#FY16 - 5
(For DCWQC Only)

PROJECT APPLICATION
Dickinson County Water Quality Commission
Cover Sheet

1. Applicant Organization: Silver Lake Park Improvement Association
   Street address 3302 18th St.
   City Spirit Lake
   State Iowa
   Zip 51360
   Email mitchell.dle@gmail.com
   Phone (712) 320-2037
   Organization contact
2. Project title: Silver Lake Watershed Project
   Location Silver Lake
3. Project Director (if different than organization contact): John H. Wills
   Street address
   City
   State
   Zip
   Email
   Phone

4. Application submission date: October 1, 2015

5. Brief description (75 words or less) of project, including expected results:
The project involves the installation of best management practices on private land within the Silver Lake Watershed that is experiencing severe erosion problems. The project involves a combination of filter strips, grassed waterways, water and sediment control basins and other practices to stop erosion on existing drainage ways. The project follows the Silver Lake Watershed Management Plan with the priority of these practices being located in Trappers Bay, West Basin.

6. Amount requested through this grant application * : $12,500

7. Matching funds:
   Hard match 25,000 (Anything paid for with real money)

   Source(s) Landowners, SLPIA, Lake Restoration, EQIP, IFIP, Others

   Soft match 20,000 (Anything not paid with real money but has a value)
   Source(s) Clean Water Alliance Coordinator
   Other support

   a. **Amount of Federal, State or other public cash match money already acquired or in process:** $ 25,000

   b. **Amount of private cash match funds:** $

#FY16 - 5
(For DCWQC Only)

c. **Source of public and/or private <u>cash</u> match (list all):**

Landowners

Is the project a portion of a larger, overall project to be implemented over a multi-year period? **Yes** _____ **No** __X__ If yes, describe in project narrative and include in budget form as instructed.

**** The Water Quality Commission will <u>only</u> obligate funds for current fiscal year. Any multi-year projects will be allowed to re-apply in subsequent years***

Type of project (select all that apply):

_____ Public education, public awareness and information dissemination

__X__ Creation or maintenance of Best Management Practices

_____ Erection and maintenance of storm water run off facilities

_____ Dredging

__X__ Bank stabilization Water treatment

_____ Water monitoring

__X__ Watershed protection

_____ Activities to abate and remove invasive species

_____ Any other activity which will improve, protect or enhance the quality of water in the lakes in Dickinson County

Estimated project dates:

a. Start April 2016 b. Completion September 2018

#FY16 - 5
(For DCWQC Only)

Applicant's signature. Upon signing in the space provided below, the applicant agrees to conform with the requirements pertaining to:

- **Civil Rights Assurance of Compliance:** The applicant hereby agrees that it will comply with Title VI of the Rights Act of 1964, 1873 and the age Discrimination Act of 1975 to the end that no person in the United States shall on the grounds of race, color, national origin or otherwise subjected to discrimination under any program or activity for which the Applicant-Recipient receives grant funds and hereby gives assurance that it will immediately take any measures to effectuate this agreement.

This assurance is binding on the Applicant-Recipient, its successors, transferees, and assignees, and the person or person whose signature appears below are authorized to sign this assurance on behalf of the Applicant-Recipient.

_____ _____ 9/30/15

Applicant's name and title **Date**

#FY16 - 5
(For DCWQC Only)

REQUIRED BUDGET FORM

See Application Guidelines for this form.

Proposed Budget for Current Year

	Commission	Hard Match*	Soft Match**	Total
1. Temporary Staff				
Seasonal staff (Hourly rate)	$_____	$_____	$ 20,000	$ 20,000
Hourly staff (Hourly rate)	$_____	$_____	$_____	$_____
2. Supplies and Services	$_____	$_____	$_____	$_____
3. Equipment (List all equipment over $1,000)	$_____	$_____	$_____	$_____
4. Travel	$_____	$_____	$_____	$_____
5. Water Monitoring	$_____	$_____	$_____	$_____
5. Land Acquisition	$_____	$_____	$_____	$_____
6. Land Development	$ 12,500	$ 25,000	$_____	$ 37,500
7. Other	$_____	$_____	$_____	$_____
Total	$ 12,500	$ 25,000	$ 20,000	$ 57,500

*** Hard Match is "real money spent" toward project goal.**
**** Soft Match is money indirectly spent toward project goal.**
You must attach a letter of support for each contributor of Hard Match dollars and soft match dollars that specifies the amount of money or service being provided.

BUDGET NARRATIVE: Attach a Budget Narrative. Follow directions in Application Guidelines.
The hard match for this project will be provided by the landowner who will pay at least 25% of the cost of practices installed on their land. When piggy backing cost shares with the Water Quality Commission amount the total cost share to landowners may be as high as (but not over) 75% of the total cost of the project. The costs will be directly attributed to the construction of the project and design, inspection, and other costs will be absorbed by the Dickinson SWCD and the USDA, NRCS; those costs are identified as soft match contributions. Upon completion the built conservation practice will be maintained by the landowner for the life of the practice. The Dickinson SWCD will hold a maintenance agreement for the practice for the life of that practice.

TASKS AND DELIVERABLES: Attach a list of Tasks and Deliverables following the Application Guidelines included in this packet.

Tasks and Deliverables		
Task	**Due Date**	**Outcome**
Begin to canvass Landowners	Apr-16	5 landowners with interest
Design Practice	Jun-16	5 practices
Construct Practice	Nov-16	5 practices
Request funds to pay for practices	Nov-16	1/2 of funds gone
Design Practice	Dec-16	5 practices
Construct Practice	Jun-17	5 practices
Request funds to pay for practices	Apr-17	All funds obligated
Final Report to the WQC	Nov-17	Final Report

PROJECT NARRATIVE

Attach project narrative following the instructions in application guidelines, including:

QUALIFICATIONS OF AGENCY:

The Silver Lake Park Improvement Association (SLPIA) is committed to improving the water quality of Silver Lake. We have teamed up with the Dickinson Soil and Water Conservation District, Osceola Soil and Water Conservation District, and the Silver Lake Watershed Project with this program. The SLPIA holds improving water quality as a top priority and has been working tirelessly to improve the water quality of Silver Lake. We were also recognized in 2012 by Director of the Iowa DNR, Chuck Gipp, as an exciting and impactful watershed group. The services of the Silver Lake Watershed Project and the Dickinson and Osceola SWCD's will benefit this project due to their expertise in designing conservation practices and working with farmers.

STATEMENT OF PROJECT NEED:

This project is needed to protect and enhance the water quality of Silver Lake. This project will filter and treat the runoff into the lake or the streams that lead to the lake. As stated in Silver Lake Watershed Management Plan, " The Silver Lake Water Quality Project has, as a goal, to reduce sediment and phosphorous from reaching Silver Lake. The primary reason for these two pollutants being targeted is the TMDL showing a need to reduce both in order for the lake to become a water body that reaches its highest and best use." In addition, "No single BMP will be able to reduce pollutant loads to Silver Lake. Rather, a comprehensive package of BMPs will be required to address poor water transparency that has caused "aesthetically objectionable conditions" and impaired primary contact recreation. The majority of the phosphorus and sediment entering Silver Lake is from agricultural land uses and internal recycling; however, some urban area drains to the lake as well. Therefore, potential BMPs for water quality improvement in Silver Lake are grouped into three components: agricultural, urban, and in-lake".

