

APPENDIX E
PHASE Ia LITERATURE REVIEW AND
STATE HISTORIC PRESERVATION OFFICE RESPONSE



414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

April 13, 2011

Mary Ann Heidemann
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55102-1903

Re: Xcel Energy – Proposed Orono Substation Expansion and New 115 kV Transmission Line Project
City of Orono, Township 118N, Range 23W, Sections 29, 20 and 32, Hennepin County, MN
SHPO Number: 2010-497
MPUC Docket Number: E002/TL-11-223 (formerly E002/LR-10-957)

Dear Ms. Heidemann:

Northern States Power Company, a Minnesota corporation (Xcel Energy), owns and operates the Orono Substation and related electric transmission facilities in the City of Orono, Hennepin County, Minnesota.

Xcel Energy will be jointly submitting a Route Permit Application to the Minnesota Public Utilities Commission (MPUC) to expand the existing Orono Substation facility and construct approximately 0.6 miles of new 115 kilovolt (kV) transmission line to connect the expanded substation to existing Xcel Energy transmission Line 0831 (the Orono Project). The Orono Project is needed to increase the operating voltage of the existing Orono Substation to the transmission system 115 kV voltage, which will improve local and system reliability, reduce the risk of overloads, and allow for additional load growth in the future.

Xcel Energy engaged URS Corporation (URS) to complete a Phase Ia Literature Review for the Orono Project (see enclosure). Please review the attached Phase Ia Literature Review Report and recommendations and respond with an agency consultation letter at your earliest convenience. If you have any questions or need additional information, please contact me at 612-330-6435.

Best Regards;



Joseph G. Sedarski
Senior Permitting Analyst

Enclosure (2 copies)

cc: Project File

MPUC Docket No.
E002/TL-11-223



STATE HISTORIC PRESERVATION OFFICE

May 12, 2011

Joe Sedarski, Senior Permitting Analyst
Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401-1993

RE: Orono Substation Expansion and Transmission Line
Orono, Hennepin County
SHPO Number: 2010-4976

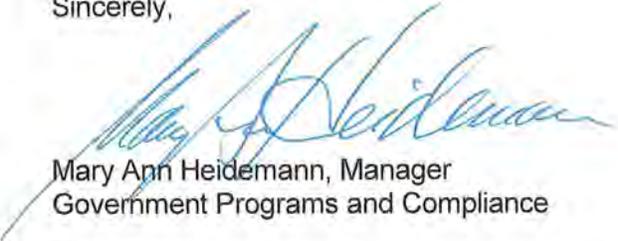
Dear Mr. Sedarski:

Thank you for the opportunity to review and comment on the Phase Ia Literature Review submitted for the above project. It has been reviewed pursuant to responsibilities given the State Historic Preservation Office by the National Historic Preservation Act of 1966 and the procedures of the Advisory Council on Historic Preservation (36CFR800).

Based on the information provided, we concur with the conclusions and recommendations of your consulting archaeologist that a full field survey needs to be performed at two locations within the project area: the 16 acre parcel proposed for expansion of the Orono Substation, and the landform previously identified as site 21HE0162, being considered as a location for transmission structures.

We look forward to reviewing results of that survey. Meanwhile, please call our archaeologist, David Mather, at (651) 259-3454, if you have any questions on our review.

Sincerely,



Mary Ann Heidemann, Manager
Government Programs and Compliance

REDACTED

Phase Ia Literature Review for the
Proposed Orono Substation Expansion and
New 115 kV Transmission Line Project
Hennepin County, Minnesota

SHPO Number: 2010-4976

MPUC Docket Number: E002/TL-11-223
(Formerly E002/LR-10-957)

April, 2011

MPUC Docket No.
E002/TL-11-223

Report Title: Phase Ia Literature Review for the Proposed Orono Substation Expansion and New
115 kV Transmission Line Project, Hennepin County, Minnesota

Report Prepared by: URS Corporation
100 South Fifth Street, Suite 1500
Minneapolis, Minnesota 55402
612.370.0700

Report Author: Scott M. Buskey

Report Date: April 2011

Submitted to: Joseph Sedarski, Senior Permitting Analyst
Xcel Energy, Inc.
414 Nicollet Mall, MP8
Minneapolis, Minnesota 55401
612.330.6435

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1.0 INTRODUCTION

1.1 Project Description

Xcel Energy, Inc. (“Xcel Energy” or the “Company”) proposes to expand and upgrade the existing Xcel Energy Orono Substation, construct approximately 0.4 miles of new double circuit 115 kilovolt (“kV”) transmission line and construct approximately 0.2 miles of single circuit 115 kV transmission line within the municipal boundaries of the City of Orono located west of the Twin Cities metropolitan area, Hennepin County, Minnesota. The project is referred to as the Orono Substation Expansion Project (the “Project”). **Figure 1** shows the general vicinity of the proposed Project.

The Project involves expanding and upgrading the existing 69-13.8 kV Orono Substation (a distribution substation) to a 115-13.8 kV transmission substation and constructing approximately 0.19 miles of single circuit and approximately 0.4 miles of double circuit 115 kV overhead transmission line. The Proposed Route for the transmission line associated with the Project will originate at the proposed Orono Substation expansion, and initially remain on Xcel Energy property. *See Figure 2.* At the point the Proposed Route exits the proposed substation expansion area and extends approximately 866 feet northwesterly and north within the 16-acre substation site and along Xcel Energy’s western property line to the BNSF railroad right-of-way. At this point the Proposed Route extends westerly paralleling the BNSF railroad right-of-way approximately 1,795 feet before turning southwest for an additional 475 feet where it will connect to existing Structure 78 that supports transmission line 0831.

The Project is needed to increase the operating voltage of the existing Orono Substation to the transmission system 115 kV voltage, which will improve local and system reliability, reduce the risk of overloads, and allow for additional load growth in the future.

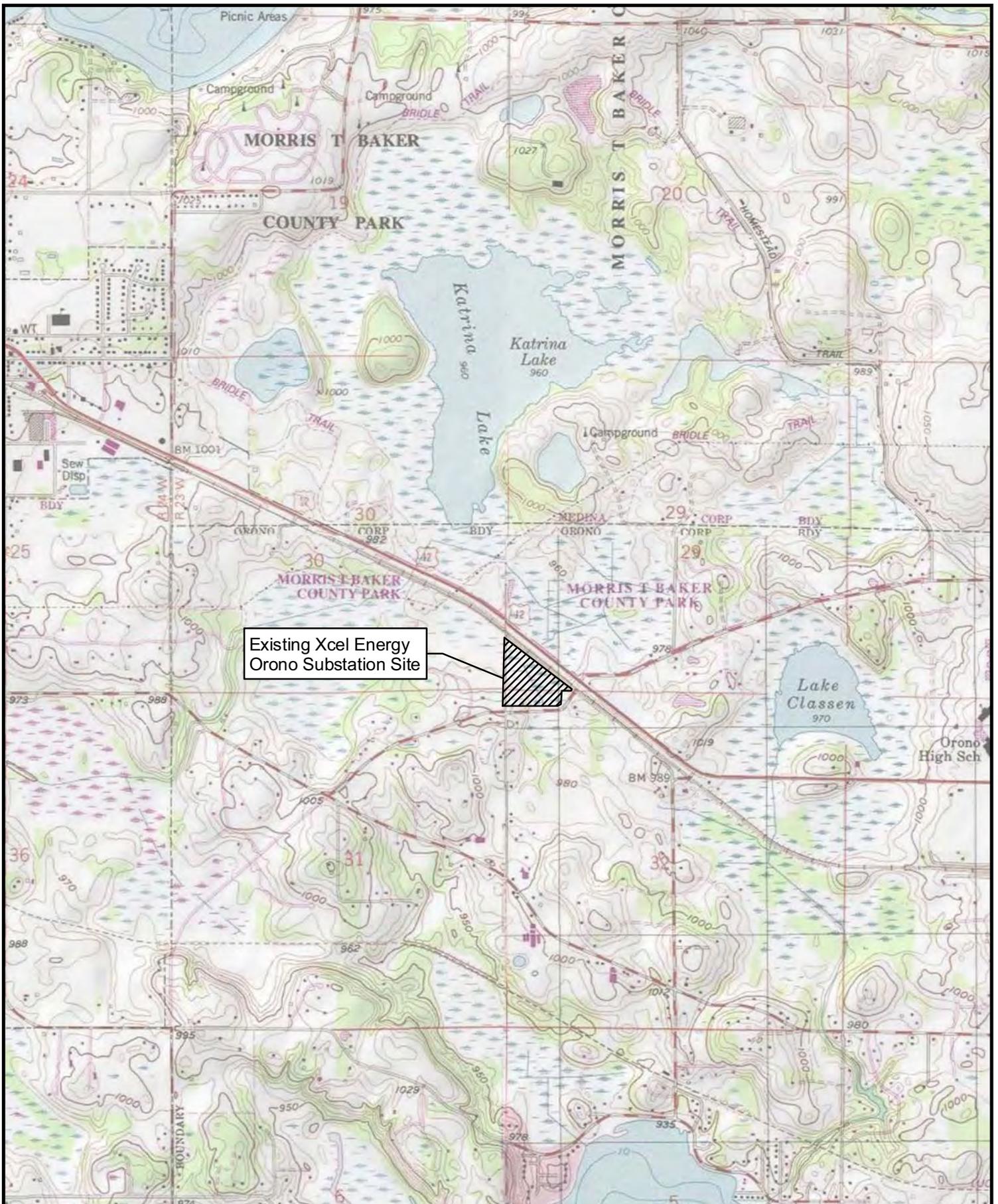
Xcel Energy will file a Route Permit Application (the “Application”) with the Minnesota Public Utilities Commission (“MPUC”) for a Route Permit for the Project (*see* MPUC Docket No. E002/TL-11-223). For new construction of structures and transmission line, Xcel Energy proposes a 400-foot route width, 200 feet on either side of the centerline of the proposed new line. Ground disturbance associated with the Project would generally be limited to excavation of foundations to secure the 115kV line structures and construction of the planned expansion of the substation within existing Xcel Energy property. The height of the structures will range from 70 to 105 feet. The spans between structures typically range from 300 to 500. The overall spacing of the structures will be comparable to other Xcel Energy 115 kV transmission line structures, which can vary based on soil conditions, engineering requirements and land use constraints.

