

# GREAT RIVER ENERGY

APPLICATION TO THE  
NORTH DAKOTA PUBLIC SERVICE COMMISSION  
FOR A  
TRANSMISSION FACILITY CERTIFICATE OF CORRIDOR  
COMPATIBILITY AND ROUTE PERMIT

## 230 kV GD Line Reroute

Docket # PU-12-398



**31 August 2012**

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## 1.0 Introduction

Great River Energy is proposing to relocate two segments of an existing 230 kV transmission line that travels between Grand Forks and Devils Lake, North Dakota (“Project”), as shown in **Figure 1-1**. This transmission line is the last 80 miles of a 240 mile transmission line outlet with interconnecting load centers at Devils Lake, Minot, and Grand Forks, North Dakota. The line is an outlet for the Stanton generation plant, and serves a broader purpose of stabilizing the electrical transmission grid in and outside of North Dakota. Since the construction of the transmission line in 1966, several wetland basins along the transmission line route have become flooded, resulting in compromised clearances under the existing transmission line. Surveys have identified the need to mitigate clearance discrepancies as a result of the increased water elevations. Great River Energy proposes to relocate around these expanded water bodies.

Great River Energy is a not-for-profit generation and transmission electric cooperative owned by its 28 member cooperatives that serve the outer suburban Twin Cities area, up to the Arrowhead region of Minnesota, and down to the southwestern portions of the State of Minnesota. Great River Energy is the second largest electric power supplier in Minnesota and its’ member cooperatives serve about 1.7 million people. Great River Energy owns and operates 11 power plants and generates more than 2,800 megawatts (MW) of electricity, and also purchases additional power from wind farms and other generating facilities. In addition, Great River Energy owns and operates nearly 4,500 miles of transmission line and owns or partly owns more than 100 transmission substations. Great River Energy employs more than 850 people.

### 1.1. Compliance with the Energy Conversion and Transmission Facility Siting Act

The North Dakota Energy Conversion and transmission facility Siting Act requires an application for a Certificate of Corridor Compatibility to meet the criteria set forth in the North Dakota Century Code (NDCC Chapter 49-22). The following application provides the required information, as described within the Act. In addition, there is discussion with regard to exclusion areas, avoidance areas, and the selection criteria set forth in the North Dakota Administrative Code (NDAC, Section 69-06-08-02).

#### 1.1.1. Letter of Intent and Waiver of One-Year Notice

On June 20, 2012, Great River Energy filed a Letter of Intent (LOI) to submit an application for a combined Certificate of Corridor Compatibility and Route Permit and a request for a waiver of the one-year notice period between filing a LOI and Certificate of Corridor Compatibility and Route Permit Application. The LOI was accepted and the waiver requested was granted by the Commission on August 1, 2012. See **Appendix A**.

#### 1.1.2. Request for Commission Guidance Regarding a Route Proposal

In May 2012, an informal request was made to the Commission staff requesting guidance on the routing issues and the need for identifying alternate routes. Given the scope of the proposed

reroutes, two segments with a combined length of approximately four miles, staff indicated that Great River Energy did not need to identify alternate routes. In addition, staff recommended that a minimum corridor width of 150 feet be identified for the reroutes. Further, the reroutes will require a Class III Pedestrian Survey to identify any areas of cultural significance.

### 1.1.3. Waiver of Corridor Width Requirement

Great River Energy is requesting that the Commission allow a 1,000 foot corridor in this Certificate of Corridor Compatibility application. The selection of a 1,000 foot corridor is a result of an extensive review of GIS data offsite, and an extensive field review. The 1,000 foot corridor will allow for the avoidance of all exclusion areas.

### 1.1.4. Waiver of Procedures

Great River Energy requests a waiver from Section 69-06-03-01 of the North Dakota Administrative Code, which establishes a one-year notice period between filing a LOI and filing the application for a Certificate of Corridor Compatibility and Route Permit. Pursuant to Section 69-06-03-01, the Commission may approve a shorter notice period. Great River Energy is requesting this waiver of the one-year notice period to allow adequate time to permit and construct the transmission line during the upcoming winter.

### 1.1.5. Certificate of Corridor Compatibility and Route Permit

**Table 1-1** outlines the information to fulfill the requirements for the combined Certificate of Corridor Compatibility and Route Permit based on the Commission's guidelines and identifies where these requirements are addressed in this document.

**Table 1-1. Certificate of Corridor Compatibility and Route Permit Checklist.**

State Authority	Description	Sections
NDCC-49-22-08	Commission Guidelines: Energy Conversion and Transmission Facility Siting (November 1979)	
Section A	Description	
1.	Type: Describe the type of energy conversion facility proposed and provide a diagram of the major process system or a flow diagram	1.0, 2.0, 4.2
2.	Product: Describe in general terms and technical terms the products to be produced by the facility	1.0, 4.2
3.	Size & Design: Provide the following description of the electrical facility including, but not limited to the following:	
a.	Width of the Right-of-Way;	4.2
b.	Estimated span lengths;	4.2
c.	Anticipated type of structure;	4.2
d.	Approximate length of transmission line facility;	1.0, 4.2
e.	Voltage;	1.0, 4.2
f.	General location of any new associated facilities; and	4.2

State Authority	Description	Sections
g.	One (1) copy of all design data reports separate from the application.	n/a
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following:	1.3
a.	Certificate of Site Compatibility and Route Permit	1.3
b.	Right-of-Way acquisition complete	1.3
c.	Construction start date	1.3
d.	Construction complete	1.3
e.	Test operations	1.3
f.	In-service date	1.3
<b>Section B</b>	<b>Studies</b>	
1.	Provide a copy of an evaluative studies or assessments of the environmental impact to the proposed facility submitted to any federal, state or local agency.	n/a
<b>Section C</b>	<b>Need for Facility</b>	
1.	An analysis of the need for the proposed facility base on present and projected demand for the product or products to be provided by the proposed facility, including the most recent system studies supporting the analysis of the need.	2.0, 2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	n/a
<b>Section D</b>	<b>Location</b>	
1.	Select a study area, which includes the proposed facility site, of sufficient size to enable the Commission to evaluate the factors addressed in Section 49-22-09	1.2.1
2.	Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	3.4
3.	Identify and map the criteria that led to the proposed facility location within the study area.	Figures 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, 5-10, 5-11, 5-12, 5-13, 5-14, 5-15, 5-16
4.	Discuss in detail the relative value of each criteria and how the proposed facility location was selected giving consideration to all criteria	3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3.0
a.	Exclusion areas;	3.1
b.	Avoidance areas;	3.2
c.	Selection criteria;	3.3
d.	Policy criteria;	3.4

State Authority	Description	Sections
e.	Design and construction limitations; and	3.5
f.	Economic considerations.	3.6
6.	Discuss the adverse direct or indirect environmental effects which cannot be avoided for the proposed route.	5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 8.1, 8.3, 8.4
7.	Discuss the effect of the proposed route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	5.6, 8.7
8.	Discuss the effect of the proposed route on areas which are unique because of biological wealth or because they are habitats for rare or endangered species.	5.12, 5.13, 5.14, 5.15, 8.8
9.	Discuss the mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.7.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3
10.	Identify any issues raised by federal agencies, other state agencies, or local entities.	8.9
11.	List the qualifications of the people in the various disciplines that contributed to the facility site location study.	9.0
12.	Maps	See Maps
a.	Map the criteria within the study area showing the proposed facility location. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures 4-1 and 4-2
b.	Furnish one Mylar map, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed facility location.	n/a
NDCC 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	n/a
2.	The effects of new transmission technologies and systems designed to minimize adverse environmental effects.	8.2

## 1.2. Project Summary

The Project consists of the reroute of two segments of the Ramsey to Grand Forks 230 kV transmission line. The need for the reroutes is due to compromised clearances over standing surface water due to flooded conditions in two locations (**Figure 1-2**). The total reroute lengths

are 1.75 miles for Segment 7 and 2.25 miles for Segment 8. While final engineering and design have yet to be completed, the majority of the line will be constructed the same as the existing transmission line, which consists of wood poles with H-frame cross arms and braces. The wood poles will be either cedar or Douglas fir and pressure treated with Penta. Span lengths will generally range from 600 to 800 feet; however, longer spans may be necessary in certain areas depending on the topography.

### **1.2.1. Study Area, Project Corridors, and Route Development Summary**

The study area occurs along an 80 mile section of the GD 230 kV transmission line between Grand Forks and Devils Lake. Recent surveys have identified two areas (Segment 7 and Segment 8) where transmission line clearances have been compromised due to high water in the slough areas.

Segment 7 is located near the City of Lakota and the proposed reroute will occur between Structures 449 and 460 south of the high water area. Segment 8 is located near the City of Crary and the proposed reroute will occur between Structures 550 and 562 north of the high water area. These areas are characterized by a rolling topography of cultivated lands on the higher ground, and prairie pothole wetland ecosystems in the lower reaches. The area is rural with sporadic homesteads, with wooded wind breaks and groves surrounding the homes and along some fence lines.

The factors addressed in NDCC Section 49-22-09 were considered in evaluating the Project Corridors for the GD 230 kV transmission line reroutes. All exclusion and avoidance areas were considered in selecting the Project Corridors. Great River Energy sought to avoid residential areas, irrigated land, recreational areas, wildlife areas, and conservation easement areas to the extent feasible. This is consistent with the Commission's Policy Criteria for siting transmission line corridors and routes.

### **1.3. Project Schedule**

- **Certificate of Corridor Compatibility and Route Permit:** Great River Energy anticipates that the Certificate of Corridor Compatibility and Route Permit will be issued during the Fourth Quarter of 2012.
- **Equipment Procurement, Manufacture and Delivery:** Great River Energy expects that project materials will arrive during the Third and Fourth Quarters of 2012.
- **Construction:** Project construction will begin during the Fourth Quarter of 2012 and continue through the First Quarter of 2013, during the scheduled line outage.
- **In-Service date:** The scheduled line outage begins December 3, 2012, and ends on April 5<sup>th</sup>, 2013; therefore the anticipated in-service date is April 5<sup>th</sup>, 2013.

## **2.0 Need for Facility**

Great River Energy has conducted an analysis of this 230 kV transmission line in response to a “Recommendation to Industry (Consideration of Actual Field Conditions in Determination of Facility Ratings)” issued in October of 2010 by the North American Reliability Corporation (NERC). This NERC recommendation was issued to all utilities in North America. Great River Energy corrected all land-related clearance discrepancies on the GD line by April of 2012. Structures in water could not be rebuilt in the same location due to existing rock protection and concern of the existing wood poles reaching their end of life. Rerouting these structures on dry ground was the logical and economical choice for correction of the clearance discrepancies.

### **2.1. Needs Analysis**

At the time of the initial construction in 1966, the area was much drier than at the present time. Wetter than normal hydrologic conditions have created high water in several basins along the transmission line, resulting in compromised clearances under portions of the GD 230 kV transmission line. Great River Energy proposes to relocate the existing structures out of these high water areas.

### **2.2. Segment Reroutes**

Between the cities of Grand Forks and Devils Lake, the proposed reroutes occur in two locations on the Ramsey to Grand Forks (GD) 230 kV transmission line to move the existing structures out of high water areas. The first location (Segment 7 reroute) is in the Lakota area where Great River Energy is proposing to relocate Structures 449 to 460 to the south to avoid the high water area within Jones Lake. The second location (Segment 8 reroute) is in the Crary location where Great River Energy is proposing to relocate Structures 550 to 562 to the north to avoid the high water area.

### 3.0 Transmission Facility Route Criteria

The Project Corridors were selected with regard to the following exclusion, avoidance and selection criteria, as described in NDAC Section 69-06-08-02. The selection criteria were intended to minimize potential land use impacts and environmental impacts, as well as to minimize impacts to the public. In addition, design and construction limitations present in the Project Corridors were also factored into the proposed reroutes.

#### 3.1. Exclusion Areas

In accordance with Section 69-06-08-02(1), the following geographical areas shall be excluded in consideration of a route for a transmission facility (**Table 3-1**):

**Table 3-1: Exclusion Areas**

Geographic Area	Present within Project Corridors	Adjacent to Project Route	Proposed Buffer	Section Addressed
Designated or registered national parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, not within Project Corridor
Designated or registered state parks; historic sites; monuments; historical markers, archaeological sites; and nature preserves.	Yes, See Section 5.6 for description	Yes, project structures are as close as 75 feet to archaeological sites.	No impacts are anticipated and no buffer is proposed.	5.6
County Parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, Not within Project Corridor
Areas critical to the life stages of threatened or endangered species.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.15
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.13, 5.14, 5.15

#### 3.2. Avoidance Areas

In accordance with Section 69-06-08-02(2), the geographic areas identified in **Table 3-2** shall not be considered in the routing of a transmission facility unless the applicant can support the conclusion that there are no other reasonable alternatives. In determining whether an avoidance area should be designated for a transmission facility, consideration may be given to the proposed management of the potential adverse impacts; actual siting of the facility; the system reliability and integrity; and the use of resources.

**Table 3-2: Avoidance Areas**

<b>Avoidance Area</b>	<b>Present within Project Corridors</b>	<b>Adjacent to Project Route</b>	<b>Proposed Buffer</b>	<b>Section Addressed</b>
Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, Not within Project Corridor
Designated or registered state: wild, scenic or recreational rivers; game refuges; game management areas; forests, forest management lands; and grasslands.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, Not within Project Corridor
Historical resources which are not specifically designated as exclusion or avoidance areas.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.6
Areas which are geologically unstable.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.10
Within 500 feet of a resident, school, or place of business.	Yes	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, Not within Project Corridor
Reservoirs and municipal water supplies.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.3, 5.11
Water sources for organized rural water districts.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.11
Irrigated land.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	N/A, Not within Project Corridor
Areas of recreational significance which are not designated as exclusion areas.	Not present within Project Corridors	Not present within Project Route	No impacts are anticipated and no buffer is proposed.	5.7

As indicated in **Table 3-2**, the proposed Segment 7 reroute is surrounded by four residences within a half of a mile of the Project Corridor. Of those residences, two are within 500 feet of the Project Corridor. The Class III Pedestrian Survey identified two prehistoric sites in the Segment 7 Project Corridor and one historic and one prehistoric site within the Segment 8

Project Corridor. See **Figures 4-1 and 4-2** for a graphical depiction of the exclusion and avoidance areas. Additional information is provided in the full report in **Appendix A**.

A portion of the large waterbody to the south of Segment 8 is the Crary State Wildlife Management Area (WMA). No part of this 311 acre WMA parcel is within the Project Corridor.

### 3.3. Selection Criteria

In accordance with Section 69-06-08-02(3), adverse effects resulting from the location, construction and maintenance of a transmission facility shall be minimized to the extent practicable, and shall be managed and maintained at an acceptable minimum. **Table 3-3** identifies the selection criteria for the Project Corridors and proposed reroutes.

**Table 3-3: Selection Criteria**

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon agriculture:		
Agricultural Production	Permanent impacts will occur from structure placement along the route; impacts are 20-25 sq. ft. per pole structure, (depending on the structure type) and three (3) permanent access roads. Temporary construction impacts from construction equipment and vehicles within the ROW may occur, and will total a radius of 100 feet per structure, and an access roadway approximately 20 feet wide (with 4:1 slopes) along the ROW centerline. Great River Energy will work with landowners to minimize impacts to agricultural production, and landowners will be compensated for permanent impacts.	5.2, 5.8, 5.9, 5.13, 8.1, 8.5
Family farms and ranches	There are no family farms and ranches within the Project Corridors.	5.2, 5.8
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.	There is no irrigated land within the Project Corridors.	n/a
The impact upon:		
Noise-sensitive land uses.	There are no noise sensitive land uses within the Project Corridors. There are 3 (three) occupied homes within the vicinity of the Segment 7 Project Corridor. These homes may experience temporary noise effects during construction; however, no permanent noise effects are associated with the operation of the transmission line.	5.2
The visual effect on the adjacent area.	No additional visual effects are anticipated from the proposed Project. A transmission line is currently in operation, and this project represents only a reroute of the existing line within the same general area.	5.5
Extractive and storage resources.	There are no extractive or storage resources within the Project Corridors.	n/a

Selection Criteria	Potential Adverse Effects	Section Addressed
Wetlands, woodlands, and wooded areas.	<p>A wetland delineation will be completed prior to project construction to identify existing wetland resources and to avoid, minimize and quantify wetland impacts. Wetland impacts will be mitigated as described in Section 404 of the Clean Water Act.</p> <p>There are two wooded areas within the Project Corridor. These wooded resources are groves around occupied and unoccupied residences. Impacts to wooded areas will be minimized and mitigation will be proposed consistent with regulatory requirements.</p>	5.12, 5.13
Radio and television reception, and other communication or electronic control facilities.	There are no communication towers in the Project Corridors.	n/a
Human health and safety.	Great River Energy will design the reroutes to meet the standards of the National Electric Safety Code (NESC). Human health and safety are addressed in these standards.	5.3
Animal health and safety.	No impacts to livestock are anticipated. Impacts to wildlife populations will be minimal; avian collisions may occur, but are not anticipated to be a major threat. Great River Energy will mark the lines with aviation marker balls, swinging plates, spiral vibration dampeners, or swan flight diverters to minimize collisions.	5.14
Plant life.	Plant life within the proposed Project Corridors is primarily agricultural. Other natural plant communities present include wetland communities and two wooded stands around homesteads. Permanent impacts to plant life will occur where permanent structures are constructed, and any areas where tree clearing needs to occur. Areas temporarily impacted will be restored to their pre-construction condition.	5.13, 5.15

### 3.4. Policy Criteria

In accordance with Section 69-06-08-02(4), preference will be given to a proposed route that is established based on the following policies and practices with the intent to provide benefit to the area to the maximum extent practicable. **Table 3-4** identifies the policies and criteria considered when identifying the Project Corridors and proposed reroutes.

**Table 3-4: Policy Criteria**

Policy Criteria	Suitable Policy or Great River Energy Practice
Location and design	Great River Energy's policy is to locate and design the transmission facility to minimize environmental impacts and utilize existing corridors as feasible.

Policy Criteria	Suitable Policy or Great River Energy Practice
Location and design	Great River Energy's policy is to locate and design the transmission facility to minimize environmental impacts and utilize existing corridors as feasible.
Training and utilization of available labor in the state for the general and specialized skills required.	Great River Energy will use local qualified contractors to provide the labor to the extent practicable.
Economies of construction and operation.	Great River Energy will use experienced local contractors to the extent practicable. Economies will be realized by identifying a route that minimizes the extent and impacts within the right-of-way.
Use of citizen coordinating committees.	Great River Energy will work closely with the local landowners of properties crossed, and the local communities to ensure that any concerns are adequately addressed. The need for a separate coordinating committee is not necessary based on the extent of the reroute project.
A commitment of a portion of the transmitted product for use in the state.	Energy transmitted by the Project is from the coal generating plant in Stanton with interconnecting load centers at Minot, Devils Lake and Grand Forks, North Dakota.
Labor relations.	No labor relations will be affected by the 230 kV GD transmission line reroute project.
The coordination of facilities.	Great River Energy will coordinate with utilities within the area of the reroutes to the maximum extent feasible.
Monitoring of impacts.	Great River Energy will implement best management practices during construction of the reroutes to minimize any potential impacts and comply with all applicable permit conditions.
Utilization of existing and proposed rights-of-way and corridors.	A primary goal in siting the transmission line reroutes is to utilize existing right-of-ways and corridors to the extent practicable; and follow the existing field access points to avoid impacting UFWs easements.
Other existing or proposed transmission facilities.	Great River Energy is open to utilizing or paralleling existing utility right-of-way when siting the reroutes. Limited opportunities exist in the vicinity of the rerouted segments.

### 3.5. Design and Construction Limitations

Design and construction limitations for the rerouted sections of Segment 7 and Segment 8 within the designated Project Corridors are primarily associated with the actual pole locations and access to the transmission line for maintenance. The Project Corridors designated for Segment 7 and Segment 8 are the most direct routes that also minimize impacts associated with the criteria identified in Section 69-06-08-02.

The Project Corridor for Segment 7 intersects a 500-foot residential buffer area, and wooded areas exist adjacent to those residents. Three prehistoric mounds and a historic homestead were identified in the Project Corridors, and the Segment 8 Project Corridor is adjacent to a designated WMA.

United States Fish and Wildlife Service (USFWS) grassland and wetland conservation easements, as well as prime farmland of statewide importance, have been identified within both Project Corridors.

The proposed segment reroutes will avoid or minimize, to the maximum extent possible, impacts to the USFWS easements, prime farmland areas and jurisdictional wetlands. Additionally, the proposed reroutes avoid the residential buffer areas and the areas where the historic and prehistoric mounds were identified. For those unavoidable impacts, Great River Energy is working with the appropriate agencies and landowners to mitigate as appropriate. Further discussion of the impacts and associated mitigation is included in Section 5.

### **3.6 Economic Considerations**

Great River Energy takes into account numerous economic factors when routing a transmission line facility. In general, minimizing the length of the reroutes decreases the cost of the actual construction of the transmission line due to less material and right-of-way (ROW) required. In addition, a shorter segment impacts less land and consequently minimizes the land impacts and the potential mitigation costs associated with those impacts.

The estimated cost to relocate these structures is approximately \$704,000 per mile, which includes ROW easement costs and approximately \$50,000 per mile to retire existing structures. Total mileage for both relocation sections is approximately four miles, which results in \$2,816,000 for construction costs. The cost to retire approximately 1.5 miles of line will be \$75,000.

Great River Energy's goal in designing the rerouted segments is to minimize the Project costs with consideration for the constraints characterized by the exclusion areas, avoidance areas, selection criteria, policy criteria and landowner concerns.

## 4.0 Engineering and Operational Design

### 4.1. General Route Description

Great River Energy's proposed routes are shown in **Figures 4-1 and 4-2**. Near Jones Lake, the proposed reroute turns to the southwest for 2,600 feet then turns west for 3,000 feet then back to northwest for 2,000 feet. In the Crary area, the proposed reroute turns from the existing transmission line to the northwest for 4,700 feet then turns to the southwest for 6,125 feet. Both reroutes will be on higher grade to avoid future flooding impacts.

The proposed reroutes pass primarily through agricultural land and rangeland. There are very few trees within the 150 foot easement ROW. Because there are very few obstructions within the reroutes, minimal ROW preparation is anticipated.

In those few areas where there is some growth of brush, ROW clearing will include cutting and removal. Where practicable, any low growing vegetation will not be removed if future growth will not interfere with the operation or maintenance of the transmission line. Herbaceous and smaller woody plants will not be disturbed, except for those that may be crushed unavoidably during structure installation. No threatened or endangered species habitat, or otherwise sensitive vegetation will be disturbed.

Most of the construction activity will be limited to the immediate area of each structure. Relatively little ground disturbance, other than shaft excavation, will be necessary at the structure sites. The total disturbed area in the vicinity of each structure will be confined to an area within a 60 foot radius of the structure center.

Great River Energy will compensate landowners for easements based upon structures and anchors placed on the surveyed easement strip. Any damages to existing rangeland or conservation set aside acres would also be paid to affected landowners.

### 4.2. Description of the Proposed Transmission Facility

The transmission line carries 230 kV, three phase, alternating current electrical energy at maximum summer capacity of about 685,600 kilovolt-amperes (kVA) and a winter capacity of 763,300 kilovolt-amperes (kVA).

Span lengths will be approximately 600 to 800 feet.

The proposed reroutes will be designed to accommodate a conductor size of 954 MCM 54/7 ACSS (Aluminum Conductor Steel Supported; 54 aluminum strands, 7 steel strands) "Cardinal" for the transmission line phases and 7/16 EHS (Extra High Strength Steel) for one shield wire and Optical Ground Wire (OPGW) for the other shield wire. The adjacent structures in these areas are planned to be rebuilt within the next several years; the OPGW will be strung in when this section is scheduled to be rebuilt in a future year.

The transmission structures will be designed for installation at existing grades. Structure sites will not be graded or leveled, unless it is necessary to provide a reasonably level area for construction access and activities. At the Crary location, due to pockets of lowland, it may be necessary to build a maintenance road to construct between structures and to maintain the transmission line structures. Once construction is complete, any graded areas will be restored as nearly as practicable to their original contours.

Once the ROW is prepared, each structure site will need to be accessed several times. This access will include construction crews and equipment, such as digger/derrick trucks to auger holes for foundations, equipment for setting poles, stringing and clipping in wire.

The tangent H-frame structures will be set approximately 9 to 12 feet deep and the poles will be 1.5 to 2 feet in diameter. The poles will be set in place and the holes backfilled with crushed rock.

Structure type will be the same as on the existing transmission line, wood poles with H-frame cross arms and braces. The wood poles would be either cedar or Douglas fir pressure treated with Penta oil. Polymer insulators will be used on tangent structures and porcelain insulators will be used on deadend structures. The structure height will vary from 80 feet to 100 feet.

After transmission structures have been erected, conductors will be installed by establishing stringing setup areas within the ROW. Conductors will be installed between setup areas using a "controlled tension method," which ensures that the cable comes off the reel at a constant tension without backlashes. Conductor stringing operations will also require brief access to each structure to secure the conductor wire to the insulators or shield wire clamps once final sag is established.

Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels, and sheave blocks. Stringing operations consist of pulling lightweight cables or ropes through the stringing sheaves located at each structure site. This cable or rope will be used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground.

Debris associated with the transmission line construction may include construction materials such as packaging material, insulator crates, conductor reels, and wrappings. This debris may also include excess excavated soil and removed vegetation. Materials with salvage value, including conductor reels, unused conductor and hardware, poles, and other materials will be removed from the site for reuse if possible. Excess soil and vegetation will be distributed along the transmission ROW, but will not be placed in wetlands or other aquatic resources. Solid waste will be stored on the ROW or contractor construction areas, and then transported to appropriate disposal facilities. Debris will be disposed of in accordance with federal, state, and local regulations.

Materials may be delivered to a marshalling yard near the sites.

Disturbed areas will be restored to their original condition to the maximum extent practicable.

Post-construction reclamation activities will generally include the following:

- Cleaning up all construction sites, including removing and disposing of debris
- Removing all temporary facilities such as staging and laydown areas
- Employing appropriate erosion control measures
- Reseeding disturbed areas (due to construction activities) with like vegetation and restoring them to their original condition to the extent possible.

## 5.0 Environmental Analysis

This section describes the environmental setting as it relates to the additional Project Corridors, the Project Routes, and the Project ROWs. The Project Corridors are defined as a 1000-foot wide corridor in which the transmission line facilities will be constructed. The Project Route refers to the specific location within the Project Corridors that the transmission line facilities will be located (**Figures 5-1 and 5-2**). The Project ROW is a 150 foot-wide-area centered on the Project Route. The following subsections discuss resources within the Project Corridors, potential impacts from the Project, and the proposed mitigative measures.

The impact discussion describes the potential effects from the Project. Impacts are discussed in terms of short-term vs. long-term and indirect vs. direct, depending upon the resource.

Temporary impacts are associated with construction activities in the areas around new structure locations along the re-route alignments, a temporary access road within the ROW, and laydown areas. Permanent impacts are associated with structure locations along the rerouted alignments.

