location of the data point used to include or omit the house in the proximity count. To include a more conservative estimate for this factor, the home was included in this round of analysis for a total of four homes. The total number of residences for this portion of A-LH, as identified in the Draft EIS is five.

For evaluations in the Draft EIS of wetland impacts at both Fox Lake and Lake Charlotte, the National Wetland Inventory layer used to obtain acres of forested and non-forested wetlands was unedited and counted the entire water bodies as non-forested wetlands in the case of Draft EIS variations FL-1 and LC-4, respectively. Unless otherwise noted, water bodies are generally removed from the non-forested wetland count in order to provide a more accurate estimate of potential wetland impacts. For the number of Minnesota Biological Survey ("MBS") sites within 1,000 feet of the proposed alignment, the Draft EIS did not include the Verona 17 site from the MnDNR GIS layer. I understand this is because the site is considered below a minimum biodiversity significance threshold.

Q. IS THERE A ROUTE IN THE DRAFT EIS THAT IS SIMILAR TO MODIFIED ROUTE A?

A. Yes. Between the Lakefield Junction and Huntley substations, I90-2 is most similar to Modified Route A. I90-2 differs from Modified Route A in a few areas: 1) at the Des Moines River, the I90-2 anticipated right-of-way does not incorporate the perpendicular crossing of the Des Moines River, the

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additional separation from the Des Moines River MBS site, and the alignment proposed on the south side of 820th Street to avoid an identified well located on the north side; 2) at Fox Lake, the I90-2 anticipated right-of-way stays north of I-90, boxing in a residence on 125th Street and then continues east along an existing 69 kV line; 3) I90-2 continues east to State Highway 15 where it turns north, crossing the highway two times before rejoining the existing Lakefield to Border 161 kV Transmission Line. Between the Huntley substation and the Iowa border, I90-2 would use A-HI. At the Blue Earth River, A-HI's anticipated right-of-way does not incorporate the deviation to avoid crossing the river twice just south of the Proposed Huntley Substation/Huntley Substation – Application. A map comparing I90-2 and Modified Route A is included as **Schedule 28** to my testimony.

Q. **DURING YOUR REVIEW OF I90-2 IN THE DRAFT EIS, DID YOU IDENTIFY ANY DISCREPANCIES?**

A. Yes. Map 3-8 states that immediately south of the Fox Lake Substation, the route would require a double-circuit 345 kV/161 kV transmission line. I90-2 follows an existing 69 kV transmission line from this location to just west of State Highway 15. To accommodate the relocation of the existing Lakefield to Border 161 kV Transmission Line if it is removed from the lakes as discussed in one option for I90-2, co-location with the existing 69 kV transmission line, and construction of the 345 kV transmission line, triple-circuit structures would be required in this area. Map 3-8 should be

7-50

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7-50.

Map 3-8 has been revised to indicate the use of triple-circuit structures for a portion of route alternatives I90–1 and I90-2.

7-50 contiued

revised to state "begin 161/345 kV triple-circuit with I90-1 or I90-2" at the location immediately south of the Fox Lake Substation in the Final EIS. Any aesthetic evaluations of this portion of I90-1 and I90-2 should also be reevaluated to determine if any revisions are necessary based on a triple-circuit structure instead of a double-circuit structure before the Final EIS is issued.

Q. ARE THERE DIFFERENCES IN POTENTIAL IMPACTS BETWEEN MODIFIED ROUTE A AND I90-2?

A. Yes. There are differences in potential impacts that should be considered. Modified Route A follows more of the existing 161 kV transmission line around Fox Lake and Lake Charlotte. I90-2 does not follow any portion of the existing Lakefield to Border 161 kV Transmission Line in these areas. The I90-2 anticipated right-of-way crosses through the center of the Krahmer Wildlife Management Area ("WMA") near I-90 and the I90-2 route width also crosses the Fox Lake WMA. With Modified Route A, neither the route width nor right-of-way crosses a WMA. Further, Modified Route A would require triple-circuit 345 kV/161 kV/69 kV structures only in the area south of Fox Lake between the Fox Lake Substation and where the existing 69 kV line turns east in Section 35 of Fox Lake Township and along 160th Street south of Lake Charlotte. Construction along I90-2 would require installing triple-circuit structures in the area south of Fox Lake, plus along I-90 toward Fairmont, through the Krahmer WMA, and south of Buffalo Lake west of State Highway 15.

