Mara N. Koeller
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Minneapolis, Minnesota 55401
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January 13, 2012

VIA ELECTRONIC FILING AND U.S. MAIL

Eric L. Lipman, Esq.
Administrative Law Judge
Office of Administrative Hearings
PO Box 64620
St. Paul, MN 55164-0620

Re: Re: Applicant's Exhibit 19: Noise Assessment

Northern States Power Company Application to the Minnesota Public Utilities Commission for a Route Permit Orono Substation Replacement and New 115 kV Transmission Line Project
Alternative Permitting Process
MPUC Docket No. E002/TL-11-223
OAH Docket No. 8-2500-22429-02

Dear Judge Lipman:

Applicant Northern States Power Company, a Minnesota corporation, respectfully requests that the enclosed Exhibit 19 be accepted into the record as a late-filed exhibit. Applicant's proposed Exhibit 19 is the Noise Assessment prepared for the proposed Orono Substation Replacement and New 115 kV Transmission Line Project ("Project"). Exhibit 19 also includes a copy of the mailing that was sent to the Project Service list, landowners, and local officials that enclosed a copy of the Noise Assessment and the Notice of Comment Period from the Minnesota Department of Commerce, Energy Facility Permitting.

Please feel free to contact me with any questions regarding this filing.

Sincerely,

Mara Koeller

Mara Koeller

Enclosure
cc: Suzanne Steinhauer
Service List

4430396v1

414 Nicollet Mall
Minneapolis, Minnesota 55401

January 13, 2012

To: Persons Interested in the Orono Substation Replacement and New 115 kV Transmission Line Project, Property Owners, and Local Officials

RE: NORTHERN STATES POWER COMPANY APPLICATION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION FOR A ROUTE PERMIT
ORONO SUBSTATION REPLACEMENT AND NEW 115 KV TRANSMISSION LINE PROJECT
NOISE ASSESSMENT REPORT

ALTERNATIVE PERMITTING PROCESS
DOCKET NO. E002/TL-11-223

Dear Interested Persons, Property Owners, and Local Officials:

Enclosed is a copy of the noise assessment prepared for the Orono Substation Replacement and new 115 kV Transmission Line Project ("Orono Project"). The enclosed noise assessment outlines the existing ambient sound levels in the vicinity of the existing Orono Substation at 3960 Sixth Avenue North, Orono, Minnesota. The noise assessment also assesses the potential sound level impacts on the surrounding residential area of the proposed Orono Substation replacement, which is part of the Orono Project, and identifies noise mitigation measures.

While the noise assessment indicates that all alternative transformer configurations under consideration by Xcel Energy would be below the applicable noise standard based upon predicted and estimated noise levels. Xcel Energy will install a sound wall around the proposed transformer as noise mitigation for the Project.

Written comments on the noise assessment should be submitted to Administrative Law Judge Eric L. Lipman by 4:30 p.m., Tuesday, January 31, 2012. Additional information regarding how to submit these comments is included in the attached Notice of Comment Period from the Minnesota Department of Commerce, Energy Facility Permitting Staff.

Sincerely,

s/ Joseph G. Sedarski

Joseph G. Sedarski
Senior Permitting Analyst

STATE OF MINNESOTA
Energy Facility Permitting

January 13, 2012

NOTICE OF COMMENT PERIOD

In the Matter of the Route Permit Application for the Orono Substation Replacement and new 115 kV Transmission Line Project

PUC Docket Number: E002/TL-11-223
OAH Docket Number: 8-2500-22429-2

PLEASE TAKE NOTICE that Xcel Energy has prepared a noise assessment for the Orono Substation Replacement and new 115 kV Transmission Line Project in Orono, Minnesota.

Comment Period. Written comments on the noise assessment should be submitted to the Administrative Law Judge presiding over this proceeding no later than **4:30 p.m., Tuesday, January 31, 2012**. Please include the PUC docket No. E002/TL-11-223 and OAH Docket No. 8-2500-2249-1 on all comments. Comments should be mailed, emailed or faxed to:

The Honorable Eric L. Lipman
Office of Administrative Hearings
P.O. Box 64620
St. Paul, Minnesota 55164-0620
Fax: (651) 361-7936
Eric.Lipman@state.mn.us

Electronic versions of the noise assessment will be available for viewing by January 17, 2012, on the Commission's energy facility permitting website: http://energyfacilities.puc.state.mn.us/Docket.html?Id=32082. Additionally, documents are available on the Commission's eDockets system: https://www.edockets.state.mn.us/EFiling/search.jsp (enter the year "11" and the number "223").

The noise assessment will also be available after January 17, 2012, at the locations noted below:

Orono City Hall
Planning and Zoning Department
2750 Kelley Parkway
Orono, MN 55356

Maple Plain Library
5184 Main Street East
Maple Plain, MN 55359

Long Lake Library
1865 Wayzata Boulevard West
Long Lake, MN 55365

This document can be made available in alternative formats (i.e. large print or audio) by calling 651-296-0391 (voice). Persons with hearing or speech disabilities may call us through Minnesota Relay at 1-800-627-3529 or by dialing 711.

Project Mailing List. Interested persons can add their names to the mailing list for this project by contacting the state permit manager or public advisor, or by registering on-line at: www.energyfacilities.puc.state.mn.us.

Orono Substation Replacement Project

NOISE ASSESSMENT

Prepared for

Northern States Power Company, a Minnesota corporation (Xcel Energy)

by

David Braslau Associates, Inc.

13 January 2012

EXECUTIVE SUMMARY

The objectives of this noise assessment are to establish the existing ambient sound levels in the vicinity of the existing Orono Substation in Orono, Minnesota, and to assess the potential impacts on the surrounding residential area of the proposed Orono Substation replacement which would have larger transformers. The address of the Orono Substation is 3960 Sixth Avenue North, Orono, Hennepin County, Minnesota. Potential impacts are assessed with respect to the lowest State of Minnesota (State) Nighttime Noise Standards (NNS) and the existing ambient sound level.

