

# Iowa Nutrient Reduction Strategy 2013-2014 Annual Progress Report

## (From Strategy Release through May 30<sup>th</sup>, 2014)

The Nutrient Reduction Strategy Annual Progress Report is assigned to the Water Resources Coordinating Council and follows the Iowa Nutrient Reduction Strategy (NRS) ([nutrientstrategy.iastate.edu](http://nutrientstrategy.iastate.edu)) framework that is based on EPA recommendations provided in their March 16, 2001 memo, "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reduction." The annual report provides progress updates on point source and nonpoint source efforts related to the action items listed in the elements of the strategy and updates on implementation activities to achieve reductions in nitrogen and phosphorus loads.

Membership in the Water Resources Coordinating Council includes:

- Secretary of Agriculture, Chair
- Governor's Office
- Iowa Department of Agriculture and Land Stewardship (IDALS)
- Iowa Department of Natural Resources (DNR)
- Iowa Department of Public Health
- Iowa Homeland Security and Emergency Management Division
- Iowa State University (ISU)-College of Agriculture and Life Sciences
- University of Northern Iowa (UNI)-College of Natural Sciences
- Iowa Department of Transportation (DOT)
- Iowa Economic Development Authority (IEDA)
- Iowa Finance Authority (IFA)
- University of Iowa (UI)-College of Engineering
- University of Iowa (UI)-College of Public Health
- United States Geologic Survey (USGS)
- USDA-Natural Resource Conservation Service (NRCS)
- USDA-Farm Service Agency (FSA)
- USDA-Rural Development (RD)
- US-Environmental Protection Agency (EPA)
- US-Army Corps of Engineers (USACE)

The WRCC established subcommittees to coordinate on specific items detailed in the Nutrient Reduction Strategy listed below:

- Watershed Prioritization Working Group

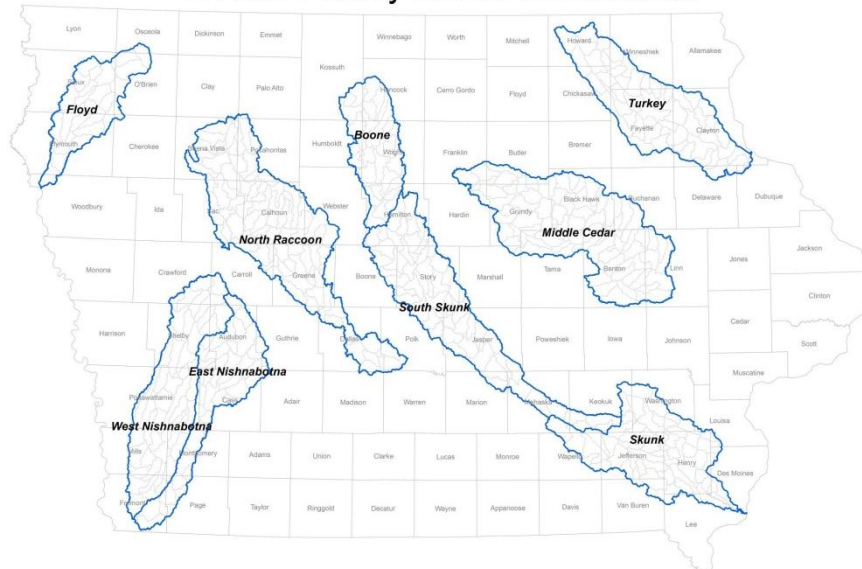
- WRCC members – IDALS, DNR, University of Iowa, and USDA-NRCS
- WPAC Representative – Iowa Soybean Association, Iowa Farm Bureau (alternate)
- Measures Sub-Committee
  - WRCC members –ISU, IDALS, DNR, University of Iowa, USDA-NRCS, USDA-FSA, & USGS.

The 2013-2014 Annual Progress Report was organized by the 3 lead agencies of the Nutrient Reduction Strategy (NRS). The draft report was submitted to the WRCC and WPAC members during the July 2014 meeting. Comments were solicited from the WRCC and WPAC members on the report and their comments were taken into consideration and incorporated into the final report.

### 1.) Prioritization of Watersheds

The Nutrient Reduction Strategy (NRS) called for “identification of high priority watersheds within one year”. This goal was achieved as nine priority HUC8 watersheds were designated through the WRCC in February of 2013. These priority watersheds were developed by a working group of the WRCC membership that included IDALS, DNR, NRCS, and the University of Iowa along with diverse private sector stakeholder input from cities, businesses, industries, utilities, environmental organizations, and agricultural organizations through the Watershed Planning Advisory Council (WPAC).

WRCC Priority HUC8 Watersheds



These watersheds were selected based on N & P loads and concentrations, presence of point sources, landform distribution throughout the state, and engagement of active, local groups within these watersheds.