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The remainder of the Project along either route would be constructed on double-circuit structures.

Q. ARE THERE ANY CONCERNS YOU IDENTIFIED WITH THE I90-2 ANTICIPATED ALIGNMENT IN THE DRAFT EIS?

A. Yes. The Draft EIS shows I90-2 primarily following the existing 69 kV transmission line between Fox Lake to a point west of State Highway 15. I90-2 could not likely follow the existing 69 kV line centerline between the Fox Lake Substation and State Highway 15 as it appears there are portions of the existing 69 kV line are located fewer than 10 feet from the I-90 Minnesota Department of Transportation right-of-way.

7-51

Q. ARE THERE ANY NOTABLE SIMILARITIES BETWEEN I90-2 AND MODIFIED ROUTE A?

A. Yes. Both I90-2 and Modified Route A would be constructed with an available 161 kV circuit position that would accommodate relocation of the existing Lakefield to Border 161 kV Transmission Line between the Fox Lake Substation and Lake Charlotte. This relocation could occur in the future or as part of this Project.

Q. WOULD YOU RECOMMEND ANY MODIFICATIONS TO I90-2?

A. Yes. If I90-2 were selected for the Project, it should include the modifications identified for Modified Route A at the Des Moines

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7-51.

As discussed in Section 5.2.1 and in Section 6.1 of the EIS, the project must be constructed in accordance with the Minnesota Department of Transportation (MnDOT) accommodation policy for utilities. This policy requires, among other things, that transmission line structures along I-90, including davit arms, must be outside of the MnDOT ROW. Route alternative I90-2 anticipates following an existing 69 kV line for a portion of its length west of Fox Lake. If placing the new 345 kV structures on the alignment of the existing 69 kV line causes, in places, the line to be in nonconformance with MnDOT's accommodation policy, the line would need to be moved back from I-90 in these locations to come into conformance.

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River/Jackson Municipal Airport, immediately south of Fox Lake, and at the Blue Earth River south of the Huntley Substation.

Q. DOES THE DRAFT EIS INCLUDE OTHER ROUTE COMPARISON DATA YOU HAVE REPLICATED TO INCLUDE MODIFIED ROUTE A?

A. Yes. Chapter 7 includes a relative merits analysis. This analysis compares the relative merits of various routing factors identified in the Commission's route rules against the Route Alternatives presented in the Draft EIS. Attached to my rebuttal testimony as **Schedule 29**, I have included my analysis of these various factors for Modified Route A. I have also included information in each table to provide background on how I reached my conclusions.

Q. DID YOUR CONCLUSIONS REGARDING THE RELATIVE MERITS OF THE ROUTE ALTERNATIVES AND ROUTE VARIATIONS DIFFER FROM THE CONCLUSIONS REACHED IN THE DRAFT EIS?

A. Yes.

Q. PLEASE EXPLAIN ANY OF YOUR CONCLUSIONS THAT DIFFER FROM THE RELATIVE MERITS CONCLUSIONS IN THE DRAFT EIS.

A. There are a total of six relative merits conclusions with which I disagree or would like to provide additional clarification regarding potential impacts.

- Figure 7-2, I90-1 and I90-2 – Both of these Route Alternatives provide the ability to remove existing transmission lines across Fox

7-52

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7-52.

Section 7.1.1 discusses using route alternatives I90-1 and I90-2 to remove the existing 161 kV line from Fox Lake and Lake Charlotte. This discussion notes that potential impacts to avian species could be reduced by removing the 161 kV line from the lakes and double-circuiting along I90-1 or I90-2.

The figures in Section 7, including Figure 7-2, do not include stoplight motifs for routing scenarios that remove the existing 161 kV line from Fox Lake and/or Lake Charlotte. These scenarios are discussed only in text. To add these scenarios to the figures would, in EERA staff's opinion, be more confusing for the reader than helpful.