**Table 5-1** provides a summary of the temporary and permanent impacts for the Project Routes.

**Table 5-1 Project Route Summary Table**

Impact	Route	
	<u>Reroute Segment 7</u> (Jones Lake / Lakota)	<u>Reroute Segment 8</u> (Crary)
Total Length (miles)	1.45 miles	2.0 miles
Total ROW (acres)	26.20	35.51
Approximate Number of Structures	11	14
Temporary Structure Impacts (acres)	7.06	9.16
Temporary Access Road Impact (acres)	2.92	3.73
Total Temporary Impacts (acres)	9.98	12.90
Percent of ROW – Temporary Impact	38.07%	36.31%
Permanent Structure Impacts (acres)	0.0096 Ac (420 sq. ft.)	0.0122 Ac (531 sq. ft.)
Permanent Road Impacts	0.00	1.40
Total Permanent Impacts (acres)	0.0096Ac	1.42
Percent of ROW – Permanent Impact	0.037%	3.99%

Impact calculations for this Project were completed using the ArcInfo license of ESRI™ ArcMap™ 10.0, using UTM NAD 83 projection. The following assumptions were used to estimate resource impacts on land cover, vegetation, soils, prime farmland, wetlands, floodplains, and managed resource areas based on the preliminary structure locations:

- The ROW is 150 feet wide.
- Permanent structure impacts were estimated to be a 2.5 foot radius around each pole for the straight structures and a 3 foot radius around each pole for the dead end structures, to account for additional guy wires needed for stability. Each structure consists of two poles (H-Frame, See Section 4.2).

- Temporary structure impacts were estimated to be a 100 foot radius from the centerline of each structure.
- The three permanent access and maintenance road impacts were estimated by calculating a 25 foot wide roadway, with 4:1 slopes. Depending on the topography at the specific access roadway, the width varied between 50 and 75 feet.
- The temporary roadway impacts were calculated by estimating a 20 foot access road within the centerline of the ROW.

One additional roadway will be constructed outside of the Project Corridor on Segment 8 (See Figure 4-2). This roadway will be within the existing ROW and will be constructed between two poles. The function of this roadway will allow maintenance access to the existing line. Current maintenance access is not available due to the high water conditions.

The mitigation discussion provides potential measures to reduce or eliminate anticipated impacts identified for each resource area. Mitigative measures are not discussed for identified potential effects that are either not anticipated to occur during construction or operation of the Project or are anticipated to result in a positive effect. The mitigation discussion addresses typical high voltage transmission line permit conditions issued by state and federal agencies, mitigation strategies proposed by Great River Energy, and additional mitigative measures that may be warranted.

## **5.1. Demographics**

Proposed alignments for the two reroutes are located separately in rural portions of Nelson and Ramsey Counties, near the respective towns of Lakota (population 672) and Crary (population 142), North Dakota (U.S. Census 2010). The Spirit Lake Nation lands, which have the nearest minority population, are located approximately five miles south and east of Segment 8 in Benson County. Neither alignment crosses Spirit Lake Lands.

### **5.1.1. Description of Resources**

While agriculture is the economic foundation of both counties, healthcare and retail trade businesses are also major employers in the area. This economic information is according to the 2009 Annual Survey of Manufacturers, which included 115 established businesses in Nelson County and 384 in Ramsey County (U.S. Census 2010).

Population characteristics considered relevant to the social setting of this project include the total population, projected population, per capita income, and poverty status. In 2010, the reported population in Nelson County was 3,126 and projected to decline slightly, while Ramsey County reported 11,452 and was expected to remain largely unchanged. Annual per capita income was also slightly higher in Ramsey County (\$24,130 versus \$22,838). Ramsey County also had a slightly higher percentage of people below the poverty line (11.5% versus 9.9%). The slight

differences in these trends between counties are likely due to the much larger population center in Ramsey County, represented by Devils Lake.

Several racial and ethnic groups are present in the vicinity of the Project ROWs. Race is defined as a self-identification data item based on an individual's perception of his or her racial identity. Respondents to the 2010 Census selected the race(s) with which they most closely identified themselves. Ethnicity is defined as a classification of a population that share common characteristics such as religion, cultural traditions, language, tribal heritage, or national origin. In Nelson County, 97 percent of the population identified themselves as White/Caucasian, while in Ramsey County this group represented 88 percent. The remaining populations in both counties include American Indian, Hispanic or Latino, reported two or more races, or some other race alone.

### **5.1.2. Impacts**

The short-term impacts of the Project on demographic resources will be relatively minor. Permanent agricultural land conversion associated with the Project alignments will result in a small socioeconomic impact to those landowners with facilities on their land. Section 5.2.2 discusses impacts to agricultural land. Agricultural areas surrounding transmission line structures can be farmed following construction of the rerouted lines. There is no indication that any minority or low-income population is concentrated in any one area of the Project ROWs, or that the transmission line will be placed in an area occupied primarily by a minority group.

Construction of the transmission line will provide temporary increases to the total personal income of the area through expenditures for housing, lodging, food services and general supplies by the major contractors. Opportunity exists for sub-contracting to local contractors for gravel, fill, and civil work. Additional personal income may also be generated by circulation and recirculation of dollars paid out by Great River Energy as business expenditures and state and local taxes. Labor relations will not be affected.

Studies of the effect of a transmission line on rural property values have concluded that power line structures and easements do not have a significant impact on rural property values. For instance, a recent study concluded that the differences in sale prices and market values for rural Wisconsin properties with a high-voltage electric transmission line were not statistically significant (1.11 to 2.44 percent) when compared to properties without a transmission line (Jackson 2010). As these rerouted alignments will be within close proximity to the original alignments (less than ½ mile offset), and other transmission lines also exist in the area, the impact to rural property values is even less likely to be an issue.

Great River Energy will offer to conduct staking reviews with the landowners to minimize the potential impacts to the land to the greatest extent practical. Great River Energy will also obtain easements from each landowner whose property is crossed by the proposed ROW. The easements will allow Great River Energy to locate transmission facilities on the property and

enter for maintenance, when needed. The landowner retains ownership and use of the land subject to the easement, which restricts certain activities within the easement to avoid compromising the safety and efficiency of the transmission line.

### 5.1.3. Mitigation

Socioeconomic impacts associated with the Project, if any, will be primarily positive due to an influx of wages and expenditures made at local businesses during construction. Where practical, Great River Energy and specialty contractors will utilize local labor and sub-contractors. Impacts to landowners will be minimized to the extent practicable by discussing final structure location with landowners, establishing good lines of communication, negotiating easement payments, and maintaining communication with landowners along the proposed Project ROWs. The landowner will receive compensation for impacts, easements and ROW access.

## 5.2. Land Use

The Project Corridors are primarily rural agricultural land, used for the production of row crops. Less common land uses in the vicinity include occupied and abandoned farmsteads, wild game habitat, and other utility ROW.

Data sources used to analyze land use in the Project Corridors include local, state, and federal agencies, nonprofit organizations, and field work conducted by Great River Energy's consultants. Land use and land cover data were gathered from the North Dakota GAP data (USGS 2004). Mapping was completed using the ArcInfo license of ESRI® ArcMap™ 10.0.

### 5.2.1. Description of Resources

Land uses within the proposed Project Corridors are presented on **Figure 5-3 and 5-4**, and summarized in **Table 5-2**. There are farmsteads located in the surrounding area, as shown in the aerial photographs, but there are no occupied farmsteads within the extent of either Project Corridor. According to the North Dakota Administrative Code (NDAC), the edge of the nearest transmission line facility, usually the end of the transmission structure arm or conductor, must be 500 feet or greater from the edge of an occupied residence (home) (NDCC Section 49-22-05.1 and NDAC Rules 69-06-08-02(2)(e)). Occupied homes and this minimum offset are noted on **Figures 5-3 and 5-4**. As shown, the proposed Project ROW does not intersect the offset boundary for any of these homes.

Developed infrastructure in the vicinity of the proposed ROWs includes US Highway 2, county and township gravel roads, BNSF Railway, and other utility ROWs. It is likely that rural water lines are also present. Known infrastructure is presented in **Figures 5-3 and 5-4**. As shown, no known infrastructure intersects the proposed ROW for the Segment 8 reroute. Existing infrastructure adjacent to and crossing the proposed ROW for the Segment 7 reroute includes:

- Western Area Power Administration (WAPA) transmission line
- NoDak Utilities transmission line
- Nelson County Road 23

- A private gravel driveway

No irrigation systems are crossed by the ROW at either site.

The proposed ROW crosses USFWS wetland easements at both sites, as shown on **Figures 5-5 and 5-6**. These wetlands have been assigned legal protection and are intended to serve as wildlife habitat. A field review was conducted in May 2012 with USFWS staff and Great River Energy's consultant to review the extent of wetlands under easement. Construction through these areas will require a Special Use Permit from the USFWS. Permanent impacts to these wetlands will require 1:1 acreage replacement by restoring historical wetlands that had been previously drained.

The Crary State WMA is public land owned by Ramsey County and managed by North Dakota Game and Fish. It is located near reroute Segment 8, in the southwest quarter of Section 18 and the northwest quarter of Section 19, Township 153 North, Range 63W. Both of these quarters are currently entirely underwater and outside the Project Corridor.

### **5.2.2. Impacts**

Land use in the Project Corridors is predominantly agricultural row crops. The only portions that will be permanently removed from production are the areas occupied by the poles and guy wire anchors. The areas under the transmission line that are not occupied by structures may continue to be used for agriculture. Depending on the time of year that construction occurs, temporary impacts to agricultural land include loss of planting opportunity, crop damage, and rutting or compaction of the ground surface. Damage to fences or drain tile could also occur and would require restoration. Based on the proposed permanent pole placement and temporary impacts, it is anticipated that temporary and permanent impacts to agricultural land will be 17.82 acres and 0.17 acres, respectively.

The Project may make certain agricultural activities more difficult, such as maneuvering equipment around structures and aerial spraying. Landowners may conduct aerial spraying to apply pesticides, fungicides, and fertilizers. Aerial spraying is typically conducted by small aircraft with low-flying altitudes.

Impacts to USFWS easement wetlands will be avoided to the greatest extent possible by positioning poles and guy wire anchors outside of the estimated outer extent of the wetland. This boundary was determined by the vegetation and cropping history evident during the site visit. Wetlands within the Project Corridors may fall under the jurisdiction of the US Army Corps of Engineers (USACE). A request for a Jurisdictional Determination has been submitted.

Short-term impacts to residents and local business owners in the vicinity of either site will primarily be related to disruption caused by temporary construction activities, such as elevated noise levels and increased vehicle traffic.

As noted on **Figure 5-3**, the new Project Route for Segment 7 will change where Great River Energy's transmission line crosses WAPA and NoDak transmission lines and Nelson County Road 23. It will also require crossing a private driveway. No existing infrastructure is known to intersect the existing or new alignment at reroute Segment 8.

### 5.2.3. Mitigation

Where practical, the proposed ROW was located along existing ROWs, field edges, and shorelines to minimize impacts to agricultural land and maintain existing plowing and harvest patterns. Structures were located to maintain access and minimize obstacles for farm equipment. Great River Energy will offer to stake individual structure locations on each landowner's property for their visual review and input. Great River Energy will work with each landowner to provide appropriate compensation for the permanent impacts and ROW acquired, and restorative measures for temporary impacts, where necessary.

Evidence of drain tile was not observed during the site visit. If drain tile is identified, Great River Energy will work with the landowner to address any location conflicts and repair any damage that occurs as a result of construction.

After the Project is constructed, aerial sprayers will need to adjust their flight patterns to account for the new locations of the transmission lines within these areas. As the new alignments are offset less than one mile from the existing alignments, this is not anticipated to require a significant adjustment.

Construction is proposed to occur from December 2012 to February 2013. This timeline should avoid temporary impacts such as loss of planting opportunity or crop damage, and minimize rutting or soil compaction. Additionally, this timeline also avoids nesting and impacts to both natural and cultivated vegetation (as described in Section 5.7 and 5.14). Fences or other property improvements that are removed or damaged as a result of construction activities will be restored to the current condition.

Completing construction during this time of year will also avoid the higher traffic in the spring and fall that is associated with planting and harvesting activities. Construction activities will be restricted to daylight hours to minimize the disruption associated with noise. Best management practices (BMPs) for erosion control will be employed to prevent erosion and the discharge of sediment to adjacent surface water as a result of the construction activities. The placement of equipment traffic and fill material in adjacent wetlands without permission from USFWS and USACE will be prohibited.

Although the existing Great River Energy transmission line crosses over top of the intersecting utilities and roads, these facilities will not require any modification to facilitate the new crossings. New structure heights will be designed to meet current clearance criteria for crossing the intersecting facilities.

Proper safeguards will be implemented for construction and operation of the Project facilities. The Project facilities will be designed according to local, state, and NESC standards regarding ground clearance, crossing utilities clearance, building clearance, strength of materials, and ROW widths. Construction crews and/or contract crews will comply with local, state, and NESC standards regarding facility installation and standard construction practices. Great River Energy will use established industry safety procedures that will be followed during and after rerouting of the transmission line, including clear signage during all construction activities.

### **5.3. Human Health and Safety**

Human health and safety concerns include potential issues such as electric and magnetic fields (EMF) (collectively referred to as electromagnetic fields), stray voltage, and air quality.

#### **5.3.1. Potential Adverse Health Effects**

Concerns about potential health effects of EMF from transmission lines were first raised in the late 1970s, triggered by a weak statistical correlation between living in proximity to utility distribution systems and childhood leukemia cases. While there are numerous internet sites devoted to EMF (whether from transmission lines, cell phones, or radio frequency signals), the vast majority of public health agencies concur that EMF from transmission lines do not cause health problems. In part, these scientific consensus groups note the physical impossibility of any health effect (or adverse biological effect) being caused by exposure to low-frequency, low intensity magnetic fields. Exhaustive reviews of the health effects from power-frequency fields conclude that the evidence of health risk is weak and there is little laboratory evidence correlating extra low frequency EMF exposure with health risk.

Induced voltage is an electrical condition through which very low levels of voltage are transferred to and may be measured in objects in the near vicinity of a high voltage transmission line. Near objects could be buildings, fences, pipelines, railways, or other equipment in very close proximity to the transmission line. If a person touches them, a small current will pass through the person's body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what can occur when a person walks across a carpet and touches a grounded object or another person.

Corona consists of the breakdown or ionization of air within a few centimeters of transmission line conductors and hardware. Usually some imperfection such as a sharp edge, a protrusion on hardware, a scratch on the conductor, or water is necessary to cause corona. Corona can produce ozone and nitrogen oxides in the air surrounding the conductor. Ozone also forms in the lower atmosphere from lightning discharges and from reactions between solar ultraviolet radiation and air pollutants, such as hydrocarbons from auto emissions. Ozone is a very reactive form of oxygen molecules and combines readily with other elements and compounds in the atmosphere. Because of its chemical reactivity, ozone is relatively short-lived.

### **5.3.2. Impacts**

The maximum offset between the existing and the new alignments is less than one mile. In addition, other overhead power lines are present in the near vicinity. Furthermore, the rural setting and minimal access to these sites indicates very little potential for exposure to human populations. Based on the minimal offset distance, close proximity of existing overhead utilities in the area, and the lack of an exposure population, no significant change in human health impacts associated with the rerouted alignments are anticipated.

### **5.3.3. Mitigation**

The NESC provides standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths, which will be adhered to on this Project. The U.S. Occupational Safety and Health Administration (OSHA) regulates worker safety in both construction and industrial settings and has developed and enforces regulations that are designed to protect workers from potential accidents. OSHA-compliant safety procedures will be followed during and after re-routing of the transmission line, including clear signage during all construction activities. No additional mitigation is anticipated.

## **5.4. Noise**

Noise is defined as unwanted sound. Due to the proximity of the rerouted alignments to the existing alignments, any operational noise that is presently experienced is not expected to change.

### **5.4.1. Noise Characterization**

This section addresses temporary noise associated with constructing the rerouted alignment. Construction activities will generate noise that is short-term and intermittent.

### **5.4.2. Impacts**

Noise generated during operation of construction equipment and the presence of workers will create a short-term impact to nearby residences.

### **5.4.3. Mitigation**

Noise impacts associated with construction will be mitigated in noise sensitive areas by limiting the hours of work to daytime hours. Heavy equipment used in construction will be equipped with sound attenuation devices, such as mufflers, to minimize the daytime noise levels. No long-term noise impacts are anticipated, thus no mitigation is necessary.

## **5.5. Visual Impacts**

Visual impacts are associated with a change in the visual quality and aesthetics of the area surrounding the Project ROW.

### **5.5.1. Visual Characterization**

The landscape in both areas is generally flat to slightly rolling terrain. As such, the existing transmission lines are visible for miles from any direction.

### **5.5.2. Impacts**

As the offset of the new alignments is less than one mile from the existing routes and existing structures are easily visible from the new ROWs, the visual impact of the reroutes is anticipated to be minimal.

### **5.5.3. Mitigation**

No mitigation is anticipated.

## **5.6. Cultural Resources**

A class III cultural resources survey was completed for the two Project Corridors to locate and identify cultural resources within the Project Corridors. The survey included a visual inspection of the Project Corridors, pedestrian survey, and examination of soil exposures and soil probes.

### **5.6.1. Description of Resources**

No previously identified National Register of Historic Places (NRHP) eligible structures are located within two miles of the survey area. No standing structures were identified within the survey area. Four archaeological sites were identified within the Project Corridors. Three prehistoric sites are NRHP ineligible lithic scatters in significantly disturbed fields. The other site was a large farmstead.

### **5.6.2. Impacts**

No impacts to cultural resources are anticipated. The three lithic scatter areas will not be impacted by the transmission structures.

### **5.6.3. Mitigation**

Structures will be located to avoid disturbance to (and span if necessary) identified cultural resources. The outer boundaries of these resources will be clearly marked prior to the start of construction to prevent impacts from ground activities.

## **5.7. Recreational Resources**

Recreational resources in the vicinity of the Project Corridors include federal and state- managed wildlife production areas. Outdoor recreational opportunities include riding all-terrain vehicles (ATVs) and snowmobiles, hiking, boating, hunting, and nature observation.

### **5.7.1. Description of Resources**

As noted previously, there are USFWS easement wetlands within and adjacent to the proposed ROW. These areas, in addition to the larger water and woodland features of the surrounding area, support a variety of species of game for hunters. As the surrounding land is privately-owned, access to these areas is somewhat restricted.

### **5.7.2. Impacts**

Temporary impacts such as a dispersion of the wildlife from the Project area may occur during construction due to the equipment operation and human activity. This is anticipated to be similar to the dispersion that occurs during planting or harvesting activities.

Structure placement outside of the estimated outer extent of easement wetlands, in addition to the proposed erosion control and fill placement restrictions to be in place during construction, are anticipated to eliminate any potential permanent impacts to wildlife or their habitat. Once construction is complete there will be no impacts on recreation.

### **5.7.3. Mitigation**

Constructing the Project in January and February will minimize wildlife present in these areas, as the vegetation is dormant and waterfowl have migrated south.

## **5.8. Effects on Land-Based Economies**

Eastern North Dakota contains highly productive agricultural lands and is a hub for wilderness tourism, including fishing and hunting and other wildlife recreational activities.

### **5.8.1. Description of Resources**

The primary economic resource within the Project Corridors is agriculture. Cultivated crops within the Project Corridors may include various grains, oilseeds, dry beans and dry peas. High yields can be expected in these areas due to fertile soils (see Section 5.10 for further information) and ideal climatic conditions. Livestock operations are also present in the general area; however, no livestock operations were observed within the Segment 7 or Segment 8 corridors. Please see **Figures 5-3 and 5-4** for the GAP Land Use Map.

Travel and tourism is North Dakota's third largest industry. Recreational activities including hunting, fishing and bird-watching attract a large population of people to the area surrounding Devils Lake. Travel and tourism is a \$4.6 billion industry in North Dakota, and tourism represents a vital portion of North Dakota's overall employment and tax base. Because the Project Corridors are predominantly located on private cultivated lands, public tourism within the Project Corridors would likely be limited and include passive recreation activities such as bird watching.

### **5.8.2. Impacts**

Impacts to agricultural production will include a minor loss of land available for cultivation, due to the placement of the new power poles. Temporary impacts will occur during construction; however, construction activities are anticipated for the winter months so no yield loss will occur. Permanent agriculture loss is expected from the construction footprint of the new reroutes. One structure will permanently remove approximately 31,280.20 ft<sup>2</sup> of land from cultivation. This will result in approximately 7.9 acres for the proposed Segment 7 reroute and 10.05 acres for the Segment 8 reroute.

No impacts to tourism are anticipated from the reroutes. Transmission lines exist in the vicinity of the reroute segments, therefore no additional viewshed impacts will occur. The small amount of permanent impacts from new pole construction will occur within privately-cultivated lands, therefore little public tourism opportunities exist directly within the corridors. Within reroute Segment 8, transmission lines will be removed from North Dakota Game and Fish lands that are present (**Figure 5-6**) within the large existing basin, which may improve tourism opportunities in the future.

### 5.8.3. Mitigation

Great River Energy will minimize impacts to cultivation practices within the Project ROWs. Landowners will be compensated for acreage permanently removed from production. Areas temporarily disturbed during construction will be returned to their original, pre-construction condition. Drain tiles will be avoided and replaced if necessary. No negative impacts to tourism are anticipated from the reroutes.

## 5.9. Soils

### 5.9.1. Description of Resources

The soil surveys of Nelson and Ramsey Counties (SSURGO) were consulted to determine soil types and characteristics within the corridors. The soils found within the corridors can generally be described as loam (soils that have a relatively uniform concentration of sands, silts and clays). Loams are considered an ideal combination for agricultural purposes, as they have higher nutrient content from organic materials and medium porosity to retain water more than sands, but allow water to drain away more quickly than clay soils.

“Prime Farmland” is a soil designation described by the US Department of Agriculture (USDA), indicating soil resources that are ideal for agricultural production. Elements that are considered when defining prime farmland include soil physical and chemical properties, soil quality, as well as climate and moisture supply. “Farmland of statewide importance” is another soil designation described by the USDA, defined as “being of statewide importance for the production of food, feed, fiber and forage.” Both of these farmland designations have been identified within the corridors, according to the County Soil Survey data. For a graphical representation of these designations with the two Project Corridors, see **Figures 5-7 and 5-8**.

Tables 5-2 and 5-3 describe the soils found within the Project Corridors:

**Table 5-2: Soil Series and Acreage for Segment 7, Jones Lake Project Corridor.**

Soil Series	Acreage in Project Corridor	Special farmland designations
Parnell silty clay loam, 0-1% slopes	3.9	Not prime farmland
Southam silty clay loam, 0-1 percent slopes	2.1	Not prime farmland
Vallers, saline-Parnell complex, 0-1 percent slopes	1.9	Not prime farmland
Hamerly-Tonka complex, 0-3 percent slopes	36.6	Prime farmland if drained

Hamerly-Wyard loams, 0-3 percent slopes	11.8	Prime farmland if drained
Vallers-Hamerly loams, saline, 0-3 percent slopes	10.4	Not prime farmland
Barnes-Svea loams, 0-3 percent slopes	21.4	All areas prime farmland
Barnes-Buse-Langhei loams, 6-9 percent slopes	12.4	Not prime farmland
Barnes-Buse-Langhei loams, 9-15 percent slopes	33.9	Not prime farmland
Barnes-Buse loams, 3-6 percent slopes	58	All areas prime farmland
Barnes-Sioux complex, 6-15 percent slopes	13.7	Not prime farmland
Water	1.3	Not prime farmland

**Table 5-3: Soil Series and Acreage for Segment 8, Crary Project Corridor.**

Soil Series	Acres in Project Corridor	Special farmland designations
Tonka silt loam, 0-1 percent slopes	3.8	Prime farmland if drained
Southam silty clay loam, 0-4 percent slopes	12.3	Not prime farmland
Vallers, saline-Parnell complex, 0-1 percent slopes	5.3	Not prime farmland
Colvin silty clay loam, 0-1 percent slopes	4.9	Prime farmland if drained
Hamerly-Wyard loams, 0-3 percent slopes	6.3	All areas are prime farmland
Easby clay loam, 0-1 percent slopes	3.6	Not prime farmland
Vallers-Hamerly loams, saline, 0-3 percent slopes	17.8	Not prime farmland
Hamerly-Cresbard loams, 0-3 percent slopes	4.7	Farmland of statewide importance
Barnes-Scea loams, 0-3 percent slopes	23.9	All areas are prime farmland
Barnes-Svea loam, 3-6 percent slopes	22.3	All areas are prime farmland
Barnes-Buse-Langhei loams, 6-9 percent slopes	18.5	Not prime farmland
Barnes-Buse-Langhei loams, 9-15 percent slopes	6.5	Not prime farmland
Barnes-Buse loams, 3-6 percent slopes	67.1	All areas are prime farmland
Balaton-Wyard loams, 0-6 percent slopes	15.7	All areas are prime farmland
Colvin-Borup complex, saline, 0-1 percent slopes	25.4	Not prime farmland
Glyndon loam, 0-2 percent slopes	18	All areas are prime farmland
Overly silty clay loam, 0-52 percent slopes	0.3	All areas are prime farmland
Barnes-Sioux complex, 3-9 percent slopes	12.9	Farmland of statewide importance
Water	2.4	Not prime farmland

### 5.9.2. Impacts

Surface soil impacts would occur from the construction of new poles and land clearing operations along the new corridors. Construction activities may include grading, excavation, and site clearing. As described in Section 5.9, a relatively small amount of land will be permanently disturbed for pole construction. Other impacts may include minimal compaction from machinery that is necessary to complete construction, which would occur within the ROW. It is anticipated that these impacts will be temporary and land use will be cultivated after construction has been completed.

### **5.9.3. Mitigation**

Impacts to prime farmland will be avoided to the greatest extent possible. Construction BMPs will be installed to minimize soil loss from erosion. A sediment and erosion control plan will be developed and utilized during construction. Land-altering activities will be minimized in areas with steep slopes. Lands will be restored to their original contours after construction to minimize future erosion potential.

### **5.10. Geologic and Groundwater Resources**

According to Bluemle 1977, bedrock in both Corridors is primarily shale of the Pierre Formation, formed in offshore marine environments during the Cretaceous Period. The Segment 8 Project Corridor is underlain by Quaternary-age glacial sediments. These sediments are collapsed transition sediments with hummocky topography that draped over and partially eliminated the topography that existed before the last glacial advance. The Segment 7 Project Corridor is also underlain by Quaternary-age glacial sediments. The sediments are collapsed and gently undulating with supraglacial sediment and hummocky topography.

Groundwater is an important resource in North Dakota. A large portion of the rural population and many municipalities rely entirely on groundwater as a drinking water source.

#### **5.10.1. Description of Resources**

Groundwater resources exist in both unconsolidated (surficial) and the bedrock underlying the unconsolidated rock. Bedrock aquifers within the Project Corridors include the Dakota Sandstone Aquifer. The Dakota Aquifer covers most of central North America and is uncontaminated. It consists of an upper and lower aquifer with a shale aquitard separating the two. Regionally, it is currently used for irrigation and public industrial supply purposes, which have caused water levels to decrease significantly.

No surficial aquifers are present directly within the Project Corridors; however, the Starkweather and Spiritwood Aquifers are in close proximity.

#### **5.10.2. Impacts**

Impacts would be limited to the excavation of surface materials during construction. Although subsurface soil conditions have not yet been examined, it is not anticipated that the Project features would extend beyond a depth of 20 feet below the ground surface. No contact with aquifers is anticipated. Spoil materials from excavation will be redeposited at the excavation point and any remaining materials will be deposited off-site.

#### **5.10.3. Mitigation**

Impacts to groundwater and geologic resources will be avoided and minimized by the creation of a Stormwater Pollution Prevention Plan (SWPPP) during the design phase that will establish procedures for storage and disposal of wastes generated during construction. In addition, the structures will be designed to minimize ground disturbances.