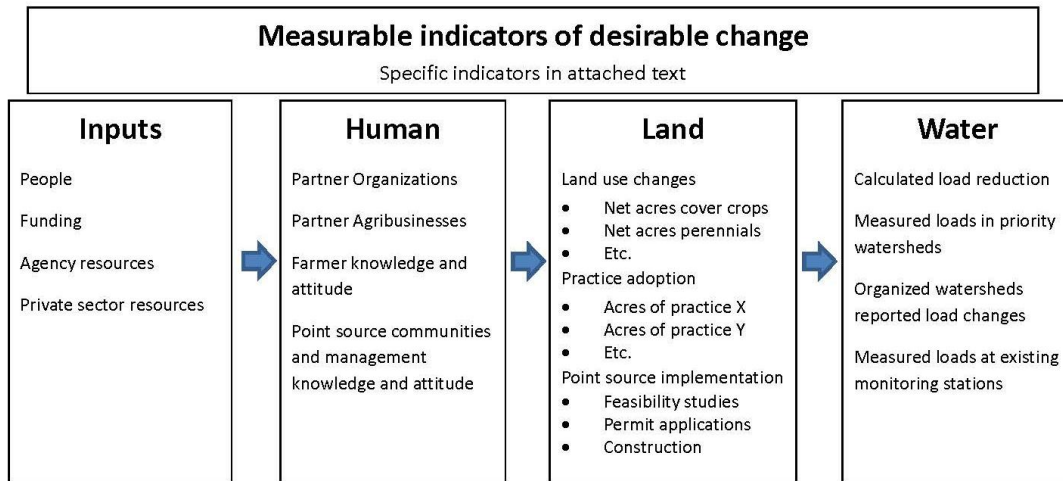
- |                      |                   |
|----------------------|-------------------|
| 1.) Boone            | 5.) South Skunk   |
| 2.) East Nishnabotna | 6.) Middle Cedar  |
| 3.) West Nishnabotna | 7.) North Raccoon |
| 4.) Floyd            | 8.) Skunk         |

9.) Turkey

**2.) Determine Watershed Goals**

The Water Resources Coordinating Council (WRCC) established the Measures of Success subcommittee to develop a list of measures to help document and track the progress of water quality improvements in Iowa. When finalized, these indicators should have the ability to be aggregated at a watershed and state scale to evaluate cumulative impacts and trends.

The Measures of Success Subcommittee has held four meetings between September and July, but has not finalized full recommendations to the WRCC yet. Information provided in this report is based on a summary of these meetings. The basis of these meetings has revolved around developing a framework to track changes as part of a “logic model”. By employing the logic model, multiple indicators can be tracked over time to determine progress being made toward the final goal of reducing nutrient loading and improve water quality. See diagram below.



The logic model basis starts with Inputs. Inputs can be funding, people, and other investments that influence changes in behavior. The next category is the Human element. What are individuals, agencies, businesses, organizations, etc doing to advance the Iowa NRS? How many people, acres or municipalities do they influence? How are these efforts being received by the public, etc? The third category is the Land and treatment facilities. What impact are the first two categories having on changes in the land in the adoption of practices to achieve nutrient reductions? Are permitted facilities progressing toward upgrades? The final category is Water. Are there changes in nutrient loads statewide or in priority watersheds? Following the logic model, the first three elements are needed before there are actual changes in the water. By collecting appropriate data on all 4 of these categories, the data can be analyzed to influence program development to ensure progress is moving forward to the ultimate goal.

**3.) Ensure Effectiveness of Point Source Permits**

- Number of permits issued that require nutrient reduction feasibility studies

The NRS was released in May 2013. One of the goals of the point source component was to issue 20 NPDES permits for facilities listed in the NRS that included the feasibility study requirement within the first year of the Strategy. As of May 31, 2014, 21 permits were issued with the feasibility study requirement included. (see table below). There are currently 147 facilities included in the Strategy. The intent is to reissue approximately 20 permits per year that include the feasibility study with the expectation that after seven years all Major facilities will be reissued with the feasibility study provisions included.

	<b>Facility</b>	<b>Issued</b>
1.	Dairiconcepts, L.P. – Allerton, IA	9/1/2013
2.	City of Grinnell	9/1/2013
3.	Rembrandt Enterprises – Thompson, IA	9/1/2013
4.	City of West Liberty	9/1/2013
5.	City of Dubuque	10/1/2013
6.	City of Harlan	10/1/2013
7.	Tyson Foods – Perry, IA	11/1/2013
8.	City of Atlantic	12/1/2013
9.	City of Eldridge	12/1/2013
10.	Manildra Milling Corporation – Hamburg, IA	12/1/2013
11.	Oakland Foods LLC – Oakland, IA	12/1/2013
12.	City of Grundy Center	2/1/2014
13.	City of Mt. Pleasant	2/1/2014
14.	City of New Hampton	4/1/2014
15.	City of Boone	5/1/2014
16.	City of Cedar Falls	5/1/2014
17.	City of Iowa City	5/1/2014
18.	City of Red Oak	5/1/2014
19.	City of West Burlington	5/1/2014
20.	City of Winterset	5/1/2014
21.	Walter Scott, Jr. Energy Center	5/14/2014

There are 37 facilities identified in the nine priority watersheds. Of those, 33 were expired and eligible for reissuance. Of those permits nine (9) have been reissued and include the feasibility study.

- Number of nutrient reduction feasibility studies submitted

The primary goal of the Strategy is to reduce the amount of total nitrogen (TN) and total phosphorus (TP) discharged from point sources by 66% and 75%, respectively. The feasibility study requires a

facility to monitoring influent and effluent flows for TN and TP during a 2-year period. At the end of that 2-year period, the facility is required to submit a report that evaluates the feasibility and reasonableness of reducing the amounts of nitrogen and phosphorus discharged into surface water. The report will include an evaluation of operational changes to the existing treatment facility that could be implemented to reduce the TN and TP discharged. If the implementation of operational changes cannot achieve the desired goals for reduction of TN and TP, the facility will evaluate new or additional treatment technologies that would achieve reductions in the amounts of TN and TP discharged. The report will also include a proposed schedule for implementing the operational changes and/or installing new or additional treatment technologies to achieve the projected effluent quality attainable using the selected method(s).

