
PROJECT APPLICATION
Dickinson County Water Quality Commission
Cover Sheet

1. Applicant Organization **Ducks Unlimited, Inc.**
Great Lakes/Atlantic Regional Office
Street address 1220 Eisenhower Place
City Ann Arbor
State MI
Zip 48108
Email dbrakhage@ducks.org
Phone (734)623-2029
Organization contact: David Brakhage, Director of Operations
2. Project title: Dickinson County Shallow Lakes Enhancement – Phase 2
Location Multiple locations, Dickinson County
3. Project Director (if different than organization contact)
Street address 2003 Benton Street
City Boone
State Iowa
Zip 50036
Email mshannon@ducks.org
Phone (541)891-5047
Organization contact: Michael Shannon, Regional Biologist
4. Application submission date: October 1, 2015
5. Brief description (75 words or less) of project, including expected results:

This Project consists of 3 separate yet complementary elements: Garlock Slough Watershed Protection, Garlock Slough Wetland Enhancement Feasibility and Engineering Study, and Kettleson Hogsback Wetland Enhancement. The Project will enhance wetlands to help realize the practices and water quality goals identified in the Iowa Great Lakes Management Plan. We are requesting a total of \$100,000 from the Commission to help with the Project and will provide \$234,262 in match.
6. Amount requested through this grant application * : \$100,000
7. Matching funds:
Hard match \$220,180 (Anything paid for with real money)
- Sources: 1) Ducks Unlimited = \$4,000
2) Iowa DNR = \$117,000
3) U.S. Fish and Wildlife Service = \$87,000 (Secured by DU through *Upper Iowa Prairie Pothole NAWCA, Phase 3* in 2013)
4) Iowa Natural Heritage Foundation = \$10,000
5) Local funding sources = \$2,180. DU and IDNR are working to secure funding.

Soft match \$14,082 (Anything not paid with real money but has a value)
Sources: Ducks Unlimited Indirect Costs, Calculated based on DU's federally-approved indirect rate of 13.54% in FY15 applied to all incurred or anticipated direct project costs. (Note: This rate is updated annually as determined by an independent auditor).

Other support _____

a. Amount of Federal, State or other public cash match money already acquired or in process: \$204,000

b. Amount of private cash match funds: \$30,262

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

d. Ducks Unlimited, Inc. = \$18,082

e. Iowa Department of Natural Resources = \$141,180

f. U.S. Fish and Wildlife Service = \$87,000 (Secured by DU through *Upper Iowa Prairie Pothole NAWCA, Phase 3* in 2013)

g. Iowa Natural Heritage Foundation = \$10,000

h. Local funding sources = \$2,180. DU and IDNR are working to secure funding.

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

*** The Water Quality Commission will only 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

_____ Bank stabilization Water treatment

_____ Water monitoring

X Watershed protection

_____ Activities to abate and remove invasive species

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

Estimated project dates:

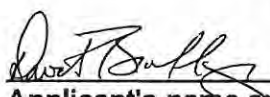
a. Start March 2016

b. Completion October 30, 2017

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.

 - Director

Applicant's name and title

09/29/2015

Date

Dickinson County Shallow Lakes Enhancement Project – Phase 2



**A Wetland Protection and Enhancement Proposal Submitted To
Dickinson County Water Quality Commission**

October 1, 2015

**By:
Michael Shannon
Regional Biologist, Iowa**



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PROJECT NARRATIVE

Iowa's Prairie Pothole Region is one of the most altered and threatened landscapes in the entire United States. Over the last 150 years, Iowa's prairie landscape has endured dramatic changes, resulting in a loss of over 95% of our states wetlands and 99.9% of our native grasslands (Iowa's Wildlife Action Plan, 2005). With this reduction of habitat comes a corresponding loss in the benefits once provided by these habitats: flood control, fish and wildlife habitat, water purification, shoreline protection, groundwater recharge and abundant recreational opportunities.

The Iowa Great Lakes are a prime example of what happens when these natural systems are altered, resulting in increased runoff and nutrient loading, turbid lakes, declining populations of native fish and wildlife, and the resulting negative impacts on economic systems dependent these resources. The combination of major hydrological changes (i.e., artificially high water levels caused by increased tiling and drainage), increased sediment and non-point source pollution, and the introduction of exotic and invasive common carp (*Cyprinus carpio*) have led to the slow degradation of these important wetland systems. Despite these problems, this region also shows how healthy, functioning wetlands can improve water quality and wildlife habitat, and how productive partnerships can work to restore these resources.

The Iowa Great Lakes has an extensive watershed that covers approximately 90,631 acres in Iowa and Minnesota. To address the problems facing this vast area, concerned partners will need to work cooperatively throughout the watershed. The Water Quality Management Plan for Iowa Great Lakes Watershed (Wills, 2013) provides a strategic approach towards tackling the issues that plague the watershed. Ducks Unlimited is working with a multitude of partners to restore productivity to the region's numerous shallow lakes and marshes, one of the approaches identified in the IGL Management Plan as necessary to have a meaningful impact on Phosphorus level reductions in the watershed.

In order to bring Spirit Lake and the surrounding sub-watersheds back to productivity, intensive restoration and management of the area's wetland complexes must occur. Ducks Unlimited and our partners are proposing to undertake habitat protection and enhancement activities on 3 sites in the Spirit Lake watershed to improve productivity of the areas shallow lakes and help improve water quality. Two of these projects focus on the Garlock Slough RMA and the third on wetland enhancement activities in the Marble and Hottes Lakes RMA. Details of all project activities will be provided in the Project Needs section below.

While the three project elements described in this proposal could function as stand-alone projects, they are part of a coordinated larger effort initiated by DU and our partners to restore northern Iowa's wetland habitat and water quality. Ducks Unlimited, in partnership with Iowa DNR and numerous private supporters, kicked off the "*Living Lakes Initiative*" in 2004 with the goal of establishing "stepping stones" of high quality and perpetually protected wetland habitat within 11 Emphasis Areas (EA) strategically targeted within Iowa's Prairie Pothole Region. The Iowa Great Lakes Region represents one of the emphasis areas called the "Spirit Lake Emphasis Area" (Figure 1). Over the last decade, approximately \$2.75 million has been invested in shallow lakes projects in this EA. Projects have been completed on Diamond Lake, Jemmerson Slough, Dry Mud Lake, Dan Green Slough, and most recently, the Marble-Hottes Lakes system. Additional projects are underway on Little Swan Lake and the Clemens Tract in the Spring Run Complex.

