2009 Project Abstract
For the Period Ending June 30, 2012

PROJECT TITLE: Restorable Wetlands Inventory
PROJECT MANAGER: Darin R. Blunck
AFFILIATION: Ducks Unlimited, Inc.
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WEBSITE: http://www.ducks.org
FUNDING SOURCE: Environment and Natural Resources Trust Fund
LEGAL CITATION: M.L. 2009, Chp. 143, Sec. 2, Subd. 3(e)
APPROPRIATION AMOUNT: $300,000

Overall Project Outcome and Results

The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant. In Pope County alone, 25,000 acres of completely drained wetland acres were missed in the NWI mapping process—nearly 19% of the total wetland resources in that county. The RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

The 2009 Environment and Natural Resources Trust Fund appropriation provided the last project funding needed to complete, remaining RWI mapping for the glaciated, tallgrass prairie region of Minnesota – an additional 6,120 mi^2. The mapping occurred in approximately 178 townships in Clay, Mahnomen, McLeod, Meeker, Nicollet, Norman, Renville, Sibley, Wilkin, and Wright Counties.

In the Red River Valley Complex, over 132,000 individual restorable wetland basins were identified and mapped. In the Prairie-Hardwood Complex, almost 131,000 individual restorable wetland basins were identified and mapped.

As in previous phase of the mapping project, partners included the LCCMR, Ducks Unlimited, Inc., and the U.S. Fish and Wildlife Service. The photo-interpretation and digitization work was contracted to the GIS Lab at South Dakota State University.

The attached “Restorable Wetlands Inventory: Final Status Map” displays the counties and townships that were completed under the M.L. 2008, M.L. 2009, and prior appropriations.

Data will be distributed on the web via the Minnesota GIS Data Deli (http://deli.dnr.state.mn.us) and the Ducks Unlimited, Inc. (http://www.ducks.org) websites.

Trust Fund 2008 Work Program and Trust Fund 2009 Work Program

Date of Report:	August 15, 2012	
Date of Next Status Report:	n/a	
	M.L. 2008	**M.L. 2009**
Date of Work program Approval:	June 10, 2008	June 16, 2009
Project Completion Date:	June, 30 2010	June 30, 2012

I. PROJECT TITLE: Restorable Wetlands Inventory

Project Manager: Darin R. Blunck
Affiliation: Ducks Unlimited, Inc.
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Fax Number:
Web Page address: http://www.ducks.org

Location: Under the 2008 Appropriation, mapping will occur in 154 townships in Brown, Cottonwood, Lincoln, Lyon, Martin, Murray, Nobles, Pipestone, Redwood, Rock, and Watonwan Counties (See Status Map).

Under the 2009 Appropriation, mapping will occur in 170 townships in Clay, Mahnomen, McLeod, Meeker, Nicollet, Norman, Renville, Sibley, Wilkin, and Wright Counties (See Status Map).

Total Trust Fund Project Budget:	**M.L. 2008**	**M.L. 2009**	**Total**
Trust Fund Appropriation:	**$245,000.00**	**$300,000**	**$545,000**
Minus Amount Spent:	**$243,870.50**	**$300,000**	**$543,870.50**
Equal Balance:	**$1129.50***	**$0**	**$1,129.50**

*M.L. 2008 not used will cancel.

Legal Citation:
M.L. 2008, Chp. 367, Sec. 2, Subd. 5(e)
2008 Appropriation Language:
$245,000 is from the trust fund to the commissioner of natural resources for an agreement with Ducks Unlimited, Inc., to continue the inventory, mapping, and digitizing of drained restorable wetlands in the southwest prairie region of Minnesota. This appropriation is available until June 30, 2011, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

M.L. 2009, Chp. 143, Sec. 2, Subd. 3(e)
2009 Appropriation Language:
$300,000 is from the trust fund to the commissioner of natural resources for an agreement with Ducks Unlimited, Inc., to complete the inventory, mapping, and digitizing of drained restorable wetlands in Minnesota. This appropriation is available until June 30, 2012, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

II. PROJECT SUMMARY AND RESULTS:

The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant. In Pope County alone, 25,000 acres of completely drained wetland acres were missed in the NWI mapping process—nearly 19% of the total wetland resources in that county. RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

M.L. 2008 FINAL PROJECT SUMMARY

The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant

RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

In the Southwest Prairie Complex, over 300,000 individual restorable wetland basins were identified and mapped. Upon completing the Southwest Prairie Complex mapping, townships in 42 western and south-central counties in the prairie and transition zone eco-regions of Minnesota have been mapped, adding an important component to the State's spatial data infrastructure that informs environmental planning and research. Through this investment in RWI – combined with the National Wetlands Inventory, landcover classifications, and a growing catalogue of high-resolution elevation data – our capacity to understand (and importantly, restore and manage) Minnesota's wetland resources is continuing to improve.