The Department has not received nor expected any reports based on feasibility studies. The first permits with the feasibility study requirements were issued on September 1, 2013. **It is expected that the first reports will be submitted in mid to late 2015.**

- Number of permits amended with nutrient removal/reduction construction schedules

Once a facility has completed the feasibility study and submitted the report, the current NPDES permit will be amended to include a construction schedule for nutrient removal/reduction. The construction schedule will specify the timeframe and individual steps that the facility will take to implement nutrient removal/reduction. No permits have been amended to include construction schedules.

- Number of nutrient removal/reduction facilities in place/in design/under construction

While the Strategy itself has not yet directly resulted in implementation of point source nutrient reduction, some facilities in Iowa have voluntarily implemented nutrient removal. The City of Clinton constructed and is operating a new wastewater treatment plant in 2013 that removes nitrogen and phosphorus. Initial monitoring indicates that the facility is meeting the nutrient reduction goals of the Strategy. Iowa City and Sioux City are operating a new wastewater treatment plants that removes nitrogen. Phosphorus removal will be considered under their 2-year feasibility studies. We are aware of other wastewater treatment facilities that may remove nitrogen and phosphorus and will be looking to confirm this as we move forward.

- Number of facilities monitoring nutrient in their effluent

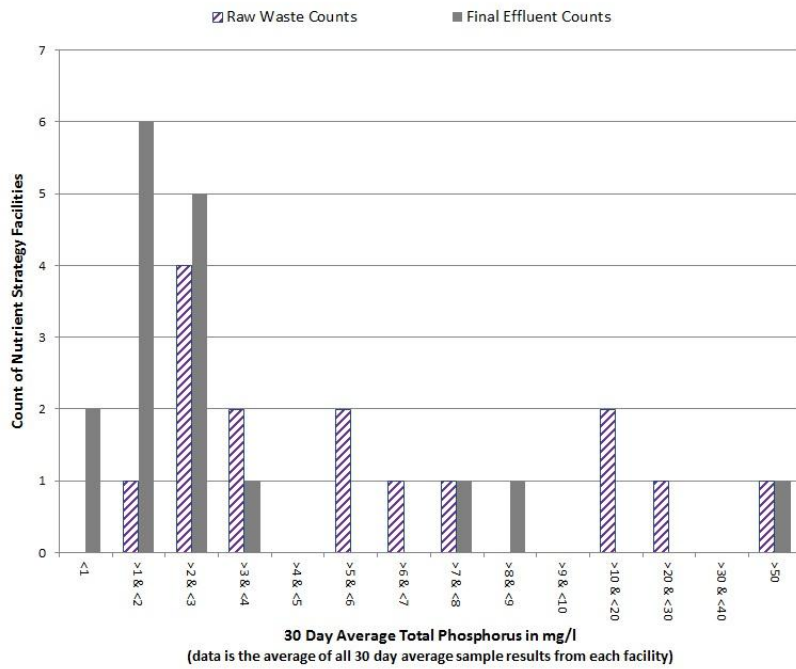
The Strategy calls for Major facilities to regularly monitor effluent TN and TP once per week. Currently, 22 facilities are monitoring their effluent based on the Strategy. This number will continue to grow as permits are reissued and nutrient monitoring requirements are added (20 permits/year). In addition to the nutrient monitoring requirements in the Strategy, facilities with a population equivalent (PE) greater than 3,001 are required by rule to monitor effluent for TN and TP (567 IAC Chapter 63 Table II). 147 additional facilities are monitoring for TN and TP outside of the Strategy requirements.

The City of Clinton has been removing nutrients since January 2013. Monitoring data demonstrates that they are removing 75% TN and 75% TP on average. Iowa City has a new WWTP that is designed for nitrogen removal. They have only one month to report at this time and are showing 72% nitrogen removal.

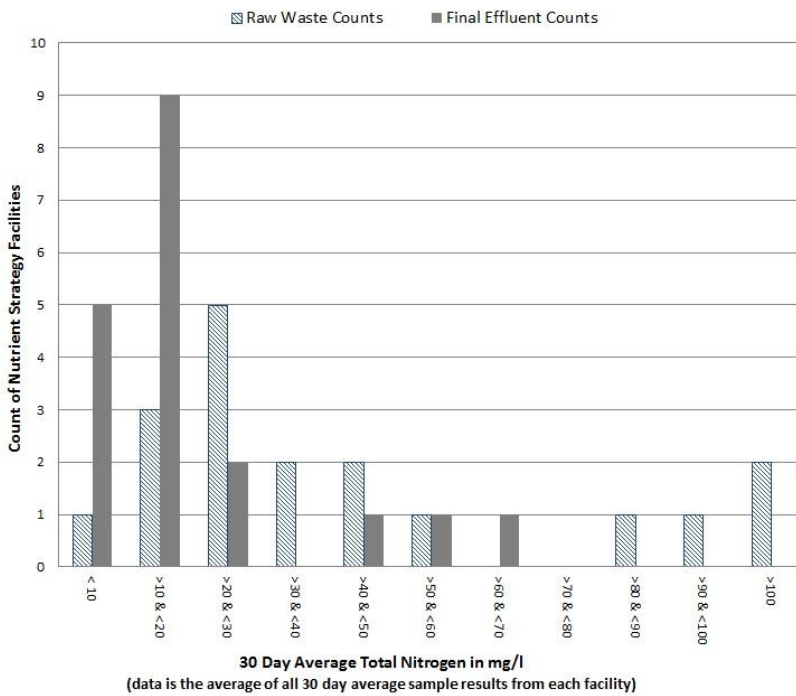
- Total nitrogen and phosphorus loads discharged from point sources