## 5.11. Surface Water and Floodplain Resources

Surface water resources have become increasingly abundant within the Project area. Wetter than normal hydrologic conditions have resulted in an increase in surface water, and an expansion of lakes and wetlands. Water levels that were once considered an extreme hydrologic condition have become “normal”.

### 5.11.1. Description of Resources

#### *Segment 7*

There are no rivers or streams within the Segment 7 reroute Corridor. Jones Lake is located directly to the north, and a small amount of shoreline is within the northern edges of the Project Corridor.

#### *Segment 8*

There are no rivers or streams within the Segment 8 reroute Corridor. The Project will reroute the current Segment 8 transmission line around an unnamed water body. The northern shore of the unnamed waterbody is partially within the Project Corridor.

Federal Emergency Management Agency (FEMA) floodplain data are not available within either Project Corridor. A water level analysis and outfall discharge analysis were completed to determine the potential high water mark for closed basins (see **Appendix B**). Graphical depictions of the high water mapping are included in this report as **Figures 5-11 and 5-12**.

### 5.11.2. Impacts

No direct impacts to surface waters are anticipated. No construction activities or pole placement will take place within either of the waterbodies. It is likely that the rerouted line in Segment 8 will span several flooded basins; however, no permanent poles will be placed within surface waters. Aerial photography presented in **Figure 5-12** for Segment 8 depicts a period when this closed basin was discharging to a series of wetlands and eventually Devils Lake. As this outfall elevation is above the ultimate outlet for Devils Lake, the extent of flooding for this basin is not anticipated to expand further. No spanning over Jones Lake will be necessary within Segment 7.

### 5.11.3. Mitigation

The Project will likely require several water resource permits, including a NDPES stormwater permit, a Section 404 Federal Clean Water Act permit, a Section 10 Rivers and Harbors Act permit, and a USFWS Special Use Permit for easement wetlands. BMPs will be utilized to minimize impacts to water resources from sedimentation and erosion during land clearing and construction activities.

## 5.12. Wetlands

The Project Corridors are located within the prairie pothole region of North Dakota. This area is characterized by shallow freshwater basins that span the landscape. Spring snow melt and

precipitation are the primary source of water, and pothole wetlands can typically contain surface water during the early spring and summer months, and may dry out in the late summer and fall.

#### **5.12.1. Description of Resources**

Both reroute Project Corridors contain numerous pothole wetlands. Wetter than normal hydrologic conditions have resulted in previously isolated basins becoming interconnected through now flooded channels. Generally, the National Wetland Inventory (NWI) maps identify wetlands under a normal hydrologic condition; when comparing the NWI to the most recent aerial photography, flooded conditions are easily discernible. NWI mapped basins can be found in **Figures 5-5 and 5-6**.

The USFWS holds wetland easements on many parcels within the Project area. Many of the wetland basins within the reroute corridors are USFWS easement wetlands. **Figures 5-7 and 5-8** identify the estimated extent of the easement wetlands within the two Project Corridors.

#### **5.12.2. Impacts**

Wetland impacts result from construction activities including pole placement, access road construction, and any necessary grading activities. Great River Energy will conduct a wetland delineation to identify jurisdictional wetlands and easement wetlands within both of the corridors. This will support impact avoidance and minimization and quantification of any unavoidable wetland impacts. Generally, the transmission line will be designed with a maximum span length of 800 feet. Any wetland basins wider than 800 feet would be impacted by the placement of a pole. When selecting the reroute corridors, there did not appear to be basins wider than 800 feet in either of the two reroute Project Corridors; however, the specific span lengths and structures will be determined in final design.

#### **5.12.3. Mitigation**

Impacts to jurisdictional wetlands will be avoided and minimized to the greatest extent possible during the design phase of the Project. Wetland impacts will be minimized by spanning over wetland basins, or routing around wetland basins. Great River Energy will consult with the USACE and the USFWS to obtain permits and agency approval on any unavoidable wetland impacts. Permanent wetland impacts will be mitigated by replacement per the rules established in the Federal Clean Water Act.

### **5.13. Vegetation**

Two different types of vegetation exist within the Project Corridors; natural vegetation and agricultural resources. Generally, natural vegetation and communities can be described as vegetation growing naturally without cultivation, within prairies, wetlands and woodlands. Agricultural resources are vegetation produced from cultivation as a crop for profit. Please see **Figures 5-3 and 5-4** for Existing Condition land cover data for the Project Corridors.

### 5.13.1. Description of Resources

The majority of the vegetative cover within the Project Corridors is agricultural, which, depending on the rotation, can include various different types of grains, oilseeds, dry beans and dry peas. Native, natural communities are rare within the Project Corridors and are generally limited to farmstead groves and pothole wetland vegetation.

### 5.13.2. Impacts

Construction activities will take place during the winter months, therefore no temporary impacts to crops are anticipated. Temporary impacts to native, natural vegetation will be due to construction equipment and access. Permanent impacts for all areas will be limited to the footprint of the transmission structures.

### 5.13.3. Mitigation

Impacts to native and natural vegetation will be minimized to the greatest extent possible during the design and siting phase. Native and natural vegetation areas temporarily impacted will be restored to the original pre-construction condition. No temporary impacts to agriculture are anticipated, because construction will take place during the winter of 2012-2013. Permanent impacts to agriculture will be minimized to the greatest extent possible during the siting and design phase. Great River Energy will work with landowners to determine compensation for any temporary or permanent land or crop losses.

## 5.14. Wildlife

### 5.14.1. Description of Resources

A variety of wildlife species are present within the Project area. Species present are those typical of agricultural, grassland and prairie pothole habitats. Mammal species typical of these habitats include fox (*Vulpes vulpes*., *Urocyon spp.*), Coyote (*Canis latrans*), multiple species of bats (*Lasiurus spp.*), hare species (*Lepus spp.*), cottontail species (*Sylvilagus spp.*) beaver (*Castor canadensis*), mouse species (*Zapus spp.*, *Mus spp.*, *Peromyscus spp.*, *Onychomys spp.*), porcupine (*Erethizon dorsatum*), shrews (*Sorex spp.*), vole (*Microtus spp.*, *Clethrionomys spp.*) muskrat (*Ondatra spp.*), rat (*Rattus spp.*), woodchuck (*Marmota spp.*), squirrel (*Sciurus spp.*) ground squirrel (*Spermophilus spp.*), chipmunk (*Tamias spp.*), skunk (*Mephitis mephitis*), weasel (*Mustela spp.*), raccoon (*Procyon lotor*), and white-tail deer (*Odocoileus virginianus*). Typical birds include a wide variety of songbirds, waterfowl, raptors, and game birds such as pheasant, duck, geese, partridge, turkey and grouse.

### 5.14.2. Impacts

Direct and indirect impacts could occur to wildlife species as a result of the transmission line reroutes; however, because the line is in existence and operational, no additional impacts are anticipated. The Project will add only a negligible additional distance to the lines. Examples of direct effects could include injury or death from collision with transmission lines or construction equipment, direct habitat modification from construction clearing and grading, raptor nest

removal during breeding season, erosion and sedimentation from grading and land clearing activities during construction, or contamination from chemicals used in construction equipment.

Indirect impacts could include habitat disturbance, invasive species and noise disturbances during construction.

### 5.14.3. Mitigation

Great River Energy contacted the USFWS regarding known rare, threatened and endangered species within the general Project area. In response to this request, the USFWS made the following recommendations (summarized below, see original response in **Appendix D**) regarding migratory birds and bald and golden eagles, in addition to threatened and endangered species, which are discussed in Section 5.16.

#### Migratory Birds

*Whooping cranes in the Aransas Wood Buffalo Population (AWBP) normally migrate from 1,000 to 6,000 feet above the ground and well above the height of power lines, but stop every night to roost in shallow wetlands. Potentially suitable migratory stopover roosting habitat for whooping cranes includes wetlands with areas of shallow water (approximately 18 inches or less) without visual obstructions. The proposed project locations are located outside of the main portion of the whooping crane migration corridor (5 percent of all confirmed whooping crane sightings are outside the main corridor) through North Dakota. Conservation measures to avoid or reduce potential impacts to whooping cranes and piping plovers include, but are not limited to: burying all new electrical transmission lines; if new transmission lines cannot be buried, mark all new overhead transmission lines within one mile of suitable whooping crane stopover habitat with visual marking devices such as aviation marker balls, swinging plates, spiral vibration dampeners, or swan flight diverters to make the lines more visible, reducing the potential for avian collision. In addition to marking line, the Service requests that if a whooping crane is seen within one-mile of the project under construction, construction be halted on that portion of the project and the Service be notified immediately. In consultation with the Service, work may resume once birds have left the area.*

*Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within your proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat, and that you share this information with our office.*

*To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt migratory birds during the breeding season February 1 to July 15. If work is proposed to take place during the breeding season or at any other time which may result in the take of migratory birds, their eggs, or active nests, the Service recommends that the project proponent implement all practicable measures to avoid all take, such as suspending construction where necessary, and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if you choose to conduct field surveys for nesting birds with the intent of avoiding take, that you maintain any documentation of the presence of migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of migratory birds, their eggs, or active nests, the Service requests that you contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on migratory bird populations.*

*To minimize the electrocution hazard to migratory birds, the Service, with support from the Rural Utilities Service, recommends that new or updated overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. The recommended guidelines can be found in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996". To increase power line visibility and reduce bird fatalities resulting from collisions with power lines, the Service recommends new power lines that cross or run adjacent to rivers or large wetlands be modified according to "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994".*

#### *Bald and Golden Eagles*

*The Bald and Golden Eagle Protection Act (BGEPA) prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles, including their parts, nests, or eggs. We recommend conducting surveys to identify bald or golden eagle nests within 0.5 mile of the proposed route in winter/early spring before trees have leaves that could screen possible nests. To avoid/minimize impacts to nesting eagles from transmission line construction activities, the Service recommends: (1) keeping a 0.5 mile distance between the activity and the nest, (2) maintaining natural areas between the activity and around nest trees (landscape buffers), and (3) avoiding activities during the breeding season (February 1 – July 15). The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest sites and provide for alternative or replacement nest sites. The*

*Services May 2007, National Bald Eagle Management Guidelines contains detailed information on protecting bald eagles from disturbance due to human activity.*

To aid in the prevention of injury and death from line collisions, Great River Energy will work with the USFWS to identify areas where the lines should be marked. The transmission line will be designed considering the suggested guidance documents regarding the prevention of raptor electrocutions. Construction activities will take place in the winter months of 2013, well before the breeding season. Impacts to jurisdictional wetlands and easement wetlands will be mitigated per the Federal Clean Water Act, and no habitat or wetland function or service loss will occur. Construction BMPs will be implemented to minimize erosion and sedimentation into nearby waterbodies, and areas temporarily impacted will be restored to the original, pre-construction condition. Tree loss will be replaced per the PSC requirements.

### **5.15. Rare and Unique Natural Resources**

The Federal Endangered Species Act (ESA) was authorized in 1973, to list species of concern and to provide a means to recover endangered populations and their ecosystems. The ESA determines which species are endangered or threatened based on factors that affect their health and existence. The USFWS has identified the locations and habitats of Endangered and Threatened species within the State of North Dakota. There were no Endangered, Threatened or Species of Concern that have been identified within either reroute corridor. A brief discussion of species that were identified near the Project Corridors or that have habitat within the reroute corridors is provided below.

#### **5.15.1. Description of Resources**

##### Whooping crane (*Grus americana*)

The whooping crane has been identified as endangered within the ESA. They inhabit shallow wetlands that are characterized by cattails, bulrushes and sedges, but can also be found in upland areas, especially during migration. The main flock of birds mate in northern Canada (Wood Buffalo National Park, Alberta Canada) and migrate to the southern United States (Aransas National Wildlife Refuge) to winter. Their decline has been due almost entirely to habitat loss. The current wild population is approximately 264, and almost all are in the Aransas-Wood Buffalo (AWBP) flock.

##### Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle's population has grown from 400 breeding pairs when it was placed on the endangered species list in 1967 to approximately 10,000 currently, and due to the population's success, it has been delisted from the ESA. It is still protected under other federal laws including the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. USFWS has identified several bald eagle nesting sites within 30 miles of the Project Corridors.

### **5.15.2. Impacts**

#### Whooping crane (*Grus americana*)

The proposed Project Corridors are located outside of the main portion of the whooping crane migration corridor (five percent of all confirmed whooping crane sightings are outside the main corridor). Potential effects include injury or death from collisions and habitat loss from construction. Because the existing transmission line exists directly within a potential whooping crane stop-over habitat, but outside of the main portion of the whooping crane migration corridor, it is not anticipated that an increase in these impacts would occur by rerouting the transmission line.

Construction activities will take place during winter of 2012-2013, therefore it is not anticipated that construction activities will have an effect on migration, such as displacement from stop-over resting spots.

### **5.15.3. Mitigation**

#### Bald Eagle (*Haliaeetus leucocephalus*)

More information about bald and golden eagle impact mitigation is provided in Section 5.14.3.

#### Whooping crane (*Grus americana*)

More information about whooping crane impact mitigation is provided in Section 5.14.3.

## 6.0 Public Agency Coordination and Identification of Permits and Approvals

Great River Energy is required to obtain approvals from a variety of federal, state, and local agencies prior to constructing the Project. The agency with primary approval/permitting authority is the Commission.

### 6.1. Public Participation

**Table 6-1** identifies permits, approvals, and other project coordination that may be needed with federal agencies, tribal governments, State of North Dakota, counties, and townships. This listing of regulatory requirements is subject to change as Project development continues. A list of agencies that were contacted, along with copies of correspondence with each agency, are included in **Appendix C**.

**Table 6-1: Potential Required Permits and Approvals**

Agency	Type of Permit, Regulatory Compliance, or Coordination	Need
<b>Federal</b>		
U.S Fish and Wildlife Service	Section 7 of the Endangered Species Act, Migratory Bird Treaty Act of 1918, and Bald and Golden Eagle Protection Act of 1972	Section 7 Consultation under NEPA for Special Use Permit
	Special Use Permit (SUP) and Compatibility Determination	If construction in wetlands within wetland easements, then compatibility analysis is required. Special Use Permit needed if temporary disturbance to a wetland subject to a wetland easement.
U.S. Army Corps of Engineers	Section 404 of the Clean Water Act	Nationwide Permit 12 required for dredging or filling jurisdictional waters of the United States for utility line projects.
	Pre-Construction Notification	Pre-Construction Notification need for the Nationwide Permit 12.
Department of Agriculture – Natural Resources Conservation Service	Farmland Conversion Form - Form CPA-106	Farmland conversion impact rating.
<b>State</b>		
Public Service Commission	Certificate of Corridor Compatibility and Route Permit	Required prior to construction of a transmission line.

Agency	Type of Permit, Regulatory Compliance, or Coordination	Need
		Designates corridor and route location within approved corridor.
Department of Health	Section 401 Water Quality Certification	Required for filling jurisdictional waters of the United States.
	NPDES Permit: General Construction Stormwater	Required for disturbance of over one acre of land. Must prepare a SWPPP.
Parks and Recreation	Natural Heritage Inventory	Compliance with NDCC § 20.1-02-05 – Management programs have been established for protection of threatened and endangered species in North Dakota. North Dakota does not have a list of threatened and endangered species.
State Water Commission – Office of State Engineer	Coordinate with Nelson and Ramsey County Floodplain Administrators	Required for construction within the floodplain.
	Waste Disposal	No disposal allowed within floodway.
State Historical Society	Section 106 of the National Historic Preservation Act Coordination	Compliance with NDCC §§ 55-03-01 and 55-03-01.1 and consultation under Section 106 of the NHPA is required for projects considered a federal undertaking (i.e., federal funding, PSC).
North Dakota Highway Patrol	Overheight/Overweight Permit	Permit required for hauling construction equipment and materials on state highways. Contractors will obtain as necessary.
<b>Local</b>		
Nelson County	Conditional Use Permit	Required for project construction.
	Coordination with Floodplain Administrator	Required for construction within the floodplain.

Agency	Type of Permit, Regulatory Compliance, or Coordination	Need
Ramsey County	Conditional Use Permit	Required for approval by County Commissioners.
	Coordination with Floodplain Administrator	Required for construction within the floodplain.
Stevens Township	Approval from Township Board	Required for approval by Ramsey County Commissioners.
South Minnewaukan Township	Approval from Township Board	Required for approval by Ramsey County Commissioners.
Transmission Line Utility Companies	Utility Crossing Permission	Permit required to cross existing transmission facilities.

The Spirit Lake Tribe and the Indian Affairs Commission were contacted for comment on the proposed Project. No responses were received at the time of this application.

## **7.0 Factors Considered**

The North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the Commission in evaluation of the corridor.

### **7.1. Public Health and Welfare, Natural Resources and the Environment**

Section 5.0 describes the effects of the proposed reroute on public health and welfare, natural resources, and the environment. Section 5.0 also discusses mitigation strategies. Great River Energy will minimize impacts to landowners, agricultural practices, and environmental features.

### **7.2. Technologies to Minimize Adverse Environmental Effects**

Great River Energy will use the most current designs and construction technologies to minimize environmental impacts.

### **7.3. Unavoidable Adverse Environmental Effects**

Unavoidable adverse environmental effects include physical impacts to the landscape, primarily taking place on agricultural land. Other effects may include migratory bird impacts. Impacts will be minimized and mitigated as described in Section 5. Great River Energy will work with regulatory agencies to identify any additional minimization methods to reduce impacts.

### **7.4. Irreversible and Irrecoverable Commitment of Natural Resources**

Irreversible and irretrievable natural resource commitments are associated with the use of nonrenewable resources and the effects on future use of these resources. There are few commitments of resources associated with this Project that are irreversible and irretrievable. Irreversible and irretrievable construction resources that will be used include aggregate, concrete, and fossil fuels. These resources will be utilized to construct the proposed reroutes.

### **7.5. Direct and Indirect Economic Impact of the Proposed Transmission Facility**

Direct economic impacts include the impacts associated with the removal of agricultural land from production. The landowner will be compensated for the small amount of land removed from production due to the pole footprints. Other direct and indirect economic impacts are generally positive, and may include spending for fuel, operating supplies, and other products and services that will benefit local businesses.

### **7.6. Existing Development Plans in the Vicinity of the Re-routes**

There are no conflicts with existing or anticipated development plans in the vicinity of the reroute corridors.

### **7.7. Effect on Cultural Resources**

There are no anticipated effects on cultural resources. All identified cultural resources will be avoided by the Project.

### 7.8. Effect on Biological Resources

Great River Energy has implemented measures to avoid and minimize effects to biological resources in the vicinity of the Project Corridors. The impact of the Project on vegetation, wildlife and sensitive species is expected to be minimal. The Project will include measures to minimize impacts to avian species.

### 7.9. Problems Identified by Agencies

**Appendix C** includes a list of the federal agencies, tribes, state agencies, and county commissioners that have been notified about the Project. Agency responses are summarized below and a copy of their response letters are included in **Appendix D**.

**Table 7-1: Summary of Agency responses to the Solicitation of Views letter.**

#	Agency	Contact	Response Date	Notes
1	North Dakota Dept. of Health	L. David Glatt, Chief	July 6th, 2012	Minor environmental impacts; provided construction recommendations.
2	State Historical Society of North Dakota	Merlan E. Paaverud, Jr. State Historic Preservation Officer	July 16th, 2012	Recommend a Class III (Pedestrian) Survey.
3	North Dakota State Water Commission	Linda Weispfenning, Water Resource Planner	July 18th, 2012	Commented on AE floodplain identified within the project corridor & provided floodplain administrator contact information; dispose of waste material properly and not within floodways; there are no sole source aquifers designated in North Dakota
4	US Army Corps of Engineers	Sam E. Werner, Acting Regulatory Program Manager	July 5th, 2012	Requested submission of a location map and completed Corps permit application, describing all proposed work and construction methodology for a Section 10, Section 404 permit.
5	US Fish and Wildlife Service -- GIS RT&E	Karine Becker	May 16th, 2012	Provided rare, threatened and endangered species information and web links to additional species information.
6	US Fish and Wildlife Service -- Wetland Easements	Tim Loose	May 29th, 2012	Provided USFWS easement parcels within the project corridors.
7	US Fish and Wildlife Service -- Wetland Easements	Brian Vose	June 1st, 2012	Provided USFWS easement parcels within the project corridors.
8	Ramsey County Auditor	Elizabeth Fischer, Auditor	July 18th, 2012	Tabled Decision pending Township input; Commissioner Meeting August 7th, 2012, 8 am
9	Nelson County Auditor	W.J. (Jack) Davidson, Auditor	July 11th, 2012	CUP required, planning commission public hearing July 26th 8pm; County Commissioners meeting August 7,th 10am
10	Stevens Township	Donald Pershke, Chairman	July 12th, 2012	Verbal approval, but will need to confirm with board

#	Agency	Contact	Response Date	Notes
11	South Minnewaukan Township	Kevin Frith, Chairman	July 18th, 2012	Verbal approval, but will need to confirm with board
12	North Dakota Game and Fish	Greg Link, Chief Conservation & Communication Division	July 26th, 2012	Noted Segment 8 crosses the Crary WMA and a Special Use Permit may be required. Recommended protection of wetlands and marking of overhead lines, per "Mitigation Bird Collisions with Power Lines: the State of the Art in 1994."
12	North Dakota Game and Fish	Brian Prince, Wildlife Resource Management Supervisor	August 2nd, 2012	Requested removal of abandoned poles. No Special Use permit required, as work is proposed to occur in the winter on ice over flooded WMA.
13	USFWS	INSERT COMMENTS		
14	North Dakota DOT	Robert A. Fode, Directory, Office of Project Development	August 14, 2012	Project will have no adverse effect on NDDOT highways.

## 8.0 Qualification of Contributors

**Barton Schultz** has 31 years of experience in the civil and environmental engineering field. His primary technical duties include the preparation of engineering drawings and specifications, technical reports, planning and permit documents, and providing construction observation services. Further, his project experience includes comprehensive planning and siting studies for single or multiple public entities, environmental permitting, environmental site assessments, feasibility studies, development of SPCC Plans, corridor studies associated with routing new transmission lines, design of solid waste facilities, design of material handling facilities, quality control review of facility design projects, construction observation, third party review of contested projects, and technical input to legislative subcommittees during the rule-making process.

**Mark D. Aanenson** has 21 years of experience in the fields of environmental science, including environmental review, wetland permitting and delineation, water quality and biological monitoring programs, as well as preparation of water quality documents (such as water quality protection plans).

**Joshua Kadrmas** has 12 years of experience in environmental consulting, including hazardous waste investigations and cleanup, wetland mitigation, stormwater and NEPA compliance. His project experience includes work with multiple state and federal agencies on projects located across the US. Mr. Kadrmas holds dual B.S. Degrees in Civil Engineering and Biological Sciences (2000), and is a registered professional engineer in North Dakota and Missouri.

**Emmy Baskerville** has 7 years of experience working in the area of wetland ecology and environmental permitting. Her project experience includes wetland delineations, environmental permitting, wetland restorations and mitigation banking plans, mitigation wetland monitoring and other natural resource-themed projects.

**Charles Lukkarila** is a Senior Project Manager at Great River Energy, and has 28 years of professional experience as an electrical engineer. He is a registered Professional Engineer in Minnesota.

**Marsha Parlow** has 20 years of experience in the field of environmental science, including 13 years of experience in the electric utility industry. She currently develops local, state and federal permit applications to construct Great River Energy transmission line and associated facilities (69 kV lines up to 230 kV lines) in the Great River Energy service area.

**Carole L. Schmidt** has 31 years of experience in the field of environmental science, including 21 years of experience in the electric utility industry (focused on environmental permitting). She currently manages the development of local, state and federal permit applications to construct Great River Energy transmission line and associated facilities of various size and complexity (69 kV lines up to CapX 345 kV Project) in Minnesota, North Dakota and Wisconsin, provides support in preparation of certificate of need applications for regulatory commissions, and

supervises permitting staff and consultants to ensure high quality permit applications and compliance with federal, state and local regulations as well as company standards and procedures.

**Kyle Oraskovich** is a Transmission Line Design Engineer at Great River Energy, and has 4.5 years of professional experience as an engineer. He is a registered Professional Engineer in Minnesota.