On page 56 of the Silver Lake Watershed Management Plan it states:

"Trappers Bay RMA, West Basin

Restoration Planning Components

Phosphorus Management

A combination of Conservation Tillage, No-till systems, Phosphorous Rate Reduction, and Cover Crops will reduce approximately 32.7 pounds of Phosphorus from entering Silver Lake each year. The Spreadsheet that follows details the number of acres and level of treatment. However, it is significant to understand that the important figure to reach is not acres of a practice but rather the pounds of phosphorus reduction.

Land Use Change

A combination of Grassed Waterways, Sediment Basins, Grade Stabilization, Structures, and land retirement will prevent approximately 77.0 pounds of Phosphorus from entering Silver Lake. The spreadsheet that follows will detail the number of acres and the level of treatment necessary to get the required level of reduction. However, it is significant to point out that the pound of Phosphorus is the important factor in the reduction.

Edge of Field
A combination of wetland restorations, sediment control practices, vegetative buffers, and tile intake treatments will be used to prevent approximately 26.0 pounds of Phosphorus from reaching Silver Lake. It is significant to note that the acres and number of practices is not as important as is the pounds of Phosphorus reduced.

Drainage Ditch Repair
The Joint Drainage Ditch 1 travels through all three of the sub-basins in Trappers Bay, but to divide that amount up presented a staggering task. Therefore, the drainage ditch repair that is proposed and currently moving forward has been planned in this sub-basin as it starts in this basin and travels through all three sub-basins. The total savings of phosphorous that would be realized from completing this drainage ditch project would be 308 pounds each year that would be prevented from reaching the lake.

Education
An intensive education campaign to change attitudes and the culture that has been formed over time will be implemented. The education campaign will closely follow the Public Outreach program that is outlined on page 13 of this Management Plan. The campaign will specifically target the landowners and operators of this RMA but will be done in a way that anyone can use the information.

Monitoring
Water monitoring of this RMA will be vital in providing a baseline and documentation of any improvements that are realized by the cultural practices and the erosion control practices that are installed as part of the plan. The water monitoring will be inclusive and follow the QUAPP that has been developed specifically for this RMA."

STATEMENT OF PROJECT BENEFITS TO WATER QUALITY
The project benefit will be calculated based on scientific information from Iowa's Nutrient Reduction Strategy which states:

Phosphorous is one of three primary nutrients for plant (crop) production along with nitrogen (N) and potassium (K), and therefore needs to be managed for agronomic production. Additionally, P is generally the limiting nutrient for algal production in fresh water systems (Schindler et al., 2008; Schindler, 1971), meaning the addition of P to fresh water can lead to eutrophication. Eutrophication has a negative impact on aquatic ecosystems by limiting oxygen available for aquatic species.

Much of the P being delivered to surface water is from non-point sources via agricultural runoff (Jacobson et al., 2011) and/or streambank erosion (Zairnes et al., 2008b), although under some conditions loss through sub-surface tile drains can be significant. Most P in runoff is sediment bound (Jacobson et al., 2011), 70% of the total P delivered to streams near agricultural fields (Mallarino and Wittry, 2005).

With that said, and knowing the impairment of Silver Lake is bound to phosphorous, each of the practices that is part of this project were chose to make a significant impact on phosphorous delivery to the lake.

The Iowa Nutrient Reduction Strategy (NRS) goes further to pinpoint specific practices that reduce phosphorous very effectively. Those practices are the focus of this project. The

practices outlined in the NRS are categorized as Phosphorous Management, Land Use Change, and Edge of Field Practices.

The NRS States the following:

Phosphorus Management

Phosphorus Application Rate and Timing

Research suggests that, in practice, P rate is less important than N rate as it affects water quality. The P rate affects the STP level, both in the short and long---term, with a small to moderate but long---term impact on annual P loss. Applied P quickly binds to soil particles in most Iowa soils and, unless there is significant soil erosion, only a small portion is available for runoff loss as dissolved P, except for runoff events occurring within a few days of surface P application (Allen and Mallarino, 2008; Tabbara, 2003). Key P management issues for crop production involve knowing the optimum STP level, applying P to avoid deficiencies, and achieving the optimum soil---test level over time by using various strategies that consider fertilization rates and the frequency of application. Therefore, in most fields, the fertilizer P application rates being used are those that maintain STP levels farmers want to maintain, largely based on estimated P removal. The soil--- test levels being maintained often exceed those recommended by Iowa State University, however, which explains the high proportion of soils testing high and very high in the state as suggested by soil test summaries (Mallarino et al., 2011a). In practice, therefore, the historical P application rates and current STP level a farmer maintains is a most important and relevant issue for the economics of P management and impacts on water quality. The rate of P application becomes of great concern, however, when manure is applied for disposal purposes, when any manure type is applied at N---based rates to continuous corn, and when poultry manure (which often has a lower N/P ratio) is applied at N---based rates for corn after soybean or continuous corn. In these cases, there is the short---term direct effect of P rate on P runoff loss and also the long---term effect through excessive soil P increase.

Soil—Test Phosphorus Level

Since a large portion of P loss is associated with erosion (sediment bound P or dissolved P in surface runoff), the amount of P applied to the soil and its effect on STP and total soil P has a significant impact on the total P loss from a field. Phosphorus loss can be reduced by decreasing the total soil P concentration, which means limiting or stopping P application to high---testing soils until STP is lowered to agronomically optimum concentrations. This practice does not reduce erosion, only the amount of sediment---bound and dissolved P lost.

Site—Specific Phosphorus Management

Agricultural fields are becoming larger, and research shows large within---field variability concerning soil types, erosion risk, crop yield, P removal with harvest, and STP levels along with many other properties. Therefore, site---specific management that considers the P loss risk from different areas of a field could be a beneficial practice to reduce P loss, depending on the degree of variability present. The potential for site--- specific management to reduce risk of P loss is not well studied, but on---farm research in Iowa has found

variable---rate fertilizer and manure P application to be effective in reducing within field variability of STP levels (Bermudez and Mallarino, 2007; Mallarino and Wittry, 2010; Wittry and Mallarino, 2004). Therefore, variable---rate P application is expected to reduce P loss from fields compared with a uniform application based on the average STP level for a field.

Source

There is little evidence of P source (i.e., fertilizer compared to manure P) effects on short---term P delivery from fields if the P is incorporated into the soil. In the long term, however, manure compared with inorganic P forms can reduce runoff (Gilley and Risse, 2000; Gessel et al., 2004) by increasing soil organic carbon and improving soil structure. If runoff---producing rainfall events occur immediately after P application, significantly less P loss occurs with solid beef and poultry manure, compared with commercial fertilizer (Mallarino and Haq, 2007 and 2008).

Placement

Placing P in the plant root zone can increase P availability and allow for reduced application rates in some conditions, but extensive research has shown this is not the case in Iowa soils. Also, long term Iowa research shows that applying similar rates of broadcast or planter---band P results in similar STP levels. On the other hand, subsurface banding of P or incorporation of surface---applied P fertilizer or manure on sloping ground reduces P loss significantly compared with surface application when runoff---producing precipitation occurs within a few days or weeks of the application.

Tillage

Tillage practices affect soil erosion, which is the primary transport process of P delivery in Iowa. Increased tillage reduces ground cover by crop residues, exposing more soil to raindrop splash effects that contribute to sheet erosion. Some forms of tillage reduce soil aggregate stability, resulting in increased break---up of aggregates during rainfall events, increasing erodibility and reducing permeability of surface soil. Tillage effects on P loss are site specific, but less P loss generally occurs with minimum or no tillage than with conventional tillage, although no---till can increase the proportion of total P lost as dissolved P, especially in tile drained areas.