It is assumed that typical municipal wastewater effluent contains 25 mg/L of TN and 4 mg/L of TP. The Strategy is targeting effluent concentrations of 10 mg/L TN and 1 mg/L TP for facilities that are actively removing nutrient from the waste stream. Current available monitoring data is only available from a small number of facilities and represents only a small portion of the “total” nitrogen and phosphorus loads discharged from point sources. Based on the limited data received so far the assumptions used to estimate effluent concentrations of TP and TN was accurate in some cases and widely variable in others. Therefore we’ll continue to utilize the assumptions used during strategy development until we have more data and are better able to quantify nutrient loads from point sources. Below are two tables summarizing the data received to date for influent and effluent concentrations for TP and TN for facilities permitted with the nutrient strategy provisions.

**Total Phosphorus Raw Waste and Final Effluent Averages -  
Count of Nutrient Strategy Facilities Utilizing 30 Day Averages**



**Total Nitrogen Raw Waste and Final Effluent Averages -  
Count of Nutrient Strategy Facilities Utilizing 30 Day Averages**



#### **4.) Agricultural Areas**

- Focus Conservation Programs

The Iowa Water Quality Initiative was established during the 2013 legislative session to assist the implementation of the Nutrient Reduction Strategy (NRS). The WQI seeks to harness the collective ability of both private and public resources and organizations to deliver a clear and consistent message to the agricultural community to reduce nutrient loss and improve water quality. Significant investments have been and continue to be made on reducing nutrients lost from non-point sources by both private and publicly funded programs. It's important to note that in addition to the level of public funding utilized to install practices, these funds leverage 50% or more of the cost from private landowners and producers.

- Water Quality Initiative (Statewide)

In August of 2013, \$2.8 million was made available through all 100 Soil and Water Conservation Districts to help implement conservation practices through the Water Quality Initiative (WQI). After an initial \$1.8 million was offered and subsequently obligated in less than a week, a supplement of \$1 million was added to the fund and this additional funding spoken for within another week.

The practices offered through the WQI Statewide initiatives were selected because of their ability to be implemented in a short time frame and thereby providing a water quality benefit in 2013 and spring of 2014. The statewide approach gave farmers an opportunity to try these practices for the first time. Offering a portion of WQI funding statewide allowed each county to participate. This funding, along with a targeted approach, engaged more farmers and landowners in the process. Final totals of established practices through the WQI Statewide cost-share program was over 94,880 acres of cover crops, 1,020 acres of No-till/Strip-till, and 4,279 acres of N inhibitor.

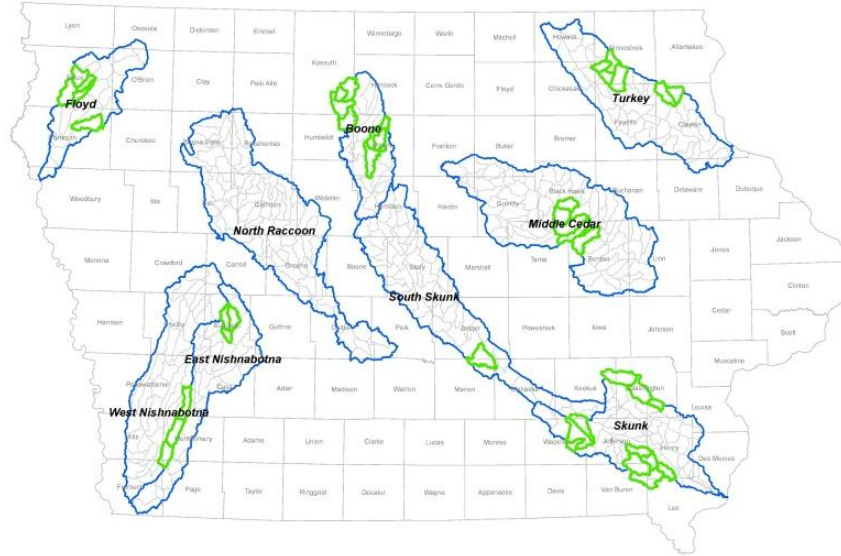
- Small Watershed Demonstration Projects

The Iowa Department of Agriculture and Land Stewardship (IDALS) issued two requests for applications (RFA) in FY2014 to provide funding for targeted watershed demonstration projects. Applications for watershed demonstration projects located in the priority HUC8 watersheds designated through the WRCC.

The initial RFA was released in August of 2013 and the second in February 2014 for interested groups to establish targeted demonstration watershed projects. There are currently 13 active projects through these first two rounds of RFAs. The projects were awarded \$5.8M in state funding leveraging an additional \$12M in landowner and partner match. These projects are designed to help implement and demonstrate the effectiveness and adaptability of a host of conservation practices highlighted in the NRS on a watershed scale.



