

June 9, 2011

VIA HAND DELIVERY

Mr. Darrell Nitschke
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

RECEIVED

JUN 09 2011

PUBLIC SERVICE COMMISSION

**RE: Minnkota Power Cooperative, Inc.
345 kV Transmission Line – Center
to Grand Forks – Siting Application
Case No. PU-09-670**

Dear Mr. Nitschke:

On February 18, 2011, Minnkota Power Cooperative, Inc. (“Minnkota”), filed an Application for a Certificate of Corridor Compatibility (“Application”) with the North Dakota Public Service Commission (“Commission”) for its Center to Grand Forks 345 kV Transmission Line Project (“Project”). Since filing the Application, the Project Corridor has been modified slightly in two locations: (1) in Painted Woods Township, Burleigh County, North Dakota; and (2) near State Highway 3 in Wells County, North Dakota. The Project Corridor modifications were approved by the affected landowners, and no new landowners are affected by the modifications.

Therefore, enclosed please find an original and six (6) copies of the following documents:

1. A map depicting the Project Corridor as filed and the modified Project Corridor in Painted Woods Township (please note that this modification supersedes the Painted Woods Township modification submitted to the Commission on March 18, 2011);
2. A map depicting the Project Corridor as filed and the modified Project Corridor near State Highway 3 in Wells County;
3. An updated Corridor Description, incorporating the two Project Corridor modifications (pages 4-1 to 4-2 of the Application);
4. Updated Application Figures, reflecting the two Project Corridor modifications (Figures 1 through 12 in the Application); and
5. An Affidavit of Service.

Also enclosed is a CD containing the above-referenced documents in PDF format.

By copy of this letter, the auditors for each county in which any part of the proposed Project Corridor will be located are being served with a copy of the above-referenced documents.

Attorneys & Advisors
main 701.221.4020
fax 701.221.4040
www.fredlaw.com

Fredrikson & Byron, P.A.
200 North Th
Bismarck, No
58501-3879

56 **PU-09-670** Filed: 6/9/2011
Project corridor modification maps

Pages: 70

Mr. Darrell Nitschke
June 9, 2011
Page 2

Should you have any questions, please do not hesitate to contact me.

Sincerely,



MOLLIE M. SMITH

MMS/ms

Enclosures

cc: Mr. Leslie Korgel, McLean Co. Auditor (*w/ encl. – via Federal Express*)
Mr. Kevin Glatt, Burleigh Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Shirley A. Murray, Sheridan Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Janell Rudell, Wells Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Mary Ripplinger, Eddy Co. Auditor (*w/ encl. – via Federal Express*)
Mr. Roger Schlotman, Foster Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Cynthia Anton, Griggs Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Linda Leadbetter, Steele Co. Auditor (*w/ encl. – via Federal Express*)
Mr. W.J. Davidson, Nelson Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Debbie Nelson, Grand Forks Co. Auditor (*w/ encl. – via Federal Express*)
Ms. Barbara Fleming, Oliver Co. Auditor (*w/ encl. – via Federal Express*)
Mr. Gerad Paul (*w/o encl. – via e-mail*)
Mr. Mike Hennes (*w/o encl. – via e-mail*)
Mr. John Graves (*w/o encl. – via e-mail*)
Mr. Wally Lang (*w/o encl. – via e-mail*)
Mr. Brian Hunker (*w/o encl. – via e-mail*)

Shirley A. Murray
Sheridan Co. Auditor
215 2nd St. E., Floor 2
P.O. Box 439
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Janell Rudell
Wells Co. Auditor
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Fessenden, ND 58438-0037

Mary Ripplinger
Eddy Co. Auditor
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Rockford, ND 58356

Roger Schlotman
Foster Co. Auditor
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P.O. Box 104
Carrington, ND 58421

Cynthia Anton
Griggs Co. Auditor
808 Rollin Ave. SW
P.O. Box 511
Cooperstown, ND 58425

Linda Leadbetter
Steele Co. Auditor
Steele Co. Courthouse
201 Washington Ave. W.
Finley, ND 58230

W.J. Davidson
Nelson Co. Auditor
210 B Ave. W., Suite 201
Lakota, ND 58344-7410

Debbie Nelson
Grand Forks Co. Auditor
151 S. 4th St., Suite 101
Grand Forks, ND 58201

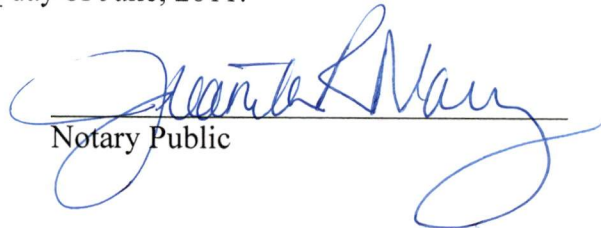
Barbara Fleming
Oliver County Auditor
115 West Main
Center, ND 58530

and depositing the same, with postage prepaid, with Federal Express at Minneapolis, Minnesota.



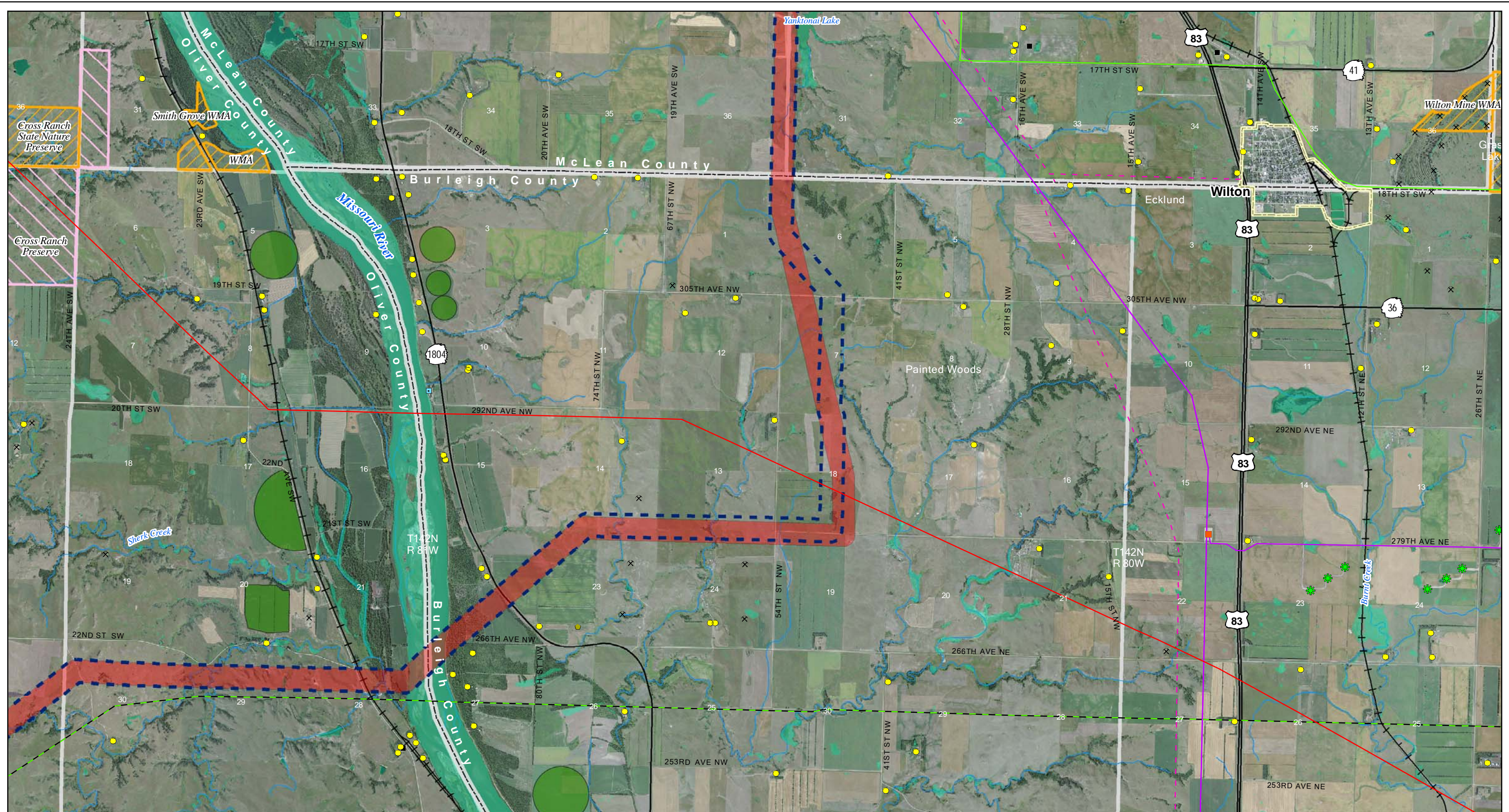
Subscribed and sworn to before me this 9th day of June, 2011.



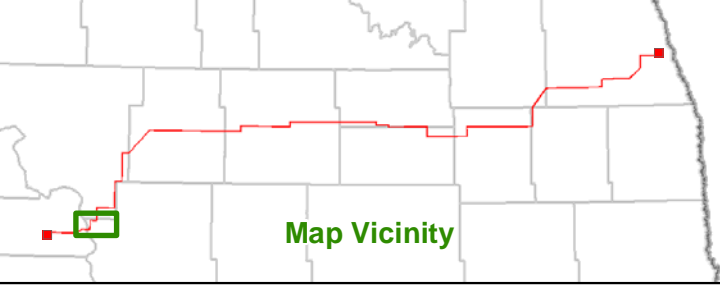


Notary Public

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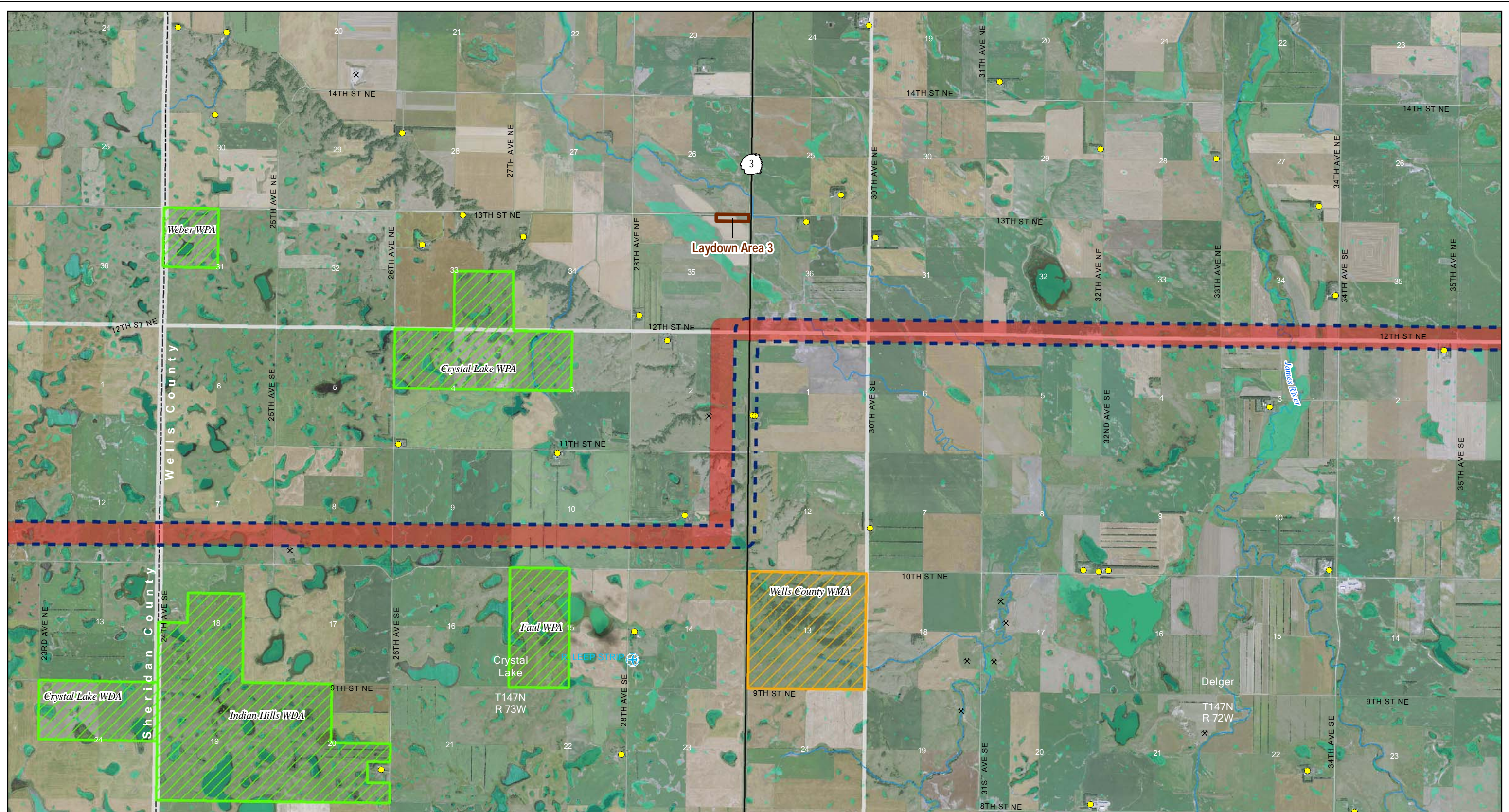


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|---|-----------------------------|--------------------|------------------------------------|-----------------------------|
| Project Corridor (filed Feb 18, 2011) | Existing Transmission Lines | Home | Wind Turbine | Irrigated Land |
| Project Corridor (updated June 9, 2011) | 400-kV DC | Business | State Park, Recreation Area or WMA | Incorporated Area |
| Laydown Area | 345-kV AC | School | USFWS WPA or WDA | Public Airport |
| | 250-kV DC | Recreation | USFWS NWR | Private Airport |
| | 230-kV AC | Gravel Pit or Mine | USBOR Land | USGS River, Stream or Canal |
| | 115-kV or less AC | Dump or Landfill | TNC Preserve | NWI Wetland |
| | Gas or Oil Pipeline | | | |

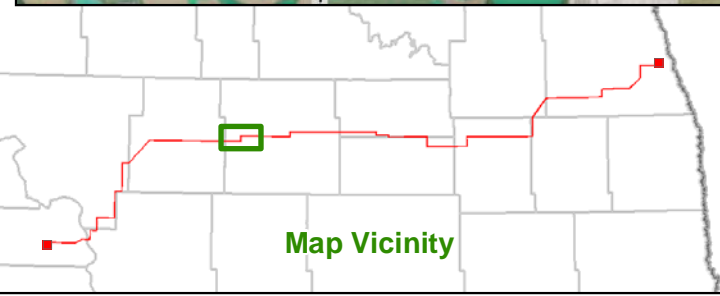
**Modified Project Corridor in Painted Woods Township
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.**

0 0.5 1 Miles
Scale 1:50,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



Map Document: (\\mapserver\gis\proj\minnkota\110900\map_docs\FSC\Corridor\Map\Change\Map\CGF_CCC_11x17L_Supplemental\ReferenceMap2.mxd) 7/7/2011 - 10:20 PM



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| Project Corridor (filed Feb 18, 2011) | Existing Transmission Lines | Substation | Wind Turbine | Irrigated Land |
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| | 230-kV AC | Recreation | USBOR Land | USGS River, Stream or Canal |
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| | Gas or Oil Pipeline | Dump or Landfill | | |

**Modified Project Corridor in Wells County
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.**

0 0.5 1 Miles
Scale 1:50,000

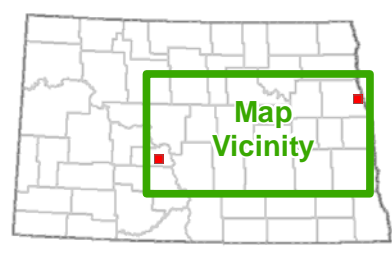
Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.

Figures – Updated June 9, 2011

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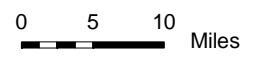


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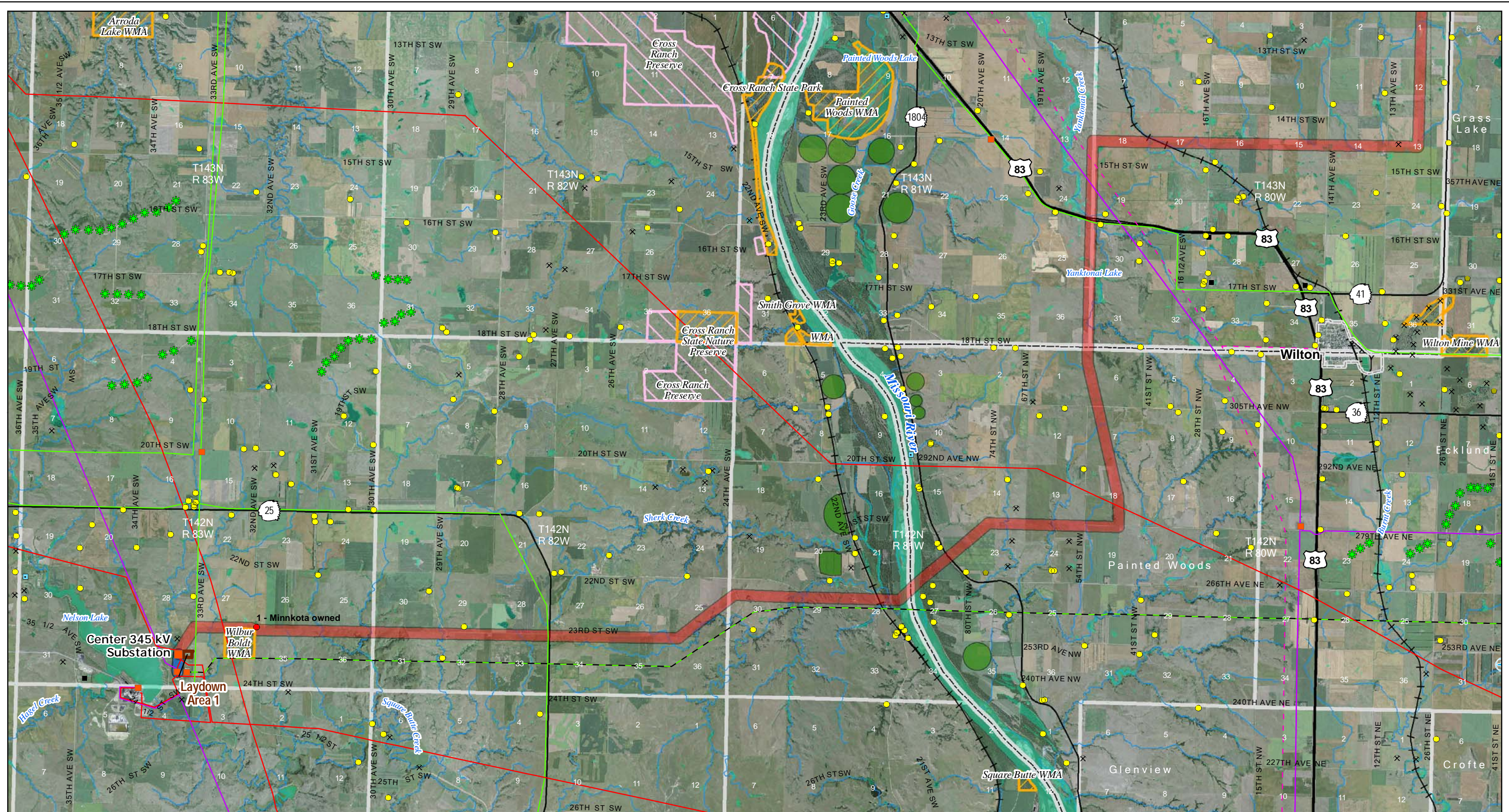


- Project Corridor (updated June 9, 2011)
- Project Substation

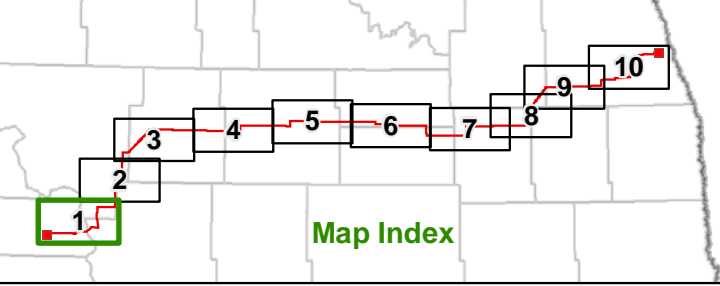
Figure 1
Project Vicinity
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

Scale 1:850,000



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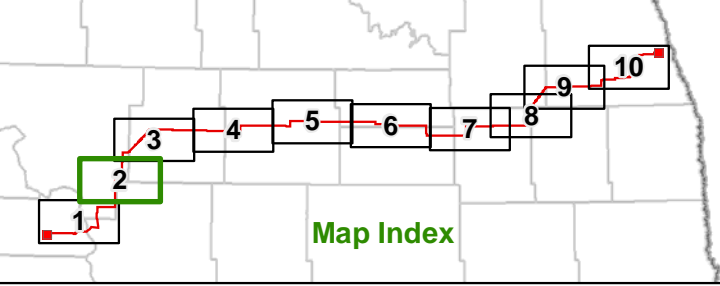
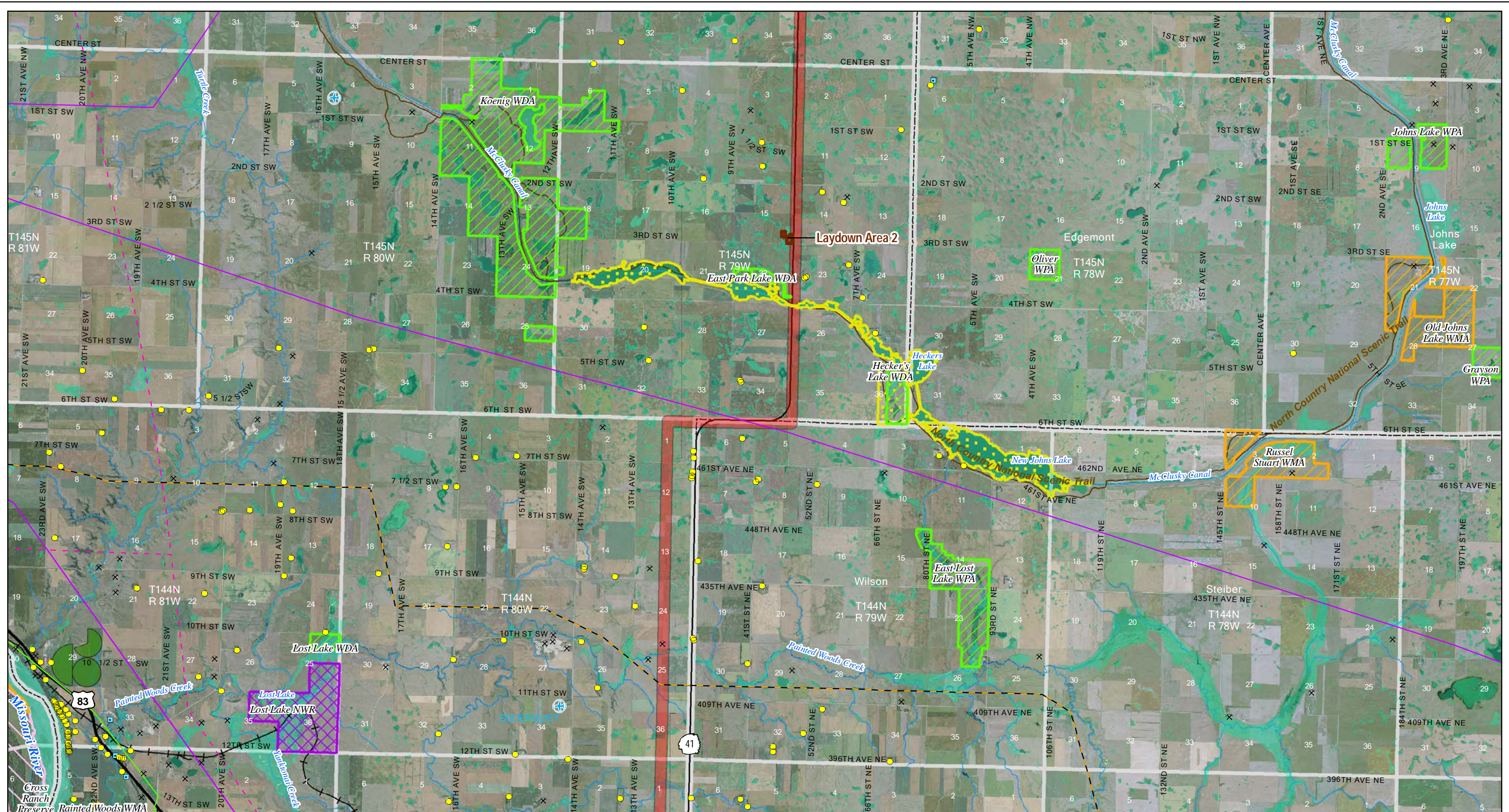


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|---|--|----------------------|------------------------------------|-----------------------------|
| Project Corridor (updated June 9, 2011) | Existing Transmission Lines
400-kV DC | Home within Corridor | Wind Turbine | Irrigated Land |
| 230-kV Tie Line Corridor | 345-kV AC | Home | State Park, Recreation Area or WMA | Incorporated Area |
| Substation | 250-kV DC | School | USFWS WPA or WDA | Public Airport |
| Laydown Area | 230-kV AC | Business | USFWS NWR | Private Airport |
| | 115-kV or less AC | Recreation | USBOR Land | USGS River, Stream or Canal |
| | Gas or Oil Pipeline | Gravel Pit or Mine | TNC Preserve | NWI Wetland |
| | | Dump or Landfill | | |

Figure 2: Page 1 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



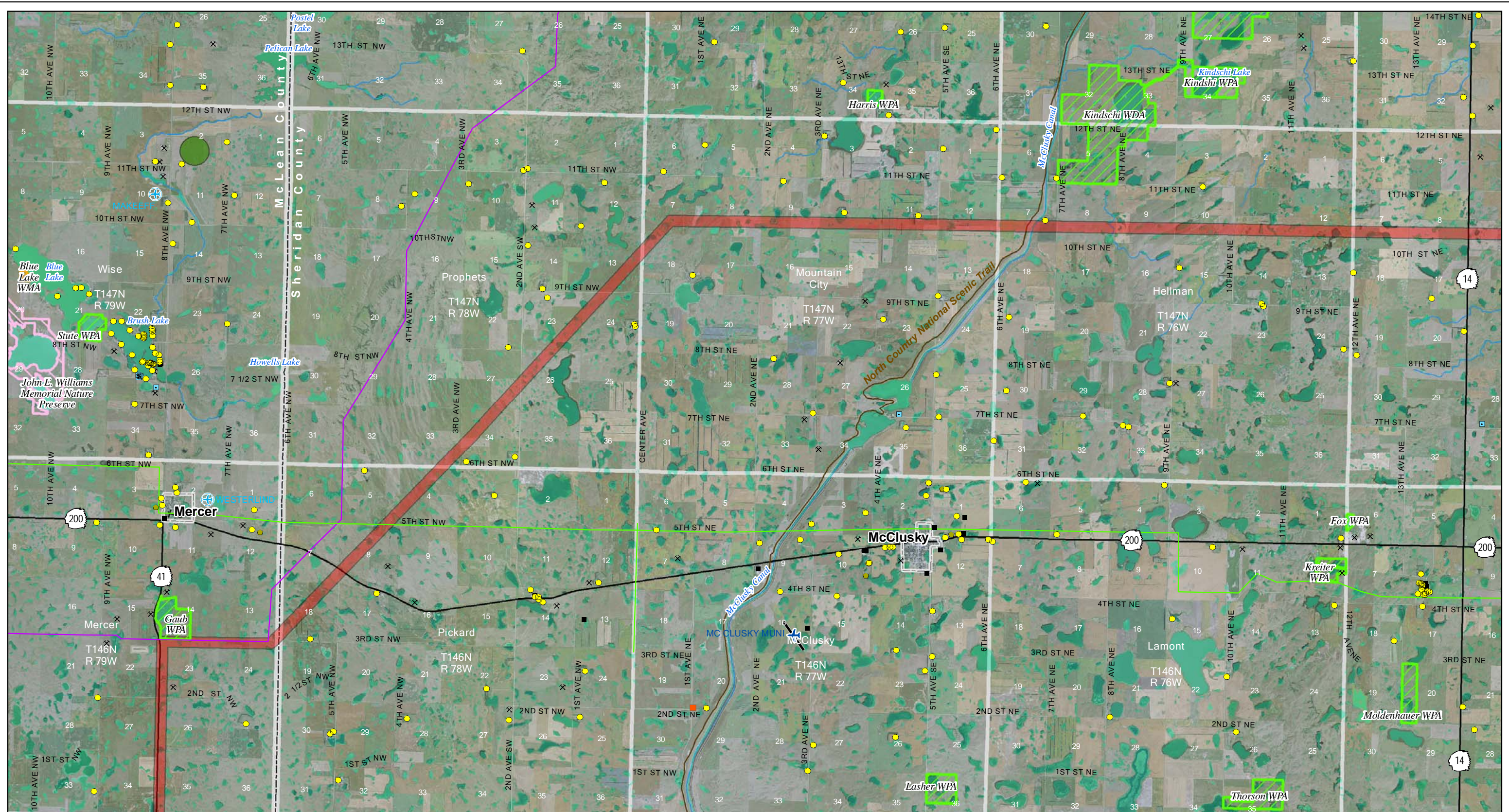
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| Project Corridor (updated June 9, 2011) | Existing Transmission Lines | Home within Corridor | Wind Turbine | Irrigated Land |
| 230-kV Tie Line Corridor | 400-kV DC | Home | State Park, Recreation Area or WMA | Incorporated Area |
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| | Gas or Oil Pipeline | Dump or Landfill | | |

Figure 2: Page 2 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



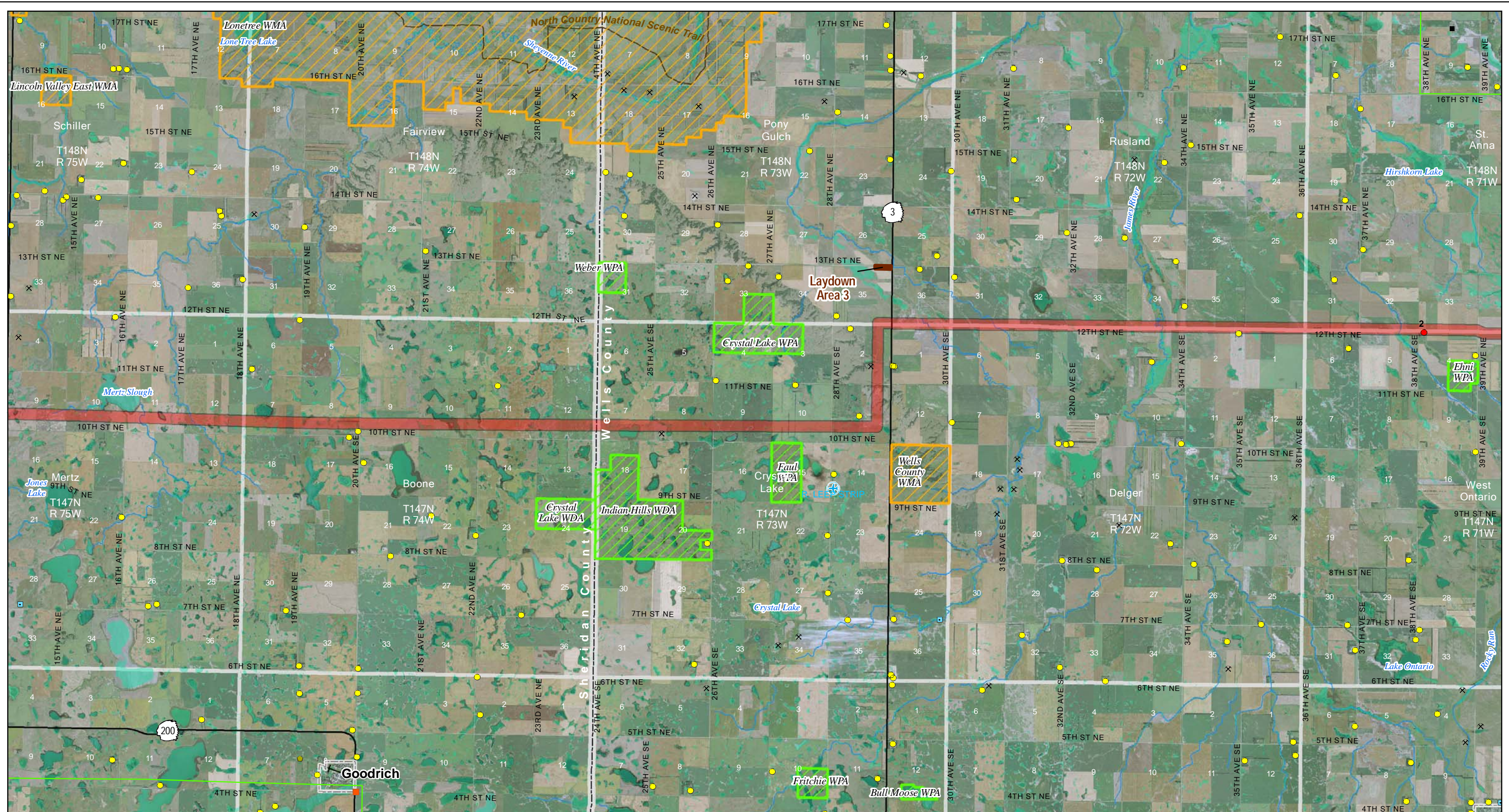
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| | Gas or Oil Pipeline | Dump or Landfill | | |

