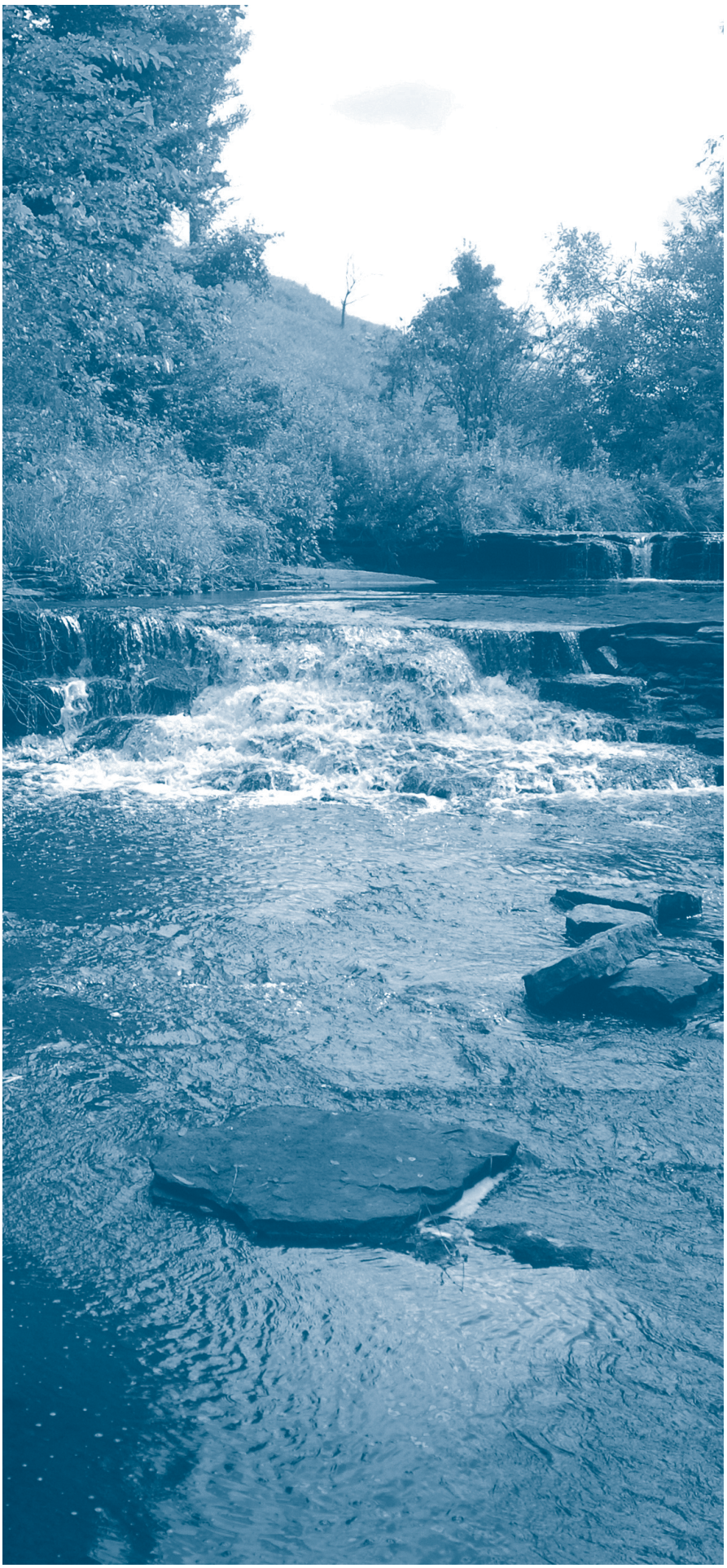

PLANNING FOR WATER QUALITY

JULY 2012

IOWA'S NONPOINT SOURCE MANAGEMENT PLAN

clean water starts with you.
IOWA DNR WATERSHED IMPROVEMENT

DNR

ABOUT

ACKNOWLEDGEMENTS

The 2012 Nonpoint Source Management Plan reflects a long, collaborative process between state departments, federal agencies, soil and water conservation districts, universities, and a collection of engaged stakeholder groups representing a spectrum of interests. For many, the time dedicated to this project was voluntary or in addition to normal job responsibilities.

We would like to thank the members of the visioning team for their dedication and diligence in crafting the goals and objectives as well as the many professionals who helped develop the action steps to achieve those objectives. Special thanks to the teamwork demonstrated by the leaders of the core partner group – without your support, this project would have withered on the vine. The result of the collaborative effort reflects the common ground carved out of the diverse views and opinions offered by the various stakeholder groups that made up the visioning team.

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PLOTTING A PATH TO CLEANER WATER

FROM THE DIRECTOR

Partnership has long been the cornerstone of conservation efforts in Iowa. The Nonpoint Source Management Plan, itself a result of a large collaborative endeavor, will give Iowa agencies and organizations the tools to strengthen their conservation efforts.

Over the course of 18 months, five core partner organizations and 55 stakeholder groups came together in an open process to assess how best to move forward in our work to improve Iowa's land and water. Building on the progress these groups and countless others have already made, the plan will increase the efficiency and effectiveness of current watershed improvement efforts.

Just as the plan focuses on collaboration, cooperation and open communication between groups, it also assists us in working with Iowans, both citizens and professionals devoted to improving their local lakes, streams and rivers. The action steps laid out in this plan will help these groups work with more complete information and use resources more efficiently. Only through collective action will we realize significant changes in water quality.

Along with my colleagues at the Iowa Department of Agriculture and Land Stewardship, USDA Natural Resources Conservation Service, Conservation Districts of Iowa and Iowa State University Extension, I am pleased to endorse this plan with the hope that it will improve Iowa's water quality through the partnership efforts of many stakeholder groups, organizations and citizens.

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with

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PURPOSE OF THE PLAN

INTRODUCTION

The following document serves two purposes. First, the Environmental Protection Agency (EPA) requires a state to develop an approved Nonpoint Source Management Plan (NPSMP or Plan) that encompasses the nine key elements, described in full in Appendix A, to be eligible for federal Clean Water Act Section 319 funding. Second, the Plan serves as a representation of Iowa's vision, goals, objectives and potential action steps to reduce nonpoint source pollution and improve water quality over the next five to ten years.

This plan is not intended to be, nor should it be, limited to the Department of Natural Resources or Iowa's Section 319 Program, but rather reflects the collective efforts and intents of the core partners and stakeholder groups that worked together to develop the goals identified herein and programmatic means of achieving those goals.

The main body of this document can be read in its entirety for full understanding of the goals, objectives, and strategies to address those issues. Readers that would like to focus on the heart of the Plan are encouraged to review the vision and major goals section. Those that wish to obtain a more comprehensive understanding of the plan can read the appendices. These appendices contain valuable information for understanding terms used throughout the narrative (Appendix B), an inventory of relevant core partner programs (Appendix C), a full breakdown of the collaborative process used (Appendix D), and the report "Water Quality Matters to Us All" (Appendix E).

WHO OWNS THIS PLAN?

This Plan does not function solely as the Section 319 Program's operating plan, but rather reflects statewide goals and values for all runoff pollution abatement related activities in the state. The issue of runoff pollution remains much too large for one department to successfully remediate, let alone one program.

Water quality professionals throughout the state, working in concert with one another, would not accomplish anything without the help and cooperation of stakeholder groups, Iowa landowners and citizens to affect real change on the landscape. This reality served as a focal point in developing this Plan and helped shape the path taken to develop its contents. The responsibility for developing this Plan lies with the DNR by virtue of its role as the responsible agency for the Section 319 Program.

However, realizing that the plan stands for the State of Iowa and the issues run much deeper than one program, the DNR used this opportunity to fully collaborate on its development with the core partners and interested stakeholders.

WHERE DO WE GO FROM HERE?

While this document aims to illuminate the world of runoff pollution abatement work in Iowa, questions may linger. To close the narrative of the Plan, we offer responses to common questions.

WILL WE BE ABLE TO ACCOMPLISH EVERYTHING LAID OUT IN THE PLAN?

The visioning team crafted 20 objectives and the core partners came up with action steps to accomplish those objectives. Some people may see an insurmountable mountain of work, but a collaborative effort of the five core partners and 55 identified stakeholder groups could accomplish a great deal. Plus, this plan cannot take into account the dynamic landscape of available conservation resources, market forces, attitude changes, and the myriad other factors that contribute to water quality improvement. To paraphrase Robert Browning, the Plan's reach should exceed its grasp.

HOW CAN WE TRACK THE PROGRESS OF THE PLAN?

Objective 1.1 provides an important link of accountability in the form of a central clearinghouse for reporting progress. This should serve as an opportunity to evaluate, in regular intervals, the progress or lack of progress of the action items. Additionally, the DNR expects to adhere to the EPA recommendation to update the Plan every five years. This will result in a more detailed review of the Plan in 2017.

IF WE ACCOMPLISH EVERYTHING IN THIS PLAN, WILL IT SOLVE ALL THE WATER QUALITY PROBLEMS IN IOWA?

No. Solving water quality issues in Iowa will not happen overnight or even in the next five years. Completion of the identified action steps will help augment the work performed by the core partners and stakeholder groups. In some cases, completing the action steps will help these groups work with more complete information, improve lines of communication, and use resources more efficiently. Most importantly, completion of these actions steps can lead to a better informed public, which will hopefully empower Iowans to make decisions that improve water quality. Only through collective action will we realize significant changes in water quality.

HOW CAN I LEARN MORE ABOUT RUNOFF POLLUTION, BEST MANAGEMENT PRACTICES AND OTHER WATER QUALITY ISSUES?

We realize that the information contained in this document may inspire additional research. We encourage you to contact a local water quality professional to learn more about these issues.

HOW DO I GET INVOLVED TO MAKE A DIFFERENCE?

If you would like to improve a local stream or lake, we urge you to contact either the DNR or IDALS-DSC to discuss a watershed project. If you would like to learn more about how to contribute to the growing network of IOWATER monitoring volunteers, contact the DNR. If you would like to discuss incorporating agricultural Best Management Practices on your farmland, contact your local NRCS office. If you would like to explore options for urban Best Management Practices, please contact IDALS-DSC's Urban Conservation Program.

WHERE DO WE GO FROM HERE?

Aldo Leopold, the father of modern conservation and an Iowa native, put it best when he wrote: "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."This quote elegantly frames the issue of runoff pollution and this plan lays the foundation for how we can work together better as a community, to strive toward living in harmony with the land.

NONPOINT SOURCE POLLUTION DEFINED

To understand the essence of nonpoint source pollution, one must start with an appreciation of water and how it interacts with the environment. One of the amazing characteristics of water involves its ability to dissolve other substances. In fact, this universal solvent can dissolve more substances than any other liquid. This property demonstrates itself daily by our morning coffee. To make this popular pick-me-up, we pour water into a coffee maker, which heats and drips the water through a filter filled with coffee grounds. As gravity pulls water through the filter, it dissolves some of the grounds to make coffee. Many people will mix in a sugar packet (or two) with their coffee and with a few stirs of the swizzle stick, the granules of sugar disappear, dissolved into the now sweetened coffee.

The watershed represents another important concept to consider – the land area that drains to a particular location, such as a stream, river, or lake. A watershed forms a natural boundary that helps us identify where we are and how our actions affect water quality in a particular waterbody. To think of this another way, a homeowner in Lake View in Sac County would live near Black Hawk Lake (Black Hawk Lake Watershed), a beautiful natural lake that in many ways defines the city of Lake View. However, water from Black Hawk Lake discharges to Indian Creek and eventually the North Raccoon River. The Raccoon flows to a confluence with the Des Moines River in downtown Des Moines (Raccoon River Watershed). The Des Moines River drains into the Mississippi River, which eventually makes its way down to the Gulf of Mexico near New Orleans, Louisiana (Mississippi River Watershed). To say that the homeowner in Lake View lives in the Black Hawk Lake Watershed, the Raccoon River Watershed, or the Mississippi River watershed are all correct statements.

