

APPENDIX I

WETLAND MITIGATION PLAN AND AGENCY
MEETING NOTES



**Watertown South
Connector-
US 81 to 29th Street SE**

Codington County,
South Dakota

Wetland Mitigation Report

March 2008

Prepared by:

HDR ENGINEERING, INC.
SIOUX FALLS, SOUTH DAKOTA

HDR

ONE COMPANY | *Many Solutions™*

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Prepared by:



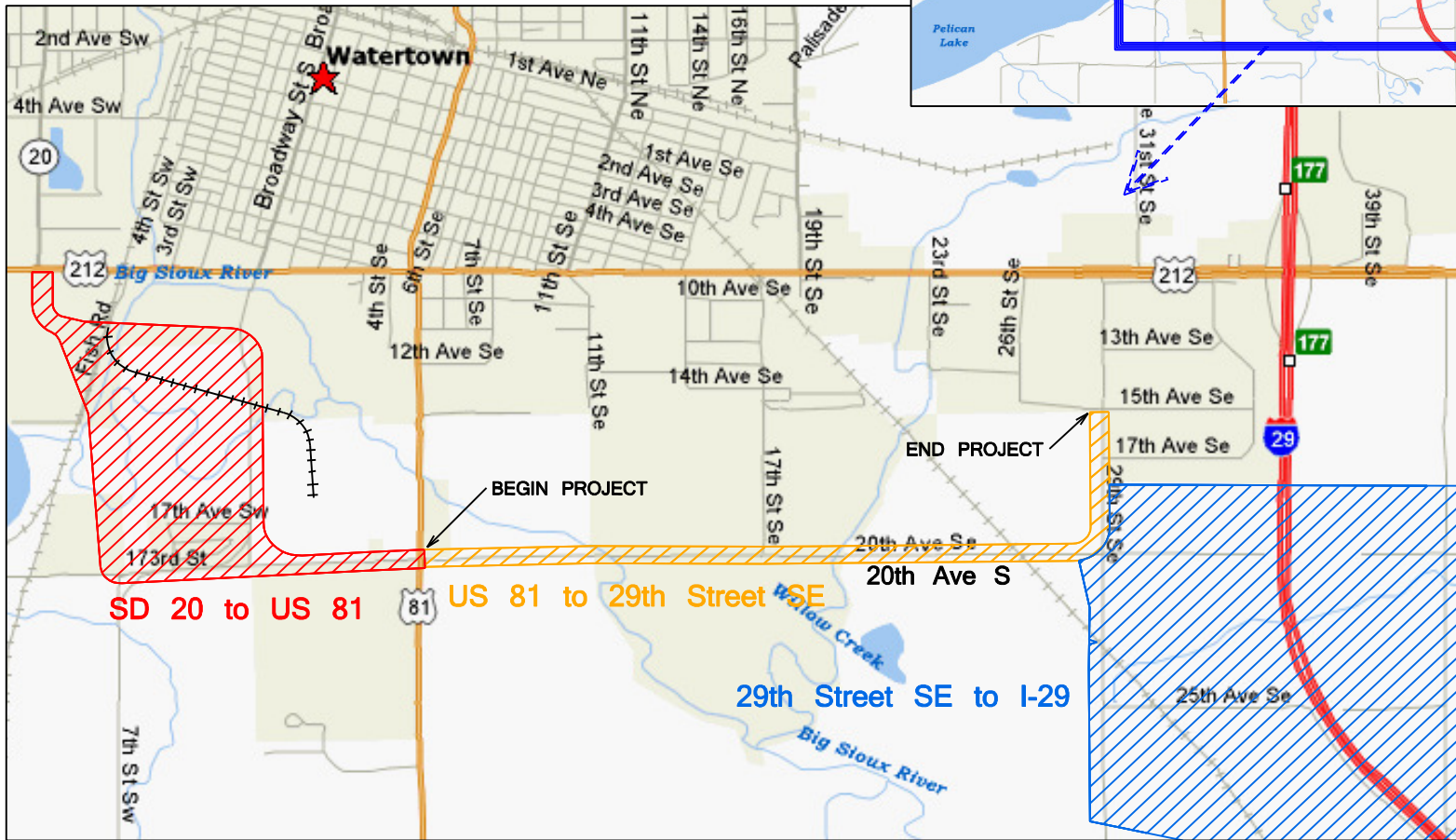
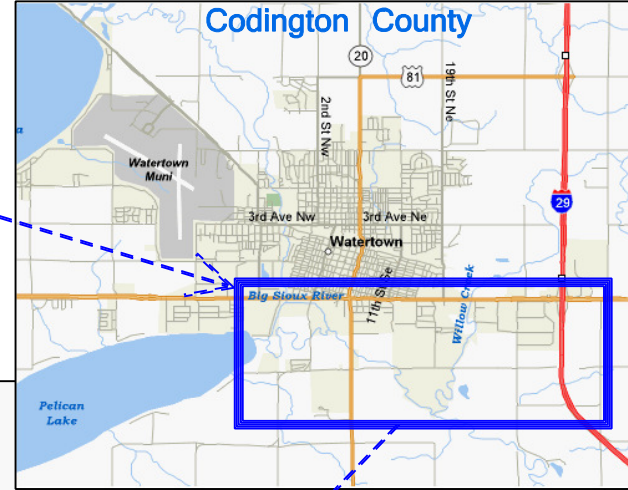
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**South Dakota Department of Transportation
Watertown South Connector—
US 81 to 29th Street SE
Codington County, South Dakota**

