Missouri
Nonpoint Source Management Program
Annual Report
For Federal Fiscal Year 2007**

**Prepared by the Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program, Watershed Protection Section, Nonpoint Source Unit**

Disclaimer: Changes to Web Links in this document are beyond control of the authors. All links were active as of December 31, 2007.

December 2007

Table of Contents

List of Figures	5
I. Missouri’s Nonpoint Source Management Program	10
A. Mission Statement	
B. Elements of an Effective State Program	
C. Missouri’s Nine Key Elements	
D. State Program Challenges	
II. 319 Nonpoint Source Grant Program Overview	13
A. Missouri Section 319(h) Nonpoint Source Management Grants	
B. Priorities and Project Selection Process	
C. Measuring Benefits of the Section 319(h) Nonpoint Source Management Grant Program	
1. Summary of FY07 Project Evaluation Measures	
2. Summary of FY07 319 Grant Program Dollars Spent	
3. Summary of FY07 319 Results through Modeling	
4. Activities of the 319 Program Staff	
5. General Progress Statements	
III. 319 Project Accomplishments.....	25
A. Successful 319 Nonpoint Source Grant Projects	
B. NPS Information for HUC 8 Watersheds	
• Lower Des Moines Basin.....	29
• Bear-Wyaconda Basin	31
• North Fabius River Basin	35
• South Fabius River Basin	39
• The Sny River Basin	41
• North Fork Salt River Basin	43
• South Fork Salt River Basin	46
• Salt River Basin	49
• Cuivre River Basin.....	51
• Peruque-Piasa River Basin.....	54
• Cahokia-Joachim River Basin.....	56
• Meramec River Basin	60
• Bourbeuse River Basin	64
• Big River Basin.....	67
• Upper Mississippi- Cape Girardeau.....	71
• Whitewater Basin.....	74
• Lower Mississippi – Memphis Basin.....	77
• New Madrid-St. John’s Basin.....	79
• Upper St. Francis River Basin	81
• Lower St. Francis River Basin	85
• Little River Ditches Basin.....	87
• Cache River Basin	90
• Keg-Weeping Water Basin	91
• Nishnabotna River Basin	93

- Tarkio-Wolf River Basin 95
- Nodaway River Basin 97
- Independence-Sugar Basin..... 99
- Platte River Basin 102
- One Hundred and Two River Basin..... 105
- Lower Kansas River Basin..... 107
- Upper Grand River Basin 109
- Thompson River Basin 114
- Lower Grand River Basin 118
- Upper Chariton River Basin..... 121
- Lower Chariton River Basin 125
- Little Chariton River Basin..... 128
- Lower Marais des Cygnes..... 131
- Little Osage River Basin..... 134
- Marmaton River Basin..... 136
- Harry S. Truman Reservoir..... 138
- Sac River Basin..... 141
- Pomme de Terre River Basin..... 145
- South Grand River Basin 148
- Lake of the Ozarks Basin..... 152
- Niangua River Basin 155
- Lower Osage River Basin 159
- Upper Gasconade River Basin 162
- Big Piney River Basin..... 166
- Lower Gasconade River Basin..... 169
- Lower Missouri - Crooked River Basin..... 171
- Lower Missouri-Moreau River Basin 177
- Lamine River Basin 183
- Blackwater River Basin 188
- Lower Missouri River Basin..... 191
- Beaver Reservoir..... 194
- James River Basin..... 196
- Bull Shoals Lake Basin 202
- North Fork White River Basin..... 205
- Black River Watershed 208
- Current River Basin 211
- Lower Black River Basin..... 216
- Spring River Basin (Howell/Oregon counties) 218
- Eleven Point River Basin 220
- Lake O' the Cherokees 222
- Spring River Basin..... 224
- Elk River Basin 230

IV. Other Department Nonpoint Source Water Quality Accomplishments.....234

- A. Agricultural NPS SALT Program
- B. Source Water Protection
- C. Total Maximum Daily Load (TMDL) Development
- D. Hazardous Waste Program

E.	Land Reclamation Program	
F.	Financial Assistance Center and State Revolving Fund	
•	NPS Animal Waste Disposal Loan Program	
•	NPS Neighborhood Improvement Loans	
•	Brownfields Redevelopment	
•	Future NPS Loan Programs and Projects	
G.	Water Quality Standards/Monitoring/Assessment	
•	Water Quality Monitoring	
•	Water Quality Standards	
H.	Environmental Services Program	
V.	Agency Partnerships	244
A.	Natural Resources Conservation Service	
B.	Missouri Department of Health and Senior Services	
C.	Missouri Department of Conservation	
D.	Missouri Department of Agriculture	
E.	United States Geological Survey	
VI.	Teams, Committees, and Volunteers	250
A.	Missouri Water Quality Coordinating Committee	
B.	Water Protection Forum	
C.	Water Resources Center	
D.	Missouri Stream Teams/Volunteer Water Quality Monitoring Program	
•	Training Levels	
•	Stream Team Monitoring/Assessment Activities	
VII.	Conclusion: Future Efforts	255
VIII.	Appendices	256
A.	Water Data Available through USGS	
B.	Watershed Information Network	
1.	Know Your Watershed	
2.	Surf Your Watershed	
3.	Science in Your Watershed	
C.	References and Useful Web Links	
D.	Acronyms	
E.	2002 303(d) List of Impaired Waters Map and List	
F.	Outstanding National Resource Waters	
G.	Outstanding State Resource Waters	

List of Figures

- Figure 1: Summary of FY07 319 NPS Project Evaluation Measures: All Activities
- Figure 2: Summary of FY07 319 NPS Project Evaluation Measures: Statewide
- Figure 3: Summary of FY07 NPS Projection Evaluation Measures: Regional
- Figure 4: Summary of FY07 NPS Projection Evaluation Measures: 8-Digit HUC Summary
- Figure 5: Comparison of BMPs
- Figure 6: Comparison of Sediment Saved
- Figure 7: Nitrogen Saved due to BMP Implementation
- Figure 8: Phosphorus Saved due to BMP Implementation
- Figure 9: Missouri Watersheds based on their HUC 8, USGS basin name, and Missouri basin name
- Figure 10: Missouri Hydrologic Unit Delineation by 8-digit Hydrologic Unit Code
- Figure 11: Natural Resources Conservation Service (NRCS) and Partner Contributions: HUC 07100009
- Figure 12: Number of Volunteer Water Quality Sampling Events Conducted in 07110001
Bear-Wyaconda River Basin
- Figure 13: AgNPS SALT Project Plan Goals for HUC 07110001
- Figure 14: NRCS and Partner Contributions: HUC 07110001
- Figure 15: Summary of FY07 319 NPS Project Evaluation Measures: 07110001 Bear-Wyaconda
- Figure 16: Number of Volunteer Water Quality Sampling Events Conducted in 07110002
North Fabius River Basin
- Figure 17: AgNPS SALT Project Plan Goals for HUC 07110002
- Figure 18: NRCS and Partner Contributions: HUC 07110002
- Figure 19: Summary of FY07 319 NPS Project Evaluation Measures: HUC 07110002 North Fabius
- Figure 20: Number of Water Quality Sampling Events Conducted in 07110003
South Fabius River Basin
- Figure 21: NRCS and Partner Contributions: HUC 07110003
- Figure 22: Number of Volunteer Water Quality Sampling Events Conducted in 07110004
The Sny River Basin
- Figure 23: NRCS and Partner Contributions: HUC 07110004
- Figure 24: Number of Volunteer Water Quality Sampling Events Conducted in 07110005
North Fork Salt River Basin
- Figure 25: AgNPS SALT Project Plan Goals for HUC 07110005
- Figure 26: NRCS and Partner Contributions: HUC 07110005
- Figure 27: Number of Volunteer Water Quality Sampling Events Conducted in 07110006
South Fork Salt River Basin
- Figure 28: AgNPS SALT Project Plan Goals for HUC 07110006
- Figure 29: NRCS and Partner Contributions: HUC 07110006
- Figure 30: NRCS and Partner Contributions: HUC 07110007
- Figure 31: Number of Volunteer Water Quality Sampling Events Conducted in 07110008
Cuivre River Basin
- Figure 32: AgNPS SALT Project Plan Goals for HUC 07110008
- Figure 33: NRCS and Partner Contributions: HUC 07110008
- Figure 34: Number of Volunteer Water Quality Sampling Events Conducted in 07110009
Peruque-Piasa River Basin
- Figure 35: NRCS and Partner Contributions: HUC 07110009
- Figure 36: Number of Volunteer Water Quality Sampling Events Conducted in 07140101
Cahokia-Joachim Creek Basin
- Figure 37: NRCS and Partner Contributions: HUC 07140101
- Figure 38: Summary of FY07 319 NPS Project Evaluation Measures: 07140101 Cahokia-Joachim
- Figure 39: Number of Volunteer Water Quality Sampling Events Conducted in 07140102
Meramec River Basin

Figure 40: NRCS and Partner Contributions: HUC 07140102

Figure 41: Summary of FY07 319 NPS Project Evaluation Measures: HUC 07140102 Meramec

Figure 42: Number of Water Quality Sampling Events Conducted in 07140103 Bourbeuse River Basin

Figure 43: NRCS and Partner Contributions: HUC 07140103

Figure 44: Number of Water Quality Sampling Events Conducted in 07140104 Big River Basin

Figure 45: AgNPS SALT Project Plan Goals for HUC 07140104

Figure 46: NRCS and Partner Contributions: HUC 07140104

Figure 47: Summary of FY07 319 NPS Project Evaluation Measures: 07140104 Big

Figure 48: Number of Volunteer Water Quality Sampling Events Conducted in 07140105
Upper Mississippi – Cape Girardeau River Basin

Figure 49: NRCS and Partner Contributions: HUC 07140105

Figure 50: Summary of FY07 319 NPS Project Evaluation Measures: HUC 07140105
Upper Mississippi – Cape Girardeau River Basin

Figure 51: Number of Volunteer Water Quality Sampling Events Conducted in 07140107
Whitewater River Basin

Figure 52: AgNPS SALT Project Plan Goals for HUC 07140107

Figure 53: NRCS and Partner Contributions: HUC 07140107

Figure 54: NRCS and Partner Contributions: HUC 08010100

Figure 55: Number of Volunteer Water Quality Sampling Events Conducted in 08020201
St. John’s Basin

Figure 56: AgNPS Project Plan Goals for HUC 08020201

Figure 57: NRCS and Partner Contributions: HUC 08020201

Figure 58: Number of Volunteer Water Quality Sampling Events Conducted in 08020202
Upper St. Francis River Basin

Figure 59: NRCS and Partner Contributions: HUC 08020202

Figure 60: NRCS and Partner Contributions: HUC 08020203

Figure 61: AgNPS SALT Project Plan Goals for HUC 08020204

Figure 62: NRCS and Partner Contributions: HUC 08020204

Figure 63: NRCS and Partner Contributions: HUC 08020302

Figure 64: NRCS and Partner Contributions: HUC 10240001

Figure 65: NRCS and Partner Contributions: HUC 10240004

Figure 66: NRCS and Partner Contributions: HUC 10240005

Figure 67: NRCS and Partner Contributions: HUC 10240010

Figure 68: Number of Volunteer Water Quality Sampling Events Conducted in 10240011
Independence – Sugar Basin

Figure 69: NRCS and Partner Contributions: HUC 10240011

Figure 70: Summary of FY07 319 NPS Project Evaluation Measures: HUC 10240011
Independence - Sugar Basin

Figure 71: Number of Volunteer Water Quality Sampling Events Conducted in 10240012
Platte River Basin

Figure 72: AgNPS SALT Project Plan Goals for HUC 10240012

Figure 73: NRCS and Partner Contributions: HUC 10240012

Figure 74: NRCS and Partner Contributions: HUC 10240013

Figure 75: NRCS and Partner Contributions: HUC 10270104

Figure 76: Number of Volunteer Water Quality Sampling Events Conducted in 10280101
Upper Grand River Basin

Figure 77: AgNPS Salt Project Plan Goals for HUC 10280101

Figure 78: NRCS and Partner Contributions: HUC 10280101

Figure 79: Summary of FY07 319 NPS Project Evaluation Measures: HUC 10280101 Upper Grand

Figure 80: Number of Volunteer Water Quality Sampling Events Conducted in 10280102
Thompson River Basin

Figure 81: AgNPS SALT Project Plan Goals for HUC 10280102
Figure 82: NRCS and Partner Contributions: HUC 10280102
Figure 83: Summary of FY07 319 NPS Project Evaluation Measures: 10280102 Thompson
Figure 84: Number of Volunteer Water Quality Sampling Events Conducted in 10280103
Lower Grand River Basin
Figure 85: AgNPS SALT Project Plan Goals for HUC 10280103
Figure 86: NRCS and Partner Contributions: HUC 10280103
Figure 87: Number of Volunteer Water Quality Sampling Events Conducted in 10280201
Upper Chariton River Basin
Figure 88: AgNPS SALT Project Plan Goals for HUC 10280201
Figure 89: NRCS and Partner Contributions: HUC 10280201
Figure 90: Summary of FY07 319 NPS Project Evaluation Measures: HUC 10280201 Upper Chariton
Figure 91: Number of Volunteer Water Quality Sampling Events Conducted in 10280202
Little Chariton River Basin
Figure 92: AgNPS SALT Project Plan Goals for HUC 10280202
Figure 93: NRCS and Partner Contributions: HUC 10280202
Figure 94: AgNPS SALT Project Plan Goals for HUC 10280203
Figure 95: NRCS and Partner Contributions: HUC 10280203
Figure 96: AgNPS SALT Project Plan Goals for HUC 10290102
Figure 97: NRCS and Partner Contributions: HUC 10290102
Figure 98: NRCS and Partner Contributions: HUC 10290103
Figure 99: AgNPS SALT Project Plan Goals for HUC 10290104
Figure 100: NRCS and Partner Contributions: HUC 10290104
Figure 101: AgNPS SALT Project Plan Goals for HUC 10290105
Figure 102: NRCS and Partner Contributions: HUC 10290105
Figure 103: Number of Volunteer Water Quality Sampling Events Conducted in 10290106
Sac River Basin
Figure 104: AgNPS SALT Project Plan Goals for HUC 10290106
Figure 105: NRCS and Partner Contributions: HUC 10290106
Figure 106: Summary of FY07 319 NPS Project Evaluation Measures: 10290106 Sac
Figure 107: Number of Volunteer Water Quality Sampling Events Conducted in 10290107
Pomme de Terre River Basin
Figure 108: AgNPS SALT Project Plan Goals for HUC 10290107
Figure 109: NRCS and Partner Contributions: HUC 10290107
Figure 110: Number of Volunteer Water Quality Sampling Events Conducted in 10290108
South Grant River Basin
Figure 111: AgNPS SALT Project Plan Goals for HUC 10290108
Figure 112: NRCS and Partner Contributions: HUC 10290108
Figure 113: Number of Volunteer Water Quality Sampling Events Conducted in 10290109
Lake of the Ozarks Basin
Figure 114: AgNPS SALT Project Plan Goals for HUC 10290109
Figure 115: NRCS and Partner Contributions: HUC 10290109
Figure 116: Number of Volunteer Water Quality Sampling Events Conducted in 10290110
Niangua River Basin
Figure 117: AgNPS SALT Project Plan Goals for HUC 10290110
Figure 118: NRCS and Partner Contributions: HUC 10290110
Figure 119: Summary of FY07 319 NPS Project Evaluation Measures: HUC 10290110 Niangua
Figure 120: Number of Volunteer Water Quality Sampling Events Conducted in 10290111
Lower Osage River Basin
Figure 121: AgNPS SALT Project Plan Goals for HUC 10290111
Figure 122: NRCS and Partner Contributions: HUC 10290111

Figure 123: Number of Volunteer Water Quality Sampling Events Conducted in 10290201
Upper Gasconade River Basin

Figure 124: AgNPS SALT Project Plan Goals for HUC 10290201

Figure 125: NRCS and Partner Contributions: HUC 10290201

Figure 126: Summary of FY07 319 NPS Project Evaluation Measures: 10290201 Upper Gasconade

Figure 127: Number of Volunteer Water Quality Sampling Events Conducted in 10290202
Big Piney River Basin

Figure 128: NRCS and Partner Contributions: HUC 10290202

Figure 129: Number of Volunteer Water Quality Sampling Events Conducted in 10290203
Lower Gasconade River Basin

Figure 130: NRCS and Partner Contributions: HUC 10290203

Figure 131: Number of Volunteer Water Quality Sampling Events Conducted in 10300101
Lower Missouri – Crooked River Basin

Figure 132: AgNPS SALT Project Plan Goals for HUC 10300101

Figure 133: NRCS and Partner Contributions: HUC 10300101

Figure 134: Summary of FY07 319 NPS Project Evaluation Measures: 10300101
Lower Missouri-Crooked

Figure 135: Number of Volunteer Water Quality Sampling Events Conducted in 10300102
Lower Missouri – Moreau River Basin

Figure 136: AgNPS SALT Project Plan Goals for HUC 10300102

Figure 137: NRCS and Partner Contributions: HUC 10300102

Figure 138: Summary of FY07 319 NPS Project Evaluation Measures: 10300102 Lower Missouri-Moreau

Figure 139: Number of Volunteer Water Quality Sampling Events Conducted in 10300103
Lamine River Basin

Figure 140: AgNPS SALT Project Plan Goals for HUC 10300103

Figure 141: NRCS and Partner Contributions: HUC 10300103

Figure 142: Summary of FY07 319 NPS Project Evaluation Measures: 10300103

Figure 143: Number of Water Quality Sampling Events Conducted in 10300104 Blackwater River Basin

Figure 144: AgNPS SALT Project Plan Goals for HUC 10300104

Figure 145: NRCS and Partner Contributions: HUC 10300104

Figure 146: Number of Volunteer Water Quality Sampling Events Conducted in 10300200
Lower Missouri River Basin

Figure 147: AgNPS SALT Project Plan Goals for HUC 10300200

Figure 148: NRCS and Partner Contributions: HUC 10300200

Figure 149: NRCS and Partner Contributions: HUC 11010001

Figure 150: Number of Volunteer Water Quality Sampling Events Conducted in 11010002
James River Basin

Figure 151: AgNPS SALT Project Plan Goals for HUC 11010002

Figure 152: NRCS and Partner Contributions: HUC 11010002

Figure 153: Summary of FY07 319 NPS Project Evaluation Measures: 11010002 James

Figure 154: Number of Volunteer Water Quality Sampling Events Conducted in 11010003
Bull Shoals Lake Basin

Figure 155: AgNPS SALT Project Plan Goals for HUC 11010003

Figure 156: NRCS and Partner Contributions: HUC 11010003

Figure 157: Number of Volunteer Water Quality Sampling Events Conducted in 11010006
North Fork White River Basin

Figure 158: NRCS and Partner Contributions: HUC 11010006

Figure 159: Number of Volunteer Water Quality Sampling Events Conducted in 11010007
Upper Black River Basin

Figure 160: NRCS and Partner Contributions: HUC 11010007

Figure 161: Phosphorus Loading, HUC 11010008

Figure 162: Sediment Loading, HUC 11010008
Figure 163: Number of Volunteer Water Quality Sampling Events Conducted in 11010008
Current River Basin
Figure 164: NRCS and Partner Contributions: HUC 11010008
Figure 165: NRCS and Partner Contributions: HUC 11010009
Figure 166: Number of Volunteer Water Quality Sampling Events Conducted in 11010010
Spring River Basin
Figure 167: NRCS and Partner Contributions: HUC 11010010
Figure 168: Number of Volunteer Water Quality Sampling Events Conducted in 11010011
Eleven Point River Basin
Figure 169: NRCS and Partner Contributions: HUC 11010011
Figure 170: Number of Volunteer Water Quality Sampling Events Conducted in 11070206
Lake O' the Cherokees Basin
Figure 171: NRCS and Partner Contributions: HUC 11070206
Figure 172: Number of Volunteer Water Quality Sampling Events Conducted in 11070207
Spring River Basin
Figure 173: AgNPS SALT Project Plan Goals for HUC 11070207
Figure 174: NRCS and Partner Contributions: HUC 11070207
Figure 175: Mine Shaft Closure by MDNR Land Reclamation Program
Figure 176: Summary of FY07 319 Project Evaluation Measures: HUC 11070207 Spring
Figure 177: Number of Volunteer Water Quality Sampling Events Conducted in 11070208
Elk River Basin
Figure 178: AgNPS SALT Project Plan Goals for HUC 11070208
Figure 179: NRCS and Partner Contributions: HUC 11070208
Figure 180: Summary of FY07 319 NPS Project Evaluation Measures: 11070208 Elk
Figure 181: FY07 Active AgNPS SALT Projects
Figure 182: Water bodies having TMDLs approved in FFY 2007
Figure 183: TMDL Stakeholder Meeting Attendance
Figure 184: NRCS FFY2006 Report of Selected NPS-Related Achievements
Figure 185: NRCS Rapid Watershed Assessments
Figure 186: USGS Gaging Stations
Figure 187: Chart Depicting Stream Team Activities during FFY 2007
Figure 188: Table of Stream Team Activities during FFY 2007

The Missouri Nonpoint Source Management Program Annual Report for Federal Fiscal Year 2007

**Prepared by the Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program, Watershed Protection Section, Nonpoint Source Unit**

Fulfilling the water quality protection mission of the Missouri Nonpoint Source Management Program can be accomplished only with the cooperation of other resource agencies and the citizens of the state. Nonpoint source pollution occurs when water runs over land or through the ground, picks up natural or human-made pollutants, and deposits them in surface waters or ground water. As administrator of the program, the Missouri Department of Natural Resources (the department) and its partners continue to make significant progress in the protection of water, as well as air and land resources.

This document reports the impacts being made by the department and its partners in the control and abatement of nonpoint source pollution through the 319-grant program and collaborative efforts in the State of Missouri during the Federal Fiscal Year 2007 (October 1, 2006 through September 30, 2007).

I. Missouri's Nonpoint Source Management Program

A. Mission Statement

The mission of Missouri's Nonpoint Source Management Program (the program) is to preserve and protect the quality of the water resources of the state from nonpoint source impairments.

Goal A: Water Quality Assessment, Monitoring and Prioritization

Continue and enhance statewide water quality assessment processes to evaluate water quality and prioritize watersheds affected by nonpoint source (NPS) pollution.

Goal B: Water Quality Improvement and Protection

Improve water quality by implementing NPS-related projects and other activities.

Goal C: State Nonpoint Source Program Management

Maintain a viable, relevant, and effective program with the flexibility necessary to meet changing environmental conditions and regulations.

B. Elements of an Effective State Program

The Missouri Nonpoint Source Management Plan (NPSMP), initially approved and implemented in June 2000, is a five-year plan that contains broad goals intended to identify the general activities necessary to achieve the program's mission statement: *Preserve and protect the quality of the water resources of the state from NPS impairments*. Objectives reflect the five-year life of the NPSMP, with most of them being targeted for completion in five years or less. Specific sections of the NPSMP were updated, according to a prescribed schedule, in 2001-2005. In 2007, the mission, goals, and objectives are being reevaluated to determine if the objectives were achieved, if the objectives were appropriate for reaching the goals, and if the goals are appropriate for achieving the mission. After the review, an update of the NPSMP will be completed. The NPSMP may be found at <http://www.dnr.mo.gov/env/wpp/nps/mgmtplan/index.html>.

C. Missouri's Nine Key Elements

In 1996, a committee of state and U.S. Environmental Protection Agency (EPA) Region 7 representatives developed a list of items considered to be essential components of a state program. These components were embodied in EPA guidance commonly referred to as *Nine Key Elements of an Effective State Program*. The following elements provide the framework for Missouri's NPSMP. Missouri's approach to the nine key elements is outlined beginning on page 19 in the NPSMP: <http://www.dnr.mo.gov/env/wpp/nps/mgmtplan/index.html>. To determine the progress, specifically the successes, of the program, the department must continually endeavor to satisfy the intent of these nine key elements.

1. The state program contains explicit short and long-term goals, objectives, and strategies to protect surface and ground water.
2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional and local entities (including conservation districts), private sector groups, citizen groups, and federal agencies.
3. The state uses a balanced approach that emphasizes both statewide programs and on-the-ground management of individual watersheds where waters are impaired or threatened.
4. The state program (a) abates known water quality impairments from NPS pollution and (b) prevents significant threats to water quality from present and future NPS activities.
5. The state program identifies waters and their watersheds impaired by NPS pollution and identifies important unimpaired waters that are threatened or otherwise at risk. Further, the state establishes a process to progressively address these identified waters by conducting more detailed watershed assessments and

developing watershed implementation or management plans, and then implementing the plans.

6. The state reviews, upgrades, and implements all program components required by section 319(b) of the Clean Water Act, and establishes flexible, targeted, and iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable. The state programs include:
 - A mix of water quality-based and/or technology-based programs designed to achieve and maintain beneficial uses of water; and
 - A mix of regulatory, non-regulatory, financial, and technical assistance as needed to achieve and maintain beneficial uses of water as expeditiously as practicable.
7. The state identifies federal lands and activities, which are not managed consistently with state program objectives. Where appropriate, the state seeks EPA assistance to help resolve issues.
8. The state manages and implements its program efficiently and effectively, including necessary financial management.
9. The state periodically reviews and evaluates its program using environmental and functional measures of success and revises its NPS assessment and its program at least every five years.

D. State Program Challenges

This annual report focuses on goals of the NPSMP, which outlines the challenges that Missouri faces with NPS pollution. The report will also illustrate progress that has been made toward addressing the following challenges:

1. 303(d) listed waters;
2. Water Quality Standards;
3. Total Maximum Daily Loads (TMDLs); and
4. Watershed Management Planning.

The program challenges listed above will be assessed at the 8-digit hydrologic unit code (HUC) level. Identifying challenges by watershed will help to identify areas of the state where progress is being made toward reducing NPS pollution in watersheds, and will also identify areas where watershed protection and restoration efforts might be lacking.

Program activity measures (PAMs) for NPS pollution, as established by EPA, are identified in the summary charts provided in Section II and in discussion of individual watersheds in Section III of this report. PAMs include watershed-based plans designed to remediate impaired waters (with or without TMDLs), and which include protective

actions for the watersheds. These plans are those that address EPA's nine critical elements of watershed planning, as provided in EPA's 2004 guidance. Plans will be listed in each 8-digit HUC that are being developed, being implemented, and those that have been substantially completed.

II. 319 Nonpoint Source Grant Program Overview

A. Missouri Section 319(h) Nonpoint Source Management Grants

NPS grant funds are provided from EPA through Section 319(h) of the Clean Water Act. Funds are used to address nonpoint sources of pollution and are administered from EPA through the department to eligible sponsors. Funds can be used to address NPS pollution through information/education, water quality monitoring, demonstrations, and implementation of practices that preserve, conserve, restore, or improve water quality. Eligible sponsors include state and local agencies, educational institutions, and non-profit organizations. Each year a request for proposals (RFP) is distributed describing the grant opportunity. A training session is held to help applicants develop a competitive proposal, provide information about grant requirements, and provide individualized assistance.

B. Priorities and Project Selection Process

Selection for 319 funding emphasizes projects that restore the quality of waters on the state's 303(d) list due to nonpoint sources. However, other high quality NPS projects are encouraged. Highest priority for funding is assigned to projects addressing agricultural, urban, and abandoned coal mine land. Priorities that help guide the selection process are established in the NPSMP.

To confront these priorities, three types of subgrants are offered: major subgrants, minigrants, and watershed planning subgrants.

Major subgrants are awarded through an annual RFP. The RFP is sent to entities on a mailing list, sent electronically to members of the Water Quality Coordinating Committee, advertised on the department's Web site, provided to all Soil and Water Conservation Districts and NRCSs, and distributed at various conferences, meetings, and events. The availability is announced in departmental newsletters, by our resource partners, and via press release. Applicant pre-proposals are submitted and reviewed by staff, while final ranking is performed by an interagency review committee.

In contrast to previous years, the 2007 RFP was targeted to nine priority watersheds within the state. The watersheds were prioritized based upon several criteria including: 303(d) listing, presence of a TMDL or Watershed Plan, priority of partnering agencies, existing remedial efforts, and probability of success. Watersheds targeted for funding with the 2007 grant are:

WATERSHED/WATER BODIES	HUC
Upper Shoal Creek (Spring), Lamar Lake, N. Fork Spring R.	11070207
Jack's Fork (Current R)	11010008
Sedalia - Spring Fork Lake, Lamine Basin	10300103
Lower Missouri-Crooked	10300101
James River	11010002
Fellow's - McDaniel Lakes	10290106
Big River	07140104
Marais des Cygnes, Miami Ck.	10290102
Elk River subsheds	11070208

On August 1, 2007, the NPS Unit staff held a subgrant writing training at the DNR Conference Building in Jefferson City. The training was attended by 19 potential applicants in targeted watersheds. The main objective of the training is to help applicants develop a competitive proposal. During the training staff inform the applicants about the priorities of the 319 funding, as well as additional funding opportunities, such as watershed management planning grants and minigrants. The training is also an opportunity for the applicants to meet the 319 staff, present and modify the proposals, and develop their budget. Training is open to all applicants with Soil and Water Conservation Districts, university staff, local government agencies, and not-for-profit organizations with interest in NPS water quality projects.

Final applications for subgrants are evaluated, and the applicants interviewed by an interagency review committee. The proposed projects are ranked by the review committee, submitted to the department and Missouri Clean Water Commission for concurrence, and submitted to EPA for approval.

Minigrant applications, in federal fiscal year 2007 (FY07), are reviewed quarterly. These projects cost \$5,000 or less and last up to 18 months. Applications are reviewed, prioritized, and rated by an in-house review committee. Selected projects are recommended for funding. Beginning in federal fiscal year 2008 (FY08), minigrants will be increased to up to \$10,000 and can last for 24 months. They will be reviewed by the in-house committee three times per year.

Watershed Management Planning Subgrants are available for producing nine-element watershed planning in watersheds with 303(d) listed NPS impairments. Up to \$15,000 may be awarded for projects lasting up to 18 months. The focus of this program is to produce a watershed management plan that incorporates EPA's nine critical elements. Applications for this subgrant are accepted quarterly.

Projects activity summary: The department administered and managed 77 319 NPS grant projects during FY07. Among those 77, the department initiated 26 new 319 NPS projects. Twenty-five projects were completed in FY07.

In FY07, 13 major subgrants applications and 25 minigrants were submitted; 19 subgrants and 7 minigrants were awarded. Two Watershed Management Planning Grant applications were submitted and recommended for funding. Applications must have been received within FY07 (October 1, 2006 – September 30, 2007).

C. Measuring Benefits of the Section 319(h) Nonpoint Source Management Grant Program

NPS 319 grants have accomplished significant results in the control and mitigation of NPS pollution in the State of Missouri. By focusing funding on water quality information and education, innovative pollution prevention practices, and remediation of existing water quality problems, 319 grant funding has proven to be a valuable resource to the citizens of Missouri.

The 319 NPS Management Grant Program strives to provide Missouri citizens with choices, tools, and decision-making skills that will benefit water quality through education in the use and protection of natural resources and through implementation of best management practices (BMPs). BMPs are used to control the production or delivery of pollutants from agricultural, mining, and urban activities to water resources, and to prevent impacts to the physical and biological integrity of surface and ground water. BMPs can be either structural or managerial.

Structural BMPs include physical structures or materials that are used to protect water quality and slow water velocities to prevent soil erosion. Some examples are animal waste facilities, sediment basins, silt fences, check dams, water diversions, and grade stabilization.

Managerial BMPs address how projects are implemented, primarily the method of carrying out a project. Examples of managerial BMPs include nutrient and pest management, rotational grazing, conservation tillage, street sweeping, use of native plants, and practices that minimize or prevent soil erosion. It can be difficult to quantify the benefits of managerial BMPs because they are often represented by philosophical changes among land managers.

BMPs promote sustainability and may be reproduced to achieve comparable results in other locations. Some BMPs are founded in research that identifies potential for measured reductions in pollution that will be achieved through use of the practice.

One of the broad goals described in the state's NPSMP, Goal B, specifies that the state will "Improve water quality by implementing NPS-related projects and other activities." Water quality benefits are often difficult to quantify and BMP implementation can take a considerable period of time before improvements to water quality can be measured. In Section III, the department has estimated the number of BMPs implemented as a direct result of 319 NPS grants for 2006. Load reductions data collection is not all-inclusive, as not all projects are required to report, but it does indicate that the 319 NPS Program is having a significant, positive impact on the state's water quality.

The data contained in the following charts was compiled from information submitted by 319 subgrant project sponsors and reflects the activities that have been conducted as part of their projects that were active during this reporting period.

1. Summary of FY07 Project Evaluation Measures

Figure 1, on the following page, entitled “Summary of FY07 319 NPS Project Evaluation Measures: All Activities,” represents a summary of results for all 319-related project activities in FY07. Project sponsors reported these project activities and load reductions on a statewide, regional, or HUC 8 basis. Figure 2, titled “Summary of FY07 319 NPS Project Evaluation Measures: Statewide,” shows only projects that reported statewide (more than one HUC 8) achievements and were not designated to a watershed level or specific HUC 8. Figure 3, titled “Summary of FY07 319 NPS Projects Evaluation Measures: Regional,” shows only projects that reported achievements on a regional basis (multiple HUCs) as opposed to statewide or by individual HUC. These projects impacted more than one HUC. Finally, Figure 4, titled “Summary of FY07 319 NPS Projects Evaluation Measures: 8 digit HUC Summary,” provides a summary of achievements at watershed (HUC) levels.

**Figure 1: Summary of FY07 319 NPS Project Evaluation Measures
All Activities**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	37	203	292	43	3	6	4	63
					acres	acres	acres	acres
					8200	66688	0	3238

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	15	15	0	50	304

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	90	1,904	101	3,448	67	700	683	8,325	6202	51	247

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	158	174,317	107	73,772	18	678	99

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	3	13	10	16	58	334	616	214

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	125	5	1	99

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	255	15,165	15,058	10,137	15,054	50

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	24	6	12	8,261	3,600	4	4060

**Figure 2: Summary of FY07 319 NPS Project Evaluation Measures
Statewide**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	9	67	47	14	1	0	4	9
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	14	14	0	0	1

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	19	415	54	2,036	31	344	405	2,440	6087	22	80

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	79	41,945	34	54,862	2	40	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	2	6	24	191	14	19

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	1	1,400	0	4,300	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Figure 3: Summary of FY07 319 NPS Project Evaluation Measures
Regional**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	2	8	17	1	0	0	0	30
					acres	acres	acres	acres
					0	0	0	300

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	131

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	19	819	23	502	20	164	260	1,660	46	4	8

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	12	4,900	17	0	5	100	2

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	4	1	2	3	42	448	63

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	29	10,035	9,800	4,800	5,000	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	20	3	10	7,000	3,500	2	4060

**Figure 4: Summary of FY07 319 NPS Project Evaluation Measures
8-Digit HUC Summary**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	26	128	228	28	2	6	0	24
					acres	acres	acres	acres
					8200	66688	0	2938

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	1	1	0	50	172

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	52	670	24	910	16	192	18	4,225	69	25	159

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	67	127,472	56	18,910	11	538	97

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	3	9	7	8	31	101	154	132

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	125	5	1	99

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	225	3,730	5,258	1,037	10,054	50

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	4	3	2	1,261	100	2	0

319 NPS Regional Projects:

- 1) Demonstration Measuring the Effectiveness of Buffers in Treating Runoff of Underground Outlets (UGO) (G02-NPS-13)
- 2) Endocrine Modulators and Excess Nutrients in Little Medicine and West Locust Creeks (G03-NPS-15)
- 3) Community On-Site Stormwater and Wastewater Project (G04-NPS-18)
- 4) Upper White River Watershed Integrated Economic and Environmental Management (G05-NPS-09)
- 5) Watershed Management through Community Engagement and Education (G06-WQM-01)
- 6) Table Rock Long-term Monitoring (G06-NPS-07)
- 7) West Plains Watershed Initiative (G06-NPS-19)
- 8) Clean Water Education and Resources Project (G06-NPS-22)
- 9) City of Rogersville NPS Pollution Abatement Project (G06-NPS-24)
- 10) Stewardship Implementation Project (SIP) (G02-NPS-15)
- 11) Show Me Yards and Neighborhoods (G07-NPS-15)
- 12) Abandoned Well Education & Assistance for Grundy County Landowners (G07-NPS-20)
- 13) Upper Big River Corridor Groundwater Protection and Well Decommissioning (G04-NPS-22)

319 NPS Statewide Projects:

- 1) Team Up! Protecting Missouri's Water Resources from Irrigation-related Nitrogen Contamination (G03-NPS-18)
- 2) Project WET (G05-NPS-04)
- 3) MO-Ag Watershed Project (G06-NPS-02)
- 4) Lakes of Missouri Volunteer Program (G00-NPS-20 & G06-NPS-08)
- 5) Achieving TMDLs Through Locally Developed & Implemented Watershed Management (G06-NPS-10)
- 6) Development of a Watershed Comparison & Educational Tool (G06-NPS-11)
- 7) Water Quality Education for the Professionally Trained Logger (G06-NPS-13)
- 8) Statewide Lake Assessment Program (G06-NPS-20)
- 9) Missouri Statewide Lake Assessment (G00-NPS-19)
- 10) Developing Interactive Watershed Information Websites for Science Teachers in Grades 4-8 (G03-NPS-11)
- 11) Solar Water Pumps for Intensive Grazing (MOA-2001)
- 12) Ambient Water Quality Monitoring Network (AOC3000377)
- 13) Stream Educational Workshops and Product Development (G04-NPS-19)
- 14) Reducing Nitrogen Using Color-Guided Sidedressing (G07-NPS-12)

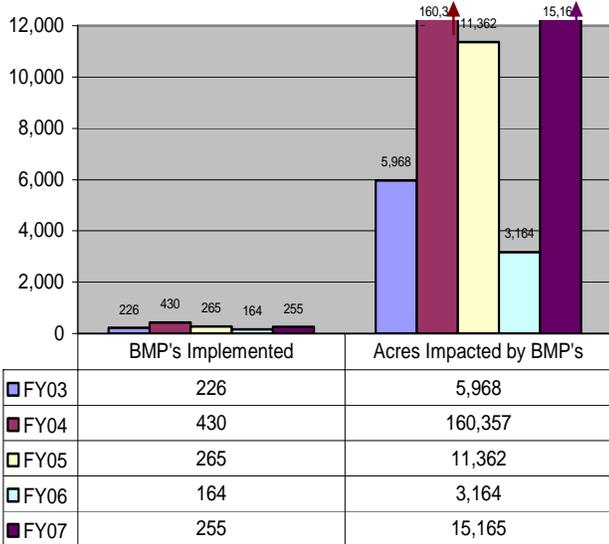
319 NPS HUC Projects:

- 1) Elk River/Shoal Creek Water Quality Restoration 319 Project (G02-NPS-21)
- 2) Brush Creek Mid-Shed (G03-NPS-06)
- 3) Fox River Ecosystem Development Project (G03-NPS-07)
- 4) Land-Use Planning and Water Quality Restoration in Bonne Femme Creek Watershed. (G03-NPS-16)
- 5) McCroskie Creek Watershed Project (G04-NPS-01)

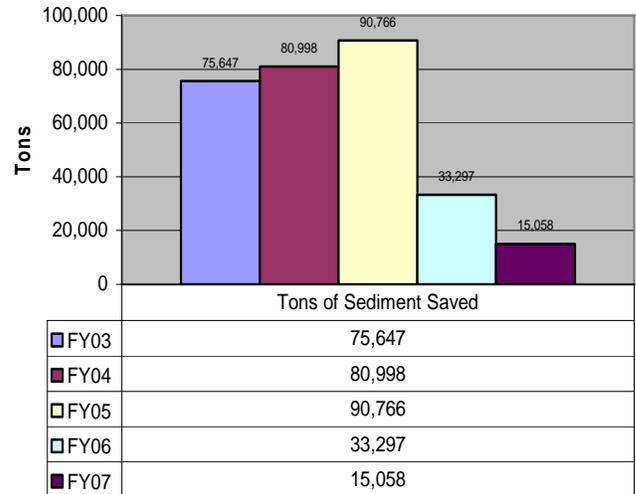
- 6) Osage Fork Animal Waste and Nutrient Management Implementation 319 Project (G04-NPS-11)
- 7) Hinkson Creek Restoration Project (G04-NPS-23)
- 8) Ward Branch Preservation, Restoration & Enhancement (G04-NPS-24)
- 9) Belew Creek Watershed Plan (G06-NPS-03)
- 10) Elk River Poultry Litter Demonstration Project (G06-NPS-04)
- 11) Hickory Creek Watershed Demonstration/Education Project (G06-NPS-14)
- 12) Sources and Reduction of Stormwater Runoff in the James River Basin (G06-NPS-15)
- 13) River des Peres Southwest Branch Water Quality Project (G06-NPS-18)
- 14) Finley River Nontraditional Agriculture Implementation Project (G06-NPS-23)
- 15) Watkins Creek Watershed Planning Project (G06-NPS-25)
- 16) Lower Shoal Creek Watershed Restoration Action Strategy Project (G07-NPS-01)
- 17) Bennett Spring Branch Sub-Watershed: Planning for Wastewater Treatment and Water Quality Education (G07-WQM-01)
- 18) Headwaters of Mudd Creek Project (G07-NPS-02)
- 19) Perry County Karst Protection Project (G07-NPS-03)
- 20) Upper Shoal Creek On-site System Implementation (G07-NPS-04)
- 21) Watkins Creek Demonstration Project (G07-NPS-06)
- 22) Lower James and Table Rock Lake Watershed Management Plan (G07-NPS-07)
- 23) Fellows/McDaniel/Fulbright Watershed Nutrient Reduction Project (G07-NPS-08)
- 24) Addressing Organic Waste Impacts on Water Quality in Three St. Louis County Streams (G07-NPS-10)
- 25) Elk River Watershed Plans (G07-NPS-11)
- 26) North Fabius River Watershed Management Plan (G07-NPS-13)
- 27) Hazel Creek Watershed Education Project (G07-NPS-16)
- 28) Gabriel Creek Streambank Stabilization Project (G07-NPS-18)

Figures 5 through 8, below display graphically selected information from the preceding tables and compare 319 BMP implementation and load reduction for years 2003 through 2007.

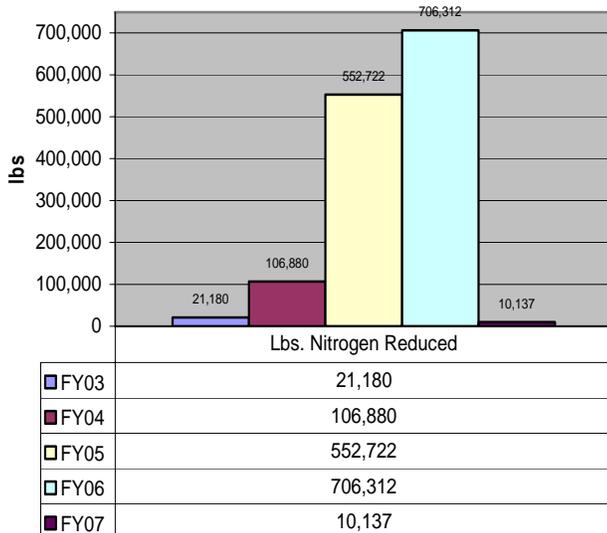
Comparison of BMP's



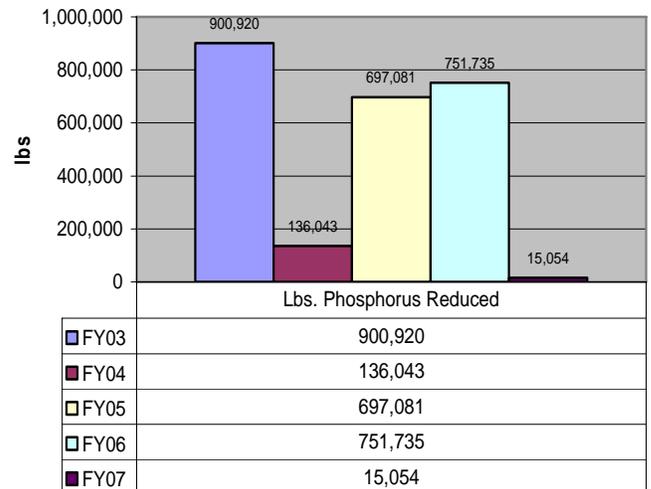
Comparison of Sediment Saved



Nitrogen Saved due to BMP Implementation



Phosphorus Saved due to BMP Implementation



2. Summary of FY07 319 Grant Program Dollars Spent

The amount spent in FY07 out of six open grants on local, regional, and state 319 projects was \$2,628,685.13. This funding was passed through to sponsors for water quality education, demonstration, implementation, modeling, and monitoring.

3. Summary of FY07 319 Results Through Modeling

STEPL

EPA supports several computer models that simulate and measure load reductions. One such model is called the Spreadsheet Tool for Estimating Pollutant Load (STEPL). STEPL employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various BMPs. STEPL provides a user-friendly Visual Basic (VB) interface to create a customized spreadsheet-based model in Microsoft Excel. It computes watershed surface runoff; nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5); and sediment delivery based on various land uses and management practices.

For each watershed, the annual nutrient loading is calculated based on the runoff volume and the pollutant concentrations in the runoff water as influenced by factors such as the land use distribution and management practices. The annual sediment load (sheet and rill erosion only) is calculated based on the Universal Soil Loss Equation (USLE) and the sediment delivery ratio. The sediment and pollutant load reductions that result from the implementation of BMPs are computed using the known BMP efficiencies.

The STEPL model is provided to project sponsors to help quantify the effectiveness of their projects. Currently, load reduction data and other evaluation information reported to the department by 319 subgrant recipients is provided through quarterly and annual project reporting. Although STEPL is recommended, it is not required. Subgrant recipients use several approved methods for quantifying load reductions.

RUSLE2

Many project personnel calculate sediment loss using the Revised Universal Soil Loss Equation version 2 (RUSLE2). For more information on RUSLE2, review the following Web sites: <http://nmplanner.missouri.edu/> and http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm.

Other Calculations and/or Models

In most cases, the Natural Resources Conservation Service (NRCS) has worked with the project sponsors to obtain this information. Reduction in nutrient loading for animal waste projects was calculated using equations based upon university publications and from soil and litter analysis.

Department staff use Microsoft Excel to compile data received from the project sponsors. This software provides analyses capabilities and is the source of the data summaries and tabulated totals used to create the graphs and tables for this document.

For more information about STEPL and other models approved by EPA for measuring pollutant load reductions, review the following Web site: <http://it.tetrattech-ffx.com/stepl/>.

4. Activities of the 319 Program Staff

Some staff funded through the 319 program are responsible for promoting, implementing, and reporting progress of subgrant projects. Staff performs other activities not directly associated with a grant project such as providing input and direction on a wide variety of water quality related issues that are priorities for the department. Staff served on many workgroups and committees to help address issues which include, but are not limited to, wetlands, forest management, lake monitoring, abandoned mine lands, animal waste handling, urban and stormwater runoff, TMDLs, mercury contamination, abandoned landfills, pesticide and nutrient planning, general agriculture, sand and gravel mining, watershed planning, source water protection, wellhead protection, State Revolving Fund (SRF) NPS on-site systems, and Missouri Stream Teams.

Staff participated in conferences and meetings, gave approximately nine presentations, and set up six displays at a variety of venues throughout the state to provide awareness about grant opportunities and disseminate information to those interested in addressing NPS problems. The number of presentations does not include presentations made during the subgrant application training session.

5. General Progress Statements

Approximately, 22% of the impaired segments shown on the 1998 303(d) list of impaired waters now meet water quality standards and have been removed from the list.

Twelve (12) TMDL Action Plans and thirteen (13) watershed-based plans have been implemented.

EPA has approved 108 TMDLs and 30 more are currently being developed.

There are approximately 24 active watershed groups that have developed or are developing watershed plans.

III. 319 Project Accomplishments

The program focus is on watershed based, NPS projects. Therefore, staff strives to track NPS accomplishments by watershed. A watershed is an area of land that catches rainfall and snowmelt, which then drains into low-lying bodies of water. Watersheds come in all shapes and sizes, from a few acres to over a million square miles and are sometimes difficult to delineate. Consequently, Hydrologic Unit Codes (HUCs) were created to logically convey the drainage relationship of stream systems, watersheds, and larger river basins. Generally, HUC describes an area of land that most effectively and consistently describes a drainage area for surface runoff. A unique HUC number, consisting of 2 to 14 digits, identifies every hydrologic unit (a watershed or subwatershed). The larger the

HUC number the smaller the watershed. There are sixty-six 8-digit HUCs in Missouri, which includes several that are shared with neighboring states.

A. Successful 319 Nonpoint Source Grant Projects

There were many successful 319 NPS grant projects active in FY07. The 319 NPS grant funds three types of NPS water quality projects: Information and Education, Implementation, and Water Quality Monitoring and Assessment. Please visit our Web site for information on individual projects and their locations.