This sound assessment analyzes the most sensitive receptor sites which are the closest residential structures to the site that would be exposed to sound by the one or two transformers in the proposed replacement Orono Substation.

Ambient sound levels were measured between December 5 and December 6, 2011, just west of the existing substation to establish the existing ambient level over a 24-hour period. Spot readings were taken on December 5, 2011, close to the existing substation to establish a source sound level for the existing transformer and to provide a basis for confirming the noise prediction model for the existing and replacement substations.

Sound levels near the proposed Orono Substation replacement have been predicted based upon the following four alternative transformer configurations with assumed sound levels:

1. TR#1 78 dBA
2. TR#1 75 dBA
3. TR#1 78 dBA + TR#2 68 dBA
4. TR#1 68 dBA + TR#2 68 dBA

The transformer configurations were provided by Xcel Energy for the proposed replacement Orono Substation, which initially involves replacement of the existing 69 kV transformer with one 115 kV transformer, and possible future buildout, which involves installation of a second 115 kV transformer.

Sound levels of these transformer configurations at the nearest residences are predicted to be at or below the State NNS for residential land uses (L50 50 dBA) but above the existing ambient sound level. To provide a greater margin of confidence that the levels are below the State NNS, sound walls close to TR#1 where a 78 dBA transformer would be installed were analyzed. The sound walls would be located south and west of the planned transformer where the closest residences are located.

With the addition of sound walls, predictions show that sound levels will be 6 dBA or more below the State NNS L50 50 dBA standard, and within 5 dBA of the predicted existing ambient levels except for the home immediately south of the transformer (Home 5). At Home 5 the predicted sound level with an assumed 78 dBA transformer may be 8 dBA above the predicted ambient level. Increasing the south sound wall height to 16 feet would reduce the sound level at Home 5 bringing it closer to the existing ambient sound level. When a 68 dBA transformer is added at the TR #2 position, a 16 foot wall would be needed to maintain the predicted sound level at Home 5 instead of the 14 foot wall for the 78 dBA transformer alone.

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1.0 INTRODUCTION

The objectives of this noise assessment are to establish the existing ambient sound levels in the vicinity of the existing Orono Substation in Orono, Minnesota, and to assess the potential impacts on the surrounding residential area of the proposed Orono Substation replacement which would have larger transformers. The address of the Orono Substation is 3960 Sixth Avenue North, Orono, Hennepin County, Minnesota. Potential impacts are assessed with respect to the State of Minnesota (State) Nighttime Noise Standards (NNS) and the existing ambient sound level.

For continuous sources such as a substation, the L50 standard, or that level exceeded for 50% or 30 minutes of an hour, is the applicable noise standard. Since residential land uses or receptor sites are involved and the substation will be in operation during the nighttime (10 p.m. to 7 a.m.) hours as defined in the Minnesota Rules, sound levels from the substation will be compared with the L50 50 dBA residential nighttime standard (Minn. Rules 7040.0040).

The State noise standards are presented in **Table 1.1.** Sound levels in the table are specified in terms of the dBA or A-weighted decibel. It should be noted that, while the standards are receiving land use standards and not source standards, they have been interpreted by the State as applying to sources that impact the receiving land use. Thus, the receiving land use standards do not include ambient levels not associated with the source in question. This sound level metric or measure is commonly used throughout the world in evaluating environmental and community noise levels and is a single number that combines all frequencies of sound similar to how sound is perceived by the human ear.

Table 1.1 Minnesota Noise Standards

	Daytime (7 a.m. to 10 p.m.)		Nighttime (10 p.m. to 7 a.m.)	
Noise Area Classification	L10	L50	L10	L50
NAC-1 (residential)	65	60	55	50
NAC-2 (commercial)	70	65	70	65
NAC-3 (industrial)	80	75	80	75

This sound assessment analyzes the most sensitive receptor sites which are the closest residential structures to the Orono Substation site that would be exposed to sound by the one or two transformers in the replacement substation. The residences are identified on the aerial photograph in **Figure 1.1**.

Ambient sound levels were measured between December 5 and December 6, 2011, just west of the existing substation to establish the existing ambient level over a 24-hour period. Spot readings were taken on December 5, 2011, close to the existing substation to establish a source sound level for the existing transformer and to provide a basis for confirming the noise prediction model for the existing and replacement substations. The continuous monitoring site locations, as well as the spot monitoring locations, are shown on the aerial photo in **Figure 1.2**.