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Lake and Lake Charlotte, resulting in a reduction in the potential for impacts to avian species that utilize these habitats. The existing 161 kV line that crosses both lakes and connects the Fox Lake and Rutland substations could be co-located with the new 345 kV line, reducing the incremental impact on avian species from placing this existing line in a different location.

7-52 contiued

- Figure 7-3, JA-2, Land-Based Economies/Agriculture – In my opinion, this should be categorized as "minimal to moderate" not "minimal." JA-2 crosses through the center of several fields to the north of 820th Street. Other routing options that cross through fields instead of following existing linear features have been categorized as minimal to moderate in Chapter 7.

7-53

- Figure 7-3, JA-2, Use or paralleling of existing ROWs – In my opinion, this should be categorized as minimal to moderate, not minimal. Unlike JA-1 and A-JA, which follow 820th Street in this area, JA-2 crosses through fields. Although it does follow field lines in a few instances, those are not existing rights-of-way, but are what I would consider a different category under the Commission's routing factors in Rule 7850.4100, Subdivision H.

7-54

- Figure 7-3, JA-1, Natural Environment / Flora and Fauna – In my opinion and based on Map 6-14 of the Draft EIS, JA-1 should be categorized as moderate. JA-1 extends through native plant communities on the west and east side of the Des Moines River in addition to crossing through two National Heritage Information

7-55

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7-53.

As discussed in Section 7.1.2, the primary indicator used to estimate potential impacts to agricultural lands is the utilization of existing ROW where transmission lines cross agricultural land. Using existing ROW, e.g., existing roads and transmission lines, minimizes impacts to agricultural operations.

Though route variation JA-2 crosses through several fields north of 820th St., it also utilizes the existing 161 kV line for the greatest extent. Because of this utilization of existing transmission line ROW, EERA staff believes that JA-2 is appropriately categorized in Figure 7-3. EERA staff appreciates that there is judgment involved in estimating relative merits and that the figures in Section 7 are limited to three categories of relative merits.

7-54.

See response to comment 7-53. JA-2 is categorized as consistent with the routing factor "Use or Paralleling of Existing ROWs" for its use of transmission line ROW and field lines (see Figure 6-12).

As discussed in the introduction to Section 7, the routing factors H and J in Minnesota Rule 7850.4100 address similar issues, and for purposes of the relative merits figures in Section 7 they are considered as one, with textual comment on the use of field lines and boundaries as appropriate.

7-55.

Figure 7-3 has been modified to address this comment.

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7-55 contiued

7-56

System Rare Natural Features sites (Belmont Bridge Southeast and Belmont 34/35) and through approximately one mile of native plant communities in Sections 33 and 34 of Belmont Township. Due to the extent of these resources in this area, these resources would not be able to be spanned and would require multiple structures within these communities.

- Figure 7-4, FL-5 and FL-6, Land Based Economies / Agriculture – As with FL-1, FL-5 and FL-6 would replace the existing H-frame structures with single pole structures, resulting in reduced agricultural impacts where these existing structures are located. The Final EIS should discuss these reduced impacts and evaluate if the proper motif has been assigned in Chapter 7.

Schedule 29 includes an evaluation of Modified Route A against the routing factors identified in the various Figures included in Chapter 7 of the Draft EIS.

III. CONCLUSION

Q. WHAT IS YOUR ROUTE RECOMMENDATION FOR THE PROJECT?

A. Consistent with my direct testimony, my opinion is that Modified Route A best balances overall impacts on the environment, human settlement, and electrical system reliability. Should Modified Route A not be selected for the Project, I recommend, in order of preference, Route A then Route B

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7-56.

Figure 7-4 has been modified to address this comment.

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(including M15-R and F3-R), over the other routes in the EIS Scoping Decision.