Depending upon the final route location, the Project may cross over a small waterbody, wetlands and transportation corridors (e.g. railroad and highway). The proposed Orono Substation expansion and a portion of the proposed new transmission line will be located within the 16-acre Xcel Energy owned property where the existing Orono Substation is located. The 16-acre Orono Substation site is located in the southwest corner of the U.S. Highway 12 and 6th Avenue North intersection within the municipal boundaries of the City of Orono. Although utilizing Company property for

placement of the proposed new transmission line and expansion of the existing substation is important to Xcel Energy, some new easement acquisition for the proposed new transmission line is anticipated.

As part of preparation of the Application for the proposed Project, and on behalf of Xcel Energy, URS Corporation (“URS”) is assessing the potential Project related impacts on cultural resources. This Phase Ia Review Report (“the Report”) presents the methods and findings of a cultural resources literature review for the Project. The purpose of this literature review is to identify all previously recorded archaeological sites and historic properties within one-mile of the Project area. The Project area is defined as the 400-foot-route width of the Proposed Route for the planned new transmission line and the expansion area of the planned Orono Substation facility and is considered the area of potential effect (APE) for potential impacts on cultural resources. In addition, this review serves to provide a brief cultural history for the Project area as well as assess the potential for the presence of previously unidentified cultural sites.

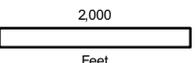
Scott Buskey of URS conducted the research and wrote the literature review report. URS’s GIS Department prepared the Project graphics.



Existing Xcel Energy
Orono Substation Site



FIGURE 1
ORONO SUBSTATION EXPANSION AND NEW
115 KV TRANSMISSION LINE PROJECT
GENERAL VICINITY MAP
ORONO, MINNESOTA



Topographic Map Source:
USGS Excelsior, Minn.
Quad dated 1997

DRN BY: TS
CHK'D BY: DD

DATE: 2/17/11
DATE: 2/17/11

PROJECT NO.
31810889

FIG. NO.
1

1.2 Jurisdiction

At this time, there are no federal regulatory triggers that require compliance with federal historic preservation laws, specifically Section 106 of the National Historic Preservation Act of 1966 (“NHPA”), as amended. Environmental review of the Project falls under the jurisdiction of the MPUC. Xcel Energy will provide in the Application to the MPUC a description of the effects of the Proposed Route and Orono Substation expansion on archaeological and historic resources to assist in the preparation of an environmental impact statement under Minnesota Rules Chapter 7850.1900, Subp. 3(D). Also, Minnesota state historic preservation laws protect human burials of all types (*see* Minnesota Private Cemeteries Act [Minn. Stat. § 307]), and archaeological sites and historic properties that are listed on the National Register of Historic Places (“NRHP”) or the Minnesota Register of Historic Sites (*see* Minnesota Historic Sites Act [Minn. Stat. § 138.661-138.6691]).

1.3 Project Location

The proposed Project is located within Hennepin County, Minnesota. **Figure 1** shows an overview of the general vicinity of the Project and the Proposed Route is shown in **Figure 2**. **Figure 3** shows the planned expansion of the existing Orono Substation facility. The Project is wholly located within the municipal boundaries of ██████████ in Hennepin County, Minnesota.

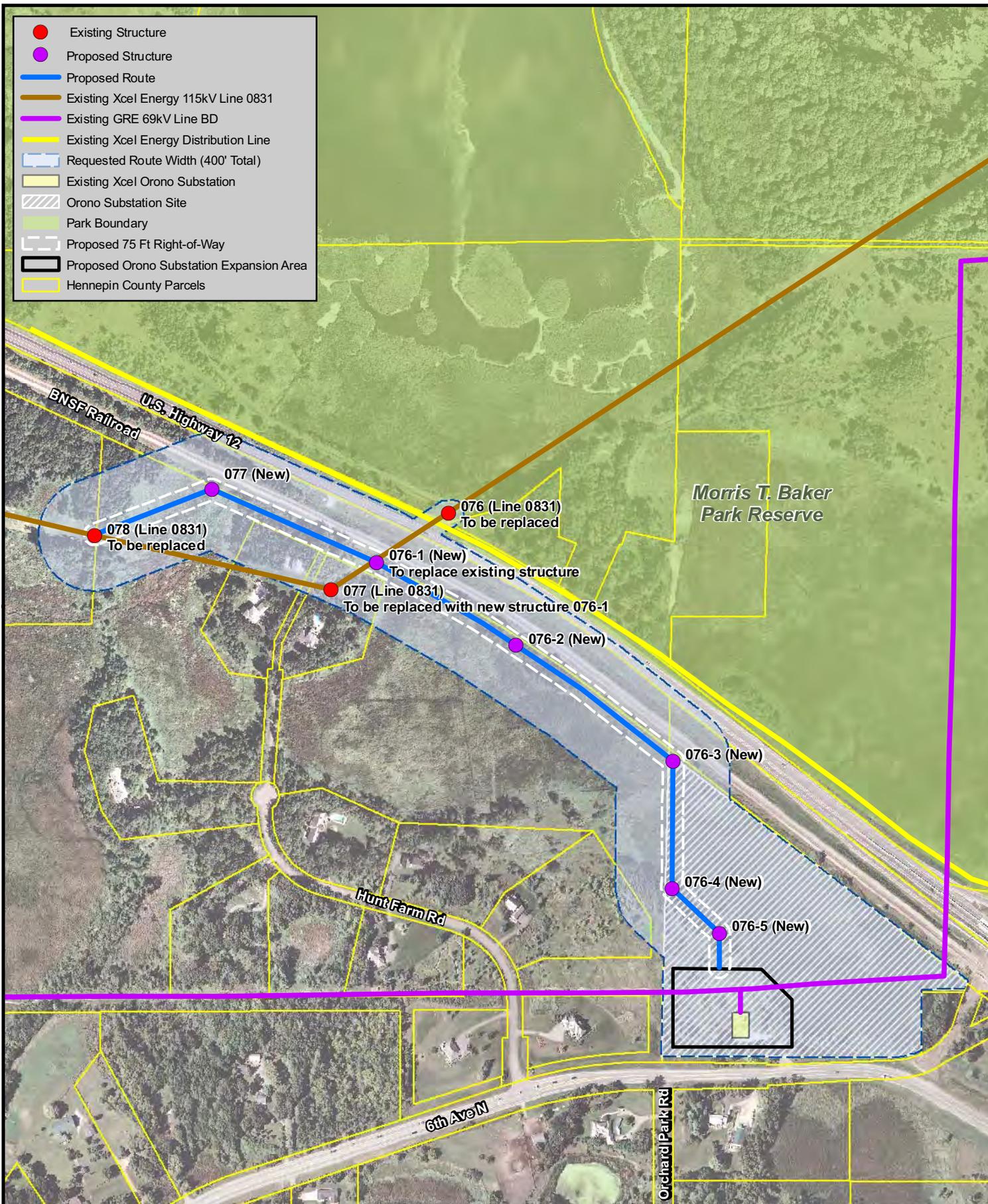
The Project consists of a new linear transmission line that generally will run north and west for an approximate 3,136 feet and the expansion of the existing substation site. The fenced area of the existing Orono Substation is approximately 0.1 acres. The proposed 115 kV Orono Substation encompasses an area of approximately 1.2 acres within the existing Xcel Energy 16-acre site, and includes the existing 0.1 acre site.