Figure 1.1 Substation and Adjacent Residences

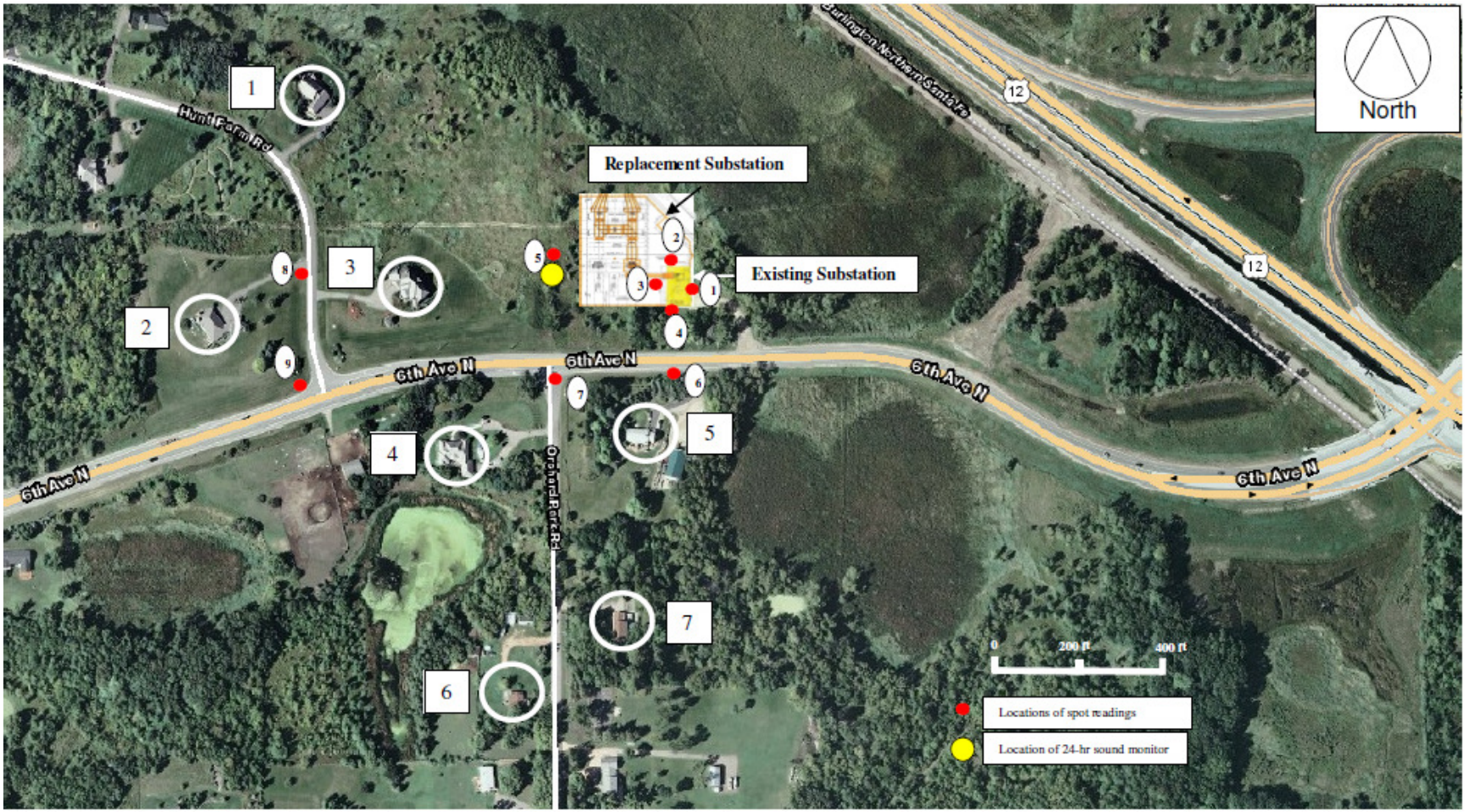

Figure 1.2 Location of Sound Level Monitoring Sites

2.0 NOISE CONCEPTS AND TERMINOLOGY

The State limits for a residential location are L10 = 65 dBA and L50 = 60 dBA during the daytime (7:00 a.m. – 10:00 p.m.) and L10 = 55 dBA and L50 = 50 dBA during the nighttime (10:00 p.m. – 7:00 a.m.) (Minn. Rules 7030.0040). This means that during a one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time, and cannot exceed 60 dBA more than 50 percent of the time.

The L50 level is used to address continuous sources, i.e. sources that are operated for more than 30 minutes of an hour. Potential sound levels from the proposed replacement substation are compared with this standard to ensure that the substation will be in compliance with State noise standards.

A basic introduction to noise levels and common terminology can be found in the publication by the Minnesota Pollution Control Agency (MPCA), A Guide to Noise Control in Minnesota, which was updated in October 2008 and can be found at the following website: http://www.pca.state.mn.us/publications/p-gen6-01.pdf (MPCA Noise Guide). Page two of the MPCA Noise Guide is a listing of decibel levels of common noise sources which is listed below with some distances added for clarity. The L50 NNS is 50 dBA which, from the table below, is similar to sound level in a library.

Decibel levels of common noise sources

140 ---------- Jet Engine (at 25 meters)
130 ---------- Jet Aircraft (at 100 meters)
120 ---------- Rock Concert (at 10 meters from loudspeakers)
110 ---------- Pneumatic Chipper (at one meter)
100 ---------- Jackhammer (at one meter)
90 ---------- Chainsaw, Lawn Mower (at one meter)
80 ---------- Heavy Truck Traffic (at 15 meters)
70 ---------- Business Office, Vacuum Cleaner (at three meters)
60 ---------- Conversational Speech, Typical TV Volume (at 2-3 meters)
50 ---------- Library
40 ---------- Bedroom
30 ---------- Rural woods
20 ---------- Concert Hall/Recording Studio

3.0 NOISE MONITORING RESULTS

Monitored ambient levels from the spot readings (see Figure 1.2) with minimal influence from adjacent traffic or railroad noise are presented in **Table 3.1**. Measurements at the existing Orono Substation fence (i.e. spot readings at monitoring sites 1 to 4 on Figure 1.2) were used to establish a source level for the existing transformer. The other locations (shown on **Figure 1.2** represent general ambient levels in the neighborhood with the existing substation.

Table 3.1 Ambient Sound Levels with the Existing Orono Substation

Monitoring Site	dBA	Location
1	58	Fence East
2	51	Fence North
3	57	Fence West
4	49	Fence South
5	41	24-hour Meter
6	46	South Side - 6th Ave. N
7	44	6th Ave. N at Orchard Park Road
8	42	West Side - Hunter Farm Road
9	39	6th Ave. N at Hunter Farm Road

The 24-hour statistical sound levels that provide an overall picture of sound level variation in the neighborhood near the existing Orono Substation are shown in **Figure 3.1**. The L01 represents sound levels lasting longer than 6 seconds; L10 represents sound levels lasting longer than 1 minute; L50 longer than 5 minutes; and L90 longer than 9 minutes of each 10-minute interval. A 10-minute interval was used to ensure that a full 24 hours of data could be accommodated by the monitor memory.