<http://www.dnr.mo.gov/env/wpp/nps/319nps-statewide-map.htm>

B. NPS Information for HUC 8 Watersheds

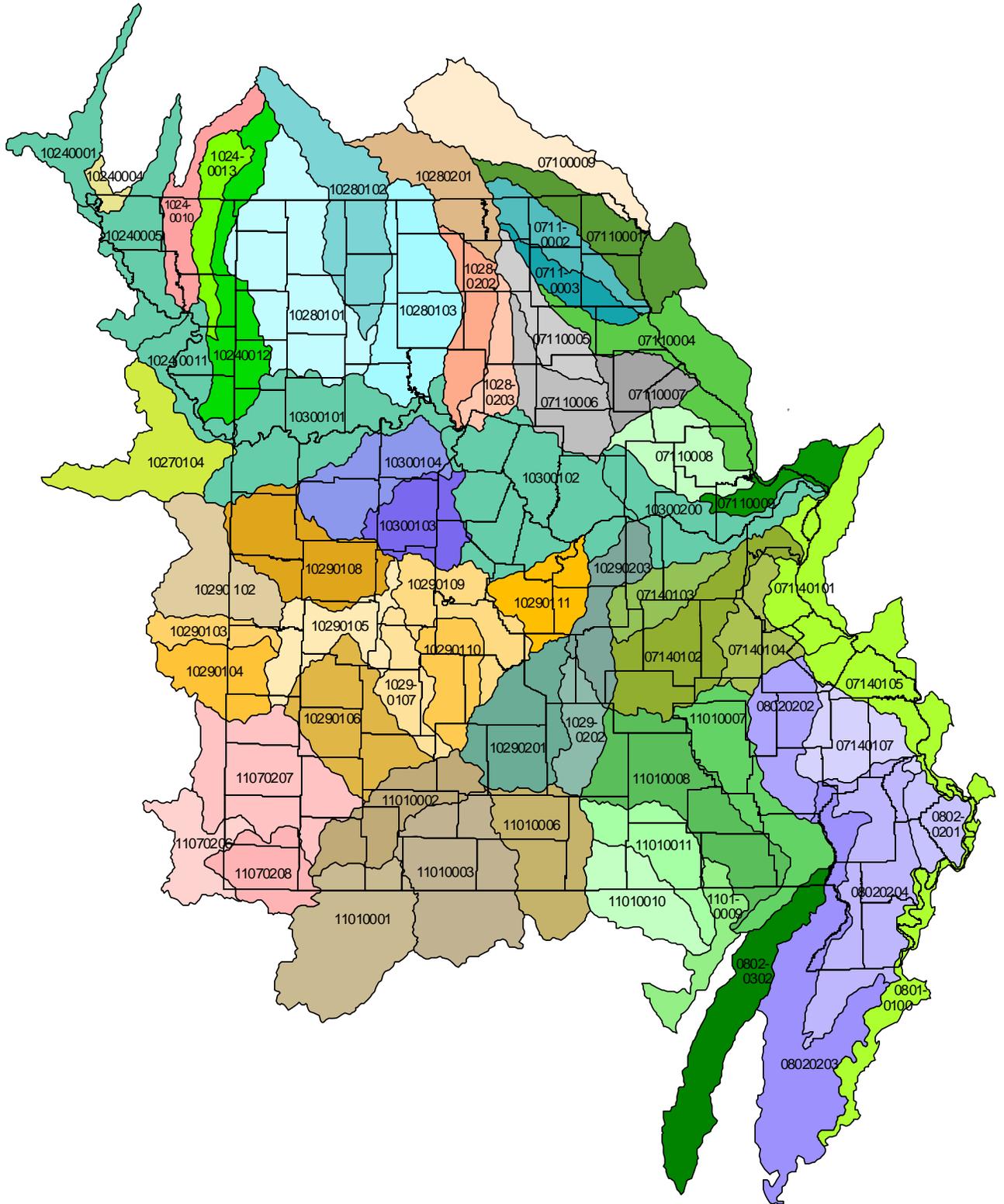
For this report, and for practical purposes, information has been aggregated to the HUC 8 scale. Though the HUC 8 scale is practical for reporting purposes, the units are rather large and many watershed based programs and projects tend to focus on smaller, more manageable sub-watersheds. The active 319 projects in FY07 are presented on a HUC 8 watershed scale so the implementation and monitoring results, educational efforts, load reduction, TMDL, source water protection, and program activity measures may be viewed as they relate to the watershed. The basins will be listed based upon HUC 8, USGS basin names, and Missouri basin names. The watershed information is presented in the order described in Figure 9.

Figure 9: Missouri Watersheds based on their HUC 8, USGS basin name, and Missouri basin name.

HUC 8	USGS Basin Name	Missouri Basin Name
07100009	Lower Des Moines	Des Moines Basin
07110001	Bear-Wyaconda	Wyaconda - Fox Rivers
07110002	North Fabius	North Fabius River Basin
07110003	South Fabius	South Fabius River Basin
07110004	The Sny	North River - Bobs Creek
07110005	North Fork Salt	North Salt River Basin
07110006	South Fork Salt	Middle-South Forks of the Salt River
07110007	Salt	Lower Salt River Basin
07110008	Cuivre	Cuivre River Basin
07110009	Peruque-Piasa	Peruque-Dardenne Creeks
07140101	Cahokia-Joachim	Mississippi River Tribs - St. L-Ste. Gen
07140102	Meramec	Meramec River Basin
07140103	Bourbeuse	Bourbeuse River Basin
07140104	Big	Big River Basin
07140105	Upper Mississippi-Cape Girardeau	Mississippi River Tribs - Ste. Gen-Cape Gir.
07140107	Whitewater	Castor-Whitewater Rivers Basin
08010100	Lower Mississippi-Memphis	Mississippi River Mainstem Below Ohio River
08020201	New Madrid-St. Johns	St. Johns Bayou
08020202	Upper St. Francis	Upper St. Francis Basin
08020203	Lower St. Francis	Lower St. Francis Basin
08020204	Little River Ditches	Little River Ditches
08020302	Cache	Cache River Basin

HUC 8	USGS Basin Name	Missouri Basin Name
10240001	Keg-Weeping Water	Missouri River Bottom
10240004	Nishnabotna	Nishnabotna River Basin
10240005	Tarkio-Wolf	Tarkio-Squaw Tributaries Basin
10240010	Nodaway	Nodaway River Basin
10240011	Independence-Sugar	Missouri River Mainstem
10240012	Platte	Platte River Basin
10240013	One Hundred and Two	102 River Basin
10270104	Lower Kansas	Kansas River Basin
10280101	Upper Grand	Upper Grand River Basin
10280102	Thompson	Thompson River Basin
10280103	Lower Grand	Middle Grand River Basin
10280201	Upper Chariton	Upper Chariton River Basin
10280202	Lower Chariton	Lower Chariton River Basin
10280203	Little Chariton	Little Chariton River Basin
10290102	Lower Marais Des Cygnes	Maries des Cygnes River Basin
10290103	Little Osage	Little Osage River Basin
10290104	Marmaton	Marmaton River Basin
10290105	Harry S. Truman Reservoir	Upper Osage River Basin
10290106	Sac	Sac River Basin
10290107	Pomme De Terre	Pomme de Terre River Basin
10290108	South Grand	South Grand River Basin
10290109	Lake of the Ozarks	Lake of Ozarks Basin
10290110	Niangua	Niangua River Basin
10290111	Lower Osage	Lower Osage River Basin
10290201	Upper Gasconade	Upper Gasconade River Basin
10290202	Big Piney	Big Piney River Basin
10290203	Lower Gasconade	Lower Gasconade River Basin
10300101	Lower Missouri-Crooked	Missouri River Mainstem - KC to Glasgow
10300102	Lower Missouri-Moreau	Missouri River Mainstem - Glasqow to Hermann
10300103	Lamine	Lamine River Basin
10300104	Blackwater	Blackwater River Basin
10300200	Lower Missouri	Missouri River Mainstem - Hermann to St. Louis
11010001	Beaver Reservoir	Table Rock Lake Basin
11010002	James	James River Basin
11010003	Bull Shoals Lake	Bull Shoals Lake Basin
11010006	North Fork White	North Fork White River Basin
11010007	Upper Black	Black River Basin
11010008	Current	Current River Basin
11010009	Lower Black	Fourche Creek Basin
11010010	Spring	Spring River Basin (Howell/Oregon counties)
11010011	Eleven Point	Eleven Point River Basin
11070206	Lake O' the Cherokees	Cherokees Lake Basin
11070207	Spring	Spring River Basin
11070208	Elk	Elk River Basin

Figure 10: Missouri Hydrologic Unit Delineations by 8-digit Hydrologic Unit Code.



**Lower Des Moines Basin
(HUC 07100009)
Missouri Basin Name – Des Moines Basin**

The Lower Des Moines River basin lies in the northeastern corner of Missouri in Clark County. The Des Moines is the largest interior river in Iowa and drains much of the central portion of that state. The lower 29 miles of the Des Moines forms the state line between Missouri and Iowa and there is a strip of land three to four miles in width along the river that comprises its watershed in Missouri. The Des Moines River flows in a southeasterly direction to its confluence with the Mississippi River. A mixture of hills and open plains characterizes the Des Moines River basin. Most water movement in the basin is through the surface stream network.

The most serious NPS pollution problem is degradation of aquatic habitat and agricultural runoff. The basin is mainly rural.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDL* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* – none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* – none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* – none

Figure 11: Natural Resources Conservation Service (NRCS) and Partner Contributions: HUC 07100009

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	2
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	3
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
Waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Bear-Wyaconda Basin
(HUC 07110001)
Missouri Basin Name – Wyaconda-Fox Rivers Basin

Bear-Wyaconda River basin, HUC 07110001, lies in the northeastern corner of Missouri and occupies portions of Scotland, Clark, Lewis, and Marion counties. The uppermost portions of the Wyaconda basin and the upper half of the Fox River basin lie in southeastern Iowa. The Fox and Wyaconda flow in a southeasterly direction to their confluence with the Mississippi River. The largest tributaries within Missouri are the Little Fox and Little Wyaconda rivers. The largest reservoir in the basin is Agate Lake with a surface area of 167 acres. Wyaconda Lake, which serves the town of Wyaconda, is the only public drinking water reservoir in the basin.

The basin is characterized by a mixture of hills and open plains and is mostly rural. The main land use in the basin is for crops and pastureland. Most water movement in the basin is through the surface stream network. The most serious NPS pollution problem is degradation of aquatic habitat. Over 50% of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 77 miles (19%) of streams in the basin. Other NPS pollution results from sediment, nutrients, and pesticides from crop production.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Watershed Restoration Action Strategy (WRAS) for 07110001030 and 07110001040; Status: being implemented through G03-NPS-07
- **Rapid Watershed Assessment**
 - Bear-Wyaconda, NRCS watershed assessment and planning document for the entire HUC 8, Scheduled for 2008.
- **TMDLs**
 - #0037 Fox River
 - Impaired by naturally occurring manganese.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0037-fox-r-info.pdf>
 - #0001 Mississippi River
 - Impaired by chlordane and PCBs. TMDL approved by EPA November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>
 - #0050 South Wyaconda River
 - Impaired by sediment. TMDL for sediment approved by EPA on November 22, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/s_wyaconda_river_tmdl_112206.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - Impaired by naturally occurring manganese.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0050-s-wyaconda-mn-info.pdf>
 - #0046 Wyaconda River
 - Impaired by naturally occurring manganese.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0046-wyaconda-r-info.pdf>

- **Watershed Groups Formed**
 - Fox River Ecosystem Development Board of Supervisors,
 - FRED Board (Fox River), and
 - Fox River Ecosystem Development group.
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05495000 Fox River at Wayland, and
 - #05496000 Wyaconda River above Canton.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Wyaconda River.

Figure 12: Number of Volunteer Water Quality Sampling Events Conducted in 07110001 Bear-Wyaconda River Basin

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	---	0	---
2	---	2	---
3	---	0	---
4	---	0	---

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Fox River Ecosystem Development Project (G03-NPS-07)
- **AgNPS SALT Projects**
 - Little Fox River (SN038)

Figure 13: AgNPS SALT Project Plan Goals for HUC 07110001.

Watershed Name	Little Fox Creek
Project #	SN038
Watershed Size (ac)	39,481
Cropland (ac)	10,500
Cropland Treated in Plan (ac)	
Pasture/Hayland (ac)	4,365
Pasture/Hayland Treated in Plan (ac)	
CRP Land (ac)	
CRP Treated in Plan (ac)	
Urban (ac)	
Urban Treated in Plan (ac)	
Woodland (ac)	
Woodland Treated in Plan (ac)	
Public Land (ac)	
Public Land Treated in Plan (ac)	
Other (ac)	21,056
Other Treated in Plan (ac)	
Stream (mi)	11
Stream Treated in Plan (mi)	

Figure 14: Natural Resources Conservation Service (NRCS) and Partner Contributions: HUC 07110001.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	2,500	Terraces (Ft.)	63,943
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	3	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	1
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	12
Windbreak (Ft.)	0	Water/Sediment Basins (#)	8
Waste Utilization (Ac.)	47	Wells Decomissioned (#)	6
Nutrient Management (Ac.)	171	CRP Acres	736
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	1
Conservation Reserve Program	35	15
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 15:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07110001 Bear-Wyaconda

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	3	14	10	0	0	0	0	20
					acres	acres	acres	acres
					0	0	0	2938

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	3	23	1	23	4	42	0	0	0	2	2

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	600	0	0	0	0	0

	OAPP Plans Produced	OAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	1	2	20	3	6	6

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	24	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	72	2,938	1,650	0	8,988	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

North Fabius River Basin
(HUC 07110002)
Missouri Basin Name – North Fabius River Basin

The North Fabius River basin, HUC 07110002, lies in northeastern Missouri in portions of Schuyler, Scotland, Adair, Knox, Clark, Lewis, and Marion counties, except for a very small portion of the watershed that extends into southeastern Iowa. The largest tributaries are the North and Middle Forks of the Fabius. These streams all flow in a southeasterly direction and join just a few miles before flowing into the Mississippi River near West Quincy. The North Fabius River basin is characterized by a mixture of hills and open plains with the major land use being agricultural.

In this river basin, the most serious NPS pollution problem is degradation of aquatic habitat. Most of the classified streams in the basin are considered to have degraded aquatic habitat partially due to channelization in a number of basin streams. Several reservoirs in the basin serve as drinking water supplies.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - North Fabius Watershed developing a watershed plan under G07-NPS-13. Watershed Management Plan Worksheet completed.
- **Rapid Watershed Assessment**
 - North Fabius River, NRCS watershed assessment and planning document for entire HUC 8.
- **TMDLs**
 - #7015 Deer Ridge Community Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #7020 Lewistown Lake
 - Impaired by atrazine and cyanazine.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7020-lewistown-lk-info.pdf>
 - #0063 Middle Fabius River
 - Impaired by manganese from natural conditions.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0063-m-fabius-r-info.pdf>
 - #0056 North Fabius River
 - Impaired for manganese from natural conditions.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0056-n-fabius-r-mn-info.pdf>
 - Impaired for sediment.
 - TMDL approved by EPA on November 15, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/north_fabius_river_final_tmdl_111506.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Source Water Protection Plans - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)**
 - City of Memphis (PWSSID # 2010513)**
 - Memphis Lake (Old)
 - Memphis Lake (New)
 - Memphis Pre-Settlement Basin
- **Watershed Groups Formed**
 - North and Middle Fabius WMP Steering Committee.

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05497000 North Fabius River at Monticello, and
 - #05498000 Middle Fabius River near Monticello.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007:

Figure 16: Number of Volunteer Water Quality Sampling Events Conducted in 07110002 North Fabius River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	---	---	---
2	---	---	---
3	---	---	---
4	---	---	---

Active Nonpoint Source Projects

- **319 NPS Projects**
 - North Fabius Watershed Management Plan (G07-NPS-13)
- **AgNPS SALT Projects**
 - South Fork North Fabius (SN065)
 - North Fork/Middle North Fabius (SN066)

Figure 17: AgNPS SALT Project Plan Goals for HUC 07110002.

Watershed Name	S. Fork North Fabius	N. Fork/ M. Fork N. Fabius	Total
Project #	SN065	SN066	
Watershed Size (ac)	51,484	42,092	93,576
Cropland (ac)	15,817	15,083	30,900
Cropland Treated in Plan (ac)	5,000	5,000	10,000
Pasture/Hayland (ac)	22,923	14,040	36,963
Pasture/Hayland Treated in Plan (ac)	5,000	2,900	7,900
CRP Land (ac)	6,808	5,762	12,570
CRP Treated in Plan (ac)	500	1,500	2,000
Urban (ac)	0	401	401
Urban Treated in Plan (ac)	0	0	0
Woodland (ac)	4,418	4,578	8,996
Woodland Treated in Plan (ac)	300	0	300
Public Land (ac)	1,518	90	1,608
Public Land Treated in Plan (ac)	0	0	0
Other (ac)	0	2,138	2,138
Other Treated in Plan (ac)	0	0	0
Stream (mi)	82	65	147
Stream Treated in Plan (mi)	12	12	24

Figure 18: NRCS and Partner Contributions: HUC 07110002.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	45,187
Filter Strip (Ac.)	8	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	<1	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	2	Critical Planting (Ac.)	13
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	17
Windbreak (Ft.)	0	Water/Sediment Basins (#)	2
waste Utilization (Ac.)	214	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	420	CRP Acres	2161
CSP Acres	0	WRP Acres	14
WHIP Acres	73	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	3
Conservation Reserve Program	71	39
Conservation Security Program	1	1
Wetland Reserve Program	2	2
Wildlife Hab. Incentive Program	0	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 19:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07110002 North Fabius

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	14	10	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	1	41	0	0	0	0	0	0	1	2	2

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	1	1	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	1	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**South Fabius River Basin
(HUC 07110003)
Missouri Basin Name – South Fabius River Basin**

The South Fabius River basin, HUC 07110003, lies in northeastern Missouri in portions of Schuyler, Knox, Lewis, Shelby, Adair, Scotland, and Marion counties. The South Fabius and Troublesome Creek and their tributaries all flow in a southeasterly direction and join just a few miles before flowing into the Mississippi River near West Quincy. A mixture of hills and open plains characterizes the basin.

In this river basin, the most serious NPS pollution problem is degradation of aquatic habitat. Most of the classified streams in the basin are considered to have degraded aquatic habitat partially due to channelization in a number of basin streams. Several reservoirs in the basin serve as drinking water supplies.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDL**
 - #7026 Edina Reservoir
 - Impaired by atrazine and cyanazine.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7026-edina-lk-info.pdf>
 - #7023 LaBelle Lake #2
 - Impaired by atrazine and cyanazine.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7022-7023-la-belle-lk-info.pdf>
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0073 Troublesome Creek
 - Impaired by manganese.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0073-troublesome-ck-mn-info.pdf>
 - Impaired by sediment.
 - TMDL approved by EPA on November 22, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/troublesome_creek_tmdl_112206.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Source Water Protection Plans**
 - Forest Lake/Hazel Creek – under development
- **Watershed Groups Formed**
 - Forest Lake/Hazel Creek Watershed Group

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05499900 Troublesome Creek near Ewing, and
 - #05500000 South Fabius River near Taylor.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - South Fabius River

Figure 20: Number of Water Quality Sampling Events Conducted in 07110003 South Fabius River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	0	0	0
2	0	0	0
3	3	1	1
4	0	0	0

Active Nonpoint Source Projects

- *319 NPS Projects* – none
- *AgNPS SALT Projects* – none

Figure 21: NRCS and Partner Contributions: HUC 07110003.

Contour buffer Strips (Ac.)	13	Diversion (Ft.)	0
Field Border (Ft.)	10040	Terraces (Ft.)	15,080
Filter Strip (Ac.)	25	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	1	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	36	Critical Planting (Ac.)	4
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	15
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	61	Wells Decommissioned (#)	4
Nutrient Management (Ac.)	220	CRP Acres	2425
CSP Acres	0	WRP Acres	0
WHIP Acres	48	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	3
Conservation Reserve Program	39	33
Conservation Security Program	1	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	2	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**The Sny River Basin
(HUC 07110004)
Missouri Basin Name – North River-Bobs Creek**

The Sny River Basin, HUC 07110004, lies in northeastern and eastern Missouri and encompasses the watersheds of the North and South Rivers and several small direct tributaries to the Mississippi River in Pike and Lincoln counties. Other counties included within this unit are Knox, Monroe, Marion, St. Charles, Shelby, Ralls, and Lewis. North River originates in Knox County near Novelty and flows eastward into the Mississippi River. Aside from North River, the larger streams in this basin include South River, Noix, Buffalo, Bryant, and Bobs creeks, all of which flow directly into the Mississippi River. The basin also contains the Old Kings Lake slough, with 22 miles of standing or slowly flowing waters in the Mississippi River floodplain in Lincoln County. The basin is 1,018 square miles in area, with 237.5 miles of classified streams in the basin. The largest reservoir in the basin is Hunnewell Lake with a surface area of 228 acres. There are two small public drinking water reservoirs in this basin that serve the town of Bowling Green. A mixture of hills and open plains characterizes the basin. Basin-wide, 38% of the land is row crop, 37% is pasture and hay fields, 22% forest, and 1% open water. Most water movement in the basin is through the surface stream network. There are 34 small springs of note in the basin. None of these sustain flow in dry weather.

In the North River basin, the most serious NPS pollution problem is degradation of aquatic habitat. A total of 86.5 miles (36 percent) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 15 miles (6%) of streams in the basin. Studies of private well water quality in northeastern Missouri have shown that about 20 percent of all private wells sampled exceeded drinking water standards for nitrate. One to two percent of wells exceeded drinking water standards or health advisory levels for pesticides, most commonly the herbicides Atrazine or Alachlor. This contamination is often caused by local land use practices or surface contamination of the wellhead and does not represent widespread contamination of the underground aquifer. Deeper aquifers are protected from surface contamination by impermeable strata.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **Rapid Watershed Assessment**
 - North River Bobs Creek, NRCS watershed assessment and planning document for entire HUC 8.
- **TMDLs**
 - #7029 Hunnewell Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0001 Mississippi River
 - Impaired by chlordane and PCBs.
 - TMDL approved by EPA on November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Bowling Green (PWSSID # 2010093)
 - Bowling Green Lake Reservoir (New) Intake #2
 - Bowling Green Lake Reservoir (Old) Intake #1

City of Palmyra (PWSSID # 2010623)
 North River Emergency Supply Intake
City of Monroe City (PWSSID #2010538)

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05501000 North River at Palmyra, and
 - #05502000 Bear Creek at Hannibal.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Bear Creek,
 - South Fork North River, and
 - South River.

Figure 22: Number of Volunteer Water Quality Sampling Events Conducted in 07110004 The Sny River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	0	0	0
2	15	9	4
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects** – none

Figure 23: NRCS and Partner Contributions: HUC 07110004.

Contour Buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	39224	Terraces (Ft.)	29,850
Filter Strip (Ac.)	20	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	3	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	5	Critical Planting (Ac.)	5
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	2
Windbreak (Ft.)	0	Water/Sediment Basins (#)	1
Waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	726	CRP Acres	1433
CSP Acres	0	WRP Acres	2
WHIP Acres	277	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	3	2
Conservation Reserve Program	29	30
Conservation Security Program	0	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	3	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**North Fork Salt River Basin
(HUC 07110005)
Missouri Basin Name – North Salt River Basin**

The North Fork of the Salt River Basin, HUC 07110005, lies in northeastern Missouri. North Fork Salt River originates in Schuyler County near Queen City, includes portions of Macon, Adair, Monroe, Knox, and Shelby counties, and flows into Mark Twain Lake. The major tributary streams in this basin are Bear, Black, Crooked, and Otter creeks. The downstream end of the basin occurs where these streams flow into Mark Twain Lake. The basin is 893 square miles in area. The largest reservoir in the basin is La Plata New Lake, with a surface area of 81 acres. There are four public drinking water reservoirs. A mixture of hills and open plains characterizes the North Fork of the Salt River basin. The western uplands of the basin lie within the Central Claypan, an area of very flat lands dominated by row crop agriculture. Basin-wide, 44% of the land is row crop, 42% grasslands, 11% forest, and 1% urban. Most water movement in the basin is through the surface stream network.

The major NPS pollution problems result from agriculture and loss of habitat. All 202 miles (100 percent) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 53 miles (26 percent) of streams in the basin. During warm weather, when streams are low, livestock tend to gather in and around streams. The wastes they leave in the water contribute to nuisance algae growths, low levels of dissolved oxygen, and elevated levels of ammonia and bacteria.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Shelbina Lake Watershed Plan
<http://www.mowin.org/Training/WQMP/pdf/shelbina.pdf>
 - North Fork of Salt River (WRAS) (G03-NPS-01)
<http://www.mowin.org/Training/WQMP/pdf/nfsaltwras.pdf>
- **TMDLs**
 - #0115U Bear Creek
Impaired by unknown pollutant.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/9001-bear-ck-info.pdf>
 - #7033 Mark Twain Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed**
 - 2004 Turf Issues Workshop Planning Committee
 - 2004 Water Festival Planning Committee
 - Target MAP Planning Committee
 - Shelbina Watershed Committee
 - Community Wastewater Program Committee
 - Youth Retreat Committee
 - Regional Watershed Conference Committee
 - On-site Sewage Workshop Committee
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Shelbina** (PWSSID # 2010736)
 - Salt River Intake
 - Shelbina Lake

Clarence Cannon Wholesale Water Commission (PWSSID # 2020421)
 Mark Twain Lake
City of Kirksville (PWSSID # 2010219) – pending approval

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05502300 North Fork Salt River at Hagers Grove,
 - #05502500 North Fork Salt River near Shelbina, and
 - #05503800 Crooked Creek near Paris.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Unnamed Tributary to Bear Creek, and
 - Bear Creek.

Figure 24: Number of Volunteer Water Quality Sampling Events Conducted in 07110005 North Fork Salt River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	---	4	---
2	---	0	---
3	---	0	---
4	---	0	---

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Demonstration Measuring the Effectiveness of Buffers in Treating Runoff from Underground Outlets (UGOs) (G02-NPS-13)
- **AgNPS SALT Projects**
 - North Fork of Salt River (Knox County) (SN047)
 - North Fork of Salt River (Shelby County) (SN053)

Figure 25: AgNPS SALT Project Plan Goals for HUC 07110005

Watershed Name	North Fork Salt River	North Fork Salt River	Total
Project #	SN047	SN053	
Watershed Size (ac)	44,124	64,666	108,790
Cropland (ac)	16,364	23,698	40,062
Cropland Treated in Plan (ac)	6,150	10,000	16,150
Pasture/Hayland (ac)	19,229	28,835	48,064
Pasture/Hayland Treated in Plan (ac)	7,100	2,500	9,600
CRP Land (ac)	3,848	2,675	6,523
CRP Treated in Plan (ac)	0	0	0
Urban (ac)	38	216	254
Urban Treated in Plan (ac)	0	0	0
Woodland (ac)	4,563	11,547	16,110
Woodland Treated in Plan (ac)	500	500	1,000
Public Land (ac)	0	276	276
Public Land Treated in Plan (ac)	0	0	0
Other (ac)	82	419	501
Other Treated in Plan (ac)	0	0	0
Stream (mi)	120	132	252
Stream Treated in Plan (mi)	60	5	65

Figure 26: NRCS and Partner Contributions: HUC 07110005.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	9115	Terraces (Ft.)	91,714
Filter Strip (Ac.)	4	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	5904	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	12	Critical Planting (Ac.)	40
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	16
Windbreak (Ft.)	0	Water/Sediment Basins (#)	5
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	3203	CRP Acres	3485
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	2
Conservation Reserve Program	127	61
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	1
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**South Fork Salt River Basin
(HUC 07110006)
Missouri Basin Name – Middle-South Forks of the Salt River**

The Middle, Elk, and South Forks of the Upper Salt River basin, HUC 07110006, lies in northeastern Missouri and encompasses much of Monroe, Audrain, eastern Randolph and Macon, and portions of Callaway, Shelby, and Boone counties. The major streams in this basin are the Middle Fork, Elk Fork, and South Fork of Salt River. The downstream end of the basin occurs where these streams flow into Mark Twain Lake. The basin is 1,214 square miles in area. The largest reservoir in the basin is Teal Lake with a surface area of 76 acres. There are no public drinking water reservoirs in this basin.

The uppermost portion of the basin is in an area of very flat lands dominated by row crop agriculture. Basin-wide, 50% of the land is row crop, 34% is grassland, 13% forest and 1% open water. Most water movement in the basin is through the surface stream network. There are only two small springs of note in the basin, and neither sustains flow during dry weather.

All 316 miles (100 percent) of classified streams in the basin are considered to have degraded aquatic habitat. The quality of aquatic habitat is impaired by large amounts of removed wooded riparian vegetation and by the channelization of streams. Channelization has occurred in seven miles (two percent) of streams in the basin. Stormwater runoff of fertilizers, animal wastes, and pesticides into streams contribute to nonpoint source pollution. Studies of private well water quality in northeastern Missouri have shown that about 20 percent of all private wells sampled exceeded drinking water standards for nitrate and one to two percent of wells exceeded drinking water standards or health advisory levels for pesticides, most commonly the herbicides Atrazine or Alachlor.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0121 Middle Fork Salt River
 - Impaired by sediment.
 - TMDL approved by EPA November 1, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/middle_fork_salt_river_final_110106.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #7033 Mark Twain Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans**
 - City of Macon (PWSSID #2010487)*
 - Mexico Water District – MAWC (PWSSID #2010519) - pending issue*
 - City of Moberly (PWSSID #2010513) – pending issue*
 - Clarence Cannon Wholesale Water Commission (PWSSID #2020421)*

[Water Quality Monitoring](#)

- **Active USGS Gaging Station(s)**
 - #05504900 South Fork Salt River above Santa Fe,
 - #05506100 Long Branch near Santa Fe,
 - #05506350 Middle Fork Salt River near Holliday, and
 - #05506800 Elk Fork Salt River near Madison.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Elk Fork (Salt River).

Figure 27: Number of Volunteer Water Quality Sampling Events Conducted in 07110006 South Fork Salt River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	---	0	---
2	---	1	---
3	---	0	---
4	---	0	---

[Active Nonpoint Source Projects](#)

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - Bee and Turkey Creeks (SN034)
 - Middle Fork Salt River (SN086)

Figure 28: AgNPS SALT Project Plan Goals for HUC 07110006.

Watershed Name	Bee and Turkey Creek	Middle Fork Salt River	Total
Project #	SN034	SN086	
Watershed Size (ac)	22,806	42,926	65,732
Cropland (ac)	592	18,217	18,809
Cropland Treated in Plan (ac)		3,413	3,413
Pasture/Hayland (ac)	6,816	14,252	21,068
Pasture/Hayland Treated in Plan (ac)		1,430	1,430
CRP Land (ac)		3,643	3,643
CRP Treated in Plan (ac)		0	0
Urban (ac)	459	1,114	1,573
Urban Treated in Plan (ac)		0	0
Woodland (ac)	2,924	4,660	7,584
Woodland Treated in Plan (ac)		200	200
Public Land (ac)		0	0
Public Land Treated in Plan (ac)		0	0
Other (ac)	15	1,040	1,055
Other Treated in Plan (ac)		0	0
Stream (mi)	39	109	148
Stream Treated in Plan (mi)		7	7

Figure 29: NRCS and Partner Contributions: HUC 07110006.

Contour Buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	7,483	Terraces (Ft.)	44,110
Filter Strip (Ac.)	40	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	25	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	56	Critical Planting (Ac.)	22
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	17
Windbreak (Ft.)	6210	Water/Sediment Basins (#)	1
Waste Utilization (Ac.)	0	Wells Decomissioned (#)	2
Nutrient Management (Ac.)	2604	CRP Acres	2868
CSP Acres	200	WRP Acres	0
WHIP Acres	5	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	91	47
Conservation Security Program	1	1
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	1
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Salt River Basin
(HUC 07110007)
Missouri Basin Name – Lower Salt River Basin**

The Salt River basin, HUC 07110007, lies in northeastern Missouri and flows east to its confluence with the Mississippi River about 20 miles southeast of Hannibal. The basin includes all of Mark Twain Lake and the watershed of the Salt River downstream of Mark Twain Lake. Counties within this unit are Marion, Pike, Ralls, Shelby, Audrain, and Monroe. The basin is 794 square miles in area and the major tributaries include Spencer and Peno creeks. The largest reservoir in the basin is Mark Twain Lake with a surface area of 18,600 acres. A mixture of hills and open plains characterizes the Lower Salt River basin. Land use consists of 50% row crop, 26% grasslands, 21% forest, and 3% open water. There are 22 known small springs. Most water movement in the basin is through the surface stream network.

A total of 18 miles (14 percent) of classified streams in the basin are considered to have degraded aquatic habitat. Nonpoint source pollution results from sediment, nutrients and pesticides from crop fields and removal of wooded riparian vegetation. The state standard for the maximum allowable level of Atrazine in a raw public water supply is 3 ug/l as an average. Long-term Atrazine levels in Monroe City Route J Lake and Vandalia Lake exceed this standard. Average levels of a second herbicide, Cyanazine, exceed Federal Drinking Water Health Advisory guidelines of 1 ug/l in Monroe City Route J Lake.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9-element plan being written for Vandalia Lake, HUC 07110007030003
Status is being developed through G00-NPS-12
 - Monroe City Reservoirs Watershed Plan <http://www.mowin.org/Training/WRAS/Monroecity.pdf>
- **TMDLs**
 - #7033 Mark Twain Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #7031 Monroe City Route J Lake
Impaired by atrazine and cyanazine.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7031-monroe-city-lk-info.pdf>
 - #0091 Salt River
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
Impaired by manganese.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0091-0103-salt-r-info.pdf>
 - #0103 Salt River
Impaired by manganese and iron.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0091-0103-salt-r-info.pdf>
 - #7032 Vandalia Lake
Impaired by atrazine.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7032-vandalia-lk-info.pdf>
- **Watershed Groups Formed**
 - Monroe City Resources Steering Committee
 - Vandalia Watershed Management Committee

- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Monroe City* (PWSSID # 2010538)
 - Monroe South Lake
 - Route J Lake
 - City of Vandalia* (PWSSID #2010812) – pending issue

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05507600 Lick Creek at Perry,
 - #05507700 Mark Twain Lake near Center,
 - #05507800 Salt River near Center,
 - #05508000 Salt River near New London, and
 - #05508805 Spencer Creek below Plum Creek near Frankford.
- **Stream Teams** – No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects** – none

Figure 30: NRCS and Partner Contributions: HUC 07110007.

Contour Buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	34,928	Terraces (Ft.)	7,850
Filter Strip (Ac.)	30	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	161	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	12	Critical Planting (Ac.)	8
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	9
Waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	6215	CRP Acres	2664
CSP Acres	0	WRP Acres	0
WHIP Acres	254	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	1
Conservation Reserve Program	78	57
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	5	7
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Cuivre River Basin
(HUC 07110008)
Missouri Basin Name – Cuivre River**

The Cuivre River basin, HUC 07110008, lies in east central Missouri and flows in a southeasterly direction to its confluence with the Mississippi River about 15 miles northwest of St. Charles. It flows through portions of Audrain, Montgomery, Warren, Lincoln, Pike, Ralls, and St. Charles counties. The basin is 1,260 square miles in area and the major tributaries include the North and West Forks of the Cuivre River, and Indian, Coon, Elkhorn, Bear, and Big creeks. The largest reservoir in the basin is Golden Eagle Lake with a surface area of 141 acres. The western portion of the basin is part of the Central Claypan area, a flat landscape dominated by row crop agriculture. The remainder of the basin is a mixture of hills and plains with more pasture and forested land. In total, 53% of the land is row crop, 26% is grassland and 19% forest.

There are many small springs along the lower North Fork Cuivre River and its tributaries and along the lower portion of the West Fork. There are few springs in the remainder of the basin. Most water movement in the basin is through the surface stream network. Groundwater from bedrock aquifers is used for all public and most private drinking water supplies in this basin. There are no public drinking water reservoirs in this basin. Along the northern and western edges of the basin, bedrock aquifers become increasingly saline and are unfit for either drinking water or agricultural irrigation. The most serious nonpoint source pollution problem is degradation of aquatic habitat. A total of 121 miles (30%) of classified streams in the basin are considered to have degraded aquatic habitat.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Elk Horn River – developing a nine-element plan for subwatersheds 0711000820004 and 005.
- **TMDLs**
 - #0189 Elkhorn Creek
 - Impaired by BOD and VSS.
 - Permit-in-lieu (PIL) of TMDL approved by EPA May 1, 2006.
 - PIL <http://www.dnr.mo.gov/env/wpp/tmdl/0189-elkhorn-ck-pil.pdf>
 - MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0084158.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0189-elkhorn-ck-bod-info.pdf>
 - Impaired by sediment.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0212 Indian Camp Creek
 - Impaired by NVSS and ammonia nitrogen.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0212-indian-camp-ck-info.pdf>
 - #0159 Mill Creek
 - Impaired by sediment.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed**
 - Elk River Watershed Improvement Association
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Troy (PWSSID # 6010798)
 - Groundwater

[Water Quality Monitoring](#)

- **Active USGS Gaging Station(s)**
 - #05514500 Cuivre River near Troy.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Little Sugar Creek,
 - North Fork Cuivre River, and
 - Sugar Creek.

Figure 31: Number of Volunteer Water Quality Sampling Events Conducted in 07110008 Cuivre River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	22	4	4
2	0	0	0
3	0	0	0
4	0	0	0

[Active Nonpoint Source Projects](#)

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - Elkhorn Creek (SN016)
 - Bear and Brush Creeks (SN077)

Figure 32: AgNPS SALT Project Plan Goals for HUC 07110008.

Watershed Name	Elkhorn Creek	Bear and Brush Creeks	Total
Project #	SN016	SN077	
Watershed Size (ac)	62,830	71,347	134,177
Cropland (ac)	42,000	39,932	81,932
Cropland Treated in Plan (ac)		8,845	8,845
Pasture/Hayland (ac)	7,900	15,295	23,195
Pasture/Hayland Treated in Plan (ac)		1,703	1,703
CRP Land (ac)		1,350	1,350
CRP Treated in Plan (ac)		0	0
Urban (ac)	1,400	298	1,698
Urban Treated in Plan (ac)		0	0
Woodland (ac)	8,200	13,869	22,069
Woodland Treated in Plan (ac)		660	660
Public Land (ac)		88	88
Public Land Treated in Plan (ac)		0	0
Other (ac)	3,330	515	3,845
Other Treated in Plan (ac)		0	0
Stream (mi)		160	160
Stream Treated in Plan (mi)		1	1

Figure 33: NRCS and Partner Contributions: HUC 07110008.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	900
Field Border (Ft.)	29,432	Terraces (Ft.)	171,160
Filter Strip (Ac.)	55	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	32	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	13	Critical Planting (Ac.)	7
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	4
Windbreak (Ft.)	0	Water/Sediment Basins (#)	13
waste Utilization (Ac.)	69	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	5,755	CRP Acres	2,037
CSP Acres	0	WRP Acres	0
WHIP Acres	1	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	2
Conservation Reserve Program	41	48
Conservation Security Program	1	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>.

**Peruque-Piasa River Basin
(HUC 07110009)
Missouri Basin Name – Peruque-Dardenne Creeks**

The Peruque-Piasa basin, HUC 07110009, lies within Warren, Lincoln and St. Charles counties. Peruque and Dardenne creeks are the main streams in the basin. Peruque Creek originates in Warren County, and Dardenne Creek begins in western St. Charles County. Both streams flow easterly through a heavily urbanized area and gradually turn north to flow into the Mississippi River. Peruque Creek forms Lake St. Louis and Lake Ste. Louise.

Nonpoint source pollution results from stormwater flow over impervious surfaces. Pollutants from urban sources such as oil and other car fluids, road salt, pet waste, lawn fertilizer, and sediment from construction areas all impact the water quality. Lack of riparian habitat causes streambank erosion. Much of Dardenne Creek has been channelized which results in loss of habitat and flash flooding.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0221 Dardenne Creek
Impairment unknown.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0221-dardenne-ck-info.pdf>
 - #7055 Lake Ste. Louise
Impaired by fecal coliform.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7055-lk-ste-louise-info.pdf>
 - #0001 Mississippi River
Impaired by chlordane and PCBs.
TMDL approved by EPA on November 3, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>
 - #0217 Peruque Creek
Impaired by NVSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0217-0218-peruque-ck-info.pdf>
 - #0218 Peruque Creek
Impaired by NVSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0217-0218-peruque-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #05514840 Dardenne Creek at O’Fallon,
 - #05514860 Dardenne Creek at Old Town St. Peters,
 - #05587450 Mississippi River at Grafton, IL, and
 - #05587455 Mississippi River below Grafton, IL.

- **Stream Teams** – The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Belleau Creek,
 - Crooked Creek,
 - Dardenne Creek,
 - Peruque Creek,
 - Sandfort Creek,
 - Unnamed Tributary to Belleau Creek, and
 - Unnamed Tributary to Cole Creek.

Figure 34: Number of Volunteer Water Quality Sampling Events Conducted in 07110009 Peruque-Piasa River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	43	13	15
2	3	0	0
3	0	0	0
4	0	2	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects** – none

Figure 35: NRCS and Partner Contributions: HUC 07110009.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	4,800	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	22
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	932	CRP Acres	66
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	2	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>.

**Cahokia-Joachim River Basin
(HUC 07140101)**

Missouri Basin Name – Mississippi River Tribs - St. Louis-Ste. Genevieve

The Middle Mississippi River (MMR) corridor ecosystem is a 200-mile long reach of the Mississippi River running from St. Louis, Missouri, to Cairo, Illinois. The Cahokia-Joachim portion, HUC 07140101, stretches along the eastern border of St. Louis City, St. Louis County, Jefferson, St. Charles, St. Francis, and Ste. Genevieve counties. The river and its associated floodplain provide habitat for numerous native fish and wildlife, and serves as a vital migration corridor for ducks and other waterfowl within the Mississippi Flyway.

What is locally referred to as the “batture” lands are unprotected lands inside the levees and bluffs on both the Missouri and Illinois sides, within the floodplain of the river. A 140-mile stretch of the “open river” begins just north of St. Louis, Missouri, at the confluence of the Missouri River and runs south to the confluence of the Ohio River near Cairo, Illinois. This section is called the open river because it is free of dams and does not have as intricate a levee and drainage system as does the river below Cairo. This area sustained much of the \$12 billion in damages caused by the Great Flood of 1993.

The World Resources Institute (WRI) brief, *Awakening the Dead Zone* (2003), states that 56% of the nitrogen entering the Mississippi River occurs above where the Ohio River enters near Cairo, Illinois. This is predominantly from agricultural nonpoint sources. Loss of aquatic, wetland, and forested riparian habitats has exacerbated nutrient and sedimentation loading along this river stretch. Many of these lands were cleared of bottomland hardwood forests in the 1950s-70s and drained for cropping, resulting in the loss of natural ecosystems that were rich in biodiversity and helped to maintain water quality.

Watershed Efforts and Ongoing Activities

Watershed Planning

▪ **Watershed Management Plans**

- Ecosystem Management Plan for Ruth Park Woods, Golf Course and River Des Peres. (G06-NPS-18)
- Watkins Creek Watershed.
- River des Peres, Grand Glaize, Fox Creek Watershed developing a plan through G07-NPS-10.

▪ **TMDLs**

#1746 Big Bottom Creek

Impaired by BOD and VSS.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1746-big-bottom-ck-info.pdf>

#1707 Mississippi River

Impaired by chlordane and PCBs.

TMDL approved by EPA on November 3, 2006.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>

#1707 Mississippi River

Impaired by lead and zinc.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1707-miss-r-info.pdf>

#9003 River des Peres

Impaired by low dissolved oxygen.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/9003-river-des-peres-info.pdf>

#1714 Rock Creek

Impaired by BOD and ammonia nitrogen.

TMDL approved by EPA on December 1, 1999.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1714-rock-ck-tmdl.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1714-rock-ck-info.pdf>

- **Watershed Groups Formed**
 - Earth Day Symposium Planning Committee
 - Great River Planning Sub-committee
 - Community Design and Water Quality Planning Sub-committee
 - Green Buildings Planning Sub-committee
 - Water Resources Advisory Council Brochure Project Focus Group Review Committee
 - River des Peres Coalition
 - Watkins Creek task group
- **Source Water Protection Plans -** <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
Ste. Genevieve PWS #1 (PWSSID # 4024543 and # 4024544)

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07001985 Watkins Creek at Bellefontaine Neighbors,
 - #07005000 Maline Creek at Bellefontaine Neighbors,
 - #07010022 River des Peres near University City,
 - #07010030 River des Peres Tributary at Pagedale,
 - #07010035 Engelholm Creek near Wellston,
 - #07010055 Deer Creek at Ladue,
 - #07010070 Sebago Creek near Rock Hill,
 - #07010075 Deer Creek at Ladue,
 - #07010082 Black Creek near Brentwood,
 - #07010086 Deer Creek at Maplewood,
 - #07010090 Mackenzie Creek near Shrewbury,
 - #07010097 River des Peres at St. Louis,
 - #07010180 Gravois Creek near Mehlville,
 - #07010208 Martigney Creek near Arnold, and
 - #07010000 Mississippi River at St. Louis.
- **Stream Teams** – The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Black Creek,
 - Deer Creek,
 - Gravois Creek,
 - Joachim Creek,
 - North Gabouri Creek,
 - Maline Creek,
 - River des Peres,
 - Rock Creek,
 - Sandy Creek,
 - Shady Grove Creek,
 - Tributary to Unnamed Tributary to River des Peres,
 - Twomile Creek,
 - Unnamed Tributary to Black Creek,
 - Unnamed Tributary to Deer Creek,
 - Unnamed Tributary to River des Peres,

- Unnamed Tributary to River des Peres (Engelholm), and
- Unnamed Tributary to Lake Wauwanoka (Dry Creek).

Figure 36: Number of Volunteer Water Quality Sampling Events Conducted in 07140101 Cahokia-Joachim Creek Basin

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	35	19	13
2	12	29	0
3	21	14	7
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - River des Peres Southwest Branch Water Quality Project (G06-NPS-18)
 - Watkins Creek Citizen Watershed Planning – Phase 1 (G06-NPS-25)
 - Watkins Creek Demonstration Project (G07-NPS-06)
- **AgNPS SALT Projects** - none

Figure 37: NRCS and Partner Contributions: HUC 07140101.

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	1	Critical Planting (Ac.)	1
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	2
Windbreak (Ft.)	0	Water/Sediment Basins (#)	1
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	59	CRP Acres	21
CSP Acres	0	WRP Acres	0
WHIP Acres	395	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	4	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	1
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>.

Figure 38:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07140101 Cahokia-Joachim

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9- elements	Watershed Mgmt Plans W/out 9- elements	Source Water Protection Plans Written	Other Plans
Planning	2	7	16	1	1	1	0	4
				acres	acres	acres	acres	acres
				8200	0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	2	5	1	2	0	0	2	1,700	9	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	4	1,700	16	612	4	155	3

	OAPP Plans Produced	OAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	1	1	2	5	18	19

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Meramec River Basin
(HUC 07140102)
Missouri Basin Name – Meramec River Basin**

The Meramec River basin, HUC 07140102, is located in east central Missouri in Crawford, Dent, Franklin, Iron, Jefferson, Phelps, Reynolds, St. Louis, Texas, and Washington counties. The Meramec River and its tributaries drain 2,149 square miles. The main stem of the Meramec's 218 linear miles carries water from the lightly populated, forested, and agricultural upper watershed northeasterly to the heavily populated and urbanized lower watershed to enter the Mississippi River below St. Louis. Meramec tributaries of fifth order or greater include Courtois, Crooked, Dry, Dry Fork, Huzzah, and Indian creeks and the Little Meramec River. Meramec base flows are well sustained by springs characteristic of the region's karst topography and by drainage from the Big and Bourbeuse rivers, two major tributaries.

Meramec River basin land cover consists of roughly 50% forest, 25% pasture, and 25% cropland, rural transportation, urban development, water, and other minor land uses combined. Within the upper Meramec River portion, nearly one third of the forestland is privately owned. The Mark Twain National Forest covers a large area in the remaining two thirds. Major resource uses within the Meramec River basin include grazing, logging, and mining lead, iron, sand and gravel. There is a current trend toward increasing numbers of cattle and increasing grazing density. Where cattle have free access to streams, this trend causes more stream-channel disturbance. Also, gravel mining contributes to the accelerated transport of sediments in the Meramec River basin.

Overall, water quality within the Meramec River basin is good. Segments of Courtois Creek, Huzzah Creek, Blue Springs Creek, and the Meramec River are Outstanding State Resource Waters. Nonpoint source pollution problems result from cattle grazing on creek bottom pastures with access to streams where they damage riparian areas and cause excessive nutrient loading of the streams. In the upper basin, impoundments containing tailings from mining operations pose a potential threat to stream water quality. The lower watershed from Eureka to Fenton is an urbanized zone that poses other threats to water quality. Sediment and pollution-laden runoff enter the lower Meramec system rapidly because of impervious surfaces from development and the channelization of tributaries.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - La Barque Creek – currently rewriting a watershed plan.
 - River des Peres, Grand Glaize, Fox Creek Watershed developing a plan through G07-NPS-10.
- **TMDLs**
 - #2184 Grand Glaize Creek
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #1946 Indian Creek
Impaired by zinc.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1946-indian-ck-info.pdf>
 - #1846 Meramec River
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>

- #2190 Saline Creek
 Impaired by BOD and ammonia nitrogen.
 TMDL approved by EPA on January 12, 2001.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2190-saline-ron-rog-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2190-saline-ck-ron-rog-info.pdf>
- #7280 Schuman Park Lake
 Impaired by mercury.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #1870 Spring Branch
 Impaired by BOD and VSS.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1870-spring-ck-info.pdf>
- **Watershed Groups Formed**
 - Addressing Organic Waste Impacts on WQ in Three St. Louis Stream Project Steering Committee.
 - **Source Water Protection Plans -** <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Cuba (PWSSID # 6010200)
 Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07010500 Meramec Spring near St. James,
 - #07013000 Meramec River near Steelville,
 - #07014000 Huzzah Creek near Steelville,
 - #07014200 Courtois Creek at Berryman,
 - #07014500 Meramec River near Sullivan,
 - #07019000 Meramec River near Eureka,
 - #07019072 Kiefer Creek near Ballwin,
 - #07019090 Williams Creek near Peerless Park,
 - #07019120 Fishpot Creek at Valley Park,
 - #07019150 Grand Glaize Creek near Manchester,
 - #07019175 Sugar Creek at Kirkwood,
 - #07019185 Grand Glaize Creek near Valley Park,
 - #07019195 Yarnell Creek at Fenton,
 - #07019220 Fenton Creek near Fenton,
 - #07019280 Meramec River at Paulina Hills, and
 - #07019317 Mattese Creek near Mattese.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Brush Creek,
 - Courtois Creek,
 - Fox Creek,
 - Grand Glaize Creek,
 - Keifer Creek,
 - La Barque Creek,
 - The Lost River,
 - Mattese Creek,
 - Meramec River,
 - Pierce Creek,
 - Saline Creek,
 - Unnamed Tributary to Brush Creek,

- Unnamed Tributary to Meramec River (Cathedral Cave), and
- Williams Creek.

Figure 39: Number of Volunteer Water Quality Sampling Events Conducted in 07140102 Meramec River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	33	19	7
2	12	23	4
3	27	24	6
4	0	6	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Addressing Organic Waste Impacts on Water Quality in Three St. Louis County Streams (G07-NPS-10)
- **AgNPS SALT Projects** - none

Figure 40: NRCS and Partner Contributions: HUC 07140102

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	1	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	16	CRP Acres	84
CSP Acres	0	WRP Acres	
WHIP Acres	16	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	7	3
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	1
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>.

