DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
190 FIFTH STREET EAST, SUITE 401
ST. PAUL, MINNESOTA 55101-1638

REPLY TO
ATTENTION OF

APR 3 0 2007

Operations
Regulatory (MVP-2005-546-JKA)

Ms. Debra L. McGovern
Environmental & Regulatory Affairs Director
Minnesota Steel Industries, LLC
2550 University Ave., Suite 2248
St. Paul, MN 55114

Dear Ms. McGovern:

The purpose of this letter is to provide Minnesota Steel Industries, LLC (Minnesota Steel) with the U.S. Army Corps of Engineers St. Paul District (Corps) comments regarding the "Revised Wetland Impacts and Mitigation Plan – Minnesota Steel Industries, LLC" dated December 18, 2006 (Plan).

The proposed compensatory wetland mitigation sites 229 and 248 (the wild rice farm north of Aitkin, in Aitkin County, Minnesota) and the proposed Minnesota Steel project site where the wetland impacts would occur are both located in the Mississippi River Headwaters watershed. Therefore, the proposed mitigation at sites 229 and 248 would be considered in-place by the Corps. The mitigation ratio for compensatory wetland mitigation conducted in-place, in-kind, and in-advance in the greater than 80 percent counties would be 1:1. The proposed project would be conducted in Itasca County and the proposed mitigation would be conducted in Aitkin County, both of which are greater than 80 percent counties in Minnesota.

To be considered in-advance, the mitigation work must be successfully conducted, and one growing season must have passed, before wetland impacts for the project occur. If wetland impacts occur before the first growing season ends, an incremental increase of 0.25 would be added to the mitigation ratio for those wetland impacts that occur before the end of the first growing season.

Table 3 in the Plan (enclosed) shows the in-kind replacement difference for the different wetland types that would be impacted. The Corps believes that not enough Type 6 (shrub-carr and/or alder thicket) wetlands are proposed at the mitigation sites (a deficit of 65.8 acres is proposed), and too much Type 5 (shallow, open water) wetlands are proposed. To be considered in-kind, the Corps requests that the Type 6 (shrub-carr and/or alder thicket) deficit be eliminated and that the positive differences in the Type 2 and the Type 7 (hardwood swamp and/or coniferous swamp) wetlands be maintained. An incremental increase of 0.25 would be added to the mitigation ratio for the wetland mitigation acres that are not in-kind.

To eliminate the Type 6 (shrub-carr and/or alder thicket) wetland mitigation deficit, the Corps recommends that Minnesota Steel consider restoring Cell 21 (37.7 acres) and Cell 31 (30.9 acres) at Site 248 (see enclosed map) as Type 6 (shrub-carr and/or alder thicket). The Corps believes that too many acres of Type 5 (shallow, open water) wetlands are being proposed at the mitigation sites. Even though 222.1 acres of Type 5 (shallow, open water) wetlands would be impacted by the project, most of those wetlands are not natural. They were created from mine reclaim ponds when the previous mining operation at the site was closed. The Corps recommends that some of the proposed 123 acres of Type 5 (shallow, open water) wetlands at site 248 be restored as Type 2 (sedge meadow and/or fresh (wet) meadow), Type 3 (shallow marsh), and/or Type 6 (shrub-carr and/or alder thicket). The Corps recommends that Cell 47 (33.6 acres) should be considered for such a change in wetland type(s).

The Corps requests that additional information be provided in the Plan regarding how natural wetland hydrology will occur in the highest elevation cells.

As you are making changes to the compensatory wetland mitigation plan, please use the Eggers and Reed[1] wetland classification method. The Circular 39 wetland type information may be retained for dual wetland typing information. Using the Eggers and Reed wetland classification will enable a better comparison of wetland impacts (the Corps has recently requested via email that Minnesota Steel provide Eggers and Reed wetland classifications for proposed project wetland impacts) to compensatory wetland mitigation for determining whether the mitigation is in-kind and will replace the lost functions and values.

If you have any questions, contact Jon K. Ahlness in our St. Paul office at (651) 290-5381. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

for Ralph J. Augustin
Robert J. Whiting
Chief, Regulatory Branch

[1]Eggers, Steve D. and Donald M. Reed. 1997. Wetland plants and plant communities of Minnesota and Wisconsin. U.S. Army Corps of Engineers, St. Paul District.

Enclosures

Copy Furnished:

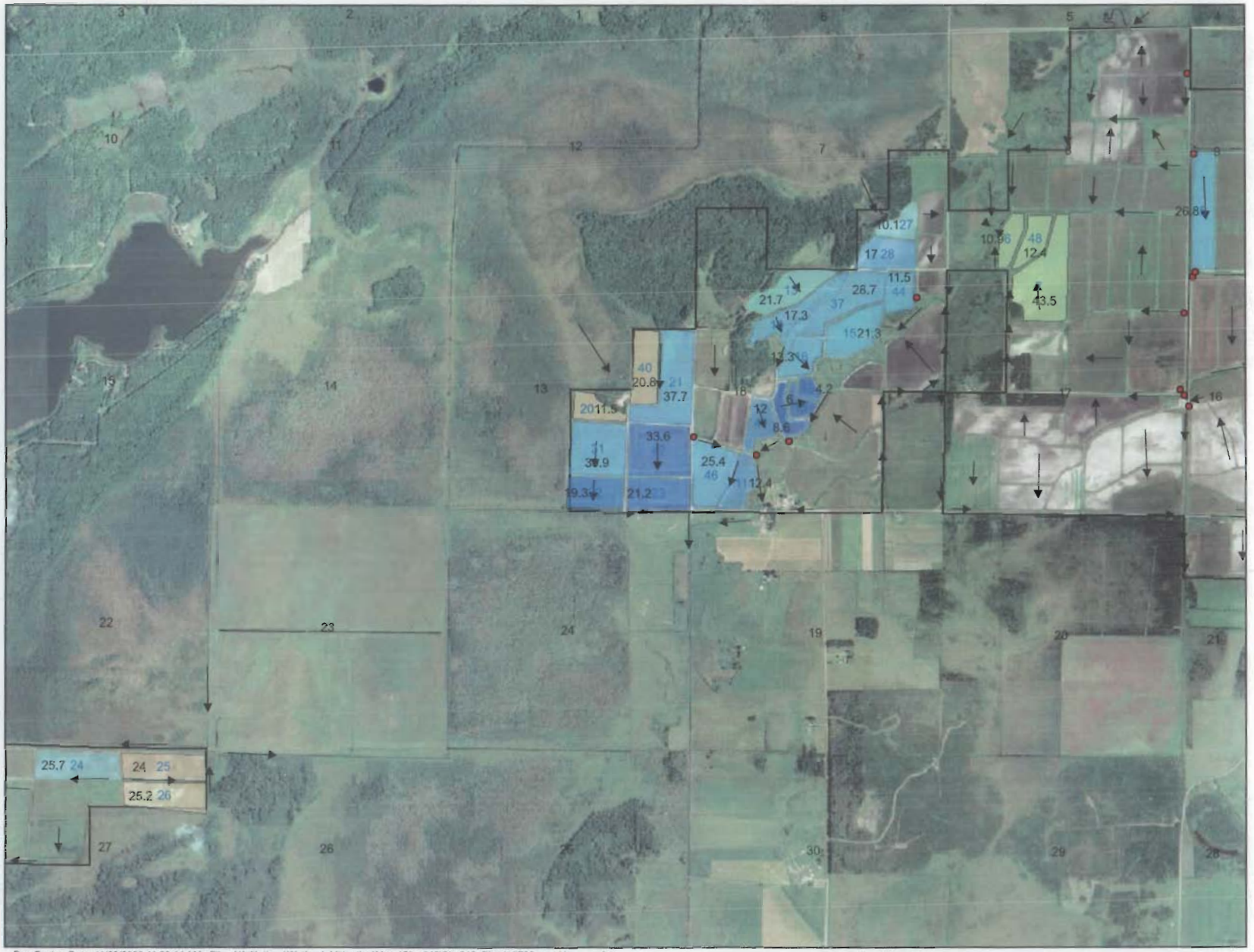
Anna Miller, USEPA
Sue Elston, USEPA
Scott Ek, MnDNR
Steve Dewar, MnDNR

Jess Richards, MnPCA
Kevin Molloy, MnPCA
Jennie Ross, Wenck Associates
Mark Jacobson, Barr Engineering

Table 3
Summary of Wetland Impacts and Mitigation by Circular 39 Wetland Type
20-Year Wetland Mitigation Plan
December 1, 2006
Minnesota Steel Industries

Project Area	Circular 39 Type									Wetland Total
	1	2	3	4	5	6	7	8	Deepwater	
	Impact Area (acres)									
Mine Area	1.59	5.48	0.42	2.76	11.67	6.49	3.17	0.00	315.8	31.6
Plant Area	0.21	24.15	0.00	17.51	0.71	56.85	8.80	0.00	0.00	108.2
Stockpile Area	8.71	11.20	0.70	38.90	73.35	65.87	15.09	0.00	0.06	213.8
Tailings Basin Pipeline, Stormwater and Water	0.00	0.11	0.00	0.58	13.17	0.70	1.73	0.00	11.88	16.3
Stage I Tailings Basin	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	0.00	395.0
Total with Stage I Tailings Basin	10.5	107.7	93.4	66.1	222.1	231.8	32.1	1.2	327.7	765
Mitigation Project	Mitigation Area Goal (acres)									
Sites 229 & 248	0	72	92	197	123.0	69.0	0	0	0	553.0
Site 1981-NW	0	47	0	0	0	47	46	0	0	140.0
On-site Wetland Restoration	0	0	20	40	90	0	0	0	0.0	150.0
On-site Deepwater Habitat Development	0	0	0	0	0	0	0	0	755.5	0.0
Chippewa Forest Road Decommissioning	10	10	20	3	0	35	10	0	0.0	88.0
Tribal Land Wetland Restorations	0	25	0	0	0	15	10	0	0.0	50.0
Project Total	10	154	132	240	213.0	166.0	66.0	0.0	755.5	981
In-Kind Replacement Difference[1]	-0.5	46.3	38.6	173.9	-9.1	-65.8	33.9	-1.2	427.8	216

[1] Positive values represent more than 1:1 replacement of that wetland type, negative values represent less than 1:1 replacement of that type.



Barr Footer: Date: 11/29/2006 11:30:14 AM File: I:\Initiatives\Wetland_Mitigation\Maps\Site 248\Site248_Plan112706.mxd User: maj

Figure 6

WETLAND RESTORATION PLAN
Wetland Mitigation Sites 229 & 248
Minnesota Steel Industries
Aitkin County, Minnesota

Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601 • www.barr.com *An EEO Employer*

Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO

December 18, 2006

Mr. Jon Ahlness
Corps of Engineers
Department of the Army
190 East Fifth Street
St. Paul, MN 55101-1638

Mr. Steve Dewar
Minnesota Department of Natural Resources
Division of Lands and Minerals
1525 East Third Street
Hibbing, MN 55746

Re: Revised Wetland Impacts and Mitigation Plan – Minnesota Steel Industries, LLC

Dear Messrs. Ahlness and Dewar:

On behalf of Minnesota Steel Industries, LLC, we are hereby submitting an updated wetland impact summary and a revised 5-year wetland mitigation plan for Sites 229 and 248 in Aitkin County.

Wetland Impacts

The proposed project areas have been finalized for inclusion in the Environmental Impact Statement and to update the state and federal wetland permit applications (Table 2, Figure 5). Minor adjustments have been made to the mine, stockpile, and plant areas as shown on Figures 1-3. The tailings pipeline and reclaim line routes have been modified as shown on Figure 4. Stormwater and water supply management project features have been added as shown on Figure 4. The preferred, Stage I tailings basin project area has not changed from that shown in the January 25, 2006, *Wetland Delineation and Functional Assessment* report. The primary change to the project since completion of the *Wetland Delineation and Functional Assessment* report has been the addition of stormwater management and water supply features.

The proposed project includes a total of 765 acres of impacts to wetlands and 327.7 acres of impacts to deepwater mine pits (Tables 5-8). It is expected that 542 acres of wetlands and all 327.7 acres of deepwater mine pits will be impacted during the first 5 years of the project (Table 1).

Wetland Mitigation

The proposed 5-year wetland mitigation plan has been developed to provide compensatory mitigation for wetland impacts expected during the first 5 years of the project. The revised plans include:

1. Restoration of 553 acres of wetland on a wild rice farm near Aitkin (Sites 229 and 248),
2. Wetland restoration focused along the Little Willow River,

3. Wetland restoration with sustainable, natural hydrology,
4. Approximately 72 acres of Type 2 wetlands, 92 acres of Type 3 wetlands, 196 acres of Type 4 wetlands, 123 acres of Type 5 wetlands and 69 acres of Type 6 wetlands (Table 3),
5. Topographic survey data for the entire mitigation site,

The wetland restoration areas are shown by predominant Circular 39 wetland type on Figure 6 and the plan sheets are attached. The expected acreage of each wetland type is tabulated in Table 3 and the proportion of wetland types within each restoration cell is provided in Table 9. The planned hydrology for the various wetland types follows the ranges provided in Table 4.

Assuming that the wetland restoration can be completed at least one year ahead of the impacts, the 553 acres of wetland mitigation is expected to compensate for 527 acres of wetland impacts (Table 10). It is assumed that wetlands replaced in-kind will be compensated at a 1:1 ratio and wetlands that are replaced with different wetland types will be compensated at a 1.25:1 ratio, in accordance with Corps guidelines. The only out-of-kind wetland replacement proposed includes a total of 196 acres of Type 4 wetland mitigation planned, but only 66 acres of Type 4 impacts. Therefore, at a compensation ratio of 1.25:1, the excess 130 acres of restored Type 4 wetland will provide compensation for 104 acres of impacts to other wetland types. The wetland mitigation activities planned for Sites 229 and 248 are expected to adequately compensate for the 542 acres of planned impacts during the first 5 years of the project (Table 1).

The wetland mitigation plans for Sites 229 and 248 have been revised based on the recent completion of the topographic site survey. When reviewing the wetland mitigation plans, please note that the cross-sections represent the planned elevations for the primary overflows and the general areas in which interior ditches will be filled. The precise location of the overflow from each wetland restoration cell has not been determined yet. Nor has the extent of complete dike removal and ditch filling been shown on the plans. These details will be provided in subsequent plan revisions.

We hope this information will help you in meeting the project timeline. If you or other Corps/DNR staff have any questions concerning this information, please contact either myself at 952-832-2781 or Deb McGovern at 651-209-7707.

Sincerely,

Len Kremer, P.E.
On Behalf of Minnesota Steel Industries, L.L.C.

Enclosure

c: Deb McGovern
Jim Payne
Scott Ek
Steve Menden
Jeff Udd
Howard Hilshorst

Table 1
Wetland Mitigation Summary - 5 Year Plan and Total Project
Minnesota Steel Industries
December 11, 2006

WETLANDS		
Impacts	First 5 Years (acres)	Total Project (acres)
Mine Area	11	32
Plant Area	108	108
Stockpile Area	150	214
Tailings Basin Pipeline, Stormwater, and Water Supply	16	16
Stage I Tailings Basin	257	395
Total	542	765
Mitigation		
Aitkin Sod Farm	553	553
Aitkin Farm Site	0	140
Chippewa Forest Road Removals	0	88
Tribal Wetland Restorations	0	50
Tailings Basin Wetlands	0	60
Reclaim Water Wetlands	0	90
Total	553	981
DEEPWATER HABITATS		
Impacts	First 5 Years (acres)	Total Project (acres)
Pits 1 and 2	111.5	111.5
Pit 5	204.3	204
Other Pits	11.9	11.9
Total	327.7	327.4
Mitigation		
Pits 1 and 2	0	111.5
Pit 5	0	408
Pit 6	0	236
Total	0	755.5

Table 2: Summary of Project Areas
Minnesota Steel Industries
Nashwauk, Minnesota
Revised December 11, 2006

Project Area	Area (acres)
Stage I Tailings Basin and Reclaim Pond	1,580
Alternative Tailings Basin	1,118
Stockpile Area	818
Mine Area	767
Plant Area	477
Plant Area Stormwater and Water Supply	74
Tailings Pipeline and Reclaim Line	24
Total of all Potential Project Areas	**4,858**

Table 3
Summary of Wetland Impacts and Mitigation by Circular 39 Wetland Type
20-Year Wetland Mitigation Plan
December 1, 2006
Minnesota Steel Industries

Project Area	Circular 39 Type									Wetland Total
	1	2	3	4	5	6	7	8	Deepwater	
	Impact Area (acres)									
Mine Area	1.59	5.48	0.42	2.76	11.67	6.49	3.17	0.00	315.8	31.6
Plant Area	0.21	24.15	0.00	17.51	0.71	56.85	8.80	0.00	0.00	108.2
Stockpile Area	8.71	11.20	0.70	38.90	73.35	65.87	15.09	0.00	0.06	213.8
Tailings Basin Pipeline, Stormwater and Water	0.00	0.11	0.00	0.58	13.17	0.70	1.73	0.00	11.88	16.3
Stage I Tailings Basin	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	0.00	395.0
Total with Stage I Tailings Basin	10.5	107.7	93.4	66.1	222.1	231.8	32.1	1.2	327.7	765
Mitigation Project	Mitigation Area Goal (acres)									
Sites 229 & 248	0	72	92	197	123.0	69.0	0	0	0	553.0
Site 1981-NW	0	47	0	0	0	47	46	0	0	140.0
On-site Wetland Restoration	0	0	20	40	90	0	0	0	0.0	150.0
On-site Deepwater Habitat Development	0	0	0	0	0	0	0	0	755.5	0.0
Chippewa Forest Road Decommissioning	10	10	20	3	0	35	10	0	0.0	88.0
Tribal Land Wetland Restorations	0	25	0	0	0	15	10	0	0.0	50.0
Project Total	10	154	132	240	213.0	166.0	66.0	0.0	755.5	981
In-Kind Replacement Difference[1]	-0.5	46.3	38.6	173.9	-9.1	-65.8	33.9	-1.2	427.8	216

[1] Positive values represent more than 1:1 replacement of that wetland type, negative values represent less than 1:1 replacement of that type.