Figure 2: Page 3 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

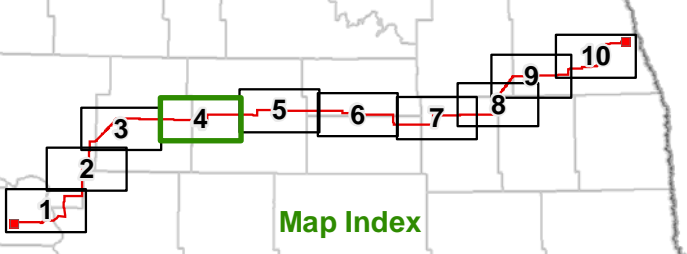
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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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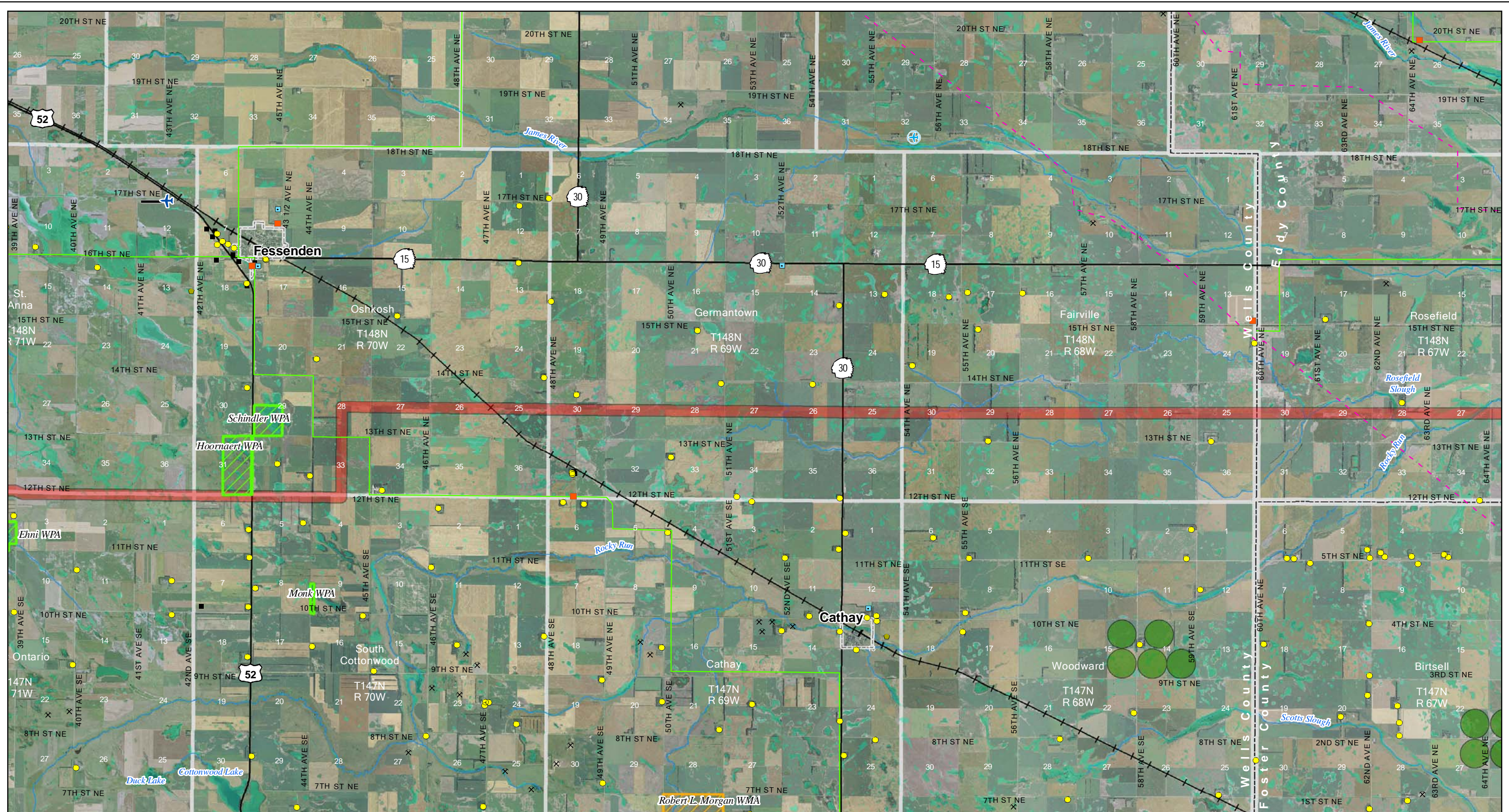


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| | | Dump or Landfill | | |

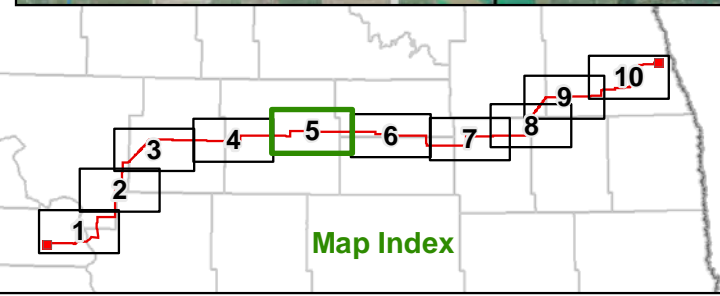
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 Corridor Siting Criteria
 Center to Grand Forks Project
 Minncota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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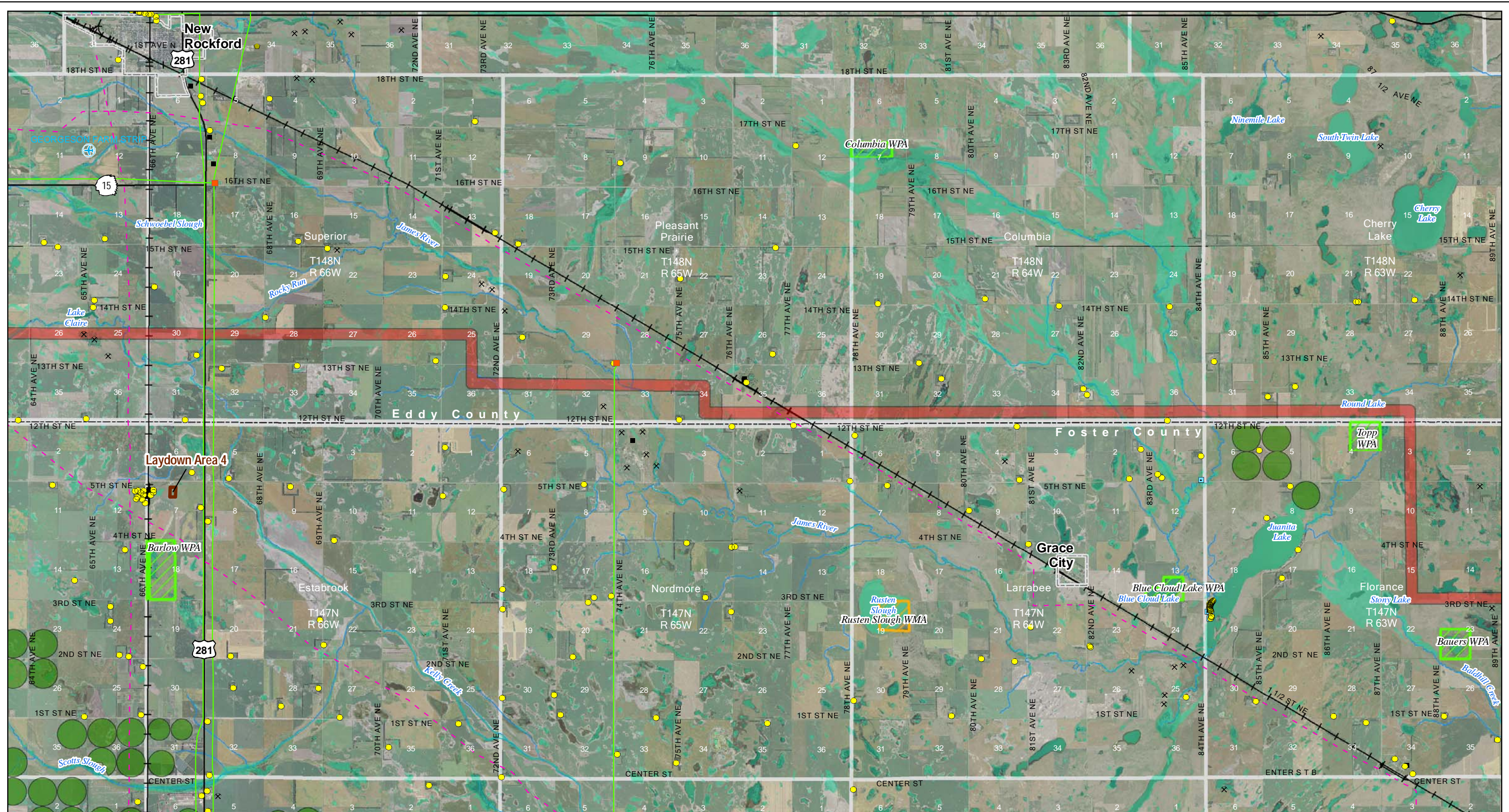


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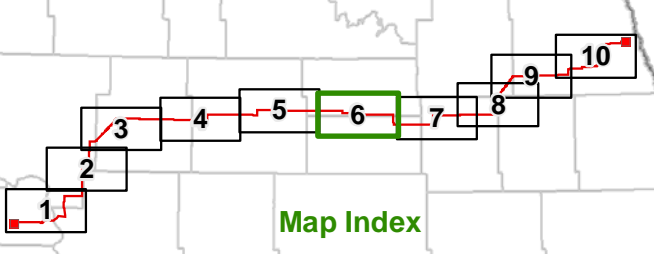
Figure 2: Page 5 of 10
Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:100,000

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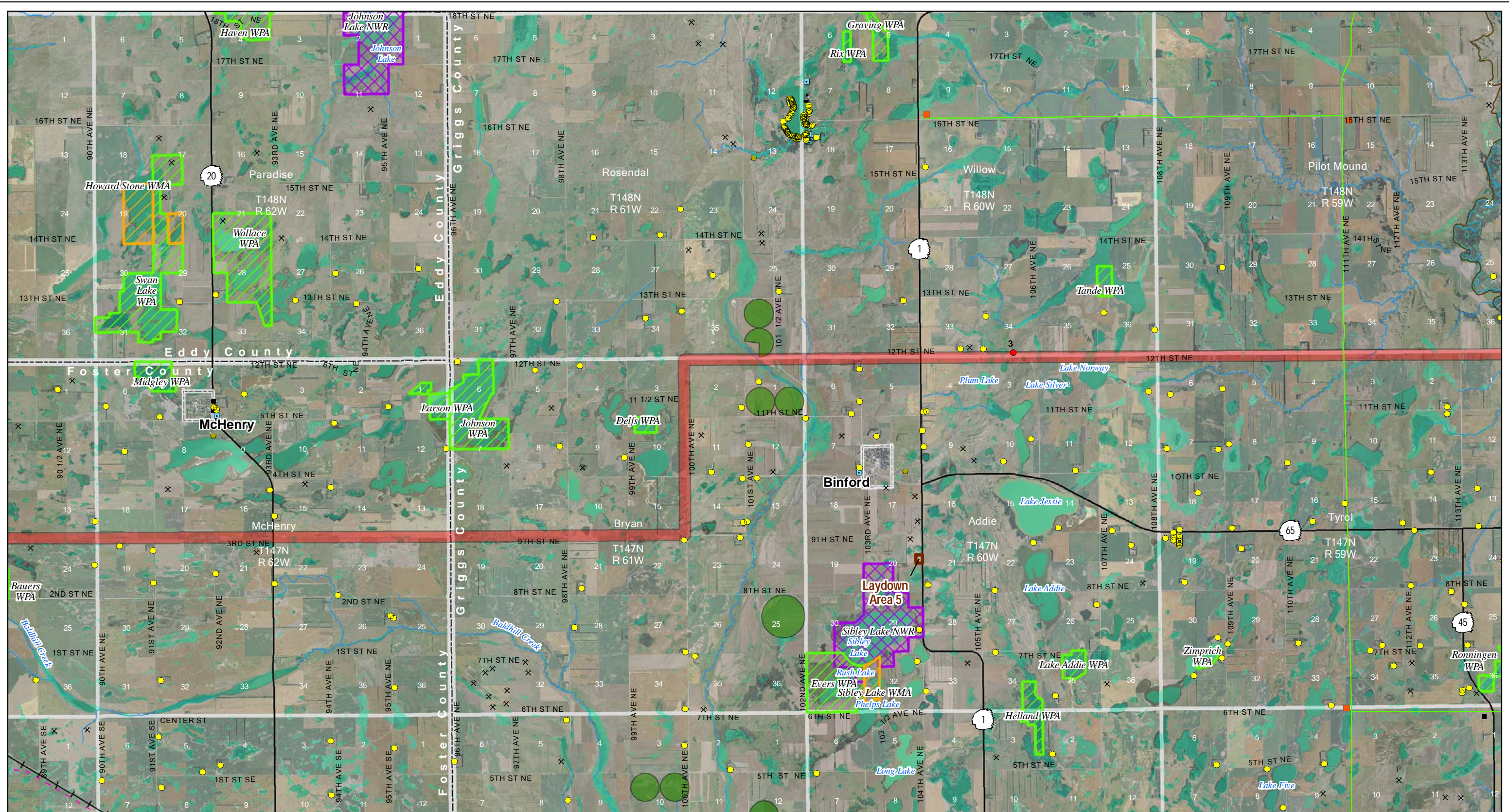


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| | Gas or Oil Pipeline | Dump or Landfill | | |

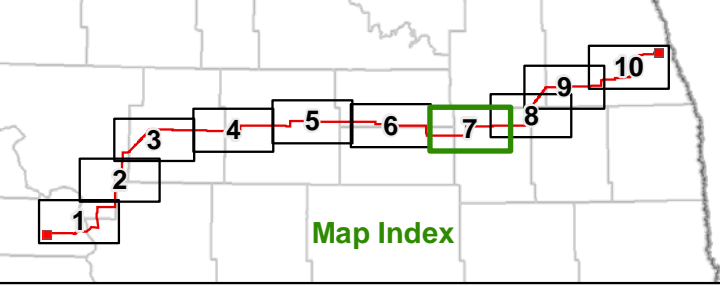
Figure 2: Page 6 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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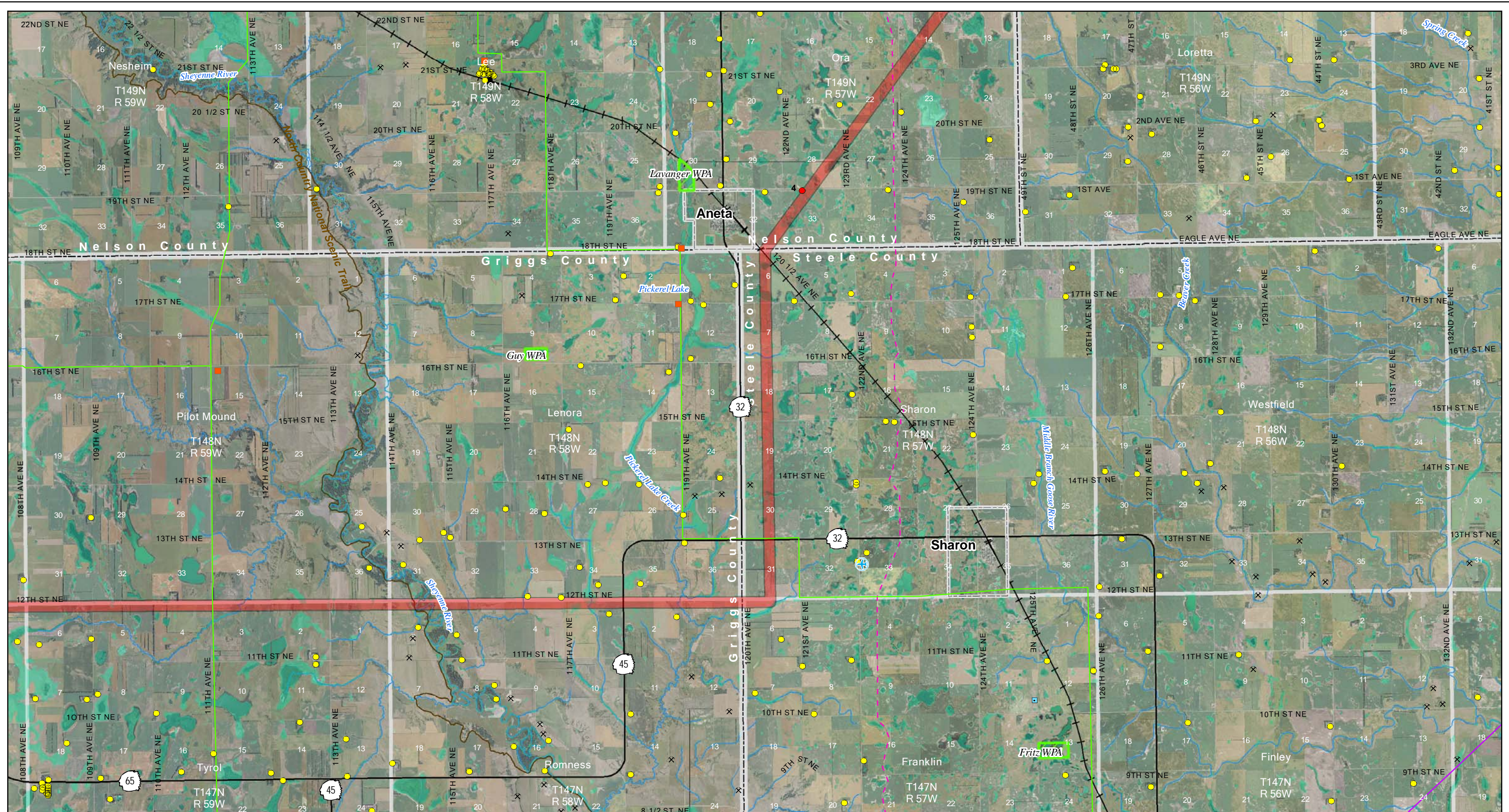
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| | | | Incorporated Area |
| | | | Public Airport |
| | | | Private Airport |
| | | | USGS River, Stream or Canal |
| | | | NWI Wetland |

Figure 2: Page 7 of 10
Corridor Siting Criteria
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

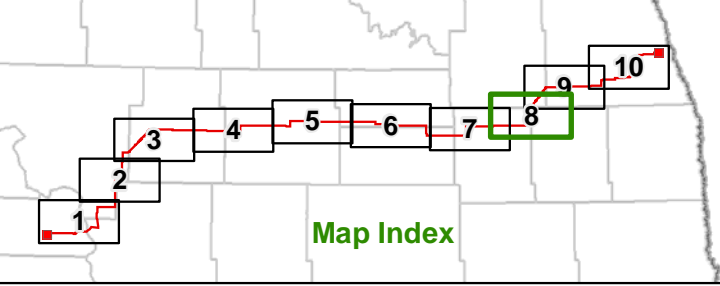
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0 1 2 Miles

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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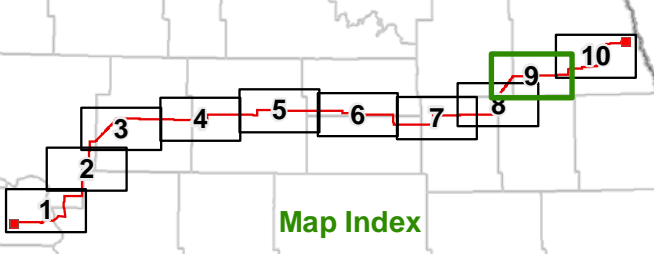
Figure 2: Page 8 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minncota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

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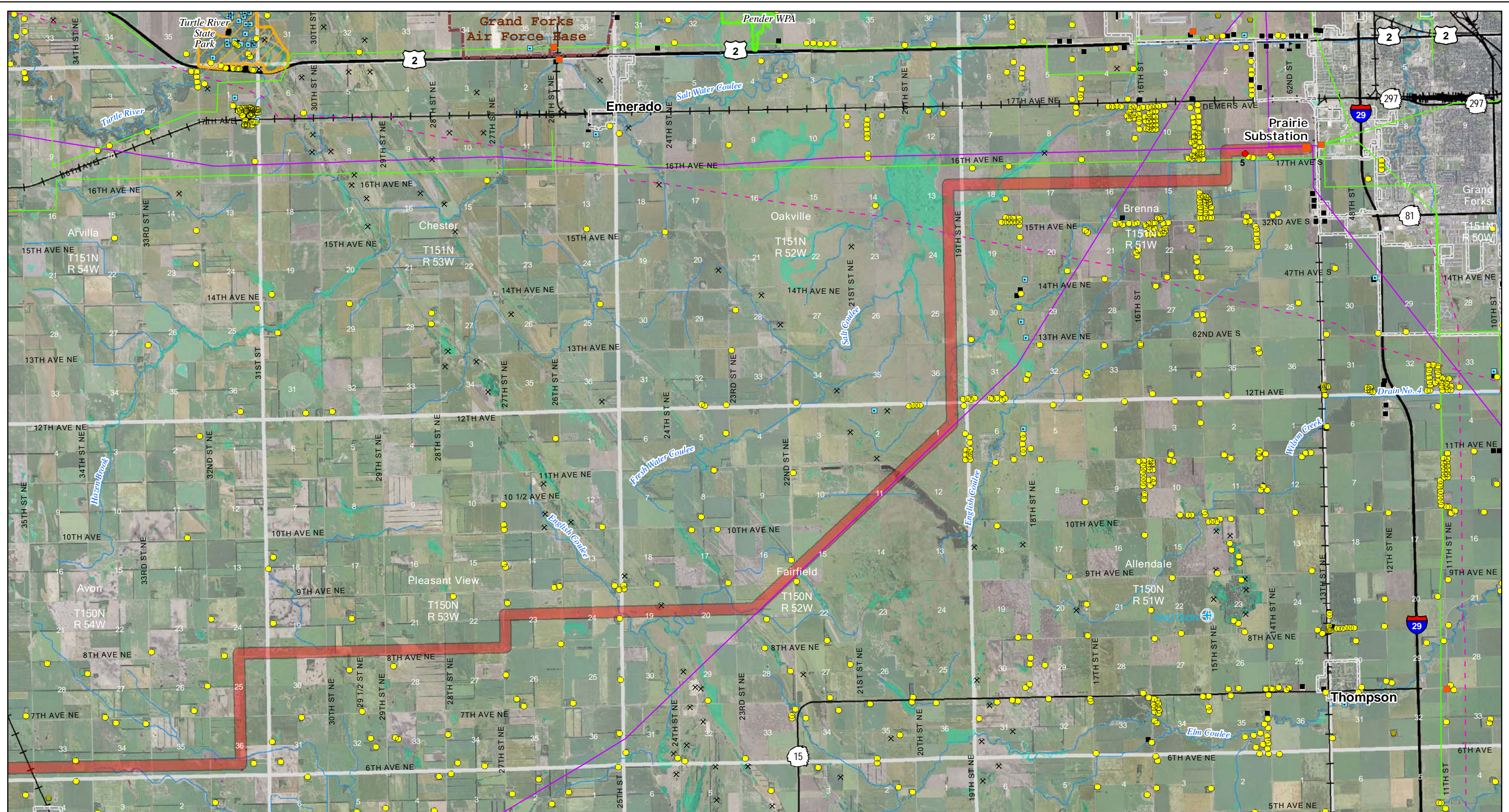


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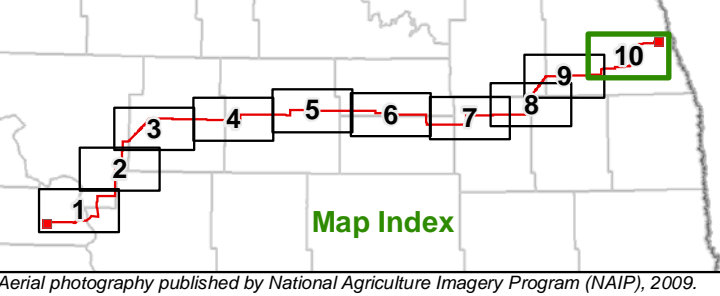
Figure 2: Page 9 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minncota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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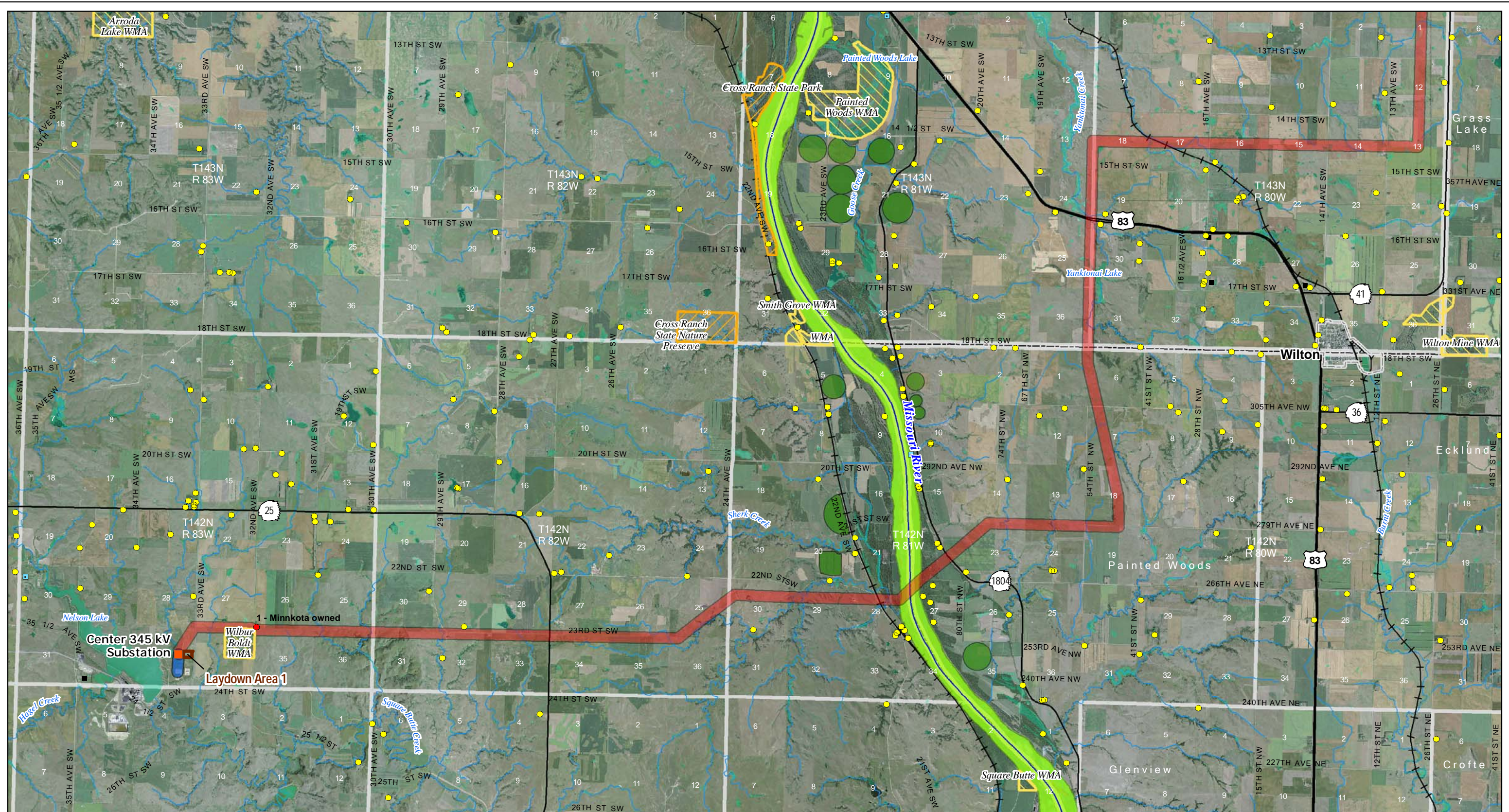


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Figure 2: Page 10 of 10
 Corridor Siting Criteria
 Center to Grand Forks Project
 Minncota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



Sensitive location information has been redacted from this Figure.

Project Areas

- Project Corridor (updated June 9, 2011)
- 230-kV Tie Line Corridor
- Project Substation
- Laydown Area

Exclusion Areas

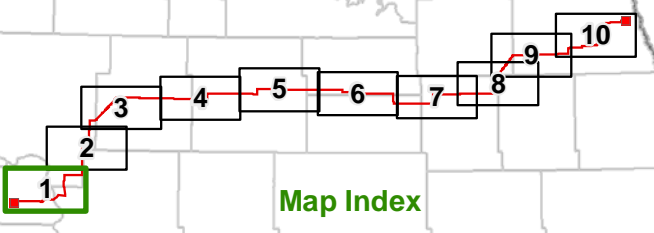
- State Park, Recreation Area or Nature Preserve
- Piping Plover Critical Habitat

Avoidance Areas

- Home within Corridor
- Home
- School
- Business
- Recreation

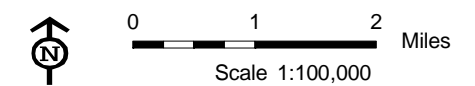
- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

- Chain of Lake Recreation Area
- USBR McClusky Canal - fenceline
- North Country National Scenic Trail

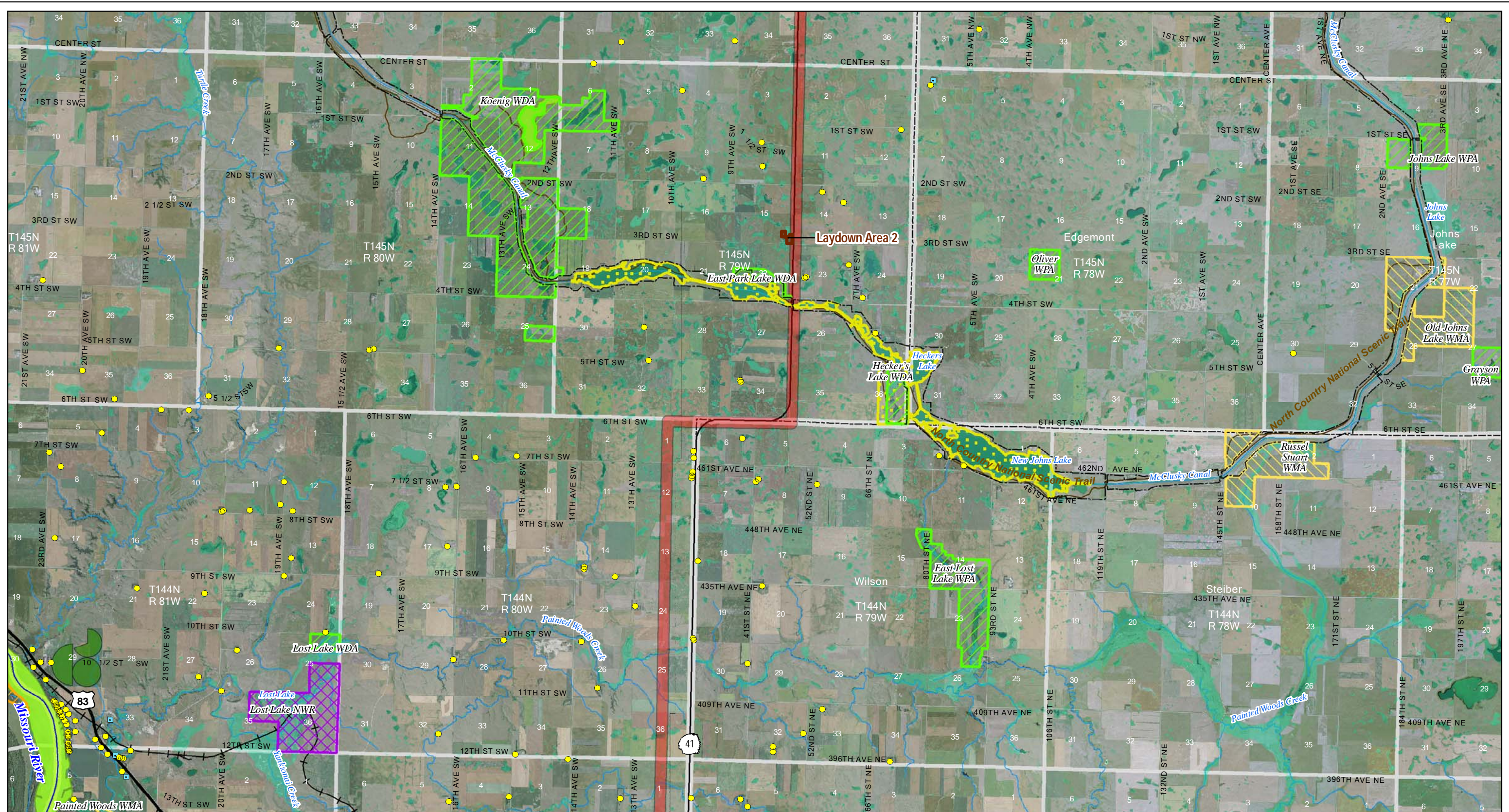


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Figure 3: Page 1 of 10
Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.







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Sensitive location information has been redacted from this Figure.






Project Areas

-  Project Corridor (updated June 9, 2011)
-  230-kV Tie Line Corridor
-  Project Substation
-  Laydown Area




Exclusion Areas

-  State Park, Recreation Area or Nature Preserve
-  Piping Plover Critical Habitat

Avoidance Areas

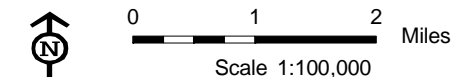
-  Home within Corridor
-  Home
-  School
-  Business
-  Recreation

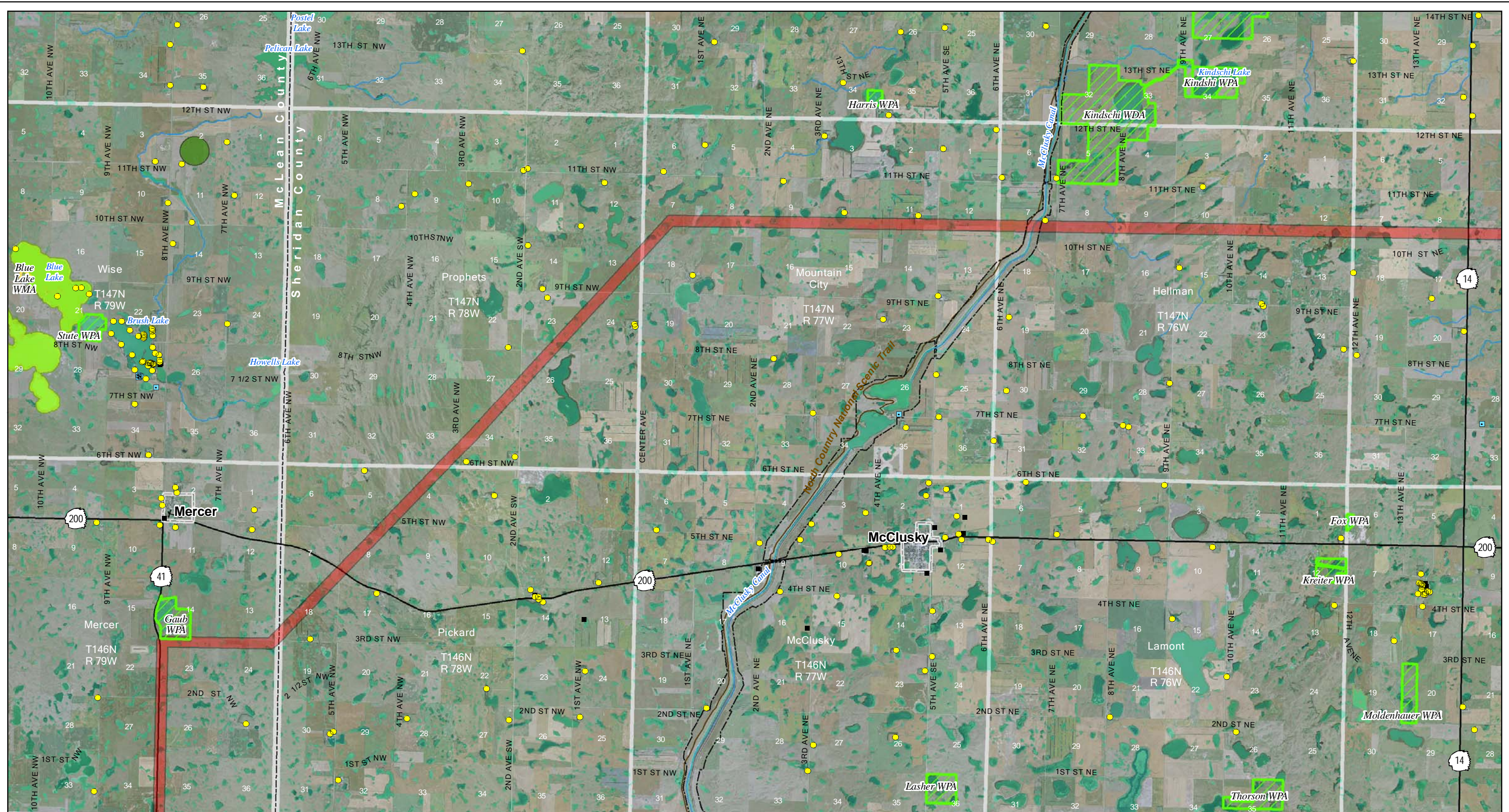
-  Irrigated Land
-  USFWS NWR
-  USFWS WPA or WDA
-  State WMA

-  Chain of Lake Recreation Area
-  USBR McClusky Canal - fenceline
-  North Country National Scenic Trail

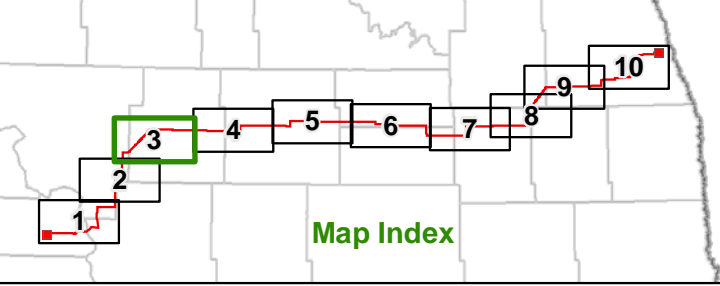
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Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.