The Dickinson County Water Quality Commission has been a significant partner in several of these projects, partnering with Ducks Unlimited and Iowa DNR on the Little Swan Lake, Clemens and Marble-Hottes projects. Little Swan Lake and the Clemens Tract restoration are currently in the design phase with construction anticipated for 2016. The majority of the Marble-Hottes project was completed in early 2015, with the final component, installation of the East Hottes Fish Screen completed in late September 2015. This proposal builds on these previous efforts, as well as other projects to improve wetland habitat and water quality within the region. The Commission also partnered with Iowa Natural Heritage Foundation and DNR in 2013 on the Garlock Slough Protection Project.

STATEMENT OF PROJECT NEED:

In a healthy state, the shallow lakes and large marshes surrounding the Iowa Great Lakes provide critical watershed protection and habitat for wildlife and fisheries. Despite their ecological, environmental and recreational importance, these shallow lakes and marshes have experienced a significant decline in water quality, ecological health and migratory bird use over the past several decades. In order to reverse this trend and to improve over-all water quality in the Spirit Lake watershed, DU and our partners have initiated a series of shallow lake enhancement projects. Past projects include Diamond Lake, Jemmerson Slough, Marble/Hottes Enhancement and the on-going Clemens Tract Restoration project. Through this proposal, DU and our partners seek to build on this momentum and initiate three additional wetland projects in the county. All three of these Project Elements meet the goals and objectives of the Water Quality Management Plan for Iowa Great Lakes Watershed. These three elements are: 1) Garlock Slough Watershed Protection; 2) Garlock Slough Wetland Enhancement Feasibility and Engineering Study; 3) Kettleon Hogsback Wetland Enhancement. All three elements are identified in the Management Plan and will address explicit water quality objectives laid out in the plan.

- 1) Garlock Slough Watershed Protection. The Garlock Slough RMA represents approximately 9% of the watershed for West Okoboji Lake. Land protection and wetland restoration within this RMA will directly benefit water quality within the lake, as well as lower parts of the watershed such as Lower Gar Lake. West Okoboji Lake is listed as impaired due to E. coli contamination and at risk of impairment from turbidity and algal blooms. The Water Quality Management Plan identifies both land acquisition and wetland restoration as two primary tools to address these issues. Acquisition and improved land management of strategic parcels within the watershed will eliminate livestock grazing in critical portions of the watershed and reduce erosion and nutrient flows into Garlock Slough, and ultimately, West Okoboji Lake.

Because of their location upstream of Garlock Slough, acquisition and wetland restoration has long been a priority for the parcels immediately south of Hwy 86. Iowa Natural Heritage and DNR, with previous financial assistance from the Water Quality Commission, have been working to finalize acquisition of the Lambert and Shuck Tracts (Figure 2). Both of these properties should be transferred to DNR in the near future. Now we have the opportunity to acquire the Clark Tract, immediately south of the Lambert Tract. Purchase of this 44-acre parcel is necessary to fully restore the large wetland on the Lambert Tract. Additionally, the majority of this property has never been farmed. Once acquisition of the Clark Tract is complete, DNR is committed to restoring a series of small wetlands on all three tracts (Figure

3). These three acquisitions will result in a 124-acre addition to the Garlock Slough Wildlife Management Area.

- 2) Garlock Slough Wetland Enhancement Feasibility and Engineering Study. All water entering West Okoboji Lake from the Garlock Slough RMA passes through Garlock Slough. Under healthy, clear water conditions, this semi-permanent wetland should act as a filter to remove nutrients and sediment before entering the lake. Past alterations to the hydrology, however, prevent this wetland from performing its complete function. High stable water levels have led to a loss of emergent vegetation and increased turbidity. The presence of carp further exacerbates this situation. A dilapidated water control structure formerly controlled water and fish movement between the lake and slough, but no longer functions as designed (Figure 4). The existing carp barrier needs to be modified or replaced to prevent adult carp from entering the wetland to forage and spawn. Carp foraging behavior leads to the re-suspension of bottom sediments, plus a reduction in emergent and sub-emergent wetland vegetation. An improved fish barrier on Garlock Slough will prevent adult carp from utilizing potential spawning habitat in the slough and help to further reduce the population within West Okoboji and throughout the Spirit Lake watershed. Additionally, sand buildup on the lake shore at the mouth of the outlet from Garlock Slough often prevents water from flowing out of the slough in a timely manner and inhibits proper water management.

Before any restoration or enhancement activities can occur, project partners must complete a comprehensive engineering survey, design and feasibility study. The goal is to develop a cost-effective water management system that restores Garlock Slough to a clear water condition and prevents excess nutrients from reaching West Okoboji, and ultimately, Lower Gar Lakes. Fundamental engineering needs for the project includes the specifications for project features, (e.g. water-control structures, pumping/tiling systems, fish barriers, etc.) and their associated cost estimates, as well as professional engineering designs that can be included in future construction plans. These engineering feasibility results, particularly the cost estimates, will help us accurately determine what specific infrastructure improvements might be required and the amount of funding that is needed to complete these enhancement activities. Acquiring this critical information will also help public outreach and education efforts and garner further support from stakeholders on the need to improve these sites.

- 3) Kettleson Hogsback Wetland Enhancement (Marble and Hottes Lakes RMA). The Marble and Hottes Lakes watershed accounts for approximately 19% of the inflow to Big Spirit Lake. A significant amount of restoration work has occurred in this watershed, including the recently completed Marble/Hottes Lakes Enhancement Project, funded in part by the Dickinson County Water Quality Commission. That project improved water management capacity on West Hottes and Marble Lakes, as well as installed a fish screen on the outlet on East Hottes Lake. The goal was to use natural wetland functions to improve water quality flowing into Big Spirit Lake.

The project partners would now like to expand this partnership to address water quality problems before they hit the lake. Ducks Unlimited and Iowa DNR are seeking funding to restore a series of small wetlands on the south side of West Hottes Lake (Figure 5). The 4 proposed wetlands (16 acres total) would intercept surface runoff and tile drain water from 75 acres of private lands and hold that runoff in a series of wetland basins on the Kettleson Hogsback Wildlife Management Area.

Water control structures would be installed to allow managers to promote aquatic wetland vegetation. All restoration design plans have been completed and are ready for construction in 2016.