The South Dakota Department of Transportation (SDDOT) has contracted with HDR Engineering, Inc. (HDR) for design of the Watertown South Connector that extends from US 81 to 29th Street SE (the Project). The project is located on the south edge of the City of Watertown within Codington County, South Dakota. Within Codington County, the project is located in Sections 3, 4, 5, 8, 9, and 10 of Township 116 north, Range 52 west (See Figure 1, Project Location Map).

The Project would consist of providing a wider and paved arterial route along 20th Avenue South from US 81 to 29th Street Southeast and along 29th Street Southeast from 20th Avenue South to approximately 1400 feet south of US 212. The Watertown South Connector Route would initially be constructed with two or three travel lanes, one in each direction of traffic, and a continuous center turn lane where necessary. Ultimately, an additional lane could be added to either side of 20th Avenue to increase the capacity of the road to four or five travel lanes. The three-lane 29th Street section is considered adequate for the interim and ultimate conditions. This Project would include replacing the existing bridges over the Big Sioux River and over Willow Creek.

Wetlands and linear waters of the U.S. were delineated within the project area in August 2006. This Mitigation Report outlines how Section 404 jurisdictional impacts will be successfully mitigated on-site.



Drawn by: B. Miller
 Date: 1-11-07
 Checked by: J. Unruh
 Date: 1-11-07
 Revision Date: May 2008



Project Location Map
 Watertown South Connector, Codrington County, SD
 Project EM 4411(01) PCN 00RV

Figure 1

1.0 Mitigation Goals and Objectives

1.1 Functions Lost at Impact Areas

It is anticipated that 0.70 acres of potentially jurisdictional wetlands (to be determined by the U.S. Army Corp of Engineers (USACE)) will be impacted by the Project. Impacts will result primarily from widening of the roadway and construction of the bridge crossings of the Big Sioux River and Willow Creek. A summary of impacts for the Project is provided in Table 1.

Table 1: Wetland Impacts within Project

Plot ID	Cowardin Wetland Type¹	Impacted Area of delineated wetland (acres)
<i>Wetlands Adjacent to Willow Creek</i>		
1	PEMA	0.029
2	PEMA	0.031
Total		0.060
<i>Wetlands Adjacent to Big Sioux River</i>		
3	PEMC	0.031
5	PEMC	0.201
Subtotal		0.232
<i>Roadside Ditch Wetlands</i>		
6	PEMC	0.406
Total		0.698

Notes:

¹ Cowardin Classification (Cowardin et al., December 1979): PEMA = Palustrine Emergent Temporarily Flooded; PEMC = Palustrine Emergent Seasonally Flooded;

The Project would permanently impact approximately 0.70 acres of potentially jurisdictional wetlands, which are all palustrine emergent wetlands acres. Table 2 provides a brief summary of the functions and values of the potentially jurisdictional impacted wetlands within the Project.

Table 2: Function and Value of Impacted Wetlands

Function	Value	Comments
Wetlands Adjacent to Willow Creek		
Water Quality	High	The impacted wetlands lie immediately adjacent to the Willow Creek. They are valuable buffers for surface water runoff, although the adjacent land use (pasture) contributes to the nutrient load.
Flood Storage	High	The impacted wetlands occur along the banks of Willow Creek and could store flood waters during a large storm event.
Wildlife Habitat	Moderate	Some extensions of the impacted wetlands provide good wildlife habitat; however, the impacted wetlands themselves are limited in their habitat value as they lie adjacent to a roadway corridor.
Wetlands Adjacent to Big Sioux River		
Water Quality	High	The impacted wetlands lie immediately adjacent to the Big Sioux River. They are valuable buffers for surface water runoff.
Flood Storage	High	The impacted wetlands occur along the banks of Willow Creek and could store flood waters during a large storm event.
Wildlife Habitat	Moderate	Some extensions of the impacted wetlands provide good wildlife habitat; however, the impacted wetlands themselves are limited in their habitat value as they lie adjacent to a roadway corridor.
Roadside Ditch Wetlands		
Water Quality	Low	Limited nutrient removal and groundwater recharge benefit is supplied.
Flood Storage	Moderate	The Big Sioux River is located adjacent to this area but due to the elevations due not provide sufficient flood storage.
Wildlife Habitat	Low	The impacted wetlands are limited in their habitat value as they lie adjacent to a roadway corridor.