## 9.0 References

### Economic/Demographic

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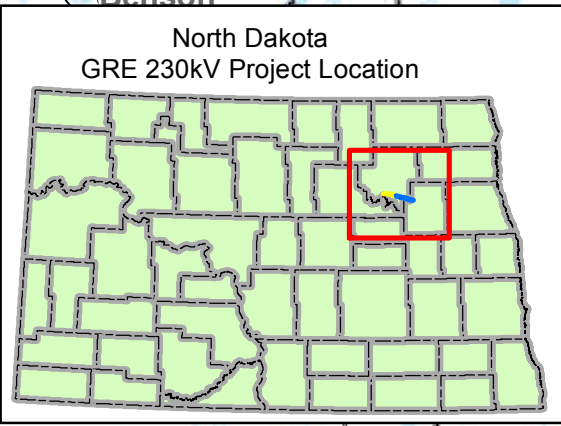
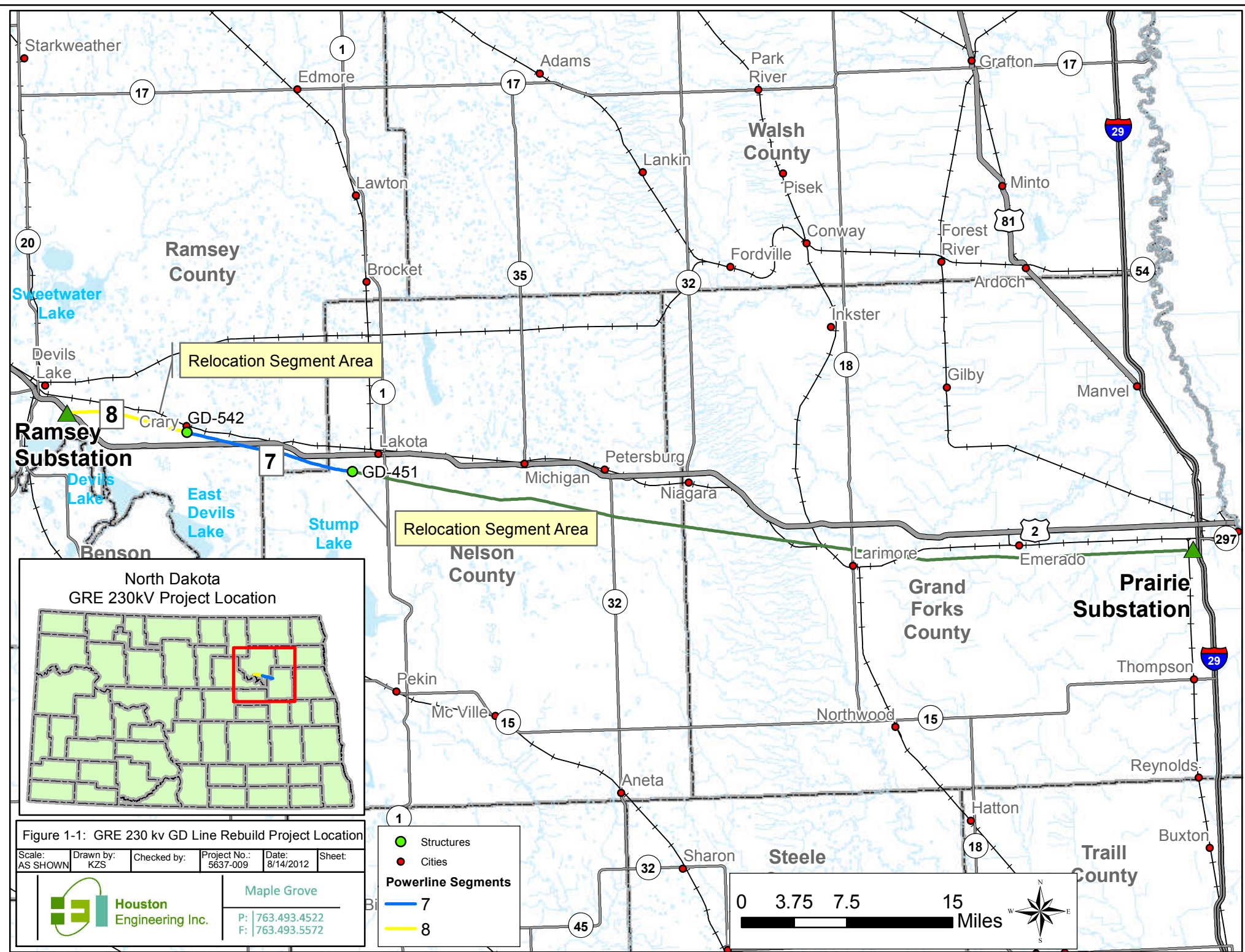


Figure 1-1: GRE 230 kv GD Line Rebuild Project Location

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**Houston Engineering Inc.**  
Maple Grove  
P: 763.493.4522  
F: 763.493.5572

- Structures
- Cities

**Powerline Segments**

- 7
- 8

0 3.75 7.5 15 Miles

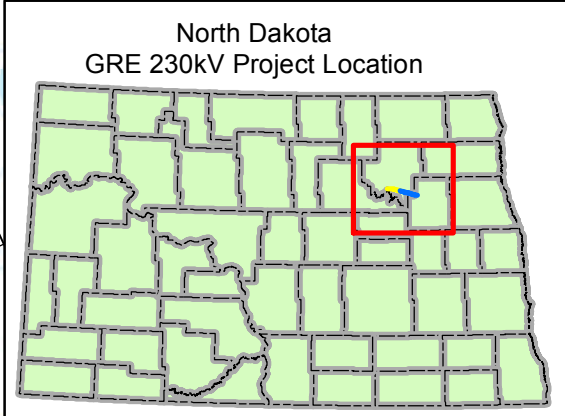
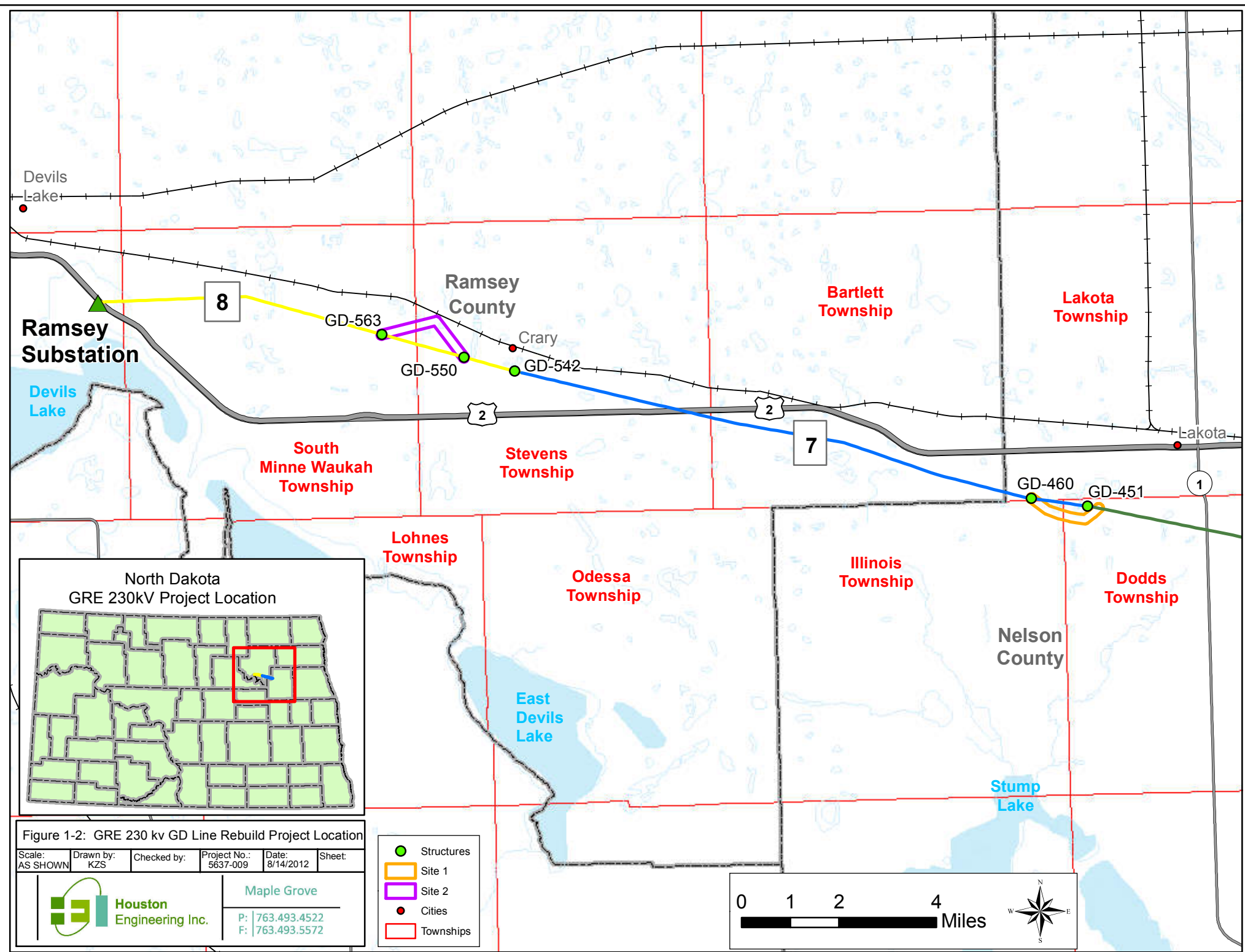







Figure 1-2: GRE 230 kv GD Line Rebuild Project Location

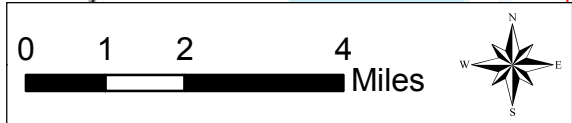
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 **Houston Engineering Inc.**

Maple Grove

P: 763.493.4522  
F: 763.493.5572

-  Structures
-  Site 1
-  Site 2
-  Cities
-  Townships



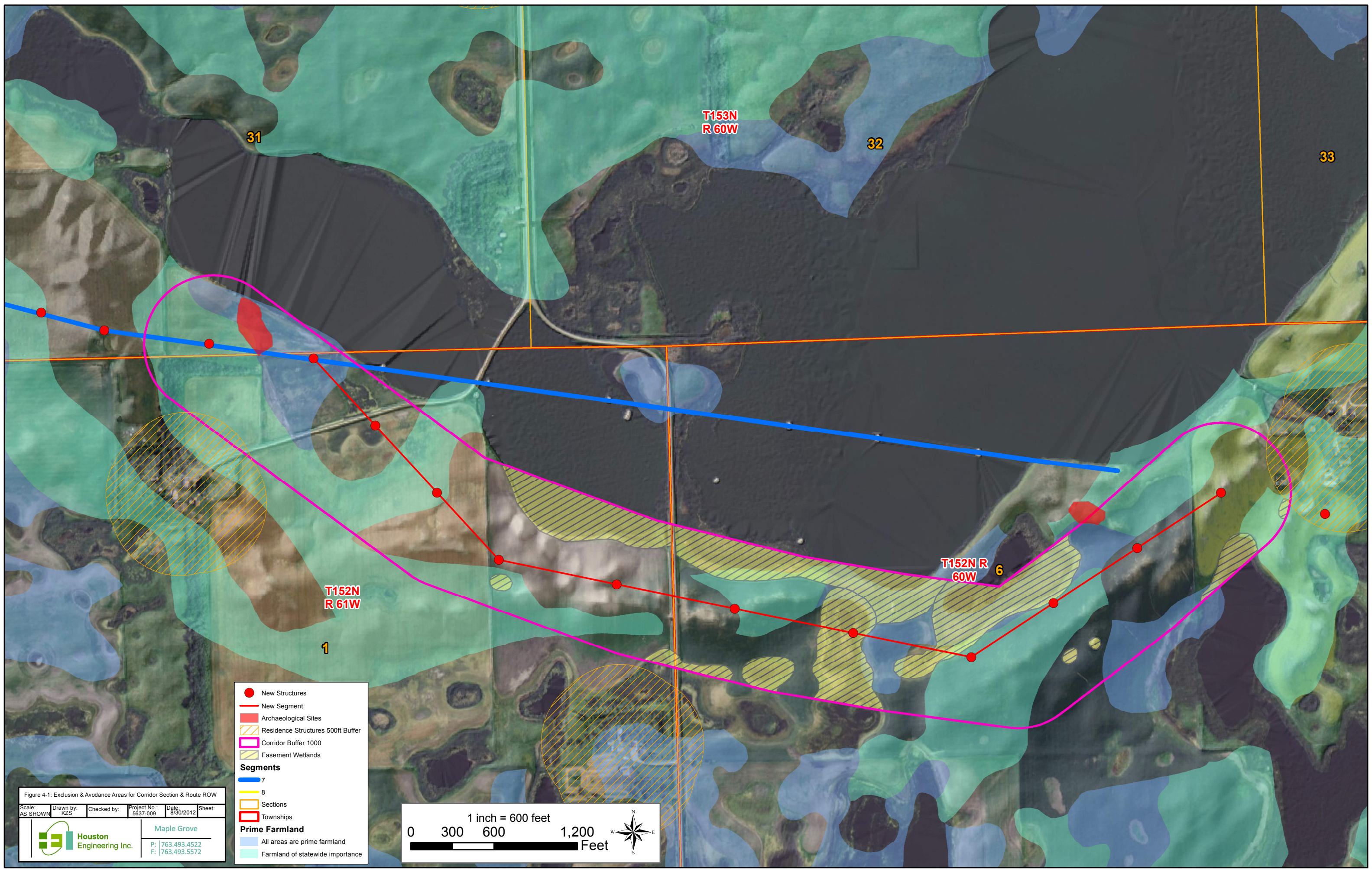
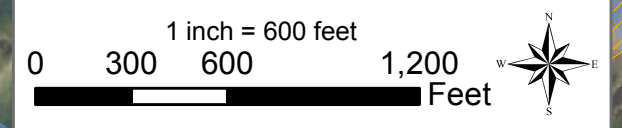


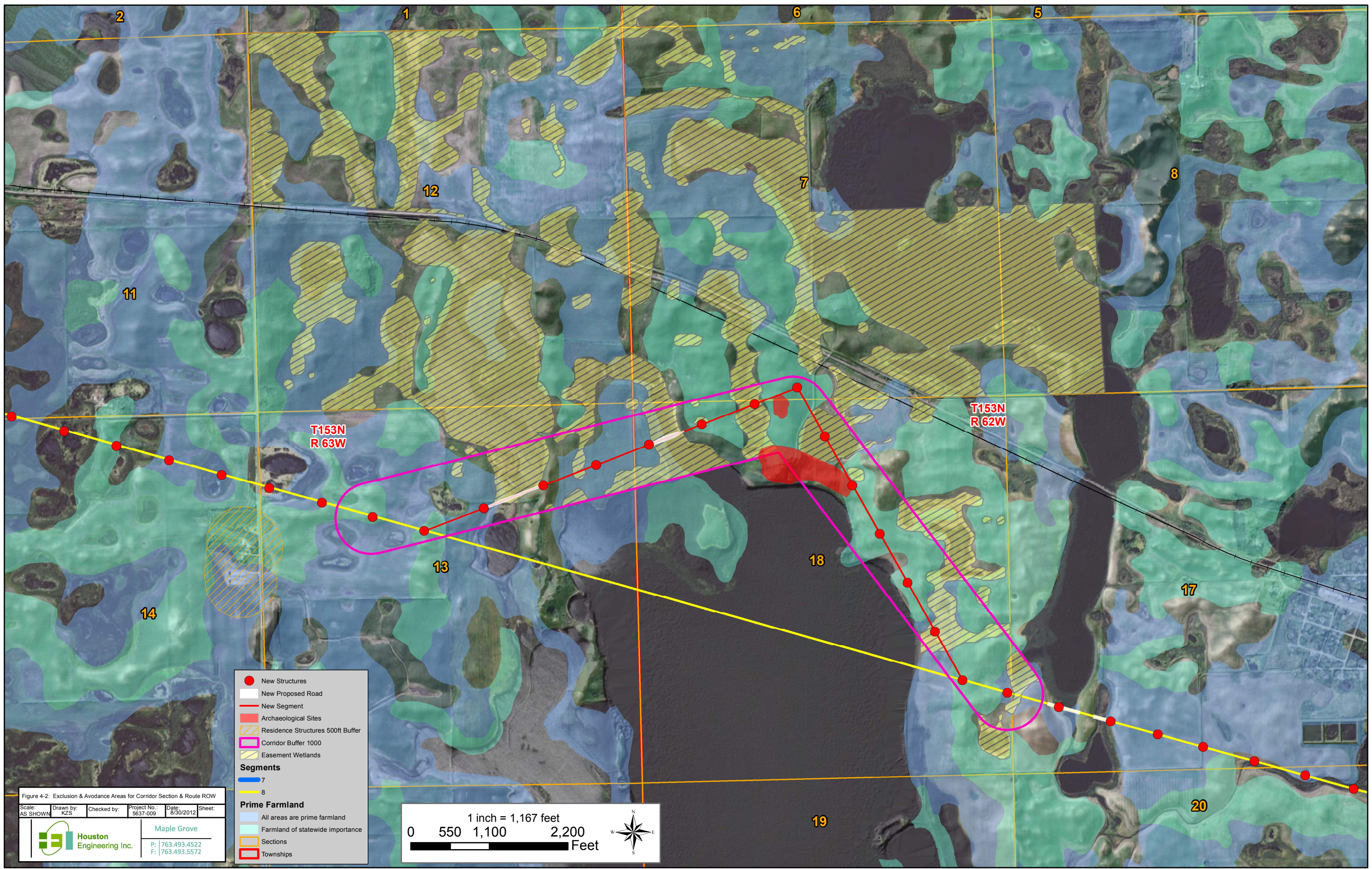
Figure 4-1: Exclusion & Avoidance Areas for Corridor Section & Route ROW

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Houston Engineering Inc.  
 Maple Grove  
 P: 763.493.4522  
 F: 763.493.5572

- New Structures
  - New Segment
  - Archaeological Sites
  - Residence Structures 500ft Buffer
  - Corridor Buffer 1000
  - Easement Wetlands
- Segments**
- 7
  - 8
- Sections**
- Sections
  - Townships
- Prime Farmland**
- All areas are prime farmland
  - Farmland of statewide importance





T153N  
R 63W

T153N  
R 62W

●	New Structures
—	New Proposed Road
—	New Segment
■	Archaeological Sites
▨	Residence Structures 500ft Buffer
▨	Corridor Buffer 1000
▨	Easement Wetlands
<b>Segments</b>	
—	7
—	8
<b>Prime Farmland</b>	
■	All areas are prime farmland
■	Farmland of statewide importance
■	Sections
■	Townships

Figure 4-2: Exclusion & Avoidance Areas for Corridor Section & Route ROW

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 8/30/2012	Sheet:
		Maple Grove P: 763.493.4522 F: 763.493.5572			

1 inch = 1,167 feet

0 550 1,100 2,200 Feet

Reroute Corridor 7

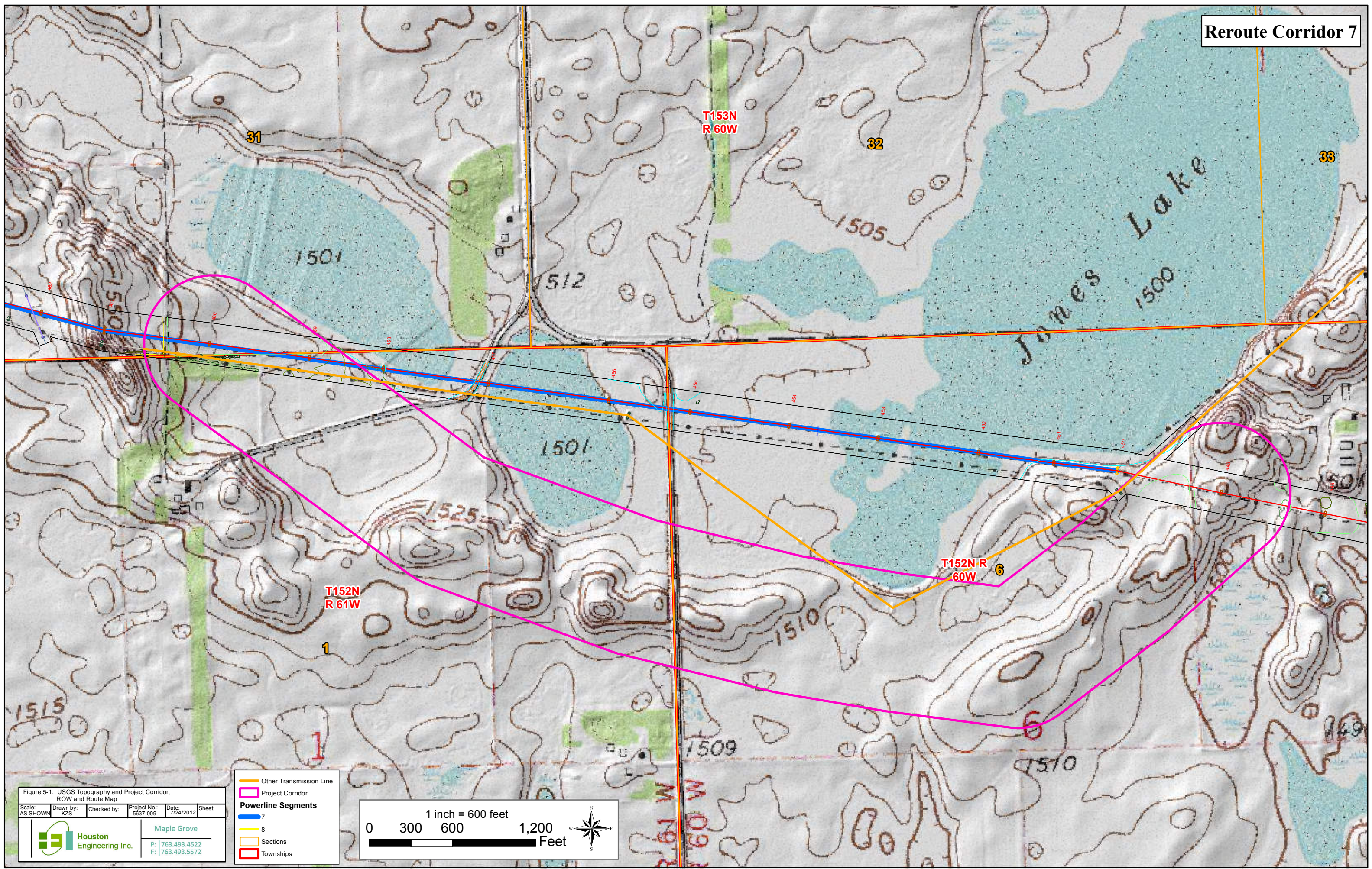


Figure 5-1: USGS Topography and Project Corridor.  
ROW and Route Map

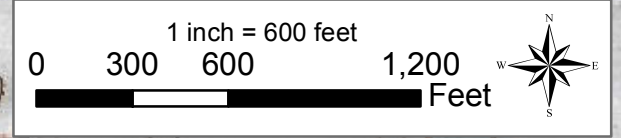
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Maple Grove

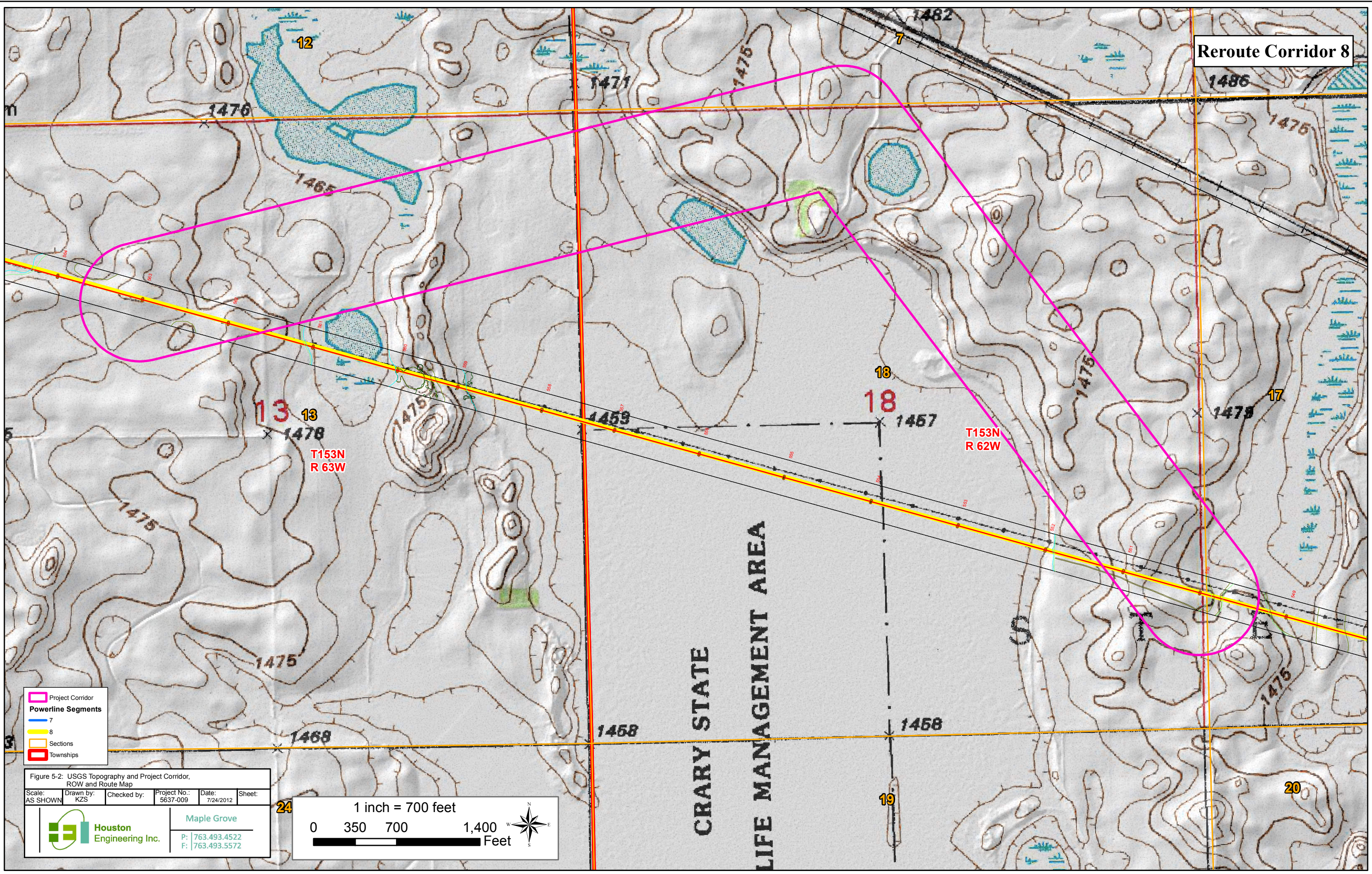
Houston Engineering Inc.