STATEMENT OF PROJECT BENEFITS TO WATER QUALITY

The proposed project will directly address the Water Quality Management Plan for Iowa Great Lakes Watershed goals for the Garlock Slough RMA and the Hottes and Marble Lakes RMA as follows:

Element 1 - Garlock Slough Watershed Protection: The object of this element is to help reduce bacteria issues in Emerson Bay and return Garlock Slough to a clear water state. Purchasing the Clark Tract and restoring wetlands on the adjacent Lambert and Shuck Tracts will greatly improve management of 124 acres immediately upstream of Garlock Slough. The Lambert and Clark Tracts have traditionally been used as pasture. Removing livestock will dramatically reduce the issue of soil compaction and improve the health and vigor of native prairie and wetland vegetation on the site. The source of E. coli responsible for the Emerson Bay impairment has not been positively identified. Removing livestock may prevent movement of bacteria from livestock waste into West Okoboji. Additionally, acquisition of 124 acres in a critical part of the watershed above Garlock Slough would reduce sediments, nutrients and water loading by decreasing the rate of runoff into Garlock Slough. This action will result in a decrease of nutrient, sediment laden runoff from reaching Garlock Slough and West Okoboji Lake. The IGL Management Plan states that land retirement practices within the Garlock Slough RMA could prevent up to 690 lbs of Phosphorus from reaching West Okoboji Lake annually. Edge of Field wetland restoration and grass buffers would further reduce Phosphorus by another 293.7 lbs.

Element 2 - Garlock Slough Wetland Enhancement Feasibility and Engineering Study. Installation of a water management system and fish barrier on Garlock Slough is specifically identified in the Water Quality Management Plan for Iowa Great Lakes Watershed (Wills, pg. 58). The slough serves as a filter for 9% of the water that enters West Okoboji Lake. By returning Garlock Slough to a clean water state, the wetland will slow runoff and capture excess nutrients before water flows into the lake. The objective of this project element is to investigate the feasibility of potential enhancement activities, the first step in any project. The project partners have agreed on a basic conceptual design (Figure 6) but because of a multitude of issues (surrounding land use, fisheries concerns, residential housing, multiple stakeholders), any finished design will be very engineering intensive and open to public review. The partners think that the best course of action is to develop a complete design plan and accurate cost estimate, seek input from all concerned parties, and once consensus is achieved pursue funding for implementation at a future date. Ducks Unlimited and DNR are committed to seeing this project through to completion and will work diligently to fund and implement the plan once it is finalized.

Element 3 - Kettleon Hogsback Wetland Enhancement. The Water Quality Management Plan for Iowa Great Lakes Watershed identifies wetland restoration, in combination with additional practices such as grass waterways, sediment control practices, and tile treatments, as essential to achieving the desired Phosphorus reductions in the Marble and Hottes Lakes RMA. The proposed project will intercept tile runoff water from 75 acres of private agricultural lands and direct that runoff into a series of wetlands on DNR-owned land immediately above West Hottes Lake. The restored wetlands will reduce the rate of direct runoff into West Hottes Lake and allow wetland functions to filter excess nutrients. Implementation of this project would help

achieve the wetland restoration objective identified in the Management Plan (Wills, Pg. 161) and help in removing a portion of 2,233 lbs of Phosphorus.

PUBLIC AWARENESS PLAN

Ducks Unlimited will collaborate with the Dickinson County Water Quality Commission to promote the success of this project and to help increase public awareness through various media outlets including local press releases, project signage, DU's website, Iowa DU Facebook page, and DU's national magazine. If funded, we will publish a short write-up in our national magazine and/or Mississippi Flyway pages that is distributed to over 700,000 DU members and supporters nationwide, including approximately 19,000 in Iowa. DU will feature this project at various fundraising and public education events throughout the state. In addition to this, DU and DNR plan to submit future NAWCA proposals for additional wetland protection and restoration work in Dickinson County. The Dickinson County Water Quality Commission has received national recognition as a partner in previous NAWCA proposals and can once again through successful funding of this proposal.

In addition to various media outlets, educational opportunities exist at each project site. The Garlock Slough site is very visible on the south end along Highway 86 and the adjacent bike trail. The fish screen and water control structure are located adjacent to Emerson Bay State Park. Project signage at these sites can raise awareness for the need and benefits of carp control and wetland restoration and protection. Interpretive signs at these locations can raise awareness about the current state of our water and habitat resources and what the project participants are doing to alleviate these issues.

Proposed Budget for Current Year

Element 1: Garlock Slough Watershed Protection (Garlock Slough RMA)

	<u>Commission</u>	Hard Match*	Soft Match**	<u>Total</u>
1. Staff	\$ _____	\$ _____	\$ _____	\$ _____
2. Travel	\$ _____	\$ _____	\$ _____	\$ _____
3. Land Acquisition	\$ <u>55,820</u>	\$ <u>186,180</u>	\$ _____	\$ <u>242,000</u>
4. Land Development	\$ _____	\$ <u>10,000</u>	\$ _____	\$ <u>10,000</u>
5. Other(DU Indirect Costs)	\$ _____	\$ _____	\$ <u>7,558</u>	\$ <u>7,558</u>
Total	\$ <u>55,820</u>	\$ <u>196,180</u>	\$ <u>7,558</u>	\$ <u>259,558</u>

Element 2: Garlock Slough Wetland Enhancement Feasibility and Engineering Study (Garlock Slough RMA)

	<u>Commission</u>	Hard Match*	Soft Match**	<u>Total</u>
1. Staff	\$ <u>22,380</u>	\$ <u>4,000</u>	\$ _____	\$ <u>26,380</u>
2. Travel	\$ <u>1,800</u>	\$ _____	\$ _____	\$ <u>1,800</u>
3. Land Acquisition	\$ _____	\$ _____	\$ _____	\$ _____
4. Land Development	\$ _____	\$ _____	\$ _____	\$ _____
5. Other(DU Indirect Costs)	\$ _____	\$ _____	\$ <u>3,816</u>	\$ <u>3,816</u>
Total	\$ <u>24,180</u>	\$ <u>4,000</u>	\$ <u>3,816</u>	\$ <u>31,996</u>

Element 3: Kettleon Hogsback Wetland Enhancement (Hottes/Marble Lake RMA)

	<u>Commission</u>	Hard Match*	Soft Match**	<u>Total</u>
1. Staff	\$ _____	\$ _____	\$ _____	\$ _____
2. Travel	\$ _____	\$ _____	\$ _____	\$ _____
3. Land Acquisition	\$ _____	\$ _____	\$ _____	\$ _____

4. Land Development	\$ <u>20,000</u>	\$ <u>20,000</u>	\$ _____	\$ <u>40,000</u>
5. Other(DU Indirect Costs)	\$ _____	\$ _____	\$ <u>2,708</u>	\$ <u>2,708</u>
Total	\$ <u>20,000</u>	\$ <u>20,000</u>	\$ <u>2,708</u>	\$ <u>42,708</u>

Match Sources

- 1) Ducks Unlimited, Inc. = \$4,000 in donated Personnel Costs
- 2) Iowa Department of Natural Resources = \$117,000 (Support letter attached)
- 3) U.S. Fish and Wildlife Service = \$87,000 (*Upper Iowa Prairie Pothole NAWCA, Phase 3* – Secured by DU in 2013.
- 4) Iowa Natural Heritage Foundation = \$10,000 (Support letter attached)
- 5) Local funding sources = \$2,180. DU and IDNR are working to secure funding.
- 6) DU donated indirect costs =\$14,082

(Calculated based on DU's federally-approved indirect rate of 13.54% in FY16 % applied to all incurred or anticipated direct project costs. This rate is updated annually).