Project Partners were the LCCMR, Ducks Unlimited, Inc., and the U.S. Fish and Wildlife Service. The photo-interpretation and digitization work was contracted to the GIS Lab at South Dakota State University.

M.L. 2009 FINAL PROJECT SUMMARY

The 2009 LCCMR appropriation provided the last project funding needed to complete, remaining RWI mapping for the glaciated, tallgrass prairie region of Minnesota – an additional 6,120 mi^2. The mapping occurred in approximately 178 townships in Clay, Mahnomen, McLeod, Meeker, Nicollet, Norman, Renville, Sibley, Wilkin, and Wright Counties.

In the Red River Valley Complex, over 132,000 individual restorable wetland basins were identified and mapped. In the Prairie-Hardwood Complex, almost 131,000 individual restorable wetland basins were identified and mapped.

As in previous phase of the mapping project, partners included the LCCMR, Ducks Unlimited, Inc., and the U.S. Fish and Wildlife Service. The photo-interpretation and digitization work was contracted to the GIS Lab at South Dakota State University.

The attached "Restorable Wetlands Inventory: Final Status Map" displays the counties and townships that were completed under the M.L. 2008, M.L. 2009, and prior appropriations.

III. PROGRESS SUMMARY AS OF:

M.L. 2008
Completed (see "M.L. 2008 Final Project Summary" in Section II above)

December 31, 2008
M.L. 2009
N/A

June 30, 2009:
M.L. 2009
N/A

December 31, 2009:
M.L. 2009
Agreement has been signed with GIS lab at South Dakota State University to continue working on the project through the final phase of counties.

June 30, 2010:
M.L. 2009
NAPP imagery has been acquired and prepared for the Red River Valley Complex and Farm Service Agency compliance slides have been obtained for Clay and Wilkin Counties. Deviating from the schedule outlined in the workplan, Clay and Wilkin Counties will be completed prior to Mahnomen and Norman Counties due to the timing of the compliance slide acquisitions.

December 31, 2010:

M.L. 2009

Clay County has been photo-interpreted and digitized and is under final QA/QC by the USFWS project partner. Wilkin County photo-interpretation is finished with digitization underway. Photo-interpretation of Mahnomen and Norman Counties is partly completed. NAPP imagery has been acquired and prepared for the Prairie-Hardwood Complex.

June 30, 2011:

M.L. 2009

Clay County has been completed. Mahnomen County has been photo-interpreted and digitized and is under final QA/QC by the USFWS project partner. Wilkin County digitization is complete; errors were found during initial QA/QC and is being revisited by the contractor. Photo-interpretation and digitization of Meeker and Norman Counties is completed and awaiting QA/QC.

December 31, 2011:

M.L. 2009

Mahnomen and Meeker Counties are under final QA/QC by the USFWS project partner. Wilkin County is near finalization and ready for QA/QC. QA/QC is also underway for Meeker and Norman Counties. Photo-interpretation of Renville County is complete with 12 of 27 townships digitized.

IV. OUTLINE OF PROJECT RESULTS*:*

Result 1: Southwest Prairie Complex Mapping

Description:

In **Brown, Cottonwood, Lincoln, Lyon, Martin, Murray, Nobles, Pipestone, Redwood, Rock, and Watonwan Counties**, RWI product will be mapped for **154 Townships**. National Aerial Photography Program (NAPP) (1:40,000 scale) color infrared (CIR) photographs will be viewed in stereo pairs at 5x magnification using a cartographic engineering stereoscope. Drained depressional wetlands will be delineated on a Mylar overlay using a 6X0 (0.13mm diameter) rapidograph pen and indelible ink. Collateral data will be consulted during the digitization process consisting of published county soil surveys and descriptions of hydric soils, USDA Farm Service Agency compliance slides (aerial 35-mm slides) acquired in 1993 (immediately after a period of intense precipitation), USGS 7.5-minute topographic maps, and National Wetlands Inventory (NWI) maps. Mylar overlays will be scanned to create draft digital data. The final deliverable consists of distributing the final GIS products on the Minnesota DNR Data Deli and Ducks Unlimited websites.