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- Project Areas**
- Project Corridor (updated June 9, 2011)
 - 230-kV Tie Line Corridor
 - Project Substation
 - Laydown Area

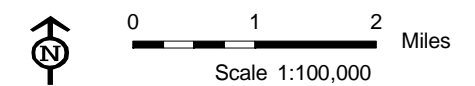
- Exclusion Areas**
- State Park, Recreation Area or Nature Preserve
 - Piping Plover Critical Habitat

- Avoidance Areas**
- Home within Corridor
 - Home
 - School
 - Business
 - Recreation

- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

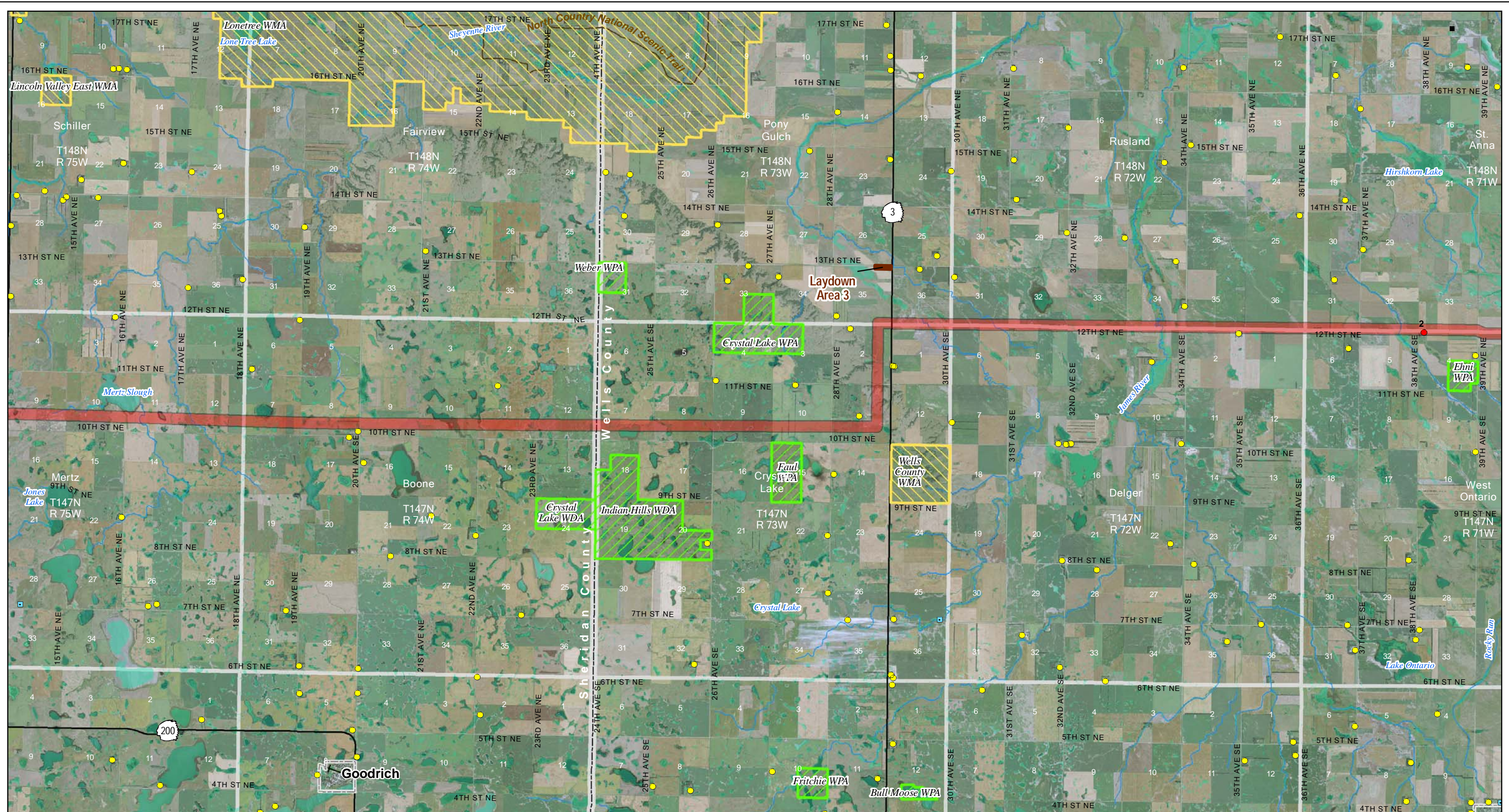
- Chain of Lake Recreation Area
- USBR McClusky Canal - fence line
- North Country National Scenic Trail

Figure 3: Page 3 of 10
Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

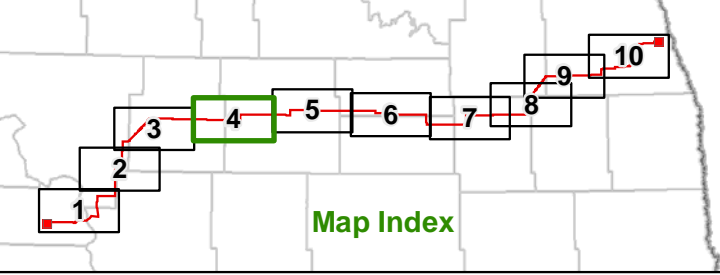


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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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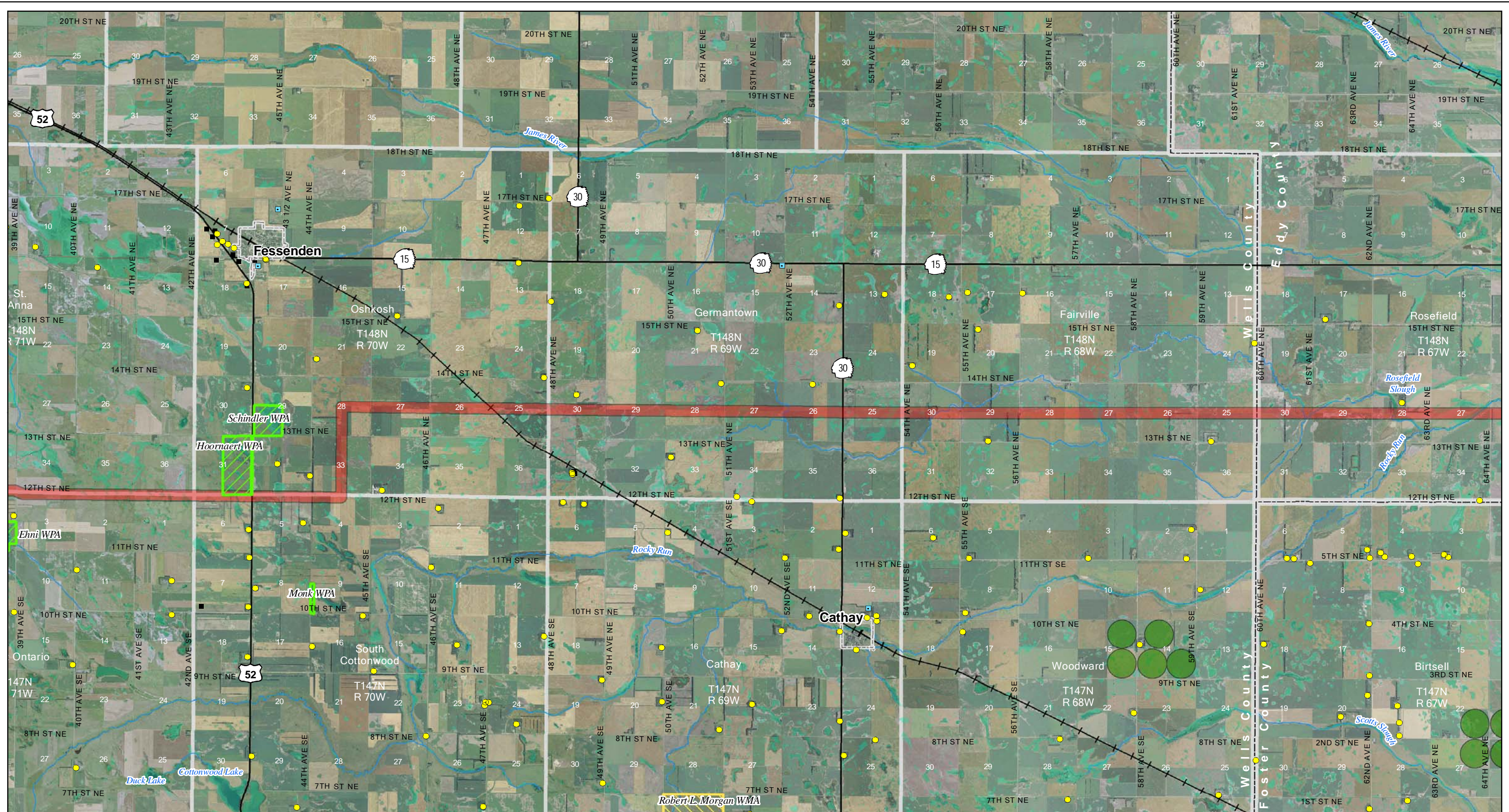
- | | | | |
|---|--|------------------------|--------------------------------------|
| Project Areas | Exclusion Areas | Avoidance Areas | Chain of Lake Recreation Area |
| Project Corridor (updated June 9, 2011) | State Park, Recreation Area or Nature Preserve | Home within Corridor | Chain of Lake Recreation Area |
| 230-kV Tie Line Corridor | Piping Plover Critical Habitat | Home | USBR McClusky Canal - fenceline |
| Project Substation | | School | North Country National Scenic Trail |
| Laydown Area | | Business | |
| | | Recreation | |
| | | Irrigated Land | |
| | | USFWS NWR | |
| | | USFWS WPA or WDA | |
| | | State WMA | |

Figure 3: Page 4 of 10
 Corridor Exclusion and Avoidance Areas
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

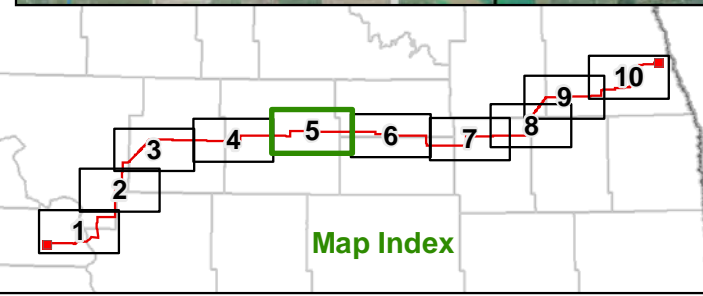
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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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- Project Areas**
- Project Corridor (updated June 9, 2011)
 - 230-kV Tie Line Corridor
 - Project Substation
 - Laydown Area

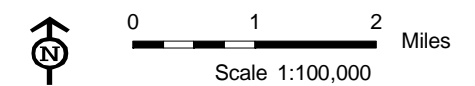
- Exclusion Areas**
- State Park, Recreation Area or Nature Preserve
 - Piping Plover Critical Habitat

- Avoidance Areas**
- Home within Corridor
 - Home
 - School
 - Business
 - Recreation

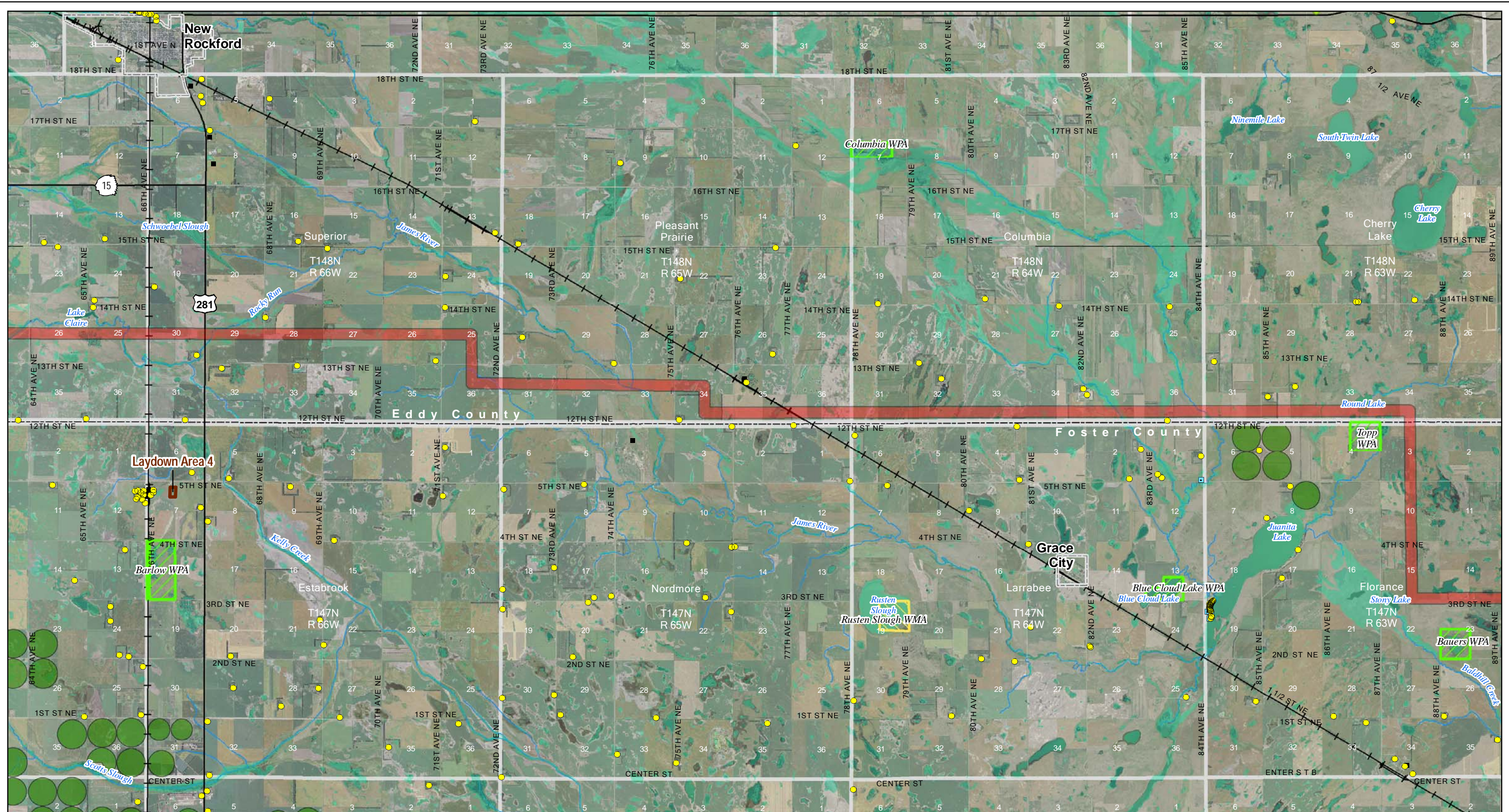
- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

- Chain of Lake Recreation Area
- USBR McClusky Canal - fenceline
- North Country National Scenic Trail

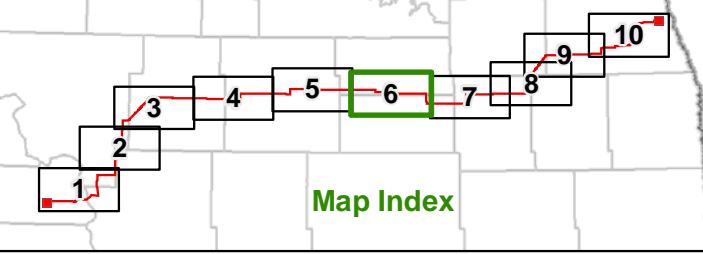
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Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



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- Project Areas**
- Project Corridor (updated June 9, 2011)
 - 230-kV Tie Line Corridor
 - Project Substation
 - Laydown Area

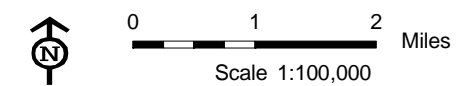
- Exclusion Areas**
- State Park, Recreation Area or Nature Preserve
 - Piping Plover Critical Habitat

- Avoidance Areas**
- Home within Corridor
 - Home
 - School
 - Business
 - Recreation

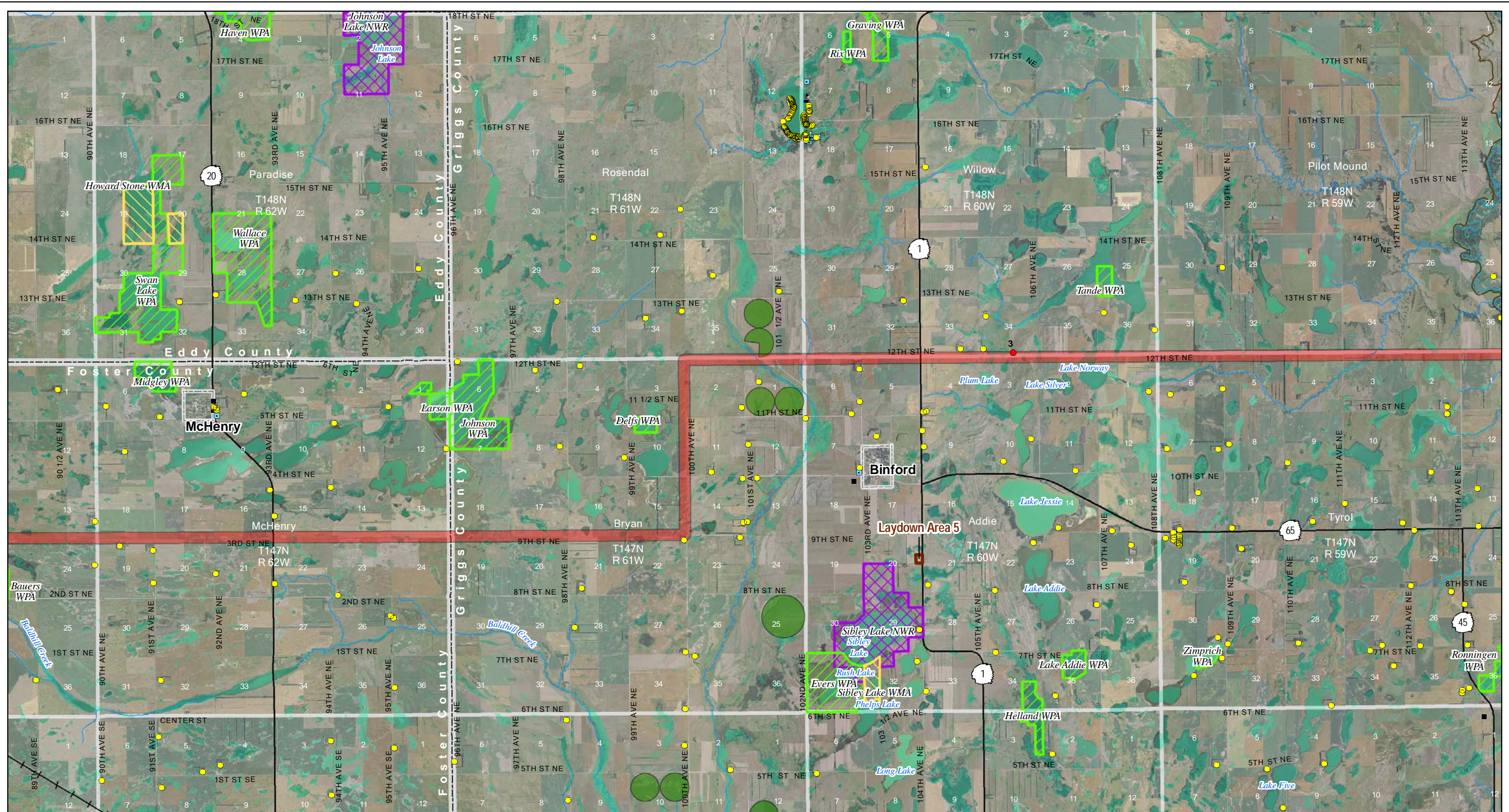
- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

- Chain of Lake Recreation Area
- USBR McClusky Canal - fence line
- North Country National Scenic Trail

Figure 3: Page 6 of 10
Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



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Project Areas

- Project Corridor (updated June 9, 2011)
- 230-kV Tie Line Corridor
- Project Substation
- Laydown Area

Exclusion Areas

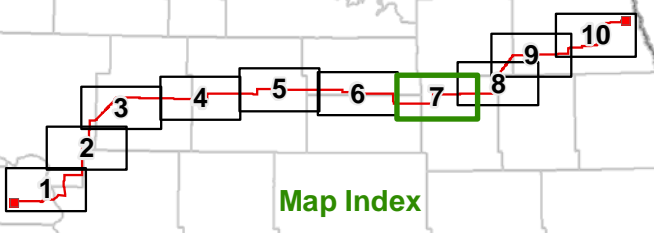
- State Park, Recreation Area or Nature Preserve
- Piping Plover Critical Habitat

Avoidance Areas

- Home within Corridor
- Home
- School
- Business
- Recreation

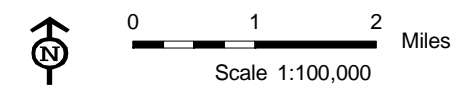
- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

- Chain of Lake Recreation Area
- USBR McClusky Canal - fenceline
- North Country National Scenic Trail



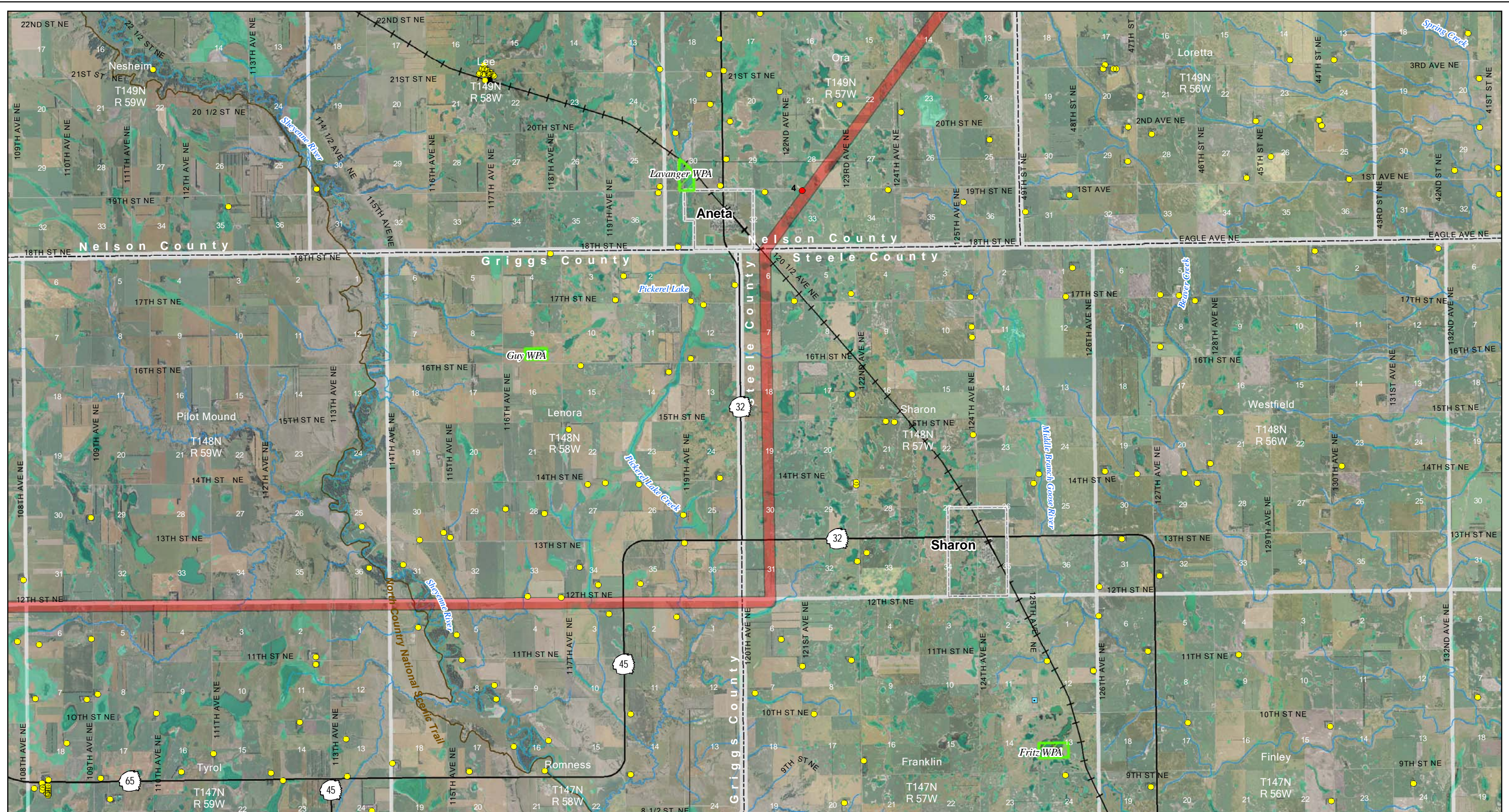
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Figure 3: Page 7 of 10
Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

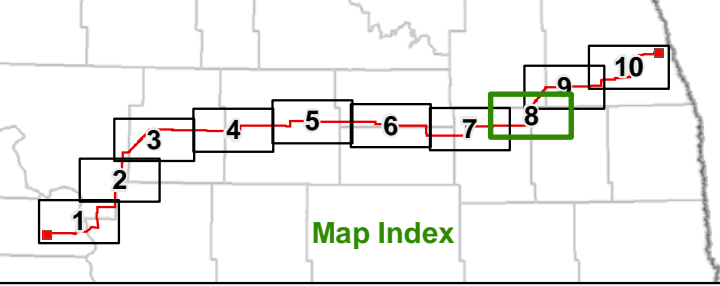


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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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- Project Areas**
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 - Project Substation
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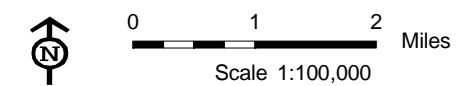
- Exclusion Areas**
- State Park, Recreation Area or Nature Preserve
 - Piping Plover Critical Habitat

- Avoidance Areas**
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- USFWS WPA or WDA
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Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



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- | | | | |
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| <p>Project Areas</p> <ul style="list-style-type: none"> Project Corridor (updated June 9, 2011) 230-kV Tie Line Corridor Project Substation Laydown Area | <p>Exclusion Areas</p> <ul style="list-style-type: none"> State Park, Recreation Area or Nature Preserve Piping Plover Critical Habitat | <p>Avoidance Areas</p> <ul style="list-style-type: none"> Home within Corridor Home School Business Recreation Irrigated Land USFS NWR USFS WPA or WDA State WMA | <ul style="list-style-type: none"> Chain of Lake Recreation Area USBR McClusky Canal - fenceline North Country National Scenic Trail |
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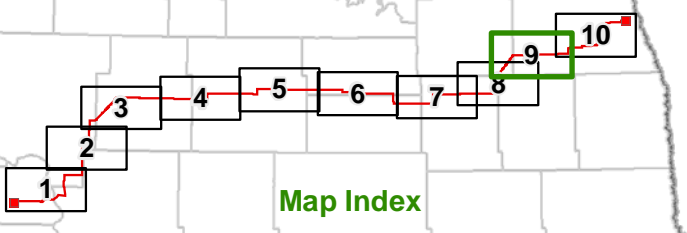


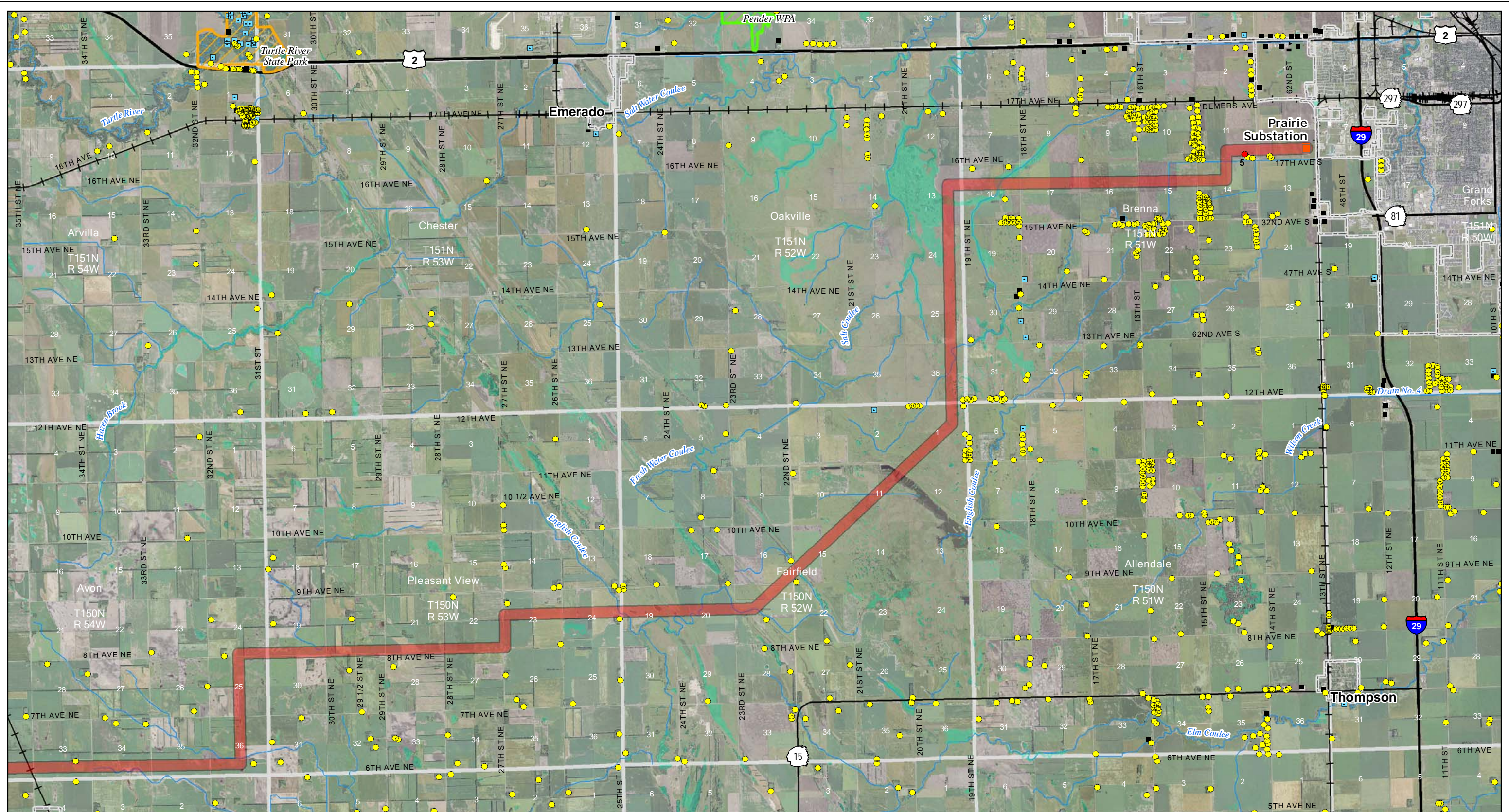
Figure 3: Page 9 of 10
 Corridor Exclusion and Avoidance Areas
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:100,000

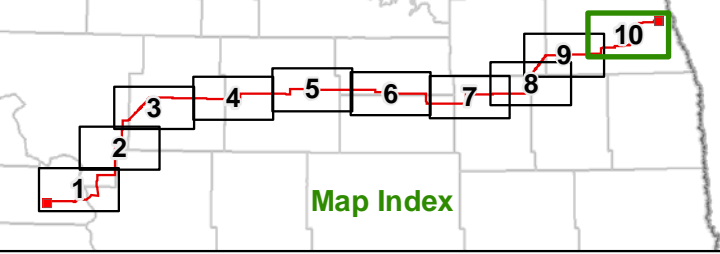
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Aerial photography published by National Agriculture Imagery Program (NAIP), 2009.