Cover Crops

Cover crops reduce soil erosion by improving soil structure, stability, and permeability in addition to providing ground cover as a physical barrier between raindrops and the soil surface. Cover crops can be seeded in the fall using a variety of methods including drilling after crop harvest, broadcasting after crop harvest, or aerially broadcasting before harvest. Because of the Iowa climate and mainly corn---soybean production systems, fall growth of cover crops is very limited. Although often there may be poor germination with aerial application, this seeding method and timing has potential for extending the growing season of the cover crop by seeding before row crop harvest. The effectiveness of cover crops in reducing erosion is related to the soil cover achieved, which is generally greater with early compared to late sowing for both fall and spring sowing. This cover is most important in the spring, however, when most runoff events occur. Termination of a winter rye cover crop two weeks before planting corn reduces the negative impact on corn growth and yield. However, the research summary indicates an average 6% reduction in

corn yield following a rye cover crop. Soybean yield is not affected by winter rye cover crops, which can continue growing longer in the spring to provide more protection against erosion. Corn yield reduction has been small, if any, with oat as a cover crop.

Land Use Change

Sediment Control

Numerous erosion and sediment delivery control practices can be appropriate at the field or sub---field scale to reduce sediment delivery. These include terraces (with multiple design criteria), grassed waterways to reduce gully erosion, water and sediment control basins to capture sediment in waterways, and ponds. Ponds can be effective at removing sediment (and P), but generally are not built for this purpose in the agricultural setting. Some of these structures also may be located at field edges.

Crop Choice (Extended Rotation)

For Iowa, an extended rotation can be defined as a rotation of corn, soybean, and at least three years of alfalfa or legume---grass mixtures managed for hay harvest. The P loss reduction with alfalfa or a legume--- grass mixture in the rotation is associated with reduced soil erosion because of greater soil cover, and also higher P removal with hay than with corn grain or soybean seed. There is very little concurrent P loss and corn yield data for specific extended rotations compared to a corn---soybean rotation in Iowa, but much information is available for crop rotation effects on erosion.

Perennial Energy Crops

Several perennial crops, such as switch grass, produce biomass that can be used as a bio---energy feedstock. Demand for and production of these crops still is small and localized in Iowa, but the acreage is likely to increase. These crops improve soil physical properties, provide good soil cover, reduce erosion, and reduce P loss.

Grazed Pastures

There are substantial areas of Iowa, especially in southern counties, in permanent pasture. Although there is little research comparing P loss from pasture and corn---soybean rotation in Iowa, pastures typically have lower soil erosion rates than a corn---soybean rotation on comparable land but higher dissolved P concentration in runoff because of fertilizer application and fecal P on the soil surface. Delivery of P to water bodies is highly affected by pasture management. Phosphorus delivery is greater with excessive and prolonged over---grazing and with unrestricted animal access to streams, compared with intensively managed rotational grazing and restricted animal access to streams.

Land Retirement

The Conservation Reserve Program (CRP) is a long---term (10---15 year) perennial vegetation program intended to limit soil erosion. The established vegetation is a near "natural" system that has plant and animal habitat and soil improvement benefits that should result in reduced P loss.

Edge—of—Field

Wetlands (Targeted for Water Quality)

The performance of installed wetlands depends on the wetland---to---watershed ratio (wetland area compared to watershed area) with larger ratios having a greater impact on P removal. Several factors are involved with implementation of wetlands and their effectiveness, including land cost and availability and level of sediment P loading. Eventually, the effectiveness of wetlands for removing P declines due to P saturation. Wetlands installed or restored specifically for habitat benefit also may result in reduced P delivery to water bodies.

Sediment Control

Several sediment delivery control practices are appropriate for edge---of---field to reduce sediment delivery. These include water and sediment control basins to capture sediment from a field or wetlands.

Vegetative Buffers

A buffer is a vegetated area strategically placed between cropland and a stream or other water body, which acts as a filter. Buffers can have plant and animal habitat benefits, but a primary role is to reduce P delivery from fields to water bodies by removing particulate P from runoff water through filtration and sedimentation and removing dissolved P by plant uptake or soil binding. Riparian buffers also can reduce P delivery to water bodies by stabilizing stream banks.

Performance of Phosphorus Loss Reduction Practices

The effectiveness of practices (Table 1) in reducing P loss and their effect on corn yield were evaluated based on research results. For consistency, individual years of data (site years) were extracted from the reviewed studies to allow for direct comparisons. Large variations in P reduction and yield effects were found for most practices, and the minimum and maximum values are reported. The average reported values were determined from the multiple available observations. Specific methods for calculating the values are described below. Great care was taken to ensure appropriate comparisons were being made from each study.

The Table 1 noted above could not be brought into this document in its present format but here is the data contained in that table:

Phosphorous Management (annual practices):

Phosphorous Application – 17 percent load reduction

Source of Phosphorous (Liquid Manure versus commercial fertilizer) – 46 percent load reduction

Placement of Phosphorous (with Seed in knifed bands) – 24 percent load reduction

Cover Crops – 29 percent load reduction

Tillage – 33 percent load reduction

Land Use Change (permanent/long term practices):

Perennial Vegetation (Land Retirement) – 75 percent load reduction

Erosion Control and Edge of Field Practices:

Wetlands – 35 percent load reduction

Buffers/Filter Strips – 58 percent load reduction

Sediment Basins – 85 percent load reduction

For the pollutant load reductions it is thought to be a good cost per dollar investment to look at the Land Use Change Practices and specifically the Erosion Control and Edge of Field Practices which are the more permanent land use change and also provides the higher load reduction percentage.

PUBLIC AWARENESS PLAN

Phase I Development

During the development of the draft Phase I additional stakeholders will be invited to participate in marketing efforts. Staff will also conduct presentations for interested parties outside of the marketing group.

Phase II Outreach

The marketing "team" will develop following communications, education and outreach materials, activities and efforts.

Development of Communications, Education and Outreach Materials

- ☐ Brochures: "Get in the Boat – Our role in cleaning up Silver Lake"
- ☐ Frequently Asked Questions – Phase II Watershed Management Plan
- ☐ Fact Sheet: "The Silver Lake "Pollution Diet" – What it Means for our Lake"
- ☐ Iowa's Nutrient Reduction Strategy and what it means to Silver Lake.
- ☐ PowerPoint: Phase II WMP Guidance, Milestones, Path Forward
- ☐ The Lakes Barometer – A Health and Restoration Assessment of the Silver Lake and Watershed – Silver Lake Program document
- ☐ Posters: WIP Phase II highlighting: partners; partner responsibilities; goals/strategies; progress made; what needs to be completed; and contact information: Stormwater; Agriculture; Public Lands; Wastewater; Planning and Land Use; Restoration; and Information and Technology
- ☐ An educational poster, "Where Silver Lake pollution comes from," explaining the origins of pollution and how excess nutrients pollute our Lakes. The poster also outlines relative pollution rates for different land uses.

- ☐ An educational poster, "Protecting our Silver Lake waterways," showing areas of concern in the Silver Lake Watershed and the sources of pollution and impacts on water quality
- ☐ An education poster, ""In this together," highlighting the role of homeowners, agriculture, builders/developers and governments in cleaning up our waterways.

Press Releases

Press releases will be used to highlight success and problematic areas and the

actions being taken to protect or fix the area.

