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# State Nonpoint Source Management Program - Iowa



Iowa Department of Natural Resources  
Larry J. Wilson, Director  
September, 1992

# **State Nonpoint Source Management Program - Iowa**

**Environmental Protection Division**

**September, 1992**

**The recommendations in this report were adopted by the Environmental Protection Commission on  
August 17, 1992.**

**Members include: Richard Hartsuck, Des Moines, chairperson; Clark A. Yeager, Ottumwa, vice-chairperson;  
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**This State Nonpoint Source Management Program report was  
approved by the US Environmental Protection Agency on September 25, 1992.**

**Iowa Department of Natural Resources  
Larry J. Wilson, Director**

TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION..... 1

CHAPTER 2 - CURRENT NONPOINT CONDITIONS AND CONTROL PROGRAMS..... 3

AGRICULTURAL SOURCES..... 3

A. State Water Quality Programs..... 4

    1. Nonpoint Pollution Control Planning and Implementation..... 4

    2. Livestock Waste Control Program..... 6

    3. Iowa Groundwater Protection Act 1987..... 7

    4. Publicly Owned Lakes Program (Iowa Financial Incentive Program)..... 8

    5. Water Protection Projects..... 8

    6. Iowa Wetland Protection Plan..... 9

B. State Soil Conservation Programs.....10

    1. Iowa Soil 2000.....10

    2. Soil and Water Conservation Districts.....11

    3. State Soil Loss Limit Regulations.....11

    4. Iowa Financial Incentive Program.....11

        a. Voluntary State Cost Share Program.....11

        b. Mandatory Program.....12

        c. Publicly Owned Lakes Program.....12

        d. Summer Construction Incentives.....12

    5. No-Interest Soil Conservation Loan Program.....12

C. State Agricultural Chemical Regulatory Programs...13

    1. Fertilizers.....13

    2. Pesticides.....13

D. Information and Education Programs.....14

    1. Iowa State University Extension Service.....14

        a. Plan #211-Profitable and Sustainable Systems.....14

        b. Plan #231-Land, Water, and Energy Resource Management.....15

        c. Plan #232-Pesticide/Nutrient Management Plan.....15

        d. Plan #233-Solid Waste Management.....15

    2. Department of Natural Resources.....16

    3. Department of Agriculture and Land Stewardship.....17

        a. Integrated Farm Management Demonstration Project.....17

        b. Targeted Education Program.....18

        c. Model Farms Demonstration Project.....19

E. Federal Water Quality Programs.....19

    1. Section 208.....19

    2. Rural Clean Water Program.....20

    3. Clean Lakes Program.....21

    4. Sections 205(j)(5) and 319.....21

F. Federal Soil Conservation Program.....22

    1. Technical Assistance.....22

        a. Conservation Reserve.....23

        b. Conservation Compliance.....23

|  |           |
|--|-----------|
| c. Sodbuster.....  | 23        |
| d. Swampbuster.....  | 24        |
| e. Water Quality Incentives Program.....                             | 24        |
| f. Wetland Reserve Program.....                                      | 25        |
| 2. Agricultural Conservation Program.....                            | 26        |
| 3. Watershed Protection and Flood Prevention Act (PL-566).....       | 27        |
| 4. Resource Conservation and Development.....                        | 28        |
| 5. Little Sioux Flood Prevention Project.....                        | 29        |
| G. USDA Water Quality Program Plan.....                              | 29        |
| 1. Nonpoint Source Hydrologic Unit Areas.....                        | 30        |
| 2. Northeast Iowa Demonstration Project.....                         | 30        |
| 3. ACP Water Quality Special Projects.....                           | 31        |
| H. Federal Pesticide Control Programs.....                           | 31        |
| <u>LAND DISPOSAL OF WASTES.....</u>                                  | <u>33</u> |
| A. Animal Waste Control.....   | 33        |
| B. Sewage Sludge Regulation.....                                     | 33        |
| C. Septic Tank Regulation.....                                       | 34        |
| D. Landfill Regulation.....  | 35        |
| E. Uncontrolled Site.....  | 36        |
| <u>WASTEWATER DISPOSAL SYSTEMS.....</u>                              | <u>37</u> |
| A. Lagoon Regulation.....  | 38        |
| B. Urban Runoff.....   | 38        |
| 1. Storm Water Discharges.....                                       | 38        |
| 2. Combined Sewer Overflows.....                                     | 40        |
| 3. Residential Pesticide/Fertilizer Pollution Control.....           | 40        |
| 4. Household Hazardous Material.....                                 | 41        |
| <u>CONSTRUCTION SITE RUNOFF.....</u>                                 | <u>42</u> |
| <u>HYDROLOGIC AND HABITAT MODIFICATION.....</u>                      | <u>43</u> |
| <u>SURFACE MINING.....</u>   | <u>44</u> |
| <br>   |           |
| CHAPTER 3 - STATE NONPOINT SOURCE MANAGEMENT PROGRAM.....            | 46        |
| A. Statewide Implementation.....                                     | 46        |
| B. Complete Ongoing Control Projects.....                            | 47        |
| C. Establish Additional Nonpoint Control Projects....                | 47        |
| Work Element #1: STATEWIDE IMPLEMENTATION.....                       | 48        |
| Objectives.....  | 48        |
| Work Activities.....   | 48        |
| Agency Responsibilities.....   | 50        |
| Implementation Schedule.....   | 51        |
| Work Element #2: COMPLETE ONGOING CONTROL PROJECTS.....              | 54        |
| Objectives.....  | 54        |
| Work Activities.....   | 54        |
| Agency Responsibilities.....   | 55        |
| Implementation Schedule.....   | 55        |
| Work Element #3: ESTABLISH ADDITIONAL NONPOINT CONTROL PROJECTS..... | 56        |
| Objectives.....  | 56        |
| Work Activities.....   | 56        |
| a) Identify Water Body to be Protected.....                          | 57        |
| 1. Lakes.....  | 57        |
| 2. Streams.....  | 58        |
| 3. Other waters.....   | 58        |
| b) Evaluation of Water Quality Problems.....                         | 59        |

|   |  |     |
|---|--|-----|
| c)  | Determine Current Nonpoint Pollution Problems..  | 59  |
| d)  | Identify and Evaluate Nonpoint Control<br>Alternatives.....  | 60  |
| e)  | Develop Details of Proposed Implementation<br>Project.....   | 62  |
| f)  | Submittal of Project Applications.....   | 62  |
| g)  | Project Implementation.....  | 62  |
| h)  | Project Reporting and Evaluation.....  | 62  |
| Agency Responsibilities.....  |  | 63  |
| Implementation Schedule.....  |  | 63  |
| Section 319(h).....   |  | 63  |
| Publicly Owned Lakes Program.....   |  | 64  |
| Water Quality Protection Projects.....  |  | 64  |
| Rural Clean Water Program.....  |  | 65  |
| Clean Lakes Program.....  |  | 65  |
| ASCS ACP Special Projects.....  |  | 65  |
| ASCS Water Quality Initiative Program.....  |  | 66  |
| Watershed Protection and Flood Prevention<br>Act.....   |  | 66  |
| Resource Conservation and Development.....  |  | 67  |
| USDA Hydrologic Unit Area Projects, USDA<br>Water Quality Demonstration Projects, EPA<br>Pollution Prevention Projects..... |  | 67  |
| APPENDICES.....   |  | 68  |
| A -   | Federal Programs Subject to Consistency Reviews<br>and Current Review Procedures.....                  | 69  |
| B -   | Active Nonpoint Pollution Control Projects-1992  |     |
| B.1   | Lakes.....   | 71  |
| B.2   | - Cold-Water Streams.....  | 74  |
| B.3   | - Groundwater Projects.....  | 75  |
| B.4   | - Warm-Water River Watershed Projects.....   | 76  |
| B.5   | - Major Reservoir Watershed Projects.....  | 77  |
| B.6   | - Regional Or Statewide Demonstration Projects...<br>- Abbreviations Used In Appendices.....           | 78  |
| B.7   | - Iowa ACP Special Water Quality Projects.....   | 79  |
| B.8   | - Agency Responsibilities.....   | 80  |
| C.1   | - Priority Lakes.....  | 83  |
| C.2   | - Priority Class B(C) Streams.....   | 87  |
| D.1   | - Soil and Water Conservation Practices<br>USDA - SCS Iowa Field Office Handbook.....                  | 88  |
| D.2   | - Chemical BMP List -<br>Iowa State University - 1983.....   | 91  |
| D.3   | - BMPs to Improve Groundwater Quality in Iowa -<br>Iowa State University - 1988.....                   | 92  |
| D.4   | - Urban BMPs.....  | 94  |
| D.5   | - Storm Water BMPs.....  | 95  |
| D.6   | - Sediment and Erosion Control BMPs.....   | 96  |
| D.7   | - Urban Erosion and Sediment Control Practices...<br>E.1 - Soil Conservation Practice Impacts.....     | 97  |
| E.2   | - Control Effectiveness of Structural BMP<br>Components.....   | 99  |
| E.3   | - Control Effectiveness of Agronomic and<br>Management BMP Components.....                             | 100 |
| E.4   | - Comparative Pollutant Removal of Urban BMPs...<br>F - Resource Requirements-Program Implementation.. | 101 |
|   |  | 102 |

ABBREVIATIONS

| Full Name  | Abbr.  | Page |
|--|--------|------|
| 1. Clean Water Act   | CWA    | 1    |
| 2. Environmental Protection Agency   | EPA    | 1    |
| 3. Department of Natural Resources   | DNR    | 1    |
| 4. Federal Fiscal Year   | FFY    | 1    |
| 5. Environmental Protection Commission                                     | EPC    | 2    |
| 6. Best Management Practices   | BMPs   | 5    |
| 7. Publicly Owned Lakes Program  | POLP   | 8    |
| 8. Division of Soil Conservation   | DSC    | 8    |
| 9. Agricultural Conservation Program                                       | ACP    | 8    |
| 10. State Fiscal Year  | SFY    | 8    |
| 11. Resource Enhancement and Protection                                    | REAP   | 8    |
| 12. Soil and Water Conservation District                                   | SWCD   | 9    |
| 13. Statewide Comprehensive Outdoor Recreation Plan                        | SCORP  | 9    |
| 14. Land and Water Conservation Fund                                       | LWCF   | 10   |
| 15. Department of Agriculture and Land Stewardship                         | DALS   | 10   |
| 16. Iowa Financial Incentive Program                                       | IFIP   | 11   |
| 17. Federal Insecticide, Fungicide, Rodenticide Act                        | FIFRA  | 13   |
| 18. Iowa State University  | ISU    | 14   |
| 19. Iowa State University Extension Service                                | ISUE   | 14   |
| 20. United States Department of Agriculture                                | USDA   | 14   |
| 21. Soil Conservation Service  | SCS    | 14   |
| 22. Iowa State Water Resources Research Institute                          | ISWRI  | 14   |
| 23. Phosphorus   | P      | 15   |
| 24. Potassium  | K      | 15   |
| 25. Pesticide Applicator Training  | PAT    | 15   |
| 26. Geological Survey Bureau   | GSB    | 16   |
| 27. Environmental Protection Division                                      | EPD    | 16   |
| 28. Integrated Farm Demonstration Program                                  | IFMDP  | 17   |
| 29. Model Farms Demonstration Project                                      | MFDP   | 19   |
| 30. Integrated Crop Management   | ICM    | 19   |
| 31. Rural Clean Water Program  | RCWP   | 20   |
| 32. Agricultural Stabilization and Conservation<br>Service                 | ASCS   | 20   |
| 33. National Coordinating Committee  | NCC    | 20   |
| 34. Clean Lakes Program  | CLP    | 21   |
| 35. Resources Conservation Act   | RCA    | 22   |
| 36. General Accounting Office  | GAO    | 22   |
| 37. National Conservation Program  | NCP    | 22   |
| 38. Water Quality Action Plan  | WQAP   | 22   |
| 39. Food, Agriculture, and Conservation Trade Act                          | FACT   | 23   |
| 40. Water Quality Incentives Program                                       | WQIP   | 24   |
| 41. Wetlands Reserve Program   | WRP    | 25   |
| 42. Energy Security Act  | ESA    | 26   |
| 43. Resource Conservation and Development                                  | RC&D   | 28   |
| 44. Hydrologic Unit Area   | HUA    | 30   |
| 45. Northeast Iowa Demonstration Project                                   | NEIDP  | 30   |
| 46. National Pollutant Discharge Elimination System                        | NPDES  | 34   |
| 47. Comprehensive Environmental Response<br>Compensation and Liability Act | CERCLA | 76   |

ABBREVIATIONS (CON'T)

| Full Name                                    | Abbr. | Page |
|--|-------|------|
| 50. Department of Transportation             | DOT   | 39   |
| 51. Combined Sewer Overflows                 | CSO   | 40   |
| 52. Integrated Pest Management               | IPM   | 41   |
| 53. Household Hazardous Material             | HHM   | 41   |
| 54. High Quality Waters                      | HQ    | 44   |
| 55. High Quality Resource Waters             | HQR   | 44   |
| 56. Cold Water (Class B)                     | B(CW) | 44   |
| 57. Abandoned Mined Lands Program            | AML   | 45   |
| 58. Office of Surface Mining                 | OSM   | 45   |
| 59. Nonpoint Source                          | NPS   | 46   |
| 60. Big Spring Basin Demonstration Project   | BSBDP | 47   |
| 61. Iowa Planning Agreement                  | IPA   | 50   |
| 62. Grants Information and Control System    | GICS  | 51   |
| 63. USDA Water Quality Demonstration Project | DEMO  | 56   |
| 64. EPA Pollution Prevention Projects        | PPP   | 56   |

## CHAPTER 1

### INTRODUCTION

The 1987 amendments to the federal Clean Water Act (CWA) added the following statement to the Act's Declaration of Goals and Policy:

"It is the national policy that programs for the control of nonpoint pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution."

To ensure that progress in implementing this policy was made, additional nonpoint pollution control provisions were added to the Act. Among these provisions, given in Section 319 of the CWA, were requirements that states prepare and submit two reports to the US Environmental Protection Agency (EPA) for approval: a state assessment report describing the state's nonpoint pollution problems, and a state management program outlining the actions the state intends to conduct over the next four years to address its nonpoint pollution problems. EPA must approve both the assessment report and management program before a state becomes eligible for Section 319 grants to support program implementation.

Iowa's nonpoint assessment report was completed and submitted to EPA in July, 1988. The report included summary results of a statewide assessment of the impacts of nonpoint pollution on Iowa streams, lakes, and wetlands, as well as information on those nonpoint sources known or suspected of contributing to contamination of Iowa's ground waters. Copies of the assessment report are available upon request from the Department of Natural Resources (DNR).

In contrast to the assessment report, which only discussed the problems caused by nonpoint pollution, this report provides information on what is currently being done and what Iowa intends to do over the next four years to deal with these problems.

Chapter 2 of this report reviews the major federal, state, and local programs currently being used in Iowa to control nonpoint source pollution. The review covers both programs in which nonpoint pollution control is the major program objective and programs conducted for some other purpose, but which achieve nonpoint pollution control as a secondary program benefit.

Chapter 3 of this report identifies the specific nonpoint pollution control activities Iowa intends to conduct during federal fiscal years 1992 through 1996 (FFY 92-96) as part of its Section 319 nonpoint pollution management program. Although many of the programs identified in Chapter 2 are not included in the work elements of the Section 319 management program, these programs will continue to play a significant role in controlling nonpoint pollution of Iowa's waters.



This up-dated management program presented in this report will provide all of the information Iowa must submit to fulfill the Section 319 planning requirements. Following public review and approval by the Environmental Protection Commission (EPC), this report will be submitted to EPA for approval.

## CHAPTER 2

### CURRENT NONPOINT CONDITIONS AND CONTROL PROGRAMS

Iowa's 1988 Nonpoint Source Assessment Report indicates a number of nonpoint pollution sources are affecting the quality of Iowa's surface and ground waters. Statewide, agriculture is by far the most significant source, with its impacts being seen in many surface and ground waters throughout the state. Other nonpoint sources are of lesser statewide significance, but may be of major importance in determining local or regional water quality conditions.

Over the years, a number of local, state, and federal programs have been implemented to deal with the water quality and other environmental problems caused by various nonpoint pollution sources. In a few instances, these programs were established specifically to control nonpoint source pollution. In most cases, however, programs were established mainly for other purposes, and nonpoint pollution control was a secondary program benefit.

The major programs currently being used to control nonpoint pollution of Iowa's surface and ground waters are identified and discussed in this chapter of the management program. This review covers both programs in which nonpoint pollution control is the primary program objective and programs in which control of nonpoint pollution is a secondary program benefit. Because agriculture is the most significant pollutant source impacting the state's waters, more emphasis has been given on the review of programs affecting agricultural sources. As a consequence, greater detail is given on these programs than on the control programs affecting other nonpoint sources.

#### AGRICULTURAL SOURCES :

The results of Iowa's 1988 nonpoint assessment clearly point out agriculture's position as the major nonpoint source impacting the state's surface waters. Of 8,235 stream miles assessed, agriculture was identified as the primary nonpoint source impacting 93 percent of this mileage, and all streams were assessed as being impacted to some degree by agriculture. Similarly, agriculture was assessed as the major source of impact for 156 of 236 assessed lakes, and for 68 of 96 wetlands.

Sediment was most frequently identified as the agricultural pollutant causing the greatest water quality impact, with 84 percent of the stream miles reporting major sediment related impacts and lesser impacts reported for the remaining 16 percent. Sediment was also reported as the major pollutant for 137 of 236 lakes, for 55 of 65 wetlands, and for all four of Iowa's federal flood control reservoirs. For these waters, nutrients and pesticides were generally identified as causing moderate to minor water quality impacts, while other pollutants such as pathogens and organic enrichment were less frequently identified.

The 1988 nonpoint assessment also showed agriculture is impacting many of the state's ground waters. Leaching of nitrogen through the soil has caused nitrate concentrations in Iowa ground waters to increase significantly over the past 20 years, with many shallow aquifers now exceeding the nitrate drinking water standard of 10 mg/l (N). Currently, about 49 of Iowa's public water supplies exceed the nitrate standard, and an additional 161 supplies are experiencing nitrate related problems. About 529,000 people, or 19 percent of the state's population, are currently served by public water supplies with nitrate concentrations in excess of 5 mg/l N. In addition, about 18 percent of private wells exceed the nitrate standard affecting 130,000 rural Iowans. Although a number of sources may contribute to the state's nitrate problems, the leaching of nitrogen fertilizers from croplands is the greatest contributor.

In recent years, a number of commonly used agricultural pesticides have been detected at low concentrations in shallow ground water aquifers. The pesticides found are generally quite soluble, and thus leach readily under favorable soil and geologic conditions. Although leaching from areas in which high pesticide concentrations are found in the soil (due to container breakage, spills during mixing and handling, etc.) has been implicated as contributing to this problem, the major source appears to be the widespread use of pesticides on Iowa croplands.

Agricultural drainage wells, sinkholes, and poorly constructed or abandoned water supply wells allow agricultural pollutants to be discharged directly into groundwaters. While nitrates and soluble pesticides are the major pollutants found if only tile drainage is involved, a variety of pollutants (including sediment, pathogens, and organic matter) may enter the ground water if surface runoff is involved. Abandoned water supply wells are located throughout the state, while agricultural drainage wells and sinkholes are generally found in north central and northeastern Iowa, respectively.

Programs which directly or indirectly assist in controlling nonpoint pollution from agricultural sources in Iowa include:

A. State Water Quality Programs:

1. Nonpoint Pollution Control Planning & Implementation:

Nonpoint pollution control was first included as an element of the state's water quality protection programs in 1975, when the state began developing a comprehensive water quality management plan in accordance with requirements of Section 208 of the 1972 federal Clean Water Act. A major focus of this planning was on developing a program to protect the state's surface waters from agricultural nonpoint pollution.

A number of studies were conducted between 1975 and 1979 which better defined the nature and extent of Iowa's nonpoint problems, the factors influencing the types and amounts of pollution occurring, and the effectiveness of various control practices. These study results were used to develop an agricultural nonpoint control plan, which was adopted in 1979 as part of the Iowa Statewide Water Quality Management Plan.

The control program focused on reducing sediment movement into the state's surface waters, since sediment is the greatest pollutant of Iowa's surface waters and since sediment control would also reduce movement of attached nutrients and pesticides into these waters. A number of structural and management practices were recommended as Best Management Practices (BMPs), and wide-spread use of these practices was called for. To encourage their use, the program called for comprehensive public information efforts, greater funding for state and federal cost share programs, development of additional financial incentive programs, and early implementation of BMPs in the watersheds of priority lakes and streams.

Since 1979, the state's efforts have been directed at improving and updating the original control plan and implementing its recommendations. Progress in implementation has been made, including:

- funding for state cost-share programs has been increased;
- additional financial incentive programs have been developed, including no-interest and low-interest loan programs and a summer construction incentive program; and
- accelerated BMP implementation projects have been initiated on at least 50 lake watersheds, five of which are now completed.

Additional nonpoint pollution planning efforts have also been conducted since 1979. Major studies completed include:

- a Clean Lakes Classification Study was completed, as required by Section 314 of the Clean Water Act;
- a report was developed evaluating the pollution potential of agricultural chemicals and identifying recommended chemical management BMPs;
- several studies were completed assessing agriculture's impacts on Iowa's groundwaters; and
- in 1986, a comprehensive update of the state's nonpoint source control program was completed.

Most recently, the state's nonpoint planning activities have been directed toward complying with the new nonpoint control requirements of the 1987 Clean Water Act. These activities led to the development of a comprehensive state water quality assessment report in July, 1988, to development of a state nonpoint source management program for agricultural sources in December 1989, and the expansion of the state nonpoint source management program to cover all nonpoint pollution sources in 1992.

## 2. Livestock Waste Control Program:

Iowa's water pollution control programs generally consider large animal feeding operations as point sources of pollution, while small operations and animal waste disposal are considered to be nonpoint sources. Even so, the state has chosen to address both types of sources through one set of rules.

Iowa first adopted rules to control pollution from animal feeding operations in 1969. The rules have been revised several times since, with the last revision made in July, 1987. These rules not only incorporate, but go beyond, rules adopted by the EPA. They establish minimum waste control requirements for all types of animal feeding operations, and require certain methods of operation to be used if the facility is to obtain construction and/or operation permits from the Iowa Department of Natural Resources (DNR). Land disposal guidelines are also provided in the Iowa regulations for animal feeding regulations.

Requirements applying to small feeding operations are also included. As a minimum, settleable solids must be removed before wastes are discharged to state waters. Confinement (totally roofed) operations are prohibited from discharging any wastes to state waters, and, if ordered to do so, operations must correct any pollution problems identified through DNR investigations. The state land disposal guidelines apply to small feeding operations also.

The rules require that land disposal of animal waste be done in a manner that does not cause surface or groundwater pollution. To assist producers in selecting suitable disposal practices, land disposal guidelines are included in an appendix to the rules. Producers are encouraged, but not required, to follow these guidelines. Topics covered in these guidelines include nutrient application rates, application methods and timing of applications, and field conditions considered suitable for conducting disposal operations.

Many animal feeding operations in Iowa rely upon anaerobic lagoons for waste disposal. The design and construction requirements for anaerobic lagoons are found in Chapters 23, 64, and 65 of the Iowa Administrative Code and Chapter 18C of the Iowa Wastewater Facilities Design Standards. The requirements include minimum separation distances, maximum percolation rates, design volumes, maximum sulfate content (for anaerobic lagoons) and liquid depth requirements.

New rules were adopted in 1990 regarding on-farm disposal of dead livestock. Iowa Administrative Code 567-101.3(1) lists special requirements for the disposal of animals including: numbers that may be buried, burial depths, and separation distances from wells and surface waters. DNR is also involved with the ISUE in a Section 319 project to gather more information and demonstrate different methods of dead animal disposal. Monitoring of ground

water is being done at two burial sites and composting of poultry carcasses is being demonstrated at two poultry farms.