BUDGET NARRATIVE

The proposed budget provides details for the three elements of this large-scale project: 1) Garlock Slough Watershed Protection; 2) Garlock Slough Wetland Enhancement Feasibility and Engineering Study; 3) Kettleon Hogsback Wetland Enhancement. Details for each element are as follows:

Element 1: Garlock Slough Watershed Protection (Garlock Slough RMA). The project consists of fee title acquisition of the Clark Tract, plus restoration of 4 small wetlands on the Shuck, Lambert and Clark Tracts after DNR has finalized the acquisitions. DNR is committing \$87,000 of Lakes Restoration funds for this purchase, matched by \$10,000 from INHF and \$87,000 from U.S. Fish and Wildlife Service. USFWS funds come from the Upper Iowa Prairie Pothole Phase 3 NAWCA grant, secured by DU in 2013. The request of \$55,820 from Dickinson County Water Quality Commission will be used for acquisition costs. DU and DNR are working with additional local sources to secure the remaining \$2,180 necessary to close on the property. Once the acquisition is complete, DNR will provide an additional \$10,000 from Lakes Restoration to restore the four wetland basins south of Hwy 86.

Element 2: Garlock Slough Enhancement Feasibility and Engineering Study (Garlock Slough RMA). The project will perform hydraulic/hydrologic watershed modeling and develop professional engineering plans and specifications for planned future enhancement of Garlock Slough. Hard costs consist of costs associated with DU's professional conservation team of biologists, surveyors, engineers and engineering technicians and travel costs associated with this assessment and engineering. Hard match consists of a mix of old match generated in the planning and design phase, plus anticipated costs for engineering. DU engineering technicians have already completed a preliminary topographic review of the site, although a thorough survey will be necessary in the future. Hourly rates for DU staff consist of \$98/hour for professional staff and \$84/hour for technical staff. Travel expenses include lodging and meals are based on the anticipated number of days spent in the field as part of the project, including IRS approved mileage of \$0.575/mile. A request of \$24,180 is being submitted to the

Commission to help cover these costs. DU will donate a minimum of \$4,000 in new and old match in the form of donated personnel costs, which are shown as match. A detailed budget for this project is attached (Table 1).

Element 3: Kettleon Hogsback Wetland Enhancement (Hottes/Marble Lake RMA). Hard match consists \$20,000 from DNR (\$10,000 State Migratory Bird Fee and \$10,000 Prairie Lakes 6 NAWCA). A request of \$20,000 from the Water Quality Commission will be used for contractor costs associated with the construction of berms and water control structures on four small wetlands within the West Hottes Lake watershed. DNR engineers will supervise construction. A detailed cost estimate is provided (Table 2).

TASKS AND DELIVERABLES

Element 1: Garlock Slough Watershed Protection

Tasks:

1. Complete acquisition of the Clark Tract and transfer title to Iowa DNR (includes appraisal, abstract, title opinion, legal and recording fees).
2. Complete wetland restoration plan for 4 wetlands on the Shuck, Lambert and Clark Tracts.
3. Select a contractor and complete construction of these small wetlands.

Deliverables:

1. 44 acre addition to the Garlock Slough Wildlife Management Area.
2. Four wetland cells totaling approximately 25 acres.
3. Annual and Final Reports describing project developments and final outcomes.

Element 2: Garlock Slough Wetland Enhancement Feasibility and Engineering Study

Tasks:

1. Conduct a topographic survey of all potential area affected by the Garlock Slough Enhancement Project. This includes the existing water control structure, cross sections of the Garlock Slough basin, the upper wetland basin west of the slough, and the shore of West Okoboji Lake adjacent to the water control structure.
2. Generate a topographic map for analysis using survey data points for areas noted.
3. Evaluate the condition and functional capability of the existing structure.
4. Evaluate the effectiveness of the current conceptual plan, including a lift pump to occasionally dewater Garlock Slough; the effectiveness of the upper wetland to act as a sediment basin and treatment wetland before water flows to the lake; a buried pipeline allowing water to flow from the upper wetland to West Okoboji Lake during dewatering; a buried perforated pipe (within water control structure) allowing slough and lake levels to equalize when desired; and the effectiveness of the existing structure to exclude carp from Garlock Slough.
5. Assuming feasibility analysis indicates the need for structures listed above, design or modify the water management system as required.
6. Prepare preliminary construction plans and specifications for the project features.
7. Prepare a Design Report and cost estimate.
8. Coordinate a meeting with partners and funding groups to review the Preliminary plans and determine a plan for implementing such plans.

Deliverables:

1. Topographic map of the project site.
2. Preliminary construction plans and specifications available for permitting.
4. Design Report signed by a professional engineer licensed in Iowa.
5. A cost estimate for the project.
6. Annual and Final Reports describing project developments and final outcomes.

Element 3: Kattleson Hogsback Wetland Enhancement

Tasks:

1. Put the project out to bid.
2. Evaluate bids.
3. Award contract for the work.
4. Supervise and inspect construction work.
5. Conduct final inspection upon completion and make payment to Contractor.
6. Keep partners and funding agencies up to date on progress and developments.

Deliverables:

1. Installation of 4 water control structures to enhance wetland management.
2. Construction of 3 berms to improve wetland conditions.
3. Daylight existing private 10" tile to wetlands to filter water before flowing to West Hottes Lake.
4. Annual and Final Reports describing project developments and final outcomes.

LAND ACQUISITION AND DEVELOPMENT:

Project Location: At approximately 90,631 acres, the Iowa Great Lakes Watershed is a vast area facing a multitude of resource challenges. In order to address the magnitude of this problem, this project seeks to perform large-scale water quality enhancements on multiple sites through an extensive and coordinated effort among a variety of partners and entities. The current project consists of three elements addressing different, but related water quality concerns in Dickinson County.

The first element, Garlock Slough Watershed Protection, is within the Garlock Slough RMA. Legal description is T98N R37W Sec 2. Element 2, Garlock Slough Wetland Enhancement Feasibility and Engineering Study is immediately north across Hwy 86. The location is T99N R37W Sec 36. Element 3, Kattleson Hogsback Wetland Enhancement is located just south of West Hottes Lake, part of the Kattleson Hogsback wetland complex. The legal description is T100N R36W Sec 19.