Figure 41:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07140102 Meramec

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	4	6	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	0	0	0	0	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	0	0	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

Bourbeuse River Basin
(HUC 07140103)
Missouri Basin Name – Bourbeuse River Basin

The Bourbeuse River watershed, HUC 07140103, is located within the northeastern quarter of the Ozark Highlands. The main stem of the Bourbeuse River winds northeasterly through Phelps, Gasconade, and Franklin counties to join the Meramec River; its watershed additionally encompasses portions of Maries, Osage, and Crawford counties. The Bourbeuse River is 147 miles from mouth to headwaters, and the lower 132 miles have permanent flow. The Bourbeuse River watershed drains 843 square miles and is composed of a number of smaller watersheds including Spring Creek, Boone Creek, Brush Creek, Red Oak Creek, Dry Fork, Little Bourbeuse River, and the Lower Bourbeuse River. Land uses within the watershed consist of 45% cropland and pasture found primarily within stream floodplains, 51% deciduous forest, and the remainder a mixture of other forest types, shrub and brush rangeland, and urban areas. Most of the urban-type land use is found in the lower watershed near Union.

Water quality in the Bourbeuse River watershed is generally good. Nonpoint source pollution in the form of sediment from erosion and organic wastes from livestock are the main problems.

Stream habitat conditions within the Bourbeuse River and its tributaries are variable. The main stem has no channelized segments, and old mill dams located near Beaufort and Union provide channel grade controls. A number of tributaries are impounded, with the largest impoundment being Indian Lake (326 acres) in the Brush Creek subwatershed. In many streams, the lack of adequate riparian corridors, excessive nutrient loading, streambank erosion, excessive runoff and erosion, and the effects of extensive in-stream gravel mining are among the problems observed. Grazing practices along many streams contribute to streambank instability, nutrient loading, and poor riparian corridor conditions.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #2034 Bourbeuse River
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #7382 Foxboro Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #7288 Indian Hills Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #2038 Red Oak Creek and Tributaries
 - Impaired by VSS.
 - Permit-in-lieu of TMDL approved by EPA on April 21, 2006.
 - PIL (not available online)
 - MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0041068.pdf>
 - Permit t<http://www.dnr.mo.gov/env/wpp/tmdl/info/2038-3360-3361-red-oak-trib-info.pdf>
 - #3360 Red Oak Creek Tributary
 - Impaired by VSS.
 - Permit-in-lieu of TMDL approved by EPA on April 21, 2006.

PIL (not available online)
 MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0041068.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2038-3360-3361-red-oak-trib-info.pdf>

#3361 Red Oak Creek Tributary

Impaired by VSS.

Permit-in-lieu of TMDL approved by EPA on April 21, 2006.

PIL (not available online)

MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0041068.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2038-3360-3361-red-oak-trib-info.pdf>

- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Belle* (PWSSID # 3010054)
Groundwater
 - City of Cuba* (PWSSID # 6010200)
Groundwater
 - City of Owensville* (PWSSID #6010618) - pending issue
Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07015720 Bourbeuse River near High Grove,
 - #07016400 Bourbeuse River above Union, and
 - #07016500 Bourbeuse River at Union.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Ausbin Creek,
 - Little Bourbeuse River, and
 - Borubeuse River.

Figure 42: Number of Water Quality Sampling Events Conducted in 07140103 Bourbeuse River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	18	5	5
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 43:

**NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 07140103**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	1,820	Terraces (Ft.)	0
Filter Strip (Ac.)	101	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	1	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	72	Critical Planting (Ac.)	13
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	4
Windbreak (Ft.)	0	Water/Sediment Basins (#)	1
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	412	CRP Acres	36
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	1
Conservation Reserve Program	12	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Big River Basin
(HUC 07140104)
Missouri Basin Name – Big River Basin**

The Big River Watershed Basin, HUC 07140104, is located in east-central Missouri and drains 955 square miles of the Ozark plateau in portions of Ste. Genevieve, St. Francis, Franklin, Washington, Jefferson, and Iron counties. Big River has eight 5th order tributaries and flows northward for 138 miles until it reaches the Meramec River. The majority of basin land use is forest and pasture with some row cropping along stream bottoms. However, urbanization is rapidly increasing in the lower basin. Ninety-five percent of the basin is privately owned and is used extensively for recreation, especially fishing. Basin streams exhibit typical Ozarkian characteristics: good water quality and fish habitat. Damage to some aquatic habitats and the potential for serious damage to several streams exists due to past lead and barite mining activity. Unsafe mine dams and poorly-stored mine waste continue to degrade habitat or biota in about 110 miles of basin streams.

Riparian corridor habitat is fair to good, with Big River having slightly better habitat than tributary streams. About 75% of basin's streambanks have either minimal or no erosion and are protected by trees or shrubs. Riparian corridors are negatively affected by riparian land use, especially along tributary streams. The major source of nonpoint source pollution in the basin comes from mine chat and tailings piles. The eroded mine waste has buried aquatic habitats in some basin streams, leading to extirpation of some benthic invertebrates. This sediment is associated with elevated levels of heavy metals. Habitat quality is threatened by potential releases of mine waste. A fish consumption advisory for some fish species is present on Big River due to lead contamination.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**

- 9-element plan for Big River 07140104 010 004, 010 004, 010 004, and 080 003;
Status - being developed through G04-NPS-22 and G00-NPS-12
- 9-element plan for Belew Creek HUC 07140104080007;
Status - being developed through G06-NPS-03

- **TMDLs**

- #2074 Big River

- Impaired by lead.

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2074-2080-2168-big-r-info.pdf>

- #2080 Big River

- Impaired by lead & NVSS.

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2074-2080-2168-big-r-info.pdf>

- #2168 Flat River Creek

- Impaired by lead, NVSS, & zinc.

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2074-2080-2168-big-r-info.pdf>

- #2128 Pond Creek Tributary

- Impaired by NVSS.

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2128-pond-ck-trib-info.pdf>

- #2170 Shaw Branch

- Impaired by lead and NVSS.

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2170-shaw-br-info.pdf>

- #2120 Shilboleth Creek
Impaired by NVSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2120-shilboleth-ck-info.pdf>
- #3282 Turkey Creek
Impaired by BOD & VSS.
TMDL approved by EPA on January 13, 2005.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3282-turkey-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3282-turkey-ck-info.pdf>
- **Watershed Groups Formed**
 - Steering Committee for Upper Big River Corridor Groundwater Protection and Well Decommissioning Project
 - Upper Big River Corridor Steering Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07017200 Big River at Irondale,
 - #07018100 Big River near Richwoods, and
 - #07018500 Big River at Byrnesville.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Big River,
 - Mineral Fork
 - Coonville Creek, and
 - Unnamed Tributary to Heads Creek.

Figure 44: Number of Water Quality Sampling Events Conducted in 07140104 Big River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	6	3	2
2	4	2	2
3	0	1	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Upper Big River Corridor Groundwater Protection and Well Decommissioning (G04-NPS-22)
 - Belew Creek Watershed Management Plan Development (G06-NPS-03)
- **AgNPS SALT Projects**
 - Upper Big River (SN078)

Figure 45: AgNPS SALT Project Plan Goals for HUC 07140104

Watershed Name	Upper Big River
Project #	SN078
Watershed Size (ac)	26,552
Cropland (ac)	300
Cropland Treated in Plan (ac)	100
Pasture/Hayland (ac)	6,752
Pasture/Hayland Treated in Plan (ac)	2,173
CRP Land (ac)	5
CRP Treated in Plan (ac)	0
Urban (ac)	2,700
Urban Treated in Plan (ac)	0
Woodland (ac)	13,500
Woodland Treated in Plan (ac)	2,335
Public Land (ac)	2,000
Public Land Treated in Plan (ac)	0
Other (ac)	1,295
Other Treated in Plan (ac)	0
Stream (mi)	20
Stream Treated in Plan (mi)	8

Figure 46: NRCS and Partner Contributions: HUC 07140104

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	7	Critical Planting (Ac.)	4
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	88
Nutrient Management (Ac.)	0	CRP Acres	33
CSP Acres	0	WRP Acres	0
WHIP Acres	164	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	3	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	2
EQIP Ground/Surface water plans	0	0

(This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>)

Figure 47:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07140104 Big

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	2	1	23	1	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	1	1	0	50	47

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	11	16	1	2	1	1	2	124	21	2	2

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	2	0	0	1	12	20

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	2	2	1	6	1	9

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	99	0	0	99

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	99	99	99	999	999	50

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Upper Mississippi- Cape Girardeau
(HUC 07140105)
Missouri Basin Name – Mississippi River Tribs- Ste. Genevieve - Cape Girardeau**

The Middle Mississippi River (MMR) corridor ecosystem is a 200-mile long reach of the Mississippi River running from St. Louis, Missouri, to Cairo, Illinois. The Upper Mississippi – Cape Girardeau portion, HUC 07140105, stretches along the eastern border of Ste. Genevieve, Perry, Cape Girardeau, Scott, St. Francis, Bollinger, and Mississippi counties. The river and its associated floodplain provide habitat for numerous native fish and wildlife, and serves as a vital migration corridor for ducks and other waterfowl within the Mississippi Flyway. What is locally referred to as the “batture” lands are unprotected lands inside the levees and bluffs on both the Missouri and Illinois sides, within the floodplain of the river.

A 140-mile stretch of the “open river” begins just north of St. Louis, Missouri, at the confluence of the Missouri River and runs south to the confluence of the Ohio River near Cairo, Illinois. This section is called the open river because it is free of dams and does not have as intricate a levee and drainage system as does the river below Cairo. This area sustained much of the \$12 billion in damages caused by the Great Flood of 1993.

The World Resources Institute (WRI) brief, *Awakening the Dead Zone* (2003), states that 56% of the nitrogen entering the Mississippi River occurs above where the Ohio River enters near Cairo, Illinois. This is predominantly from agricultural nonpoint sources, loss of aquatic, wetland and forested riparian habitats has exacerbated nutrient and sedimentation loading along this river stretch. Many of these lands were cleared of bottomland hardwood forests in the 1950s-70s and drained for cropping, resulting in the loss of natural ecosystems that were rich in biodiversity and helped maintain water quality.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #1707 Mississippi River
 - Impaired by chlordane and PCBs.
 - TMDL approved by EPA on November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>
- **Watershed Groups Formed**
 - Perry County Planning Group
 - Perry County Stream Team
 - Perry Co. Karst Protection Project Steering Committee;
 - Perry Co. Karst Protection Project Homeowner/Landowner Steering Committee;
 - Addressing Organic Waste on WQ in Three St. Louis Streams Project Steering Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07020550 South Fork Saline Creek near Perryville,
 - #07022000 Mississippi River at Thebes, and
 - #07020500 Mississippi River at Chester, IL.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Apple Creek,
 - Indian Creek,
 - Dorrity Creek

Figure 48: Number of Volunteer Water Quality Sampling Events Conducted in 07140105 Upper Mississippi – Cape Girardeau River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	2	5	2
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Perry County Karst Protection Project (G07-NPS-03)
- **AgNPS SALT Projects** – none

Figure 49: NRCS and Partner Contributions: HUC 07140105

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	950
Field Border (Ft.)	95,109	Terraces (Ft.)	507
Filter Strip (Ac.)	60	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	108	Critical Planting (Ac.)	37
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	24
Windbreak (Ft.)	0	Water/Sediment Basins (#)	23
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	221	CRP Acres	496
CSP Acres	0	WRP Acres	0
WHIP Acres	683	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	7	20
Conservation Security Program	1	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 50:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 07140105 Upper Mississippi-Cape Girardeau

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	3	7	16	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	0	0	0	0	0	0	0	1	1

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	1	750	0	0	1	12	66

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	3	0	0	0	18	8	17

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	1	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	4	22	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Whitewater Basin
(HUC 07140107)
Missouri Basin Name – Castor-Whitewater Rivers Basin**

The Whitewater River basin includes portions of Cape Girardeau, Ste. Genevieve, Madison, Wayne, Perry, St. Francis, Bollinger, and Scott counties. The four primary streams in the 1,207-square mile watershed include the Castor River (6th order, 69 miles), Whitewater River (6th order, 56 miles) and Crooked Creek (5th order, 49 miles), which are now tributaries to the man-made Headwater Diversion Channel (7th order, 34 miles) that drains into the Mississippi River near Cape Girardeau, Missouri. The basin is primarily Ozarkian in nature with a steep descent into the Mississippi Lowlands and is characterized by a high incidence of permanent streams, diverse channel gradients and land use, which is 55% woodland, 22% grassland and 19% cropland. Only 30,100 people live in the basin, which is free of heavy industrial developments and major urban centers.

An abundant water supply provided by adequate precipitation, good infiltration, high subsurface storage and minimal runoff assures clean, sustained and stable base flows which help maintain high water quality. Nonpoint source pollution problems are generally moderate and local in nature. Nutrient loading from livestock waste, non-permitted gravel mining, sawdust leachate and occasional raw sewage bypasses sometimes constitute minor threats to basin streams. An estimated 6% of the streambanks are severely or moderately eroding. The quality of the corridor vegetation is typically good with 75% of the existing corridors in dense timber. Corridor widths, however, are variable and agricultural encroachment into narrow corridors causes some streambank erosion problems.

Soils in the basin are highly erosive when disturbed. The potential for sheet, rill and gully erosion is the highest in the state; but, few fine sediments actually reach stream channels because of modest cropland acreage and fairly good farming practices. Coarse sediments, however, are eroding from the wooded uplands and clogging some downstream reaches because of poor timber harvest and woodland grazing practices.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Watershed Restoration Action Strategy (WRAS) for Hubble Creek HUC 07140107060001
Status - substantially implemented through G01-NPS-04
- **TMDLs** - none
- **Watershed Groups Formed**
 - Cape Girardeau County Stormwater Committee
 - Stormwater Advisory Committee (Cape Girardeau)
 - Hubble Creek SALT Steering Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07021000 Caster River at Zalma.

- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Hubble Creek
 - Castor River
 - Headwater Diversion.

Figure 51: Number of Volunteer Water Quality Sampling Events Conducted in 07140107 Whitewater River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	3	4	2
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - Hubble Creek (SN022)
 - Ramsey Creek (SN079)

Figure 52: AgNPS SALT Project Plan Goals for HUC 07140107

Watershed Name	Hubble Creek	Ramsey Creek	Total
Project #	SN022	SN079	
Watershed Size (ac)	44,875	22,606	67,481
Cropland (ac)	14,809	14,547	29,356
Cropland Treated in Plan (ac)		5,000	5,000
Pasture/Hayland (ac)	17,052	3,397	20,449
Pasture/Hayland Treated in Plan (ac)		1,115	1,115
CRP Land (ac)		1,079	1,079
CRP Treated in Plan (ac)		0	0
Urban (ac)	5,385	1,170	6,555
Urban Treated in Plan (ac)		0	0
Woodland (ac)	5,385	2,093	7,478
Woodland Treated in Plan (ac)		10	10
Public Land (ac)		285	285
Public Land Treated in Plan (ac)		0	0
Other (ac)	2,243	35	2,278
Other Treated in Plan (ac)		0	0
Stream (mi)		69	69
Stream Treated in Plan (mi)		3	3

Figure 53:

**NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 07140107**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1058
Field Border (Ft.)	101,943	Terraces (Ft.)	507
Filter Strip (Ac.)	97	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	49	Critical Planting (Ac.)	3
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	36
Windbreak (Ft.)	700	Water/Sediment Basins (#)	2
waste Utilization (Ac.)	0	Wells Decommissioned (#)	3
Nutrient Management (Ac.)	369	CRP Acres	354
CSP Acres	0	WRP Acres	35
WHIP Acres	214	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	1
Conservation Reserve Program	8	9
Conservation Security Program	1	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	1	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Mississippi – Memphis Basin
(HUC 08010100)
Missouri Basin Name – Mississippi Mainstem Below Ohio River**

The Middle Mississippi River (MMR) corridor ecosystem is a 200-mile long reach of the Mississippi River running from St. Louis, Missouri, to Cairo, Illinois. The Lower Mississippi-Memphis portion, HUC 08010100, stretches along the east boundary of Mississippi, New Madrid, and Pemiscot counties. The river and its associated floodplain provide habitat for numerous native fish and wildlife, and serves as a vital migration corridor for ducks and other waterfowl within the Mississippi Flyway.

The World Resources Institute (WRI) brief, *Awakening the Dead Zone* (2003), states that 56% of the nitrogen entering the Mississippi River occurs above where the Ohio River enters near Cairo, Illinois. This is predominantly from agricultural nonpoint sources. Loss of aquatic, wetland and forested riparian habitats has exacerbated nutrient and sedimentation loading along this river stretch. Many of these lands were cleared of bottomland hardwood forests in the 1950s-70s and drained for cropping, resulting in the loss of natural ecosystems that were rich in biodiversity and helped maintain water quality.

Generally, some 96% of the lower Mississippi River Valley floodplain has been cut off from the river primarily to serve agricultural purposes. In southeast Missouri an estimated 50,000 of the 2.5 million acres of forested floodplain remain and existing in very small patches. In addition to the floodplain itself, the Mississippi River tributaries enter the river throughout and create passages for fish to reach and exit the critical nursery floodplain habitat that maintains their populations. With the construction of the levee system, these rivers now enter the river through concrete gates. While some forested floodplain exists along the main river course outside the area protected by the levees (e.g., Donaldson Point Conservation Area and Seven Island Conservation Area), the New Madrid Floodway stands as the only backwater floodplain along the lower Mississippi. Most of this area is flooded approximately once every three years. As a result of its regime of floods the area contains a vast diversity of stream habitats including forested wetlands, swamps, flooded croplands, and critically important ephemeral wetland depressions that pond during late winter and spring.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #3152 Mississippi River
 - Impaired by chlordane and PCBs
 - TMDL approved by EPA on November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0001-1707-3152-mississippi-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0001-1707-3152-miss-r-chlor-pcb-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)** - none
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 54: NRCS and Partner Contributions: HUC 08010100

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	22,405	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	547	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	362
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	4	4
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**New Madrid-St. John's Basin
(HUC 08020201)
Missouri Basin Name – St. John's Bayou**

The Middle Mississippi River (MMR) corridor ecosystem is a 200-mile long reach of the Mississippi River running from St. Louis, Missouri, to Cairo, Illinois. The New Madrid-St. John's Basin, HUC 08020201, occupies portions of Scott, Mississippi, and New Madrid counties. The majority of the streams in this basin are channelized. St. John's Ditch and several other tributaries flow into St. John's Bayou. The river and its associated floodplain provide habitat for numerous native fish and wildlife, and serves as a vital migration corridor for ducks and other waterfowl within the Mississippi Flyway.

Generally some 96% of the lower Mississippi River Valley floodplain has been cut off from the river primarily to serve agricultural purposes. Main nonpoint source impairments come from sediment, nutrients and pesticides from agricultural sources as well as problems associated with channelization. Meanwhile, in southeast Missouri only 50,000 of the 2.5 million acres of forested floodplain remain and these in only very small patches. In addition to the floodplain itself, throughout the Mississippi River tributaries enter the river and create passages for fish to reach and exit the critical nursery floodplain habitat that maintains their populations. With the construction of the levee system, these rivers now enter the river through concrete gates.

While some forested floodplain exists along the main river course outside the area protected by the levees (e.g., Donaldson Point Conservation Area and Seven Island Conservation Area), the New Madrid Floodway stands as the only backwater floodplain along the lower Mississippi. Most of this area is flooded approximately once every three years. As a result of its regime of floods the area contains a vast diversity of stream habitats including forested wetlands, swamps, flooded croplands and critically important ephemeral wetland depressions that pond during late winter and spring.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #3134 Spillway Ditch
 - Impaired by sediment.
 - TMDL approved by EPA on November 22, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/spillway_ditch_tmdl_112206.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #3151 Swift Ditch
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07042450 St. Johns Ditch near Henderson Mound.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Big Oak Lake

Figure 55: Number of Volunteer Water Quality Sampling Events Conducted in 08020201 St. John's Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	0	0	1
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - North Cut (SN021)
 - St. John's Bayou (SN091)

Figure 56: AgNPS SALT Project Plan Goals for HUC 08020201

Watershed Name	North Cut	St. John's Bayou	Total
Project #	SN021	SN091	
Watershed Size (ac)	65,065	40,494	105,559
Cropland (ac)	59,021	30,663	89,684
Cropland Treated in Plan (ac)		9,070	9,070
Pasture/Hayland (ac)	2,292	3,600	5,892
Pasture/Hayland Treated in Plan (ac)		400	400
CRP Land (ac)		128	128
CRP Treated in Plan (ac)		0	0
Urban (ac)	560	3,400	3,960
Urban Treated in Plan (ac)		1,000	1,000
Woodland (ac)	2,402	1,825	4,227
Woodland Treated in Plan (ac)		100	100
Public Land (ac)		875	875
Public Land Treated in Plan (ac)		0	0
Other (ac)	89	3	92
Other Treated in Plan (ac)		0	0
Stream (mi)		110	110
Stream Treated in Plan (mi)		10	10

Figure 57: NRCS and Partner Contributions: HUC 08020201

HUC 8 - 08020201

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	491,188	Terraces (Ft.)	0
Filter Strip (Ac.)	28	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	48	Critical Planting (Ac.)	16
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	64
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	374	Wells Decomissioned (#)	1
Nutrient Management (Ac.)	1874	CRP Acres	6258
CSP Acres	2528	WRP Acres	935
WHIP Acres	0	EQIP Grd/surf Water Acres	1213

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	8	36
Conservation Security Program	10	8
Wetland Reserve Program	1	4
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	9	10

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Upper St. Francis River Basin
(HUC 08020202)
Missouri Basin Name – Upper St. Francis Basin**

The Upper St. Francis Basin, HUC 08020202, lies in portions of Iron, St. Francois, Madison, Ste. Genevieve, Butler, Reynolds, Washington, and Wayne counties. The St. Francis River originates in Iron County in southeast Missouri and flows 225 miles to the Missouri/Arkansas border. The basin drains 1,839 square miles in Missouri. The Upper St. Francis Basin is located above Wappapello Dam and the Lower St. Francis Basin below Wappapello Dam. Six dams are located in the upper basin, which can affect flows and fish movement. These include Wappapello Dam and Lake (8,400 acres) and the dam at DiSalvo Lake on the mainstem and four dams located on mainstem tributaries.

This basin is 77% woodland, 10% grassland, 7% cropland, and 6% other land uses, which includes industrial, urban, and water developments. The basin is mostly rural. The communities of Farmington, Fredericktown, and Ironton and the area surrounding Wappapello Lake are experiencing the greatest population growth. Uncontrolled sediment and stormwater runoff at construction sites pose localized nonpoint source pollution problems. Other nonpoint source pollution problems include runoff from mine tailing piles and nutrient enrichment from agricultural activities.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none

- **TMDLs**

- #2916 Big Creek

- Impaired by metals.

- TMDL approved by EPA on February 17, 2006.

- TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2916-big-ck-tmdl.pdf>

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2916-big-ck-info.pdf>

- #2860 Goose Creek

- Impaired by nickel and cobalt

- TMDL approved by EPA on December 1, 1999.

- TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2860-goose-2859-saline-cks-tmdl.pdf>

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2860-goose-2859-saline-ck-info.pdf>

- #2860 Saline Creek

- Impaired by nickel and cobalt

- TMDL approved by EPA on December 1, 1999.

- TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2860-goose-2859-saline-cks-tmdl.pdf>

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2860-goose-2859-saline-ck-info.pdf>

- #2190 Saline Creek

- Impaired by BOD and ammonia nitrogen

- TMDL approved by EPA on January 12, 2001.

- TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2190-saline-ron-rog-tmdl.pdf>

- Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2190-saline-ck-ron-rog-info.pdf>

#2835 St. Francis River
 Impaired by BOD and ammonia nitrogen.
 TMDL approved by EPA on February 1, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2835-st-francis-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2835-st-francis-r-info.pdf>

#2850 Trace Creek
 Impaired by pH from natural sources
 TMDL approved by EPA on November 15, 2004.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2850-trace-ck-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2850-trace-ck-info.pdf>

#2864 Village Creek
 Impaired by NVSS.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2864-village-ck-info.pdf>

- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Fredericktown (PWSSID # 4010290)
 Fredericktown City Lake
S-F Scout Ranch (NC) (PWSSID # 4240120) – pending issue
 Surface Water

Water Quality Monitoring

- **Active USGS Gaging Station(s)** - 6
 - #07035800 St. Francis River near Mill Creek,
 - #07036100 St. Francis River near Saco,
 - #07037000 Big Creek at Des Arc,
 - #07037300 Big Creek at Sam A. Baker State Park,
 - #07037500 St. Francis River near Patterson, and
 - #07039000 Wappapello Lake at Wappapello.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Little St. Francis River,
 - Mill Creek,
 - Saline Creek, and
 - Tollar Branch.

Figure 58: Number of Volunteer Water Quality Sampling Events Conducted in 08020202 Upper St. Francis River Basin.

Training Level	Monitoring Category		
	Invertebrate	Chemical	Visual
Intro/1	15	3	3
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 59: NRCS and Partner Contributions: HUC 08020202

Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	109	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	374	Wells Decommissioned (#)	1
Nutrient Management (Ac.)	0	CRP Acres	10
CSP Acres	0	WRP Acres	0
WHIP Acres	1272	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	2	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower St. Francis River Basin
(HUC 08020203)
Missouri Basin Name – Lower St. Francis Basin**

The Lower St. Francis Basin, HUC 08020203, lies in portions of Bollinger, Wayne, Stoddard, Butler and Dunklin counties. The St. Francis River originates in Iron County in southeast Missouri and flows 225 miles to the Missouri/Arkansas border. The basin drains 1,839 square miles in Missouri. The Upper St. Francis Basin is located above Wappapello Dam and the Lower St. Francis Basin below Wappapello Dam. Drainage in the lower basin has been altered by a system of levees and drainage ditches. Most of the west bank of the lower St. Francis River is a levee, which prevents drainage into the river from the west. Flow in the lower sub-basin is primarily regulated by water released through Wappapello Dam. However, extensive infiltration produces a good aquifer with abundant groundwater supplies.

Nonpoint source water pollution is mainly associated with headcutting, streambank erosion, and the resulting increased sediment load and deposition downstream which adversely effects water quality. Nutrient enrichment from cropland in many of the smaller tributary ditches can cause turbidity, excessive growth of aquatic plants, and low dissolved oxygen concentrations during summer low flow periods. Pesticide residues are present in surface and shallow groundwater supplies throughout the basin. Irrigation is a major use of groundwater. The majority of the land use in the basin is for crops with 90% of the basin being used for cropland and pasture.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* - 1
 - #07039500 St. Francis River at Wappapello.
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* – none

Figure 60: NRCS and Partner Contributions: HUC 08020203

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	12,620	Terraces (Ft.)	0
Filter Strip (Ac.)	4	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	2
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	12
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	39	CRP Acres	768
CSP Acres	0	WRP Acres	1409
WHIP Acres	0	EQIP Grd/surf Water Acres	63

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	4	10
Conservation Security Program	11	0
Wetland Reserve Program	2	3
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	5	2

(This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>)

**Little River Ditches Basin
(HUC 08020204)
Missouri Basin Name – Little River Ditches Basin**

The Little River Ditches Basin, HUC 08020204, flows through seven counties in Missouri, Bollinger, Cape Girardeau, Scott, Stoddard, New Madrid, Pemiscot, and Dunklin to the Missouri-Arkansas border. Drainage in the basin has been altered by a system of levees and drainage ditches. Irrigation is a major use of ground water. Wetland drainage, timber clearing, and flood control projects have converted the basin from an immense swampland forest to a vast agricultural area. Approximately 90% of the basin is cropland, 7% woodland, and 3% other.

Excessive streambank erosion and headcutting are serious problems in the channelized section of the lower sub-basin mainstem and most of its tributaries. The quality of the riparian corridor varies considerably. The streambed is primarily composed of clay and sand, with very little diversity. Excessive sedimentation is occurring below the channelized sections. The main nonpoint source pollutants are sediment and nutrients from agricultural activities.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #3118 Buffalo Ditch
 - Impaired by BOD (low DO).
 - Information Sheet -not available
 - #3050 Ditch #1
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #3105 Lateral #2 Main Ditch
 - Impaired by sediment.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #3041 Old Channel Little River
 - Impaired by sediment.
 - TMDL approved by EPA on November 1, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/old_channel_little_river_final_110106.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07043500 Little River Ditch 1 near Morehouse, and
 - #07046250 Little River Ditches near Rives.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Pemiscot Bayou (SN024)
 - Jenkins Basin (SN028)
 - Dexter Creek (SN080)
 - Clay Root Bayou (SN089)
 - Bess Slough (SN092)

Figure 61: AgNPS SALT Project Plan Goals for HUC 08020204

Watershed Name	Pemiscot Bayou	Jenkins Basin	Dexter Creek	Clay Root Bayou	Bess Slough	Total
Project #	SN024	SN028	SN080	SN089	SN092	
Watershed Size (ac)	46,490	46,195	31,101	50,840	18,007	192,633
Cropland (ac)	41,795	33,674	20,004	50,170	17,005	162,648
Cropland Treated in Plan (ac)			9,000	18,863	8,400	36,263
Pasture/Hayland (ac)	2,941	7,096	1,745	0	181	11,963
Pasture/Hayland Treated in Plan (ac)			80	0	0	80
CRP Land (ac)			82	23	160	265
CRP Treated in Plan (ac)			0	0	0	0
Urban (ac)		231	2,345	272	271	3,119
Urban Treated in Plan (ac)			0	0	0	0
Woodland (ac)	789	5,041	5,030	0	318	11,178
Woodland Treated in Plan (ac)			0	0	0	0
Public Land (ac)			732	0	72	804
Public Land Treated in Plan (ac)			0	0	0	0
Other (ac)	965	153	1,163	375	0	2,656
Other Treated in Plan (ac)			0	0	0	0
Stream (mi)			48	26	44	118
Stream Treated in Plan (mi)			7	26	12	45

Figure 62:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 08020204**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	191,199	Terraces (Ft.)	0
Filter Strip (Ac.)	13	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	6
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	87
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	1107	Wells Decomissioned (#)	2
Nutrient Management (Ac.)	6135	CRP Acres	4741
CSP Acres	418	WRP Acres	646
WHIP Acres	0	EQIP Grd/surf Water Acres	3313

	Planned	Applied
Nutrient Plans (CNMP)	0	1
Conservation Reserve Program	9	44
Conservation Security Program	41	4
Wetland Reserve Program	1	4
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	32	27

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Cache River Basin
(HUC 08020302)
Missouri Basin Name – Cache River Basin**

The Cache River Basin, HUC 08020302, has a small portion that lies in Butler County, Missouri, with the majority of the basin located in Arkansas. The total area of the watershed is approximately 2,000 square miles.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* - none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 63: NRCS and Partner Contributions: HUC 08020302
HUC 8 - 08020302

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	3
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	324

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	3

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Keg-Weeping Water Basin
(HUC 10240001)
Missouri Basin Name – Missouri River Bottom**

The Keg-Weeping Water Basin, HUC 10240001, has only 6,498.2 acres (10.2 square miles) in Atchison County, Missouri, which is in the most northwest corner of the state. The basin extends into Harrison, Mills, Pottawattamie, Fremont, and Shelby counties in Iowa and Cass, Nemaha, and Otoe counties in Nebraska. The Missouri River provides the boundary for the western edge of the basin in Missouri. There are no classified streams in the Missouri portion of the basin. Land use is rural.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs*
 - #0226 Missouri River
 - Impaired by chlordane and PCBs.
 - TMDL approved by EPA on November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* - none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 64:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10240001**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	5	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	5
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Nishnabotna River Basin
(HUC 10240004)
Missouri Basin Name – Nishnabotna River Basin**

The Nishnabotna River Basin, HUC 10240004, has 44,994 acres in Atchison County, Missouri. The basin extends into Fremont County, Iowa and Nemaha County in Nebraska. The Missouri River provides the boundary for the western edge of the basin in Missouri. The Nishnabotna River flows into Missouri from Iowa. High Creek and its tributaries flow in a westerly direction until they meet the Nishnabotna which then flows to the Missouri River. Greys Lake is the largest lake in the basin.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Source Water Protection Plans* - none
- *Watershed Groups Formed* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* - none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* – none

Figure 65:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10240004**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	2	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	52
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	2	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Tarkio-Wolf River Basin
(HUC 10240005)
Missouri Basin Name – Tarkio-Squaw Tributaries Basin**

The Tarkio-Wolf River Basin, HUC 10240005, covers 543,144 acres (848.7 square miles) in Atchison, Holt, Andrew, and Nodaway counties. The Tarkio River, and Middle and West Tarkio creeks flow into Missouri from Iowa. The Tarkio River and all streams in the watershed flow in a southerly direction and empty into the Missouri River. Little Tarkio, Squaw, Kimsey, Mill, Rock Creek, and Old Chain Nishnabotna are the main creeks in the watershed. Big Lake in Holt County is the only significant impoundment. The watershed is mostly rural. Nonpoint source impacts from agricultural runoff and channelization contribute to sediment loading from fields and streambanks. Channelization also results in degraded riparian habitat in the watershed.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0248 Little Tarkio Creek
 - Impaired by sediment.
 - TMDL approved by EPA on October 13, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/little_tarkio_crk_final_tmdl101306.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0226 Missouri River
 - Impaired by chlordane and PCBs.
 - TMDL approved by EPA on November 3, 2006.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Mound City** (PWSSID # 1010548)
 - Groundwater
 - City of Oregon** (PWSSID # 1010605)
 - Groundwater
 - City of Craig** (PWSSID # 1010191) – pending issue
 - Groundwater
 - City of Fairfax** (PWSSID # 1010265) – pending issue
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)** - 2
 - #06815575 Squaw Creek near Mound City, and
 - #06813500 Missouri River at Rulo.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 66:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10240005**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	5337
Field Border (Ft.)	40,306	Terraces (Ft.)	266,355
Filter Strip (Ac.)	28	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	2	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	28
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	67
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	6316	CRP Acres	95
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	15	3
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Nodaway River Basin
(HUC 10240010)
Missouri Basin Name – Nodaway River Basin**

The Nodaway River watershed (basin), HUC 10240010, lies within Iowa and Missouri. The upper two-thirds of the Nodaway River basin lies in southern Iowa and the lower one-third of the basin in northwestern Missouri. In Missouri, the Nodaway River flows almost due south to its confluence with the Missouri River about 12 miles northwest of St. Joseph. The Missouri portion of the basin has an area of 567 square miles in Nodaway, Holt, Atchison, and Andrew counties. The major tributaries include Clear, Elkhorn, and Mill creeks. The largest reservoir in the basin is Bilby Ranch Lake with a surface area of 110 acres. There are no public drinking water reservoirs in this basin. Most water movement in the basin is through the surface stream network. There are eight small springs of note in the basin, only one of which, Hazlett Spring, produces more than ten gallons per minute. The land is a mixture of hills and plains. Sixty-five percent of the land is row crop, 28 percent is pasture and hay fields and 6 percent forest.

In the Nodaway River basin, the most serious nonpoint source problem is degradation of aquatic habitat in 178 miles (100 percent) of the classified streams because of the prevalence of highly erosive loess soils, large amounts of row crop agriculture, removal of riparian vegetation and channelization of streams. Channelization has occurred in 42.5 miles (24 percent) of streams in the basin. Storm water runoff carries significant amounts of fertilizers, animal wastes, and pesticides into streams. There were seven nonpoint source watershed projects in the basin during the 1990's, which treated over 15,800 acres of land, comprising about four percent of the entire basin.

Watershed Efforts and Ongoing Activities

Watershed Planning

- ***Watershed Management Plans*** – none
- ***TMDLs*** - none
- ***Watershed Groups Formed*** - none
- ***Source Water Protection Plans*** - none

Water Quality Monitoring

- ***Active USGS Gaging Station(s)***
 - #06817700 Nodaway River near Graham.
- ***Stream Teams*** - No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- ***319 NPS Projects*** - none
- ***AgNPS SALT Projects*** - none

Figure 67: NRCS and Partner Contributions: HUC 10240010

HUC 8 - 10240010

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	63,666	Terraces (Ft.)	164,436
Filter Strip (Ac.)	24	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	2	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	25
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	4
Windbreak (Ft.)	0	Water/Sediment Basins (#)	29
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	1742	CRP Acres	95
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0
	Planned	Applied	
Nutrient Plans (CNMP)	0	0	
Conservation Reserve Program	28	9	
Conservation Security Program	0	0	
Wetland Reserve Program	0	0	
Wildlife Hab. Incentive Program	0	0	
EQIP Ground/Surface water plans	0	0	

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Independence-Sugar Basin
(HUC 10240011)
Missouri Basin Name – Missouri River Bottom**

The Independence-Sugar Basin, HUC 10240011, covers the western portions of Andrew, Buchanan, Platte, Jackson, and Clay counties with the remainder of the watershed being in Kansas. The Missouri River follows the western edge of the basin in Missouri. There are several small lakes in the watershed. The watershed contains the urban areas of Savannah, St. Joseph and part of Kansas City. Nonpoint source pollution from urban runoff is a primary concern in these areas.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Brush Creek Mid-shed – nine-element plan through G03-NPS-06
- **TMDLs**
 - #0226 Missouri River
Impaired by chlordane and PCBs.
TMDL approved by EPA on November 3, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
 - #7071 Weatherby Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Source Water Protection Plans**
City of Weston (PWSSID # 1010851) – pending issue
Groundwater
- **Watershed Groups Formed**
 - Brush Creek Steering Committee
 - Brush Creek Technical Advisory Committee for Water Quality
 - Brush Creek Cost Share Program Committee
 - Brush Creek Outreach/Education Advisory Committee

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06818000 Missouri River at St. Joseph.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Brush Creek

Figure 68: Number of Volunteer Water Quality Sampling Events Conducted in 10240011 Independence – Sugar Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	12	16	5
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Brush Creek Mid-Shed (G03-NPS-06)
- **AgNPS SALT Projects** - none

Figure 69:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10240011**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	830
Field Border (Ft.)	35,660	Terraces (Ft.)	24,090
Filter Strip (Ac.)	40	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	1
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	2789	CRP Acres	326
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	8	6
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 70:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10240011 Independence-Sugar**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	0	15	6	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	24	72	2	95	1	3	0	250	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	3	300	0	900	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	1	0	0	2	5	12	8

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	4	4	7	14	5	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Platte River Basin
(HUC 10240012)
Missouri Basin Name – Platte River Basin**

The Platte River watershed (basin), HUC 10240012, originates near Spaulding, Iowa, in the southwestern portion of that state, and enters Missouri near the town of Sheridan, Missouri. Portions of nine counties are included in the watershed including Andrew, Buchanan, Worth, Platte, Dekalb, Gentry, Nodaway, Clay, and Clinton. The Platte River is a low gradient, eighth order river which flows southward for about 200 miles through northwest Missouri, and drains into the Missouri River near Farley, Missouri. The 102 River is the largest tributary of the Platte River, while smaller tributaries include Honey Creek, Long Branch, Third Fork Platte River, Little Third Fork Platte River, Castile Creek, and Little Platte River. Streams within the basin are typical of prairie type, with turbid water and generally homogeneous substrate consisting of silt and sand. The high erosion and deposition rates within the basin have created major water quality concerns and have resulted in filling riffle and pool habitats, as well as widening of stream channels.

Nonpoint source pollution caused by channelization, intensive row cropping, and livestock have had the greatest negative influence upon water quality in the watershed. Water quality concerns are low dissolved oxygen, high levels of turbidity, and organic nutrients. Row cropping and grazing of pastureland dominates the land use within the basin, although urban construction and runoff are problematic in the Kansas City and St. Joseph areas. The Platte River, 102 River, and Little Platte River, including Smithville Lake are also classified for drinking water use and irrigation.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Smithville Lake nine-element plan implemented through G03-NPS-12
- **TMDLs**
 - #3326 Rocky Branch Creek
 - Impaired by BOD.
 - Permit-in-lieu of TMDL approved by EPA on July 20, 2006.
 - PIL <http://www.dnr.mo.gov/env/wpp/waterquality/documents/2004-06-303d-enclosure-092707.pdf>
 - MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0048305.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3326-rocky-br-kc-info.pdf>
 - #7077 Smithville Reservoir
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0327 Third Fork Platte River
 - Impaired by sediment.
 - TMDL approved by EPA on November 15, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/third_fork_platte_final_tmdl_111506.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed** – Smithville Lake Watershed Coalition (SLWC)
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Smithville (PWSSID # 1010748)
 - Smithville Reservoir
 - Smithville City Lake

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06820500 Platte River near Agency,
 - #06821080 Little Platte River near Plattsburg,
 - #06821140 Smithville Reservoir near Smithville,
 - #06821150 Little Platte River at Smithville, and
 - #06821190 Platte River at Sharps Station.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Honey Creek, and
 - Long Branch.

Figure 71: Number of Volunteer Water Quality Sampling Events Conducted in 10240012 Platte River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	9	3	3
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Little Third Fork (SN058)

Figure 72: AgNPS SALT Project Plan Goals for HUC 10240012

Watershed Name	Little Third Fork
Project #	SN058
Watershed Size (ac)	50,963
Cropland (ac)	18,377
Cropland Treated in Plan (ac)	9,000
Pasture/Hayland (ac)	13,724
Pasture/Hayland Treated in Plan (ac)	2,000
CRP Land (ac)	8,753
CRP Treated in Plan (ac)	200
Urban (ac)	235
Urban Treated in Plan (ac)	0
Woodland (ac)	8,378
Woodland Treated in Plan (ac)	250
Public Land (ac)	0
Public Land Treated in Plan (ac)	0
Other (ac)	1,496
Other Treated in Plan (ac)	0
Stream (mi)	32
Stream Treated in Plan (mi)	9

Figure 73:
NRCS AND PARTNER CONTRIBUTIONS
HUC 8 - 10240012

Contour buffer Strips (Ac.)	57	Diversion (Ft.)	1600
Field Border (Ft.)	148,006	Terraces (Ft.)	285,032
Filter Strip (Ac.)	53	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	19	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	3	Critical Planting (Ac.)	85
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	21
Windbreak (Ft.)	0	Water/Sediment Basins (#)	3
waste Utilization (Ac.)	810	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	9396	CRP Acres	2094
CSP Acres	25	WRP Acres	0
WHIP Acres	74	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	69	48
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**One Hundred and Two River Basin
(HUC 10240013)
Missouri Basin Name – 102 River Basin**

The One Hundred and Two River Basin, HUC 10240013, has its upstream portion in southern Iowa. The river flows almost due south to its confluence with the Platte River just north of St. Joseph. The Missouri portion of the basin has an area of 386 square miles and includes portions of Nodaway, Buchanan, and Andrew counties. The two largest tributaries are Mozingo and White Cloud creeks. The largest reservoir in the basin is Mozingo Reservoir with a surface area of 1,000 acres.

The basin is a mixture of hills and plains. Land use is 52% row crop, 39% grassland, 7% forest and 1% urban. Most water movement in the basin is through the surface stream network.

The most serious nonpoint problem is degradation of aquatic habitat. A total of 110 miles (100 percent) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 44 miles (40 percent) of streams in the basin. Mozingo Lake, the main water supply for Maryville is the only public water supply reservoir in the basin. Pesticide monitoring of this lake began in 2002 and at present there is inadequate data to estimate an average atrazine level in the lake.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)*
 - #06819500 One Hundred and Two River at Maryville.
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 74: NRCS and Partner Contributions: HUC 10240013

HUC 8 - 10240013

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	800
Field Border (Ft.)	89,200	Terraces (Ft.)	0
Filter Strip (Ac.)	19	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	35
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	397	CRP Acres	3,073
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	43	13
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Kansas River Basin
(HUC 10270104)
Missouri Basin Name – Kansas River Basin**

The Lower Kansas River basin, HUC 10270104, is a small segment (4,576 acres) of a very large watershed that is located almost entirely in Kansas. The portion of the watershed in Missouri is in Jackson County and completely within the urban area of Kansas City. It has no classified waters within in the Missouri portion of the watershed. Potential sources of nonpoint pollution come from stormwater runoff from urban sources.

Watershed Efforts and Ongoing Activities

Watershed Planning:

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Stations* - none
- *Groundwater-Level Observation Well Network* – none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 75:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10270104**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Upper Grand River Basin
(HUC 10280101)
Missouri Basin Name – Upper Grand River Basin**

The Upper Grand River Basin, HUC 10280101, has its most upstream portions in southern Iowa. The East, Middle and West forks meet just south of Albany, Missouri, and form the Grand River. The upper portion of the basin within Missouri extends from the Iowa state line to the confluence with Shoal Creek near Chillicothe. The Missouri portion of the basin has an area of 2,811 square miles and includes portions of Livingston, Harrison, Nodaway, Worth, Caldwell, Clinton, Andrew, Carroll, Daviess, DeKalb, Ray, Gentry, and Grundy counties. The major tributaries include the East, Middle, and West forks of the Grand and Big, Lost, and Shoal creeks. The largest reservoir in the basin is Lake Viking with a surface area of 550 acres. Reservoirs are an important source of drinking water in this portion of the state. There are 18 reservoirs that serve as public drinking water supply sources in this basin.

The basin is a mixture of hills and plains with 53% grasslands, 33% row crop, and 14% forest. Most water movement in the basin is through the surface stream network. There are 19 small springs of note in basin, none of which sustain flow during dry weather. The most serious nonpoint source pollution problem in the basin is degradation of aquatic habitat. A total of 859 miles (100%) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 138 miles (16%) of streams in the basin. Proper animal waste management is especially important in this basin due to the presence of several large hog farms that land apply large amounts of liquid hog manure. There are 18 reservoirs in the Upper Grand River basin that serve as drinking water supplies and none of those tested exceeds the standards for atrazine, an agricultural herbicide.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #7109 Bethany Reservoir
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0436 Big Muddy Creek
Impaired by sediment.
TMDL approved by EPA on October 13, 2006.
TMDL http://www.epa.gov/region07/water/pdf/big_muddy_crk_final_tmdl101306.pdf
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0510 Dog Creek
Impaired by NVSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0510-dog-ck-info.pdf>
 - #7384 Grindstone Reservoir
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0442 Hickory Creek
Impairment unknown.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>

#7105 Jamesport City Lake

Impaired by mercury.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>

#0468 Middle Fork Grand River

Impaired by sediment.

TMDL approved by EPA on November 15, 2006.

TMDL http://www.epa.gov/region07/water/pdf/mid_fk_grnd_river_final_tmdl_111506.pdf

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>

#7453 Wallace State Park Lake

Impaired by fecal coliform.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7453-wallacesp-lk-info.pdf>

- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)

Maysville Water Resources Plan, <http://www.mowin.org/Training/WQMP/pdf/Maysville.pdf>

City of Bethany (PWSSID # 1010068)

Bethany Reservoir #1

Bethany Reservoir #2

Harrison County Lake

City of Breckenridge (PWSSID # 1010099)

Breckenridge Lake Intake

City of Hamilton (PWSSID # 1010342)

Hamilton Lake

Marrowbone Creek

Harrison County PDWS #1 (PWSSID # 1024241)

Eagleville Lake

Storage Basin

City of Maysville (PWSSID # 1010510)

Maysville West Lake

Maysville South Lake

Maysville Willowbrook Lake

City of City of Cameron (PWSSID # 1010131)

Cameron Reservoir #3

Grindstone Reservoir

City of Braymer (PWSSID #1010098) – pending issue

Groundwater

City of Kingston (PWSSID # 1010426)

Groundwater

- **Watershed Groups Formed** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06896187 Middle Fork Grand River near Grant City,
 - #06896320 East Fork Grand River at Allendale,
 - #06896400 East Fork Grand River at Albany,
 - #06897000 East Fork Big Creek near Bethany, and
 - #06897500 Grand River near Gallatin.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Grand River

Figure 76: Number of Volunteer Water Quality Sampling Events Conducted in 10280101 Upper Grand River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	0	0	0
2	0	0	0
3	3	1	1
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Headwaters of Mudd Creek Project (G07-NPS-02)
- **AgNPS SALT Projects**
 - Mudd Creek (SN043)
 - Hickory Creek (SN045)
 - West Fork of Big Creek (SN046)
 - Shoal Creek (Caldwell Co.) (SN070)
 - Shoal Creek (Clinton Co.) (SN084)

Figure 77: AgNPS SALT Project Plan Goals for HUC 10280101

Watershed Name	Mudd Creek	Hickory Creek	West Fork of Big Creek	Shoal Creek	Shoal Creek	Total
Project #	SN043	SN045	SN046	SN070	SN084	
Watershed Size (ac)	41,499	17,037	81,722	40,312	15,047	195,617
Cropland (ac)	15,069	7,245	10,269	20,939	5,933	59,455
Cropland Treated in Plan (ac)	10,064	4,320	4,000	8,794	3,000	30,178
Pasture/Hayland (ac)	13,807	600	18,851	2,188	4,100	39,546
Pasture/Hayland Treated in Plan (ac)	9,319	480	7,200	1,395	2,750	21,144
CRP Land (ac)	7,437	6,547	4,684	6,541	1,015	26,224
CRP Treated in Plan (ac)	0	360	0	0	0	360
Urban (ac)	772	10	300	632	792	2,506
Urban Treated in Plan (ac)	0	0	0	0	0	0
Woodland (ac)	3,961	2,631	7,690	8,730	1,817	24,829
Woodland Treated in Plan (ac)	1,980	240	1,200	1,419	250	5,089
Public Land (ac)	0	0	0	0	0	0
Public Land Treated in Plan (ac)	0	0	0	0	0	0
Other (ac)	453	4	0	1,282	1,390	3,129
Other Treated in Plan (ac)	0	0	0	0	0	0
Stream (mi)	28	19	29	104	13	193
Stream Treated in Plan (mi)	28	5	8	12	3	56

Figure 78:

**NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10280101**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1452
Field Border (Ft.)	156,286	Terraces (Ft.)	326,986
Filter Strip (Ac.)	50	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	24	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	5	Critical Planting (Ac.)	211
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	101
Windbreak (Ft.)	0	Water/Sediment Basins (#)	1
waste Utilization (Ac.)	68	Wells Decomissioned (#)	4
Nutrient Management (Ac.)	3813	CRP Acres	15,342
CSP Acres	20	WRP Acres	54
WHIP Acres	632	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	3
Conservation Reserve Program	262	204
Conservation Security Program	1	2
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	8	7
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 79:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10280101 Upper Grand**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	0	4	15	12	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	2	12	1	10	2	30	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	4	4	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	1	0	3	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	1	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	9	110	3,300	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	2	0	2	110	0	0	0

**Thompson River Basin
(HUC 10280102)
Missouri Basin Name – Thompson River Basin**

The Thompson River Basin, HUC 10280102, originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Grand River near Chillicothe, Missouri. The Missouri portion of the basin has an area of 1,105 square miles and includes portions of Grundy, Mercer, Harrison, Daviess, and Livingston counties. The major tributaries include the Weldon River and Muddy, Honey and No creeks. The largest reservoir in the basin is Lake Paho with a surface area of 273 acres. Mercer Reservoir and Ridgeway Lake serve as public drinking water supply sources.