As part of it's FY90 Section 319(h) grant, DNR was awarded funds to conduct an animal waste management project. This project includes establishing a network of ten to fifteen animal waste demonstration farms throughout the state and also developing public information\education materials. Section 319(h) funds are also being used to add a groundwater monitoring component to some of the demonstration farm sites, in order to evaluate and demonstrate the effectiveness of earthen manure storage facilities in protecting Iowa's groundwater resources.

A booklet "Environmental Regulations and Guidelines for Animal Feeding Operations in Iowa", which explains Iowa's current "Animal Feeding Operations" rules (found in Chapter 567-65 of the Iowa Administrative Code) has been completed and distributed. The booklet includes information on permits, minimum waste control requirements, land disposal guidelines, and a permit application form.

The Leopold Center For Sustainable Agriculture also has an Animal Waste Management Interdisciplinary Research Team which is working to encourage sustainable animal and crop production in Iowa through economic and applied research of livestock waste management in development of cropping systems.

### 3. Iowa Groundwater Protection Act 1987:

This legislation emphasizes research and education to aid in eliminating water quality problems at their source. The principle objective is to promote changes in human activities that will resolve causes and sources of pollution impacts on groundwater quality. Major provisions of the Groundwater Protection Act include:

- significant increases in the amount of information collected by the state on the quality of groundwater;
- establishment of an ag-drainage well registration program and a program providing for research and demonstration projects on alternative methods to reduce contamination from ag-drainage wells by 1995;
- improvement of certification programs for pesticide applicators;
- a mandate for more rigorous monitoring and control of landfills and abandoned waste sites;
- improvement of underground storage tank management;
- improvement of public information materials on household hazardous substances;
- establishment of the Leopold Center for Sustainable Agriculture at Iowa State University to conduct and sponsor research on alternative agricultural practices which minimize negative environmental and socioeconomic impacts of agriculture;

- establishment of the Center for Health Effects of Environmental Contamination at the University of Iowa to determine the levels of environmental contamination which may impact human health;
- establishment of the Small Business Assistance Center for the Safe and Economic Management of Solid Waste and Hazardous Substances at the University of Northern Iowa to help provide education, information, and financial assistance for the safe management of solid and hazardous materials;
- establishment of various fees for fertilizer and pesticide distributors and manufacturers;
- establishment of "Grants to Counties" program that awards funds to counties (that adopt state regulations for water supply construction, on-site disposal systems, and abandoned well closure) for public information, private well testing, and well closure
- increase of tonnage fees for disposal in landfills and certification of sanitary landfill operators by 1990; and
- establishment of a permit program and fees for retailers selling household hazardous materials.

These groundwater protection programs are funded, in part, by revenues received from increased fees established on activities that often contribute to groundwater pollution. Provisions and programs mandated in this law are currently being implemented by the three state universities and various state agencies.

#### 4. Publicly Owned Lakes Program (Iowa Financial Incentive Program):

The Publicly Owned Lakes Program (POLP) is used to cost-share the approved cost of permanent soil conservation practices installed in watersheds above certain publicly owned lakes and reservoirs. For a number of years this program provided 75 percent cost share, however, a change in state law has made 50 percent the maximum cost share available.

The publicly owned lakes or reservoirs eligible for POLP funds are identified on a priority list established annually by the DNR. The Iowa Department of Agriculture and Land Stewardship Division of Soil Conservation (DSC) gives first priority to projects where a commitment has been made to use state cost-share dollars to match other public funds (i.e. Clean Lakes, Agricultural Conservation Program (ACP) Special Projects, etc.). Currently, 32 lakes have been approved for State fiscal Year '92 (SFY92) POLP funding, 15 which have been awarded POLP funding in the past and 17 which are receiving funding for the first time in SFY92.

#### 5. Water Protection Projects:

The State of Iowa receives funds from the Resource Enhancement and Protection Account (REAP) to carry out soil and water enhancement programs including, but not limited to, reforestation, woodland

protection and enhancement, wildlife habitat preservation and enhancement, protection of highly erodible soils, and clean water programs. The Soil and Water Enhancement Account receives 20 percent of the REAP appropriation. Fifty percent of its annual allocation up to a maximum of \$1,000,000 is directed to water quality protection projects. The balance of the allocation is directed to water protection practices. The practice allotment is then further divided for forestry and native vegetation practices (25 percent) and land treatment practices (75 percent).

Soil and Water Conservation Districts (SWCDs) are the only eligible applicants for the Soil and Water Enhancement Project Funds. The districts make application to the State Soil Conservation Committee and the DSC.

In 1989 prior to REAP, the DSC funded eight projects from 38 applications through the oil overcharge account. These project costs totaled \$481,298.

In 1990, through the REAP program, 19 projects were approved from 26 applications. These project costs totaled \$942,941.

In 1991 through the REAP program, 22 projects were approved from 27 applications. These project costs totaled \$1,049,107.

In 1992, there will be enough carry over of work from the current projects that have been funded to spend the REAP dollars. If REAP is funded by the legislature in 1993, more projects will be added.

The projects are designated to protect both surface and ground water. Rules for administering the water protection fund projects are found in the administrative rules of the State of Iowa.

Rules for administering the Water Protection Practices Program were adopted by DSC in early 1990. Major provisions of the approved rules include:

- \* districts must designate the high priority watersheds or water quality problems that funding will be used for and the State Soil Conservation Committee must approve the districts priority designations.
- \* some practices which have had little or no support in previous cost-share programs will be encouraged. Cost-share at the 75% level will be available for critical area planting, grass strips, field borders, filter strips, and pasture and hayland planting.

The DSC works closely with the DNR and with other state and federal resource agencies in selecting the projects to be funded.

#### 6. Iowa Wetland Protection Plan:

This plan has been prepared as a supplement to the 1988 Statewide Comprehensive Outdoor Recreation Plan (SCORP). The Wetlands



Protection Plan was mandated by Section 303 of the Emergency Wetlands Resources Act of 1986. The state plan must be consistent with the National Plan in order for states to qualify for Land and Water Conservation Fund (LWCF) money. LWCF cost-share money may be used for the purpose of wetland acquisition. Other funding sources, including financial incentive programs (e.g., tax relief through Iowa's "Slough Bill", state preserve dedication provisions under Chapter 111B of the Iowa Code, and the use of conservation easements), as well as options available through the Prairie Pothole Joint Venture, may be used for the purpose of wetland protection. Each of these approaches can be used to help maintain or improve water quality as well as a host of recreational and wildlife benefits. Intact wetlands play important roles in terms of nutrient removal from surface waters and groundwater recharge.

The Wetland Protection Plan establishes criteria by which wetlands can be prioritized for protection under natural area protection/preservation and waterfowl or other wildlife management. Priority classes of wetlands identified by the DNR include palustrine emergent wetlands (prairie potholes) in 35 counties, restored wetlands, riverine wetlands (interior), border river wetlands (Missouri and Mississippi rivers), and fens. The plan also identifies numerous state and federal laws that provide mechanisms for protection and restoration of wetlands, including:

- Section 404, Clean Water Act, for wetland drainage or fill permits;
- Chapter 72, Code of Iowa, criteria for DNR to issue or deny permits for channel changes;
- Chapter 111, Code of Iowa, for the issuance of construction permits on or over sovereign lands of Iowa; and
- Chapter 455, Code of Iowa, with over 200 subsections governing establishment and operation of levee and drainage districts, and DNR permit authority regulating construction and alterations within floodplains.

#### B. State Soil Conservation Programs:

##### 1. Iowa Soil 2000:

Iowa Soil 2000 was established by legislation in 1980 to promote soil conservation activities and practices. The Iowa Department of Soil Conservation (DSC), now a division of the Department of Agriculture and Land Stewardship (DALSS), was assigned primary responsibility for administering this program which established 5, 10, 15, and 20-year goals for the reduction of soil erosion losses. Some of the basic features of the program include:

- development of conservation folders to increase landowner awareness of potential problems;
- development of farm unit soil conservation plans to guide erosion control efforts;
- development of options and restrictions or conditions on cost-share incentive programs;

- requiring building or grading permit applications to include a soil conservation district approved erosion control plan;
- initiating periodic review of soil loss limits; and
- directing soil and water conservation districts to assist local school districts in providing soil conservation education.

The Iowa Soil 2000 program is still in effect. However, since the broader concerns of nonpoint pollution, surface water quality, and groundwater quality have gained increased attention through directives and programs at both the state and federal levels, the specific activities of the program have in some cases been modified or redirected.

## 2. Soil and Water Conservation Districts:

The Soil and Water Conservation Districts (SWCDs) of Iowa provide a variety of general services to assist in soil conservation practices. Technical assistance is provided for planning, design, and adherence to specifications of soil conservation practices. Soil surveys and evaluation of data are available to landowners in determining needs and practices. Educational materials and programs are made available to the public and schools and cost-share funds are locally administered.

## 3. State Soil Loss Limit Regulations:

Iowa law, Chapter 467A, requires each SWCD to adopt reasonable soil loss limit regulations that have been reviewed and approved by the State Soil Conservation Committee. Different soil loss limits may be established for different classes of land in each district, based upon differences in factors affecting erosion potential. The law provides that district commissioners may require the owners of agricultural land or farm operators to employ soil and water conservation practices, although they cannot specify which particular practice to use. The state has provided 50 percent cost-share monies which must be made available to the landowner or operator before legal action can be used to force compliance.

## 4. Iowa Financial Incentive Program:

The Iowa Financial Incentive Program (IFIP) for Soil Erosion Control was established in 1973 by the Iowa General Assembly and is described in Chapter 467A, Code of Iowa. The purpose of the program is to provide financial assistance to landowners and farm operators to pay a part of the cost for installation and use of soil and water conservation practices. The program is administered by the DSC of the Department of Agriculture and Land Stewardship. The program includes a number of different elements such as:

- a. The Voluntary State Cost-Share Program uses up to 85 percent of the cost-share appropriation each year to pay for up to 50 percent of the installation cost of approved permanent soil and water conservation practices. State law

also allows up to 30 percent of the county's allocation to be used for approved management practices. The DSC allocates funds to SWCDs by utilizing a formula from the Conservation Needs Inventory (1970). In the event that an SWCD does not use all of its allocation, the DSC may recall unspent funds for redistribution to other SWCDs. Landowners or operators apply at their SWCD office for funds and then the SWCD commissioners review applications and use a priority system to determine approval and funding. The priority systems vary by county, but may include funding for only certain practices, priority watersheds, or construction ready projects.

b. The Mandatory Program is funded with five percent of the state cost-share appropriation to be used where land owners or farm operators are required to install soil erosion control practices by an SWCD administrative order or a court order. This may occur when state soil loss limits have been exceeded and an SWCD action has been taken to abate soil erosion complaints filed under provisions of section 467A, Code of Iowa. Under these conditions the state must make available a 50 percent cost-share assistance for permanent soil conservation practices to be installed. Temporary soil conservation practices may be installed with cost-share rates set by the State Soil Conservation Committee. Any unobligated funds remaining in the mandatory program at the end of the year are reallocated to the voluntary state cost-share program.

c. The Publicly Owned Lakes Program (POLP) is also a part of the IFIP which was established as a soil erosion control program. Since the POLP program has been aimed at the broader goal of improving the state's water quality, it has been discussed above under State Water Quality Programs.

d. Summer Construction Incentives are authorized in Section 467A.7, Code of Iowa, which authorizes SWCD commissioners to provide incentive payments of up to 60 percent of the cost of establishing permanent soil conservation practices that are installed between June 1 and August 15 of any calendar year. Monies for this program are made available within districts when the SWCD is unable to obligate all of their state cost-share funds in other programs. Ordinarily, monies have been obligated to other programs and the summer construction incentives have had limited use.

#### 5. No-Interest Soil Conservation Loan Program:

The Iowa Legislature appropriated funds for three years (\$1,000,000 in 1983, \$750,000 in 1984, and \$99,000 in 1985) for the purpose of providing interest-free loans to landowners and farm operators to implement soil conservation practices. A maximum of \$10,000 per individual farm unit is made available for the installation of permanent soil conservation practices. Up to 10 years is available for interest-free loan repayment. At the present time new

appropriations are not being made for the program, but as loans are repaid on existing projects the money is made available to fund new projects. As the legislation establishing this program does not require reversion of loan funds to the state general fund, these funds will remain available indefinitely.

#### C. State Agricultural Chemical Regulatory Programs:

The Department of Agriculture and Land Stewardship (DALs) has primary responsibility in administering state rules pertaining to agricultural chemicals.

##### 1. Fertilizers:

Nitrogen added to lands from animal feeding operations, wastewater treatment, and septic systems are regulated in part by state and local authorities (see Land Disposal of Wastes). Commercial dealers and applicators of fertilizers are required to have impermeable dikes and pads where bulk supplies of fertilizers are stored and mixed. Application of fertilizers is not currently regulated, but efforts have been directed through education to encourage voluntary implementation of best management practices that maximize efficient use and reduce loss of applied fertilizers. As part of these efforts, DALs has initiated a voluntary certification program for private laboratories engaged in soil testing. This certification program is designed to assure accurate and comparable analytical results on soil samples for growers in the state of Iowa, and to enhance the reliability of laboratories' soil analysis and recommendation procedures.

##### 2. Pesticides:

In addition to Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) regulations on the proper use and handling of pesticides, the state has implemented rules under DALs administration. Most commercial pesticides dealers and custom applicators are now required to install dikes and pads for non-mobile bulk storage of pesticides and where pesticides are mixed and loaded. The rules are implemented where more than 300 pounds or gallons of pesticide are mixed within a 30 day period. Farmers who store non-mobile bulk pesticide containers greater than 55 gallons are also affected by these rules and must have impermeable dikes and pads installed. Similar containment is recommended but not required for smaller operators using minibulk storage or smaller containers. Where dikes and pads are required, they are to be at least 150 feet from private well heads and 400 feet from public water supply wells.

The Groundwater Protection Act 1987 has imposed fees for agricultural manufacturers and distributors and has improved certification programs for pesticide applicators. All commercial applicators must pass a test and pay a fee to be certified and must keep records of their product applications. In many cases farmers apply their own chemicals and are guided by FIFRA, EPA and state requirements to follow label instructions and by recommendations

for application procedures. If farmers apply restricted use pesticides, they must pass a private pesticide applicator test and pay fees to be certified, but they are not required to keep records of their product use.

Farmers are guided by recommendations from Iowa State University (ISU) College of Agriculture and Iowa State University Extension Service (ISUE) for mixing, application, and disposal procedures. Recommendations have been provided to reduce the risk of groundwater contamination from mixing of chemicals near private well heads and from disposal of excess chemical and rinsate waters in the field.

#### D. Information and Education Programs:

DNR received Section 319(h) funding in 1990 to support a staff position to work on a number of nonpoint pollution related public information and education projects. This Public Information Specialist has prepared a workplan for developing an overall state nonpoint public information and education strategy, and also helped develop the Animal Feeding Operations booklet mentioned previously in the Livestock Waste Control section.

In addition, public information and education activities addressing nonpoint source pollution issues are conducted by a number of agencies. The ISUE, the DNR, the DALs, the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), SWCDs, the Iowa State Water Resources Research Institute (ISWRI) and the Leopold Center For Sustainable Agriculture have all contributed to statewide educational efforts to help inform the public of concerns relating to sediment movement, pesticides, nutrients and other nonpoint pollutants impacting surface and ground water quality in Iowa. These educational efforts often rely upon basic knowledge obtained through research activities conducted or supported by academic institutions and agencies across Iowa.

##### 1. Iowa State University Extension Service:

The ISUE is a client-focused organization that provides research-based unbiased information and education to help people make better decisions in their personal, community, and professional lives.

Based on input from the public and Extension professionals, ISUE has implemented four priority programs relevant to non-point pollution concerns in Iowa.

Plan #211 - "Profitable and Sustainable Systems" is designed to help Iowa farmers understand and adopt practices that improve agricultural profitability and protect Iowa's land and water resources. Improved use of livestock wastes, taking credit for nutrient inputs from leguminous crops, and adoption of realistic yield goals for various soil types are key concepts emphasized in this program. Program activities

include on-farm nutrient management demonstrations, development of resource inventories, conducting cooperative education programs with other USDA agencies, and providing in-service education on natural resource management for ISUE and other agency personnel.

Plan #231 - "Land, Water, and Energy Resource Management" is designed to encourage Iowa landowners and managers to implement land management practices that decrease soil erosion on cropland, and to improve the clarity and purity of surface water resources in targeted watersheds and enhance the ability of these resources to meet state-designated use classifications. Program elements include: on-farm demonstrations; public information bulletins; take-home video tapes; and public meetings co-sponsored with local soil and water conservation districts and other natural resource agencies.

Plan #232 - "Pesticide/Nutrient Management Plan" targets farmers, retail service providers, and householders. Program objectives include: adoption of recommended Phosphorus (P), Potassium (K), and pH soil testing procedures; increased adoption of herbicide banding; understanding and adoption of recommended nitrogen management practices; development of farm pesticide management plans and use records; and increased use of integrated nutrient management and pest scouting practices. Video programs, public meetings, workshops, demonstrations, and print media are key delivery methods for this program.

Plan #233 - "Solid Waste Management" is designed to reach community leaders, consumers, youth, businesses, and manufacturers with information on waste reduction, reuse, and recycling. The focus of this program is on assisting local organizations to develop community-based programs emphasizing methods for reducing the amount of solid waste going into Iowa landfills.

In addition to the four Extension base programs described above, ISUE is also responsible for conducting state-mandated pesticide applicator training (PAT) in Iowa. Some 9,000 - 10,000 private applicators annually receive training through this program, and about 6,000 commercial applicators receive four to six continuing education credits each year. Delivery methods include satellite video conferences, county meetings, printed study guides, and demonstrations. Integrated pesticide and nutrient management techniques designed to reduce the likelihood of nonpoint pollution are stressed throughout the training.

The Leopold Center and ISWRRRI have funded a number of education and demonstration projects relevant to nonpoint pollution concerns in Iowa. Investigators of these projects from state universities, private and community colleges and non-profit organizations have developed useful educational programs for Iowa farmers and citizens.

University research provides the foundation upon which Extension programs are based. Research results are provided by various University academic departments, the Iowa Agriculture and Home Economics Experiment Station, and the National Soil Tilth Laboratory (USDA-ARS).

## 2. Department of Natural Resources:

A number of divisions of the DNR contribute to the ongoing efforts to educate the public on water quality concerns, including nonpoint source pollution. The Geological Survey Bureau (GSB) has played a central role in the Big Spring Basin Study, which helped provide the foundation for the Groundwater Protection Act. Educational activities provided for in state groundwater legislation are being carried out in part by the Information and Education Bureau of the DNR. The Fish and Wildlife Division, the Parks, Recreation and Preserves Division, and the Forests and Forestry Division manage programs and facilities throughout the state that provide the public opportunities to enjoy the state's natural resources, and through these activities to get a greater understanding of the need to protect the state's waters and other natural resources. The Environmental Protection Division (EPD) uses water quality monitoring programs and periodic assessment reports to keep the public informed on the quality of the state's waters. The EPD also plays an important role in identifying, planning and implementing water quality protection and restoration projects throughout the state.

Listed below are a few of the major program activities in which DNR has participated over the past year.

- \* A cooperative agreement was developed in 1990 between DNR and the US Soil Conservation Service (SCS), under which the SCS has assigned an employee to DNR to assist in implementing the state nonpoint source management program. This agreement has been renewed for a second year.
- \* Assistance was provided to SCS in developing training materials and providing training to SCS field staff about Iowa's water quality problems and control programs.
- \* Development of the state's Section 319(h) grant applications and implementation of the funded projects has been coordinated with the funding programs and project activities of other agencies; a Section 319 project review committee has been formed including members of the DALs, DSC; ISUE Service; Leopold Center for Sustainable Agriculture; USDA Soil Conservation Service; and the DNR Environmental Protection Division and the Geological Survey Bureau; a meeting of the review committee was held March 19, 1991 and again on February 26, 1992 to review the project proposals submitted to DNR for Section 319 funding consideration.

- \* Criteria for developing watershed based water quality protection project applications and an example of such an application were developed and used in 1992. These materials were supplied to those applying for 319(h) funds or funds from other water quality programs. These materials should make the grant development process more efficient in the future as well as improve the quality of individual projects.
- \* Assistance was provided in the identification, development, and/or the selection of nonpoint pollution control projects for a variety of programs, including: DSC/DALS Water Protection and Publicly Owned Lakes Programs; EPA's Pollution Prevention and Clean Lakes Programs; SCS Resources Conservation Act and PL-566 Watershed Protection Programs; and USDA Water Quality Initiative Program (Demonstration, Hydrologic Unit, & ACP Water Quality Special Projects).
- \* Assistance was provided (from DNR field offices) to ISUE on locating existing dead animal burial sites which might be suitable for groundwater monitoring as part of the Section 319(h) Dead Animal Disposal Project; ISU was also provided with information on DNR requirements applicable to composting facilities.
- \* DNR has actively participated in a variety of meetings and other activities dealing with nonpoint related issues.

### 3. Department of Agriculture and Land Stewardship:

The Division of Soil Conservation (DSC) serves as a major source of information and programs promoting soil conservation and nonpoint source pollution control. The DSC also plays a major role in the Integrated Farm Management Demonstration Program (IFMDP), Model Farms Demonstration Project (MFDP), and Targeted Education Program.

#### a. Integrated Farm Management Demonstration Program

The Integrated Farm Management Demonstration Program (IFMDP), was established in 1986 and became part of the 1987 Ground Water Protection Act the following year. The IFMDP is supported by the Agriculture Energy Management Fund and administered by the Department of Agriculture and Land Stewardship.

The program has worked with farmers and the agribusiness community to implement the best available innovative crop production technologies to reduce energy consumption, protect soil and water resources, and enhance the profitability of agriculture in Iowa. The program incorporates the knowledge and skills of farmers, technicians, and research scientists through subcontracts with the three major universities of Iowa, the Geological Survey Bureau of DNR, and non-profit organizations including Practical Farmers of Iowa and Grinnell 2000.



Since the initiation of the program, technologies that focus on energy efficiency and environmental improvement have been demonstrated at sites in every county of the state. Field plots, including replicated treatments to evaluate new technologies, were established in over 100 locations each year from 1987 through 1991 on farms and research centers. The primary technologies address at these sites include: reduced tillage practices; nutrient management; weed and insect management; integrated pest management; and water resource management.

Activities include field demonstrations, newsletters and educational materials distributed statewide. An important feature of this program is that the majority of the demonstration sites are established in cooperating farmers' fields using guidelines and assistance from researchers and technicians. Analysis of cooperators' farmstead well water for nitrates and agricultural chemicals is also part of the program.

Detailed information about the IFMDP is contained in annual progress reports published through the ISUE Service. The final contractual report will be completed in August, 1992. Individual components, including manure management, agribusiness education, information and media support, and evaluation, will continue until 1993.

#### b. Targeted Education Program

The Targeted Education Program is a multi-year cooperative effort between IDALS Division of Soil Conservation and ISUE. The program focuses on transferring technology of best management practices which prevent or reduce point or nonpoint source pollution of surface and groundwater, and are economically and technologically feasible, to targeted audiences. Best management practices and technologies will be directed toward farmers and land managers in areas of the state having abandoned wells, shallow bedrock aquifers and sinkholes, and agricultural drainage wells. Completed projects include:

1. Assisted with Field Day for ADW Research and Demonstration Project.
2. Assisted with sinkhole cleanup demonstration and public information meeting.
3. Display for 1989-1990 annual convention of Iowa Fertilizer and Chemical Association.
4. Produced and distributed informational posters and display panels regarding plugging of abandoned wells.
5. Developed and distributed "Plugging Abandoned Wells" slide-tape set.
6. Developed and printed fact sheet "Banding Herbicides for Row Crop Weed Management".
7. Developed and printed brochure "Atrazine Management Rules for Iowa".
8. Developed and printed brochure "Chemical Alternatives to Atrazine in Corn Weed Management Programs".

9. Developed and printed brochure "Agricultural Drainage Well Research and Demonstration Project Profile".
10. Developed and printed literature review "Vegetative Filter Strips".
11. Developed and printed brochure "Plugging Abandoned Wells".
12. Developed and printed brochure "Nitrogen Management for Northeast Iowa".

c. Model Farms Demonstration Project

The Model Farms Demonstration Project (MFDP) is a three-year project (FY1990-93) authorized by the Iowa legislature in 1989 to establish concentrated demonstration and education programs in five areas of the state. The MFDP is focused on providing integrated crop management (ICM) assistance to over 150 individual producers to refine their management of fertility and pests, reduce inputs, reduce energy use and improve their economic record-keeping.