## WQI HUC12 Demonstration Projects-2014



Project Name	Lead	HUC 8 WS
Benton/Tama Nutrient Reduction Demonstration Project	Benton SWCD	Middle Cedar
Bluegrass & Crabapple - East Nishnabotna Watershed Projects	Audubon SWCD	East Nishnabotna
Boone River Watershed Nutrient Management Initiative	Wright SWCD	Boone
Cedar Creek Partnership Project	Wapello SWCD	Skunk
Central Turkey River Nutrient Reduction Demonstration Project	Winneshiek SWCD	Turkey
Deep Creek Water Quality Initiative Project	Plymouth SWCD	Floyd
Demonstration of Targeted Nutrient Reduction Systems for Clayton County	Clayton SWCD	Turkey
Lower Skunk Water Quality and Soil Health Initiative	Henry SWCD	Skunk
Miller Creek Water Quality Improvement Project	Black Hawk SWCD	Middle Cedar
Van Zante Creek Water Quality Improvement Project	Marion SWCD	South Skunk
Walnut Creek Watershed Project	Montgomery SWCD	West Nishnabotna
West Branch of the Floyd River Water Quality Initiative	Sioux SWCD	Floyd
West Fork Crooked Creek Water Quality and Soil Health Initiative	Washington SWCD	Skunk

More than 70 partners from agriculture organizations, institutions of higher education, private industry, the local, state and federal government, and others, are working together on these projects with the Soil and Water Conservation Districts (SWCD) serving as the project leaders.

These projects will utilize the collective resources of their partners to demonstrate conservation practices paired with strong outreach and education components. This effort will promote increased awareness and adoption of available practices and technologies. Successful projects will serve as local and regional hubs for demonstrating practices and providing practice information to farmers, peer networks, and local communities.

To date, currently funded projects are administered by the local Soil and Water Conservation Districts. Their first opportunity of funding practices will be in SFY2015. Updates on their status will be provided in subsequent annual reports.

- Nutrient Trading and Innovative Approaches

Nutrient trading was and continues to be a hot topic moving forward into NRS implementation. IDNR, EPA, and several stakeholder groups have discussed and met about the different aspects of successful trading programs. IDNR has met with EPA to discuss NPDES permitting options to accommodate different styles of trading programs. ISU and UI have been approached with questions on how to create the market utilizing the scientific assessment. More work is expected in the upcoming year.

- Research & Technology

The Iowa Nutrient Research Center (NRC) was created in 2013 to pursue science-based approaches to areas that include evaluating the performance of current and emerging nutrient management practices, and providing recommendations on implementing the practices and developing new practices.

With an initial appropriation of \$1.5M from the Iowa Legislature, the Iowa NRC funded 10 projects.

Details on these projects and progress reports can be viewed at

<http://www.nutrientstrategy.iastate.edu/center>

The Iowa NRC received its second appropriation of \$1.375M during the 2014 Legislative session. An RFP will be released in the summer of 2014 for selecting new research projects through the Center.

The Science Assessment Team led by College of Ag and Life Sciences - Iowa State University developed a set of practices shown by research to reduce the loss of nitrogen and phosphorous to surface water. The practice table also included the estimated average and standard deviation of loss reduction for N and P. The set of practices and estimated effectiveness was based on the research available in 2012 when the report was prepared. The practice list is expected to be a living document as new practices are identified and proven and the performance and predictability of existing ones improves. The process outlined below is the recommended method for updating the Iowa Nutrient Reduction Strategy non-point source approved practice list.

- 1.) The CALS Dean appoints the Science Team and asks the Director of the Iowa Nutrient Research Center to coordinate the review with the Science Team.
- 2.) The Science Team reviews the Non-Point Source Practice Lists to:
  - a. update the average and standard deviation of existing practices
  - b. add new peer reviewed practices that reduce the loss of nutrients to surface water.
- 3.) A practice may be revised or a new practice added to the practice list by the following:
  - a. A proposal is submitted to the Director of the INRC before July 1 each year. The proposal shall include:
    - i. Peer reviewed article(s) showing impact of the practice on water quality and crop yield.
    - ii. Or, present research reports from credible sources with data for review by the Science Team.
- 4.) Science Team meets during the fall and determines if:
  - a. Practice list values for existing practices should be revised and

- b. if new practices should be added to the practice list. Science Team also assigns the average and standard deviation for the new practices added to the practice list.
- 5.) The Science Team estimates the cost to implement the practice, cost per unit of nutrient reduced and the impact, if any, on crop yields.
- 6.) Science team publishes updated practice list for non-point sources that becomes an addendum to the Iowa Nutrient Reduction Strategy. The published report is accompanied with the explanation of any new practices added and references to the original published peer-review article. The updated practice list is posted at [www.nutrientstrategy.iastate.edu](http://www.nutrientstrategy.iastate.edu).

Following the process for updating the list of approved non-point source practices, Saturated Buffers has been approved and added to the practice list. Saturated buffers intercept tile drainage from a field by using a tile line perpendicular to the field tile that runs under a vegetative buffer in the riparian area near a stream. Drainage water saturates the soil in the buffer and is denitrified before reaching the stream.

- Strengthen Outreach, Education, Collaboration

Outreach conducted directly to over 26,000 farmers and 1,000 Certified Crop Advisors (CCAs) through the ISU Extension and Outreach Meetings.