The proposed transmission line will originate at the proposed expanded Orono Substation, and initially remain on Xcel Energy property. At the point the Proposed Route exits the proposed substation expansion area, it extends approximately 866 feet northwesterly and north within the 16-acre substation site and along Xcel Energy’s western property line to the Burlington Northern Santa Fe (“BNSF”) railroad right-of-way. At this point the Proposed Route extends westerly across adjacent Huntington Farm Association (“HFA”) property paralleling the BNSF railroad right-of-way approximately 1,795 feet before turning southwest for an additional 475 feet where it will connect to existing transmission Structure 078 that supports Xcel Energy transmission Line 0831.

Xcel Energy is currently in the process of evaluating siting/routing information and collecting comments and input from the Local Government Unit (“LGU”), regulatory officials, the public, and other interested parties. The Proposed Route location shown in **Figure 2** is preliminary and subject to change through this process.

In order to study the cultural background of the Project location and better understand the potential for impacts to cultural resources, a 1-mile buffer around the Project location was used to gather information. The Project area plus the 1-mile buffer is called the Cultural Resources Study Area (or “Study Area”).

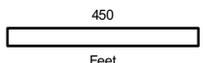
- Existing Structure
- Proposed Structure
- Proposed Route
- Existing Xcel Energy 115kV Line 0831
- Existing GRE 69kV Line BD
- Existing Xcel Energy Distribution Line
- Requested Route Width (400' Total)
- Existing Xcel Orono Substation
- Orono Substation Site
- Park Boundary
- Proposed 75 Ft Right-of-Way
- Proposed Orono Substation Expansion Area
- Hennepin County Parcels



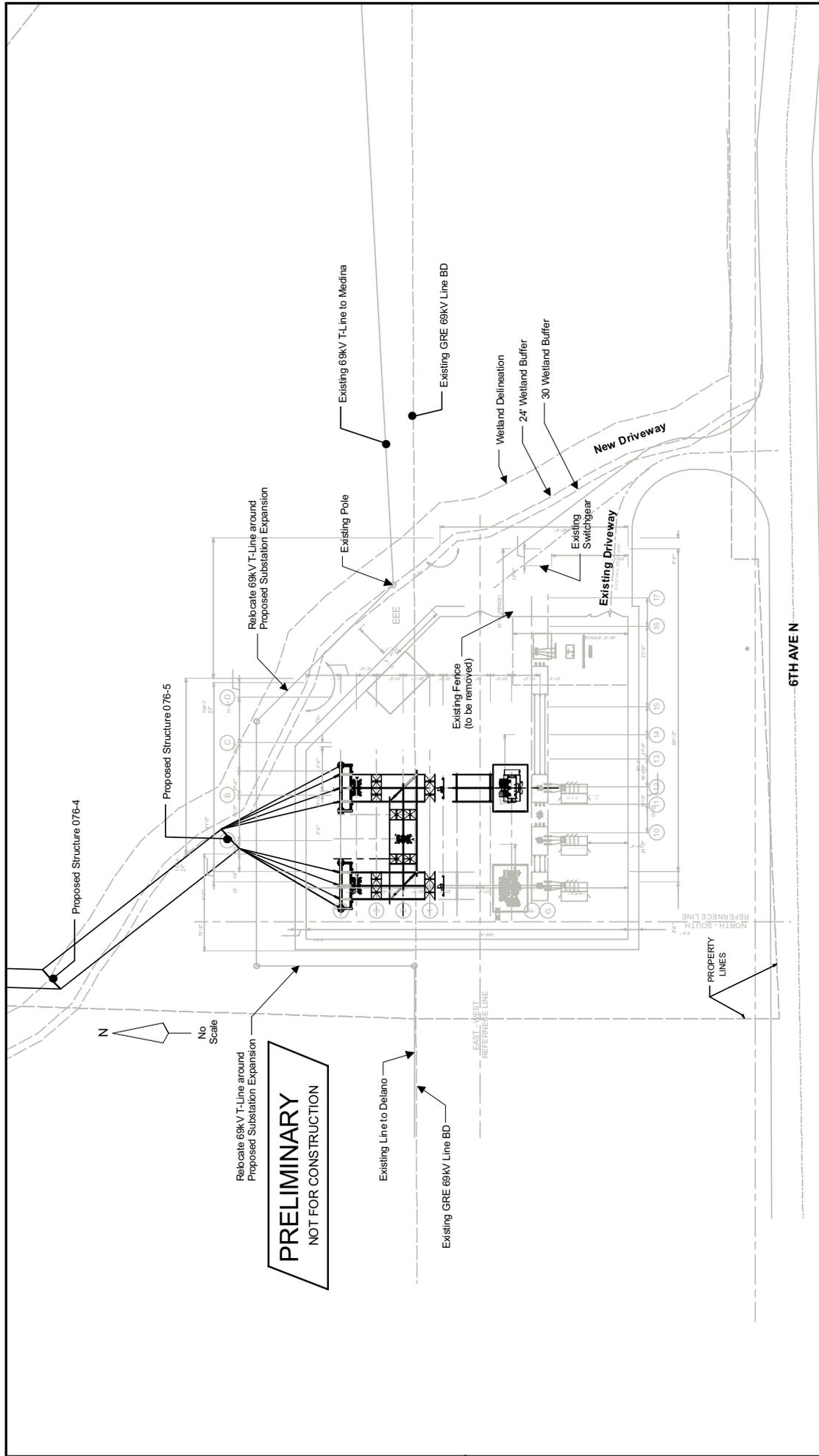
**FIGURE 2
ORONO SUBSTATION EXPANSION AND NEW
115 KV TRANSMISSION LINE PROJECT
PROPOSED ROUTE LOCATION
ORONO, MINNESOTA**



Aerial Image Source:
Aerial Express ECW Image
dated Sept. 15, 2009



DRN BY: TS	DATE: 3/7/11	PROJECT NO. 31810889	FIG. NO. 2
CHK'D BY: DD	DATE: 3/7/11		



PRELIMINARY
NOT FOR CONSTRUCTION

FIGURE 3
ORONDO SUBSTATION EXPANSION AND NEW 115 kV TRANSMISSION LINE PROJECT
PROPOSED EXPANSION TO ORONDO SUBSTATION
ORONDO, MINNESOTA

DRN BY: TS	DATE: 3/30/11	PROJECT NO.	FIG. NO.
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ORCHARD PARK RD

6TH AVE N

1.4 Cultural Resources Study Area Background

The proposed Study Area is located in western Hennepin County to the northwest of the Lake Minnetonka Area and is part of the Central Lakes Deciduous South Archaeological Region (Anfinson 1990). The physical relief in this region was formed by the retreat of the vast ice sheets at the end of the Wisconsin glaciation. It is assigned to the Pine City Moraine Association relating to the Grantsburg sub-lobe of the Des Moines lobe and is a gently undulating landscape comprised of glacial till. Till from the earlier St. Croix moraine of the Superior lobe underlies the Pine City Moraine contributing to a uniquely lacustrine landscape and the soils which subsequently formed in the area consist of loamy and clayey tills.