1.2 Functions to be Gained at Mitigation Areas

SDDOT is proposing on-site mitigation to offset unavoidable wetland impacts resulting from the construction of the bridge crossings of the Big Sioux River and Willow Creek. The proposed mitigation areas lie immediately adjacent to the Big Sioux River in Sections 5 and 8 of Township 116 North, Range 52 West in Codington County, South Dakota. The area is north and south of 20th Avenue South and west of the Big Sioux River (see Figures 12A and 12B).

Based on the anticipated impacts of the Project, and the appropriate mitigation areas available on-site, SDDOT proposes to establish approximately 0.92 acres of palustrine

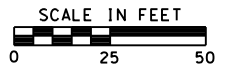
emergent wetlands and to restore approximately 0.85 acres of existing palustrine emergent wetlands (see Figure 2, Exhibit A and Appendix A, Mitigation Calculations). The mitigation areas consist of an area north and south of 20th Avenue South and west of the Big Sioux River. Plot ID 4 in the *Watertown South Connector- US 81 to 29th Street SE Wetland Determination and Delineation Report* represents the area that is proposed for the establishment of wetlands. The SDDOT proposes to establish this area, while also restoring portions of the impacted wetlands north of 20th Avenue South.

SDDOT proposes to restore wetlands for on-site mitigation by constructing roadside ditches north of 20th Avenue South that match the contours of the impacted wetland roadside ditches. The proposed roadside ditches will be replaced north of the existing roadside ditch of 20th Avenue South due to the widening of the roadway. An area adjacent to the Big Sioux River and north of 20th Avenue South will also be replaced to existing contours on the west side and graded to promote hydrology to the area.

The function and value of the mitigation areas are anticipated to be similar to the abovementioned functions and values of the impacted areas. The primary function of the mitigation areas is fringe wetlands to the Big Sioux River including adjacent wetland and roadside ditches.

FIGURE 12A - ATTACHMENT FOR 404 PERMIT GRADING, WETLANDS AND RIP RAP AT BIG SIOUX RIVER

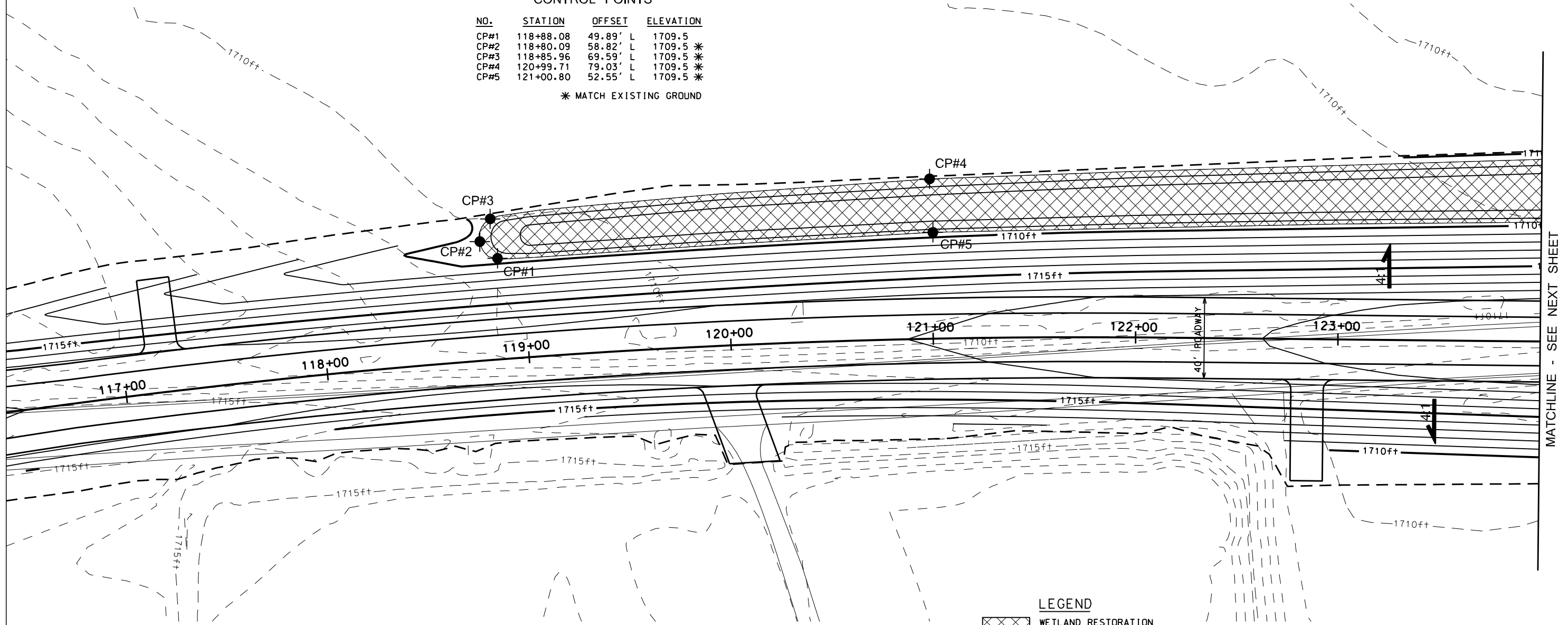
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 4411(01)	B17	B30
FILE: B17 Grading Big Sioux-1.dwg		REV DATE:	
DATE: 3/20/2008		INITIAL:	