A major focus of the Nutrient Strategy has been expanding learning and outreach opportunities. In 2014, IDALS through the WQI and partners have conducted over 32 events led by 45 SWCDs in cooperation with over 44 groups and organizations. These events/activities include field days, workshops, demonstration plots, etc. related to improving management of nutrients to prevent loss. This accounting is for WQI supported activities and does not include other SWCD, outside organizations, university led, or other project outreach events.

Last October, Gov. Terry Branstad and Lt. Gov. Kim Reynolds joined Iowa Secretary of Agriculture Bill Northey and Department of Natural Resources Director Chuck Gipp for the launch of the [www.CleanWaterIowa.org](http://www.CleanWaterIowa.org) website. Iowans can visit the site to learn more about the voluntary, science-based practices that can be implemented on farms and in cities to improve water quality. The site includes descriptions of water quality practices, their benefits, and links to additional information. A newsletter is emailed out to anyone who subscribes on the main page of the CleanWaterIowa.org website. Each newsletter includes updates from the past few weeks, and a link to the full News & Blog article or Practice at Work success story. Iowans can also follow @CleanWaterIowa on Twitter or “like” the page on Facebook to receive updates and other information about the ongoing Iowa water quality initiative.

The agribusiness community continues to be engaged in the NRS through partnering in all 13 demonstration watershed projects, other watershed projects, etc. These efforts will continue to be fostered and provide more tangible references in future reports.

- Increased Public Awareness and Recognition

The Iowa Farm Environmental Leader Awards were established in 2012 and recognized 67 individual farmers or farm families. In 2013, 64 recipients were recognized. In 2014, nominations were being still being accepted at the end of May.

Many local SWCDs, watershed groups and other organizations recognize members of their community for their efforts to improve conservation and water quality. Efforts will be made to analyze and summarize new and existing recognition programs.

- Funding

IDALS received a direct appropriation of \$2.4M to establish the Water Quality Initiative (WQI) in state fiscal year 2014. Also, a one-time appropriation of \$10M was made to the WQI. 70% was designated to the development of targeted watershed demonstration projects and 30% could be used to support statewide initiatives. In addition to this funding, \$7M in one-time appropriations were made to the state cost-share program and \$3M of funding was provided to the Watershed Improvement Review Board, 50% of which was designated to directly to help implement nutrient reduction practices based on the Iowa Nutrient Strategy Science Assessment.

In state fiscal year 2015, IDALS received an increase in direct appropriations to the WQI to \$4.4M to further the support of implementing the activities outlined in the Iowa NRS.

Once established, future funding reporting efforts will revolve around a variety of state and federal programs. A private investment summary could be part of any public or private tracking framework.

## **5.) Storm Water, Septic Systems, Minor POTWs**

### Private Sewage Disposal Systems (PSDS):

Upgrading of failing septic systems continues through implementation of Iowa's "time of transfer" law that took effect in 2009. Database improvements are expected over the next year to better enumerate the success of this program. The Private Sewage Disposal Program has also integrated a PSDS nutrient removal training course for septic installers, sanitarians, and inspectors. Two training courses were hosted during this first year of INRS implementation.

## **6.) Accountability and Verification Measures**

The Water Resources Coordinating Council (WRCC) established the Measures of Success subcommittee to develop a list of measures to help document and track the progress of water quality improvements in Iowa. When finalized, these indicators should have the ability to be aggregated at a watershed and state scale to evaluate cumulative impacts and trends.

The Iowa Nutrient Research Center has undertaken an effort with the aid of USDA-NRCS, USDA-FSA and IDALS to quantify practices applied through publicly funded programs by practice. Implementation of practices varies annually. Current efforts focused on the data gathered for practices applied in 2014 before moving to past years as far as is reasonably able to be collected. This exercise will be the basis

for developing a framework that will allow this effort to be repeatable annually. The framework will be able to outline what information needs to be collected from which sources, when the information is available, and what additional information should and could be collected. Individual practice data would provide the basis for analysis by the ISU Science Team to develop load reduction estimates.

2013 land use data by crop reporting district from the USDA-Farm Service Agency (FSA) was obtained and is summarized in the table located in Attachment A. This data will be collected annually from FSA when available and reported in subsequent reports.

The Iowa NRC will be seeking data on conservation practices applied from USDA-NRCS and FSA. It's anticipated the data is readily available and obtainable per the request. These funds would not directly be used to implement the Iowa NRS, but are an important component that would complement the implementation efforts of the NRS.

Public resources alone are not enough to support the level of conservation implementation needed to meet the 45% N and P goals of the NRS. Privately implemented conservation practices and fertility management must be collected. Efforts to quantify publicly supported conservation implementation will not be robust enough to support a fully quantifiable accounting of total practice implementation.

Because most efforts around quantifying practices applied has revolved around state and federally funded programs with a share of the investment by private landowners, the missing component is practices applied with entirely private investments. Information collected from land improvement contractors have indicated 50% or more of the terraces and waterways they do are funded entirely with landowner investment. The majority of nutrient management decisions are based on individual farmer or with input from agronomists, university, or CCAs with no public funding support.

The development of a tracking framework that can quantify privately implemented practices is currently under development. This information could include the trends in total amount of fertilizer applied every year, trends in infrastructure or implement investments by farmers and ag retailers, etc. Anecdotal evidence would suggest these recommendations have changed over time to provide better advice, improve efficiency, and reduce loss of applied fertilizers. It is a goal of the NRS to better strategize obtaining properly protected, aggregate information on this practice adoption. This information could help develop trends over the years to show how changes in fertility management are being made in response to activities driven by private sector investments or conducted through the NRS.

