MAINE DEPARTMENT OF TRANSPORTATION

2006 POST-CONSTRUCTION MONITORING REPORT:

Well Field Site, Fort Kent

(MDOT PIN 5220.44)

Year 5 of 5

Compensation for Route 11 Reconstruction Project, Wallagrass – Fort Kent (MDOT PIN 5220.10)

ACOE Permit Number: 200100376

MDEP Permit Number: PBR

March 2007

Prepared By

MAINE DEPARTMENT OF TRANSPORTATION
Environmental Office
Field Studies and Mitigation Division
16 State House Station
Augusta, Maine 04333

2006 Post Construction Monitoring Report: Well Field Site, Fort Kent (PIN 5220.44)

CONTENTS

Section	Title	Page
1.0	**Introduction**	1
2. 0	**Mitigation Goals and Performance Standards**	5
3.0	**Monitoring Methods**	6
4.0	**Results and Discussion**	6
5.0	**Recommendations**	8

Appendices:

Appendix A. MDEP and Corps Permits
Appendix B. Vegetation Data
Appendix C. Photographs

List of Tables

Table 1.	Summary Table - Site Progress Toward Performance Standards	2

List of Figures

Figure 1.	Location Map - Well Field Site	3
Figure 2.	Well Field Site Map	4

1.0 Introduction

This report presents the results of the fifth and final year of post-construction monitoring (2006 growing season) at the Well Field compensatory wetland mitigation site in Fort Kent, Aroostook County (Figure 1). The site provides compensation for 59,618 square feet (1.37 acres) of wetland impacts associated with the reconstruction by the Maine Department of Transportation (MaineDOT) of a 2.0 mile (3.2 km) section of Route 11 in Wallagrass and Fort Kent.

In 2001, MaineDOT received permits for the project from the Maine Department of Environmental Protection (MDEP) (PBR – no number), and from the U.S. Army Corps of Engineers (Corps), (permit number 200100376) for PIN 5220.10 (Appendix A). In accordance with the Preliminary Wetland Mitigation Plan (the Plan) for the project dated February 2001 and the permit conditions, MaineDOT restored, enhanced and created (hereafter referred to as constructed) approximately 33,720 square feet (0.77 acres) of area intended to function as wetland. Wetlands were constructed in two separate locations: the Farm Road area in the western portion of the site and the Mid-Field area in the central part of the site (Figure 2). In both locations, portions of a dirt and gravel farm road and the edge of a former potato field were excavated, graded, loamed and planted to enlarge existing adjacent scrub-shrub and emergent wetlands.

Post-construction monitoring at the site consists of determining the hydrology and vegetative cover and species composition within the constructed wetland areas and relating the results to required performance standards. Table 1 summarizes the conditions at the site at the end of the second growing season and compares them with the required performance standards.

Table 1. Summary Table Showing Site Progress Towards Performance Standards

Performance Standard	2002 Findings (Year 1)	2003 Findings (Year 2)	2004 Findings (Year 3)	2006 Findings (Year 5)	Met Standard?
Hydrology meets minimum criteria and is similar to adjacent wetlands	Water levels altered by beavers	Water levels altered by beavers	Water levels altered by beavers	Hydrology similar to adjacent wetlands	Yes[3]
Stable slopes with no significant erosion	Yes[1]	Yes	Yes	Yes	Yes
In constructed wetland, >50% of dominant vegetation classified as OBL through FAC	Not monitored	Prevalence of hydrophytes in 2 of 6 quadrats	Prevalence of hydrophytes in 5 of 6 quadrats	Prevalence of hydrophytes in 6 of 6 quadrats	Yes
Density of at least 500 shrubs per acre in shrub swamp zone	All containerized plantings installed[2]	Supplemental plantings and live stakes installed	All plantings healthy and growing	Buffer plantings meet density standard; live stakes noted	Yes[2]

[1] minor soil redistribution was noted at inlets to the constructed wetlands

[2] in accordance with Corps guidelines, shrub plantings were moved in response to altered hydrologic conditions present at the site at the time of planting.