The 24-hour meter was located away from any homes or roadways and the existing substation to provide the minimum expected noise level in the area. It can be seen, however, that traffic on 6th Avenue North still dominates the sound environment except between about midnight and 4 a.m. The sound level during this quietest period is close to 34 dBA which is typical of rural areas in the winter. Summer levels could be higher due to sound from insects and other increased activity such as air conditioner operation.

The high peaks in **Figure 3.1** probably reflect passing trains to the northeast since these levels are similar to an observed and monitored train passage during the spot reading at Site 7. The number of peaks also correlates closely with the number of trains per day (9) on the MnDOT railroad map of the metro area (see Appendix A).

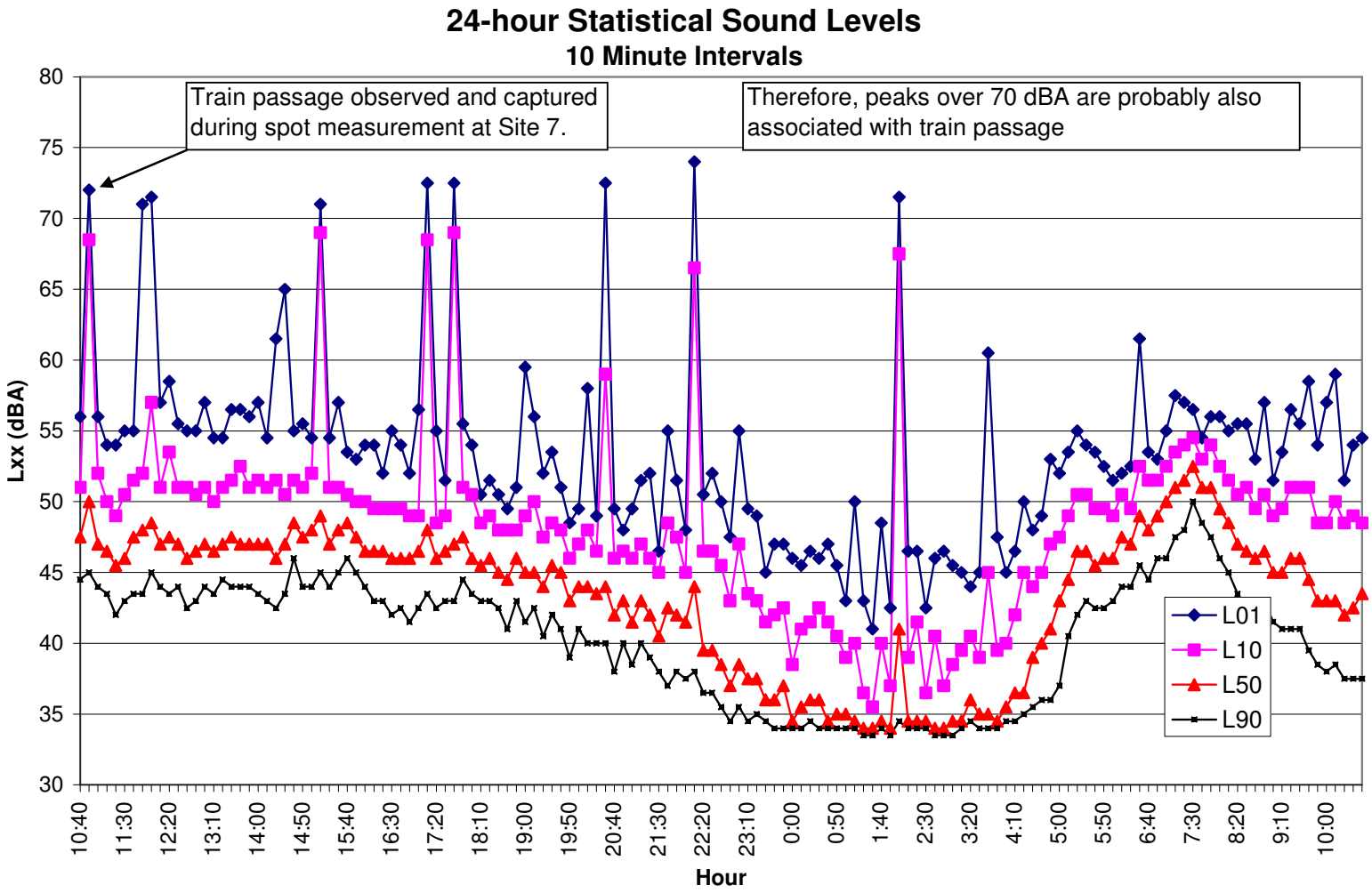

Figure 3.1 24-Hour Statistical Sound Levels (10-minute intervals) (Dec. 5, 2011 10:40 a.m. to midnight to Dec. 6, 2011, midnight to 10:40 a.m.)

4.0 PREDICTED SOUND LEVELS

Sound levels were predicted at each of the residences shown on **Figure 2.1** from four different alternative transformer replacement options (see **Table 4.1** below). The transformer alternatives were provided by Xcel Energy for the proposed replacement Orono Substation project for replacing the existing 69 kV transformer with a 115 kV transformer, and for the possible future buildout of the substation site which would involve adding a second 115 kV transformer. It should be noted that similarly sized transformers can operate at varying sound levels. This is due to variations in design, materials, construction, and operational conditions of the transformers and where they operate. Xcel Energy does not have specific sound information for the initial transformer. Therefore, the sound level for this transformer has been estimated.

According to Xcel Energy, Alternatives 1 and 2 involve use of an existing Xcel Energy 115 kV transformer (TR#1) with an assumed low to high sound level ranging from 75 to 78 dBA. No sound data are available from the manufacturer of this transformer and the assumed 75 dBA to 78 dBA sound level range is based upon past use of the transformer, best engineering estimates and the age of the transformer.

Alternatives 3 and 4 would occur if, in the future, a second transformer would be needed at the Orono Substation site. The sound levels for TR#2 are current low noise rated levels currently available from transformer manufacturers. If a second 115 kV transformer is needed in the future at the Orono Substation site, Xcel Energy would install a low noise model.