Presently, the climate of the Study Area is continental with wide seasonal variations in temperature. Annual precipitation in the region is sufficient to support a variety of agricultural crops as well as lands suitable for pastoral use. At the time of Euro-American arrival, the vegetation in the region was part of the Big Woods environment. Big Woods environments can be described as forests of elm, sugar maple, basswood and oak that once covered much of south-central Minnesota. The modern vegetation assemblage near the Study Area consists of parcels of land in agricultural use, and mixed deciduous hardwoods.

Human occupation in the region dates back to the beginning of the Holocene period 12,000 years ago. The earliest inhabitants were Paleoindians (10,000 – 6,000/5,000 B.C.), who were highly mobile, widely scattered, hunting and gathering bands. Archaeological evidence representing the Paleoindian period in Minnesota is scarce, largely represented by the isolated finds of large, finely crafted chipped-stone projectile points. The Archaic period (6,000/5,000 – 400/200 B.C.) in Minnesota follows the Paleoindian period and is typified by a shift in subsistence strategies to a more diversified hunting-and-gathering. Excavated Archaic sites demonstrate greater sedentism and population growth, as well as the development of more advanced lithic technologies and a diverse tool kit. The Woodland period (400/200 B.C. – A.D. 1650) is characterized by several important adaptations, including adoption of pottery, use of the bow and arrow, and the widespread construction of earthen mounds. The Mississippian/Oneota tradition (ca. A.D. 1000 – 1700) in the upper Midwest and Minnesota is largely represented by local expression of cultural manifestations by Woodland peoples.

The Historic period in Minnesota began in the late seventeenth century with the arrival of Euro-American fur traders, explorers, missionaries, and soldiers. The American Indian population inhabiting the region at the time of contact was the Dakota. Subsequent treaties with the Tribes in the region opened the land for Euro-American settlement in the mid-1800s. The westward migration of people from the East Coast as well as new immigrants, primarily from northern Europe, follows a pattern of settlement common throughout Minnesota and the Midwest. It is common in the historic record to find settlements of groups along ethnic lines in the region, and in the Study Area, people from Sweden and Germany were the most populous.

2.0 METHODS

The purpose of performing a cultural resources literature review is to identify previously recorded cultural properties and assess the potential for additional properties needing field survey within the APE prior to construction.

On September 23, 2010, Xcel Energy sent the SHPO a letter with Project information and requested comments from the SHPO concerning the Project (*see Appendix A*). In an October 21, 2010, letter to the Company, the SHPO indicated that it reviewed the Project (*see Appendix A*). Due to the nature of the Project, the SHPO recommended that an archeological survey be conducted that meets the requirements of the Secretary of Interior's Standards for Identification and Evaluation, and an evaluation of National Register eligibility for any properties that are identified. The SHPO also indicated that if the Project area can be documented as previously disturbed or previously surveyed, the SHPO will re-evaluate the need for the survey.

URS personnel followed the Minnesota State Historic Preservation Office ("SHPO") guidelines for conducting cultural resources literature reviews in Minnesota. (Anfinson 2005). A site file search was requested for both archaeological sites and historic properties from the SHPO database coordinator Tom Cinadr prior to visiting the SHPO office on March 8, 2011.

Several visual resources were used in the process of evaluating both the current and historic land uses of the study area. Topographic and Quaternary maps were used to examine the Study Area in terms of landscape evolution and how it relates to settlement and land use patterns. Modern and historic aerial photographs were used to evaluate historic properties in the Study Area. Additionally, General Land Survey ("GLO") maps, Trygg maps, and county plat maps were examined as a part of better understanding the historic development of the Study Area. Online resources documenting the history of Hennepin County, and the townships of Independence, Medina, and Orono were used to gather information pertaining to the Study Area.

3.0 LITERATURE REVIEW RESULTS

3.1 National Register of Historic Places

A search of the NRHP website and the records at the SHPO revealed that there are 1,582 properties in Hennepin County listed on the NRHP. None of the properties listed are located within the cultural resources Study Area for the proposed Project.

4.0 MINNESOTA STATE SITE FILES

4.1 Previously Recorded Archaeological Sites

A total of 15 archaeological sites have been previously recorded within one mile of the alignment of the Study Area (*see* **Figure 4**). Of the 15 archaeological sites, thirteen are pre-contact and consist of: six lithic scatters, two artifact scatters, three single artifact finds, and two American Indian earthworks. The remaining two sites consist of post-contact historic structural ruins with associated artifact scatters. None of the previously recorded sites are listed in the Nation Register Considered Eligible Findings (“CEF”) by the SHPO. A total of 19 previously recorded historic architectural properties were identified within the Study Area (*see* **Figure 4**). Of the 19 historic architectural properties none are listed on the NRHP or CEF. A summary of the inventoried archaeological and architectural sites is provided in **Table 1**.

Because the Project is located in close proximity to Lake Minnetonka which is a highly sensitive archaeological area, and within one mile of documented Native American earthworks, it has the potential to contain additional pre-contact cultural resources. However, much of the proposed Project and transmission line route lies near or within wetland areas making traditional survey methods nearly impossible in these locations. Under these circumstances, where traditional survey methods prior to the start of construction are difficult to undertake, URS recommends that Xcel Energy has an unanticipated discovery plan in place prior to the start of construction. The unanticipated discovery plan should outline procedures to follow, in accordance with state and federal laws, if archaeological materials or human remains are discovered prior or during construction.

The two American Indian earthworks (21HE0184, and 21HEam) located within the cultural resources study area warrant special discussion as they are protected under Minn. Stat. Section 307.08 of Minnesota’s “Private Cemeteries” Act. While it is known that not all earthworks contain human burials, they are protected as such until authenticated by the Office of the State Archaeologist (OSA) and the Minnesota Indian Affairs Council (MIAC). Neither of the earthworks located in the cultural resources Study Area have been authenticated. Of the two sites, one is located approximately [REDACTED] away from its nearest point to the Proposed Route width and the other is approximately [REDACTED] away from its nearest point to the Proposed Route. Given the distance between these sites and the proposed construction activities, no impacts are anticipated. Based on recent aerial photographs, it appears that an existing transmission line passes along the northern boundary of site 21HE0184, and a portion of site 21HEam may have been destroyed by residential development.

FIGURE 4

Figure 4 has been eliminated from Appendix E of the Route Permit Application due to the sensitive nature of information included within the figure. This information is not readily available for use in a public document.