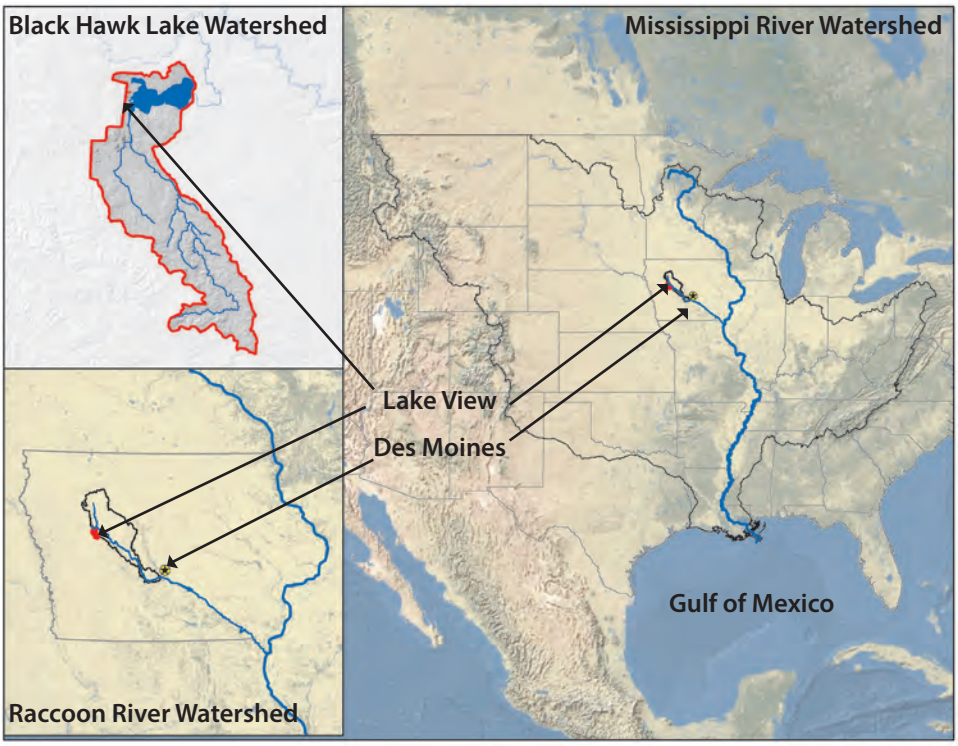


Figure 1: Lake View, Iowa in its progressively larger watersheds.

Finally, consider water's movement as it falls from the sky as rainfall or freed from snow by spring melting. If conditions on the ground allow, the water will soak into the soil, nourishing plants and other living organisms within the soil. If the water meets saturated ground or the land cannot accept water fast enough, water will run off the surface, following the slope of the land. It will obey the rules of gravity until collected by a stream or lake draining that watershed or by some kind of device built to influence water like a residential rain garden or a detention pond. Millions of drops of water play this game out during every rain storm, and true to its properties, the water will try to dissolve and carry with it whatever substance the land it falls onto or travels over offers.

Imagine a rainstorm; some of the water soaks into the ground, some of it fills up rain barrels, but most of it likely runs together and heads to the nearest stream or storm drain. "Runoff" refers to rainfall that travels over the surface of the land and represents the entire volume of water that discharges into the nearest waterbody. The pollutants that runoff dissolves and carries with it are known as nonpoint source pollution. For example, if a homeowner fertilizes their lawn before a rainstorm, fertilizer on the grass and/or ground surface will likely attach itself to rainwater, which will collect and flow together to lower elevations until it reaches a storm sewer or a waterbody. Imagine that same rainfall collecting fertilizer from other lawns,

golf courses and agricultural lands as it "runs off" and flows to the same waterbody. This mass sum of pollutants can add up to a lot of undesirable substances in the water. Too much of a pollutant or pollutants from runoff, like fertilizer, can create conditions which affect the ability of aquatic life to survive and thrive and can adversely affect our enjoyment and safe use of that waterbody. In our example above, the homeowner in Lake View impacts the water quality of Black Hawk Lake by what they do on their land. That homeowner's actions also contribute to water quality of the Raccoon River and even the Gulf of Mexico. The impact of individual homeowners on water quality may account for a relatively small change, but the collective action of everyone that lives, works, or recreates in the watershed is significant.

The contents of runoff depend on what substances are available for the water to pick up and carry with it on its route. The potential runoff pollutant list runs long, but commonly can include: fertilizers and pesticides from agricultural and residential areas; oil, grease, heavy metals, and chemicals found commonly in urbanized areas; sediment from improperly managed construction sites, agricultural and forested lands, and eroding streambanks; and bacteria and nutrients from livestock waste, pet waste, and faulty or improperly connected septic systems. The contents of runoff in many ways directly reflect land use and management choices in that watershed. For example:

Pollutant	Potential Associated Land Use(s)	Potential Impact
Nutrients – (fertilizers, organic matter)	Agricultural fields, livestock operations, gardens, lawns, and forests	Excess phosphorus in lakes can create algal blooms, which can kill aquatic life and prohibit human enjoyment; can create cyanobacteria blooms that produce a toxin; high nitrate levels in drinking water are unsafe for consumption
Oil, heavy metals, salts	Urban runoff from roads and parking lots	Toxic to aquatic life, high metal content can create drinking water problems
Toxic chemicals (pesticides, organic, inorganic compounds)	Agricultural fields, poorly managed and/or unpermitted construction sites, gardens, lawns, and landfills	Can be fatal to aquatic life, may contaminate groundwater wells
Sediment	Agricultural cropland, poorly managed and/or unpermitted construction sites, poorly managed forested areas, streambank and shoreline erosion	Can create muddy or "turbid" conditions that affect aquatic life, human recreation, and drinking water, can reduce the useful life of infrastructure such as ditches, ponds, lakes, dams, culverts, and bridges
Bacteria	Livestock waste, manure surface applied (not incorporated) to agricultural fields, pet waste, faulty or improperly connected septic systems	Poses a potential human health risk as some forms of bacteria can cause illness or indicate the presence of other disease-causing organisms

IOWA – ANATOMY OF A STATE

Three navigable rivers define Iowa's unique shape as the Missouri and the Big Sioux form the western border while the Mississippi shapes the east. Several large river basins define useful watershed segmentations in the interior of the state. Unlike in Minnesota and Wisconsin, glaciers left few natural lakes across the Iowa landscape. European settlers found Iowa a vast system of tallgrass prairie and wetlands, supporting buffalo herds and associated flora and fauna. Settlers able to cultivate the land with the moldboard plow found agricultural success in the fertile soil left behind by glacial action and the buildup of biomass from generations of prairie. Construction of subsurface tile drains increased the area suitable for growing crops and contributed to tremendous agricultural yield increases. Iowa has long enjoyed the benefits of some of the most productive soil in the country and possibly the world. Weather patterns since settlement, on average, support this agricultural way of life with ample rainfall during the growing season and hot, humid conditions in the summer for ideal plant growth.

The population of Iowa remained relatively constant over the past 30 years with a modest 2.6 percent increase from 2000 to 2010 (US Census Bureau). Much of the population movement in Iowa followed an internal shift from rural, agriculturally dominated areas and small towns to more urbanized areas. This movement results in large part from agricultural technology improvements, which reduced much of the human labor needs on the farm and led many rural farm residents to move to a city to find work.

Iowa cities with populations greater than 30,000 likely established themselves on the banks of one of the major Iowa rivers more than a century and a half ago based on the need for efficient movement of goods by watercraft. Just more than half of Iowa's approximately 3 million residents live in one of the five major metropolitan statistical areas (Des Moines – West Des

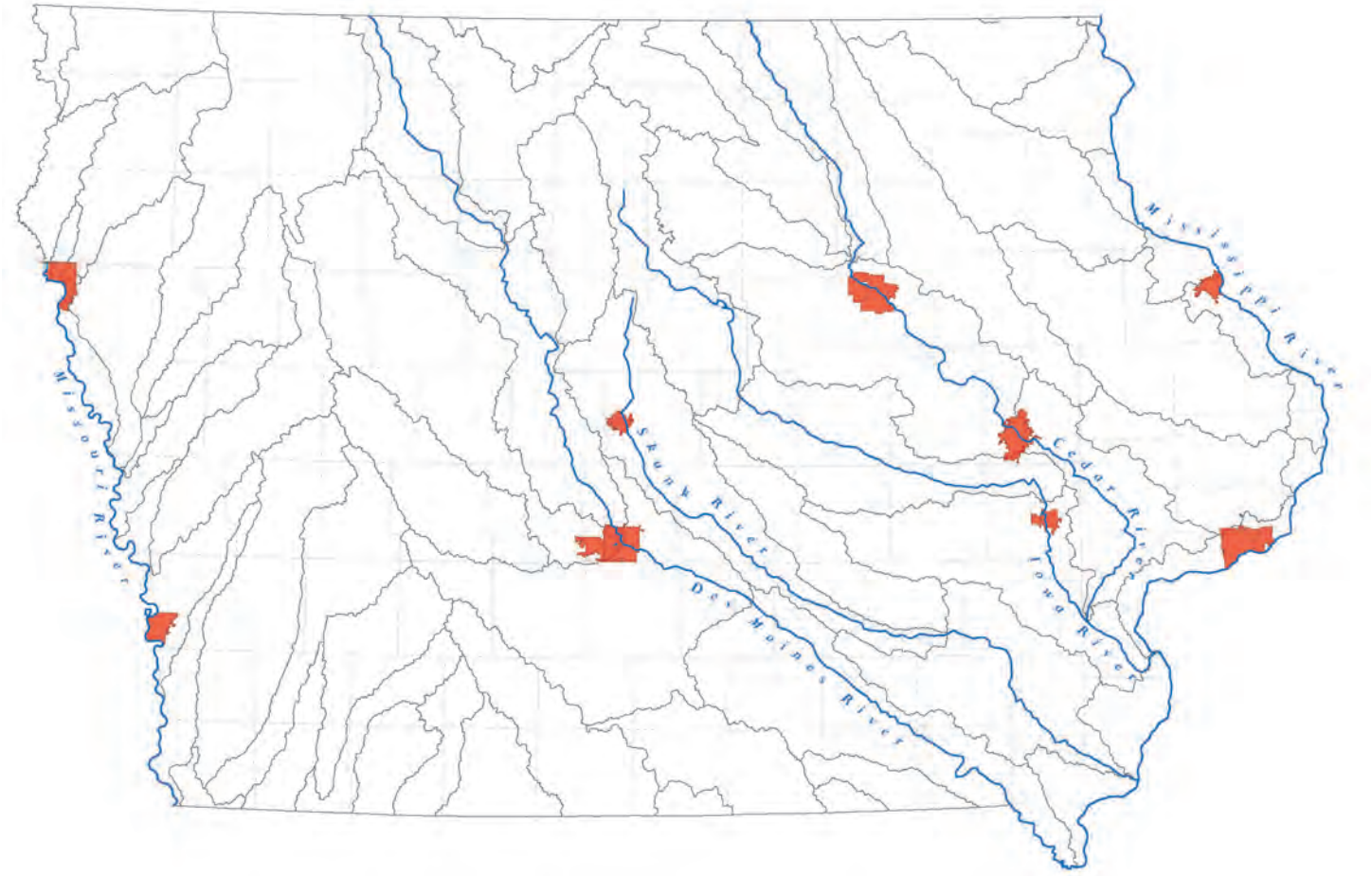


Figure 2: Map of Iowa highlighting urban areas and major rivers. Watershed (HUC 8 scale) boundaries outlined in gray.

Moines, Cedar Rapids, Iowa City, Ames, and Waterloo – Cedar Falls) or five major cities on the border rivers (Mississippi: Bettendorf, Davenport, Dubuque; Missouri: Council Bluffs, Sioux City).

The rest of the disperse population spreads itself throughout the state in unincorporated farming communities and villages, farmsteads and small cities. Iowa owns the most altered landscape in the United States with a significant portion of the land cultivated for crops and pastured land for livestock, about 90 percent, with the remaining comprised of cities, forested areas, residences, wetlands, waterbodies and prairie.