[3] hydrologic conditions are wetter and more variable than originally planned as a result of higher water levels in adjacent PEM/PSS wetland

Figure 1. Well Field Site Location Map

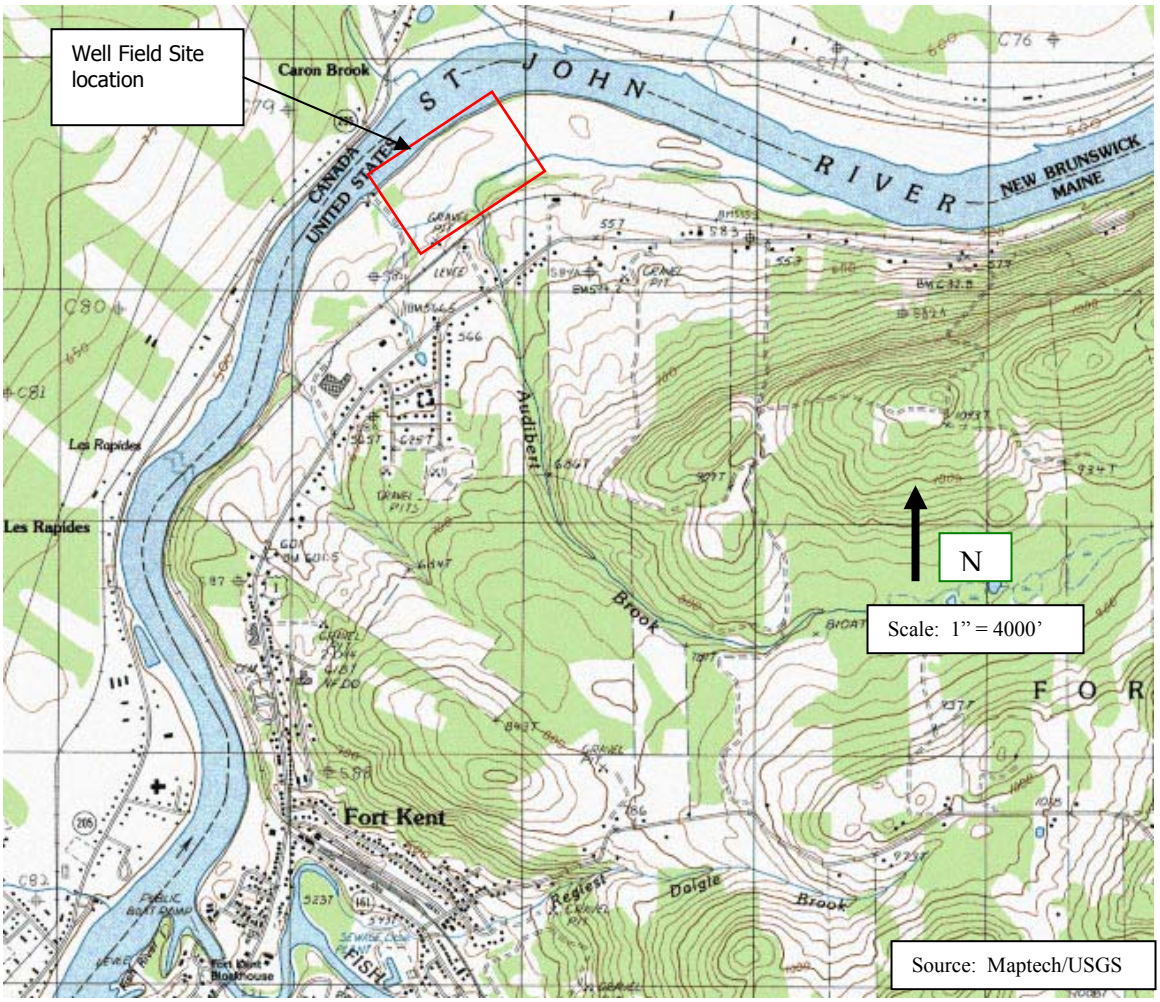

Figure 2. Well Field Mitigation Site

2.0 Mitigation Goals and Performance Standards

The mitigation goal for the Well Field site is to replace the wetland functions impacted by the Route 11 highway reconstruction project by restoring, enhancing and creating emergent and shrub wetlands in former wetland and adjacent upland areas degraded by previous agricultural activities. The constructed wetlands were intended to have similar hydrology, soils and vegetation as the adjacent reference wetland. An additional goal is to protect the existing and constructed wetlands and the nearby municipal wells from sediment and chemicals associated with past agricultural activities and to protect wildlife habitat by preserving wetlands and uplands at the site.

The monitoring plan for the site includes evaluating the hydrology, soils, and vegetative cover and species composition within the constructed wetland and comparing the results to specified performance standards. The Plan specified that the constructed wetland areas would meet the following performance standards by the end of the monitoring period:

- ***Hydrology -*** At least 85% of the constructed wetland area must meet the minimum hydrology criteria for wetlands as specified in the 1987 manual. In addition, the hydrologic regime of the shrub swamp and emergent covertype zones will be predominantly seasonally flooded/saturated.
- ***Soils -*** Slopes in and around the constructed wetland area will be stable with no significant erosion.
- ***Vegetation -*** Greater than 50% of the dominant plant species within constructed wetland planting zones (excluding planned shallow pool areas) will be classified as FAC, FACW, or OBL on the U.S. Fish and Wildlife Service *National List of Plant Species That Occur in Wetlands* (USFWS, 1996). In addition, within the shrub swamp covertype zone a density of at least 500 shrubs per acre, including volunteers, will be achieved.

3.0 Monitoring Methods

A MaineDOT mitigation specialist visited the site in October 2006 to assess the status of the site and to compare the conditions with the performance standards. The following parameters were evaluated:

- ***Hydrology -*** The relative water levels in the constructed and reference wetlands, the flow in nearby streams, and signs of beaver activity were noted during the monitoring visit.