The Thompson River basin is a mixture of hills and plains. Land use is 53% grasslands, 31% row crop and 15% forest. Most water movement in the basin is through the surface stream network. There are only two small spring of note in basin and these probably cease flowing in dry weather. The most serious nonpoint source problem is degradation of aquatic habitat. A total of 383 miles (100%) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 125 miles (33%) of streams in the basin. Storm water runoff carries significant amounts of fertilizers, animal wastes, and pesticides into streams. Studies of water quality of private wells in northern and western Missouri show that about one third of wells exceed the drinking water standard for nitrate. Local land use practices or surface contamination of the wellhead often causes this pollution. During warm weather when stream flows are low, livestock tend to gather in and around streams. The wastes they leave in the water contributes to nuisance algae growths, low levels of dissolved oxygen and elevated levels of ammonia and bacteria.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #7135 Crowder State Park Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0588 Hickory Creek
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #0589 Hickory Creek Tributary
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #0554 Honey Creek
 - Impaired by sediment.
 - TMDL approved by EPA on November 5, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/honey_crk_final_111506.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0557 Muddy Creek
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
- **Source Water Protection Plans** - none
- **Watershed Groups Formed** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06898100 Thompson River near Mt. Moriah,
 - #06898800 Weldon River at Princeton,
 - #06899500 Thompson River at Trenton, and
 - #06899580 No Creek near Dunlap.
- **Stream Teams** - The following water bodies were monitored between June 1, 2007 and February 28, 2007:
 - Sugar Creek
 - West Fork Honey Creek

Figure 80: Number of Volunteer Water Quality Sampling Events Conducted in 10280102 Thompson River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	3	0	1
2	3	1	1
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Hickory Creek Watershed Demonstration/Education Project (G06-NPS-14)
- **AgNPS SALT Projects**
 - Honey Creek (SN033)
 - Hickory Creek (SN073)
 - Little Muddy Creek (SN076)

Figure 81: AgNPS SALT Project Plan Goals for HUC 10280102

Watershed Name	Honey Creek	Hickory Creek	Little Muddy Creek	Total
Project #	SN033	SN073	SN076	
Watershed Size (ac)	64,500	17,664	55,611	137,775
Cropland (ac)	34,200	6,955	6,925	48,080
Cropland Treated in Plan (ac)		1,565	2,410	3,975
Pasture/Hayland (ac)	21,500	3,085	19,470	44,055
Pasture/Hayland Treated in Plan (ac)		695	4,700	5,395
CRP Land (ac)		3,674	9,682	13,356
CRP Treated in Plan (ac)		0	0	0
Urban (ac)		0	235	235
Urban Treated in Plan (ac)		0	0	0
Woodland (ac)	7,300	2,489	7,900	17,689
Woodland Treated in Plan (ac)		0	100	100
Public Land (ac)		0	0	0
Public Land Treated in Plan (ac)		0	0	0
Other (ac)	1,500	1,461	1,385	4,346
Other Treated in Plan (ac)		0	0	0
Stream (mi)	27	19	36	82
Stream Treated in Plan (mi)		4	7	11

Figure 82:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10280102**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1022
Field Border (Ft.)	0	Terraces (Ft.)	52,925
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	28	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	18	Critical Planting (Ac.)	29
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	39
Windbreak (Ft.)	0	Water/Sediment Basins (#)	7
waste Utilization (Ac.)	183	Wells Decommissioned (#)	8
Nutrient Management (Ac.)	3589	CRP Acres	1677
CSP Acres	0	WRP Acres	0
WHIP Acres	18	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	2
Conservation Reserve Program	64	16
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 83:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10280102 Thompson**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	1	10	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	1	36	0	0	0	0	1	1	1

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	3	560	1	810	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	5	190	136	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Lower Grand River Basin
(HUC 10280103)
Missouri Basin Name – Middle Grand River Basin**

The Grand River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. Counties within this watershed include Putnam, Carroll, Chariton, Macon, Linn, Grundy, Livingston, Sullivan, and Mercer. The Lower Grand River basin, HUC 10280103, begins at the confluence of the Grand River and Shoal Creek near Chillicothe. The basin lies in north central Missouri. It has an area of 2,234 square miles, and encompasses all tributaries entering the Grand between Shoal Creek and the confluence with the Missouri River near Brunswick. The major tributaries include Medicine, Locust, and Yellow creeks. The largest reservoirs are Silver Lake (2,464 acres), Swan Lake (1,425 acres), and South Pool (1,151 acres). All three are shallow lakes that lie within the Swan Lake National Wildlife Refuge.

The Lower Grand River basin is a mixture of hills and plains. Land use is 53% grasslands, 32% row crop, and 14% forest. Most water movement in the basin is through the surface stream network. Two small springs are known and probably cease flowing in dry weather.

A total of 678 miles (100%) of classified streams in the basin are considered to have degraded aquatic habitat. Channelization has occurred in 115 miles (17%) of streams in the basin. Nonpoint source pollution problems result from sedimentation due to channelization and lack of riparian corridor, nutrients from land application of animal waste, and nutrients and pesticides from crop production.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0619 East Fork Medicine Creek
 - Impaired by sediment.
 - TMDL approved by EPA on November 22, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/e_fork_medicine_crk_tmdl_112206.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0602 Long Branch Creek
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #0612 West Fork Locust Creek
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #0613 West Fork Locust Creek
 - Impairment unknown.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #0623 Little Medicine Creek (also known as West Fork Medicine Creek)
 - Impaired by sediment.
 - TMDL approved by EPA on October 13, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/little_medicine_crk_final_tmdl101306.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed** - none

- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Marceline* (PWSSID # 2010497)
 - Marceline Lake (new intake)
 - Brunswick District Water System* (PWSSID # 2010109)
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06899950 Medicine Creek at Harris,
 - #06900050 Medicine Creek at Laredo,
 - #06900100 Little Medicine Creek near Harris,
 - #06900900 Locust Creek near Unionville,
 - #06901500 Locust Creek near Linneus, and
 - #06902000 Grand River near Sumner.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Elmwood Branch
 - Elmwood Lake
 - East Locust Creek
 - Locust Creek

Figure 84: Number of Volunteer Water Quality Sampling Events Conducted in 10280103 Lower Grand River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	3	0	10
2	0	0	0
3	0	0	0
4	12	55	5

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Endocrine Modulators and Excess Nutrients in Little Medicine and West (G03-NPS-15)
- **AgNPS SALT Projects**
 - Big Creek (SN071)

Figure 85: AgNPS SALT Project Plan Goals for HUC 10280103

Watershed Name	Big Creek
Project #	SN071
Watershed Size (ac)	47,889
Cropland (ac)	16,740
Cropland Treated in Plan (ac)	5,538
Pasture/Hayland (ac)	12,321
Pasture/Hayland Treated in Plan (ac)	1,850
CRP Land (ac)	9,025
CRP Treated in Plan (ac)	0
Urban (ac)	151
Urban Treated in Plan (ac)	0
Woodland (ac)	7,574
Woodland Treated in Plan (ac)	540
Public Land (ac)	0
Public Land Treated in Plan (ac)	0
Other (ac)	2,078
Other Treated in Plan (ac)	0
Stream (mi)	294
Stream Treated in Plan (mi)	20

Figure 86:

NRCS AND PARTNER CONTRIBUTIONS

HUC 8 - 10280103

Contour buffer Strips (Ac.)	1	Diversion (Ft.)	0
Field Border (Ft.)	1,675	Terraces (Ft.)	227,689
Filter Strip (Ac.)	2	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	190	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	167	Critical Planting (Ac.)	92
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	69
Windbreak (Ft.)	4000	Water/Sediment Basins (#)	15
waste Utilization (Ac.)	438	Wells Decommissioned (#)	2
Nutrient Management (Ac.)	1016	CRP Acres	12,746
CSP Acres	0	WRP Acres	2207
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	4
Conservation Reserve Program	226	165
Conservation Security Program	0	0
Wetland Reserve Program	10	10
Wildlife Hab. Incentive Program	2	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Upper Chariton River Basin
(HUC 10280201)
Missouri Basin Name – Upper Chariton River Basin**

The Chariton River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. The watershed includes portions of Putnam, Adair, Sullivan, and Schuyler counties. The river flows through 2 basins, the Upper and Lower Chariton. The major tributaries in the Upper Chariton include Shoal and Blackbird creeks. The largest reservoirs in the Missouri portion of the basin are Lake Thunderhead (1,015 acres) near Unionville. Reservoirs supply much of the public drinking water in this basin. Atrazine is an agricultural herbicide used on corn and grain sorghum. The reservoirs in the basin that serve as drinking water supplies have average atrazine or cyanazine levels in excess of state or federal standards.

The land is a mixture of hills and plains with the northern portion of the basin having more hills and woods than any other portion of the plains region in Missouri. The main land use is for pasture and hayfields. The majority of classified streams in the basin are considered to have degraded aquatic habitat due to channelization and agriculture. The major nonpoint source concerns in the basin are sediment, nutrients and pesticides from agricultural activities. Abandoned coal mined lands in the Blackbird, Shoal, and Sandy creek watersheds have resulted in increased levels of dissolved minerals, primarily sulfate.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0653 Blackbird Creek
 - Impaired by sediment.
 - TMDL approved by EPA on June 27, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/blackbird_creek_finaltmdl062706.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0652 Sandy Creek
 - Impaired by unknown sources.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
 - #9005U Willow Branch
 - Impaired by unknown sources.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Unionville (PWSSID # 2010804)
 - Lake Thunderhead
 - Unionville Reservoir

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06904050 Chariton River at Livonia.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - North Blackbird Creek
 - Sandy Creek

Figure 87: Number of Volunteer Water Quality Sampling Events Conducted in 10280201 Upper Chariton River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	1	0	2
2	0	0	1
3	0	0	0
4	0	4	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Hazel Creek Watershed Education Project (G07-NPS-16)
- **AgNPS SALT Projects**
 - Blackbird Creek (SN035)

Figure 88: AgNPS SALT Project Plan Goals for HUC 10280201

Watershed Name	Blackbird Creek
Project #	SN035
Watershed Size (ac)	36,287
Cropland (ac)	2,537
Cropland Treated in Plan (ac)	
Pasture/Hayland (ac)	13,021
Pasture/Hayland Treated in Plan (ac)	
CRP Land (ac)	
CRP Treated in Plan (ac)	
Urban (ac)	1,344
Urban Treated in Plan (ac)	
Woodland (ac)	5,455
Woodland Treated in Plan (ac)	
Public Land (ac)	
Public Land Treated in Plan (ac)	
Other (ac)	2,440
Other Treated in Plan (ac)	
Stream (mi)	27
Stream Treated in Plan (mi)	

Figure 89:

**NATURAL RESOURCES CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10280201**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1619
Field Border (Ft.)	12,930	Terraces (Ft.)	9,460
Filter Strip (Ac.)	7	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	210	Critical Planting (Ac.)	26
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	13
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	10
Nutrient Management (Ac.)	0	CRP Acres	1683
CSP Acres	0	WRP Acres	67
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	1
Conservation Reserve Program	14	26
Conservation Security Program	0	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 90:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10280201 Upper Chariton**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	2	6	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	0	0	0	0	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	0	0	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Lower Chariton River Basin
(HUC 10280202)
Missouri Basin Name – Lower Chariton River Basin**

The Chariton River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. The Lower Chariton Basin, HUC 10280202, includes portions of seven counties, Putnam, Sullivan, Adair, Linn, Macon, Chariton and Randolph. The major tributaries include Brush and Mussel Fork creeks. The largest reservoir in the basin is Forest Lake in Thousand Hills State Park (573 acres). This reservoir and several smaller ones provide much of the drinking water in the basin. Atrazine is an agricultural herbicide used on corn and grain sorghum. The reservoirs in the basin that serve as drinking water supplies have average atrazine or cyanazine levels in excess of state or federal standards.

The basin is a mixture of hills and plains. The land use is mainly rural dominated by grasslands and row crops. The majority of classified streams in the basin are considered to have degraded aquatic habitat due to channelization and agriculture. The major nonpoint source concerns in the basin are sediment, nutrients and pesticides from agricultural activities.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #0674 Mussel Fork Creek
 - Impaired by sediment.
 - TMDL approved by EPA on September 25, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/mussel_fork_crk_approved_tmdl092506.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Marceline** (PWSSID # 2010497)
 - Marceline Lake (old intake)
 - Mussel Fork Creek
 - City of Kirksville/Forest Lake/Hazel Creek** (PWSSID #2010249)
 - Forest Lake

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06904500 Chariton River at Novinger,
 - #06905500 Chariton River near Prairie Hill,
 - #06905725 Musselfork near Mystic, and
 - #06906000 Mussel Fork near Musselfork.
- **Stream Teams** – The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Unnamed Tributary to Cottonwood Creek
 - Chariton River (Old Channel)

Figure 91: Number of Volunteer Water Quality Sampling Events Conducted in 10280202 Lower Chariton River Basin.

Training Level	Monitoring Category		
	FY07 Invertebrate	FY07 Chemical	FY07 Visual
Intro/1	0	0	2
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Mussel Fork Creek (SN056)

Figure 92: AgNPS SALT Project Plan Goals for HUC 10280202

Watershed Name	Mussel Fork Creek
Project #	SN056
Watershed Size (ac)	53,111
Cropland (ac)	14,290
Cropland Treated in Plan (ac)	6,000
Pasture/Hayland (ac)	26,220
Pasture/Hayland Treated in Plan (ac)	7,000
CRP Land (ac)	4,951
CRP Treated in Plan (ac)	0
Urban (ac)	1,100
Urban Treated in Plan (ac)	0
Woodland (ac)	5,200
Woodland Treated in Plan (ac)	700
Public Land (ac)	650
Public Land Treated in Plan (ac)	0
Other (ac)	700
Other Treated in Plan (ac)	0
Stream (mi)	58
Stream Treated in Plan (mi)	10

Figure 93:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10280202**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	76,523
Filter Strip (Ac.)	13	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	43
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	31
Windbreak (Ft.)	700	Water/Sediment Basins (#)	2
waste Utilization (Ac.)	18	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	302	CRP Acres	2267
CSP Acres	0	WRP Acres	241
WHIP Acres	160	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	1
Conservation Reserve Program	38	32
Conservation Security Program	0	0
Wetland Reserve Program	3	4
Wildlife Hab. Incentive Program	1	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Little Chariton River Basin
(HUC 10280203)
Missouri Basin Name – Little Chariton River Basin**

The Little Chariton River Basin, HUC 10280203, occupies portions of five counties, Howard, Chariton, Randolph, Macon and Adair. The classified portions of the East Fork of the Chariton River and Long Branch Creek originate in northern Macon County and flow in a southerly direction to form Long Branch Lake and Macon Lake. The East Fork of the Chariton flows out of these lakes and into Randolph County where it eventually flows in a southwesterly direction into Chariton County. The Middle Fork of the Chariton and Stinking Creek also begin in northern Macon County and flow southerly to form Thomas Hill Lake in Macon and Randolph counties. The Middle Fork of the Chariton flows out of the lake in a southwesterly direction into Chariton County where it converges with the East Fork to empty into the Little Chariton. The Old Chain Chariton, which flows from the Chariton River, joins the Little Chariton shortly before it empties into the Missouri River.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Long Branch Watershed Assessment and Management Plan
<http://www.mowin.org/Training/WQMP/pdf/Longbranch.pdf>
- **TMDLs**
 - #0690 Dark Creek
Impaired by sulfate.
TMDL approved by EPA on December 15, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0690-dark-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0690-dark-ck-info.pdf>
 - #7171 Long Branch Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0686 Sugar Creek
Impaired by low pH.
TMDL approved by EPA on December 19, 2002.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0686-sugar-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0686-sugar-ck-info.pdf>
- **Watershed Groups Formed**
 - Piper Creek Town Branch Watershed Committee
 - Long Branch Watershed Steering Committee
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Macon** (PWSSID # 2010487)
Long Branch Lake
 - City of Moberly** (PWSSID #2010533) – pending issue
Surface Water

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06906150 Long Branch Creek at Atlanta,
 - #06906190 Long Branch Reservoir near Macon,
 - #06906200 East Fork Little Chariton River near Macon, and
 - #06906300 East Fork Little Chariton River near Huntsville.

- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Dark and Sugar Creeks (SN036)
 - Long Branch (SN049)
 - Little Chariton River (SN060)

Figure 94: AgNPS SALT Project Plan Goals for HUC 10280203

Watershed Name	Dark and Sugar Creeks	Long Branch	Little Chariton River	Total
Project #	SN036	SN049	SN060	
Watershed Size (ac)	44,467	63,775	26,616	134,858
Cropland (ac)	18,500	16,029	11,478	46,007
Cropland Treated in Plan (ac)		9,475	3,195	12,670
Pasture/Hayland (ac)	15,000	15,498	10,601	41,099
Pasture/Hayland Treated in Plan (ac)		3,210	700	3,910
CRP Land (ac)		9,525	1,136	10,661
CRP Treated in Plan (ac)		0	180	180
Urban (ac)	500	297	8	805
Urban Treated in Plan (ac)		0	0	0
Woodland (ac)	6,000	15,239	3,297	24,536
Woodland Treated in Plan (ac)		940	240	1,180
Public Land (ac)	467	7,187	0	7,654
Public Land Treated in Plan (ac)		0	0	0
Other (ac)	4,000	0	96	4,096
Other Treated in Plan (ac)		0	0	0
Stream (mi)	35	245	35	315
Stream Treated in Plan (mi)		19	10	29

Figure 95:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10280203**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	3150
Field Border (Ft.)	0	Terraces (Ft.)	49,200
Filter Strip (Ac.)	58	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	6	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	4
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	16
Windbreak (Ft.)	690	Water/Sediment Basins (#)	2
waste Utilization (Ac.)	0	Wells Decomissioned (#)	1
Nutrient Management (Ac.)	208	CRP Acres	3600
CSP Acres	0	WRP Acres	0
WHIP Acres	18	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	43	54
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	2	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Marais des Cygnes
(HUC 10290102)
Missouri Basin Name – Marais des Cygnes Basin**

The Lower Marais des Cygnes basin, HUC 10290102, covers 3,704 square miles; 13% of the basin is in Missouri with the remainder in Kansas. The basin lies in Bates County except for a very small portion in Cass County. Over 35% of the mainstem Marais des Cygnes River is channelized. On the average, the Marais des Cygnes exceeds bankful discharge eight times per year.

The major nonpoint source problems in the watershed result from unreclaimed strip mines, acid mine drainage, channelization, sedimentation, agricultural runoff, and low base flows. During low flows, the Marais des Cygnes River has exceeded secondary drinking water supply standards for sulfates. Contamination from abandoned and reclaimed coal mines is a major problem for several streams in this basin. Erosion, sedimentation, acid mine drainage, high sulfate concentrations and iron deposits have seriously degraded some streams. Walnut Creek appears to be the most impacted. Mulberry Creek, Park Branch, New Home Creek, Miami Creek, the Marais des Cygnes River and other tributaries also are affected.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9–element plan for Marais des Cygnes HUC 1029010203, and 04
Status - developed through G05-NPS-05
 - Butler City Lake Watershed Management Plan
<http://www.mowin.org/Training/WQMP/pdf/butlerplan.pdf>
- **TMDLs**
 - #1299 Miami Creek
Impaired by sediment.
TMDL approved by EPA on November 15, 2006.
TMDL http://www.epa.gov/region07/water/pdf/miami_creek_final_tmdl_111506.pdf
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #1300 Mound Branch
Impaired by biochemical oxygen demand and ammonia nitrogen.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1300-mound-br-info.pdf>
- **Watershed Groups Formed** - steering committee for
 - Marmaton, Marais des Cygnes, Little Osage Watershed Management Plan Committee
 - Citizen Watershed Committee (multi-counties)
 - Butler Lake Watershed Management Committee
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Butler (PWSSID # 1010118)
 - Butler Lake
 - Miami Creek
 - Marais des Cygnes

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06916675 Miami Creek near Butler.
- **Stream Teams** – No water bodies were monitored between June 1, 2006 and February 28, 2007.

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Bates SWCD Producer Workshops (G05-NPS-30)
 - Marmaton, Marais des Cygnes, Little Osage Watershed Management and Protection Plan (G05-NPS-05)
- **AgNPS SALT Projects**
 - Lower Marais des Cygnes (SN069)

Figure 96: AgNPS SALT Project Plan Goals for HUC 10290102

Watershed Name	Lower Marais des Cygnes*
Project #	SN069
Watershed Size (ac)	36,749
Cropland (ac)	13,720
Cropland Treated in Plan (ac)	3,722
Pasture/Hayland (ac)	13,617
Pasture/Hayland Treated in Plan (ac)	1,945
CRP Land (ac)	750
CRP Treated in Plan (ac)	0
Urban (ac)	7
Urban Treated in Plan (ac)	0
Woodland (ac)	5,979
Woodland Treated in Plan (ac)	70
Public Land (ac)	279
Public Land Treated in Plan (ac)	0
Other (ac)	2,397
Other Treated in Plan (ac)	0
Stream (mi)	208
Stream Treated in Plan (mi)	10

* Same information for both HUCs (10290102 & 10290105).
 These numbers have not been divided out per HUC
 (i.e., duplicate numbers).

Figure 97:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290102**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	24,400	Terraces (Ft.)	1,025
Filter Strip (Ac.)	38	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	26	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	27	Critical Planting (Ac.)	32
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	5
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	4260	CRP Acres	752
CSP Acres	0	WRP Acres	13
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	1
Conservation Reserve Program	11	28
Conservation Security Program	0	0
Wetland Reserve Program	0	1
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Little Osage River Basin
(HUC 10290103)
Missouri Basin Name – Little Osage River Basin**

The Little Osage River Basin, HUC 10290103, lies within Bates and Vernon counties. The Little Osage River flows from Kansas into Missouri in Vernon County where it continues in an easterly direction to join the Marmaton River. The basin is rural with the primary land use being agriculture. Row crops, pasture and hay production, and swine and cattle dominate the agricultural activities. On the average, the Little Osage River exceeds bank full discharge 2 times per year.

The main nonpoint source pollution problems are associated with agricultural and mining activities. These include nutrient enrichment and streambank degradation due to row crop and animal agriculture; inadequate riparian corridors, erosion and sedimentation caused by channelization; maintenance of already low base flows; and threats to base flows by watershed developments.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9–element plan for Little Osage HUC 10290103
Status - developed through G05-NPS-05
- **TMDLs**
 - #3652 Little Osage River
Impaired by low dissolved oxygen.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3652-little-osage-r-info.pdf>
 - #1308 Marmaton River
Impaired by low dissolved oxygen.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1308-marmaton-r-info.pdf>
- **Watershed Groups**
 - Marmaton, Marais des Cygnes, Little Osage Rivers Watershed Planning Steering Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06917060 Little Osage at Horton.
- **Stream Teams** – No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Marmaton, Marais des Cygnes, Little Osage Watershed Management and Protection Plan (G05-NPS-05)
 - Citizen Watershed Committee (multi-counties)
- **AgNPS SALT Projects** - none

Figure 98:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290103**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	200
Field Border (Ft.)	31,804	Terraces (Ft.)	5,660
Filter Strip (Ac.)	1	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	8	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	14
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	2	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	154	CRP Acres	695
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	11	8
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Marmaton River Basin
(HUC 10290104)
Missouri Basin Name – Marmaton River Basin**

The Marmaton River Basin, HUC 10290104, lies within Vernon and Barton counties. The Marmaton River flows from Kansas into Missouri in Vernon County where it continues in an easterly direction, and then just before reaching the city of Nevada it turns northeasterly until the Little Osage River empties into it. It has two main tributaries, Drywood Creek and Little Drywood Creek, which originate in Barton County and flow north into the Marmaton.

The basin is rural with the primary land use being agriculture. Row crops, pasture and hay production and beef, swine and dairy cattle dominate the agricultural activities. The main nonpoint source pollution problems are associated with agricultural and mining activities. Stream problems in the basin include: water quality degradation due to cattle; inadequate riparian corridors, erosion and sedimentation caused by channelization and agricultural runoff; maintenance of already low base flows; threats to base flows by future watershed developments. The Marmaton River is highly mineralized, characterized by high specific conductance values and sulfate concentrations. The Marmaton River has exceeded total sulfate concentration standards for public drinking water supplies, irrigation, and livestock and wildlife watering.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9-element plan for Marmaton River HUC 10290104
Status - developed through G05-NPS-05
- **TMDLs**
 - #1308 Marmaton River
Impaired by low dissolved oxygen.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1308-marmaton-r-info.pdf>
 - #1319 Second Nicolson Creek
Impaired by sulfate.
TMDL approved by EPA on June 9, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1319-second-nicolson-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1319-second-nicholson-info.pdf>
- **Watershed Groups Formed**
 - Marmaton, Marais des Cygnes, Little Osage River Management Plan Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06917630 East Drywood Creek at Prairie State Park,
 - #06917680 Dry Wood Creek near Deerfield, and
 - #06918060 Marmaton River near Nevada.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Marmaton, Marais des Cygnes, Little Osage Watershed Management and Protection Plan (G05-NPS-05)

- Citizen Watershed Committee (multi-counties)
- Poultry Litter Fertility and Water Quality Demonstration Project (G05-NPS-23)
- **AgNPS SALT Projects –**
 - Lower Marmaton River (SN040)
 - Osage Plains (SN081)

Figure 99: AgNPS SALT Project Plan Goals for HUC 10290104

Watershed Name	Lower Marmaton River	Osage Plains	Total
Project #	SN040	SN081	
Watershed Size (ac)	35,706	44,821	80,527
Cropland (ac)	15,543	15,897	31,440
Cropland Treated in Plan (ac)		6,000	6,000
Pasture/Hayland (ac)	8,087	13,527	21,614
Pasture/Hayland Treated in Plan (ac)		2,000	2,000
CRP Land (ac)		1,473	1,473
CRP Treated in Plan (ac)		0	0
Urban (ac)	180	1,925	2,105
Urban Treated in Plan (ac)		0	0
Woodland (ac)	5,429	7,632	13,061
Woodland Treated in Plan (ac)		0	0
Public Land (ac)	150	799	949
Public Land Treated in Plan (ac)		0	0
Other (ac)	6,317	3,568	9,885
Other Treated in Plan (ac)		0	0
Stream (mi)	36	180	216
Stream Treated in Plan (mi)		4	4

Figure 100: NRCS and Partner Contributions: HUC 10290104

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	8,150	Terraces (Ft.)	17,503
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	13	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	11
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	3
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	949	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	2612	CRP Acres	1339
CSP Acres	0	WRP Acres	162
WHIP Acres	125	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	4
Conservation Reserve Program	30	13
Conservation Security Program	0	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	0	3

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Harry S. Truman Reservoir
(HUC 10290105)
Missouri Basin Name – Upper Osage River Basin**

The Harry S. Truman Reservoir, HUC 10290105, covers portions of Barton, Vernon, St. Clair, Cedar, Hickory, Benton, Bates, Polk, and Henry counties. The Osage River originates at the confluence of the Bates County Drainage Ditch and Marmaton River northwest of Schell City, Missouri, in northeast Vernon County then flows in an easterly direction and inundates Harry S. Truman Lake. Truman Dam impounded 98.5 miles of the Osage River in November 1979. Since the construction of Truman Dam, flooding has increased in the lower portions of streams within the flood pool of Truman Lake. Main tributaries include Clear, Panther, Mongaw, Gallinipper, Weaubleau, and Bear creeks.

Land use in the basin is primarily animal agriculture and forestland. Agriculture, coal strip mines, and sewage discharges are the major sources of water quality problems. Problems associated with agricultural runoff, livestock grazing in the watershed, and discharges from unregulated or faulty animal waste facilities include turbidity, sedimentation, low dissolved oxygen, high nitrogen and phosphorous concentrations, high ammonia, and high fecal coliform counts. Several areas in Clear Creek and the Monegaw are impacted heavily by mine drainage.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #1336 Clear Creek (Vernon County)
 - Impaired by sediment.
 - TMDL approved by EPA on November 15, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/clear_creek_final_111506.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #1308 Marmaton River
 - Impaired by low dissolved oxygen.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1308-marmaton-r-info.pdf>
 - #1234 Monegaw Creek
 - Impaired by sulfate.
 - TMDL approved by EPA on August 17, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/monegaw_crk_mo081706.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1234-monegaw-ck-info.pdf>
 - #1339 Walnut Creek
 - Impaired by BOD and VSS.
 - Permit-in-lieu of TMDL approved by EPA on May 26, 2006.
 - PIL <http://www.dnr.mo.gov/env/wpp/tmdl/1339-walnut-ck-pil.pdf>
 - MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0040002.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1339-walnut-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06918070 Osage River above Schell City.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects -**
 - Polk County Regional Grazing School (G05-NPS-06)
 - Poultry Litter Fertility and Water Quality Demonstration (G05-NPS-23)
- **AgNPS SALT Projects -**
 - Weaubleau Creek (SN032)
 - Lower Marais des Cygnes (SN069)

Figure 101: AgNPS SALT Project Plan Goals for HUC 10290105

Watershed Name	Weaubleau Creek	Lower Marais des Cygnes*	Total
Project #	SN032	SN069	
Watershed Size (ac)	39,308	36,749	76,057
Cropland (ac)	5,898	13,720	19,618
Cropland Treated in Plan (ac)		3,722	3,722
Pasture/Hayland (ac)	22,609	13,617	36,226
Pasture/Hayland Treated in Plan (ac)		1,945	1,945
CRP Land (ac)		750	750
CRP Treated in Plan (ac)		0	0
Urban (ac)	975	7	982
Urban Treated in Plan (ac)		0	0
Woodland (ac)	9,826	5,979	15,805
Woodland Treated in Plan (ac)		70	70
Public Land (ac)		279	279
Public Land Treated in Plan (ac)		0	0
Other (ac)		2,397	2,397
Other Treated in Plan (ac)		0	0
Stream (mi)	75	208	283
Stream Treated in Plan (mi)		10	10

*Same information for both HUCs (10290102 & 10290105). These numbers have not been divided out per HUC (i.e., duplicate numbers).

Figure 102:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290105**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1362
Field Border (Ft.)	9,190	Terraces (Ft.)	2,800
Filter Strip (Ac.)	2	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	14	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	4	Critical Planting (Ac.)	13
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	2
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	28	Wells Decomissioned (#)	2
Nutrient Management (Ac.)	1533	CRP Acres	1068
CSP Acres	0	WRP Acres	44
WHIP Acres	155	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	31	18
Conservation Security Program	0	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	6	4
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Sac River Basin
(HUC 10290106)
Missouri Basin Name – Sac River Basin**

The Sac River headwaters originate near Springfield, Missouri. Major tributaries include Little Sac River, Turnback Creek, Sons Creek, Horse Creek, Cedar Creek, Coon Creek, Turkey Creek, Brush Creek, and Bear Creek. Stockton Lake inundates large portions of the Sac River and Little Sac River. Truman Reservoir inundates a large area of the Lower Sac River and occasionally floods the lower portions of Coon Creek, Brush Creek, Turkey Creek, and Cedar Creek. The Sac River basin encompasses an area of 1,981 square miles in southwest Missouri. Counties that are partially or entirely within the basin are Barton, Cedar, Christian, Dade, Greene, Hickory, Lawrence, Polk, St. Clair, and Vernon.

Caves, springs, and losing streams are found primarily in the southern areas of the watershed due to the soluble bedrocks (limestone and dolomite) that underlay that portion of the basin. The streams found in the basin range from clear with predominantly chert gravel/cobble streambeds to turbid with silt, sand, and gravel streambeds. The Sac River is a sixth order stream where it enters Truman Reservoir. The Sac River basin is primarily rural. Land use is primarily pasture/grazing, with smaller amounts distributed among forest, row crop, and urban land practices. Animal agriculture is a major enterprise in the basin with beef cattle and dairy production being predominant. Nonpoint source pollution in the basin comes from various sources including urban development and runoff, mining, land conversion from forest to pasture, livestock with free access to streams and riparian corridors, channelization, road construction, and septic tanks.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Watershed Restoration Action Strategy (WRAS) for HUCs 1029010605, 1029010606
Status - substantially implemented through G01-NPS-01
- **TMDLs**
 - #1371 Brush Creek
Impaired by BOD and VSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1371-brush-ck-info.pdf>
 - #7237 Fellows Lake
Impaired by nutrients.
Information Sheets <http://www.dnr.mo.gov/env/wpp/tmdl/info/7237-fellows-lk-info.pdf>
Impaired by mercury.
Information Sheets <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #1381 Little Sac River
Impaired by fecal coliform.
TMDL approved by EPA on August 9, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1381-l-sac-r-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1381-little-sac-r-info.pdf>
 - #7236 McDaniel Lake
Impaired by nutrients
TMDL approved by EPA on February 3, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/7236-mcdaniel-lk-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7236-mcdaniel-lk-info.pdf>

#1361 Stockton Branch

Impaired by VSS

Permit-in-lieu of TMDL approved by EPA on May 11, 2005.

PIL <http://www.dnr.mo.gov/env/wpp/tmdl/1361-stockton-br-pil.pdf>

MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0055280.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1361-stockton-br-info.pdf>

▪ **Watershed Groups Formed**

- Valley Mills Project Task Force
- Little Sac Watershed Steering Committee
- Community On-site, Stormwater, Groundwater Committees
- Community On-site Training Curriculum Group
- Fellows/McDaniel/Fulbright Project Steering Committee

▪ **Source Water Protection Plans** - none

Water Quality Monitoring

▪ **Active USGS Gaging Station(s)**

- #06918440 Sac River near Dadeville,
- #06918460 Turnback Creek above Greenfield,
- #06918600 Little Sac River near Walnut Grove,
- #06918740 Little Sac River near Morrisville,
- #06918990 Stockton Lake near Stockton,
- #06919020 Sac River at Highway J below Stockton,
- #06919500 Cedar Creek near Pleasant View, and
- #06919900 Sac River near Caplinger Mills.

▪ **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:

- Clear Creek, Sac River, S. Dry Sac River, L. Sac River, Cedar Creek, and
- Spring Branch (Ritter Springs).

Figure 103: Number of Volunteer Water Quality Sampling Events Conducted in 10290106 Sac River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	18	6	8
2	6	2	1
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

▪ **319 NPS Projects**

- Community On-Site Wastewater and Stormwater Project (G04-NPS-18)
- Valley Mill Lake Watershed Restoration Project (G02-NPS-12)
- Poultry Litter Fertility and Water Quality Demonstration (G05-NPS-23)
- Polk County Regional Grazing School (G05-NPS-06)

AgNPS SALT Projects

- Middle Little Sac River (SN014)
- Bear Creek (SN026)

Figure 104: AgNPS SALT Project Plan Goals for HUC 10290106

Watershed Name	Middle Little Sac River	Bear Creek	Total
Project #	SN014	SN026	
Watershed Size (ac)	71,942	40,722	112,664
Cropland (ac)	1,000	1,650	2,650
Cropland Treated in Plan (ac)			0
Pasture/Hayland (ac)	25,968	29,526	55,494
Pasture/Hayland Treated in Plan (ac)			0
CRP Land (ac)			0
CRP Treated in Plan (ac)			0
Urban (ac)	3,530	180	3,710
Urban Treated in Plan (ac)			0
Woodland (ac)	25,489	9,366	34,855
Woodland Treated in Plan (ac)			0
Public Land (ac)			0
Public Land Treated in Plan (ac)			0
Other (ac)	6,952		6,952
Other Treated in Plan (ac)			0
Stream (mi)			0
Stream Treated in Plan (mi)			0

Figure 105: NRCS and Partner Contributions: HUC 10290106

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	2	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	3	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	2	Critical Planting (Ac.)	2
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	12,568	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	523	Wells Decomissioned (#)	4
Nutrient Management (Ac.)	2,810	CRP Acres	667
CSP Acres	0	WRP Acres	0
WHIP Acres	321	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	11	7
Conservation Reserve Program	16	10
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	8	6
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 106:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10290106 Sac**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	2	15	2	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	1	23	1	23	1	23	2	40	3	1	1

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	2	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	1	1	0	0	0	15	64	29

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	1	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	1	1	0	0	7	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

**Pomme de Terre River Basin
(HUC 10290107)
Missouri Basin Name – Pomme de Terre River Basin**

Pomme de Terre River is a sixth order river originating in southwest Missouri, near Marshfield. The river flows in a northeast direction from Marshfield and is impounded as Pomme de Terre Lake just upstream of Hermitage, Missouri, and further downstream becomes part of Harry S. Truman Reservoir. Pomme de Terre Lake is a 7,820-acre reservoir constructed and operated by the United States Army Corps of Engineers. Pomme de Terre Dam was closed in 1961 forming the lake, which contains 113 miles of shoreline. Harry S. Truman Lake was formed in 1979 with the closing of Harry S. Truman Dam. Pomme de Terre River and Little Pomme de Terre River (north) makes up one arm of this 55,600-acre impoundment. The Pomme de Terre River watershed encompasses about 840 square miles and includes parts of six Missouri counties (Benton, Dallas, Greene, Hickory, Polk, and Webster). Major tributaries include Little Pomme de Terre River (north), Little Pomme de Terre River (south), and Lindley Creek.

The majority of the Pomme de Terre River watershed is covered in grassland (about 53%) and forest (about 37%). Most grassland is used for pasture and/or hay production for dairy and beef cattle production. Contributing factors to nonpoint source pollution includes runoff from pastures, cattle with free access to streams, and urbanization near Bolivar. Generally, stream bank stability in the basin is good with the exception of localized erosion.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** –
 - Piper Creek/Town Branch – not yet approved
- **TMDLs**
 - #1438 Little Lindley Creek
 - Impaired by BOD and VSS.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1438-little-lindley-ck-info.pdf>
 - #1444 Piper Creek (also known as Town Branch)
 - Impaired by VSS.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1444-town-branch-piper-ck-info.pdf>
- **Watershed Groups Formed**
 - Piper Creek/Town Branch, Bolivar Community Watershed Improvement Group
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06921070 Pomme de Terre River near Polk,
 - #06921200 Lindley Creek near Polk,
 - #06921325 Pomme de Terre Lake near Hermitage, and
 - #06921350 Pomme de Terre River near Hermitage.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Little Lindley Creek,
 - Pomme de Terre River,
 - Town Branch, and
 - Piper Creek.

Figure 107: Number of Volunteer Water Quality Sampling Events Conducted in 10290107 Pomme de Terre River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	12	6	4
2	5	2	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Polk County Regional Grazing School (G05-NPS-06)
- **AgNPS SALT Projects**
 - Lindley Creek (SN020)
 - Lower Pomme De Terre (SN059)
 - Hominy Creek (SN064)

Figure 108: AgNPS SALT Project Plan Goals for HUC 10290107

Watershed Name	Lindley Creek	Lower Pomme de Terre	Hominy Creek	Total
Project #	SN020	SN059	SN064	
Watershed Size (ac)		40,582	52,582	93,164
Cropland (ac)	700	547	250	1,497
Cropland Treated in Plan (ac)		400	75	475
Pasture/Hayland (ac)	23,453	14,244	37,865	75,562
Pasture/Hayland Treated in Plan (ac)		6,000	14,380	20,380
CRP Land (ac)		0	16	16
CRP Treated in Plan (ac)		0	0	0
Urban (ac)	375	18	305	698
Urban Treated in Plan (ac)		0	0	0
Woodland (ac)	15,636	21,438	14,080	51,154
Woodland Treated in Plan (ac)		2,600	400	3,000
Public Land (ac)		3,021	5	3,026
Public Land Treated in Plan (ac)		0	0	0
Other (ac)		1,314	61	1,375
Other Treated in Plan (ac)		0	0	0
Stream (mi)		75	187	262
Stream Treated in Plan (mi)		20	10	30

Figure 109:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290107**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	22	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	176	Wells Decomissioned (#)	5
Nutrient Management (Ac.)	457	CRP Acres	37
CSP Acres	0	WRP Acres	0
WHIP Acres	100	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	2
Conservation Reserve Program	2	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**South Grand River Basin
(HUC 10290108)
Missouri Basin Name – South Grand River Basin**

The South Grand River Watershed, HUC 10290108, occupies a land area of approximately 2,046 square miles in portions of eight counties in Missouri and 2 counties in Kansas. These counties include Bates, Benton, Cass, Henry, Jackson, Johnson, Pettis, and St. Clair counties in Missouri and Johnson and Miami in Kansas. Most of the watershed (98.5%) lies within Missouri.

The South Grand River is formed by the confluence of Massey Creek and East Creek approximately five miles southwest of Peculiar, Missouri. The river flows approximately 67 miles before emptying into Harry S. Truman Reservoir near Clinton, Missouri. Big Creek is the largest tributary to the South Grand. The South Grand Watershed has 13 cities and towns with populations exceeding 1,000 persons within or partially within its boundary. There are 186 third order and larger streams within the watershed. The South Grand is 66.4 miles long and becomes seventh order at the confluence of Big Creek. Total drainage area of the South Grand Watershed is 2,046 square miles with 2,016 square miles in Missouri. There are approximately 636 stream miles and 24,378 impoundment acres in the basin.

The basin is 52% grassland, 27% cropland, 18% forest, and 3% water and wetland. Major nonpoint sources of pollution are animal agriculture, mine land runoff, construction, urban pollutants, and sedimentation from channelization. Most streams on the impaired list have impacts related to coal mining activities in the watershed. Several streams within of the South Grand Watershed, including the South Grand River and Big Creek, are highly altered by channelization and levees. Inundation by Truman Reservoir has eliminated or impacted many stream miles in the lower portion of the watershed including 39% of the original South Grand River.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plan** – none
- **TMDLs**
 - #9000U Barkers Creek Tributary
 - Impaired by pH and sulfate.
 - TMDL approved by EPA on February 12, 2004.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/9000-trib-barker-ck-tmdl.pdf>
 - Information sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/9000-trib-barker-ck-info.pdf>
 - #1250 Big Creek
 - Impaired by sediment.
 - TMDL approved by EPA on October 13, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/big_creek_final_tmdl101306.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #1224 Big Otter Creek
 - Impaired by pH.
 - TMDL approved by EPA on August 17, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/big_otter_final_tmdl_mo081706.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1224-1225-big-otter-ck-and-trib-info.pdf>

#1225 Big Otter Creek Tributary

Impaired by pH.

TMDL approved by EPA on October 21, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1225-trib-big-otter-tmdl.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1224-1225-big-otter-ck-and-trib-info.pdf>

#7370 Bluestem Lake

Impaired by mercury.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>

#1282 East Fork Tebo Creek

Impaired by pH.

TMDL approved by EPA on July 24, 2006.

TMDL http://www.epa.gov/region07/water/pdf/east_fork_tebo_mo_final072406.pdf

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1282-1284-1288-1292-tebo-ck-info.pdf>

#7207 Harry S. Truman Lake

Impaired by naturally occurring manganese.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7207-truman-lk-info.pdf>

#1251 Honey Creek

Impaired by sulfate.

TMDL approved by EPA on August 17, 2006.

TMDL http://www.epa.gov/region07/water/pdf/honey_crk_final_tmdl_mo081706.pdf

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1251-honey-ck-info.pdf>

#1284 Middle Fork Tebo Creek

Impaired by sulfate.

TMDL approved by EPA on February 12, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/tebo-ck-final-tmdl.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1282-1284-1288-1292-tebo-ck-info.pdf>

#1288 Middle Fork Tebo Creek Tributary

Impaired by sulfate and pH.

TMDL approved by EPA on February 12, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1284-1288-1292-tebo-ck-tmdl.pdf>

Information sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1282-1284-1288-1292-tebo-ck-info.pdf>

#1292 West Fork Tebo Creek

Impaired by sulfate.

TMDL approved by EPA on February 12, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1284-1288-1292-tebo-ck-tmdl.pdf>

Information sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1282-1284-1288-1292-tebo-ck-info.pdf>

#7212 Winnebago Lake

Impaired by mercury.

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>

- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Leeton (PWSSID # 1010460)
Groundwater

[Water Quality Monitoring](#)

- **Active USGS Gaging Station(s)**
 - #06921582 South Grand River below Freeman, and
 - #06921760 South Grand River near Clinton.
- **Stream Teams** – The following water bodies were monitored between June 1, 2006 and February 28, 2007, in the Missouri portion of this watershed:
 - Holwell Branch,
 - Tebo Creek,
 - Massey Creek, and
 - An unnamed tributary of Moreau Creek.

Figure 110: Number of Volunteer Water Quality Sampling Events Conducted in 10290108 South Grand River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	0	1
2	0	0	0
3	0	0	0
4	0	0	0

[Active Nonpoint Source Projects](#)

- **319 NPS Projects**
 - South Grand River Headwaters Watershed Water Quality Education (G05-NPS-03)
- **AgNPS SALT Projects**
 - South Grand River (SN044)

Figure 111: AgNPS SALT Project Plan Goals for HUC 10290108

Watershed Name	South Grand River
Project #	SN044
Watershed Size (ac)	49,565
Cropland (ac)	18,150
Cropland Treated in Plan (ac)	7,623
Pasture/Hayland (ac)	24,395
Pasture/Hayland Treated in Plan (ac)	4,608
CRP Land (ac)	1,050
CRP Treated in Plan (ac)	0
Urban (ac)	5
Urban Treated in Plan (ac)	0
Woodland (ac)	4,758
Woodland Treated in Plan (ac)	100
Public Land (ac)	631
Public Land Treated in Plan (ac)	0
Other (ac)	576
Other Treated in Plan (ac)	0
Stream (mi)	23
Stream Treated in Plan (mi)	5

Figure 112:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290108**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	1,200
Field Border (Ft.)	36,105	Terraces (Ft.)	42,912
Filter Strip (Ac.)	57	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	28	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	30	Critical Planting (Ac.)	74
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	10
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	293	Wells Decomissioned (#)	6
Nutrient Management (Ac.)	15,044	CRP Acres	2520
CSP Acres	0	WRP Acres	344
WHIP Acres	155	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	1
Conservation Reserve Program	59	42
Conservation Security Program	0	0
Wetland Reserve Program	0	5
Wildlife Hab. Incentive Program	3	4
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Lake of the Ozarks Basin
(HUC 10290109)
Missouri Basin Name – Lake of the Ozarks Basin**

The Lake of the Ozarks basin, HUC 10290109, is found in central Missouri in the counties of Pulaski, Miller, Camden, Morgan, Laclede, Benton, and Hickory. The Lake of the Ozarks was formed in 1931 in the western half of the East Osage River Basin. A number of losing streams and springs exist within the area. Truman Dam and Bagnell Dam on the Osage River have significantly impacted the hydrology of the region. There are over 85,000 people served in the basin by either public supplied surface water (9%), public supplied groundwater (39%), or private wells (52%).

Karst features are common and soils are generally acidic with moderate to low fertility. Land use in the basin is listed as approximately 54.8% forest, 39.7% grassland, 2.5% open water, 1.6% cropland, and 1.6% urban. Erosion rates are generally low although new housing developments, road construction, intensive confinement of livestock and overgrazing have denuded the land, causing locally increased erosion and sediment pollution. Animal feeding operations, gravel mining, failing septic systems, urban construction projects, and stream flow alterations and channel degradation from discharge of impounded water for hydroelectric power result in nonpoint source pollution in the basin.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** –
 - Lake of the Ozarks – Group working with Union Electric on Shoreline Protection Plan and intend to apply for a watershed planning grant.
- **TMDLs**
 - #1145 Dry Auglaise Creek
Impairment is unknown.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1145-dry-auglaise-ck-info.pdf>
 - #7205 Lake of the Ozarks
Impaired by fish trauma, gas supersaturation, and low DO.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7205-lk-ozarks-info.pdf>
- **Watershed Groups Formed**
 - Lake of the Ozarks Watershed Alliance
- **Source Water Protection Plans**
 - City of Laurie (PWSSID #3024413) – pending issue*
 - City of Osage Beach (PWSSID #3011346 & #3011367)*
Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06922440 Harry S Truman Reservoir at Warsaw, and
 - #06925500 Lake of the Ozarks near Bagnell.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Big Buffalo Creek,
 - Archer Creek,
 - Deer Creek, and
 - Wet Glaiize Creek.

Figure 113: Number of Volunteer Water Quality Sampling Events Conducted in 10290109 Lake of the Ozarks Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Deer Creek (SN018)
 - Dry Auglaize (SN048)
 - Lower Cole Camp (SN083)

Figure 114: AgNPS SALT Project Plan Goals for HUC 10290109

Watershed Name	Deer Creek	Dry Auglaize	Lower Cole Camp	Total
Project #	SN018	SN048	SN083	
Watershed Size (ac)	46,378	81,490	33,466	161,334
Cropland (ac)		300	2,500	2,800
Cropland Treated in Plan (ac)		90	200	290
Pasture/Hayland (ac)	11,973	54,726	8,362	75,061
Pasture/Hayland Treated in Plan (ac)	4,260	10,945	3,200	18,405
CRP Land (ac)		64	0	64
CRP Treated in Plan (ac)		64	0	64
Urban (ac)	8,550	2,886	311	11,747
Urban Treated in Plan (ac)	0	0	150	150
Woodland (ac)	27,626	22,579	20,093	70,298
Woodland Treated in Plan (ac)	350	4,516	2,200	7,066
Public Land (ac)	5,248	25	400	5,673
Public Land Treated in Plan (ac)	0	0	100	100
Other (ac)	676	910	1,800	3,386
Other Treated in Plan (ac)	0	0	100	100
Stream (mi)	30	42	80	152
Stream Treated in Plan (mi)	3	10	6	19

Figure 115:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290109**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	19	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	1	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	14	Critical Planting (Ac.)	7
Stream/Shore protection (Ft.)	850	Grade Stab. Structures (#)	10
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	189	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	741	CRP Acres	42
CSP Acres	0	WRP Acres	0
WHIP Acres	128	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	9	1
Conservation Reserve Program	3	3
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	2	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Niangua River Basin
(HUC 10290110)
Missouri Basin Name – Niangua River Basin**

The Niangua River, HUC 10290110, is a sixth order tributary of the Osage River in west central Missouri. It originates in northern Webster County, at the confluence of its East and West Forks, about 7 miles north of Marshfield. The river meanders 120 miles to the north where it joins the Osage River (Osage Arm, Lake of the Ozarks). The largest tributary is the Little Niangua River, a fifth order stream which drains about one third of the entire watershed which originates in central Dallas County. It meanders to the north and east 59 miles before joining the Niangua River. The lower 21 miles of the Niangua and lower 10 miles of the Little Niangua were inundated in 1931 by Lake of the Ozarks. The Niangua Watershed includes portions of six counties, Webster, Dallas, Camden, Hickory, Laclede and Benton. Only 500 acres of Benton County is within the watershed and includes negligible population and development.