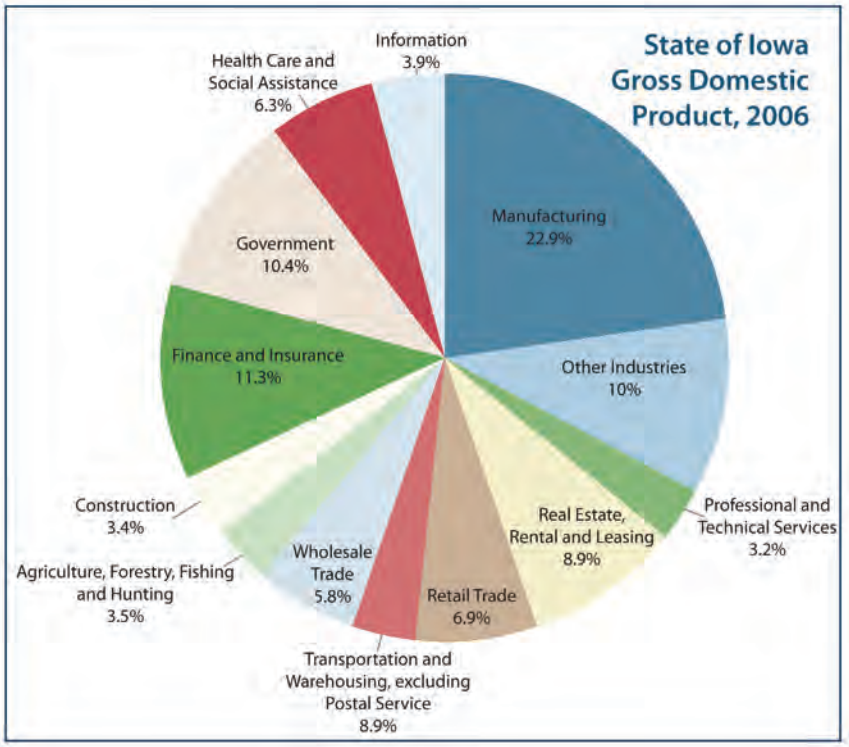


Figure 3: State of Iowa Gross Domestic Product, 2006 - $106.3 billion.

The state holds one of the highest rates of privately owned land in the country as state and federally owned land comprises a mere 1 percent, which ranks Iowa 49th in the country. This private ownership, coupled with a commitment to production agriculture, ranks Iowa second in overall agricultural productivity based on sales behind California, a remarkable feat when size of the state and length of growing season factor into the equation. In fact, Iowa leads the nation in production of corn, soybean, hog, and eggs, and ranks in the top 10 states for cattle and sheep production. To be sure, agriculture remains paramount to Iowa's economy, culture, and heritage.

Iowa enjoys a healthy economy with large finance, insurance, manufacturing and other industries. Agriculture accounts for a smaller portion of the state's gross products than these sectors, but contributes to many other aspects of the Iowa economy, acting as its backbone. The contribution from agriculture is proportional to the number of farmers working the land. According to the Iowa Data Center (2009 census), total farms in Iowa number 92,600. Iowans that claim farming as their principle occupation number 48,637, while 44,219 people list farming as a secondary occupation. These 92,856 farmers represent about 3.1 percent of the 3 million Iowa residents, and contribute a similar total product to the state's overall economy (Figure 3; source: 2007 Iowa Fact Book, Bureau of Economic Analysis).

While the Iowa economy on a macro level benefits from a diversified portfolio of business and industry, the fact remains that agricultural production uses the vast majority of land in Iowa. Therefore, the potential problems from runoff most directly link back, in aggregate, to agricultural lands. However, urbanized areas in Iowa also play a significant role in water quality and runoff issues in the state, especially those with close proximity to major rivers. Larger watersheds in Iowa likely contain both urban and rural areas and cooperation among all residents within its boundaries will most effectively address water quality issues.

ORIGINS AND HISTORY

SECTION 319 PROGRAM AND NONPOINT SOURCE MANAGEMENT PLAN

The 1972 amendments to the federal Water Pollution Control Act, more commonly known as the Clean Water Act (CWA), provided the statutory basis for the regulation of pollution from point sources. Point sources can be aptly described as any place where water flows out of a pipe into the environment, usually from a waste water treatment plant (WWTP) or an industrial facility. Before this act of Congress took effect, many streams, rivers, and lakes throughout the United States contained levels of pollutants from these point sources that created unlivable conditions for fish and other aquatic creatures, and rendered many waters unusable for safe recreational and human consumption purposes.

Figure 4: Iowa bluegill fishing.

The Clean Water Act delivered positive results and many of the problems caused by point source pollution found remedy through the National Pollution Discharge Elimination System (NPDES) permitting process and advances in technology. However, by 1987 it became clear that the footprint of human activity does not collect itself for treatment and discharge through the end of a pipe. The 1987 amendment to the CWA recognized runoff pollution as a significant contributor to water quality issues throughout the country and created the National Nonpoint Source Program, known commonly as the Section 319 Program, a reference to the specific section of the 1987 amendment.

After Congress finalized the amendment, then Iowa Governor Terry Branstad designated the Department of Natural Resources (DNR) as the lead agency for administering the 319 Program. This designation made logical sense as the DNR serves as the state's water resources agency and takes responsibility for the protection and preservation of surface water in Iowa. The DNR then developed the state's first nonpoint source management plan in 1989 to unlock federal funding for the 319 Program. The state updated its Plan in the year 2000 to incorporate new state-level programming and satisfy new EPA requirements (nine key elements) for the program. For a complete discussion of the EPA's nine key elements and relevant discussions found throughout the Plan, please reference Appendix A.

The 2000 Plan served a useful life for 11 years, but needed an update, creating an opportunity to engage in a collaborative development process with partners and stakeholders to produce a document that reflects statewide goals. This document represents the final product of this effort and serves as the updated (2012) Iowa Nonpoint Source Management Plan.

FROM STANDARDS TO IMPLEMENTATION

The DNR administers a set of programs that work together to interpret the state of water quality in Iowa. This set of programs gathers information about the condition of waters, applies that information against a set of water quality standards, determines sources and contributions of water quality problems, and works with local communities to implement practices to remedy the problems.

Figure 5: DNR water monitoring

The basis for our understanding of the condition of Iowa waters starts with water quality standards, maintained by the DNR. This set of physical, chemical, and biological thresholds and criteria were developed in order to protect the health of humans that interact with the rivers, lakes, and streams of Iowa, in addition to the aquatic organisms that make water their home. The standards vary based on how the waterbody is used. For example, a standard for nitrate levels applies only in waterbodies used as drinking water sources. This results from scientific evidence that links high levels of nitrates in drinking water to human health concerns, specifically blue-baby syndrome. For a full description of designated uses, please visit: http://www.iowadnr.gov/InsideDNR/RegulatoryWater/WaterQualityStandards/DesignatedUses.aspx

Water quality standards most relevant to nonpoint source pollution include nitrate, bacteria, pH, dissolved oxygen, ammonia, algae, and turbidity. Some pollutants measure against numeric criteria, which means the results of a water quality analysis should yield a number that lies within an acceptable range of values. Other pollutants measure against narrative criteria, such as "aesthetically objectionable conditions." The presence of algae blooms, which lack a numeric trigger but are easily observed with the naked eye, illustrates one example of narrative criteria. The nuances of waterbody usage, anti-degradation of high quality streams, and explanations behind the full suite of substances that hold a specific water quality standard can all improve a more full understanding of the water quality picture in Iowa, but lie beyond the scope of this document. The important message here is that a number of numeric and narrative criteria exist to determine if a waterbody meets expectations. (For a full listing of water quality standards, please reference the Iowa Administrative Code under the Environmental Protection Commission (567) in Chapter 61.) https://www.legis.iowa.gov/IowaLaw/AdminCode/adminLaw.aspx

The DNR regularly gathers monitoring data in Iowa's rivers, lakes, and streams. Other programs throughout the state contribute to the data set as well, including the State Hygienic Lab at the University of Iowa, the Limnology Laboratory at Iowa State University, some local government and non-governmental organizations (i.e., Des Moines Water Works, Ag Clean Water Alliance), and a volunteer network called IOWATER. The DNR's monitoring group maintains a network of "ambient" streams and lakes: a defined set of waterbodies monitored on a regular basis and tested for the same potential pollutants. This data set establishes baseline information and paints a picture of long-term water quality trends. Additionally, this data set allows the state to determine if a waterbody fails to meet the standards associated with its intended use.

The state fulfills its requirement to prepare a biennial (every other year) report that describes the condition of the State of Iowa's waterbodies according to credible monitoring data and the water quality standards discussed above. If a waterbody fails to meet expectations for a particular standard, the water body qualifies as "impaired" and is identified as such on the state's "303(d)" or impaired waters list. This list represents, in essence, a reflection of historical monitoring data compared with the state's standards. The list does not provide a comprehensive view of all potential impairments as the monitoring network resources cannot support sampling of all waterbodies in the state or for all potential pollutants. The list does not provide priorities to decision makers, lacks information on specific sources of the pollutant, and in some cases, is not able to determine the pollutant causing the impairment (as is the case for "biological" impairments). In other words, the list takes an objective view of the available information, identifying waterbodies that fail in some way to meet expectations, and contains valuable information used as a tool to guide decision making. For more information on the impaired waters list, please visit: http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement/WatershedResearchData/ImpairedWaters.aspx

IMPAIRED WATERS

The most recent impaired waters list dates from 2010. This list shows a total of 588 impairments throughout the state – 470 on streams and rivers and 118 on lakes and flood control reservoirs. The most common stream impairments include biological (246) and bacterial (212). While the bacteria standard reflects a numeric criterion, evaluation of biological impairments are based on a more nuanced approach that measures the biological conditions of a stream against expected performance. Lake impairments most commonly include algae (57), turbidity (45), pH (41), and bacteria (35). Many times, algae, turbidity and pH impairments link back to a common pollutant, typically phosphorus.

Figure 6: 2010 Impaired Waters map of Iowa.

Once a waterbody lands on the impaired waters list, the DNR must develop a document that quantifies the problem and sets a level of abatement (i.e., reduction) that, if achieved, would remedy the water quality problem. These documents, known as Total Maximum Daily Loads (TMDL), satisfy the requirements of the Clean Water Act for determining the quantity of the problem and the needed reductions for meeting water quality standards.

The TMDL contains valuable information to help local water quality improvement efforts by estimating the relative importance of pollutant sources and providing alternatives to achieve reductions. The Iowa DNR places extra emphasis in the development of an "implementation plan" in each TMDL it develops. The implementation plan does not prescribe specific improvements, but rather provides potential solutions for local citizens to decide what works in their watershed. Due to the emphasis on implementation in TMDL documents, the DNR calls these documents "water quality improvement plans" because they contain the "math and the path" to successful water quality improvement.

In the past, the TMDL program has prioritized development of water quality improvement plans to fit strategic efforts. Currently, priority TMDLs focus on watersheds with stakeholder interest and the potential likelihood of implementation in the watershed. This will likely remain a priority as the TMDL, in many ways, serves as the best starting point for initial research into a water quality problem. In the future, the TMDL program will also likely shift to a river basin approach to maximize efficiency of work efforts and monitoring dollars, in addition to tackling impairments that have persisted since 2002 and 2004. The TMDL program posts all completed documents and the anticipated five year development schedule on its website: http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement/WatershedResearchData/WaterImprovementPlans.aspx

Once the DNR prepares a TMDL and it gains EPA approval, improvement in water quality usually depends on local stakeholders making alterations to the landscape or in the way the land is managed. These kinds of changes are commonly referred to as "Best Management Practices" or BMPs, and encompass any conservation practice that improves water quality. These practices usually provide many benefits, such as wildlife habitat, retention of topsoil, and localized flood mitigation. Each watershed poses its own individual challenges as certain types of BMPs may create the biggest benefit to water quality in an area, but may not appeal to local landowners. Developing a comprehensive plan for the watershed can identify the desired and acceptable BMPs and establish a timeline and cost estimates to address the water quality issues. A comprehensive plan, known as a watershed management plan, in many cases serves as the key to unlocking financial assistance from federal and state funding programs, such as the Section 319 Program.

The DNR's Section 319 Program requires the development of a comprehensive watershed management plan that meets EPA's nine elements (not to be confused with EPA's nine key elements of an effective nonpoint source management pro-

gram). These requirements help shape a plan that describes the magnitude of the problem, the sources contributing to the problem, and a strategy to rectify the situation. Many of the required elements of a watershed management plan share common ground with the water quality improvement plans prepared by the DNR. The difference between the two lies in the more comprehensive and locally-developed nature of the watershed management plan, which also includes timelines and cost estimates. The best plans are updated regularly and learn from successes and failures alike. The Section 319 program aims to help groups successfully develop these watershed management plans by awarding planning money under its planning grant program. Figure 7 below shows where the EPA approved or pending section 319 watershed management plans are in Iowa.

The Section 319 program invests dollars to implement projects in watersheds where an identified water quality problem and approved watershed management plan designed to achieve measurable water quality improvements exists. Moving the needle on water quality impairments may prove difficult and expensive, but can be achieved through persistence and targeted resource allocation and careful selection and placement of effective BMPs. The Section 319 program usually limits its focus to smaller watersheds (less than 30,000 acres) where water quality improvements manifest in a reasonable timeframe. Figure 8 depicts the watersheds across the state that the Section 319 program invested resources from 2000-2011. Over those 12 years, Section 319 investments total approximately $34.2 million while leveraging local and other resource investments estimated at $70.5 million. Over that same timeframe, practices installed on the land have reduced sediment loading by an estimated 200,000 tons per year and almost 300,000 pounds per year of phosphorus reduction.