- ***Soils -*** Soils in the constructed wetlands, the adjacent upland slopes, and the former potato field were checked for signs of significant erosion.
- ***Vegetation -*** The condition of the planted shrubs and willow and dogwood live stakes were checked during the site visit. The number of live shrubs was tallied to allow densities to be determined, and vegetation plot data was collected within each area to evaluate the vegetative cover and hydrophyte prevalence.
- ***Other Observations -*** The site was checked for signs of wildlife use, damage or disturbance from human activity, and the presence of invasive species such as purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites sp*.).

4.0 Results and Discussion

Hydrology

The surface water levels noted at the site in 2006 are consistent with observations made during previous monitoring years. Conditions within the Farm Road area ranged from flooded to saturated in the westerly end, permanently flooded within the larger constructed pools, and mostly saturated within the easterly end. Water levels in both the constructed and the adjacent reference wetland were similar as a result of the openings graded along the edge of the site that allow surface water to move between the wetlands. Within the Mid-Field Area, conditions appeared to be seasonally flooded within the constructed shallow pool, and saturated along the margins.

These results indicate that the hydrologic conditions within portions of the constructed wetlands are wetter, with more shallow ponding of water than specified in the mitigation plan for the site. This may be partly explained by greater than anticipated runoff from the Audibert Brook watershed which has led to high water levels in the adjacent wetland and flooding of the constructed wetlands.

Another important factor has been persistent damming of stream channels and culverts on adjacent town property by beaver. This has resulted in periods of extensive flooding and favored marsh development in the constructed wetlands. On-going beaver management and culvert maintenance activities by the Town of Fort Kent may reduce the flooding frequency in the future. Although site conditions are generally wetter than called for in the performance standards, the water levels within the constructed wetland are similar to the adjacent reference wetland and support a similar mix of wetland and aquatic habitats.

Soils

No evidence of soil disturbance or significant erosion within the constructed wetlands or the former potato fields was noted during the site visit.