TABLE 1

Previously Identified Cultural Resource Properties near the Project

Type of Historic Property	Inventory Number	Description	NRHP Status
Archaeological	21HE0155	[REDACTED]	not eligible
Archaeological	21HE0158	[REDACTED]	Unevaluated
Archaeological	21HE0159	[REDACTED]	Unevaluated
Archaeological	21HE0161	[REDACTED]	Unevaluated
Archaeological	21HE0162	[REDACTED]	not eligible
Archaeological	21HE0163	[REDACTED]	not eligible
Archaeological	21HE0165	[REDACTED]	not eligible
Archaeological	21HE0166	[REDACTED]	not eligible
Archaeological	21HE0167	[REDACTED]	Unevaluated
Archaeological	21HE0177	[REDACTED]	Unevaluated
Archaeological	21HE0178	[REDACTED]	not eligible
Archaeological	21HE0184	[REDACTED]	Unevaluated
Archaeological	21HE0288	[REDACTED]	structures moved
Archaeological	21HEh	[REDACTED]	not eligible
Archaeological	21HEam	[REDACTED]	Unevaluated
Architectural	HE-INC-033	[REDACTED]	Unevaluated
Architectural	HE-ORC-006	[REDACTED]	not eligible
Architectural	HE-ORC-007	[REDACTED]	not eligible
Architectural	HE-ORC-008	[REDACTED]	Unevaluated
Architectural	HE-ORC-013	[REDACTED]	structure moved
Architectural	HE-ORC-014	[REDACTED]	Unevaluated
Architectural	HE-ORC-015	[REDACTED]	Unevaluated
Architectural	HE-ORC-016	[REDACTED]	not eligible
Architectural	HE-ORC-035	[REDACTED]	not eligible
Architectural	HE-ORC-042	[REDACTED]	not eligible
Architectural	HE-ORC-043	[REDACTED]	not eligible
Architectural	HE-ORC-044	[REDACTED]	Unevaluated
Architectural	HE-ORC-045	[REDACTED]	not eligible
Architectural	HE-ORC-046	[REDACTED]	Unevaluated
Architectural	HE-ORC-047	[REDACTED]	Unevaluated
Architectural	HE-ORC-052	[REDACTED]	not eligible
Architectural	HE-ORC-055	[REDACTED]	not eligible
Architectural	HE-ORC-058	[REDACTED]	Unevaluated
Architectural	HE-MAC-036	[REDACTED]	not eligible

4.2 Previously Recorded Standing Structures

Nineteen historic properties have been inventoried within the Study Area as part of various cultural resources inventories. Several rural properties within the Study Area were recommended for further evaluation during the previous resource studies but have not been subjected to such studies as of the completion of this literature review. None of the historic properties are located within the 400 foot Proposed Route width, with the nearest being approximately [REDACTED] away, and will not be impacted by construction activities.

4.3 Previously Conducted Cultural Resources Surveys

The reports for eight cultural resources inventories in the Study Area were reviewed. Another report submitted in 2003 was unable to be located during the March 2011 visits to the SHPO. A 1988 Reconnaissance NRHP Survey of 26 Municipalities in Hennepin County for the SHPO covered portions of the cultural resources Study Area documenting several standing structures. Several structures were recorded as potentially eligible for listing in the NRHP; however, none of the properties recorded for the 1988 report relating to this Project will be adversely impacted.

Two reports document the Minnesota Trunk Highway Archaeological Reconnaissance Studies of 1993 and 1994. The Project location was covered within one of 8 segments where a 500 foot wide survey corridor was implemented. None of the sites recorded within these reports and relating to this Project are listed as potentially eligible for listing in the NRHP.

The 106 Group conducted Phase II evaluations of two structures relating to reconstruction of County State Aid Highway (“CSAH”) 6 in 1994. Both of the previously identified properties were found to be not eligible for listing in the NRHP.

In 1995, a final report was submitted to the Minnesota Historical Society as part of the Trunk Highway Cultural Resource Program (Mather et. al. 1995) summarizing the results of surveys for several alternatives relating to improvements to U.S. Highway 12. Several archaeological sites were recorded as part of this survey, including 21HE0162, which falls within one of the Alternate Routes for this Project but outside of the 400 foot Proposed Route width.

In 1997, the 106 Group submitted a Phase I report for the proposed reconstruction of CSAH 6 from Townline Road to U.S. Highway 12. The extreme southern extent of the 16 acre substation parcel was covered as part of this survey with a result of no findings.

Phase II evaluations were conducted prior to improvements to U.S. Highway 12 in 1998 on two sites outside of the proposed 400 foot route width and existing substation site for the Project, but within the one mile cultural resources Study Area. BRW, Inc. found both sites to be not eligible for listing in the NRHP; however, a reported undocumented Euro-American burial at site 21HE0288 was recommended for monitoring during construction activities. Site 21HE0288 is approximately [REDACTED] away from the proposed Project.

5.0 OTHER RESOURCES

Historical documents, detailed below, were reviewed in order to identify possible previously undocumented historic sites that might be impacted by the proposed Project.

5.1 GLO Maps

Minnesota's Original Public Land Survey Maps were viewed online through the Minnesota Geospatial Information Office ("MnGeo") website. The Project location was surveyed in 1854 and 1855 under the jurisdiction of the Surveyor General of Iowa and Wisconsin as a means of dividing the western lands into grid-shaped townships and sections. None of the GLO maps representing the Project location show any cultural features within the proposed Project's 400 foot route width or existing Xcel Energy Orono Substation 16-acre site. In addition, the description of environmental and topographic conditions indicates that much of the area was swamp or marshland at the time of Euro American arrival.

5.2 George B. Wright

In the late nineteenth century, George B. Wright published an atlas of Hennepin County which is available for viewing online through the University of Minnesota John R. Borchert Map Library. The Medina page presents the Project location in detail, showing the St. Paul and Pacific Railroad as the only cultural feature, which is currently the BNSF Railroad.

5.3 J. William Trygg Composite Maps

The Trygg maps were created in 1950 and combine information from the GLO Survey plats and field notes and miscellaneous other early sources into a series of 46 sheets covering Minnesota and portions of Wisconsin, Michigan and Iowa. Aside from a road and trail to the south of the Project location, no cultural features are identified in the area.

5.4 Historic Aerial Photographs

URS reviewed aerial photographs of the cultural resources Study Area online from the University of Minnesota John R. Borchert Map Library (U.S. Department of Agriculture). The 1937 aerial shows the rural landscape with agricultural fields and farmsteads as well as small, scattered stands of woods. Subsequent aerials (1940, 1951, 1960, and 1971) showed little change from the 1937 photo. Several of the farmsteads visible on the aerial photos correspond with current residences depicted on modern aerials. In addition, structures relating to previously identified historic properties are able to be compared to existing structures on modern aerial photographs. Of note is the location [REDACTED]



5.5 Historic Topographic Quadrangles

URS reviewed historic topographic 15 minute quadrangles available online from the Historical Map Archive at http://alabamamaps.ua.edu/historicalmaps/us_states/minnesota/topo/index.html. The Minnetonka quadrangle (1907) and the Rockford quadrangle (1909, 1950) show no unidentified cultural features in the Project location while illustrating the changing landscape.

6.0 ALTERNATIVE ROUTES CONSIDERED AND REJECTED

Xcel Energy identified and analyzed four Alternative Routes for the Project, which are identified as “Alternative Route 1”, “Alternative Route 2”, “Alternative Route 3” and “Alternative Route 4” (collectively, “Alternative Routes”), and are further described below. *See Figure 5.* In evaluating the Alternative Routes, Xcel Energy focused predominantly on the use of Xcel Energy property and on the location of existing transportation corridors and alignment of the existing distribution and transmission lines because they best satisfy the routing criteria. The Alternative Routes follow existing rights-of-way and property lines to the extent feasible. All of the Alternative Routes were rejected due to various routing and siting issues specific to each Alternative.

Alternative Route 1 and the Proposed Route share the same route for the first 1,701 feet of the Proposed Route (*see Figure 5*). At this point, Alternative Route 1 deviates from the Proposed Route on a more westerly course for approximately 550 feet, where it connects to an existing Structure.

Alternative Route 2 utilizes the portion of the Proposed Route (866 feet) prior to the Proposed Route turning westerly at the BNSF railroad right-of-way (*see Figure 5*). At this point Alternative Route 2 continues north an approximate 326 feet and crosses the BNSF railroad, U.S. Highway 12 and an existing Xcel Energy distribution line. Upon exiting U.S. Highway 12 right-of-way, Alternative Route 2 enters the Three Rivers Park District’s Baker Park Reserve. From here Alternative Route 2 continues westerly approximately 974 feet across Baker Park Reserve property connecting to existing Xcel Energy 115 kV transmission Line 0831. Alternative Route 2 would traverse the previously identified site 21HE0162. Evaluation of site 21HE0162, a pre-contact lithic scatter, was undertaken in 1994 as part of a cultural resources inventory for proposed improvements to U.S. Highway 12 (Mather et. al. 1995). The report authors determined that the site did not possess integrity or research potential due to extensive disturbance and no further work was recommended if the proposed highway project was constructed using the preferred alternative.