Most of the streams in the watershed are designated for whole body contact recreation and many streams are designated for cool-water fishing. A portion of Little Niangua River is protected as an Outstanding State Resource Water (OSRW). Major nonpoint source pollution in the watershed comes from animal agriculture due to large numbers of cattle in these counties. Other significant sources of pollution are from individual septic tanks especially around the Lake of the Ozarks, and improper sand and gravel mining.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs** - none
- **Watershed Groups Formed**
 - Bennett Spring Area Water Protection Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06923700 Niangua River below Bennett Spring, and
 - #06923950 Niangua River at Tunnel Dam near Macks Creek.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Bank Branch,
 - Mill Creek,
 - Little Niangua River,
 - Niangua River,
 - Spencer Creek, and
 - West Fork Niangua River.

Figure 116: Number of Volunteer Water Quality Sampling Events Conducted in 10290110 Niangua River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	10	5	4
2	26	10	2
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Greasy Creek (SN072)

Figure 117: AgNPS SALT Project Plan Goals for HUC 10290110

Watershed Name	Greasy Creek
Project #	SN072
Watershed Size (ac)	46,227
Cropland (ac)	500
Cropland Treated in Plan (ac)	200
Pasture/Hayland (ac)	29,377
Pasture/Hayland Treated in Plan (ac)	9,005
CRP Land (ac)	0
CRP Treated in Plan (ac)	0
Urban (ac)	142
Urban Treated in Plan (ac)	0
Woodland (ac)	16,107
Woodland Treated in Plan (ac)	450
Public Land (ac)	0
Public Land Treated in Plan (ac)	0
Other (ac)	101
Other Treated in Plan (ac)	0
Stream (mi)	32
Stream Treated in Plan (mi)	8

Figure 118: NRCS and Partner Contributions: HUC 10290110

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	1	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	22	Critical Planting (Ac.)	1
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	79	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	433	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	153	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	4	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	4
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 119:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10290110 Niangua**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans			
Planning	1	3	19	0	0	0	0	0			
					acres	acres	acres	acres			
					0	0	0	0			
	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance						
Total Maximum Daily Loads	0	0	0	0	0						
	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	0	0	0	0	3	59	5	0	0
	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events				
Education/Information	0	0	0	0	0	0	0				
	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed			
Water Quality Monitoring	1	3	0	0	0	20	12	3			
	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation							
Groundwater Protection	0	0	0	0							
	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced					
Best Management Practices	0	0	0	0	0	0					
	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out				
Agricultural	0	0	0	0	0	0	0				

**Lower Osage River Basin
(HUC 10290111)
Missouri Basin Name – Lower Osage River Basin**

The Lower Osage River Basin, HUC 10290111, is found in central Missouri in the counties of Osage, Maries, Cole, Pulaski, Miller, Camden, and Morgan. The basin begins at Bagnell Dam where the Lake of the Ozarks enters the Osage River in Miller County. The river runs in a northwesterly direction until it empties into the Missouri River in Cole County. The major tributaries to the Osage River are the Tavern Creek and the Maries River. The basin is primarily rural with animal agriculture as the primary land use. Nonpoint source pollution in the watershed comes from improper sand and gravel mining, animal agriculture and construction in the Osage Beach and Lake Ozark areas. Hydroelectric power generation using the discharge of impounded water of the Osage River has caused considerable stream flow alteration and channel degradation to the Osage River below Bagnell Dam and has caused multiple fish kills below Bagnell Dam.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plan** – none
- **TMDLs**
#1031 Osage River
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Dixon (PWSSID # 3010219)
City of Osage Beach (PWSSID # 3010196)
Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06926000 Osage River near Bagnell,
 - #06926510 Osage River below St. Thomas, and
 - #06927000 Maries River at Westphalia.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Barren Fork (Tavern Creek)
 - Big Saline Creek,
 - Brushy Fork (Tavern Creek)
 - Tavern Creek, and
 - Maries River.

Figure 120: Number of Volunteer Water Quality Sampling Events Conducted in 10290111 Lower Osage River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	14	5	7
2	0	2	1
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - Upper Big Maries River (SN050)
 - Lower Big Maries River (SN051)
 - Upper Tavern Creek (SN061)
 - Little Maries River (SN074)
 - Little Maries Creek (SN088)

Figure 121: AgNPS SALT Project Plan Goals for HUC 10290111

Watershed Name	Upper Big Maries River	Lower Big Maries River	Upper Tavern Creek	Little Maries River	Little Maries Creek	Total
Project #	SN050	SN051	SN061	SN074	SN088	
Watershed Size (ac)	61,689	67,863	42,682	38,616	1,900	212,750
Cropland (ac)	118	2,664	300	4,634	200	7,916
Cropland Treated in Plan (ac)	37	1,000	80	912	106	2,135
Pasture/Hayland (ac)	33,568	26,496	20,292	18,755	9,300	108,411
Pasture/Hayland Treated in Plan (ac)	8,900	10,000	6,700	3,589	3,066	32,255
CRP Land (ac)	0	110	0	0	85	195
CRP Treated in Plan (ac)	0	0	0	0	0	0
Urban (ac)	141	135	97	0	15	388
Urban Treated in Plan (ac)	0	0	0	0	0	0
Woodland (ac)	27,628	38,354	20,436	14,960	9,400	110,778
Woodland Treated in Plan (ac)	8,288	9,000	3,000	1,988	1,508	23,784
Public Land (ac)	234	104	28	267	0	633
Public Land Treated in Plan (ac)	0	0	0	0	0	0
Other (ac)	0	0	1,529	0	0	1,529
Other Treated in Plan (ac)	0	0	0	0	0	0
Stream (mi)	315	279	82	164	96	936
Stream Treated in Plan (mi)	46	67	12	20	2	147

Figure 122: NRCS and Partner Contributions: HUC 10290111

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	525
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	4
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	3
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	213	Wells Decomissioned (#)	1
Nutrient Management (Ac.)	1,112	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	69	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	5	8
Conservation Reserve Program	17	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Upper Gasconade River Basin
(HUC 10290201)
Missouri Basin Name – Upper Gasconade River Basin**

The Upper Gasconade River basin, HUC 10290201, includes portions of Wright, Webster, Laclede, Camden, Texas, and Pulaski counties. The Gasconade River meanders north to northeast until it joins the Missouri River. The Upper and Lower Gasconade River watersheds drain 2,806 square miles. The Gasconade River is 271 miles long from mouth to headwaters with 263 miles having permanent flow. The entire Gasconade River watershed is reported to have 76 springs and the largest concentration of big springs in the state. The karst topography causes losing portions in the Upper basin in the Osage Fork, Roubidoux, and North Cobb creeks, and Gasconade River.

The Gasconade River watershed is mostly rural with low population density and high farmland density. The most populated area in the Upper basin is in Pulaski County, which is experiencing land development from growth surrounding Fort Leonard Wood. The basin has 49% grassland and cropland, 46% forest, with the remainder as urban and water areas. Designated uses on water bodies within the watershed are warm water aquatic life protection (fishing) and livestock and wildlife watering. Nonpoint source pollution results from animal agriculture, sand and gravel mining, residential septic, construction, and impervious surface runoff in urbanized areas. The Upper Gasconade River watershed is poorly forested along major segments of its tributaries with only 38% of the major stream segments with forested corridors.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #1505 East Whetstone Creek
Impaired by BOD.
TMDL approved by EPA on January 28, 2002.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1505-east-whetstone-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1505-whetstone-ck-info.pdf>
 - #1455 Gasconade River
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed**
 - Osage Fork of the Gasconade 319 Project Steering Committee
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Dixon** (PWSSID # 3010219)
Groundwater
 - City of Norwood** (PWSSID # 5010585)
Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06928000 Gasconade River near Hazelgreen,
 - #06928300 Roubidoux Creek above Ft. Leonard Wood,
 - #06928430 Roubidoux Creek below Ft. Leonard Wood, and
 - #06928440 Roubidoux Spring at Waynesville.

- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Gasconade River, and
 - Unnamed Tributary to Osage Fork Gasconade River.

Figure 123: Number of Volunteer Water Quality Sampling Events Conducted in 10290201 Upper Gasconade River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	6	1	1
2	3	1	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Osage Fork Animal Waste and Nutrient Management Implementation Project (G04-NPS-11)
- **AgNPS SALT Projects**
 - Whetstone Creek (SN030)
 - Woods Fork-Gasconade (SN082)

Figure 124: AgNPS SALT Project Plan Goals for HUC 10290201

Watershed Name	Whetstone Creek	Woods Fork - Gasconade	Total
Project #	SN030	SN082	
Watershed Size (ac)	68,040	41,600	109,640
Cropland (ac)	2,792	250	3,042
Cropland Treated in Plan (ac)		75	75
Pasture/Hayland (ac)	20,936	24,710	45,646
Pasture/Hayland Treated in Plan (ac)		5,570	5,570
CRP Land (ac)		0	0
CRP Treated in Plan (ac)		0	0
Urban (ac)		371	371
Urban Treated in Plan (ac)		0	0
Woodland (ac)	22,332	16,152	38,484
Woodland Treated in Plan (ac)		1,000	1,000
Public Land (ac)		117	117
Public Land Treated in Plan (ac)		0	0
Other (ac)	465	0	465
Other Treated in Plan (ac)		0	0
Stream (mi)		33	33
Stream Treated in Plan (mi)		2	2

Figure 125:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290201**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	22	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	1
Nutrient Management (Ac.)	520	CRP Acres	31
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	5	3
Conservation Reserve Program	2	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 126:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10290201 Upper Gasconade**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
					acres	acres	acres	acres
Planning	1	0	0	0	0	0	0	0
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	1	180	0	0	0	0	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	4	750	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	1	0	0	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	1	0	0	196	100	2	0

Big Piney River Basin
(HUC 10290202)
Missouri Basin Name – Big Piney River Basin

The Big Piney River basin, HUC 10290202, occupies an area of approximately 755 square miles in portions of Texas, Howell, Phelps, and Pulaski counties in Missouri. Most of the watershed (74%) lies within Texas County, while Pulaski, Phelps, and Howell counties contain 14%, 12%, and less than 1% of the watershed respectively. The Big Piney River begins as a first order stream approximately 4 miles northwest of Cabool, Missouri. From its beginnings, the stream flows in a southeasterly direction for approximately six miles before turning northeast and flows slightly over 100 miles before emptying into the Gasconade River 2.8 river miles north of Interstate 44. The geology of the Big Piney Watershed (primarily consisting of soluble rock formations of dolomites and sandstone dolomites), in combination with an average annual precipitation of over 42 inches has created a karst landscape within the watershed. This karst landscape is characterized by a close relationship between the surface water and ground water systems. There are 91 third order and larger streams within the watershed. These streams account for a total of approximately 602 stream miles or 30% of the total stream miles within the watershed. The Big Piney River is 110.5 miles long and becomes sixth order at the confluence of West Piney Creek. There are five major subwatersheds (based on 5th order streams) within the watershed. These include the subwatersheds of Spring Creek, West Piney Creek, Arthur Creek, Big Paddy Creek, and Bald Ridge Creek.

Approximately 62.7% of the watershed is forested, 36.6% grassland, 0.1% cropland and 0.6% urban, and 0.1% water. Approximately 264 stream miles and 10 impoundment acres within the Big Piney Watershed are classified and have designated beneficial uses. Nonpoint source pollution problems result from livestock access to streams, and uncontrolled septic discharge. Also, all waters within the watershed are currently (2004) included in a statewide fish consumption advisory for largemouth bass for mercury. Periodically elevated phosphorous levels and fecal coliform counts have been noted at a few water quality sample sites within the watershed and two springs within the watershed have been determined to suffer from probable septic contamination. In addition, detections of pesticides and/or elevated levels of other constituents have been noted from some ground water and surface water quality sites.

A 0.4 mile segment of Brushy Creek is included on 2002 303(d) listing of impaired waters for biochemical oxygen demand and volatile suspended solids with the source being the Houston Brushy Creek Wastewater Treatment Plant.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plan** – none
- **TMDLs**
 - #1592 Brushy Creek
 - Impaired by BOD and VSS.
 - TMDL approved by EPA on November 30, 2005.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1592-brushy-ck-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1592-brushy-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Cabool (PWSSID # 4010120)
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06930000 Big Piney River near Big Piney,
 - #06930060 Big Piney River below Ft. Leonard Wood, and
 - #06930450 Big Piney River at Devil’s Elbow.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Big Piney River.

Figure 127: Number of Volunteer Water Quality Sampling Events Conducted in 10290202 Big Piney River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	0	0	0
2	5	2	1
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 128:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290202**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	3,073
CSP Acres	0	WRP Acres	0
WHIP Acres	74	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	1
Conservation Reserve Program	1	0
Conservation Security Program	0	0
Wetland Reserve Program	0	13
Wildlife Hab. Incentive Program	2	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Lower Gasconade River Basin
(HUC 10290203)
Missouri Basin Name – Lower Gasconade River Basin**

The Lower Gasconade River Basin, HUC 10290203 is located in portions of Gasconade, Osage, Maries, Texas, Dent, Phelps, and Pulaski counties. The karst topography causes losing stream portions in the Little Piney, Spring, and Mill creeks, and the Gasconade River. There are a large number of springs in the watershed with a major concentration in the Little Piney Creek watershed. Little Piney Creek for 25 miles has been protected as an Outstanding State Resource Water (OSRW) in Missouri.

As a whole, the Gasconade River watershed is rural with low population density and high farmland density. Watershed areas of Maries, Osage, and Gasconade counties have low population density. The basin has approximately 33% grassland and cropland and 66% forest. Nonpoint source pollution in the watershed results from sand and gravel mining, runoff from farms, mining operations, construction sites, forest operations, residential septics, and impervious surface in urbanized areas. Forty-six percent of the major segments of the watershed have forested corridors.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #1455 Gasconade River
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #1529 Little Beaver Creek
 - Impaired by VSS.
 - Permit-in-lieu of TMDL approved by EPA on August 9, 2006.
 - PIL <http://www.dnr.mo.gov/env/wpp/tmdl/1529-little-beaver-ck-pil.pdf>
 - MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0047023.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1529-little-beaver-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID) *City of Belle* (PWSSID # 3010054)
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06930800 Gasconade River above Jerome,
 - #06932000 Little Piney Creek at Newburg,
 - #06933500 Gasconade River at Jerome, and
 - #06934000 Gasconade River near Rich Fountain.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Beaver Creek
 - Richland Creek,
 - Pointers Creek, and
 - Unnamed Tributary to Beaver Creek.

Figure 129: Number of Volunteer Water Quality Sampling Events Conducted in 10290203 Lower Gasconade River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	9	3	3
2	0	0	0
3	3	1	1
4	0	0	0

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 130:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10290203**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	1,900
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	6
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	6
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	107	CRP Acres	61
CSP Acres	0	WRP Acres	0
WHIP Acres	313	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	0
Conservation Reserve Program	12	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	3	5
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Missouri - Crooked River Basin
(HUC 10300101)**

Missouri Basin Name – Missouri River Mainstem-Kansas City to Glasgow

The Lower Missouri-Crooked, HUC 10300101, consists of the land drained by the Missouri River and its tributaries from just downstream of its confluence with the Kansas River to Glasgow, Missouri. The drainages of the Grand River, Chariton River, and Little Chariton River are not included in the basin. It covers an area of approximately 2,650 square miles, 95% of which lies in western Missouri, with the remainder in eastern Kansas. Missouri counties partially contained in this watershed include Clay, Caldwell, Howard, Carroll, Johnson, Chariton, Clinton, Lafayette, Jackson, Cass, Platte, Ray, and Saline. The major tributaries of the Missouri that drain the basin are the Blue River, Little Blue River, Fishing River, Crooked River, Sni-a-Bar Creek, and Wakenda Creek. The only sizable lakes in the basin are oxbows near the Missouri, such as Cooley Lake, Jackass Bend, Sunshine Lake, and Cut-Off Lake.

The Missouri portion of the basin is largely agricultural with 43% row crops, 33% grasslands and 18% forest. Kansas City and surrounding areas contribute 4% urban area, and 1% is open water. There are 758.1 miles of classified stream in the basin, of which 5.2 miles, or 0.7%, are impaired by point source discharges. The major nonpoint source issue is the degradation of aquatic habitat in 97% of the watershed, resulting from channelization (27% of the streams), other streambank alterations, and loss of riparian corridors. Soil erosion, subsequent in-stream sediment deposition, and runoff of fertilizers, pesticides, and animal wastes, and urban storm water are also concerns. The majority of the people living in the basin receive their drinking water from municipal supplies drawn from the Missouri River or its alluvial aquifer.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – NRCS Rapid Watershed Assessment includes planning efforts for the entire HUC 8.
- **TMDLs**
 - #0417 Blue River
 - Impaired by chlordane.
 - TMDL approved by EPA on November 19, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0417-0418-0419-0421-blue-river-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0417-0418-0419-0421-blue-r-info.pdf>
 - #0418 Blue River
 - Impaired by chlordane.
 - TMDL approved by EPA on November 19, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0417-0418-0419-0421-blue-river-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0417-0418-0419-0421-blue-r-info.pdf>
 - #0419 Blue River
 - Impaired by chlordane.
 - TMDL approved by EPA on November 19, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0417-0418-0419-0421-blue-river-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0417-0418-0419-0421-blue-r-info.pdf>

- #0421 Blue River
 Impaired by chlordane.
 TMDL approved by EPA on November 19, 2001.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0417-0418-0419-0421-blue-river-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0417-0418-0419-0421-blue-r-info.pdf>
- #7090 Cooley Lake
 Impaired by mercury.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #3413 Horseshoe Creek
 Impaired by BOD and ammonia nitrogen.
 Permit-in-lieu of TMDL approved by EPA on April 21, 2006.
 PIL (not available online)
 MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0130371.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3413-horseshoe-ck-info.pdf>
- #0420 Indian Creek
 Impaired by fecal coliform.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0420-indian-ck-info.pdf>
- #0423 Little Blue River
 Impaired by mercury.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #7097 Longview Reservoir
 Impaired by mercury.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #0356 Missouri River
 Impaired by chlordane and PCBs.
 TMDL approved by EPA on November 3, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- #0701 Missouri River
 Impaired by chlordane and PCBs.
 TMDL approved by EPA on November 3, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- #7087 Watkins Mill Lake
 Impaired by fecal coliform.
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7087-watkins-mill-lk-info.pdf>
- #0400 West Fork Sni-A-Bar Creek
 Impaired by BOD and VSS.
 TMDL approved by EPA on January 6, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0400-west-fork-sni-a-bar-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0400-w-fork-sni-a-bar-info.pdf>
- **Watershed Groups Formed**
 - Kansas City Metropolitan Water Quality Initiative Stakeholders Advisory Committee
 - McCroskie Creek Project Steering Committee
 - Metro Green Advisory Committee
 - Missouri River Conservation Working Group
 - Upper Blue River Conservation Working Group

- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
 - City of Hardin* (PWSSID # 1010346)
 - Groundwater
 - City of Independence* (PWSSID # 1010399)
 - Groundwater
 - City of Slater* (PWSSID # 2010745)
 - Groundwater
 - City of Higginsville* (PWSSID #1010363)
 - Surface Water
 - Tri County Water Authority* (PWSSID #1071079) – pending issue
 - Groundwater
 - City of Norborne* (PWSSID #2010578) – pending issue
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06893000 Missouri River at Kansas City,
 - #06893150 Blue River at Blue Ridge Pkwy in Kansas City,
 - #06893400 Indian Creek at 103rd Street in Kansas City,
 - #06893500 Blue River at Kansas City,
 - #06893557 Brush Creek at Ward Parkway in Kansas City,
 - #06893562 Brush Creek at Rockhill Road in Kansas City,
 - #06893578 Blue River at Stadium Drive in Kansas City,
 - #06893791 Longview Reservoir at Kansas City,
 - #06893885 Blue Springs Reservoir near Blue Springs,
 - #06894000 Little Blue River near Lake City, and
 - #06895500 Missouri River at Waverly.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Blue River,
 - Indian Creek
 - Little Blue River,
 - Shoal Creek,
 - Rock Creek, and
 - Rush Creek.

Figure 131: Number of Volunteer Water Quality Sampling Events Conducted in 10300101 Lower Missouri – Crooked River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	9	2	4
2	6	14	3
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

▪ **319 NPS Projects**

- Kansas City Metropolitan Water Quality Initiative (G04-NPS-05)
- McCroskie Creek Watershed Project (G04-NPS-01)

AgNPS SALT Projects

- McCroskie Creek (SN031)

Figure 132: AgNPS SALT Project Plan Goals for HUC 10300101

Watershed Name	McCroskie Creek
Project #	SN031
Watershed Size (ac)	43,744
Cropland (ac)	24,565
Cropland Treated in Plan (ac)	
Pasture/Hayland (ac)	15,803
Pasture/Hayland Treated in Plan (ac)	
CRP Land (ac)	
CRP Treated in Plan (ac)	
Urban (ac)	
Urban Treated in Plan (ac)	
Woodland (ac)	3,070
Woodland Treated in Plan (ac)	
Public Land (ac)	
Public Land Treated in Plan (ac)	
Other (ac)	298
Other Treated in Plan (ac)	
Stream (mi)	98
Stream Treated in Plan (mi)	

Figure 133:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10300101**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	8057
Field Border (Ft.)	61,965	Terraces (Ft.)	58
Filter Strip (Ac.)	62	Lined WW or outlet (Ft.)	426945
Grassed waterways (Ac.)	58	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	60	Critical Planting (Ac.)	40
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	32
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	42	Wells Decomissioned (#)	3
Nutrient Management (Ac.)	9147	CRP Acres	2774
CSP Acres	0	WRP Acres	275
WHIP Acres	111	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	2
Conservation Reserve Program	76	43
Conservation Security Program	1	0
Wetland Reserve Program	1	1
Wildlife Hab. Incentive Program	2	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 134:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10300101 Lower Missouri - Crooked**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	0	0	0	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	1	22	1	35	1	350	1	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	700	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	1	1	3	4	9

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	1	4	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	13	347	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	1	1	0	24	0	0	0

**Lower Missouri-Moreau River Basin
(HUC 10300102)
Missouri Basin Name – Missouri River Mainstem - Glasgow to Hermann**

The Missouri River Mainstem from Glasgow to Hermann, HUC 10300102, lies in the central Missouri counties of Cole, Osage, Howard, Gasconade, Morgan, Randolph, Cooper, Chariton, Saline, Callaway, Boone, Audrain, Miller, Montgomery, and Moniteau. The Moreau River is formed by the union of North Moreau Creek and South Moreau Creek, and empties into the Missouri River just south of Jefferson City, Missouri in Cole County. The watershed is approximately 584 square miles. The Moreau is a 6th order stream with base flows that are poorly sustained.

Current land use in the basin is 2.6% urban, 5.8% woodland, 18.4% forest, 32.4% grassland, and 40.5% cropland. The cities of Jefferson City, California, Versailles, Tipton, Eldon, and Wardsville ring the perimeter of the basin. Cropland and grassland uses predominate in the western portion of the basin. Forest, grassland and woodland predominate in the eastern half of the basin.

Nonpoint source pollution in 1997 included soil erosion from cropland and pasture. Other sources of pollution include in-stream erosion and nutrient-loaded runoff from crop fields, livestock pastures, and residential septic fields. The clearing of riparian corridors contributes to streambank instability and allows sediment laden runoff to reach streams. Inspection of aerial photos of the mainstem Moreau River indicated 16% of streambanks had virtually no tree corridor and 40% had one row to 25 meters of continuous tree coverage. Forty-four percent had a tree corridor at least 26 meters wide. An appropriate goal for a wooded riparian border is 100-300 feet (33-99 meters) wide.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - A plan for Bonne Femme Creek HUC 10300102130
Status - developed through G03-NPS-16
 - 9-element plan for Hinkson Creek HUC 10300102120001, 10300102120002
Status - being developed through G04-NPS-23
- **TMDLs**
 - #7186 Ben Branch Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0709 Bynum Creek
Impaired by NVSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0709-bynum-ck-info.pdf>
 - #0737 Cedar Creek
Impaired by pH and sulfate.
TMDL approved by EPA on January 30, 2001.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0737-cedar-creek-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0737-cedar-ck-info.pdf>
 - Impaired by sulfate.
TMDL approved by EPA on July 14, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0742-manacle-0737-cedar-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0742-manacle-0737-cedar-ck-info.pdf>

- #0811 E. Brush Creek
Impaired by nutrients, BOD, and NFR.
Permit-in-Lieu of TMDL approved by EPA on December 11, 2006.
PIL <http://www.dnr.mo.gov/env/wpp/tmdl/0811-e-brush-ck-tmdl-pil.pdf>
MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0023281.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0811-e-brush-ck-info.pdf>
- #1007 Hinkson Creek
Impaired by unknown pollutants.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1007-1008-hinkson-ck-info.pdf>
- #1008 Hinkson Creek
Impaired by unknown pollutants.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1007-1008-hinkson-ck-info.pdf>
- #7388 Hough Park Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #1016 Kelley Branch
Impaired by NVSS (sediment).
TMDL approved by EPA on December 19, 2003.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1016-kelley-br-1014-rocky-fk-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1016-kelley-br-info.pdf>
- #7436 Lake of the Woods
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #0742 Manacle Creek
Impaired by low pH and sulfate.
TMDL approved by EPA on July 14, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0742-manacle-0737-cedar-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0742-manacle-0737-cedar-ck-info.pdf>
- #0701 Missouri River
Impaired by chlordane and PCBs.
TMDL approved by EPA on November 3, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- #0942 North Moreau Creek
Impaired by NFR.
TMDL approved by EPA on December 1, 1999.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0942-n-moreau-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0942-n-moreau-ck-info.pdf>
- #1014 Rocky Fork
Impaired by NVSS.
TMDL approved by EPA on December 19, 2003.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/1016-kelley-br-1014-rocky-fk-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/1014-rocky-fork-info.pdf>
- #0710 Stinson Creek
Impaired by BOD and VSS.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0710-stinson-ck-info.pdf>

#0959 Straight Fork

Impaired by VSS.

Permit-in-lieu of TMDL approved by EPA on December 11, 2006.

PIL <http://www.dnr.mo.gov/env/wpp/tmdl/0959-straight-fk-pil.pdf>

MSOP <http://www.dnr.mo.gov/env/wpp/permits/issued/0094927.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0959-straight-fork-info.pdf>

▪ ***Watershed Groups Formed***

- Hinkson Creek Steering Committee
- Bonne Femme Watershed Policy Committee
- Bonne Femme Watershed Stakeholder Committee
- Columbia Show-Me Yard and Neighborhood Technical Committee
- Wonderful World of Water Festival Planning Committee

▪ ***Source Water Protection Plans –***

Boone County PWSD #9 (PWSSID #3024058) – pending issue

City of California (PWSSID #3010124) – pending issue

City of New Franklin (PWSSID #2010566) – pending issue

Water Quality Monitoring

▪ ***Active USGS Gaging Stations***

- #06906500 Missouri River at Glasgow,
- #06909000 Missouri River at Boonville,
- #06909500 Moniteau Creek near Fayette, and
- #06910750 Moreau River near Jefferson City.

▪ ***Stream Teams*** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:

- Bass Creek,
- Bear Creek
- Bonne Femme Creek,
- Callahan Creek,
- Cedar Creek
- Clear Creek
- Flat Branch,
- Gans Creek,
- Grindstone Creek,
- Hinkson Creek,
- Hominy Creek,
- Logan Creek,
- Little Bonne Femme
- Missouri River
- North Fork Grindstone Creek,
- South Fork Grindstone Creek,
- Stinson Creek,
- Unnamed Tributary to Boggs Creek, and
- Unnamed Tributary to Missouri River.

Figure 135: Number of Volunteer Water Quality Sampling Events Conducted in 10300102 Lower Missouri – Moreau River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	33	10	13
2	6	8	2
3	6	2	2
4	1	2	2

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Land-use Planning and Water Quality Restoration in Bonne Femme Creek (G03-NPS-16)
 - Hinkson Creek Watershed Restoration Project (G04-NPS-23)
 - Jefferson City Watershed Festival and Associated Educational Activities (G06-NPS-17)
- **AgNPS SALT Projects**
 - Upper Petite Saline Creek (SN013)
 - Upper Hinkson Creek (SN019)
 - Upper Moreau River (SN023)
 - Upper Moniteau Creek (SN057)
 - Lower Moniteau Creek (SN062)
 - Grays Creek (SN085)

Figure 136: AgNPS SALT Project Plan Goals for HUC 10300102

Watershed Name	Upper Petite Saline Creek	Upper Hinkson Creek	Upper Moreau River	Upper Moniteau Creek	Lower Moniteau Creek	Grays Creek	Total
Project #	SN013	SN019	SN023	SN057	SN062	SN085	
Watershed Size (ac)	50,146	32,918	48,845	77,347	71,398	35,801	316,455
Cropland (ac)	19,682	5,925	14,400	16,590	8,044	6,800	71,441
Cropland Treated in Plan (ac)				7,299	2,517	2,950	12,766
Pasture/Hayland (ac)	24,621	13,826	24,100	44,832	35,194	19,715	162,288
Pasture/Hayland Treated in Plan (ac)				2,350	7,860	4,295	14,505
CRP Land (ac)			2,500	1,840	1,113	70	5,523
CRP Treated in Plan (ac)				0	0	0	0
Urban (ac)		6,582	1,600	108	218	5,500	14,008
Urban Treated in Plan (ac)				0	0	1,000	1,000
Woodland (ac)	5,767	6,254	4,000	12,462	23,062	3,000	54,545
Woodland Treated in Plan (ac)				220	350	400	970
Public Land (ac)			800	1,462	3,484	716	6,462
Public Land Treated in Plan (ac)				0	0	200	200
Other (ac)			900	53	283	0	1,236
Other Treated in Plan (ac)				0	0	0	0
Stream (mi)			38	206	231	97	572
Stream Treated in Plan (mi)				13	21	15	49

Figure 137:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10300102**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	8057
Field Border (Ft.)	61,965	Terraces (Ft.)	58
Filter Strip (Ac.)	62	Lined WW or outlet (Ft.)	426945
Grassed waterways (Ac.)	58	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	60	Critical Planting (Ac.)	40
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	32
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	42	Wells Decommissioned (#)	3
Nutrient Management (Ac.)	9147	CRP Acres	2374
CSP Acres	0	WRP Acres	0
WHIP Acres	783	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	9	9
Conservation Reserve Program	139	55
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	11	13
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 138:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10300102 Lower Missouri - Moreau**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	0	14	12	2	0	2	0	0
					acres	acres	acres	acres
					0	117020	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	5	137	5	145	1	3	0	200	5	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	3,500	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	14	7	17

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	8	9	1	24	3	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

Lamine River Basin
(HUC 10300103)
Missouri Basin Name – Lamine River Basin

The Lamine River Basin, HUC 10300103, consists of all the land drained by the Lamine River and its tributaries, except that drained by the Blackwater River and its tributaries. It is a 6th order stream and covers an area of approximately 1,110 square miles in west central Missouri including portions of Pettis, Benton, Morgan, Saline, Cooper, Johnson, and Moniteau counties. The Lamine basin is unique for its combination of prairie and Ozarkian streams. Streams such as Richland Creek, Gabriel Creek, Haw Creek, and Flat Creek generally support an assemblage of aquatic life that is more characteristic of the Ozarks than Muddy Creek or Heaths Creek.

The Lamine River basin is mainly agricultural with 49% pasture or grassland, 29% row crops, 21% forest or woodland, and 1% urban. There is very little subsurface movement of water in the basin, mainly due to the presence of impermeable shales in the bedrock. The Lamine River and its tributaries can have highly variable flows, rising quickly after heavy rainfall and soon returning to low-flow levels. The only surface source of drinking water in the basin is Spring Fork Lake, on Spring Fork, and there are seven recorded springs in the basin.

Most nonpoint source pollution in the basin is from soil erosion and animal waste runoff. Levels of dissolved oxygen can be very low during periods of low flow. Of the 489.6 miles of classified stream in the basin, 417.6 miles, or 85%, are considered to be impaired habitat for aquatic life due to a large amount of surface runoff. Siltation in the main stem of the Lamine River and Heath and Muddy creeks are excessive. There are two small abandoned coal mined areas on upper Muddy Creek in Johnson County, which may cause occasional minor problems with low pH, high sulfate and high iron levels in the receiving streams.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9–element plan for Springfork Lake HUC 10300103010004
Status - developed through G05-NPS-07
- **TMDLs**
 - #0859 Brushy Creek
 - Impaired by BOD, ammonia nitrogen, and NFR.
 - TMDL approved by EPA on February 11, 2002.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0859-brushy-0855-muddy-ck-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0859-brushy-0855-muddy-ck-info.pdf>
 - #0865 Flat Creek
 - Impaired by sediment.
 - TMDL approved by EPA on November 22, 2006.
 - TMDL http://www.epa.gov/region07/water/pdf/flat_creek_tmdl_112206.pdf
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
 - #0883 Gabriel Creek
 - Impaired by BOD and NFR.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0883-gabriel-ck-info.pdf>

- #0875 Lake Creek
Impaired by sediment.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- #0847 Lamine River
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #0856 Little Muddy Creek
Impaired by temperature.
TMDL approved by EPA on January 12, 2001.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0856-little-muddy-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0856-3490-little-muddy-ck-trib-info.pdf>
- #3490 Little Muddy Creek Tributary
Impaired by temperature.
TMDL approved by EPA on January 12, 2001.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0856-little-muddy-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0856-3490-little-muddy-ck-trib-info.pdf>
- #0857 Long Branch
Impairment unknown.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/unknowns-info.pdf>
- #0855 Muddy Creek
Impaired by BOD.
TMDL approved by EPA on February 11, 2002.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0859-brushy-0855-muddy-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0859-brushy-0855-muddy-ck-info.pdf>
- #9004 Sewer Branch
Impaired by low DO.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/9004-sewer-br-info.pdf>
- #7187 Spring Fork Lake
Impaired by nutrients.
TMDL approved by EPA on July 20, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/7187-spring-fk-lk-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7187-spring-fork-lk-info.pdf>
- **Watershed Groups Formed**
 - Sedalia Watershed Steering Committee
 - **Source Water Protection Plans** – <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Sedalia (PWSSID #3010728)
 - Surface Water
 - Ground Water

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06906800 Lamine River near Otterville, and
 - #06907300 Lamine River near Pilot Gove.

- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Flat Creek, and
 - Spring Fork Flat Creek,

Figure 139: Number of Volunteer Water Quality Sampling Events Conducted in 10300103 Lamine River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	0	0
2	3	1	1
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Gabriel Creek Stream Stabilization
- **AgNPS SALT Projects**
 - Camp Branch/Basin Fork (SN025)
 - Muddy Creek (SN063)

Figure 140: AgNPS SALT Project Plan Goals for HUC 10300103

Watershed Name	Camp Branch & Basin Fork	Muddy Creek	Total
Project #	SN025	SN063	
Watershed Size (ac)	28,750	68,690	97,440
Cropland (ac)	11,500	23,902	35,402
Cropland Treated in Plan (ac)		10,036	10,036
Pasture/Hayland (ac)	12,938	29,825	42,763
Pasture/Hayland Treated in Plan (ac)		2,339	2,339
CRP Land (ac)		500	500
CRP Treated in Plan (ac)		0	0
Urban (ac)	1,438	6,154	7,592
Urban Treated in Plan (ac)		0	0
Woodland (ac)	2,875	8,062	10,937
Woodland Treated in Plan (ac)		144	144
Public Land (ac)		247	247
Public Land Treated in Plan (ac)		0	0
Other (ac)		0	0
Other Treated in Plan (ac)		0	0
Stream (mi)		41	41
Stream Treated in Plan (mi)		13	13

Figure 141: NRCS and Partner Contributions: HUC 10300103

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	8057
Field Border (Ft.)	61,965	Terraces (Ft.)	58
Filter Strip (Ac.)	62	Lined WW or outlet (Ft.)	426945
Grassed waterways (Ac.)	58	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	60	Critical Planting (Ac.)	40
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	32
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	42	Wells Decomissioned (#)	3
Nutrient Management (Ac.)	9147	CRP Acres	2454
CSP Acres	3	WRP Acres	0
WHIP Acres	228	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	9	12
Conservation Reserve Program	70	47
Conservation Security Program	1	1
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	4	3
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 142:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 10300103 Lamine**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	1	0	0	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	1	142	0	0	0	0	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	0	0	0	0	0	0

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	1	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	2	0	931	0	0	0

Blackwater River Basin
(HUC 10300104)
Missouri Basin Name – Blackwater River Basin

The Blackwater River Basin, HUC 10300104, occupies portions of five counties: Johnson, Lafayette, Saline, Pettis and Cooper. The Blackwater River originates in Johnson County and flows in a northeasterly direction. A main tributary to Blackwater River, Davis Creek originates in Lafayette County and flows eastward to joins the Blackwater River in Pettis County near the Pettis and Saline county line. The Blackwater River then continues eastward where the Salt Fork tributary empties into it just before reaching the Cooper County line. The Blackwater River empties into the Lamine River in Cooper County.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - Concordia – Edwin A. Pape Lake Watershed Management Plan
<http://www.mowin.org/Training/WRAS/concord.pdf>
 - 9-element plan being written for Higginsville Lake, HUC 10300104060003
Status - being developed through G00-NPS-12
 - 9-element plan being written for Concordia Lake, HUC 10300104050004
Status - being developed through G00-NPS-12
 - Higginsville City Lake Watershed Management Plan
<http://www.ctic.purdue.edu/kyw/tmdl/TipsAndHints/PlanIndex.html>
- **TMDLs**
 - #9012 Davis Creek
Impaired by low DO.
TMDL approved by EPA on August 13, 2003.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0912-davis-ck-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0912-davis-ck-info.pdf>
 - #7196 Knob Noster State Park Lake
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #0921 South Fork Blackwater River
Impaired by sediment.
TMDL approved by EPA on November 15, 2006.
TMDL http://www.epa.gov/region07/water/pdf/south_fork_blackwtr_river_final_111506.pdf
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- **Watershed Groups Formed**
 - Concordia – Edwin A. Pape Lake Water Resources Needs Committee
 - Higginsville City Lake - Watershed Steering Committee
- **Source Water Protection Plans - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)**
 - City of Higginsville (PWSSID # 1010363)**
 - Missouri River Intake
 - Higginsville Lake
 - City of Concordia (PWSSID # 1010184)**
 - E.A. Pape Lake
 - City of Leeton (PWSSID # 1010460)**
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06908000 Blackwater River at Blue Lick.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.
 - Sand Creek
 - Unnamed Tributary to Clear Fork Blackwater River

Figure 143: Number of Volunteer Water Quality Sampling Events Conducted in 10300104 Blackwater River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	0	0	1
2	0	1	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects**
 - Finney Creek (SN037)
 - Salt Fork Creek (SN090)

Figure 144: AgNPS SALT Project Plan Goals for HUC 10300104

Watershed Name	Finney Creek	Salt Fork Creek	Total
Project #	SN037	SN090	
Watershed Size (ac)	34,388	44,026	78,414
Cropland (ac)	24,000	38,243	62,243
Cropland Treated in Plan (ac)		20,000	20,000
Pasture/Hayland (ac)	6,974	3,268	10,242
Pasture/Hayland Treated in Plan (ac)		1,700	1,700
CRP Land (ac)		355	355
CRP Treated in Plan (ac)		250	250
Urban (ac)	2,063	195	2,258
Urban Treated in Plan (ac)		0	0
Woodland (ac)	1,243	1,700	2,943
Woodland Treated in Plan (ac)		500	500
Public Land (ac)		24	24
Public Land Treated in Plan (ac)		0	0
Other (ac)	108	241	349
Other Treated in Plan (ac)		0	0
Stream (mi)		100	100
Stream Treated in Plan (mi)		24	24

Figure 145:

NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS			
HUC 8 - 10300104			
Contour buffer Strips (Ac.)	0		Diversion (Ft.)
Field Border (Ft.)	53,186		Terraces (Ft.)
Filter Strip (Ac.)	25		Lined WW or outlet (Ft.)
Grassed waterways (Ac.)	141		Vegetative barrier (Ft.)
Riparian forest buffer (Ac.)	15		Critical Planting (Ac.)
Stream/Shore protection (Ft.)	0		Grade Stab. Structures (#)
Windbreak (Ft.)	0		Water/Sediment Basins (#)
waste Utilization (Ac.)	475		Wells Decommissioned (#)
Nutrient Management (Ac.)	5,888		CRP Acres
CSP Acres	150		WRP Acres
WHIP Acres	0		EQIP Grd/surf Water Acres
	Planned	Applied	
Nutrient Plans (CNMP)	6	5	
Conservation Reserve Program	93	55	
Conservation Security Program	0	0	
Wetland Reserve Program	2	3	
Wildlife Hab. Incentive Program	2	3	
EQIP Ground/Surface water plans	1	0	

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Missouri River Basin
(HUC 10300200)**

Missouri Basin Name – Missouri River Mainstem - Hermann to St. Louis

The Missouri River Mainstem from Hermann to St. Louis, HUC 10300200, lies in the eastern Missouri counties of Audrain, Callaway, Montgomery, Gasconade, Warren, Franklin, St. Charles, and St. Louis. The Missouri River runs through the middle of the basin from west to east. The major tributaries that drain into the Missouri River are Loutre River, Charrette Creek, St. John's Creek, Boeuf Creek and Big Berger Creek. Creve Couer, Callaway and Sherwood Lakes are some of the larger lakes in the watershed that are associated with the river system. The western portion of the basin is primarily rural and the eastern is heavily urbanized by St. Louis and adjoining areas.

Nonpoint source pollution results from farming practices in the western portion of the basin and urban storm water and associated pollutants in the eastern portion.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #1605 Femme Osage Creek (also known as Femme Osage Slough)
Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #1604 Missouri River
Impaired by chlordanes and PCBs.
TMDL approved by EPA on November 3, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/0226-0356-0701-1604-missouri-r-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/0226-0356-0701-1604-missouri-r-chlor-pcb-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Wellsville (PWSSID # 6010848)
 - Wellsville City Lake
 - Sportsman Lake

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #06934500 Missouri River at Hermann,
 - #06935755 Bonhomme Creek near Ellisville,
 - #06935770 Bonhomme Creek near Clarkson Valley,
 - #06935830 Caulks Creek at Chesterfield.
 - #06935850 Creve Coeur Creek at Chesterfield,
 - #06935890 Creve Coeur Creek near Creve Coeur,
 - #06935955 Fee Fee Creek near Bridgeton,
 - #06935965 Missouri River at St. Charles.
 - #06935980 Cowmire Creek at Bridgeton,
 - #06935997 Mill Creek near Florissant,
 - #06936475 Coldwater Creek near Black Jack, and
 - #06936530 Spanish Lake Tributary near Black Jack.

- **Stream Teams** - The most recent stream team monitoring for the following water bodies was between October 1, 2005 and September 30, 2006:
 - Callaway Fork,
 - Charrette Creek,
 - Creve Coeur Creek,
 - Labadie Creek,
 - Little Femme Osage Creek,
 - Unnamed Tributary to Caulk's Creek,
 - Unnamed Tributary to Fee Fee Creek
 - Unnamed Tributary to Creve Coeur Creek, and
 - Unnamed Tributary to Missouri River.

Figure 146: Number of Volunteer Water Quality Sampling Events Conducted in 10300200 Lower Missouri River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	27	7	5
2	6	2	1
3	0	0	0
4	0	0	0

[Active Nonpoint Source Projects](#)

- **319 NPS Projects**
 - Big River Stewardship and Education Initiative (G06-NPS-05)
 - Clean Water Education & Resources Project (G06-NPS-22)
- **AgNPS SALT Projects**
 - Charrette Creek (SN054)
 - Lower Loutre (SN087)

Figure 147: AgNPS SALT Project Plan Goals for HUC 10300200

Watershed Name	Charrette Creek	Lower Loutre	Total
Project #	SN054	SN087	
Watershed Size (ac)	90,562	81,988	172,550
Cropland (ac)	22,094	5,000	27,094
Cropland Treated in Plan (ac)	11,047	2,988	14,035
Pasture/Hayland (ac)	5,975	45,569	51,544
Pasture/Hayland Treated in Plan (ac)	2,987	5,538	8,525
CRP Land (ac)	1,326	450	1,776
CRP Treated in Plan (ac)	0	0	0
Urban (ac)	24,358	400	24,758
Urban Treated in Plan (ac)	0	0	0
Woodland (ac)	34,636	27,329	61,965
Woodland Treated in Plan (ac)	20,781	2,215	22,996
Public Land (ac)	1,408	1,640	3,048
Public Land Treated in Plan (ac)	0	0	0
Other (ac)	765	1,600	2,365
Other Treated in Plan (ac)	0	0	0
Stream (mi)	298	19	317
Stream Treated in Plan (mi)	0	4	4

Figure 148:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 10300200**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	2,371
Field Border (Ft.)	6,970	Terraces (Ft.)	25,894
Filter Strip (Ac.)	38	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	15	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	24	Critical Planting (Ac.)	26
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	12
Windbreak (Ft.)	0	Water/Sediment Basins (#)	2
waste Utilization (Ac.)	194	Wells Decommissioned (#)	8
Nutrient Management (Ac.)	8,325	CRP Acres	644
CSP Acres	0	WRP Acres	0
WHIP Acres		EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	3	3
Conservation Reserve Program	45	24
Conservation Security Program	1	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	4	2
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Beaver Reservoir
(HUC 11010001)
Missouri Basin Name – Table Rock Lake Basin**

Beaver Reservoir basin, HUC 11010001, is also called Table Rock Lake Basin, which covers portions of Taney, Stone and Barry Counties. Table Rock Lake created by the damming of the White River in Taney County covers from 43,000 to 52,000 acres and is one of the most popular tourist destinations in Missouri with visitor use of between 30 and 40 million hours per year. A large increase in permanent residents and businesses is also occurring. The Table Rock Lake basin is part of the White River basin, which covers 5,184 square miles of Missouri and Arkansas. There are three notable springs in the watershed. Table Rock Lake is designated for livestock & wildlife watering, aquatic life, whole body contact recreation, drinking water supply, and secondary contact recreation.

Localized, excessive eutrophication and the resulting increases in phytoplankton and lower water clarity in Table Rock Lake have been a cause for concern. Nonpoint source pollution contributing to these problems comes mainly from residential septic systems and livestock and poultry waste.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #7313 Table Rock Lake
 - Impaired by nutrients.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7313-table-rock-lk-info.pdf>
- **Watershed Groups Formed**
 - Table Rock Lake Shoreline Cleanup Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07050150 Roaring River Spring near Cassville.
- **Stream Teams** - No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Upper White River Watershed Integrated Economic and Environmental (G05-NPS-09)
- **AgNPS SALT Projects** - none

Figure 149:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010001**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	3	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**James River Basin
(HUC 11010002)
Missouri Basin Name – James River Basin**

The James River Basin, HUC 11010002, is a major tributary to the White River and its geology is characterized by karst which creates a terrain dominated by sinkholes, losing streams, caves and springs. The basin includes all of the land drained by the unimpounded portions of the James River and all of its tributaries, an area of 1,512 square miles. The basin is located in southwest Missouri in portions of Webster, Greene, Christian, Stone, Wright, Douglas, Lawrence, and Barry counties. The James River flows nearly 100 miles from Webster County to its mouth in Table Rock Lake. Major tributaries of the James River within the basin include Crane Creek, Flat Creek, Finley Creek, Panther Creek, Pearson Creek and Wilson Creek.

Approximately 30% of the land cover within the James River basin is hardwood forest, 63% is agricultural, and 7% is urban. Springfield is the largest city in the basin but population growth and land use changes from rural to urban are rapidly occurring south of Springfield. Potential sources of nonpoint pollution in the basin include: animal agriculture, sedimentation from erosion, sludge application from sewage treatment facilities, coal pile runoff, seepage from septic tanks, and runoff from urban areas. Both urban and rural phosphorus sources are significant.

Watershed Efforts and Ongoing Activities

Watershed Planning

▪ **Watershed Management Plans**

- Watershed Restoration Action Strategy written for the James River 8-digit HUC11010002
Status - developed January 3, 2000.
- Watershed Restoration Action Strategy written for the Wilson Creek, HUC11010002.
Status – developed January 3, 2000.
Status - substantially implemented through G02-NPS-01.
- 9–element plan being written for Finley Creek, HUC 1101000203.
Status - being developed.
- 9-element plan being written for Wards Branch, HUC 11010002020002.
Status - being developed.
- 9–element plan being written for Middle James River, HUC 1101000202001, 1101000202002, 1101000202003 and Finley Creek, HUC 11010002030004.
Status - being developed.
- 9-element plan being written for Lower James, HUC 11010002070 and Table Rock Lake, HUC 11010002050 Watersheds.
Status – being developed.

▪ **TMDLs**

#2347 James River

Impaired by nutrients.