P: 763.493.4522  
F: 763.493.5572

- Other Transmission Line
- Project Corridor
- Powerline Segments
- 7
- 8
- Sections
- Townships



**Reroute Corridor 8**



- Project Corridor
- Powerline Segments**
- 7
- 8
- Sections
- Townships

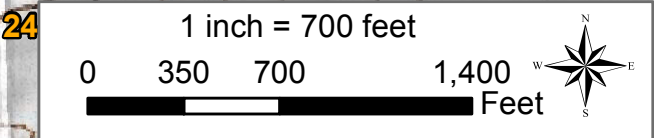
Figure 5-2: USGS Topography and Project Corridor, ROW and Route Map

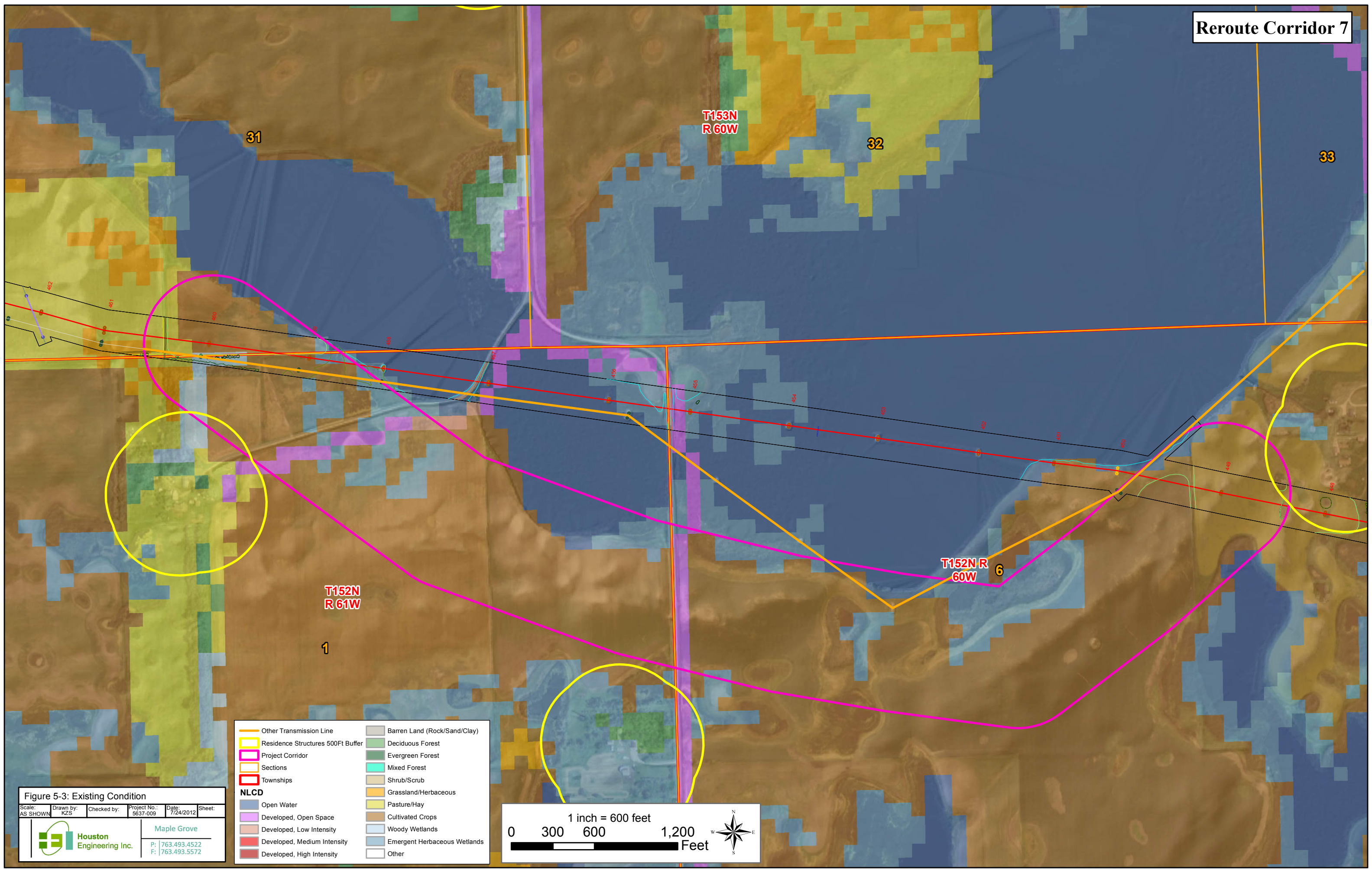
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**Houston Engineering Inc.**

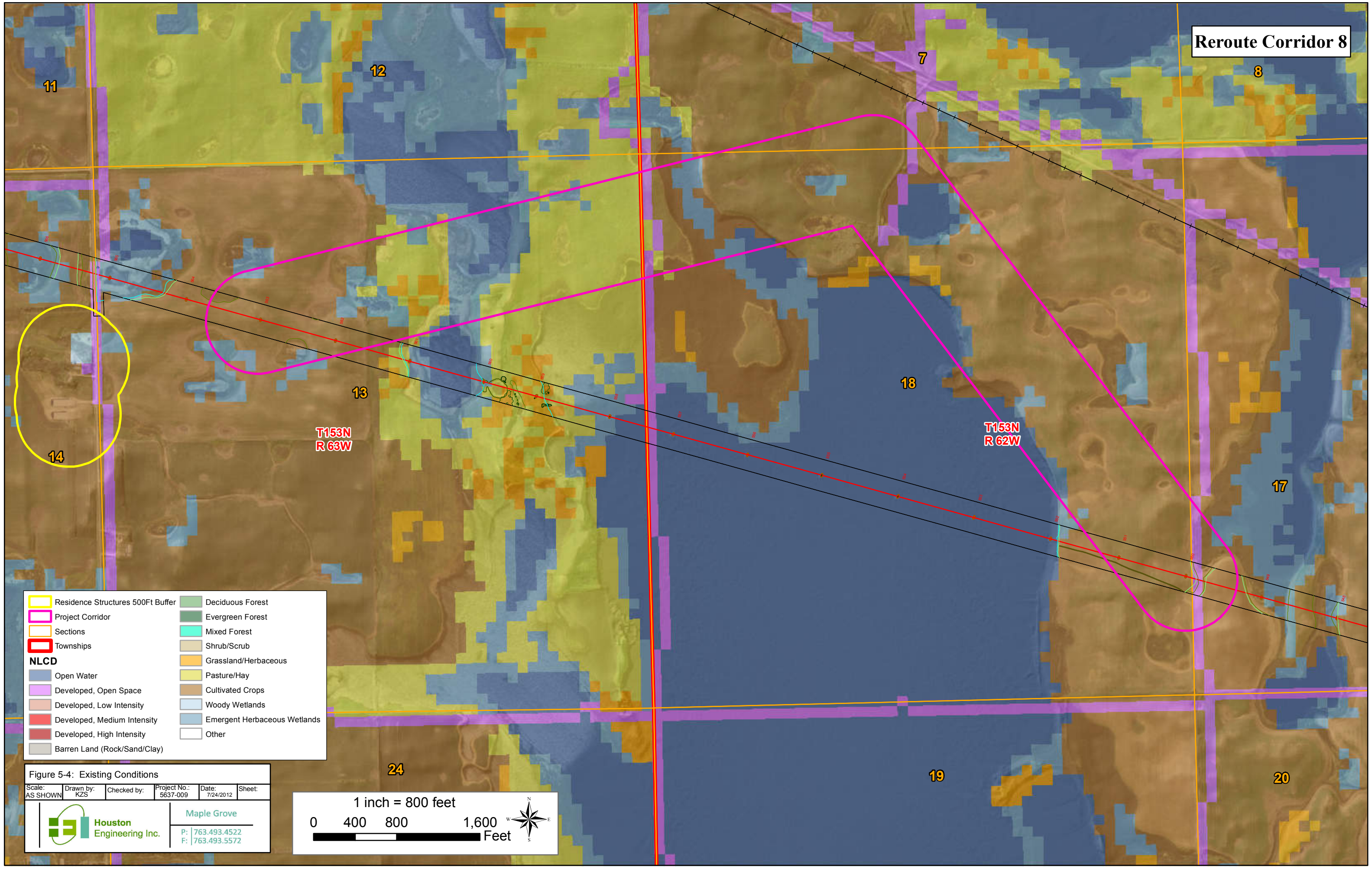
Maple Grove

P: 763.493.4522  
F: 763.493.5572





**Reroute Corridor 8**



Residence Structures 500Ft Buffer	Deciduous Forest
Project Corridor	Evergreen Forest
Sections	Mixed Forest
Townships	Shrub/Scrub
<b>NLCD</b>	Grassland/Herbaceous
Open Water	Pasture/Hay
Developed, Open Space	Cultivated Crops
Developed, Low Intensity	Woody Wetlands
Developed, Medium Intensity	Emergent Herbaceous Wetlands
Developed, High Intensity	Other
Barren Land (Rock/Sand/Clay)	

**Figure 5-4: Existing Conditions**

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 7/24/2012	Sheet:
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	Maple Grove
	P: 763.493.4522 F: 763.493.5572

1 inch = 800 feet

0 400 800 1,600 Feet

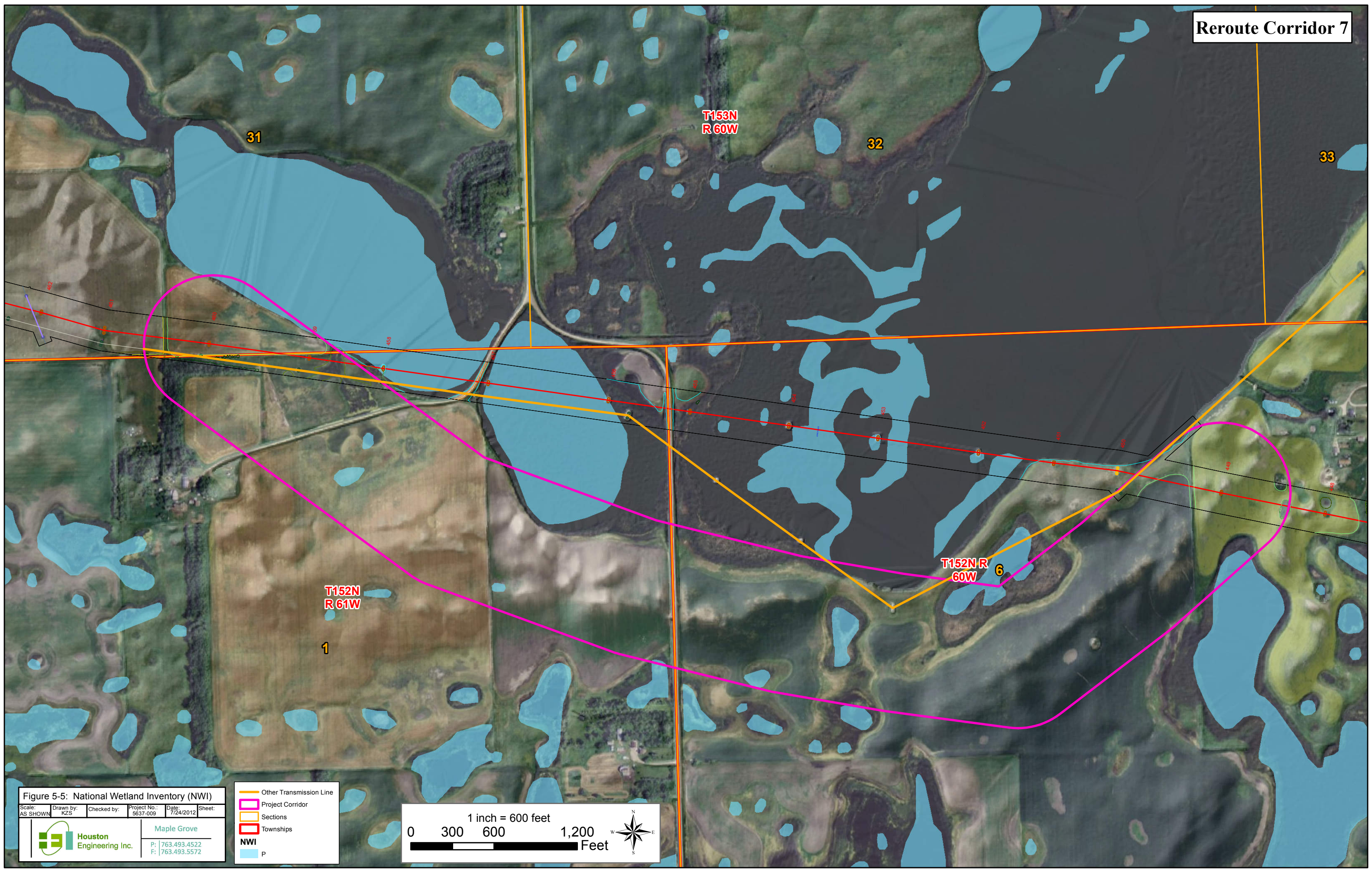


Figure 5-5: National Wetland Inventory (NWI)

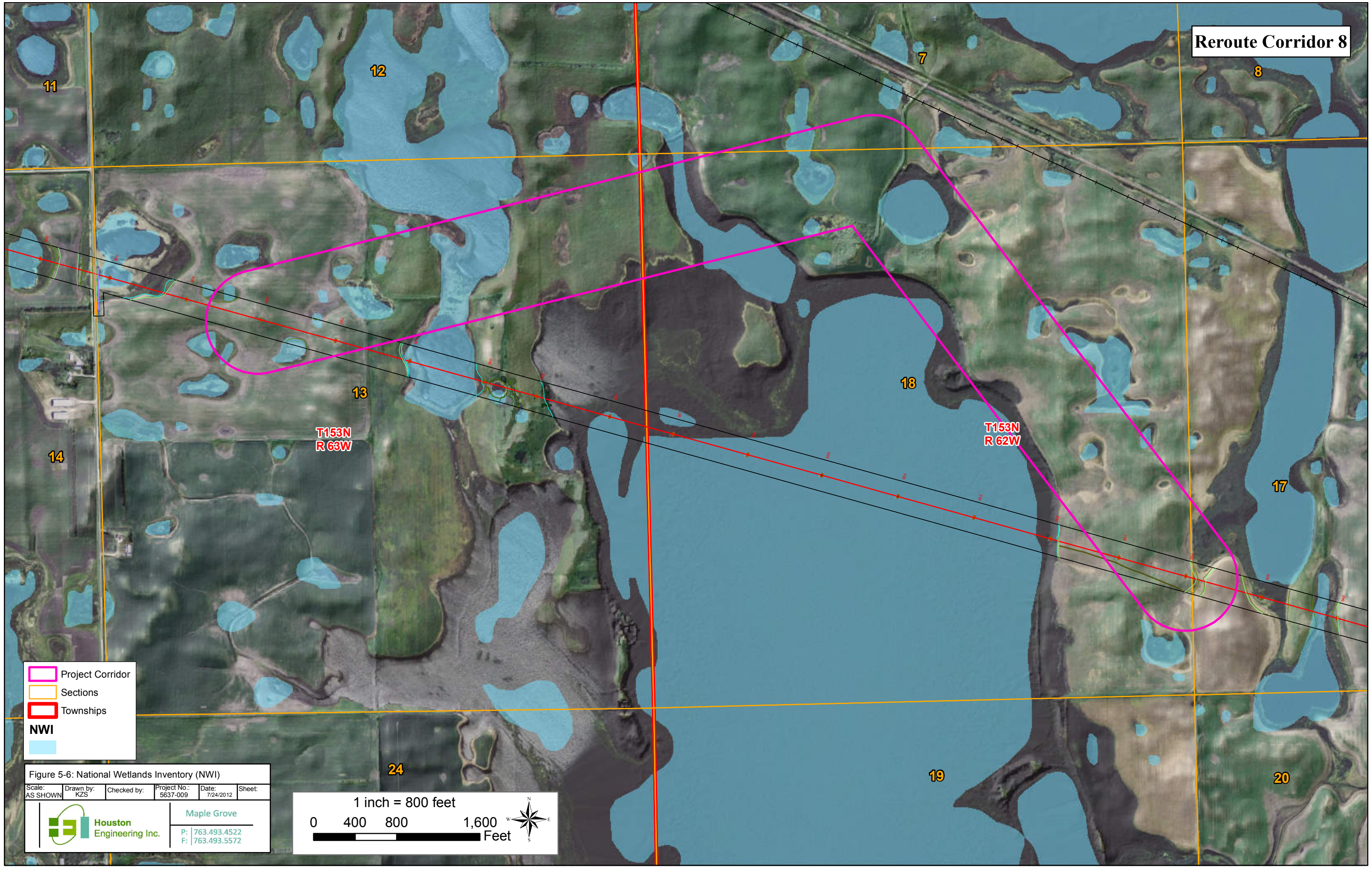
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Houston Engineering Inc.			Maple Grove		
P: 763.493.4522			F: 763.493.5572		

- Other Transmission Line
- Project Corridor
- Sections
- Townships
- NWI
- P

1 inch = 600 feet

0 300 600 1,200 Feet

# Reroute Corridor 8



- Project Corridor
- Sections
- Townships

**NWI**

- 

Figure 5-6: National Wetlands Inventory (NWI)

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 7/24/2012	Sheet:
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**Houston Engineering Inc.**

Maple Grove

P: 763.493.4522  
F: 763.493.5572

1 inch = 800 feet

0 400 800 1,600 Feet

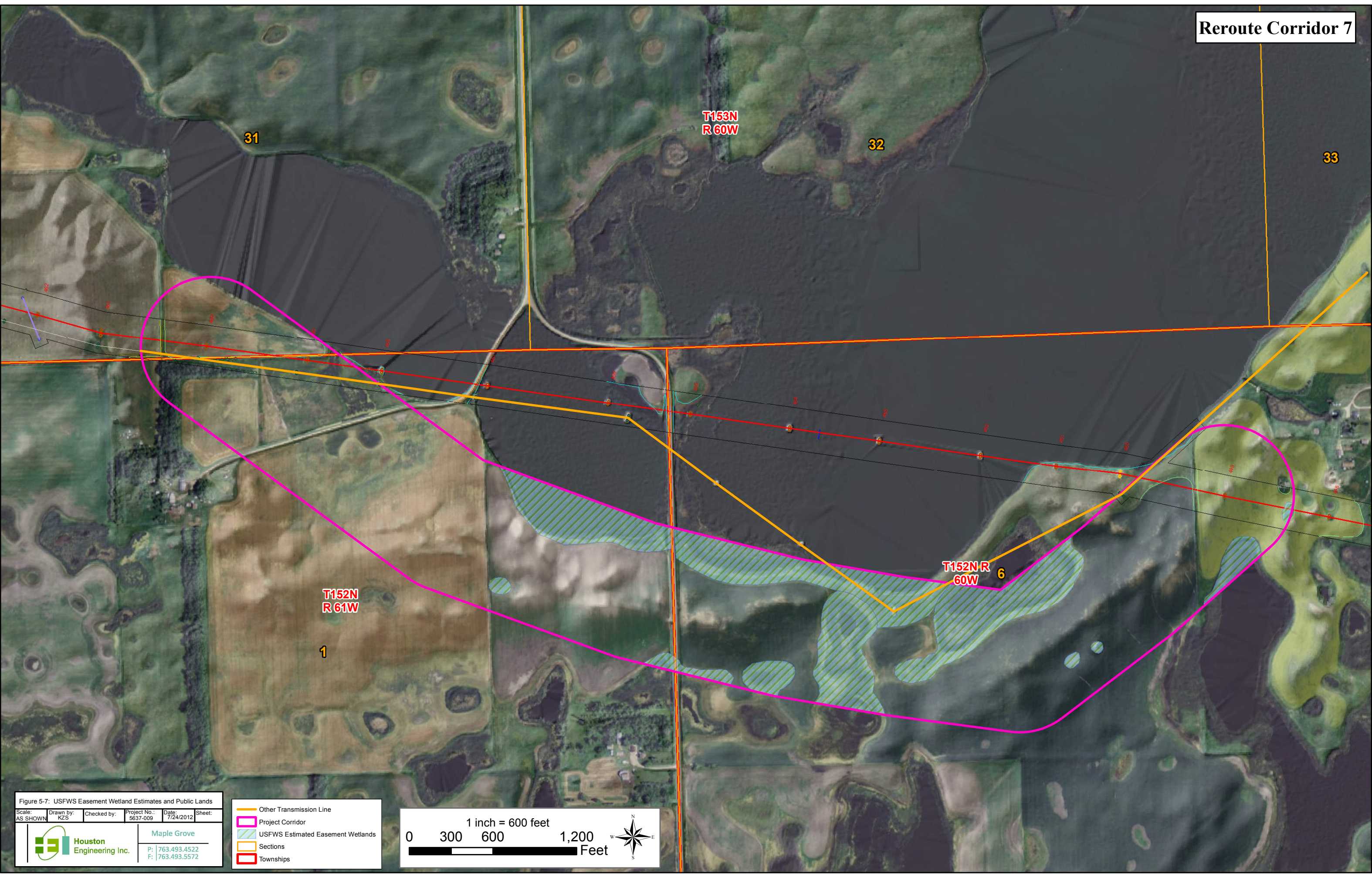
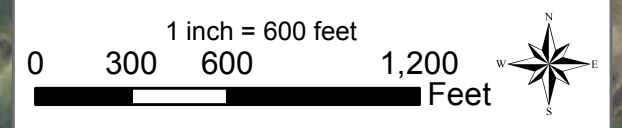


Figure 5-7: USFWS Easement Wetland Estimates and Public Lands

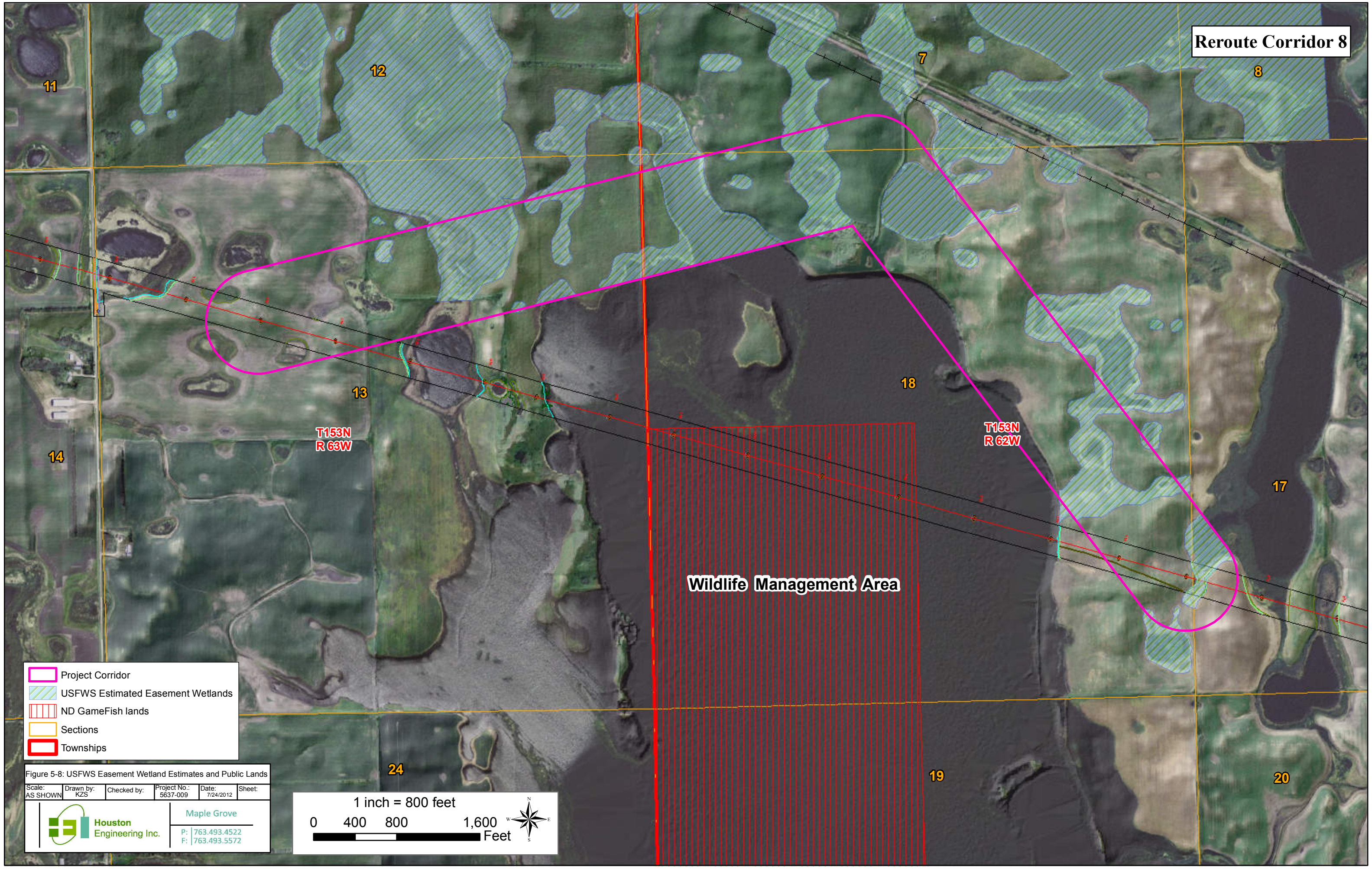
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**Houston Engineering Inc.**  
 Maple Grove  
 P: 763.493.4522  
 F: 763.493.5572

- Other Transmission Line
- Project Corridor
- USFWS Estimated Easement Wetlands
- Sections
- Townships



**Reroute Corridor 8**

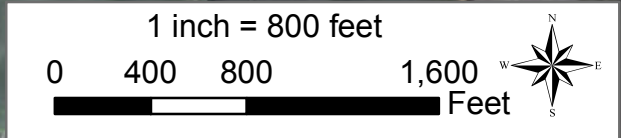


- Project Corridor
- USFWS Estimated Easement Wetlands
- ND GameFish lands
- Sections
- Townships

Figure 5-8: USFWS Easement Wetland Estimates and Public Lands

Scale:	Drawn by:	Checked by:	Project No.:	Date:	Sheet:
AS SHOWN	KZS		5637-009	7/24/2012	

**Houston Engineering Inc.**  
Maple Grove  
P: 763.493.4522  
F: 763.493.5572



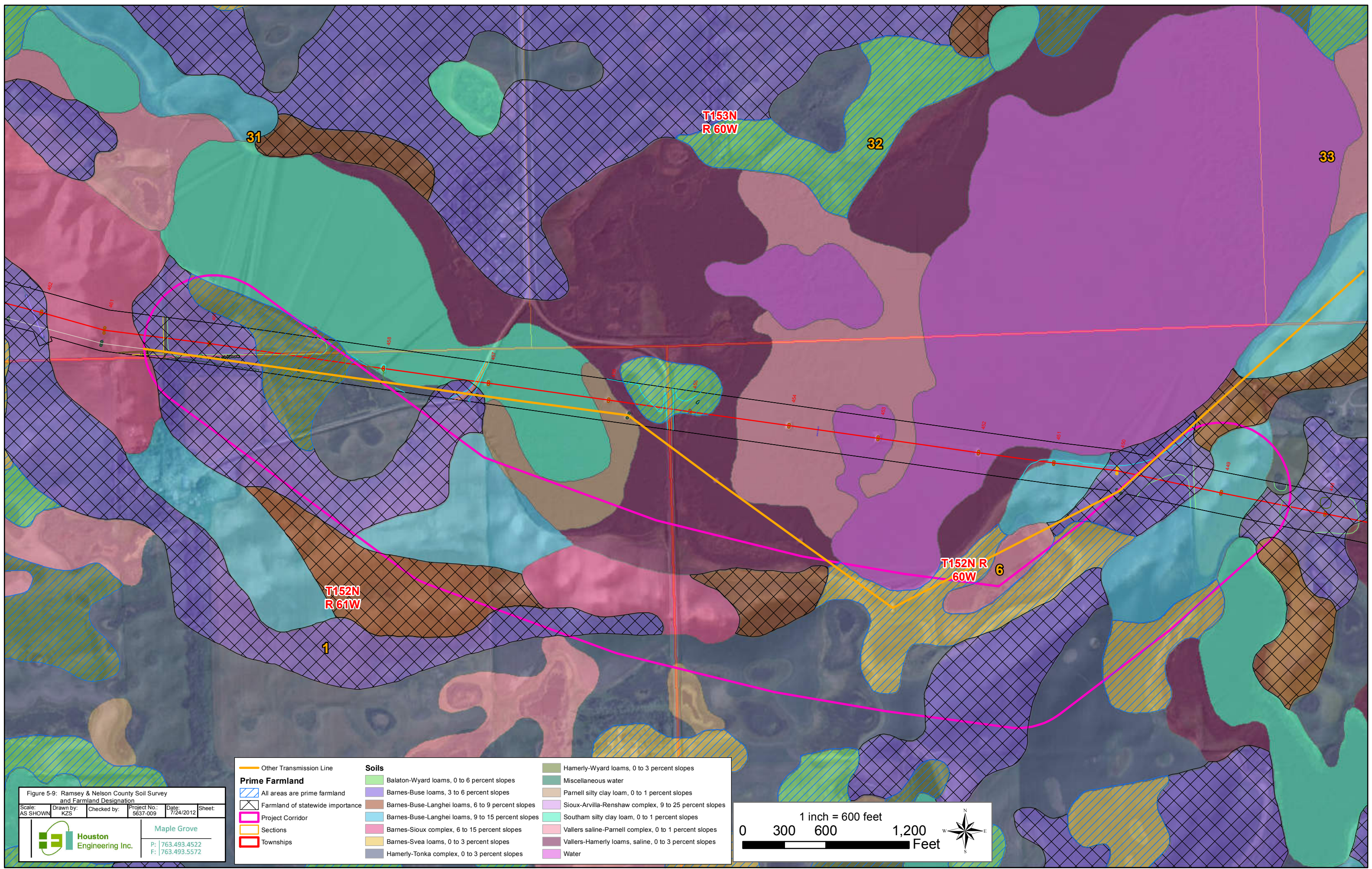


Figure 5-9: Ramsey & Nelson County Soil Survey and Farmland Designation

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 7/24/2012	Sheet:
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**Houston Engineering Inc.**  
 Maple Grove  
 P: 763.493.4522  
 F: 763.493.5572