Participant farmers received the services at no charge the first year, and have paid an increasing per acre cost in FY91 and FY92. In FY93, farmers will finance the entire cost of the project and it will have established local enterprises that continue to refine management and reduce inputs in the future.

The MFDP is designed to fit Iowa's different agricultural needs. The state's north central and western areas require more efficient practices in crop production. However, agriculture in south central Iowa has a higher percentage of land used for grazing livestock, so that portion of the project concentrates on efficient forage and pasture management. Southeast Iowa's landscape consists of broad upland flats with gentle to moderately sloping hillsides used for rowcrop production. In this area, the project concentrates on alternate tillage practices that can help slow erosion of the land.

IFMDP, MFDP, and other Iowa water quality programs have assisted Iowa farmers to achieve substantial savings by reducing nitrogen fertilizer use for corn. These reductions, which exceeded 200 million pounds per year, provided Iowa farmers with a savings of \$80 million in the period 1989-90. The realization of additional savings will be related to the continued interaction of Iowa farmers with Iowa programs.

E. Federal Water Quality Programs:

1. Section 208:

Section 208 of the federal Clean Water Act required states to develop comprehensive water quality management programs. The areawide water quality planning activities conducted in Iowa to meet requirements of Section 208 involved many agencies and public input groups. The state was divided into six major river basins, with public input groups established and utilized in each

basin. Statewide, Section 208 water quality planning activities were conducted by the Department of Environmental Quality (now the Department of Natural Resources) and agricultural nonpoint source planning activities were conducted by the Department of Soil Conservation (now the Iowa Department of Agriculture and Land Stewardship). In addition, to regional planning agencies, Rathbun 208 and Des Moines 208, were designated to conduct more detailed planning for their respective areas. These planning activities resulted in development of the 1979 Iowa Statewide Water Quality Management Plan.

Activities conducted in Iowa in response to Section 208 are discussed in this chapter under "Nonpoint Pollution Control Planning and Implementation, State Water Quality Programs." Agency responsibilities for implementing various nonpoint source activities are addressed in Chapter 3, "State Nonpoint Source Management Program" and its associated work elements.

## 2. Rural Clean Water Program:

The Rural Clean Water Program (RCWP) was established in the Clean Water Act of 1977 as amendments to Section 208 of the Federal Water Pollution Control Act Amendments of 1972. Funds for RCWP were not made available until the 1980 Agriculture Appropriations Act which provided \$50 million in FY80. The purpose of RCWP is to provide financial assistance to landowners for installing BMPs to control movement of agricultural chemicals and animal wastes into streams or impoundments for the primary benefit of improved water quality. The program is administered primarily by Agricultural Stabilization and Conservation Service (ASCS) with project selection and allocation to states taking place at the national level. State ASCS offices transfer funds to county ASCS offices where landowners enter into contracts for 3 to 10 years. SCS works with landowners to develop long term contracts and provides technical assistance to implement individual BMPs as contained in each contract. The contracts establish specific BMPs to be installed and the cost-share rate, which is ordinarily 75 percent for installation of practices. Up to 100 percent of cost is available from RCWP for technical assistance. The National Coordinating Committee (NCC) assists ASCS in administration of the program and includes USDA representatives and an EPA representative.

RCWP regulations require that water quality concerns for a potential project be identified through the state's water quality planning process and that treatment sites in a selected project must be hydrologically related or in the same watershed. It is also required that baseline data be available for projects as a means of evaluating effectiveness. The target problems must be nonpoint pollutants, particularly nutrients, pesticides, and animal wastes. The NCC reviews project applications and takes into account such things as:

- severity of the nonpoint source problem;
- potential public benefits associated with the project;

- feasibility of controlling the problem within the life of the project;
- suitability of the project in testing programs, policies, and procedures for control of nonpoint sources;
- state and local participation in the project; and
- project's contribution to meeting national water quality goals.

In Iowa, the Prairie Rose Lake Project was funded at \$596,000 for ten years. It is one of 21 projects initiated nationwide in 1980 and is still active. No other RCWP projects have been funded in Iowa. The installation of nonpoint source control practices in the Prairie Rose Lake watershed has reduced the rate of lake sedimentation and substantially decreased the turbidity in the lake.

### 3. Clean Lakes Program:

Section 314 of the Clean Water Act, originally enacted in 1972, established the Clean Lakes Program (CLP). The CLP provides financial assistance to states for research and implementation projects aimed at controlling pollution of publicly owned freshwater lakes for the purpose of improving water quality in degraded lakes. The program is administered at the federal level by the EPA which selects projects and determines awards to states. In Iowa the DNR administers the program and may contract with firms or other agencies to conduct lake pollution studies or to carry out lake protection and restoration projects. Funds for implementing soil conservation practices to control nonpoint pollution are channeled through the DSC to SWCDs for cost-sharing to landowners.

In Iowa the early projects consisted primarily of dredging to extend lake life with little regard to prevention of the cause of the problem. The early years of CLP did not emphasize control of nonpoint source pollution, however, Iowa became one of the first states to include nonpoint pollution control efforts in the CLP projects. Subsequent to Iowa's initiatives, EPA revised policy to place more emphasis on nonpoint source control measures. Lake Manawa was primarily a lake dredging project, but included a control structure on the source stream to divert stream flow past the lake during periods of high runoff and sediment loads. Swan Lake also emphasized lake restoration practices including deepening of the lake and creation of an artificial wetland, but many nonpoint source control practices were already in place in that watershed. In the recently completed Green Valley Lake, the ongoing Union Grove Lake, Black Hawk Lake and Lake Ahquabi, and the Little Wall Lake (Little Wall is only in Phase I, Studies stage) projects, the implementation of BMPs for nonpoint source control is an integral part of each project.

### 4. Sections 205(j)(5) and 319:

The Clean Water Act of 1987 added Section 319 Nonpoint Source Management Programs as a requirement for individual states to complete an assessment of nonpoint source pollution problems in the

states' surface waters and groundwaters, and develop a management plan to address nonpoint source problems identified in the assessment report. Section 205(j)(5) provided funds to assist the states in the assessment and management planning process. Section 319(h) established a funding program to provide financial assistance that could be applied toward enforcement activities, technical assistance, education, technology transfer, monitoring and evaluation for the purpose of implementation of the state's NPS management program. As a part of the state's on-going water quality planning activities, pursuant to efforts initiated by Section 208, Iowa has adequate data and assessments available for some waterbodies, particularly lakes, that are ready for development of 319 projects. Iowa has now completed its State Assessment Report and has been developing project plans suitable for 319 funding since 1990.

F. Federal Soil Conservation Program:

1. Technical assistance:

Conservation Technical Assistance as conducted by the SCS was established by the Soil Conservation and Domestic Allotment Act of 1935. It is the core program of SCS, providing technical assistance in the form of onsite planning and application of conservation treatments for landowners in nearly 3,000 conservation districts nationwide and 100 soil and water districts in Iowa. The general thrust of SCS's technical assistance programs has been to respond to farmers voluntarily seeking assistance by developing detailed conservation plans and providing assistance in installation of those planned conservation measures.

Following the Soil and Water Resources Conservation Act (RCA) of 1977, a National Resource Inventories program was conducted by SCS which provided the first nationally consistent and statistically reliable estimate of current erosion rates. The study indicated that erosion rates had generally been reduced, but that total erosion losses were increasing because of changes in farm machinery and cropping systems, and because of increased acreage in cultivation. The overall conclusion of the study was that the SCS program was not successful in its present form and needed revision to meet changing practices and problems in agriculture. The General Accounting Office (GAO) in another study also recommended that SCS assume a more aggressive role in seeking farmers with severe erosion problems and that SCS reduce its plan development activities and instead give greater emphasis to implementation of erosion control practices.

RCA also called for the development of a National Conservation Program (NCP) which first appeared in 1982. The first two priorities of the NCP 1988-1997 are reduction of soil erosion and protection of surface water and groundwater quality from nonpoint sources (including agricultural chemicals). This emphasis is reflected in a recent change by SCS to develop a water quality action plan (WQAP) which will include water quality improvement as

a conservation planning objective. SCS will be giving attention to the general concept of water quality in addition to its traditional focus on soil conservation. This approach by SCS is consistent with the goals and project development that have been promoted in Iowa for control of nonpoint sources since 1980.

The Food Security Act of 1985, also known as the 1985 Farm Bill, and the 1990 Food, Agriculture, and Conservation Trade Act (FACT) are most significant technical assistance programs in terms of their potential for reducing soil erosion and the impacts of nonpoint sources on surface waters. This is because these programs require conservation practices as a prerequisite to receive nearly any USDA program benefit. The program is administered by ASCS and has technical assistance provided by SCS. Six major conservation provisions were established:

a. Conservation Reserve. The Conservation Reserve was established to encourage producers to retire highly erodible cropland to permanent plantings of grasses, legumes, trees, windbreaks, wetlands, or wildlife cover. Also available is the use of vegetated filter strips, including permanent plantings of grass, forbs, shrubs, or trees, planted along streams and other waterbodies, regardless of the site's erodibility classification. To promote this program ASCS will make annual rental payments for the retired acreage under 10 to 15 year contracts as long as the operator complies with the terms and conditions of the contract. This program will provide significant nonpoint source control benefits and also increase wildlife habitat.

b. Conservation Compliance. Conservation compliance applies to farmers who continue to plant annually tilled crops on highly erodible lands. Generally, lands with eight percent slope or more are considered to be highly erodible, but lands with more gentle slopes may also be classified as highly erodible if the soils are more fragile. To remain eligible for all federal farm payment programs and many other USDA programs, farmers must develop and begin to apply a local SCS and SWCD approved conservation plan for the highly erodible fields by January 1, 1990. The plan must be fully implemented by January 1, 1995. The intent of this provision is to ensure that federal programs do not encourage farming of highly erodible lands.

c. Sodbuster. Sodbusting occurs when a person plants an agricultural commodity crop on highly erodible land that was not used to produce a commodity crop during any of the 1981 to 1985 crop years. If such lands are broken out in order to produce crops after December 23, 1985, the farmer will become ineligible for USDA farm payment programs for that year, unless needed erosion control measures are planned and applied prior to planting. The intent of this provision is to keep highly erodible lands under more protective plant cover, and not to convert them to cropland unless erosion is controlled.

d. Swampbuster. The swampbuster provision applies to farmers who convert naturally occurring wetlands to cropland after December 23, 1985. Generally farmers who alter any wetland are ineligible to receive USDA program benefits. Wetlands tend to be dominated by plants adapted to waterlogged soils and the intent of swampbuster is to maintain wildlife habitat, nonpoint source control and other benefits of wetlands.

e. Water Quality Incentives Program. The Water Quality Incentive Program, authorized by the FACT Act of 1990, was funded through the Agricultural Conservation Program (ACP) in 1992 as Water Quality Incentive Projects (WQIP). The goal of WQIP is to achieve source reduction of agricultural pollutants by implementing management practices in an environmentally and economically sound manner.

The purpose of the projects are to encourage use of management practices to improve and protect water quality in areas where agricultural pollutants have been identified as a concern in priority public waters. These pollutants include sediment, nutrients, and pesticides. The intent is to achieve a reduction of agricultural pollutants at the source by using water quality or best management practices. WQIP encourages producers to make changes on a voluntary basis.

Iowa producers with at least two-thirds of a tract of land in the following projects are eligible:

- \* Northeast Iowa Demonstration Project, which includes parts of Allamakee, Clayton, Fayette, and Winneshiek Counties
- \* French Creek Water Quality Special Project, Allamakee County
- \* Three Mile creek Watershed in Adair and Union Counties
- \* Black Hawk Lake Project in Sac and Carroll Counties
- \* Union Grove Lake Project in Marshall and Tama Counties

Water Quality Incentive Projects have many incentives and benefits.

- \* Producers receive incentive payments (not cost-share) for up to a three year period for using management components that improve water quality. Payments are made annually with a \$3,500 (\$25/acre) limit.
- \* Producers develop and carry out a comprehensive Water Quality Resource Management Plan with help from SCS. The plan is designed to help farmers:
  - Improve the rural environment.
  - Save money on crop inputs, such as nitrogen, while maintaining yields and protecting the environment.

- Reduce health risks associated with handling agricultural chemicals.
- Improve drinking water quality for family and livestock.
- Keep comprehensive, accurate records of production costs, ag chemical applications, and tillage operations. The record-keeping practice will also prepare producers for record-keeping requirements of restricted-use pesticides in '93 as required by FACT.
- Improve pest and nutrient management skills by working with crop consultants and other specialists.
- Learn to make economic and environmentally safe use of animal waste.

Most of the practices involve management and cultural changes as effective alternatives to the construction of any expensive permanent structures. A water quality resource management plan will likely include some practices not addressed in compliance plans. The new practices can be integrated into existing conservation compliance plans. Farmers without highly erodible land or conservation compliance plans may enter the program and develop a plan to suit water quality needs.

Most water quality resource management plans will include an Integrated Crop Management Plan. It is advisable to work with a crop consultant, a dealer, or an Extension specialist to develop the ICM plan. Record keeping will be required to document the application (type, amount, and cost) of nutrients and pesticides.

The overall water quality resource management plan must be approved by a water quality team of representatives from SCS, Extension, ASCS, and the local SWCD.

f. Wetland Reserve Program.

The Wetlands Reserve Program (WRP), funded at \$46.4 million this year, was one of the landmark environmental steps in the 1990 Farm Bill. The administration is asking to increase funding to \$160.9 million for fiscal 1993, beginning October 1, 1992.

Under the WRP, the Department of Agriculture's Agricultural Stabilization and Conservation Service (ASCS) can spend funds to purchase easements from eligible owners who agree to farmed and converted wetlands with some adjacent lands dependent upon wetlands.

Producers in California, Iowa, Louisiana, Minnesota, Mississippi, Missouri, New York and North Carolina may enroll up to a total 50,000 acres in the WRP during fiscal



year 1992. The WRP's goal is to enroll one million acres by the end of 1995 through the purchase of permanent or long-term easements. Eligible landowners may offer their land to be enrolled in the WRP during a designated signup period this spring which will be announced later.

If the land offered is eligible, and the compensation requested is acceptable, cost-share assistance may be provided for rehabilitating the land under easement. Certain compatible uses of the land under easement by the landowner will be permitted in exchange for continued maintenance of the land by the landowner and successors.

USDA's SCS and the U.S. Department of the Interior's Fish and Wildlife Service will assist ASCS in determining the eligibility of the acres offered during the WRP spring signup. The evaluation and selection of the offered bids will be conducted by the national ASCS office.

In Iowa there are significant implications from the 1985 and 1990 Farm Bills. Iowa has nearly two million acres in "highly erodible" croplands. The SCS estimates that this is resulting in an annual loss of in excess of 160 million tons of soil from highly erodible soils which does not include losses from the rest of Iowa's farmland. The goal of the 1985 and 1990 Farm Bills is to reduce rates to acceptable soil loss limits. It is expected that Conservation Reserve could remove 2.5 million acres of highly erodible Iowa land from production and the balance could be brought into compliance with a conservation plan.

## 2. Agricultural Conservation Program:

The Agricultural Conservation Program (ACP) was authorized by the Soil Conservation and Domestic Allotment Act of 1935 and first funded by the Agricultural Allotment Act of 1936. This legislation was amended by the Energy Security Act (ESA) of 1980 to extend the range of qualified technical assistance projects. Since 1979 the use of ACP funds has been limited to practices conforming to the national objectives of:

- control agricultural erosion and sedimentation;
- conserve agricultural water resources;
- improve water quality;
- control animal and other waste pollution;
- encourage voluntary compliance with point and nonpoint source pollution control;
- attain national environmental priorities; and
- maintain a continuous and adequate supply of food and fiber.

Emphasis has been given to permanent soil and water conservation practices such as terraces and sediment control structures, although some temporary practices such as conservation tillage have also been cost-shared. The 1989 ESA extended the range of eligible practices for control of ag-chemicals, erosion, and animal wastes

to include installation of minimum tillage systems, energy efficient irrigation, integrated pest management, shelter belts, manure storage systems, permanent seedings, strip cropping, buffer strips, and other practices.

The program is administered by the ASCS which allocates monies to states and subsequently to county offices. County ASCS offices establish cost-share agreements with landowners. In Iowa some of the state allocation may be reserved for state ACP special projects, five percent of the allocation is transferred to SCS for technical services, and the remainder of the funds go the counties. Most of the county ACP allocation is applied for cost-share of practices in the annual agreement program, while a small portion of the county funds are used for cost-share of practices installed under long-term agreements (three to five years) with landowners. Up to five percent of the county ASCS allotment may be used to reimburse SCS for technical assistance in planning and layout of practices. In Iowa the bulk of the state allotment is used for annual ACP cost-share agreements while on the order of ten percent of the allotment has been used for long-term agreements. The cost-share rates for permanent practices is generally in the range of 50 to 75 percent. In recent years Iowa has received additional allocations for ACP Special Projects which may be conducted at the state or county level. ACP Special Projects have the distinction of promoting more interagency cooperation in developing better ways of solving conservation and environmental problems. They may take the form of demonstration projects that provide lasting benefits to the community in the treatment area.

### 3. Watershed Protection and Flood Prevention Act (PL-566):

The Watershed Protection and Flood Prevention Act was enacted in 1954 to provide technical and financial assistance for project development and implementation which protects and develops land and water resources. Projects are limited to watersheds less than 250,000 acres size and may include such purposes as flood control, water quality improvement, recreation development, fish and wildlife developments, rural water supply, and erosion control. These projects also provide the opportunity for local communities to include municipal and industrial water supply in selected reservoir sites as evidenced by projects such as Walters Creek, Twelve Mile Creek, and Little River watersheds. The program is administered by SCS which provides allocations of funds for plan development and implementation of individual projects. Individual project administration is carried out by the local sponsors who are usually the county SWCD office in Iowa and the county board of supervisors. Construction cost share incentives are:

- flood control 100%
- water quality improvement 65%
- recreation development 50%
- fish and wildlife developments 50%
- erosion control 65%

PL-566 funds cannot be used to purchase land rights or for operation, maintenance, and replacement of established projects, except that such funds may be used to cost-share up to 50 percent of the land rights for the purpose of fish and wildlife wetland and recreation developments.

PL-566 funds have been used extensively in Iowa with 36 projects completed, 20 in progress and 13 in various stages of application or planning. The bulk of the projects have been in western and southern Iowa where a well developed topography results in higher potential erosion rates and flooding. Few projects have been undertaken in northeastern Iowa where similar erosion potential exists, but recently two potential PL-566 projects were reviewed in northeastern Iowa including Bear Creek and Little Paint Creek which are trout streams.

#### 4. Resource Conservation and Development (RC&D):

The RC&D program was established by Section 102 of the Food and Agriculture Act of 1962 and given permanent authorization in the Food and Agriculture Act of 1982. Specific project goals originate at the local level but must be consistent with long-range activities for resource conservation and development in rural areas. Land-based problems such as flood control, soil erosion, fish and wildlife habitat, agricultural water resources and community-based problems such as inadequate community facilities or local unemployment are examples of RC&D project targets. RC&D is administered by SCS at the national and state levels. At the local level each RC&D project is administered by a steering committee appointed by local sponsors of the RC&D area (typically county boards of supervisors and county soil conservation districts). Up to 100 percent of cost for flood control construction and 50 percent of construction costs for agricultural water resource management, recreation, or fish and wildlife development are available. In contrast to PL-566, RC&D can pay 50 percent of land rights purchase for recreation or fish and wildlife development.

There are seven RC&D areas in Iowa including the RC&D for Northeast Iowa, the Southern Iowa and Chariton Valley RC&D's in southcentral Iowa, Geode Wonderland and Pathfinder RC&D's in southeast Iowa, Golden Hills RC&D in southwest Iowa and the newly approved M and M Divide RC&D in western Iowa, for a total of 40 counties. RC&D areas are involved in water quality efforts in two ways:

1. Directly working with local sponsors to plan projects to protect specific water bodies from identified water quality problems. Financial assistance and other implementation funds are used from federal, state, and other funding sources.
2. RC&D project proposals are usually comprehensive resource development plans that have a positive effect on water quality and other environmental considerations.

#### 5. Little Sioux Flood Prevention Project:

The Little Sioux Flood Prevention program was authorized by the Flood Control Act of 1944 and has current program authority extending to 1992. The area includes 4,500 square miles (2,880,000 acres) extending from Nobles and Jackson counties in southwestern Minnesota southward some 135 miles to its point of confluence with the Missouri River (approximately halfway between Sioux City, Iowa and Omaha, Nebraska). Its greatest width is approximately 50 miles. The uplands (1,714,000 acres) located to the south of Clay and Osceola counties, Iowa are authorized for erosion control and flood prevention assistance, which by definition includes gully control. Projects are not limited in size and include all types of erosion control plus flood prevention. Individual requests for fish and wildlife developments, recreation developments and municipal and industrial water supply may be considered and added as plan modifications that are not included in the original act.

The program is administered by SCS which provides allocations of funds for plan development and implementation of individual projects. The Little Sioux Works Committee, made up of commissioners and supervisors within the participating counties makes decisions regarding the priorities for planning and the installation of structural measures. Individual project administration is carried out by the local sponsors, which normally includes the SWCD plus the county board of supervisors.

Financial assistance is provided for the installation of structural measures. One hundred percent of the construction cost for the flood prevention purpose is provided. Cost sharing of up to 75 percent is allowed for the installation of conservation practices. The local sponsors are responsible for the acquisition of landrights and operation, maintenance, and replacement. Public Law 534 funds have been used extensively in Iowa with 83 projects completed, 17 in progress, and 24 currently being planned. The 24 subwatersheds being planned are the last 24 subwatersheds in the Little Sioux Flood Prevention Project. These subwatersheds will be included in one final plan.

#### G. USDA Water Quality Program Plan

President Bush recommended a new initiative for enhancing water quality in 1990. The President's Water Quality Initiative defines a vigorous effort to protect ground and surface water from potential contamination by agricultural chemicals and wastes, especially pesticides and nutrients. The plan integrates the combined expertise of USDA agencies to promote the use of environmentally and economically sound farm production practices and to develop improved chemical and biological pest controls. Three parts of the plan offer opportunities for project activities and are discussed separately in the following narrative:

## 1. Nonpoint Source Hydrologic Unit Areas

The objective of Hydrologic Unit Area (HUA) Project is to assist farmers in voluntarily applying conservation practices that will help achieve water quality goals in a specific water body. Iowa has three HUA projects, each with a five year implementation period.

The HUA Project approved in FY90 includes both Union Grove Lake in Tama County and Black Hawk Lake in Sac County. Both lakes are impaired by sediment and nutrient runoff. The other two HUA Projects approved in FY91 include Three Mile Creek in Union and Adair counties and Sny Magill Creek in Clayton County. The Three Mile Creek proposal includes the 23,300 drainage area above a proposed 880 acre multi-purpose reservoir. Sny Magill Creek includes 19,500 acres of agricultural land above a state priority coldwater stream.

The HUA Projects are under the joint leadership of three agencies; the ISUE Service, the SCS, and the ASCS.

The SCS is using project funding to provide accelerated technical assistance to landowners to develop and implement plans to control sediment from erosion on agricultural land. Animal waste management systems are being developed with livestock producers to control waste runoff at farmsteads and to use animal waste as a part of a planned crop fertilizer program. Project coordinators have been assigned to each project.

ISUE has a project coordinator funded for each of the HUAs, with responsibilities for implementing a program of Integrated Crop Management (ICM) assistance with individual farmers. Nutrient management, integrated pest management, and crop enterprise record keeping are the principal components of ICM. ISUE also provides water quality and best management practices (BMPs) education and demonstration activities, information marketing and publicity, and intensive survey/assessment components for evaluation of these projects.

The ASCS is providing ACP cost share funds to producers in the Sny Magill and Three Mile project to install best management practices. Financial assistance from the ACP program is not being used in the Black Hawk and Union Grove project because of existing cost share funding from the Iowa Department of Agriculture and Land Stewardship and the EPA Clean Lakes Program.