Table 4
Planned Wetland Hydrology by Wetland Type - Sites 229 and 248
November 29, 2006
Minnesota Steel Industries
Aitkin, Minnesota

Circ 39 Wetland Type	Planned Surface Water Depths (inches)
Type 2	None, with occasional inundation of 2-3 inches
Type 3	0-6 with occasional inundation to 12 inches
Type 4	6-30
Type 5	30-48
Type 6	None, with occasional inundation of 2-3 inches

Table 5: Delineated Wetland and Deepwater Habitat Types
Minnesota Steel Industries [1]
Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Mine Area	Pits 1 & 2	433.62	111.50	DW					
Mine Area	330 (Pit 5)	163.53	163.53	DW					
Mine Area	493	15.84	0.05	3			PEMC		
Mine Area	524	1.13	0.03	6	2		PSSB	PEMB	
Mine Area	529	16.88	16.88	DW			PUBH		
Mine Area	530	4.92	1.54	6	1	4	PSSB	PFOA	PEMF
Mine Area	532	0.30	0.01	2			PEMB		
Mine Area	536	0.24	0.24	1			PFOA		
Mine Area	546	0.46	0.46	1			PFOA		
Mine Area	551	0.28	0.28	4			PUB/EMF		
Mine Area	553	5.98	3.80	5	4	2	PUBF	PEMF	PEMB
Mine Area	556	0.32	0.04	4			PEMG		
Mine Area	557	13.55	3.35	5			PUBH		
Mine Area	573	0.31	0.31	7	6		PFOB	PSSB	
Mine Area	584	2.76	2.76	6	2		PSSB	PEMB	
Mine Area	585	12.39	0.11	7			PFOB		
Mine Area	586	0.17	0.17	6			PSSC		
Mine Area	596	0.04	0.04	3			PEMC		
Mine Area	599	0.15	0.15	3			PEMC		
Mine Area	600	0.10	0.10	3			PEMC		
Mine Area	601	0.46	0.46	7			PFOB		
Mine Area	602	0.65	0.65	7			PFOB		
Mine Area	604	0.56	0.56	7	6		PFOB	PSSB	
Mine Area	609	0.72	0.72	4	7		PEMF	PFOB	
Mine Area	615	0.06	0.06	2			PEMB		
Mine Area	617	0.38	0.38	7			PFOB		
Mine Area	625	0.36	0.11	7			PFOB		
Mine Area	641	1.99	1.99	6			PSSB		
Mine Area	645	0.33	0.12	7			PFOB		
Mine Area	649	0.08	0.08	3			PEMC		
Mine Area	691	23.88	23.88	DW					
Mine Area	705	4.53	4.53	5	2	7	PABG	PEMB	PFOB
Mine Area	718	2.10	0.66	1	6		PEMA	PSSA	
Mine Area	736	0.18	0.18	7	2		PFOB	PEMB	
Mine Area	739	0.28	0.28	7	2		PFOB	PEMB	
Mine Area	760	19.26	5.42	2	3		PEMB	PEMC	
Mine Area	770	1.04	0.05	4			PABF		
Mine Area	777	130.44	1.68	4			PABF		
Mine Area	2001	0.23	0.23	1			PFOA		
Mine Area Subtotal	**39**	**426.9**	**347.4**						
Plant Area	287	2.80	2.80	6			PSSB		
Plant Area	294	3.51	3.51	2	6	4	PEMB	PSSB	PEMF
Plant Area	307	0.07	0.06	2			PEMB		
Plant Area	309	2.59	1.82	2			PEMB		
Plant Area	313	1.46	1.46	2			PEMB		
Plant Area	316	2.37	2.37	6			PSSB		
Plant Area	317	1.15	1.15	2	4		PEMB	PEMF	
Plant Area	318	0.68	0.68	2	4		PEMB	PEMF	
Plant Area	319	3.18	3.18	7			PFOB		
Plant Area	320	1.11	1.11	2	6		PEMB	PSSB	
Plant Area	331	27.86	14.22	4	6		PEMF	PSSB	
Plant Area	345	6.76	6.66	6			PSSB		
Plant Area	350	2.08	2.08	6			PSSC		
Plant Area	358	7.73	2.89	2	6		PEMB	PSSB	
Plant Area	359	1.29	1.29	6			PSSC		
Plant Area	362	3.91	3.28	4			PEMF		
Plant Area	368	2.45	2.08	2			PEMB		
Plant Area	369	13.88	0.71	5	4		PUB/ABG	PEMF	
Plant Area	372	12.74	6.62	2	3		PEMB	PEMC	
Plant Area	476	51.55	13.32	6			PSSB		
Plant Area	534	0.64	0.44	7			PFOB		
Plant Area	542	0.62	0.37	2			PEMB		
Plant Area	549	2.68	1.10	6			PSSB		
Plant Area	568	2.44	1.30	7			PFOB		
Plant Area	585	12.39	3.88	7			PFOB		
Plant Area	2003	1.21	1.21	2	6		PEMB	PSSB	
Plant Area	2004	0.21	0.21	1			PEMA		
Plant Area	2005	0.85	0.19	6	7		PSSB	PFOB	
Plant Area	2006	27.04	27.04	6			PSSA		
Plant Area	2020	2.90	1.20	2	6		PEMB	PSSB	
Plant Area Subtotal	**30**	**200.1**	**108.2**						
Stockpile Area	425	71.16	71.16	5	4	6	PUBH	PEMF	PSSB
Stockpile Area	455	4.26	4.26	6	0	0	PSSB		
Stockpile Area	457	0.31	0.31	6	0	0	PSSB		
Stockpile Area	462	0.46	0.46	1	0	0	PFOA		
Stockpile Area	476	51.55	38.23	6			PSSB		
Stockpile Area	482	0.34	0.34	3			PEMF		
Stockpile Area	485	3.29	3.29	4			PUBF		
Stockpile Area	499	0.15	0.15	6			PSSB		
Stockpile Area	504	3.07	3.07	7			PFOB		
Stockpile Area	506	0.81	0.81	6			PSSA		
Stockpile Area	510	0.17	0.17	6			PSSA		
Stockpile Area	516	0.13	0.13	6			PSSA		
Stockpile Area	523	4.45	4.45	6	1		PSSB	PFOA	
Stockpile Area	524	1.13	1.10	6	2		PSSB	PEMB	

Table 5: Delineated Wetland and Deepwater Habitat Types
Minnesota Steel Industries [1]
Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Stockpile Area	526	0.54	0.54	1	2		PFOA	PEMB	
Stockpile Area	530	4.92	3.38	6	1	4	PSSB	PFOA	PEMF
Stockpile Area	532	0.30	0.29	2			PEMB		
Stockpile Area	536	0.24	0.01	1			PFOA		
Stockpile Area	539	0.37	0.37	6			PSSB		
Stockpile Area	549	2.68	1.58	6			PSSB		
Stockpile Area	552	2.22	1.85	2			PEMB		
Stockpile Area	553	5.98	2.19	5	4	2	PUBF	PEMF	PEMB
Stockpile Area	568	2.44	1.14	7			PFOB		
Stockpile Area	572	0.99	0.99	6			PSSB		
Stockpile Area	585	12.39	8.39	7			PFOB		
Stockpile Area	591	143.18	7.74	4			PUBG		
Stockpile Area	606	7.17	7.17	2	6		PEMB	PSSB	
Stockpile Area	621	2.28	2.28	7	6		PFOB	PSSC	
Stockpile Area	626	5.14	5.14	6			PSSC		
Stockpile Area	645	0.33	0.21	7			PFOB		
Stockpile Area	646	2.32	2.32	6			PSSA		
Stockpile Area	658	0.13	0.13	6			PSSB		
Stockpile Area	675	2.36	2.36	6			PSSB		
Stockpile Area	676	3.40	3.40	4	6		PUBG	PSSB	
Stockpile Area	704	3.50	3.41	4	6		PUBG	PSSB	
Stockpile Area	718	2.10	1.44	1	6		PEMA	PSSA	
Stockpile Area	2008	6.27	6.27	1			PFOA		
Stockpile Area	2009	0.36	0.36	3			PEMC		
Stockpile Area	2010	21.07	21.07	4	3		PEMF	PEMC	
Stockpile Area	2020	2.90	1.71	2	6		PEMB	PSSB	
Stockpile Area	2021	0.19	0.19	2			PEMB		
Stockpile Area Subtotal	**41**	**377.0**	**213.8**						
Plant Area Stormwater and Water Supply	362	3.91	0.58	4			PEMF		
Plant Area Stormwater and Water Supply	369	13.88	13.17	5	4		PUB/ABG	PEMF	
Plant Area Stormwater and Water Supply	387	0.29	0.29	7			PFOB		
Plant Area Stormwater and Water Supply	403	4.51	4.51	DW					
Plant Area Stormwater and Water Supply	408	0.19	0.01	6			PSSB		
Plant Area Stormwater and Water Supply	415	1.43	1.42	7			PFOB		
Plant Area Stormwater and Water Supply	429	7.37	7.37	DW					
Plant Area Stormwater and Water Supply	441	0.31	0.02	7			PFOB		
Stage I TB Tailings Pipeline	558	2.34	0.11	2			PEMB		
Stage I TB Tailings Pipeline	562	0.56	0.28	6	7		PSSB	PFOB	
Stage I TB Tailings Pipeline	566	1.22	0.40	6	2		PSSB	PEMB	
Plant Area Stormwater and Water Supply	2005	0.85	0.02	6	7		PSSB	PFOB	
Tailings Pipeline and Stormwater Subtotal	**12**	**36.9**	**28.2**						
Stage I Tailings Basin	438	46.56	9.77	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	445	6.78	1.19	4	2	0	PEMF	PEMB	
Stage I Tailings Basin	475	0.63	0.44	3	4	6	PEMC	PEMG	PSSB
Stage I Tailings Basin	488	5.05	5.05	4	6	3	PEMG	PSSB	PEMC
Stage I Tailings Basin	519	2.97	2.97	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	545	1.92	1.92	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	618	3.28	3.28	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	634	6.46	6.46	6	7	0	PSSB	PFOB	
Stage I Tailings Basin	651	2.38	2.38	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	665	0.98	0.98	2	0	0	PEMB		
Stage I Tailings Basin	678	8.09	8.09	3	0	0	PEMC		
Stage I Tailings Basin	679	0.22	0.22	2	3	0	PEMB	PEMC	
Stage I Tailings Basin	680	3.24	3.24	2	0	0	PEMB		
Stage I Tailings Basin	689	3.38	3.38	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	744	14.23	13.09	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	748	16.88	16.88	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	771	0.24	0.24	3	0	0	PEMC		
Stage I Tailings Basin	773	5.67	3.29	5	0	0	PUBG		
Stage I Tailings Basin	779	50.80	50.80	5	2	6	PUBH	PEMB	PSSB
Stage I Tailings Basin	782	8.61	8.61	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	784	69.15	69.15	5	3	0	PUBH	PEMC	
Stage I Tailings Basin	787	2.92	2.92	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	794	1.27	1.27	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	797	1.27	1.27	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	798	0.35	0.35	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	805	3.06	3.06	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	817	0.42	0.42	3	0	0	PEMC		
Stage I Tailings Basin	823	0.22	0.20	7	0	0	PFOB		
Stage I Tailings Basin	831	6.64	0.10	4	3	2	PABG	PEMC	PEMB
Stage I Tailings Basin	834	22.88	22.88	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	838	0.18	0.18	3	0	0	PEMC		
Stage I Tailings Basin	844	2.33	2.33	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	847	1.16	1.16	8	0	0	PFOB		
Stage I Tailings Basin	849	10.33	1.82	7	6	0	PFOB	PSSB	
Stage I Tailings Basin	855	3.66	1.28	6	3	0	PSSB	PEMC	
Stage I Tailings Basin	982	93.44	93.44	6	3	0	PSSB	PEMF	
Stage I Tailings Basin	983	2.39	2.39	3	0	0	PEMC		
Stage I Tailings Basin	984	0.70	0.70	2	3	0	PEMB	PEMC	
Stage I Tailings Basin	985	0.67	0.67	6	0	0	PSSB		
Stage I Tailings Basin	1033	0.69	0.69	2	0	0	PEMB		
Stage I Tailings Basin	1034	4.32	4.32	2	0	0	PEMB		
Stage I Tailings Basin	1035	3.37	3.37	2	0	0	PEMB		
Stage I Tailings Basin	1037	5.57	5.57	2	0	0	PEMB		

Table 5: Delineated Wetland and Deepwater Habitat Types
Minnesota Steel Industries [1]
Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Stage I Tailings Basin	1038	0.84	0.84	3	0	0	PEMF		
Stage I Tailings Basin	1039	24.81	24.81	2	0	0	PEMB		
Stage I Tailings Basin	1044	0.18	0.18	2	0	0	PEMB		
Stage I Tailings Basin	1046	1.30	1.30	2	0	0	PEMB		
Stage I Tailings Basin	1047	0.39	0.39	2	0	0	PEMB		
Stage I Tailings Basin	1048	0.14	0.14	3	0	0	PEMC		
Stage I Tailings Basin	1052	3.01	3.01	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	1055	0.03	0.03	2	0	0	PEMB		
Stage I Tailings Basin	1056	1.32	1.32	7	0	0	PFOB		
Stage I Tailings Basin	1057	0.71	0.71	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	1059	0.04	0.04	2	0	0	PEMB		
Stage I Tailings Basin	1060	0.09	0.09	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	1061	0.24	0.24	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	1062	0.70	0.10	3	7	0	PEMC	PFOB	
Stage I Tailings Basin Subtotal	**57**	**459.2**	**395.0**						
Alternative Tailings Basin	4	0.82	0.82	7			PFOB		
Alternative Tailings Basin	8	3.34	3.34	6			PSSB		
Alternative Tailings Basin	10	0.12	0.12	5			PUBHx		
Alternative Tailings Basin	11	0.35	0.35	2	6		PEMB	PSSB	
Alternative Tailings Basin	16	5.18	5.18	8	6		PFOB	PSSB	
Alternative Tailings Basin	18	0.68	0.68	2	3		PEMB	PEMC	
Alternative Tailings Basin	19	34.20	0.71	4	3	2	PEMG	PEMC	PEMB
Alternative Tailings Basin	22	0.68	0.68	7			PFOB		
Alternative Tailings Basin	23	0.64	0.64	2	7		PEMB	PFOB	
Alternative Tailings Basin	24	0.82	0.82	2			PEMB		
Alternative Tailings Basin	25	6.14	6.14	4	3		PEMG	PEMC	
Alternative Tailings Basin	26	6.31	6.31	2	5		PEMB	PUBH	
Alternative Tailings Basin	30	18.43	0.83	7			PFOC		
Alternative Tailings Basin	31	20.62	20.62	2	3		PEMB	PEMF	
Alternative Tailings Basin	32	1.39	1.39	2	6		PEMB	PSSB	
Alternative Tailings Basin	33	22.93	22.93	6	7	2	PSSB	PFOB	PEMB
Alternative Tailings Basin	34	1.20	1.20	8			PFOB		
Alternative Tailings Basin	35	0.97	0.97	6	7		PSSB	PFOB	
Alternative Tailings Basin	37	13.76	13.76	7	6		PFOB	PSSB	
Alternative Tailings Basin	39	2.65	2.43	8			PFOB		
Alternative Tailings Basin	42	22.51	14.01	6			PSSB		
Alternative Tailings Basin	43	32.92	32.92	6	7	4	PSSB	PFOB	PEMG
Alternative Tailings Basin	44	11.30	9.32	7			PFOB		
Alternative Tailings Basin	45	31.89	31.89	7			PFOB		
Alternative Tailings Basin	46	10.10	10.10	7	6		PFOB	PSSB	
Alternative Tailings Basin	48	8.15	3.07	7			PFOB		
Alternative Tailings Basin	1007	25.59	0.39	2			PEMB		
Alternative Tailings Basin	1010	22.95	0.28	6			PSSB		
Alternative Tailings Basin	1021	55.68	5.39	7	6		PFOB	PSSB	
Alternative Tailings Basin	1026	21.15	7.67	2	6		PEMB	PSSB	
Alternative Tailings Basin	1027	1.70	1.70	8			PFOB		
Alternative Tailings Basin	1028	0.93	0.93	8			PFOB		
Alternative Tailings Basin	1029	0.94	0.94	6			PSSB		
Alternative Tailings Basin	1030	0.68	0.68	6	7	2	PSSB	PFOB	PEMB
Alternative Tailings Basin	1040	0.63	0.63	2	3		PEMB	PEMC	
Alternative Tailings Basin	1041	0.96	0.96	7			PFOB		
Alternative Tailings Basin	1042	0.14	0.14	2			PEMB		
Alternative Tailings Basin	1043	1.49	1.49	7			PFOB		
Alternative Tailings Basin	1050	0.19	0.02	2	7		PEMB	PFOB	
Alternative Tailings Basin Subtotal	**39**	**391.1**	**212.5**						
Total with Stage I Tailings Basin	**179**	**1,500**	**1,093**						
Total with Alternative Tailings Basin	**161**	**1432**	**910**						