The proposed grading plan for the replacement Orono Substation project is shown in **Figure 4.1**. Positions for two transformers are shown on the figure. Initially, one transformer is planned for the TR #1 (east) position. Two alternatives have been analyzed for this position, a 78 dBA and a 75 dBA transformer. In the future, another transformer could be added in the TR #2 (west) position. The alternatives with two transformers include a 78 dBA and 68 dBA transformer, and two 68 dBA transformers. The four alternatives analyzed are summarized in **Table 4.1**.

Table 4.1 Proposed Transformer Alternatives

Alternative	TR #1 (east location)	TR #2 (west location)
1	78 dBA	None
2	75 dBA	None
3	78 dBA	68 dBA
4	68 dBA	68 dBA

Predicted sound levels for the existing Orono Substation and the four alternatives for the proposed substation replacement are presented in **Figure 4.2**.

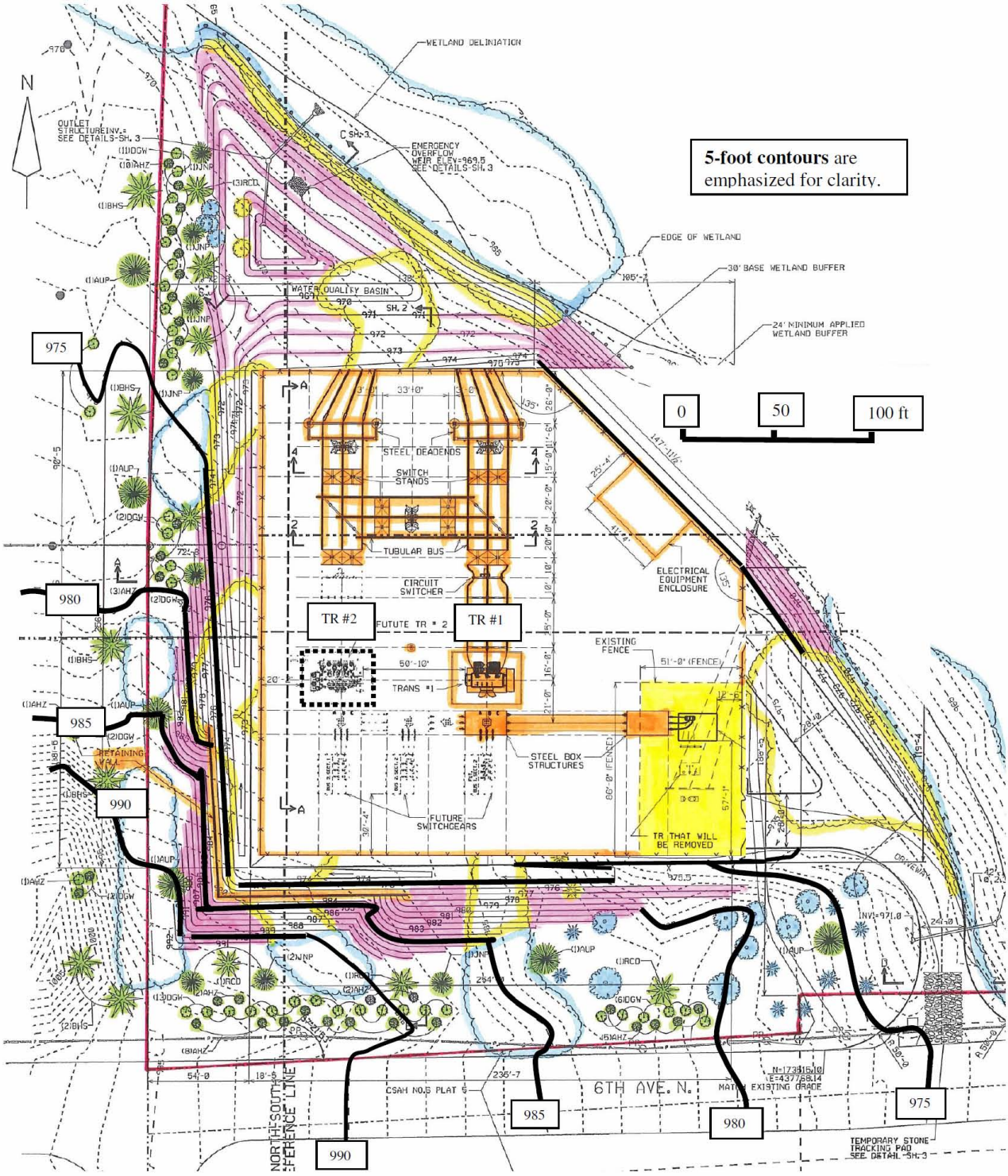

Figure 4.1 Proposed Substation Replacement Layout

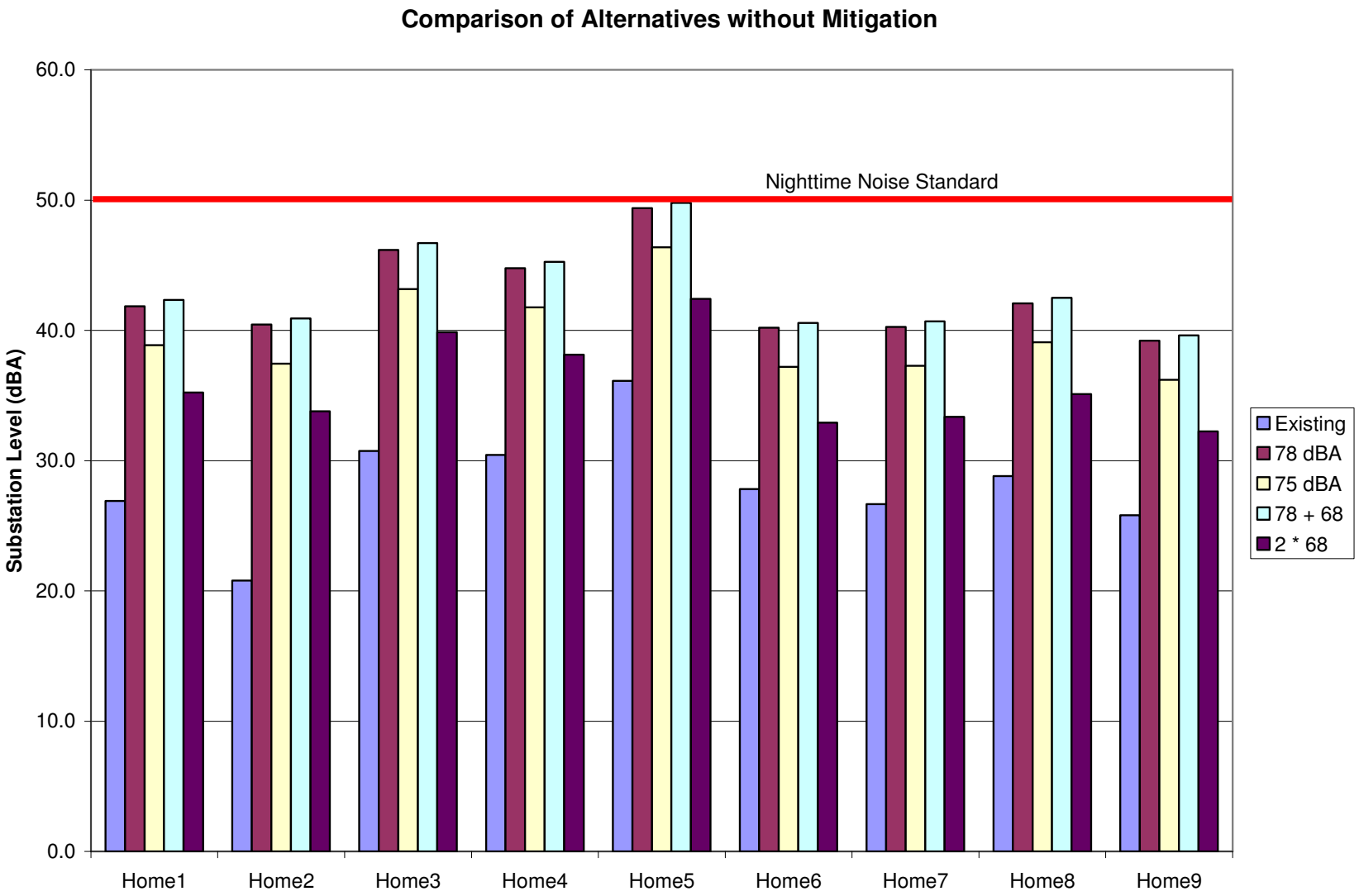

Figure 4.2 Predicted Sound Levels by Alternative without Mitigation

From **Figure 4.2** it can be seen that the predicted level at exceeds 40 dBA only when TR #1 is assumed to be a 78 dBA or 75 dBA transformer. The highest level at Home 5, which is immediately south of the Orono Substation site across 6th Avenue North, is just below 50 dBA. Therefore, based upon the assumed transformer sound levels, all of the alternatives are expected to comply with the L50 50 dBA NNS.

To provide a margin of confidence in the predictions and to bring the predicted levels closer to the existing ambient level in the area, a concrete sound wall has been evaluated for TR #1. Since the highest sound levels are expected to be south and west of the proposed substation replacement, an L-shaped wall south and west of TR #1 was analyzed. Both the south and west sections for the sound wall are