TMDL approved by EPA on May 7, 2001.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-tmdl.pdf>

TMDL update approved by EPA on December 1, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-update-12-04.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2347-2362-2365-james-r-info.pdf>

- Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #2362 James River
Impaired by nutrients.
TMDL approved by EPA on May 7, 2001.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-tmdl.pdf>
TMDL update approved by EPA on December 1, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-update-12-04.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2347-2362-2365-james-r-info.pdf>
- Impaired by mercury.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- #2365 James River
Impaired by nutrients.
TMDL approved by EPA on May 7, 2001.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-tmdl.pdf>
TMDL update approved by EPA on December 1, 2004.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-update-12-04.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2347-2362-2365-james-r-info.pdf>
- #2373 Pearson Creek
Impaired by unknown pollutant(s).
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2373-pearson-ck-info.pdf>
- #7313 Table Rock Lake
Impaired by nutrients.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7313-table-rock-lk-info.pdf>
- #2375 Wilsons Creek
Impaired by unknown pollutant(s).
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2375-wilsons-ck-info.pdf>
- ***Watershed Groups Formed***
 - James River Rescue Planning Committee
 - Ward Branch Technical Advisory Committee
 - Ward Branch Advisory Committee
 - Watershed Coordinating Committee
 - Missouri Watershed Modeling Group
 - Habitat Low Impact Development Site Planning Committee
 - Habitat Low Impact Development Landscape Committee
 - Low Impact Development Technical Stormwater Demonstration Committee
 - James River Stormwater Project Advisory, Technical & Stakeholders Committees
 - Finley River NAIP Steering Committee
 - Finley River Watershed Management Plan Stakeholder Committee
 - Middle James Stakeholder Group
 - Lower James River Stakeholder Group
 - Table Rock Lake Stakeholder Group
 - Finley River Project Committee
 - ***Source Water Protection Plans*** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07050690 Pearson Creek near Springfield,
 - #07050700 James River near Springfield,
 - #07052000 Wilson Creek at Springfield,
 - #07052100 Wilson Creek near Springfield,
 - #07052120 South Creek near Springfield,
 - #07052152 Wilson Creek near Brookline,
 - #07052160 Wilson Creek near Battlefield,
 - #07052250 James River near Boaz,
 - #07052345 Finley Creek below Riverdale,
 - #07052500 James River at Galena, and
 - #07052820 Flat Creek below Jenkins.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Crane Creek,
 - Finley Creek,
 - Galloway Creek,
 - James River,
 - Pearson Creek,
 - South Creek,
 - Wilsons Creek, and
 - Unnamed Tributary to James River.

Figure 150: Number of Volunteer Water Quality Sampling Events Conducted in 11010002 James River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	26	3	5
2	15	75	2
3	3	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - James River Watershed Project (G02-NPS-01)
 - Community On-Site Stormwater and Wastewater Program (G04-NPS-18)
 - Ward Branch Preservation, Restoration and Enhancement (G04-NPS-24)
 - Upper White River Watershed Integrated Economic and Environment (G05-NPS-09)
 - Landowner Outreach Project (G05-NPS-16)
 - Habitat for Humanity Low Impact Development (G05-NPS-15)
 - Sources & Reduction of Stormwater Runoff in the James River Basin (G06-NPS-15)
- **AgNPS SALT Projects**
 - Crane Creek (SN039)
 - James River Headwaters (SN041)
 - Flat Creek (SN055)

Figure 151: AgNPS SALT Project Plan Goals for HUC 11010002

Watershed Name	Crane Creek	James River Headwaters	Flat Creek	Total
Project #	SN039	SN041	SN055	
Watershed Size (ac)	53,060	75,356	72,900	201,316
Cropland (ac)	500	1,670	2,190	4,360
Cropland Treated in Plan (ac)			250	250
Pasture/Hayland (ac)	41,730	45,605	57,009	144,344
Pasture/Hayland Treated in Plan (ac)			16,085	16,085
CRP Land (ac)			15	15
CRP Treated in Plan (ac)			0	0
Urban (ac)	200	1,100	1,942	3,242
Urban Treated in Plan (ac)			0	0
Woodland (ac)	9,000	25,641	11,754	46,395
Woodland Treated in Plan (ac)			500	500
Public Land (ac)	730	840	80	1,650
Public Land Treated in Plan (ac)			0	0
Other (ac)	900	500	0	1,400
Other Treated in Plan (ac)			0	0
Stream (mi)	100	477	79	656
Stream Treated in Plan (mi)			12	12

Figure 152:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010002**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	24	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	4	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	121	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	136	CRP Acres	261
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	3
Conservation Reserve Program	4	7
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	5
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

Figure 153:

**Summary of FY07 319 NPS Project Evaluation Measures
HUC 11010002 James**

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	7	29	48	10	1	3	0	0
					acres	acres	acres	acres
					0	251139	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL's	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	0

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	1	19	7	181	5	55	8	1,502	23	16	150

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	33	18,603	33	16,588	2	280	7

	QAPP Plans Produced	QAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	1	1	2	2	11	22	15

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	10	10	65	0	52	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

Bull Shoals Lake Basin
(HUC 11010003)
Missouri Basin Name – Bull Shoals Lake Basin

The Bull Shoals Lake Basin, HUC 11010003, includes Lake Taneycomo, which covers 1,730 acres, and Bull Shoals Lake, which covers 45,000 acres with approximately 740 miles of shoreline. The upper 9,000 acres of the Bull Shoals basin lies in Missouri, and the remainder lies in Arkansas. Missouri counties within this watershed are portions of Wright, Stone, Ozark, Taney, Douglas, Christian, and Webster. These lakes are designated for livestock & wildlife watering, aquatic life, whole body contact recreation, secondary contact recreation, and drinking water supply. In addition, Lake Taneycomo is designated as a cold water fishery.

The Lake Taneycomo sub-watershed is estimated at 93% forest, 4% pasture, and 3% urban. Lake Taneycomo supports a large rainbow trout fishery and in the surrounding hills, Branson, Missouri, is one of the largest tourist destinations in the Midwest. Increasing human population and land use changes in the basin present challenges to local and state governments trying to protect the lake for its recreational potential and drinking water supply. The Bull Shoals Lake sub-basin is estimated at 85% forest and 15% pasture. The upper portion of Bull Shoals Lake lies in Missouri and the remainder in Arkansas. The lake is larger and has much less development than Lake Taneycomo. Water quality in the lake and its tributary streams is very good.

Significant nonpoint sources include storm water runoff from urban areas. Major pollutants from these sources include nitrogen, phosphorus, sediment, and bacteria. Urban runoff can carry heavy metals or toxic organics. Other potential nonpoint sources also include sedimentation from erosion in disturbed watersheds, sludge application from sewage treatment facilities, and seepage from septic tanks. Continuing urban and suburban development in the watershed will increase sewage loads and storm water runoff problems in these lakes and area streams. Because of the rapid pace of development and steep slopes in the Branson area, soil erosion associated with land clearing for development is one of the largest nonpoint source problems in the area of the Lake Taneycomo sub-watershed.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #7314 Lake Taneycomo
 - Impaired by low dissolved oxygen.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7314-lk-taneycomo-info.pdf>
- **Watershed Groups Formed**
 - Lake Taneycomo Stakeholders Group
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Ava (PWSSID # 5010040)
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07053400 Table Rock Lake near Branson,
 - #07053450 White River below Table Rock Dam near Branson,
 - #07053600 Lake Taneycomo at College of the Ozarks,
 - #07053700 Lake Taneycomo at Branson,
 - #07053810 Bull Creek near Walnut Shade,
 - #07053900 Swan Creek near Swan, and
 - #07054080 Beaver Creek at Bradleyville.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Bull Creek and
 - Swan Creek.

Figure 154: Number of Volunteer Water Quality Sampling Events Conducted in 11010003 Bull Shoals Lake Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	2	2	0
2	0	15	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - South Bull Shoals (SN052)
 - Beaver Creek (SN067)

Figure 155: AgNPS SALT Project Plan Goals for HUC 11010003

Watershed Name	South Bull Shoals	Beaver Creek	Total
Project #	SN052	SN067	
Watershed Size (ac)	55,386	89,495	144,881
Cropland (ac)	500	150	650
Cropland Treated in Plan (ac)	0	0	0
Pasture/Hayland (ac)	18,184	31,308	49,492
Pasture/Hayland Treated in Plan (ac)	5,000	3,600	8,600
CRP Land (ac)	0	0	0
CRP Treated in Plan (ac)	0	0	0
Urban (ac)	640	100	740
Urban Treated in Plan (ac)	0	0	0
Woodland (ac)	22,713	25,984	48,697
Woodland Treated in Plan (ac)	2,000	2,550	4,550
Public Land (ac)	7,556	29,179	36,735
Public Land Treated in Plan (ac)	0	0	0
Other (ac)	5,793	2,774	8,567
Other Treated in Plan (ac)	0	0	0
Stream (mi)	28	56	84
Stream Treated in Plan (mi)	10	15	25

Figure 156:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010003**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	101	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	3
Nutrient Management (Ac.)	3768	CRP Acres	106
CSP Acres	0	WRP Acres	0
WHIP Acres	1448	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	1
Conservation Reserve Program	0	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	7	8
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**North Fork White River Basin
(HUC 11010006)
Missouri Basin Name – North Fork White River Basin**

The North Fork White River Basin, HUC 11010006, occupies approximately 1,389 square miles in parts of six counties in the southern Missouri Ozarks - Douglas, Howell, Ozark, Texas, Webster, and Wright. The North Fork Watershed in Missouri constitutes approximately 76% of the total area of the North Fork Watershed with the remainder in Arkansas. The North Fork White River originates in the vicinity of Mountain Grove in southeastern Wright County. The river flows in a general southerly direction across Douglas and Ozark counties for 67 miles before emptying into Norfork Reservoir (22,000 acres) near Tecumseh, Missouri. The North Fork White River is joined by Bryant Creek, its largest tributary, approximately one-half mile north of Tecumseh. Bryant Creek flows southeasterly across Douglas and Ozark counties for 71 miles before emptying into the North Fork White River.

Caves, springs, losing streams, and sinkholes are common in the watershed, due to the highly karst nature of its topography. There are 283 springs within the watershed as determined from USGS 7.5-minute topographic maps. The largest of these springs are Double (Rainbow) and North Fork Springs, which emerge close together on the North Fork White River.

Land use/land cover within the North Fork Watershed primarily consists of grassland/cropland (37.5%) and forest/woodland (61.9%). Urban areas make up 0.4% of the watershed. The greatest nonpoint source pollution threat in is the potential contamination of the groundwater system. Seventy-four percent of the water withdrawn within the watershed comes from the groundwater system.

Water quality within the North Fork Watershed is relatively good; however periodically high fecal coliform levels, nutrient loading, and sediment/gravel deposition are threats to water quality. Gravel dredging, indiscriminate land clearing, and the presence of livestock in riparian zones for extended periods of time are some causes of the water quality problems. In addition, the potential contamination of the ground water system by septic systems as well as municipal discharges to losing streams is also of concern. No streams within the North Fork Watershed are designated for use as a drinking water supply.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #7316 Noblett Lake
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)
City of Norwood (PWSSID # 5010585)
 - Groundwater

[Water Quality Monitoring](#)

- **Active USGS Gaging Station(s)**
 - #07057500 North Fork River near Tecumseh,
 - #07057750 Bryant Creek below Evans, and
 - #07058000 Byrant Creek near Tecumseh.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Bennetts Bayou,
 - Bryant Creek,
 - North Fork White River, and
 - Rippee Creek.

Figure 157: Number of Volunteer Water Quality Sampling Events Conducted in 11010006 North Fork White River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	9	3	3
2	6	2	2
3	0	0	0
4	0	0	0

[Active Nonpoint Source Projects](#)

- **319 NPS Projects**
 - Our Watersheds, Our Homes: Building on the Watershed Atlas Concept (G04-NPS-17)
- **AgNPS SALT Projects** – none

Figure 158:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010006**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	24	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	4	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	121	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	136	CRP Acres	368
CSP Acres	0	WRP Acres	0
WHIP Acres	695	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	1	0
Conservation Reserve Program	7	6
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	5
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Black River Watershed
(HUC 11010007)
Missouri Basin Name – Black River Basin**

The Upper Black River basin, HUC 1101007, originates in Reynolds and Iron counties, Missouri, and flows south through Wayne and Butler counties and into Arkansas. Also included in this watershed, are portions of Dent, Ripley, Carter, and Shannon counties. The Black River drains 1,756 square miles in Missouri. The basin lies in the Ozark Plateau. A large portion of the basin forested with much of the land in public ownership. Soils in the basin are primarily suited for trees and are considered highly erodible. There are excessive amounts of gravel bedload in the stream channel.

Basin streams generally exhibit good water quality and most streams are classified as full use attainment. In the upper subbasin, Logan Creek, Clearwater Lake, the Black River, and all three forks of the Black River are designated for whole-body contact recreation. Two reservoirs, Clearwater Lake and Lower Taum Sauk Lake, affect stream flows and fish movement.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – NRCS Rapid Watershed Assessment includes planning aspects at the HUC 8 level.
- **TMDLs**
 - #2769 Black River
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #7326 Clearwater Reservoir
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #2814 Main Ditch
 - Impaired by BOD, VSS, and low DO.
 - TMDL approved by EPA on December 19, 2005.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2814-main-ditch-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2814-main-ditch-info.pdf>
 - #2786 McKenzie Creek
 - Impaired by BOD.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2786-mckenzie-ck-info.pdf>
 - #2787 McKenzie Creek
 - Impaired by naturally low pH.
 - TMDL approved by EPA on November 15, 2004.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2787-mckenzie-ck-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2787-mckenzie-ck-info.pdf>
 - #2755 West Fork Black River
 - Impaired by nutrients.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2755-w-fk-black-r-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07061150 West Fork Black River at Centerville,
 - #07061260 East Fork Black River near Ironton,
 - #07061270 East Fork Black River near Lesterville,
 - #07061500 Black River near Annapolis,
 - #07061600 Black River below Annapolis,
 - #07061900 Logan Creek at Ellington,
 - #07062000 Clearwater Lake near Piedmont, and
 - #07063000 Black River at Poplar Bluff.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - East Fork Black River
 - Middle Fork Black River.

Figure 159: Number of Volunteer Water Quality Sampling Events Conducted in 11010007 Upper Black River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	0	0	0
2	3	1	0
3	6	3	1
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 160:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010007**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	6
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	1
Nutrient Management (Ac.)	713	CRP Acres	50
CSP Acres	0	WRP Acres	0
WHIP Acres	577	EQIP Grd/surf Water Acres	498

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	3	2
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	2
EQIP Ground/Surface water plans	6	6

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Current River Basin
(HUC 11010008)
Missouri Basin Name – Current River**

The Current River Basin, HUC 11010008, drains a land area of approximately 2,621 square miles in portions of 9 counties in Missouri, and 2 counties in Arkansas. These counties include Texas, Dent, Reynolds, Shannon, Howell, Oregon, Carter, Butler, and Ripley in Missouri; and Randolph and Clay in Arkansas. Most of the watershed (95.9%) lies within Missouri. The Jacks Fork River drains approximately 18% of the Current River Watershed, which flows into the Current River approximately five air miles east-northeast of Eminence, Missouri. The Current River is formed by the confluence of Pigeon Creek and the Montauk Spring complex near Montauk, Missouri. From its beginning, the river flows approximately 184 miles in a southeasterly to south direction before flowing into the Black River near Pochahontas, Arkansas.

A combination of climate and geology has created a karst landscape in the watershed characterized by a close interaction between groundwater and surface water systems through sinkholes, losing streams, and springs. Dye trace data for the Current River Watershed indicates the watershed receives substantial amounts of ground water from neighboring watersheds; the most notable example is the Big Spring recharge area. Much of this recharge area is located in the Eleven Point River Watershed.

There are approximately 197 third order and larger streams within the watershed. The Current River is a seventh order stream. An estimated 678 stream miles in the watershed have permanent water. Approximately 98 miles of channelized stream exists within the Current River with most of the areas located in the lowlands of the southeast corner of the watershed. The watershed is 80% forested, and 16% grasslands with approximately 32% (420,576 acres) of land under public ownership. The United States Forest Service (USFS) holds the largest amount of publicly-owned land, totaling 235,279 acres.

Overall water quality within the watershed appears to be relatively good with a diverse biotic community. Nonpoint source water pollution problems in this watershed, include large numbers of livestock in riparian zones for extended periods of time, private septic system failure, improper sand and gravel removal and poor land use practices such as indiscriminate land clearing. These can result in periodic high fecal coliform levels, nutrient loading, and increased sediment deposition.

Watershed Efforts and Ongoing Activities

[Watershed Planning](#)

- ***Watershed Management Plans***
 - 9-element plan being written for Jacks Fork, HUC 1101000805
Status is being developed through G00-NPS-12
 - NRCS Rapid Watershed Assessment includes planning aspects for the entire HUC 8 will be completed by May 2008.
 - The tables below will be incorporated into that final assessment.

Figure 161: Phosphorus Loading, HUC 11010008 (courtesy of NRCS, 2007)

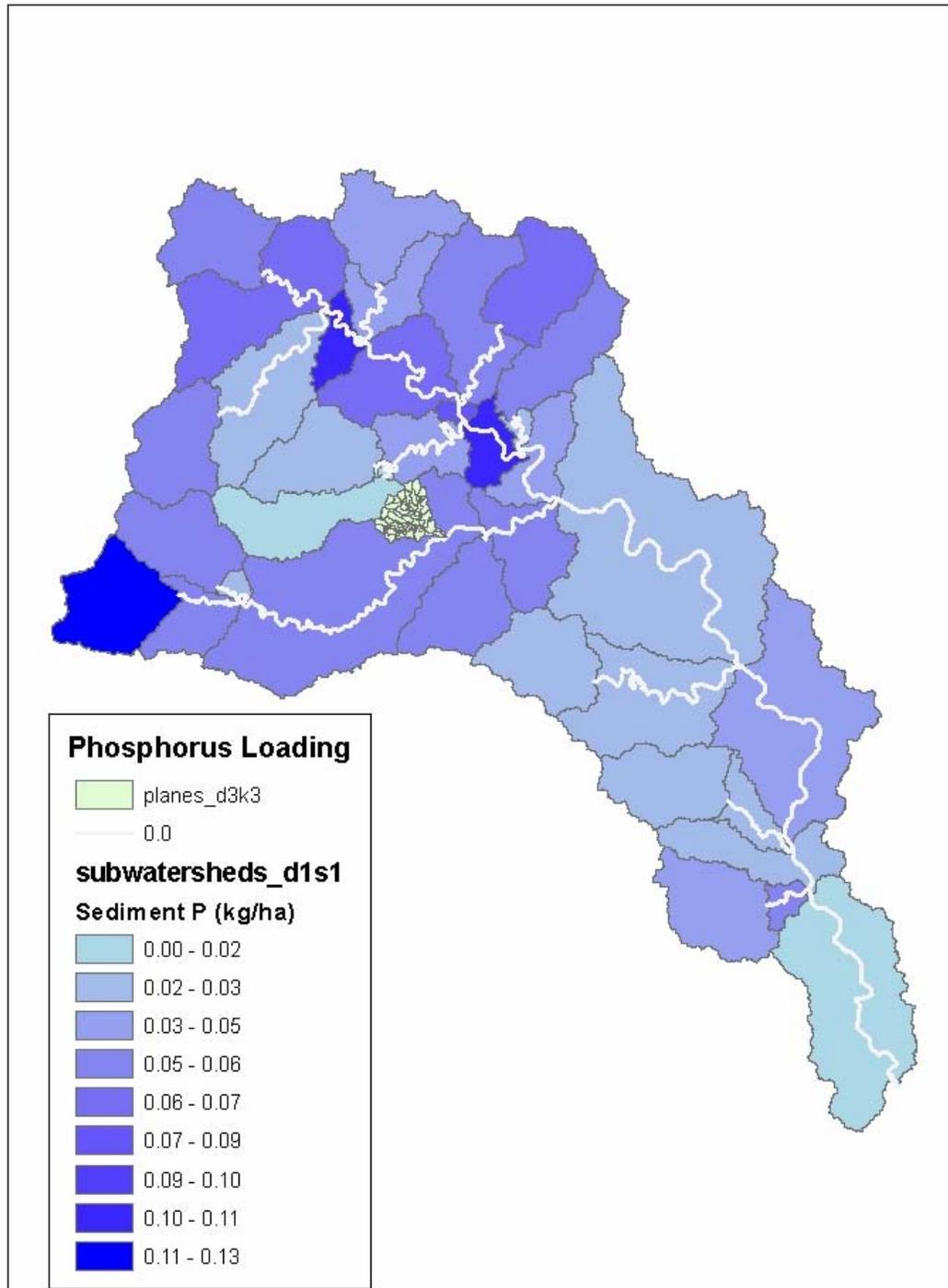
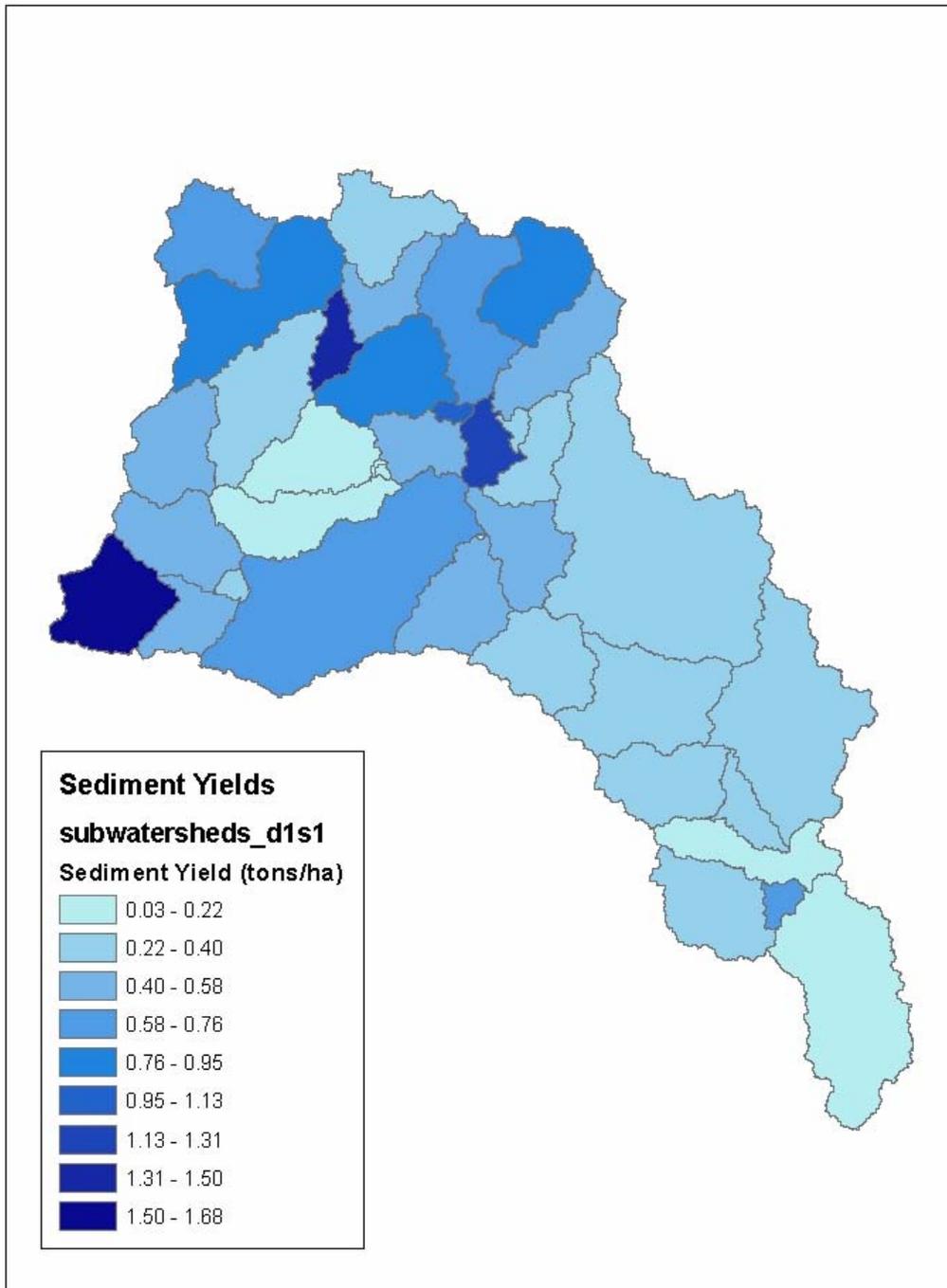


Figure 162: Sediment Loading, HUC 11010008 (courtesy of NRCS, 2007)



- **TMDLs**
 #2681 Jack's Fork River
 Impaired by fecal coliform.
 TMDL approved by EPA on January 21, 2004.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2681-jacks-fork-r-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2681-jacks-fk-r-info.pdf>
- **Watershed Groups Formed**
 - Jack's Fork Watershed Steering Committee
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07064533 Current River above Akers,
 - #07065200 Jacks Fork near Mountain View,
 - #07065495 Jacks Fork at Alley Spring,
 - #07066000 Jacks Fork at Eminence,
 - #07066110 Jacks Fork above Two Rivers,
 - #07067000 Current River at Van Buren,
 - #07067500 Big Spring near Van Buren,
 - #07068000 Current River at Doniphan,
 - #07068510 Little Black River below Fairdealing,
 - #370857091265901 Jacks Fork above Alley Spring,
 - #370901091262001 Alley Spring below Alley,
 - #370905091204001 Jacks Fork above 2nd Unnamed Hollow below Eminence,
 - #371014091201301 Jacks Fork above Lick Log Hollow below Eminence,
 - #371019091180101 Shawnee Creek above Two Rivers,
 - #371020091174101 Jacks Fork above Little Shawnee Creek above Two Rivers,
 - #371026091183301 Jacks Fork above Powell Spring above Two Rivers, and
 - #371054091173501 Jacks Fork below 3rd Unnamed Hollow above Two Rivers.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Big Creek,
 - Current River,
 - Little Black River, and
 - Logan Creek.

Figure 163: Number of Volunteer Water Quality Sampling Events Conducted in 11010008 Current River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	13	4	7
2	0	0	0
3	3	1	1
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Our Watersheds, Our Homes: Building on the Watershed Atlas Concept (G04-NPS-17)
- **AgNPS SALT Projects** - none

Figure 164: NRCS and Partner Contributions: HUC 11010008

Filter Strip (Ac.)	5	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	1
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	12
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	946	CRP Acres	265
CSP Acres	0	WRP Acres	0
WHIP Acres	872	EQIP Grd/surf Water Acres	41

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	4	10
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	1	4
EQIP Ground/Surface water plans	2	4

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2006/>

**Lower Black River Basin
(HUC 11010009)
Missouri Basin Name – Fourche Creek Basin**

The Lower Black River basin, HUC 11010009, lies mainly within the southwest corner of Ripley County with a small fraction of the watershed in Oregon County. Fourche Creek and its tributaries are the classified water bodies within the Missouri portion of the basin. Fourche Lake is located in the main stem of Fourche Creek. The basin is 55% forested and 45% row crop or pasture. Wetland drainage, timber clearing, and flood control projects have converted the southern and eastern sections of the watershed into a vast agricultural area. Nonpoint source pollution comes from agricultural runoff. In the southeast portion of the basin, approximately 30% of the wells exceed nitrate water quality standards. Flow in the lower Black River is primarily regulated by water released through Clearwater Lake.

Watershed Efforts and Ongoing Activities

Watershed Planning

- *Watershed Management Plans* – none
- *TMDLs* - none
- *Watershed Groups Formed* - none
- *Source Water Protection Plans* - none

Water Quality Monitoring

- *Active USGS Gaging Station(s)* - none
- *Stream Teams* - No water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed.

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* - none

Figure 165:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010009**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Spring River Basin
(HUC 11010010)
Missouri Basin Name – Spring River Basin (Howell/Oregon counties)**

The Spring River Basin, HUC 11010010, is located southwest of the Eleven Point Watershed and is bounded to the west by the North Fork White River Watershed. The Spring River Basin in Missouri occupies 480.3 square miles. It constitutes approximately 39% of the total area of the Spring River Watershed with the remainder in Arkansas and of which the Eleven Point River is also a tributary. The basin occupies parts of Howell and Oregon counties in Missouri. Caves, springs, losing streams, and sinkholes are common in the watershed. The watershed consists of three major streams, which generally flow in a south to southeast direction and cross the Missouri/Arkansas border to join the Spring River in Arkansas. These streams include the South Fork Spring River, Myatt Creek, and Warm Fork Spring River. The longest of these tributaries in Missouri is the Warm Fork Spring River, which originates in the headwaters as Howell Creek within the city limits of West Plains, Missouri. There have been no significant channel alterations within the watershed.

Land use/land cover primarily consists of grassland/cropland (49.1%) and forest/woodland (48.3%). Urban areas make up 2.4% of the watershed. West Plains is the largest population center in south central Missouri and a hub of transportation. Approximately 2% of the watershed is in public ownership, nearly all of which is managed by the Missouri Department of Conservation. Nonpoint source pollution results from poor land use practices, gravel dredging, large numbers of cattle, and runoff as well as sewage effluent associated with developed and urbanized areas. These sources all contribute to water quality problems in both surface water and ground water. Nearly all water for domestic use is obtained from ground water systems within the watershed.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #2582 Howell Creek
 - Impaired by chlorine.
 - TMDL approved by EPA on January 31, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2582-howell-ck-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2582-howell-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)** - none
- **Stream Teams** – The following water bodies were monitored between June 1, 2006 and February 28, 2007, in this watershed:
 - S. Fork Spring River.

Figure 166: Number of Volunteer Water Quality Sampling Events Conducted in 11010010 Spring River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	1	1
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - West Plains Urban Storm Water Initiative (G06-NPS-19)
- **AgNPS SALT Projects** – none

Figure 167:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010010**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	70	CRP Acres	0
CSP Acres	0	WRP Acres	0
WHIP Acres	99	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	0	0
Conservation Reserve Program	0	0
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	1
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Eleven Point River Basin
(HUC 11010011)
Missouri Basin Name – Eleven Point River Basin**

The Eleven Point Basin, HUC 11010011, originates near the town of Willow Springs, located in northeastern Howell County. The river flows southeasterly across northern Howell and Oregon counties and then south, crossing the Arkansas state line about 2.5 miles west of the southeast corner of Oregon County. From there it flows generally south through Randolph County, Arkansas, joining the Spring River approximately 3.7 miles above the Spring River/Black River Confluence near Black Rock, Arkansas. Major tributaries of the Eleven Point River include Middle Fork, Spring Creek, Hurricane Creek, and Fredrick Creek. Greer Spring also contributes significantly to the flow of the Eleven Point River, turning the river into a cold water stream. The Eleven Point Watershed drains approximately 1,024 square miles in portions of five counties within Missouri. These include Howell, Oregon, Ripley, Carter, and Shannon. The watersheds bordering the Eleven Point Watershed include the Jacks Fork to the north, the Current and Fourche to the east, and the North Fork White River and Spring River to the west. Many caves, springs, and losing streams are present within the watershed. This is due to the highly karst nature of its topography.

Land use/land cover within the Eleven Point Watershed is 64.9% forest/woodland, 34.4% grassland/cropland and 0.4% urban. Approximately 22% of the watershed is in public ownership with the majority of this land managed as part of the Mark Twain National Forest.

Water quality within the Eleven Point Watershed is relatively good; however, high fecal coliform levels, nutrient loading, and sediment and gravel deposition are the most severe nonpoint source pollution threats to water quality. Poor land use practices, gravel dredging, and increasing cattle populations are the primary causes of the water quality problems. Lead prospecting has occurred throughout the watershed, and is a potential threat to water quality along with lead mining. The Eleven Point River between Thomasville and Highway 142 has been designated as a National Scenic River Area (Outstanding National Resource Water). The biotic community of the Eleven Point Watershed is diverse.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
 - #2593 Eleven Point River (Oregon County)
 - Impaired by mercury.
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/mercury-info.pdf>
 - #2604 Eleven Point River (Howell County)
 - Impaired by chlorine.
 - TMDL approved by EPA on January 12, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2604-eleven-point-tmdl.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2604-eleven-point-r-info.pdf>
 - #2614 Piney Creek
 - Impaired by chlorine.
 - TMDL approved by EPA on January 12, 2001.
 - TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/2614-piney-ck-tmdl%20.pdf>
 - Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/2614-piney-ck-info.pdf>
- **Watershed Groups Formed** - none
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07071000 Greer Spring at Greer, and
 - #07071500 Eleven Point River near Bardley.
- **Stream Teams** - The following water body was monitored between June 1, 2006 and February 28, 2007:
 - Eleven Point River.

Figure 168: Number of Volunteer Water Quality Sampling Events Conducted in 11010011 Eleven Point River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	1	1
2	0	0	0
3	0	0	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** - none
- **AgNPS SALT Projects** - none

Figure 169:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11010011**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	0	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	9
CSP Acres	0	WRP Acres	0
WHIP Acres	155	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	2	1
Conservation Reserve Program	0	1
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	6	5
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Lake O' the Cherokees
(HUC 11070206)
Missouri Basin Name – Cherokees Lake Basin**

The Lake O' the Cherokees basin, HUC 11070206, has two portions in Missouri, one above the Elk River basin and one below in the southwest most corner of the state. The Missouri counties of Newton and McDonald contain portions of the watershed. The flow in the basin is westerly and the headwaters originate in several locations in Missouri and Arkansas. Big Sugar Creek and Little Sugar Creek join to form the Elk River near Pineville, Missouri, from which it flows west, terminating in Grand Lake O' the Cherokees in Oklahoma. Lost Creek and Honey Creek which are in the Lake O' the Cherokees basin are tributaries of Neosho/Grand River and originate in Missouri, then flow to the Lake O' the Cherokees.

Animal agriculture is a major enterprise in the basin. Confined animal agriculture (primarily poultry) has grown explosively in the basin since the early 1980s. Waste management and disposal at these facilities, wastewater treatment and disposal at associated processing plants, and increasing pollutants in basin streams has become a concern in the basin.

Nonpoint source pollution in the basin comes from various sources including urban development and runoff, mining, land conversion from forest to pasture, free ranging livestock, animal feeding operations, road construction, and septic tanks. The Lake O' the Cherokees basin is subject to intense water-based recreational use in the warmer months. Intensive animal based agriculture and poor land use are the primary water quality related problems in the watershed.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans** – none
- **TMDLs**
#3245 Cave Spring Branch
Impaired by nutrients.
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/9002-cave-spring-br-info.pdf>
- **Watershed Groups Formed**
 - Lower Shoal Creek Watershed Alliance
 - Upper Shoal Creek Watershed Group
 - Spring River Basin Clearinghouse

Water Quality Monitoring

- **Active USGS Gaging Station(s)** - none
- **Stream Teams** - The Grand Lake of the Cherokee's basin was monitored between June 1, 2006 and February 28, 2007.

Figure 170: Number of Volunteer Water Quality Sampling Events Conducted in 11070206 Lake O' the Cherokees basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	2	1
2	3	0	0
3	0	7	0
4	0	0	0

Active Nonpoint Source Projects

- *319 NPS Projects* - none
- *AgNPS SALT Projects* – none

Figure 171:

NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS			
HUC 8 - 11070206			
Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	0	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	4	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	0	Wells Decommissioned (#)	0
Nutrient Management (Ac.)	0	CRP Acres	7
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0
	Planned	Applied	
Nutrient Plans (CNMP)	1	1	
Conservation Reserve Program	1	1	
Conservation Security Program	0	0	
Wetland Reserve Program	0	0	
Wildlife Hab. Incentive Program	0	0	
EQIP Ground/Surface water plans	0	0	

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

**Spring River Basin
(HUC 11070207)
Missouri Basin Name – Spring River Basin**

The Spring River Basin, HUC 11070207, is located in southwest Missouri in Barry, Barton, Christian, Dade, Jasper, Lawrence, Newton, and Stone counties. The Spring River originates along the Barry-Lawrence county line south of Verona, flows west-northeast to its confluence with the North Fork Spring River east of Asbury in Jasper County and then southwest into Kansas and Grand Lake of the Cherokees in Oklahoma. Major tributaries within the basin are the North Fork Spring River, Center Creek, Turkey Creek, and Shoal Creek. Numerous smaller tributaries flow throughout the basin. The Spring River watershed totals 2,271 square miles. The total mileage of streams with permanent flow is 331 miles. Intermittent streams add another 188 miles. Several losing stream reaches and numerous springs are also located in the basin. There are six stream segments listed on the 2002 303(d) list totaling 107.5 miles.

Land use in the North Fork of the Spring River area of the basin is approximately 85% agricultural (pasture and row cropping) and 15% forested. Land use in the Spring River portion of the basin is estimated at 70% row crop and pasture and 30% forested. In the Center/Shoal Creek sub-basin, land use is approximately 52% row crop and pasture, 45% forest cover, and 3% mined lands. Stream habitat quality is fair to good throughout most of the basin. Some areas, including portions of the Capps Creek sub-basin, suffer from a severe lack of riparian vegetation. Sources of nonpoint source pollution in the basin include: runoff from mine tailings and active mining sites, livestock operations, sedimentation from erosion in disturbed watersheds, sludge application from sewage treatment facilities, seepage from septic tanks, and runoff from urban areas.

Watershed Efforts and Ongoing Activities

Watershed Planning

- **Watershed Management Plans**
 - 9-element plan for Upper Shoal Creek HUC 11070207100001, 11070207100002, 11070207100003, 11070207030001
Status - being developed through G02-NPS-21
- **TMDLs**
 - #3203 Center Creek
Impaired by zinc.
TMDL approved by EPA on October 25, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3203-center-3216-3217-turkey-cks-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3203-center-ck-info.pdf>
 - #3239 Clear Creek (Barry county)
Impaired by BOD, NFR, and ammonia nitrogen (nutrients).
TMDL approved by EPA on December 1, 1999.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3239-clear-creek-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3239-clear-ck-info.pdf>
 - #3168 Douger Branch
Impaired by zinc.
TMDL approved by EPA on August 29, 2006.
TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3168-douger-br-final-tmdl.pdf>
Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3168-douger-br-info.pdf>

- #7356 Lamar Lake
 Impaired by nutrients.
 TMDL approved by EPA on July 20, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/7356-lamar-lk-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/7356-lamar-lk-info.pdf>
- #3188 North Fork Spring River
 Impaired by sediment.
 TMDL approved by EPA on November 22, 2006.
 TMDL http://www.epa.gov/region07/water/pdf/n_fork_spring_river_tmdl_112206.pdf
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/sediment-info.pdf>
- #3230 Shoal Creek
 Impaired by fecal coliform.
 TMDL approved by EPA on November 18, 2003.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3230-shoal-ck-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3230-shoal-ck-info.pdf>
- #3216 Turkey Creek
 Impaired by zinc.
 TMDL approved by EPA on October 25, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3203-center-3216-3217-turkey-cks-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3216-3217-turkey-ck-info.pdf>
- #3217 Turkey Creek
 Impaired by zinc.
 TMDL approved by EPA on October 25, 2006.
 TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3203-center-3216-3217-turkey-cks-tmdl.pdf>
 Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3216-3217-turkey-ck-info.pdf>
- **Watershed Groups Formed**
 - Lamar Lake Community Group
 - Shoal Creek Watershed Partnership
 - **Source Water Protection Plans - <http://maproom.missouri.edu/swipmaps/pwssid.htm> (enter PWSSID)**
 - City of Lamar (PWSSID # 5010446)**
 - Lamar City Lake
 - City of Oronogo (PWSSID # 5010606)**
 - Groundwater

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07186000 Spring River near Waco,
 - #07186480 Center Creek near Smithfield,
 - #07186600 Turkey Creek near Joplin, and
 - #07187000 Shoal Creek above Joplin.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Bartholic Spring,
 - Capps Creek,
 - Center Creek,
 - Clear Creek,
 - Elm Spring,
 - Hearrell Spring,
 - Hickory Creek,
 - McMahan Spring,
 - Shoal Creek,

- Spring River,
- Spring River (mill race), and
- Turkey Creek,
- Unnamed tributary to Capps Creek

Figure 172: Number of Volunteer Water Quality Sampling Events Conducted in 11070207 Spring River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	18	10	6
2	9	74	0
3	3	78	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects**
 - Upper Reach Spring River (G01-NPS-11)
 - Elk River/Shoal Creek Water Quality Restoration – 319 Project (G02-NPS-21)
 - Wildcat Glades Conservation and Audubon Center (G06-NPS-16)
 - Lower Shoal Creek Watershed Restoration Action Strategy (WRAS) Project (G07-NPS-01)
 - Upper Shoal Creek On-site System Implementation (G07-NPS-04)
 - Elk River Watershed Management Action Plans (G07-NPS-11)
- **AgNPS SALT Projects**
 - Little North Fork Spring (SN068)

Figure 173: AgNPS SALT Project Plan Goals for HUC 11070207

Watershed Name	Little North Fork Spring River
Project #	SN068
Watershed Size (ac)	49,467
Cropland (ac)	21,578
Cropland Treated in Plan (ac)	8,016
Pasture/Hayland (ac)	16,665
Pasture/Hayland Treated in Plan (ac)	2,550
CRP Land (ac)	1,375
CRP Treated in Plan (ac)	0
Urban (ac)	901
Urban Treated in Plan (ac)	0
Woodland (ac)	4,913
Woodland Treated in Plan (ac)	100
Public Land (ac)	3,245
Public Land Treated in Plan (ac)	0
Other (ac)	790
Other Treated in Plan (ac)	0
Stream (mi)	194
Stream Treated in Plan (mi)	4

Figure 174:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11070207**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	7,425	Terraces (Ft.)	26,125
Filter Strip (Ac.)	60	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	25	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	2	Critical Planting (Ac.)	17
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	1
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	355	Wells Decommissioned (#)	6
Nutrient Management (Ac.)	1289	CRP Acres	938
CSP Acres	0	WRP Acres	26
WHIP Acres	180	EQIP Grd/surf Water Acres	14

	Planned	Applied
Nutrient Plans (CNMP)	18	21
Conservation Reserve Program	41	26
Conservation Security Program	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 176:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 11070207 Spring

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans			
Planning	1	11	16	0	0	0	0	0			
					acres	acres	acres	acres			
					0	0	0	0			
	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL'S	TMDL Acres Treated	Stream Miles in compliance						
Total Maximum Daily Loads	0	0	0	0	0						
	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	0	0	0	0	0	0	0	0	0
	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events				
Education/Information	0	0	0	0	2	55	0				
	OAPP Plans Produced	OAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed			
Water Quality Monitoring	0	0	0	0	0	0	0	0			
	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation							
Groundwater Protection	0	0	0	0							
	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced					
Best Management Practices	0	0	0	0	0	0					
	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out				
Agricultural	0	0	0	0	0	0	0				

**Elk River Basin
(HUC 11070208)
Missouri Basin Name – Elk River Basin**

The Elk River basin, HUC 11070208, encompasses 1,032 square miles in the corners of four states, Arkansas, Kansas, Missouri, and Oklahoma. Counties that are partially or entirely within the basin are Benton County in Arkansas; Crawford County in Kansas; Barry, McDonald, and Newton counties in Missouri (866 square miles), and Delaware and Ottawa counties in Oklahoma. The basin runs in a westerly direction. It is bound to the east by the James River basin and the White River basin, bound on the north by the Shoal Creek and the Spring River basins and bound on the south and west by the Lake O' the Cherokees basin. The Elk River headwaters originate in Big Sugar Creek near Seligman, Missouri and Little Sugar Creek near Bentonville, Arkansas. These two streams merge near Pineville, Missouri, to form the Elk River. The Elk River is a sixth order stream for its entire length. Other major tributaries are Indian Creek and Buffalo Creek. The lower portion of Elk River is inundated by, and forms, the Elk River Arm of Grand Lake O' the Cherokees.

There are 234 third order and larger streams in the Elk River basin with a total stream mileage of 1,115 miles. There are 11 water body segments in this basin listed on Missouri's 1998 and 2002 303(d) list with 126.5 miles impaired by nutrients from livestock production. Nonpoint source pollution in the basin comes from various sources including urban development and runoff, mining, land conversion from forest to pasture, free ranging livestock, road construction, and septic tanks. This area of Missouri has a very large concentration of poultry operations. The basin is mainly rural but some areas are rapidly developing. All classified streams in the Elk River basin are designated for aquatic life protection and livestock & wildlife watering. The permanent flowing reaches of the Elk River, Buffalo Creek, Indian Creek, Big Sugar Creek, and Lost Creek are also designated for whole body contact recreation and secondary contact recreation. The permanently flowing reaches of South Indian Creek are designated for cold water fishery.

Watershed Efforts and Ongoing Activities

[Watershed Planning](#)

- ***Watershed Management Plans***
 - Watershed Restoration Action Strategy (WRAS)
Status - substantially implemented through G00-NPS-13 and G02-NPS-21
 - 9-element plan for Elk River HUC 11070208
Status - being developed through G00-NPS-13 and G02-NPS-21
- ***TMDLs***
 - #3250 Big Sugar Creek
 - #3269 Buffalo Creek
 - #3273 Buffalo Creek
 - #3246 Elk River
 - #3256 Indian Creek
 - #3249 Little Sugar Creek
 - #3262 Middle Indian Creek
 - #3263 Middle Indian Creek
 - #3260 North Indian Creek
 - #3268 Patterson Creek

#3259 South Indian Creek

Impaired by nutrients.

TMDL approved by EPA on March 26, 2004.

TMDL <http://www.dnr.mo.gov/env/wpp/tmdl/3246-elk-r-tmdl.pdf>

Information Sheet <http://www.dnr.mo.gov/env/wpp/tmdl/info/3246-elk-r-basin-info.pdf>

- **Watershed Groups Formed**
 - Elk River Watershed Improvement Association
- **Source Water Protection Plans** - none

Water Quality Monitoring

- **Active USGS Gaging Station(s)**
 - #07188653 Big Sugar Creek near Powell,
 - #07188885 Indian Creek near Lanagan,
 - #07188950 Patterson Creek near Tiff City,
 - #07189000 Elk River near Tiff City, and
 - #07189100 Buffalo Creek at Tiff City.
- **Stream Teams** - The following water bodies were monitored between June 1, 2006 and February 28, 2007:
 - Elk River, and
 - Indian Creek.

Figure 177: Number of Volunteer Water Quality Sampling Events Conducted in 11070208 Elk River Basin.

Training Level	Monitoring Category		
	FY06 Invertebrate	FY06 Chemical	FY06 Visual
Intro/1	3	2	1
2	0	0	0
3	0	8	0
4	0	0	0

Active Nonpoint Source Projects

- **319 NPS Projects** – none
- **AgNPS SALT Projects**
 - Indian Creek Project (SN075)

Figure 178: AgNPS SALT Project Plan Goals for HUC 11070208

Watershed Name	Indian Creek
Project #	SN075
Watershed Size (ac)	87,522
Cropland (ac)	1,700
Cropland Treated in Plan (ac)	200
Pasture/Hayland (ac)	42,040
Pasture/Hayland Treated in Plan (ac)	15,000
CRP Land (ac)	50
CRP Treated in Plan (ac)	0
Urban (ac)	2,000
Urban Treated in Plan (ac)	0
Woodland (ac)	36,612
Woodland Treated in Plan (ac)	345
Public Land (ac)	5,120
Public Land Treated in Plan (ac)	0
Other (ac)	0
Other Treated in Plan (ac)	0
Stream (mi)	46
Stream Treated in Plan (mi)	5

Figure 179:

**NATURAL RESOURCE CONSERVATION SERVICE (NRCS) AND PARTNER CONTRIBUTIONS
HUC 8 - 11070208**

Contour buffer Strips (Ac.)	0	Diversion (Ft.)	0
Field Border (Ft.)	28	Terraces (Ft.)	0
Filter Strip (Ac.)	0	Lined WW or outlet (Ft.)	0
Grassed waterways (Ac.)	0	Vegetative barrier (Ft.)	0
Riparian forest buffer (Ac.)	2	Critical Planting (Ac.)	0
Stream/Shore protection (Ft.)	0	Grade Stab. Structures (#)	0
Windbreak (Ft.)	0	Water/Sediment Basins (#)	0
waste Utilization (Ac.)	98	Wells Decomissioned (#)	0
Nutrient Management (Ac.)	388	CRP Acres	132
CSP Acres	0	WRP Acres	0
WHIP Acres	0	EQIP Grd/surf Water Acres	0

	Planned	Applied
Nutrient Plans (CNMP)	10	8
Conservation Reserve Program	3	5
Conservation Security Program	0	0
Wetland Reserve Program	0	0
Wildlife Hab. Incentive Program	0	0
EQIP Ground/Surface water plans	0	0

This data table was compiled using the NRCS database at: <http://ias.sc.egov.usda.gov/prsreport2007/>

Figure 180:

Summary of FY07 319 NPS Project Evaluation Measures
HUC 11070208 EIk

Activities	Groups Formed	Meetings Held	Ave Attendees	Planning Documents Produced	Watershed Mgmt Plans W/ 9-elements	Watershed Mgmt Plans W/out 9-elements	Source Water Protection Plans Written	Other Plans
Planning	0	0	0	0	0	0	0	0
					acres	acres	acres	acres
					0	0	0	0

	TMDL Action Plans Written	TMDL Action Plans Implemented	BMP's Applied Toward TMDL'S	TMDL Acres Treated	Stream Miles in compliance
Total Maximum Daily Loads	0	0	0	0	125

	Field Days	Field Day Participants	Workshops	Workshop Participants	Demonstration Sites	Demonstration Site Participants	Brochures & Factsheets Developed	Brochures & Factsheets Distributed	GIS Maps Files Developed	PSA's Produced	PSA's Aired
Education/Information	0	0	3	371	0	0	0	0	0	0	0

	Newsletters Developed	Newsletters Distributed	Webpages Produced	Webpage Views	Clean-Up Events Conducted	Clean-Up Event Participants	Tons Collected at Clean-Up Events
Education/Information	2	100,000	6	0	1	24	1

	OAPP Plans Produced	OAPP's Revised	Stream Teams Formed	Training Sessions Conducted	Volunteers Trained	Sampling Locations Monitored	Sampling Events Conducted	Water Quality Parameters Analyzed
Water Quality Monitoring	0	0	0	0	0	0	0	0

	Wells Plugged	Wells Monitored	Sinkhole/Karst Protection	Groundwater Remediation
Groundwater Protection	0	0	0	0

	BMP's Implemented	Acres Impacted by BMP's	Tons of Sediment Saved	Lbs. Nitrogen Reduced	Lbs. Phosphorus Reduced	Lbs. Pesticides Reduced
Best Management Practices	0	0	0	0	0	0

	CNMP Developed	CNMP's Updated	CNMP's Implemented	Acres Impacted by CNMP's	Animals Impacted by CNMP's	Animal Waste Facilities Built	lbs of Manure Transferred Out
Agricultural	0	0	0	0	0	0	0

IV. Other Department Nonpoint Source Water Quality Accomplishments

The department programs listed below work in conjunction with the Nonpoint Source Program and can impact nonpoint sources and influence 319 projects either through shared funding to assist the projects, by providing information for watershed management plans, or by assisting in evaluating outcomes of 319 projects.