CONTROL POINTS

NO.	STATION	OFFSET	ELEVATION
CP#1	118+88.08	49.89' L	1709.5
CP#2	118+80.09	58.82' L	1709.5 *
CP#3	118+85.96	69.59' L	1709.5 *
CP#4	120+99.71	79.03' L	1709.5 *
CP#5	121+00.80	52.55' L	1709.5 *

* MATCH EXISTING GROUND



LEGEND

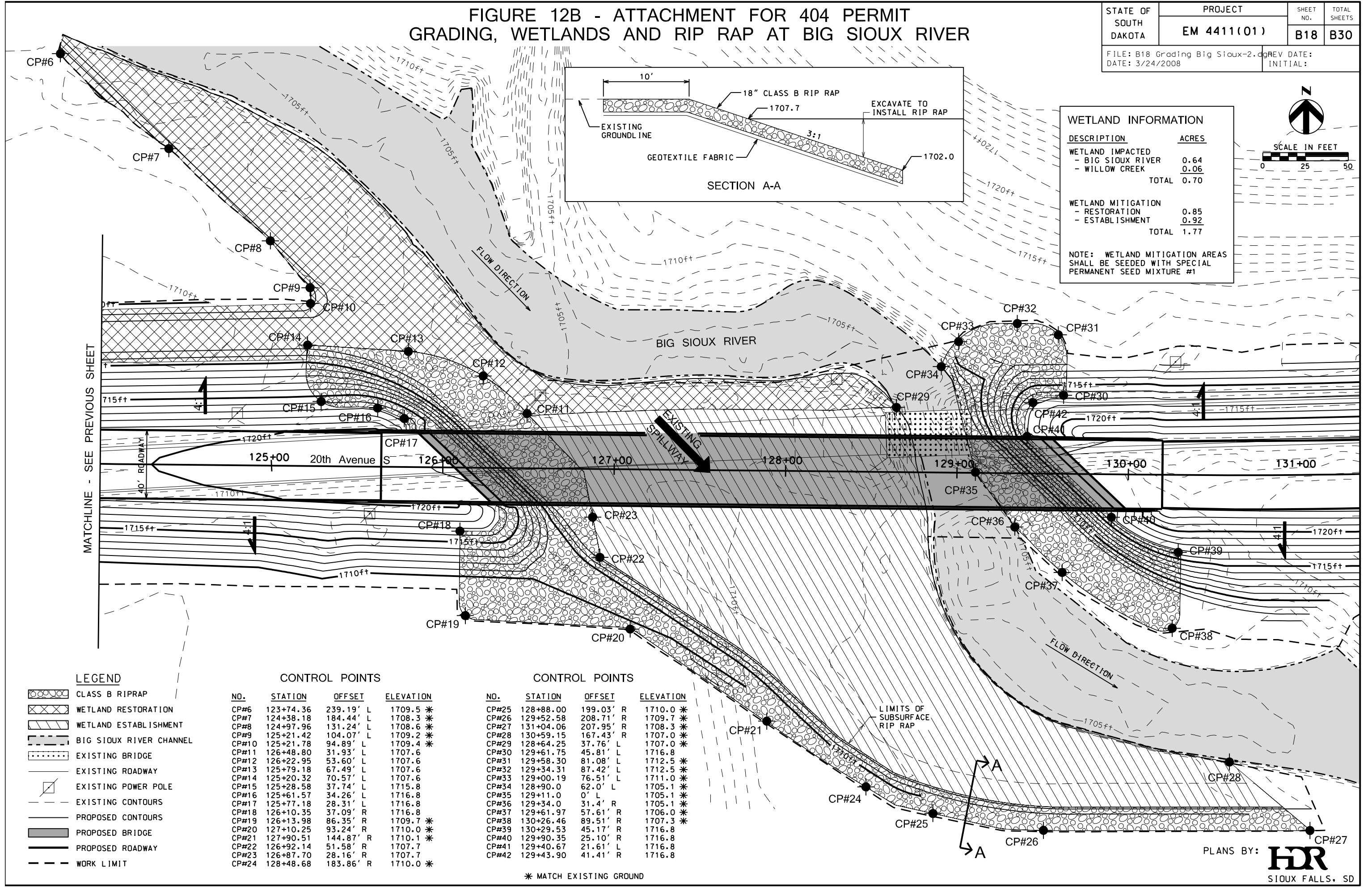
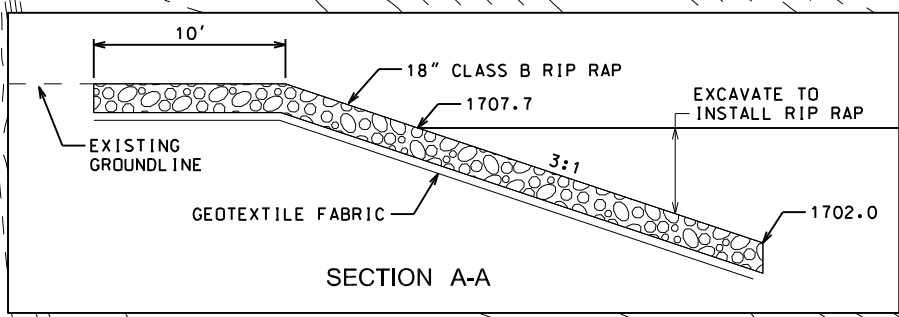
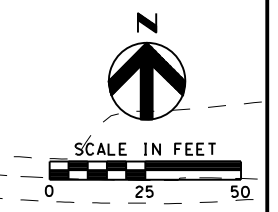
	WETLAND RESTORATION
	EXISTING ROADWAY
	EXISTING CONTOURS
	PROPOSED CONTOURS
	PROPOSED ROADWAY
	WORK LIMIT