Alternative Route 3 and the Proposed Route share the same route from the point the routes leave the proposed substation expansion to approximately 1,000 feet west of the point both routes turn westerly along the BNSF right-of-way (*see Figure 5*). At this location Alternative Route 3 extends both to the north and to the west to make connections with Xcel Energy’s existing 115 kV transmission Line 0831. The northerly connection includes a 329 foot span across the BNSF railroad and U.S. Highway 12, and enters into Baker Park Reserve property making the northern connection to transmission Line 0831 at existing Structure 76. The westerly connection of Alternative Route 3, south of the BNSF railroad and U.S. Highway 12, spans across HFA land, and for an additional approximate 384 feet to connect to Xcel Energy’s existing 115 kV transmission Line 0831 at Structure 77.

Alternative Route 4 exits the proposed substation upgrade northwesterly for approximately 100 feet over Xcel Energy property before turning southeasterly for an additional approximate 160 feet. Alternative Route 4 then parallels the GRE Line BD for the remainder of the route. Alternative

Route 4 would continue east for approximately 607 feet prior to turning north. Upon turning north Alternative Route 4 would continue north for approximately 2,873 feet leaving Xcel Energy's property and crossing over the BNSF railroad, U.S. Highway 12 and entering Barker Park Reserve. The majority of Alternative Route 4 would be constructed along an existing transmission line corridor. However, a 350 foot span requiring new right-of-way through Barker Park Reserve would be required where the existing transmission line and the Alternative Route 4 deviate.

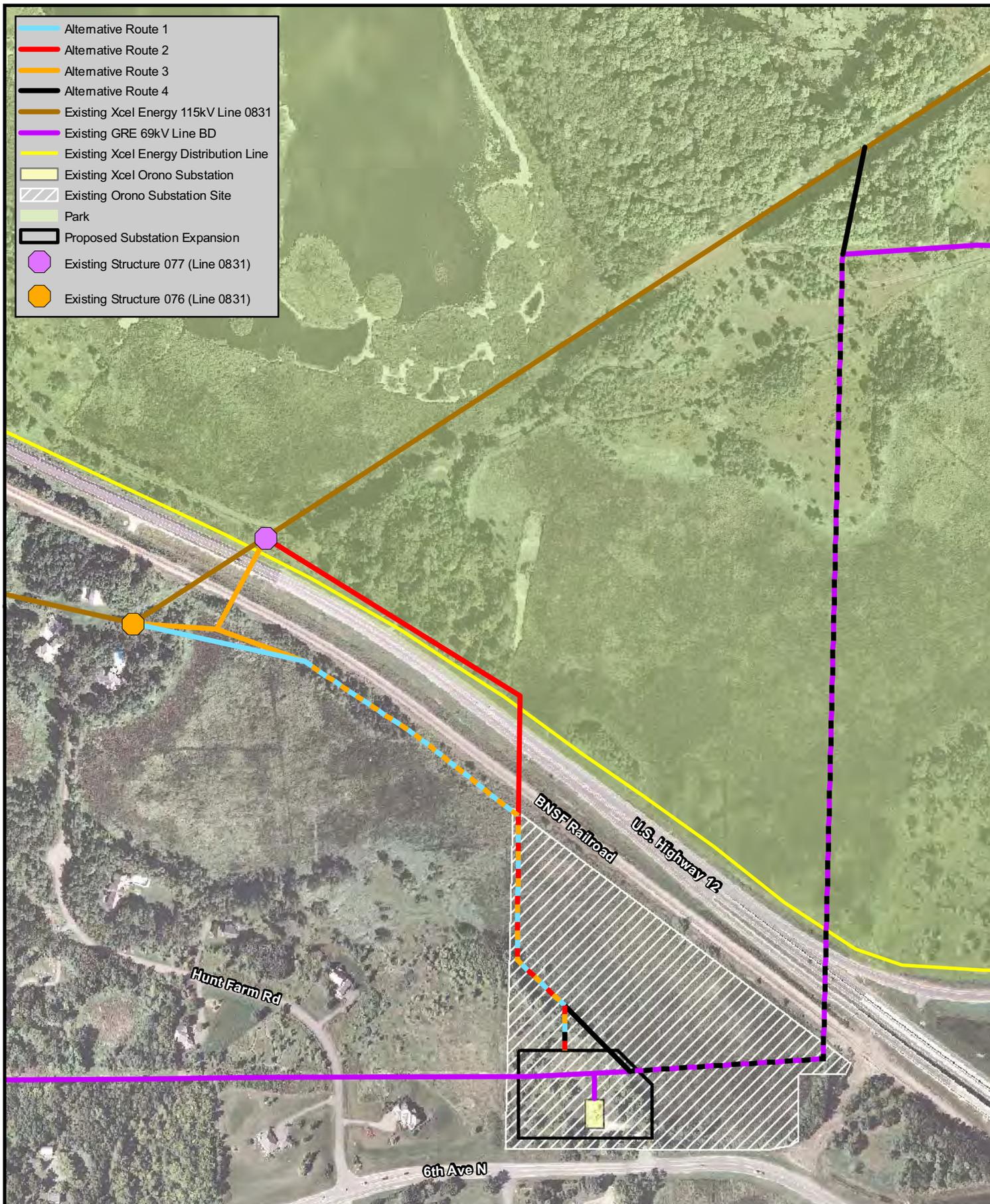
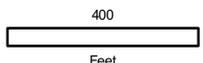


FIGURE 5
ORONO SUBSTATION EXPANSION AND NEW
115 KV TRANSMISSION LINE PROJECT
ALTERNATIVE ROUTES
ORONO, MINNESOTA



Aerial Image Source:
 Aerial Express ECW Image
 dated Sept. 15, 2009



DRN BY: TS	DATE: 3/7/11	PROJECT NO. 31810889	FIG. NO. 5
CHK'D BY: DD	DATE: 3/7/11		

7.0 CONCLUSIONS AND RECOMMENDATIONS

There are no historic landmarks, historic properties, districts, or landscapes within the Project location that are listed on the NRHP, or determined or recommended for listing on the NRHP. Because the Project's Proposed Route is adjacent to existing transportation and utility corridors for the majority of the route, the potential affect to historic structures is considered to be minimal. One of the rejected Alternative Routes to the Proposed Route crosses a single archaeological site [REDACTED]

Based upon the findings of this Report and current plans for the proposed Project, URS recommends field survey at two locations for the Proposed Route. The first survey area is a portion of the 16 acre parcel where the expansion to the Orono Substation is proposed. The area is a small portion of the parcel that has not been surveyed and is adjacent to a structure viewed on historic aerial photographs. This survey area is recommended for previously undisturbed areas.

The second survey area is a landform that previously identified site 21HE0162 occupies [REDACTED]. The second survey area will only be necessary if the landform previously identified [REDACTED] is considered for placement of new transmission structures.

URS believes that field survey at previously undisturbed areas within these two locations is warranted because the proposed Project is situated in an area that is considered to have high potential to contain archaeological sites, combined with the fact that there are several previously identified cultural resources in the cultural resource Study Area. The remainder of the Proposed Route would be constructed along existing transportation and utility corridors, tying in to an existing transmission line and associated structures. These areas are considered to be previously disturbed and no field survey is warranted.

To summarize the literature review findings, no previously identified property listed or determined eligible for listing on the NRHP and the Minnesota Register of Historic Sites is located within the Project location. One previously identified archaeological site, 21HE0162, is located [REDACTED]

[REDACTED] The site was evaluated in 1994 and received a not eligible determination. The potential for impacting unrecorded archaeological resources within the Project location is considered to be high due to number of previously recorded sites and the Project's proximity to the archaeologically sensitive Lake Minnetonka.

To assure that any undiscovered cultural resources are recognized and protected during ground disturbance associated with the Project, URS further recommends that Xcel Energy have an unanticipated discovery plan in place. This plan would provide guidance to Xcel Energy Project

personnel in the event that previously unidentified cultural resources are encountered during construction activities.