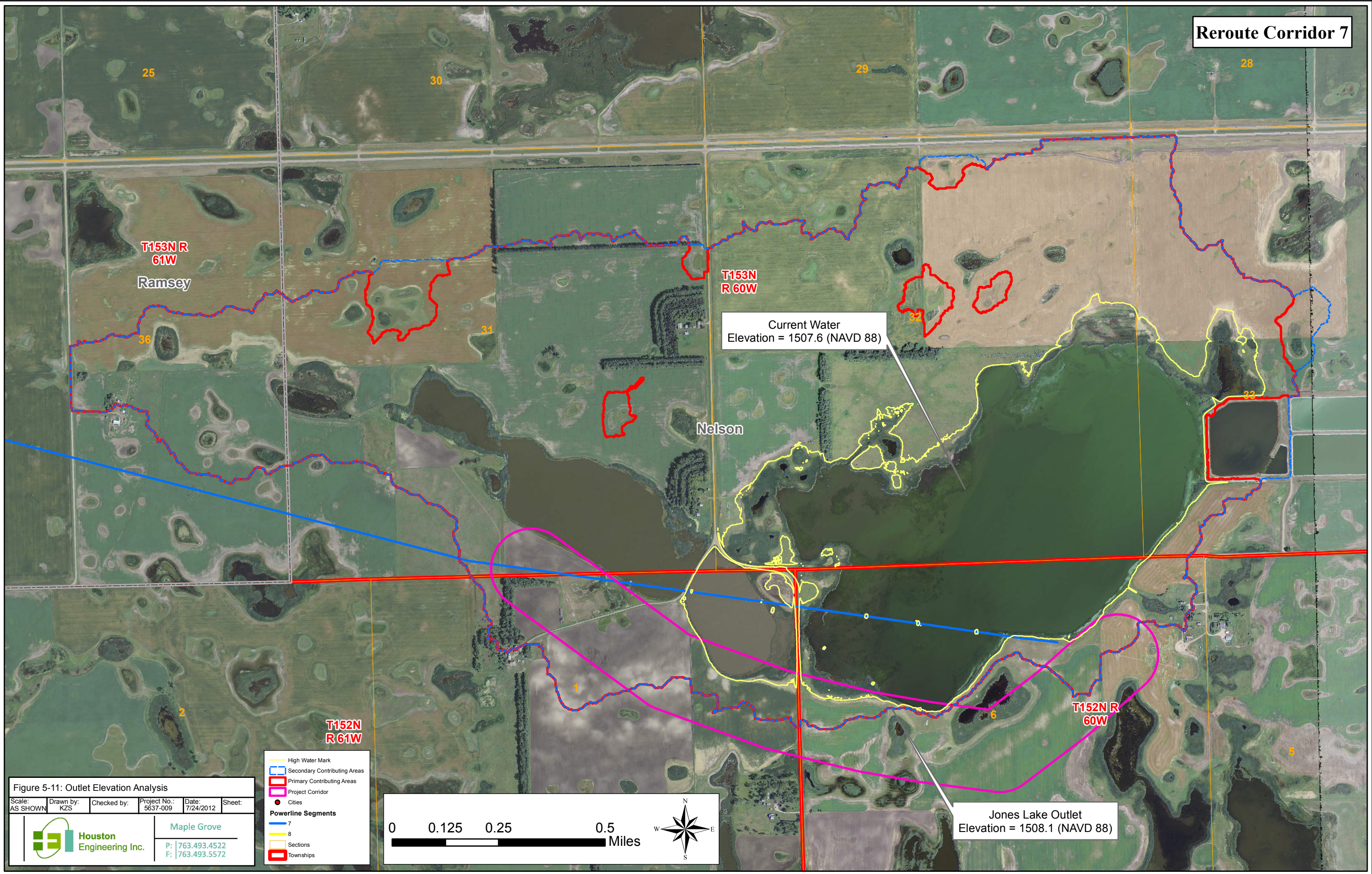
Prime Farmland		Soils	
	All areas are prime farmland		Balaton-Wyand loams, 0 to 6 percent slopes
	Farmland of statewide importance		Barnes-Buse loams, 3 to 6 percent slopes
	Project Corridor		Barnes-Buse-Langhei loams, 6 to 9 percent slopes
	Sections		Barnes-Buse-Langhei loams, 9 to 15 percent slopes
	Townships		Barnes-Sioux complex, 6 to 15 percent slopes
			Barnes-Svea loams, 0 to 3 percent slopes
			Hamerly-Tonka complex, 0 to 3 percent slopes
			Hamerly-Wyand loams, 0 to 3 percent slopes
			Miscellaneous water
			Parnell silty clay loam, 0 to 1 percent slopes
			Sioux-Arvilla-Renshaw complex, 9 to 25 percent slopes
			Southam silty clay loam, 0 to 1 percent slopes
			Vallers saline-Parnell complex, 0 to 1 percent slopes
			Vallers-Hamerly loams, saline, 0 to 3 percent slopes
			Water

1 inch = 600 feet

0 300 600 1,200 Feet



**Reroute Corridor 7**



Current Water  
Elevation = 1507.6 (NAVD 88)

Jones Lake Outlet  
Elevation = 1508.1 (NAVD 88)

T153N R  
61W  
Ramsey

T153N  
R 60W

Nelson

T152N R  
60W

T152N  
R 61W

**Figure 5-11: Outlet Elevation Analysis**

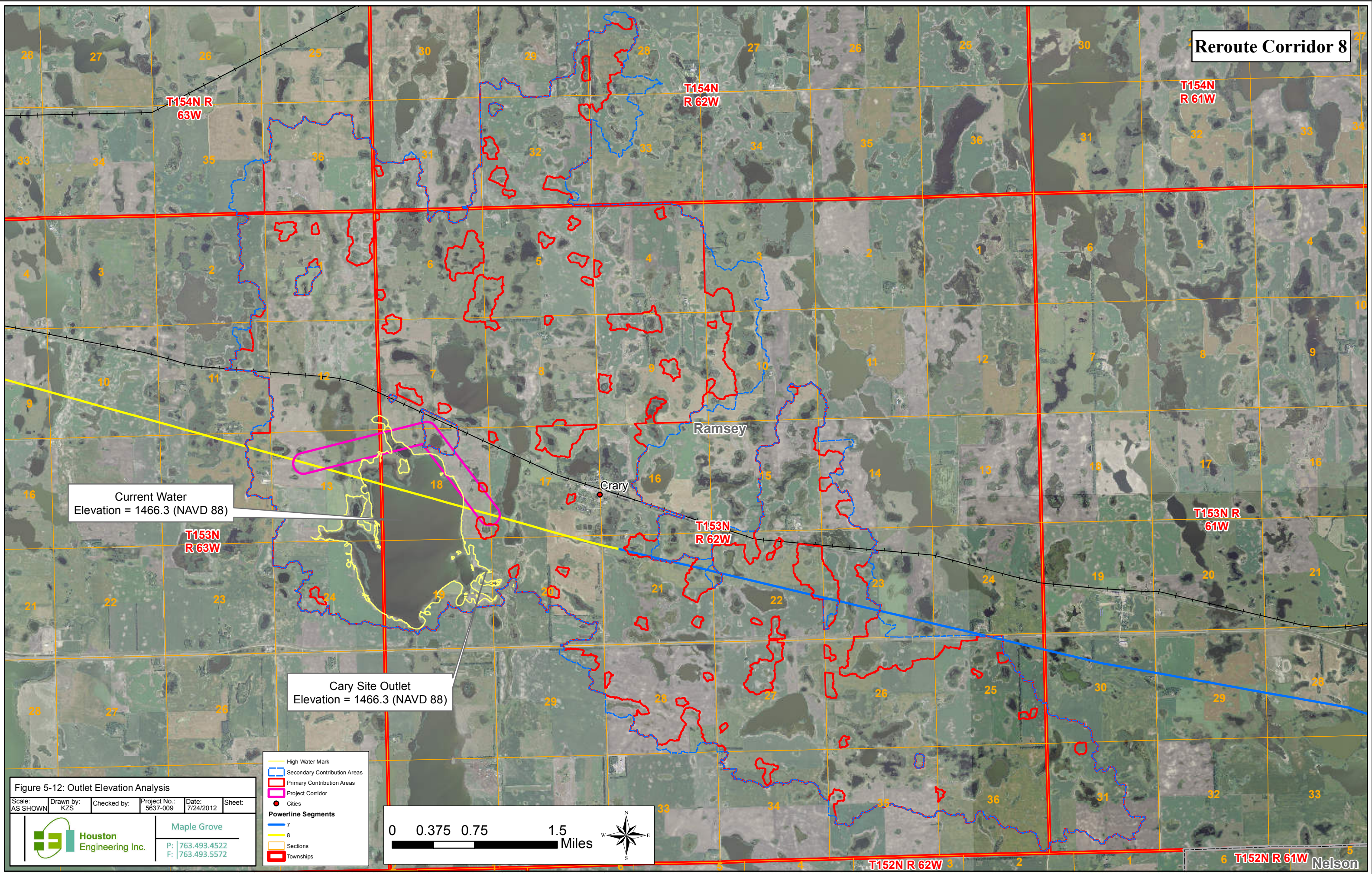
Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 7/24/2012	Sheet:
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**Houston Engineering Inc.**  
Maple Grove  
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F: 763.493.5572

- High Water Mark
- Secondary Contributing Areas
- Primary Contributing Areas
- Project Corridor
- Cities
- Powerline Segments**
- 7
- 8
- Sections
- Townships

0 0.125 0.25 0.5 Miles

# Reroute Corridor 8



Current Water  
Elevation = 1466.3 (NAVD 88)

Cary Site Outlet  
Elevation = 1466.3 (NAVD 88)

**Figure 5-12: Outlet Elevation Analysis**

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5637-009	Date: 7/24/2012	Sheet:
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**Houston Engineering Inc.**  
 Maple Grove  
 P: 763.493.4522  
 F: 763.493.5572

- High Water Mark
- Secondary Contribution Areas
- Primary Contribution Areas
- Project Corridor
- Cities
- Powerline Segments**
- 7
- 8
- Sections
- Townships



# **APPENDICES**

Appendix A: Cultural Resources Report – Trefoil Cultural and Environmental, August 2012

Appendix B: Houston Engineering, Inc. Hydraulic Analysis Report, June 2012

Appendix C: Solicitation of Views Letter Agency Distribution List, July 2012

Appendix D: Solicitation of Views Agency Response Letters

**Appendix B:** Houston Engineering, Inc. Hydraulic Analysis Report,  
June 2012

# HYDRAULIC ANALYSIS

Great River Energy  
230-kV "GD" Line  
Segment 7 and 8 Analysis

**Transmission Line Reroute  
Ramsey and Nelson County, ND**

**PREPARED BY**



HOUSTON ENGINEERING, INC.

1401 21<sup>ST</sup> AVENUE NORTH

FARGO, NORTH DAKOTA 58102

**June 2012**

# HYDRAULIC ANALYSIS

Great River Energy  
230-kV "GD" Line  
Segment 7 and 8 Analysis

**Transmission Line Reroute**  
**Ramsey and Nelson County, ND**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.

*C. Gregg Thielman*  
C. Gregg Thielman  
Certification No. 3777  
Date: *June 2016*



Houston Engineering, Inc.  
1401 21<sup>st</sup> Avenue North  
Fargo, ND 58102  
Phone (701) 237-5065  
HE Project No. 5637-009

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    3.1 Precipitation Data ..... 2  
    3.2 Drainage Area Determination ..... 3  
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- 2. Lakota Site Overview
- 3. Lakota Site Additional Closed Basins
- 4. Crary Site Overview
- 5. Doyon Closed Basin Overview
- 6. SWC Precipitation Gage Locations

## 1.0 Purpose

Due to rising water levels, Great River Energy is proposing the reroute of several towers at two locations on Segments 7 and 8 of the Ramsey Substation to Prairie Substation transmission line (230-kV “GD” Line) to meet line clearance requirements and provide easier access for maintenance. Site 1 (Lakota site) is located in Nelson County on Segment 7 (Structures 452-458) and is approximately 2 miles southwest of Lakota, ND. Site 2 (Crary site) is located in Ramsey County on Segment 8 (Structures 552-559) and is approximately 1 mile west of Crary, ND.

The tower reroute is necessary due to the rising water bodies preventing access for maintenance and lines not meeting minimum clearance requirements. The Lakota site involves the towers currently running through Jones Lake, which is a closed basin nearing its natural outlet elevation. The Crary site has reached its natural outlet elevation and is currently outletting to the south into East Devils Lake.

As part of this effort, Houston Engineering is performing a hydrologic analysis to determine the maximum water levels and appropriate tower locations that avoid the problems currently associated with the high water now and in the future. **Figure 1** shows the locations of the individual sites.

The purpose of this report is to summarize the hydrologic analysis that was performed for this project. Specifically, it analyzes the volume of runoff from the contributing drainage areas to the sites and the corresponding maximum water elevations.

## 2.0 Existing Conditions

### **Site 1 (Lakota Site):**

Based on a recent survey completed by Houston Engineering on May 25, 2012 the water surface elevation of Jones Lake (Lakota Site) was 1507.6 (NAVD 88). The natural outlet elevation was determined to be 1508.1 based on the field survey data. Once the natural outlet is reached, water will enter a series of closed basins to the south ultimately outletting into Stump Lake. Preliminary analysis of the series of closed basins to the south was completed using IWI Lidar available for the Devils Lake Basin. The natural outlet and closed basin boundaries for the Lakota Site are shown in **Figure 2**.

### **Site 2 (Crary Site):**

The current water surface elevation of the Crary site was surveyed at 1466.3, which is equivalent to the survey outlet elevation of 1466.3. Based on aerial imagery, water has been outletting since sometime around 2010. Water from the Crary Site outlets to the south, through U.S. Highway 2 and into East Devils Lake. The basin boundaries and outlet location for the Crary Site can be found in **Figure 4**.

## **Other Sites:**

While the Lakota Site analysis determined the subsequent basin outlets to be below the natural outlet for Jones Lake of 1508.1, there is potential for water levels in subsequent closed basins south and east of Jones Lake to cause future problems to structure GD-447 on the west side of Segment 6, especially once Jones Lake begins contributing to them. An overview of the maximum water extent for Jones Lake and the lakes along the outlet as well as proximity of towers on the west side of Segment 6 can be seen in **Figure 3**.

Another closed basin site with potential future impacts was identified during the field and aerial review along Segment 7 (GD-509 to GD-514) approximately half a mile west of Doyon, ND. The basin outlet was estimated at 1503.9 using Lidar and has a current water surface elevation surveyed at 1496.8. An overview of this area can be seen in **Figure 5**. It is recommended that a more detailed closed basin analysis be performed prior to any re-alignment work through this site.

### **3.0 Hydrologic Analysis**

A hydrologic analysis to determine potential lake levels was performed using methodologies developed by the North Dakota Department of Transportation for analyzing grade raises for closed basin watersheds.

The hydrology for the sites is complicated due to the fact that the geography of the region has a large number of closed basins of varying size and volume capacity. With continued above average precipitation and increasing waters levels, a number of these basins will combine to form larger and larger closed basins until they fill and begin contributing to Devils Lake. All of the basins evaluated have outlets which are higher than the outlet of Devils Lake. This means that once these basins begin to outlet, the water level is not anticipated to fluctuate more than 6 inches higher than the existing outlet elevation. This bounce may occur due to vegetative constriction of flow or storm events. Due to the complicated nature of the hydrology, a combination of runoff and precipitation data from both the ND Hydrology Manual and ND State Water Commission was used. The development of the hydrology and drainage boundaries for these areas is further discussed below.

#### **3.1 Precipitation Data**

The precipitation data was estimated using data obtained from five adjacent North Dakota State Water Commission (ND SWC) Rain Gages. **Figure 6** shows the location of these gages relative to the location of the Lakota and Crary Sites. Rainfall data from the five gages for 2009, 2010, and 2011 was averaged to arrive at 16.3 inches of recent annual rainfall for the area. **Table 1** shows the average yearly rainfall data over the 3 year period. (Rain Data is for April – September and does not include any snowfall, therefore, average annual precipitation data from the ND Hydrology Manual was also considered.)

ND SWC Rain Data	
Gage No.	Average of Past Three Years (inches)
15406301	16.0
15406116	17.0
15106405	15.2
15106527	15.4
15505922	18.0
Mean 2009, 2010, 2011 (Three Year Average)	16.3

**Table 1: SWC Averaged Rainfall Data**

Annual precipitation was also estimated using the Hydrology Manual for North Dakota. A value of 17.1 inches was estimated for the Crary Site and 17.3 inches for the Lakota Site.

### 3.2 Drainage Area Determination

The primary and secondary drainage boundaries for both the Lakota and Crary Sites were determined using GIS with available IWI LiDAR data available for the Devils Lake Basin.

The primary contributing drainage area was calculated to be 2.30 sq. miles (1480 acres) for the Lakota Site and 23.05 sq. miles (14,750 acres) for the Crary Site. This included all areas where the topography resulted in runoff being directly conveyed to the water bodies at their current elevations.

The secondary drainage areas were made up of both the adjacent drainage basins that contribute to the sites during times of high precipitation; and the additional areas that become directly contributing as the water bodies rise. To identify the areas that contribute during times of high precipitation, the 100-yr, 10-day runoff as shown in the USDA publication *TR-60 "Earth Dams and Reservoirs"* was used. For both the Lakota and Crary Basins, the 100-yr, 10-day runoff was shown to be 4.4 inches. A depression evaluation was then completed using the LiDAR based DEM to determine which adjacent basins would contribute during runoff events of greater than 4.4 inches. These basins were then combined to define the secondary drainage boundary area of 0.11 sq. miles (70 acres) for the Lakota Site and 2.93 sq. miles (1880 acres) for the Crary Site.

This resulted in a total drainage area (direct and secondary) of 2.41 sq. miles (1550 acres) for the Lakota Site (shown in **Figure 2**) and 25.98 sq. miles (16630 acres) for the Crary Site (shown in **Figure 4**).

### 3.3 Three Year Net Storage Determination

Based on the average precipitation data (16.3 inches) the recent annual runoff volumes were determined to be 2,110 ac-ft. for the Lakota Site and 22,590 ac-ft. for the Crary Site, based on 100% runoff with no evaporation. This was determined by multiplying the total drainage areas of 1,540 and 16,630 acres of the respective basins by the 16.3 inches of annual rainfall for the area.

Using the methods developed by the North Dakota Department of Transportation (NDDOT) for projects involving closed basins, the hydraulic analysis evaluates the 3 year net storage requirement. For locations with drainage areas smaller than 3 square miles (1920 acres), the volume is defined based on 70% runoff, while the volume is defined based on 50% runoff for drainage areas larger than 3 square miles. The resultant net runoff volume is approximately 1480 ac-ft. for the Lakota Site and 11,300 ac-ft. for the Crary Site.

Based on the total net volume of 1480 ac-ft. in the Lakota Site, the water levels would rise to an elevation of 1510.4, which is well above the outlet elevation of 1508.1, at which point it would spill into a series of closed basins to the south. The Crary site has reached the natural outlet elevation of 1466.3 and is outletting to the south into East Devils Lake.

According to this analysis the 3 year net storage would fill the Lakota site and begin to outlet into the closed basins to the south. A similar analysis was performed using the average annual precipitation from the ND Hydrology Guide, which yields an elevation of 1510.60 based on 1570 ac-ft. of runoff for the Lakota Site. The results for both analyses are summarized in the **Table 2**.

		Annual Runoff Volume (100% Runoff) acre-ft.	Three Year Net Storage acre-ft.	Three Year Net Storage Elevation (feet)	Natural Outlet Elevation (feet)	Current Water Surface Elev. (feet)
Lakota Site	SWC Rain Gage Data	2110	1480	1510.4	1508.1	1507.6
	ND Hydrology Guide	2240	1570	1510.6		
Crary Site	SWC Rain Gage Data	22590	11300	1474.2*	1466.3	1466.3
	ND Hydrology Guide	23700	11850	1474.4*		

\*Site is already outletting

**Table 2: Three Year Storage Comparison**

#### **4.0 Summary and Recommendations**

##### **Site 1 (Lakota Site):**

Based on the analysis, the basin will continue to rise until to the natural outlet elevation of approximately 1508.1 feet, based on both the SWC Rain Gage data and ND Hydrology Guide average annual precipitation, figuring 70% runoff. The water will then flow into a series of closed basins south and east of Jones Lake, which have the potential to impact the west side of Segment 6 in the future. Based on this analysis it is recommended that the towers rerouted around Jones Lake (Lakota Site) be placed at an elevation above the 1508.1 outlet elevation (Outlets +/- 6" to account for vegetation constriction of outlet and lake level "bounce").

##### **Site 2 (Crary Site):**

The Crary site has reached its natural outlet elevation of 1466.3 and is flowing south into East Devils Lake. It is recommended that the towers rerouted around the Crary Site be placed at an elevation above the 1466.3 outlet elevation.

##### **Other Sites:**

An in depth analysis of the closed basins south and east of Jones Lake is recommended to better quantify the potential impacts to the west side of Segment 6.

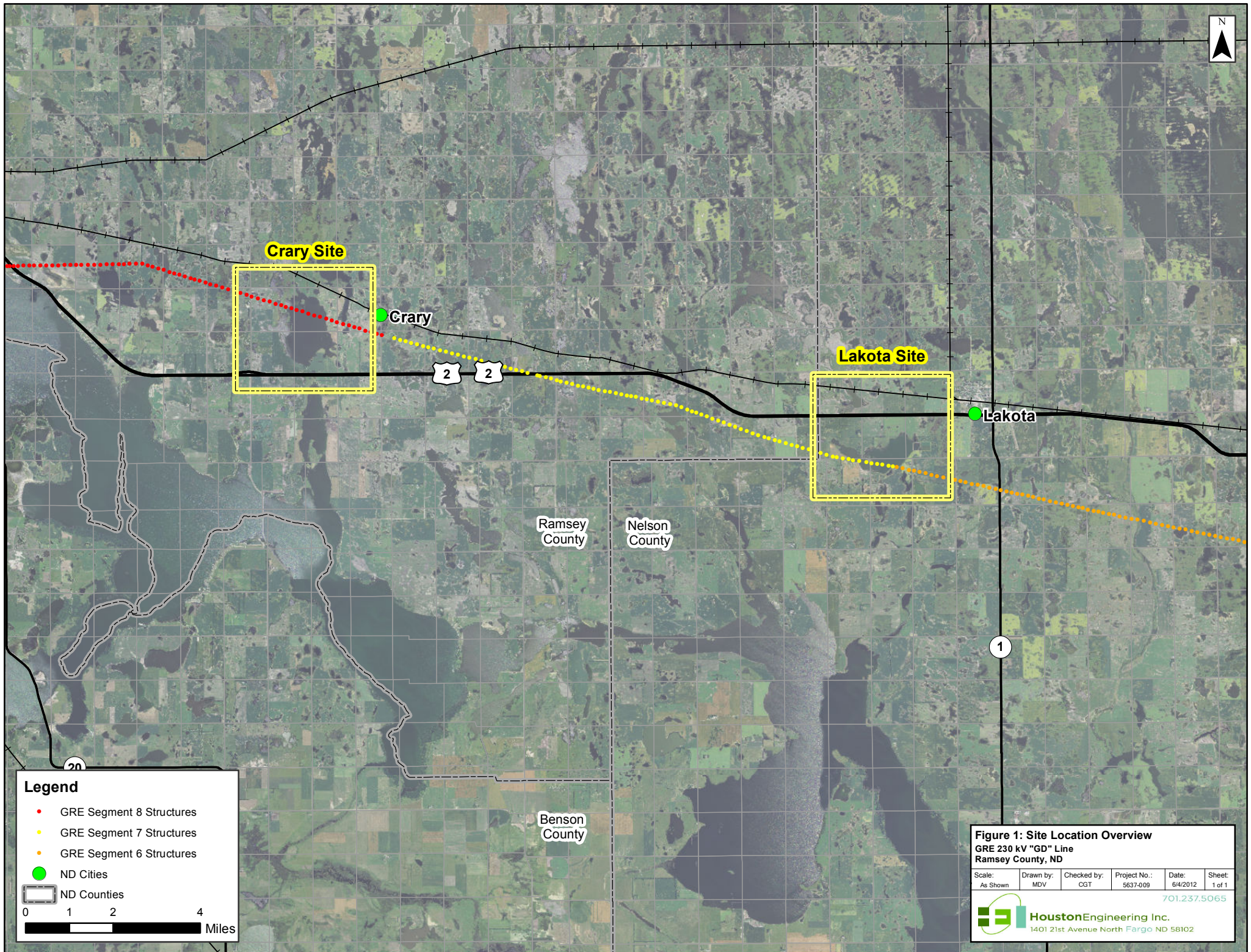
The closed basin West of Doyon, ND has the potential to affect Segment 7 (GD-509 to GD-514) in the future if water levels continued to rise. The basin currently has a surveyed water elevation of 1496.8 and an estimated outlet of 1503.9. It is recommended that a more detailed closed basin analysis be performed prior to any re-alignment work through this site.