Many programs and funding sources throughout the state help implement projects that improve water quality related to runoff pollution. Usually, these funding sources require the watershed to complete a plan similar in nature to the EPA nine element plans. While these other programs may operate different metrics to measure success, all programs aim to reduce runoff pollutants and improve water quality.

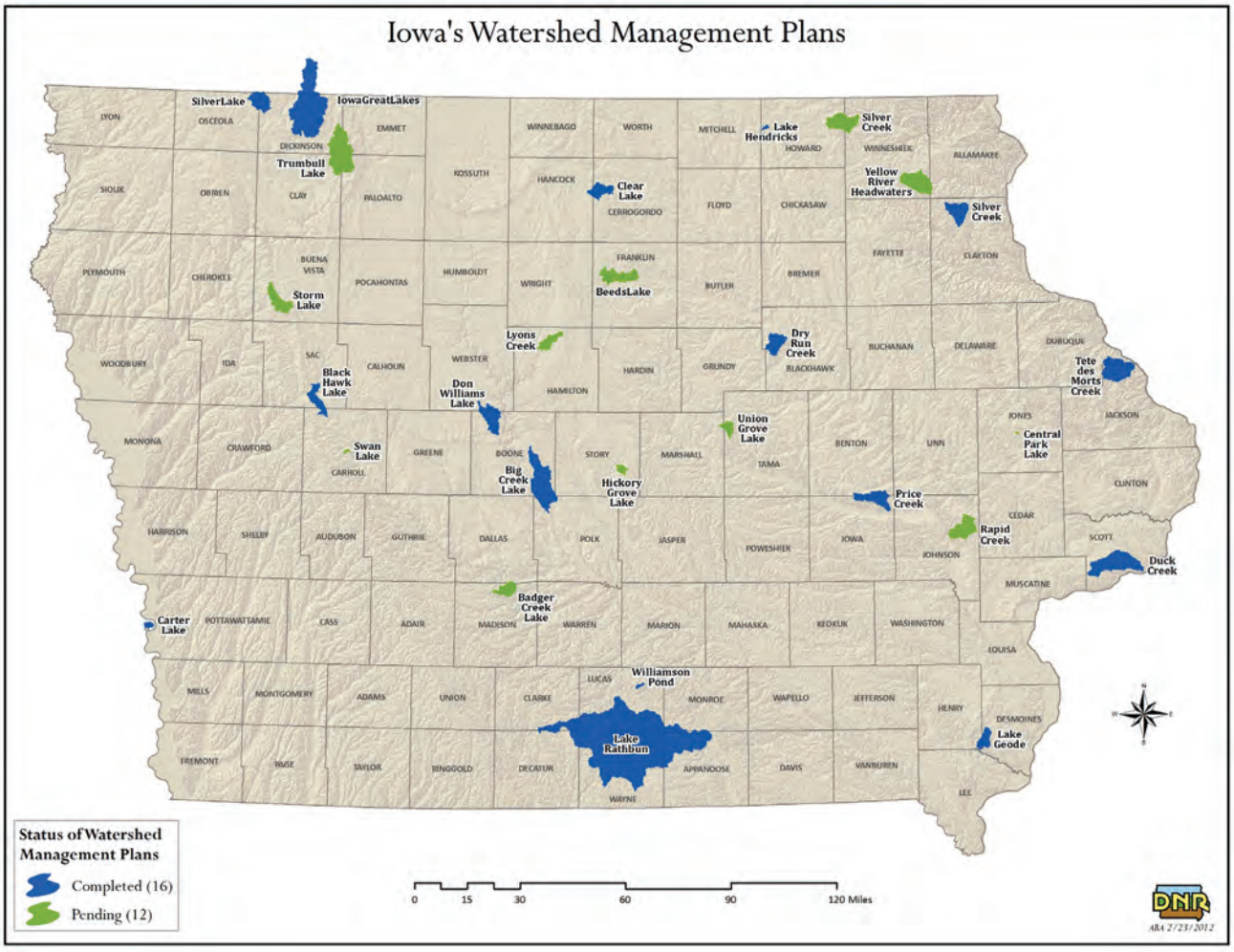
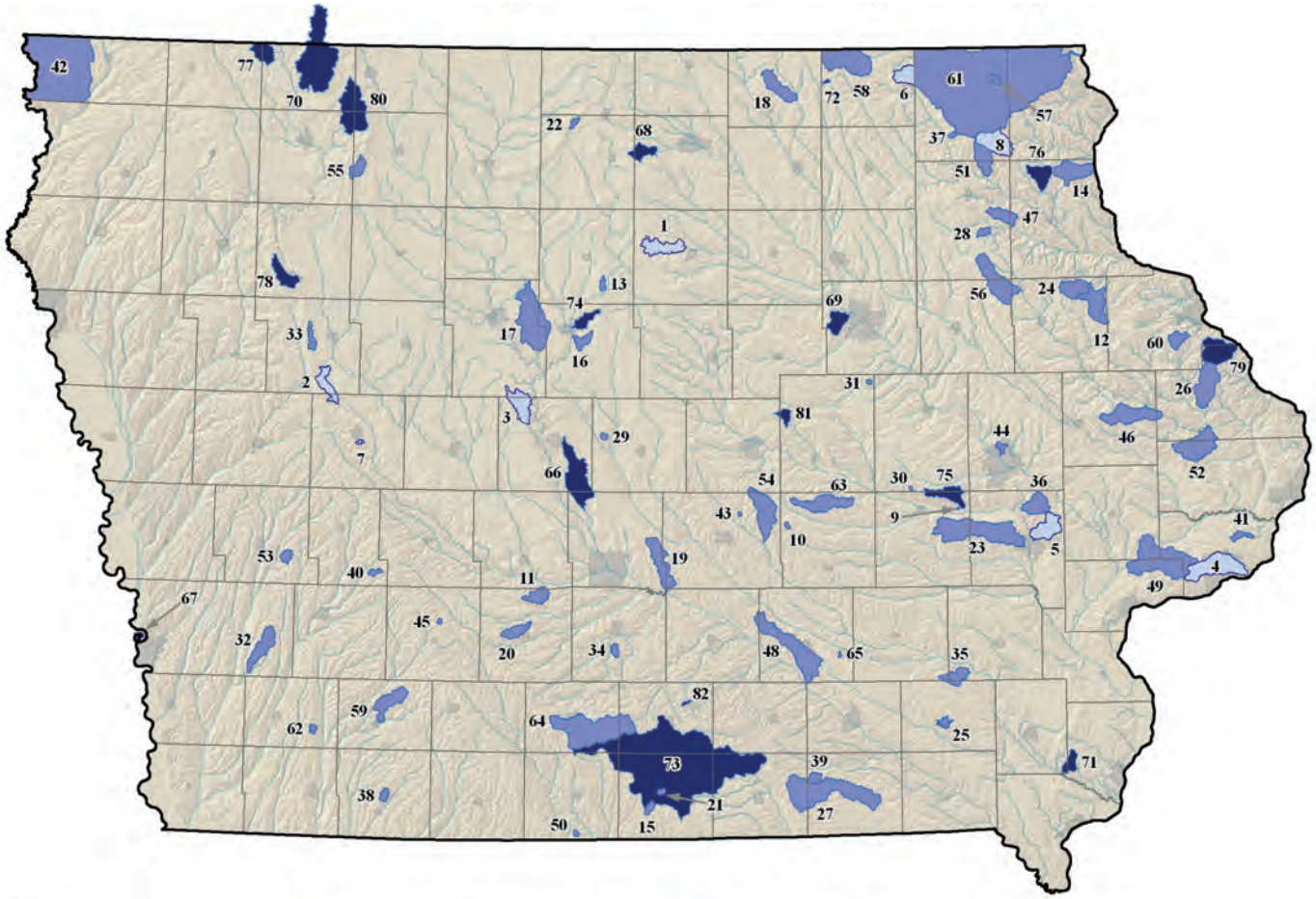


Figure 7: Map of watersheds with EPA-approved or pending Section 319 watershed management plans in Iowa

319-Funded Watershed Management Plans (WMPs) and Projects, 2000-2011



WMPs

1 Beeds Lake
2 Black Hawk Lake
3 Don Williams Lake
4 Duck Creek
5 Rapid Creek
6 Silver Creek (Howard)
7 Swan Lake
8 Yellow River Headwaters

Projects

9 Amana Lily Pond
10 Arbor Lake
11 Badger Creek Lake
12 Bear Creek
13 Big Wall Lake
14 Bloody Run
15 Bob White Lake
16 Briggs Woods Lake
17 Brushy Creek Lake
18 Burr Oak/Turtle Creeks
19 Camp Creek
20 Cedar Lake
21 Corydon Reservoir
22 Crystal Lake
23 Deer/Clear Creeks
24 Elk Creek
25 Fairfield Stormwater Demo
26 Farmers Creek
27 Fox River
28 Grannis Creek
29 Hallett's Quarry
30 Hannen Lake
31 Hickory Hills Park
32 Jordan Creek
33 Kiowa Marsh
34 Lake Ahquabi
35 Lake Darling
36 Lake Macbride
37 Lake Meyer
38 Lake of Three Fires
39 Lake Wapello
40 Littlefield Lake
41 Lost Grove Lake
42 Lyon County Clean Water Demo
43 Mariposa Lake
44 McLoud Run
45 Meadow Lake
46 Mineral Creek
47 Mink Creek
48 Muchakinock Creek
49 Mud Creek
50 Nine Eagles Lake
51 Nutting Creek
52 Prairie Creek
53 Prairie Rose Lake
54 Rock Creek Lake
55 Silver Lake (Palo Alto)
56 South Fork Maquoketa River
57 South Pine Stream
58 Staff/Beaver Creeks
59 Three Lakes (Adams)
60 Upper Catfish Creek
61 Upper Iowa River (FLEVAL)
62 Viking Lake
63 Walnut Creek
64 Whitebreast Creek
65 White Oak Lake

Projects with WMPs

66 Big Creek Lake
67 Carter Lake
68 Clear Lake
69 Dry Run Creek
70 Iowa Great Lakes
71 Lake Geode
72 Lake Hendricks
73 Lake Rathbun
74 Lyons Creek
75 Price Creek
76 Silver Creek (Clayton)
77 Silver Lake (Dickinson)
78 Storm Lake
79 Tete des Morts Creek
80 Trumbull Lake
81 Union Grove Lake
82 Williamson Pond

Figure 8: Watershed projects supported by Section 319 funds from 2000-2011

NONPOINT SOURCE MANAGEMENT PLAN DEVELOPMENT

CORE PARTNER IDENTIFICATION

The process of updating Iowa's Nonpoint Source Management Plan began when the DNR identified the four other entities that have historically worked in the field of runoff abatement. For purposes of the planning process, this group banded under the name "core partners," a term coined to represent the major entities that house programs and professionals dedicated to addressing runoff pollution issues in Iowa. The core partner group includes, in addition to DNR, the Iowa Department of Agriculture and Land Stewardship – Division of Soil Conservation (IDALS-DSC or DSC), the USDA Natural Resources Conservation Service (NRCS), Iowa State University's Extension and Leopold Center (ISU), and Conservation Districts of Iowa (CDI).

All five of the core partners operate a diverse array of programming that deals with runoff pollution. The first collaborative effort performed by the core partners centered on the development of an inventory of all relevant programming. The core partners collaborated by identifying and describing all programming efforts and funding sources for runoff pollution related issues. This information was organized into flow charts for each entity with a corresponding narrative describing the program. For a full discussion of core partner programming, please reference Appendix C. During development of the inventory of programs, the DNR suggested using a third party facilitator to help develop the vision and goals of the plan. With support of the core partners, the DNR retained the services of the University of Northern Iowa's Institute for Decision Making (IDM) to facilitate the visioning process. This process allowed the DNR to participate as a member of the visioning team and allowed the process to use the facilitation expertise of an unbiased and objective third party.

Concurrently, Iowa State University conducted four "listening sessions" to engage Iowa citizens and explore their knowledge and perceptions regarding runoff pollution issues. Three of the sessions focused on rural, agricultural areas since a relatively small number of landowners make most of the land management decisions in Iowa. A fourth session targeted a group of urban residents to gauge their knowledge on the same issues. These sessions, combined with similar research conducted in the past, were compiled into the report "Water Quality Matters to Us All." For more information on this effort, please reference Appendix E. Many of the observations, comments, and recommendations from the report helped inform and inspire objectives developed throughout the planning process.