Summary Budget Information for Result 1:

	M.L. 2008	M.L. 2009	Total
Trust Fund Budget:	**$245,000.00**	**$0**	**$245,000.00**
Amount Spent:	**$243,870.50**	**$0**	**$243,870.50**

Balance:	**$1129.50**	**$0**	**$1129.50**

Deliverable	Completion Date	Budget	Status
1. Acquisition of Imagery	July 2008	$2,500	n/a
2. SDSU Photointerpretation/Digitization • Brown County (~17 townships) • Cottonwood (9 townships) • Lincoln County (13 townships) • Lyon County (12 townships) • Martin County (20 townships) • Murray County (6 townships) • Nobles County (16 townships) • Pipestone County (~12 townships) • Redwood County ~(24 townships) • Rock County (~13 townships) • Watonwan County (12 townships)	n/a September 2008 December 2008 February 2008 April 2009 July 2009 September 2009 December 2009 February 2010 April 2010 May 2010 June 2010	$242,500	n/a
3. Product Distribution	July 2010	$0	n/a

[a] SDSU GIS Lab will receive a one-time payment upon delivery of product for all Counties. Ducks Unlimited, Inc. will request LCCMR reimbursement after product has been delivered by SDSU and Ducks Unlimited, Inc. has paid SDSU for their work. Completion dates reflect anticipated digitization timeframes for each county.

Completion Date: M.L. 2008 = July 31, 2010

Final Report Summary (July 2010):

The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant

RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

In the Southwest Prairie Complex, over 300,000 individual restorable wetland basins were identified and mapped. Upon completing the Southwest Prairie Complex mapping, townships in 42 western and south-central counties in the prairie and transition zone eco-regions of Minnesota have been mapped, adding an important component to the State's spatial data infrastructure that informs environmental planning and research. Through this investment in RWI – combined with the National Wetlands Inventory, landcover classifications, and a growing catalogue of

high-resolution elevation data – our capacity to understand (and importantly, restore and manage) Minnesota's wetland resources is continuing to improve.

The Restorable Wetlands Inventory mapping product for the Southwest Prairie Complex is complete and will be distributed on the Minnesota Data Deli and Ducks Unlimited, Inc. websites by the end of August 2010 in GIS-compatible formats.

Result 2: Red River Valley Complex Mapping
Description:
Within **Clay, Mahnomen, Norman, and Wilkin Counties**, RWI product will be mapped for **72 Townships** (see Work Plan Map #1). The protocols, procedures, and deliverables will be the same as described under Result 1, but for the different geographic extent.

Summary Budget Information for Result 2:

	M.L. 2008	M.L. 2009	Total
Trust Fund Budget:	**$0**	**$125,000**	**$125,000**
Amount Spent:	**$0**	**$125,000**	**$125,000**
Balance:	**$0**	**$0**	**$0**

Deliverable	Completion Date	Budget	Status
1. Acquisition of Imagery	January 2010	$2,500	n/a
2. SDSU Photointerpretation/Digitization • Mahnomen County (16 townships) • Norman County (24 townships) • Clay County (12 townships) • Wilkin County (~21 townships)	n/a June 2010 September 2010 December 2010 April 2011	$122,500	n/a
3. Product Distribution	April 2011	$0	n/a

[a] SDSU GIS Lab will receive a one-time payment upon delivery of product for all Counties. Ducks Unlimited, Inc. will request LCCMR reimbursement after product has been delivered by SDSU and Ducks Unlimited, Inc. has paid SDSU for their work. Completion dates reflect anticipated digitization timeframes for each county.

Completion Date: M.L. 2009 = April 30, 2011

Result Status as of December 31, 2009:
M.L. 2009
Agreement has been signed with the GIS lab at South Dakota State University to continue photo-interpretation and digitization work on the final, remaining counties in the RWI project.

Result Status as of June 30, 2010:
M.L. 2009
NAPP imagery has been acquired and prepared for the Red River Valley Complex and Farm Service Agency compliance slides have been obtained for Clay and Wilkin Counties. Deviating from the schedule outlined in the workplan, Clay and Wilkin

Counties will be completed prior to Mahnomen and Norman Counties due to the timing of the compliance slide acquisitions.

Result Status as of December 31, 2010:
M.L. 2009
Clay County has been photo-interpreted and digitized and is under final QA/QC by the USFWS project partner. Wilkin County photo-interpretation is finished with digitization underway. Photo-interpretation of Mahnomen and Norman Counties is partly completed.