## 5.0 References

1. USDA - NRCS, TR-60 - Earth Dams and Reservoirs, July 2005.
2. U.S. Department of Commerce, Technical Paper 40 Rainfall Frequency Atlas of the United States, May 1961.
3. U.S. Department of Agriculture Soil Conservation Service, Hydrology Manual for North Dakota, 1967

## **Appendix**

### Figures



**Crary Site**

**Crary**

**Lakota Site**

**Lakota**

Ramsey  
County

Nelson  
County

Benson  
County

**Legend**

- GRE Segment 8 Structures
- GRE Segment 7 Structures
- GRE Segment 6 Structures
- ND Cities
- ND Counties

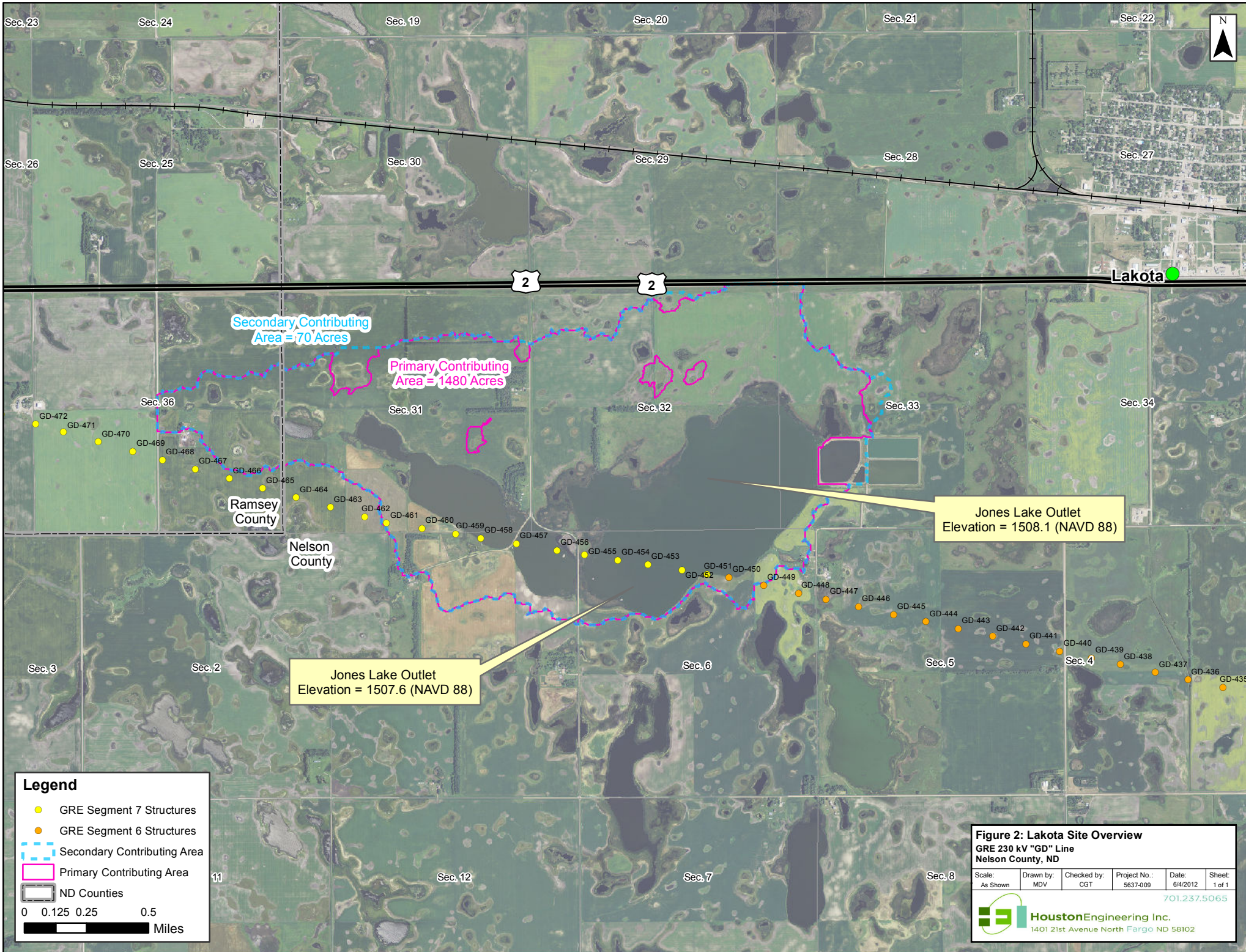
0 1 2 4 Miles

**Figure 1: Site Location Overview**  
GRE 230 kV "GD" Line  
Ramsey County, ND

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**Houston Engineering Inc.**  
1401 21st Avenue North Fargo ND 58102



Secondary Contributing Area = 70 Acres

Primary Contributing Area = 1480 Acres

Jones Lake Outlet  
Elevation = 1508.1 (NAVD 88)

Jones Lake Outlet  
Elevation = 1507.6 (NAVD 88)

**Legend**

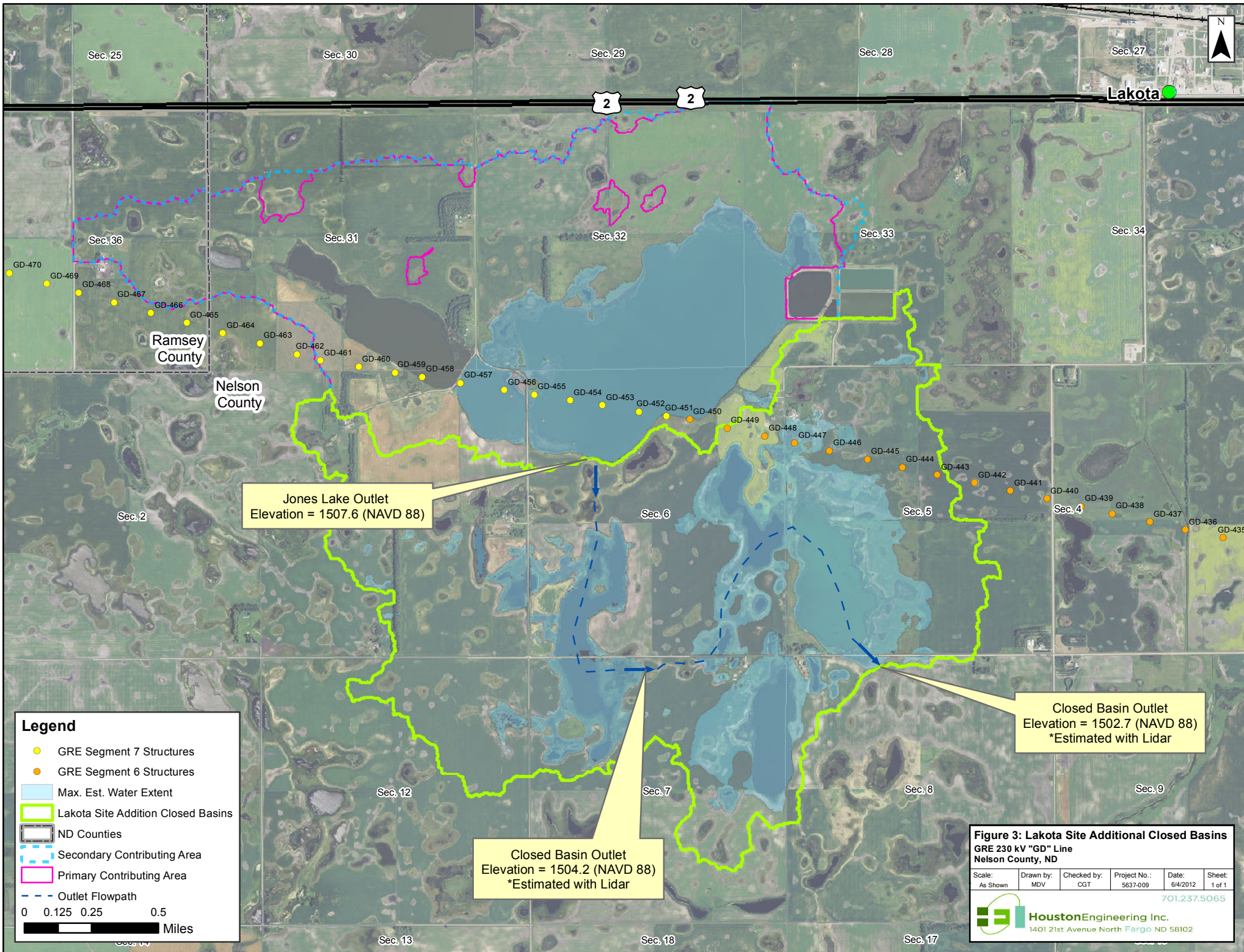
- GRE Segment 7 Structures
  - GRE Segment 6 Structures
  - Secondary Contributing Area
  - Primary Contributing Area
  - ND Counties
- 0 0.125 0.25 0.5 Miles

**Figure 2: Lakota Site Overview**  
GRE 230 kV "GD" Line  
Nelson County, ND

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**HoustonEngineering Inc.**  
1401 21st Avenue North Fargo ND 58102



**Legend**

- GRE Segment 7 Structures
- GRE Segment 6 Structures
- Max. Est. Water Extent
- Lakota Site Addition Closed Basins
- ND Counties
- Secondary Contributing Area
- Primary Contributing Area
- Outlet Flowpath

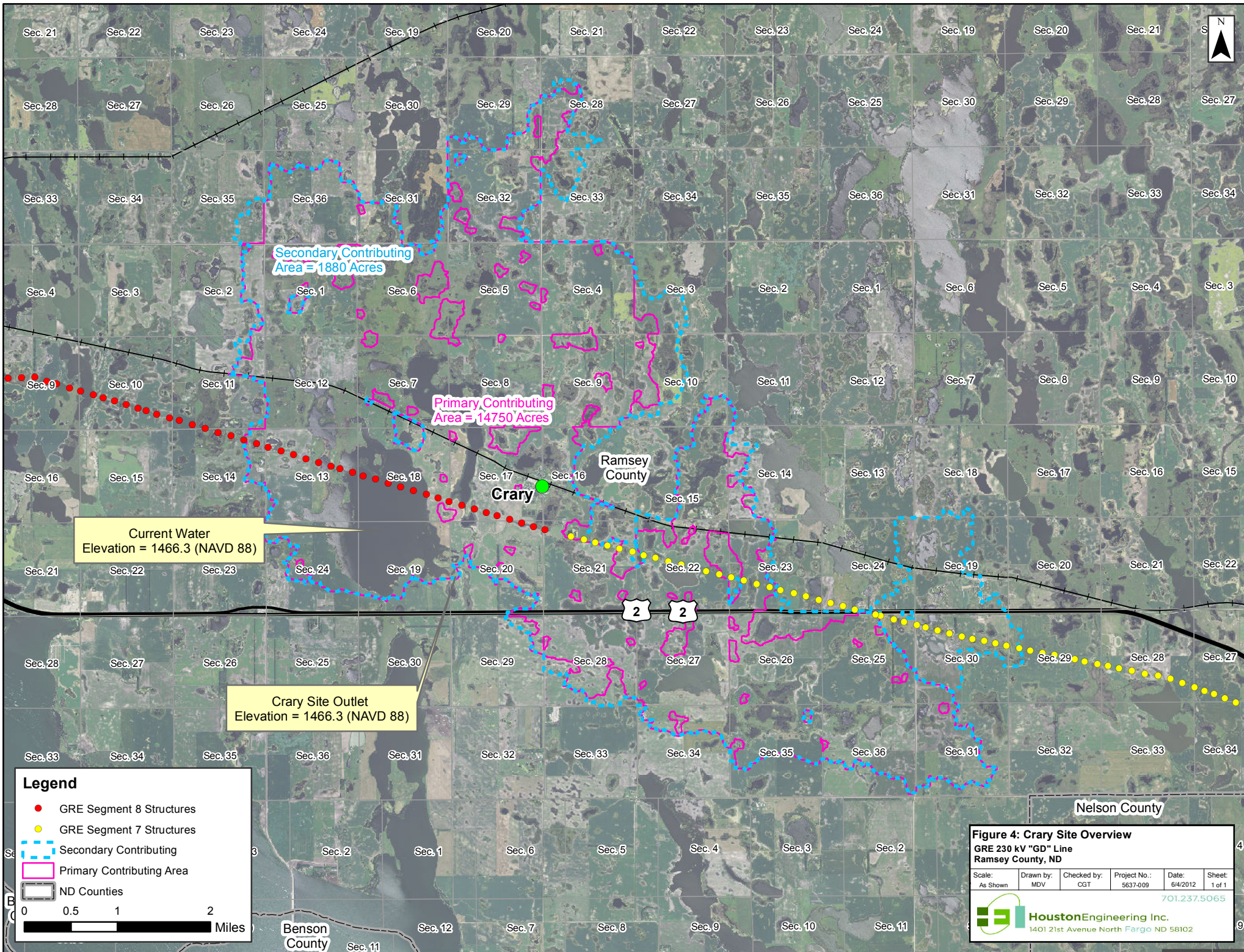
0 0.125 0.25 0.5 Miles

**Figure 3: Lakota Site Additional Closed Basins**  
 GRE 230 kV "GD" Line  
 Nelson County, ND

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**HoustonEngineering Inc.**  
 1401 21st Avenue North Fargo ND 58102



**Legend**

- GRE Segment 8 Structures
- GRE Segment 7 Structures
- Secondary Contributing
- Primary Contributing Area
- ND Counties

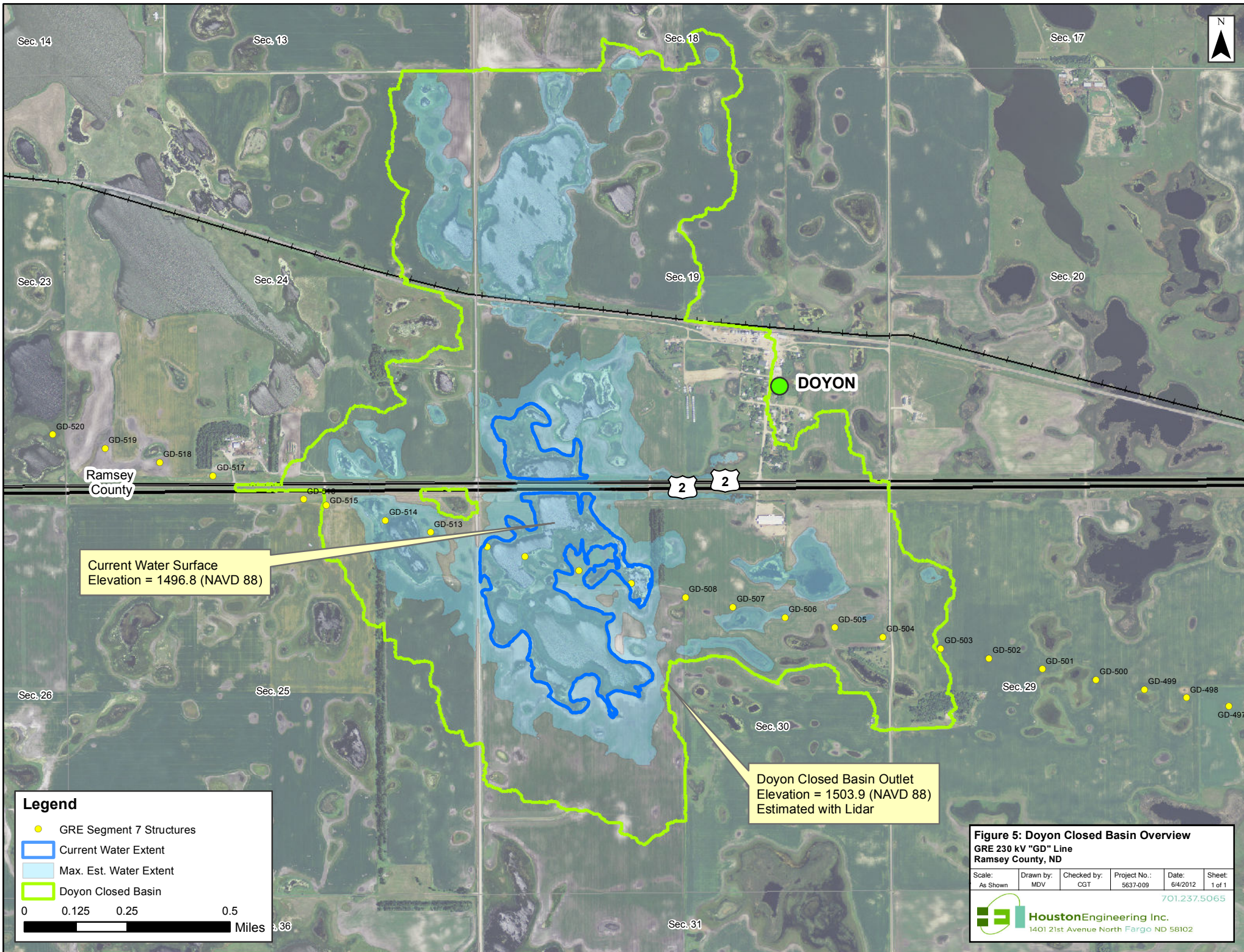
0 0.5 1 2 Miles

**Figure 4: Crary Site Overview**  
 GRE 230 kV "GD" Line  
 Ramsey County, ND

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**HoustonEngineering Inc.**  
 1401 21st Avenue North Fargo ND 58102



Sec. 14

Sec. 13

Sec. 18

Sec. 17

Sec. 23

Sec. 24

Sec. 19

Sec. 20

**DOYON**

Ramsey County

2 2

Current Water Surface  
Elevation = 1496.8 (NAVD 88)

Doyon Closed Basin Outlet  
Elevation = 1503.9 (NAVD 88)  
Estimated with Lidar

Sec. 26

Sec. 25

Sec. 30

Sec. 29

Sec. 31

**Legend**

- GRE Segment 7 Structures
- Current Water Extent
- Max. Est. Water Extent
- Doyon Closed Basin

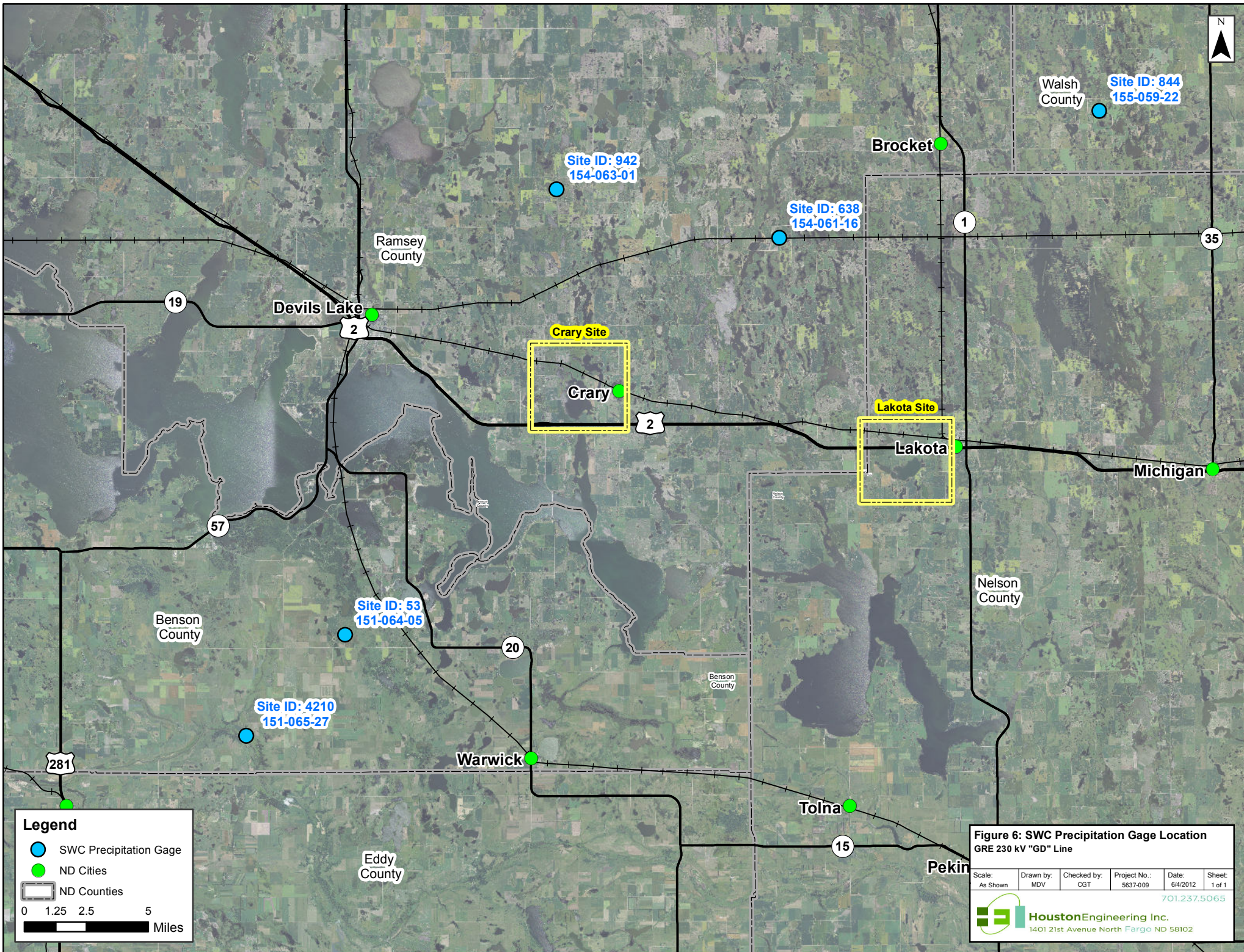
0 0.125 0.25 0.5  
Miles 1.36

**Figure 5: Doyon Closed Basin Overview**  
GRE 230 kV "GD" Line  
Ramsey County, ND

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**HoustonEngineering Inc.**  
1401 21st Avenue North Fargo ND 58102



**Legend**

- SWC Precipitation Gage
- ND Cities
- ND Counties

0 1.25 2.5 5  
 Miles

**Figure 6: SWC Precipitation Gage Location**  
 GRE 230 kV "GD" Line

Scale: As Shown	Drawn by: MDV	Checked by: CGT	Project No.: 5637-009	Date: 6/4/2012	Sheet: 1 of 1
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701.237.5065

**HoustonEngineering Inc.**  
 1401 21st Avenue North Fargo ND 58102

**Appendix C: Solicitation of Views Letter Agency Distribution List,  
July 2012**

GRE GD T-Line Reroute  
Solicitation of Views Distribution List

July 2nd, 2012

Company	Department	First	Last	Title	Address	City	State	Zip
Spirit Lake Tribe	Ft. Totten Tribal Business Office	Roger	Yankton, Sr.	Tribal Chairperson	PO Box 359	Ft. Totten	ND	58335
Spirit Lake Tribe		Silas	Ironheart, Jr.	SLT-EPA Director	P.O. Box 99	Fort Totten	ND	58335
Cable Affairs Office	Chief Missile Engineer			Chief Missile Engineer	417 Bomber Blvd.	Minot AFB	ND	58705
Federal Railroad Administration					1200 New Jersey Avenue SE	Washington	DC	20590
Grand Forks Air Force Base	Deputy Base Civil Engineer	Mary	Giltner	Deputy Base Civil Engineer	525 Tuskagee Airmen Rd.	Grand Forks AFB	ND	58205-6434
US Army Corps of Engineers	Manager	Dan	Cimarosti	Manager	1513 S. 12th St.	Bismarck	ND	58504
US Department of Agriculture	State Conservationist	Mary	Podoll	State Conservationist	PO Box 1458	Bismarck	ND	58502-1458
US Department of Energy	Director, Transmission Lines and Substations	Gerald	Paulson	Director, Transmission Lines and Substations	PO Box 1173	Bismarck	ND	58502-1173
US Fish & Wildlife Service	Field Supervisor	Jeffrey	Towner	Field Supervisor	3425 Miriam Ave.	Bismarck	ND	58501
US Geological Survey	Director	Greg	Wiche	Director	821 E. Interstate Ave.	Bismarck	ND	58501
Indian Affairs Commission	Executive Director	Scott	Davis	Executive Director	600 E. Blvd. Ave 1st Floor, Judicial Wing, Rm 117	Bismarck	ND	58505-0300
ND Aeronautics Commission	Aviation Planner	Kyle	Wanner	Aviation Planner	PO Box 5020	Bismarck	ND	58502-5020
ND Department of Emergency Services	Disaster Recovery Chief	Lonnie	Hoffer	Disaster Recovery Chief	PO Box 5511	Bismarck	ND	58506
ND Department of Health	Chief	L. David	Glatt	Chief	918 E. Divide Ave., 4th floor	Bismarck	ND	58501-1947
ND Forest Service	State Forester	Larry	Kotchman	State Forester	307 1st St. E.	Bottineau	ND	58318-1100
ND Game & Fish Department	Supervisor	Steve	Dyke	Supervisor	100 Bismarck Expressway	Bismarck	ND	58501-5095
ND Attorney General					600 East Boulevard Avenue	Bismarck	ND	58505
ND Department of Human Services					600 East Boulevard Avenue, Dept. 325	Bismarck	ND	58505
ND Department of Agriculture					600 East Boulevard Avenue, Dept. 602	Bismarck	ND	58505
ND Department of Labor					600 East Boulevard Avenue, Dept. 406	Bismarck	ND	58505
ND Department of Career and Technical Education					600 E. Boulevard Avenue, Dept. 270	Bismarck	ND	58505
ND Energy Development Impact Office					1707 N 9th St	Bismarck	ND	58505
ND Office of Governor					600 East Boulevard Avenue	Bismarck	ND	58505
Highway Department (NDDOT)					608 East Boulevard Avenue	Bismarck	ND	58505-0700
ND State Historical Society					612 East Boulevard Ave.	Bismarck	ND	58505
Job Service of North Dakota						Bismarck	ND	58505
ND Department of Commerce					1600 E. Century Ave., Suite 2	Bismarck	ND	58505
ND Land Department	Asst. Director	Gerry	Fisher	Asst. Director	1707 North 9th Street, PO Box 5523	Bismarck	ND	58506-5523
ND Geological Survey	State Geologist	Edward	Murphy	State Geologist	600 East Boulevard Avenue	Bismarck	ND	58505-0840
ND Parks & Recreation Dept.	Director	Mark	Zimmerman	Director	1600 E. Century Ave., Suite 3	Bismarck	ND	58505
ND State Water Commission	State Engineer	Todd	Sando	State Engineer	900 E. Blvd. Ave.	Bismarck	ND	58505
Soil Conservation Committee	State Soil Specialist	Scott	Hochhalter	State Soil Specialist	2718 Gateway Ave., #104	Bismarck	ND	58503
North Dakota State Senate District 15		Dave	Oehlke		125 Woodlea Drive, Devils Lake	Devils Lake	ND	58301-8545
North Dakota State Senate District 23		Joan	Heckaman		322 Second Avenue North	New Rockford	ND	58356-1712
North Dakota State House of Representatives District 15		Curt	Hofstad		1614 Third Street SE	Devils Lake	ND	58301-3450
North Dakota State House of Representatives District 15		Dennis	Johnson		7871 45th Street NE	Devils Lake	ND	58301-9089
North Dakota State House of Representatives District 23		Bill	Devlin		P.O. Box 505	Finley	ND	58230-0505
North Dakota State House of Representatives District 23		Don	Vigesaa		P.O. Box 763	Cooperstown	ND	58425-0763
City of Lakota, City Hall	Mayor	Ed	Pawlikowski	Mayor	PO Box 505	Lakota	ND	58344
Ramsey County	Auditor	Elizabeth	Fischer	Auditor	524 4th Avenue NE Unit 6	Devils Lake	ND	58301-2487
Nelson County	Auditor	W.J. (Jack)	Davidson	Auditor	210 B Ave W Suite 201	Lakota	ND	58344-7410
Ramsey County Commission					524 4th Avenue NE	Devils Lake	ND	58301
Nelson County Commission	Chairman	Odell	Flaagan	Chairman	210 B Avenue West	Lakota	ND	58344
ND National Guard	Environmental Program Manager	Stephen	Herda	Environmental Program Manager	PO Box 5511	Bismarck	ND	58506-5511
NoDak Electric Coopertive					4000 32nd Avenue South	Grand Forks	ND	58208-3000
Greater Ramsey Water District					PO Box 1257	Devils Lake	ND	58301-1257
Stevens Township		Donald	Pershke	Chairman	4205 93rd Ave NE	Crary	ND	58327-9305
South Minnewaukan Township		Kevin	Frith	Chairman	804 Lakeview Dr	Devils Lake	ND	58301-8751

## **Appendix D: Solicitation of Views Agency Response Letters**



July 6, 2012

Mr. Barton L. Schultz  
Senior Project Manager  
Houston Engineering, Inc.  
6901 East Fish Lake Road, Suite 140  
Maple Grove, MN 55369

**RECEIVED**  
JUL 13 2012  
HOUSTON ENGINEERING  
Minneapolis, MN

Re: Great River Energy, GD 230kV Transmission Line Reroute Project  
Ramsey and Nelson Counties

Dear Mr. Schultz:

This department has reviewed the information concerning the above-referenced project submitted under date of July 2, 2012, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.
2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.
4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is

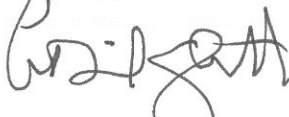
equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read "L. David Glatt". The signature is written in a cursive style with a large, looped initial "L".

L. David Glatt, Chief  
Environmental Health Section

LDG:cc  
Attach.



**Construction and Environmental Disturbance Requirements**

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

**Soils**

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

**Surface Waters**

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

**Fill Material**

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



# North Dakota Department of Transportation

Francis G. Ziegler, P.E.  
*Director*

Jack Dalrymple  
*Governor*

August 14, 2012

RECEIVED  
AUG 20 2012

Barton L. Schultz  
Senior Project Manager  
Houston Engineering  
6901 East Fish Lake Road, Suite 140  
Maple Grove MN 55369

HOUSTON ENGINEERING  
Minneapolis, MN

REROUTE PART OF 230 kV TRANSMISSION LINE BETWEEN GRAND FORKS AND  
DEVILS LAKE WITH INTERCONNECTING LOAD CENTERS A DEVILS LAKE, MINOT,  
AND GRAND FORKS, NORTH DAKOTA

We have reviewed your July 2, 2012, letter.

This project should have no adverse effect on the North Dakota Department of Transportation highways.

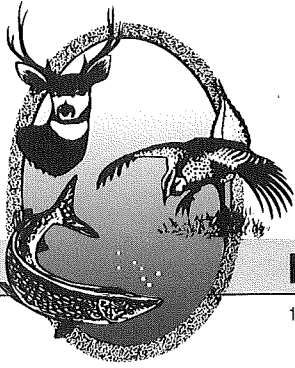
However, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineers, Les Noehre, Grand Forks at 701-787-6500, Wayde Swenson, Devils Lake at 701-665-5100, and Jim Redding, Minot at 701-837-7625.

A handwritten signature in blue ink that reads "Robert Fode".