STAKEHOLDER IDENTIFICATION

To help inform the visioning process led by IDM, the core partner group identified 55 stakeholder organizations currently interested in runoff pollution and water quality issues, or potential partners to collaborate with in the near future. The large body of organizations illustrated the far-reaching impacts of runoff pollution and how many groups actively work toward water quality improvement in Iowa.

VISIONING TEAM FORMATION

To facilitate an effective series of visioning sessions, the Institute for Decision Making limited the number of participants to 30. Stakeholder organizations filled 20 of the 30 total seats at the table, while the remaining 10 seats were reserved for the core partners. The core partners determined that their seats would represent a cross section of their collective organizations based on the relative diversity of the member groups. The resulting seats divided as follows: DNR – 3, ISU – 3, IDALS-DSC – 2, NRCS – 1, CDI – 1. To determine allocation of the 20 seats, the stakeholder entities split into eight categories (to encourage balance) and were asked to self-select two to three representatives, depending on the category, to participate in the visioning session. The representatives, in some cases, communicated back to their larger category group any pertinent information throughout the process. The following reflects the stakeholder categories and identified stakeholder groups invited. The bold font indicates the represented groups in the visioning sessions.

Category	Stakeholder Groups (Participants represented in bold)
Group A: Agriculture / Producer Organizations	**Iowa Soybean Association, Iowa Pork Producers Association, Iowa Farm Bureau**, Iowa Cattlemen's Association, Iowa Corn Growers Association, Iowa State Dairy Association, Iowa Poultry Association
Group B: NGO Conservation Organizations	**The Nature Conservancy, Environmental Working Group, Soil and Water Conservation Society**, Trees Forever, Iowa Natural Heritage Foundation, Iowa Prairie Network
Group C: Environmental Policy Organizations	**Raccoon River Watershed Association, Iowa Environmental Council, Sierra Club**, Iowa Rivers Revival
Group D: Local Government Organizations	**Iowa Association of Water Agencies, Iowa Association of Municipal Utilities, Iowa Environmental Health Association**, Iowa Association of County Conservation Boards, Iowa Association of Regional Planning Agencies (COGs), Des Moines Water Works, Iowa League of Cities, Iowa Rural Water Association
Group E: Industry / Agribusiness Organizations	**Agribusiness Association of Iowa, Land Improvement Contractors Association**, Farmland Industry, Iowa Certified Crop Advisors, Iowa Fertilizer and Chemical Association, Iowa Forage and Grassland Council, Iowa Limestone Association, Iowa Renewable Fuels Association
Group F: Recreation / Sporting Organizations	**Pheasants Forever, Ducks Unlimited**, National Wild Turkey Federation, Trout Unlimited, Izaak Walton League
Group G: Other Government Organizations	**Iowa Groundwater Association, Iowa Homeland Security**, Iowa League of RC&Ds, Farm Service Agency, National Agriculture Statistics Service, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Iowa Environmental Health Association, USDA Forest Service, USDA Rural Development
Group H: Alternative Agriculture / Food Organizations	**Practical Farmers of Iowa, Iowa Farmers Union**, Buy Fresh - Buy Local of Iowa, Iowa Food Cooperative, Iowa Network for Community Agriculture

Appendix C contains a sampling of stakeholder programs. However, many stakeholder organizations that participated in the visioning session did not respond to the core partners' request for relevant stakeholder programs and activities. The information on the stakeholders identified could serve useful to any group searching for organizations interested in collaborating on a project. In general, stakeholder groups stand ready to engage in action and develop new partnerships to affect real change in water quality.

THE VISIONING PROCESS

The collaborative process charged the visioning team with the task of crafting a vision for runoff pollution abatement in Iowa, create goals associated with that vision, and develop objectives to meet each goal. This ambitious task was originally slated for completion in only three sessions, but needed a fourth session to finish the process. The visioning team worked together through many of the issues facing water quality professionals today and made decisions based on group consensus.

The visioning team started with a blank piece of paper and developed an ambitious but achievable result. This process used information from the "Water Quality Matters to Us All" report (Appendix E) and the core partner inventories (Appendix C) in addition to the visioning team's own individual and collective expertise and ideas. The resulting visions, goals, and objectives were solidified into the framework of the plan and turned back to the core partner team for development of action steps, timelines, and success measures. The core partners then divided and shared the workload, developing the needed information for the 20 objectives in the plan. Task teams were organized around the 20 objectives with each team specifically convened for the purposes of that particular objective. Each team was comprised of individuals with subject matter expertise to develop the action steps, success indicators, and anticipated completion dates. The visioning team met once more to confirm the work of the core partners. For a full discussion of the visioning process, please reference Appendix D. The following section reveals the results of this immense effort, which effectively lays out the path forward for Iowa's Plan over the next five to ten years.

VISION

"THE CORNERSTONE OF OUR VISION FOR THE FUTURE IS FISHABLE, SWIMMABLE, DRINKABLE, CLEAN WATER FOR ALL IOWANS."

The vision is supported by the following statement: "The key elements required to reduce and remediate nonpoint source pollution in Iowa's waterways is the ability of stakeholder groups and agencies at the federal, state, and local levels to collaborate, cooperate, and coordinate efforts. From a future perspective, citizens of the state of Iowa are engaged and educated about the impact of NPS pollution and successful remediation practices that improve and protect Iowa's water resources. Programs, projects, and practices in existence are analyzed using universally accepted scientific-based environmental and functional measures of success on a watershed-by-watershed basis to ensure resources are used efficiently and effectively."

The group also developed "Guiding Principles," considered overriding themes emphasized throughout the visioning process: Collaboration, Cooperation, Coordination; EPA's Nine Key Elements; Commitment to the Greater Good.

ACHIEVING THE VISION

The ideas developed during the visioning process sorted into four major goal areas. The Visioning Team collectively identified and came to a consensus on 20 objectives within these four goals. After the Visioning Team completed their task, the Core Partners met and divided the responsibility for developing the action steps, timelines, and success indicators to achieve each objective.

Organization	Responsibility	
	Lead	Secondary
Iowa Department of Natural Resources	DNR	DNR
Iowa State University	ISU	ISU
USDA Natural Resources Conservation Service	NRCS	NRCS
Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation	DSC	DSC
Conservation Districts of Iowa	CDI	CDI
Stakeholder organizations		S

To accomplish this part of the process, at least one Core Partner group needed to take a "Lead Responsibility" role. Lead Responsibility meant that the organization would develop the action steps, timelines and success indicators in the context of the Plan. It may or may not reflect a commitment for implementation or limit other groups not originally identified in the development of the objective for implementation.

In many cases, more than one organization volunteered for this leadership role, which meant a shared leadership between those organizations. Additionally, the Core Partners could sign on in a "Secondary Responsibility" role, which signified a willingness to support the development and/or implementation of the objective.

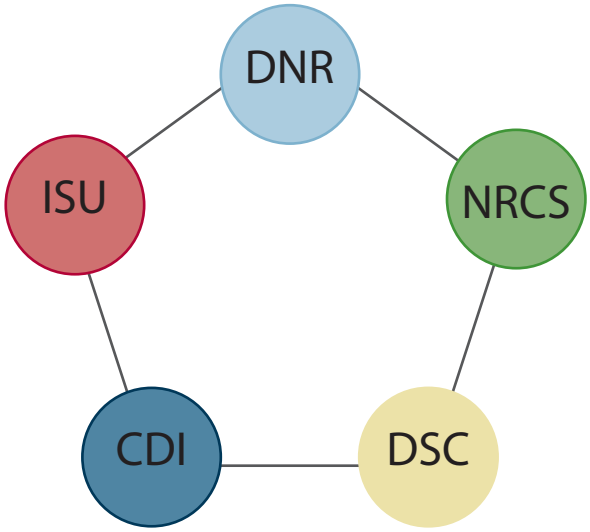
On the following pages, a visual aid signifies what groups were involved in the development of the details. Large circles indicate Lead Responsibility while the small circles indicate Secondary Responsibility and are color coded by organization.

WATERSHED COLLABORATION

GOAL 1: BUILD PARTNERSHIPS TO ENHANCE A COLLABORATIVE WATERSHED APPROACH TO NONPOINT SOURCE WATER POLLUTION.

The first goal area identified five objectives centered on watershed collaboration. These ideas reflect recognition that many programs develop useful information already, and emphasize improving how local watershed groups utilize a more complete information package.

OBJECTIVE 1.1: STRENGTHEN AND EXPAND AGENCY COLLABORATION.



Improving agency collaboration persisted as a recurring theme throughout the visioning process. The Visioning Team realized that the diverse programming within the Core Partner groups collaborate and communicate regularly, albeit on a small, program level scale.

The realization that the entire water quality community would benefit from a centralized clearing house for information and data sharing inspired the idea to report priorities and progress on work performed relevant to this plan to a common body. The Water Resources Coordinating Council (WRCC) and Watershed Planning Advisory Council (WPAC) provide the perfect structure for a centralized clearing house for this type of reporting. Since the councils closely associate with the Secretary of Agriculture, the Department of Agriculture and Land Stewardship's Division of Soil Conservation acts as the lead entity in this objective.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Communicate progress of implementation to the Water Resources Coordinating Council (WRCC) & Watershed Planning Advisory Council (WPAC).	Ongoing	Ability to report on priorities and progress.*
2. Implement activities and initiatives based on the priorities.	Ongoing	Demonstration of a strengthened and expanded collaboration.

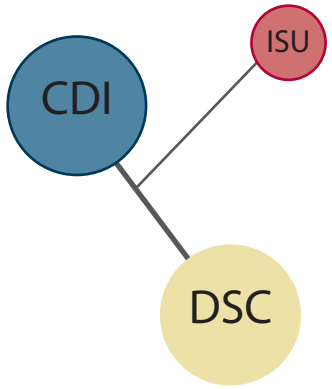
*EPA will measure the number of organizations reporting to the WRCC and/or WPAC as a measure of success for this action step. It is also noted that this action step would result in enhanced collaboration and the ability to share statewide water quality activities and improvements with others.

GOAL 1: BUILD PARTNERSHIPS TO ENHANCE A COLLABORATIVE WATERSHED APPROACH TO NONPOINT SOURCE WATER POLLUTION.

OBJECTIVE 1.2:
ORGANIZE SOIL AND WATER CONSERVATION DISTRICTS TO COOPERATE WITHIN WATERSHED BOUNDARIES.

Watersheds rarely fit into the confines of geopolitical boundaries like county lines. Soil and Water Conservation Districts (SWCDs) divide along these geopolitical boundaries but focus much of their work in concentrated watershed projects.

To navigate this terrain, successful watershed projects encouraged participation and co-operation between all SWCDs within the watershed's boundaries. The action steps below reflect a formalization of successful efforts in other areas of the state.



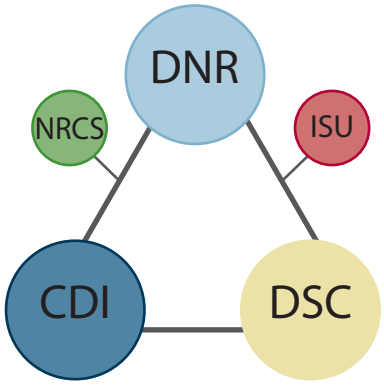
Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. 1. Incorporate action steps 2-9 into SWCD 5 year plan and make public via IDALS web-site.	Ongoing	Longevity goal, commitment.
2. Joint commissioner and stakeholder meeting visionary session.	2013	Foster understanding and knowledge of watershed issues, encourage partnership activity, identify leadership.
3. Develop a watershed map on display in every SWCD office, use in public and in publications, events.	2015	Facilitate citizenry gaining knowledge of watersheds and that everyone lives in a watershed.
4. Communicate available science and needed information to make informed decisions.	Ongoing	Local districts have sound information to make decisions.
5. Host legislative/elected official tours, field days.	Ongoing	Informed elected officials, Legislative packet handout.
6. Involve media by inviting local media to watershed events.	Ongoing	Positive press, Informed citizenry, Progress reports.
7. Plan and provide for volunteer recognition activities and networking events.	Ongoing	Plan to get information and updates, progress reports.
8. Develop local watershed websites.	Ongoing	Websites developed.