URS understands that Xcel Energy will file for a Route Permit from the MPUC for the Project, and that cultural resource matters will be taken into consideration in this permitting process. The recommendations provided here are based on standard predictability models for discovery of archaeological resources in Minnesota and the Upper Midwest, and in accordance with relevant MPUC regulations, the Minnesota Historic Sites Act, the Minnesota Field Archaeology Act, and the Minnesota Private Cemeteries Act. In the event that there is federal involvement in the Project, such as federal permitting, licensing or funding, Section 106 of the National Historic Preservation Act of 1966, as amended, must be followed.

8.0 REFERENCES

- Anfinson, Scott
2005 SHPO Manual for Archaeological Projects in Minnesota. Minnesota State Historic Preservation Office.
- Ketz, Dr. Ann
1994 Phase II Evaluations of Two Barns CSAH 6 Reconstruction From Townline Road to T.H. 12, Orono and Independence, Hennepin County, Minnesota.
- Ketz, Dr. Ann
1997 Phase I Archaeological Survey for CSAH 6 Reconstruction From Townline Road to T.H. 12, Orono and Independence, Hennepin County, Minnesota. 106 Group for the Hennepin County Department of Public Works.
- Malmquist, Chandra, Scott O'Mack and Jackie Sluss
1998 Phase II Cultural Resources Investigation Along Trunk Highway 12, Hennepin County, Minnesota.
- Mather, David, Patrick Nunnally and Shawna Kruger
1994 Draft Phase I Cultural Resources Reconnaissance Survey Report MnDOT S.P. 2713-64 For Channelization and Turn Lanes Along T.J. 12 Between Orono and Long Lake, Hennepin County, Minnesota.
- Mather, David and Patrick Nunnally
1995 Final Cultural Resources Reconnaissance Survey Report. Trunk Highway Cultural Resource Program.
- Peterson, Leslie D., Kent A. Skaar and Wanda Watson Radford (editors)
1994 Minnesota Trunk Highway Archaeological Reconnaissance Study, Annual Report 1993. Minnesota Historical Society, St. Paul. Submitted to the Minnesota Department of Transportation.
- Roberts, Dr. Norene A.
1988 Reconnaissance National Register of Historic Places Survey of 26 Municipalities in Hennepin County. For the State Historic Preservation Office.
- Trygg, J.W.
1964 Composite Map of United States Land Surveyors' Original Plats and Field Notes. Sheet 7. J.W. Trygg, Ely, Minnesota.
- United States Department of Agriculture (USDA), Farm Service Agency
1937, 1957, 1960, 1964, 1971 Aerial Phtotgraphs for Agricultural Stability and Conservation. Available online from the John R. Borchert Map Library University of Minnesota, <http://map.lib.umn.edu/mhapo/index.html>.

United States General Land Office (US GLO)

1855 General Land Office Survey Maps. Originally produced in 1855 by the United States Land Office, Dubuque Iowa. Viewed Online at <http://www.mngeo.state.mn.us/glo/index.html>

Wiltberger, Christine, Bruce Penner, Garneth Peterson, Evelyn Tidlow and Mike Justin
2003 Phase I Archaeological Investigation and Phase I and II Architectural History Investigations of the Proposed Reconstruction of TH 7 and TH 15 in Hutchinson, McLeod County, Minnesota

Wright, George B.

1873 Long Lake, St. Paul & Pacific RR. In *Atlas of Hennepin County 1873*. Published by George B. Wright & G.J. Rice. Viewed Online at <http://www.historicmapworks.com/Map/US/478462/Long+Lake++St+Paul+++Pacific+RR/Hennepin+County+1873/Minnesota/>

Wright, H. E., Jr.

1972 Physiography of Minnesota. In *Geology of Minnesota: A Centennial Volume*, edited by P. K. Sims and G. B. Morey, pp. 561-580. Minnesota Geological Survey, St. Paul.

APPENDIX A

SHPO and Xcel Energy Correspondence

 Minnesota
Historical Society
STATE HISTORIC PRESERVATION OFFICE

October 21, 2010

Xcel Energy
Attn: Joe Sedarski, Senior Permitting Analyst
414 Nicollet Mall – MP8
Minneapolis, MN 55401

RE: Orono Substation Expansion and New 115kV Transmission Line Project
T118 R23 S29 SW, S30 SE, S32 NW
Orono, Hennepin County
PUC Docket Number: E002/LR-10-957
SHPO Number: 2010-4976

Dear Mr. Sedarski:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Due to the nature of the proposed project, we recommend that an archaeological survey be completed. The survey must meet the requirements of the Secretary of the Interior's Standards for Identification and Evaluation, and should include an evaluation of National Register eligibility for any properties that are identified. For your information, we have enclosed a list of consultants who have expressed an interest in undertaking such surveys.

If the project area can be documented as previously disturbed or previously surveyed, we will re-evaluate the need for survey. Previously disturbed areas are those where the naturally occurring post-glacial soils and sediments have been recently removed. Any previous survey work must meet contemporary standards.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal license or permit, it should be submitted to our office with reference to the appropriate federal agency.

If you have any questions on our review of this project, please contact me at (651) 259-3456.

Sincerely,


Mary Ann Heidemann
Manager, Government Programs and Compliance

Enclosure: List of Consultants



414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

September 23, 2010

[Name]
[Address]

**RE: Request for Comments of Proposed Orono Substation Expansion and
New 115kV Transmission Line Project
City of Orono Zoning Application #10-3486
PUC Docket No. E002/LR-10-957**

Dear [Name]:

Northern States Power Company, a Minnesota corporation (Xcel Energy), is requesting a Conditional Use Permit (CUP) from the City of Orono to expand the existing Orono Substation and construct a new 115 kilovolt (kV) transmission line to connect the expanded substation to an existing Xcel Energy 115kV transmission Line 0831 (see **Figure 1**). The expansion and upgrade will include a complete rebuild of the existing substation, an increase in operating voltage from 69kV to 115kV, and a new 115kV transmission line (Project). Attached is a fact sheet with additional Project information.

The purpose of this letter is to request your comments on the Project and on the scope of the Environmental Assessment (EA) that will be prepared for the Project. The EA is required as part of the approval process for the Project. A draft of the table of contents of the EA is attached for your reference. The EA will address items listed in the attachment. Should you have other questions, comments or suggestions regarding the contents of the EA, please provide those to me at the address indicated below. The following provides further information regarding the Project.

Orono Substation

The Orono Substation is located at 3960 Sixth Avenue North, Orono, Hennepin County, MN 55356. The Project site consists of approximately 16 acres and is located in the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 29 and the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 32, Township 118 North, Range 23 West. The Project area is bounded by State Highway 12 (Wayzata Boulevard) and the Burlington Northern Santa Fe Railroad to the north, County Road 6 (6th Avenue North) to the south and east, with a residential property boundary to the west. The property contains an existing substation in the southwest corner of the property that is surrounded by open meadow with scattered trees. The remainder of the property is comprised of wetland. Adjacent land use consists of large-lot, single-family homes to the west and south, wetland to the north, and a highway interchange to the east.

Project Need

The Project is needed to increase system reliability and reduce the risk of overloads. The increase in voltage from 69kV to 115kV is needed to improve local reliability and to allow for additional load growth in the future.

Project Description

The existing Orono Substation has been in service since 1990 and is situated on land owned in fee by Xcel Energy. All proposed substation upgrade components will be located within existing Xcel Energy property. Xcel Energy also proposes to build a new transmission line to connect the Orono Substation to the existing 115kV Line 0831 located approximately ½ mile northwest of the Orono Substation. The new 115kV transmission line route will run north from the Orono Substation across Xcel Energy property for approximately ¼ mile and then cross an additional ¼ mile of private property as shown on the attached map (see **Figure 1**).

Local Governmental Unit

The City of Orono (City) is the local governmental unit (LGU) for the Project. While the Project is required to be approved by the Minnesota Public Utilities Commission (PUC), the Project qualifies for local review. Xcel Energy is requesting local review and approval from the City via the CUP process. City staff has indicated they are willing to review and grant a CUP for the Project.