assumed to be 14 feet high and placed 8 feet from the main transformer surface as shown on **Figure 4.3**. The south wall would be 36 feet long while the west wall would be 24 feet long. These lengths also ensure that the homes to the south and west will receive benefit from the sound wall.

If needed, the sound wall could be provided with sound absorption on the side facing the transformer to ensure that the sound level is not increased due to the proximity of the wall.

Benefits in sound reduction expected from the wall are presented in **Table 4.2** for a 78 dBA transformer in the TR #1 position. The predicted sound reduction benefits do not include some limited additional mitigation from installing sound absorption material on the side facing the transformer.

Table 4.2 Predicted Sound Reduction Benefits of Sound Walls(without Sound Absorption Material)

Home	No Wall (dBA)	With Wall (dBA)	Benefit (dBA)
1	41.9	36.7	5.2
2	40.4	35.4	5.1
3	46.2	41.1	5.1
4	44.8	40.7	4.0
5	49.4	44.3	5.1
6	40.3	35.1	5.1
7	42.1	36.9	5.2

From **Table 4.2** it can be seen that, all but Home 4 should expect at least a 5 dBA reduction in sound level, while Home 4 should expect a 4 dBA reduction in sound level. Placing sound absorption material on the side of the wall facing the transformer can provide some limited additional sound reduction benefit.

Except for Home 5 located south of the site, predicted sound levels will be close to or within about 5 dBA of the lowest observed existing level on a winter night (see Figure 4.2). A 16 foot high wall south of TR #1 could lower the sound level at Home 5. With the addition of a 68 dBA transformer at the TR #2 position, a 16 foot high wall would be needed to maintain the sound level at Home 5. Predicted levels and benefits with both the 78 dBA and 68 dBA transformers with a 16 foot high south wall and 14 foot high west wall are presented in **Table 4.3**.