A. Agricultural NPS SALT Program

Agricultural Nonpoint Source (AgNPS) Special Area Land Treatment (SALT) Program information can be accessed at: <http://www.dnr.mo.gov/env/swcp/service/swcpsalt.htm>. Individual watershed goals and project descriptions may be viewed at that Web site.

Provided by funding through half of the 1/10th of one percent Parks and Soils Sales Tax of Missouri, the AgNPS SALT program is offered through the department's Soil and Water Conservation Program. The program allows county Soil and Water Conservation Districts (SWCDs) to direct technical and financial assistance to landowners with land identified and prioritized as having water quality problems, to address agricultural nonpoint sources of pollution. Success of these projects is dependent on the cooperation of numerous partners using a variety of tools to accomplish project goals.

Below is a list of the seventy-four AgNPS SALT projects that were active in FY2007.

Figure 181: FY07 Active AgNPS SALT Projects

District	Project Name	Start Date	Length (years)	District	Project Name	Start Date	Length
Cooper	Upper Petite Saline Creek	1/1/2001	7	Cooper	Upper Moniteau Creek	7/1/2004	7
Montgomery	Elkhorn Creek	1/1/2001	7	DeKalb	Little Third Fork	7/1/2004	6
Benton	Deer Creek	7/1/2001	7	Hickory	Lower Pomme De Terre River	7/1/2004	7
Boone	Upper Hinkson Creek	7/1/2001	7	Howard	Little Chariton River	7/1/2004	7
Dallas	Lindley Creek	7/1/2001	7	Miller	Upper Tavern Creek	7/1/2004	7
Scott	North Cut	7/1/2001	7	Moniteau	Lower Moniteau Creek	7/1/2004	6
Moniteau	Upper Moreau River	7/1/2001	7	Pettis	Muddy Creek	7/1/2004	7
Pemiscot	Pemiscot Bayou	7/1/2001	7	Polk	Hominy Creek AgNPS SALT	7/1/2004	7
Pettis	Camp Branch and Basin Fork	7/1/2001	7	Schuyler	South Fork N. Fabius	7/1/2004	7
Polk	Bear Creek	7/1/2001	7	Scotland	N. Fork/Middle N. Fabius	7/1/2004	7
Wright	Whetstone Creek	7/1/2001	7	Taney	Beaver Creek	7/1/2004	6
Carroll	McCroskie Creek	7/1/2002	7	Barton	Little North Fork Spring Creek	7/1/2005	7
Hickory	Weaubleu Creek	7/1/2002	7	Bates	Lower Marais des Cygnes River	7/1/2005	6

District	Project Name	Start Date	Length (years)	District	Project Name	Start Date	Length
Mercer	Honey Creek	7/1/2002	7	Caldwell	Shoal Creek	7/1/2005	7
Monroe	Bee and Turkey Creeks	7/1/2002	7	Carroll	Big Creek	7/1/2005	7
Putnam	Blackbird Creek	7/1/2002	7	Dallas	Greasy Creek	7/1/2005	7
Randolph	Dark and Sugar Creeks	7/1/2002	7	Grundy	Hickory Creek	7/1/2005	5
Saline	Finney Creek	7/1/2002	6	Maries	Little Maries River	7/1/2005	7
Scotland	Little Fox Creek	7/1/2002	7	McDonald	Indian Creek	7/1/2005	7
Stone	Crane Creek	7/1/2002	7	Mercer	Muddy Creek	7/1/2005	7
Vernon	Lower Marmaton River	7/1/2002	7	Montgomery	Bear/Brush Creek	7/1/2005	7
Webster	James River Headwaters	7/1/2002	7	St. Francois	Upper Big River	7/1/2005	5
Stoddard	Jenkins Basin	7/1/2001	6	Scott	Ramsey Creek	7/1/2005	7
Caldwell	Mudd Creek	7/1/2003	7	Stoddard	Dexter Creek	7/1/2005	6
Cass	South Grand River	7/1/2003	7	Vernon	Osage Plains	7/1/2005	7
Daviess	Hickory Creek	7/1/2003	6	Wright	Woods Fork / Gasconade River	7/1/2005	7
Harrison	West Fork of Big Creek	7/1/2003	7	Benton	Lower Cole Camp	7/1/2007	7
Knox	North Fork of Salt River	7/1/2003	7	Clinton	Shoal Creek	7/1/2007	6
Laclede	Dry Auglaize	7/1/2003	7	Cole	Grays Creek	7/1/2007	7
Macon	Long Branch	7/1/2003	7	Macon	Middle Fork Salt River	7/1/2007	7
Maries	Upper Big Maries River	7/1/2003	7	Montgomery	Lower Loutre	7/1/2007	7
Osage	Lower Big Maries River	7/1/2003	7	Osage	Little Maries Creek	7/1/2007	7
Ozark	South Bull Shoals	7/1/2003	7	Pemiscot	Pemiscot Clay Root	7/1/2007	7
Shelby	North Fork Salt River	7/1/2003	7	Saline	Salt Fork Creek	7/1/2007	7
Warren	Charette Creek	7/1/2003	7	Scott	St. Johns Bayou	7/1/2007	7
Barry	Flat Creek	7/1/2004	7	Stoddard	Bess Slough	7/1/2007	6
Chariton	Mussel Fork	7/1/2004	7	Cape Girardeau	Hubble Creek	7/1/2001	6

Further discussion and links to individual SALT projects that were active in FY07 is provided within the individual HUC 8 watershed pages.

B. Source Water Protection

Public Drinking Water information can be accessed at:

<http://www.dnr.mo.gov/env/wpp/dw-index.htm>

The Safe Drinking Water Act (SDWA) Amendments of 1996 require states to implement Source Water Assessment Plans (SWAP) to better protect public drinking water from contamination. These tasks include:

- Delineate source water areas
- [Inventory significant potential sources of contamination](#)
- [Determine the susceptibility of each public water supply to contamination](#)
- [Make the results available to the public](#)

As of June 22, 2007, there are 34 surface water community water supplies (CWS) in the state that had approved Source Water Protection Plans (SWPPs), which served a population of 2,900,000. There are 36 ground water CWS in Missouri with approved SWPPs, which served a population of 330,000. The total population served by the 70 approved SWPP is 3,230,000 or about 73% of the state's population who are served by CWS. The Source Water Inventory Projects Web site <http://drinkingwater.missouri.edu/swip/index.html> provides information on source water assessment for Missouri's drinking water supplies.

CREP Overview

The Conservation Reserve Enhancement Program (CREP) is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water.

The program is a partnership among producers; tribal, state, and federal governments; and, in some cases, private groups. CREP is an offshoot of the country's largest private-lands environmental improvement program - the Conservation Reserve Program (CRP).

Like CRP, CREP is administered by USDA's Farm Service Agency (FSA). By combining CRP resources with state, tribal, and private programs, CREP provides farmers and ranchers with a sound financial package for conserving and enhancing the natural resources of farms.

CREP addresses high-priority conservation issues of both local and national significance, such as impacts to water supplies, loss of critical habitat for threatened and endangered wildlife species, soil erosion, and reduced habitat for fish populations such as salmon. CREP is a community-based, results-oriented effort centered around local participation and leadership.

Planning Efforts

There are currently 70 SWPPs on file with the Public Drinking Water Branch of which 34 are for surface water and 36 for groundwater. As of June 22, 2007, 60 community water supplies (30 groundwater systems and 30 surface water systems) were in various

stages of implementing SWPPs. The Public Drinking Water Branch, in association with the USEPA and other partners, has an active program to reach out to community planners and civic leaders to educate and inform the citizens of Missouri about the importance and benefits of establishing SWPPs in their communities.

Further discussion and links to approved source water plan information are provided within the individual HUC 8 watershed pages.

C. Total Maximum Daily Load (TMDL) Development

Under the federal [Clean Water Act](#), the TMDL program provides a framework for identifying and cleaning up impaired waters. [Section 303\(d\)](#) of the law requires states to identify all waters that are failing to meet the state's [water quality standards](#). These are waters that remain impaired even though the existing regulatory and permitting requirements have been put in place. The state is required to develop a TMDL for all waters on the 303(d) list. Missouri's 2002 303(d) List can be viewed at the following URL: http://www.dnr.mo.gov/env/wpp/waterquality/2002_303d_list.pdf

The TMDL is a mathematical calculation of the amount of a specific pollutant a water body can absorb and still meet water quality standards. Each TMDL document includes allocations of the acceptable load for all sources of the pollutant. It also includes an implementation plan to identify how the load will be reduced to a level that will protect water quality. The department is currently required to develop TMDLs for 174 impaired water bodies for approval by the U.S. EPA. Since 1999, 143 have been completed and approved, including 36 in FY2007. Each river, stream or lake on the list will have a TMDL study done and a plan written for restoring the water to its designated uses.

Information contained in a TMDL document includes:

- Location of the impaired water body.
- Identification of the pollutant(s).
- Sources of the pollutant(s).
- A calculation of the pollutant "load" that the water body can assimilate without becoming impaired.
- A plan to reduce the pollutant "load" and restore the water body to meet the standards for its designated use.

TMDLs are best used to address nonpoint sources of pollution that occur when runoff from rainwater, snowmelt, and crop irrigation carries pollutants into the water.

Additional information on approved TMDLs and those in progress can be viewed at the following Web site: <http://www.dnr.mo.gov/env/wpp/tmdl/index.html>. Further discussion and links to TMDL information for each basin in Missouri is provided in Section III of this report, within the individual HUC 8 watershed pages.

Figure 182: Water bodies having TMDLs approved in FFY 2007

WBID #	Stream Segment Name	Date EPA Approved	HUC 8
1	Mississippi River, Across 16 counties: Clark to Pemiscot county PDF	11/3/2006	7110001
50	South Wyaconda River, Clark County (EPA Established) PDF	11/22/2006	7110001
56	North Fabius River, Marion County (EPA Established) PDF	11/15/2006	7110002
73	Troublesome Creek, Marion County (EPA Established) PDF	11/22/2006	7110003
121	Middle Fork Salt River, Monroe County (EPA Established) PDF	11/1/2006	7110006
1707	Mississippi River, Across 16 counties: Clark to Pemiscot county PDF	11/3/2006	7140101
3152	Mississippi River, Across 16 counties: Clark to Pemiscot county PDF	11/3/2006	8010100
3134	Spillway Ditch, New Madrid County (EPA Established) PDF	11/22/2006	8020201
3041	Old Channel Little River, New Madrid (EPA Established) PDF	11/1/2006	8020204
226	Missouri River, Across 25 counties: Atchison to St. Louis county PDF	11/3/2006	10240005
248	Little Tarkio Creek, Holt County (EPA Established) PDF	10/13/2006	10240005
327	Third Fork Platte River, Buchanan County (EPA Established) PDF	11/15/2006	10240012
436	Big Muddy Creek, Daviess County (EPA Established) PDF	10/13/2006	10280101
468	Middle Fork Grand River, Worth and Gentry Counties (EPA Established) PDF	11/15/2006	10280101
554	Honey Creek, Grundy and Livingston County (EPA Established) PDF	11/15/2006	10280102
619	East Fork Medicine Creek, Sullivan and Putnam Counties (EPA Established) PDF	11/22/2006	10280103
623	Little Medicine Creek (West Fork), Grundy County (EPA Established) PDF	10/13/2006	10280103
1299	Miami Creek, Bates County (EPA Established) PDF	11/15/2006	10290102
1336	Clear Creek, Vernon County (EPA Established) PDF	11/15/2006	10290105
1250	Big Creek, Henry County (EPA Established) PDF	10/13/2006	10290108
356	Missouri River, Across 25 counties: Atchison to St. Louis county PDF	11/3/2006	10300101
701	Missouri River, Across 25 counties: Atchison to St. Louis county PDF	11/3/2006	10300102
811	East Brush Creek, Moniteau County PDF	12/11/2006	10300102
959	Straight Fork, Morgan County PDF	12/11/2006	10300102
865	Flat Creek, Pettis County (EPA Established) PDF	11/22/2006	10300103
883	Gabriel Creek, Morgan County (see TMDLs in development on DNR webpage)	7/27/2007	10300103
921	South Fork Blackwater Creek, Johnson County (EPA Established) PDF	11/15/2006	10300104
1604	Missouri River, Across 25 counties: Atchison to St. Louis county PDF	11/3/2006	10300200
3188	North Fork Spring River, Barton County (EPA Established) PDF	11/22/2006	11070207
3203	Center Creek, Jasper County PDF	10/25/2006	11070207
3216	Turkey Creek, Jasper County 3282-turkey-ck-tmdl.pdfPDF	10/25/2006	11070207
3217	Turkey Creek, Jasper County 3282-turkey-ck-tmdl.pdfPDF	10/25/2006	11070207

Four TMDLs were completed in calendar year 2007 and within FY2007: Gabriel Creek, Little Lindley Creek, Bynum Creek, and Dog Creek.

TMDL staff participated in 21 local watershed related meetings according to the table below.

Figure 183: TMDL Stakeholder Meeting Attendance

Meeting Location	No. of Meetings
Big River	8
Spring Branch	4
Town Branch/Piper Creek	2
Peruque Creek	1
Mound Branch	1
Jack's Fork River	1
Lamar Lake	1
Tri-State Mining Partnership Center and Turkey Creeks	1
Springfield Public Works Pearson and Wilson Creeks	1
Marais des Cygnes	1
Stream Team – Central Region	1

In 2007, locally led TMDL Action Plans are being implemented at 30 water body segments within 14 impaired water bodies.

Additional information on approved TMDLs and those in progress can be viewed at the following Web site: <http://www.dnr.mo.gov/env/wpp/tmdl/index.html>. Further discussion and links to TMDL information for each basin in Missouri is provided in Section III, within the individual HUC 8 watershed pages.

D. Hazardous Waste Program (Superfund Sites)

In 1980, the U.S. Congress established the [Comprehensive Environmental Response, Compensation and Liability Act \(CERCLA\)](#), better known as Superfund. This law was passed in response to the indiscriminant disposal of the by-products of industrial life, which contaminated soil and water, resulting in threats to public health and the environment. The federal law provided both response and funding mechanisms for the cleanup of hazardous substance disposal sites. The Superfund section is designed to clean up contaminated property where releases of hazardous substances have occurred in the past or are threatening to occur due to past practice. The federal law requires the past polluters, called responsible parties, to pay for the cleanup. The Missouri Department of Natural Resources, Superfund Section has responsibility for many of these sites.

National Priorities List Sites <http://www.epa.gov/superfund/sites/npl/mo.htm>

- Annapolis Lead Mine, Iron County
- Armour Road, Clay County
- Bee Cee Manufacturing Plant, Dunklin County
- Big River Mine Tailings/St. Joe Minerals, St. Francois County
- Conservation Chemical Company, Jackson County

- Ellisville Site, St. Louis County
- Fulbright Landfill, Greene County
- Kem-Pest Laboratories, Cape Girardeau County
- Lake City Army Ammunition Plant, Jackson County
- Lee Chemical, Clay County
- Madison County Mines, Madison County
- Minker/Stout/Romaine Creek, Jefferson County
- Missouri Electric Works, Cape Girardeau County
- Newton County Mine Tailings, Newton County
- Newton County Wells, Newton County
- Oronogo-Duenweg Mining Belt, Jasper County
- Pool's Prairie Site, Newton County
- Quality Plating Site, Scott County
- Riverfront Industries, Franklin County
- Shenandoah Stables, Lincoln County
- Solid State Circuits, Inc., Greene County
- St. Louis Airport/HIS/Futura Coatings, St. Louis County
- Syntex Facility, Inc., Lawrence County
- Times Beach Site, St. Louis County
- Valley Park TCE, St. Louis County
- Weldon Spring Former Army Ordnance Works, St. Charles County
- Weldon Spring Quarry/Plant/Pitts (USDOE), St. Charles County
- Westlake Landfill, St. Louis County

E. Land Reclamation Program <http://www.dnr.mo.gov/env/lrp/index.html>

Historically, nearly 67,000 acres have been left unreclaimed by coal-mining operations, and an estimated 40,000 acres were left abandoned through the mining of other commodities. Missouri was left with acid mine drainage, dangerous high walls, hazardous water bodies, open wells and mine shafts, barren mine spoils, coal waste, soil erosion, stream sedimentation, and channelized streams.

The Land Reclamation Program plays an integral role in protecting and preserving Missouri's water resources. The program is responsible for regulating today's mining industry and for correcting health, safety and environmental problems associated with abandoned mines. When properly reclaimed, the land can once again be used as for a variety of uses, including agricultural and wildlife areas. Wildlife habitat remains a primary concern of the Land Reclamation Program. Whenever possible, abandoned mines are reclaimed with wetlands, native prairie grasses and trees that are part of Missouri's history. Of primary importance to this report is that reclaiming abandoned mine land (AML) protects the environment by preventing or addressing toxic or acid mine drainage, groundwater contamination and soil erosion.

In addition to Coal mine Reclamation, the program was approved to use funds to close Lead and Zinc mine shafts in southwest Missouri. Since that approval, 42 abandoned Lead/Zinc mine shafts have been closed to the benefit of groundwater quality in that region.

Rocky Fork Abandoned Mine Project. In March 2007, the Missouri Land Reclamation Program (LRP) began construction work on the Rocky Fork AML Reclamation Project. The project was completed in October of 2007. The Rocky Fork project site was a 27-acre eroding coal waste pile and a 35-acre coal slurry pond that posed a threat to public safety and to water quality in Rocky Fork Creek. This site is located in the Missouri Department of Conservation's Rocky Fork Lakes Conservation Area in Boone County, approximately 10 miles north of the City of Columbia (population 84,531).

The project site is located within a 3,500-acre area that was strip-mined by the Peabody Coal Company from the late 1950's until 1972. Over the years, erosion has cut deep ravines in the coal waste pile which is now located in a highly visited public use area. The 15 to 20 ft. deep ravines were very unstable, creating significant danger to visitors using public lands. The slurry pond dam was broken in several locations. If the dam had become completely breached, thousands of tons of coal slurry could have entered Rocky Fork and Perche Creeks. These creeks are located in a rapidly developing area in Boone County including parts of Columbia.

The completed reclamation project regraded approximately 27 acres of exposed mine waste and gob material at the old tippie site and loadout facility to a gentle slope. The mine wastes are extremely acidic, so large quantities of agricultural lime was applied and incorporated into the graded area. Following lime application, the area was covered with 2 - 3 ft. of good quality glacial-till overburden borrowed from a nearby 9-acre mine spoil ridge. Additionally, a 5-acre eroding portion of the slurry pond was reclaimed by grading, incorporating lime and covering with glacial-till overburden. Limestone armored drop-down structures were installed to control erosion and improve the long-term stability of the slurry pond. All affected areas were revegetated. Three acid wetland areas, totaling one acre, were reconstructed or enhanced. The wetlands were surface treated with calcium carbonate in the form of agricultural lime and covered with organic matter obtained from the City of Columbia's compost facility. Two small acid ponds, not directly associated with the earthmoving activities, were also neutralized under this project.

Some reclamation statistics are maintained by Department of Interior, Office of Surface Mining and can be found in their 2006 annual report
<http://www.osmre.gov/annualreports/annualreport06.htm>

F. Financial Assistance Center and State Revolving Fund

The Financial Assistance Center provided the state coordinator for Project WET (Water Education for Teachers) and cooperates with the Division of State Parks on river based habitat restoration projects such as tree plantings. The Project WET coordinator works with entities seeking advice and help in meeting the education and outreach components of their Phase II Storm Water plans.

State Revolving Fund (SRF) information can be found at:

<http://www.dnr.mo.gov/env/wpp/srf/cwsrf-info.htm>

The State Revolving Fund (SRF) provides low-interest loans to communities for wastewater and drinking water infrastructure projects. Projects may be new construction or the improvement or renovation of existing facilities. Various programs are listed below.

NPS Animal Waste Disposal Loan Program

This is a nonpoint source loan program designed to provide low interest financing to small producers for design and construction of animal waste treatment facilities.

<http://www.dnr.mo.gov/env/wpp/srf/cwsrf-animal-loans.htm>

NPS Neighborhood Improvement Loans

The SRF may finance neighborhood improvement projects if the project is a benefit to water quality and the problem is addressed in [Missouri's NPS Management Plan](#). The Neighborhood Improvement District Act, adopted by the Missouri General Assembly in 1990, provides a framework for political subdivisions of the State to issue general obligation bonds upon a 100% petition or a majority vote (4/7 in general, municipal, or primary elections; 2/3 in special elections) of the residents in an area to form a neighborhood improvement district (NID). These projects were the result of a cooperative effort between a city, county, sewer district and the residents within a proposed neighborhood improvement district. The city/county/district's role was to coordinate efforts and provide engineering, inspection, and financial support. Individual members of the NID were given the choice to pay for the improvement in a lump sum or through special property tax assessments. Projects are financed for 10 to 20 years.

Brownfields Redevelopment

SRF monies may be loaned for Brownsfields Redevelopment if the project can result in a benefit to local water quality and if the category of problem is identified in [Missouri's NPS Management Plan](#). The SRF funds can be used in conjunction with a number of other state and federal funding sources to affect the clean up of a "Brownfields" site, underutilized or abandoned, contaminated, industrial property. The Department of Natural Resources' Voluntary Cleanup Program provides technical oversight for Brownfield remediation. Additional financial incentives (tax rebates or credits) can be obtained through the Missouri Department of Economic Development's Brownfield Redevelopment Program.

Future NPS Loan Programs and Projects

On-site Wastewater Treatment Systems financing programs are in the early stages of development with the expectation of the first program loans being made in SFY 2009. These programs will provide an interest subsidy on conventional financing for resolving ongoing pollution issues resulting from failing on-site systems. Numerous other eligible projects could be financed through the SRF--agriculture best management practices, protection of wetlands and riparian corridors, landfill closures, abandoned mine land restoration, Superfund remediation, etc. Loan recipients for SRF-NPS projects may be

governmental, private sector entities, or individuals if the project is a benefit to water quality and the problem is addressed in Missouri's Nonpoint Source Management Plan

G. Water Quality Standards/Monitoring/Assessment

Water Quality Monitoring, Assessment, and Standards can be found at:

<http://www.dnr.mo.gov/env/wpp/waterquality/>

Water Quality Monitoring

The department monitors water quality to:

- characterize background or reference water quality conditions;
- better understand daily, flow-event, and seasonal water quality variations and their underlying processes;
- characterize aquatic biological communities and habitats and to distinguish between the impacts of water chemistry and habitat quality;
- assess time trends in water quality;
- characterize the impacts of regional and local point and nonpoint source discharges on water quality;
- check for compliance with water quality standards or wastewater permit limits and monitor the effectiveness of pollution control activities; and
- support development of strategies to return impaired waters to compliance with water quality standards.

The department released an updated version of the Missouri Water Quality Report, also called the 305(b) Report, in FY06. The complete document can be viewed at the following URL: <http://www.dnr.mo.gov/env/wpp/waterquality/305b/index.html>

Water Quality Standards

Information on Missouri's water quality standards can be found at:

<http://www.dnr.mo.gov/env/wpp/wqstandards/index.html>

The objective of the Clean Water Act of 1972 along with its amendments are to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The first national set of water quality standards were published in 1983 and codified in 40 CFR Part 131. These regulations allow individual states to construct their own water quality standards framework providing there is no reduction in protection compared to federal guidelines.

Water Quality Standards are to be reviewed and modified every three years. Termed the triennial review process, coordinators with the Missouri Department of Natural Resources meet with the U.S. EPA, other state agencies, and concerned citizens to evaluate the effectiveness of our standards.

Water quality standards provide a means by which attainment of water quality objectives can be measured. The objective is protection of designated uses through the application of narrative or numeric [criteria](#). The level of protection given to a stream, lake, or river is

dependent on the expected or “designated use(s),” of that water. Classified waters in Missouri have been assigned the designated uses that are listed in 10 CSR 20-7.031(C). The Antidegradation section requires actions to maintain existing uses.

Attainment frequency of water quality standards are used in identifying and characterizing waters of the state for purposes of compiling the 303(d) list and 305(b) report. In addition, effluent limits contained in National Pollution Discharge Elimination System (NPDES) permits are frequently derived using water quality standards.
<http://www.dnr.mo.gov/env/wpp/permits/>

During the past fiscal year, much has happened in the world of water quality standards. New standards were put into effect on December 30, 2005, after a lengthy process of citizen and stakeholder involvement, commission and staff review, public comment, and rulemaking procedure. The new standards can be found at Secretary of State’s Web site:
<http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7a.pdf>.

H. Environmental Services Program (ESP)

The Water Quality Monitoring Section (WQMS) of the ESP takes part in the important effort of the Department of Natural Resources to ensure that Missourians will always have clean water for drinking, recreation, tourism, and continued economic growth. Staff travel to all areas of the state conducting a variety of investigations. These investigations routinely include monitoring wastewater discharges, groundwater monitoring, electro fishing and stream surveys. The WQMS often assists with special projects such as enforcement actions, environmental risk assessments, or damage assessments resulting from chemical spills. The staff is responsible for and possess the expertise to collect and evaluate a wide variety of water, sediment, and macroinvertebrate samples. The results of these studies are used to ensure that the rivers, streams, and lakes of Missouri remain a treasure for all to enjoy. (From ESP web page.)

More information on the ESP can be obtained from their Web site,
<http://www.dnr.mo.gov/env/esp/esp-wqm.htm>

V. Agency Partnerships

Partner agencies’ impact on NPS pollution is critical to nonpoint source programs. Both technical and financial assistance is available from various other state agencies to address nonpoint source pollution. This section highlights the many significant contributions that some of our other agency partners made in 2007.

A. Natural Resources Conservation Service (NRCS) <http://www.nrcs.usda.gov/>

NRCS puts nearly 70 years of experience to work assisting America’s private landowners with conserving their soil, water, and other natural resources. Local, state and federal agencies and policymakers also rely on their expertise. NRCS delivers technical assistance based on science and is suited to a customer’s specific needs. Cost-share and financial incentives are available in some cases. Most work is done with local partners.

Participation in NRCS programs is voluntary. Some examples of the work NRCS did in Missouri for 2005/2006 (most recent presentation in this format) are listed below. In some instances the latest available data has been presented.

- ◆ Comprehensive Nutrient Management Plans (CNMPs) - In 2006, 181 were planned, 111 applied.
- ◆ Conservation Buffers - In 2006, 7,544 acres (This includes contour strips, filter strips, grassed waterways, riparian forest buffers).
- ◆ Erosion reduction in 2005 was reported at 287,849 tons.
- ◆ Irrigation water management is now Irrigation Efficiency Improved - In 2006, 43,333 acre-feet were reported.
- ◆ Nutrient Management - In 2006 (practice 590) 98,858 acres.
- ◆ Pest Management - In 2006 (practice 595) 79,828 acres.
- ◆ Wetlands Created, Restored, or Enhanced - 9,305 acres in 2006.

The following table summarizes the most recent report of selected NRCS' Nonpoint Source related activities in FY2006 (FY2007 is not yet published).

Figure 184: **NRCS FFY 2006 Report of Selected NPS-Related Achievements.**

NRCS Fiscal Year 2006 Report		
Summary Conservation Practices	Planned	Applied
Anaerobic Digester, Ambient Temperature (365) (no)	1	
Anaerobic Digester, Controlled Temperature (366) (no)	11	1
Animal Mortality Facility (316) (no)	862	351
Channel Bank Vegetation (322) (ac)	385	235
Channel Stabilization (584) (ft)	261,451	224,375
Composting Facility (317) (no)	736	347
Comprehensive Nutrient Management Plan (100) (no)	10,478	5,789
Conservation Cover (327) (ac)	4,034,405	1,575,471
Constructed Wetland (656) (ac)	2,669	1,920
Controlled Stream access for Livestock Watering (730) (no)	5	2
Cover Crop (340) (ac)	1,185,841	663,693
Critical Area Planting (342) (ac)	73,149	21,584
Field Border (386) (ft)	45,754,578	21,373,346
Filter Strip (393) (ac)	113,880	64,492
Grade Stabilization Structure (410) (no)	10,871	6,338
Grass Buffer Strip (741) (ac)	1,359	869
Manure Transfer (634) (no)	42,820	21,636
Monitoring Well (353) (no)	2	
Mulching (484) (ac)	77,579	47,684
Nutrient Management (590) (ac)	9,790,873	4,561,636
Riparian Buffers - Vegetative (759) (ac)	2	751
Riparian Forest Buffer (391) (ac)	83,565	65,259
Riparian Herbaceous Cover (390) (ac)	19,473	7,822
Spring Development (574) (no)	2,869	1,244
Stewardship Payment (SP) (ac)	102,304	60,801
Stream Corridor Improvement (745) (ft)	45	50

Stream Crossing (578) (no)	5,372	1,793
Stream Crossing (728) (no)	76	108
Streambank and Shoreline Protection (580) (ft)	1,593,191	921,578
Terrace (600) (ft)	57,135,217	38,018,008
Use Exclusion (472) (ac)	2,424,964	1,086,927
Vegetated Sinkhole Buffer (768) (ac)	1	1
Waste Management System (312) (no)	18	33
Waste Storage Facility (313) (no)	9,281	82,562
Waste Treatment (629) (no)	80	12
Waste Utilization (633) (ac)	603,268	299,363
Waste Water & Feedlot Runoff Control (784) (ac)	1,937	1,599
Well Decommissioning (351) (no)	953	491
Well Plugging (755) (no)	3	
Wetland Creation (658) (ac)	9,155	6,599
Wetland Enhancement (659) (ac)	145,265	58,835
Wetland Restoration (657) (ac)	323,216	252,628

Rapid Watershed Assessments

“Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

These assessments are conducted by watershed planning teams traveling through each watershed, meeting with landowners and conservation groups, inventorying agricultural areas, identifying conservation opportunities and current levels of resource management, and estimating impacts of these opportunities on the local priority resource concerns. While these rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost.” (NRCS, RWA Website)

Figure 185: NRCS Rapid Watershed Assessments

NRCS “Internal” Rapid Watershed Assessments for 2007

NRCS Area	HUC Name	HUC Number
Area 5	Upper Black River	11010007
Areas 4 and 5	Current River	11010008
Area 2	North Fabius River	07110002
Area 2	North River Bobs Creek	07110004
Areas 1 and 3	Lower Missouri Crooked River	10300101

University of Missouri “External” Rapid Watershed Assessments for 2007

NRCS Area	HUC Name	HUC Number
Area 4	Sac River	10290106
Area 1	South Grand River	10290108
Area 3	Lower Osage River	10290111
Area 3	Lower Gasconade River	10290203

“Internal” NRCS Rapid Watershed Assessments for 2008 Multi-State HUCs

NRCS Area	HUC Name	HUC Number
Area 2 (MO & IA)	Bear-Wyaconda	07110001
Areas 1 and 3 (MO & KS)	Little Osage River	10290103
Area 4	Spring River	11070207
Area 1 (MO & IA)	Upper Grand River	10280101
Areas 1 and 3 (MO & KS)	Lower Marais Des Cygnes	10290102

Within-State HUCs

NRCS Area	HUC Name	HUC Number
Area 3	Blackwater	10300104
Areas 2 and 3	Lower Missouri River	10300200
Area 4	Pomme de Terre	10290107
Area 5	Whitewater	07140107
Areas 4 and 5	Eleven Point River	11010011

For additional NRCS reporting information select the following link:

<http://ias.sc.egov.usda.gov/prsreport2006/>

B. Missouri Department of Health and Senior Services: <http://www.dhss.mo.gov/>

The mission of the Department of Health and Senior Services (DHSS), Bureau of Environmental Regulation and Licensure, and Bureau of Environmental Epidemiology are to protect and promote quality of life and health for all Missouri citizens by developing and implementing programs and systems that provide:

1. Assessment services for environmental health conditions,
2. Public assurance through education, effective regulation and oversight, and surveillance of environment health conditions, and
3. Public health policies that effectively achieve the DHSS mission.

There is particular cooperation and partnership regarding nonpoint issues relating to private drinking water, on-site sewage, and other various wastewater systems.

The DHSS Health Laboratory provides private well testing services for public assurance of environment health. Local county public health agencies and DHSS provide technical advice to private well owners related to drinking water quality.

The DHSS Bureau of Environmental Regulation and Licensure works to educate and license contractors that construct or repair on-site wastewater treatment systems. A listing by county of On-Site Wastewater Treatment Installers may be found at http://www.dhss.mo.gov/Onsite/onsite_map.html. In general, DHSS also works with local county public health agencies on the issuance of onsite sewage permits <http://www.dhss.mo.gov/Onsite/PermitProcess.html>.

To assure the public of fish consumption safety, the DHSS Bureau of Environmental Epidemiology also assesses fish tissue data obtained from Missouri Department of Conservation (MDC) and Department of Natural Resources (DNR) <http://www.dhss.mo.gov/NewsAndPublicNotices/07FishAdvisory.pdf>. Related to fish consumption safety, DHSS also provides technical support for DNR's Section 303(d) Impaired Waters Listing and TMDL listings. As needed, DHSS also cooperates with MDC and DNR on fish kills and pollution investigations to protect public health from these events.

C. Missouri Department of Conservation <http://mdc.mo.gov/>

Strategic goals of the Conservation Commission and the Missouri Department of Conservation (MDC) are to preserve and restore the state's biodiversity; to inform and educate the public about fish, forest and wildlife conservation; to help landowners manage their land for sustainable resources; to develop and maintain public land that invites public use; and to integrate conservation principles and urban lifestyles. Creating effective partnerships, retaining public support, recruiting new participants and improving our business management systems are also important goals. Direct information was not available from MDC on their activities regarding nonpoint source remediation activities for Federal Fiscal Year 2007. However, MDC's 2006 Annual Report provides several nonpoint source related accomplishments <http://www.mdc.mo.gov/conmag/2007/01/60.htm>.

In 2007, Fisheries staff responded to 7,579 requests for watershed, floodplain, riparian corridor, and stream or lake management information and technical assistance on streams or lakes. MDC made 1,435 on-site visits and wrote 182 recommendation letters or management plans. On-site work included 253 fish population surveys, 309 stocking inspections and 45 fish-kill investigations. Staff conducted 39 stream or lake management workshops attended by 1,176 people. MDC also coordinated or participated in 69 active watershed-focused resource management projects.

D. Missouri Department of Agriculture <http://www.mda.mo.gov>

The Missouri Department of Agriculture sets agriculture policy and provides assistance to farmers throughout the state. While the department maintains its regulatory functions, its expanded duties include: consumer protection; public health roles; environmental advocacy; agricultural marketing; public information and awareness; and promoting new technology and new uses for Missouri's agricultural goods. As its primary mission, the department strives to serve, promote, and protect the agricultural producers, processors, and consumers of Missouri's food, fuel, and fiber products.

Pesticide Applicator Training

Section 281.100 and 2 CSR 70-25.050 (2) of the Missouri Pesticide Use Act and Code of State Regulations authorizes the Missouri Department of Agriculture's Bureau of Pesticide Control to establish minimum criteria for re-certifying Missouri certified Commercial and Non-commercial Pesticide Applicators and Public Operators. Each re-certification training course must be approved in advance by the Bureau of Pesticide Control. <http://www.mda.mo.gov/Pest/bureauintro.htm>

Currently, there are approximately 7,500 commercial, noncommercial, and public pesticide applicators as well as about 24,000 private applicators in Missouri. Depending on the type of license, these applicators have participated in initial training, taken exams or both. In addition to initial training or exams, these applicators recertify by attending training programs conducted by University Extension or other entities and approved by the Missouri Department of Agriculture’s Bureau of Pesticide Control.

Dead Animal Reporting

The Animal Health Division responds to reports of dead livestock that have not been properly disposed. Division staff do not dispose of the animals, but do attempt to locate those responsible and see that they properly dispose of the carcasses in a timely manner as required by the [Disposal of Dead Animal Law](#), Chapter 269, RSMo. <http://www.moga.state.mo.us/STATUTES/C269.HTM>. The division only investigates animals raised for commercial purposes and does not respond to reports of dead animals under the Wildlife Code (deer, coyotes, etc.), or pets, whether confined or stray.

E. United States Geological Survey http://mo.water.usgs.gov/district_info/index.htm

The United States Geological Survey (USGS) is the Nation’s largest earth-science agency and has the principal responsibility within the federal government for providing hydrologic information and for appraising the nation’s water resources. The water resources of Missouri consist of numerous streams, springs, lakes, and aquifer systems. In 2007, the USGS Missouri Water Science Center measures stream flow at about 207 stream-gaging stations, water-surface elevation at 17 lakes and reservoirs, annual peak stage and discharge at 39 crest-stage stations, continuous water-level elevation at 8 ground-water wells, continuous water-quality at 20 water-quality stations, and collects periodic water-quality samples at 94 sites. These hydrologic data and other data are used in research and hydrologic studies to describe the quantity, quality, and location of Missouri’s water resources. The collection, analysis, and interpretation of these data is done in cooperation with other Federal, State and local agencies, universities, and research centers.

Figure 186: USGS Gaging Stations

NUMBER	NAME	TYPE	HU8	BASINNAME
07071000	Greer Spring at Greer	d,c,m	11010011	Eleven Point River Basin
07071500	Eleven Point River near Bardley	d,c,m	11010011	Eleven Point River Basin
07186000	Spring River near Waco	d	11070207	Spring River Basin
07186480	Center Creek near Smithfield	c,m	11070207	Spring River Basin
07186600	Turkey Creek near Joplin	c,m	11070207	Spring River Basin
07187000	Shoal Creek above Joplin	d	11070207	Spring River Basin
07188653	Big Sugar Creek near Powell	d	11070208	Elk River Basin
07188885	Indian Creek near Lanagan	d	11070208	Elk River Basin
07188950	Patterson Creek near Tiff City	c,m	11070208	Elk River Basin
07189000	Elk River near Tiff City	d,c,m	11070208	Elk River Basin
07189100	Buffalo Creek at Tiff City	d	11070208	Elk River Basin

discharge(d), chemical (c), microbiological (m)

VI. Teams, Committees, and Volunteers

A. Missouri Water Quality Coordinating Committee

The Water Quality Coordinating Committee (WQCC) is an informal interagency and public committee dealing with water quality issues. Representatives from non-profit organizations, universities and colleges, cities and businesses, as well as state, federal and local agencies, regularly attend WQCC meetings. It is informal in that the committee has no statutory or regulatory foundation. It exists through and for the participants. Each agency or group brings issues, information or requests to the committee that are related to water quality, and each continues to exercise its statutory responsibilities.

The department originally convened the WQCC to deal with animal waste issues, specifically, poultry in southwest Missouri. The committee's activities continue to be organized through the department's Water Protection Program. As a forum for discussion among agencies on that issue, it was readily apparent that the information exchange and coordination opportunities afforded by the committee were valuable far beyond that original issue, and the committee's scope expanded. A sampling of issues brought before the committee for this reporting period include Missouri's TMDL process, volunteer water quality monitoring, rapid watershed assessment, watershed planning, new AgNPS SALT BMPs, NRCS BMPs, surface water monitoring, an experimental streambank stabilization project, and 319 project updates. The committee meetings are open to the public and have given the public an opportunity to address the agencies on specific water quality concerns. Speakers included members from the Watershed Committee of the Ozarks, EPA Region 7, MDC, DNR, NRCS, UMC Extension, University of Missouri Rolla, and City of Columbia, among others. The Committee may also assist in the coordination and implementation of watershed protection strategies.

During this annual reporting period, six meetings were held. Future meeting information and minutes from previous meetings can be found on the department's web site at <http://www.dnr.mo.gov/env/wpp/wqcc/index.html>.

B. Water Protection Forum

The Water Protection Forum was initiated in May 2005 as a means to involve a variety of individuals in water quality policy discussions. A wide diversity of interests is represented, including agriculture, municipalities, industry, environmental groups, consultants, environmental attorneys, and others. The department must always consider how policy issues affect regulated entities and the public and this is a means to solicit input from those affected interests.

Due to the many complex issues presented at the main Water Protection Forum meetings, the group decided to form several advisory groups to help work on selected issues. These subcommittees include:

- 303(d) List/Water Quality Monitoring Issues,
- Antidegradation Implementation Procedures,

- Continuing Authorities,
- Federal Safe Drinking Water Rules/Design Guide,
- Funding/Staff/Resources,
- Small Flows (<22,500 gal/day) Effluent Limits/Lagoon Pesticides Policy,
- State Revolving Fund (SRF) Priority Points/Process,
- Unclassified Streams/Wetland Classification/Tiered Aquatic Life,
- Water Quality Effluent Limits/Effluent Dominated Streams/Waivers to Disinfect,
- Nutrient Criteria Development Stakeholder Workgroup, and
- Missouri Nonpoint Source Management Plan Revisions Stakeholder Meetings.

During this annual reporting period, two meetings of the entire forum were held along with multiple subcommittee meetings. Future meeting information and presentations from previous meetings can be found on the department's web site at <http://www.dnr.mo.gov/env/wpp/cwforum/index.html>.

C. Water Resources Center

Information on DNR's Water Resources Center can be found at: <http://www.dnr.mo.gov/env/wrc/index.html>.

The Mission of the Missouri Water Resources Center is to administer the development, conservation and use of the state's water resources. The Center's primary role is to provide technical advice and assistance on water use, comprehensive water supply and use planning, ground water, and surface water hydrology.

Collection, maintenance and interpretation of water resources information is imperative in order for Missouri to respond to environmental and economic problems related to water. Types of issues requiring this kind of information include: interstate water availability and usage, public water well locations, water quality and quantity determinations, drought and flood response and planning, coordination and resolution of river basin issues, major water users data collection, groundwater and surface water contamination potential and prevention, and water use decisions.

One can find links to a magnitude of information, both for general knowledge and potentially helpful for watershed planning. These links include drought information, dam and reservoir safety, interstate waters, State Water Plan, groundwater, springs and caves, major water users, surface water, wetlands, publications, forms, frequently asked questions, a staff directory and links to other water related sites.

D. Missouri Stream Teams/Volunteer Water Quality Monitoring Program

Missouri Stream Team and Volunteer Water Quality Monitoring information can be found at the following Web site: <http://www.mostreamteam.org/>.

Summary of Stream Team-related activities, including Volunteer Water Quality Monitoring (VWQM) (Information based on 2006 Calendar Year)

The State of Missouri is rich in water resources, with over 110,000 miles of free flowing streams. The waterways of Missouri are beneficial to all living inhabitants of the state, and indirectly beneficial to the nation as a whole. Missouri Stream Team is a network of citizens who are concerned about Missouri streams. It provides an opportunity to become involved in stream conservation by offering free membership to any interested citizen, family or organization. Stream Teams often adopt a local stream, although doing so is not a requirement. Missouri Stream Teams strive to assist in the proper management of these waterways. The Missouri Stream Team program organizes concerned citizens to address stream problems at the local level. Collectively, Stream Team members learn to monitor water quality on a geographic scale far beyond what government agencies can do. They also work to plant trees, stabilize stream banks, and improve fish and wildlife habitats in or near streams. Homeowners, students, landowners, and businesses are a few examples of the cross section of society that Stream Teams hope to continue to enlist in their efforts to conserve Missouri's greatest natural assets. Each Stream Team has the opportunity to bring together public and private resources to reach the goals of the program. The objectives of Missouri Stream Teams are:

1. To organize concerned citizens to address stream problems that result from pollution, alteration, and general neglect.
2. To address the issues involving stream alteration and pollution on a local basis by involving members of the community and educating them on the importance of water quality, and conservation of natural resources.
3. To draw together public and private resources to implement solutions across jurisdictional lines.
4. To help communities appreciate streams as positive assets through education and group involvement in the program.

Training Levels

The Voluntary Water Quality Monitoring (VWQM) Program currently has five levels of training. The classes are chronological, meaning each one is a pre-requisite for the next, as is submission of appropriate data as listed below. Classes are only offered at specific times of the year, at various training sites around the state.

- ◆ **Introductory:** This is the entry level of monitoring that includes watershed mapping, visual surveys, and biological monitoring. The primary emphasis is education about watersheds. These classes are usually offered in the spring and early summer each year.
- ◆ **Level 1:** Volunteers who have attended the Introductory workshop and submitted site information and biological data are eligible to attend a Level 1 workshop. This level

of monitoring focuses on chemical and physical monitoring (e.g., measuring flow), although biological monitoring is reviewed. A quality control designation of Level 1 indicates that the volunteer has completed the 8-hour Level 1 Workshop. These classes are offered in the fall of each year.

- ◆ Level 2: Volunteers who have attended the Level 1 workshop and have submitted water chemistry and flow data are eligible to attend a Level 2 workshop. Data assigned the quality control designation of Level 2 indicates a volunteer has successfully completed the Level 2 Quality Assurance/Quality Control Workshop, where they correctly identified 75% of the macroinvertebrates covered in the workshop to Order and established accuracy limits on 4 out of 5 chemical parameters. Attending a Level 2 allows the volunteer to check chemical monitoring equipment to ensure it is functioning properly, as well as to improve chemical monitoring techniques. This workshop may also improve the volunteer's ability to correctly identify macroinvertebrates since instructors will assist in identifying unknown invertebrates that volunteers bring to the class from their streams. Volunteers can also get assistance confirming identification of invertebrates in their reference collections. Level 2 classes are offered during the winter of each year.
- ◆ Level 3: The designation of Level 3 indicates that program personnel have evaluated the volunteer in the field at their monitoring site - it is more an audit than a workshop. A volunteer is eligible for a Level 3 audit if they have successfully completed the Level 2 Workshop. Participants must meet accuracy limits on five out of five chemical parameters and correctly identify all invertebrates at their site to Order to be elevated to Level 3. This evaluation is scheduled through appointment only.
- ◆ Cooperative Site Investigation (CSI): CSI volunteers participating in specific projects will be required to successfully complete all VWQM courses through Level 2. They must have demonstrated a commitment to monitoring and submitting data on a timely basis before becoming a CSI. Volunteers shall attend a one-day training class conducted in a classroom setting along with a field exercise to learn proper collection, preservation, tag and transportation of water samples (including Chain-of-Custody procedures) for analysis by the Department of Natural Resources' Environmental Services Program. Training will be conducted statewide on a case-by-case basis, the need for which will be determined by the Department of Natural Resources. Parameters may include *E. coli*, nitrate, ammonia, phosphorus, settleable solids, lead, and/or others as needed.

Stream Team Monitoring/Assessment Activities

- ◆ Number of Stream Teams formed in fiscal year 2007 was 361. These are comprised of 290 teams formed by adults and 71 youth formed teams.
 - Number of volunteers attending the Missouri Stream Team Program's VWQM workshops in calendar year 2007 was 556 attendees at 34 workshops. Note: Individuals can and do attend more than one workshop in a year. Therefore, the number of citizens trained without counting them twice or three times would be slightly less than the count provided. The individual workshops/audits have the following values:
 - 19 "Introduction to VWQM" workshops attended by 367 citizens.
 - 8 Level 1 workshops attended by 160 individuals.

- 4 Level 2 workshops attended by 26 participants.
- 2 Level 3 workshops attended by 3 participants.
- 4 Level 4 (CSI) training sessions were held.
- ◆ Amount of data submitted to the Stream Team Program: See individual watershed (8-digit HUC) descriptions. Twenty “Dedicating a Decade to Water Monitoring” and “Contributing to the State’s Scientific Data” certificates and engraved plaques were awarded by the Department of Natural Resources in 2007.
- ◆ Number of newsletters developed by Stream Team staff:
 - 4950 issues of *Monitoring News & Notes* by DNR were distributed to active monitors in 2007.
 - Missouri Department of Conservation’s *Channels* newsletters can be found at <http://www.mostreamteam.org/channel.asp>
- ◆ Stream Team Activities:

Figure 187: Chart Depicting Stream Team Activities during FFY 2007

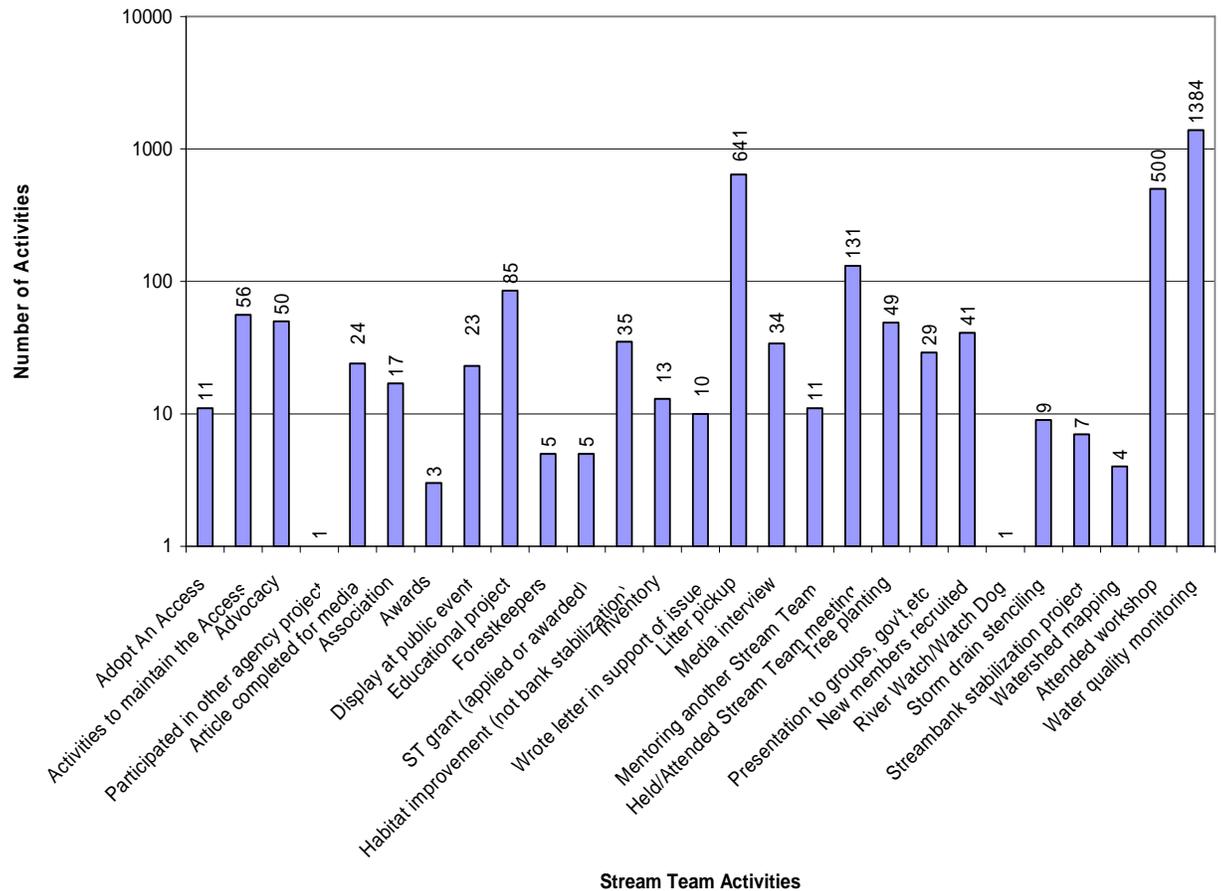


Figure 188: Table of Stream Team Activities during FFY 2007

DESCRIPTION	10/1/2006 to 9/30/2007	UNITS
Adopt An Access	11	agreements
Activities to maintain the Access	56	events
Advocacy	50	hours
Participated in other agency project	1	events
Article completed for media	24	articles
Association	17	hours
Awards	3	awards
Display at public event	23	events
Educational project	85	events
Forestkeepers	5	trips
ST grant (applied or awarded)	5	projects
Habitat improvement (not bank stabilization)	35	projects
Inventory	13	sites
Wrote letter in support of issue	10	letters
Litter pickup	641	tons
Media interview	34	interviews
Mentoring another Stream Team	11	hours
Held/Attended Stream Team meeting	131	attendees
Tree planting	49	trees
Presentation to groups, gov't,etc.	29	presentations
New members recruited	41	people
River Watch/Watch Dog	1	hours
Storm drain stenciling	9	drains
Streambank stabilization project	7	event
Watershed mapping	4	trip
Attended workshop	500+	attendees
Water quality monitoring	1384	events
Zebra mussel monitoring	3	trips

Additional information can be found in the Missouri Stream Team Annual Reports:
<http://www.mostreamteam.org/annreport.asp>

VII. Conclusion: Future Efforts

The Missouri Department of Natural Resources and their resource partners will continue a watershed approach to address nonpoint pollution according to the guidance of Missouri's Nonpoint Source Management Plan. The department anticipates continued success in the use of funding sources to improve water quality, while concurrently improving upon reporting and evaluation measures as specified in the Nonpoint Source Management Plan.