Table 6: Projected Wetland and Deepwater Habitat Impacts
Minnesota Steel Industries
Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Mine Area	Pits 1 & 2	Deepwater	433.62	111.50	Low	Low	High	Mine Pit	Artificial	No
Mine Area	330 (Pit 5)	Deepwater	163.53	163.53	Low	Low	High	Mine Pit	Artificial	Yes
Mine Area	493	3	15.84	0.05	Low	Low	High	Ditch	Artificial	Yes
Mine Area	524	6	1.13	0.03	Low	Medium	Low	None	Natural	Yes
Mine Area	529	Deepwater	16.88	16.88	Low	Low	High	Pit	Artificial	Yes
Mine Area	530	6	4.92	1.54	High	High	Low	None	Natural	Yes
Mine Area	532	2	0.30	0.01	High	High	Low	None	Natural	Yes
Mine Area	536	1	0.24	0.24	Medium	Medium	Low	None	Natural	Yes
Mine Area	546	1	0.46	0.46	High	High	Low	None	Natural	Yes
Mine Area	551	4	0.28	0.28	Low	Medium	High	Excavated	Artificial	Yes
Mine Area	553	5	5.98	3.80	Medium	Medium	High	Excavated	Artificial	Yes
Mine Area	556	4	0.32	0.04	High	High	Medium	Road	Natural	No
Mine Area	557	5	13.55	3.35	Low	Low	Low	Pit	Artificial	Yes
Mine Area	573	7	0.31	0.31	Medium	Medium	High	Impounded	Natural	Yes
Mine Area	584	6	2.76	2.76	High	High	Medium	Logged	Natural	Yes
Mine Area	585	7	12.39	0.11	High	Medium	Low	None	Natural	Yes
Mine Area	586	6	0.17	0.17	High	Medium	Low	None	Natural	Yes
Mine Area	596	3	0.04	0.04	Medium	Medium	Low	None	Natural	Yes
Mine Area	599	3	0.15	0.15	Medium	Medium	Low	None	Natural	Yes
Mine Area	600	3	0.10	0.10	Medium	Medium	Low	None	Natural	Yes
Mine Area	601	7	0.46	0.46	High	Medium	Low	None	Natural	Yes
Mine Area	602	7	0.65	0.65	High	Medium	Low	None	Natural	Yes
Mine Area	604	7	0.56	0.56	High	Medium	Low	None	Natural	Yes
Mine Area	609	4	0.72	0.72	High	Medium	Low	None	Natural	Yes
Mine Area	615	2	0.06	0.06	Medium	Medium	Medium	Road	Natural	Yes
Mine Area	617	7	0.38	0.38	High	Medium	Low	None	Natural	Yes
Mine Area	625	7	0.36	0.11	High	Medium	Low	None	Natural	Yes
Mine Area	641	6	1.99	1.99	High	Medium	Low	None	Natural	Yes
Mine Area	645	7	0.33	0.12	High	Medium	High	Road	Natural	Yes
Mine Area	649	3	0.08	0.08	High	High	Low	None	Natural	Yes
Mine Area	691	Deepwater	23.88	23.88	Low	Low	High	Mine Pit	Artificial	Yes
Mine Area	705	5	4.53	4.53	High	Medium	Medium	Pit	Natural	Yes
Mine Area	718	1	2.10	0.660	Low	Medium	High	Pit	Artificial	Yes
Mine Area	736	7	0.18	0.18	High	Medium	Low	None	Natural	Yes
Mine Area	739	7	0.28	0.28	Medium	Medium	Low	None	Natural	Yes
Mine Area	760	2	19.26	5.42	Medium	Medium	Low	None	Natural	Yes
Mine Area	770	4	1.04	0.05	High	Medium	Low	None	Natural	Yes
Mine Area	777	4	130.44	1.68	High	Medium	Low	None	Natural	Yes
Mine Area	2001	1	0.23	0.23	Medium	Medium	Medium	Road	Artificial	Yes
Mine Area Subtotal	**39**		**426.9**	**347.4**	**20/39 High 10/39 Medium 9/39 Low**	**6/39 High 27/39 Medium 6/39 Low**				
Plant Area	287	6	2.80	2.80	Medium	Medium	Low	Road	Natural	Yes
Plant Area	294	2	3.51	3.51	High	Medium	Low	None	Natural	Yes
Plant Area	307	2	0.07	0.06	Low	Medium	Medium	Road	Natural	Yes
Plant Area	309	2	2.59	1.82	Medium	Medium	Low	None	Natural	Yes
Plant Area	313	2	1.46	1.46	Low	Medium	Low	None	Natural	Yes
Plant Area	316	6	2.37	2.37	High	High	Low	None	Natural	Yes
Plant Area	317	2	1.15	1.15	Medium	Medium	Low	None	Natural	Yes

Table 6: Projected Wetland and Deepwater Habitat Impacts
Minnesota Steel Industries
Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Plant Area	318	2	0.68	0.68	Medium	Medium	Low	None	Natural	Yes
Plant Area	319	7	3.18	3.18	High	High	Low	None	Natural	Yes
Plant Area	320	2	1.11	1.11	High	High	Low	None	Natural	Yes
Plant Area	331	4	27.86	14.22	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area	345	6	6.76	6.66	High	Medium	Low	None	Natural	Yes
Plant Area	350	6	2.08	2.08	High	Medium	Medium	Flooded	Natural	Yes
Plant Area	358	2	7.73	2.89	High	Medium	Low	None	Natural	Yes
Plant Area	359	6	1.29	1.29	High	Medium	Medium	Flooded	Natural	Yes
Plant Area	362	4	3.91	3.28	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area	368	2	2.45	2.08	High	Medium	Low	None	Natural	Yes
Plant Area	369	5	13.88	0.71	Medium	Medium	High	Flooded	Natural	Yes
Plant Area	372	2	12.74	6.62	High	Medium	Low	None	Natural	Yes
Plant Area	476	6	51.55	13.32	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Plant Area	534	7	0.64	0.44	High	High	Low	None	Natural	Yes
Plant Area	542	2	0.62	0.37	High	High	Low	None	Natural	Yes
Plant Area	549	6	2.68	1.10	High	High	Low	None	Natural	Yes
Plant Area	568	7	2.44	1.30	High	High	Medium	Road	Natural	Yes
Plant Area	585	7	12.39	3.88	High	Medium	Low	None	Natural	Yes
Plant Area	2003	2	1.21	1.21	High	Medium	Medium	None	Natural	Yes
Plant Area	2004	1	0.21	0.21	High	Medium	Low	None	Natural	Yes
Plant Area	2005	6	0.85	0.19	High	Medium	Low	None	Natural	Yes
Plant Area	2006	6	27.04	27.04	High	Medium	Low	None	Natural	Yes
Plant Area	2020	2	2.90	1.20	High	High	Low	None	Natural	Yes
Plant Area Subtotal	**30**		**200.1**	**108.2**	**20/30 High 8/30 Medium 2/30 Low**	**8/30 High 22/30 Medium 0/30 Low**				
Stockpile Area	425	5	71.16	71.16	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	455	6	4.26	4.26	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	457	6	0.31	0.31	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	462	1	0.46	0.46	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	476	6	51.55	38.23	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	482	3	0.34	0.34	Medium	Medium	Medium	Stockpile	Natural	No
Stockpile Area	485	4	3.29	3.29	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	499	6	0.15	0.15	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	504	7	3.07	3.07	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	506	6	0.81	0.81	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	510	6	0.17	0.17	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	516	6	0.13	0.13	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	523	6	4.45	4.45	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	524	6	1.13	1.10	Low	Medium	Low	None	Natural	Yes
Stockpile Area	526	1	0.54	0.54	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	530	6	4.92	3.38	High	High	Low	None	Natural	Yes
Stockpile Area	532	2	0.30	0.29	High	High	Low	None	Natural	Yes
Stockpile Area	536	1	0.24	0.01	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	539	6	0.37	0.37	High	High	Low	None	Natural	Yes
Stockpile Area	549	6	2.68	1.58	High	High	Low	None	Natural	Yes
Stockpile Area	552	2	2.22	1.85	Exceptional	High	Low	Power line adjacent	Natural	Yes
Stockpile Area	553	5	5.98	2.19	Medium	Medium	High	Excavated	Artificial	Yes
Stockpile Area	568	7	2.44	1.14	High	High	Medium	Road	Natural	Yes
Stockpile Area	572	6	0.99	0.99	High	High	Low	None	Natural	Yes

Table 6: Projected Wetland and Deepwater Habitat Impacts
Minnesota Steel Industries
Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Stockpile Area	585	7	12.39	8.39	High	Medium	Low	None	Natural	Yes
Stockpile Area	591	4	143.18	7.74	Medium	Medium	High	Tailings Basin	Natural	Yes
Stockpile Area	606	2	7.17	7.17	High	High	Low	None	Natural	Yes
Stockpile Area	621	7	2.28	2.28	High	High	Low	None	Natural	Yes
Stockpile Area	626	6	5.14	5.14	High	High	Low	None	Natural	Yes
Stockpile Area	645	7	0.33	0.21	High	Medium	High	Road	Natural	Yes
Stockpile Area	646	6	2.32	2.32	High	High	Low	None	Natural	Yes
Stockpile Area	658	6	0.13	0.13	High	High	Low	None	Natural	Yes
Stockpile Area	675	6	2.36	2.36	High	High	Low	None	Natural	Yes
Stockpile Area	676	4	3.40	3.40	High	High	Low	None	Natural	Yes
Stockpile Area	704	4	3.50	3.41	High	Medium	Medium	Tailings Dam	Natural	Yes
Stockpile Area	718	1	2.10	1.44	Low	Medium	High	Pit	Artificial	Yes
Stockpile Area	2008	1	6.27	6.27	Low	Medium	Low	Tailings Basin	Artificial	Yes
Stockpile Area	2009	3	0.36	0.36	Medium	Medium	Medium	Road	Artificial	Yes
Stockpile Area	2010	4	21.07	21.07	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	2020	2	2.90	1.71	High	High	Low	None	Natural	Yes
Stockpile Area	2021	2	0.19	0.19	High	High	Low	None	Natural	Yes
Stockpile Area Subtotal	**41**		**377.0**	**213.8**	**22/41 High 16/41 Medium 3/41 Low**	**16/41 High 25/41 Medium 0/41 Low**				
Plant Area Stormwater and Water Supply	362	4	3.91	0.58	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area Stormwater and Water Supply	369	5	13.88	13.17	Medium	Medium	High	Flooded	Natural	Yes
Plant Area Stormwater and Water Supply	387	7	0.29	0.29	High	High	Medium	Road	Natural	No
Plant Area Stormwater and Water Supply	403	Deepwater	4.51	4.51	Low	Low	High	Pit	Artificial	No
Plant Area Stormwater and Water Supply	408	6	0.19	0.01	Medium	Medium	Medium	Stockpile	Natural	No
Plant Area Stormwater and Water Supply	415	7	1.43	1.42	High	High	Medium	Pits	Natural	No
Plant Area Stormwater and Water Supply	429	Deepwater	7.37	7.37	Low	Low	High	Pit	Artificial	No
Plant Area Stormwater and Water Supply	441	7	0.31	0.02	High	High	Medium	Road	Natural	No
Stage I TB Tailings Pipeline	558	2	2.34	0.11	Low	Low	High	Stockpile	Artificial	No
Stage I TB Tailings Pipeline	562	6	0.56	0.28	Medium	Medium	Medium	Roads	Natural	No
Stage I TB Tailings Pipeline	566	6	1.22	0.40	Medium	Medium	Medium	Roads, Stockpile	Natural	No
Plant Area Stormwater and Water Supply	2005	6	0.85	0.02	High	Medium	Low	None	Natural	Yes
Tailings Pipeline Corridor Subtotal	**12**		**36.9**	**28.2**	**4/12 High 5/12 Medium 3/12 Low**	**3/12 High 6/12 Medium 3/12 Low**				
Stage I Tailings Basin	438	3	46.56	9.77	Low	Low	High	Tailings Basin/ATV	Artificial	Yes
Stage I Tailings Basin	445	4	6.78	1.19	Medium	Medium	Medium	Excavation/Tailings	Natural	Yes
Stage I Tailings Basin	475	3	0.63	0.44	High	Medium	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	488	4	5.05	5.05	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	519	3	2.97	2.97	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	545	3	1.92	1.92	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	618	2	3.28	3.28	Low	Low	High	Tailings Basin	Artificial	No
Stage I Tailings Basin	634	6	6.46	6.46	High	High	Medium	Impounded	Natural	No
Stage I Tailings Basin	651	3	2.38	2.38	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	665	2	0.98	0.98	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	678	3	8.09	8.09	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	679	2	0.22	0.22	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	680	2	3.24	3.24	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	689	3	3.38	3.38	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	744	3	14.23	13.09	Low	Low	High	Tailings Basin	Artificial	No

Table 6: Projected Wetland and Deepwater Habitat Impacts
Minnesota Steel Industries
Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Stage I Tailings Basin	748	2	16.88	16.88	Medium	High	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	771	3	0.24	0.24	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	773	5	5.67	3.29	High	High	Low	None	Natural	No
Stage I Tailings Basin	779	5	50.80	50.80	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	782	3	8.61	8.61	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	784	5	69.15	69.15	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	787	3	2.92	2.92	Low	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	794	3	1.27	1.27	High	High	Medium	Tailings Basin	Natural	Yes
Stage I Tailings Basin	797	3	1.27	1.27	Medium	Medium	Medium	Tailings Basin	Natural	Yes
Stage I Tailings Basin	798	3	0.35	0.35	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	805	3	3.06	3.06	High	High	Low	None	Natural	No
Stage I Tailings Basin	817	3	0.42	0.42	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	823	7	0.22	0.20	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	831	4	6.64	0.10	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	834	3	22.88	22.88	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	838	3	0.18	0.18	High	High	Low	None	Natural	No
Stage I Tailings Basin	844	3	2.33	2.33	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	847	8	1.16	1.16	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	849	7	10.33	1.82	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	855	6	3.66	1.28	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	982	6	93.44	93.44	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	983	3	2.39	2.39	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	984	2	0.70	0.70	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	985	6	0.67	0.67	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1033	2	0.69	0.69	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1034	2	4.32	4.32	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1035	2	3.37	3.37	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1037	2	5.57	5.57	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1038	3	0.84	0.84	Low	Medium	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1039	2	24.81	24.81	High	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1044	2	0.18	0.18	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1046	2	1.30	1.30	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1047	2	0.39	0.39	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1048	3	0.14	0.14	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	1052	3	3.01	3.01	Medium	Medium	High	Tailings Basin	Natural	No
Stage I Tailings Basin	1055	2	0.03	0.03	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1056	7	1.32	1.32	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1057	2	0.71	0.71	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1059	2	0.04	0.04	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1060	2	0.09	0.09	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1061	3	0.24	0.24	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1062	3	0.70	0.10	Medium	Medium	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin Subtotal	**57**		**459.2**	**395.0**	**20/57 High 21/57 Medium 16/57 Low**	**18/57 High 20/57 Medium 19/57 Low**				
Alternative Tailings Basin	4	7	0.82	0.82	High	High	Low	Forest Harvest	Natural	No
Alternative Tailings Basin	8	6	3.34	3.34	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	10	5	0.12	0.12	Medium	Medium	High	Excavation/Forest	Artificial	No
Alternative Tailings Basin	11	2	0.35	0.35	High	High	Low	Forest Harvest	Natural	No

Table 6: Projected Wetland and Deepwater Habitat Impacts
Minnesota Steel Industries
Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Alternative Tailings Basin	16	8	5.18	5.18	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	18	2	0.68	0.68	High	High	Low	Forest Harvest	Natural	No
Alternative Tailings Basin	19	4	34.20	0.71	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	22	7	0.68	0.68	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	23	2	0.64	0.64	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	24	2	0.82	0.82	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	25	4	6.14	6.14	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	26	2	6.31	6.31	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	30	7	18.43	0.83	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	31	2	20.62	20.63	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	32	2	1.39	1.39	High	High	Low	None	Natural	No
Alternative Tailings Basin	33	6	22.93	22.91	High	Medium	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	34	8	1.20	1.20	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	35	6	0.97	0.97	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	37	7	13.76	13.77	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	39	8	2.65	2.43	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	42	6	22.51	14.02	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	43	6	32.92	32.93	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	44	7	11.30	9.33	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	45	7	31.89	31.91	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	46	7	10.10	10.10	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	48	7	8.15	3.07	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1007	2	25.59	0.39	High	High	Low	None	Natural	No
Alternative Tailings Basin	1010	6	22.95	0.28	High	High	Low	None	Natural	No
Alternative Tailings Basin	1021	7	55.68	5.40	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1026	2	21.15	7.68	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1027	8	1.70	1.70	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1028	8	0.93	0.93	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1029	6	0.94	0.94	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1030	6	0.68	0.68	High	Medium	Medium	Tailings Basin	Natural	Yes
Alternative Tailings Basin	1040	2	0.63	0.63	High	Medium	Medium	Impounded	Natural	Yes
Alternative Tailings Basin	1041	7	0.96	0.96	High	High	Low	Road Adjacent	Natural	Yes
Alternative Tailings Basin	1042	2	0.14	0.14	High	High	Low	Power line	Natural	Yes
Alternative Tailings Basin	1043	7	1.49	1.49	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1050	2	0.19	0.02	High	High	Low	None	Natural	Yes
Alternative Tailings Basin Subtotal	**39**		**391.1**	**212.5**	**38/39 High 1/39 Medium**	**35/39 High 4/39 Medium**				
Total with Stage I Tailings Basin	**179**		**1,500**	**1,093**						
Total with Alternative Tailings Basin	**161**		**1432**	**910**						

Table 7: Summary of Projected Wetland Impacts by Circular 39 Type
Minnesota Steel Industries
Revised December 12, 2006