FIGURE 12B - ATTACHMENT FOR 404 PERMIT GRADING, WETLANDS AND RIP RAP AT BIG SIOUX RIVER

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 4411(01)	B18	B30
FILE: B18 Grading Big Sioux-2.dwg		REV DATE:	
DATE: 3/24/2008		INITIAL:	

WETLAND INFORMATION	
DESCRIPTION	ACRES
WETLAND IMPACTED	
- BIG SIOUX RIVER	0.64
- WILLOW CREEK	0.06
TOTAL	0.70
WETLAND MITIGATION	
- RESTORATION	0.85
- ESTABLISHMENT	0.92
TOTAL	1.77

NOTE: WETLAND MITIGATION AREAS SHALL BE SEEDED WITH SPECIAL PERMANENT SEED MIXTURE #1



LEGEND

- CLASS B RIPRAP
- WETLAND RESTORATION
- WETLAND ESTABLISHMENT
- BIG SIOUX RIVER CHANNEL
- EXISTING BRIDGE
- EXISTING ROADWAY
- EXISTING POWER POLE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED BRIDGE
- PROPOSED ROADWAY
- WORK LIMIT

CONTROL POINTS

NO.	STATION	OFFSET	ELEVATION
CP#6	123+74.36	239.19' L	1709.5 *
CP#7	124+38.18	184.44' L	1708.3 *
CP#8	124+97.96	131.24' L	1708.6 *
CP#9	125+21.42	104.07' L	1709.2 *
CP#10	125+21.78	94.89' L	1709.4 *
CP#11	126+48.80	31.93' L	1707.6
CP#12	126+22.95	53.60' L	1707.6
CP#13	125+79.18	67.49' L	1707.6
CP#14	125+20.32	70.57' L	1707.6
CP#15	125+28.58	37.74' L	1715.8
CP#16	125+61.57	34.26' L	1716.8
CP#17	125+77.18	28.31' L	1716.8
CP#18	126+10.35	37.09' R	1716.8
CP#19	126+13.98	86.35' R	1709.7 *
CP#20	127+10.25	93.24' R	1710.0 *
CP#21	127+90.51	144.87' R	1710.1 *
CP#22	126+92.14	51.58' R	1707.7
CP#23	126+87.70	28.16' R	1707.7
CP#24	128+48.68	183.86' R	1710.0 *

CONTROL POINTS

NO.	STATION	OFFSET	ELEVATION
CP#25	128+88.00	199.03' R	1710.0 *
CP#26	129+52.58	208.71' R	1709.7 *
CP#27	131+04.06	207.95' R	1708.3 *
CP#28	130+59.15	167.43' R	1707.0 *
CP#29	128+64.25	37.76' L	1707.0 *
CP#30	129+61.75	45.81' L	1716.8
CP#31	129+58.30	81.08' L	1712.5 *
CP#32	129+34.31	87.42' L	1712.5 *
CP#33	129+00.19	76.51' L	1711.0 *
CP#34	128+90.0	62.0' L	1705.1 *
CP#35	129+11.0	0' L	1705.1 *
CP#36	129+34.0	31.4' R	1705.1 *
CP#37	129+61.97	57.61' R	1706.0 *
CP#38	130+26.46	89.51' R	1707.3 *
CP#39	130+29.53	45.17' R	1716.8
CP#40	129+90.35	25.10' R	1716.8
CP#41	129+40.67	21.61' L	1716.8
CP#42	129+43.90	41.41' R	1716.8

* MATCH EXISTING GROUND

PLANS BY: **HDR**
SIOUX FALLS, SD

2.0 Baseline Information for Impact Areas and Mitigation Areas

2.1 Location

Within Codington County, the wetland impacts are located in Sections 4, 5, 8, and 9 of Township 116 north, Range 52 west. Mitigation is proposed on-site (see Figure 2, Exhibit A). The impact and mitigation areas are within the same HUC 8 watershed (10170202) as all of the impact areas with potentially jurisdictional wetlands. The Impact Sites and the Mitigation areas are located in U.S. Fish and Wildlife Service (USFWS) Mountain-Prairie Region 6.