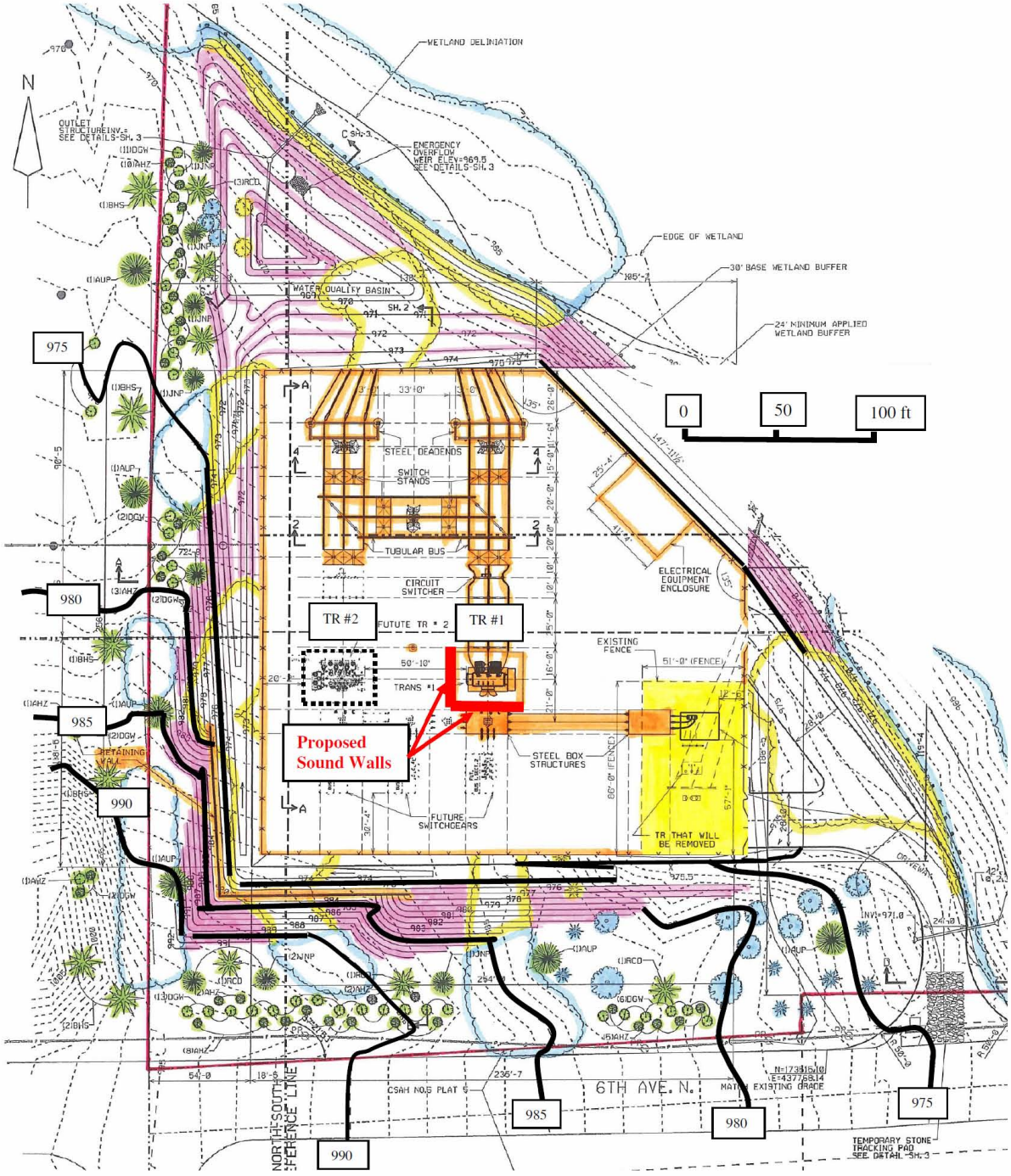

Figure 4.3 Proposed Sound Walls

Table 4.3 Predicted Sound Reduction Benefits of Sound Walls with a 78 dBA and 68 dBA Transformer (without Sound Absorption Material)

Home	No Walls (dBA)	With Walls (dBA)	Benefit (dBA)
1	42.3	36.7	5.7
2	40.9	35.4	5.6
3	46.7	41.1	5.6
4	45.3	40.7	4.5
5	49.8	44.3	5.5
6	40.7	35.1	5.6
7	42.5	36.9	5.6

While all of the sound levels are predicted to be below the L50 50 dBA nighttime standard without any mitigation, levels would be at least 6 dBA below the standard and closer to the existing ambient levels in the neighborhood if the sound walls were installed.

5.0 SUMMARY AND CONCLUSIONS

Existing sound levels in the vicinity of the existing Orono Substation were monitored to provide a basis for determining a source level for the existing transformer, to provide existing ambient sound levels in the neighborhood, and serve as a basis for confirming the accuracy of noise model predictions at selected locations for the proposed Orono Substation Replacement Project.

Sound levels near the proposed Orono Substation Replacement site have been predicted based upon the following four alternative transformer configurations:

1. TR#1 78 dBA
2. TR#1 75 dBA
3. TR#1 78 dBA + TR#2 68 dBA
4. TR#1 68 dBA + TR#2 68 dBA

Sound levels at the nearest residences are predicted to be below the State of Minnesota Nighttime Noise Standard for residential land uses (L50 is 50 dBA), but above the existing ambient sound level. To provide a greater margin of confidence that the sound levels remain below the State Nighttime Noise Standard, sound walls close to TR#1 where a 78 dBA transformer would be installed was analyzed. The sound walls would be located south and west of the transformer where the closest residences are located.

Sound level predictions with the walls in place show that sound levels will be 6 dBA or more below the Nighttime Noise Standard (L50 is 50 dBA), and within 5 dBA of the predicted existing ambient levels, except for the home immediately south of the transformer where the level may be 8 dBA above the predicted ambient level (Home 5). Increase in the wall height to 16 feet would reduce the sound level at Home 5 bringing it closer to the existing ambient. When a 68 dBA transformer is added at the TR #2 position, a 16 foot wall would be needed to maintain the level at Home 5 instead of the 14 foot wall for the 78 dBA transformer alone.