Project Area		Circular 39 Type								Wetland	
		1	2	3	4	5	6	7	8	Total	Deepwater
Mine Area	(acres)	1.59	5.48	0.42	2.76	11.67	6.49	3.17	0.00	31.6	315.79
	% of impact area	0.5%	1.6%	0.1%	0.8%	3.4%	1.9%	0.9%	0.0%		90.9%
	# wetlands	4	3	5	5	3	5	10	0	35	3
Plant Area	(acres)	0.21	24.15	0.00	17.51	0.71	56.85	8.80	0.00	108.2	0.00
	% of impact area	0.2%	22.3%	0.0%	16.2%	0.7%	52.5%	8.1%	0.0%		0.0%
	# wetlands	1	13	0	2	1	9	4	0	30	0
Stockpile Area	(acres)	8.71	11.20	0.70	38.90	73.35	65.87	15.09	0.00	213.8	0.00
	% of impact area	4.1%	5.2%	0.3%	18.2%	34.3%	30.8%	7.1%	0.0%		0.0%
	# wetlands	5	5	2	5	2	17	5	0	41	0
Tailings Basin Pipeline, Stormwater and Water Supply	(acres)	0.00	0.11	0.00	0.58	13.17	0.70	1.73	0.00	16.3	11.88
	% of impact area	0.0%	0.4%	0.0%	2.1%	46.8%	2.5%	6.2%	0.0%		42.2%
	# wetlands	0	1	0	1	1	4	3	0	10	2
Stage I Tailings Basin	(acres)	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	395.0	0.00
	% of impact area	0.0%	16.9%	23.4%	1.6%	31.2%	25.8%	0.8%	0.3%		0.0%
	# wetlands	0	18	25	3	3	4	3	1	57	0
Alternative Tailings Basin	(acres)	0.00	39.66	0.00	6.85	0.12	76.07	78.31	11.44	212.5	0.00
	% of impact area	0.0%	18.7%	0.0%	3.2%	0.1%	35.8%	36.9%	5.4%		0.0%
	# wetlands	0	12	0	2	1	8	11	5	39	0
Total with Stage I Tailings Basin	(acres)	10.51	107.74	93.41	66.09	222.13	231.75	32.14	1.16	764.9	327.7
	(%of impact area	1.4%	14.1%	12.2%	8.6%	29.0%	30.3%	4.2%	0.2%		
	# wetlands	10	40	32	16	10	39	25	1	173	5
Total with Alternative Tailings Basin	(acres)	10.51	80.60	1.12	66.60	99.02	205.98	107.10	11.44	582.4	327.7
	(%of impact area	1.8%	13.8%	0.2%	11.4%	17.0%	35.4%	18.4%	2.0%		
	# wetlands	10	34	7	15	8	43	33	5	155	5

Table 8: Summary of Projected Wetland and Deepwater Impacts by Quality
Minnesota Steel Industries
Revised December 12, 2006

Project Area		Overall Wetland Quality			Total
		High	Medium	Low	
Mine Area	(acres)	4.88	23.31	319.19	347.4
	% of impact Area	1%	7%	92%	
	# wetlands	6	27	6	39
Plant Area	(acres)	11.05	97.17	0.00	108.2
	% of impact Area	10%	90%	0%	
	# wetlands	8	22	0	30
Stockpile Area	(acres)	34.28	179.54	0.00	213.8
	% of impact Area	16%	84%	0%	
	# wetlands	16	25	0	41
Tailings Pipeline, Stormwater and Water Supply	(acres)	1.73	14.44	11.99	28.2
	% of impact Area	6%	51%	43%	
	# wetlands	3	6	3	12
Stage I Tailings Basin	(acres)	113.84	214.80	66.38	395.0
	% of impact Area	29%	54%	17%	
	# wetlands	18	20	19	57
Alternative Tailings Basin	(acres)	188.16	24.35	0.00	212.5
	% of impact Area	89%	11%	0%	
	# wetlands	35	4	0	39
Total with Stage I Tailings Basin	(acres)	165.8	529.3	397.6	1093
	% of impact Area	15%	48%	36%	
Total with Alternative Tailings Basin	(acres)	240.1	338.8	331.2	910
	% of impact Area	26%	37%	36%	

Table 9
Wetland Mitigation Summary - Sites 229 and 248
November 29, 2006
Minnesota Steel Industries
Aitkin, Minnesota

Field ID	Area (acres)	Circ 39 Wetland Type	Planned Water Depths (inches)	Primary Type	Percent	Subdominant Type	Percent	Subdominant Type	Percent
5	26.8	Type 3/4	6-18	4	75%	3	25%		
6	10.9	Type 2	0	2	100%				
7	43.5	Type 2	0	2	100%				
11	12.4	Type 3/4	6-30	4	50%	3	50%		
13	21.7	Type 2/3	0-12	3	75%	2	25%		
14	17.3	Type 4/5	24-36	4	50%	5	50%		
15	21.3	Type 4/5	24-30	4	50%	5	50%		
16	13.3	Type 4/5	24-30	4	50%	5	50%		
17	8.6	Type 4/5	30-36	5	75%	4	25%		
18	6.0	Type 4/5	30-36	5	75%	4	25%		
19	4.2	Type 4/5	30-36	5	75%	4	25%		
20	11.5	Type 6	0	6	100%				
21	37.7	Type 3/4	0-24	4	75%	3	25%		
22	19.3	Type 4/5	36-48	5	75%	4	25%		
23	21.2	Type 4/5	24-48	5	75%	4	25%		
24	25.7	Type 3/4	6-12	3	50%	4	50%		
25	24.0	Type 3/6	0-12	6	75%	3	25%		
26	25.2	Type 3/6	0-18	6	75%	3	25%		
27	10.1	Type 3/4	6-18	3	75%	4	25%		
28	17.0	Type 3/4	12-30	4	75%	3	25%		
31	30.9	Type 4/5	18-30	4	50%	5	50%		
37	28.7	Type 3/4	6-24	4	75%	3	25%		
40	20.8	Type 6	0-6	6	100%				
41	12.0	Type 3/4	12-24	4	75%	3	25%		
44	11.5	Type 4/5	18-30	4	50%	5	50%		
46	25.4	Type 3/4/5	6-36	4	50%	3	25%	5	25%
47	33.6	Type 4/5	6-42	5	75%	4	25%		
48	12.4	Type 2	0	2	100%				

Total	553.0	Total Project Wetland Impacts (ac)
Type 2 Total	72.2	110
Type 3 Total	92.1	94
Type 4 Total	196.3	66
Type 5 Total	123.2	206
Type 6 Total	69.2	232

Table 10
Wetland Impact and Mitigation Summary - First 5 Years
Sites 229 and 248
Minnesota Steel Industries
Aitkin, Minnesota

Wetland Type	Wetland Mitigation Area (acres)	Proposed Wetland Impacts (acres)	Wetland Impacts Compensated[1] (ac)
Type 2 (wet/sedge meadow wetlands)	72.2	108	72.2
Type 3 (0-12 inches water)	92.1	94	92.1
Type 4 (1-3 ft water)	196.3	66	170.2
Type 5 (>3 ft water)	123.2	222	123.2
Type 6 (shrub wetlands)	69.2	232	69.2
Total	**553**	**722**	**527**

[1] Assumes 1:1 replacement for the same wetland types and 1.25:1 for different types.

Patrick Mine
Sullivan Mine
Pit 5
Oxhide Lake
524
532
536
529
546
530
551
493
556
557
553
573
586
330
584
596
600
599
601
602
604
615
609
617
625
641
649
645
585
705
2001
718
736
691
739
760
770
777
Mine Area
Impacted Wetlands: 32 acres
Impacted Deep Water Habitat: 204 acres
1
2
3
4
9
10
11
12
13
14
15
16

Mine Area
Wetland Delineation
Impacted Wetland
Impacted Deep Water Habitat

N

Feet
500 0 500 1,000

Meters
200 0 200 400

Figure 1

MINE AREA WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Barr Footer: Date: 12/8/2006 2:56:04 PM File: I:\Client\MSI\MSI_Project_Wetlands\Maps\404Permit\Dec2006_Update\Figure 06 Wetlands-Mining_Area.mxd User: TJA

Stockpile Area
Wetlands Impacted: 214 acres
Impacted Deep Water Habitat: 0 acres

Stockpile Area A
Stockpile Area B
Stockpile Area C
Pit 5

4
3
2
9
10
11

425
457
455
462
482
485
499
504
476
2008
506
510
2010
516
526
524
532
523
536
530
539
552
549
553
572
568
2020
2021
591
585
591
621
626
606
646
645
658
675
591
676
2009
704
718

Stockpile Area
Wetland Delineation
Impacted Wetland
Impacted Deep Water Habitat

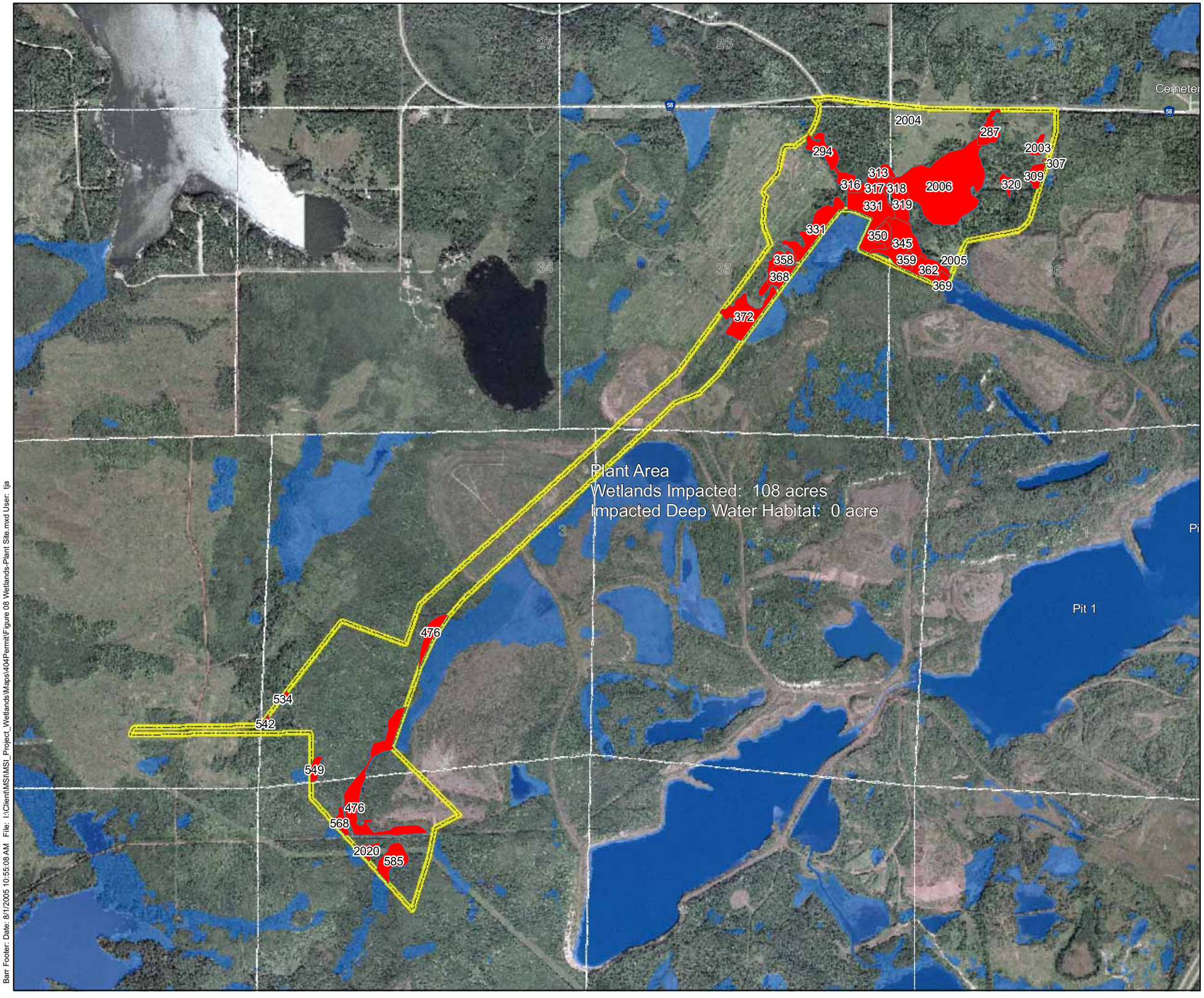
N

Feet
500 0 500 1,000
Meters
200 0 200 400

Figure 2

STOCKPILE WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Barr Footer: Date: 12/8/2006 3:06:44 PM File: I:\Client\MSI\MSI_Project_Wetlands\Maps\404Permit\Dec2006_Update\Figure 07 Wetlands-Stockpile_Area.mxd User: TJA



Plant Site

Wetland Delineation

Impacted Wetland

Impacted Deep Water Habitat

N

Feet

500 0 500 1,000 1,500 2,000 2,500

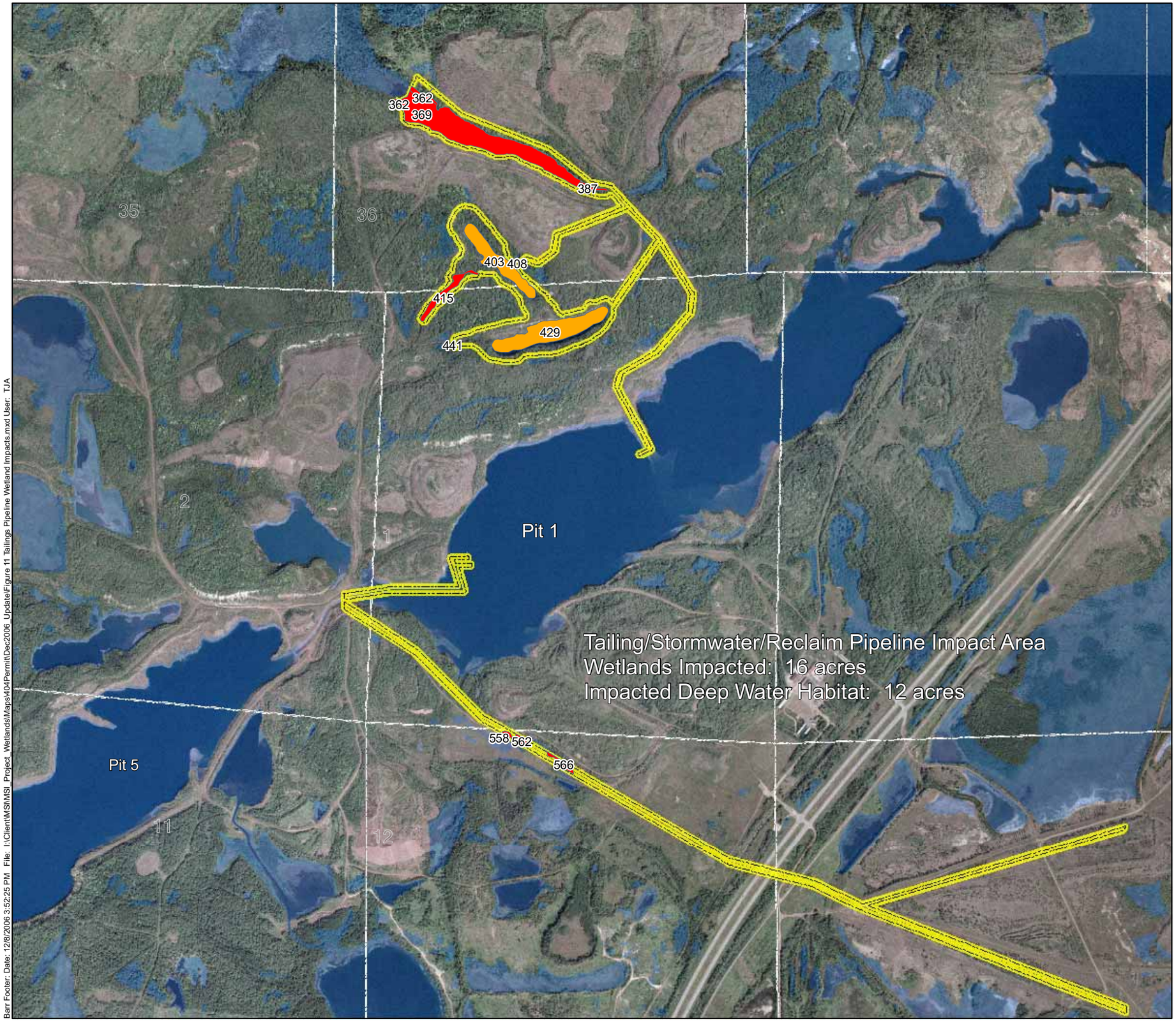
Meters

200 0 200 400 600

Figure 3

PLANT SITE WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Barr Footer: Date: 8/1/2005 10:55:08 AM File: I:\Client\MS\MSI_Project_Wetlands\Maps\404Permit\Figure 08 Wetlands-Plant Site.mxd User: tja



Wetland Inventory

Tailings/Reclaim/Water Supply/ Stormwater Project Area

Impacted Wetland

Impacted Deep Water Habitat

Feet
500 0 500 1,000

Meters
200 0 200

Figure 4
TAILINGS PIPELINE/RECLAIM LINE/
WATER SUPPLY AND STORMWATER
WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Barr Footer: Date: 12/8/2006 3:52:25 PM File: I:\Client\MSI\MSI Project Wetlands\Maps\404PermitDec2006_Update\Figure 11 Tailings Pipeline Wetland Impacts.mxd User: TJA