2.2 Classification of Wetland Areas

2.2.1 Cowardin

The field investigation of the impact areas identified the presence of palustrine emergent temporarily flooded (PEMA) and palustrine emergent seasonally flooded (PEMC) (Cowardin et al., December 1979).

2.3 Methods for Quantifying Aquatic Resources

2.3.1 Impact Areas

To quantify aquatic resources at the impact sites, a desktop analysis of the Project was initially performed. Information used for this analysis included applicable county soil surveys, the National Wetlands Inventory (NWI) database, and U.S. Geological Survey (USGS) 7.5-minute topographic maps.

Wetland and waters of the U.S. delineations were performed in accordance with the routine method outlined in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, January 1987). Wetland delineations were conducted on August 9, 2006.

2.3.2 Mitigation Areas

Due to the on-site mitigation being proposed, the abovementioned wetland and waters of the U.S. delineation includes the mitigation areas. The mitigation areas qualified during the preliminary design of the roadway.

2.4 Existing Hydrology

2.4.1 Impact Areas

The largest hydrological features within the Project are the Big Sioux River and Willow Creek. The Big Sioux River crosses the western portion of the Project, and Willow Creek crosses the central portion of the Project. Willow Creek flows south and discharges into the Big Sioux River, which flows south and connects to the Missouri River in Sioux City, Iowa. The Project is located over the Big Sioux Aquifer, a shallow sand and gravel aquifer. The Project is within a SDDENR designated aquifer protection

zone (Zone B) since it overlies the aquifer, but is not within a designated wellhead protection area¹.

2.4.2 Mitigation Areas

The Big Sioux River would provide the hydrology for the mitigation areas. Grading has been incorporated into the Project to encourage hydrology to the mitigation areas when the Big Sioux River increases to high flows. The mitigation areas will utilize the same hydrology as the impact areas.

2.5 Existing Vegetation

2.5.1 Impact Areas

The dominant vegetation located within the impact sites is detailed in the wetland delineation report for the Project. Generally, commonly noted species include prairie cord grass (*Spartina pectinata*), reed canary grass (*Phalaris arundinacea*), and narrow-leaf cattail (*Typha angustifolia*).

2.5.2 Mitigation Areas

Wetland mitigation areas will be seeded with a special permanent seed mixture. The seed mixture includes the following:

Grass Species	Scientific Name	Pure Live Seed (PLS) (Pounds/ac)
Big Bluestem	<i>Andropogon gerardii</i>	1.5
Bluejoint	<i>Calamagrostis canadensis</i>	0.1
Virginia wild rye	<i>Elymus virginicus</i>	5.0
Fowl manna grass	<i>Glyceria striate</i>	0.25
Switch grass	<i>Panicum virgatum</i>	2.25
Green Bullrush	<i>Scirpus atrovirens</i>	0.25
Wool-Grass	<i>Scirpus cyeprius</i>	0.10
Three Square Bullrush	<i>Scirpus pungens</i>	0.25
Softstem Bullrush	<i>Scirpus validus</i>	0.30
Prairie Cord grass	<i>Spartin a pectinata</i>	1.0
Total:		11.0

¹ Zone A, the wellhead protection area, is the mapped zone of contribution around all public water supply wells or wellfields in shallow/surficial aquifers and includes land upgradient from the well or wellfield to the five year time-of-travel boundary plus any delineated adjacent lands not underlain by the aquifer with sufficient slope that contaminated surface water could flow directly onto Zone A.

2.6 Soils

2.6.1 Impact Areas

Mapped soil series for the impact sites were determined by reviewing the soil survey for the applicable county in which the Project occurs. Detailed information pertaining to mapped soil series is provided in the wetland delineation report for the Project.

2.6.2 Mitigation Areas

The mitigation areas are composed of one mapped soil series: Divide loam. The mapped soil for the area proposed for wetland establishment was confirmed during the wetland delineation completed for the Project.

The Divide series consists of very deep, somewhat poorly drained soils that formed in loamy sediment over sand and gravel. Permeability is moderate over rapid or very rapid. These soils are on slightly depressed areas in outwash plains, flood plains, terraces and interbeach areas and have slope ranging from 0 to 3 percent.

2.7 Existing Wildlife Usage

2.7.1 Impact Areas

Although located adjacent to the Big Sioux River and Willow Creek, the impact sites themselves provide little or no wildlife habitat as they lie immediately adjacent to a roadway.