## 2. Northeast Iowa Demonstration Project

ISUE is the lead agency for the Northeast Iowa Demonstration Project (NEIDP), which covers 148,000 acres of farmland in portions of Allamakee, Clayton, Fayette and Winnesheik counties in the karst area of the state. Funding for the NEIDP began in FY91. ISUE and

SCS project staff work in cooperation with the four county SWCDs, County Extension Councils, and ASCS County Committees to implement project activities.

The principal goals of the NEIDP are to demonstrate the potential for voluntary adoption of selected management practices for water quality protection, and for technology transfer of these practices outside the project area. Practices targeted by the project include ICM, stripcropping, manure management, stream corridor and sinkhole protection, forestry, pasture and hayland management, and tillage and residue management. ISUE responsibilities in the NEIDP include on-farm demonstrations of the effectiveness of the selected practices, ICM assistance to individual operators, farmstead assessment for well water quality protection, information marketing including newsletters and field days, and before- and after- survey inventories of farm practices and attitudes toward water quality issues.

3. ACP Water Quality Special Projects (by ASCS), which was discussed previously under Agricultural Conservation Program on pages 25-26.

#### H. Federal Pesticide Control Programs:

The Federal Insecticide, Fungicide, Rodenticide Act of 1972, also known as FIFRA or the Pesticide Control Act, provides a mechanism for registration of pesticides and regulation of their application to minimize risk of adverse environmental or human health hazards. The program is administered by EPA, with primary enforcement authority given to states for local administration of its provisions, so long as states adopt rules consistent with FIFRA.

Major provisions of FIFRA include registration of pesticides with adequate test data and labeling to provide applicators with proper guidelines for use of the product. Pesticides which pose significant potential environmental hazards, even when properly applied according to the label, are classified as restricted use pesticides. Commercial applicators are required to be certified for pesticide application and must keep records of product use. In the case of restricted use pesticides, private applicators, such as farmers applying product on their own land, are required to obtain private applicator certification, but are not required to keep records. Pesticides found to be in violation of any provisions of FIFRA may be removed from the market.

EPA is charged with developing procedures and regulations for disposal or storage of excess pesticides or disposal of pesticides for which registration has been cancelled. EPA is also charged with conducting or supporting research on integrated pest management and with developing a national plan for pesticides monitoring to detect environmental contamination. EPA is to con-

duct these activities in cooperation with other federal agencies as well as state and local agencies.

The EPA is currently preparing guidance for the States describing the requirements for developing management programs to deal with agricultural chemicals. This is an outgrowth of the agency's Agricultural Chemicals in Ground Water: Proposed Pesticide Strategy, released in February 1988. The draft guidance provides states with the opportunity to take the lead role in protection of ground water resources by designing and implementing plans to manage pesticides. A state's pesticide management plan can be used to strengthen EPA's foundation for the federal registration within that state of pesticides posing groundwater contamination concerns. In some cases, the continued registered use of a pesticide in a state may depend on the presence and adequacy of a state pesticide management program.

## LAND DISPOSAL OF WASTES

Throughout Iowa, the application of animal wastes, industrial wastewater treatment sludges and product residues, and municipal sewage sludge onto the land surface has become a common practice. Of concern are the soluble constituents such as nitrates which can readily move through the soil to contaminate groundwater. Depending on pH conditions and soil absorptive properties, other contaminants may also become a problem.

Iowa's municipalities, industries, and agricultural operations produce large volumes of organic waste. Unless proper disposal methods are used, these wastes can contaminate the state's surface and groundwaters. For example, in 1989, Iowa's farms had fourteen million hogs producing 1.6 million cubic feet of manure per day and 4.7 million cattle producing over 3.1 million cubic feet of manure per day. Another potential source of contamination is waste sludge produced by about 250 municipal sewage treatment plants, which in most cases is disposed of by land application. It is also estimated that between 300,000 and 400,000 Iowa households are using septic tank systems for disposal of wastewater. While septic tank systems do not pose a major threat to Iowa's groundwaters, localized contamination problems may occur.

It is estimated that about 80 percent of Iowa's solid waste is now disposed of in 94 permitted sanitary landfill sites. There are a total of 173 solid waste facilities in the state. Before Iowa law required that solid wastes be disposed in permitted landfills, Iowa had over 2,000 municipal open dumps, including many which were located in sites with considerable potential for groundwater contamination. Much of the contamination potential of these now-abandoned open dumps remains, even though they have been covered with soil. In the past, industrial wastes were often disposed of on lands owned or leased by the generating companies. While this practice is no longer permitted, over 500 abandoned industrial disposal sites have been identified, and some are known to be sources of groundwater contamination.

**ANIMAL WASTE CONTROL** - State rules and programs designed to reduce water quality impacts from animal wastes are discussed under "Livestock Waste Control Programs" in the AGRICULTURAL SOURCES section of this chapter.

**SEWAGE SLUDGE REGULATION** - To minimize the pollution hazards associated with land application of these wastes, Iowa has adopted regulations governing disposal of domestic and industrial wastes. In 1978, the DNR adopted rules governing the land application of municipal wastewater sludges. These rules include provisions allowing "low rate" land disposal of sludges without a permit if specified conditions are met relative to sludge composition, maximum application rates, and conditions under which disposal is conducted. The rules also allow "high rate" land disposal of sludges, provided the



disposal meets specified conditions and a permit authorizing such disposal is obtained.

In 1981, the land application rules were amended by adding provisions to allow land application of industrial or other wastes under specified conditions, including obtaining DNR approval of plans for the proposed disposal system and a permit authorizing land disposal. These rules were updated again in 1991.

Currently 219 of Iowa's municipal sewage treatment plants are disposing of their sludge by land disposal. Of these, 178 are utilizing "low rate" land disposal, while 41 have been issued permits allowing land disposal under the "high rate" provisions of DNR rules. When "low rate" land disposal is being used, the municipality's National Pollutant Discharge Elimination System (NPDES) permit requires that sludge disposal be carried out in compliance with the DNR land application regulations. The facility representative must certify that the land application regulations are being followed. If "high rate" land disposal is approved, the rates of application and any additional criteria the DNR feels necessary to protect state waters, is added to the NPDES permit.

The general policy of the DNR in land application of sludge is to encourage cities to qualify for land application of sludge without a written permit (i.e. low rate). If a city needs a written permit due to high metal or toxic constituents, the DNR will help locate and eliminate the sources of the toxic constituents. If a city requires a permit because they wish to apply a higher application rate than two dry ton per acre per year, the DNR will try to work with the city to obtain additional land.

Since the 1987 Clean Water Act included new requirements relative to the land disposal of sludges and other wastes, revision of DNR's land disposal rules and programs will undoubtedly be required in the future. However, the exact nature and extent of the required revisions cannot be accurately determined at this time.

**SEPTIC TANK REGULATION** - In Iowa, local boards of health have primary responsibility for regulation of septic tanks serving less than 15 people, while DNR has primary responsibility for larger systems. In conducting their activities, counties must, as a minimum, comply with DNR regulations. If counties fail to adopt or enforce DNR standards for smaller systems, DNR has concurrent authority to regulate smaller septic tanks.

The DNR rules specify siting and construction requirements such as: minimum depth to groundwater of three feet below the bottom of the absorption trench; minimum separation distance of 50 feet from a private water supply well and 200 feet from a public water supply well; and minimum percolation rate of one inch in 60 minutes.

DNR rules also establish conditions under which land disposal

of septage is allowed. These conditions include:

- a. requiring the septage be stabilized prior to land disposal;
- b. application rates be limited to agronomic needs of the crops grown on the disposal area; and,
- c. waste disposal be restricted within specified distances from a well, stream, lake, pond, sinkhole, or tile line surface intake.

Responsibility for implementation of these regulations rests primarily with city and county boards of health. Prior to March 1, 1991, county boards of health issued licenses for commercial septic tank cleaners. Chapter 68 of the Iowa Administrative Code 455(B) provides standards for the commercial cleaning of and the disposal of waste from private waste facilities. These rules, that went into affect July 17, 1991, make the DNR responsible for licensing and regulating commercial septic tank cleaners.

A license may be suspended, revoked, or denied for any of the following reasons:

- a. A material misstatement of facts in a license application
- b. A failure to provide the adequate license fee
- c. A failure to satisfy the obligations of a commercial septic tank cleaner and the standards as provided in rules 68.6(455B), and 68.9(455B)
- d. Violation of disposal standards in 567-Chapters 65,69, and 121

There were 144 businesses licensed as commercial septic tank cleaners in 1991. If a septic system serves more than 50 people on a regular basis, the EPA also has regulatory authority under the federal Under-ground Injection Control Program.

**LANDFILL REGULATION** - In 1975, state law required the numerous private dumps or town dumps to close and be replaced with sanitary landfills. Today there are 173 permitted landfills operating in Iowa. Rules which require each local government to provide an approved solid waste disposal system for its population have been developed by DNR. Local boards of health cooperate in enforcing state solid waste management rules. County boards of supervisors are responsible for regulating solid waste disposal in unincorporated county areas.

Iowa law requires after July 1, 1988 that all cities, counties and private agencies operating a sanitary landfill must file a comprehensive waste disposal plan. This plan must contain the following:

- a. description of planning area and public and private agencies involved
- b. report of the waste stream as of July 1, 1988, in total tons per year and per capita per year
- c. description of current and projected 20-year waste composition and waste generation rates with listing of commercial and industrial generators
- d. description of existing waste management system
- e. analysis of alternative waste management systems
- f. specific plan and schedule for implementing the comprehensive plan by July, 1997

Alternative waste disposal analysis includes (in order of preference) volume reduction, recycling and reuse, combustion for energy production or waste reduction, and landfilling). By law, a comprehensive plan must now be completed before the DNR can issue a new landfill operation permit or renew an existing permit.

The Iowa Legislature passed the "Waste Volume Reduction and Recycling Act" that became effective July 1, 1989. Iowa has set a goal of reducing the amount of the waste stream in the state by 25 percent by 1994, and 50 percent by 2000. Burial of yard waste at sanitary landfills was prohibited after January 1, 1991 unless the landfill separated the waste and used it for composting. Iowa's landfills have not accepted waste oil or lead batteries since July 1, 1990.

Regulations that became effective June 21, 1989 set definite standards for monitoring of landfills requiring specific construction standards, minimum numbers of monitoring wells, and spacing of the wells.

**UNCONTROLLED SITE REGULATION** - Abandoned dumps are the remnants of past waste management practices which are no longer acceptable. Approximately 2,000 municipal open dumps were closed by 1976, after they had become illegal. Closure of these sites consisted of covering the debris with six to twelve inches of soil and revegetating the area. Private disposal of industrial wastes containing hazardous materials is prohibited today. However, before the Resource Conservation and Recovery Act was passed, many industries disposed of their hazardous wastes on site or on lands leased by them. The Comprehensive Environmental Response

Compensation and Liability Act (CERCLA) required that all sites containing hazardous substances be identified by June 1, 1981. Approximately 600 such sites have been identified in Iowa, including landfills, lagoons, spill sites and abandoned dumps. At this time, all sites have received a preliminary assessment, and 50 percent of those sites have been assessed as needing no further Superfund action. Through a cooperative agreement with EPA, the DNR conducts at least seven preliminary assessments and ten site investigations per year. New sites are assessed each year, and, as the assessment process continues, it is expected that additional sites on this list (CERCLA) will be found to need no further action.

The 1987 Iowa Groundwater Protection Act made the land disposal of most wastes illegal unless a permit for such disposal is first obtained. This provision applies to all public and private parties, and when fully implemented, will end the uncontrolled disposal of wastes on private properties.

In an attempt to establish a relative priority for remedial action and to improve management of uncontrolled sites, Iowa has established the Registry of Hazardous Wastes also known as Hazardous Substance Disposal Sites Registry which is updated annually. As of November 1991, 64 sites were listed on the Registry. Classifications included on this list are as follows:

- A. sites causing or presenting an imminent danger of irreversible or irreparable damage to the public health or environment -- immediate action required;
- B. sites posing a significant threat to the environment -- action required;
- C. sites not a significant threat to the environment or public health -- action may be deferred;
- D. sites properly closed -- require continued management; and,
- E. sites properly closed, no evidence of present or potential adverse impact -- no further action required.

#### WASTEWATER DISPOSAL SYSTEMS

Leaching from wastewater lagoons is sometimes considered as a nonpoint source pollution problem. There are approximately 2,200 lagoons, pits and ponds in Iowa, most of which are wastewater impoundments for municipal, industrial, or agricultural wastes.

With the presence of a constant hydraulic head, there is a risk of leaching or lateral leakage from these impoundments which could threaten groundwater quality.

LAGOON REGULATION - The design and construction requirements for wastewater treatment lagoons are found in chapters 23, 64, and 65 of the Iowa Administrative Code and Chapter 18C of the Iowa Wastewater Facilities Design Standards. These requirements include minimum separation distances, maximum percolation rates, design volumes, maximum sulfate content (for anaerobic lagoons) and liquid depth requirements. EPA regulatory programs that affect lagoons to some extent include:

- a. the Clean Water Act for effluent discharge permits;
- b. the Resource Conservation and Recovery Act for treatment or storage of hazardous wastes;
- c. the Comprehensive Environmental Response Compensation and Liability Act for the clean up of abandoned lagoons containing hazardous material; and,
- d. the Toxic Substance Control Act for the restriction of use and storage of toxic substances.

#### URBAN RUNOFF

A 1980 study by Iowa State University found that urban runoff was not having major statewide water quality impacts, although localized impacts were possible (Austin et al. 1981). Based on the findings of that study and other evaluations, DNR has not previously developed a statewide urban runoff control program. However, tests conducted in the late 1980's have shown that diffuse sources are impairing surface water quality in some areas of the state.

STORM WATER DISCHARGES - Many recent studies have shown that runoff from industrial and urban areas contain many of the same pollutants found in municipal and industrial discharges. Rainfall picks up pollutants from parking lots and streets, building roofs, construction and industrial sites, and mining.

The EPA reported in a document entitled "National Water Quality Inventory, 1988 Report to Congress" that pollution from nonpoint sources such as runoff from urban areas and industrial sites is a leading cause of water quality impairment in 37 states. However, much of the storm water runoff is discharged through separate storm sewers or other conveyances which are point sources under the Clean Water Act, and are subject to the National Pollutant Discharge Elimination System (NPDES) Permit Program.

Section 402(p) of the 1987 Clean Water Act amendments require EPA to establish regulations governing storm water discharge permit application requirements under the NPDES Program.

Under these rules NPDES permits are not required for storm water point source discharge before October 1, 1992, unless one of the following conditions exists:

- a. the stormwater discharge has been permitted prior to February 1987;
- b. the storm water discharge is associated with industrial activity as defined in 40 CFR 122.26(b)(14);
- c. the storm water discharge is from large municipal separate storm water systems (systems serving a population of 250,000 or more);
- d. the storm water discharge is from medium municipal separate storm water systems (serving a population of 100,000 to 250,000); or
- e. the permitting authority determines that the discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to the water of the United States.

DNR estimates that from 2,000 to 7,000 storm water discharges associated with industrial activity in Iowa will be affected by these federal requirements. In addition the separate storm sewers of Cedar Rapids, Des Moines and Davenport will require NPDES permits.

The EPA issued regulations on November 16, 1990. The Iowa DNR administers the NPDES program for EPA. DNR is now going through the rules making process to amend 567-Chapter 60 "SCOPE OF TITLE-DEFINITIONS-FORMS-RULES OF PRACTICE" AND 567-Chapter 64 "WASTEWATER CONSTRUCTION AND OPERATION PERMITS". The proposed rules will introduce the use of a general NPDES permit for storm water discharges. Specific procedures for applying for an individual NPDES permit or applying for coverage under a general permit, permit modification, public notification and publication procedures in the permitting process, and reissuance procedures for individual and general NPDES permits are also contained in the proposed rules. Fee schedules are also included for permit applications and for the permit. A general permit is also part of the rule making package as well as the Notice of Intent form, or application for coverage under the general permit.

In the winter months, the runoff from streets and highways in Iowa will not only contain oil and grease residues from the vehicular traffic, but also de-icing agents and sand. Although Iowa has no set requirements at present for handling of such chemicals, the Iowa Department of Transportation (DOT) keeps all of it sodium chloride or salt in covered buildings.

The DOT also uses calcium chloride, which is added to the sand piles to prevent them from freezing. The straight calcium chloride is kept under cover in buildings or under tarps. The DOT is presently investigating methods of protecting the sand mixed with the de-icing agent from runoff in response to the storm water discharge regulations.

COMBINED SEWER OVERFLOWS (CSO) - The EPA requested that each state develop a strategy to regulate the discharge of pollutants. The DNR developed a CSO strategy that was approved by the EPA on September 21, 1991. Grant funding to implement the program has also been approved by the EPA.

The CSO strategy involves a survey of municipalities to determine each CSO location, it's design capacity, and develop a data base to record all elements acquired by the inventory to track possible effluent monitoring and limits. Current water quality standards and stream use designations will be evaluated to determine possible revisions needed to address CSO water quality impacts. A field survey of all CSO locations will be conducted to collect effluent and stream data to identify possible water quality, aquatic biota, and human health impacts from these discharges. Rules regulating CSO discharges will be drafted and implemented, and NPDES permits for municipal facilities with CSOs that have been identified as having water quality violations will be modified to include monitoring requirements, technology and/or water quality based limits, and compliance schedules for constructing facilities to meet the proposed limits. The objectives of the CSO strategy are: to assure that if CSO discharges occur, that they only are a result of precipitation events; to facilitate sewer separation of sanitary and storm; flows to bring all wet weather CSO discharge points into compliance with technology based requirements of the Clean Water Act and State Water Quality standards; and to minimize water quality, aquatic biota, and human health impacts from wet weather CSO flow.

RESIDENTIAL PESTICIDE/FERTILIZER POLLUTION CONTROL - It is estimated that urban households account for 2 percent of the pesticides used in Iowa. However, these pesticides are also sources of nonpoint source pollution. State law and rules of the DALS govern certain aspects of pesticide use in urban areas. Commercial applicators applying pesticides to public and/or residential areas are required to pass state examination to become certified. Continuing education credits (four hours in FY91 and six hours in FY92) are required annually. Retesting occurs every three years.

Commercial and public applicators who apply pesticides within urban areas or municipalities are required to post notification signs at the start of the application and for at least 24 hours following the application or in accordance with label directions if the directions specify restrictions

beyond 24 hours. All mixing, packaging, and transfer of pesticides from one container to another conducted at a permanent pesticide storage and mixing site must be done within a containment area if the quantity of pesticides handled at the site exceeds certain limits. All nonmobile bulk pesticide containers must be located within a watertight secondary containment facility.

In addition to educational materials published by DALs and DNR, ISUE has developed numerous resources and programs for integrated pest management (IPM) and the responsible use of pesticides and fertilizers, and provides technical assistance, training and testing materials for the Private and Commercial Pesticide Applicator programs administered by DALs. A new set of publications on lawn care and water quality protection was published in 1991 in cooperation with Minnesota Extension Service, and a video entitled "Turfgrass Management For Protecting Surface Water Quality" was completed with funding provided by DALs. A survey of pesticide use by Iowa golf courses, and research on the fate of chemicals applied to turfgrass are also being pursued by ISUE. The two continuing education videoconferences conducted by ISUE on ornamental and turfgrass management in Fall of 1991 were dedicated to integrated pest management and pesticide effects on the environment. ISUE also has brochures available on household hazardous waste management and a community planning guide and videotape for toxic clean-up days.

**HOUSEHOLD HAZARDOUS MATERIAL (HHM)- Iowa's 1987**  
Groundwater Protection Act includes regulations on the handling and disposal of household hazardous wastes. The provisions of the law address the safe disposal and handling of household hazardous products.

Retailers that sell household hazardous materials must obtain a permit and label the shelves where the products are found. The retailer must also display information signs near the product displays explaining the labels and telling consumers where the brochures may be found.

The money from the permit fees is used as a funding mechanism for supporting HHM educational activities, providing brochures to retailers and the public, and toxic clean-up day events. Education is an important part of the HHM Program. Iowa citizens are encouraged to use non-toxic products when possible, buy only those amounts of the hazardous products needed, share left over paint etc. with friends and neighbors, and as a last resort bring the HHM to the toxic cleanup days in their area. The ISUE has developed some educational materials and has assisted in the distribution of DNR materials concerning HHM.

DNR has been involved in 34 Toxic Clean-up Days all over the state. Citizens are encouraged to bring their toxic materials



to a designated locations where the materials are segregated and disposed of safely. Paint is often donated to organizations or local government projects. HF706 has provided additional funding for creating permanent HHM drop off sites.

The Waste Volume Reduction Recycling Act of 1989 prohibits landfilling of waste oil. Anyone who retails oil must provide collection of waste oil for the customers or tell them where the nearest waste oil disposal site is located. Those retailers that sell lead acid batteries must provide a site for return of the used batteries.

#### CONSTRUCTION SITE RUNOFF

Although not a major water quality concern, Iowa has taken several steps to control construction site runoff. In 1971, concerns about excessive sediment movement from construction sites prompted passage of laws setting limits on sediment movement from such sites. To inform contractors about practices which could be used to comply with these limits, the DSC published a construction site erosion-control handbook in 1975.

Amendments to the sediment control law in 1981 changed the compliance procedures of the law, but left the soil loss limits in place. Under the current law, county SWCDs administer its provisions, unless this responsibility has been delegated to a qualified local unit of government. A 1983 evaluation found the erosion control law was working effectively in the more urbanized counties, but that it had little application in rural areas.

The DOT requires that methods of controlling soil erosion from the site be included in the original plan for the project. This is done either by the state engineers planning the project, or in the case where the project is put out for bids to the private sector, the contractor must include the soil erosion control methods in the original bid for contract. Each plan is site specific and is determined by the topography, soil, etc. in the project area, and erosion control methods might include silt basins, silt fences, or ditch checks among others.

The DOT does not have jurisdiction over county and city governments, however, there is a Local Systems Office that deals with county and city engineers. The counties use the same letting process as the state, have to follow the same specifications, and have an inspector on-site throughout the project. If the cities use Federal funds they have to meet the same specifications also. However, city projects that are locally funded do not have to meet any special requirements.

A bill introduced to the Iowa Legislature in 1991 would control and prevent soil erosion and siltation from activities

that disturb land adjacent to lakes, rivers, streams, marshes, and wetlands. Under this legislation, a person would not be able to do any land disturbing activity on a watershed lot without first obtaining a permit from the county in which the watershed was located. A permit would not be needed for land used for agriculture or horticultural purposes if a permanent fifty-foot buffer strip were installed and maintained in locations adjacent to surface water areas. Neither chamber of the Iowa Legislature acted on this piece of legislation in 1991 and the future of the bill is uncertain.

#### HYDROLOGIC AND HABITAT MODIFICATION

A number of construction-related activities in or near Iowa's water may adversely impact water quality in terms of turbidity, sedimentation, or habitat destruction. To ensure that both the interests of neighboring landowners and the public are protected, Iowa has established a program to regulate flood plain construction activities. Under this program, most major construction activities must submit plans to DNR for their approval before construction begins. Approval is necessary from the DNR for any construction, operation, or maintenance of structures on the flood plains or floodway of any river or stream draining greater than 2 square miles in urban areas and greater than 10 square miles in rural areas. The criteria used in reviewing projects include:

- a. Field inspection by DNR personnel
- b. Technical review using appropriate analytical techniques such as hydrologic and hydraulic models to determine effects and impacts of a proposed project
- c. Solicitation of expert comments on environmental effect. For channel changes or other development which may cause significant adverse effects on the wise use and protection of water resources, water quality, fish, wildlife and recreational facilities or uses, the DNR may request comment from other knowledgeable sources
- d. Notice to landowners who might be affected. Before an application for approval of a levee or channel change is approved the DNR requires the applicant to provide the names of the owners and occupants of land located immediately upstream, downstream, and across from the project site, and others that might be adversely affected by the project. The DNR will notify those people and allow a reasonable amount of time for comments.