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- Project Areas**
- Project Corridor (updated June 9, 2011)
 - 230-kV Tie Line Corridor
 - Project Substation
 - Laydown Area

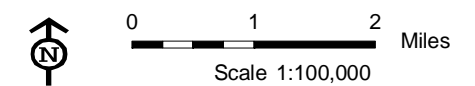
- Exclusion Areas**
- State Park, Recreation Area or Nature Preserve
 - Piping Plover Critical Habitat

- Avoidance Areas**
- Home within Corridor
 - Home
 - School
 - Business
 - Recreation

- Irrigated Land
- USFWS NWR
- USFWS WPA or WDA
- State WMA

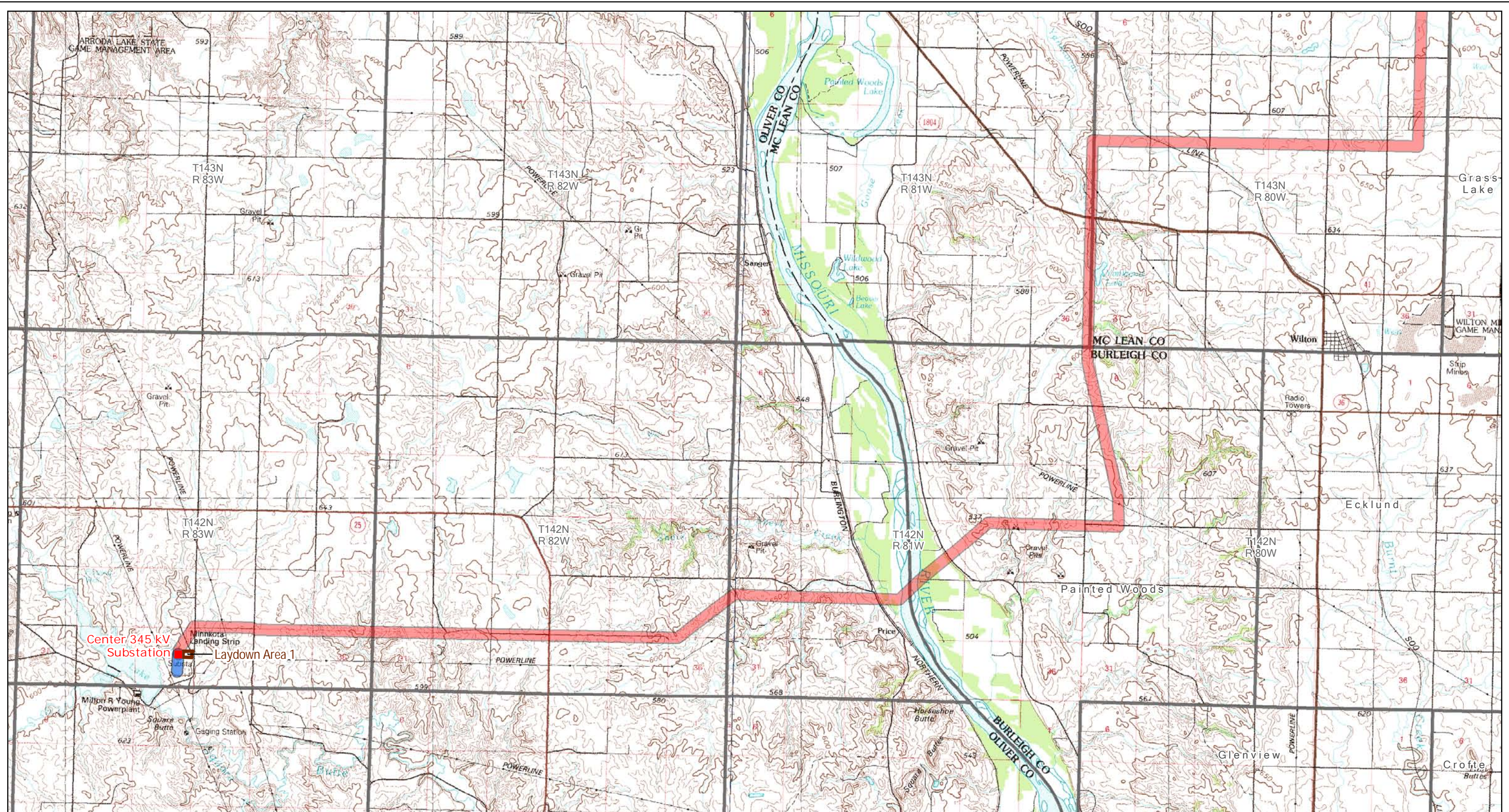
- Chain of Lake Recreation Area
- USBR McClusky Canal - fenceline
- North Country National Scenic Trail

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Corridor Exclusion and Avoidance Areas
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

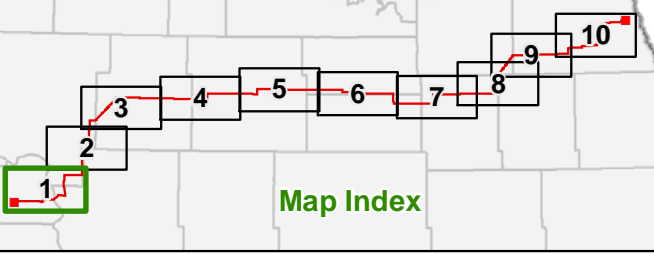


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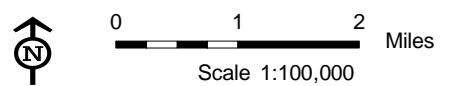


Center 345 kV Substation
Laydown Area 1

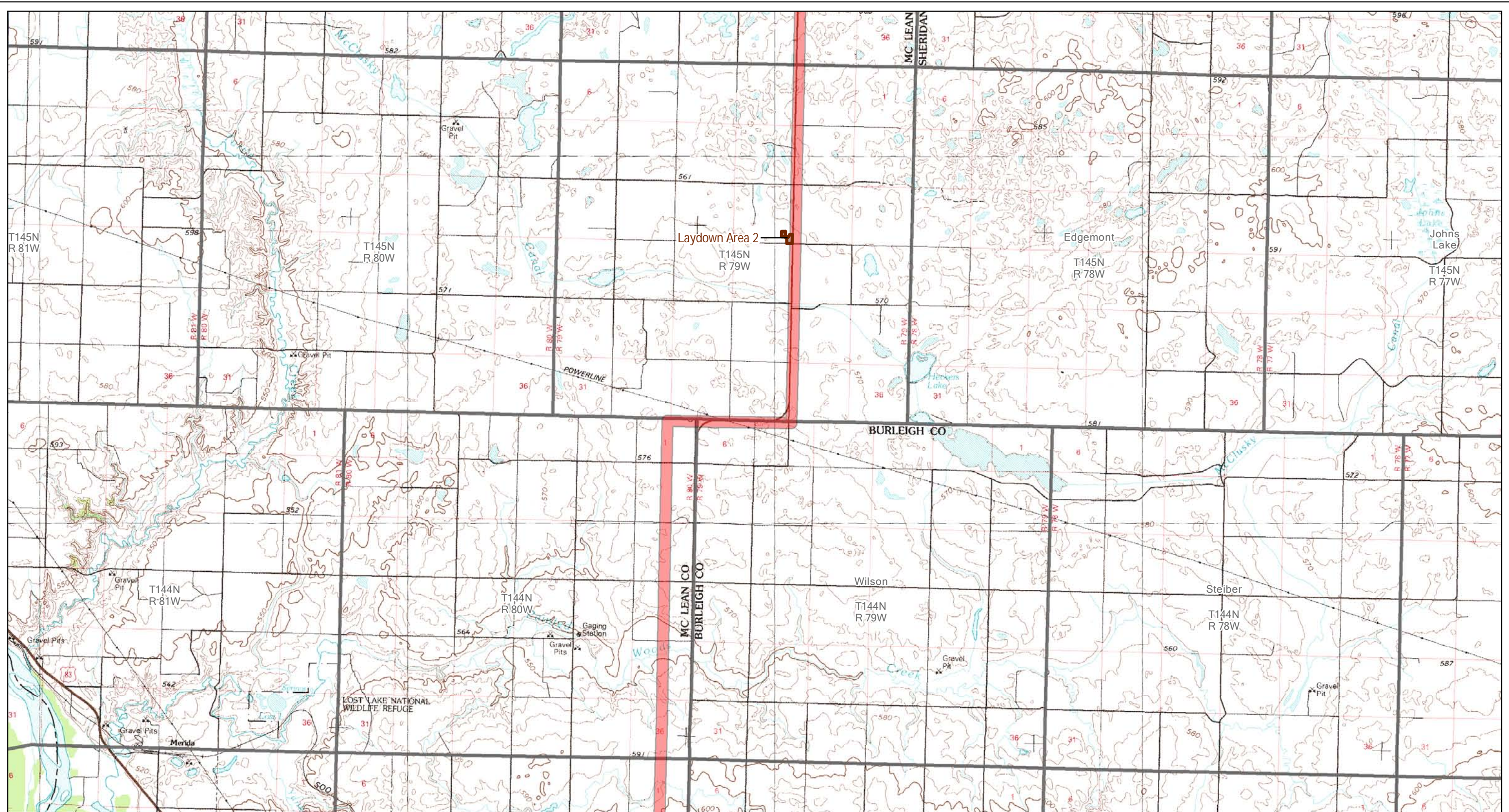


- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

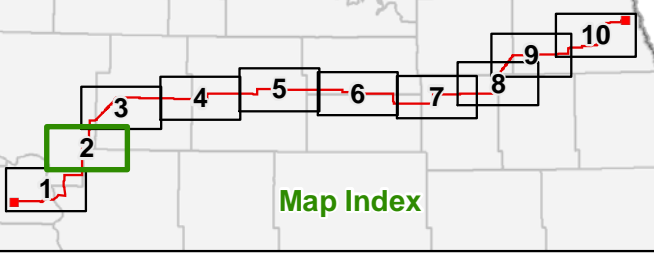
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USGS 1:100,000 Topographic Map
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



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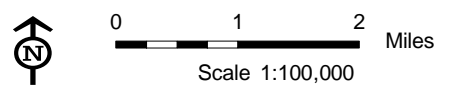


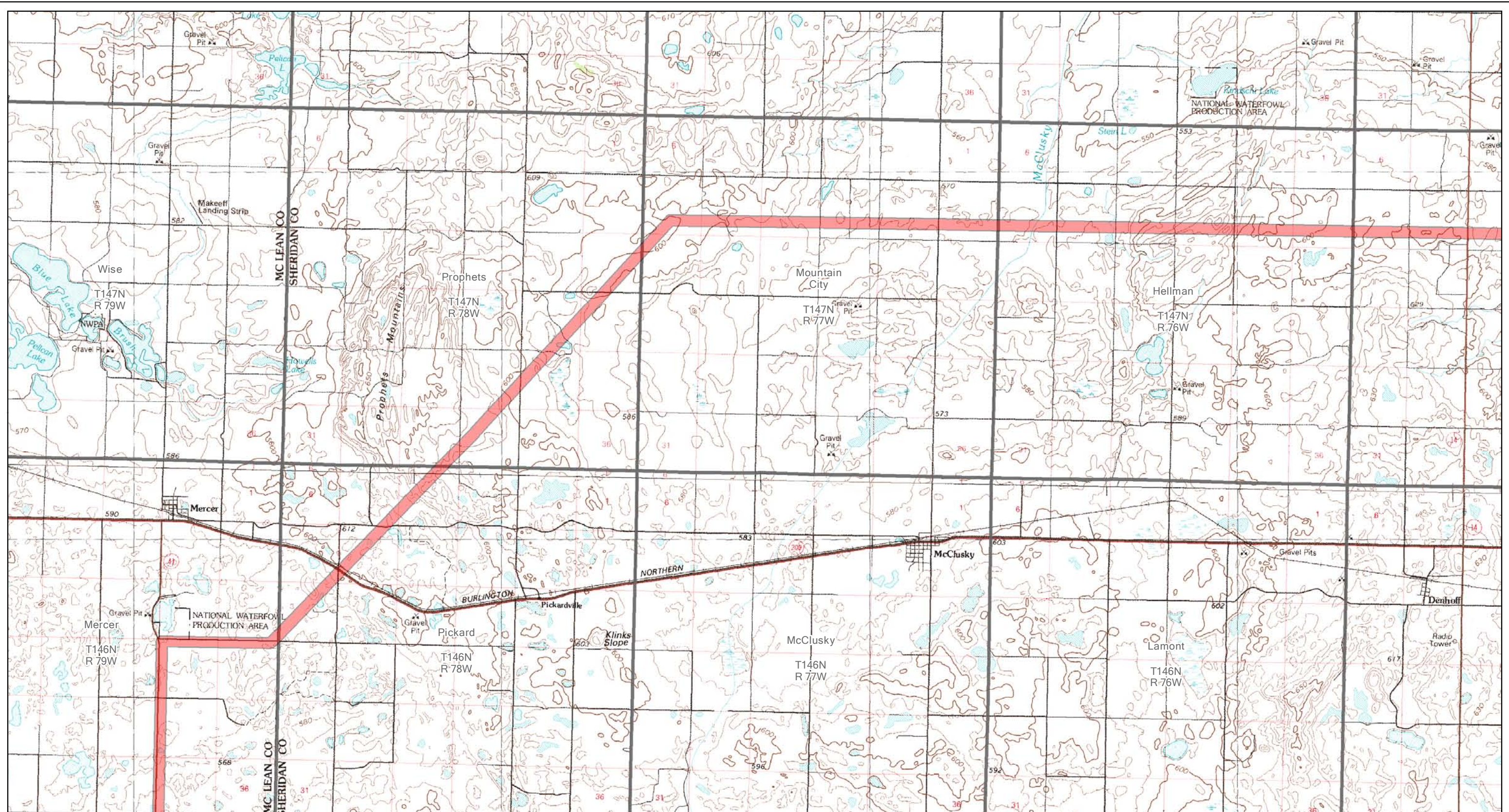
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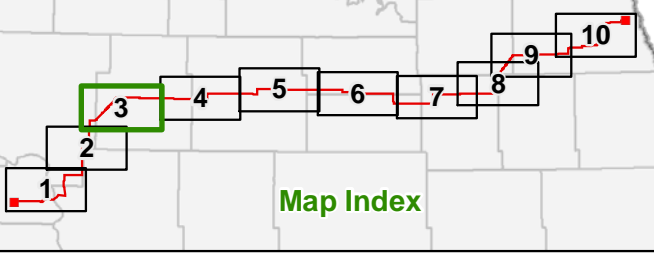
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
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Figure 4: Page 2 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



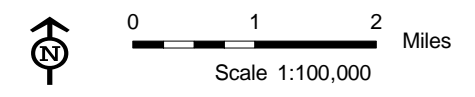


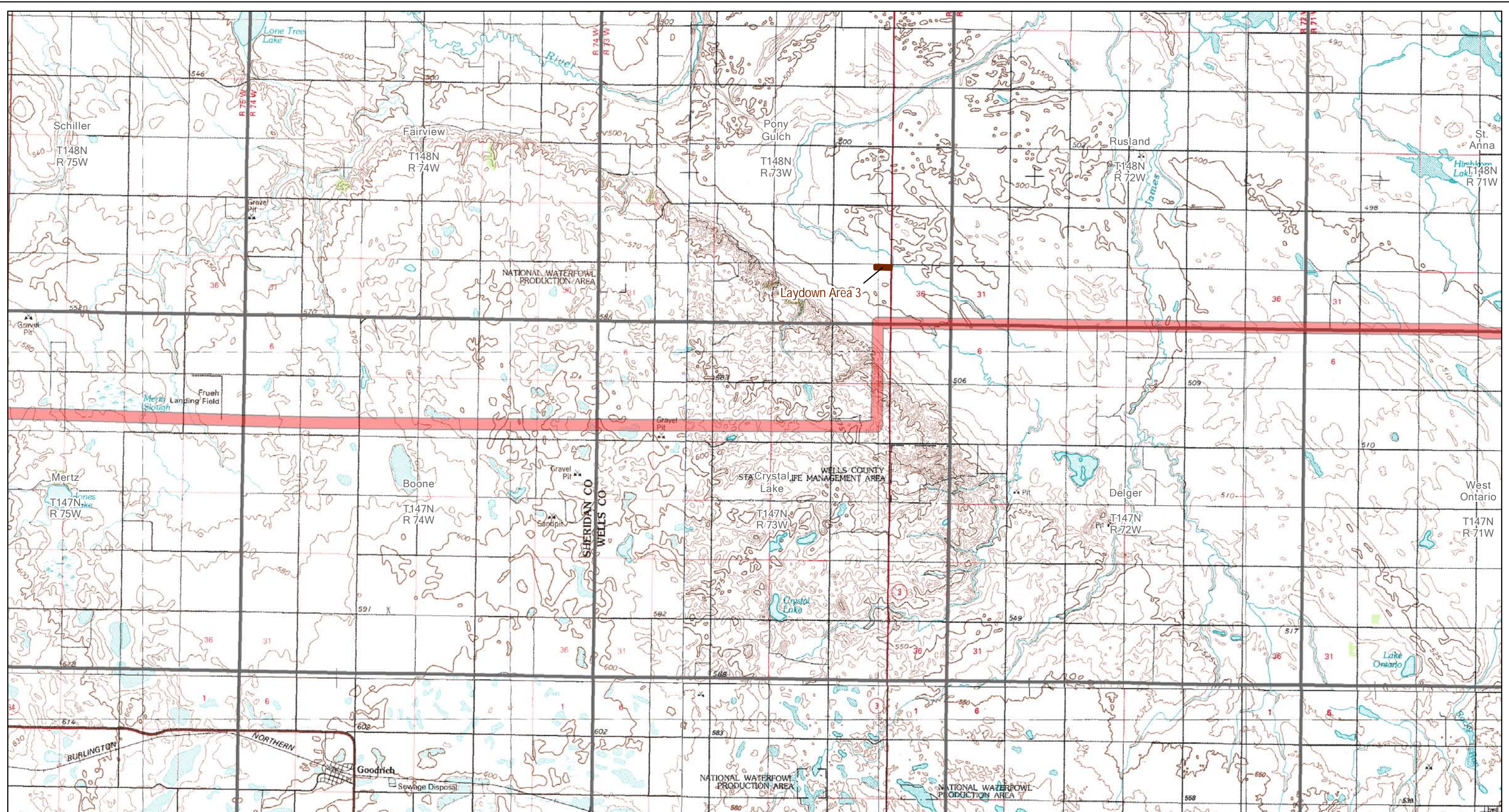
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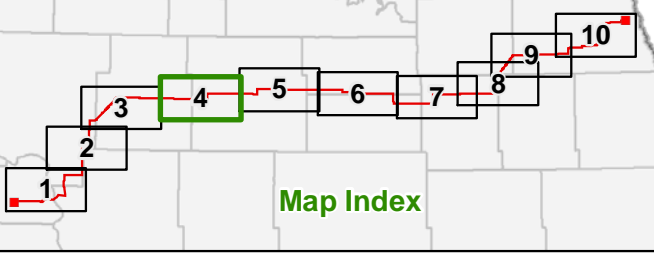
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Laydown Area
- Project Substation

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 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



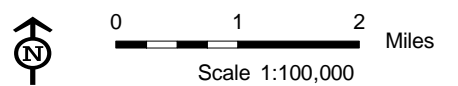


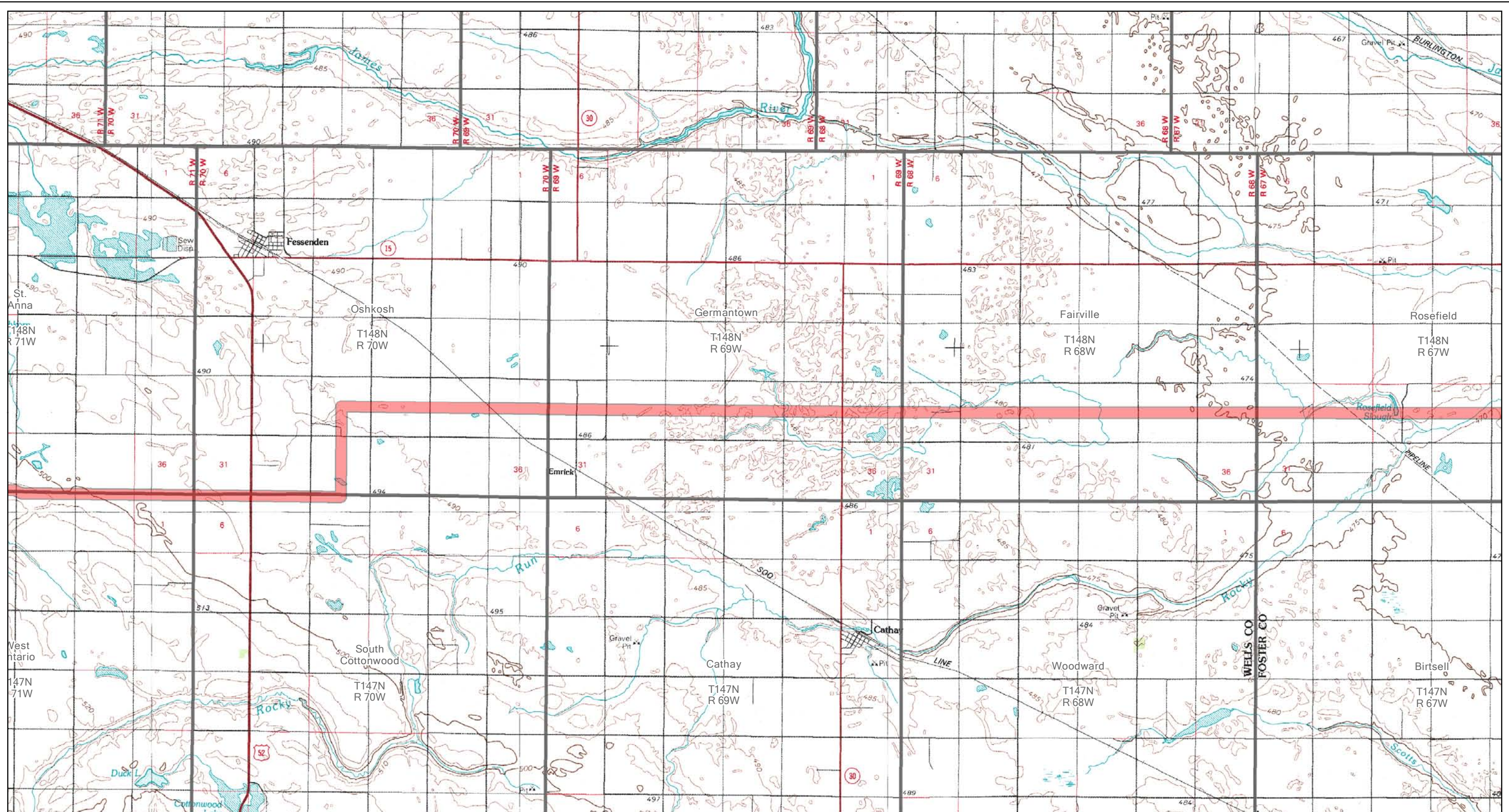
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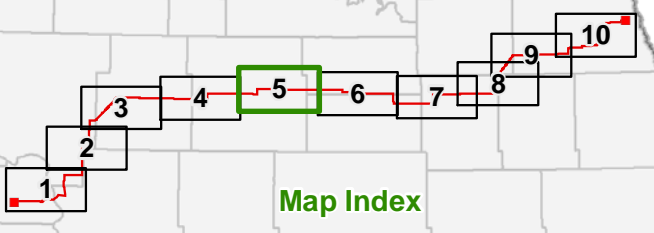
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

Figure 4: Page 4 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.





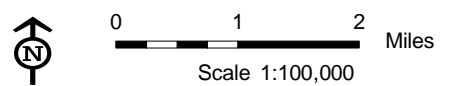
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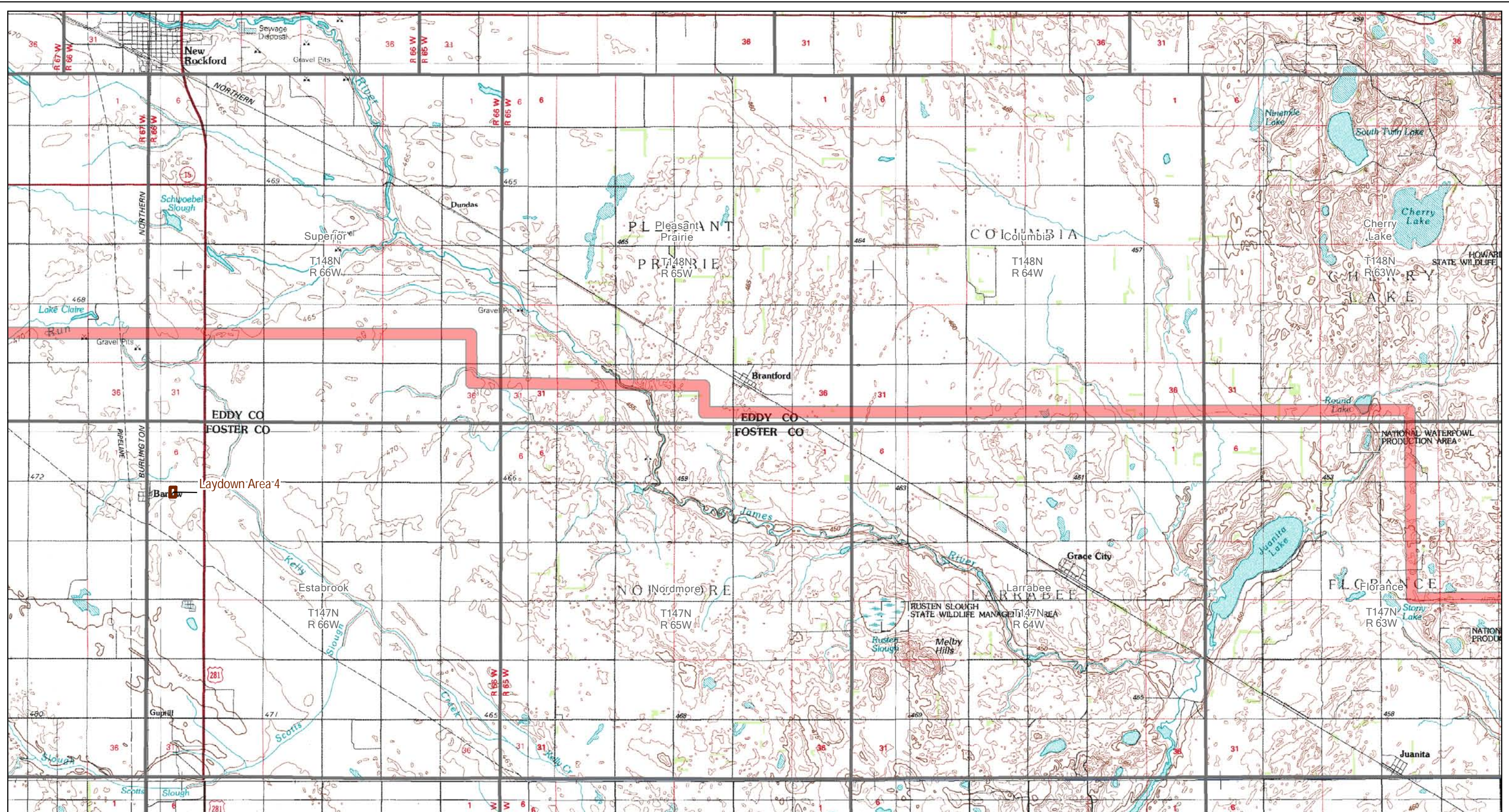


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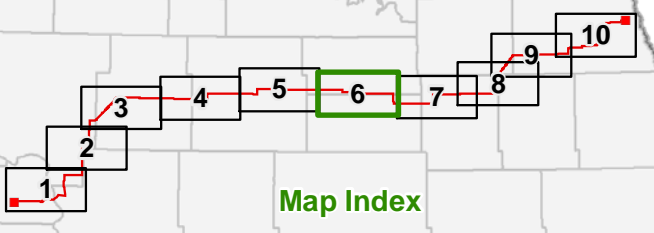
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

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USGS 1:100,000 Topographic Map
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



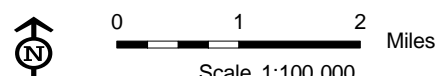


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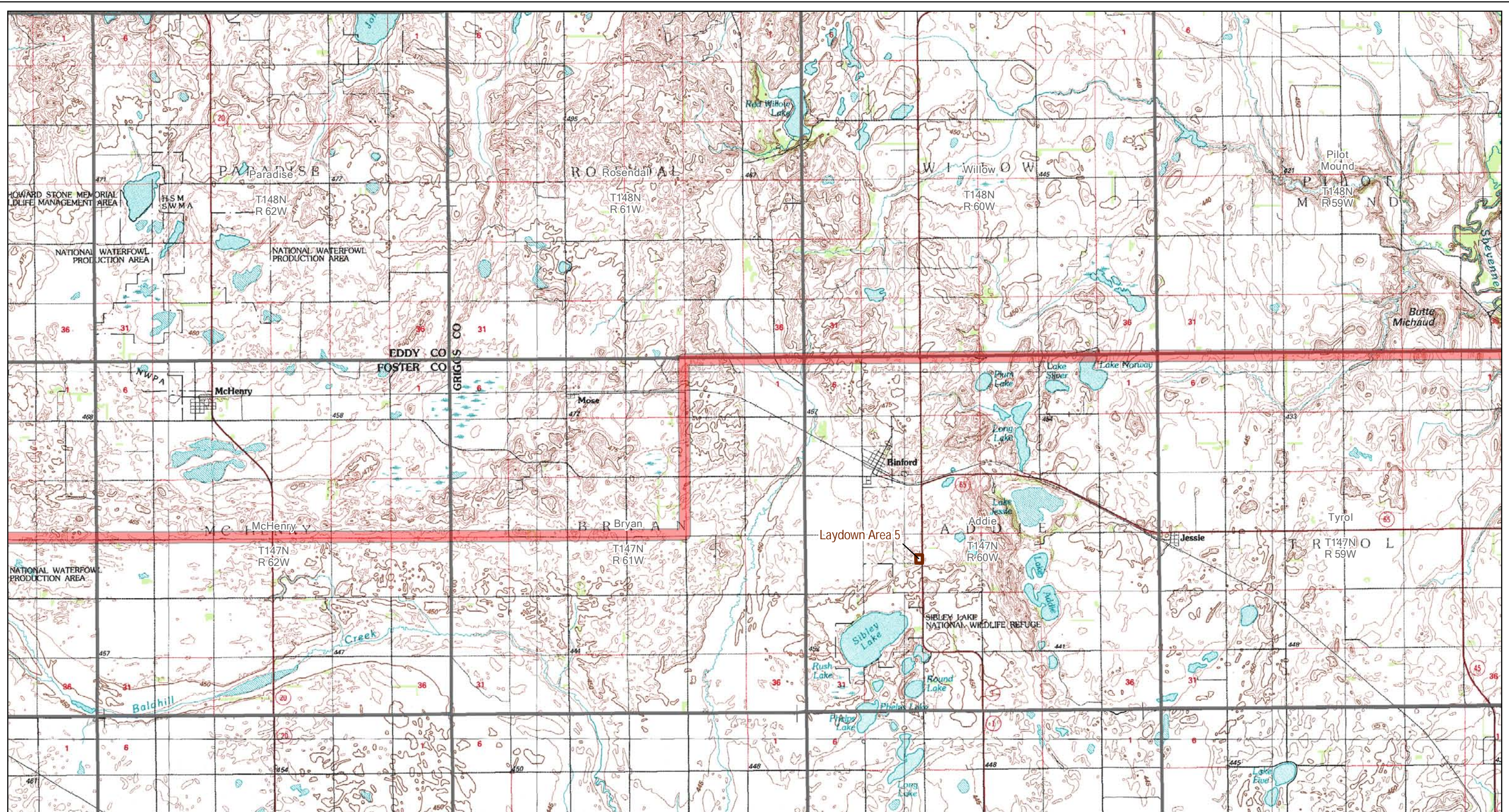


- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

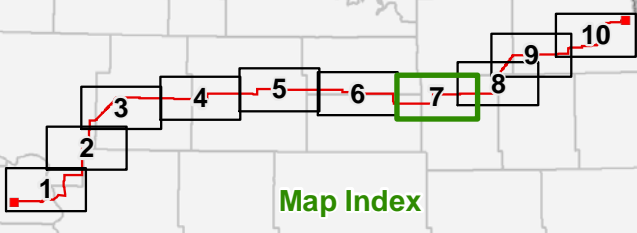
Figure 4: Page 6 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



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 Scale 1:100,000



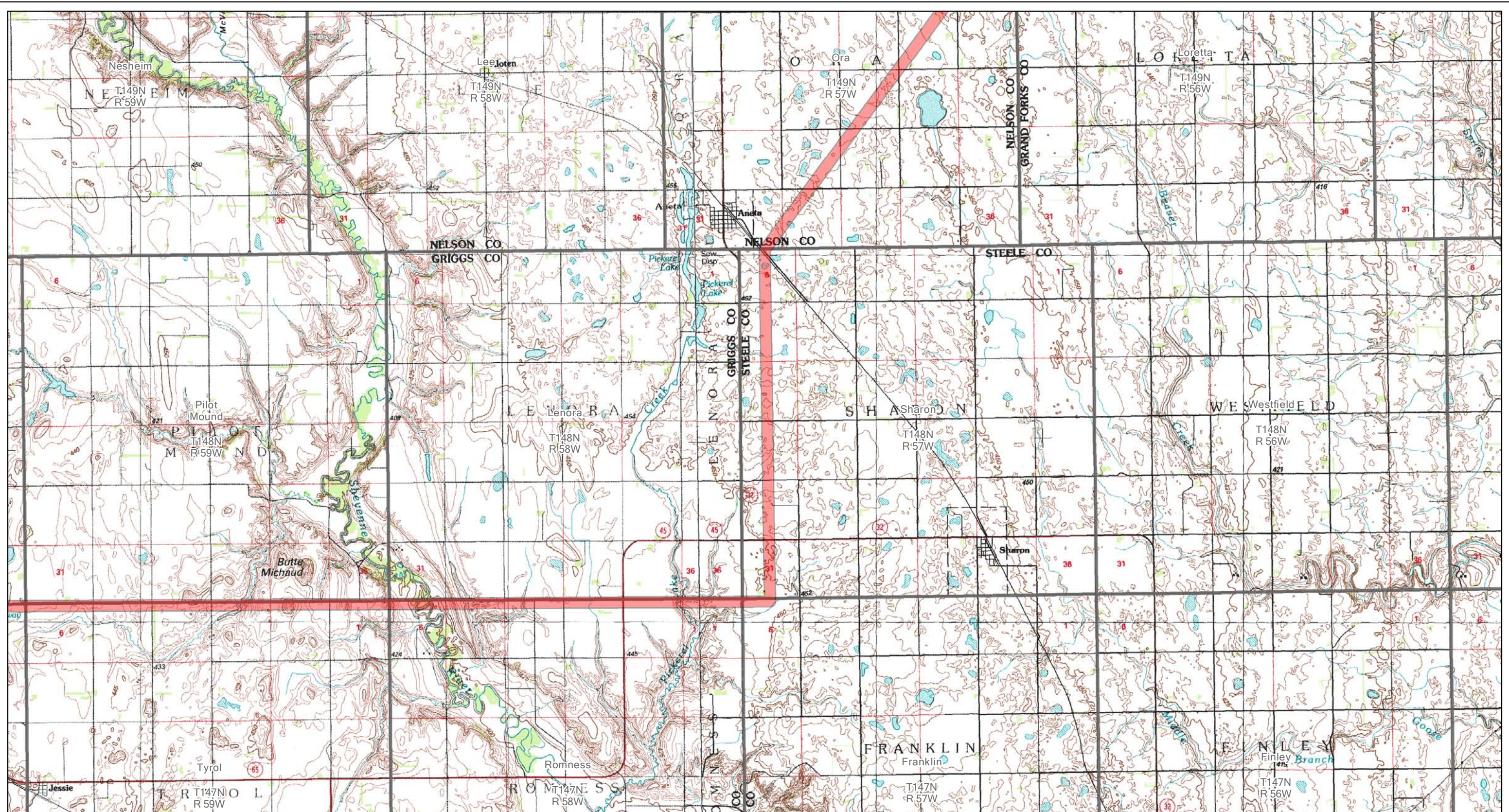
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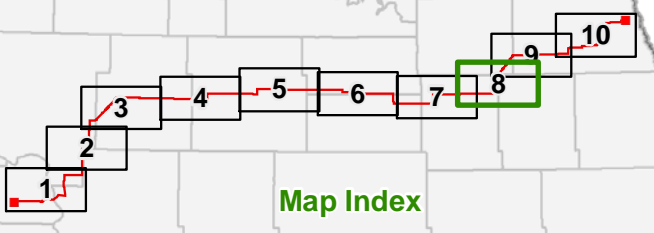
- Project Corridor (updated June 9, 2011)
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Figure 4: Page 7 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 1 2 Miles
 Scale 1:100,000

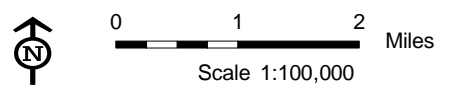


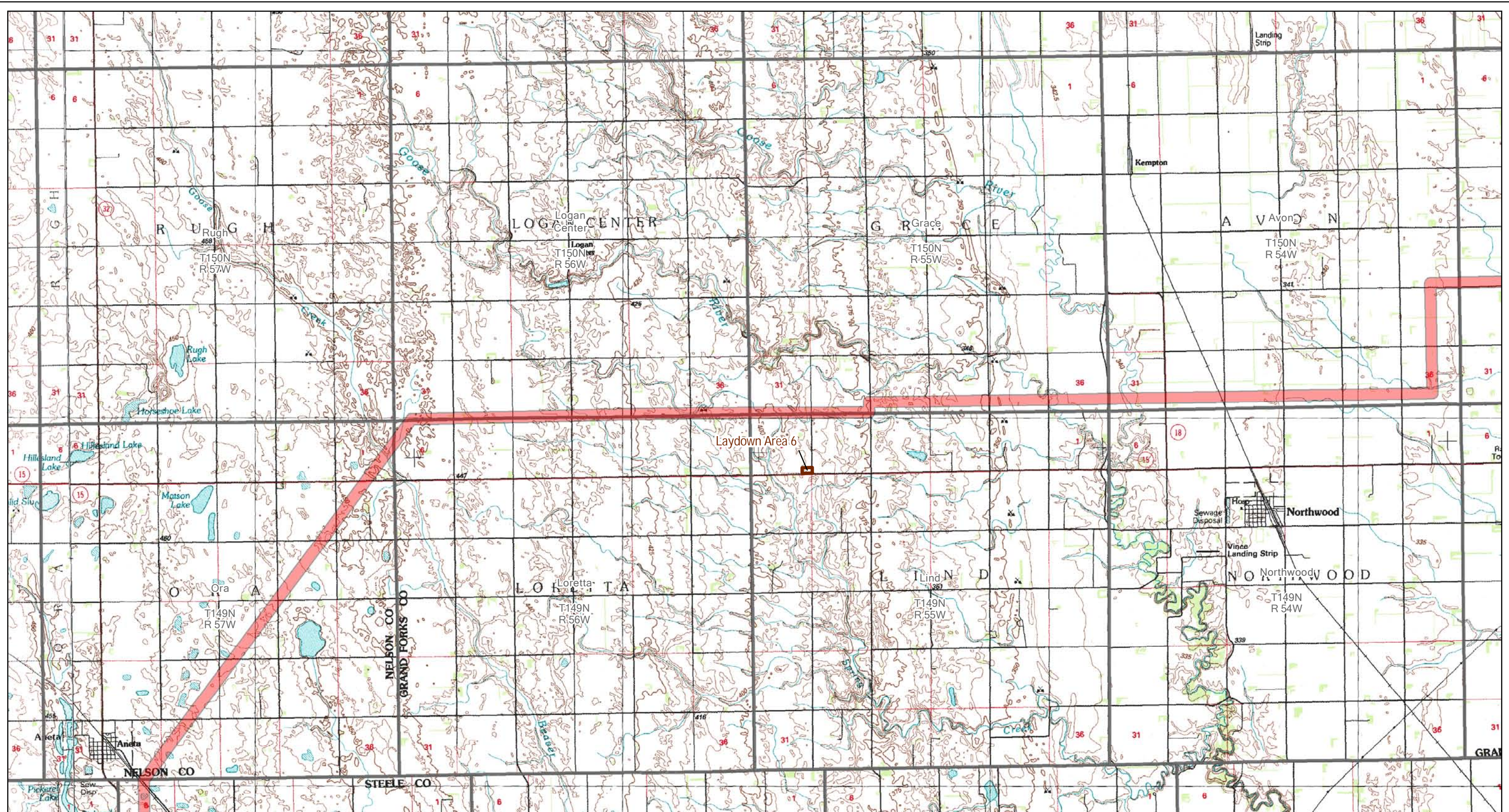
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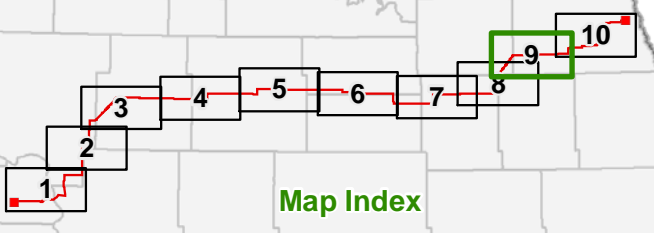
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

Figure 4: Page 8 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.