2.7.2 Mitigation Areas

The mitigation areas would replace wildlife habitat that is immediately adjacent to the Big Sioux River. The mitigation areas that are being restored would replace the current habitat north of 20th Avenue South. The mitigation area south of 20th Avenue South would establish wetland areas farther removed from the roadway. Waterfowl would likely be the most notable beneficiary of the mitigation area; however, mammals (such as white-tailed deer, rabbits, minnows, and mice) and other avian species would also use the mitigation area.

2.8 Historic and Current Land Use

The Impact Site located adjacent to Willow Creek is currently grazed pasture land. The Impact Sites that are located adjacent to the Big Sioux River are currently roadside ditches and grazed pasture land. A portion of the Project Area is owned by the City of Watertown and utilized for the wastewater treatment plant.

2.9 Current Owners

Current owners are listed and shown in Attachment E, Block 24 of the 404 permit application.

3.0 Mitigation Site Selection and Justification

In an effort to mitigate on-site, it was determined that the proposed mitigation areas would best meet the geographic, size, and function requirements of the Project impacts for the bridge crossings of the Big Sioux River and Willow Creek. The following are the portions of the proposed mitigation:

- The mitigation area to the north of 20th Avenue South will restore a roadside ditch with matching contours to the previous roadside ditch. This area would have the similar functions and values that the existing roadside ditch provides. The proposed ditch will be wider than the existing ditch.
- The mitigation area along west adjacent banks of the Big Sioux River and north of the 20th Avenue South would improve the plant community. This area would be restored to a fringed wetland and is anticipated to provide similar functions and values.
- The mitigation area to the south of 20th Avenue South and along the western banks of the Big Sioux River would take an upland area and establish fringed wetlands. This area displayed hydric soils during the wetland delineation performed on August 2006. This area is proposed to be constructed to provide a fringed wetland area by grading to provide hydrology and planted to encourage the growth of wetland plant species.

4.0 Mitigation Work Plan

4.1 Construction Plan

Construction of the mitigation areas would occur during the construction of the proposed roadway planned for Spring 2009. The mitigation area would be built according to the plans detailed in Figures 12A and 12B.

4.2 Planned Hydrology, Vegetation, and Buffers

Hydrology for the mitigation areas would be obtained by grading to drop the elevation 1707.0 feet to 1708.0 feet. This is the same elevation as the existing wetland areas. The mitigation area construction is expected to provide saturation and inundation to areas that are currently dry, and to extend the period of saturation and inundation to areas that are currently wet.

SDDOT proposes to plant a special seed mixture in all mitigation areas. See Section 2.5.2 for a list of the plant species.

The mitigation areas will be purchased as right-of-way/permanent easement to ensure they are under the ownership of SDDOT or the City of Watertown. The mitigation area proposed for establishment is located on property owned by the City of Watertown located south of 20th Avenue South. The area will be surrounded by upland buffer that will range from 25-75 feet. For the area north of 20th Avenue and on the west banks of the Big Sioux River, the surrounding property will remain property of the City of Watertown. This area is also surrounded by an upland buffer. The area north of 20th Avenue South will have a buffer of approximately 40 feet from the roadway. North of this area will remain agricultural area, which is currently pastureland.

5.0 Performance Standards

5.1 Success Criteria

Success Criterion: Meets 1987 Corps of Engineers Wetland Delineation Manual.

Reasonable efforts would be made to control the establishment of undesirable plant species such as Canada thistle, milk thistle, dodder, and St. Johnswort. SDDOT works with the Weed and Pest Board regarding management actions that are appropriate for the control of noxious weeds.

6.0 Site Protection and Maintenance

6.1 Parties and Responsibilities

SDDOT will be responsible for completing wetland restoration construction activities as well as for placing a permanent easement on the mitigation areas. In addition, SDDOT will perform site monitoring and reporting if required by the pending Section 404 permit conditions.

6.2 Evidence of Legal Protective Measures

SDDOT is planning on purchasing the mitigation areas as right-of-way/permanent easement. When the permanent easement is finalized, a copy will be forwarded to USACE (Pierre Regulatory Office). Following easement finalization, ownership of the property may be transferred to the City of Watertown.

6.3 Maintenance Plan and Schedule

SDDOT will be responsible for the everyday maintenance of the mitigation areas, the City of Watertown could potentially have future ownership and would then be responsible for everyday maintenance.

If the Mitigation areas fail to produce the minimum restored wetland acres required by the permit conditions within 3 years, SDDOT would perform appropriate, reasonable corrective actions. Construction of the mitigation areas would begin in Spring 2009.

7.0 Adaptive Management Plan

7.1 Parties and Responsibilities

SDDOT would assume responsibility for major corrective actions that may be required if the mitigation areas do not meet success criteria for an area sufficient to satisfy the mitigation conditions of the pending Section 404 permit authorizations.

7.2 Remedial Measures

If, during the three year USACE oversight period, it is determined that the mitigation areas are failing to meet the minimum wetland mitigation conditions described in the pending Section 404 permit authorizations, SDDOT would coordinate with the USACE for the appropriate corrective measures in order to meet the permit conditions.