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

Phase 2 of the Dickinson County Shallow Lakes Enhancement project focuses on delivering science-based, strategic habitat and natural resources conservation objectives as recommended in the Water Quality Management Plan for Iowa Great Lakes Watershed. Implementation of this Project will provide significant watershed and water quality improvements. As described above, each of the three elements of this proposal will have a significant impact on water quality and meet the objectives of the IGL Management Plan. Elements 1 and 2 will improve water quality in West Okoboji Lake by protecting the watershed from residential encroachment and reducing sediment and nutrient flows into Garlock Slough. The project will also take the first step to restore the slough to a clear water state by planning

new water management capabilities and exploring options to eliminate carp from the wetland. While these are two separate elements, they are very complementary of each other and address several of the objectives listed in the IGL Management Plan.

The Kettleon Hogsback Wetland Enhancement Project will restore wetland habitat, which will enhance water quality by increasing Phosphorus uptake by vegetation and decrease the nutrient load entering Big Spirit Lake. The wetlands will capture runoff from agricultural tile drains surrounding West Hottes Lake. The wetlands will also slow major runoff events, decreasing erosion and sediment loads entering the lake. The project builds on the recently completed Marble-Hottes Lakes project by further reducing nutrient flows into these fragile lakes.

These conservation efforts will benefit all Iowans by improving water quality, recharging ground water supplies, providing flood protection, enhancing recreational opportunities and improving cultural and aesthetic resources. Much of Spirit Lake's economy is based on tourism and recreational activity, and by improving water quality of the area's lakes, we are helping maintain the economic health of the region. By partnering with the Dickinson County Water Quality Commission on these projects, the grant partners will help improve water quality, enhance critical fish and wildlife habitat and provide additional public recreational opportunities. These improvements will translate into direct economic benefits for local communities and business. Support from the Dickinson County Water Quality Commission will help us achieve these important goals.

Historical, Archaeological, and Architectural Features/ Impacts/Land Acquisition, Development

No historical or cultural resources are known to exist on the proposed project areas. Before any renovation measures or construction activities can occur, the project partners will have to acquire any regulatory (i.e. NW27 wetland permits, T & E species) and cultural resources (State Historic Preservation Office) permits needed. Thus, no negative impacts on these resources, if present, are expected to occur.

Project's Relationship to State, Local and County Plans

This Project directly addresses several recommendations outlined in the Water Quality Management Plan for Iowa Great Lakes Watershed. The proposed project area is also identified as a priority focus area in Iowa's State Wildlife Action Plan (IWAP) and DU's Living Lakes Initiative – Spirit Lake Emphasis Area. In addition, the proposed project area lies within the heart of Iowa's Prairie Pothole Region, which is defined as a "geographic priority wetland area" and a region of "continental significance to North American ducks, geese and swans" (NAWMP 1998, PPJV 2005).

Agreements and Easements/Land Acquisition/Development

There are no known leases or easements associated with the acquisition of the Clark Tract. All other proposed activities will occur on public lands that are owned and managed by Iowa DNR.

Itemized Cost Estimate Land Acquisition/Development

The total project budget has been presented above. Our request of \$100,000 is matched by \$234,262 in federal, state, and private funds. This is a match ratio of 2.3:1. Detailed budgets are attached (Table 1 – 2). The budget for the Clark Acquisition in Element 1 is based on appraised value. Wetland restorations cost estimates in Elements 1 and 3 are based on similar structures DU and DNR have constructed in northern Iowa over the last

several years. Likewise, cost estimates for Element 2 are based on personnel costs incurred on similar projects in the state.

Qualification of Group or Agency

For almost 30 years, Ducks Unlimited's professional conservation staff has provided professional engineering services on literally thousands of wetland restoration and enhancement projects across the entire Prairie Pothole Region, including over 450 projects in Iowa. In fact, DU and our partners have completed over 50 projects in Dickinson County, helping to protect or restore over 4,500 acres of wetlands and associated uplands since 1988. Under DU's *Living Lakes Initiative*, our professional engineering staff has served as a resource expert on surveying and designing shallow lake restoration/enhancement projects in Iowa and southern Minnesota. Our staff of highly-trained biologists, engineers, lands surveyors, GIS technicians, drafters, and construction managers has the knowledge and expertise to deliver timely and cost-effective wetland restoration projects. Detailed resumes for DU personnel expected to work on this project are provided in Attachment A.

Figure 2. Garlock Slough Watershed Protection Showing Tract Boundaries.



Figure 3. Proposed wetland restoration locations, Garlock Slough Watershed Protection.