Sucker Lake

Plant Area Stormwater and Water Supply

Plant Area

Stockpile Area C

Stockpile Area A

Stockpile Area B

Mine Area

Lake Augmentation and CC Water Supply from Pit 1

Tailings Pipeline and Reclaim Line

Stage I Tailings Basin and Reclaim Pond

Expanded Stage I Tailings Basin

Project Areas

Wetland Inventory

Wetland Impact Areas

Feet

3,000

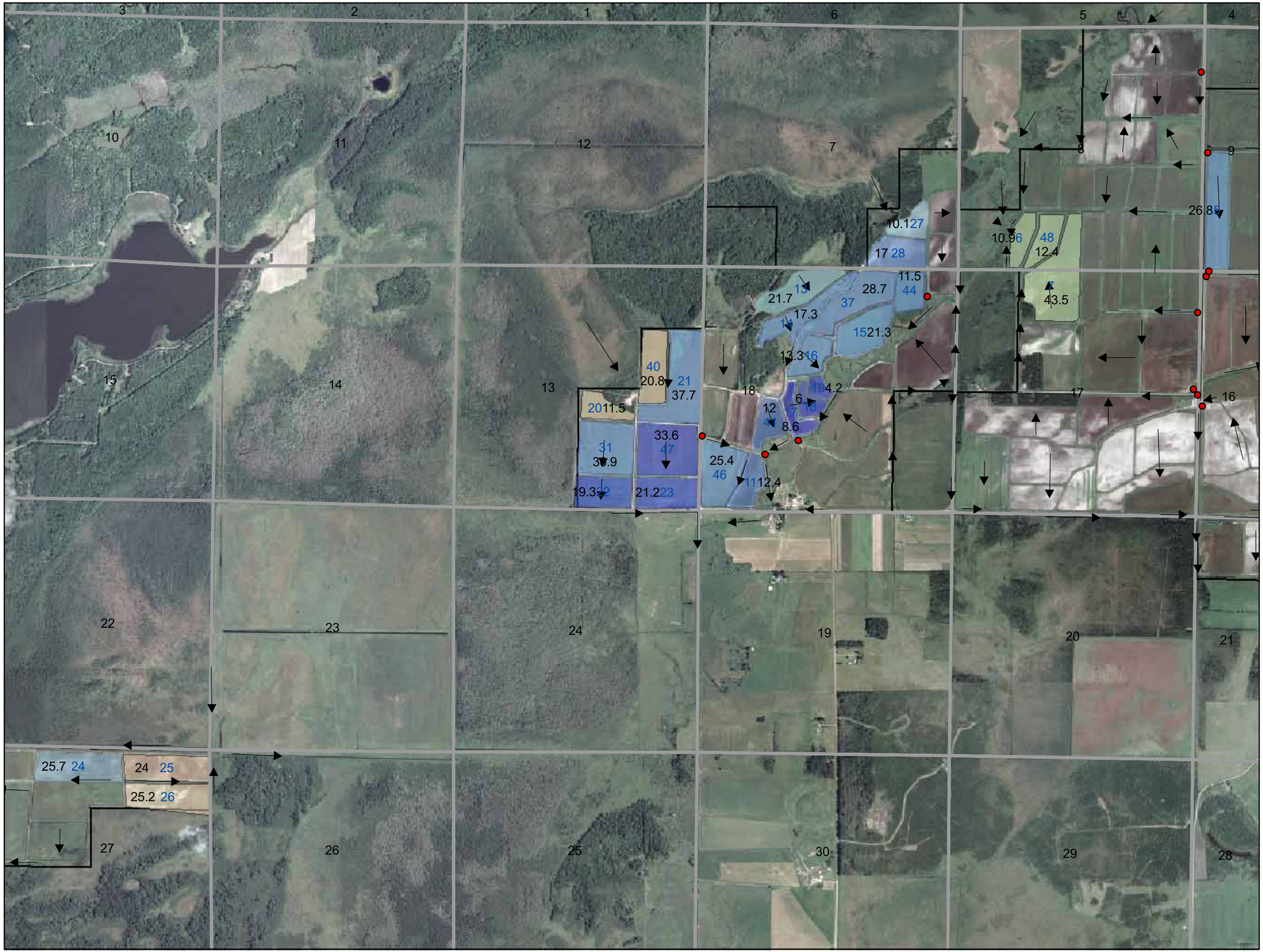
Meters

500 0 500

Figure 5

WETLAND RESOURCES
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Barr Footer: Date: 8/1/2005 10:12:30 AM File: I:\Client\MSI\MSI_Project_Wetlands\Maps\404Permit\Figure 03 Wetland Resources.mxd User: tja



Legend

- Surface Flow Directions
- Pump Stations
- Public Land Survey

Dominant Wetland Restoration Types

- Type 2
- Type 3
- Type 4
- Type 5
- Type 6
- Site 248

Total Wetland Restoration Area
553 acres

Feet
2,000 0 2,000

Figure 6

WETLAND RESTORATION
PLAN
Wetland Mitigation Sites 229 & 248
Minnesota Steel Industries
Aitkin County, Minnesota

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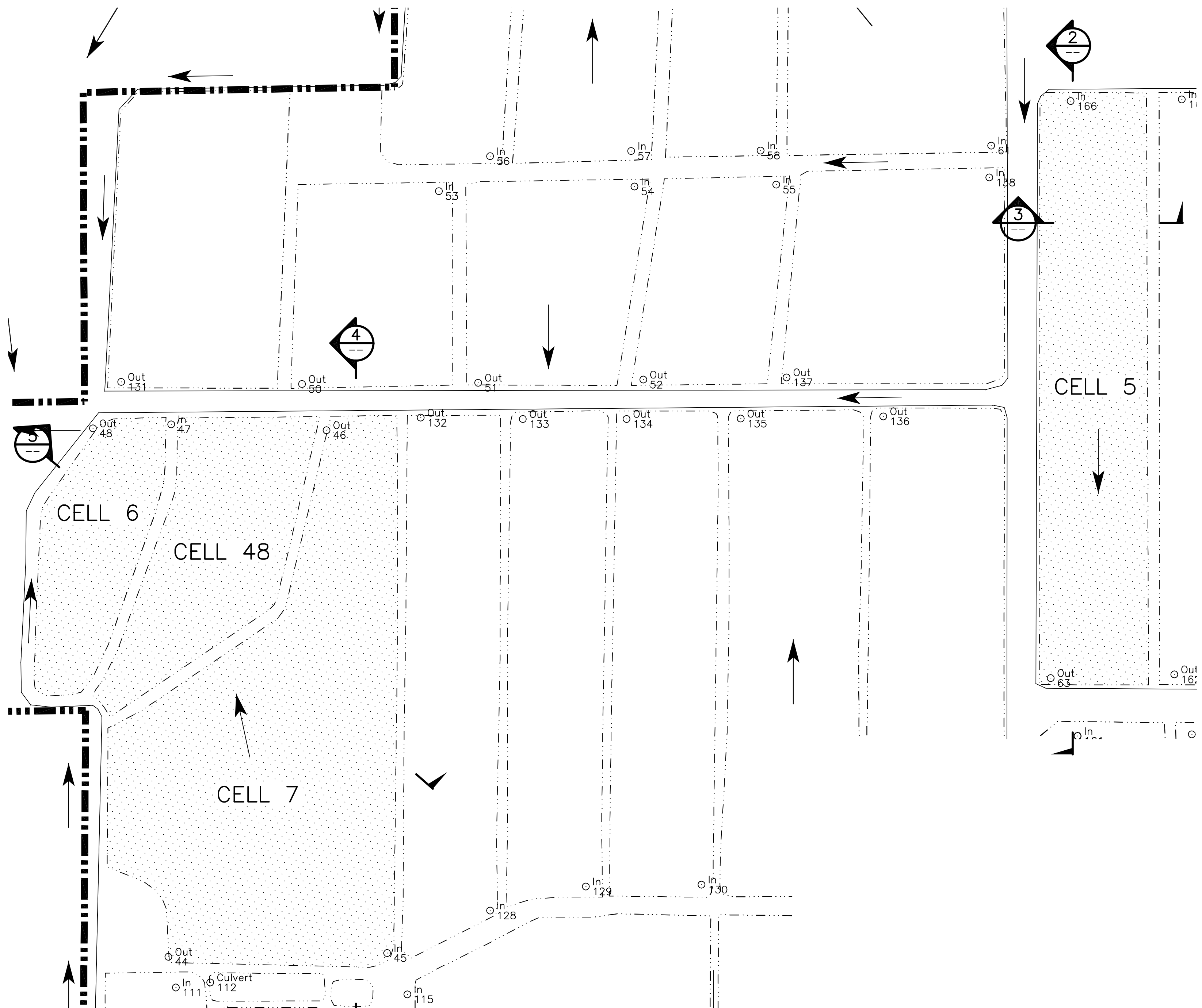
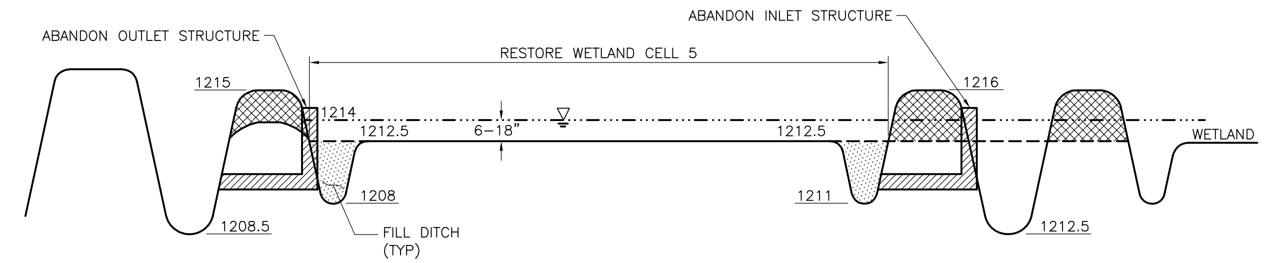


1 DETAIL: WETLAND REPLACEMENT PLAN

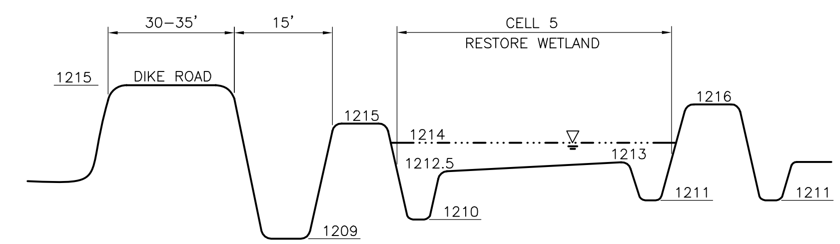
1"=300'-0"

0 300 600
SCALE IN FEET



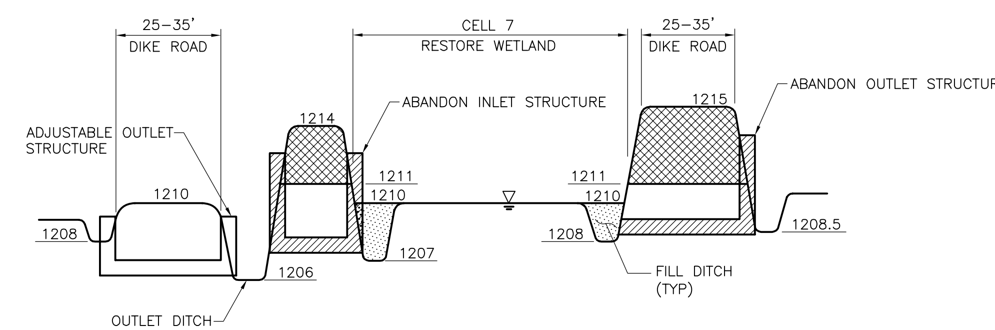
2 TYPICAL CROSS SECTION – CELL 5

NOT TO SCALE



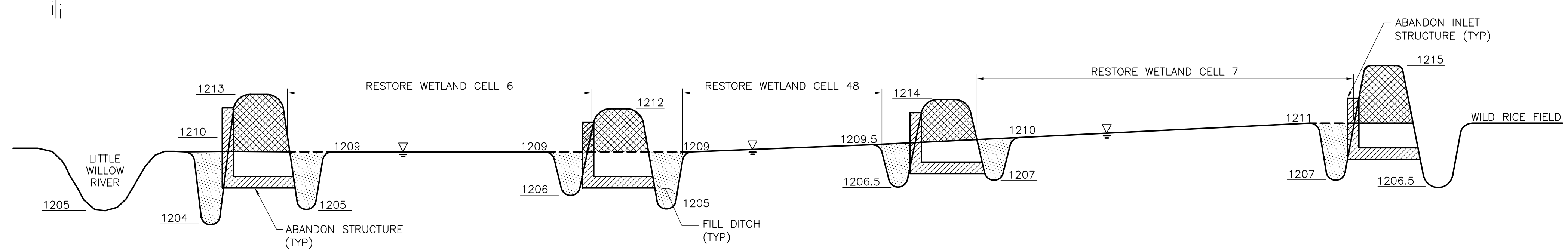
3 TYPICAL CROSS SECTION – CELL 5

NOT TO SCALE



4 TYPICAL CROSS SECTION – CELL 7

NOT TO SCALE



5 TYPICAL CROSS SECTION – CELLS 6, 48 & 7

NOT TO SCALE

LEGEND

- FILL DITCH
- ABANDON STRUCTURE
- REMOVE DIKE/LOWER OVERFLOW
- RESTORE WETLAND

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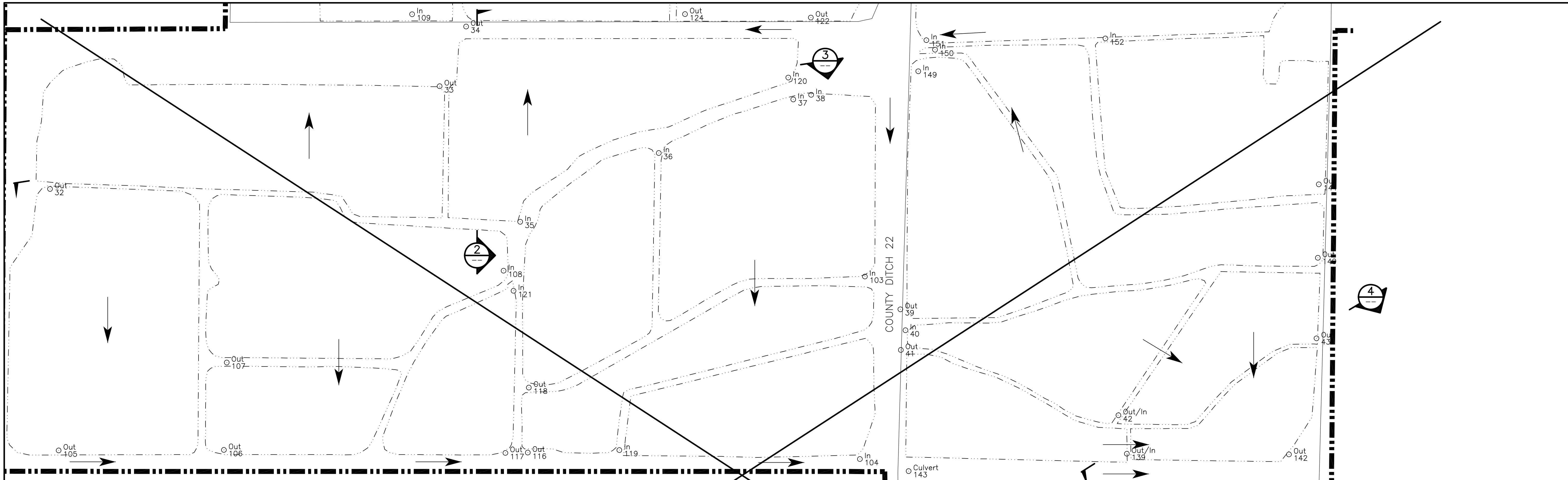
MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.
CLIENT PROJECT No. 23/31-286
DWG. No. C-01
REV. No. 1



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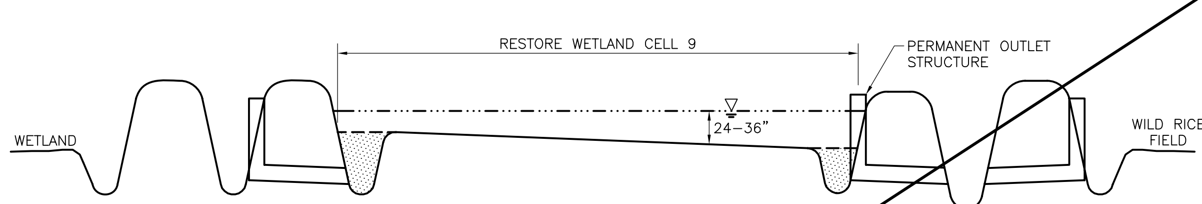

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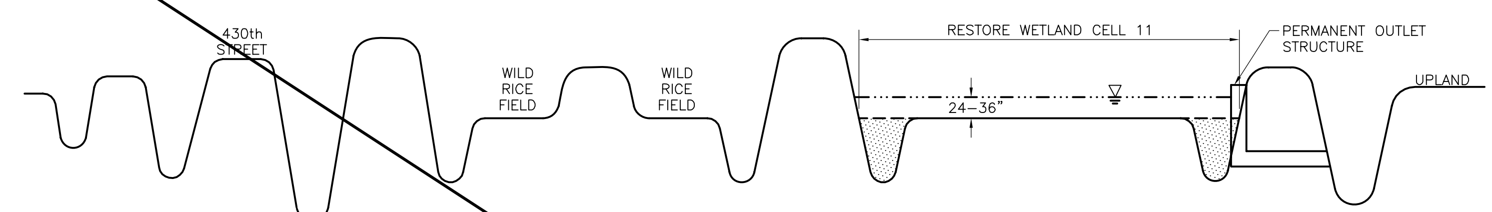