ROBERT A. FODE, P.E., DIRECTOR – OFFICE OF PROJECT DEVELOPMENT

57/raf/js

c: Les Noehre, Grand Forks District Engineer  
Wayde Swenson, Devils Lake District Engineer  
Jim Redding, Minot District Engineer



"VARIETY IN HUNTING AND FISHING"

## NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

July 26, 2012

RECEIVED  
JUL 31 2012

Barton L. Schultz  
Senior Project Manager  
Houston Engineering, Inc.  
6901 East Fish Lake Road – Suite 140  
Maple Grove, MN 55369

HOUSTON ENGINEERING  
Minneapolis, MN

Dear Mr. Schultz:

RE: Great River Energy – Proposed 230-kV Transmission Line Reroute

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

Segment 8 currently crosses the Crary Wildlife Management Area in Section 18SW, T153N, R62W. A special use permit may be required if construction activity will occur on this property. Mr. Brian Prince, Wildlife Resource Management Supervisor, should be contacted at 701-662-3617 for additional information on regarding this property.

The National Wetland Inventory indicates various wetlands within the proposed project corridors. We recommend that steps be taken to protect any wetlands that cannot be avoided, above-ground appurtenances not be placed in wetland areas, and existing drainage patterns be maintained.

We recommend that overhead lines be marked when placed over perennial streams or sited in close proximity to large wetland complexes to minimize possible avian impacts. The publication "Mitigating Bird Collisions with Power Lines: the State of the Art in 1994" provides a range of management options which can be used to reduce avian collisions.

We do not believe this project will have any significant adverse effects on wildlife or wildlife habitat provided these recommendations are implemented where appropriate and disturbed areas are reclaimed to pre-project conditions.

Sincerely,

Greg Link  
Chief  
Conservation & Communication Division

js



**STATE  
HISTORICAL  
SOCIETY  
OF NORTH DAKOTA**

Jack Dalrymple  
Governor of North Dakota

North Dakota  
State Historical Board

Gerold Gerntholz  
Valley City - President

Calvin Grinnell  
New Town - Vice President

A. Ruric Todd III  
Jamestown - Secretary

Albert I. Berger  
Grand Forks

Diane K. Larson  
Bismarck

Chester E. Nelson, Jr.  
Bismarck

Margaret Puetz  
Bismarck

Sara Otte Coleman  
Director  
Tourism Division

Kelly Schmidt  
State Treasurer

Alvin A. Jaeger  
Secretary of State

Mark Zimmerman  
Director  
Parks and Recreation  
Department

Francis Ziegler  
Director  
Department of Transportation

Merlan E. Paaverud, Jr.  
Director

Accredited by the  
American Association  
of Museums since 1986

July 16, 2012

Mr. Barton Schultz  
Senior Project Manager  
6901 East Fish Lake Road Suite 140  
Maple Grove MN 55369

RECEIVED  
JUL 18 2012

HOUSTON ENGINEERING  
Minneapolis, MN

ND SHPO Ref.:12-1300 Great River Energy reroute a portion of a 230 kV transmission line between Grand Forks and Devils Lake (GD 230kV) Ramsey County, North Dakota

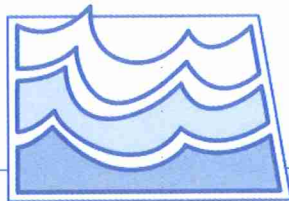
Dear Mr. Schultz,

We reviewed ND SHPO Ref.:12-1300 Great River Energy reroute a portion of a 230 kV transmission line between Grand Forks and Devils Lake (GD 230kV) Ramsey County, North Dakota. We recommend a Class III (pedestrian) survey for the project area, including any access road not previously surveyed by archaeologists.

Thank you for the opportunity to review this proposed project to date. We look forward to review of the Class III report. If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail [squinnell@nd.gov](mailto:squinnell@nd.gov)

Sincerely,

Merlan E. Paaverud, Jr.  
State Historic Preservation Officer (North Dakota)  
and Director, State Historical Society of North Dakota



# North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850  
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

July 18, 2012

Barton Schultz  
Houston Engineering  
6901 East Fish Lake Road, STE 140  
Maple Grove, MN 55369

RECEIVED  
JUL 20 2012

HOUSTON ENGINEERING  
Minneapolis, MN

Dear Mr. Schultz:

This is in response to your request for review of environmental impacts associated with Great River Energy to reroute a portion of a 230 KV transmission line between Grand Forks and Devils Lake (GD 230 KV). The GD 230 KV transmission line is the last 80 miles of the 240 mile transmission line that was constructed in 1966 as an outlet for the 189 MW lignite coal stream generating plant in Stanton, with interconnecting load centers at Devils Lake, Minot and Grand Forks, ND.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- There are floodplains identified and/or mapped where this proposed project is to take place. The areas are designated as Zone AE. North Dakota has no formal "permitting" authority as a state entity in National Flood Insurance Program (NFIP) identified floodplain areas. The permitting is always done by the local entity, which has jurisdiction in the area in question. Please work closely with the County Floodplain Administrator. The Floodplain Administrator for Grand Forks County is: Carole McMahon; PO Box 5826; 151 S 4<sup>th</sup> Street; Grand Forks, ND 58206; 701-780-8412; [carole.mcmahon@gfcounty.com](mailto:carole.mcmahon@gfcounty.com). The Floodplain Administrator for Nelson County is: Sharon Young; 210 B Avenue W #302; Lakota, ND 58344; 701-247-2472; [syoung@state.nd.us](mailto:syoung@state.nd.us). The Floodplain Administrator for Ramsey County is: Kristen Nelson; 524 4<sup>th</sup> Avenue #14; Devils Lake, ND 58301; 701-780-8412.
- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.
- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.
- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

Sincerely,

Linda Weispfenning  
Water Resource Planner

LW:dp/1570



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
NORTH DAKOTA REGULATORY OFFICE  
1513 SOUTH 12TH STREET  
BISMARCK ND 58504-6640

July 5, 2012

North Dakota Regulatory Office

RECEIVED  
JUL 10 2012

HOUSTON ENGINEERING  
Minneapolis, MN

Houston Engineering Inc.  
Attn: Barton Schultz  
6901 East Fish Lake Road, Suite 140  
Maple Grove, MN 55369

Dear Mr. Schultz:

This is in response to your letter dated July 2, 2012 requesting US Army Corps of Engineers (Corps) comments regarding a proposed project to reroute a portion of a 230kV transmission line between Grand Forks and Devils Lake, North Dakota.

Corps regulatory offices administer Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (Section 404). Section 10 regulates work impacting navigable waters. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of the railroad track in Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. Work over, in, or under navigable waters is considered to have an impact. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Please submit a location map and completed Corps permit application (copy enclosed) describing all proposed work and construction methodology, to the letterhead address if a Section 10/404 permit is required.

Do not hesitate to contact this office by letter or telephone (701-255-0015) if we can be of further assistance.

Sincerely,

for Sam E. Werner  
Acting Regulatory Program Manager  
North Dakota

Enclosure



18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
-------------------------------	-------------------------------	-------------------------------

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres  
Or  
Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes  No  IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

Address –  
City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
--------	----------------	-----------------------	--------------	---------------	-------------

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

\_\_\_\_\_  
SIGNATURE OF APPLICANT

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SIGNATURE OF AGENT

\_\_\_\_\_  
DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a  
Department of the Army Permit Application**

**Blocks 1 through 4.** To be completed by Corps of Engineers.

**Block 5. Applicant's Name.** Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant Telephone Number(s).** Please provide the number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by applicant, if an agent is to be employed.

**Block 12. Proposed Project Name or Title.** Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Project Street Address.** If the proposed project is located at a site having a street address (not a box number), please enter it here.

**Block 15. Location of Proposed Project.** Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

**Block 18. Nature of Activity.** Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

**Block 19. Proposed Project Purpose.** Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

**Block 20. Reasons for Discharge.** If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

**Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards.** Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

**Block 22. Surface Areas of Wetlands or Other Waters Filled.** Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

**Block 23. Description of Avoidance, Minimization, and Compensation.** Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

**Block 24. Is Any Portion of the Work Already Complete?** Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

**Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site.** List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

**Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.**

**Block 26. Information about Approvals or Denials by Other Agencies.** You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

**Block 27. Signature of Applicant or Agent.** The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

## **DRAWINGS AND ILLUSTRATIONS**

### **General Information.**

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

## Josh Kadrmas

---

**From:** Brian\_Vose@fws.gov  
**Sent:** Friday, June 01, 2012 9:24 AM  
**To:** Josh Kadrmas  
**Cc:** Roger\_Hollevoet@fws.gov  
**Subject:** wetlands/easements-GRE powerline  
**Attachments:** GRE powerline relocate.jpg

Josh:

Please see the attached jpeg. Wetlands are delineated with a green dot and the easement boundaries are marked in yellow.

If you have any questions, feel free to give me a call!

Brian Vose  
Lake Alice WMD Manager  
(701) 662-8611 ext 324  
[brian\\_vose@fws.gov](mailto:brian_vose@fws.gov)

*(See attached file: GRE powerline relocate.jpg)*



## Josh Kadrmas

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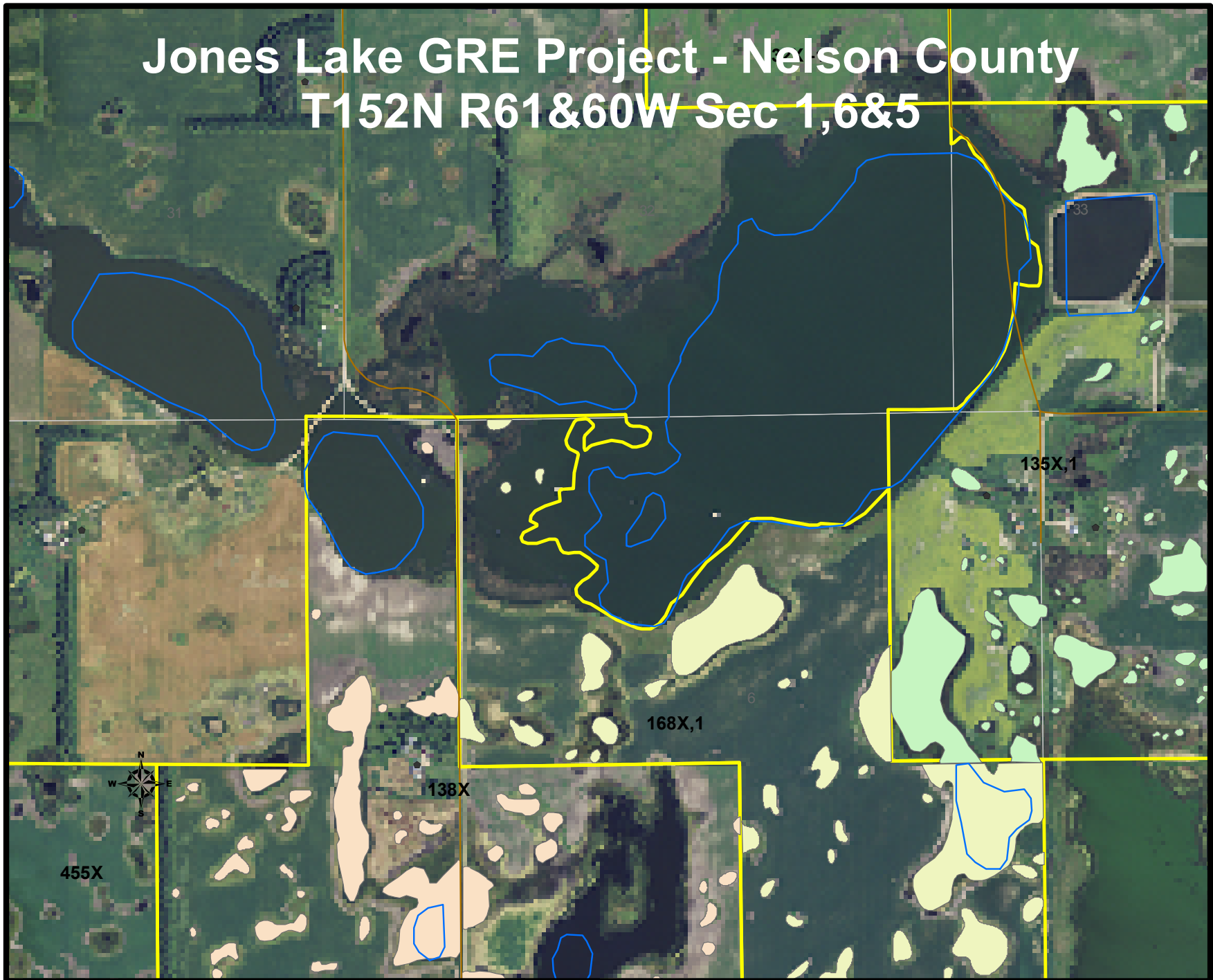
**From:** Tim\_Loose@fws.gov  
**Sent:** Tuesday, May 29, 2012 4:04 PM  
**To:** Josh Kadrmas  
**Subject:** Re: Easement Wetlands Near Crary and Lakota  
**Attachments:** Jones Lake GRE project.pdf

Josh here is a pdf file showing the protected wetland basins near the Jones Lake Project. Just as a reminder, this does not show the actual size of the basins, its simply intended to show where the basins are located.

Tim Loose  
Wildlife Refuge Manager/Sullys Hill Unit  
Devils Lake Wetland Management District  
PO Box 908  
221 2nd St NW  
Devils Lake, ND 58301  
701-662-8611 Ext 323  
701-662-8612 Fax  
[tim\\_loose@fws.gov](mailto:tim_loose@fws.gov)

# Jones Lake GRE Project - Nelson County

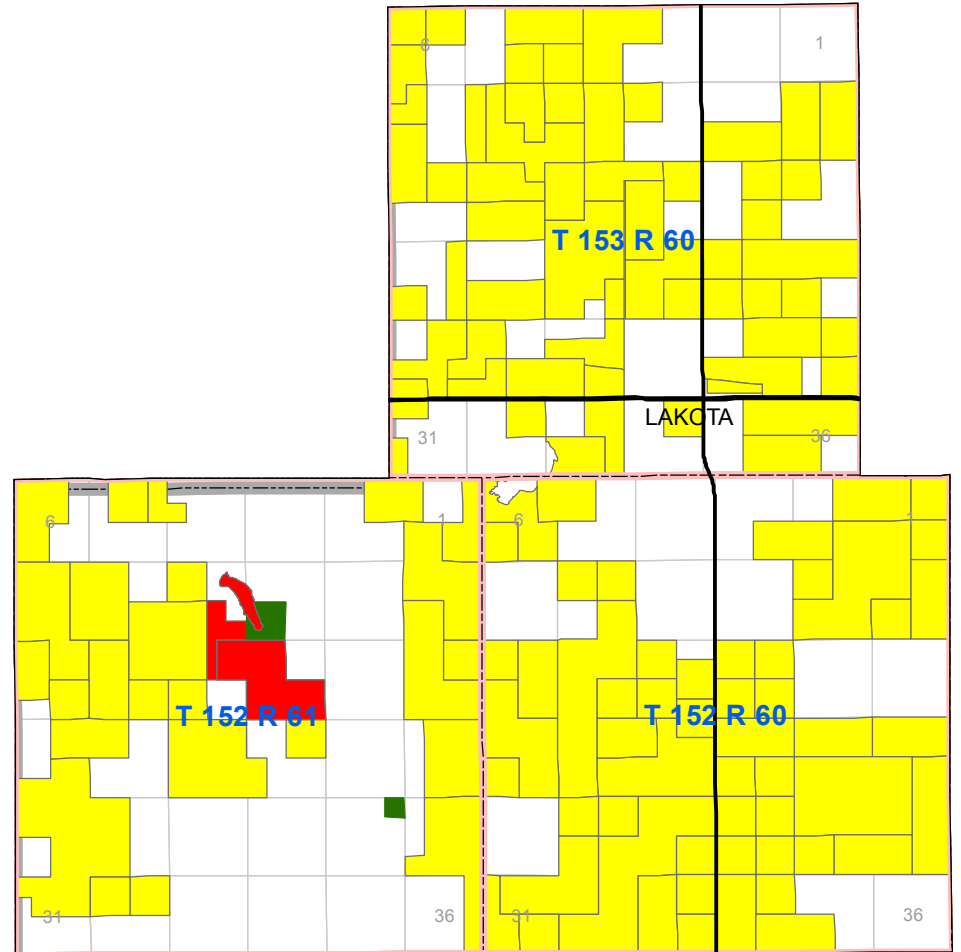
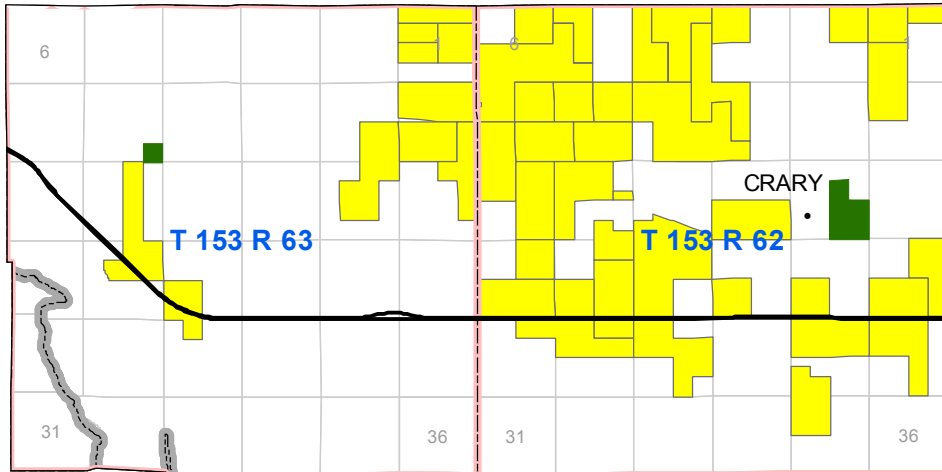
## T152N R61&60W Sec 1,6&5





# Power Line Re-Route - Houston Engineering

Nelson and Ramsey County, North Dakota



### Legend

- County Boundary
- Section
- Township
- Road
- Waterfowl Production Area
- USFWS Limited Interest NWR
- USFWS Wetland Easement



0 1.5 3 6 Kilometers

0 1.5 3 6 Miles

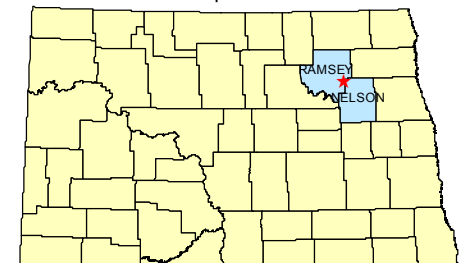
### DISCLAIMER:

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting the location of USFWS WPA fee lands and limited interest easements are for illustrative purposes only and do not represent legal boundaries. For more detailed information, please contact one of the USFWS Realty Offices located in Bismarck and Minot, North Dakota, Sand Lake and Huron, South Dakota, or Great Falls, Montana.

The USFWS easement layer is current through October 2011. Please contact the appropriate Wetland Management District for any newly acquired easements.

Map was produced by the HAPET Office, Bismarck, ND - May 2012.

Location Map - North Dakota



## Emmy Baskerville

---

**From:** Kiah Sagami  
**Sent:** Wednesday, May 16, 2012 8:33 AM  
**To:** Bart Schultz; Josh Kadrmas; Emmy Baskerville  
**Subject:** T&E

**Kiah Sagami**  
**GIS Technician**

Houston Engineering, Inc.  
6901 E Fish Lake Rd., Suite 140, Maple Grove, MN 55369  
T 763.493.4522 | D 763.493.6675 | F 763.493.5572  
[www.houstoneng.com](http://www.houstoneng.com)

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**From:** Karine\_Becker@fws.gov [mailto:Karine\_Becker@fws.gov]  
**Sent:** Wednesday, May 16, 2012 8:31 AM  
**To:** Kiah Sagami  
**Subject:** RE: Fw: GIS Data

Ms. Sagami,

The Fish and Wildlife Service (Service) is in receipt of your May 4, 2012, email requesting information on threatened and endangered species and your May 7, 2012, email with additional information concerning a proposed reroute of an overhead power line in Ramsey and Nelson Counties, North Dakota. We offer the following comments under the authority of and in accordance with the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), , the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57),

Below are recommendations to assist in complying with each of these authorities. Your plans should integrate these recommendations to the extent practicable to insure compliance. Recommendations addressing the trust resources under Service authorities are tailored to address protective measures for a variety of species. As such, recommended timing restrictions are not identical and the federal action agency or project proponent should evaluate the trust resources that may be affected by the proposed project and use the appropriate protective timing restriction accordingly.

### Threatened and Endangered Species

To obtain information on Service trust resources including federally threatened, endangered and candidate species and designated critical habitat that may occur in the identified areas, or may be affected by the proposed activities, we recommend you access the North Dakota Ecological Service Field Office website at (<http://www.fws.gov/northdakotafieldoffice/>). You may also access the Service Information, Planning, and Conservation System (IPaC) website at (<http://ecos.fws.gov/ipac/>).

Section 10(a)(1)(B) of the ESA allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. (A Federal

nexus exists whenever an activity is conducted, funded, or licensed or permitted by a Federal agency). The application must include a habitat conservation plan (HCP) laying out the proposed actions, determining the effects of those actions on federally-listed plant and wildlife species and their habitats (and may include proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

The Aransas Wood Buffalo Population (AWBP) of the whooping crane is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas Gulf Coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. Currently, collisions with power lines are the greatest known source of mortality for fledged whooping cranes, and have accounted for the death or serious injury of at least 46 whooping cranes since 1956.

Whooping cranes normally migrate from 1,000 to 6,000 feet above the ground (Kuyt 1992) and well above the height of power lines, but stop every night to roost in shallow wetlands (Howe 1989). Potentially suitable migratory stopover roosting habitat for whooping cranes includes wetlands with areas of shallow water (approximately 18 inches or less) without visual obstructions (i.e., high or dense vegetation) (Austin and Richert 2001; Johns et al. 1997; Lingle et al. 1991; Howe 1987) and submerged sandbars in wide, unobstructed river channels that are isolated from human disturbance (Armbruster 1990). Roosting wetlands are often located within one mile of grain fields.

The proposed project locations are located outside of the main portion of the whooping crane migration corridor (5 percent of all confirmed whooping crane sightings are outside the main corridor) through North Dakota. Conservation measures to avoid or reduce potential impacts to whooping cranes and piping plovers include, but are not limited to: burying all new electrical transmission lines; if new transmission lines cannot be buried, mark all new overhead transmission lines within one mile of suitable whooping crane stopover habitat with visual marking devices such as aviation marker balls, swinging plates, spiral vibration dampeners, or swan flight diverters to make the lines more visible, reducing the potential for avian collision.

In addition to marking line, the Service requests that if a whooping crane is seen within one-mile of the project under construction, construction be halted on that portion of the project and the Service be notified immediately. In consultation with the Service, work may resume once birds have left the area.

Sprague's pipit was added to the candidate species list in 2010. Migratory bird species such as the Sprague's pipit that are candidates are not protected under the ESA, but are still protected under the MBTA. Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within your proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat, and that you share this information with our office.

## **Migratory Birds**

The MBTA prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during project construction and operation even if all known reasonable and effective measures to protect birds are used. The Service Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and agencies that have taken

effective steps to avoid take of migratory birds and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take. Individual companies and agencies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt migratory birds during the breeding season February 1 to July 15. If work is proposed to take place during the breeding season or at any other time which may result in the take of migratory birds, their eggs, or active nests, the Service recommends that the project proponent implement all practicable measures to avoid all take, such as suspending construction where necessary, and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if you choose to conduct field surveys for nesting birds with the intent of avoiding take, that you maintain any documentation of the presence of migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of migratory birds, their eggs, or active nests, the Service requests that you contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on migratory bird populations.

To minimize the electrocution hazard to migratory birds, the Service, with support from the Rural Utilities Service, recommends that new or updated overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. The recommended guidelines can be found in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996". To increase power line visibility and reduce bird fatalities resulting from collisions with power lines, the Service recommends new power lines that cross or run adjacent to rivers or large wetlands be modified according to Mitigating Bird Collisions with Power Lines: The State of the Art in 1994". Both publications can be obtained by writing or calling the Edison Electric Institute, P.O. Box 266, Waldorf, Maryland 20604-0266, (1-800-334-5453) or visiting their website at [www.eei.org](http://www.eei.org).

## **Bald and Golden Eagles**

The BGEPA prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The Act defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

We recommend conducting surveys to identify bald or golden eagle nests within 0.5 mile of the proposed route in winter/early spring before trees have leaves that could screen possible nests. To avoid/minimize impacts to nesting eagles from transmission line construction activities, the Service recommends: (1) keeping a 0.5 mile

distance between the activity and the nest, (2) maintaining natural areas between the activity and around nest trees (landscape buffers), and (3) avoiding activities during the breeding season (February 1 – July 15). The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest sites and provide for alternative or replacement nest sites. The Services May 2007, National Bald Eagle Management Guidelines contains detailed information on protecting bald eagles from disturbance due to human activity. The guidelines can be accessed on the Services website: (<http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>).

### **Fish and Wildlife Service Property**

The Service administers Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota. A review of Service realty records indicates Service property interests are located in the planning area a pdf. file of existing Service easements in the planning area is attached. The Service has an ongoing easement acquisition program and we recommend that for Ramsey and Nelson Counties, contact Roger Hollevoet, Wildlife Refuge Manager, Devils Lake Wetland Management District, PO Box 908, Devils Lake, ND 58301-0908; Phone: (701)662-8611; Email: [roger\\_hollevoet@fws.gov](mailto:roger_hollevoet@fws.gov), for more specific information relative to Service easements and up to date realty records. Cultural resource compliance requires coordination with the Zone Archeologist early in the planning process. Cultural Resource field investigations on Service easements and fee lands require a permit issued by the Zone Archeologist. Contact Barry G. Williams, Service Dakotas Zone Archeologist ([barry\\_williams@fws.gov](mailto:barry_williams@fws.gov), 701-355-8577).

### **High Value Habitat Avoidance**

Our review of the National Wetland Inventory (NWI) maps and photographs indicate the proposed planning area includes numerous wetland basins and stream channels. You may access the NWI data directly through their website ([wetlands.fws.gov](http://wetlands.fws.gov)). Other high-value wildlife habitat types in North Dakota include native prairie, wooded draws, and riparian forests. The Service recommends that construction through or adjacent to these areas be avoided where possible or measures be taken to minimize disturbance to these areas.

To minimize disturbance to fish and wildlife resources in the project area, the Service provides the following recommendations:

- Make no stream channel alterations or changes in drainage patterns.
- Locate construction to avoid placement of fill in wetlands along the route.
- Replace unavoidable loss of wetland habitat with functionally equivalent wetlands
- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.
- Reseed disturbed areas with a mixture of native grass and forb species.

Parts of the proposed project area appear to be grassland habitat. The Service suggests that the rerouted power line construction have a diverse mix of native species planted to reclaim the grassland areas. Recent research indicates that a diverse native species mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant. A diverse planting of native grasses and forbs allows for less intensive management and chemical use. The more species included in a mixture, the higher the probability of

providing competition to resist invasion by non-native plants.

If construction routes intersect wetlands, streams, or rivers, the Corps of Engineers (Corps) may require a Department of the Army permit for the placement of dredge or fill material into waters of the U.S., including wetlands, or other impacts to navigable waters. We suggest you contact Mr. Daniel Cimarosti, Regulatory Office, Corps of Engineers, 1513 South 12th Street, Bismarck, North Dakota 58504, (701-255-0015), to determine the Corps permit requirements.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact Karine Becker of my staff at (701) 250-4481 in reply to this message.

Karine Becker  
US Fish & Wildlife Service  
3425 Miriam Avenue  
Bismarck, ND 58501  
Ph: 701-250-4481  
Fax: 701-355-8513