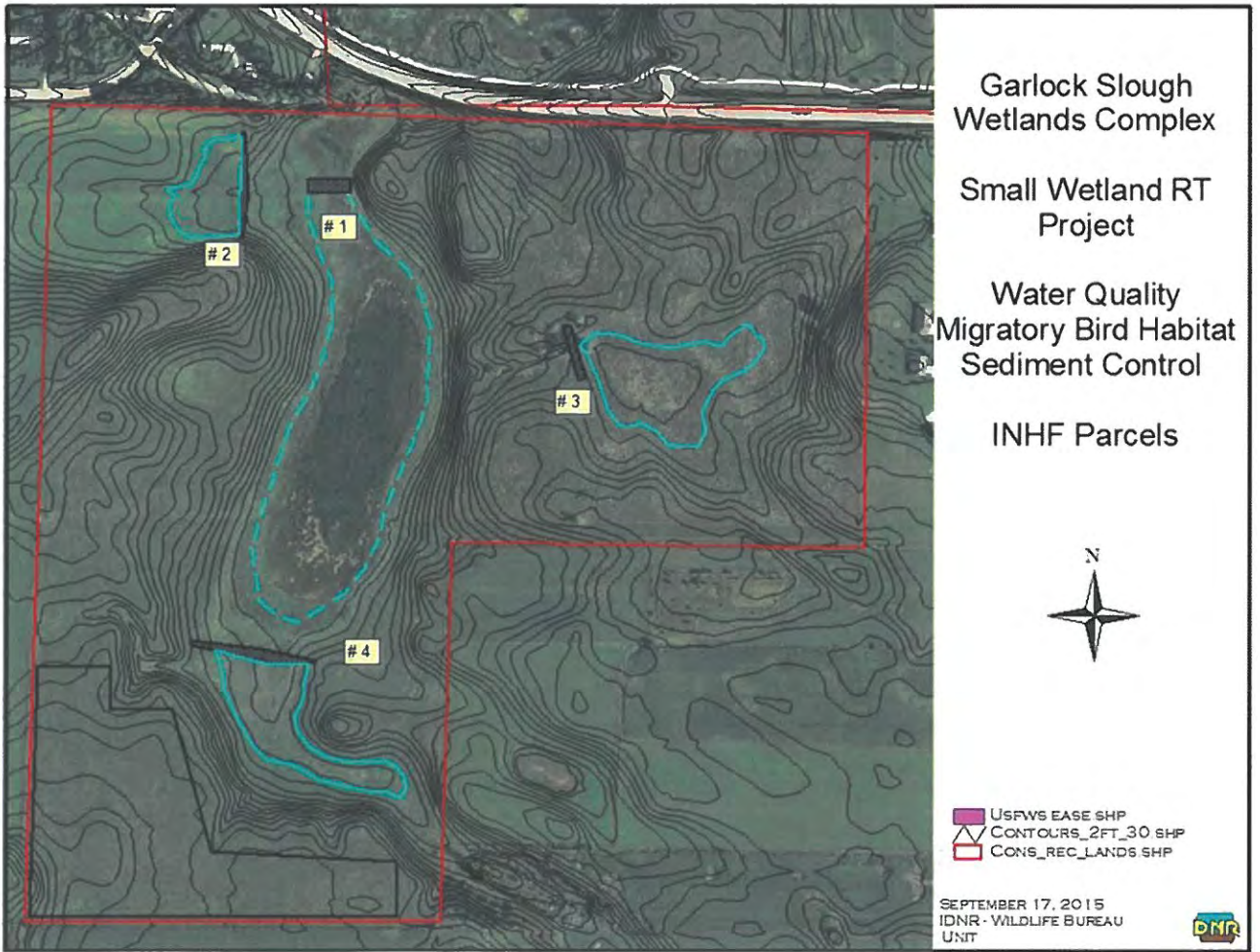


Figure 4. Photo of existing water control structure/fish trap on the outlet of Garlock Slough. Carp barrier is no longer functioning and the outlet channel is filled with sediment.



Figure 5. Kettleson Hogsback Wetland Enhancement. The project will improve water management on four DNR-owned wetlands by installing water control structures and capturing tile drainage water from neighboring private lands. The enhanced wetlands will reduce nutrient flows into West Hottes Lake.

Kettleson Hogsback Wetland Enhancement

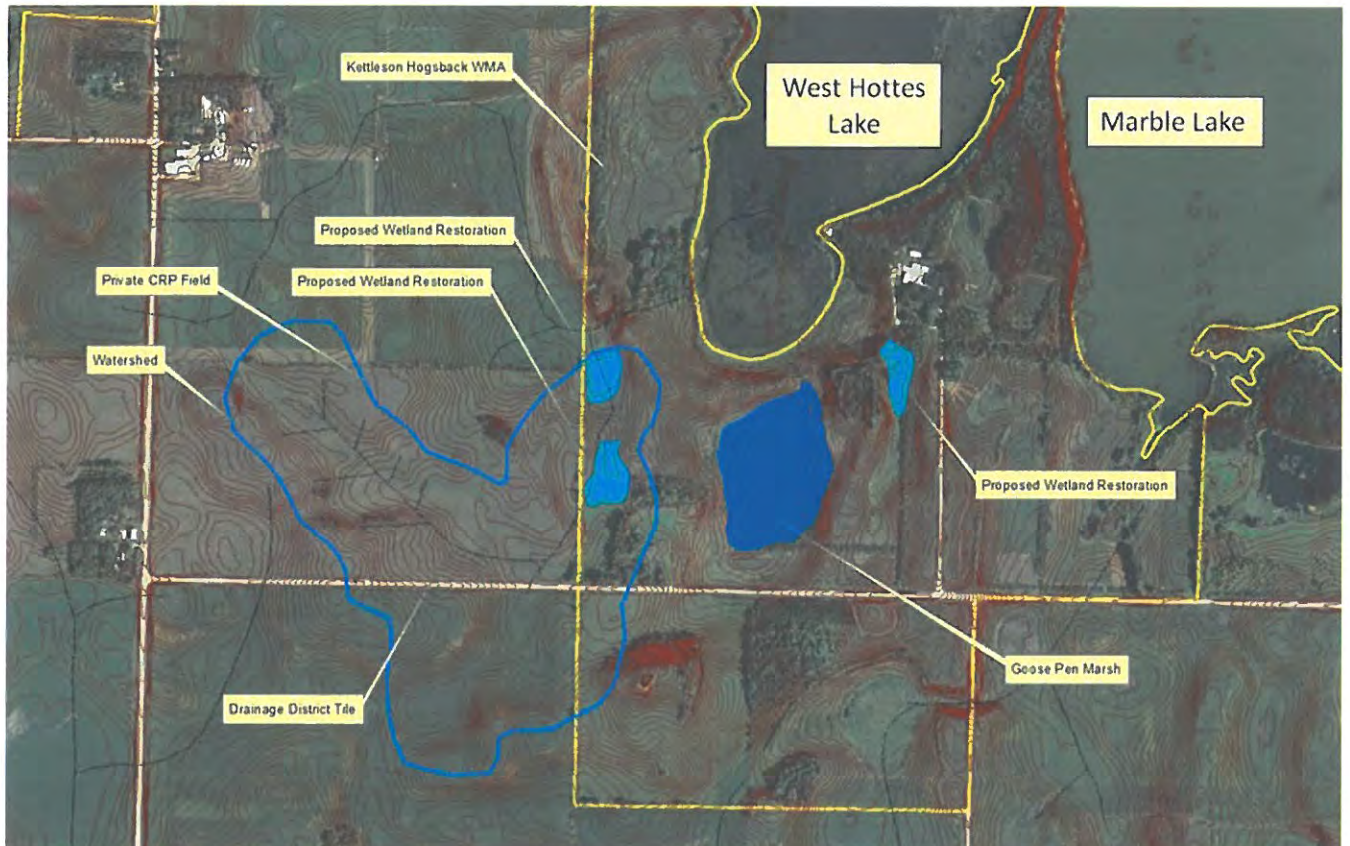


Table 1. Garlock Slough Wetland Enhancement Feasibility and Engineering Study, Proposed Budget.

PROJECT NAME: Garlock Slough Wetland Enhancement Engineering

Survey and Design - Dickinson Co. WQ Commission

10/1/2015

	Function	Est. Hours	Staff Cost	Travel Cost	
Project Planning/Cost Estimating	51	17	1,644		
Recon	52	24	2,352	800	
Topographic Site Survey	54	56	4,704	1,000	
Project Design	53	112	10,960		
Plan Preparation	57	80	6,720		
			\$26,380	\$1,800	\$28,180

Table 2. Kettleson Hogsback Wetland Enhancement Project Budget.