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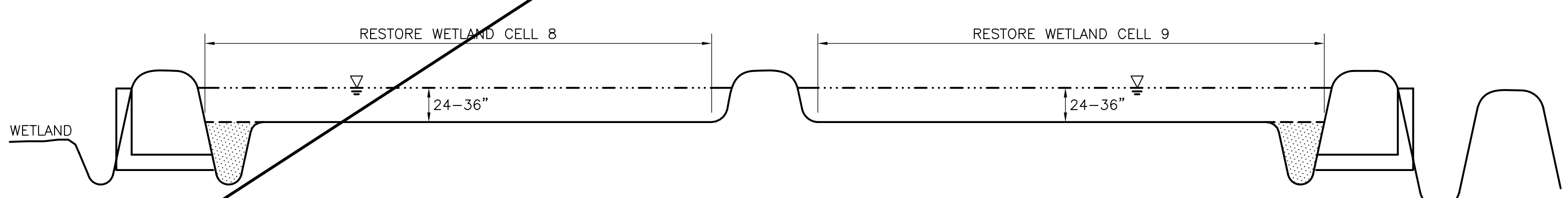

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.
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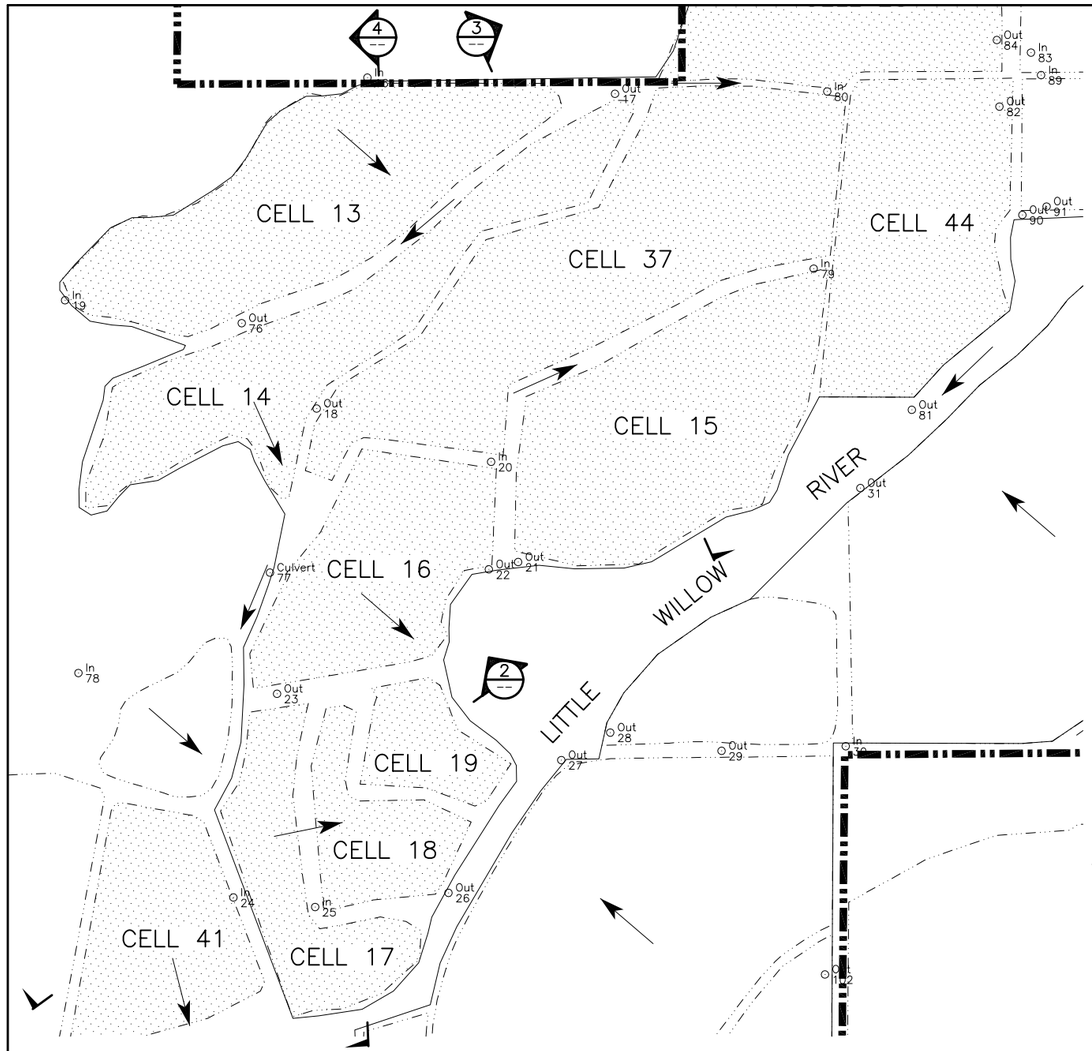
DWG. No. C-02
REV. No. 1



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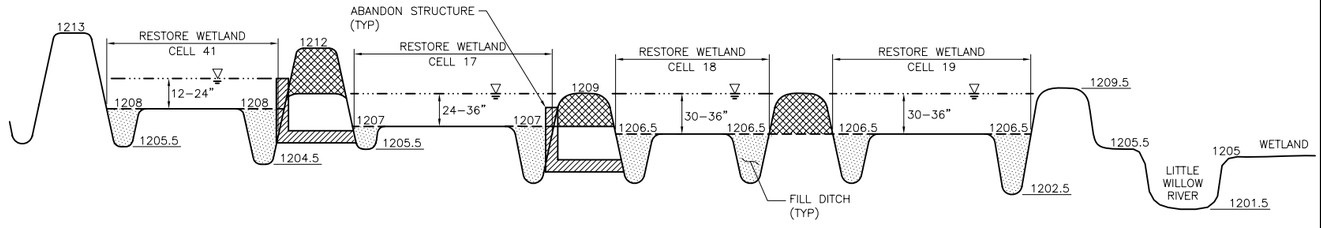

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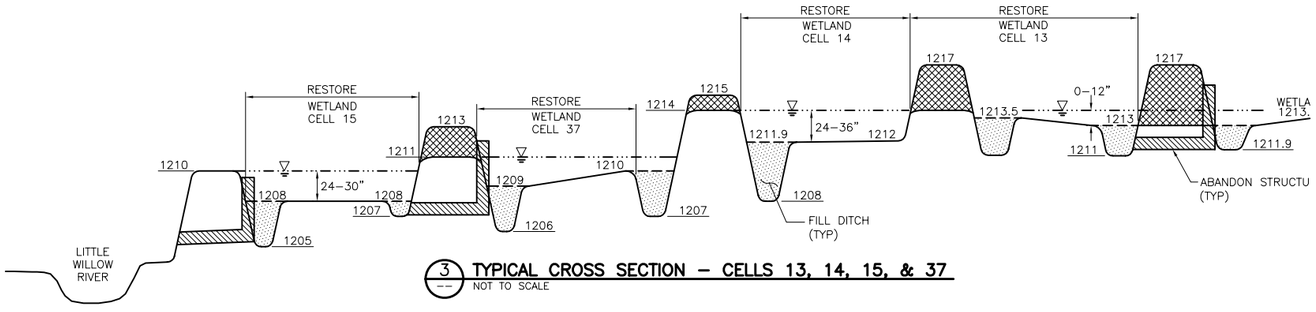

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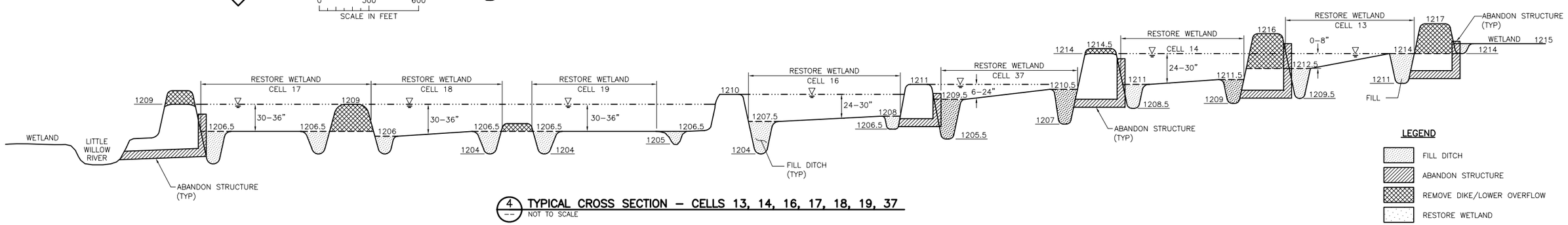

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NOT TO SCALE

LEGEND

- FILL DITCH
- ABANDON STRUCTURE
- REMOVE DIKE/LOWER OVERFLOW
- RESTORE WETLAND

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.

CLIENT PROJECT No. 23/31-286

DWG. No. C-03 | REV. No. 1

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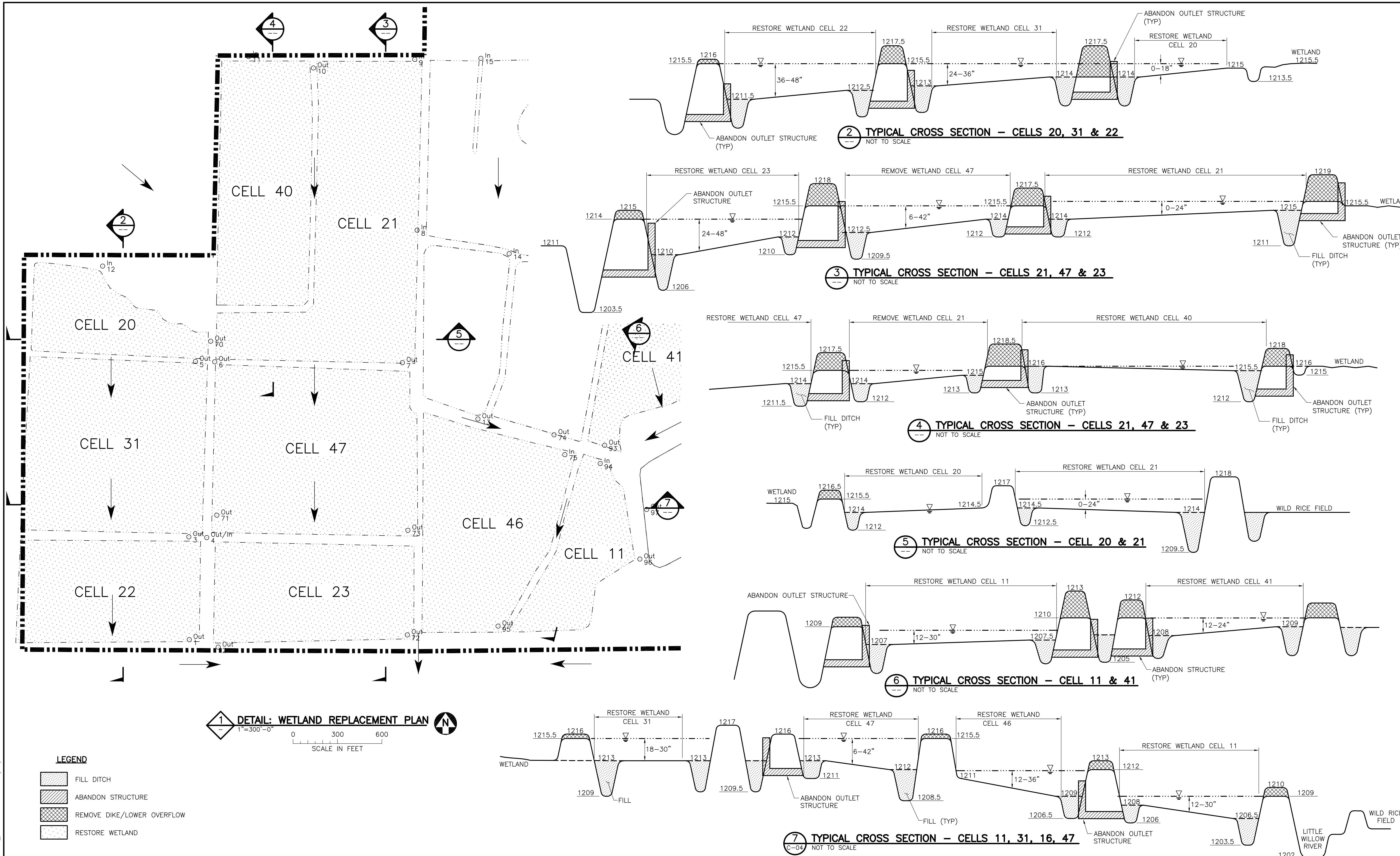

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.
CLIENT PROJECT No. 23/31-286
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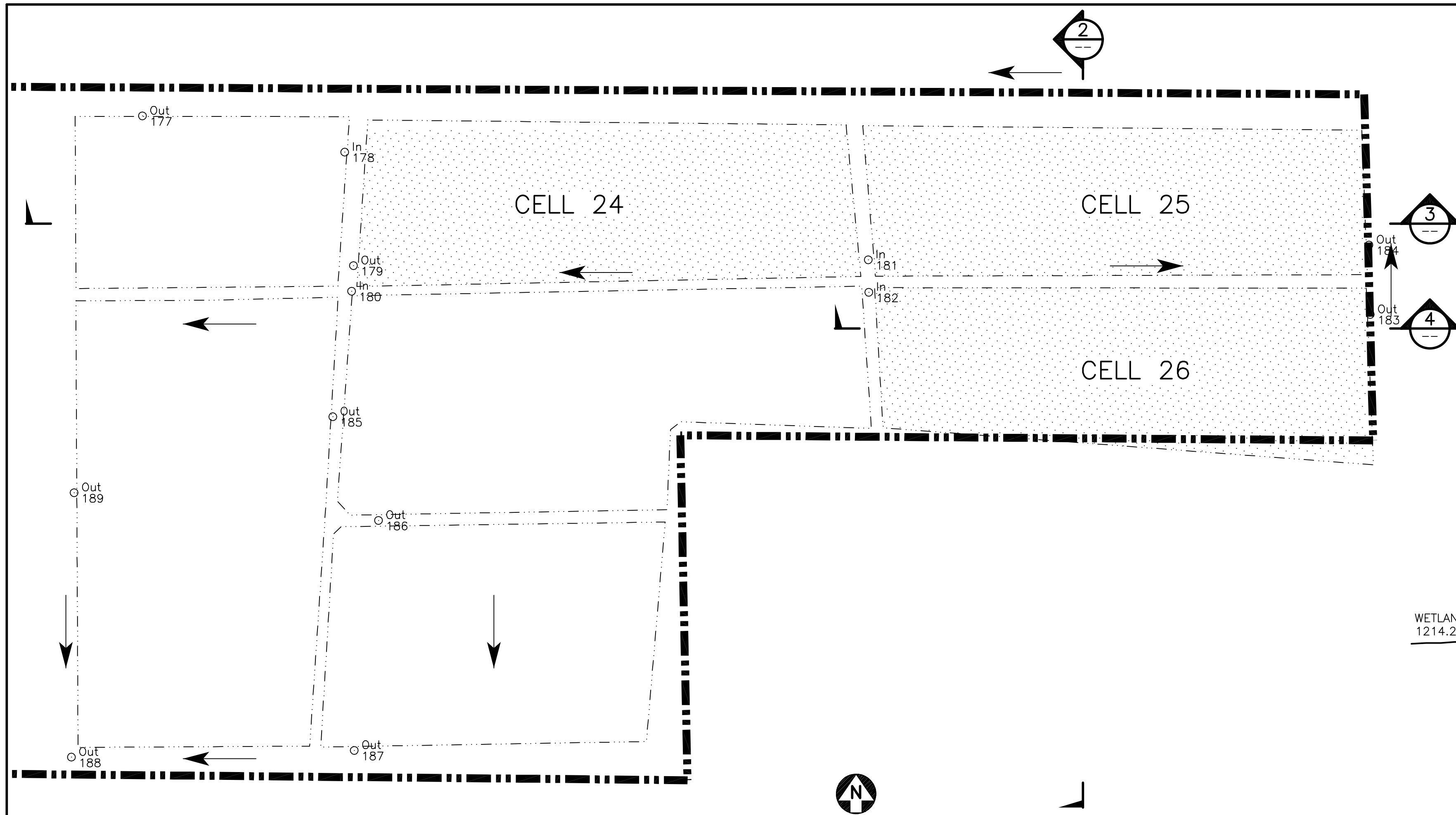

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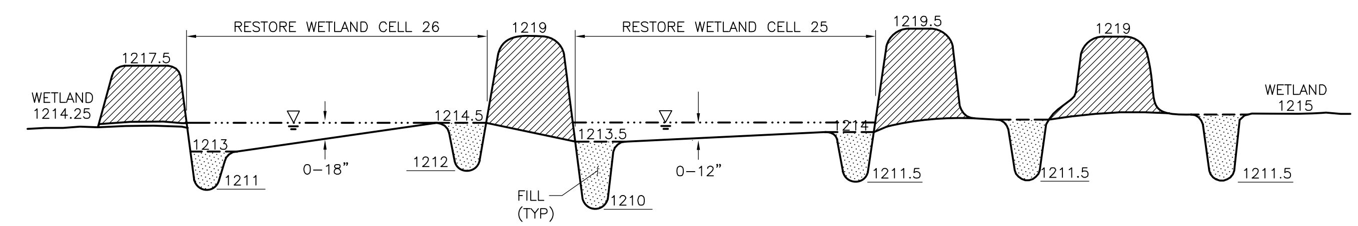