Vegetation

Vegetative cover observed within the seasonally flooded/saturated portions of the constructed wetlands was extensive and indicated that wetland conditions were prevalent throughout. The large clumps of herbaceous vegetation previously noted in the more permanently flooded sections of the Farm Road area continued to spread. Hydrophytic species dominant within the adjacent wetland such as woolgrass (*Scirpus cyperinus*), bluejoint grass (*Calamagrostis canadensis*), broad-leaved cattail (*Typha latifolia*), reed canary grass (*Phalaris arundinacea*), *Carex sp.* and willow, were prevalent in all of the sample quadrats within the constructed wetlands (Appendix B). The results indicate that the seasonally saturated/flooded portions of the constructed wetlands meet the hydrophyte prevalence standard. Areas where surface water is present for extended periods during the growing season, such as the constructed pools, were excluded from meeting the standard in the Plan. However, these areas occur as openings within the dense marsh vegetation in a pattern similar to the adjacent reference wetlands.

Shrub buffer plantings installed around the edges of both the Mid-Field and Farm Road areas were healthy and vigorous at the time of the October site visit. Some light to moderate browse was observed on the viburnums (*Viburnum lentago* and *V. trilobum*) and dogwood (*Cornus sericea*), however berry production was evident on many of the viburnums. The supplemental planting of winterberry (*Ilex verticillata*) performed in 2003 appeared to have been largely successful, and a

number of plants previously noted to have poor vigor had survived. The number of planted shrubs was tallied (Appendix B). In addition, a number of willow and dogwood shrubs installed in both areas as live stakes during previous monitoring years had rooted and were beginning to spread and scattered volunteer alder were noted. The combination of the planted shrubs, the surviving live stakes, and volunteering shrub species exceed the required density standard.

Remedial Activities

No remedial activities were necessary or were conducted at the site in 2006.

Other Observations

Use of the site by wildlife in 2006 was evident from tracks and limited direct observation and included moose (tracks), muskrat (trails), white throated sparrow, chickadee and a number of aquatic insects.

Purple loosestrife (*Lythrum salicaria*) or *Phragmites sp*. were not present within the constructed wetland and were not noted in the vicinity of the site at the time of monitoring visit. Patches of reed canary grass occur in both the Mid-Field and Farm Road areas. As noted in the Plan, dense clumps of reed canary grass were present within the adjacent wetland prior to construction and some colonization of these areas by this species was expected. No damage or disturbance from human use was noted.

5.0 Recommendations

The constructed wetlands have made satisfactory progress toward achieving the mitigation goals and performance standards by the end of the five-year post-construction monitoring period. No additional remedial measures appear to be necessary at this time. This is the final post-construction monitoring report for the Well Field site. MaineDOT requests written concurrence from DEP and the Corps that all mitigation requirements for the project have been met.

Appendix A

PERMITS

MDEP PBR

ACOE Permit Mitigation Special Conditions
(ACOE Permit Number: 200100376)

DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

PERMIT BY RULE NOTIFICATION FORM

(For use with DEP Regulation, Chapter 305)

■ MDOT PIN: 5220.10

Name of Applicant: State of Maine Department of Transportation **Name of Contact:** Sylvia Michaud
Mailing Address: 16 Station State House **Town/City:** Augusta **State:** Me. **Zip Code:** 04330-0016
Daytime Telephone #: (207)-287-5735 **Name of Wetland, Water Body or Stream:** Unnamed Stream

Detailed Directions to Site: From Presque Isle, take U.S. Rt 1 north until you reach Rt. 161 on your left. Take Rt. 161 north until you reach Rt. 11 on your left. Beginning of project is 2.5 miles south on Rt. 11 extending south 1.6 miles.