DNR rules also designate a small number of waterbodies as "protected streams" and place additional restrictions on activities affecting these streams. Iowa Administrative Code 567-72.2(1)d states that "For protected streams no channel changes will be allowed, because of the actual or potential significant effects on fisheries, water quality, flood control, flood plain management,

wildlife habitat, soil erosion, public recreation, the public health welfare and safety, compatibility with the state water plan, rights of other landowners, and other factors relevant to the control, development, protection, allocation, and utilization of the stream."

High quality waters, high quality resource waters, and cold water aquatic life waters are all waters protected in Iowa. High quality waters (Class "HQ") are those that have exceptional recreational and ecological importance. The chemical, biological, and physical integrity are very good in these waters and show little contamination. High quality resource waters (Class "HQR") also have exceptional recreational and ecological importance. However, although the biological and physical integrity of the water has been maintained, the chemical integrity has been degraded to some extent. Cold water aquatic life (Class "B(CW)") are waters that possess flow, temperature, and other habitat characteristics suitable for cold water species, including nonreproducing populations of trout. All Class "B(CW)" waters are designated as either Class "HQ" or Class "HQR" waters.

Those waters designated as high quality or high quality resource waters, the Mississippi and the Missouri Rivers receive protection under Iowa's Antidegradation policy [567-61.2(2)g]. The policy calls for maintaining the biological, chemical and physical integrity of the waters. This involves the protection of bed characteristics, water velocity, channel alignment, aquatic habitat, and existing aquatic species. For example, fieldstone would have to be used along the banks of a protected stream, rather than broken concrete that is used elsewhere in the state. Normally there is no mitigation allowed when dealing with protected waters. Iowa has 392 miles of Class "B(CW)", 222 miles of which are considered Class "HQR" and 170 miles of which are Class "HQ" waters. The Class "HQ" waters total 241 miles and there are 1,223 miles of Class "HQR" waters for a total of 1,464 miles of protected streams in Iowa. In addition to its state control program, the DNR also participates in the Corps of Engineers' Section 404 permit program by issuing Section 401 water quality certifications for projects. This certification, which is required before a Section 404 permit can be issued, is given only if it is determined that the project is consistent with the state's water quality standards.

#### SURFACE MINING

Statewide about 31,000 acres are included in registered mine sites, and abandoned mine lands cover an additional 27,500 acres. Monitoring studies conducted in the mid-1970's on some of the 11,400 acres of abandoned coal mines found that runoff from such sites could cause severe degradation of receiving streams (e.g., Kennedy 1977). Iowa first began requiring active coal mines to reclaim mined areas in 1968, when a state mine reclamation law was enacted. This act requires active coal mines to comply with a number of environmental requirements, including obtaining NPDES

permits for any water discharges, conducting mining operations in a manner which minimizes environmental hazards, and reclaiming all mined areas.

The Division of Soil Conservation of the Iowa Department of Agriculture and Land Stewardship (DALs) assumed responsibility for administering the federal Surface Mining Control and Reclamation Act in April 1981. Efforts to reclaim abandoned coal mine lands are being carried out in Iowa under the Abandoned Mined Lands Program (AML) administered by the DALs, under the sponsorship of the U.S. Office of Surface Mining (OSM), an Interior Agency. Since 1983 the state has suffered from fluctuating annual AML allocations from the OSM. The grant funding limitations have prevented the state from maximizing reclamation efforts. The state is now receiving a minimum of \$2.0 million allocation annually for its AML program.

As of December 1991 a total of 16 sites have been reclaimed with a total reclaimed acreage of 1,350 acres. An additional three sites, totaling 107 acres are currently under active reclamation contracts.

Activities at non-coal mines are conducted in an acceptable manner and that mined areas are properly reclaimed, the state has enacted laws which require non-coal mines to register with the DSC of DALs, and to conduct their mining activities in accordance with DALs rules. Among other provisions, these rules require:

- a. bonds be provided to ensure site reclamation;
- b. erosion of overburden areas be minimized during mining; and
- c. upon closure, overburden areas be graded and vegetated to a stable condition.

In addition to having to obtain license and registration from the DALs, all operations which discharge water off-site must obtain NPDES permits from the DNR. Under DNR rules those operations which involve mining of sand and gravel from Iowa Meandered Rivers or operate within flood plain corridors must also receive approval from the DNR.

Currently, there are 244 operators of non-coal mines in Iowa at 124 known active sites.

## CHAPTER 3

### STATE NONPOINT SOURCE MANAGEMENT PROGRAM

Section 319 of the 1987 Clean Water Act requires each state to prepare and submit for US Environmental Protection Agency (EPA) approval a state nonpoint source (NPS) management program. This program must outline the actions the state proposes to carry out over the next four years to control nonpoint source pollution of state waters and to improve the quality of impacted waters. Specific information the state management program must provide includes:

- the best management practices (BMPs) and other measures to be used to reduce nonpoint source pollution;
- the programs to be used to implement the BMPs and other control measures;
- a four-year schedule, including annual milestones, for implementing the proposed management program;
- the financial and other resources to be used in implementing the management program over the four-year period, and the sources (federal and other) from which such resources will be obtained;
- a certification that existing state laws provide adequate legal authority to implement the management program; or if inadequate authority exists, identification of the additional authority needed and a schedule for obtaining it; and,
- a listing of the federal assistance programs and development projects the state intends to review for consistency with the state management program.

Iowa's proposed state NPS management program is presented in the remaining sections of this chapter. All of the information required in a state management program is included, except the certification of adequate legal authority to implement the management program. However, this certification has been requested from Iowa's attorney general and will be provided to EPA.

As proposed, the management program has been divided into three major elements. The major activities to be completed under each work element are summarized below, and a more detailed description of each work element is given in the remaining sections of this chapter.

- **STATEWIDE IMPLEMENTATION:** conduct those program coordination, public information/education, and program administration/management activities essential to the effective implementation of the state NPS management program but not included in the other management program components.

- **COMPLETE ONGOING CONTROL PROJECTS:** continue implementation of the Big Spring Basin Demonstration Project (BSBDP) and Integrated Farm Management Demonstration Projects (IFMDP); continue BMP installation in the nonpoint pollution control projects now underway in Iowa; seek accelerated implementation of projects if significant short term benefits will accrue; seek additional funds for projects which are currently underfunded.

- **ESTABLISH ADDITIONAL NONPOINT CONTROL PROJECTS:** develop, obtain funding for, and initiate implementation of new nonpoint control projects to protect high priority lakes and streams or to reduce pollution of ground waters.

Iowa has included in the proposed management program only those nonpoint implementation activities being conducted directly in response to the nonpoint pollution control requirements of Section 319, 1987 Clean Water Act. As a consequence, many existing program activities identified in Chapter 2 as providing nonpoint pollution control benefits are not included in the work elements of the management program. However, all of the ongoing program activities identified in Chapter 2 will be maintained and will be coordinated with planning and implementation of new nonpoint control activities. In addition, as part of its nonpoint management activities, the state will attempt to identify and implement, where appropriate, changes which will make these programs more effective in controlling nonpoint pollution.

The State NPS Assessment Report indicates that agriculture is the primary source of nonpoint impacts on Iowa's waters. Consequently, the NPS control initiatives identified in the management plan will emphasize, but not necessarily be limited to, control of agricultural NPS pollution.

The Environmental Protection Division (EPD) of the Department of Natural Resources (DNR), has overall statewide responsibility for implementing this management program and for coordinating the activities of related federal, state, and local programs.

The responsibilities of various agencies in implementing the activities outlined under each work element of this program are generally identified in each work element. These responsibilities will be further defined, as necessary, when individual work elements are being conducted, taking into account such factors as the agency's legal authority, staffing levels and capabilities, and funding availability. As appropriate, the agreed upon responsibilities will be incorporated into memorandums of understanding (or similar interagency agreements).

Work Element #1: STATEWIDE IMPLEMENTATION

Objectives:

**Overall - Statewide Implementation:** to conduct those program coordination, public information and education, and program administration and management activities essential to the effective implementation of the state nonpoint source management program but not included in the other management program components.

**Program Coordination:** coordinate the program and project activities of federal, state, and local agencies and organizations to achieve implementation of the BMPs needed to control NPS pollution in Iowa. Coordination activities will include improving existing programs, encouraging their focus on water quality, identifying new directions and developing new programs, as necessary, and institutionalizing the NPS management program; to develop a database to assist in the planning, tracking, and coordination of Iowa NPS projects.

**Public Information/Education Programs:** develop and implement a comprehensive statewide public information and education program which will inform Iowa's citizens about the sources of NPS pollution, the contaminants involved, the effects of NPS pollution on water quality, and the consequent health and water use implications; to make available the information and technology necessary to enable the implementation of improved practices and NPS pollution control measures; to publicize existing NPS programs and to encourage and assist individuals and organizations to utilize these programs to address water quality protection and water quality improvement needs.

**Review of Federal Programs and Projects:** to determine if nonpoint concerns are adequately considered in DNR's ongoing reviews of federal assistance application and development projects and, if not, to recommend changes in the review process; to determine which additional federal assistance programs and development projects DNR should review for consistency with the state nonpoint management program; to conduct consistency reviews as applications or projects are received.

**Program Administration:** to conduct those administrative and management activities which are necessary to ensure that the state nonpoint management program is efficiently and effectively implemented, but which are not part of another management program component.

Work Activities:

**Program Coordination:** The NPS pollution control program and project activities of federal, state, and local agencies and organizations will be coordinated to ensure that the BMPs needed to control NPS pollution in Iowa are implemented efficiently and

effectively. In addition, activities conducted under programs whose primary purpose is something other than nonpoint pollution control but which can provide secondary nonpoint pollution control benefits will be coordinated with state nonpoint pollution control activities, and efforts will be made to identify and implement ways by which the effectiveness of these programs in controlling nonpoint pollution can be increased.

Program coordination efforts will encompass all aspects of the state's nonpoint pollution control program (including BMP implementation in targeted watersheds and statewide, public information and education programs, technical assistance, financial assistance, and enforcement of regulatory requirements), and will focus on achieving greater coordination of agency and organization activities, improving existing programs, encouraging programs to give greater emphasis to water quality, identifying new directions and developing new programs (where necessary), and institutionalizing the state NPS management program.

As part of the program coordination effort, the responsibilities of individual agencies in nonpoint pollution control, as well as the inter-relationships between various agencies, will be further defined and memorandums of understanding or other interagency agreements will be developed, as appropriate.

A comprehensive computerized database of pertinent information will be developed for ongoing NPS control projects/activities. The database will be used for the statewide coordination of NPS projects and activities involving either surface and ground waters or both. Database organization will assist in the tracking and evaluation of ongoing projects and the prioritization and planning of proposed and/or prospective projects. It will also facilitate the efficient allocation and use of resources and serve to detect areas of possible duplication of resources or efforts.

**Public Information/Education Programs:** A comprehensive NPS information/education program will be developed in conjunction with other agencies. This program will include identifying specific activities, schedules, agency roles and responsibilities, and funding needs and sources.

This comprehensive program will use media such as printed brochures, slide tapes, news releases, videos, and television to help Iowans understand the origin and magnitude of their NPS problems, the measures being taken to address those problems, and how individuals and organizations can take part in solving the problems, using programs available to help them.

**Review of Federal Programs and Projects:** The federal programs for which DNR currently reviews individual assistance applications and project proposals are listed in Appendix A, along with a description of DNR's current review procedures.



For each of these programs, the potential nonpoint pollution impacts will be evaluated. For those programs having potentially significant nonpoint impacts, the procedures and criteria used in conducting the reviews will be evaluated. If evaluation indicates the review process is not adequate to address applicable nonpoint pollution concerns, modifications of the review procedures and criteria will be recommended.

Criteria will be developed for determining which additional federal programs and projects should be reviewed, considering factors such as nonpoint pollution potential, current review processes and workloads, level of program or project activity in Iowa, and potential staff work loads. These criteria will then be used to identify the additional federal financial assistance programs and development projects for which DNR will review individual assistance applications and projects. For each identified federal program or project, procedures and criteria for conducting the reviews will be developed.

As individual assistance applications and project proposals are received, the DNR will review them for consistency with the state NPS management program.

**Program Administration:** Administration and management activities essential to the implementation of the state NPS management program, but not provided for by another management plan component, will be conducted. Ongoing projects and projects entering the implementation phase will be supported by these activities.

**Agency Responsibilities:**

The DNR will have overall basic responsibility for carrying out the activities outlined in this work element, including the coordination of inter-agency efforts to implement nonpoint source control projects. The role of various local, state, and federal agencies in project implementation is frequently dictated by the requirements of the program providing funds for project implementation. Agencies expected to play a major role in implementing agricultural control projects in Iowa include: US Soil Conservation Service (SCS); US Agricultural Stabilization and Conservation Service (ASCS); Division of Soil Conservation (DSC), Iowa Department of Agriculture and Land Stewardship (DALs); DNR; Iowa State University Extension Service (ISUE) and, County Soil and Water Conservation Districts (SWCDs).

Agencies expected to play a major role in implementing non-agricultural NPS control projects include those listed in the prior paragraph plus municipal and county governments, private organizations, and contractors and developer associations.

Implementation Schedule:

Due to their nature, many of the work activities being conducted or to be initiated under this program cannot be scheduled at this time. Activities for which a schedule can be given include:

a. Program Coordination/Evaluation

| <u>Activity</u>  | <u>Schedule</u>     |
|--|---------------------|
| 1) Identification of sources and amounts of match funding  |                     |
| a) DALIS   | March 1, 1992       |
| b) Leopold Center  | March 1, 1992       |
| c) other agencies  | March 1, 1992       |
|  | Annually thereafter |
| 2) Letters of agreement, contracts, or other documents covering implementation projects  | Oct. 1, 1992        |
|  | Annually thereafter |
| 3) Complete IPA with SCS   | Oct. 1, 1992        |
|  | Annually thereafter |
| 4) Continue Agricultural NPS Interagency Coordinating Committee, as appropriate  | Ongoing             |
| 5) Establish interagency coordinating committee for non-agricultural NPS programs  | December 1, 1992    |
| 6) Develop computerized data base  | July 1, 1993        |
| 7) Coordinate with and participate in planning/program development activities of other agencies/ organizations                             | Ongoing             |
| 8) Update/revise the state NPS Management program  | FY 1993             |
| 9) Implement Section 319 GICS tracking and reporting system  | FY 1993             |
| 10) Evaluate use and effectiveness of current state construction site erosion control laws and regulations and recommend changes if needed | FY 1993-4           |
| 11) Evaluate existing urban stormwater runoff control programs of Iowa municipalities, develop model ordinances as appropriate             | FY 1993-4           |

**a. Program Coordination/Evaluation (con't)**

| <u>Activity</u>  | <u>Schedule</u>                               |
|--|---|
| 12) Evaluate effectiveness of existing control programs for hydrologic/habitat/navigation and recommend changes to increase NPS control effectiveness if necessary | FFY93-4                                       |
| 13) Evaluate effectiveness of existing programs for mining and recommend changes to increase effectiveness if necessary (especially non-coal mining)               | FFY93-4                                       |
| 14) Evaluate DNR's land disposal of sewage sludge regulations and programs, recommend changes if needed  | After revisions of EPA rules become effective |
| 15) Participate in development and implementation of demonstration project for 1995 Soil Conservation Society of America Meeting                                   | FFY92-95                                      |

**b. Review of Federal Programs and Projects**

| <u>Activity</u>   | <u>Schedule</u>  |
|---|------------------|
| 1) Evaluate current review procedures and criteria. Recommend revisions.                                | November 1, 1993 |
| 2) Identify additional federal programs and projects to be reviewed and establish criteria as necessary | November 1, 1993 |
| 3) Review individual assistance applications and projects.  | Ongoing          |

**c. Public Information/Education Programs**

| <u>Activity</u>  | <u>Schedule</u> |
|--|-----------------|
| 1) Complete development of statewide agricultural NPS pollution public information/education strategy              | December 1992   |
| 2) Prepare work plan for developing statewide non-agricultural NPS pollution public information/education strategy | March 1, 1993   |

c. **Public Information/Education Programs (con't)**

| <u>Activity</u>  | <u>Schedule</u>  |
|--|------------------|
| 3) Develop statewide non-agricultural NPS pollution public information/education strategy, including activities, schedules, agency responsibilities, and funding needs and sources | March 1, 1994    |
| 4) Develop non-agricultural and agricultural nonpoint source pollution public information materials as outlined in Information/Education strategies                                | Ongoing          |
| 5) Update slide tape on Iowa's NPS pollution problems  | December 1, 1992 |
| 6) Develop Best Management Practices (BMPs) handbook for construction site erosion control   | FY 1993-4        |
| 7) Participate in development of volunteer monitoring project which addresses both rural and urban waters (coordinate with other agencies and organizations)                       | FY 1993-4        |

d. **Program Administration/Management:**

| <u>Activity</u>   | <u>Schedule</u>                          |
|---|--|
| 1) Request Section 319 project proposals  | January 1, 1992<br>Annually thereafter   |
| 2) Develop draft workplan for 319 grant application   | March 15, 1992<br>Annually thereafter    |
| 3) Prepare final 319 workplan and grant   | June 30, 1992<br>Annually thereafter     |
| 4) Prepare reports on 319 funded implementation projects for inclusion in state's NPS Annual Report | August 15, 1992<br>Annually thereafter   |
| 5) Prepare annual 319 report  | September 1, 1992<br>Annually thereafter |

## Work Element #2: COMPLETE ONGOING CONTROL PROJECTS

**Objective:** to complete implementation of ongoing nonpoint pollution control projects, to accelerate BMP implementation in projects which will provide significant public benefits in a short time period, and to obtain additional funding for projects which are currently underfunded.

**Work Activities:** As the program review in Chapter 2 indicates, programs and projects are currently being implemented in Iowa to reduce NPS pollution of the state's surface and ground waters. Some of these, such as the Big Spring Basin Demonstration Project in Clayton County, the statewide Integrated Farm Management and the Model Farms Demonstration Projects, and the nonpoint control projects receiving Water Quality Protection Funds from the Division of Soil Conservation, are being conducted under state legislation. Others, such as the USDA Water Quality Initiative Projects and DNR's Section 319 nonpoint pollution control projects, are supported by federal legislation.

The extent of the state's nonpoint pollution control activities is illustrated by the number of projects currently underway to reduce nonpoint pollution of Iowa's publicly owned lakes and coldwater streams. At present, nonpoint pollution control projects are underway in the watersheds of at least 49 of the state's publicly owned lakes, and an additional three projects are either planned or underway in watersheds of lakes proposed for future construction. Similarly, control projects are currently underway in the watersheds of at least 13 northeast Iowa coldwater streams. These lake and coldwater stream projects are listed in Appendix B.1 and B.2 respectively, along with the primary funding program(s) supporting each project. Other ongoing NPS projects in Iowa are identified in appendices B.3 through B.7.

In all of these lake and coldwater stream projects, agriculture is the major nonpoint pollution source impacting water quality. Soil erosion control BMPs are the primary control practices being used, and some projects provide cost share funding to landowners as an incentive for implementing needed BMPs. For some projects, nutrient and pesticide management, animal waste control, and other water quality protection or restoration practices are also being used. Several of Iowa's agricultural NPS projects include riparian corridor protection and the state will incorporate riparian corridor enhancement in other projects where appropriate.

Since each project is somewhat different (in terms of control needs, funding programs, level of completion, etc.), the work activities conducted and agency responsibilities for these activities also differ between projects. However, some work activities are generally conducted by all projects, including: obtain and administer project funding; solicit landowner participation and provide technical assistance in BMP selection, design, and construction; measure/monitor results of project and, prepare project status reports (as required by

funding program). For some projects, additional activities are required. For example, projects selected as national NPS monitoring projects or receiving Rural Clean Water Program or Clean Lakes Program funds must also carry out a water quality monitoring program.

During FFY 1992-95, Iowa will continue to implement the ongoing statewide nonpoint pollution control programs and work to complete the nonpoint control projects now underway for priority surface and ground waters. As appropriate, the state will modify or expand the scope of these programs or projects to ensure that all sources of nonpoint pollution (agricultural and non-agricultural) are being addressed. In addition, the state will determine whether accelerating any of these projects would provide significant water quality or other public benefits over the short term (next four years). For projects where such benefits are found, the state will (within the limits of available resources) attempt to accelerate implementation by providing additional project funding, increasing public information and technical assistance efforts, etc. This may be particularly appropriate for the Big Spring Project and the Integrated Farm Management Demonstration Project for which funding ends in 1992.

The state will also determine whether changes should be made in either the level of funding or the funding sources used to support any of these projects. This may be particularly appropriate for several of the projects now being supported only with Publicly Owned Lakes Program (POLP) funds, since the nonpoint control needs of these projects are so far in excess of the funding levels available through the POLP that project completion will take an excessive period of time.

**Agency Responsibilities:** Appendix B.8 provides a general overview of agency responsibilities for the ongoing projects, based on the funding source(s) being used. Specific agency responsibilities may vary somewhat for individual projects.

**Implementation schedule:** The proposed schedule for completing these work activities is:

| <u>Activity</u>  | <u>Schedule</u>                       |
|--|---------------------------------------|
| a. Annual review of Big Spring, Integrated Farm Mgmt, and Model Farms Demonstration Projects | 4th Qtr, FFY 1992-95                  |
| b. Annual review of NPS projects   | As dictated by the funding program    |
| c. Annual report to EPA  | September 1, 1992-95                  |
| d. Develop/update monitoring programs  | Annual if required by funding program |

Work Element #3: ESTABLISH ADDITIONAL NONPOINT CONTROL PROJECTS

**Objective:** to develop, obtain funding for, and initiate additional nonpoint pollution control projects. Individual projects may be designed to accomplish one or more of the following:

- control nonpoint pollution of priority streams, lakes, or wetlands
- reduce movement of nonpoint pollutants to groundwaters
- evaluate effectiveness of individual BMPs or BMP combinations
- assess feasibility and effectiveness of alternative approaches to accomplishing nonpoint control (such as using alternative financial incentives, expanding educational or regulatory programs, obtaining land easements, etc.
- establish demonstration projects throughout state to inform and educate landowners and the general public on the use of various BMPs and to demonstrate their effectiveness in improving water quality

**Work Activities:** As discussed in Chapter 2, a number of federal and state programs are currently being used to support nonpoint control projects in Iowa. Sources of funding include:

- Iowa Groundwater Fund
- Iowa Financial Incentive Program including Publicly Owned Lake Program (POLP)
- Water Quality Protection Projects in Iowa
- No-interest Soil Conservation Loan Program
- Rural Clean Water Program (RCWP)
- EPA Clean Lakes Program (CLP)
- ASCS Agricultural Conservation Program (ACP) Water Quality Special Projects
- SCS Small Watershed Program (PL-566)
- USDA Resource Conservation and Development Program (RC&D)
- Section 319(h) Nonpoint Source Pollution (NPS) Control Program
- USDA Water Quality Incentive Project (WQIP)
- USDA Hydrologic Unit Area Projects (HUA)
- USDA Water Quality Demonstration Projects (DEMO)
- EPA Pollution Prevention Projects (PPP)

In the future, the state expects to continue utilizing all of these funding programs, as well as new funding programs authorized under the Clean Water Act (CWA) of 1987 (and future CWA's), to carry out control projects. In addition, the state will attempt to identify and utilize, where feasible, funding from private foundations and other non-traditional funding sources to support such projects.

To ensure that all available funding can be utilized, the state will prepare draft nonpoint control project plans and retain these on file until funding becomes available. As funds are made available, the

draft plans will be revised, as necessary, and a request for funding submitted. If funded, project implementation will be initiated. As a result of past planning efforts, sufficient information currently exists on a number of the state's priority waters to allow rapid development of several draft nonpoint control project plans. The state's initial project development efforts will focus on developing project plans for these waters, using the same plan development procedures as used in past years.

Once this initial planning is completed, the state will move toward establishing a more comprehensive long term project development and implementation program. A major work item of this activity will be an interagency effort to establish a standardized methodology for developing project plans and reporting implementation progress, to ensure consistency and comparability between all projects conducted in the state, regardless of the funding source or the agencies involved in developing or implement the projects.