Public Workshops and Forums

□ Highlighting Phase I Accomplishments and introducing Phase II and Subcommittees

Other Major Outreach/Education Efforts (examples are below of such outreach efforts)

o Education and outreach at local Agricultural programs
o Media event to announce Clean Water Efforts
o Rain Gardens for the Lakes program.
o Native prairie planting demonstration.
o Rain barrel educational program to encourage Silver Lake and Lake Park residents to purchase and use rain barrels to improve water quality and conserve water.
o Media event with the Iowa DNR highlighting the Trappers Bay Renovation.
o A Public Workshop highlighting the Sediment and Stormwater Regulations.
o Dickinson County and Clay County Fairs
o "Liveable Lawns" program
o Pollution reduction education on the value of buffers
o Silver Lake Onsite Wastewater Systems and the problems with them.
o Presentation on Silver Lake Watershed Land use and the benefits and problems with that use.
o Urban tours to farm land
o Presentations to State and Local groups
o Community Outreach Initiative.
o Agriculture Week Programs
o Targeted areas with homeowners living in the Silver Lake Watersheds with failing or out-of-compliance septic systems.
o Women in Agriculture Conference.
o Meeting with the Dickinson County League of Local Governments
o Work with the local colleges and Lakeside lab to develop
o Non-credit Classes at Local Colleges and Lakeside Lab — "Choose Clean Water." The course will cover the Silver Lake Watershed from the pristine conditions described in the late 1800's to the current application of a "pollution diet" designed to improve water quality throughout the Silver Lake Watershed

Phase III

Follow-up and re-evaluate the success and challenges of the marketing plan. Continue the successes and evaluate why challenges occurred and do the failures differently. This should occur every 6 months of the marketing plan.

Partnerships and Volunteers

There are several nonprofit environmental and watershed-based organizations active in the Iowa Great Lakes Watershed. Two organizations, the Clean Water Alliance and the Dickinson Soil and Water Conservation District, have extensive experience with education and outreach efforts, which will help inform residents, businesses and visitors within the Watershed of actions that they can take to improve water quality.

The following Stakeholders and partners are considered the Target Audiences:

Stakeholders in this plan are varied and come from all lifestyles. The bottom line for each stakeholder is that they have a stake in what happens with the Iowa Great Lakes. There are five groups of Stakeholders that have been identified. Those five groups are federal, State,

local government, non-governmental organizations (NGO), and private citizens.
Federal Stakeholders:
U.S. EPA, Region 7 Non-point Source Region Headquarters (Section 319 Non-point Source Pollution Program)
U.S. Fish and Wildlife Service, Desoto Bend Wildlife Area (Private Lands Biologist)
USDA, Natural Resource Conservation Service, Dickinson County, District Conservationist (Wetlands Restoration Program, Wildlife Habitat Incentive Program, Environmental Quality Incentives Program)
State Stakeholders:
Iowa Department of Natural Resources, Bureaus of Fisheries, Wildlife, and Water Resources (Private Lands Wildlife Biologist)
Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation, Field Services Bureau. (Resource Enhancement and Protection Funds, Watershed Protection Funds, Iowa Financial Incentives Program, Watershed Improvement Review Board)
Iowa Department of Economic Development
Local Government Stakeholders:
City of Orleans, Spirit Lake, Okoboji, Arnolds Park, Milford, West Okoboji, and Wahpeton
Dickinson Soil and Water Conservation District, Commissioners (Local Grants)
Jackson (MN) Soil and Water Conservation District, Commissioners (Local Grants)
Dickinson County, Supervisors
Jackson County Commissioner
Spirit Lake School District (Future Farmers of America)
Okoboji School District (Future Farmers of America)
Iowa Great Lakes Sanitary Sewer District
Public Utilities, Alliant Energy
Dickinson County Conservation Board
Non-governmental Organizations:
Dickinson County Clean Water Alliance (Coordination and local funding)
Iowa Natural Heritage Foundation (Easement funds)
The Nature Conservancy (Habitat Restoration Program)
Pheasants Forever (Build A Wildlife Area)
Ducks Unlimited, (Wetland Restoration Assistance)
Dickinson County Water Quality Commission (Water Quality Grants)
Private Citizens:
Property owners (urban and agricultural)
Fishermen, Hunters, Investors, Farmers, Developers, Boaters, Swimmers, Marinas, Resort owners, Bankers, Chambers of Commerce, Golf Courses/clubs, Visitors/tourists

LAND ACQUISITION AND DEVELOPMENT: *If the project involves land acquisition and development, fill out the requested information below. See application guidelines for details.* (Note: Land Development is any activity on a piece of ground that constitutes improving the land, developing the land, or otherwise impacting the land)

Project Location:
Silver Lake Watershed, primarily located in the Trappers Bay West Basin Resource Management Area. The location map is provided in the Appendix below as Map 1.

Environmental, Economic and Social Impacts of Project (Demonstrate project impact to water quality and project need in this section)

The environmental impact is shown in the chart located in the Appendix, as Table 1. In addition maps 2 through 6 show detailed watershed assessment work that has been done to identify key locations for wetlands, grassed waterways and water and sediment control basins, and key fields to work with.

Historical, Archaeological, and Architectural Features/ Impacts/Land Acquisition, Development
No archaeological, architectural, or other impacts will occur due to this project.

Project's Relationship to State, Local and County Plans
This project focuses almost completely on the efforts of the Dickinson County Clean Water Alliance's Silver Lake Watershed Plan, which is currently being re-written. The plan that is presented in this grant application is the "new plan" that is expected to be approved in December of this year. In addition, the Silver Lake Watershed Management Plan draws a great deal on the State of Iowa's Nutrient Reduction Strategy which is a science based strategy that was developed over a period of years to reduce nutrients that are reaching the state's waterbodies and streams. The strategy is quoted in the grant application above in specific manner.