Result Status as of June 30, 2011:
Clay County has been completed. Mahnomen County has been photo-interpreted and digitized and is under final QA/QC by the USFWS project partner. Wilkin County digitization is complete; errors were found during initial QA/QC and is being revisited by the contractor. Photo-interpretation and digitization of Norman County is completed and awaiting QA/QC.

Result Status as of December 31, 2011:
Mahnomen and Meeker Counties are under final QA/QC by the USFWS project partner. Wilkin and Norman Counties are near finalization and ready for QA/QC.

Final Report Summary (July 2012):

In the Red River Valley Complex, over 132,000 individual restorable wetland basins were identified and mapped. Upon completing the Southwest Prairie Complex mapping, townships in 72 western in the prairie and transition zone eco-regions of Minnesota have been mapped, adding an important component to the State's spatial data infrastructure that informs environmental planning and research. Through this investment in RWI – combined with the National Wetlands Inventory, landcover classifications, and a growing catalogue of high-resolution elevation data – our capacity to understand (and importantly, restore and manage) Minnesota's wetland resources is continuing to improve.

Result 3: Prairie-Hardwood Complex Mapping
Description:
In **Meeker, McLeod, Wright, Renville, Sibley, and Nicollet Counties**, RWI product will be mapped for **106 Townships**. The protocols, procedures, and deliverables will be the same as described under Result 1, but for the different geographic extent.

Summary Budget Information for Result 3:

	M.L. 2008	M.L. 2009	Total
Trust Fund Budget:	**$0**	**$175,000**	**$175,000**
Amount Spent:	**$0**	**$175,000**	**$175,000**
Balance:	**$0**	**$0**	**$0**

Deliverable	Completion Date	Budget	Status

1. Acquisition of Imagery	June 2011	$2,500	n/a
2. SDSU Photointerpretation/Digitization • Meeker County (18 townships) • Wright County (~22 townships) • McLeod County (14 townships) • Sibley County (16 townships) • Nicollet County (~5 townships) • Renville County (~27 townships)	n/a August 2011 October 2011 December 2011 February 2012 February 2012 June 2012	$172,500	n/a
3. Product Distribution	June 2012	$0	n/a

[a] SDSU GIS Lab will receive a one-time payment upon delivery of product for all Counties. Ducks Unlimited, Inc. will request LCCMR reimbursement after product has been delivered by SDSU and Ducks Unlimited, Inc. has paid SDSU for their work. Completion dates reflect anticipated digitization timeframes for each county.

Completion Date: M.L. 2009: June 30, 2012

Result Status as of December 31, 2009:
M.L. 2009
Agreement has been signed with the GIS lab at South Dakota State University to continue photo-interpretation and digitization work on the final, remaining counties in the RWI project.

Result Status as of June 30, 2010:
M.L. 2009
N/A

Result Status as of December 31, 2010:
M.L. 2009
NAPP imagery has been acquired and prepared for the Prairie-Hardwood Complex and Farm Service Agency compliance slides have been obtained for Meeker, McLeod, Wright, Renville, Sibley, and Nicollet Counties.

Result Status as of June 30, 2011:
M.L. 2009
Photo-interpretation and digitization of Meeker County is completed and awaiting QA/QC

Result Status as of December 31, 2011:
M.L. 2009
QA/QC underway for Meeker County. Photo-interpretation of Renville County is complete with 12 of 27 townships digitized.

Final Report Summary (July 2012):

In the Prairie-Hardwood Complex, close to 131,000 individual restorable wetland basins were identified and mapped. Upon completing the Prairie Hardwood

Complex mapping, townships in 106 western and south-central counties in the prairie and transition zone eco-regions of Minnesota have been mapped, adding an important component to the State's spatial data infrastructure that informs environmental planning and research. Through this investment in RWI – combined with the National Wetlands Inventory, landcover classifications, and a growing catalogue of high-resolution elevation data – our capacity to understand (and importantly, restore and manage) Minnesota's wetland resources is continuing to improve.