The major work activities required to develop and implement additional nonpoint pollution control projects include:

a) Identify Water Body to be Protected: The water body to be protected may be determined in any of several ways, depending upon the agency(s) involved, the funding programs being considered, etc.. In some instances, interest in a particular water body may prompt plan development, and as a consequence other waters may not be given any consideration. In other cases, interest in project development may limit consideration to only certain types of water bodies (such as lakes) or to only those waters amenable to certain control measures. An exception may be made where a project is being conducted mainly for research or demonstration purposes, and no waters meeting the listed criteria are suitable for conducting the proposed research. Currently, projects that receive funding must meet the criteria listed. In the future, modification of this system will be evaluated and consideration given to prioritizing water bodies as high, medium, and low priorities.

1. Lakes: To be considered for project funding, a lake should meet all of the following criteria:
  - \* meet the "significant publicly owned lakes" criteria of Iowa's Clean Lakes Classification Study (be maintained mainly for public use; be capable of supporting fish stocks of at least 200 lb/per acre; have a surface area of at least 10 acres and a watershed to lake area ratio of less than 200 to 1; and not be a shallow marsh-like lake, a flood control reservoir, or be used solely as a water supply reservoir) - list of these lakes attached as Appendix C.1



- \* have been evaluated in the state's 1988 Nonpoint Source Assessment report as either "fully supported, threatened", "partially supported", or "not supported"
- \* the developed project plan should indicate that implementing nonpoint controls will significantly reduce pollutant levels entering the water body, and doing so will provide important public benefits by improving water quality, extending the water body's useful life, etc.

2. Streams: To be considered for project funding, a stream should meet all of the following criteria:

- \* be classified as a Class B coldwater stream in Iowa's water quality standards
- \* be one of the 25 coldwater streams assessed under the Northeast Iowa River Basin study "Pollution of Coldwater Streams (SCS, 1986) - list of these streams attached as Appendix C.2
- \* have been evaluated in state's 1988 Nonpoint Source Assessment Report as either "fully supported, threatened", "partially supported", or "not supported"
- \* the developed project plan should indicate that implementing nonpoint controls will significantly reduce pollutant levels entering the water body, and doing so will provide important public benefits by improving water quality, extending the water body's useful life, etc.

3. Other waters: To be considered for project funding, waters that do not meet the outlined lake or stream criteria should meet all of the following criteria:

- \* the water body (surface or ground water) should be publicly owned and constitute an important, local, regional, or state water resource
- \* available information or data should show that the water body is being impacted or threatened by pollution from controllable nonpoint sources
- \* the developed project plan should indicate that implementing nonpoint controls will significantly reduce pollutant levels entering the water body and doing so will provide important public benefits by improving water quality, extending the water body's useful life, etc.

- \* adequate financial and other resources such as various state and federal funds identified in Work Element #3 should be available to implement the control project, and devoting such resources to this project should not significantly reduce the resources available to control nonpoint pollution of Iowa's publicly owned lakes or high priority Class B coldwater streams.

- b) **Evaluation of Water Quality Problems:** The water quality problems of a water body will be determined by evaluating available water quality information and data, including water quality monitoring data, results of the 1988 State Nonpoint Assessment and DNR's biennial 305(b) Water Quality Reports, observations and data of DNR staff. If additional water quality monitoring data is needed and schedules and resources allow, a monitoring program to obtain such data may be established. A major emphasis of the evaluation will be to identify the impacts of nonpoint pollution on water quality.
  
- c) **Determine Current Nonpoint Pollution Problems:** The NPS pollution problems found in the drainage area of the water body will be determined, using a variety of assessment and evaluation techniques. Project specific assessments are intended to provide more detailed analyses of nonpoint problems and needs for the purposes of project development and implementation. All types of nonpoint source pollution from agricultural and non-agricultural sources will be considered in these assessments. Visual observations may be used to determine whether certain nonpoint problems, such as animal waste discharges or streambank erosion, exist. Land use and related crop management data, coupled with information on watershed soils, topography, etc., will be evaluated using the Universal Soil Loss Equation, sediment delivery ratios, and/or other analysis techniques to determine those areas which are contributing the greatest amounts of sediment and other pollutants to the water body. Any nutrient pesticide related problems will be evaluated by considering available water quality data, as well as information on the fertilizer and pesticide management practices being used in the watershed. To the extent possible, nonpoint pollution problems will be quantified (in terms of estimated annual loads, acres of land contributing to a specific nonpoint problem, etc.).

In projects where ground water protection is the primary objective, problem assessment will first focus on determining whether contamination is occurring as a result of direct entry of pollutants to ground waters through agricultural drainage wells, sinkholes, or other direct conduits; is caused by leaching of soluble pollutants to ground water; or a combination of both. The results of this assessment will then be used to determine what additional assessments are needed to adequately define the nonpoint problems.

- d) Identify and Evaluate Nonpoint Control Alternatives: Based on the water quality and nonpoint pollution problem assessment results, alternative Best Management Practices for reducing or controlling the nonpoint pollution problems will be identified and evaluated. A wide variety of BMPs may be considered, including those listed in appendices D.1 through D.7. Appendices D.1 through D.3 list BMPs which may be used to control nonpoint pollution from agricultural sources, and Appendices D.4 through D.7 list BMPs for non-agricultural sources.

In Iowa, efforts to identify BMPs to control agricultural nonpoint pollution go back to at least 1976, when statewide water quality management planning was initiated under Section 208 of the CWA. Due to the impacts nonpoint pollution from agricultural sources was having on the state's waters, Iowa's Section 208 planning efforts included several activities to better define these impacts and identify appropriate control methods. These included development of a report summarizing existing knowledge in Iowa's agricultural nonpoint pollution problems and BMP alternatives (A Technical Assessment of Nonpoint Pollution in Iowa, College of Agriculture, ISU, March 1978) and inclusion of recommended BMPs for controlling agricultural nonpoint pollution in the nonpoint portion of Iowa's 1979 Statewide Water Quality Management Plan. The BMPs listed in Appendix D.1 were taken from the USDA - SCS Iowa Field Office Technical Guide, and are generally consistent with those identified in ISU's 1978 Technical Assessment report.

As Iowa's initial BMP development efforts focused mainly on practices for controlling soil erosion and sediment delivery to surface waters, in the 1980's additional planning was conducted to develop BMPs for controlling pollution of surface and ground waters by agricultural chemicals (fertilizers and pesticides). The BMPs listed in Appendices D.2 and D.3 are those identified through these planning activities.

Information on the water quality impacts of specific agricultural BMPs is given in a number of reports, including those listed above. Examples of the available information are found in Appendices E.1 through E.3.

Efforts to refine the list of BMPs applicable to agriculture are continuing. As additional information becomes available on the effectiveness of particular nonpoint control practices, this information is evaluated to determine if changes in the state's list of BMPs should be made.

Since Iowa's past water quality planning efforts have generally not addressed nonpoint pollution from urban and other non-agricultural sources, the state has had to rely primarily upon research results and other information developed by EPA and others in identifying the BMPs applicable to non-agricultural source. Appendices D.4 through D.7 list

BMPs that Iowa has determined, through a review of available research and reports, to be applicable to non-agricultural nonpoint pollution sources, and Appendix E.4 illustrates the information which is available on the water quality impacts of these BMPs. The BMPs listed in Appendices D.4 through D.7 include:

- \* BMPs for urban areas, from Urban Targeting and BMP Selection, EPA, November 1990;
- \* Storm water BMPs for industrial sites, from Draft - Storm Water Pollution Prevention for Industrial Activities, EPA, 1992;
- \* Storm water BMPs for construction sites, from Draft - Storm Water Pollution Prevention for Construction Activities, EPA, 1992; and
- \* Urban erosion and sediment control BMPs, from Iowa Guidelines for Soil and Water Conservation in Urbanizing Areas, Iowa Department of Soil Conservation, 1976.

In addition to the BMPs listed in Appendices D.4 through D.7, additional information on BMPs for non-agricultural nonpoint sources is given in:

- \* Guide to Nonpoint source Pollution Control, EPA, 1987 - provides information on BMPs for agriculture, construction and urban runoff, silviculture, and mining; and
- \* Draft - Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, EPA, 1991 - provides information on BMP for agriculture, forestry, urban, marinas and recreational boating, hydromodification/dams/levees/shoreline erosion management, and wetlands protection and biofiltration.

As necessary, Iowa will add to and refine the lists of non-agricultural BMPs given in Appendices D.4 through D.7. Factors to be considered in evaluating specific BMPs will include: practice effectiveness in controlling specific nonpoint pollutants; initial and maintenance costs of the practice; practice life; landowner acceptance; potential ground water impacts; and, the requirements and restrictions of potential funding programs.

In assessing potential ground water impacts of a proposed control project, Iowa will utilize information contained in the report "Best Management Practices to Improve Groundwater Quality in Iowa", Cooperative Extension Service, Iowa State University, October 1988, and will supplement this with information from other technical literature, as needed. Unless a proposed control project is being conducted in an area where ground waters are considered to be highly

vulnerable to contamination, only a generalized assessment of ground water impacts will be completed. In areas of high vulnerability, a more detailed assessment will be completed.

- e) **Develop Details of Proposed Implementation Project:** Using the results of the various assessments, a proposed implementation project plan will be drafted. The project activities included in this plan will be coordinated with other DNR programs (i.e. storm water, land disposal) and with the programs and activities of other agencies. Unless the specific funding program to be used to implement the project is known at the time the draft is prepared, certain portions of the project (such as agency responsibilities) will either need to be added later or may be subject to change. Specific items the draft will include are: discussion of the water body and its condition; description of the watershed draining into the water body and the nonpoint pollution problems of this watershed; and a description of the proposed project features (such as BMPs to be used, implementation schedule and project costs, and expected project benefits). Riparian corridor protection or enhancement will be incorporated into any projects where appropriate.
- f) **Submittal of Project Applications:** When funding becomes available, a final project application will be prepared and submitted to the appropriate agency(s) for consideration. Since each of the various programs which can provide funding for projects has somewhat different requirements, the specific steps required to apply for funding and the agencies responsible for performing these steps may differ from project to project. State and federal programs from which funding may be requested include:
- \* USDA's RCWP, RC&D, PL-566, DEMO, HUA, WQIP, and ACP programs
  - \* EPA's CLP, PPP, 319(h), 319(i), and 205(j)(5) programs
  - \* DAL's POLP and Water Quality Project programs
- g) **Project Implementation:** If funding for a project is approved, project implementation will be carried out by the agencies and according to the schedule identified in the project application.
- h) **Project Reporting and Evaluation:** The agency(s) which are responsible for implementing a particular project will also have the responsibility for performing all project reporting and evaluation activities required by the funding program, unless an agreement has been reached which provides that some or all of these functions will be conducted by another agency. The status and accomplishments of all projects will be reported to EPA by the DNR as part of the state's annual project status report.

**Agency Responsibilities:** The Department of Natural Resources will be the agency primarily responsible for coordinating interagency efforts in developing and implementing NPS control projects. The DNR will provide input on each project to help ensure that project activities are consistent with NPS control and water quality goals. The role of various local, state, and federal agencies in project development and implementation is frequently dictated by the requirements of the program providing funds for project implementation. As a consequence, a number of agencies may be involved in conducting NPS control projects in Iowa, and each agency's role may vary from project to project. Agencies expected to play a major role in developing and implementing control projects in Iowa include: US Soil Conservation Service (SCS); US Agricultural Stabilization and Conservation Service (ASCS); Division of Soil Conservation Service (DSC); Department of Natural Resources (DNR); Iowa State University Extension Service (ISUE) and, County Soil and Water Conservation Service (SWCD).

Agencies expected to play a major role in implementing non-agricultural NPS control projects include those listed in the prior paragraph plus municipal and county governments, private organizations, and contractors and developer associations.

**Implementation schedule:** The proposed schedule for implementation of this work activity is:

**Section 319(h)**

| <b><u>Activity</u></b>   | <b><u>Schedule</u></b>                   |
|--|--|
| a. Request Section 319 project proposals, including proposals addressing non-agricultural problems (such as construction site erosion control or urban runoff) | January 1, 1992<br>Annually thereafter   |
| b. Include selected project proposals in draft Section 319 workplan  | March 15, 1992<br>Annually thereafter    |
| c. Prepare final 319 workplan and grant application  | June 30, 1992<br>Annually thereafter     |
| d. Prepare reports on 319 funded implementation projects for inclusion in state's NPS Annual Report  | August 15, 1992<br>Annually thereafter   |
| e. Prepare annual 319 report   | September 1, 1992<br>Annually thereafter |
| f. Reevaluate priority criteria and list including consideration of prioritizing water bodies as high, medium, and low priority for NPS control                | Sept. 1993                               |

**Publicly Owned Lakes Program (POLP),  
Iowa Financial Incentives Program:**

| <u>Activity</u>  | <u>Schedule</u>      |
|--|----------------------|
| a. Review and recommend appropriate changes in list of lake watersheds eligible for POLP (DNR) | 2nd Qtr, FFY 1992-95 |
| b. Adopt revised list of eligible lake watersheds (State Natural Resources Commission, DNR)    | 3rd Qtr, FFY 1992-95 |
| c. Allocate POLP funds to SWCDs in which eligible lake watersheds are located (DALs)           | 4th Qtr, FFY 1992-95 |
| d. Recall and reallocate unobligated POLP funds (DALs)   | 2nd Qtr, FFY 1992-95 |

**Note:**

1. Over the four-year period FFY 1992-95, revisions of the POLP list are expected to enable an average of one new lake watershed protection project per year to be initiated.

**Water Quality Protection Projects,  
Water Protection Fund (HF 2381)**

| <u>Activity</u>   | <u>Schedule</u>      |
|---|----------------------|
| a. Adopt rules for administering Water Protection Project Program (State Soil Conservation Committee, DALs) | 1st Qtr, FFY 1992-95 |
| b. Request project applications from SWCD's (DALs)  | 2nd Qtr, FFY 1992-95 |
| c. Determine projects to be funded, negotiate annual project budgets, allocate funding to SWCDs (DALs)      | 3rd Qtr, FFY 1992-95 |
| d. Complete annual project reviews determine whether to continue or terminate projects (SWCDs, DALs)        | 2nd Qtr, FFY 1992-95 |

**Note:**

1. Assuming funding remains at current levels, it is expected that during the period FFY 1992-95 an average of from one to two new projects per year can be initiated.

**Rural Clean Water Program (RCWP)**

| <u>Activity</u>   | <u>Schedule</u>  |
|---|--|
| a. Develop and submit RCWP project applications (ASCS)    | As RCWP funding becomes available & applications are solicited |
| b. Initiate project implementation activities (ASCS, SCS) | According to schedule in approved application                  |

**Note:**

1. RCWP funds were last appropriated in FFY 1981. Due to funding uncertainty, no projection can be made as to the number of RCWP projects which may be initiated during FFY 1992-95.

**Clean Lakes Program**

| <u>Activity</u>  | <u>Schedule</u>   |
|--|---|
| a. Develop and submit Clean Lakes Program project applications (DNR) | As Clean Lakes funds becomes available and applications are solicited |
| b. Initiate project implementation activities (DNR)                  | According to schedule in approved application                         |

**Note:**

1. Fiscal year 1992 appropriation for Clean Lakes Program is \$7.0 million. EPA Regional Guidance indicates up to \$50,000 per state can be used to support state lake water quality assessments, with the remainder being available for Phase I Diagnostic/Feasibility Studies and Phase II Implementation Projects. Future year appropriations are unknown.
2. Based on past program experience, Iowa may reasonably expect to obtain funding for and initiate 1 or 2 new Clean Lakes implementation projects during the period FFY 1992-95.

**ASCS ACP Special Projects**

| <u>Activity</u>   | <u>Schedule</u>   |
|---|---|
| a. Develop and submit ACP Special Project applications (ASCS) | 1st Qtr, FFY 1992, and as special project funds are made available and applications are solicited |



**ASCS ACP Special Projects (Con't)**

| <u>Activity</u>   | <u>Schedule</u>                                |
|---|--|
| b. Initiate project implementation activities (ASCS, SCS) | According to schedule in approved applications |

**Note:**

Based on past experience, it is expected that ACP special project funds may enable Iowa to initiate from 2 to 3 new implementation projects during the FFY 1992-95 period.

**ASCS WQIP**

| <u>Activity</u>   | <u>Schedule</u>  |
|---|--|
| a. Develop and submit WQIP applications (ASCS)            | 4th Qtr. FFY 1992, and as WQIP funds are made available and applications are solicited |
| b. Initiate project implementation activities (ASCS, SCS) | According to schedule in approved applications   |

**Note:**

It is expected that Water Quality Initiative Program funds may enable Iowa to initiate from 2 to 3 new implementation projects during the FFY 1992-95 period.

**Watershed Protection and Flood Prevention Act (PL-566)**

| <u>Activity</u>  | <u>Schedule</u>   |
|--|-------------------|
| a. Complete planning for Little Paint Creek, Allamakee County, request PL-566 funds for implementation | FFY 1992-93       |
| b. Initiate implementation activities for Little Paint project (SCS)                                   | 4th Qtr, FFY 1993 |
| c. Complete planning for North and South Bear Creeks request PL-566 implementation funds               | FFY 1993          |
| d. Initiate implementation activities: North and South Bear Creek Project                              | 3rd Qtr, FFY 1994 |

**Watershed Protection and Flood Prevention Act (PL-566)**

| <u>Activity</u>   | <u>Schedule</u>   |
|---|-------------------|
| e. Complete preliminary review of list of "significant publicly owned lakes", determine which lakes might be suitable for development as PL-566 projects (DNR, SCS) | 1st Qtr, FFY 1993 |
| f. Complete in depth review of lakes identified as potential PL-566 projects, select lakes(s) which should be given planning priority (DNR, SCS)                    | 4th Qtr, FFY 1993 |
| g. Initiate planning for selected lake(s) (SCS)   | 2rd Qtr, FFY 1994 |

**Resource Conservation and Development (RC&D)**

| <u>Activity</u>   | <u>Schedule</u>   |
|---|---|
| a. Discuss with RC&D's the potential for using RC&D funds to implement nonpoint control projects (DNR, RC&Ds) | 3rd Qtr, FFY 1992                                       |
| b. Develop and submit applications for funding (RC&Ds)  | As funding becomes available and applications solicited |

**USDA Hydrologic Unit Area Projects (HUA)  
USDA Water Quality Demonstration Projects (DEMO)  
EPA Pollution Prevention Projects (PPP)**

| <u>Activity</u>                               | <u>Schedule</u>   |
|---|---|
| a. Develop and submit project applications    | As funding becomes available and applications are solicited |
| b. Initiate project implementation activities | According to schedule in approved applications              |

**APPENDICES**

APPENDIX A

FEDERAL AND PROGRAMS SUBJECT TO CONSISTENCY REVIEWS  
AND CURRENT REVIEW PROCEDURES

| <u>Agency</u>  | <u>Program</u>   |
|--|--|
| Rock Island and Omaha<br>District Corps of Engineers     | <ul style="list-style-type: none"><li>- Streambank and Lake Shoreline Construction</li><li>- Dredging and Filling In Rivers/Adjacent Wetlands</li><li>- COE Operations/Management Programs</li><li>- Public Utility Stream Crossings</li><li>- General Permits on Nationwide Permits</li><li>- Public/Private Access/Loading and Unloading Facilities</li><li>- Flood Control Projects</li></ul> |
| Federal Home Administration                              | <ul style="list-style-type: none"><li>- Construction of Rural Water Systems</li><li>- Construction/Maintenance of Telephone and Electric Lines</li></ul>   |
| U.S. Defense Department                                  | <ul style="list-style-type: none"><li>- Communications program</li><li>- Expansion of Military Bases</li></ul>   |
| U.S. Environmental Protection Agency                     | <ul style="list-style-type: none"><li>- Wastewater Treatment Facilities</li></ul>  |
| Federal Energy Regulatory Commission                     | <ul style="list-style-type: none"><li>- Hydro-Power Projects</li></ul>   |
| USDA Agricultural Stabilization and Conservation Service | <ul style="list-style-type: none"><li>- ACP Water Quality Special Projects</li></ul>   |
| USDA Soil Conservation Service -                         | <ul style="list-style-type: none"><li>Resource Conservation and Development</li><li>- P.L. 566 Watershed Planning and Operations</li><li>- River Basin (studies and floodplain management)</li><li>- Rural Abandoned Mine Program</li></ul>  |
| U.S. Fish and Wildlife Service                           | <ul style="list-style-type: none"><li>- Endangered Species Programs</li><li>- Fish and Wildlife Enhancement Projects</li></ul>   |
| Federal Highway Administration                           | <ul style="list-style-type: none"><li>- Public Transportation Systems, Including Maintenance and New Construction</li></ul>  |

## APPENDIX A (Con't)

### FEDERAL AND PROGRAMS SUBJECT TO CONSISTENCY REVIEWS AND CURRENT REVIEW PROCEDURES

Current Review Procedures: The DNR's current review process considers not only the nonpoint pollution control and water quality impacts of proposed projects, but also takes into account fish and wildlife habitat losses, other environmental concerns, and public safety concerns and benefits. The review process may include participation from staff of DNR's Environmental Protection; Fish and Wildlife; Recreation, Parks, and Preserves; and Forestry Divisions; and from the Coordination and Information Bureau.

The Coordination and Information Bureau coordinates the review process for many of the projects reviewed by DNR. For those projects, this division circulates pertinent project notices and information to other DNR divisions for review and comment, compiles the various division comments, and integrates them into a departmental response. Problems identified through the review process are communicated to the appropriate federal agencies, along with a request for cooperation in resolving them.

For certain types of projects, such as those involving only Section 401 permits, the review process may involve only one or two DNR divisions. For those projects, the division most involved with the project is responsible for seeing that coordination with other divisions occurs.

Water Quality Planning Section staff review activities involving channel changes, filling or dredging of wetlands, dredging of stream/lake/wetland beds by hydraulic means, or construction activities where material will be temporarily or permanently placed in a stream/lake/wetland as under Army Corps of Engineers permitting authority. Additionally, the Water Quality Planning Section provides a water quality evaluation of Army Corps of Engineers dredging activities on the Missouri and Mississippi Rivers when the removal or placement of dredged material occurs with Iowa, and evaluates potential water quality impacts of federal projects for which an Environmental Impact Statement/Assessment Review has been prepared.