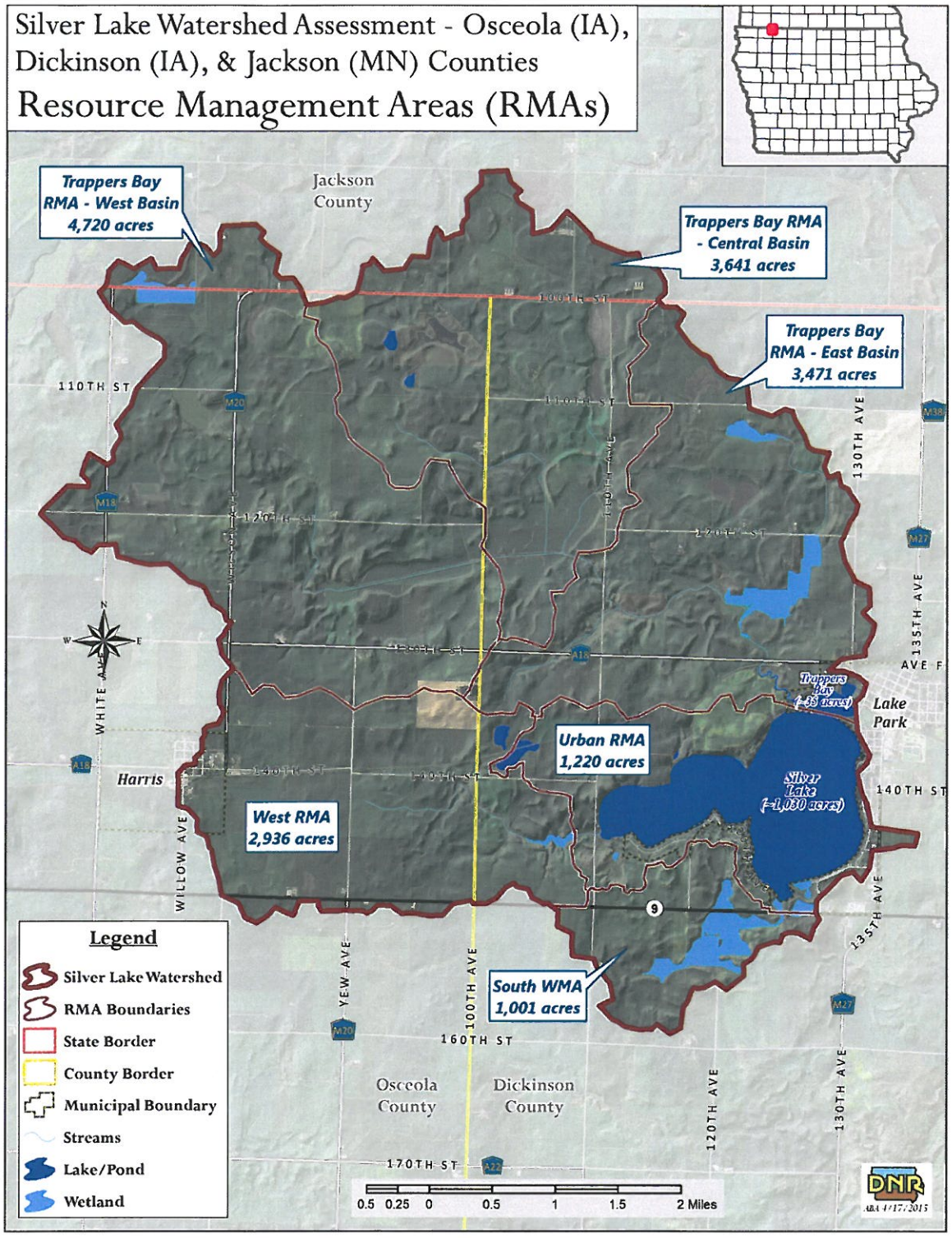
Agreements and Easements/Land Acquisition/Development
Upon completion of a conservation practice either the Dickinson Soil and Water Conservation District or the Osceola County Conservation District will enact a maintenance agreement on that practice for the life of that practice. That maintenance agreement will be held at the office until the maintenance agreement expires.

Itemized Cost Estimate Land Acquisition/Development
In a research project completed during the summer of 2013 it was discovered that Dickinson County was considerably high when looking at adjacent counties in the price for conservation practice establishment. The chart below shows the average cost of practice establishment in adjacent counties for practices. Osceola County would be expected to be similar to the table below however Dickinson County would likely be 10 to 20 percent higher in cost than those listed in the chart below.

Adjacent Counties Average Cost Data for Dickinson County								
Practice	Practice #	Acres	Feet	Net Drop	Number	CU Yards	Ave Cost	Remarks
Brush Management	314	X					$ 265.00	
Conservation Cover	327	X					$ 130.00	
Prescribed Burn	338	X					$ 50.00	
Cover Crop	340	X						Need data
Critical Area Planting	342	X					$ 150.00	
Dike	356					X	$ 1.50	
Pond	378					X	$ 2.50	Includes some 410
Windbreak/Shelterbelt	380	X					$ 700.00	
Fence	382		X				$ 1.00	
Grade Stabilization Structure	410			X			$ 2,000.00	Net drop in structure/ft
Grassed Waterway	412		X				$ 2.25	
Pasture and Hayland Planting	512	X					$ 100.00	
Pipeline Cost	516		X				$ 1.00	
Roof Structure	558				X		$ 250.00	Per animal unit
Streambank and Shorline	580		X					Need data
Subsurface Drain	606		X				$ 2.00	
Watering Facililty	614				X		$ 225.00	
Underground Outlet	620		X				$ 3.00	
Water and Sediment Control	638					X	$ 2.00	
Water Wells	642				X		$ 11,000.00	
Early Successional Habitat	647	X					$ 15.00	
Wetland Restoration	657	X					$ 1,100.00	acres of restored hydrology

In the end, the dollar amount that is requested will primarily be spent in the Osceola County side of the watershed and is expected to provide enough assistance to install approximately 15 conservation practices in connection with this grant. It is estimated the average cost for conservation practice establishment in this area would be $1,650 dollars per practice and 15 would be established. In addition, other programs will contribute to the practices, as part of this project such as cover crops and tillage reduction to ensure a complete pollutant reduction program is established. It is estimated that $25,000 dollars will be spent on these practices and an additional $12,500 will be spent on cover crops, Conservation Reserve Program and other temporary conservation practices.

Appendix:



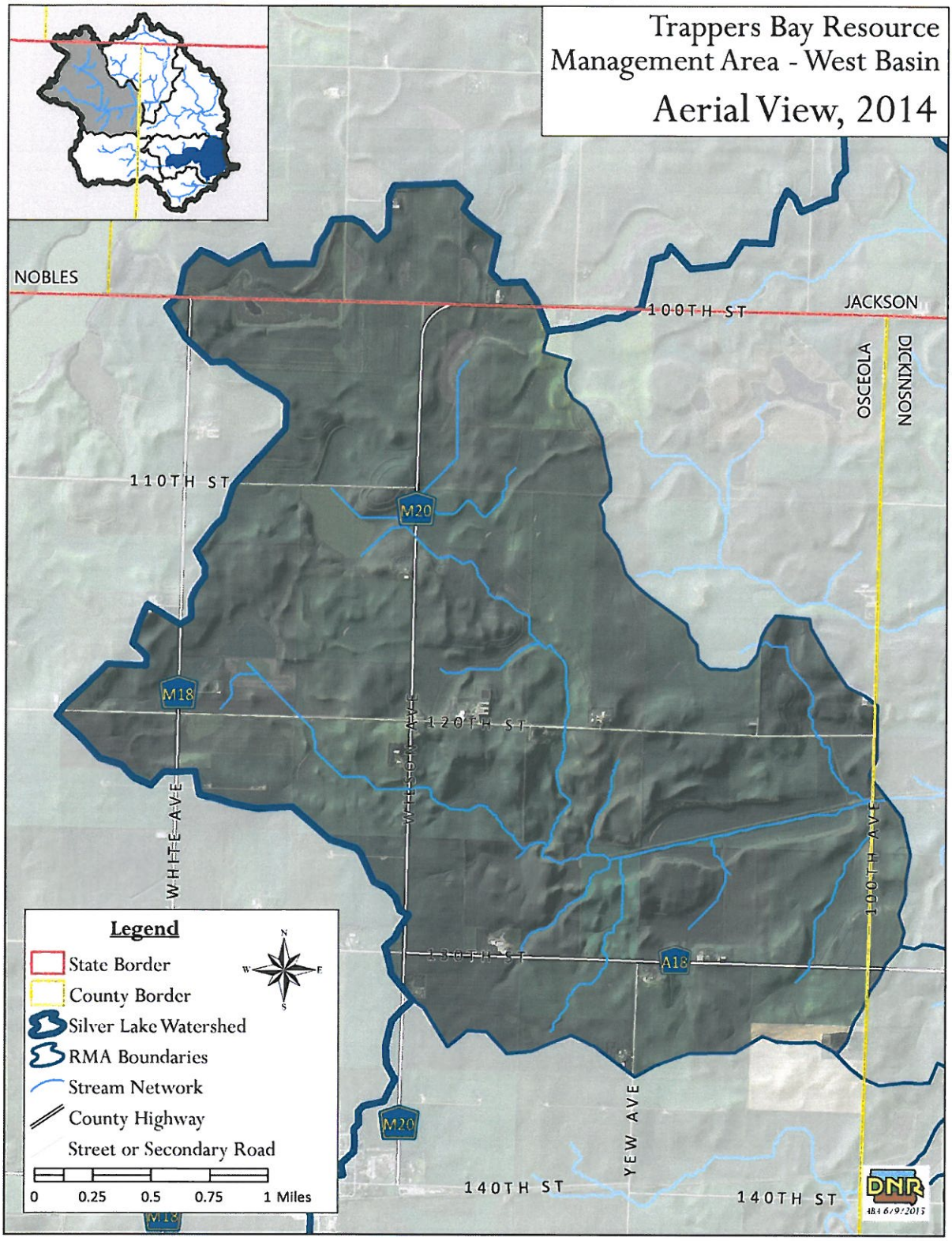
Map 1

#FY16 - 5
(For DCWQC Only)

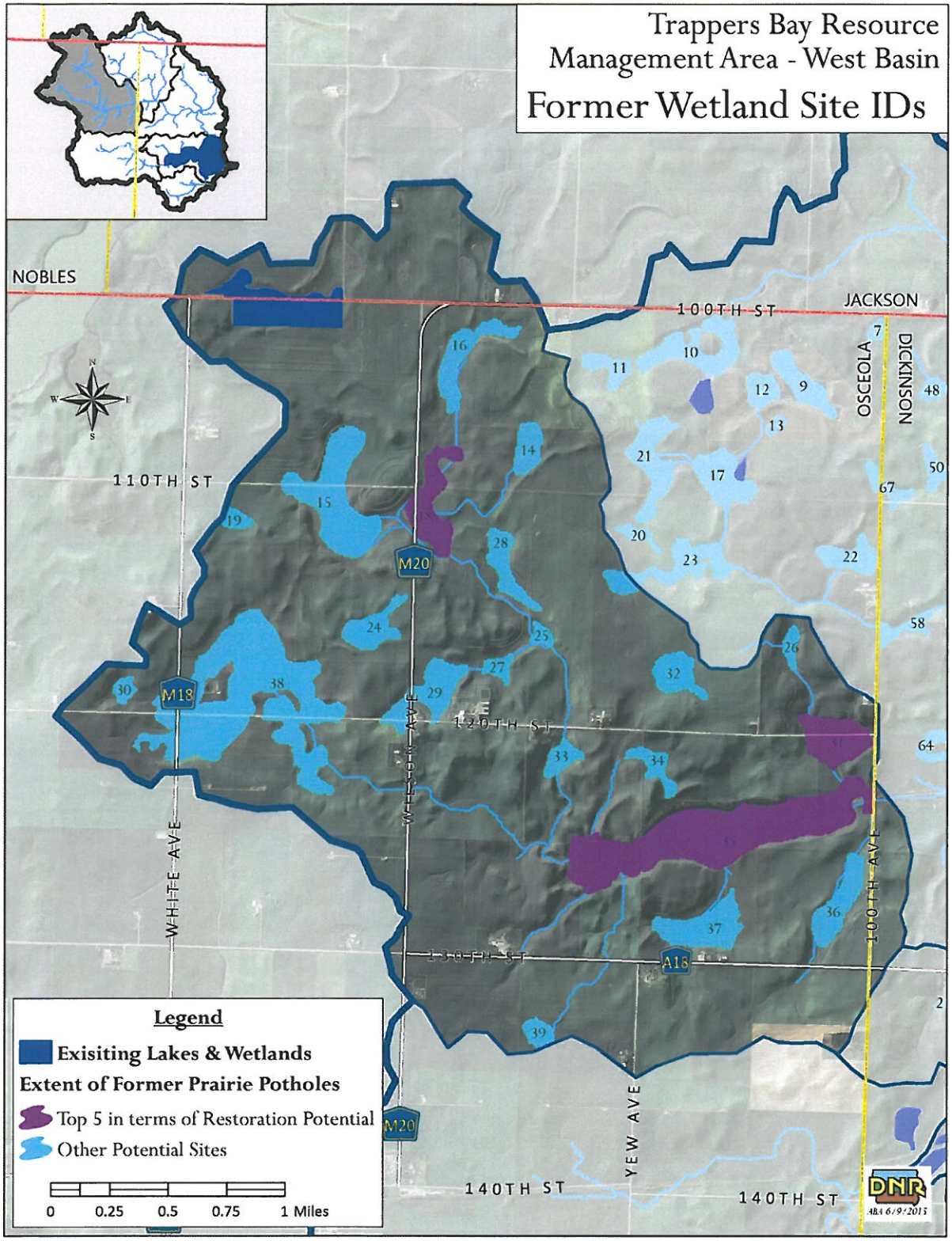
Table 1

Trappers Bay West Basin Resource Management Area											
Clean Water Alliance						Today's Date:		5/7/2015			
	Project Lead:	John H. Wills									
	Start Date:	7/1/2015									
			Annual	Long Term							
Goal	Tasks	Task Lead	Acres/feet/number	Acres/feet/number	% Complete	Estimated Annual Cost of Practice	Estimated Cost of Practice	Estimated Phosphorous Delivery Removal (lbs)	Annual cost per pound of P Removed	Cost per pound of P removed
1	Phosphorus Management				0%	$23,950	$0	32.7	-$132	$0
1.1	Conservation Tillage	SWCD	500		0%	-$500		50.05	-$10	$0
1.2	No-Till System	SWCD	400		0%	$4,800		141.96	$34	$0
1.3	P-Rate Reduction	SWCD	50		0%	-$600		3.19	-$188	$0
1.4	Cover Crop	SWCD	450		0%	$20,250		618.75	$33	$0
2	Land Use Change				0%	0.0	$ 780,886	70.0	0.0	7369.2
2.1	Grassed Waterway	SWCD		800	0%	$0	$2,000	125.00	0	$16.00
2.2	Sediment Basins	SWCD		8	0%		$12,000	98.00	0	$122.45
2.3	Grade Stabilization Structure	SWCD		1	0%		$15,000	48.00	0	$312.50
2.4	Land Retirement	SWCD		55	0%		$302,500	60.00	0	$5,041.67
3	Edge of Field				0%	$0	$104,693	22.7	$0	$705
3.1	Wetland Restoration	SWCD		3	0%		$60,000	150.00	0	$400.00
3.2	Sediment Control Practice	SWCD		2	0%		$9,000	50.00	0	$180.00
3.3	Vegetative Buffer	SWCD		3	0%		$693	48.00	0	$14.44
3.4	Tile Intake Treatment	SWCD		35	0%		$35,000	317.00	0	$110.41
4	Drainage Ditch Repair	DDS			0%			308.4		
4.1	Drainage Ditch Repair	DDS		6,000	0%		$240,000	514.00	0	$466.93
5	Education				0%	$11,500	$0	0.0	$11,000	$0
5.1	Radio	SWCD			0%	$9,000			$9,000	$0
5.2	Print	SWCD			0%	$1,500			$1,500	$0
5.3	Landowner Visits	SWCD			0%	$0			$0	$0
5.4	Landowner Seminar	SWCD			0%	$1,000			$500	$0
6	Monitoring				0%	$20,500	$0	0.0	$20,500	$0
6.1	Lake Monitoring	SWCD			0%	$6,000			$6,000	$0
6.1.1	Vegetation	SWCD			0%	$500			$500	$0
6.1.2	CLAMP	LSL			0%	$500			$500	$0
6.1.3	Cyanobacteria	ISU			0%	$5,000			$5,000	$0
6.2	Wetland	SWCD			0%	$5,000			$5,000	$0
6.3	LID Practice Samples	SWCD			0%	$3,500			$3,500	$0
	Totals					$55,950	$885,579	433.8		