GOAL 1: BUILD PARTNERSHIPS TO ENHANCE A COLLABORATIVE WATERSHED APPROACH TO NONPOINT SOURCE WATER POLLUTION.

OBJECTIVE 1.3: DEVELOP LOCAL COMPREHENSIVE VISIONS AND ACTION PLANS FOR NONPOINT SOURCE WATER QUALITY WITHIN THE HUC-12 WATERSHED.

All water quality improvement happens at the local level and this objective repeats the mantra that all change must happen on a small scale. The "HUC-12" unit of measure refers to a manageable watershed size, usually 10,000 to 40,000 acres.

Many times these watersheds connect to a favorite stream or a lake and is usually the most easily identifiable and unifying water body for neighbors to work together to improve. The following reflects a framework for how to effectively work in future watershed projects at this small scale by applying key elements of other successful watershed projects.



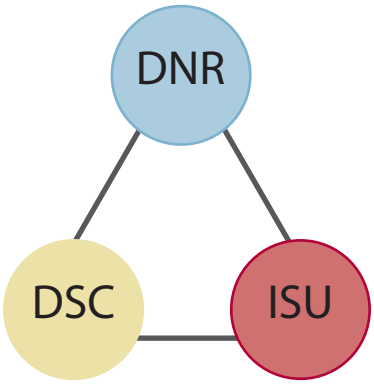
Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. State and federal agencies should provide watershed education, guidance, tech support to local stakeholders.	2013	Determine priority watersheds. I.e.: designated uses, highly used, trigger events, multiple use, improved waters.
2. Empower Commissioners with training, water quality knowledge (SWCDs).	2014	Commissioner involvement and leadership, locally led project.
3. Identify local support, individuals and groups (in addition to SWCDs).	2015	Locals lead, spearhead project, Identified local leaders.
4. Continue to fund development and planning grant processes.	Ongoing	Watershed assessment and watershed plans.
5. Form watershed steering committee.	2014	At least one commissioner on each watershed steering committee.
6. Dedicate funding.	Ongoing	Sufficient funds to accomplish environmental goal, long term funding—hard dollars.
7. Dedicate staffing for each watershed project.	Ongoing	Establish and maintain at a minimum 0.5 FTEs per watershed.

GOAL 1: BUILD PARTNERSHIPS TO ENHANCE A COLLABORATIVE WATERSHED APPROACH TO NONPOINT SOURCE WATER POLLUTION.

OBJECTIVE 1.4:
IMPLEMENT SMART PLANNING PRINCIPLES, AS PROVIDED BY CODE OF IOWA AT WATERSHED LEVEL.

Smart planning principles received a great deal of attention in Iowa since the passage of related legislation in 2009. Smart planning principles describe a holistic systems approach to city planning, including water quality.

The steps below reflect the opportunity to capitalize on the new Smart planning principles in the Code of Iowa to implement the appropriate best management practices for water quality improvement in existing and expanding urban areas.



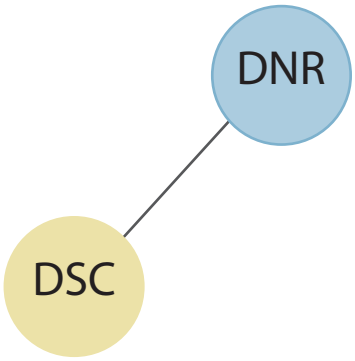
Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Develop and deliver a pilot educational program in one or more of the six major river basins or three river regions that informs communities about how NPS pollution can be reduced by utilizing Smart Planning principles and comprehensive planning elements in planning, zoning and resource management decision-making.	2014	Greater rate of adoption of sustainable storm water management practices in communities.
2. Provide financial incentives to encourage multi-jurisdictional Smart Planning emphasizing NPS reduction.	Ongoing	City and county comprehensive plans incorporate smart planning principles that address the impacts of land use decisions on water quality at the watershed scale (HUC 12 minimum).
3. Take steps to promote the implementation of Smart Planning Principles: a. Incentivize storm water management systems (site- and community-scale) that not only mitigate potential flooding, but also mitigate NPS pollution b. Expand the outreach efforts of Iowa Stormwater Education Program to reach non-MS4 communities and other watershed organizations.	Ongoing 2023 2015	Measurable reduction in NPS pollution in communities/ watersheds where pilot programs are initiated.
4. Encourage rural-urban collaboratives to address agricultural and natural resource preservation, with an emphasis on NPS pollution reduction.	Ongoing	Deliver in one river basin or river region per year.

GOAL 1: BUILD PARTNERSHIPS TO ENHANCE A COLLABORATIVE WATERSHED APPROACH TO NONPOINT SOURCE WATER POLLUTION.

OBJECTIVE 1.5: INCREASE COORDINATION BETWEEN PUBLIC AND PRIVATE ENTITIES TO BETTER LEVERAGE EXISTING FUNDING.

A watershed management plan, regardless of its technical merits, will fail without funding for implementation. Organization and leveraging of available funds from both public and private sources can help stretch scarce resources to implement plans faster, reaching water quality goals more efficiently and in a shorter time step.

The following steps reveal what the core partners can do to help local watershed groups identify and work closely with funding agents interested in successful water quality improvement.

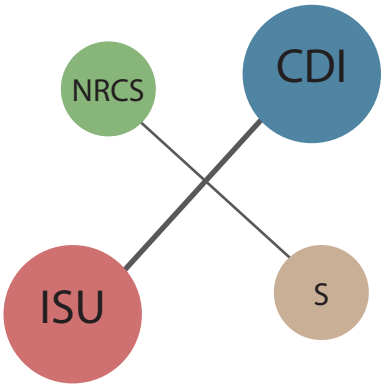


Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1 .Identify Points of Contact at statewide level for public and private entities to develop a mechanism for delivery.	2013	Communicated and coordinated use of resources to address Water Quality concerns.
2. Regional Basin Coordinators identify partners and develop a plan to initiate communication plan.	2013/ ongoing	Targeted prioritization; More effective and efficient use of resources.
3. Project Coordinators assist RBC to identify local community partners.	2013/ ongoing	Watershed Management Plan developed, Identified local community partners.
4. RBC and PC refine message to applicability of local watershed.	Ongoing	Watershed assessment and watershed plans.
5. Establish a mechanism to facilitate communication with public and private entities.	2015 / ongoing	Informed people.
6. Plans are prepared, reviewed and presented. Include a section to address identifying all potential funding sources, including but not limited to public and private.	2015 / ongoing	Plans are accepted. Plans are developed identifying multiple public and private potential funding sources. Applicants increase knowledge of local community by identifying and approaching potential funders.

OUTREACH

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

The objectives cited throughout Goal 2 expand upon the major emphases of the core partner groups' focus – educating the public by delivering understandable, consistent messaging and providing useful technical assistance to ensure proper execution of construction projects. These objectives herein describe the efforts the core partners can work together to achieve through a more formalized and coordinated effort.



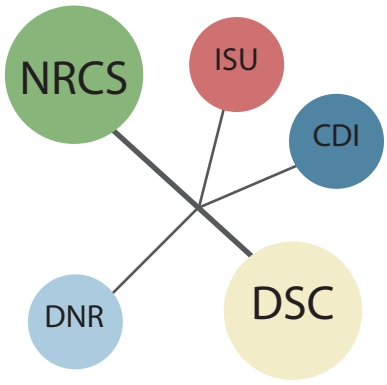
OBJECTIVE 2.1: BUILD LOCAL AND MUTUAL ACCOUNTABILITY THROUGH COMMUNITY-BASED WATERSHED AND OTHER GROUPS TO SET EXPECTATIONS FOR CONSERVATION BEHAVIOR.

One of the most compelling means of achieving behavioral change remains a locally-led effort, where the nuances and idiosyncrasies of the watershed form the basis of the message. Only through leadership at the local level will a critical mass of decision makers change their behavior to improve land use choices and water quality. The following represents a series of steps proven successful in thriving watershed projects throughout the state.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Set watershed goals at the district level for soil conservation and water quality improvement including measures to track goals, timelines, and priorities.	2014	District-level strategic plans for soil and water quality improvement.
2. Plan and incorporate community-based watershed leadership training into watershed coordinator in-service meetings and soil commissioner professional development.	2014	Each watershed coordinator and one soil and water conservation district commissioner from each district will be trained using the community-based watershed improvement process.
3. Connect districts with community-based watershed leaders through district meeting involvement.	2014	Increased local participation and leadership in watershed projects and conservation efforts.

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

OBJECTIVE 2.2: IMPLEMENT A "CONSERVATION CENTRAL" SYSTEM TO CONSISTENTLY DELIVER LOCAL COLLABORATIVE PUBLIC AND PRIVATE TECHNICAL AND FINANCIAL HELP ACROSS IOWA.



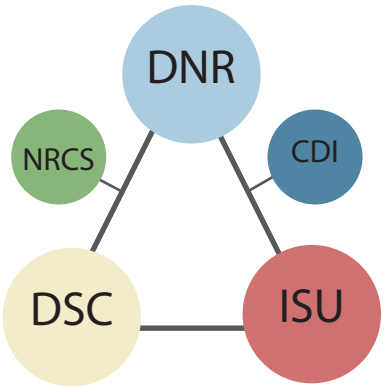
With a number of entities involved in water quality improvement efforts, it may prove overwhelming for new or existing groups to gather complete information. A Conservation Central system would consolidate information currently found in multiple locations to provide user-friendly, one-stop shopping.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Identify one group to take ownership of website and one individual to serve as primary point of contact for the website.	2013	Leadership established and primary host and funding established.
2. Identify partnering agency points of contact to support the overall site development and provide key information to be housed on the website.	2013	Partner support established.
3. Secure website; suggested site name – www.iowaconservationcentral.org	2013	Central website established.
4. Develop and populate website information and links.	2014	The following is populated on the website; Mission and vision of watershed efforts, Planning, technical, and financial assistance information, Resource maps, inventories and monitoring reports, Links to partner information, Links from partner sites back, Template and archived watershed plans. Partners and public are aware and utilizing the website.
5. Market site availability to conservation partners and public.	2015	Site is maintained with current information to assist watershed planning efforts statewide.
6. Maintain and update site via automatic updates through RSS feed and contact with partnering agency POCs.	Ongoing	Website is maintained, improved or replaced to match the need.
7. Evaluate and assess the future viability of site based on use and cost efficiency.	2016	Changes are made to site based on usability and cost.

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

OBJECTIVE 2.3: DEVELOP A CONSISTENT, UNDERSTANDABLE MESSAGE ABOUT CONSERVATION SET FOR DELIVERY BY MULTIPLE GROUPS.

Conventional marketing research indicates that only through repeated exposure to a consistent message will someone take action. This objective realizes the diversity and complexity of past efforts and aims to create a collaborative message to effectively reach a wide audience.

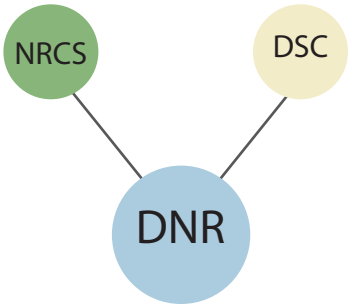


Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Utilize the Iowa Learning Farms' tagline "Building A Culture of Conservation." Develop a list of ten principles or actions that would be associated with this campaign and based on soil and water conservation BMPs. A core group with representation from IDALS, IDNR, NRCS, CDI and ISU would decide these steps. The ten actions will include at least two urban conservation ones.	2013	Raise the environmental literacy of all Iowans with a statewide education campaign that includes a youth component.
2. Get environmental groups, agencies, municipalities and agricultural interests to endorse the above statement and action steps.	Ongoing	Agency, city and agricultural interest, agrees to endorse and adopt "Building a Culture of Conservation" with meaningful steps to it, there will be a consistent message throughout the state. Success indicators are citizens seeing themselves and their behaviors as a part of the solution and acting accordingly. Increased conservation in our rural and urban areas.
3. Build an infrastructure of support for the Executive Director of the Conservation Districts of Iowa to help build a consistency of conservation message among the SWCD commissioners in the 100 SWCD in Iowa. NRCS, through DCs, will utilize their monthly meetings with SWCD commissioners to raise their environmental literacy. IDALS will take leadership on raising environmental literacy of the SWCD secretaries.	Ongoing	SWCD commissioners are better-engaged and informed decision makers in local watersheds. Indicator of success would be higher turnout at monthly, regional and annual meetings. Increase in SWCD visibility in the local watersheds. Increased conservation on land.
4. Iowa State University, through Iowa Learning Farms and Extension and Outreach, will continue to supply all groups, especially SWCD Commissioners, educational and outreach materials based on research and data on conservation BMPs.	Ongoing	Strengthened local ability to respond to water quality challenges if the university specialists would create materials that were engaging and understandable to local officials, watershed groups, educators (K-12) and citizens.