V. TOTAL TRUST FUND PROJECT BUDGET:

M.L. 2008

Staff or Contract Services: $ 245,000

• Contract - South Dakota State University, NWI Laboratory	$ 242,500
• 2.5% FTE - Project Manager Ducks Unlimited, Inc.	$ 2,500
TOTAL 2008 TRUST FUND PROJECT BUDGET:	**$ 245,000**

M.L. 2009

Staff or Contract Services: $ 300,000

• Contract - South Dakota State University, NWI Laboratory	$ 296,000
• 5% FTE - Project Manager Ducks Unlimited, Inc.	$ 4,000
TOTAL 2009 TRUST FUND PROJECT BUDGET:	**$ 300,000**

VI. OTHER FUNDS AND PARTNERS

A. Project Partners

M.L. 2008 and M.L. 2009

Dr. Rex Johnson, HAPET Team Leader, U.S. Fish & Wildlife Service – Region 3
Darin R. Blunck, Director of Conservation Programs, Ducks Unlimited, Inc.
Brian Huberty, Regional NWI Coordinator, U.S. Fish & Wildlife Service – Region 3

B. Other Funds Proposed to be Spent during the Project Period

M.L. 2008

U.S. Fish & Wildlife Service	$45,000 Cash/In-kind	Imagery Acquisition and QA/QC
Ducks Unlimited, Inc.	$4,500 In-kind	Project Management

M.L. 2009

U.S. Fish & Wildlife Service	$50,000 Cash/In-kind	Imagery Acquisition and QA/QC
Ducks Unlimited, Inc.	$6,000 In-kind	Project Management

C. Spending History

U.S. Fish & Wildlife Service	$ 10,000 Cash/In-kind
Ducks Unlimited, Inc.	$ 6,000 In-kind
Habitat Corridors Partnership (LCCMR)	$ 98,000 Cash

D. Time:

M.L. 2008
Grant funds will be used predominantly for contract services with timeframes established for deliverables based on approximations of when the contractor estimates feasible delivery of products. Reimbursement for the Southwest Prairie Complex Result will be requested from LCCMR in July 2010 upon completion and delivery of the mapping product.
M.L. 2009
Reimbursement for the Red River Valley mapping result will be requested from LCCMR in April 2011 upon completion and delivery of the mapping product. Reimbursement will be requested in June 2012 upon completion and delivery of the mapping product for the Prairie-Hardwood Complex.

E. Project Impact and Long-term Strategy

The completion of the Restorable Wetlands Inventory is an important component of the State's spatial data infrastructure. Once completed, the dataset will provide seamless data on wetland restoration potential in the glaciated regions of Minnesota. The dataset is a baseline dataset that requires no periodic updates.

VII. DISSEMINATION:
Data will be distributed on the web via the Minnesota GIS Data Deli (http://deli.dnr.state.mn.us) and the Ducks Unlimited, Inc. (http://www.ducks.org) websites.

VIII. REPORTING REQUIREMENTS:
M.L. 2008
Periodic work program progress reports will be submitted not later than December 2008, June 2009, and December 2009 for the 2008 appropriation. A final work program report and associated products for the 2008 appropriation will be submitted between June 2010 and July 2010.

M.L. 2009
Periodic work program progress reports will be submitted not later than December 2009, June 2010, December 2010, June 2011, December 2011, and June 2012. A final work program report and associated products for the 2009 appropriation will be submitted no later than August 1, 2012.

IX. RESEARCH PROJECTS:

Attachment A: Budget Detail for 2009 Projects - Summary and a Budget page for each partner (if applicable)

Project Title: *Restorable Wetland Inventory*

Project Manager Name: *Darin R. Blunck - Ducks Unlimited, Inc.*

Trust Fund Appropriation: $ **300,000**

1) See list of non-eligible expenses, do not include any of these items in your budget sheet

2) Remove any budget item lines not applicable

2009 Trust Fund Budget	Result 2 Budget:	Amount Spent	Balance 8/15/2012	Result 3 Budget:	Amount Spent	Balance 8/15/2012	TOTAL BUDGET	TOTAL BALANCE
	Red River Valley Complex			*Prairie Hardwood Complex*				
BUDGET ITEM			0			0	0	0
Contracts			0			0	0	0
Professional/technical: Ducks Unlimited, Inc., Project Management	2,500	2,500	0	2,500	2,500	0	5,000	0
Professional/technical: GIS Laboratory, Department of Fish and Wildlife Sciences, South Dakota State University	122,500	122,500	0	172,500	172,500	0	295,000	0
COLUMN TOTAL	**$125,000**	**$125,000**	**$0**	**$175,000**	**$175,000**	**$0**	**$300,000**	**$0**

Restorable Wetland Inventory - LCCMR

Final Status Map - 2012