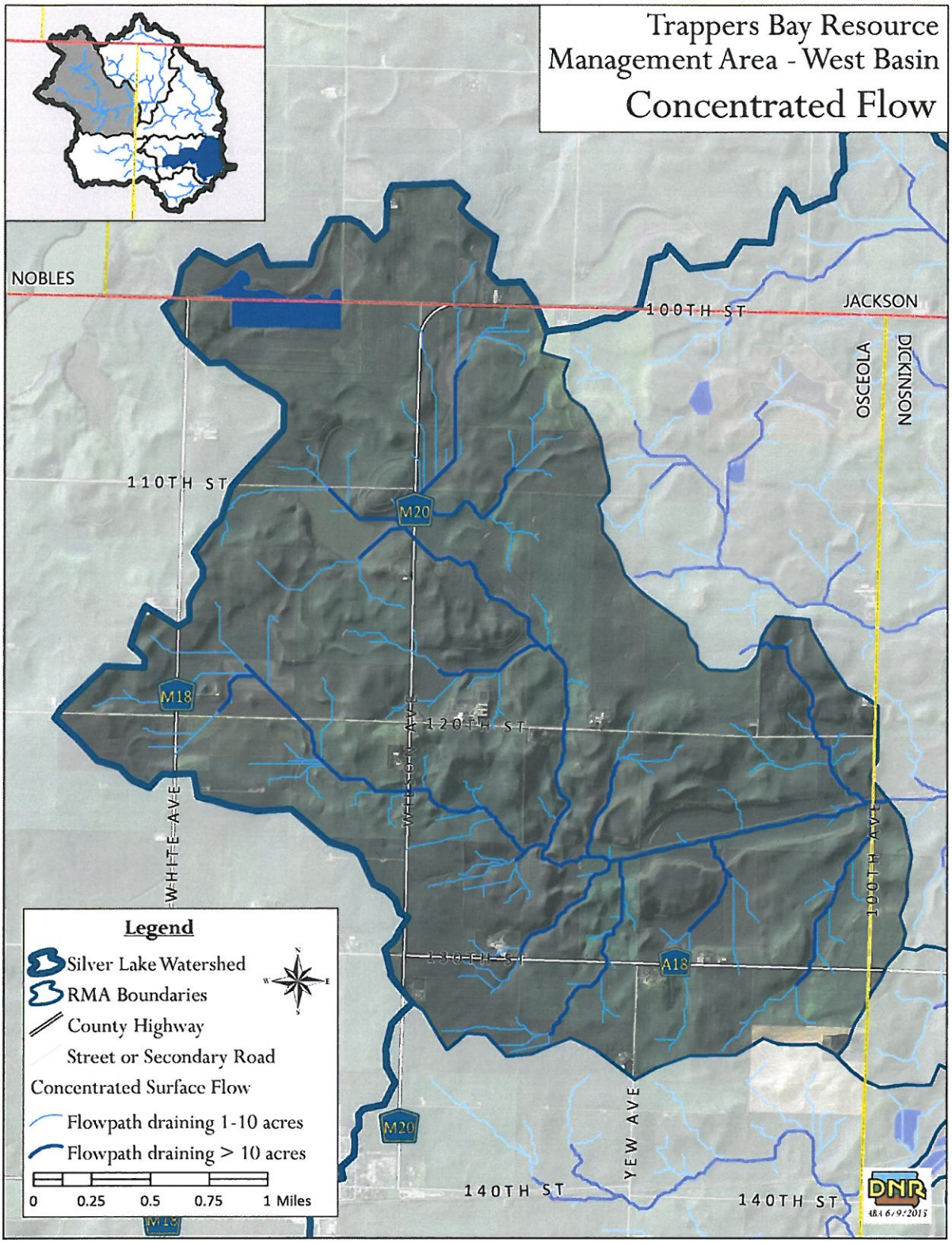
Last Revised: 4/24/2015 all previous dates are obsolete


Trappers Bay Resource Management Area - West Basin
Aerial View, 2014
NOBLES
JACKSON
100TH ST
OSCEOLA
DICKINSON
110TH ST
M20
M18
120TH ST
WHITE AVE
130TH ST
A18
YEW AVE
140TH ST
140TH ST
Legend
State Border
County Border
Silver Lake Watershed
RMA Boundaries
Stream Network
County Highway
Street or Secondary Road
0 0.25 0.5 0.75 1 Miles
N
W
E
S
DNR