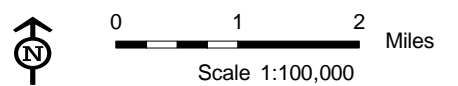
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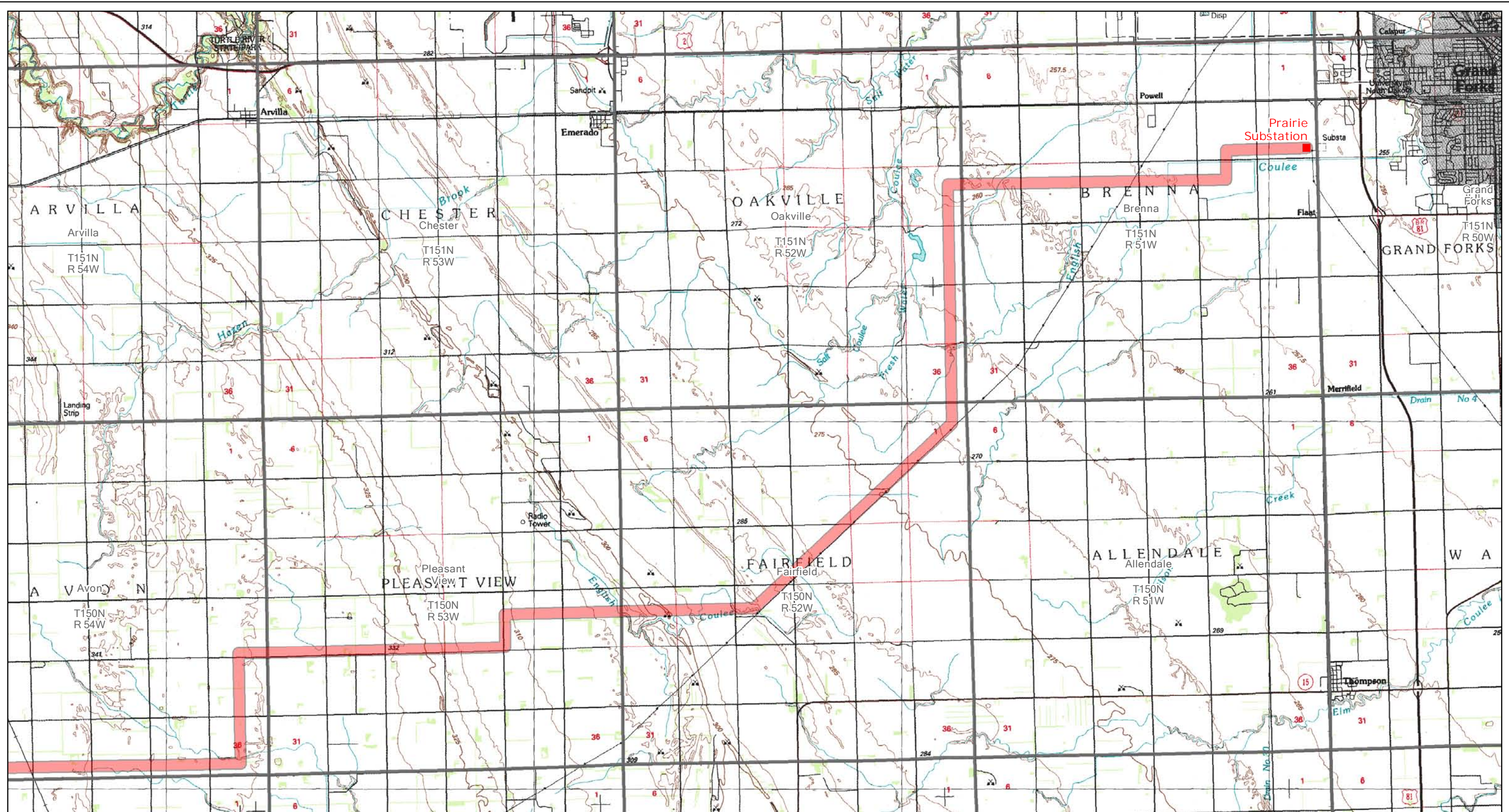


Map Index

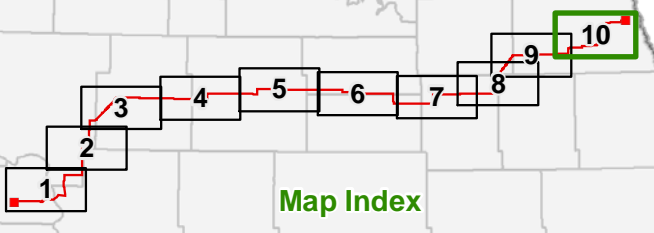
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- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

Figure 4: Page 9 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.





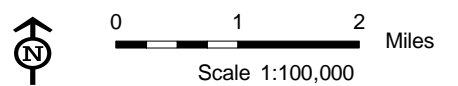
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Map Index

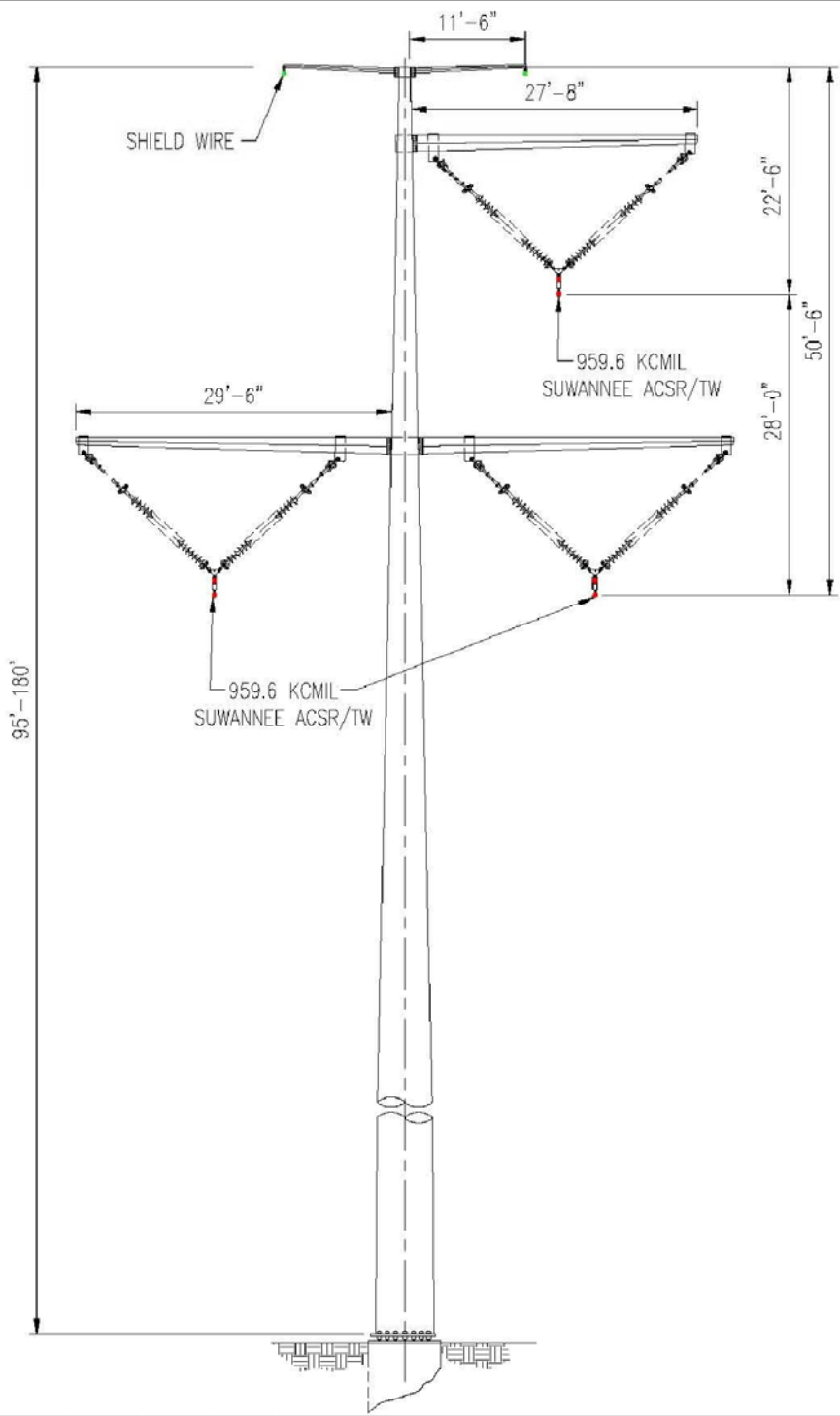
- Project Corridor (updated June 9, 2011)
- 230 kV Tie Line Corridor
- Project Substation
- Laydown Area

Figure 4: Page 10 of 10
 USGS 1:100,000 Topographic Map
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



Q:\21906\11-CADD\07-I&D\09-Preliminary\TAN2_A.dwg

CADD A1-R4 © STANLEY CONSULTANTS



REVISIONS	DSGN	CHKD	APVD	DATE



8000 South Chester Street, Suite 500
Centennial, Colorado 80112
www.stanleyconsultants.com

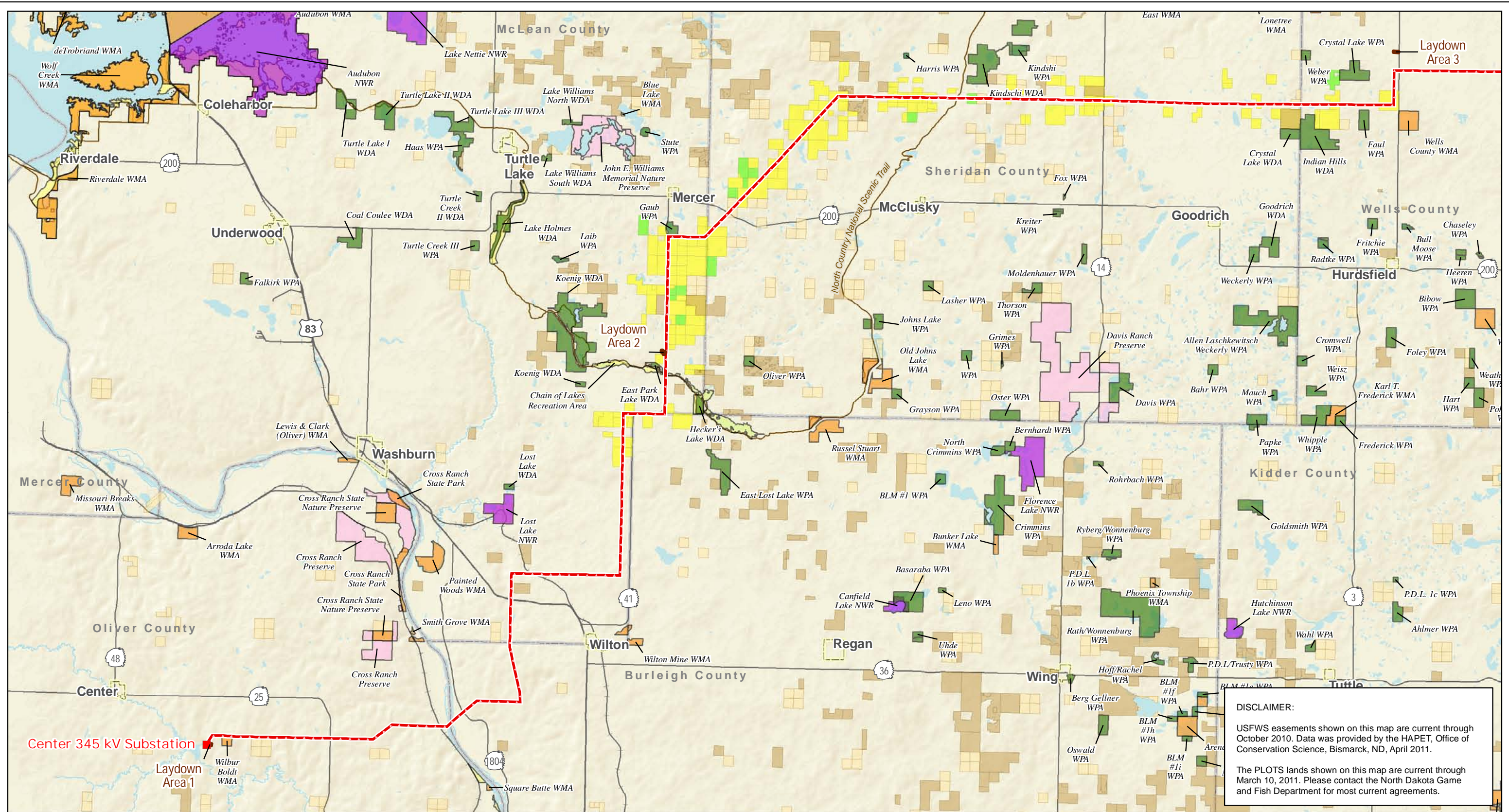
DESIGNED T. STREICH
DRAWN B. CAMPBELL
CHECKED _____
APPROVED _____
APPROVED _____
DATE _____

MINNKOTA POWER
COOPERATIVE, INC.
GRAND FORKS, N.D.

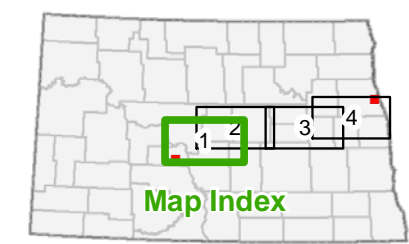
CGF TRANSMISSION LINE
345kV, SINGLE CIRCUIT,
TANGENT (PRELIMINARY)

SCALE: NTS	
NO. 21906	REV.
TAN2_A	A

Figure 5
345 kV Structure
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

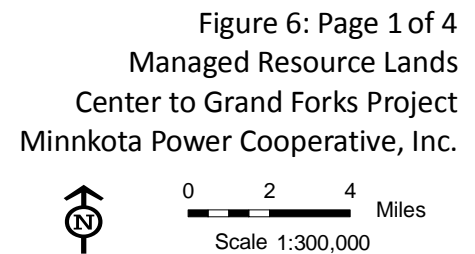


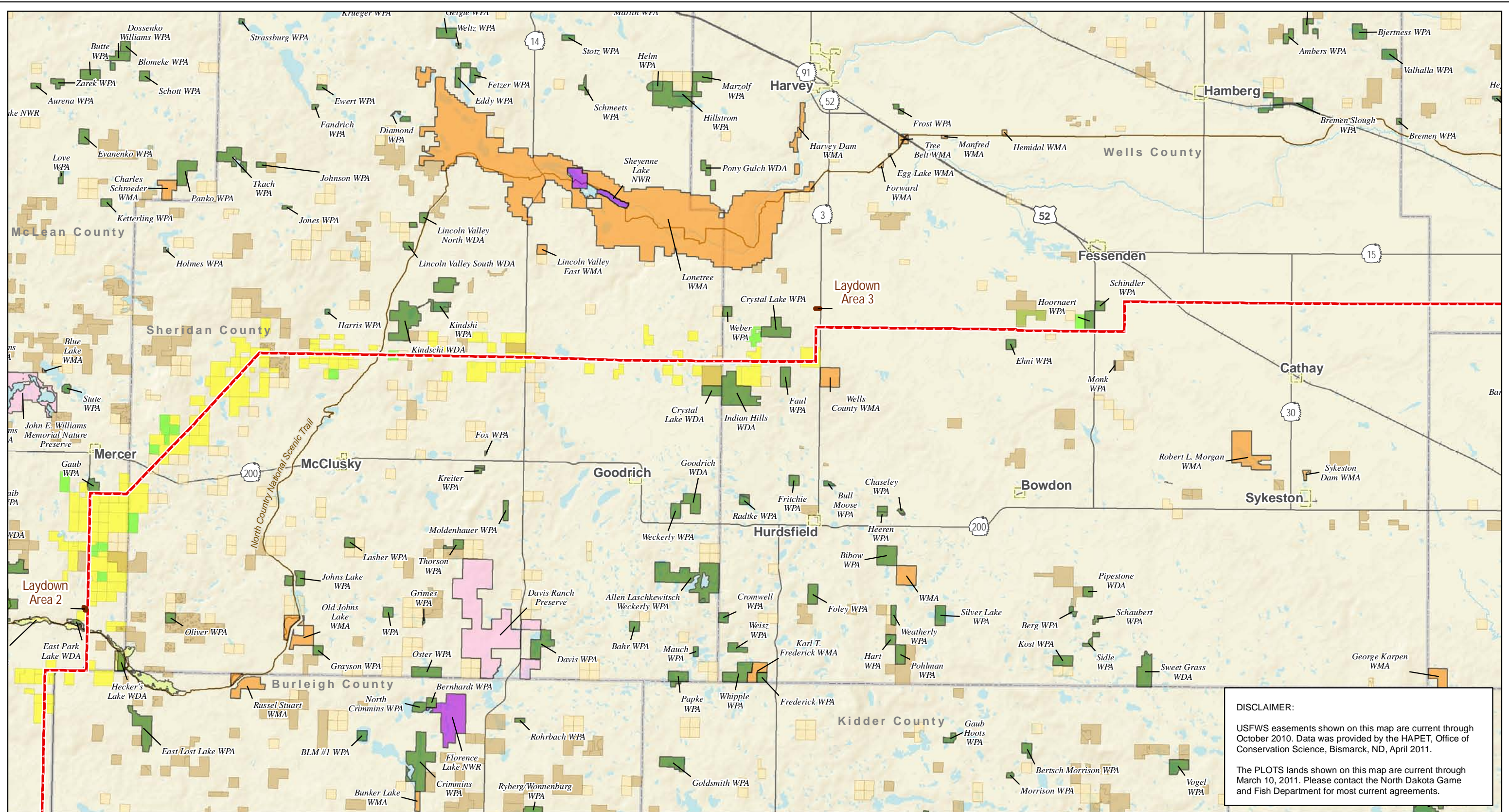
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- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- North Country National Scenic Trail
- USFWS National Wildlife Refuge
- USFWS Waterfowl Production Area or Wildlife Development Area
- State Park, Recreation Area or Wildlife Management Area
- Bureau of Reclamation or Army Corps of Engineers Land
- The Nature Conservancy Preserve
- State Surface Tract
- PLOTS Land
- USFWS Wetland Easement
- USFWS Grassland Easement

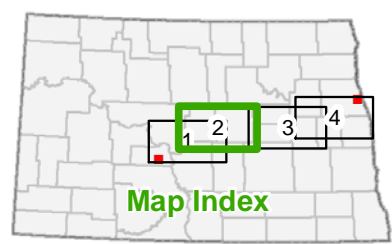
DISCLAIMER:
 USFWS easements shown on this map are current through October 2010. Data was provided by the HAPET, Office of Conservation Science, Bismarck, ND, April 2011.
 The PLOTS lands shown on this map are current through March 10, 2011. Please contact the North Dakota Game and Fish Department for most current agreements.





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 The PLOTS lands shown on this map are current through March 10, 2011. Please contact the North Dakota Game and Fish Department for most current agreements.

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- - - Project Corridor (updated June 9, 2011)
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- The Nature Conservancy Preserve
- State Surface Tract
- PLOTS Land
- USFWS Wetland Easement
- USFWS Grassland Easement

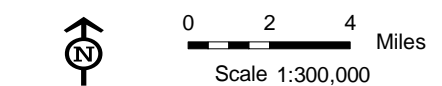
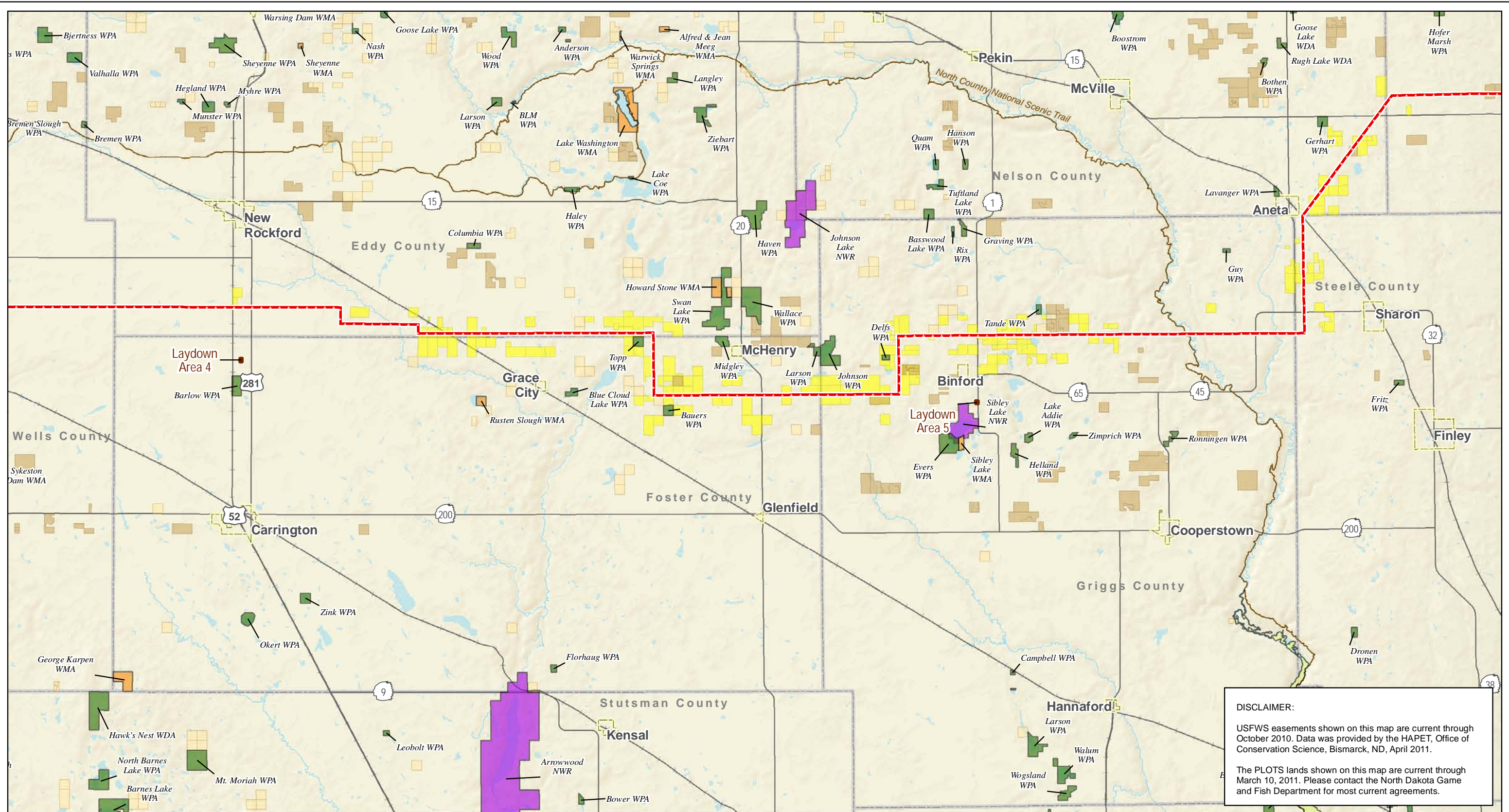
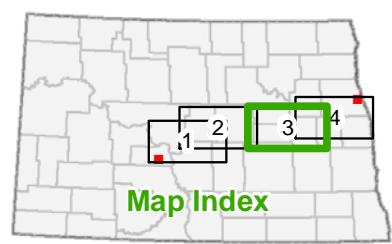


Figure 6: Page 2 of 4
Managed Resource Lands
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



DISCLAIMER:
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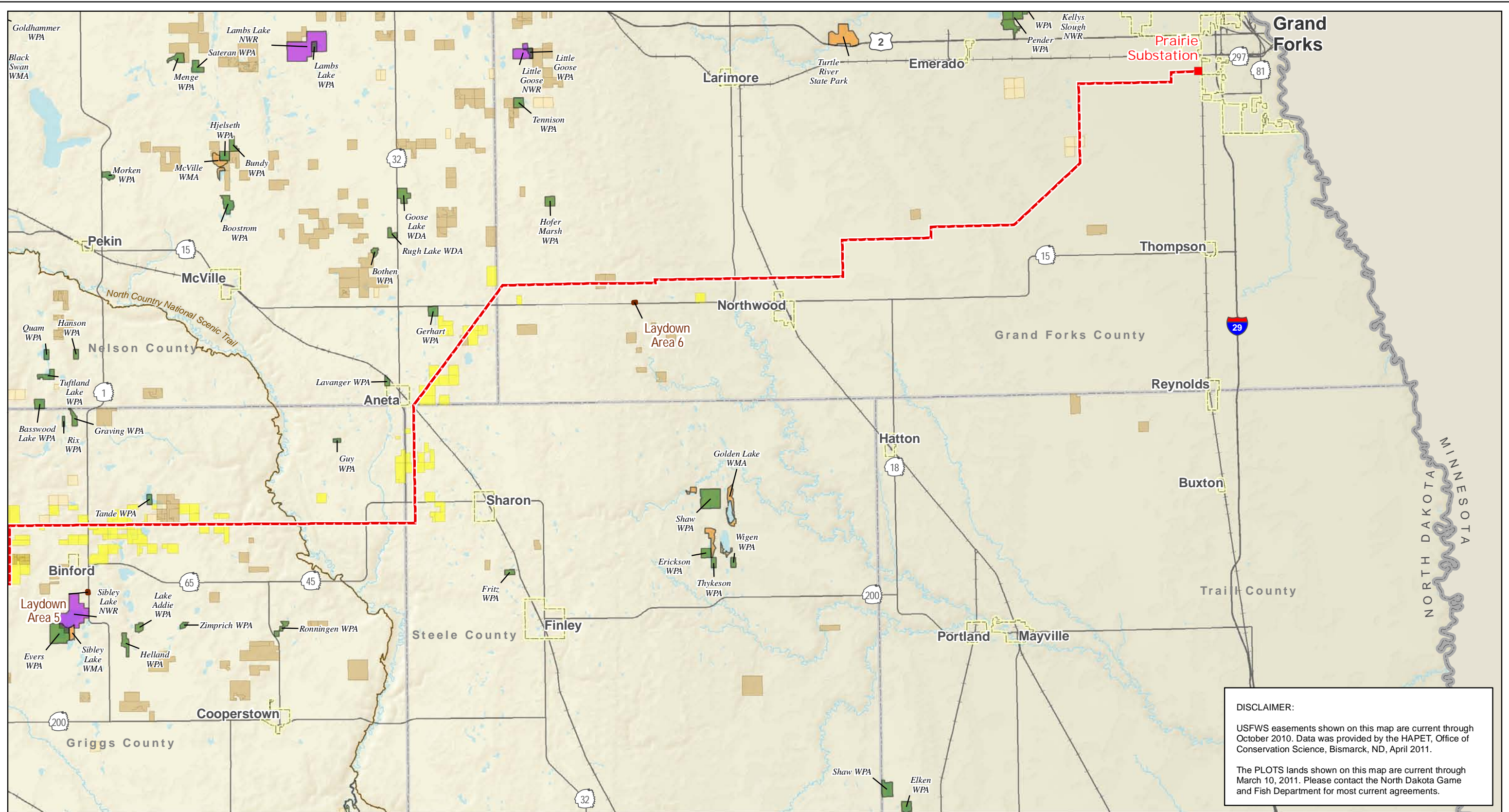
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- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- ~ North Country National Scenic Trail
- USFWS National Wildlife Refuge
- USFWS Waterfowl Production Area or Wildlife Development Area
- State Park, Recreation Area or Wildlife Management Area
- Bureau of Reclamation or Army Corps of Engineers Land
- The Nature Conservancy Preserve
- State Surface Tract
- PLOTS Land
- USFWS Wetland Easement
- USFWS Grassland Easement

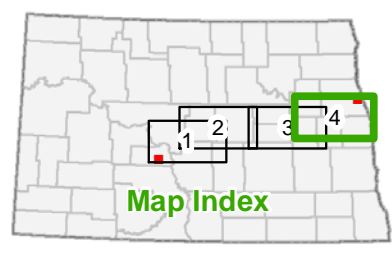
Figure 6: Page 3 of 4
Managed Resource Lands
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000



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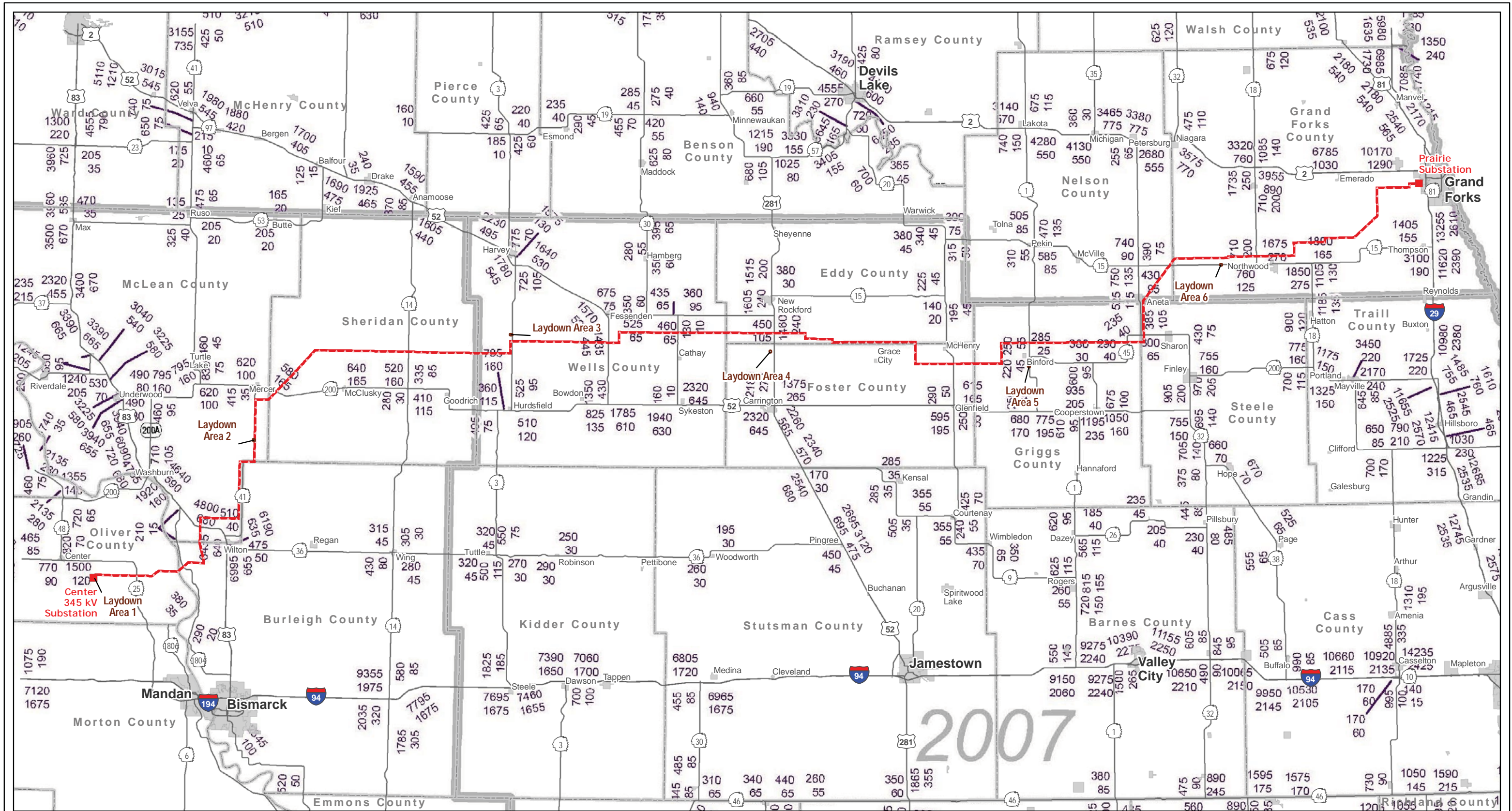
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- USFWS Wetland Easement
- USFWS Grassland Easement

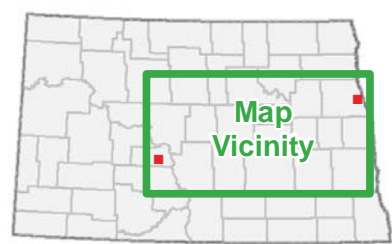
Figure 6: Page 4 of 4
Managed Resource Lands
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.