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

OBJECTIVE 2.4: DEVELOP A VISIONING PROCESS FOR HUC-8 WATERSHEDS IN IOWA.

One of the major obstacles in improving water quality throughout the state lies in determining where to invest scarce resources. Visioning on a larger but manageable watershed basis may help to organize watershed improvement. The DNR supported such an approach in the Raccoon River, two HUC-8 watersheds, with the Raccoon River Master Plan. The following reflects the need to build on that experience to develop an approach for other watersheds in Iowa to formulate a similar plan.

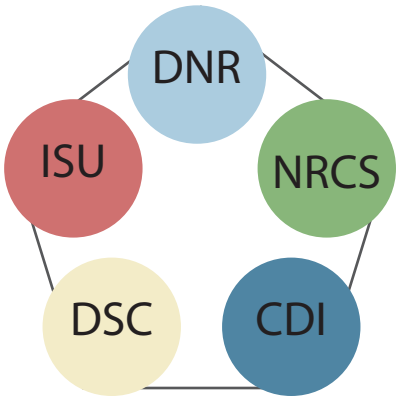


Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Determine participants and hold first meeting.	2013	Workgroup established; first meeting held.
2. Determine how vision will be used, Determine who will use the vision (audience).	2013	Goal of visioning process established.
3. Research / Identify the following: existing models for Visioning; engaging the public; identifying major players at local, state, federal level who are involved in watershed planning; existing / relevant data sources.	2013	Top 5 models for Visioning are identified; Checklist of organizations involved in watershed planning is created; Checklist of data sources (example - NRCS Rapid Watershed Assessment) is created.
4. Develop Visioning process using information gathered in Action Step #3; Organize key issues / chapters; Write "Guide for Communities."	2014	Visioning process developed; Draft guidebook created.
5. Conduct 3 pilots (east, central, west Iowa); evaluate effectiveness of the visioning process and guidebook; revisions as needed.	2015	Pilot Visioning is conducted; Evaluation completed; Final version of guidebook is rolled out.
6. Develop prioritized list of HUC-8s for implementation; Conduct HUC-8 Visioning in Iowa.	2016	Prioritized list of HUC-8s is developed; Three to five HUC-8s undergo Visioning each year.
7. Identify HUC-12s with active groups prior to kicking off Visioning in each HUC-8; Coordinate Visioning in partnership with HUC-8s.	2017	HUC-12s are identified and actively engaged in HUC-8 Visioning.

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

OBJECTIVE 2.5:
DEVELOP AND IMPLEMENT A STATEWIDE CAMPAIGN TO INFORM PEOPLE ABOUT WATER QUALITY ISSUES, MOTIVATE INVOLVEMENT, AND CHANGE BEHAVIOR.

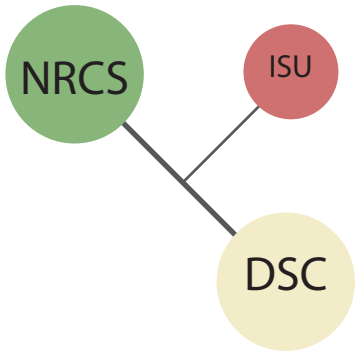
This objective cuts to the heart of the issue by developing a collaborative information campaign to help motivate Iowans to create positive change in the environment.



Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Conduct a survey to establish a baseline of public understanding and willingness to participate prior to the campaign.	2014	Baseline of public understanding and willingness to participate in improving water quality.
2. Tools and training plan developed for agency professionals to provide effective outreach programming to public. Audience survey developed.	2014	Comprehensive toolbox created for staff of agencies to use that will allow for effective and consistent messaging on water quality issues and promotion of commonly used BMPs. Audience survey used to measure effectiveness of presentations.
3. Mass media campaign developed utilizing free media, social media and display materials for outreach opportunities.	2014	Media monitored for use materials relating to campaign. "Friends" and public response to social media elements measured.
4. Development of webpage with key messaging on water quality, nonpoint source water pollution fundamentals and promotion of the commonly used BMPs.	2014	Webpage hits counted. Survey work can also be measured. Webpage hits will also measure the success of other components such as media campaign to determine how successful efforts have been to drive traffic to this site.
5. Utilize existing and initiate youth-related curriculum for schools and other youth programs (i.e. Scouts, 4-H, FFA, etc.). focusing on water quality issues reinforcing the commonly used identified BMPs).	2014	Survey of teachers and implementers of programming to determine the effectiveness of programming.
6. Short survey conducted to measure recognition of various components from the campaign.	2015	Survey will measure public recognition of various campaign components.
7. Final survey replicating the initial survey to measure success of the campaign.	2016	Survey will provide data that can be compared to initial survey, providing quantifiable measurements of how attitudes and willingness to adapt behavior to improve water quality has changed.

GOAL 2: IMPROVE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION TO FACILITATE NPS ASSESSMENT, PLANNING AND IMPLEMENTATION.

OBJECTIVE 2.6: DEVELOP AND IMPLEMENT CONSERVATION PLANS TO ADEQUATELY PRESERVE SOIL PRODUCTIVITY AND TO PROTECT WATER QUALITY FOR TARGETED PRIORITY AREAS.



One need identified by the visioning team centered on utilizing current information and models more effectively. The following outlines a plan to use existing information and expertise for further implementation of stewardship.

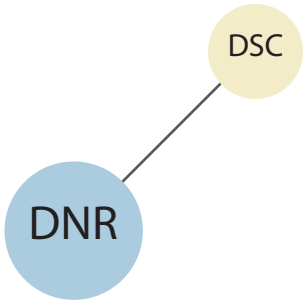
Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Make NRCS conservation planning modules in Ag Learn available to the public.	2013	Easier access to conservation planning training to the public.
2. Meet with the targeted groups able to provide conservation planning assistance (e.g. "helpers") to targeted audience. State-level completed by State Office staff; Local level completed by local staff.	2014	Demonstration to these groups that conservation planning could be a value-added service they could provide to their customers and use as a selling point to increase market share—increase profit.
3. Meet with the Iowa Agribusiness Association Board of Directors and sell them on the idea that having their staff at the field operations level (e.g. individual cooperatives, etc.) being trained and preparing conservation plans for their landowner customers will sustain their business—sustainable farms, environmental awareness, community goodwill.	2014	Managers at all levels of the organization will support the effort to dedicate the resources needed to get staff adequately trained, allow time to complete this activity.
4. Make use of economic models to demonstrate how conservation pays, and therefore, conservation planning is a necessary first step to implement conservation practices in an efficient and effective manner.	2014	Tools used by field staff, certified crop advisors and retail agronomists in small group settings or one-on-one assistance. This tool would be specifically helpful to land investment owners.
5. Review and consider ways to facilitate, incentivize participants who use state cost-share and other incentive-type programs to prepare a comprehensive conservation plan.	Ongoing	Conservation planning can help identify priorities within the planning unit.
6. Expand training opportunities for helpers.	Ongoing	Helpers and the public increase their skill and knowledge of conservation planning and through a variety of affordable training opportunities using different formats and accessible throughout Iowa.

PERFORMANCE MEASURES

GOAL 3: SCIENCE-BASED PERFORMANCE MEASURES

A major component of the work of water quality professionals remains the need for science based performance measures, which lay the foundation for understanding water quality problems and how to effectively remediate them.

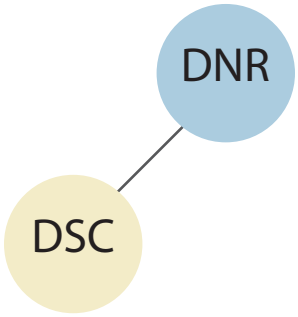
OBJECTIVE 3.1: ENCOURAGE GREATER PUBLIC PARTICIPATION IN THE MONITORING AND EVALUATION OF WATER QUALITY BEST MANAGEMENT PRACTICES.



The Iowa DNR coordinates a successful voluntary monitoring program called IOWATER. This program engages the public at large to take ownership of their local stream, capitalizing on "crowd sourcing" as a means to compile additional water quality information for little cost. The following represent ideas that could expand and increase the effectiveness of the network.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Complete migration of STORET data to EQuIS to facilitate increased accessibility and usability of DNR data.	2014	Increased availability of data/User preference surveys indicate increased user satisfaction and ease of use.
2. Develop standardized protocols for data sharing (agencies, volunteers, NGOs, private entities).	2013	Increased availability of non-DNR data/increased use of non-DNR data in watershed planning and evaluation efforts.
3. Develop on-line customized reports and/ or graphical output of data using easily understood language for HUC-12 or smaller watersheds.	2013	Reduced effort to download and synthesize data for user/increased user satisfaction and reduced labor needed to produce reports or graphs.
4. Develop an IOWATER training module that trains volunteers/citizens/others on how to develop water quality monitoring plans and quality assurance project plans.	2014	Increased capability to develop water monitoring plans and QAPPs/increased number of watershed plans derived locally.
5. Develop IOWATER or other training module on the use of hand-held monitoring equipment including quality assurance procedures for use of the equipment (calibration, etc.)	2014	Increased capability of use in basic monitoring equipment/improved data quality from hand-held meters.
6. Develop training on the interpretation and analysis of monitoring data for citizens/ volunteers/others.	2014	Improved data evaluation and assessment/increase in the number of volunteers/citizens/others with the capability of effectively analyzing monitoring data.

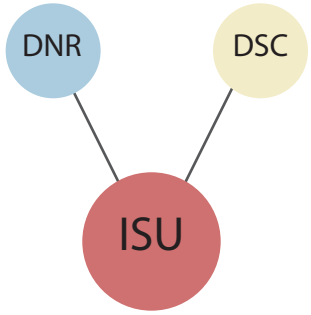
OBJECTIVE 3.2: DEVELOP LOCAL NATURAL RESOURCE GOALS WITH TARGETED SOLUTIONS TO MEET WATERSHED NEEDS.



Working at a local level remains the surest way to achieve success. With a body of past failures and successes, the following encompasses a concerted effort to formalize a process for local watershed work.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Generate basic state-wide watershed data at the HUC 12 scale.	2014	Compile all information into a database which can be provided directly to watershed groups and/or made available through a web-based system.
2. Utilize existing tools for the purpose of providing HUC 12 watershed scale information which is easily understood and readily available to local agencies and groups.	2014/up-date	Baseline HUC-12 data available for local groups and individuals to assist in the prioritization process.
3. Provide local groups with necessary assessment tools to assist in the information gathering process.	Ongoing	All groups utilizing the available tools for assessment purposes.
4. Work with all interested local groups to develop a matrix of local resource concerns which can be utilized in the process of identifying priority watersheds.	2016	In 5 years, at least 50 – 60% of the groups using this format for prioritizing watersheds.
5. Follow-up with any local partners that may not have participated in the prioritization process to allow for their input.	2017	Receive responses from at least 50% of the groups contacted.
6. Identify desired end results and utilize this information to set watershed goals and determine practices needed to achieve desired results.	2017	At least 50% of the Watershed Groups establishing agreed upon watershed goals and appropriate practices and then prioritizing local available funding toward achieving the goals.
7. Utilize the local Soil and Water Conservation District to lead the process of recruiting members and organizing the Watershed Group.	2017	Establishment of a local Watershed Groups across the State that represents all concerned groups and individuals in each watershed.

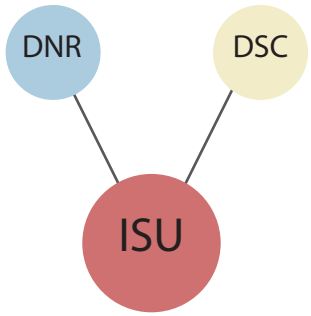
OBJECTIVE 3.3:
UTILIZE LONG-TERM RESEARCH PROJECTS, INCLUDING MONITORING, FUNDING, AND ALTERNATIVE MANAGEMENT PRACTICES TO CONFIRM POST-PROJECT RESULTS OF DEMONSTRATION PROJECTS.



Many funding cycles limit research projects in time and scope. This limitation can potentially hurt the long run implications of changes in land use and choice of Best Management Practices. By utilizing long term research projects to confirm post-project results, we can better understand their longevity.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Inventory long-term studies in Iowa.	Ongoing	Long-term projects will be funded, supported, continued, and reported (1-5 action steps).
2. Contact project leaders and identify needs (Funding, support, etc.).		
3. Seek funds, support as needed.		
4. Request periodic reports.		
5. Publish results.		