Town/City: Wallagrass - Fort Kent **Map #:** N/A **Lot #:** N/A **County:** Aroostook

Description of Project: The scope of the project is highway reconstruction, including realignment, culvert replacements, new guardrails (some requiring fill), slope and ditch work. The project will be performed in accordance with erosion control measures conforming with the latest versions of the *State of Maine Department of Transportation Standard Specifications for Highways and Bridges* and the *Department of Transportation's Best Management Practices for Erosion and Sediment Control.*

Part of a larger project? ☐Yes ☒No

(CHECK ONE) This project... ☐ does ☒does not ...involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Regulation, Chapter 305. I have a copy of PBR Sections checked below. I have read and will comply with all of the standards.

☐Sec. (2) Soil Disturbance	☐Sec. (8) Shoreline stabilization	☐Sec. (14) Piers, Wharves & Pilings
☐Sec. (3) Intake Pipes	☐Sec. (9) Utility Crossing	☐Sec. (15) Public Boat Ramps
☐Sec. (4) Replacement of Structures	☐Sec. (10) Stream Crossing	☐Sec. (16) Coastal Sand Dune Projects
☐Sec. (5) REPEALED	☒Sec. (11) State Transport. Facilities	☐Sec. (17) Transfers/Permit Extension
☐Sec. (6) Movement of Rocks or Vegetation	☐Sec. (12) Restoration of Natural Areas	☐Sec. (18) Maintenance Dredging
☐Sec. (7) Outfall Pipes	☐Sec. (13) F&W Creation/Enhance/Water Quality Improvement	

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that ***this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.***

I have attached all of the following required submittals. **NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:**

- ■ **A $50 (non-refundable) payment shall be done by internal billing.**
- ■ ***Attach* a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.**
- ☐ ***Attach* photographs showing existing site conditions (unless not required under standards).**

Signature of Applicant: John E. Dority, Chief Engineer **Date:** 02/13/01

Keep the bottom copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office listed below.** The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP STATE HOUSE STATION 17 AUGUSTA, ME 04333-0017 (207)287-2111 PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)822-6300 BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)941-4570 PRESQUE ISLE DEP 1235 CENTRAL DRIVE PRESQUE ISLE, ME 04769 (207)764-0477

OFFICE USE ONLY	Ck.#	Staff	Staff	
PBR # FP	Date	Acc. Date	Def. Date	After Photos

DEPARTMENT OF THE ARMY

NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

DEPARTMENT OF THE ARMY PROGRAMMATIC GENERAL PERMIT
STATE OF MAINE, SUMMARY OF SCREENING AND STATUS

OFFICE OF ENVIRON. SERVICES
MAINE DEPT. OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333

CORPS PERMIT # 200100376
CORPS PGP ID# 00-89
STATE ID# PBR

DESCRIPTION OF WORK AS ON ATTACHED STATE APPN:
Place fill below the ohw line of Pinette Brook, its adjacent wetlands and other freshwater wetlands and unnamed streams off Route 11 at Wallagrass, Maine in conjunction with the reconstruction of a 1.6 mile section of the roadway. Approx. 1.4 acres of stream bed and wetland will be impacted by the project. To meet State mitigation requirements, the applicant will restore, enhance and create approx. 0.65 acres of wetland and preserve a surrounding 56.7 acres of upland and wetland located adjacent to the St. John River at Ft. Kent, ME.
DOT PIN #5220.10

UTM GRID COORDINATES N: 5229587 E:: 530579 **USGS QUAD:** FT. KENT S., ME

I. STATE ACTIONS: PENDING [X], **ISSUED**[ ], **DENIED** [ ] **DATE**_____

LEVEL OF STATE REVIEW: PERMIT BY RULE: X , TIER 1: ____, TIER 2 : ____, TIER 3: ____, (NRPA)

II. FEDERAL ACTIONS:

DATE STATE FILE REVIEWED: 2/15/01 (PGP JP MEETING)

LEVEL OF CORPS REVIEW: CATEGORY 1: X CATEGORY 2: ____

AUTHORITY: SEC 10____, 404 X 10/404____, 103____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

ESSENTIAL FISH HABITAT (EFH): EFH PRESENT Y / N (CIRCLE ONE)
IF YES: Based on the terms and conditions of the PGP, which are intended to ensure that authorized projects cause no more than minimal environmental impacts, the Corps of Engineers has preliminary determined that this project will not cause more than minimal adverse effects to **EFH** identified under the Magnunson-Stevens Fisheries Conservation and Management Act.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

CORPS DETERMINATION: We authorize your project as proposed and as shown on the plans submitted to the Corps under the State of Maine PGP.