APPENDIX B.1

ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

LAKES

| <u>Project</u>       | <u>County</u>     | <u>Funding Source</u>   |
|----------------------|-------------------|---|
| Arbor Lake           | Poweshiek Co.     | IPOLP (DALS)  |
| Belva Deer Lake      | Keokuk Co.        | PL-566 (SCS)<br>REAP (DALS)   |
| Beaver Lake          | Dallas Co.        | IPOLP (DALS)  |
| Big Hollow Watershed | Des Moines Co.    | PL-566 (SCS)  |
| Black Hawk Lake      | Sac & Carroll Co. | Section 319 (EPA/DNR)<br>CLP (EPA/DNR)<br>REAP, IPOLP (DALS)<br>ACPWQSP (ASCS)<br>WQIP (ASCS)   |
| Crawford Creek       | Ida Co.           | IPOLP (DALS)  |
| Corydon Lake         | Wayne Co.         | REAP (DSC), ACPWQSP (ASCS)<br>City of Corydon, Pollution<br>Prevention (EPA)<br>City of Corydon |
| F.W. Kent Park Lake  | Johnson Co.       | REAP (DALS)   |
| Green Castle Lake    | Marshall Co.      | IPOLP (DALS)  |
| Green Valley Lake    | Union Co.         | CLP (EPA/DNR)   |
| Hawthorn Watershed   | Decatur Co.       | REAP (DALS)   |
| Hawthorne Lake       | Mahaska Co.       | IPOLP (DALS)  |
| Hazelbrush Watershed | Carroll Co.       | REAP (DALS)   |
| Hickory Hills Lake   | Tama Co.          | IPOLP (DALS)  |
| Iowa Great Lakes     | Dickinson Co.     | Section 319<br>(EPA\DNR)<br>REAP (DALS)<br>Resource<br>Conservation<br>Act (SCS)                |

APPENDIX B.1 (CON'T)

| <u>Project</u>                        | <u>County</u>  | <u>Funding Source</u>                 |
|---------------------------------------|----------------|---------------------------------------|
| Jefferson Co. Water Supply Reservoirs | Jefferson      | REAP (DALS)                           |
| Lacey-Keosauqua                       | Van Buren Co.  | IPOLP (DALS)                          |
| Lake Ahquabi                          | Warren Co.     | CLP (EPA/DNR)<br>IPOLP (DALS)<br>ISU  |
| Lake Icaria                           | Adams Co.      | REAP (DALS)<br>IPOLP (DALS)           |
| Lake Iowa                             | Iowa Co.       | IPOLP (DALS)                          |
| Lake Miami                            | Monroe Co.     | CLP (EPA/DNR)<br>IPOLP (DALS)<br>ISU  |
| Lake Myers                            | Winneshiek Co. | IPOLP (DALS)                          |
| Lake of the Hills                     | Scott Co.      | IPOLP (DALS)                          |
| Lake of Three Fires                   | Taylor Co.     | IPOLP (DALS)                          |
| Lake Pahoja                           | Lyon Co.       | Section 319 (EPA/DNR)<br>IPOLP (DALS) |
| Lake Wapello                          | Davis Co.      | IPOLP (DALS)<br>REAP (DALS)           |
| Little River Lake                     | Decatur Co.    | IPOLP (DALS)<br>REAP (DALS)           |
| Little Wall Lake                      | Hamilton Co.   | CLP (EPA/DNR)                         |
| Mariposa Lake                         | Jasper Co.     | IPOLP (DALS)                          |
| McCann Creek                          | Union Co.      | REAP (DALS)                           |
| Meadow Lake                           | Adair Co.      | IPOLP (DALS)                          |
| Moorehead Lake                        | Ida Co.        | IPOLP (DALS)                          |
| Nine Eagles Lake                      | Decatur Co.    | IPOLP (DALS)                          |
| Otter Creek Lake                      | Tama Co.       | IPOLP (DALS)                          |
| Pierce Lake                           | Page Co.       | IPOLP (DALS)                          |
| Pilot Grove Park                      | Montgomery Co. | REAP (DALS)                           |

APPENDIX B.1 (CON'T)

| <u>Project</u>              | <u>County</u>       | <u>Funding Source</u>                                     |
|-----------------------------|---------------------|---|
| Pollmiller Lake             | Lee Co.             | IPOLP (DALS)  |
| Prairie Rose Lake           | Shelby Co.          | RCWP (ASCS)<br>SCS, DNR                                   |
| Red Haw Lake                | Lucas Co.           | IPOLP (DALS)  |
| Roberts Creek Lake          | Marion Co.          | IPOLP (DALS)  |
| Schley Park                 | Harrison Co.        | REAP (DALS)   |
| Slip Bluff Lake             | Decatur Co.         | IPOLP (DALS)  |
| Swan Lake                   | Carroll Co.         | CLP (EPA/DNR)<br>ACPWQSP (ASCS)<br>WQIP (ASCS)            |
| Thayer Lake                 | Union Co.           | IPOLP (DALS)  |
| Three Mile Creek/Lake       | Union & Adair Co.   | HUA (USDA WQI)<br>REAP (DALS)<br>ACP (ASCS)<br>WQIP(ASCS) |
| Union Grove Lake            | Tama & Marshall Co. | HUA (USDA WQI)<br>IPOLP (DALS)<br>CLP (EPA/DNR)           |
| Upper & Lower Pine<br>Lakes | Hardin Co.          | CLP (EPA/DNR)   |
| Viking Lake                 | Montgomery Co.      | IPOLP (DALS)  |
| West Lake                   | Clarke Co.          | Section 319 (EPA/DNR)<br>REAP (DALS)                      |
| Williamson Pond             | Lucas Co.           | IPOLP (DALS)  |
| Willow Lake                 | Harrison Co.        | REAP (DALS)   |
| Yellowsmoke Lake            | Crawford Co.        | REAP (DALS)   |



APPENDIX B.2

ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

COLD-WATER STREAMS

| <u>Project</u>                           | <u>County</u>               | <u>Funding Source</u>                                 |
|--|-----------------------------|---|
| Bear Creek                               | Winneshiek Co.              | PL-566 (SCS)  |
| Bloody Run                               | Dubuque Co.                 | REAP (DALS)   |
| Coon Creek                               | Allamakee<br>& Winneshiek   | Section 319 (EPA/DNR)                                 |
| Ensign Hollow Creek                      | Clayton Co.                 | REAP (DALS)   |
| French Creek                             | Allamakee Co.               | ACPWQSP(ASCS)<br>WQIP (ASCS)                          |
| Glovers Creek                            | Fayette Co.                 | ACPWQSP(ASCS)   |
| Little Paint Creek                       | Allamakee Co.               | Pl-566 (SCS)  |
| Little Turkey                            | Delaware Co.                | ACPWQSP(ASCS)   |
| North Cedar Creek                        | Clayton Co.                 | ACPWQSP(ASCS)   |
| South Fork of Big<br>Mill Creek          | Jackson Co.                 | REAP (DALS)   |
| Sny Magill Creek                         | Clayton Co.                 | HUA (USDA WQI)<br>WQIP(ASCS)<br>Section 319 (EPA/DNR) |
| Trout Run                                | Winneshiek Co.              | REAP (DALS)   |
| Protected Corridor/<br>Coldwater Streams | Howard Co./<br>Bigalk Creek | Section 319 (EPA/DNR)                                 |

APPENDIX B.3

ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

GROUNDWATER PROJECTS

| <u>Project</u>  | <u>County</u> | <u>Funding Source</u>                |
|---|---------------|--------------------------------------|
| Anderson Well and<br>Groundwater Protection               | Fremont Co.   | REAP (DALS)                          |
| Dry Creek Watershed                                       | Linn Co.      | REAP (DALS)                          |
| Floyd County Ground-<br>water Protection Project          | Floyd Co.     | Section 319 (EPA/DNR)<br>REAP (DALS) |
| Mitchell County<br>Devonian Aquifer<br>Protection Project | Mitchell Co.  | REAP (DALS)                          |

APPENDIX B.4

ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

WARM-WATER RIVER WATERSHED PROJECTS

| <u>Project</u>                          | <u>County</u>  | <u>Funding Source</u> |
|---|----------------|-----------------------|
| Bonus for Trees -<br>Little Flint River | Des Moines Co. | REAP (DALS)           |

APPENDIX B.5

ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

MAJOR RESERVOIR WATERSHED PROJECTS

| <u>Project</u>   | <u>County</u>             | <u>Funding Source</u>      |
|--|---------------------------|----------------------------|
| River Basins Program<br>Red Rock Reservoir-<br>Intensity Study | counties in<br>basin area | River Basin Funds<br>(SCS) |

## APPENDIX B.6

### ACTIVE NONPOINT POLLUTION CONTROL PROJECTS - 1992

#### REGIONAL STATEWIDE DEMONSTRATION PROJECTS

1. Big spring Basin Demonstration Project
2. Northeast Iowa Demonstration Project
3. Model Farms Demonstration Project
4. Integrated Farm Management Demonstration Program

#### Abbreviations:

ACP - Agricultural Conservation Program  
ACPWQSP - Agricultural Conservation Program Water Quality Special  
Project  
ASCS - Agricultural Stabilization & Conservation Service  
DALS - Department of Agriculture and Land Stewardship  
DNR - Department of Natural Resources  
EPA - Environmental Protection Agency  
HUA - Hydrologic Unit Area  
ISU - Iowa State University  
IPOLP - Iowa Publicly Owned Lakes Program  
PL-566 - Public Law 566, Watershed Protection and Flood Protection  
Act  
RCA - Resource Conservation Act  
RCWP - Rural Clean Water Program  
REAP - Resource Enhancement and Protection  
SCS - Soil Conservation Service  
USDA - United States Department of Agriculture  
WQIP - Water quality Incentive Program

APPENDIX B.7

IOWA ACP SPECIAL WATER QUALITY PROJECTS

| PROJECT                           | COUNTY         | YEAR |
|-----------------------------------|----------------|------|
| 1. Lenox Reservoir Watershed      | Taylor/Adams * | 1979 |
| 2. Cedar Lake Watershed           | Madison*       | 1979 |
| 3. Otter Creek Watershed          | Tama*          | 1979 |
| 4. Don Williams Watershed         | Boone*         | 1979 |
| 5. Lake Hendricks Watershed       | Howard*        | 1979 |
| 6. Dedham Creek Watershed         | Carroll*       | 1979 |
| 7. Crystal Lake Watershed         | Hancock        | 1979 |
| 8. Little River Watershed         | Decatur        | 1980 |
| 9. Catfish Creek Watershed        | Dubuque*       | 1980 |
| 10. Elliot Watershed              | Story*         | 1980 |
| 11. Big Hollow Watershed          | Des Moines*    | 1980 |
| 12. Twelve Mile Watershed         | Union*         | 1980 |
| 13. Turkey Creek Watershed        | Cass*          | 1980 |
| 14. Willow Creek Watershed        | Carroll*       | 1980 |
| 15. Soldier Creek Watershed       | Monona*        | 1981 |
| 16. Spring Creek Watershed        | Franklin*      | 1981 |
| 17. Greenfield Lake Watershed     | Adair*         | 1981 |
| 18. Twelve Mile Watershed         | Adair*         | 1981 |
| 19. Bankston Park Watershed       | Dubuque*       | 1982 |
| 20. Big Springs Watershed         | Clayton*       | 1985 |
| 21. Willow Creek Recreation Area  | Harrison*      | 1985 |
| 22. YellowSmoke Lake Watershed    | Crawford*      | 1985 |
| 23. Keokuk county Special Project | Keokuk*        | 1985 |
| 24. Whickey Hollow                | Louisa*        | 1986 |
| 25. Badger Creek                  | Madison*       | 1986 |
| 26. North Cedar Creek             | Clayton        | 1988 |
| 27. Glovers Creek                 | Fayette        | 1989 |
| 28. Little Turkey River           | Delaware       | 1989 |
| 29. Corydon Lake                  | Wayne          | 1990 |
| 30. French Creek                  | Allamakee      | 1991 |
| 31. Swan Lake                     | Carroll        | 1992 |

\* Completed Projects

APPENDIX B.8

AGENCY RESPONSIBILITIES

ACTIVE NONPOINT POLLUTION CONTROL PROGRAMS - 1992

| <u>Funding Sources</u>                       | <u>Responsibilities</u>                                  | <u>Agency*</u>            |
|--|--|---------------------------|
| Clean Lakes Program<br>and IPOLP             | Overall Program Administration                           |                           |
|  | a) Clean Lakes Program                                   | DNR                       |
|  | b) IPOLP   | DALS                      |
|  | Maintain Project Priority                                | DNR                       |
|  | Administer Funding (cost-share)                          | DALS, SWCD                |
|  | Technical assistance                                     | SCS, SWCD                 |
|  | Water Quality Monitoring<br>Status reports               | DNR<br>DNR, DALS,<br>SWCD |
| IPOLP  | Overall Program Administration                           | DALS                      |
|  | Maintain Project Priority                                | DNR                       |
|  | Administer Funding (cost-share)                          | DALS, SWCD                |
|  | Technical assistance                                     | SCS, SWCD                 |
|  | Status reports   | DALS,<br>SWCD             |
| RCWP   | Overall Program Administration                           | ASCS                      |
|  | Maintain Project Priority                                | ASCS                      |
|  | Administer Funding (cost-share)                          | ASCS                      |
|  | Educational Programs                                     | ISU Ext.                  |
|  | Technical Assistance                                     | SCS, SWCD, ISU<br>EXT.    |
|  | Water Quality Monitoring                                 | DNR                       |
|  | Status reports<br>a) overall project<br>b) water quality | DNR<br>ASCS<br>DNR        |
| ACP Water Quality<br>Special Project         | Overall Program Administration                           | ASCS                      |
|  | Maintain Project Priority                                | ASCS                      |
|  | Administer Funding (cost-share)                          | ASCS                      |
|  | Technical assistance                                     | SCS, SWCD                 |
|  | Status reports   | ASCS                      |
| Big Spring Basin<br>Demonstration<br>Project | Overall Program Administration                           | DALS, DNR,<br>ISU Ext.    |
|  | Administer Funding (cost-share)                          | DALS, SWCD                |
|  | Technical assistance                                     | ISU Ext.,<br>SCS, DNR     |
|  | Status reports   | ISU Ext.,<br>SCS, DNR     |

\* Abbreviations defined on Appendix B.6

APPENDIX B.8 (cont.)

AGENCY RESPONSIBILITIES

ACTIVE NONPOINT POLLUTION CONTROL PROGRAMS - 1992

| <u>Funding Sources</u>               | <u>Responsibilities</u>   | <u>Agency</u>  |
|--------------------------------------|---|--|
| IFMDP                                | Overall Program Administration<br>Administer Funding<br>Technical Assistance<br>Status Reports  | DALS, ISU EXT.<br>DALS<br>ISU Ext.<br>DALS, DNR,<br>ISU Ext.   |
| Model Farms<br>Demonstration Project | Overall Program Administration<br>Administer Funds<br>Technical Assistance<br>Status Reports  | DALS, ISU EXT.<br>DALS<br>ISU Ext.<br>DALS, ISU Ext.   |
| HUA                                  | Overall Program Administration<br>Maintain Project Priority<br><br>Technical Assistance<br>Education Program<br>Administer Funding<br>Status Report     | SCS<br>SCS, ISU Ext.,<br>ASCS<br>SCS, SWCD, ISU Ext.<br>ISU Ext.<br>ASCS<br>SCS, ISU Ext., ASCS                    |
| REAP                                 | Overall Program Administration<br>Technical Assistance<br>Administer Funding<br>Status Report   | DALS<br>SCS, SWCD<br>DALS<br>SWCD, DALS  |
| Section 319                          | Overall Program Administration<br>Maintain Project Priority<br>Technical Assistance<br>Education Program<br>Administer Funding<br>Status Report         | DNR<br>DNR<br>SCS, SWCD, ISU Ext.<br>DNR, ISU Ext.<br>DNR<br>DNR   |
| DEMO                                 | Overall Program Administration<br>Maintain Project Priority<br><br>Technical Assistance<br><br>Education Program<br>Administer Funding<br>Status Report | ISU Ext.<br>ISU Ext., SCS,<br>ASCS<br>SCS, SWCD,<br>ISU Ext., DNR<br>ISU Ext.<br>ASCS, SWCD<br>SCS, SWCD, ISU Ext. |
| PL-566                               | Overall Program Administration<br>Maintain Project Priority<br>Technical Assistance<br>Administer Funding<br>Status Report                              | SCS<br>SCS, DALS<br>SCS, SWCD<br>SCS, SWCD<br>SCS, SWCD  |



APPENDIX B.8 (cont.)

AGENCY RESPONSIBILITIES

ACTIVE NONPOINT POLLUTION CONTROL PROGRAMS - 1992

| <u>Funding Sources</u>             | <u>Responsibilities</u>        | <u>Agency</u>       |
|------------------------------------|--------------------------------|---------------------|
| WQIP                               | Overall Program Administration | ASCS                |
|                                    | Maintain Project Priority      | ASCS                |
|                                    | Technical Assistance           | SCS, SWCD, ISU Ext. |
|                                    | Education Program              | ISU Ext.            |
|                                    | Administer Funding             | ASCS                |
|                                    | Status Report                  | SCS, SWCD           |
| RCA                                | Overall Program Administration | SCS                 |
|                                    | Maintain Project Priority      | SCS                 |
|                                    | Technical Assistance           | SCS, SWCD           |
|                                    | Administer Funding             | SCS                 |
|                                    | Status Report                  | SCS, SWCD           |
|                                    |                                |                     |
| Pollution<br>Prevention<br>Program | Overall Program Administration | EPA, DNR            |
|                                    | Maintain Project Priority      | EPA, DNR            |
|                                    | Technical Assistance           | DNR, SCS, ISU Ext.  |
|                                    | Administer Funding             | EPA, DNR            |
|                                    | Status Report                  | DNR                 |
|                                    |                                |                     |

## PRIORITY LAKES

| <u>Lake Name</u>            | <u>County</u> |
|-----------------------------|---------------|
| Lake Orient                 | Adair         |
| Meadow Lake                 | Adair         |
| Morman Trail Lake           | Adair         |
| Lake Icaria                 | Adams         |
| Littlefield Lake            | Audubon       |
| Hannen Lake                 | Benton        |
| Rodgers Park Lake           | Benton        |
| George Wyth Lake            | Black Hawk    |
| Meyer Lake                  | Black Hawk    |
| Don Williams Lake           | Boone         |
| Storm Lake                  | Buena Vista   |
| North Twin Lake             | Calhoun       |
| Swan Lake                   | Carroll       |
| Cold Springs Lake           | Cass          |
| Lake Anita                  | Cass          |
| Clear Lake                  | Cerro Gordo   |
| East Lake (Osceola)         | Clarke        |
| West Lake                   | Clarke        |
| Trumbull Lake               | Clay          |
| Nelson Lake                 | Crawford      |
| Yellow Smoke Lake           | Crawford      |
| Beaver Lake                 | Dallas        |
| Lake Wapello                | Davis         |
| Little River Watershed Lake | Decatur       |
| Nine Eagles Lake            | Decatur       |
| Slip Bluff Lake             | Decatur       |
| Silver Lake                 | Delaware      |
| Center Lake                 | Dickinson     |
| East Okoboji Lake           | Dickinson     |

APPENDIX C.1 (con't)

| <u>Lake Name</u>                  | <u>County</u> |
|-----------------------------------|---------------|
| Little Spirit Lake                | Dickinson     |
| Upper Gar Lake                    | Dickinson     |
| Lower Gar Lake                    | Dickinson     |
| Minnewashta Lake                  | Dickinson     |
| Silver Lake                       | Dickinson     |
| Spirit Lake                       | Dickinson     |
| West Okoboji Lake                 | Dickinson     |
| Ingham Lake                       | Emmet         |
| Tuttle Lake                       | Emmet         |
| Frog Hollow Lake (aka Lake Volga) | Fayette       |
| Beeds Lake                        | Franklin      |
| Spring Lake                       | Greene        |
| Springbrook Lake                  | Guthrie       |
| Briggs Woods Lake                 | Hamilton      |
| Little Wall Lake                  | Hamilton      |
| Crystal Lake                      | Hancock       |
| Eldred Sherwood Lake              | Hancock       |
| Lower Pine Lake                   | Hardin        |
| Upper Pine Lake                   | Hardin        |
| DeSoto Bend Lake                  | Harrison      |
| Willow Lake                       | Harrison      |
| Lake Geode                        | Henry         |
| Lake Hendricks                    | Howard        |
| Crawford Creek Lake               | Ida           |
| Moorehead Lake                    | Ida           |
| Lake Iowa                         | Iowa          |
| Mariposa Lake                     | Jasper        |
| Rock Creek Lake                   | Jasper        |
| Kent Park Lake                    | Johnson       |
| Lake Macbride                     | Johnson       |
| Central Lake                      | Jones         |
| Lake Smith                        | Kossuth       |

APPENDIX C.1 (con't)

| <u>Lake Name</u>            | <u>County</u> |
|-----------------------------|---------------|
| Pollmiller Park Lake        | Lee           |
| Pleasant Creek Lake         | Linn          |
| Red Haw Lake                | Lucas         |
| Williamson Pond             | Lucas         |
| Lake Pahoja                 | Lyon          |
| Badger Creek Lake           | Madison       |
| Hawthorne Lake              | Mahaska       |
| Lake Keomah                 | Mahaska       |
| White Oak Conservation Area | Mahaska       |
| Green Castle Lake           | Marshall      |
| Blue Lake                   | Monona        |
| Oldham Lake                 | Monona        |
| Lake Miami                  | Monroe        |
| Viking Lake                 | Montgomery    |
| Mill Creek Lake             | O'Brien       |
| Dog Creek Lake              | O'Brien       |
| Pierce Creek Pond           | Page          |
| Five Island Lake            | Palo Alto     |
| Lost Island Lake            | Palo Alto     |
| Silver Lake                 | Palo Alto     |
| Big Creek Lake              | Polk          |
| Easter Lake                 | Polk          |
| Arrowhead Lake              | Pottawattamie |
| Carter Lake                 | Pottawattamie |
| Lake Manawa                 | Pottawattamie |
| Arbor Lake                  | Poweshiek     |
| Diamond Lake                | Poweshiek     |
| Arrowhead Lake              | Sac           |
| Black Hawk Lake             | Sac           |
| Lake of the Hills           | Scott         |
| Manteno Lake                | Shelby        |
| Prairie Rose Lake           | Shelby        |
| Hickory Grove Lake          | Story         |

APPENDIX C.1 (con't)

| <u>Lake Name</u>                    | <u>County</u> |
|-------------------------------------|---------------|
| Hickory Hills Lake (aka Casey Lake) | Tama          |
| Otter Creek Lake                    | Tama          |
| Union Grove Lake                    | Tama          |
| Lake of Three Fires                 | Taylor        |
| Wilson Lake                         | Taylor        |
| Windmill Lake                       | Taylor        |
| Green Valley Lake                   | Union         |
| Thayer Lake                         | Union         |
| Twelve Mile Creek Lake              | Union         |
| Indian Lake                         | Van Buren     |
| Lacey-Keosauqua Lake                | Van Buren     |
| Ottumwa Reservoir                   | Wapello       |
| Lake Ahquabi                        | Warren        |
| Lake Darling                        | Washington    |
| Bob White Lake                      | Wayne         |
| Badger Lake                         | Webster       |
| Lake Meyers                         | Winneshiek    |
| Little Sioux Park Lake              | Woodbury      |
| Brown's Lake                        | Woodbury      |
| Silver Lake                         | Worth         |
| Lake Cornelia                       | Wright        |

APPENDIX C.2

PRIORITY CLASS B(C) STREAMS

| <u>Stream Name</u>  | <u>County</u> |
|---------------------|---------------|
| Bigalks Creek       | Howard        |
| Bloody Run          | Clayton       |
| Clear Creek         | Allamakee     |
| Coldwater Creek     | Winneshiek    |
| Ensign Hollow       | Clayton       |
| Fountain Springs    | Delaware      |
| French Creek        | Allamakee     |
| Glover Creek        | Fayette       |
| Grannis Creek       | Fayette       |
| Hickory Creek       | Allamakee     |
| Joy Springs         | Clayton       |
| Little Paint        | Allamakee     |
| Little Turkey       | Delaware      |
| North Bear          | Winneshiek    |
| North Cedar         | Clayton       |
| Richmond Spring     | Delaware      |
| Sny Magill          | Clayton       |
| South Bear          | Winneshiek    |
| South Fork Big Mill | Jackson       |
| Spring Branch       | Delaware      |
| Trout River         | Winneshiek    |
| Trout Run           | Winneshiek    |
| Twin Spring         | Winneshiek    |
| Waterloo Creek      | Allamakee     |

## APPENDIX D.1

### SOIL AND WATER CONSERVATION PRACTICES\*

Access Road

Bedding

Brush Management

Clearing and Snagging

Conservation Cropping System

Conservation Tillage System

Contour Farming

Cover and Green Manure Crop

Critical Area Planting

Crop Residue Use

Dam, Diversion

Dam, Floodwater retarding

Dam, Multiple Purpose

Dike

Diversion

Emergency Tillage

Farmstead and Feedlot Windbreak

Fencing

Field Border

Field Windbreak

Filter Strip

Fish Pond Management

Floodwater Diversion

Floodway

Grad Stabilization Structure

Grass Strip (MLRA 103)

Grassed Waterway

Grasses & Legumes in Rotation

Heavy Use Area Protection

Hedgerow Planting

Irrigation Land Leveling

Irrigation System, Sprinkler

Land Clearing

Land Reconstruction (Abandoned Mined Land)

Land Reclamation (Abandoned Mined Land-Highwall Treatment)

Land Reconstruction (Currently Mined Land)

\* Appendix D.1 was developed from the USDA - SCS Iowa Field Office Technical Guide.