8.0 Financial Assurances

SDDOT would initially have ownership of the mitigation areas; ownership will eventually be turned over to the City of Watertown. The costs of construction of the mitigation areas and project are the responsibility of the SDDOT. Both SDDOT and City of Watertown have adequate funding for operation and maintenance of the mitigation areas during its operational life as well as for the long-term management of the restored wetlands.

REFERENCES

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Appendix A

Mitigation Calculations

On-Site Mitigation Site

Mitigation Calculations

Background

0.70 acres total CWA Section 404 impacts

Mitigation Plan proposes **0.85** acres of wetland restoration and **0.92** acres of wetland establishment.

Calculations

0.85 restoration acres ÷ **2.5** 2.5:1 mitigation ratio = **0.34** 404 credits from restoration

0.70 total 404 impacts
- **0.34** restoration credits
0.36 404 impacts remaining following restoration credits

0.92 establishment acres ÷ **2.5** 2.5:1 mitigation ratio = **0.37** 404 credits from restoration

0.37 total 404 impacts
- **0.37** establishment credits
0.00 404 impacts remaining following establishment credits

Resource Agency Meeting
January 14, 2009

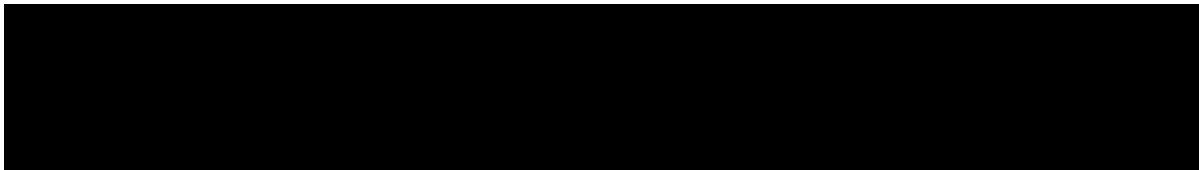
Attendees:

Joan Bortnem, SDDOT
Alice Whitebird, SDDOT
Ryan Huber, SDDOT
John Miller, DENR
Rich Phillips, SDDOT
Nathan Morey, SDDOT

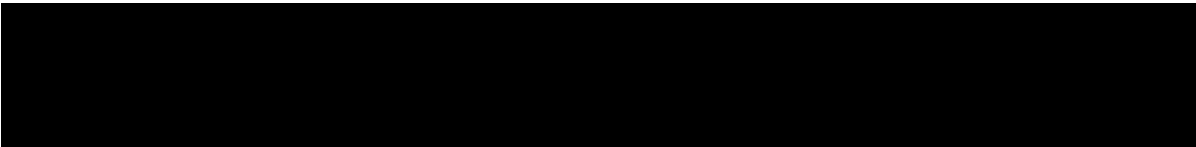
Leslie Petersen, GF&P
Carolyn Kutz, COE
Terry Keller, SDDOT
Ginger Massie, FHWA
Jim Oehlerking, COE
Amy Rubingh, SHPO

The following major projects were discussed:

SD 79 Extension to I-90



Railroad Relocation [EM 1225(02)]



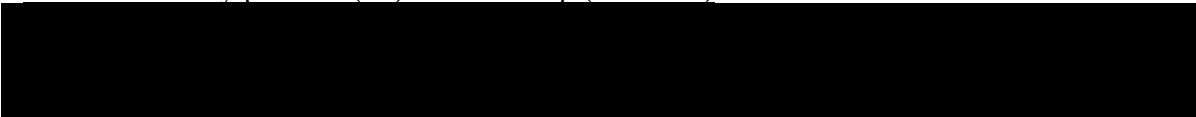
Watertown South Connector Projects

The final EA for US 81 to 29th Street SE [EM 4411(01)] has only a few outstanding items remaining prior to completion. The proposed mitigation for 0.743 acres of wetland impacts was discussed during the meeting. No comments or objections were received about the proposed mitigation. A handout was shared with the group.

The draft EA for US 212/SD20 to US 81 [EM 4020(01)] will not be complete for approximately three months. Analysis of the floodplain is currently under way.

The following County/State Project was also discussed:

Yankton County [P 6366 (04) PCN 01PU] (Handout)



Miscellaneous Discussion

- Ryan Huber, Wetlands Program Coordinator, introduced himself to the group and gave a short description of the type of work he is involved in for SDDOT. He is currently working on an inventory of SDDOT wetland mitigation sites and drafting a wetland banking instrument. The DOT does not have a timeline for completion of the banking instrument at this time.
- Terry briefly discussed the Montana wetland scan tour last year and some of the wetland training Ryan has been involved with. Close coordination with USACE is anticipated in the further development of this program, particularly the banking component. Input from SDGF&P and USFWS will be needed as well.
- Nathan discussed the requirements of the new Biological Opinion with USFWS. Major changes include design requirements for fish passage and elimination of the black out period for construction.
- Terry provided an update on Dave Graves family and vacant position. The position is hoped to be filled in March.