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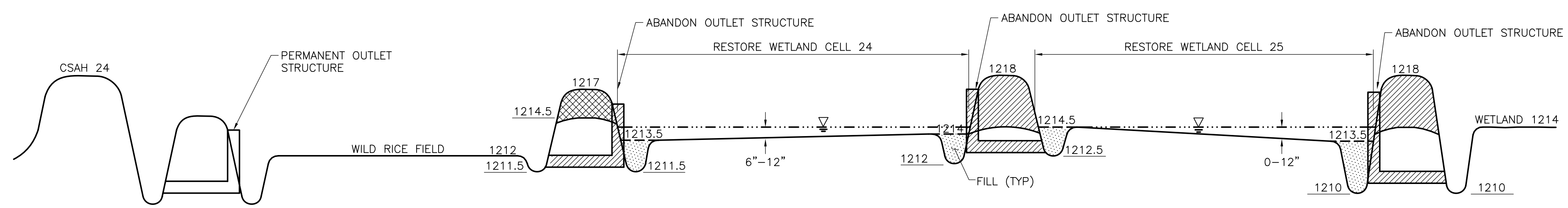

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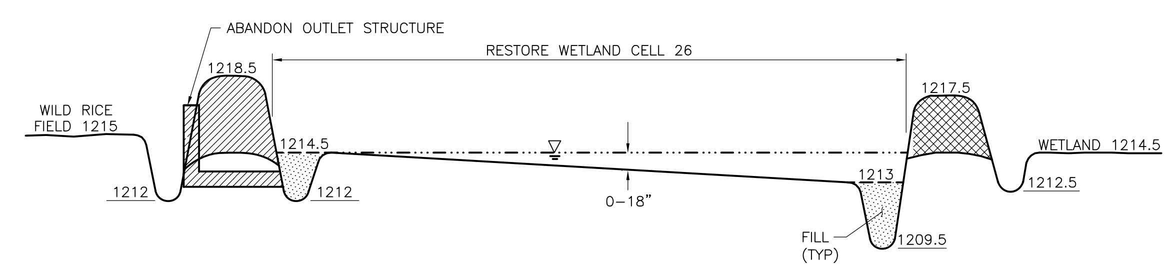

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NOT TO SCALE

LEGEND

- FILL DITCH
- ABANDON STRUCTURE
- REMOVE DIKE/LOWER OVERFLOW
- RESTORE WETLAND

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 229 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA
PLAN DETAILS AND TYPICAL CROSS SECTIONS

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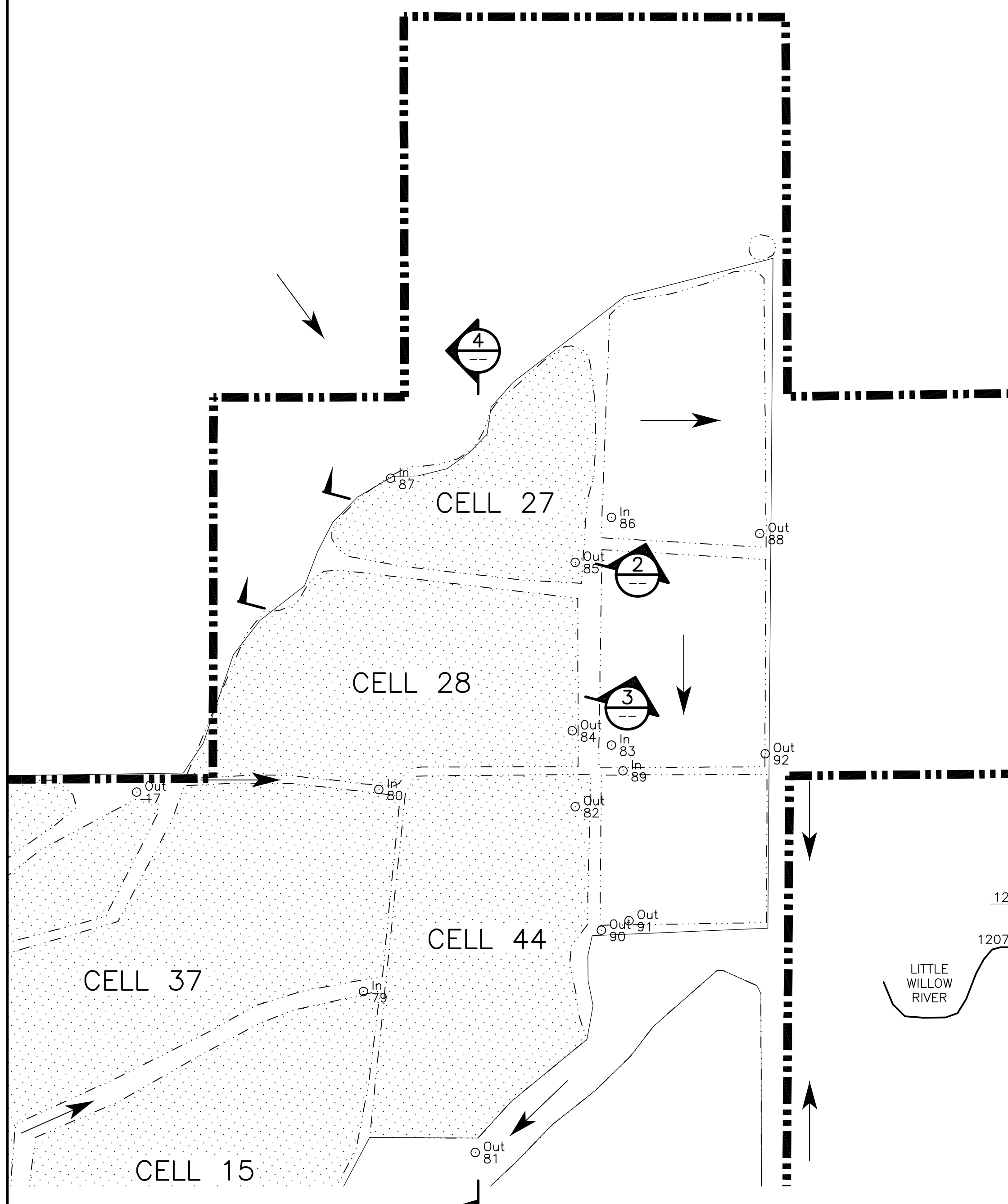
CLIENT PROJECT No. 23/31-286
DWG. No. C-05
REV. No. 1



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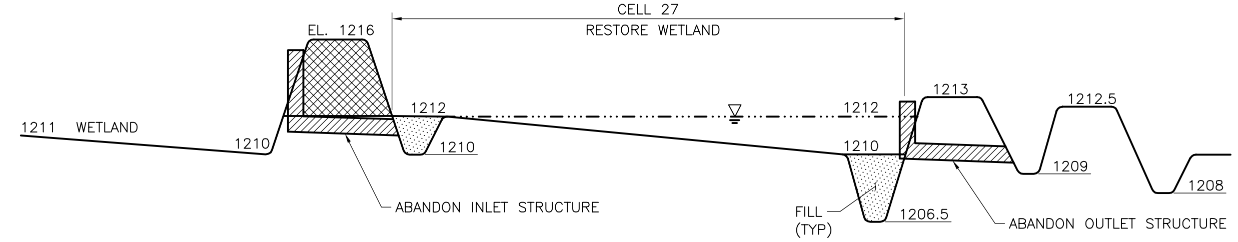

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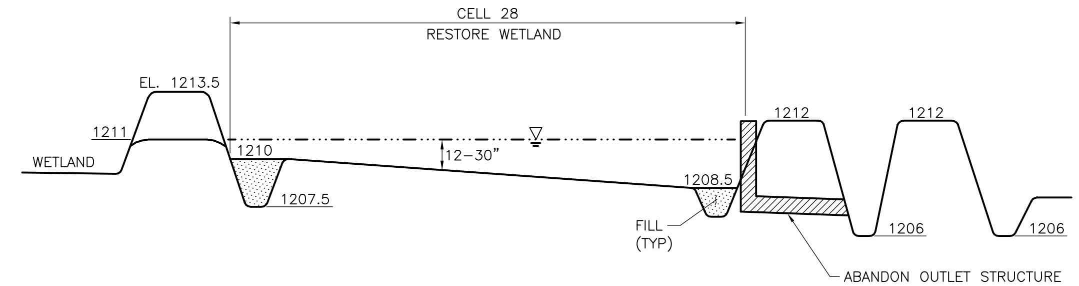

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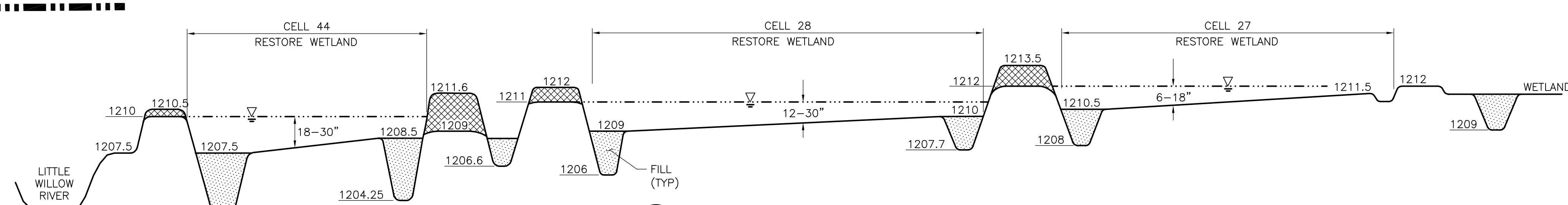

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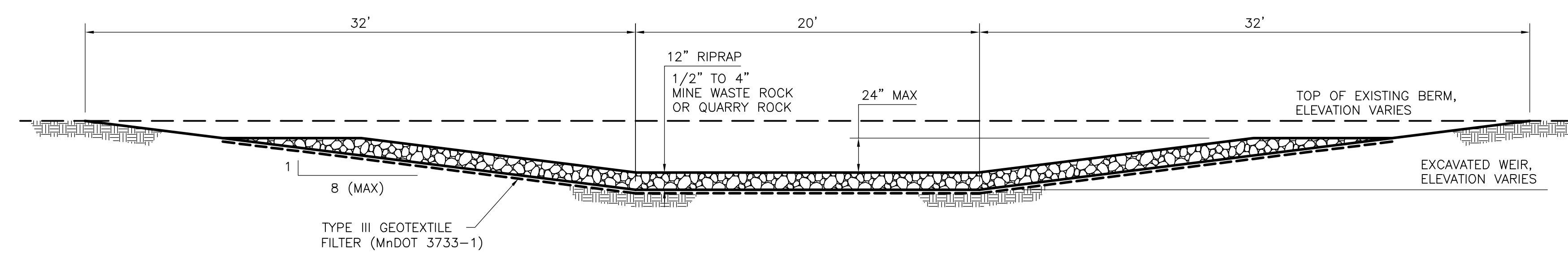

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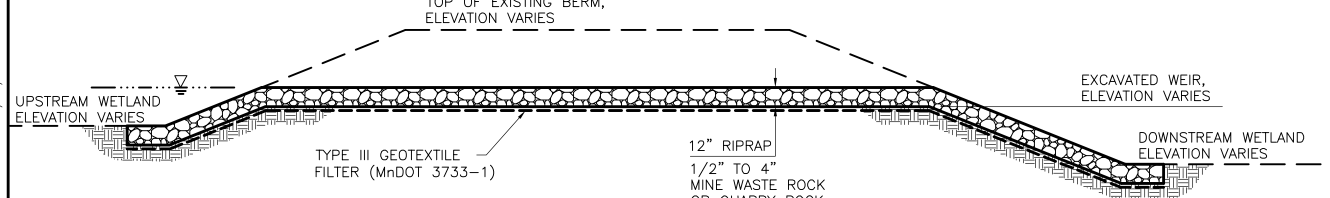

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- ABANDON STRUCTURE
- REMOVE DIKE/LOWER OVERFLOW
- RESTORE WETLAND

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

PLAN DETAILS AND TYPICAL CROSS SECTIONS

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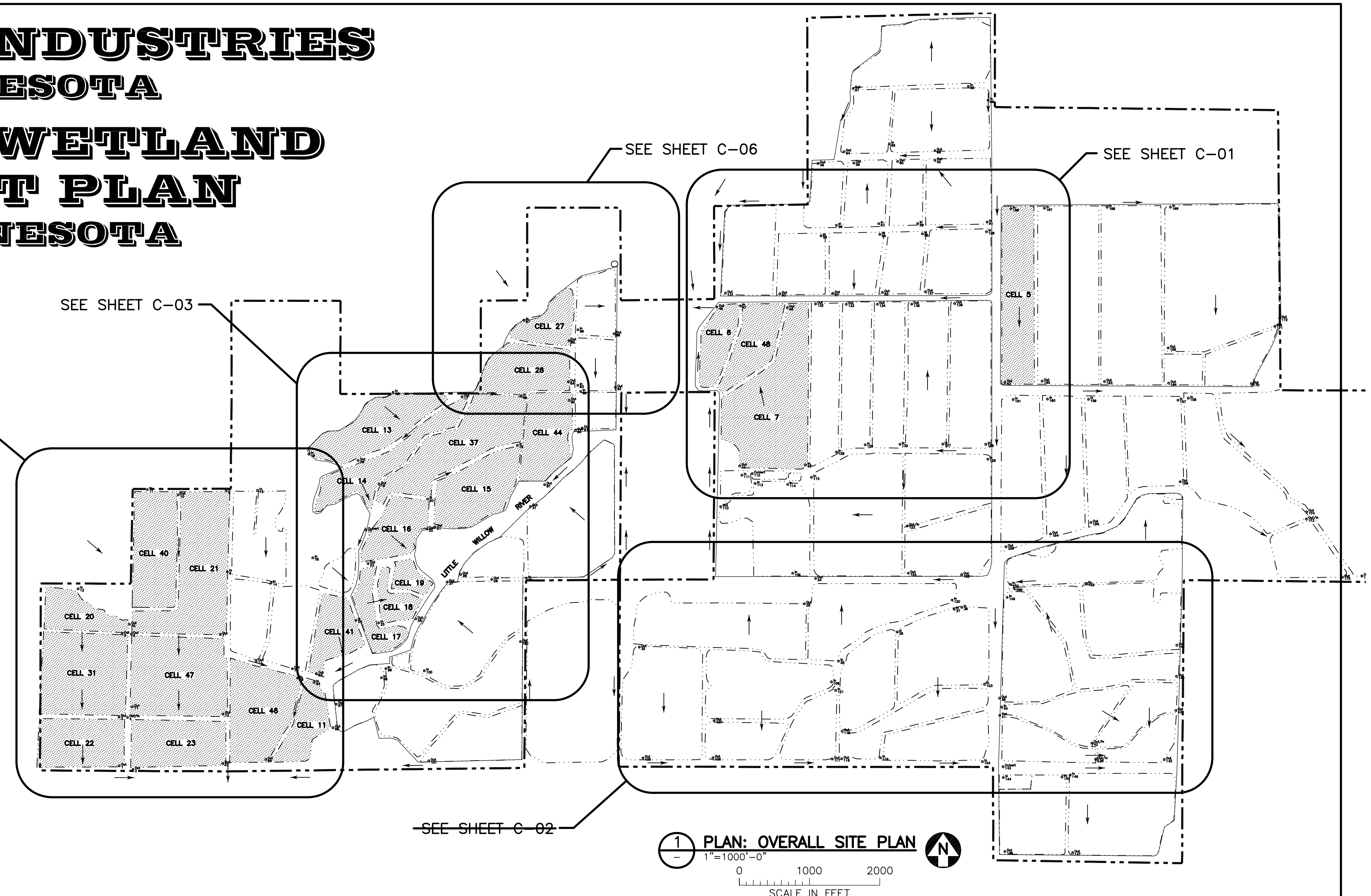
NASHWAUK, MINNESOTA

SITES 248 & 229 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA



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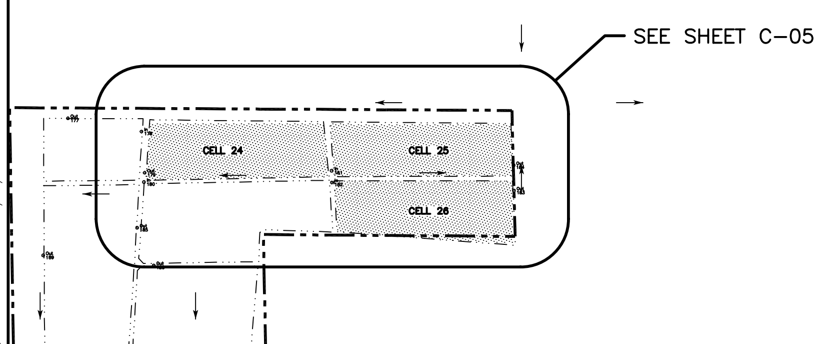
SITE LOCATION MAP



STATE MAP

INDEX

Sheet No.	Title
C-01	PLAN DETAILS AND TYPICAL CROSS SECTIONS
~~C-02 . . . .~~	~~PLAN DETAILS AND TYPICAL CROSS SECTIONS~~
C-03	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-04	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-05	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-06	PLAN DETAILS AND TYPICAL CROSS SECTIONS

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MINNESOTA STEEL INDUSTRIES
NASHWAUK, MINNESOTA

SITE 248 & 229 WETLAND REPLACEMENT PLAN
PALISADE, MINNESOTA

TITLE SHEET, SITE LOCATION MAP, AND SHEET INDEX

BARR PROJECT No.