There are many instances of farmers investing in conservation tools such as no-till planters, in-season nitrogen management equipment and other implements that help manage these conservation systems. There are also ag retailers that have invested in equipment to offer services driven by the demand to improve the timing on nutrient application, seeding cover crops, etc. To be able to quantify this, will be a major undertaking and those actions are being discussed presently.

- Results from comprehensive annual ambient stream monitoring and analysis utilizing existing permanent monitoring locations and focused study areas

A technical work group was formed and first met December 3, 2013. The technical work group was given the charge from the Nutrient Reduction Strategy to help find an efficient and reproducible procedure for the DNR to regularly calculate nutrient loads from data in our ambient monitoring network. The technical work group focused first on nitrogen, as this represented a more consistently detected nutrient in the monitoring network and therefore could be handled differently than the less detected phosphorus.

<b>Baseline Estimates from the NRS</b>	<b>Nitrogen</b>	<b>Phosphorus</b>
<b>Statewide Baseline Load (tons)</b>	307,000	16,800
<b>Load Reduction Needed for 45% Reduction</b>	138,150	7,560
<b>NPS Portion of Load Reduction</b>	125,870	4,872
<b>PS Portion of Load Reduction</b>	12,280	2,688
<b>% of Target Load Reduction from NPS</b>	91.1%	64.4%
<b>% of Target Overall Load Reduction from PS</b>	8.9%	35.6%

- Technical Workgroup Members include representatives from the following agencies and organizations:
  - ISU, IDALS, DNR, UI, Iowa Soybean Association (ISA) & USGS.

The baseline cited in the Iowa NRS for 2012 based on data collected from 2000-2010. The baseline established from the Strategy will be used in future measures and progress as determined by the Measures of Success Subcommittee. The baseline was established based on existing data available in Iowa by MLRA. Through activities conducted through efforts including, but not limited to the Water Quality Initiative (WQI) and Nutrient Research Center, new data and information will be available to help refine and improve calculating changes in baseline.

The technical work group developed a method to compare the various load calculations, including development of a standardized data set based on the work completed for the Nutrient Reduction Strategy development. Individual workgroup members were assigned specific load calculation techniques to apply to the standard data set, and reported the results back to the group. The outcomes from the different techniques were organized and evaluated by the workgroup. Based on the evaluation, a consensus method was selected for use with the nitrogen data. The technical work group is currently producing write-ups of the different techniques for nitrogen that were evaluated. These will be compiled into a report that will also identify the method selected to provide a regular nitrogen load estimate. The method selected for nitrogen will be implemented in FY 2015.

Work is continuing on establishing a standard phosphorus load method. Phosphorus tends to be bound to sediment and the majority of the loading occur after rain events. The data available does not capture all rain events nor is the monitoring network designed to do so. This adds complexity to providing an accurate statewide phosphorus load. Future meetings focusing on phosphorus will follow the general approach used for nitrogen, after most work group have completed this year's field work obligations.

The WRCC will continue to coordinate expanding opportunities for water monitoring locations with an emphasis on the designated HUC 8 watersheds and the smaller watershed demonstration projects funded through the Water Quality Initiative (WQI).

Collaboration with the Science Assessment Team to model and predict expected performance of implementation strategies is currently underway.

## **7.) Public Reporting**

All 13 currently funded projects (status map included Attachment A) are in the demonstration and assessment phase. Watershed management plans of each individual watershed will be developed as these projects proceed. Project staff and Iowa State University are conducting background assessments to show conditions/practices prior to establishment of the projects.

The Iowa Nutrient Research Center is conducting a review of publicly funded conservation practice data. The intent is these practices be quantified to produce load reduction calculations. A private framework would be set up in the same manner to collect this information as well.

### Annual Report Generation Procedure:

- Reporting period covered in reports will be from June 1<sup>st</sup> through May 31<sup>st</sup> of consecutive calendar years starting June 1, 2013 after the Iowa Nutrient Strategy was finalized.
- Information to be included in the annual report will be submitted to and compiled by the three principals (IDALS, ISU, and DNR) that worked with Iowa stakeholders to develop the Iowa Nutrient Strategy.
  - IDALS will receive and compile information regarding nonpoint source progress
  - ISU will receive and compile information relating to the updates and progress of the science related to nonpoint conservation practices
  - DNR will receive and compile information regarding point source progress
- The deadline for WRCC members and WPAC to submit information for inclusion in the annual report will be May 31st of each year.
- IDALS, ISU, and DNR will compile the information received into the annual report.
- Annual reports will be presented by the principals at the July WRCC meeting each year.

### Strategy Updates Evaluation Process:

- IDALS, ISU, and DNR will provide a preliminary evaluation of the need for review and updates to the Iowa Nutrient Strategy annually at the May WRCC meeting. This will include any proposed updates to the Strategy if applicable.
- WRCC discussion will be held at the May WRCC meeting to identify general consensus with the preliminary evaluation including any additional considerations for incorporation into the evaluation included in the annual report.

#### Public Feedback on Adaptive Management Approaches:

The Iowa Nutrient Strategy website will be modified to provide a link where the public can provide feedback on adaptive management approaches to improve implementation, strengthen collaborative local, county, state, and federal partnerships, and identify additional opportunities for accelerating cost effective N and P load reductions. This link will be available on a year round basis to provide for continuous public feedback opportunity.