ESTIMATE OF PROBABLE COSTS

Project # 13-01-30-11

Project Location: Great Lakes Wildlife Unit

Project Description: Kettleson Hogsback Wetland Restoration

Date : 8/31/2015

Author: jfelts

Item No.	Description	Full Project - 100% Federal EPA			
		Quantity	Unit	Unit Cost	Cost
1	Mobilization	1	LS	\$2,000.00	\$2,000.00
2	Tile Investigation	500	LF	\$2.50	\$1,250.00
3	Tile Break	5	EA	\$250.00	\$1,250.00
4	Excavation	890	CY	\$3.50	\$3,115.00
5	Earthfill	2580	CY	\$4.00	\$10,320.00
6	Remove & Replace Dike #3 (Including Core Trench)	513	CY	\$5.00	\$2,565.00
7	Inline Water Control Structure (10"x6' Agridrain)	1	EA	\$1,400.00	\$1,400.00
8	Inline Water Control Structure (10"x4' Agridrain)	1	EA	\$1,200.00	\$1,200.00
9	Inline Water Control Structure (Install Only 10"x10' Agridrain)	1	EA	\$500.00	\$500.00
10	Water Control Structure Cover	3	EA	\$1,500.00	\$4,500.00
11	Tile Repair - 12" Dual Wall HDPE Tubing	20	LF	\$50.00	\$1,000.00
12	10" Dual Wall HDPE Tubing (Install Only)	284	LF	\$6.00	\$1,704.00
13	8" Dual Wall HDPE Tubing (Install Only)	41	LF	\$5.00	\$205.00
14	10" CMP	45	LF	\$25.00	\$1,125.00
15	12" CMP	95	LF	\$27.00	\$2,565.00
16	Antiseep Collar	5	EA	\$200.00	\$1,000.00
17	10" Heavy Duty Bar Guard	4	EA	\$125.00	\$500.00
18	10" Animal Guard	2	EA	\$90.00	\$180.00
19	12" Animal Guard	3	EA	\$100.00	\$300.00
20	Class "E" Revetment Stone	50	TN	\$45.00	\$2,250.00
21	Engineering Fabric	55	SY	\$5.00	\$275.00
22	Silt Fence	200	LF	\$2.00	\$400.00
Total					\$39,604.00

DU's Professional Qualifications

Ducks Unlimited's professional bio-engineering staff specializes in delivering timely and cost-effective wetland conservation services in the highest wetland and waterfowl conservation priority areas throughout North America. We have the capacity, equipment and expertise to provide professional surveying, design and construction management services. Our core conservation mission and priorities align with the goals and geographic focus areas established for Iowa's Great Lakes Watershed Management Plan. Below is a summary of our staff's professional qualifications, experience and credentials related to wetland conservation efforts in Iowa and throughout our *Living Lakes Initiative*. Expanded resumes can also be provided upon request.

Douglas Lipetzky, P.E.

Director of Conservation Services-Regional Engineering Supervisor

With more than 30 years of engineering experience, Doug has served on DU's engineering staff since 1987. As Regional Engineering Supervisor for the Great Lakes-Atlantic Region, Doug works closely with our engineering staff to coordinate survey, design and construction efforts. Throughout his career, Doug has designed and delivered hundreds of wetland projects throughout the Great Plains area, including Minnesota and Iowa. Doug has extensive experience in large watershed wetland restoration projects, including the construction of dams, dikes, water control structures, water conveyance and pumping systems. Some specific areas of Doug's expertise include:

- Developing wetland site plans, cost estimates, final designs and engineering specifications;
- Designing rough fish passage barriers;
- Engineering reconnaissance and feasibility studies;
- Hydrologic and hydraulic investigation and structural analysis;
- Bid preparation, bid letting and contract compliance with applicable local, state and federal regulations.

Michael Shannon - Iowa

Regional Biologist

Mike is a Regional Biologist responsible for managing DU's conservation programs throughout Iowa. Over his 27 year career, he has worked on waterfowl research, wetland ecology and management, and habitat protection and restoration for a variety of federal, state and private conservation groups. He has been with DU for over 16 years, promoting DU's wetland conservation programs in such diverse locations as northern Colorado, the Klamath Basin in southern Oregon, and now in Iowa. Prior to DU, Mike was a Wildlife Biologist with Missouri Dept. of Conservation, where he was responsible for managing wetland habitat on state wildlife areas. His areas of expertise include:

- Identification, coordination and delivery of wetland restoration and enhancement projects on public and private lands throughout Iowa
- Providing wetland management technical assistance to land managers, particularly on the subject of Moist-soil Management.

- Fostering partnerships with a variety of partners, including State and Federal agencies, agricultural groups, watershed groups, duck clubs, private landowners and other non-profit conservation organizations
- Working extensively with local and state-level volunteers to facilitate grassroots and major gifts fundraising
- Coordinate and write multiple federal, state and private grant applications to secure project funding

James A. Streifel, P.E.

Senior Regional Engineer

Jim Streifel is a registered Professional Engineer with over 30 years of experience in civil design and water resources engineering. His broad range of experience includes wastewater treatment facilities, municipal water treatment, sanitary and storm sewer design and construction management. He has been on the Ducks Unlimited engineering staff since 1990 and is currently a Senior Regional Engineer in the GLARO. His areas of expertise include:

- Hydraulic and Hydrologic Studies: Perform hydraulic and hydrologic analysis and modeling of streams, irrigation ditches and watersheds using the HEC-RAS computer program along with HEC-HMS, HyroCAD, StormNet and TR-20.
- Wetland habitat development including the construction of dams, dikes and other earthwork activity, water control structures, water conveyance systems, pump systems, drainage facilities
- Design of fish passage or barrier features
- Perform engineering reconnaissance and feasibility studies
- Coordinate survey and geotechnical investigations
- Develop conceptual plans, cost estimates, final design plans, specifications, and design report
- Bid document preparation, analysis and awarding of project bids
- Contract administration
- Compliance monitoring on applicable state and federal regulations

Les Morgenstern

Construction Manager/Surveyor

Les Morgenstern has been a Construction Manager with DU since 2000 and has been involved in surveying since 2001. In 2005, he began actively pursuing experience and credentials towards his LSIT and eventual Professional Land Surveyor license. Prior to coming to DU, Les provided geotechnical and environmental consulting for nearly 16 years. With DU he has managed and inspected construction activities associated with wetland habitat development in North Dakota, South Dakota, Minnesota, Iowa, Nebraska and, Montana. He works closely with the engineers, construction supervisor, and chief surveyor with preliminary design criteria, plan review, managing construction projects, topographic surveys with GPS technology and, geotechnical

investigations. He is also involved in training and mentoring interns in field construction management duties and soil investigations. Project experience includes:

- Managing construction of wetland habitat development involving construction of small dams, high hazard dams, dikes, water control structures, pond excavations, pump systems and fish barriers to maintain compliance with design specifications and applicable regulations
- Managing and coordinating geotechnical investigations using a diverse background in clay mineralogy, soil science, geotechnical soil testing and soil boring operations
- Survey staking of construction projects to plan design and grade
- Surveying and topographic data collection using GPS technology
- Technical review of design plans
- Prior DU experience involved multiple phases of environmental assessments, hydrogeology investigations and interpretation, geotechnical soil classification, monitoring well installations and testing, project management of remedial investigations and clean-up at various hazardous materials and hazardous waste sites including petro-chemical, agri-chemical, solid waste and, industrial manufacturing facilities

Matthew L. Olson

Construction Manager

Matt started his career with DU engineering staff in 2004. He is currently stationed in Alexandria, MN and works closely with the engineers, construction supervisor, and surveyors. He assists with the drafting of construction plans, managing construction projects, and conducting topographic surveys. Engineering duties include:

- Computer drafting of construction plans, including dams, dikes and other earthwork features, water control structures and details, water conveyance systems, charts and diagrams.
- Help collect preliminary survey data using GPS.
- Stake all aspects of construction projects to planned line and grade.
- Oversee site soil investigations to determine foundation stability and borrow areas.
- Manage construction projects to ensure compliance with plans, specifications, and applicable state and federal regulations. Make required decisions in the field. Prepare daily reports. Prepare as-built drawings.

Debbie Knudson

Senior Engineering Technician

Debbie is a Senior Engineering Technician with Ducks Unlimited where she has been part of the engineering staff since 1999. She has over 30 years of experience in the drafting field, with an emphasis on CADD (computer aided drafting and design) since 1990. This CADD work has all been in the civil engineering field. Debbie works closely

with DU engineers and surveyors on project and plan development. Areas of proficiency include:

- Drafts construction plans utilizing Autodesk software (Land Desktop and Civil Design)
- Works closely with the surveyors to process GPS data to generate topographic maps
- Develop maps by combining digital terrain maps with aerial images using Autodesk Map software
- Performs quantity calculations to assist engineers and construction managers
- Provides technical assistance to engineering staff for all Autodesk software products
- Stays current with design software products by taking available training

Rick Verchota, P.E.

Engineer II

Rick Verchota is a registered Professional Engineer with over 27 years of experience. He has a broad range of construction experience providing capability to analyze and resolve technical problems and issues using innovative or established engineering principals. Mr. Verchota has work for Ducks Unlimited since 2011, managing all aspects of contract administration and construction for Iowa NRCS WRP restoration projects. His duties require supervising sub-contracted consulting firms and managing numerous projects simultaneously. Prior to joining Ducks Unlimited worked for the Iowa Department of Transportation where he provided direction, consultation and specialized services to field construction staff, city, county engineers, and consultants in areas concerning project development and funding, specifications, methods, techniques, and policies, serving as a technical resource in the interpretation of engineering specification language particularly for complex and unique structures and project phasing. Engineering duties include:

- Managing and monitoring construction activities on wetland restoration projects
- Preparing plans and bid letting documents, project lettings and contract awards, construction staking, construction observation, contractor payments, and final certifications
- Evaluation and providing designs to perpetuate existing subsurface tile drainage while re-establishing pre-existing surface wetlands in the Prairie Pothole region
- Assisting with topographic survey mapping of large and small wetland restoration projects using GPS technology

Literature Cited:

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North American Waterfowl Management Plan (NAWMP). 1998. Expanding the vision: 1998 update, North American Waterfowl Management Plan. U.S Dept. of Interior, Fish and Wildlife Service and Environment Canada, Canadian Wildlife Service. 32pp.

Scheffer, M. 1998. Ecology of Shallow Lakes. Chapman and Hall. Toronto.

U.S. Prairie Pothole Joint Venture. 2005. Prairie Pothole Joint Venture Implementation Plan. Update.

Wills, J.H. 2013. Water Quality Management Plan For The Iowa Great Lakes Watershed. 227 pages.



STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

September 28, 2015

Dickinson County Water Quality Commission
John Wills
3302 18th Street
Spirit Lake, IA 51360

RE: Letter of commitment for Ducks Unlimited DCWQC request

Dear John,

The Iowa Department of Natural Resources is committing \$117,000 to wetland restoration and enhancement and watershed protection projects associated with the Marble-Hottes and Garlock Slough Wetland Complexes in the Iowa Great Lakes Watershed. Specifically, DNR has committed \$10,000 in State Migratory Bird Fee (State Duck Stamp) revenues and \$10,000 from the Prairie Lakes 6 North American Wetland Conservation Act (NAWCA) grant toward restoration and enhancement of 4 wetlands associated with West Hottes Lake. These wetland projects will better filter nutrients through daylighting a district tile and installation of 3 water control structures to manage for aquatic vegetation communities, and will act to promote the healthy aquatic habitats in West Hottes Lake resulting from the recently completed renovation efforts.

DNR has further committed \$10,000 in Lake Restoration funds toward restoration and enhancement of 4 wetlands in the Garlock Slough Wetland Complex. These wetlands filter nutrients entering Garlock Slough and will promote healthy aquatic plant communities in that marsh once the planned renovation project is completed. DNR also has committed \$87,000 in Lake Restoration funds toward acquisition of the 44 acre INHF (Clark) tract in the Garlock Slough Wetland Complex which will provide permanent protection to an important part of the Garlock Slough watershed.

Sincerely,

A handwritten signature in black ink, appearing to read "Dale L. Garner".

Dale L. Garner, Ph.D.
Wildlife Bureau Chief
Iowa Department of Natural Resources



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September 28, 2015

Dickinson County Water Quality Commission
John Wills
3302 18th Street
Spirit Lake, IA 51360

RE: Letter of commitment for Garlock Slough Additions request

Dear John,

The Iowa Natural Heritage Foundation is committing \$10,000 to the Clark addition to Garlock Slough Wildlife Management Area. This funding is provided through generous donations from Iowa Natural Heritage Foundation members and donors.

Iowa Natural Heritage Foundation is pleased to be partnering with Iowa Department of Natural Resources and Ducks Unlimited on the protection and enhancement of the Garlock Slough wetland complex. Through these partnerships we are able to collectively improve and ensure long term protection of water quality in Iowa's most important water resources.

Yours in conservation,

A handwritten signature in blue ink that reads "Joe McGovern".

Joe McGovern
President

Thank you for your consideration!