On August 20, 2010, Xcel Energy submitted a CUP application to the City for review and approval of the Project. On September 20, 2010, the City Planning Commission met to discuss the Project, review EA requirements, and request public comment on the scope of the EA. The EA will be prepared over the next month and will be available for public review and comment in November. Should you have comments on the Project or scope of the EA, please provide them to me within 30 days at (612) 330-6435, email at joseph.g.sedarski@xcelenergy.com or the following address:

Xcel Energy
ATTN: Joe Sedarski, Senior Permitting Analyst
414 Nicollet Mall – MP8
Minneapolis, MN 55401

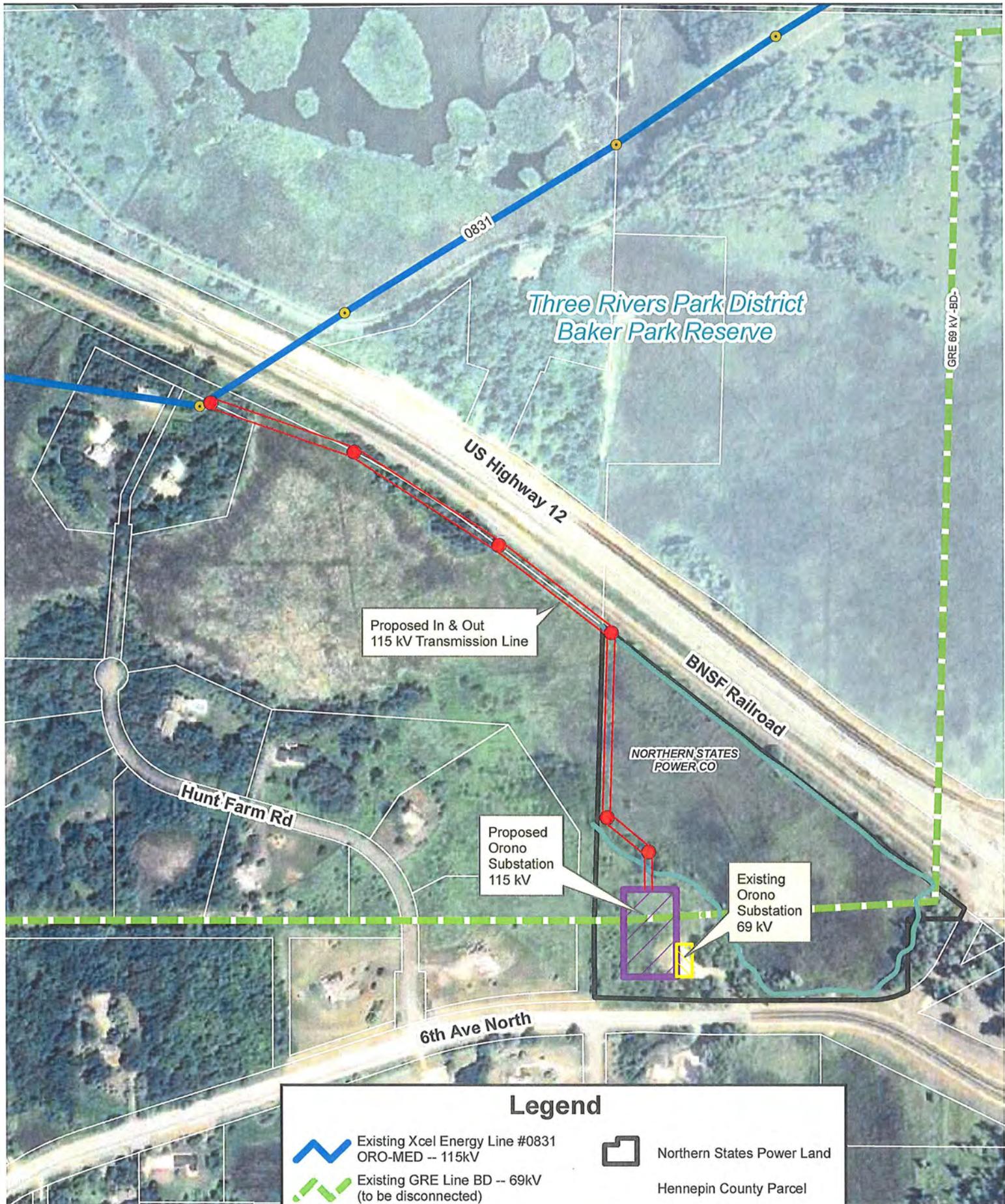
Thank you for your assistance with this matter.

Sincerely,
XCEL ENERGY

Joseph Sedarski
Senior Permitting Analyst

cc: Melanie Curtis, Planning & Zoning Coordinator, City of Orono - w/enc.

Enc: Figure
Fact Sheet
Draft Table of Contents for Project Environmental Assessment



OTE: Proposed transmission line and substation expansion locations are approximate.

Legend

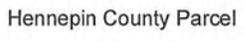
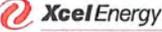
	Existing Xcel Energy Line #0831 ORO-MED -- 115kV		Northern States Power Land
	Existing GRE Line BD -- 69kV (to be disconnected)		Hennepin County Parcel
	NSP-MN Transmission Structure		Proposed In & Out Tap 115 kV Transmission Line (2 circuits)
	Proposed Orono Substation (115 kV)		Approximate Wetland Boundary
	Existing Orono Substation (69 kV)		

Figure 1
Proposed Orono Substation Project

 **Xcel Energy**
RESPONSIBLE BY NATURE™
DISCLAIMER: This information is believed to be correct but is subject to change and is not warranted.

PROPOSED ORONO SUBSTATION EXPANSION AND NEW 115kV TRANSMISSION LINE

FACT SHEET

PROJECT NEED: Northern States Power Company, doing business as Xcel Energy, plans to expand and upgrade its Orono Substation and build a new 115 kilovolt (“kV”) overhead transmission line connecting the planned substation to an existing 115kV transmission line. The substation upgrade to 115kV and new transmission line will increase electric system reliability, reduce the risk of overloads, and will allow for additional load growth in the future.

PROJECT DESCRIPTION:

- The existing Orono Substation operates at 69kV and will be removed and replaced by a 115kV substation located adjacent to the current location, all within property owned by Xcel Energy.
- Once the new 115kV substation and associated transmission line work is completed, the 69kV substation components will be removed.
- Approximately ¼ mile of new double circuit 115kV transmission line will be routed out of the new substation north over Xcel Energy property, and then approximately ¼ mile northwesterly over privately owned land to connect to an existing 115kV transmission line.
- Proposed structures for the new transmission line will be 80-100 feet tall single steel poles with davit arms placed on concrete foundations.
- New easements will need to be obtained for the transmission line portion crossing over private property.
- Xcel Energy is seeking local review and approval of the project from the Minnesota Public Utilities Commission, and the City of Orono has agreed to take local jurisdiction for permitting the project.
- Xcel Energy has applied for a Conditional Use Permit (“CUP”) with the City of Orono as required for the project.
- Once the CUP is approved by the City and State permitting requirements are met, construction is expected to begin in the fall of 2011 with completion of the new substation and transmission line by late 2012.



**Typical Double Circuit
Steel Single Pole**

CONTACTS:

Joe Sedarski, Sr. Permitting Analyst, Xcel Energy

Tel: (612) 330-6435 e-mail: joseph.g.sedarski@xcelenergy.com

Chris Rogers, Sr. Land Rights Agent, Xcel Energy

Tel: (612) 330-6078 e-mail: christopher.c.rogers@xcelenergy.com

**Environmental Assessment
for the Proposed
Orono Substation Upgrade and New 115kV
Transmission Line Project
City of Orono, Hennepin County, Minnesota**

MPUC Docket No. E002/LR-10-957

City of Orono

September 2010

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List of Acronyms Used in this Document

ACRONYMS	
BMPs	Best Management Practices
Commission	Minnesota Public Utilities Commission
dB dB(A)	Decibel Decibel, A-weighted
DNR	Minnesota Department of Natural Resources
EA	Environmental Assessment
EMF	Electromagnetic fields
EQB	Minnesota Environmental Quality Board
kV	Kilovolt
kV/m	Kilovolts per meter
MPCA	Minnesota Pollution Control Agency
NAC	Noise Area Classification
NPDES	National Pollutant Discharge Elimination System
ROW	Right-of-way
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service