Please note that all work is subject to the conditions contained in the general permit and any additional special conditions listed on any attached sheets. No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. Also, this permit requires you to notify us before beginning work and allow us to inspect the project. Hence, you must complete and return the attached Work Start Notification Form(s) to this office no later than two weeks before the anticipated starting date. **(FOR PROJECTS REQUIRING MITIGATION, BE SURE TO INCLUDE MITIGATION WORK START FORM)**

Additional Special conditions Attached: YES / NO (CIRCLE ONE)

The Corps of Engineers has implemented an administrative appeals process for jurisdictional determinations. If you are interested in appealing the jurisdictional determination for this project; or if you would like any additional information pertaining to the appeals process, please contact Shawn Mahaney or Rod Howe of my staff at 207-623-8367 at our Manchester, Maine Project Office.

Jay L. Clement
JAY L. CLEMENT
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

David H. Killoy 5/25/01
DAVID H. KILLOY **DATE**
CHIEF, PERMITS & ENFORCEMENT SECTION
REGULATORY BRANCH

ADDITIONAL SPECIAL CONDITIONS FOR
DEPARTMENT OF THE ARMY
PROGRAMMATIC GENERAL PERMIT
NO. 200100376

1. Instream work is limited to June 15 to September 15 to protect fisheries and local water quality.

2. The permittee shall provide the Corps of Engineers Maine Project Office with an updated copy of their wetland compensation to reflect the change in preservation area (23.5 acres originally to the proposed 56.7 acres). This updated information shall be provided before construction begins on the road reconstruction project.

Appendix B

VEGETATION DATA

Table B1: List of Planted Shrubs at Well Field Site October 6, 2006:

Common Name	Scientific Name	Farm Road Area	Mid-Field Area	Total
Red-Twigged Dogwood	*Cornus sericea*	9	9	18
Winterberry	*Ilex verticillata*	18	17	35
American Cranberry	*Viburnum trilobum*	17	18	35
Wild Raisin	*Viburnum nudum var. cassinoides*	4	3	7
Nannyberry	*Viburnum lentago*	16	20	36
Black Chokeberry	*Aronia melanocarpa*	14	1	15
	Total	78	68	146

Table B2: Vegetation sampling Data from the Well Field Site:

Quadrat Sampling Plot data for the Well Field Site, Fort Kent, October 6, 2006

			Plot Number:					
		Indicator	Mid-Field Area:			Farm Road Area:		
Species	**Common Name**	**Status**	**T1Q1**	**T1Q2**	**T1Q3**	**T2Q1**	**T2Q2**	**T2Q3**
Bidens frondosa	beggar-ticks	FACW				**20**		10
Calamagrostis canadensis	bluejoint grass	FACW+			10	**10**	5	
Carex lurida	sedge	OBL		**40**	10		15	
Phalaris arundinacea	reed canary grass	FACW+			**50**	2		10
Salix sp.	willow	FACW	15					
Scirpus cyperinus	woolgrass	FACW+	**90**	**60**	**30**	**25**	**90**	**25**
Typha latifolia	broad-leaved cattail	OBL						**20**
Total cover =			105	100	100	57	110	65
Dominance determination: (Dominance Threshold)	50% of Total cover =		52.5	50.0	50.0	28.5	55.0	32.5
	20% of Total cover =		21.0	20.0	20.0	11.4	22.0	13.0
Total number of dominants =			1	2	2	3	1	2
Percentage of dominant species with FAC, FACW or OBL status =			**100**	**100**	**100**	**100**	**100**	**100**

Notes:
1. List does not include species with less than 2% cover
2. Percentages in bold are dominant species according to the 50:20 Rule method in the Corps 1987 manual
3. Wetland indicator status from Reed, 1988

Appendix C

PHOTOGRAPHS

Photo 1. Westerly end of Farm Road Area looking west prior to removal of old road 11/24/99.