Scale 1:300,000



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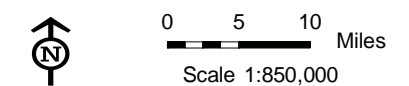
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- Project Substation
- Laydown Area

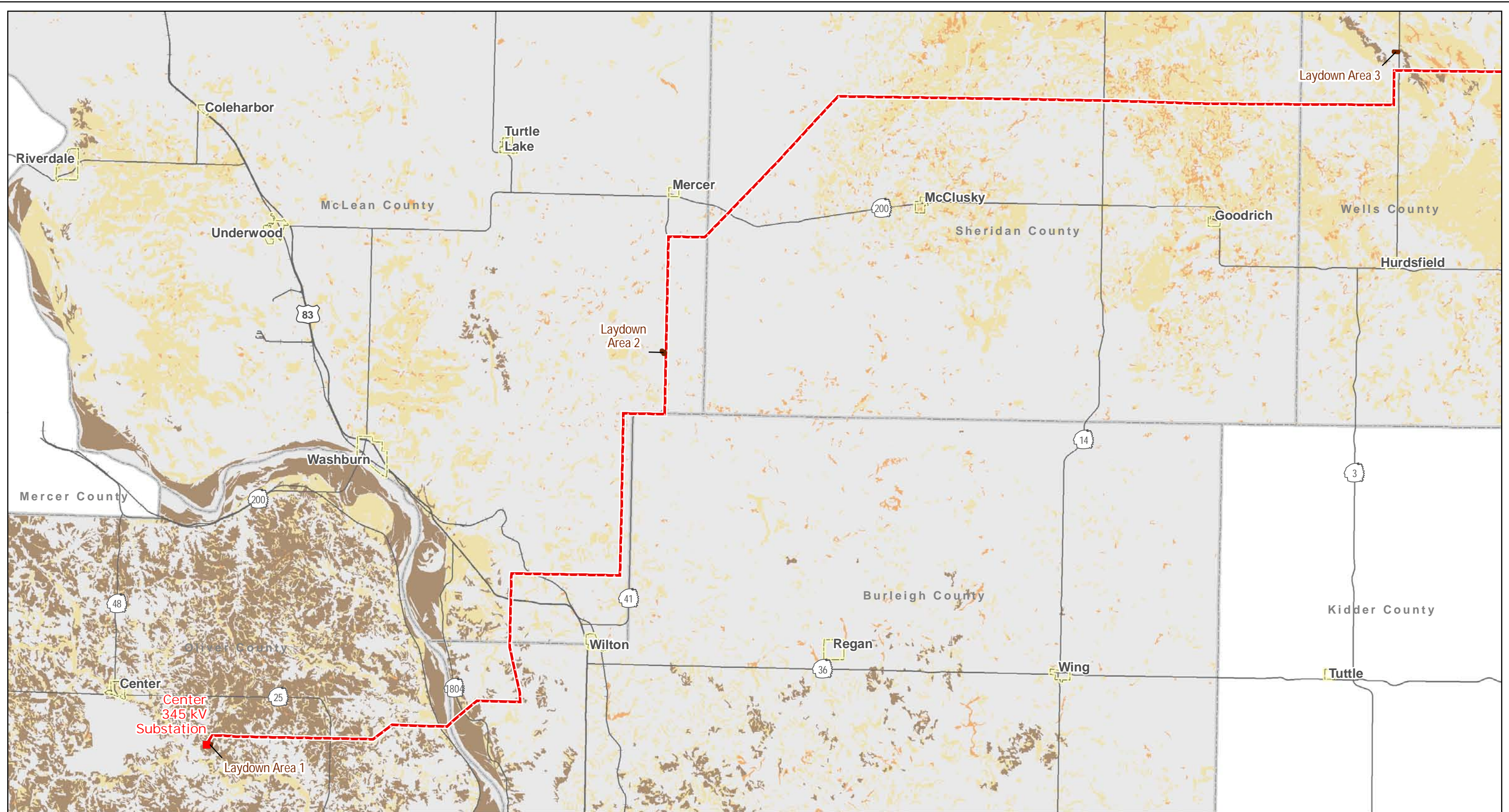
AADT (Average Annual Daily Traffic) - 2500
 COMMERCIAL TRUCK TRAFFIC - 150
 THE TRAFFIC FIGURES ARE THE TOTAL AT THE CLOSEST HIGHWAY INTERSECTION OR TOWN.

TRAFFIC COUNT CYCLES

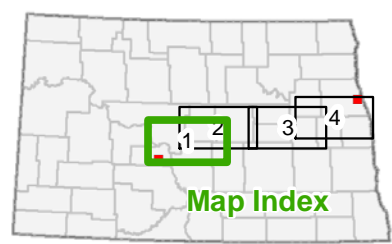


Figure 7
 Average Annual Daily Traffic
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



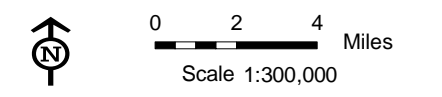


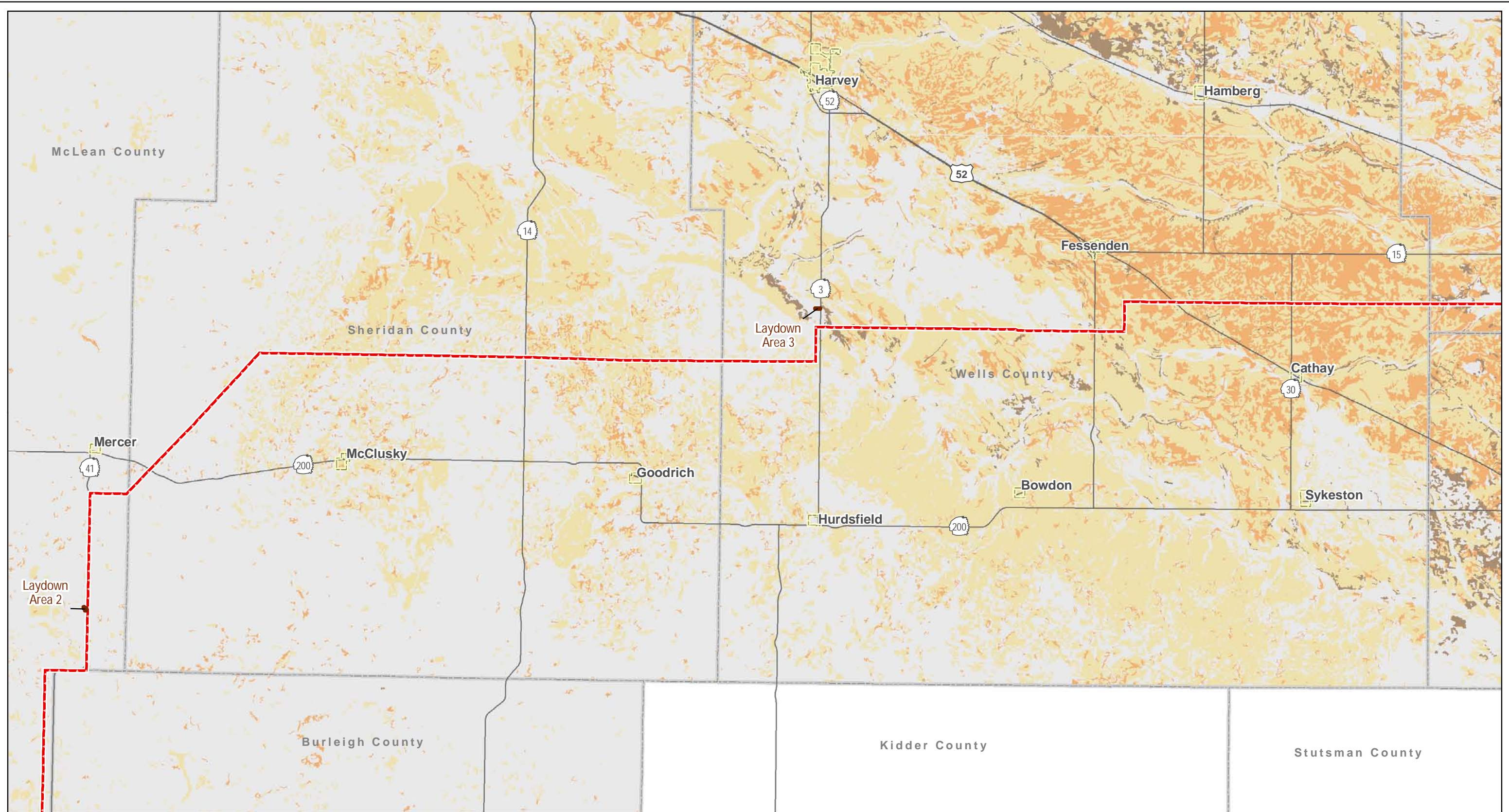
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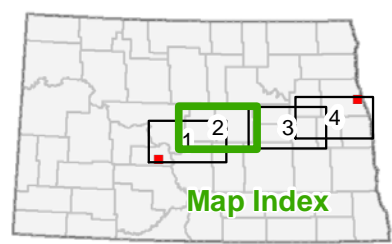
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- SSURGO Prime Farmland**
- Prime Farmland
- Prime Farmland if Drained
- Farmland of Statewide Importance
- Not Prime Farmland

Figure 8: Page 1 of 4
 Prime Farmland and Soil Distribution (SSURGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



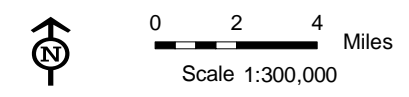


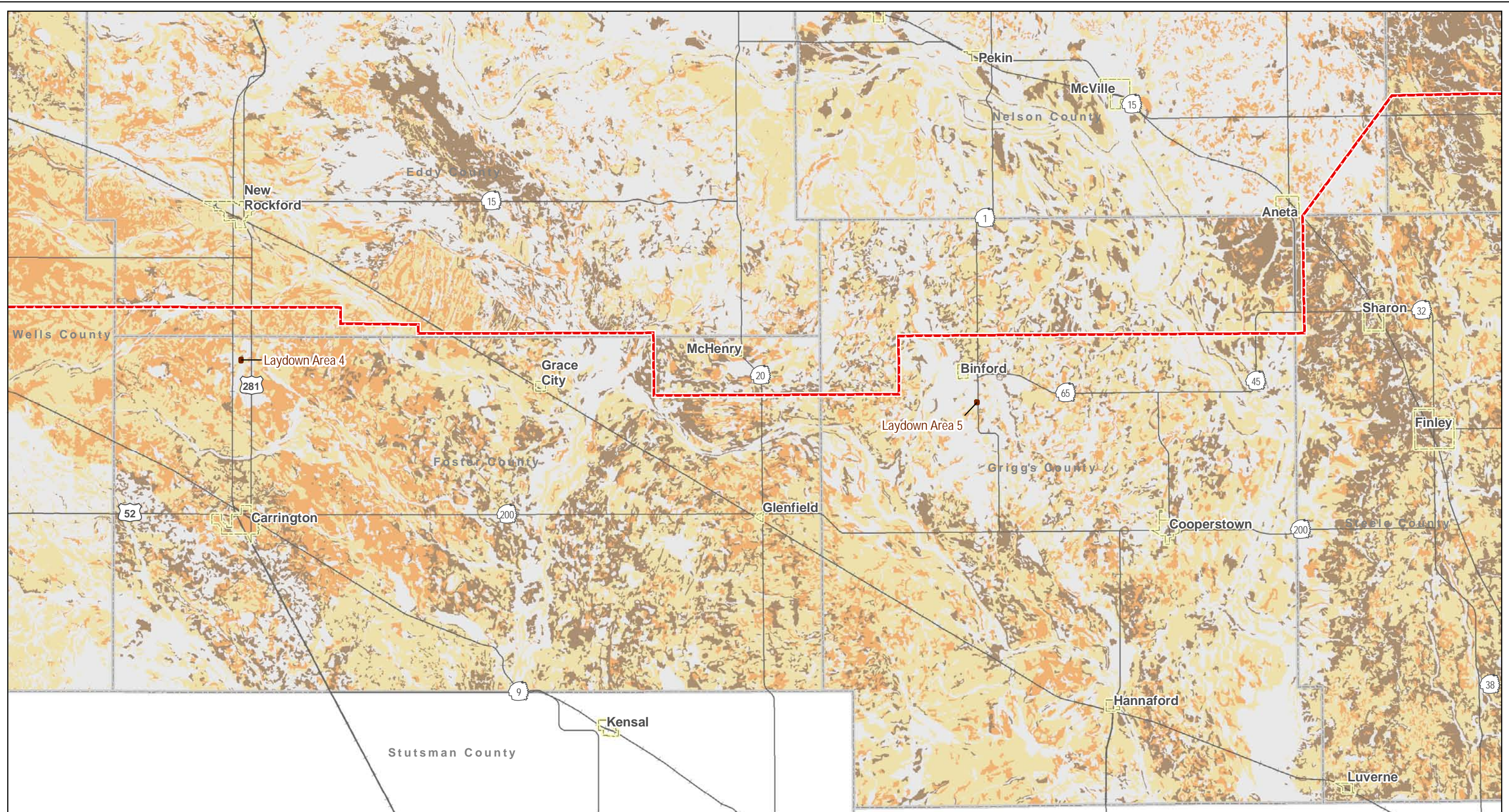
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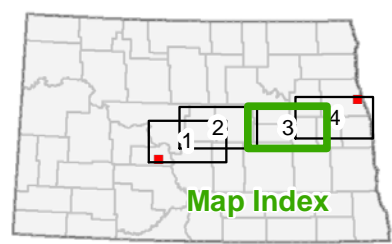
- - - Project Corridor (updated June 9, 2011)
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Figure 8: Page 2 of 4
 Prime Farmland and Soil Distribution (SSURGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



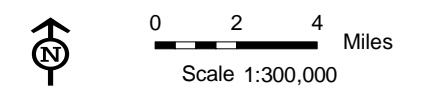


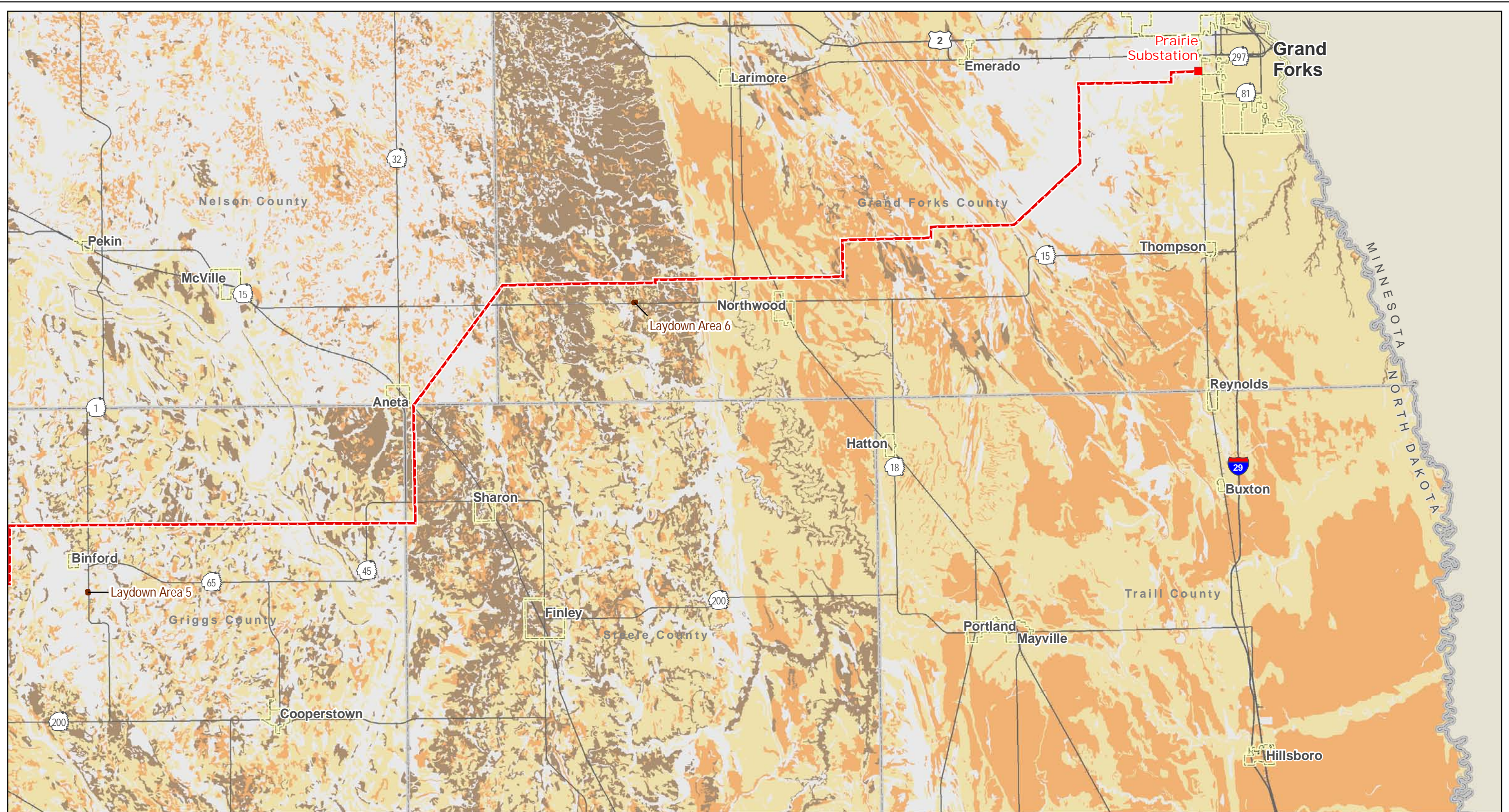
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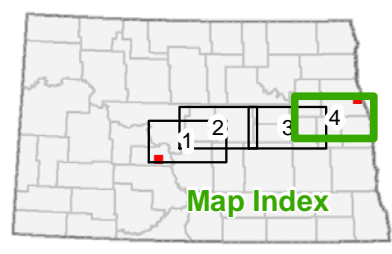
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Figure 8: Page 3 of 4
 Prime Farmland and Soil Distribution (SSURGO)
 Center to Grand Forks Project
 Minkota Power Cooperative, Inc.



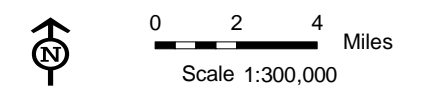


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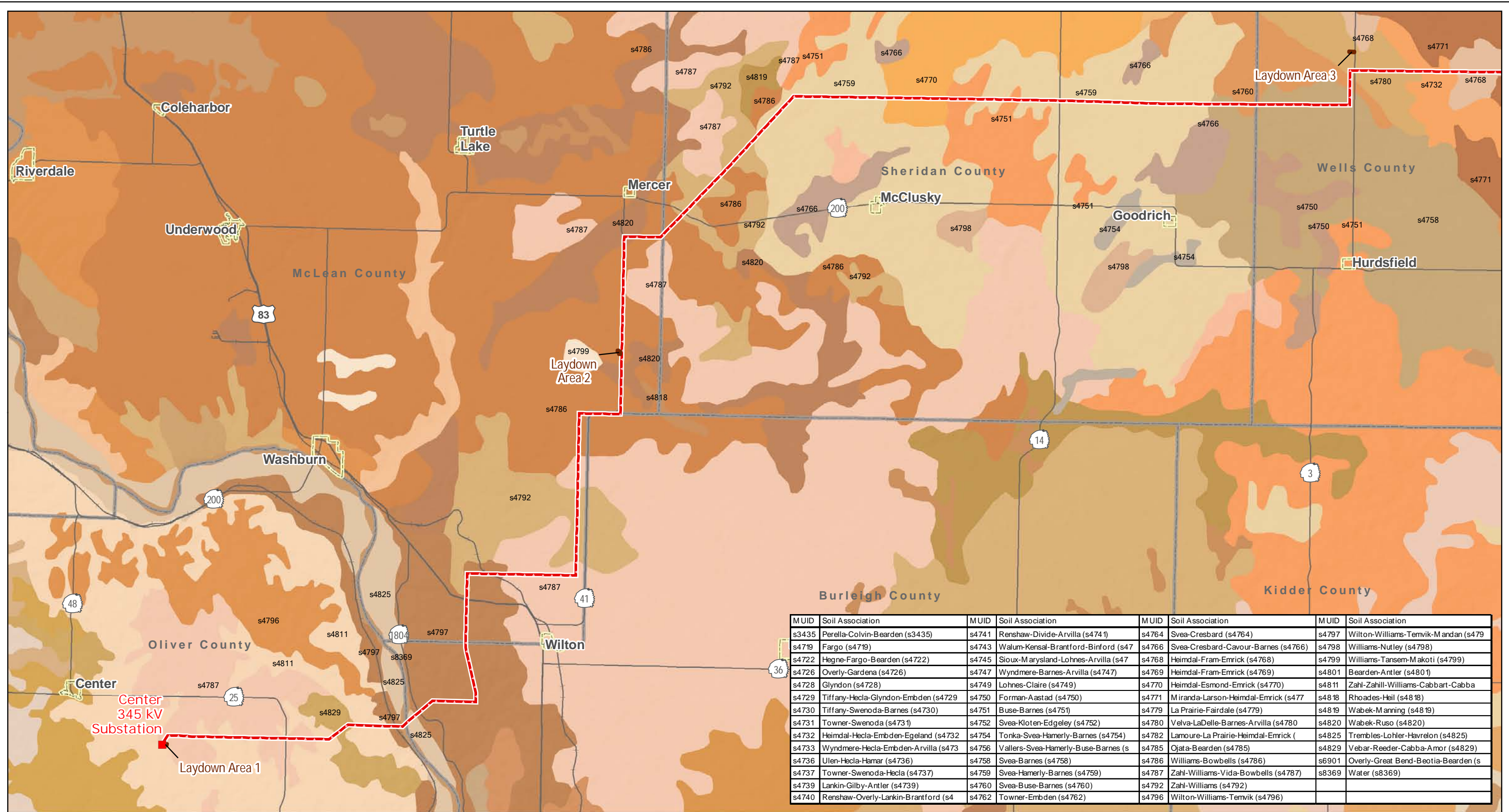


- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- SSURGO Prime Farmland
- Prime Farmland
- Prime Farmland if Drained
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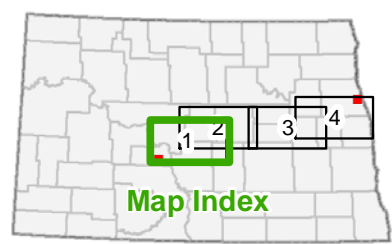
Figure 8: Page 4 of 4
 Prime Farmland and Soil Distribution (SSURGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



Map Document: (\\mapserver\gis\proj\minnkota\110900\map_docs\PSC\CorridorApp\CFCCC_09_11\17L_4pg_STATSGO.mxd) 2/26/2011 2:22:16 PM



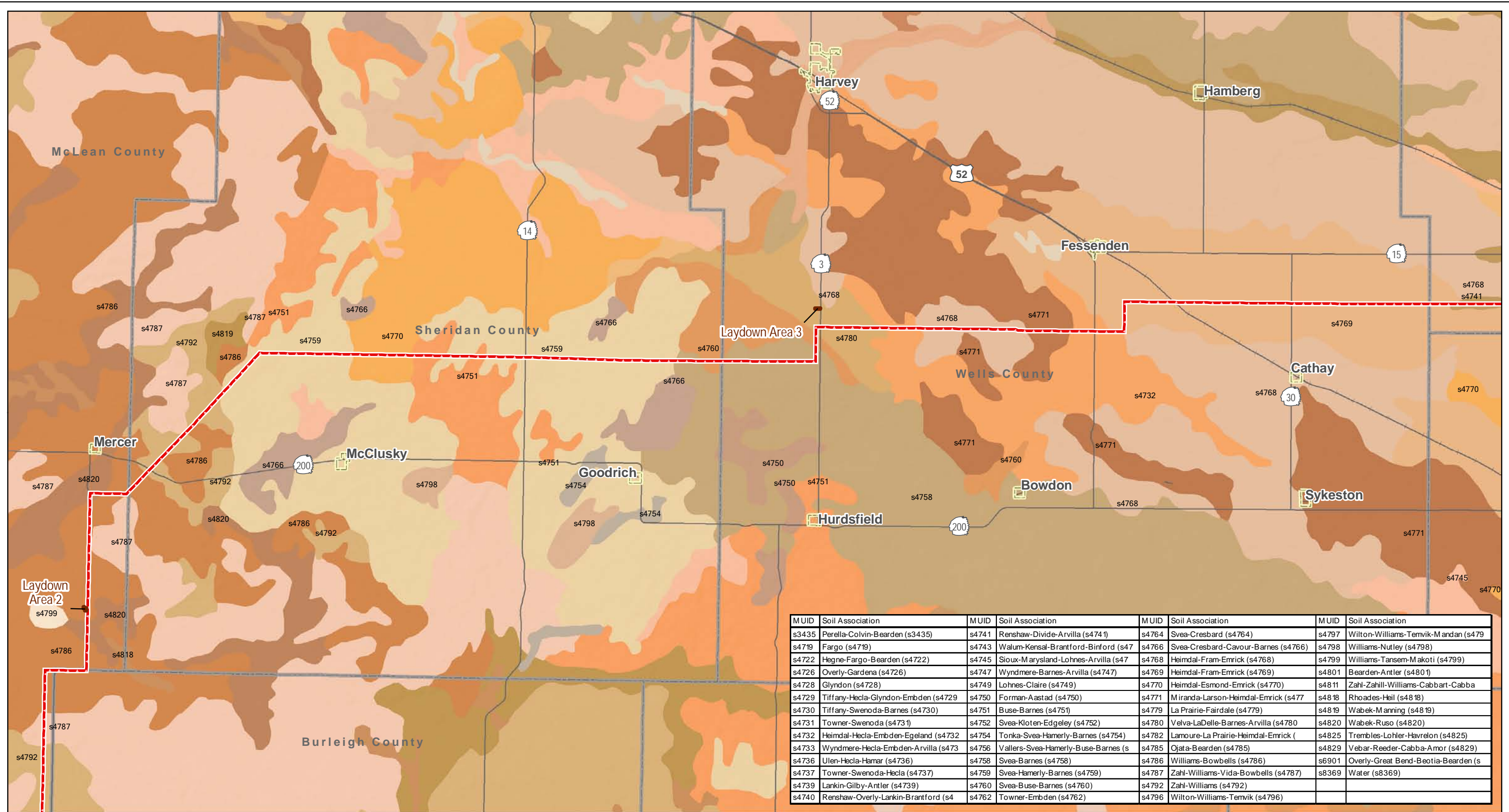
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s4719	Fargo (s4719)	s4743	Walum-Kensal-Brantford-Binford (s4743)	s4766	Svea-Cresbard-Cavour-Barnes (s4766)	s4798	Williams-Nutley (s4798)
s4722	Hegne-Fargo-Bearden (s4722)	s4745	Sioux-Marysland-Lohnes-Arvilla (s4745)	s4768	Heimdal-Fram-Erick (s4768)	s4799	Williams-Tansum-Makoti (s4799)
s4726	Overly-Gardena (s4726)	s4747	Wyndmere-Barnes-Arvilla (s4747)	s4769	Heimdal-Fram-Erick (s4769)	s4801	Bearden-Antler (s4801)
s4728	Glyndon (s4728)	s4749	Lohnes-Claire (s4749)	s4770	Heimdal-Esmond-Erick (s4770)	s4811	Zahl-Zahill-Williams-Cabbart-Cabba
s4729	Tiffany-Hecla-Glyndon-Embden (s4729)	s4750	Forman-Aastad (s4750)	s4771	Miranda-Larson-Heimdal-Erick (s4771)	s4818	Rhoades-Heil (s4818)
s4730	Tiffany-Swenoda-Barnes (s4730)	s4751	Buse-Barnes (s4751)	s4779	La Prairie-Fairdale (s4779)	s4819	Wabek-Manning (s4819)
s4731	Towner-Swenoda (s4731)	s4752	Svea-Kloten-Edgeley (s4752)	s4780	Velva-LaDelle-Barnes-Arvilla (s4780)	s4820	Wabek-Ruso (s4820)
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s4733	Wyndmere-Hecla-Embden-Arvilla (s4733)	s4756	Vallers-Svea-Hamerly-Buse-Barnes (s4756)	s4785	Ojata-Bearden (s4785)	s4829	Vebar-Reeder-Cabba-Amor (s4829)
s4736	Ulen-Hecla-Hamar (s4736)	s4758	Svea-Barnes (s4758)	s4786	Williams-Bowbells (s4786)	s6901	Overly-Great Bend-Beotia-Bearden (s6901)
s4737	Towner-Swenoda-Hecla (s4737)	s4759	Svea-Hamerly-Barnes (s4759)	s4787	Zahl-Williams-Vida-Bowbells (s4787)	s8369	Water (s8369)
s4739	Lankin-Gilby-Antler (s4739)	s4760	Svea-Buse-Barnes (s4760)	s4792	Zahl-Williams (s4792)		
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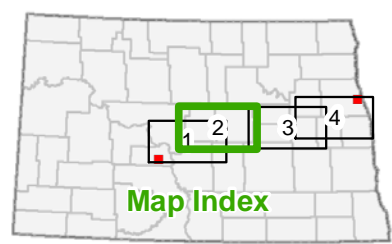
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

Figure 9: Page 1 of 4
 State Soils Association (STATSGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000



M UID	Soil Association	M UID	Soil Association	M UID	Soil Association	M UID	Soil Association
s4335	Perella-Colvin-Bearden (s4335)	s4741	Renshaw-Divide-Arvilla (s4741)	s4764	Svea-Cresbard (s4764)	s4797	Wilton-Williams-Ternvik-Mandan (s4797)
s4719	Fargo (s4719)	s4743	Walum-Kensal-Brantford-Binford (s4743)	s4766	Svea-Cresbard-Cavour-Barnes (s4766)	s4798	Williams-Nutley (s4798)
s4722	Hegne-Fargo-Bearden (s4722)	s4745	Sioux-Marysland-Lohnes-Arvilla (s4745)	s4768	Heimdal-Fram-Erick (s4768)	s4799	Williams-Tansen-Makoti (s4799)
s4726	Overly-Gardena (s4726)	s4747	Wyndmere-Barnes-Arvilla (s4747)	s4769	Heimdal-Fram-Erick (s4769)	s4801	Bearden-Antler (s4801)
s4728	Glyndon (s4728)	s4749	Lohnes-Claire (s4749)	s4770	Heimdal-Esmond-Erick (s4770)	s4811	Zahl-Zahill-Williams-Cabbart-Cabba
s4729	Tiffany-Hecla-Glyndon-Embsden (s4729)	s4750	Forman-Aastad (s4750)	s4771	Miranda-Larson-Heimdal-Erick (s4771)	s4818	Rhoades-Heil (s4818)
s4730	Tiffany-Swenoda-Barnes (s4730)	s4751	Buse-Barnes (s4751)	s4779	La Prairie-Fairdale (s4779)	s4819	Wabek-Manning (s4819)
s4731	Towner-Swenoda (s4731)	s4752	Svea-Kloten-Edgeley (s4752)	s4780	Velva-LaDelle-Barnes-Arvilla (s4780)	s4820	Wabek-Ruso (s4820)
s4732	Heimdal-Hecla-Embsden-Egeland (s4732)	s4754	Tonka-Svea-Hamerly-Barnes (s4754)	s4782	Lamoure-La Prairie-Heimdal-Erick (s4782)	s4825	Trembles-Lohler-Havrelon (s4825)
s4733	Wyndmere-Hecla-Embsden-Arvilla (s4733)	s4756	Vallers-Svea-Hamerly-Buse-Barnes (s4756)	s4785	Ojata-Bearden (s4785)	s4829	Vebar-Reeder-Cabba-Amor (s4829)
s4736	Ulen-Hecla-Hamar (s4736)	s4758	Svea-Barnes (s4758)	s4786	Williams-Bowbells (s4786)	s6901	Overly-Great Bend-Beotia-Bearden (s6901)
s4737	Towner-Swenoda-Hecla (s4737)	s4759	Svea-Hamerly-Barnes (s4759)	s4787	Zahl-Williams-Vida-Bowbells (s4787)	s8369	Water (s8369)
s4739	Lankin-Gilby-Antler (s4739)	s4760	Svea-Buse-Barnes (s4760)	s4792	Zahl-Williams (s4792)		
s4740	Renshaw-Overly-Lankin-Brantford (s4740)	s4762	Towner-Embsden (s4762)	s4796	Wilton-Williams-Ternvik (s4796)		

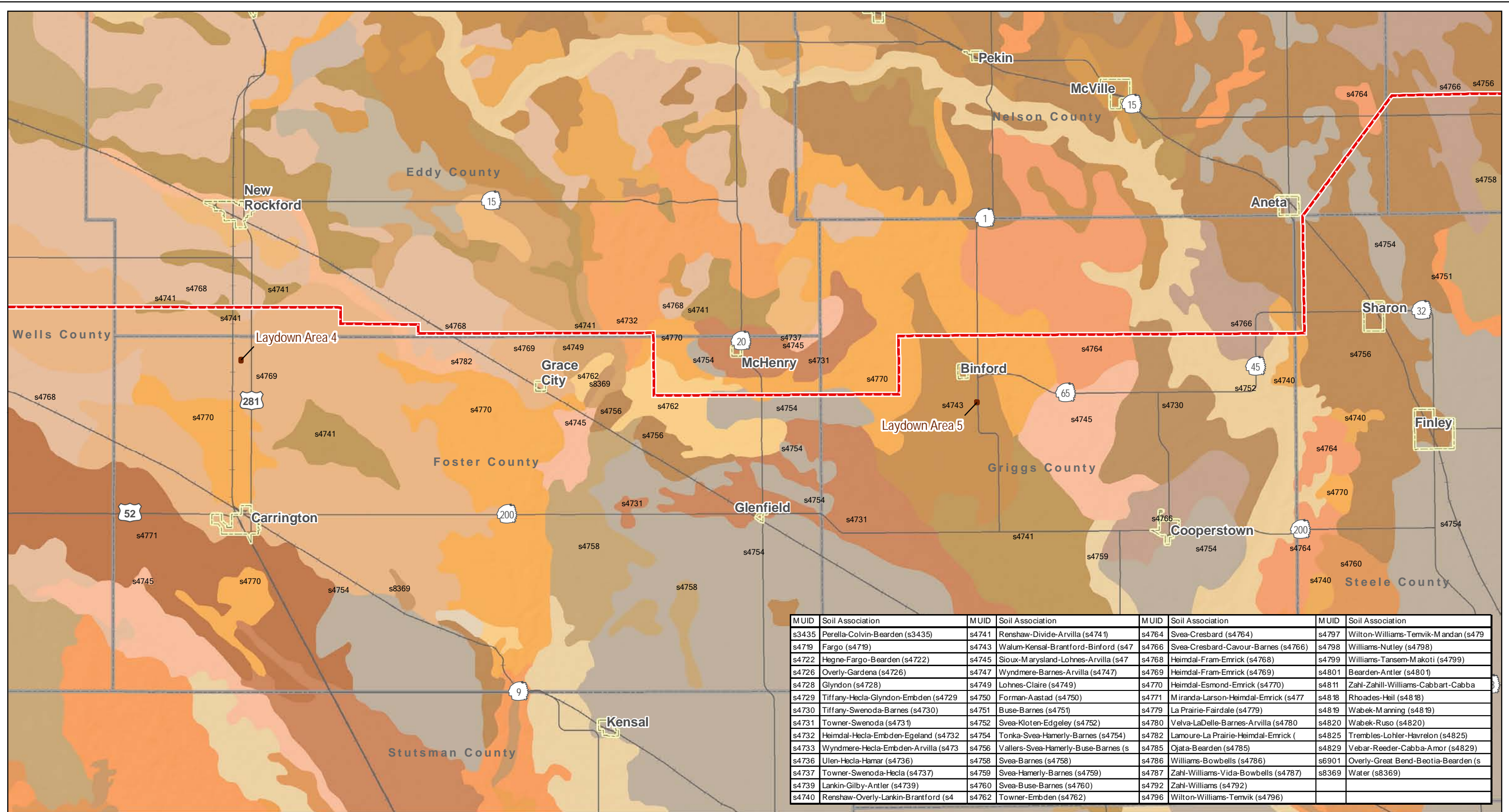


- Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

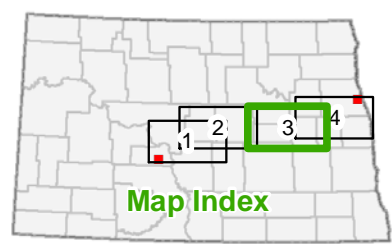
Figure 9: Page 2 of 4
 State Soils Association (STATSGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 2 4 Miles
 Scale 1:300,000