### **8.) Nutrient Criteria Development:**

#### Lakes

A research study at Iowa State University (ISU) relating to the development of lake nutrient criteria is nearing completion. The study examines relationships between water quality conditions and lake biological assemblages (i.e., benthic macroinvertebrates, fish, phytoplankton, and zooplankton). A representative subset of 45 recreational impoundments and natural lakes were included in the study. One of the main products from the study is a multi-assemblage biotic index that has the ability to distinguish lakes ranked along a gradient from poor-to-good water quality. Nutrient enrichment-related water quality parameters, including total phosphorus, phytoplankton chlorophyll A, and total suspended solids, were among the strongest predictors of biological assemblage metrics in the lakes studied.

In May 2014, the research team provided a draft project report titled “Benchmarks of biological integrity for lake restoration success - Fish, invertebrate, and plankton communities in Iowa lakes.” A meeting was subsequently held at ISU to discuss the research findings and draft report with IDNR. The final draft is expected to be available later this year. The research did not go as far as identifying threshold levels in nutrients or nutrient response parameters that might serve as criteria benchmarks; however, the development of a multi-assemblage biotic index that is correlated with lake nutrient status represents a major step forward. Additional work and experience applying the tools developed in the project will be necessary. This includes establishment and application of standardized sampling and data analysis procedures, as well as utilization of biotic index sampling results for completion of lake water quality assessments and analysis of nutrient stressor-response thresholds.

#### Rivers and Streams

The Stream Nutrient Technical Advisory Committee (hereinafter referred to as “TAC”), continues to develop nutrient criteria recommendations to protect stream aquatic life. In August 2013, IDNR provided the TAC with a draft report for technical review. The draft report titled “Development of



Nutrient Enrichment Criteria for Iowa Streams” and dated August 23, 2013, contains data analysis results and information from published scientific studies that support preliminary nutrient criteria recommendations for small- and medium-size (wadeable) streams. Recommendations for headwater creeks and large rivers are deferred pending the completion of ongoing nutrient monitoring and data analysis.

A TAC meeting was held in November 2013 to discuss the draft report and criteria recommendations. The draft report, notes from the TAC meeting, and a summary of TAC comments are available at the IDNR [Nutrients](#) web page.

A second draft, which incorporates the TAC’s comments and other substantive changes, is nearing completion. The TAC will again have the opportunity to review the draft report and nutrient criteria recommendations. After comments from the TAC and other reviewers have been addressed and the report has been finalized, IDNR will evaluate the recommendations and identify appropriate next steps relating to stream nutrient criteria development and implementation.

### **Iowa Nutrient Strategy Updates Evaluation**

IDALS, ISU and DNR collaborated on identifying needed updates to the text of the Iowa Nutrient Reduction Strategy. Updates were identified as necessary to keep the text of the strategy up to date based on current information and status of efforts related to the strategy. Following is a summary of the updates that were identified.

#### Nonpoint Source Updates:

- Update strategy to list the 9 priority HUC8 watersheds that were designated by the WRCC in February of 2013 and establish the anniversary date for the 5 year review of these watersheds
- Update Section 1.4.5 of the strategy to include discussion on source water protection efforts

#### Science Updates:

- Add new Section 2.6 describing the procedure for updating the practice list

#### Point Source Updates:

- Updated monitoring provisions to reflect changes in permit implementation for industrial facilities listed in the NRS
- Added calculation for annual average permit limitations for total nitrogen and total phosphorus
- Described method for adding or removing facilities affected by the NRS
- Updated the list of affected facilities

**Attachment A:**

**Summary of land use and crop data (in acres) by crop reporting district for crop year 2013 from the USDA-Farm Service Agency:**

Iowa Crop Reporting District	Corn	Soybeans	Alfalfa	Oats & Small Grains	Forage & Grazing Crops	Alternative Agricultural Crops and Practices	CRP	Prevent Plant, Left Standing & Failed
Northwest	2,041,319	1,435,589	30,082	8,951	40,129	5,864	94,599	82,213
North Central	1,706,198	1,090,862	16,821	10,473	22,869	6,511	132,733	391,039
Northeast	1,594,102	722,649	135,771	48,052	102,215	6,262	206,448	172,318
West Central	2,125,863	1,404,368	39,399	11,892	139,724	12,344	142,380	96,231
Central	1,913,802	1,328,168	37,784	11,280	75,831	6,486	142,274	115,267
East Central	1,407,880	896,048	61,337	21,129	107,557	5,583	153,345	52,691
Southwest	1,085,809	956,697	37,857	15,516	237,763	810	160,585	58,352
South Central	536,096	554,269	59,156	24,907	462,994	4,492	318,638	126,679
Southeast	877,903	787,753	36,910	152,200	1,189,082	4,139	293,419	1,094,790
Statewide	13,288,972	9,176,403	455,117	304,400	2,378,164	52,491	1,644,421	2,189,580

**Appendix: Report(s) on Activities Conducted by WRCC and WPAC Members in Support of the NRS.**

-During the July WRCC meeting, IDALS, DNR & ISU requested input for WRCC & WPAC members to provide a summary report of activities their representative groups or organizations have conducted in the reporting period in support of the NRS. Some members of WPAC provided comments through the Measures of Success Subcommittee. These reports are located in the appendix to the report and are provided as received by the groups that provided the information. Information provided in the reports is developed entirely by the contributing organization and does not necessarily convey these comments are supported by the WRCC or individual members of the WRCC.