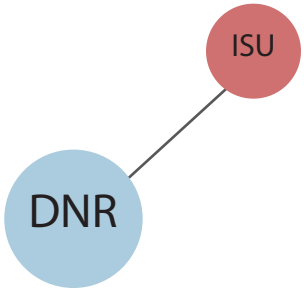
OBJECTIVE 3.4:
PLACE GREATER FOCUS ON UP-SCALING SMALL-PLOT RESEARCH TO WATERSHED SCALE.



Many successful small-plot projects never reach testing on a larger, watershed wide scale. By supporting the testing of successful small-plot research on a larger watershed scale, we can determine whether or not the practice can produce substantive positive changes in water quality.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Use plot research to calibrate and/or parameterize watershed level models that address management impacts on water quality.	2016	Published papers in peer reviewed journals and proceedings of Iowa based conferences.
2. Engage producers to increase adoption of practices showing promise for improving water quality.	2017	Presentation of outcomes to stakeholders and development of extension materials for promoting favored practices.

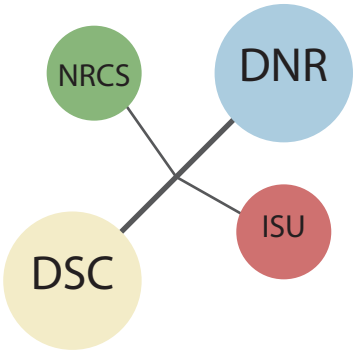
OBJECTIVE 3.5: ESTABLISH UNIFORM PRACTICES AND PROTOCOLS FOR MONITORING THAT CAN BE APPLIED TO WATERSHED NEEDS.



The world of monitoring practices, protocols, and standards can act as a barrier for the public and water quality professionals alike. The following attempts to make aspects of the monitoring network in Iowa more uniform and useful for watershed projects.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Compile current practices and protocols for monitoring in Iowa and identify limitations or barriers to their use.	2014	Decision making chart for monitoring that includes modules specific to pollutants and helps identify the appropriate monitoring to meet watershed objectives. More watershed groups are able to adopt and implement the decision making tool.
2. Identify emerging technologies that can be used.	2014	Emerging technologies identified.
3. Develop precipitation and flow monitoring protocols for implementation in the watershed.	2014	Precipitation and flow monitoring protocols are developed.
4. Develop protocols for gathering, managing, and documenting landowner inputs for a watershed. Establish protocols to ensure privacy for the information collected. Identify current methods in Iowa for tracking inputs to a watershed and limitations or barriers to those methods. Identify methods that other states use for tracking watershed inputs and evaluate their applicability for watersheds in Iowa.	2015	Guidance for gathering input information for watersheds. More of this information is being gathered for watersheds.
5. Establish post project monitoring schemes to evaluate long-term success of improved water quality in a watershed.	2016	Develop recommended post-project monitoring guidance. Post-project monitoring is conducted at a majority of the watersheds.
6. Survey cooperators/producers pre- and post-watershed project to determine if they internalize water quality into their decision making process. Survey to determine if their awareness and attitudes are changing and if behaviors are being adopted in the watershed.	Ongoing	Survey documents changes in awareness, attitude, and behavior changes relative to water quality. An increase in the number of people who internalize water quality in their decision making process.

OBJECTIVE 3.6: ADOPT SYSTEM-BASED IMPLEMENTATION AND MONITORING STRATEGIES VERSUS PRACTICE-BASED APPROACHES.



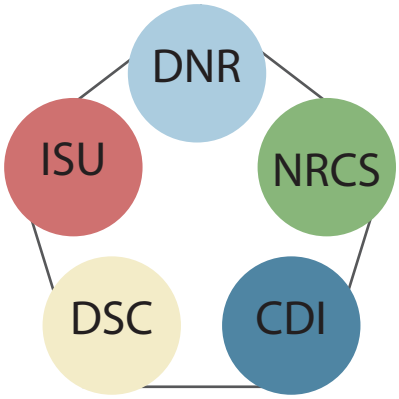
This objective effectively brings together the desire for a more efficient use of resources and the need to understand the implications of best management practices on an entire watershed scale. Collaboration on the needs of different organizations involved in watershed work can realize an even bigger increase in usefulness and efficiency of monitoring results.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Encourage conservation agencies to prioritize watersheds and resource concerns, similar to an MRBI approach.	2014	Identified priority watersheds and resource concerns.
2. Develop and implement ranking criteria to prioritize resources to projects which target practice placement within a system-based strategy for water quality improvement. Projects which adopt the "avoid, treat, and trap" approach will be given higher priority.	2014	Ranking criteria is developed and used to score watershed improvement grants.
3. Increase number of trained consultants to work with producers to implement conservation systems. Staff should develop relationships with producers and follow-up to evaluate actual outcomes and adapt accordingly.	Ongoing	Additional field staff that provide technical assistance to producers to improve water quality conditions.
4. Work with Iowa State, NRCS, SWCD, IDALS, private agronomists, and neighboring states to implement a consistent, comprehensive, and organized set of management recommendations to cover a broad set of agricultural systems, including but not limited to nutrients.	2015	Utilize a consistent, comprehensive, and organized set of management recommendations to cover a broad set of agricultural systems.
5. Develop and implement monitoring strategies at various scales within watershed project areas. For example, field level, tributary and main stream or lake. Monitoring should include flow monitoring to determine pollutant load transport. Monitoring should also be set in such a way to capture event and base flow conditions.	Ongoing	Multi-scale monitoring plans that capture sufficient information to evaluate water quality conditions and trends.

FUNDING

GOAL 4: FUNDING

Supporting public natural resources, such as the waters of the state, requires monetary and human resources, both public and private, to achieve positive results. The following represents the visioning team's ideas for public and private investment in water quality and how best to achieve those goals.



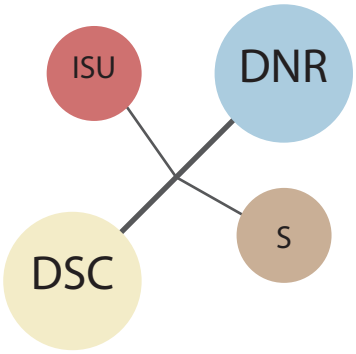
OBJECTIVE 4.1: PRIORITIZE EXISTING PUBLIC PROGRAMS THAT SUPPORT SCIENCE-BASED MEASURES IDENTIFIED IN OBJECTIVE 3.2.

The uncertainty in government funding experienced in the past teaches us the need to prioritize important programming. For purposes of runoff pollution abatement in Iowa, the visioning team identified the importance of programs that support science-based measures. The action steps below prescribe a way to effectively evaluate existing programs for efficiency and deliver needed programs as appropriate according to stakeholder input.

Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Determine priorities based on stakeholder needs: a. Survey stakeholders to identify current needs and priorities. b. Survey stakeholders to identify currently available funding sources. Determine if available funding is being used. c. Develop a plan that identifies areas for additional funding, and provides an opportunity for stakeholders to promote and support funding efforts.	2014	A Strategic Funding Plan that identifies and targets additional funding sources, and provides support that stakeholders can use to engage in securing needed funding.
2. Evaluation of existing public programs: a. Assess existing public programs to see if the correct programs and needs are being met, and the priorities are being addressed. b. Identify service and / or performance gaps. c. Identify potential overlapping services between public entities (to avoid duplication of services).	2014	Summary document that identifies current needs and priorities, and identifies available and needed funding to meet the needs and priorities.

OBJECTIVE 4.2:
IMPROVE INTERACTION AMONG PRIVATE SECTOR GROUPS TO INVEST IN NPS ISSUES AND SOLUTIONS.

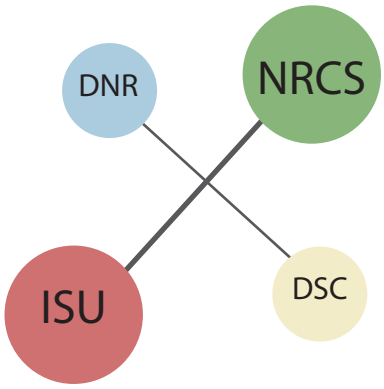
A major piece of the water quality puzzle, stakeholder groups hold huge influence in how their members think about land use choices that influence water quality. Many private sector groups benefit from improved water quality and have the potential to invest in improvement efforts. A coordinated effort among stakeholder organizations to leverage existing and create new sources of investment in water quality issues represents the blueprint for a "by the people, for the people" private investment in public resources approach.



Action Steps / Implementation Strategies	Completion Date	Desired Outcomes/ Success Indicators
1. Identify relevant NGOs in Iowa that deal with NPS issues and have each NGO identify how their work impacts NPS issues.	2013	Establish a defined network, designate a lead coordinator, formal communication (i.e. list serve) &/or regular meetings established (1-6 action steps).
2. Coordinate &/or support existing outreach efforts.		
3. Inventory available private sector funding and existing barriers that may exist for funding.		
4. Encourage the WRCC/WPAC to expand current membership to host more stakeholder groups.		
5. Target tailored messages based on identified local resource needs in coordination with WRCC & WPAC.	2015	
6. Develop easy to understand financial assessment tools and information to help translate benefits of conservation and clean water to profitability in the operation (return on investment, reduction of inputs, etc.).		
7. Identify non-traditional partner groups (i.e. banks, corporations, public health, landowners).	2016	At least 3 non-traditional partner groups identified; Designate a lead coordinator; At least 3 messages / information pieces (i.e. fact sheets) developed for 3 different non-traditional partner groups (7-10 action steps).
8. Identify what those entities currently invest in, what they would invest in, and/or what information is needed to make investment decisions.		
9. Develop tailored information / messaging on the specific incentives to invest in NPS issues.		
10. Engage the Iowa Economic Development Authority to support corporate investment.		

GOAL 4: FUNDING

OBJECTIVE 4.3: CREATE NEW OR REVISE EXISTING SOURCES TO ALLOW FOR LOCAL GROUPS TO BE MORE FLEXIBLE IN IMPLEMENTING AND TESTING INNOVATIVE APPROACHES.



To achieve this objective, developers focused on utilizing the existing tools available and capitalizing on current technologies while strengthening communication between necessary groups. The following activities are slated for completion during 2012-2013.

Action Steps / Implementation Strategies	Desired Outcomes/ Success Indicators
1. Regarding NRCS Interim Conservation Standard process: a. Inform researchers and State Technical Committee member organizations about the process to establish and utilize Interim Conservation Practice Standards. b. Encourage greater participation in the formal review and revision of existing NRCS Conservation Practice Standards to assure that the latest innovations are timely considered and implemented, upon approval.	A greater number of innovative approaches to address NPS water quality will be recognized by NRCS as Interim Conservation Practices Standards; a high percentage of the approaches evaluated are effective at protecting water quality and become eligible for NRCS cost share programs; additional conservation tools provide landowners more options, increase adoption of conservation practices, and water quality improves.
2. Regarding farmers, resource managers & researchers: a. Encourage researchers to attend farmer meetings where water quality is discussed so they develop relationships with progressive farmers and managers; showcase Farmer-led Watershed Projects to better inform farmers, extension and researchers of innovative strategies for addressing water quality; publicize Iowa Learning Farms activities, publications and website. b. Develop process for gathering input from farmers about innovative soil conservation and water quality practices and sharing the results with researchers; educate farmers, CCAs, industry and agency personnel on new research on innovative strategies and practices. c. Establish cross-links between NRCS, IDALS DSC, DNR, ISU and CDI websites that describe innovative water quality strategies and practices.	Researchers become more familiar with progressive farmers and the innovations that they have developed to protect water quality; researchers evaluate and monitor innovations based on farmer ideas and publish the results on effectiveness and costs; the additional conservation tools provide landowners more options and adoption of conservation practices increase and water quality improves.
3. Regarding Low Impact Development (LID): a. Develop new and utilize existing LID brochures, websites, and other outreach about funding programs to be distributed to the targeted audiences. b. Have agencies and LID practitioners attend trade association trade show of targeted audiences; expand LID educational programming at conferences for targeted audiences. c. Communicate LID research needs to the appropriate research community.	Urban planners, developers, civil engineers, and landscapers are more aware of BMPs regarding urban water quality; urban planners, developers, civil engineers, and landscapers are more aware of funding for LID practices to protect water quality; communities adopt a higher percentage of LID BMPs to protect water quality.