APPENDIX D.1 (Con't)

SOIL AND WATER CONSERVATION PRACTICES

Land Smoothing - Other  
Lined Waterway or Outlet  
Livestock Exclusion

Mulching

Nutrient Management

Obstruction Removal  
Open Channel

Pasture and Hayland Management  
Pasture and Hayland Planting  
Permanent Vegetative Cover for the Conservation Reserve Program -  
    Supplement 1  
Pest Management

Pipeing  
Planned Grazing Systems  
Pond  
Pond Sealing or Lining, Flexible Membrane  
Pond Sealing or Lining, Soil Dispersant  
Pond Sealing or Lining, Bentonite Sealant  
Pond Sealing or Lining, Cationic Emulsion - Waterborn Sealant  
Pond Sealing or Lining, Asphalt-Sealed  
Fabric Liner  
Precision Land Forming  
Prescribed Burning  
Pumping Plant for Water Control

Recreation Area Improvement  
Recreation Land Grading and Shaping  
Recreation Trail and Walkway  
Rock Barrier

Sediment Basin  
Spring Development  
Streambank Protection  
Stream Channel Stabilization  
Stripcropping, Contour  
Stripcropping, Wind  
Structure for Water Control  
Subsurface Drain (Revised 3/86)  
Surface Drainage, Field Ditch  
Surface Drainage, Main or Lateral

Terrace  
Tree Planting  
Trough or Tank



APPENDIX D.1 (Con't)

SOIL AND WATER CONSERVATION PRACTICES

Underground Outlet (revised 3/86)

Waste Management System  
Waste Storage Pond  
Waste Storage Structure  
Waste Treatment Lagoon  
Waste Utilization  
Water and Sediment Control Basin  
Well (Livestock and Recreation)  
Wildlife Upland Habitat Management  
Wildlife Wetland Habitat Management  
Windbreak Renovation  
Woodland Direct Seeding  
Woodland Improved Harvesting  
Woodland Improvement  
Woodland Site Preparation

\* Interim standards are being developed for:

- well-testing
- record keeping
- pesticide management

## APPENDIX D.2

### CHEMICAL BMP LIST\*

1. Establish good soil sampling program
2. Use modern soil surveys for crop production
3. Establish a sound fertility management program
4. Adjust fertilizer and pesticide management programs on high risk soils with high risk relative to chemical leaching and groundwater contamination
5. Incorporate nutrients and pesticides
6. Limiting soil losses to acceptable levels
7. Reduce row spacing
8. Alternative selection of pesticide
9. Use rootworm insecticides only where economically justified
10. Develop an integrated pest management (IPM) program

\* Appendix D.2 was developed from A Report On Best Management Practices For Agricultural Chemicals, Iowa State University, 1983.

## APPENDIX D.3

### BMPs to Improve Groundwater Quality in Iowa\*

1. Sound nitrogen management programs on cropland
  - A. Setting realistic yield goals with use of modern soil survey
  - B. Fall versus spring application of nitrogen
  - C. Preplant versus sidedress nitrogen
  - D. Use of N-Serve as a nitrogen nitrification inhibitor
  - E. Source of nitrogen, I.E. NO<sub>3</sub> vs. NH<sub>4</sub>
  - F. soil test indices
  - G. Land application of manure and other wastes
  - H. Nitrogen credits from legumes
  - I. Manure handling systems
  
2. Improve crop production and cultural practices
  - A. Use integrated pest management
    - scouting techniques
    - economic thresholds
    - pest monitoring
  - B. Chemigation usage
  - C. Rotation of crop effect
  - D. Use of various tillage practices with incorporation
  - E. Adjusting planting and harvesting dates
  - F. Emphasize mechanical weed control
  - G. Effect of various plant populations of crops
  - H. Effect of tillage practices
    - conservation cropping system (sod rotation)
    - conservation tillage system
    - contour farming
    - contour strip cropping
  - I. Effect of soil erosion
  - J. Effect of soil conservation/erosion control measures
    - critical area planting
    - water diversion
    - grade stabilization structure
    - grass filter strips
    - grassed waterway or outlet
    - tiled outlet
    - field borders/grassed headlands
    - pasture and hayland planting
    - terrace, graded channel
    - terrace, level channel
    - water and sediment control basins
  
3. Strengthened or improved pesticide handling
  - A. Observe groundwater statement on label
  - B. Band versus broadcast application

\* Appendix D.3 was developed from Best Management Practices to Improve Groundwater Quality in Iowa, Iowa State University, 1988

### APPENDIX D.3 (Con't)

#### BMPs to Improve Groundwater Quality in Iowa

- C. Sprayer calibration
- D. Selection of proper rates and products
- E. Equipment maintenance
- F. Placement of band application
- G. Incorporated (PPI) treatment versus preemergence (PRE)
- H. Soil pH and organic matter control consideration
- J. Construction of dikes and pads
- K. Proximity of sprayer water supply to nearby wells
- L. Storage, loading and mixing pesticides
- M. Disposal of pesticides
- N. Disposal of pesticide containers

## APPENDIX D.4

### Urban BMPs\*

- I. Types of Urban BMPs
  - A. Detention Basins
    1. Dry ponds
    2. Wet ponds
    3. Extended detention dry ponds
  - B. Retention Devices
    1. Infiltration basins
    2. Infiltration trenches and dry wells
    3. Porous pavement
  - C. Vegetative Controls
    1. Basin landscaping
    2. Wetlands
    3. Grassed swales
    4. Filter strips
  - D. Source Controls
    1. Exclude inappropriate discharges to storm drains
      - a. Eliminate illicit or inappropriate connections
      - b. Prevent rainfall and runoff from contacting potential contaminants
      - c. Encourage proper use and disposal of materials by homeowners
      - d. Develop and implement an aggressive field inspection program
    2. Reduce Street and Land Surface Sources of Pollutants
      - a. Control littering and improper waste disposal practices
      - b. Control animal wastes
      - c. Improve the maintenance of major paved areas
      - d. Institute programs to remove accumulation of litter and debris
      - e. Institute environmentally protective road maintenance practices
      - f. Control airborne pollutants
    3. Control Erosion
      - a. Control erosion at construction sites
      - b. Control erosion of undeveloped land and park land
    4. Implement Land Use Planning
      - a. Implement zoning Regulations
      - b. Limit the directly connected impervious area
      - c. Require physical controls for new developments
    5. Other Control Methods
      - a. Control oil and grease
      - b. Control leaks from gasoline, fuel oil, and chemical storage tanks
      - c. Intensify the maintenance and repair of stormwater drainage systems
      - d. Address indirect sources of sewage to stormwater drainage systems

\* Appendix D.4 was developed from Draft-Urban Targeting and BMP Selection (November 1990), EPA.

## APPENDIX D.5

### Storm Water BMPs\*

- I. Storm Water Pollution Prevention Plan
  - A. Activity-Specific Source Control BMPs
    1. BMPs for fueling stations
    2. BMPs for vehicle and equipment maintenance
    3. BMPs for painting operations
    4. BMPs for vehicle and equipment washing
    5. BMPs for loading and unloading materials
    6. BMPs for liquid storage in above-ground tanks
    7. BMPs for industrial waste management areas and outside manufacturing
    8. BMPs for outside storage of raw materials, by-products, or finished products.
    9. BMPs for salt storage facilities
  - B. Site-Specific Industrial Storm Water BMPs
    1. Flow Diversion Practices
      - a. Storm water conveyances (channels/gutters/drains/sewers)
      - b. Diversion dikes
      - c. Graded areas and pavement
    2. Exposure Minimization Practices
      - a. Containment diking
      - b. Curbing
      - c. Drip pans
      - d. Collection basins
      - e. Sumps
      - f. Covering
      - g. Vehicle positioning
      - h. Loading and unloading by air pressure or vacuum
  - C. Sediment and Erosion Prevention Practices
    1. Vegetative Practices
      - a. Temporary seeding
      - b. Mulching, matting, and netting
      - c. Chemical stabilization
      - d. Permanent seeding and planting
      - e. Buffer Zones
      - f. Preservation of natural vegetation
      - g. Sodding
      - h. Stream bank stabilization
    2. Structural Erosion Prevention and Sediment Control Practices
      - a. Interceptor dikes and swales
      - b. Pipe slope drains
      - c. Subsurface drains
      - d. Filter fence
      - e. Straw bale barrier
      - f. Brush barrier
      - g. Gravel or stone filter berm

\* Appendix D.5 was developed from Draft-Storm Water Pollution Prevention for Industrial Activities, EPA, 1992.

## APPENDIX D.6

### SEDIMENT AND EROSION CONTROL BMPs\*

- I. Selection of Soil Erosion and Sediment Control Practices
  - A. Minimize the amount of disturbed soil
  - B. Prevent runoff from offsite areas from flowing across disturbed areas
  - C. Slow down the runoff traveling across the site
  - D. Remove sediment from onsite runoff before it leaves the site
  - E. Meet or exceed local/state requirements for erosion and sediment control
- II. Sediment and Erosion Control Practices
  - A. Stabilization Practices
    - 1. Temporary seeding
    - 2. Mulching
    - 3. Geotextiles
    - 4. Chemical stabilization
    - 5. Permanent seeding and planting
    - 6. Buffer zones
    - 7. Preservation of natural vegetation
    - 8. Sod Stabilization
    - 9. Stream bank stabilization
    - 10. Soil retaining measures
    - 11. Dust control
  - B. Structural Erosion and Sediment Control Practices
    - 1. Earth dike
    - 2. Drainage swale
    - 3. Interceptor dikes and swales
    - 4. Temporary stream crossing
    - 5. Temporary storm drain diversion
    - 6. Pipe slope drains
    - 7. Subsurface drains
    - 8. Silt fence
    - 9. Straw bale barrier
    - 10. Brush barrier
    - 11. Gravel or stone filter berm
    - 12. Storm drain inlet protection
    - 13. Sediment trap
    - 14. Temporary sediment basin
    - 15. Outlet protection
    - 16. Check dams
    - 17. Surface Roughening
    - 18. Gradient terraces

\* Appendix D.6 was developed from Draft-Storm Water Pollution Prevention for Construction Activities, EPA, 1992.

## APPENDIX D.7

### Urban Erosion and Sediment Control Practices\*

1. Temporary grass seedings
2. Permanent grass seedings
3. Vine, shrub and tree planting
4. Topsoiling
5. Sodding
6. Mulching
7. Dust Control
8. Land grading
9. Diversion
10. Grade stabilization structure
11. Grade stabilization structure (temporary)
12. Riprap
13. Storm drain outlet protection
14. Subsurface drain
15. Grassed waterway
16. Sediment basin

\* Appendix D.7 was developed from Iowa guidelines for Soil and Water Conservation in Urbanizing Areas, Iowa Department of Soil Conservation, 1976.



### Appendix E.1

The impact of selected soil conservation/erosion control practices on the quality of surface water and groundwater. ( A plus (+) indicates beneficial impact, a minus (-) indicates detrimental impact, and a zero indicates no or very little impact.)

| Soil Conservation Practice                           | Purpose   | Impact        |              |
|--|---|---------------|--------------|
|  |   | Surface water | Ground water |
| Conservation cropping system<br>(Sod based rotation) | To reduce detachment and transport  | (+)           | 0 to (-)     |
| Conservation tillage system                          | To reduce detachment and transport  | (+)           | 0 to (-)     |
| Contour farming                                      | To reduce runoff velocity and runoff volume   | (+)           | 0 to (-)     |
| Contour Strip Cropping                               | To reduce detachment and runoff volume and velocity   | (+)           | 0 to (-)     |
| Critical area Planting                               | To reduce detachment; reduce damage from sediment and runoff to downstream areas  | (+)           | 0            |
| Diversion  | To divert excess water to sites where it can be used or disposed of safely  | (+)           | 0            |
| Grade Stabilization Structures                       | To stabilize grade and control erosion in natural or artificial channels; to prevent formation or advancement of gullies                | (+)           | 0            |
| Filter Strips  | To reduce sediment load in runoff water   | (+)           | 0            |
| Grassed waterway or outlet/<br>tiled outlet          | To provide for disposal of excess surface water from natural concentrations, terraces or diversions without causing erosion or flooding | (+)           | 0            |
| Field borders/ grassed<br>Headlands                  | To reduce detachment and transport  | (+)           | 0            |
| Pasture and Hayland planting                         | To reduce detachment and transport  | (+)           | 0 to (-)     |
| Terrace, graded channel                              | To shorten slopes and reduce runoff velocity and quantity   | (+)           | (-)          |
| Terrace, level channel                               | To shorten slopes and reduce runoff velocity and quantity   | (+)           | (-)          |
| Water and sediment control<br>basin                  | To trap and collect sediment and excess water; to control runoff  | (+)           | (-)          |

From Table 10, "Best Management Practices to Improve Groundwater in Iowa", Cooperative Extension Service, Iowa State University, October 1988.

APPENDIX E.2  
CONTROL EFFECTIVENESS OF STRUCTURAL BMP COMPONENTS

| EFFECTIVENESS FOR CONTROL OF:    |                         |                  |                   |                                  |                           |
|----------------------------------|-------------------------|------------------|-------------------|----------------------------------|---------------------------|
| BMP COMPONENT                    | EROSION                 | RUNOFF           | SEDIMENT DELIVERY | (*) NUTRIENT AND CHEMICAL LOSSES | WITH SEDIMENT IN SOLUTION |
| Debris Basin                     | None                    | None             | Substantial       | Substantial                      | None                      |
| Diversion                        | Slight to Moderate      | None to Slight   | Slight to None    | Slight to Mod.                   | None to Slight            |
| Fencing                          | None to Slight          | None             | None              | None to Slight                   | None                      |
| Grade Stabilization Structure    | Moderate to Substantial | None to Moderate | Slight to Sub.    | Mod. to Sub.                     | None to Mod.              |
| <u>Outlets:</u>                  |                         |                  |                   |                                  |                           |
| Drainage Field Ditch             | Slight                  | None             | None              | None to Slight                   | None                      |
| Grassed Waterway                 | Slight to Mod.          | None to Slight   | None to Slight    | None to Slight                   | None to Slight            |
| Subsurface Drain                 | Slight                  | Slight           | None              | Slight                           | Slight                    |
| Sediment and Water Control Basin | Slight to Mod.          | Moderate         | Substantial       | Substantial                      | Slight to Mod.            |
| <u>Terraces:</u>                 |                         |                  |                   |                                  |                           |
| Basin                            | Slight                  | Substantial      | Substantial       | Substantial                      | Substantial               |
| Gradient                         | Mod. to Substantial     | Slight           | Substantial       | Substantial                      | Slight                    |
| Level                            | Mod. to Substantial     | Substantial      | Substantial       | Substantial                      | Substantial               |
| Tile Outlet                      | Mod. to Substantial     | Slight           | Substantial       | Substantial                      | Slight                    |

None = No reduction, Slight = less than 10% reduction, Moderate = 11 - 50% reduction, Substantial = 51 - 100% reduction

(\*) = indicates the effectiveness of the BMP component relative to total amounts of nutrient and chemical losses rather than concentrations of these materials.

From Table III-2 " Interim Output for Section 208 Agricultural Nonpoint Source Planning" Iowa Department of Soil Conservation and Iowa Department of Environmental Quality, November, 1978

APPENDIX E.3

CONTROL EFFECTIVENESS OF AGRONOMIC AND MANAGEMENT BMP COMPONENTS

| EFFECTIVENESS FOR CONTROL OF: |                     |                         |  |                               |
|-------------------------------|---------------------|-------------------------|--|-------------------------------|
| BMP COMPONENT                 | EROSION             | RUNOFF                  | SEDIMENT DELIVERY (*) NUTRIENT AND CHEMICAL LOSSES |                               |
|                               |                     |                         | WITH SEDIMENT                                      | IN SOLUTION                   |
| Conservation Tillage          | Slight to Sub.      | Slight to Mod.          | Slight to Mod.                                     | Slight to Mod. Slight to Mod. |
| Contour Farming               | Slight to Mod.      | Slight to Mod.          | Slight   | Slight to Mod. Slight to Mod. |
| Cover Crop                    | Mod. to Substantial | Moderate                | Mod. to Sub.                                       | Mod. to Sub. Mod. to Sub      |
| Cropping Sequence             | Slight to Sub       | Slight to Sub           | Slight to Sub.                                     | Slight to Sub. Slight to Sub  |
| Grassed Filter Strip          | Slight to Mod.      | Slight                  | Slight to Sub.                                     | Slight to Sub. Slight         |
| Irrigation Water Management   | Slight to Mod.      | Slight to Moderate      | Slight to Mod.                                     | Slight to Mod. Slight to Mod. |
| Land Use change               | Mod. to Sub.        | Slight to Substantial   | Mod. to Sub.                                       | Mod. to Sub. Slight to Sub.   |
| Nutrient and Pesticide Mgt.   | None to Slight      | None to Slight          | None to Slight                                     | Mod. to Sub. Mod. to Sub.     |
| Pasture and Hay Mgt.          | Mod. to Sub.        | Moderate                | Slight to Mod.                                     | Moderate Moderate             |
| Permanent Vegetative cover    | Substantial         | Moderate                | Mod. to Sub.                                       | Mod. to Sub. Moderate         |
| Strip Cropping                | Mod. to Sub.        | Slight to Moderate      | Moderate   | Moderate Slight to Mod.       |
| Tree Planting                 | Mod. to Sub.        | Moderate to Substantial | Slight to Sub.                                     | Slight to Sub. Moderate       |

None = No reduction, Slight = less than 10% reduction, Moderate = 11-50% reduction, Substantial = 51 -100% reduction

(\*) = Indicates the effectiveness of the BMP component relative to total amounts of nutrients and chemical losses rather than concentrations of these materials.

From Table III-2 of the "Interim Output for Section 208 Agricultural Nonpoint Source Planning", Iowa Department of Soil Conservation and Iowa Department of Environmental Quality, November, 1978

APPENDIX E.4

**Comparative Pollutant Removal of Urban BMPs**

| BMP                     | Suspended Sediment | Total Phosphorus | Total Nitrogen | Oxygen Demand | Trace Metals | Bacteria | Overall Removal Capability |
|-------------------------|--------------------|------------------|----------------|---------------|--------------|----------|----------------------------|
| Extended Detention Pond | ●                  | ●                | ●              | ●             | ●            | ▲        | Moderate                   |
| Wet Pond                | ●                  | ●                | ●              | ●             | ●            | ▲        | Moderate                   |
| Infiltration Trench     | ●                  | ●                | ●              | ●             | ●            | ●        | Moderate                   |
| Infiltration Basin      | ●                  | ●                | ●              | ●             | ●            | ●        | Moderate                   |
| Oil/Grit Separator      | ○                  | ▲                | ▲              | ▲             | ▲            | ▲        | Low                        |
| Filter Strip            | ●                  | ●                | ●              | ●             | ●            | ▲        | Moderate                   |
| Vegetated Swale         | ●                  | ●                | ●              | ●             | ○            | ▲        | Low                        |

|   |                        |
|---|------------------------|
| ○ | None to Low            |
| ● | Low to Moderate        |
| ● | Moderate to High       |
| ▲ | Insufficient Knowledge |

Adapted from Schueler, 1987.

Table obtained from Protecting Water Quality in Urban Areas, (October 1989), Minnesota Pollution Control Agency

## APPENDIX F

### Resource Requirements - Program Implementation

Due to uncertainties regarding the future direction and funding of federal and state nonpoint pollution control programs, it is impossible to accurately determine the staffing and funding levels needed to implement the state's nonpoint source management program over the next five years. However, an estimate of staffing and funding needs can be developed if assumptions are first made regarding the future direction and funding of nonpoint control programs.

In developing its estimates of the staffing and funding needed to implement the state's nonpoint pollution control program during fiscal years 1992 through 1996, DNR made the following major assumptions:

- \* no major changes will take place in the overall scope or direction of either federal or state nonpoint pollution control programs during this period;
- \* the level of federal funding provided to support state nonpoint control programs (under Section 319[h] of the CWA) will continue to increase during this period - estimates assume a 10 to 20 percent annual increase in federal funding; and,
- \* during this period, budget constraints will prevent the state from substantially increasing either its funding of nonpoint pollution control programs or the staffing devoted to implementation of such programs.

Staffing: Currently, four (4) DNR staff have direct responsibility for implementing the state's nonpoint pollution control program, including three (3) individuals assigned to the Environmental Protection Division and one (1) person assigned to the Coordination and Information Bureau. A fifth person, an SCS employee assigned to DNR under an interagency agreement, also assists with implementation of the state's nonpoint control program.

In addition to the staff directly employed by DNR, staff of a number of other agencies have responsibilities for implementing specific nonpoint pollution control projects. Although in a few instances DNR is providing Section 319(h) funds to support these staff, in most cases funding support is being provided from other local, state, or federal sources.

In estimating future staffing needs, DNR will consider only that staffing directly assigned to DNR. Although other agencies are expected to have continuing needs for staffing to implement specific nonpoint control projects, estimation of these needs cannot be estimated with any degree of accuracy at this time.

The following table gives the estimated level of staffing the DNR must devote to implementation of the state nonpoint source management program during fiscal years 1992 through 1996. All staffing levels are expressed as full time equivalents (FTE's).

| <u>Fiscal Year</u> | <u>Staffing (FTE's)</u> |
|--------------------|-------------------------|
| 1992               | 5.0                     |
| 1993               | 6.5                     |
| 1994               | 7.5                     |
| 1995               | 8.5                     |
| 1996               | 9.5                     |

Currently, DNR is using a combination of Section 319(h) and 205(j)(5) grant funds to support staff involved in implementing the state's nonpoint pollution control programs, and expects to continue doing so in FY93. However, since DNR expects to use up its remaining 205(j)(5) grant funds in FY93, beginning in 1994 the nonpoint staff positions will need to be funded exclusively by Section 319(h) funds.

Financial: In 1990, when Section 319(h) funds first became available for implementation of state nonpoint source management programs, DNR was awarded about \$850,000 to support implementation of its state nonpoint control program. DNR's grant award increased to about \$1.18 million in 1991, and DNR anticipates receiving about \$1.39 million in Section 319(h) funds in 1992.

As noted earlier, DNR is currently using both 205(j)(5) and 319(h) funds to support its nonpoint pollution control staff. For FY92, the total staff support costs (including salaries, fringe benefits, travel, office expenses, and indirect costs) are expected to be about \$280,000. In future years, these costs will increase somewhat, due both to additional staffing being assigned to nonpoint pollution control programs and to continued inflation in the nation's economy. Also, since no 205(j)(5) funds will be available after FY93, beginning in FY94 all of these costs will have to be paid with Section 319(h) funds.

While some of Iowa's Section 319(h) funds are used to support DNR staff, the majority are devoted to supporting a variety of nonpoint pollution control projects. These projects include statewide public information and education and animal waste management programs, projects demonstrating innovative and alternative BMPs, watershed projects to protect surface and groundwater quality in priority state waters, and long term monitoring to document water quality improvements resulting from BMP implementation. Although a few of these projects are carried out directly by DNR staff, the majority are conducted by other local, state, or federal agencies. During the period FY92 through FY96, DNR anticipates the majority of the Section 319(h) grant funds Iowa receives will continue to be devoted to supporting such implementation projects.

Using the state's anticipated FY92 Section 319(h) grant award as a base and assuming that the available funding will increase at about 15% per year, the following table identifies the estimated level of Section 319(h) funding Iowa might expect to receive during the period FY92 through FY96.

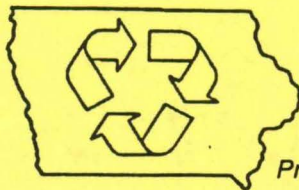
| <u>Fiscal Year</u> | <u>Section 319(h) Funds</u> |
|--------------------|-----------------------------|
| FY92               | \$1.39 million              |
| FY93               | \$1.60 million              |
| FY94               | \$1.84 million              |
| FY95               | \$2.12 million              |
| FY96               | \$2.43 million              |

Given the magnitude of Iowa's nonpoint pollution problems, the funding levels identified above are by no means adequate to address all of the state's nonpoint problems during the FY92-96 period. However, if used in a coordinated effort with funding available from other state and federal water quality 319(h) programs, this level of Section 319(h) funding will allow the state to continue making substantial progress in addressing its priority nonpoint problems. Specifically, these funding levels should allow the state to complete ongoing and to initiate new agricultural nonpoint control projects, as well as to initiate nonpoint control programs and projects addressing urban runoff and other non-agricultural nonpoint pollution sources.

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