Photo 2. Westerly end of Farm Road Area the first spring after excavation of old gravel road 6/7/02.

Photo 3. Westerly end of Farm Road Area looking west 5 years after restoration 10/6/06.

Photo 4. Central portion of Farm Road Area looking northwest prior to construction of wetland 11/24/99.

Photo 5. Created shallow pool in central portion of Farm Road area 10/6/06.

Photo 6. View of easterly section of Farm Road area looking east prior to excavation 11/24/99.

Photo 7. View of easterly section of Farm Road area looking east the first spring after construction 6/7/02.

Photo 8. View of easterly section of Farm Road area looking east after restoration 10/6/06.

Photo 9. Dirt road through easterly section of Farm Road area prior to restoration 11/24/99.

Photo 10. Shrub plantings in mulched bed along edge of easterly portion of Farm Road Area 6/7/02.

Photo 12. Shrub buffer plantings along Farm Road Area 10/6/06.

Photo 13. Mid-Field Area prior to wetland construction 11/24/1999.

Photo 15. Mid-Field Area flooded the first spring following construction 4/22/02.

Photo 16. Shallow pool in Mid-Field Area later in the first growing season 6/27/02.

Photo 17. Mid-Field Area at end of fifth growing season. 10/6/06.

Photo 18. Shrub buffer plantings along east side of Mid-Field area. 10/6/06.

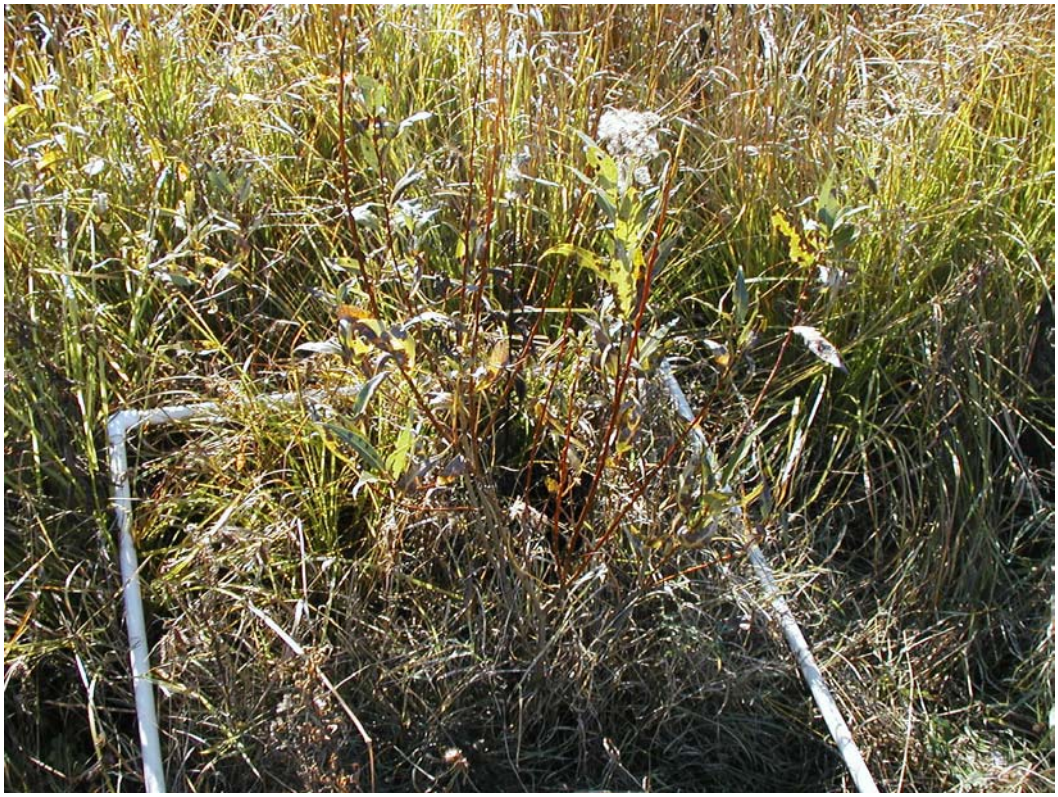

Photo 19. Three to four year-old *Salix sp.* live stake in Mid-Field area 10/6/06.