CLIENT PROJECT No. 23/31-286

DWG. No. G-01

REV. No. 1

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November 8, 2006

Mr. Jon Ahlness
Corps of Engineers
Department of the Army
190 East Fifth Street
St. Paul, MN 55101-1638

Mr. Steve Dewar
Minnesota Department of Natural Resources
Division of Lands and Minerals
1525 East Third Street
Hibbing, MN 55746

Re: 20-Year Wetland Mitigation Plan Update – Minnesota Steel Industries, LLC

Dear Messrs. Ahlness and Dewar:

On behalf of Minnesota Steel Industries, LLC, we are hereby submitting an update to the 20-year wetland mitigation plans for the project. The 5-year wetland mitigation plan includes the restoration of 553 acres of wetland at a farm in Aitkin County, Minnesota (Table 1). The 20-year plan includes additional off-site measures along with on-site restoration measures.

The preliminary wetland mitigation plan, submitted May, 2006, has been revised to include the following mitigation measures.

1. Restoration of 140 acres of a farmed wetland near Aitkin, Site 1981-NW,
2. Restoration of 150 acres of wetlands on the project site during reclamation,
3. Establishment and restoration of 755.5 acres of deepwater habitats on the project site during reclamation,
4. Restoration of wetlands through the decommissioning of roads within the Chippewa National Forest, and
5. The restoration of approximately 50-60 acres of wetlands on tribal lands.

Aitkin Site 1981-NW

Minnesota Steel is currently in discussions with a landowner (Site 1981-NW) regarding potential wetland restoration near Aitkin. Site 1981-NW encompasses approximately 155 acres of a larger 353 acre property located in Township 47 North, Range 26 West, Section 8, Aitkin County (Figure 1). The other 198 acres of the larger 353 acre property was restored to wetlands and was part of the state wetland bank between 1995 and 2003. The land was originally developed for farming in 1980-81 when a drain tile system (tiles approximately every 100 feet) was installed throughout the property. There is an approximately 10 foot deep ditch (at the outlet from the property) that runs along the north side of the parcel, into which the tile system discharges. Prior to agricultural development, the land contained a mix of tamarack, willow, and aspen, according to the landowner.

Preliminary wetland restoration planning for the 155 acres was conducted between 2003 and 2005, but permitting was not completed and no restoration work has been conducted. As part of that preliminary planning, 1-foot aerial topography was developed for the property. In addition, a map of the drain tile system is available. It is estimated that approximately 140 acres of wetland mitigation

credits may be possible through restoring wetlands within the property (Figure 2). Assuming discussions with the landowner are successful, Minnesota Steel will develop detailed wetland restoration plans for the property to be included as part of the 20-year wetland mitigation plan. It is anticipated that Type 2, 6, and 7 wetlands could be restored at the site, but the exact proportion of each has not been determined at this time. An equal area of each wetland type was assumed for planning purposes, as depicted in Table 2.

On-Site Wetland Restoration

There are approximately 90 acres of wetlands that will be utilized for holding tailings basin reclaim water during operation of the project. Since tailings will have settled out of the water prior to its discharge into the reclaim basin, it is not anticipated that significant sediment will be deposited in the reclaim basin wetlands. These wetlands were previously used for the same purpose and have redeveloped into functioning wetlands, with minimal human intervention. Therefore, it is anticipated that restoration of the wetlands at the end of the Minnesota Steel project will be equally successful. Approximately 90 acres of primarily Type 4 and 5 wetlands are planned for restoration during reclamation activities at the end of the project.

Also during reclamation, it is anticipated that wetlands will be developed on the tailings basin. The planned surface drainage area of the tailings basin is estimated to be 1,000 acres, upon completion of the project. Based on wetland development at United Taconite's closed tailings basin, it is estimated that approximately 60 acres of Type 3, 4, and 5 wetlands will be developed on the tailings basin. Specific plans for wetland establishment will be developed and submitted for review and approval prior to beginning reclamation.

On-Site Deepwater Habitat Development

At the completion of the project, the dewatered mine pits and newly developed mine pits will be allowed to fill with water. It is anticipated that over 755 acres of deepwater habitats will be developed following completion of the project while only 315 acres of deepwater habitats are expected to be impacted by the project.

Chippewa National Forest Road Decommissioning

The U.S. Forest Service (USFS) has identified approximately 140 miles of forest roads that are ready for decommissioning in the Chippewa National Forest. Many of the roads have impacted wetlands; either directly through filling or by indirect drainage or impoundment. Several particular sites have been briefly evaluated in the field and one particular site was reviewed with the Corps. Minnesota Steel plans to identify and evaluate specific sites for decommissioning and develop restoration plans in conjunction with the USFS. Plans for individual road projects will be submitted for regulatory review and approval prior to starting construction. It is anticipated that approximately 88 acres of wetlands will be restored as a result of road decommissioning.

Tribal Land Wetland Restoration

Minnesota Steel is in discussions with tribal entities that have an interest in restoring wetlands on their property. It is anticipated that Minnesota Steel will restore approximately 50 acres of wetlands on tribal lands, but no specific projects have been identified at this time. Wetland restoration plans will be submitted for regulatory review and approval before initiating construction.

Conclusion

The overall goal of the 20-year wetland mitigation plan is to replace wetland impacts in-kind and at least one growing season ahead of impacts, where feasible. The 20-year plan described herein includes 981 acres of wetland mitigation during the life of the project, while it is expected that 749 acres of wetlands will be impacted (Tables 1 and 2). This plan would result in an average replacement ratio of 1.3:1. In addition, the 20-year plan anticipates the development of 755 acres of deepwater habitat at the end of the project, while only 315 acres of deepwater habitats are expected to be dewatered during the project.

Accounting for the actual impacts and compensatory mitigation during the project is proposed to be accomplished as part of the annual permit-to-mine reporting and through approximately 5-year increment wetland mitigation plans. The annual permit-to-mine reports would include a tabulation of wetland impacts and mitigation that was conducted during that year along with a summary of overall project totals.

We hope this information will help you in meeting the project timeline. If you or other Corps staff have any questions concerning this information, please contact either myself at 952-832-2764 or Deb McGovern at 651-209-7707.

Sincerely,

Mark Jacobson
Senior Environmental Scientist

Enclosures

c: Deb McGovern
Scott Ek
Steve Menden
Jeff Udd
Howard Hilshorst
Jim Payne

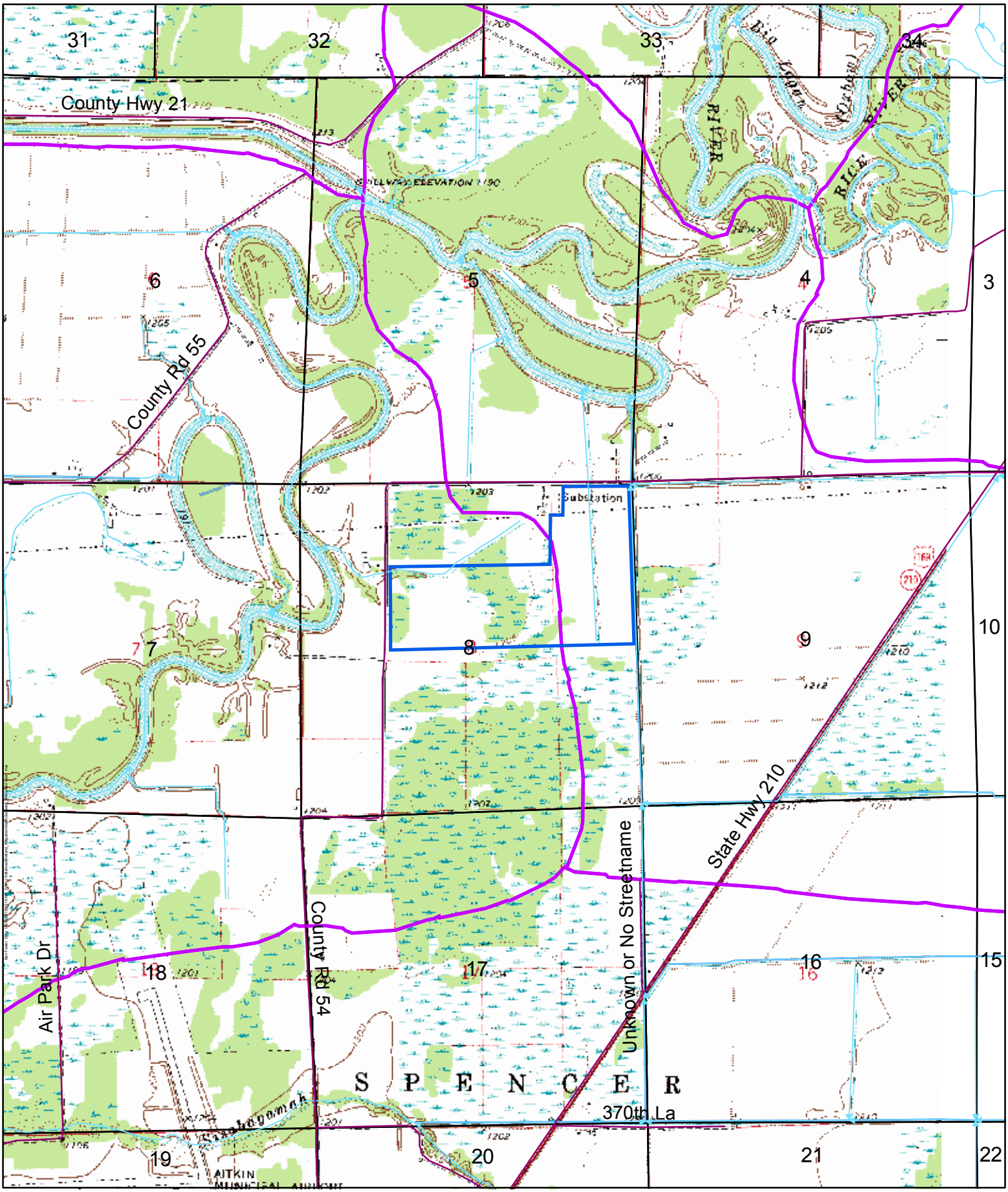
Table 1
Wetland Mitigation Summary - 20 Year Plan
Minnesota Steel Industries
November 8, 2006

WETLANDS			
Impacts	Total Project (acres)	First 5 Years (acres)	Years 6-20 (acres)
Mine Area	29	11	18
Plant Area	109	109	0
Stockpile Area	215	150	65
Tailings Basin Pipeline	2	2	0
Stage I Tailings Basin	395	257	138
Total	**749**	**529**	**221**
Mitigation			
Aitkin Sites 229 and 248	553	553	0
Aitkin Site 1981-NW	140	0	140
Chippewa Forest Road Removals	88	0	88
Tribal Wetland Restorations	50	0	50
Tailings Basin Wetlands	60	0	60
Reclaim Water Wetlands	90	0	90
Total	**981**	**553**	**428**
DEEPWATER HABITATS			
Impacts	Total Project (acres)	First 5 Years (acres)	Years 6-20 (acres)
Pits 1 and 2	111.5	111.5	0
Pit 5	204	204	0
Total	**315.5**	**315.5**	**0**
Mitigation			
Pits 1 and 2	111.5	0	111.5
Pit 5	408	0	408
Pit 6	236	0	236
Total	**755.5**	**0**	**755.5**

Table 2
Summary of Wetland Impacts and Mitigation by Circular 39 Wetland Type
20-Year Wetland Mitigation Plan
November 8, 2006
Minnesota Steel Industries

Project Area	Circular 39 Type									Wetland Total
	1	2	3	4	5	6	7	8	Deepwater	
	Impact Area (acres)									
Mine Area	0.50	7.40	0.37	3.03	8.57	5.98	3.18	0.00	315.7	29.0
Plant Area	0.21	24.15	0.00	17.50	0.71	57.33	8.80	0.00	0.00	108.7
Stockpile Area	9.80	11.21	0.70	38.90	73.35	65.90	15.33	0.00	0.06	215.2
Tailings Basin Pipeline	0.00	0.02	0.26	0.00	0.36	0.47	0.28	0.00	0.00	1.4
Stage I Tailings Basin	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	0.00	395.0
Total with Stage I Tailings Basin	10.5	109.6	93.6	65.8	206.2	231.5	30.9	1.2	315.7	749
Mitigation Project	Mitigation Area Goal (acres)									
Sites 229 & 248	0.00	39.00	120.00	120.00	120.80	153.20	0.00	0.00	0.0	553.0
Site 1981-NW	0.00	47.00	0.00	0.00	0.00	47.00	46.00	0.00	0.00	140.0
On-site Wetland Restoration	0.00	0.00	20.00	40.00	90.00	0.00	0.00	0.00	0.00	150.0
On-site Deepwater Habitat Development	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	755.50	0.0
Chippewa Forest Road Decommissioning	10.00	10.00	20.00	3.00	0.00	35.00	10.00	0.00	0.00	88.0
Tribal Land Wetland Restorations	0.00	25.00	0.00	0.00	0.00	15.00	10.00	0.00	0.00	50.0
Project Total	10.0	121.0	160.0	163.0	210.8	250.2	66.0	0.0	755.5	981
In-Kind Replacement Difference[1]	-0.5	11.4	66.4	97.2	4.6	18.7	35.1	-1.2	439.8	232

[1] Positive values represent more than 1:1 replacement of that wetland type, negative values represent less than 1:1 replacement of that type.



Legend

- Watershed Boundaries
- Public Land Survey
- Mitigation Site 1981-NW
- Roads
- MnDNR Ditches

Feet

2,000 0 2,000

Figure 1

LOCATION MAP
MITIGATION SITE 1981-NW
Aitkin County
Minnesota Steel Industries

Barr Foster; Date: 1/9/2006 10:03:16 AM; File: I:\Initiatives\Wetland_Mitigation\Maps\Godward_Aitkin.mxd User: mjl

Legend

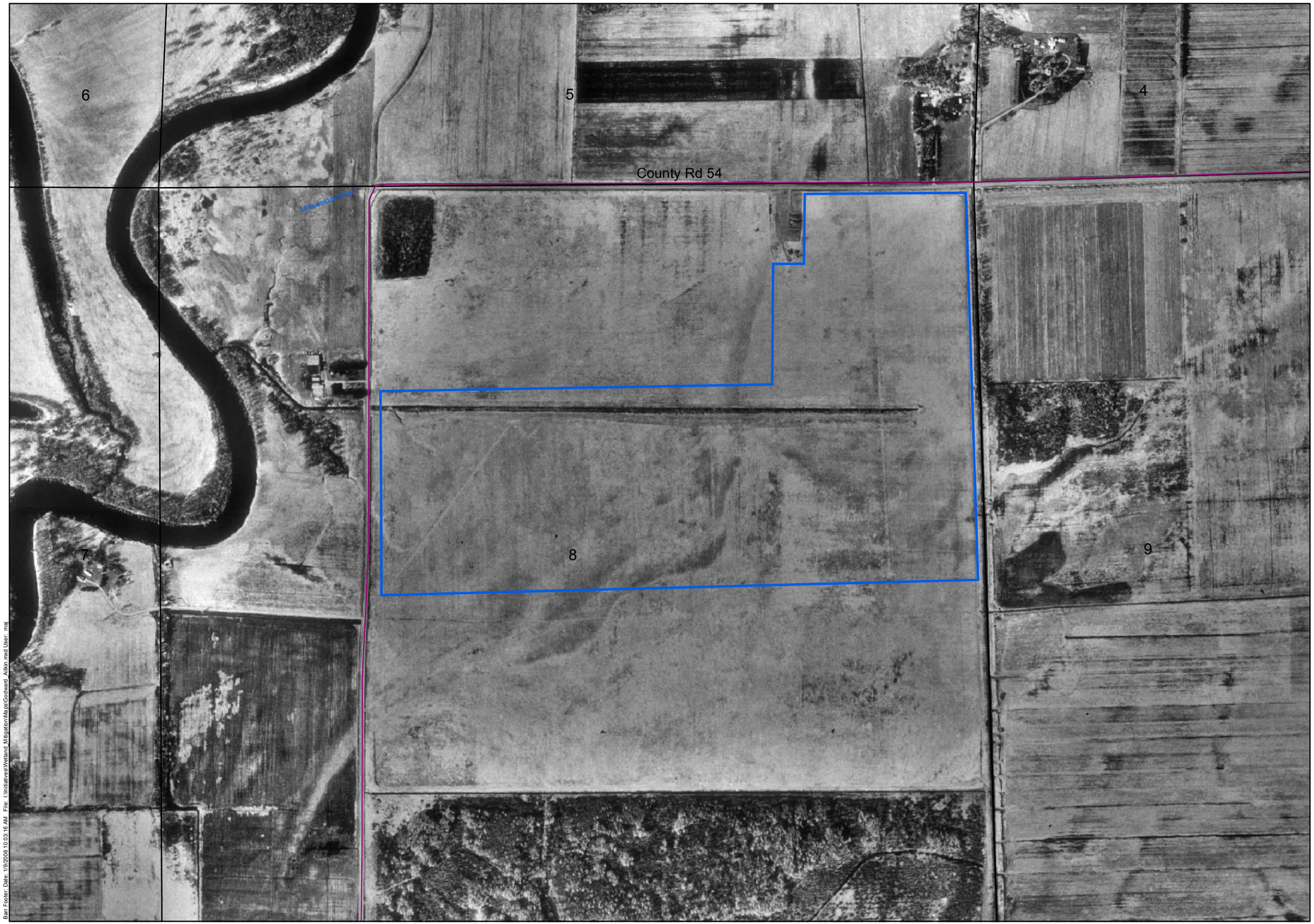
- Public Land Survey
- Mitigation Site 1981-NW
- Roads

Feet

400 0 400

Figure 2

POTENTIAL WETLAND
MITIGATION SITE 1981-NW
140 acres
Aitkin County
Minnesota Steel Industries



Legend

- Public Land Survey
- Mitigation Site 1981-NW
- Roads

N

Feet

600 0 600

Figure 3

POTENTIAL WETLAND
MITIGATION SITE 1981-NW
1991 Aerial Photograph
Aitkin County
Minnesota Steel Industries