Map Document: (\\mapserver\gis\proj\minnkota\110900\map_docs\STATSGO\CorridorApp\CGFCCC_09_11\17L_4pg_STATSGO.mxd) 2/26/2011 2:22:16 PM



M UID	Soil Association	M UID	Soil Association	M UID	Soil Association	M UID	Soil Association
s3435	Perella-Colvin-Bearden (s3435)	s4741	Renshaw-Divide-Arvilla (s4741)	s4764	Svea-Cresbard (s4764)	s4797	Wilton-Williams-Terwik-Mandan (s4797)
s4719	Fargo (s4719)	s4743	Walum-Kensal-Brantford-Binford (s4743)	s4766	Svea-Cresbard-Cavour-Barnes (s4766)	s4798	Williams-Nutley (s4798)
s4722	Hegne-Fargo-Bearden (s4722)	s4745	Sioux-Marysland-Lohnes-Arvilla (s4745)	s4768	Heimdal-Fram-Ernrick (s4768)	s4799	Williams-Tansum-Makoti (s4799)
s4726	Overly-Gardena (s4726)	s4747	Wyndmere-Barnes-Arvilla (s4747)	s4769	Heimdal-Fram-Ernrick (s4769)	s4801	Bearden-Antler (s4801)
s4728	Glyndon (s4728)	s4749	Lohnes-Claire (s4749)	s4770	Heimdal-Esmond-Ernrick (s4770)	s4811	Zahl-Zahill-Williams-Cabbart-Cabba (s4811)
s4729	Tiffany-Hecla-Glyndon-Embden (s4729)	s4750	Forman-Aastad (s4750)	s4771	Miranda-Larson-Heimdal-Ernrick (s4771)	s4818	Rhoades-Heil (s4818)
s4730	Tiffany-Swenoda-Barnes (s4730)	s4751	Buse-Barnes (s4751)	s4779	La Prairie-Fairdale (s4779)	s4819	Wabek-Manning (s4819)
s4731	Towner-Swenoda (s4731)	s4752	Svea-Kloten-Edgeley (s4752)	s4780	Velva-LaDelle-Barnes-Arvilla (s4780)	s4820	Wabek-Ruso (s4820)
s4732	Heimdal-Hecla-Embden-Egeland (s4732)	s4754	Tonka-Svea-Hamerly-Barnes (s4754)	s4782	Lamoure-La Prairie-Heimdal-Ernrick (s4782)	s4825	Trembles-Lohler-Havrelon (s4825)
s4733	Wyndmere-Hecla-Embden-Arvilla (s4733)	s4756	Vallers-Svea-Hamerly-Buse-Barnes (s4756)	s4785	Ojata-Bearden (s4785)	s4829	Vebar-Reeder-Cabba-Amor (s4829)
s4736	Ulen-Hecla-Hamar (s4736)	s4758	Svea-Barnes (s4758)	s4786	Williams-Bowbells (s4786)	s6901	Overly-Great Bend-Beotia-Bearden (s6901)
s4737	Towner-Swenoda-Hecla (s4737)	s4759	Svea-Hamerly-Barnes (s4759)	s4787	Zahl-Williams-Vida-Bowbells (s4787)	s8369	Water (s8369)
s4739	Lankin-Gilby-Antler (s4739)	s4760	Svea-Buse-Barnes (s4760)	s4792	Zahl-Williams (s4792)		
s4740	Renshaw-Overly-Lankin-Brantford (s4740)	s4762	Towner-Embden (s4762)	s4796	Wilton-Williams-Terwik (s4796)		

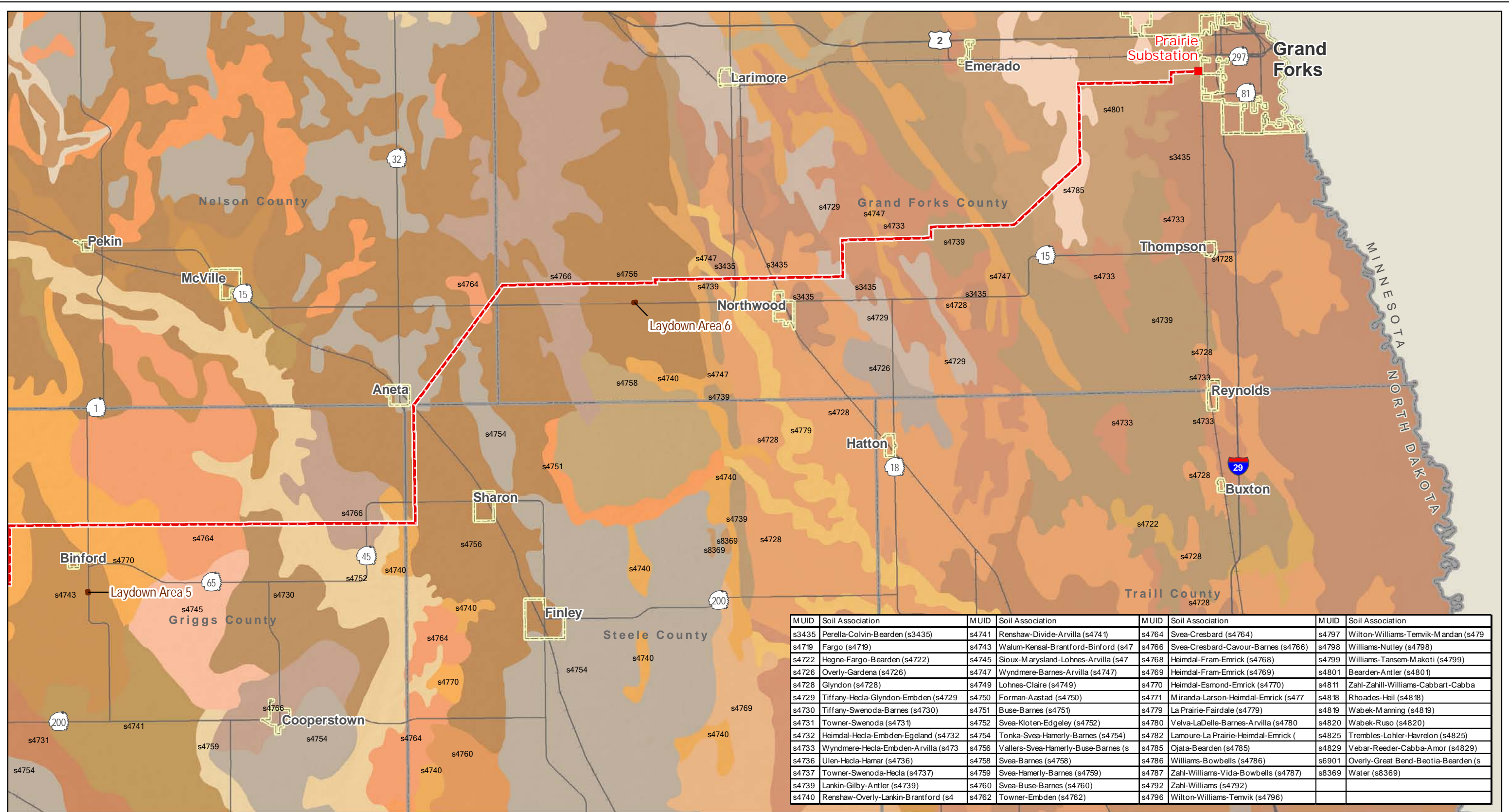


- Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

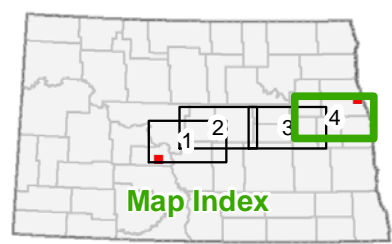
Figure 9: Page 3 of 4
 State Soils Association (STATSGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000

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M UID	Soil Association	M UID	Soil Association	M UID	Soil Association	M UID	Soil Association
s4335	Perella-Colvin-Bearden (s4335)	s4741	Renshaw-Divide-Arvilla (s4741)	s4764	Svea-Cresbard (s4764)	s4797	Wilton-Williams-Terwik-Mandan (s4797)
s4719	Fargo (s4719)	s4743	Walum-Kensal-Brantford-Binford (s4743)	s4766	Svea-Cresbard-Cavour-Barnes (s4766)	s4798	Williams-Nutley (s4798)
s4722	Hegne-Fargo-Bearden (s4722)	s4745	Sioux-Marysland-Lohnes-Arvilla (s4745)	s4768	Heimdal-Fram-Erick (s4768)	s4799	Williams-Tansen-Makoti (s4799)
s4726	Overly-Gardena (s4726)	s4747	Wyndmere-Barnes-Arvilla (s4747)	s4769	Heimdal-Fram-Erick (s4769)	s4801	Bearden-Antler (s4801)
s4728	Glyndon (s4728)	s4749	Lohnes-Claire (s4749)	s4770	Heimdal-Esmond-Erick (s4770)	s4811	Zahl-Zahill-Williams-Cabbart-Cabba
s4729	Tiffany-Hecla-Glyndon-Embden (s4729)	s4750	Forman-Aastad (s4750)	s4771	Miranda-Larson-Heimdal-Erick (s4771)	s4818	Rhoades-Heil (s4818)
s4730	Tiffany-Swenoda-Barnes (s4730)	s4751	Buse-Barnes (s4751)	s4779	La Prairie-Fairdale (s4779)	s4819	Wabek-Manning (s4819)
s4731	Towner-Swenoda (s4731)	s4752	Svea-Kloten-Edgeley (s4752)	s4780	Velva-LaDelle-Barnes-Arvilla (s4780)	s4820	Wabek-Ruso (s4820)
s4732	Heimdal-Hecla-Embden-Egeland (s4732)	s4754	Tonka-Svea-Hamerly-Barnes (s4754)	s4782	Lamoure-La Prairie-Heimdal-Erick (s4782)	s4825	Trembles-Lohler-Havrelon (s4825)
s4733	Wyndmere-Hecla-Embden-Arvilla (s4733)	s4756	Vallers-Svea-Hamerly-Buse-Barnes (s4756)	s4785	Ojata-Bearden (s4785)	s4829	Vebar-Reeder-Cabba-Amor (s4829)
s4736	Ulen-Hecla-Hamar (s4736)	s4758	Svea-Barnes (s4758)	s4786	Williams-Bowbells (s4786)	s6901	Overly-Great Bend-Beotia-Bearden (s6901)
s4737	Towner-Swenoda-Hecla (s4737)	s4759	Svea-Hamerly-Barnes (s4759)	s4787	Zahl-Williams-Vida-Bowbells (s4787)	s8369	Water (s8369)
s4739	Lankin-Gilby-Antler (s4739)	s4760	Svea-Buse-Barnes (s4760)	s4792	Zahl-Williams (s4792)		
s4740	Renshaw-Overly-Lankin-Brantford (s4740)	s4762	Towner-Embden (s4762)	s4796	Wilton-Williams-Terwik (s4796)		

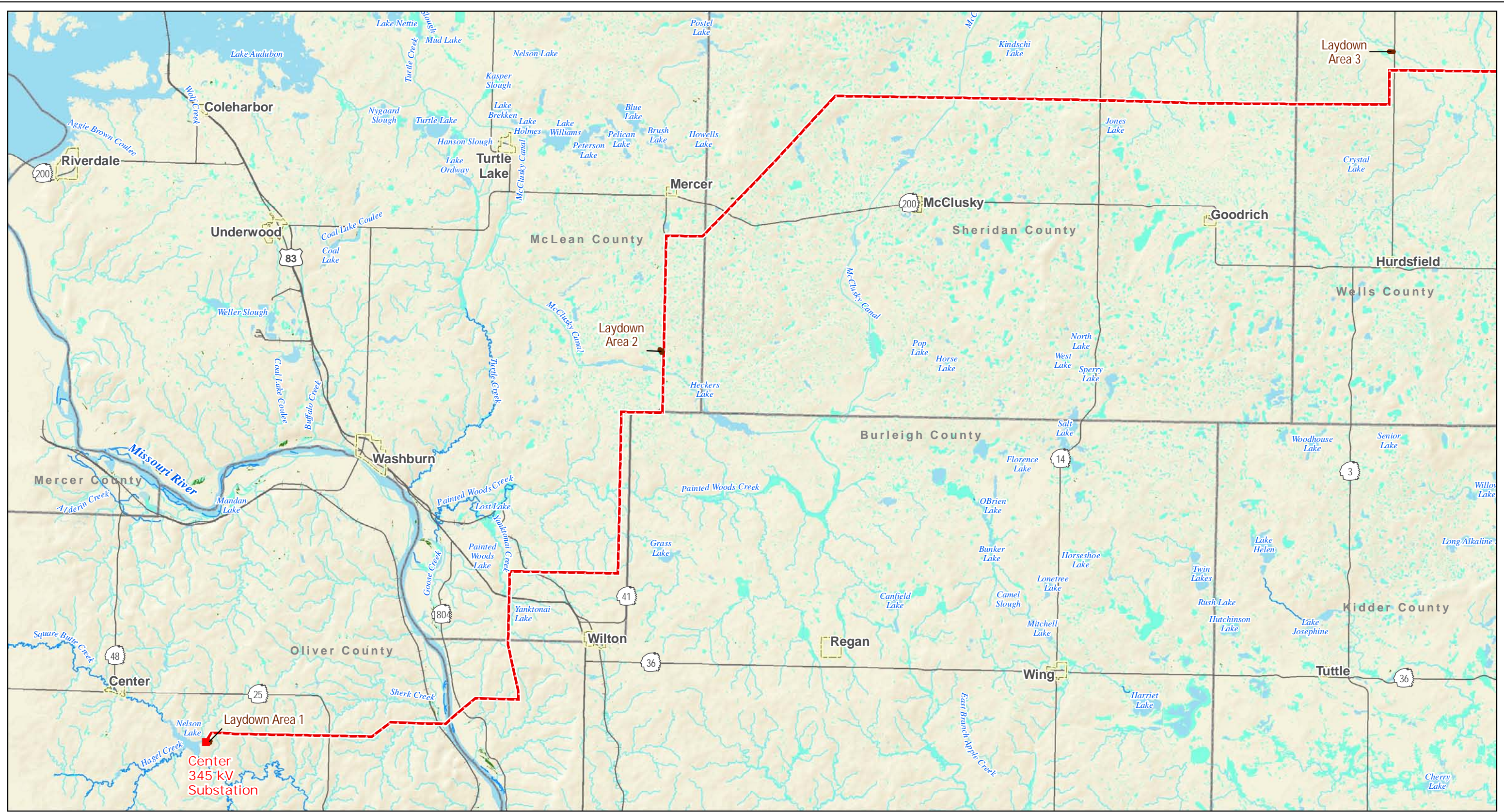


- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

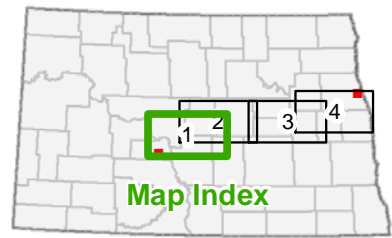
Figure 9: Page 4 of 4
 State Soils Association (STATSGO)
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

0 2 4 Miles
 Scale 1:300,000

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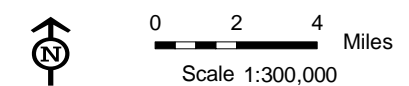


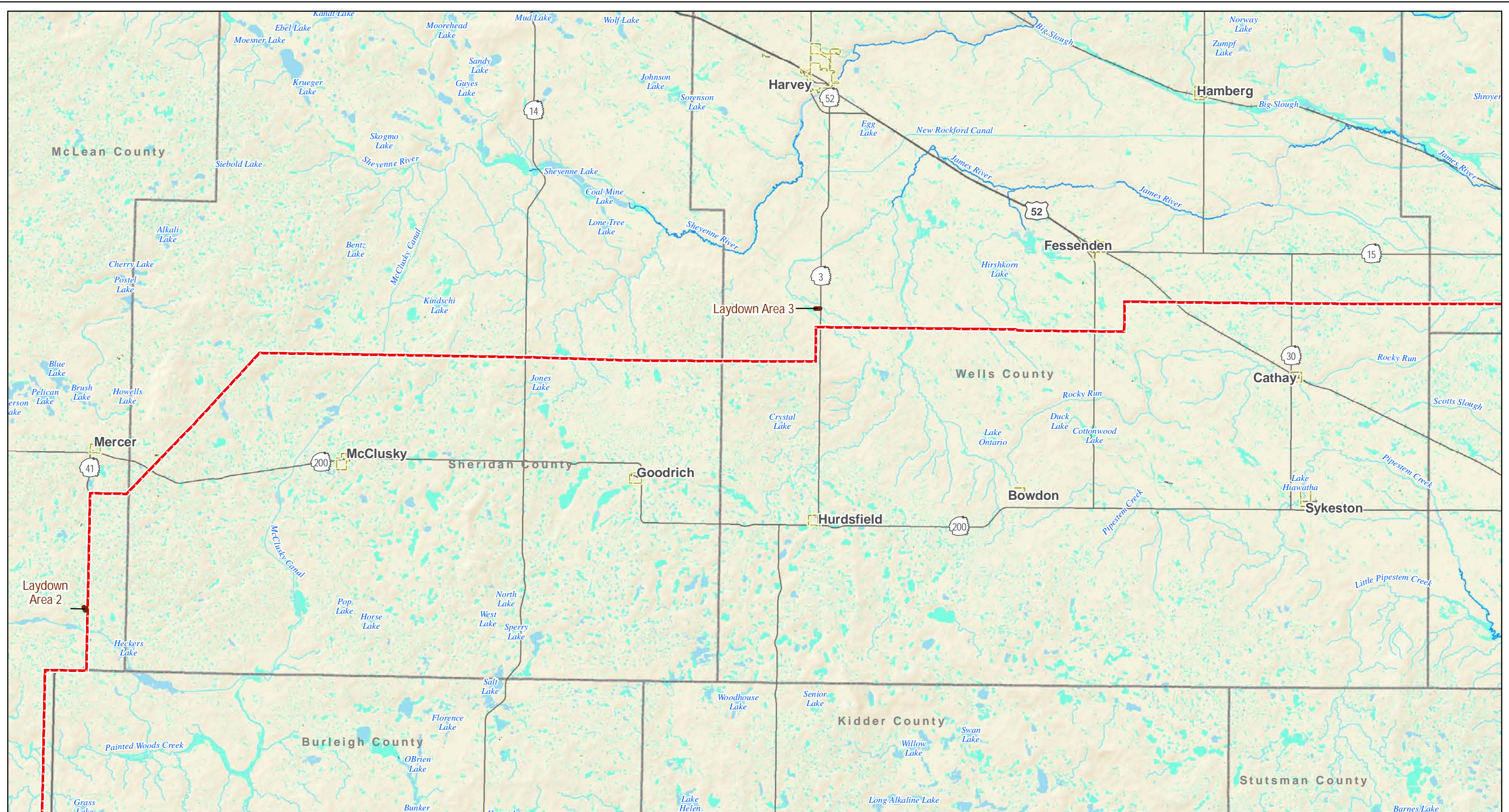
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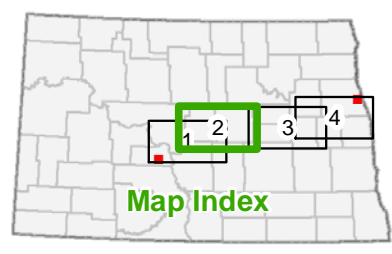
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- ~ USGS Streams
- ~ Perennial River or Stream
- ~ Intermittent Stream, Ditch or Canal
- NWI Wetlands
- Lake, Pond or River
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland

Figure 10: Page 1 of 4
 National Wetlands Inventory and Surface Waters
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



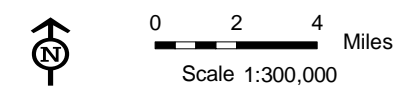


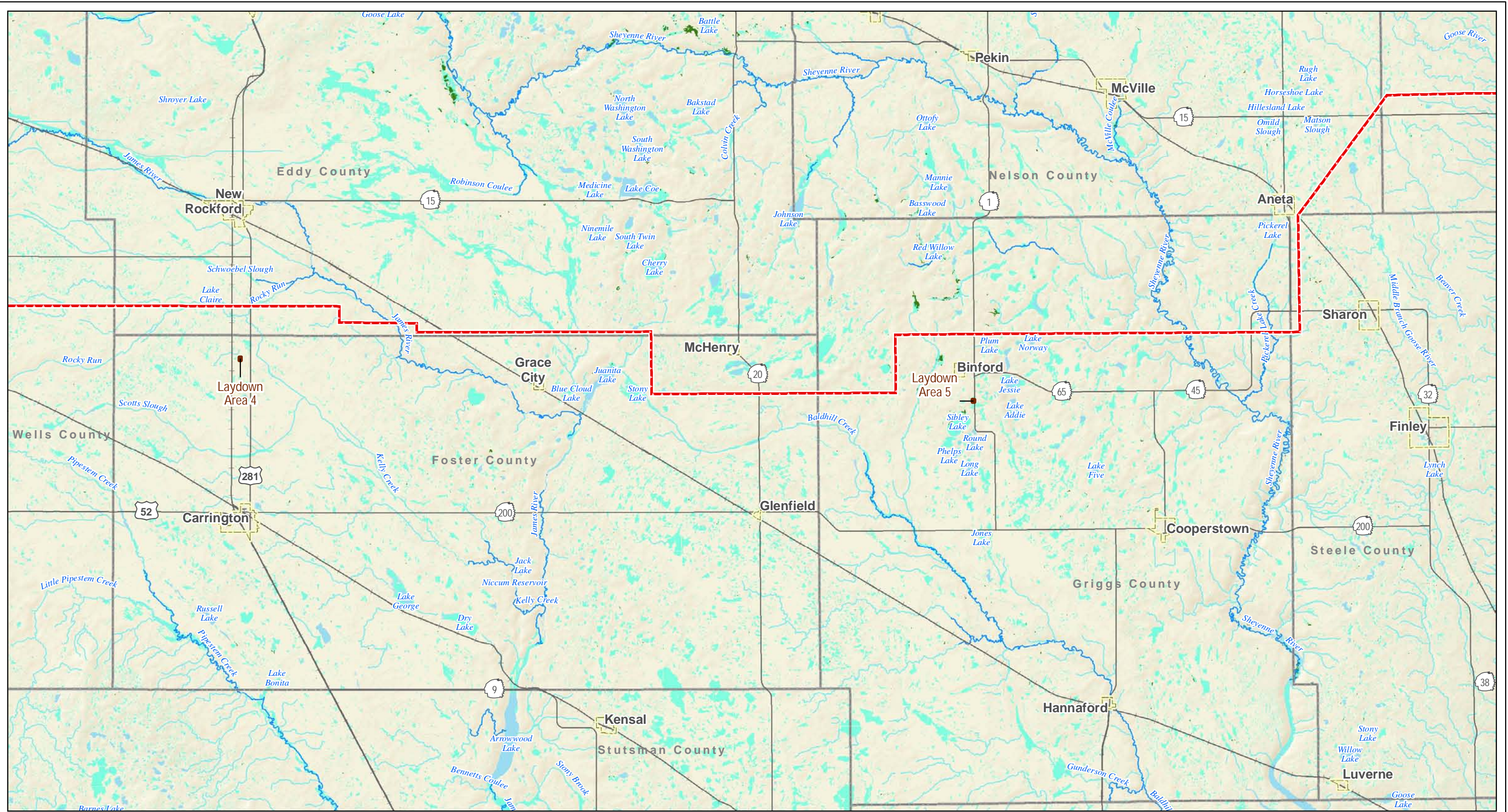
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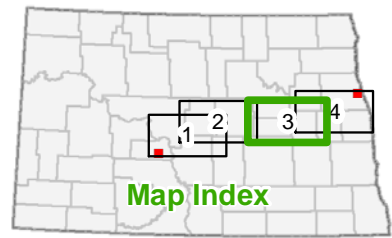
- - - Project Corridor (updated June 9, 2011)
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Figure 10: Page 2 of 4
National Wetlands Inventory and Surface Waters
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



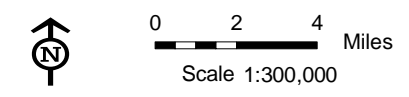


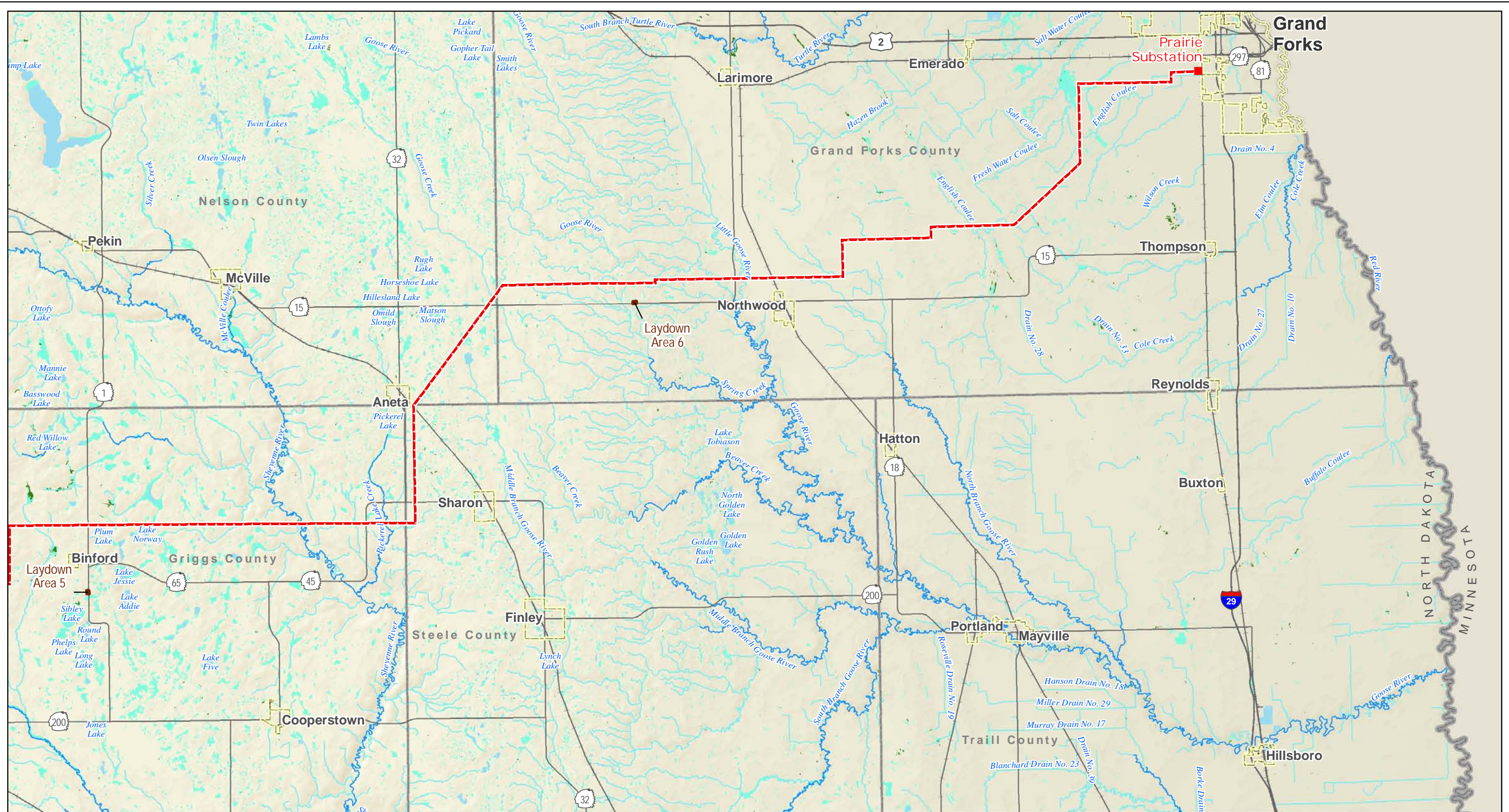
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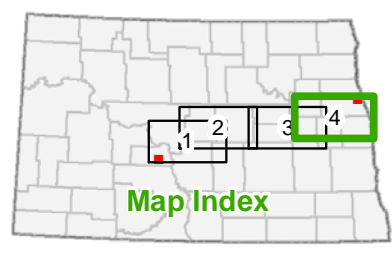
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- Project Substation
- Laydown Area
- ~ ~ ~ USGS Streams
- — — Perennial River or Stream
- - - Intermittent Stream, Ditch or Canal
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Figure 10: Page 3 of 4
National Wetlands Inventory and Surface Waters
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



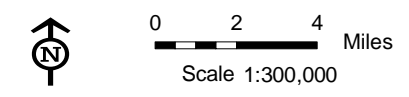


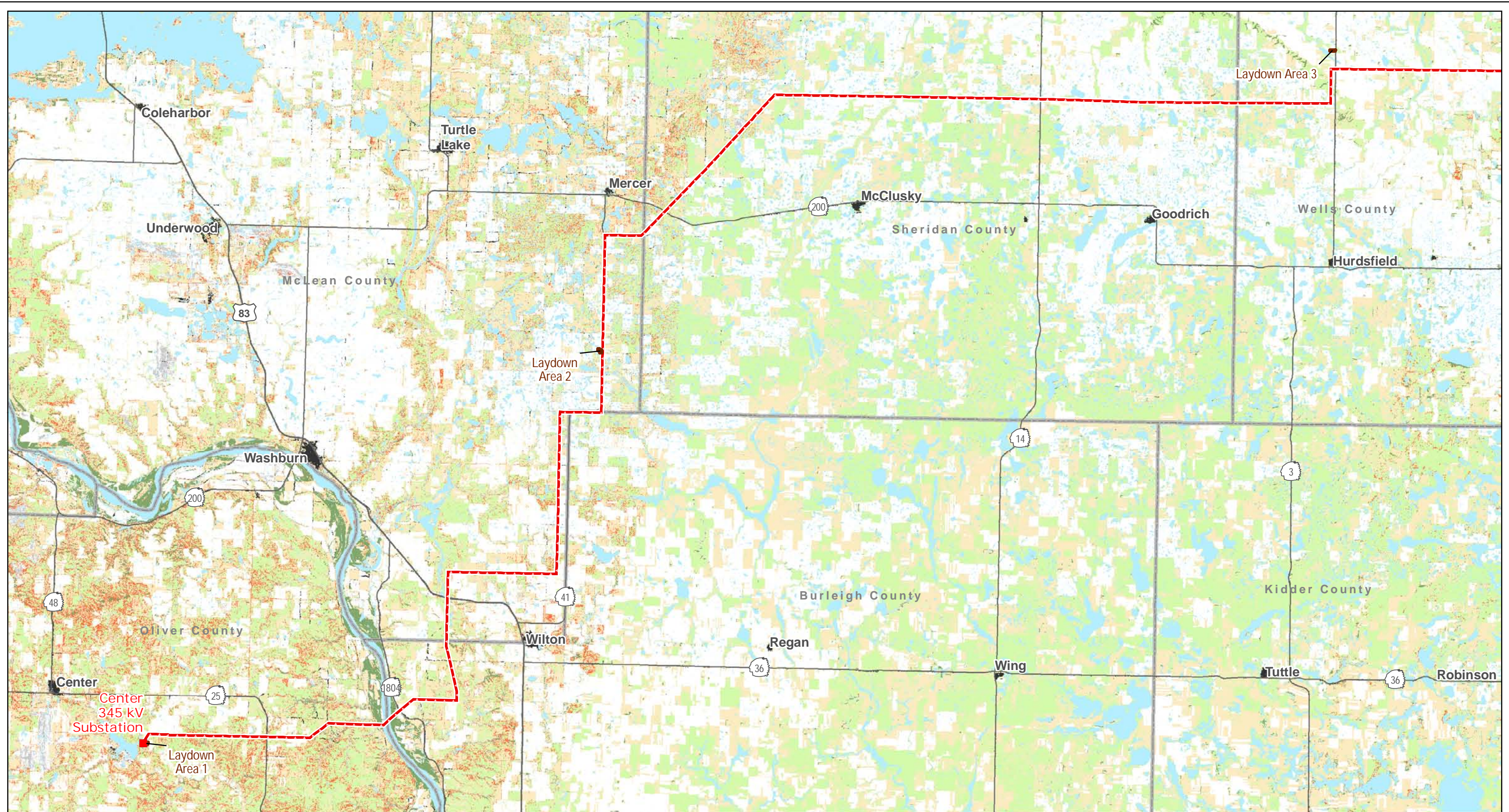
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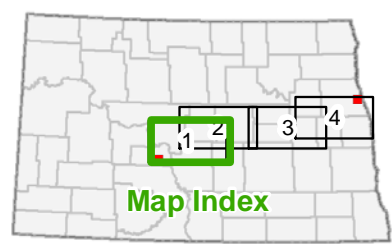
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- Laydown Area
- ~ ~ ~ USGS Streams
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Figure 10: Page 4 of 4
 National Wetlands Inventory and Surface Waters
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.