Photo 20. Three to four year-old *Cornus* live stake in Farm Road area 10/6/06.

Photo 21. Mid-Field vegetation quadrat T1-Q1 10/6/06.

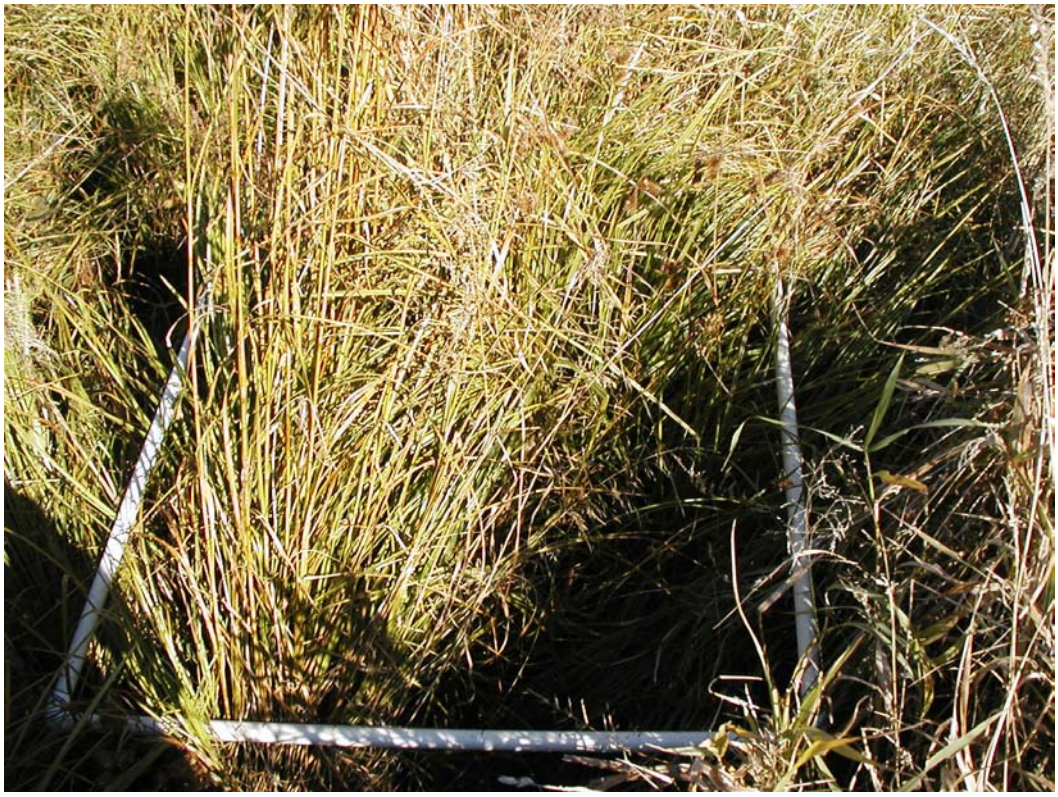

Photo 22. Mid-Field vegetation quadrat T1-Q2 10/6/06.

Photo 23. Mid-Field vegetation quadrat T1-Q3 10/6/06.

Photo 24. Farm Road vegetation quadrat T2-Q1 10/6/06.

Photo 25. Farm Road vegetation quadrat T2-Q2 10/6/06.

Photo 26. Farm Road vegetation quadrat T2-Q3 10/6/06.