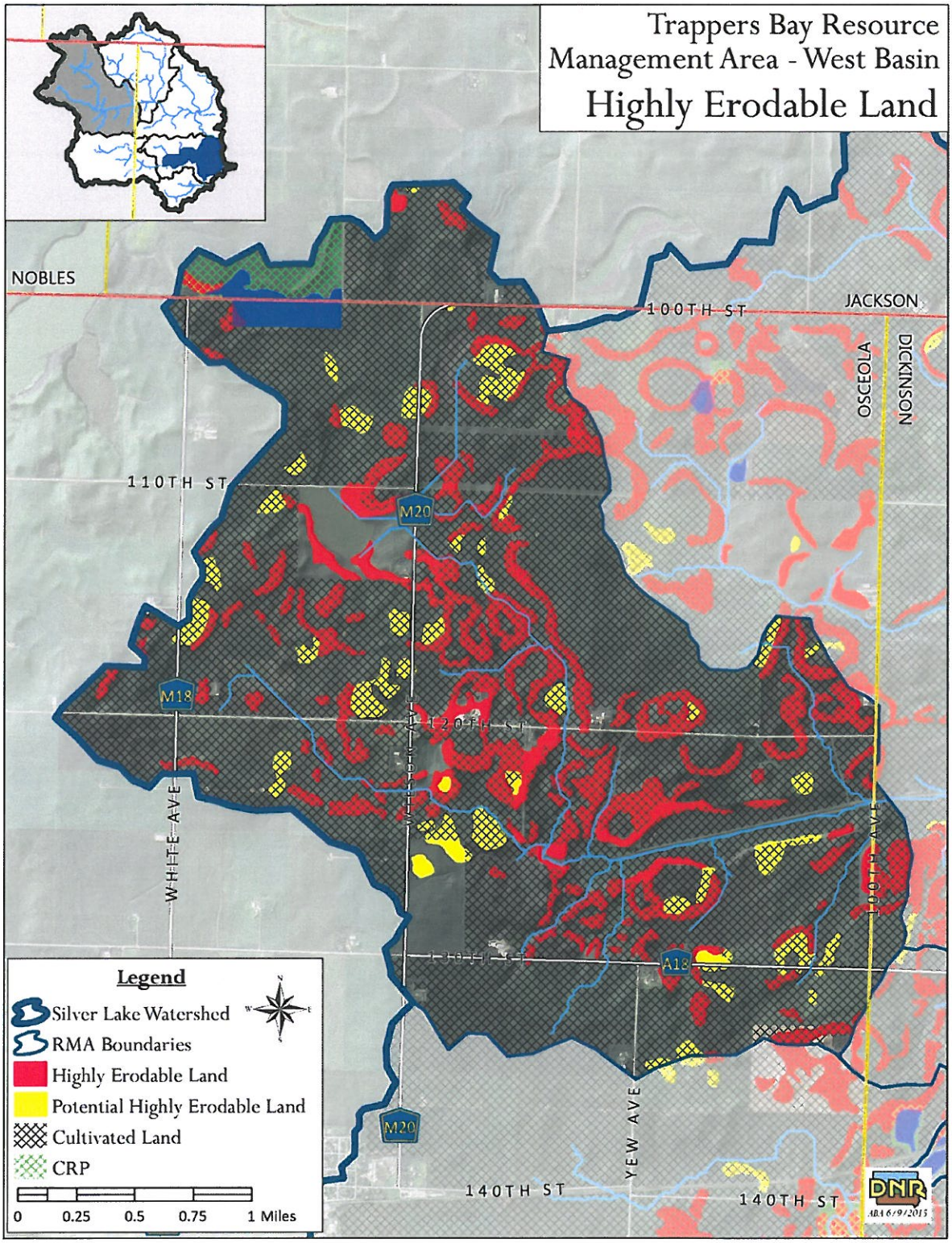
Map 2


Trappers Bay Resource Management Area - West Basin
Former Wetland Site IDs
NOBLES
JACKSON
100TH ST
110TH ST
120TH ST
130TH ST
140TH ST
WHITE AVE
M20
M18
A18
OSCEOLA
DICKINSON
YEW AVE
Legend
Exisiting Lakes & Wetlands
Extent of Former Prairie Potholes
Top 5 in terms of Restoration Potential
Other Potential Sites
0 0.25 0.5 0.75 1 Miles
DNR
ABA 6/9/2015

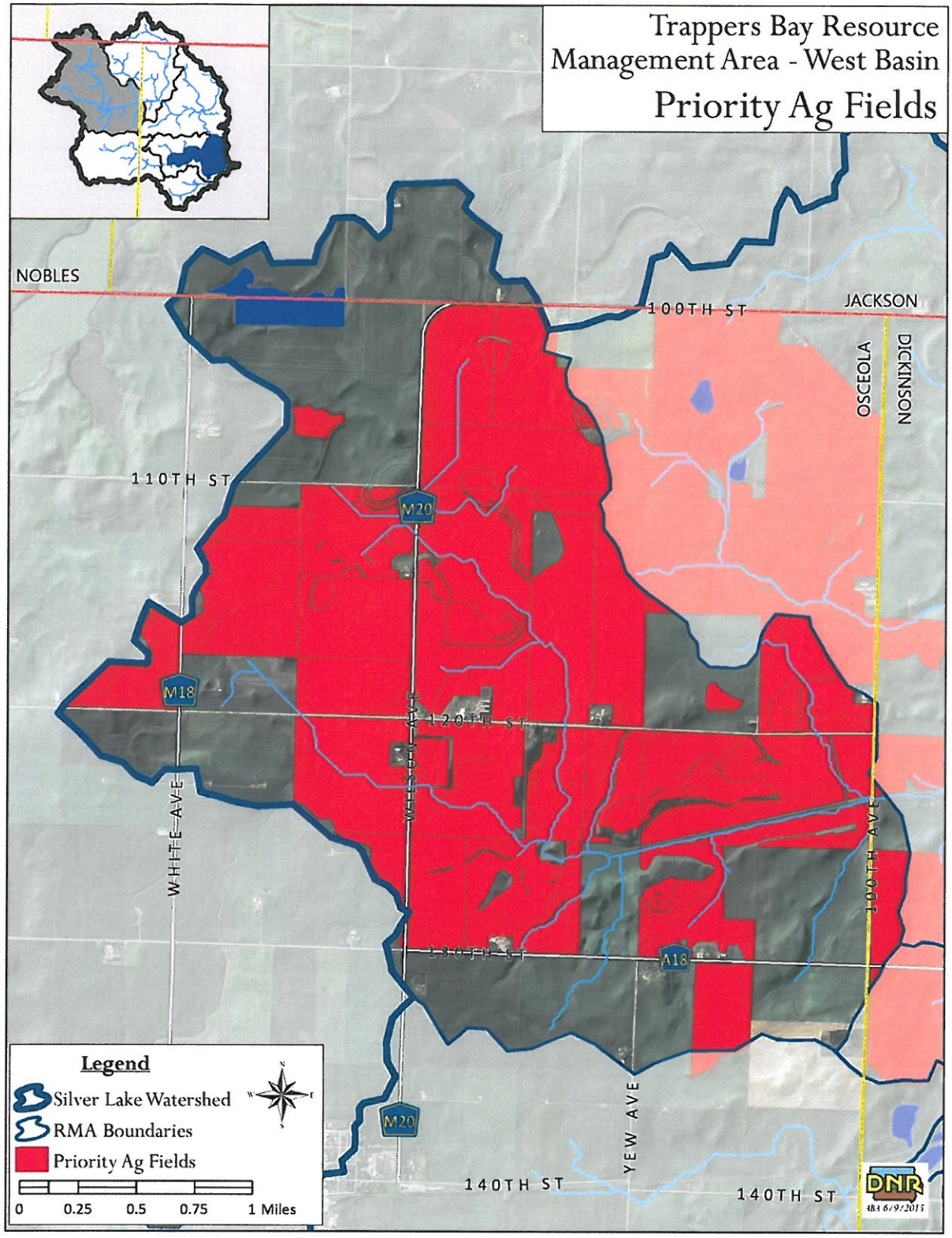
Map 3


Trappers Bay Resource Management Area - West Basin
Concentrated Flow
NOBLES
JACKSON
100TH ST
OSCEOLA
DICKINSON
110TH ST
M20
M18
120TH ST
WHITE AVE
130TH ST
A18
YEW AVE
140TH ST
140TH ST
DNR
4BA 6/9/2015
Legend
Silver Lake Watershed
RMA Boundaries
County Highway
Street or Secondary Road
Concentrated Surface Flow
Flowpath draining 1-10 acres
Flowpath draining > 10 acres
0 0.25 0.5 0.75 1 Miles

Map 4


Trappers Bay Resource Management Area - West Basin
Highly Erodable Land
NOBLES
JACKSON
100TH ST
OSCEOLA
DICKINSON
110TH ST
M20
M18
120TH ST
WHITE AVE
YEW AVE
A18
140TH ST
140TH ST
Legend
Silver Lake Watershed
RMA Boundaries
Highly Erodable Land
Potential Highly Erodable Land
Cultivated Land
CRP
0 0.25 0.5 0.75 1 Miles
DNR
ABA 6/9/2015

Map 5


Trappers Bay Resource Management Area - West Basin
Priority Ag Fields
NOBLES
JACKSON
100TH ST
110TH ST
120TH ST
130TH ST
140TH ST
140TH ST
OSCEOLA
DICKINSON
WHITE AVE
WILSON AVE
190TH AVE
YEW AVE
M20
M18
A18
M20
Legend
Silver Lake Watershed
RMA Boundaries
Priority Ag Fields
0 0.25 0.5 0.75 1 Miles
DNR
4BA 6/9/2015

Map 6