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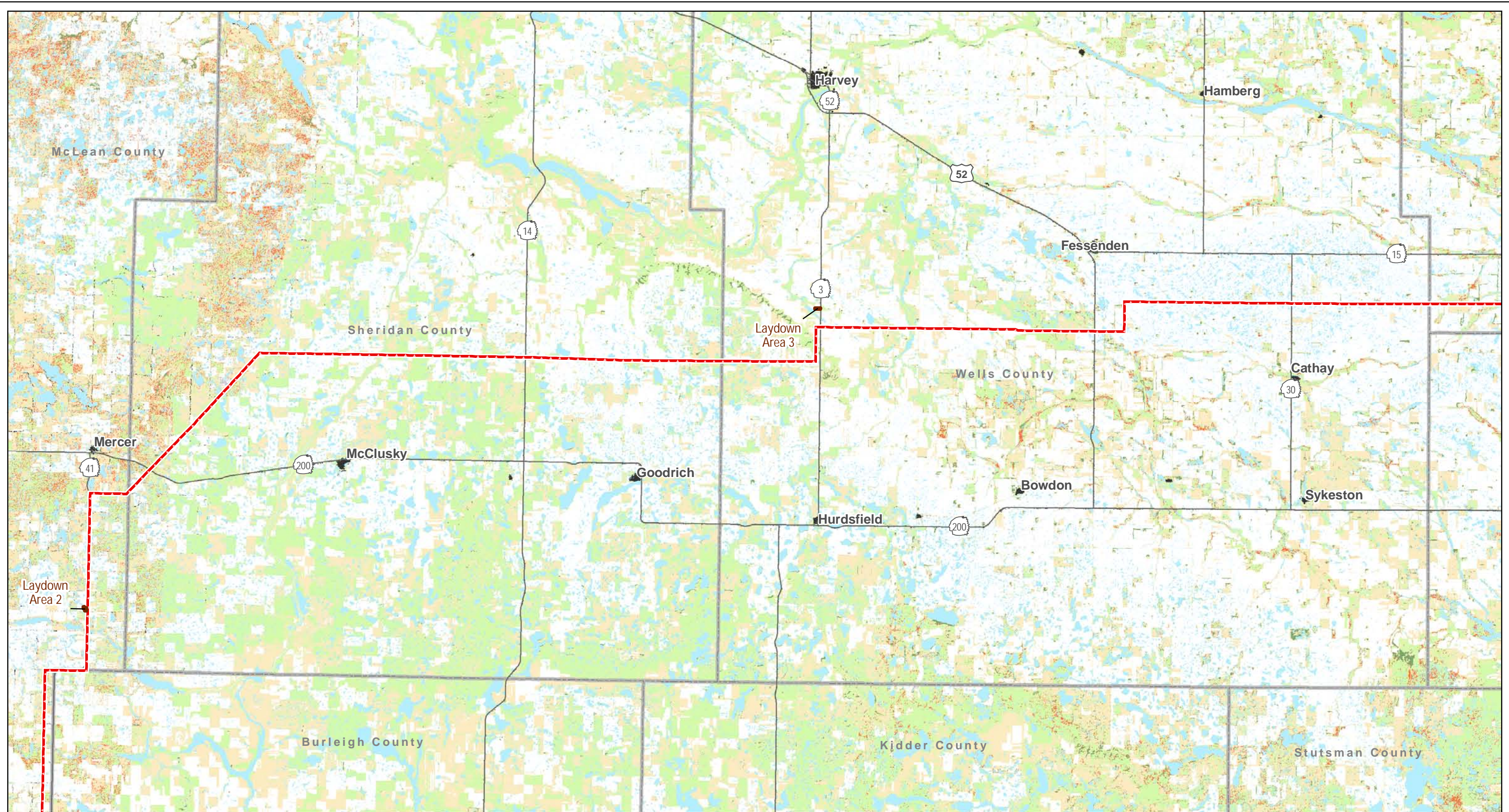
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

- 2004 GAP Land Cover
- Barren/Sparse Vegetation
 - Cropland
 - Developed
 - Pasture

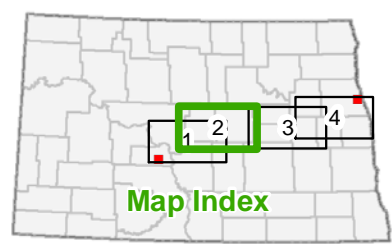
- Prairie
- Shrubland
- Wetland
- Woodland

Figure 11: Page 1 of 4
 Land Cover
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000



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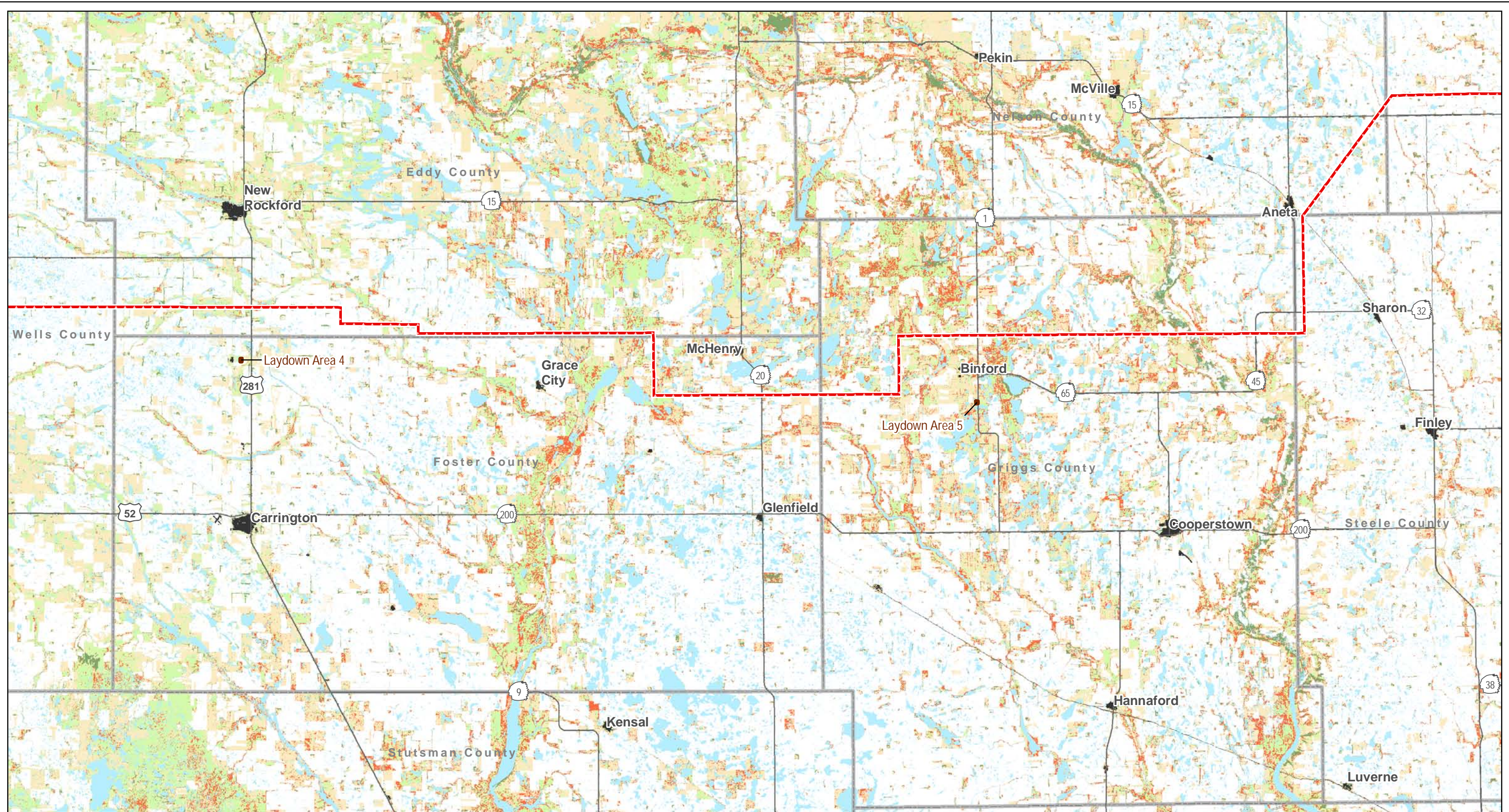
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

- 2004 GAP Land Cover**
- Barren/Sparse Vegetation
 - Cropland
 - Developed
 - Pasture

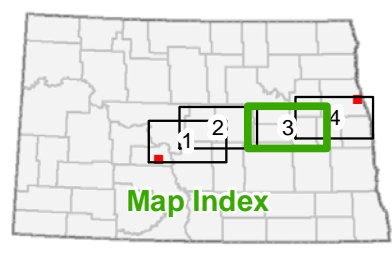
- Prairie
- Shrubland
- Wetland
- Woodland

Figure 11: Page 2 of 4
 Land Cover
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000



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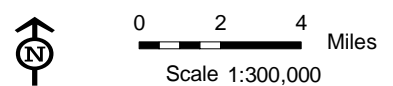


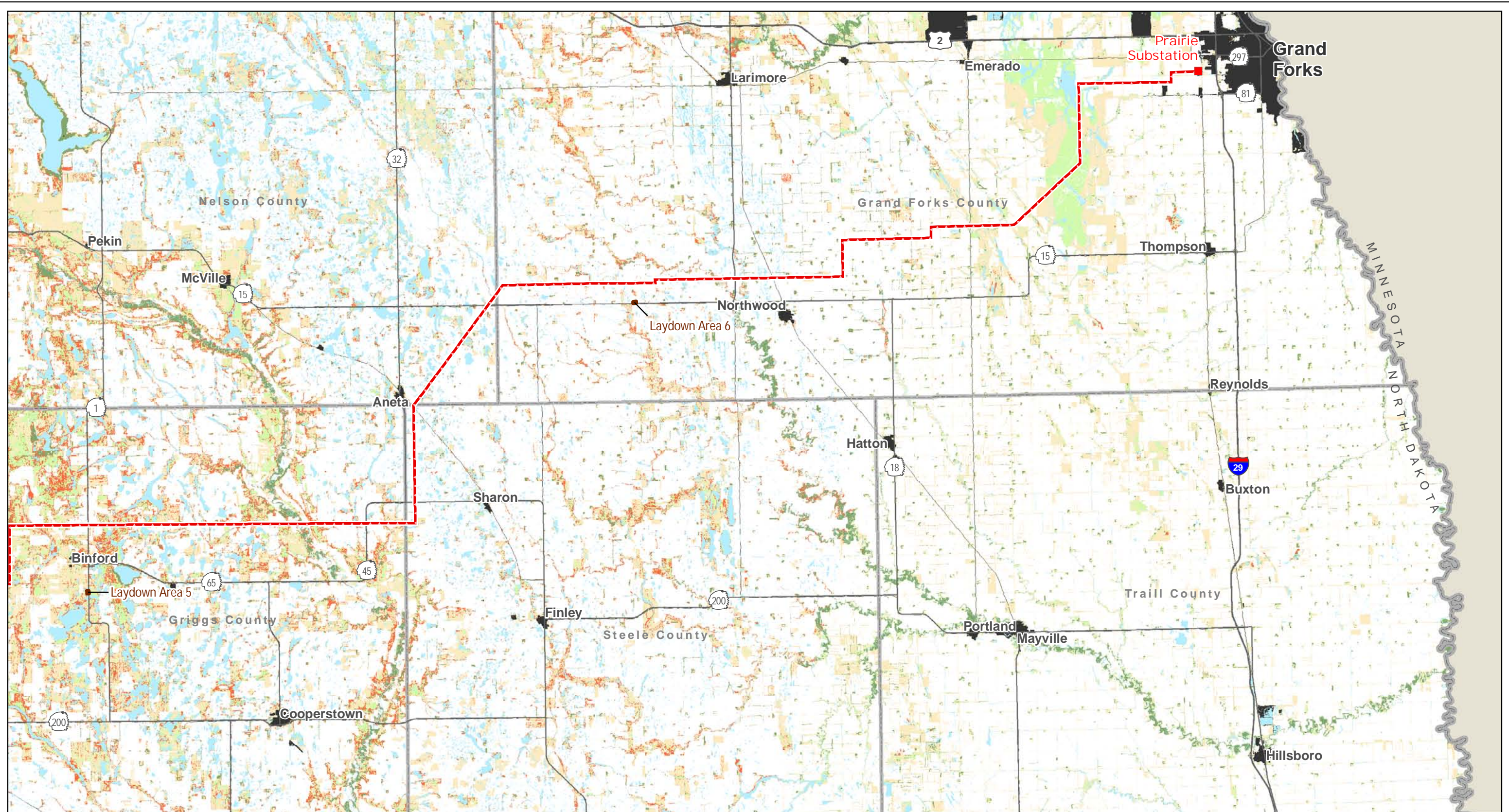
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area

- 2004 GAP Land Cover
- Barren/Sparse Vegetation
 - Cropland
 - Developed
 - Pasture

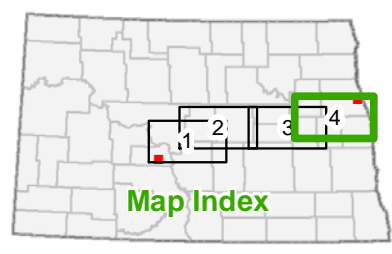
- Prairie
- Shrubland
- Wetland
- Woodland

Figure 11: Page 3 of 4
 Land Cover
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.





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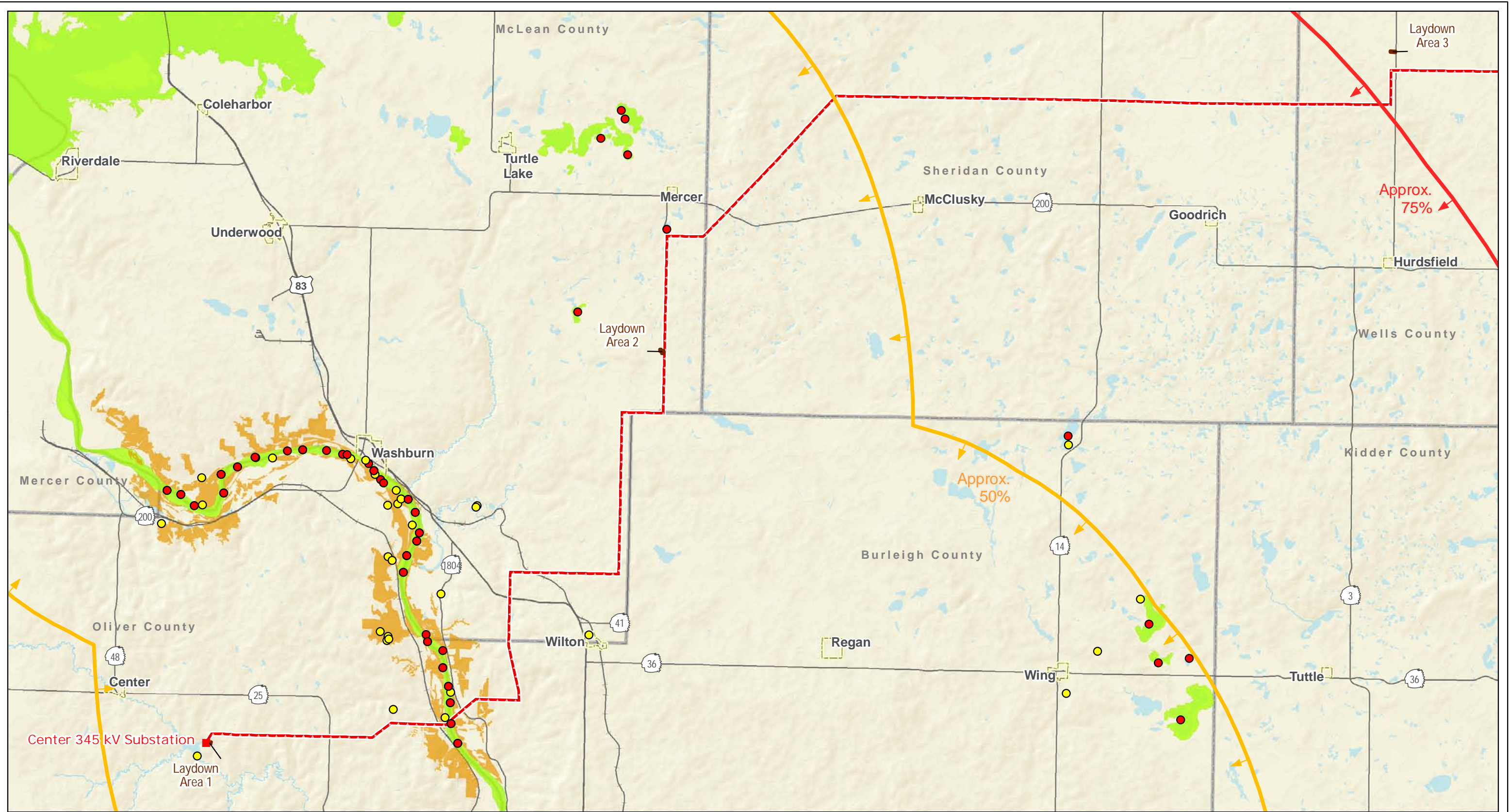
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- Laydown Area

- 2004 GAP Land Cover
- Barren/Sparse Vegetation
 - Cropland
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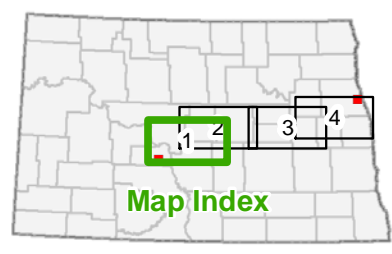
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Figure 11: Page 4 of 4
 Land Cover
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.

Scale 1:300,000

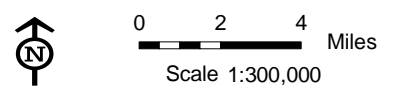


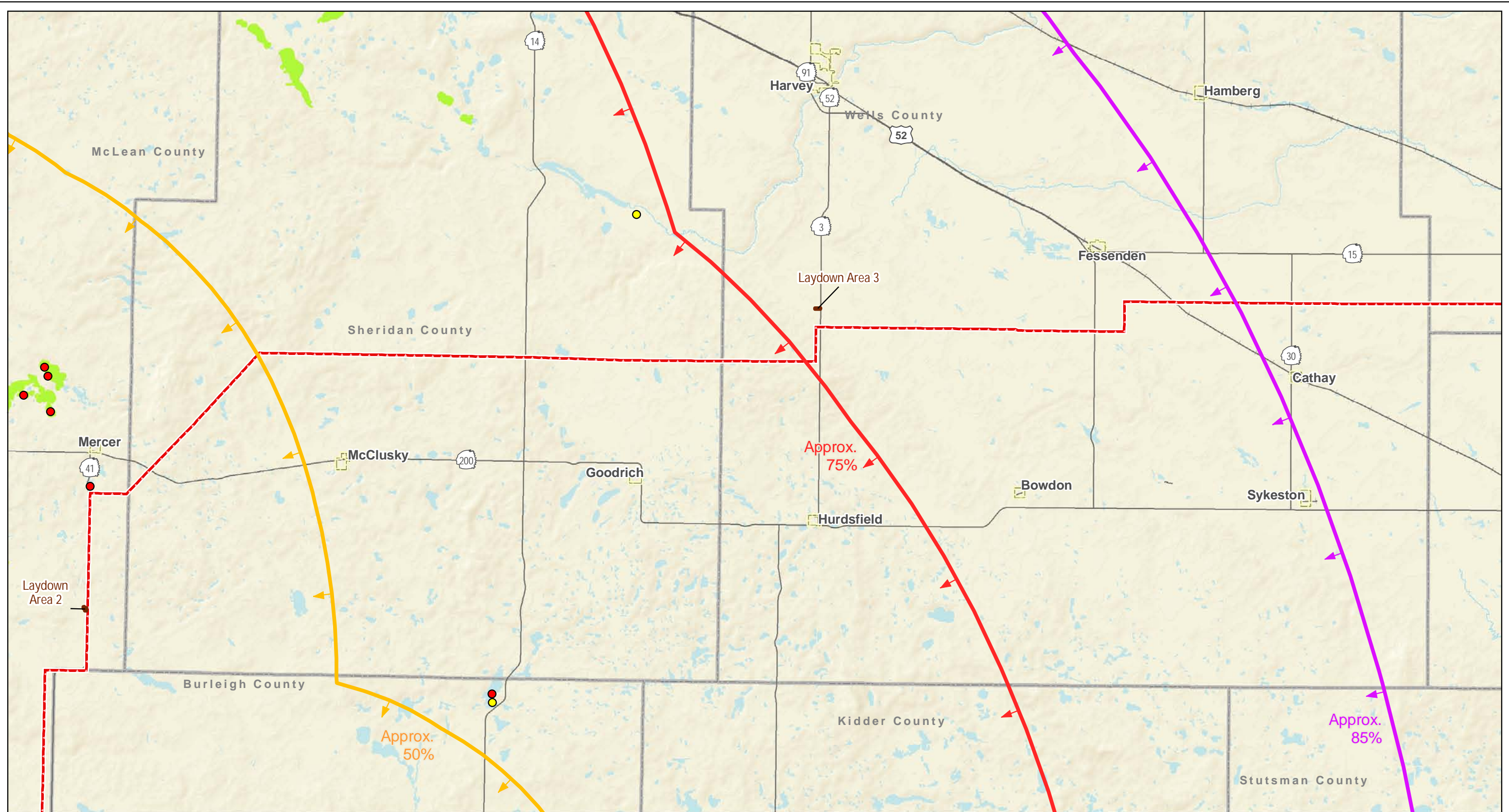
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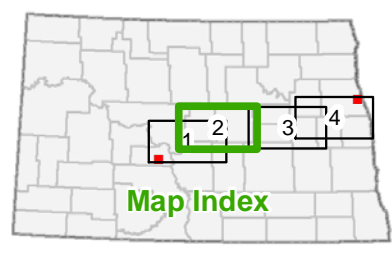
- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- Federally Threatened or Endangered Species
- NHI Species of Concern
- ✂ Impaired or Vulnerable Terrestrial Community
- ✂ Piping Plover Critical Habitat
- Whooping Crane Sighting Corridor**
- Approx. 50%
- Approx. 75%
- Approx. 85%
- Approx. 95%

Figure 12: Page 1 of 4
Sensitive Natural Resources
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.



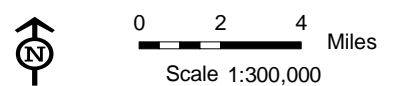


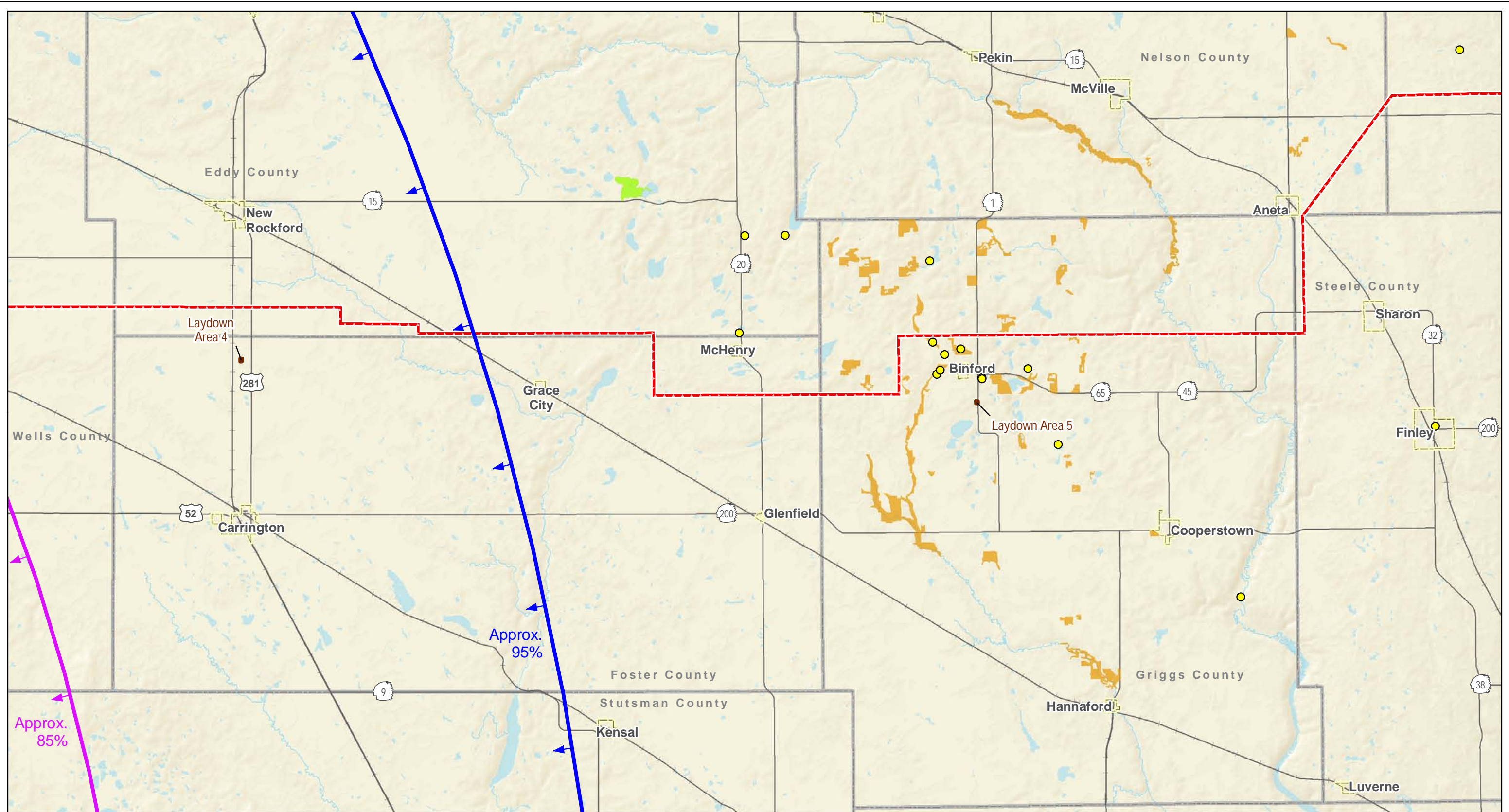
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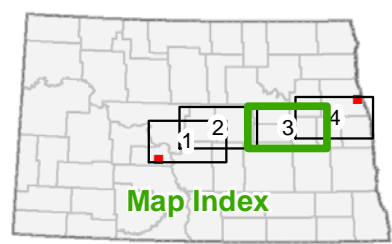
- - - Project Corridor (updated June 9, 2011)
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- Laydown Area
- Federally Threatened or Endangered Species
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- ✂ Impaired or Vulnerable Terrestrial Community
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- Whooping Crane Sighting Corridor**
- ▢ Approx. 50%
- ▢ Approx. 75%
- ▢ Approx. 85%
- ▢ Approx. 95%

Figure 12: Page 2 of 4
 Sensitive Natural Resources
 Center to Grand Forks Project
 Minnkota Power Cooperative, Inc.



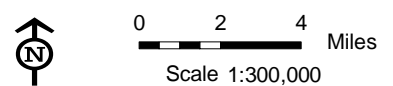


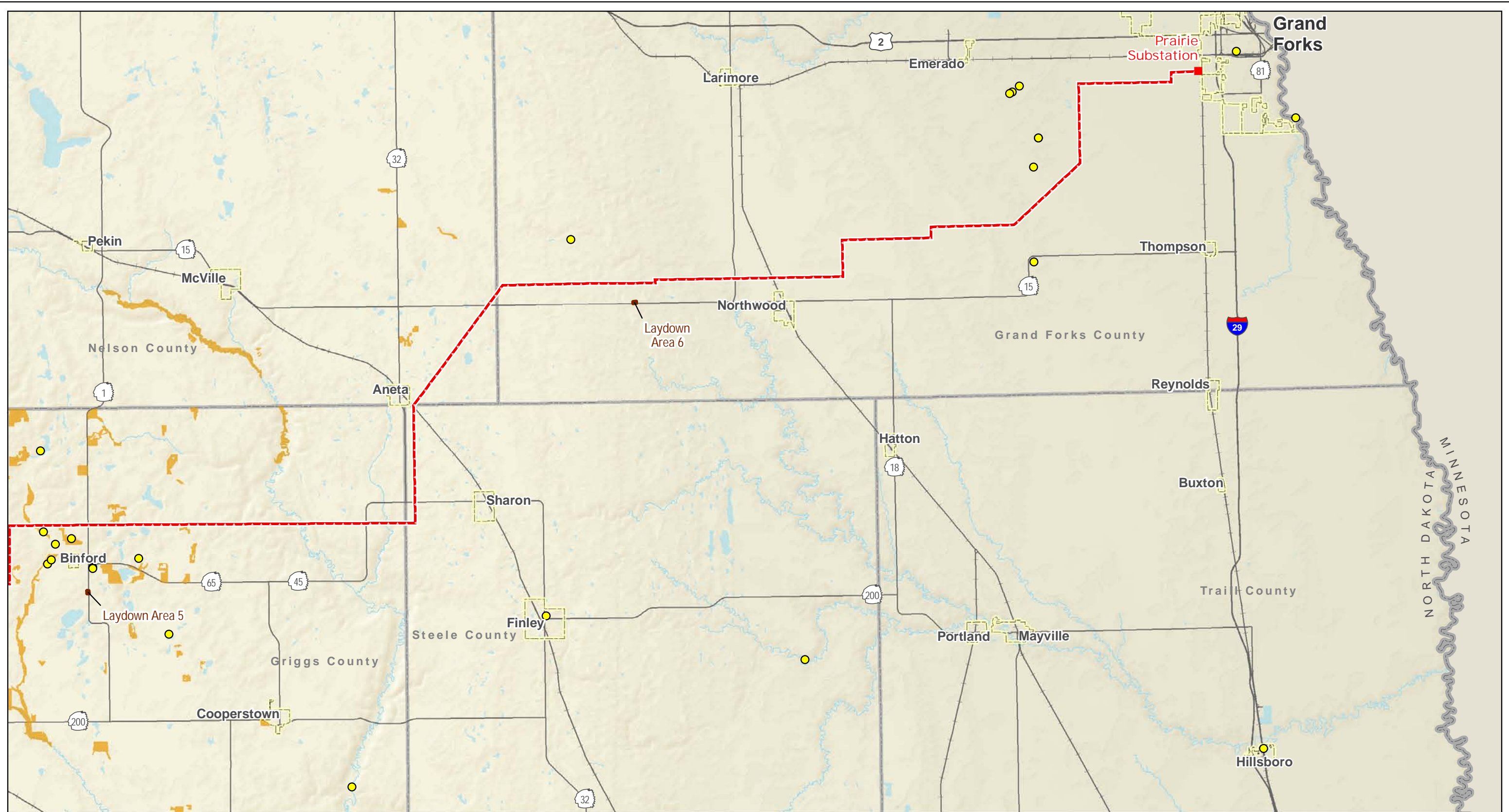
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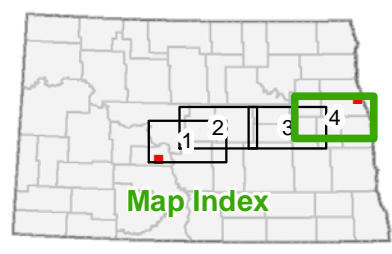
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- Laydown Area
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- Piping Plover Critical Habitat
- Whooping Crane Sighting Corridor**
- Approx. 50%
- Approx. 75%
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Figure 12: Page 3 of 4
Sensitive Natural Resources
Center to Grand Forks Project
Minnkota Power Cooperative, Inc.





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- - - Project Corridor (updated June 9, 2011)
- Project Substation
- Laydown Area
- Federally Threatened or Endangered Species
- NHI Species of Concern
- ✂ Impaired or Vulnerable Terrestrial Community
- ✂ Piping Plover Critical Habitat
- Whooping Crane Sighting Corridor**
- Approx. 50%
- Approx. 75%
- Approx. 85%
- Approx. 95%

Figure 12: Page 4 of 4
 Sensitive Natural Resources
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Scale 1:300,000

Revised Corridor Description

June 9, 2011

4.0 Engineering and Operational Design

The information in Section 4.0 is subject to change as Project development continues. These sections and updated engineering and operation design information will be finalized in Minnkota's application for a Route Permit.

4.1 Corridor Description

The Project Corridor is approximately 248-miles-long. The Project Corridor proceeds northeast out of the Center 345 kV Substation for about 0.5 miles to the section line, then proceeds due east along the section line for about 8 miles, before turning northeast on a cross-country path for about 1 mile. The Project Corridor then proceeds east for approximately 3 miles to the Missouri River. It crosses the Missouri River about 0.10 miles north of the existing HVDC transmission line on the west side of the river and about 0.4 miles north of the existing HVDC transmission line on the east side of the river. After crossing the Missouri River and State Highway 1804 diagonally for about 2 miles, the Project Corridor proceeds due east along 279th Ave NE for about 2.25 miles. The Project Corridor then proceeds north for about 0.5 miles before turning northwest for about 2.25 miles. The Project Corridor then proceeds north for about 3.75 miles along a section line, and then east for about 5.5 miles along a quarter-section line to within 0.5 miles west of State Highway 41.

The Project Corridor proceeds north for about 8.0 miles along State Highway 41, turns east for 2 miles along State Highway 41, and follows State Highway 41 to the north for about 9 miles; within this segment the Project Corridor spans the McClusky Canal. The Project Corridor turns east for approximately 2 miles along 3rd Street NW to the McLean/Sheridan County line. The Project Corridor proceeds diagonally, cross-country for about 10 miles to the east side of Center Ave in Sheridan County. At that point the Project Corridor proceeds east about 0.25 miles north of 10th St NE for about 28.25 miles to 0.25 miles west of State Highway 3, crossing the McClusky Canal and State Highway 14, then proceeds north for about 2 miles. The Project Corridor turns east along 12th St NE for about 15.75 miles, crossing U.S. Highway 52, then turns north for about 1.5 miles on a quarter-section line. The Project Corridor turns east along a quarter-section line for about 27 miles, crossing State Highway 30 and U.S. Highway 281. Then the Project Corridor turns south for about 1 mile to the quarter-section line, and continues east for about 4 miles along the quarter-section line to turn south for about 0.5 miles to the quarter-section line north of 12th St NE (Foster/Eddy County line) where it travels approximately 12 miles to the east.

To bypass the towns of McHenry and Binford, the Project Corridor goes south for approximately 3 miles, then east for about 12.5 miles along 3rd St NE/9th St NE, and north for about 3 miles to 12th St NE. Along 12th St NE, the Project Corridor heads east for about 20.5 miles, across the Sheyenne River and State Highway 45, to about 0.5 miles east of 120th Ave NE in Steele County where the Project Corridor travels north for about 6 miles on the quarter-section to Aneta. At Aneta, the Project Corridor goes northeast, diagonally, cross-country for about 7.5 miles to 6th Ave NE in Grand Forks County. The Project Corridor travels east along 6th Ave NE for about 7.75 miles, then north for about 0.2 miles along 41st St NE. The Project Corridor then proceeds east for about 9.5 miles and turns north for about 2 miles along the quarter-section line (about 0.5 miles west of 31st St NE). Then the Project Corridor travels east along 8th Ave NE for about 4.5 miles. At 27th St NE, the Project Corridor travels north for about 0.5 miles and then travels east for about 4 miles to the existing WAPA 230 kV transmission line. Then, the Project Corridor proceeds northeast, diagonally, cross-country for

about 4.5 miles adjacent to the WAPA line, then north for about 4 miles, approximately 0.25 miles west of 19th St NE, where it turns to go east for almost 5 miles. At 0.5 miles west of 14th St NE, the Project Corridor heads north for about 0.5 miles and then proceeds east for about 1.5 miles into the Prairie Substation

4.2 Description of Proposed Facilities

In general, a high-voltage transmission line consists of three phases, each at the end of a separate insulator string (or v-string configuration), all physically supported by structures. Each phase consists of one or more conductors. When more than one conductor is used to make up a phase, the term “bundled” conductors is used. Conductors are metal cables consisting of multiple strands of steel and aluminum wire wound together. There are also two shield wires strung above the electrical phases to prevent, to the extent possible, lightning from striking the phases. These wires are typically less than 1 inch in diameter. The shield wire can also include fiber optic cable that allows a path for substation protection and control equipment to communicate to equipment at other terminals on the transmission line. Transmission lines are constructed on a ROW, whose width is primarily dependent on structure design, span length, and the electrical safety requirements associated with the transmission line’s voltage.

4.2.1 Transmission Structure and Right-of-Way Design

Transmission Structure

Single pole, self-weathering steel single circuit structures are proposed for the majority of the Project (Figure 5). The self-weathering steel oxidizes or rusts to form a dark reddish brown surface coating to protect the structure from further weathering. The steel single poles are placed on large concrete foundations, which are wider than the pole base. Table 4.2-1 outlines typical characteristics of 345 kV transmission line structures.

Table 4.2-1. Typical Characteristics of 345 kV Transmission Line Structures

345 kV Transmission Line	Details
Voltage (kV)	345 kV
ROW width (feet)	150
Approximate span length (feet)	1,000
Range of structure heights (feet)	130 - 150
Number of structures per mile	5 - 7
Minimum ground clearance beneath conductor (feet)	35 - 40
Depth of concrete footings for the poles (feet)	30 - 40
Diameter of concrete footings for the poles (feet)	7 - 10
Average area of permanent disturbance per structure (square feet)	78.5

Table 4.2-2 summarizes the structure designs and foundations for the single pole structures that will be used for the majority of the Project. Preliminary information about the Missouri River structures and structures near the Grand Forks Airport is also provided.