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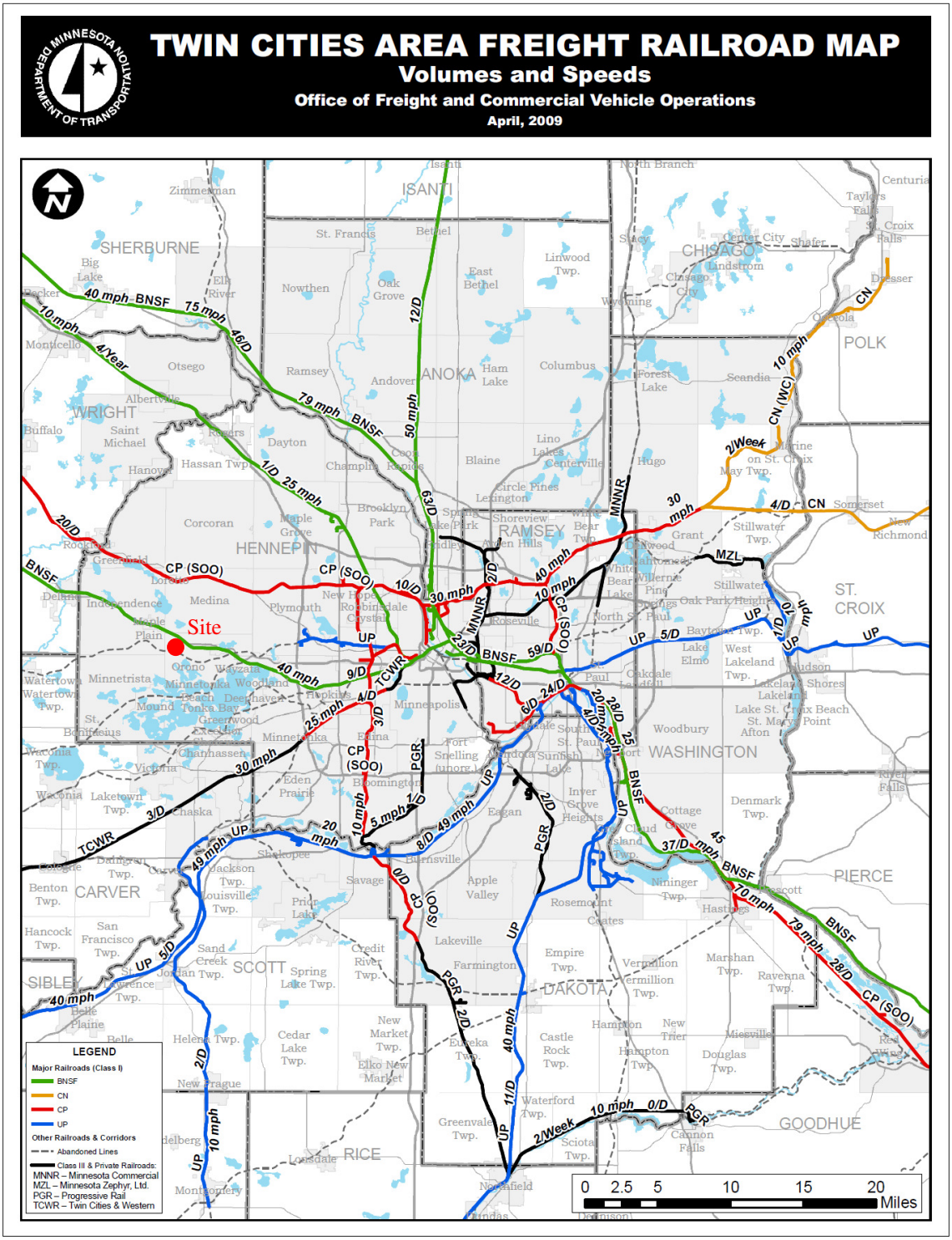
APPENDIX A

TWIN CITIES AREA FREIGHT RAILROAD MAP


TWIN CITIES AREA FREIGHT RAILROAD MAP
Volumes and Speeds
Office of Freight and Commercial Vehicle Operations
April, 2009
MINNESOTA DEPARTMENT OF TRANSPORTATION
Site
LEGEND
Major Railroads (Class I)
BNSF
CN
CP
UP
Other Railroads & Corridors
Abandoned Lines
Class III & Private Railroads:
MNNR – Minnesota Commercial
MZL – Minnesota Zephyr, Ltd.
PGR – Progressive Rail
TCWR – Twin Cities & Western
0 2.5 5 10 15 20 Miles

NORTHERN STATES POWER COMPANY
APPLICATION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION FOR A ROUTE PERMIT ORONO SUBSTATION REPLACEMENT AND NEW 115 KV TRANSMISSION LINE PROJECT

CERTIFICATE OF SERVICE
ALTERNATIVE PERMITTING PROCESS
MPUC DOCKET NO. E002/TL-11-223
OAH DOCKET NO. 8-2500-22429-2

Theresa Senart certifies that on the 13th day of January, 2012, she filed a true and correct copy of the **Exhibit 19: Noise Assessment** by posting the same on www.edockets.state.mn.us. Said Exhibit 19 has also been served via U.S. Mail or e-mail as designated on the Official Service List on file with the Minnesota Public Utilities Commission in the above-referenced docket.

/s/ Theresa Senart
Theresa Senart

Print Close

Service List Member Information

Electronic Service Member(s)

Last Name	First Name	Email	Company Name	Delivery Method	View Trade Secret
Anderson	Julia	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	Electronic Service	Yes
Ferguson	Sharon	sharon.ferguson@state.mn.us	Department of Commerce	Electronic Service	No
Haar	Burl W.	burl.haar@state.mn.us	Public Utilities Commission	Electronic Service	Yes
Lindell	John	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	Electronic Service	Yes
Sedarski	Joseph G.	joseph.g.sedarski@xcelenergy.com	Xcel Energy	Electronic Service	No

Print Close