Questions regarding this report or other nonpoint source management issues in the State of Missouri should be directed to Greg Anderson, Chief, Nonpoint Source Unit, Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102, by phone at (573) 751-7144, or by email at greg.anderson@dnr.mo.gov.

VIII. Appendices

- A. Water Data Available through the United States Geological Survey (USGS)
- B. Watershed Information Network
 - 1. Know Your Watershed
 - 2. Surf Your Watershed
 - 3. Science In Your Watershed
- C. References and Useful Web Links
- D. Acronyms
- E. 2002 303(d) List of Impaired Waters Map and List
- F. Outstanding National Resource Waters List
- G. Outstanding State Resource Waters List

Appendix A.

Water Data Available through the United States Geological Survey

About USGS Water Data (<http://nwis.waterdata.usgs.gov/mo/nwis/about>) – excerpt follows.

The United States Geological Survey (USGS) has collected water resources data at approximately 1.5 million sites across the United States, Puerto Rico, and Guam. The types of data collected are varied, but generally fit into the broad categories of surface water and ground water. Surface water data, such as gage height (stage) and streamflow (discharge), are collected at major rivers, lakes, and reservoirs. Ground water data, such as water level, are collected at wells and springs.

Water-quality data are available for both surface water and ground water. Examples of water-quality data collected are temperature, specific conductance, pH, nutrients, pesticides, and volatile organic compounds. The National Water Information System Web (NWISWeb) maintained by the USGS contains current and historical data. Data are retrieved by category of data, such as surface water, ground water, or water quality, and by geographic area.

Not all water-resources data collected by the USGS are provided on the NWISWeb site. To inquire about the availability of additional hydrologic data, as well as other USGS information such as reports, visit the USGS Water Resources Home Page at <http://water.usgs.gov>.

How to Access Current and Historical Water Data (NWISWeb)

1. From USGS' main Web page (<http://www.usgs.gov>), find the "Water" link (<http://water.usgs.gov>)
2. From the Water Resource of the United States Web page, find the link entitled "NWISWeb Water Data" (<http://waterdata.usgs.gov/mo/nwis/nwis>).
3. On the NWISWeb Data for the Nation page, select "Missouri" under the drop down menu for "Geographical Area:" in the upper right hand corner of the Web page (<http://waterdata.usgs.gov/mo/nwis/nwis>).
4. Depending on the type of data you would like to review, five categories exist:
 - Real-time (current-conditions data transmitted from selected surface-water, ground-water, and water-quality sites).
 - Site Information (descriptive site information for all sites with links to all available water data for individual sites).
 - Surface Water (water flow and levels in streams, lakes, and springs).
 - Ground Water (water level in wells).
 - Water Quality (chemical and physical data for streams, lakes, springs, and wells).
5. For the purpose of introducing individuals to the amount of information available from this Web site, USGS will proceed with the Site Information category (<http://waterdata.usgs.gov/mo/nwis/si>).
6. On the Site Information for Missouri Web page, click on the link to "Site Information" (<http://waterdata.usgs.gov/mo/nwis/inventory>).

7. The Site Inventory for Missouri Web site has many criteria by which one can search for information, including county, hydrologic unit, and site name. As part of this exercise USGS will choose the “Hydrologic unit” box only and then click on “Submit” (http://waterdata.usgs.gov/mo/nwis/inventory?search_criteria=huc_cd&submitted_form=induction).
8. Under Select Sites, choose the eight-digit hydrologic unit code (HUC 8) that you wish to gather information on.
(If you do not know which HUC 8 you need, see the instructions for navigating the Web page “Science in Your Watershed” or “Surf Your Watershed”.)
9. Under Chose Output Format, the primary format is a table of the sites sorted by site number, which should already be selected. However, if you wish to display the information in a different format, choose the option most appropriate for your purposes.
10. Click “Submit”. After you have done so, the data may take a while to display, particularly if you have a slower connection. A page should be displayed noting if there is too much information to retrieve, and you will need to select a more specific query.
11. Displayed before you should be a table with links to specific sites with a brief description of the sites.
12. If you wish to view specific water information for a site, simply click on the site number link. The site data will be displayed under “Available Data” with links to the different types for this site. In addition to the available water data, the site location, site type, drainage area, and other information can be obtained from the site’s Web page. A dropdown menu at the top of the page also contains a link to EPA’s “Surf Your Watershed” Web page, which has maps and additional information on the watershed.

Appendix B.

Watershed Information Network

The Watershed Information Network symbol on the right identifies three Web sites cooperating to provide watershed information:

- Know Your Watershed (<http://www.ctic.purdue.edu/KYW/KYW.html>) is maintained by the Conservation Technology Information Center. It focuses on a registry of watershed partnerships working to meet local goals.
- Surf Your Watershed (<http://www.epa.gov/surf/>) is maintained by the U.S. Environmental Protection Agency. It provides a service to help you locate, use, and share environmental information about your place.
- Science in Your Watershed (<http://water.usgs.gov/wsc/>) is maintained by the U.S. Geological Survey. Its focus is on bringing you scientific information such as streamflow organized by watershed.



Though each site is responsible for its own content, they are linked together through the unique Hydrologic Unit Code (<http://water.usgs.gov/GIS/huc.html>) for each watershed.

A clickable map to locate your watershed (http://water.usgs.gov/wsc/map_index.html) is available.

Appendix B.1.

“Know Your Watershed”

Maintained by the Conservation Technology Information Center (CTIC)

About “Know Your Watershed” (<http://www.ctic.purdue.edu/KYW/KYW.html>)

It is a coordinated national effort to encourage the formation of local, voluntary watershed partnerships and help assure that these partnerships successfully attain their goals.

The initiative is sponsored by more than 70 diverse national partners representing private and public corporations, government agencies, and non-profit organizations. Each national partner agrees to provide financial and/or in-kind support.

The national effort is coordinated by the CTIC, a non-profit data and technology information transfer center. In addition to coordinating the National Watershed Network, National Watershed Calendar, and many other on-going tools for watershed coordinators, the effort also...

- Stimulates multiplication of consistent messages among all national partners to state and local leaders of organizations, government agencies and companies.
- Serves as a conduit between national partners who have useful tools and coordinators of local watershed partnerships.
- Shares state activities and successes with state-level stakeholders in other states and regions.
- Facilitates and/or encourages broad-based state-level partnerships that encourage and provide support to local watershed partnerships.
- Encourages use and sharing of processes and methods that have been found to work successfully for watershed coordinators.

National Watershed Network (<http://www.ctic.purdue.edu/KYW/nwn/nwn.html>)

The National Watershed Network is a registry of locally led watershed partnerships working to meet local goals through voluntary actions.

- Search the registry by providing your state, county or watershed name to find active watershed partnerships in your watershed (<http://www.ctic.purdue.edu/KYW/NWN/WatershedForm1.html>).
- Point and click by using the interactive map (http://www.ctic.purdue.edu/KYW/NWN/US_Watersheds_8digit.html). Or,
- Identify an organization who has already faced a similar issue by using the issue/concern search (<http://www.ctic.purdue.edu/KYW/NWN/WatershedForm2.html>).

You can also register your watershed partnership with the National Watershed Network (<http://www.ctic.purdue.edu/KYW/NWN/WatershedApplication.html>).

- When you register with the National Watershed Network, you are registering with an exclusive network of watershed partnerships. Partnerships listed on the Network actively work to make their watershed healthier. They welcome all stakeholders and encourage everyone with a stake to get involved in the search for assessing the watershed, setting goals and developing strategic solutions that can be locally implemented on a voluntary basis.

- To register, simply fill out the form at <http://www.ctic.purdue.edu/KYW/NWN/WatershedApplication.html>. Call (765) 494-9555. You will be contacted annually to update the information.
- When you register, you benefit in four ways:
 1. New watershed partnerships use the Network to find a mentor. This ‘sister’ partnership can help guide them through the process, answer questions, or lend an ear for use as a sounding board.
 2. Nearly 100 national partners rely on the annual survey the Network conducts. The partners rely on feedback to develop new technologies, programs, and resources. Many local partnerships have also worked directly with individual national partners to obtain assistance with monitoring activities, demonstrating management practices, conducting training sessions, and much, much more.
 3. Partnership information is on the web. Viewers learn details about what your group is doing.
 4. Receive a free subscription to *Watershed Leader*, the newsletter published for watershed groups. It carries the latest in ideas, programs, resources, events, and other news of interest to watershed coordinators.

Appendix B.2.

“Surf Your Watershed”

Maintained by the United States Environmental Protection Agency (USEPA)

About “Surf Your Watershed” (<http://www.epa.gov/surf/>)

Surf Your Watershed contains the following databases.

- Adopt Your Watershed,
- Environmental Web sites, and
- Locate Your Watershed.

Adopt Your Watershed

Information can be added to any of these databases using the Add Information button found at the top of Surf Your Watershed pages. Additional information can also be found at this link.

- Adopt Your Watershed (<http://www.epa.gov/adopt/>) - This is a voluntary, national catalog of organizations involved in protecting local water bodies, including formal watershed alliances, local groups, and schools that conduct activities such as volunteer monitoring, cleanups, and restoration projects. You can search for a group in your area either by state, zip code, group name, keywords, or even stream name. As of December 2006 over 4000 groups are indexed.
- Wetlands Restoration Projects (<http://www.epa.gov/owow/wetlands/restore/>) - View ongoing wetlands projects, add information about your own project or update previous information about your project. Organized by state and watershed. (Restoration Project Directory can be found at <http://yosemite1.epa.gov/water/restorat.nsf/rpd-2a.htm?OpenPage>)
- American Heritage Rivers (<http://www.epa.gov/rivers/>) - A multi-agency initiative to help communities find support for their rivers. The database offers a “yellow pages” directory of services to help communities revitalize their rivers environmentally, economically, and culturally.

Environmental Web sites

A directory of Web sites dedicated to environmental issues and information can be found at <http://www.epa.gov/watershed/envsites/>. Search this SURF database using keywords, geography, organization, or even by the information medium you desire. You can locate your place and find relevant information.

Locate Your Watershed

Watersheds are those land areas that catch precipitation and drain to specific marshes, streams, rivers, lakes, or to ground water. Choose from the options below to locate your watershed.

- Search by map – Use a clickable map to locate your watershed.
- Find a place – Search all the geographic navigation tables in Surf Your Watershed by your city, river, county, state, watershed, zip code, 8-digit hydrologic unit code, or other information.
- Places - Use USGS’ Geographic Names Information System to locate your watershed by querying on lakes, airports, rivers, parks, schools, and more.

Appendix B.3.

“Science in Your Watershed”

Maintained by the United States Geological Survey (USGS)

About “Science In Your Watershed” (<http://water.usgs.gov/wsc/>)

The purpose of this site is to help you find scientific information organized on a watershed basis. This information, coupled with observations and measurements made by watershed groups, provides a powerful foundation for characterizing, assessing, analyzing, and maintaining the status and health of a watershed.

A watershed is defined as the divide separating one drainage basin from another and in the past has been generally used to convey this meaning. However, over the years, use of the term to signify drainage basin or catchment area has come to predominate, although drainage basin is preferred. Drainage divide, or just divide, is used to denote the boundary between one drainage area and another.

Discussions with watershed groups across the country resulted in this Web site. This Web site provides access to:

- Locate Your Watershed (http://water.usgs.gov/wsc/map_index.html) - use the mapping interface to locate your watershed and link to additional information from your watershed.
- Information Discovery (<http://water.usgs.gov/wsc/information.html>) - find projects, publications, and databases related to your watershed.
- Data Integration (<http://water.usgs.gov/wsc/dataintegration.html>) - learn more about how you can use scientific data to understand your watershed.

The Web site provides a decision-support process by making accessible recent case studies of projects that have occurred, publications produced, databases and information assembled, and providing access to free and nearly free software tools for manipulating spatial information.

Appendix C.

References and Useful Web Links

- Center for Agricultural, Resource, and Environmental Systems (CARES) <http://cares.missouri.edu/index.asp>
- Missouri Department of Conservation <http://mdc.mo.gov>
Missouri's Watersheds <http://mdc.mo.gov/fish/watershed>
- Missouri Department of Natural Resources <http://www.dnr.mo.gov>
Water Protection Map Gallery <http://www.dnr.mo.gov/env/wpp/wpp-map-gallery.htm>
303(d) List of Impaired Waters <http://www.dnr.mo.gov/env/wpp/waterquality/303d/index.html>
What watershed do you live in? <http://www.dnr.mo.gov/env/wpp/watersheds/index.htm>
Watershed Information Sheets <http://www.dnr.mo.gov/env/wpp/watersheds/info/index.html>
Missouri Water Quality Report <http://www.dnr.mo.gov/env/wpp/waterquality/305b/index.html>
319 Nonpoint Source Implementation Program <http://www.dnr.mo.gov/env/wpp/nps/index.html>
319 Nonpoint Source Projects <http://www.dnr.mo.gov/env/wpp/nps/319nps-statewide-map.htm>
- Missouri Watershed Information Network <http://www.mowin.org>
- Missouri Resource Assessment Partnership <http://www.cerc.usgs.gov/morap/>
- Environmental Protection Agency <http://epa.gov/>
Office of Wetlands, Oceans and Watersheds <http://www.epa.gov/owow/nps/>
Nonpoint Source Funding Opportunities <http://www.epa.gov/owow/nps/funding.html>
Publications and Information Resources <http://www.epa.gov/owow/nps/pubs.html>
Low Impact Development <http://www.epa.gov/owow/nps/lid/>
Nonpoint Source Outreach Toolbox <http://www.epa.gov/nps/toolbox.html>
Watershed Planning Handbook http://www.epa.gov/owow/nps/watershed_handbook/
Targeted Watershed Grant <http://www.epa.gov/owow/watershed/initiative/>

Appendix D.

Acronyms

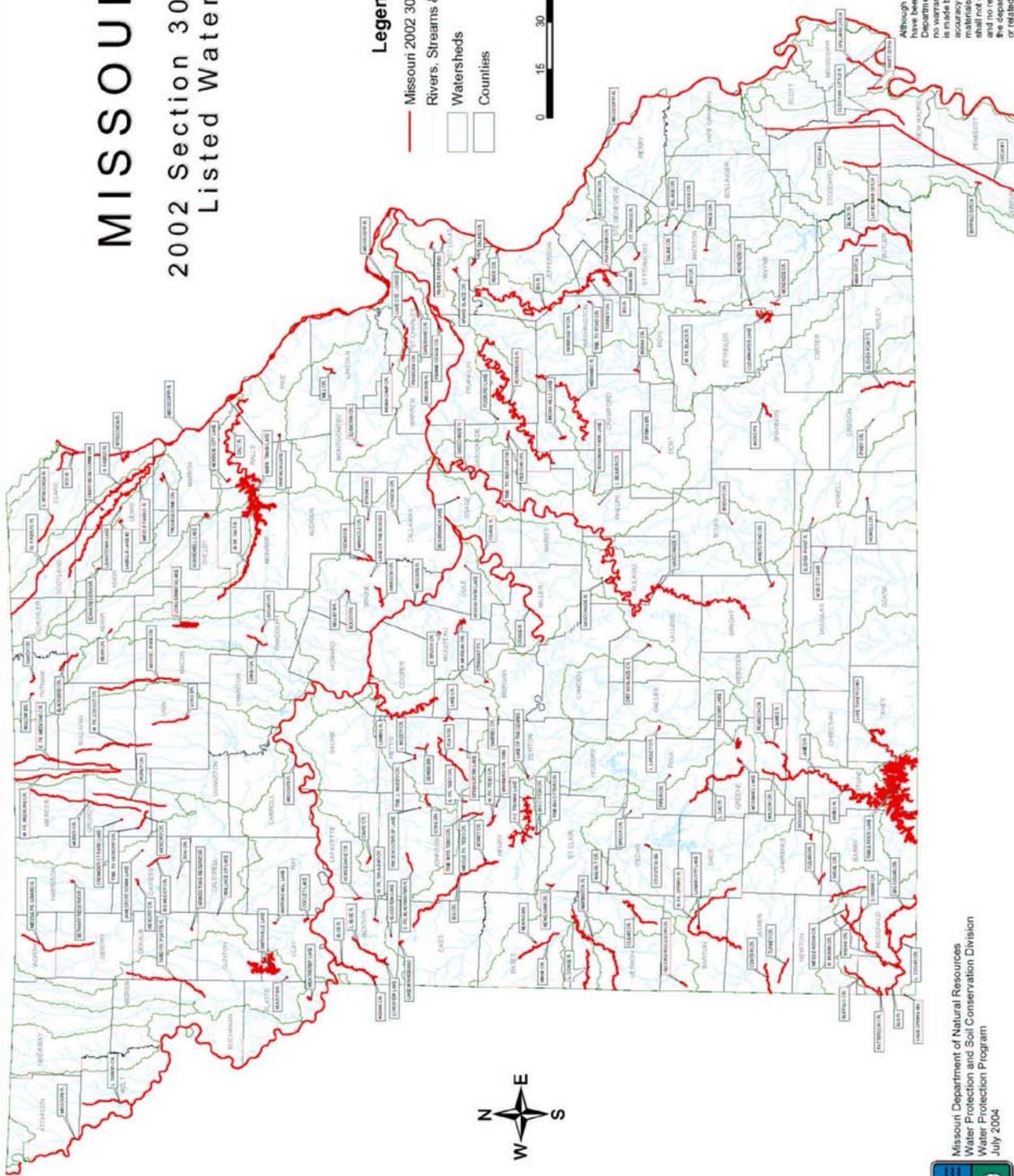
AgNPS	Agricultural Nonpoint Source
BMP	Best Management Practice
BOD5	5-day Biochemical Oxygen Demand
CARES	Center for Agricultural, Resource, and Environmental Systems
CNMP	Comprehensive Nutrient Management Plan
CWA	Clean Water Act
CWC	Missouri Clean Water Commission
DHSS	Missouri Department of Health and Senior Services
DNR	Missouri Department of Natural Resources
EPA	United States Environmental Protection Agency
HUC	Hydrologic Unit Code
LRP	DNR, Land Reclamation Program
MDA	Missouri Department of Agriculture
MDC	Missouri Department of Conservation
MoRAP	Missouri Resource Assessment Partnership
MoWIN	Missouri Watershed Information Network
NID	Neighborhood Improvement District
NPS	Nonpoint Source
NPSMP	Nonpoint Source Management Plan
NRCS	United States Department of Agriculture, Natural Resources Conservation Service
PAM	Program Activity Measure
PIL	Permit-in-Lieu of TMDL
PWSSID	Public Water Supply System ID
QAPP	Quality Assurance Project Plan
QAQC	Quality Assurance/Quality Control
RFP	Request for Proposal
RUSLE	Revised Universal Soil Loss Equation
RWA	Rapid Watershed Assessment (NRCS)
SALT	Special Area Land Treatment
SDWA	Safe Drinking Water Act
SRF	State Revolving Fund
STEPL	Spreadsheet Tool for Estimating Pollutant Load
SWAP	Source Water Assessment Plan
SWPP	Source Water Protection Plan
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
UST	Underground Storage Tank
VB	Visual Basic
VWQM	Volunteer Water Quality Monitoring
WPP	DNR, Water Protection Program
WQCC	Water Quality Coordinating Committee
WQS	Water Quality Standards
WRAS	Watershed Restoration Action Strategy

MISSOURI

2002 Section 303(d) Listed Waters

Legend

- Missouri 2002 303(d) Listed Waters
- Rivers, Streams & Lakes
- Watersheds
- Counties



Although the data in this data set were prepared by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The user of this data set assumes all responsibility for its use, and no responsibility is assumed by the department in the use of these data or related materials.



Missouri Department of Natural Resources
Water Protection and Soil Conservation Division
Water Protection Program
July 2004

Appendix E

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
9001*	Bear Creek	2*	Miles*	Unknown	Kirksville Pt/NPS*	Adair		M*
7186	Ben Branch Lake	45	Acres	Mercury	Atmospheric Dep.	Osage		M
7109	Bethany Res.	78	Acres	Mercury	Atmospheric Dep.	Harrison		M
1746	Big Bottom Creek	0.5	Miles	BOD,VSS	Lake Forest Subdivision	Ste. Genevieve		H
2916	Big Creek	4	Miles	Metals	Glover Lead Smelter	Iron		H
1250	Big Creek	49*	Miles*	Sediment	AgNPS*	Henry*	Jackson*	M*
436	Big Muddy Creek	8*	Miles*	Sediment	A.NPS*	Daviess*		M*
1224	Big Otter Creek	1	Miles	pH	Otter Creek AML	Henry		M
1225	Big Otter Creek Trib.	1	Miles	pH	Otter Creek AML	Henry	St. Clair	M
2074	Big River	53	Miles	Lead	Old Lead Belt AML	Jefferson		H
2080	Big River	40	Miles	Lead, NVSS	Old Lead Belt AML	Jefferson*	St. Francois*	H
2769	Black River	45	Miles	Mercury	Atmospheric Dep.	Butler	Wayne*	M
653	Blackbird Creek	10.5*	Miles*	Sediment	AgNPS*	Putnam*		M*
7370	Bluestem Lake	15	Acres	Mercury	Atmospheric Dep.	Jackson		M
2034	Bourbeuse River	132	Miles	Mercury	Atmospheric Dep.	Franklin	Phelps	M
1371	Brush Creek	0.2	Miles	BOD,VSS	Humansville WWTP	Polk		H
1592	Brushy Creek	0.4	Miles	BOD,VSS	Houston WWTP	Texas		H
3118	Buffalo Ditch	3	Miles	BOD	Kennett WWTP	Dunklin		H
709	Bynum Creek	0.3	Miles	NVSS	Auxvasse Stone Quarry	Callaway		L
9002*	Cave Spring Branch	0.2	Miles	Nutrients	Simmons Ind., Livestock	McDonald		H
737	Cedar Creek	1	Miles	Sulfate	Manacle Creek AML	Callaway		H*
3203	Center Creek	11	Miles	Zinc	Tristate AML	Jasper		M
1336	Clear Creek	18*	Miles*	Sediment	AgNPS*	Vernon*		M*
3239	Clear Creek	3	Miles	Nutrients	Monett WWTP	Barry*		H
7326	Clearwater Res.	1650	Acres	Mercury	Atmospheric Dep.	Reynolds*		M
7090	Cooley Lake	300	Acres	Mercury	Atmospheric Dep.	Clay		M
7135	Crowder SP Lake	18	Acres	Mercury	Atmospheric Dep.	Grundy		M
221	Dardenne Creek	10*	Miles*	Unknown	Urban/Rural NPS	St. Charles*		M*
690	Dark Creek	8	Miles	Sulfate	Crutchfield AML	Randolph		M
912	Davis Creek	2	Miles	Nutrients	Odessa SE WWTP	Lafayette		H
7015	Deer Ridge Comm. Lake	48	Acres	Mercury	Atmospheric Dep.	Lewis		M
3050	Ditch #1	44	Miles	Mercury	Atmospheric Dep.	Scott*		M

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
510	Dog Creek	0.2	Miles	NVSS	Traeger Quarry	Daviess		L
3168	Douger Branch	2	Miles	Zinc	Aurora AML	Lawrence		M
1145	Dry Auglaize Creek	1.5*	Miles*	Unknown	Lebanon WWTP*	Laclede*		H*
811	E. Brush Creek	1	Miles	Nutrients,BOD,NFR	California N. WWTP	Moniteau		L
619	E. Fork Medicine Creek	36*	Miles*	Sediment	AgNPS*	Grundy*	Mercer*	M*
1282	E. Fork Tebo Creek	1	Miles	pH	Triple Tipple AML	Henry		H
7026	Edina Res.	51	Acres	Atrazine,Cyanazine	Corn&Sorgh.Production	Knox		H
2593	Eleven Point River	21	Miles	Mercury	Atmospheric Dep.	Oregon		M
189	Elkhorn Creek	2	Miles	BOD, VSS	Montgomery City WWTP	Montgomery		H
7237	Fellows Lake	820	Acres	Nutrients	Ag.&Suburban NPS	Greene		L
7237	Fellows Lake	820	Acres	Mercury	Atmospheric Dep.	Greene		M
1605	Femme Osage Slough	5.5	Miles	Mercury	Atmospheric Dep.	St. Charles		M
865	Flat Creek	20*	Miles*	Sediment	AgNPS*	Pettis*		M*
2168	Flat River Creek	5	Miles	Zinc	Elvins tailings pile	St. Francois		M
2168	Flat River Creek	5	Miles	Lead, NVSS	Old Lead Belt AML	St. Francois		H
37	Fox River	12	Miles	Manganese	Natural	Clark		L
7382	Foxboro Lake	25	Acres	Mercury	Atmospheric Dep.	Franklin		M
883	Gabriel Creek	1	Miles	BOD, NFR	2 Stover Lagoons	Morgan		H
1455	Gasconade River	249	Miles	Mercury	Atmospheric Dep.	Gasconade	Wright	M
2184	Grand Glaize Creek	4	Miles	Mercury	Atmospheric Dep.	St. Louis		M
7384	Grindstone Res.	180	Acres	Mercury	Atmospheric Dep.	DeKalb		M
442	Hickory Creek	1.5*	Miles*	Unknown	**	Daviess		M*
589	Hickory Creek Trib.*	1*	Miles*	Unknown	**	Grundy		M*
588	Hickory Creek	7*	Miles*	Unknown	**	Grundy		M*
1007	Hinkson Creek	6*	Miles*	Unknown	**	Boone*		M
1008*	Hinkson Creek*	5*	Miles*	Unknown	**	Boone*		M
554	Honey Creek	23*	Miles*	Sediment	AgNPS*	Livingston*	Grundy*	M*
1251	Honey Creek	3	Miles	Sulfate	Reliant Shop AML	Henry		M
3413	Horseshoe Creek	3.1	Miles	BOD, NH3N	2 Oak Grove Lagoons	Jackson	Lafayette	H
7388	Hough Park Lake	7	Acres	Mercury	Atmospheric Dep.	Cole		M
7207	HS Truman Lake	10000	Acres	Manganese	Natural	Henry*	*	L
7029	Hunnewell Lake	228	Acres	Mercury	Atmospheric Dep.	Shelby		M
212	Indian Camp Creek	0.3	Miles	NVSS, NH3	JZ Landfill	Warren		M
1946	Indian Creek	1.5*	Miles*	Zinc	**	Washington		H*
420*	Indian Creek	3*	Miles*	Fecal coliform	WWTP in Kansas*	Jackson		H*
7288	Indian Hills Lake	326	Acres	Mercury	Atmospheric Dep.	Crawford		M

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
2347	James River	28	Miles	Mercury	Atmospheric Dep.	Stone		M
2362	James River	26	Miles	Mercury	Atmospheric Dep.	Stone	Greene	M
7105	Jamesport City Lake	30	Acres	Mercury	Atmospheric Dep.	Daviess		M
7196	Knob Noster SP Lakes	24	Acres	Mercury	Atmospheric Dep.	Johnson		M
1529	L. Beaver Creek	0.1	Miles	VSS	Rolla SW WWTP	Phelps		H
423	L. Blue River	22	Miles	Mercury	Atmospheric Dep.	Jackson		M
1438	L. Lindley Creek	1	Miles	BOD, VSS	Buffalo WWTP	Dallas		H
623	L. Medicine Creek	40*	Miles*	Sediment	AgNPS*	Grundy*	Putnam*	M*
3652	L. Osage River	22*	Miles*	Low DO	**	Vernon*		M*
1381	L. Sac River	27	Miles	Fecal Coliform	Pt/NP Sources	Polk	Greene	M
248	L. Tarkio Creek	17.5*	Miles*	Sediment	AgNPS*	Holt*	Atchison*	M*
7023	Labelle #2 Lake	112	Acres	Mercury	Atmospheric Dep.	Lewis		M
7023	LaBelle #2 Lake	112	Acres	Atrazine,Cyanazine	Corn&Sorgh.Production	Lewis		H
875	Lake Creek	5*	Miles*	Sediment	AgNPS*	Pettis*		M*
7205	Lake of the Ozarks	50*	Acres*	Low DO	Truman Dam*	Benton*		H*
7205	Lake of the Ozarks	50*	Acres*	Fish Trauma	Truman Dam*	Benton*		M
7205	Lake of the Ozarks	50*	Acres*	Gas supersaturation	Truman Dam*	Benton*		H*
7436	Lake of the Woods	3	Acres	Mercury	Atmospheric Dep.	Boone		M
7055	Lake Ste. Louise	50	Acres	Fecal Coliform	Urban Runoff	St. Charles		M
7314	Lake Taneycomo	1730*	Acres*	Low DO	Table Rock Dam*	Taney*		H*
7356	Lamar Lake	180	Acres	Nutrients	AgNPS	Barton		L
847	Lamine River	54	Miles	Mercury	Atmospheric Dep.	Cooper	Pettis*	M
3105	Lat.#2 Main Ditch	11.5*	Miles*	Sediment	AgNPS*	Stoddard*		M*
7020	Lewistown Res.	27	Acres	Atrazine,Cyanazine	Corn&Sorgh.Production	Lewis		H
857	Long Branch	3.5*	Miles*	Unknown	**	Pettis	Johnson	M*
602	Long Branch	13*	Miles*	Unknown	**	Linn		M*
7171	Long Branch Res.	2430	Acres	Mercury	Atmospheric Dep.	Macon		M
7097	Longview Res.	930	Acres	Mercury	Atmospheric Dep.	Jackson		M
63	M. Fabius River	57	Miles	Manganese	Natural	Lewis	Scotland	L
468	M. Fork Grand River	25*	Miles*	Sediment	AgNPS*	Gentry*	Worth*	M*
121	M. Fork Salt River	49*	Miles*	Sediment	AgNPS*	Monroe*	Macon*	M*
2814	Main Ditch	5	Miles	BOD,VSS, Low DO	Poplar Bluff WWTP	Butler		H
742	Manacle Creek	2	Miles	pH, Sulfate	Manacle Creek AML	Callaway		M
7033	Mark Twain Lake	18600	Acres	Mercury	Atmospheric Dep.	Ralls	Monroe	M
1308	Marmaton River	49.5*	Miles*	Low DO	**	Vernon*		M*
2786	McKenzie Creek	2.5	Miles	BOD	Piedmont WWTP	Wayne		H
2787	McKenzie Creek	0.5	Miles	pH	Natural	Wayne		M

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
1846	Meramec River	75	Miles	Mercury	Atmospheric Dep.	Franklin	Crawford	M
1299	Miami Creek	18*	Miles*	Sediment	AgNPS*	Bates*		M*
159	Mill Creek	4*	Miles*	Sediment	AgNPS*	Lincoln*		M*
1	Mississippi River	165*	Miles*	Chlordane, PCBs	Pt/NP Sources*	St. Charles*	Clark*	M*
3152	Mississippi River	124.5*	Miles*	Chlordane, PCBs	Pt/NP Sources*	Pemiscot*	Mississippi*	M*
1707	Mississippi River	200.5*	Miles*	Chlordane, PCBs	Pt/NP Sources*	Mississippi*	St. Louis*	M*
1707	Mississippi River	5	Miles	Lead, Zinc	Herculaneum smelter	Jefferson		H
701	Missouri River	129*	Miles*	Chlordane, PCBs	Pt/NP Sources*	Gasconade*	Chariton*	M*
356	Missouri River	125*	Miles*	Chlordane, PCBs	Pt/NP Sources*	Chariton*	Jackson*	M*
226	Missouri River	179*	Miles*	Chlordane, PCBs	Pt/NP Sources*	Jackson*	Atchison*	M*
1604	Missouri River	100*	Miles*	Chlordane, PCBs	Pt/NP Sources*	St. Louis*	Gasconade*	M*
1234	Monegaw Creek	3	Miles	Sulfate	Montee AML	St. Clair		M*
7031	Monroe City Rte. J Lake	94	Acres	Atrazine,Cyanazine	Corn&Sorgh Production	Ralls		H
1300	Mound Branch	1	Miles	BOD,NH3N	Butler WWTP	Bates		H
557	Muddy Creek	36.5*	Miles*	Unknown	**	Grundy*	Mercer*	M*
674	Mussel Fork	29*	Miles*	Sediment	AgNPS*	Macon*	Sullivan*	M*
56	N. Fabius River	82	Miles	Manganese	AgNPS*	Marion	Schuyler	L*
56	N. Fabius River	82	Miles	Sediment	AgNPS*	Marion	Schuyler	L*
3188	N. Fork Spring River	51.5*	Miles*	Sediment	AgNPS*	Barton*	Dade*	M*
7316	Noblett Lake	26	Acres	Mercury	Atmospheric Dep.	Douglass		M
3041	Old Chan.Little River	20*	Miles*	Sediment	AgNPS*	New Madrid*		M*
1031	Osage River	82	Miles	Mercury	Atmospheric Dep.	Osage	Miller	M
2373*	Pearson Creek	1.5	Miles	Unknown toxicity	Urban NPS*	Greene*		M
218	Peruque Creek	8.5	Miles	NVSS	Urban/Rural NPS	St. Charles		M
217	Peruque Creek	4	Miles	NVSS	Urban/Rural NPS	St. Charles		M
1444	Piper Creek	0.5	Miles	VSS	Bolivar WWTP	Polk		H
2128	Pond Creek Trib.	0.5	Miles	NVSS	Barite Tailings Pond	Washington		L
2038	Red Oak Creek	2	Miles	VSS	Owensville WWTP	Gasconade		H
3360	Red Oak Creek Trib.	0.5	Miles	VSS	Owensville WWTP	Gasconade		H
3361	Red Oak Creek Trib.	0.5	Miles	VSS	Owensville WWTP	Gasconade		H
9003*	River des Peres	**	Miles*	Low DO	Urban NPS	St. Louis*		M*
3326	Rocky Branch	0.4	Miles	BOD	KC, Rocky Branch WWTP	Clay		H
921	S. Fork Blackwater River	5*	Miles*	Sediment	**	Johnson*		M*
50	S. Wyaconda River	9	Miles	Sediment	AgNPS*	Clark	Scotland	M*
50	S. Wyaconda River	9	Miles	Manganese	Natural	Clark	Scotland	L
103	Salt River	10	Miles	Manganese, Iron	Cannon Dam	Pike	Ralls	L

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
91	Salt River	29	Miles	Manganese	Cannon Dam	Ralls		L
91	Salt River	29	Miles	Mercury	Atmospheric Dep.	Ralls		M
652	Sandy Creek	3*	Miles*	Unknown	**	Putnam		M*
7280	Schuman Park Lake	5	Acres	Mercury	Atmospheric Dep.	Phelps		M
1319	Second Nicolson Creek	3	Miles	Sulfate	Many AML Areas	Barton		M
9004	Sewer Branch	**	Miles	Low DO	Unknown Pt/NPS	Pettis		M*
2170	Shaw Branch	2	Miles	NVSS, Lead	Federal AML	St. Francois		M
2120	Shibboleth Creek	0.5	Miles	NVSS	Barite Tailings Pond	Washington		L
7077	Smithville Res.	7190	Acres	Mercury	Atmospheric Dep.	Clay	Clinton*	M
3134	Spillway Ditch	13.5*	Miles*	Sediment	AgNPS*	New Madrid*	Mississippi*	M*
1870	Spring Creek	0.3	Miles	BOD,VSS	Salem WWTP	Dent		H
7187	Spring Fork Lake	178	Acres	Nutrients	AgNPS	Pettis		L
2835	St. Francis River	3	Miles	BOD,NH3	Farmington W. WWTP	St. Francois		H
710	Stinson Creek	0.1	Miles	BOD,VSS	Fulton WWTP	Callaway		H
1361	Stockton Branch	1.7	Miles	VSS	Stockton WWTP	Cedar		H
959	Straight Fork	1.1	Miles	VSS	Versailles WWTP	Morgan		H
3151	Swift Ditch	4	Miles	Mercury	Atmospheric Dep.	New Madrid		M
7313	Table Rock Res.	43100	Acres	Nutrients	Point & NP Sources	Stone	Barry*	L
327	Third Fork Platte R	31.5*	Miles*	Sediment	AgNPS*	Buchanan*	Gentry*	M*
2850	Trace Creek	1	Miles	pH	Natural	Madison		M
73	Troublesome Creek	3.5	Miles	Sediment	AgNPS*	Marion		M*
73	Troublesome Creek	3.5	Miles	Manganese	Natural	Marion		L
3282	Turkey Creek	1.5	Miles	BOD,VSS	Bonne Terre WWTP	St. Francois		H
3217	Turkey Creek	5	Miles	Zinc	Duenweg AML	Jasper		M
3216	Turkey Creek	3.5	Miles	Zinc	Multiple Pb-Zn AMLs	Jasper		M
7032	Vandalia Lake	37	Acres	Atrazine	Corn&Sorgh.Production	Pike		H
2864	Village Creek	0.5	Miles	NVSS	Mine La Motte AML	Madison		H
2755	W. Fork Black River	0.2	Miles	Nutrients	Doe Run W Fork Mine	Reynolds		L
613	W. Fork Locust Creek	17*	Miles*	Unknown	**	Sullivan*		M*
612*	W. Fork Locust Creek	17	Miles	Unknown	**	Linn*	Sullivan*	M*
400	W. Fork Sni-a-Bar Creek	2	Miles	BOD,VSS	Lake Lotawana Lagoon	Jackson		H
7453	Wallace SP Lake	6	Acres	Fecal Coliform	Unknown	Clinton		M
1339	Walnut Creek	1	Miles	BOD,VSS	El Dorado Springs WWTP	Cedar		H
7087	Watkins Mill Lake	126	Acres	Fecal Coliform	Unknown	Clay		M
7071	Weatherby Lake	194	Acres	Mercury	Atmospheric Dep.	Platte		M
9005*	Willow Branch	**	Miles*	Unknown	**	Putnam		M*

WBID	Water Body	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
2375	Wilson's Creek	18*	Miles*	Unknown toxicity	**	Greene*		M
7212	Winnebago Lake	350	Acres	Mercury	Atmospheric Dep.	Cass		M
46	Wyaconda River	8	Miles	Manganese	Natural	Lewis		L

Water Bodies Where the TMDL is Written and Approved (Highlighted TMDLs have been delisted from the 2002 list)									
WBID	Water Body	TMDL Approved	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
9000	Barker's Creek Trib.	2004	0.3	Miles	pH, sulfate	Grey AML	Henry		L*
3250	Big Sugar Creek	2004	31	Miles	Nutrients	Livestock Production	McDonald	Barry	M*
417	Blue River	2001	4	Miles	Chlordane	Urban NPS	Jackson		L
418	Blue River	2001	9	Miles	Chlordane	Urban NPS	Jackson		L
419	Blue River	2001	9	Miles	Chlordane	Urban NPS	Jackson		L
421	Blue River	2001	2	Miles	Chlordane	Urban NPS	Jackson		L
859	Brushy Creek	2002	1	Miles	BOD, NFR, NH3N	Sedalia Central WWTP	Pettis		L
3273	Buffalo Creek	2004	5.5	Miles	Nutrients	Livestock Production	McDonald	Newton*	M*
3269	Buffalo Creek	2004	10	Miles	Nutrients	Livestock Production	McDonald		M*
737	Cedar Creek	2001	4	Miles	pH, sulfate	Upper Cedar AML	Callaway		H
3239	Clear Creek	1999	2	Miles	BOD,NFR,NH3N	Monett WWTP	Lawrence	Barry	H
7255	Creve Coeur Lake	2001	300	Acres	Chlordane	Urban NPS	St. Louis		L
912	Davis Creek	2003	2	Miles	Low DO	Odessa SE WWTP	Lafayette		H
1505	E. Whetstone Creek*	2002	2	Miles	BOD	2 Mtn Grove Lagoons	Wright		H
2604	Eleven Point River	2001	0.4	Miles	Chlorine	Willow Springs WWTP	Oregon		L
3246	Elk River	2004	21.5	Miles	Nutrients	Livestock Production	McDonald		M*
2860	Goose Creek	1999	0.5	Miles	Nickel	Madison Mine	Madison		H
2582	Howell Creek	2001	0.3	Miles	Chlorine	West Plains WWTP	Howell		M*
3256	Indian Creek	2004	26	Miles	Nutrients	Livestock Production	McDonald		M
2681	Jack's Fork River	2004	7	Miles	Fecal Coliform	Organic wastes	Shannon		H*
2347	James River	2001	28	Miles	Nutrients	Multiple Pt/NPS	Stone	*	H*
2362	James River	2001	26	Miles	Nutrients	Multiple Pt/NPS	Stone*	Greene	H*
2365	James River	2001	5*	Miles	Nutrients	Multiple Pt/NPS	Greene		H*
1016	Kelley Branch	2003	1	Miles	Sediment	ORVs Finger Lakes SP	Boone		H
856	L. Muddy Creek	2001	0.7	Miles	Temperature	Tyson Foods	Pettis		H
3490	L. Muddy Creek Trib.	2001	0.4	Miles	Temperature	Tyson Foods	Pettis		H
3249	L. Sugar Creek	2004	11	Miles	Nutrients	Pt/NP Sources	McDonald		M*
7054	Lake St. Louis	2001	525	Acres	Chlordane	Urban NPS	St. Charles		L

Waterbodies Where the TMDL is Written and Approved (Highlighted TMDLs have been delisted from the 2002 list)

WBID	Water Body	TMDL Approved	Size	Unit	Pollutant	Source	Downstream County	Upstream County	Priority
1284	M. Fork Tebo Creek	2004	5.5	Miles	Sulfate	Newcastle, other AML	Henry		L*
1288	M. Fork Tebo Creek Trib.	2004	2	Miles	pH, sulfate	Newcastle Tipple AML	Henry		L*
1288	M. Fork Tebo Creek Trib.	2004	1.5	Miles	sulfate	Newcastle Tipple AML	Henry		L*
3262	M. Indian Creek	2004	3	Miles	Nutrients	Livestock Production	Newton		M*
3263	M. Indian Creek	2004	2.5	Miles	Nutrients	Livestock Production	Newton		M*
7236	McDaniel Lake	2004	300	Acres	Nutrients	Ag. & Suburban NPS	Greene		M*
855	Muddy Creek	2002	1	Miles	BOD,NH3N	Sedalia Central WWTP	Pettis		L
3260	N. Indian Creek	2004	5	Miles	Nutrients	Livestock Production	Newton		M*
942	N. Moreau Creek	1999	10	Miles	NFR	California S. Lagoons	Cole	Moniteau	H
3268	Patterson Creek	2004	2	Miles	Nutrients	Livestock Production	McDonald		M*
2614	Piney Creek	2001	0.1	Miles	Chlorine	Alton WWTP	Oregon		M*
7211	Pleasant Hill Lake	2001	115	Acres	Chlordane	Unknown	Cass		L
1714	Rock Creek	1999	2	Miles	BOD,NH3N	2 WWTPs	Jefferson		H
1014	Rocky Fork	2003	0.5	Miles	NVSS	Finger Lakes AML	Boone		H*
278	Rush Creek	1999	0.2	Miles	NFR	PCSD Eldorado Apts	Platte		H
3259	S. Indian Creek	2004	9	Miles	Nutrients	Livestock Production	Newton	McDonald	M*
2859	Saline Creek	1999	0.5	Miles	Nickel	Madison Mine	Madison		H
2190	Saline Creek	2001	2*	Miles	BOD,NH3N	2 NESD WWTPs	Jefferson		M*
3230	Shoal Creek	2003	13.5	Miles	Fecal Coliform	Unknown Ag. Sources	Newton	Barry	M
686	Sugar Creek	2002	2.7*	Miles	pH	Huntsville & Calfee AML	Randolph		L*
1292	W. Fork Tebo Creek	2004	7	Miles	Sulfate	Spangler AML	Henry		L*

Appendix F

Table D (from 10 CSR 20-7)		
Outstanding National Resource Waters		
<i>Water Body</i>	<i>Location</i>	<i>County(ies)</i>
Current River	Headwaters to Northern Ripley Co. Line	
	Sec. 22,32N,07W to Sec. 15,25N,01E	Dent to Ripley
Jacks Fork River	Headwaters to Mouth	
	Sec. 29,28N,07W to Sec. 9/15,29N,03W	Texas to Shannon
Eleven Point River	Headwaters to Hwy. 142	
	Sec. 32,25N,05W to Sec. 21,22N,02W	Oregon

Appendix G

Table E (from 10 CSR 20-7)

Outstanding State Resource Waters

Water Body	Miles/Ac	Location	County(ies)
Baker Branch	4 mi.	Taberville Prairie	St. Clair
Bass Creek	1 mi.	in Three Creek Conservation Area	Boone
Big Buffalo Creek	1.5 mi.	Big Buffalo Creek Conservation Area	Benton-Morgan
Big Creek	5.3 mi.	Sam A. Baker State Park	Wayne
Big Sugar Creek	7 mi.	Cuivre River State Park	Lincoln
Big Lake Marsh	150 ac.	Big Lake State Park	Holt
Blue Springs Creek	4 mi.	Blue Spring Creek Conservation Area	Crawford
Bonne Femme Creek	2 mi.	Three Creeks Conservation Area	Boone
Brush Creek	0.7 mi.	Bonanza Conservation Area	Caldwell
Bryant Creek	1.5 mi.	Bryant Creek Natural Area in Rippee Conservation Area	Ozark/Douglas
Bull Creek	8 mi.	Mark Twain National Forest S24	Christian
Cathedral Cave Branch	5 mi.	Onondaga Cave State Park	Crawford
Chariton River	9.8 mi.	Rebels Cove Conservation Area	Putnam-Schuyler
Chloe Lowry Marsh	40 ac.	Chloe Lowry Marsh Conservation Area	Mercer
Coakley Hollow	1.5 mi.	Lake of the Ozarks State Park	Camden
Coonville Creek	2 mi.	St. Francois State Park	St. Francois
Courtois Creek	12 mi.	Mouth to Hwy. 8	Crawford
Crabapple Creek	1 mi.	Bonanza Conservation Area	Caldwell
Devils Ice Box Cave Branch	1.5 mi.	Rock Bridge State Park	Boone
East Fork Black River	3 mi.	Johnson's Shut-Ins State Park	Reynolds
First Nicholson Creek	2 mi.	Prairie State Park	Barton
Gan's Creek	3 mi.	Rock Bridge State Park	Boone
Huzzah Creek	6 mi.	Mouth to Hwy. 8	Crawford
Indian Creek	18 mi.	Mark Twain National Forest	Douglas-Howell
Ketchum Hollow	1.5 mi.	Roaring River State Park	Barry
Little Piney Creek	25 mi.	Mouth to 21,35N,08W	Phelps
Little Black River	3 mi.	Mud Puppy Natural History Area S22	Ripley
Log Creek	0.4 mi.	Bonanza Conservation Area	Caldwell
Meramec River	8 mi.	Adjacent to Meramec State Park	Crawford/Franklin
Meramec River	3 mi.	Adjacent to Onondaga and Huzzah State Forest	Crawford
Mill Creek	5 mi.	Mark Twain National Forest	Phelps
N. Fork White River	5.5 mi.	Mark Twain National Forest	Ozark
Noblett Creek	5 mi.	Above Noblett Lake, Mark Twain National Forest	Douglas-Howell
Onondaga Cave Branch	0.6 mi.	Onondaga Cave State Park	Crawford
Pickle Creek	3 mi.	Hawn State Park	Ste. Genevieve
S. Prong L. Black River	2 mi.	In Little Black Conservation Area	Ripley
Shoal Creek	0.5 mi.	Bonanza Conservation Area	Caldwell
Spring Creek	17 mi.	Mark Twain National Forest	Douglas
Spring Creek	6.5 mi.	Mark Twain National Forest	Phelps
Taum Sauk Creek	5.5 mi.	Johnson's Shut-Ins State Park Addition S23	Reynolds-Iron
Turkey Creek	4.6 mi.	In Three Creeks Conservation Area	Boone
Van Meter Marsh	80 ac.	Van Meter State Park	Saline
Whetstone Creek	5.1 mi.	Whetstone Creek Conservation Area	Callaway