Q. DOES THIS CONCLUDE YOUR PREFILED REBUTTAL TESTIMONY?

A. Yes.

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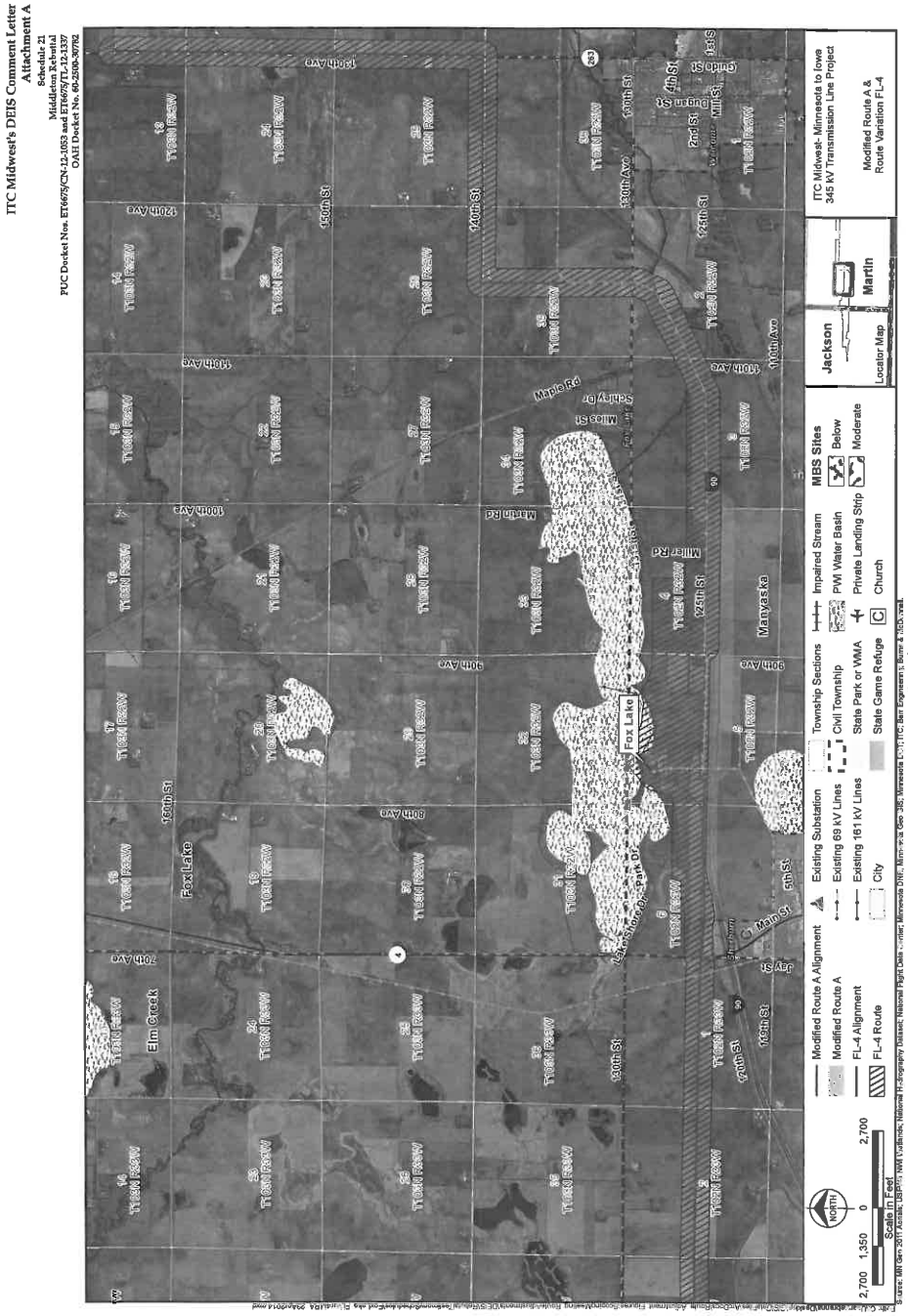
ITC Midwest's DEIS Comment Letter
Attachment A
Schedule 21
Middlewest Project
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30792
Modified Route A &
Route Variation FL-4
Jackson
Martin
Locator Map
Modified Route A Alignment
Modified Route A
FL-4 Alignment
FL-4 Route
Existing Substation
Existing 69 kV Lines
Existing 161 kV Lines
City
Township Sections
Civil Township
State Park or WMA
State Game Refuge
Impaired Stream
PWI Water Basin
Private Landing Strip
Church
MBS Sites
Below
Moderate
North
Scale in Feet
2,700 1,350 0 2,700
Fox Lake
Elm Creek
Maryaska
Page 1 of 1

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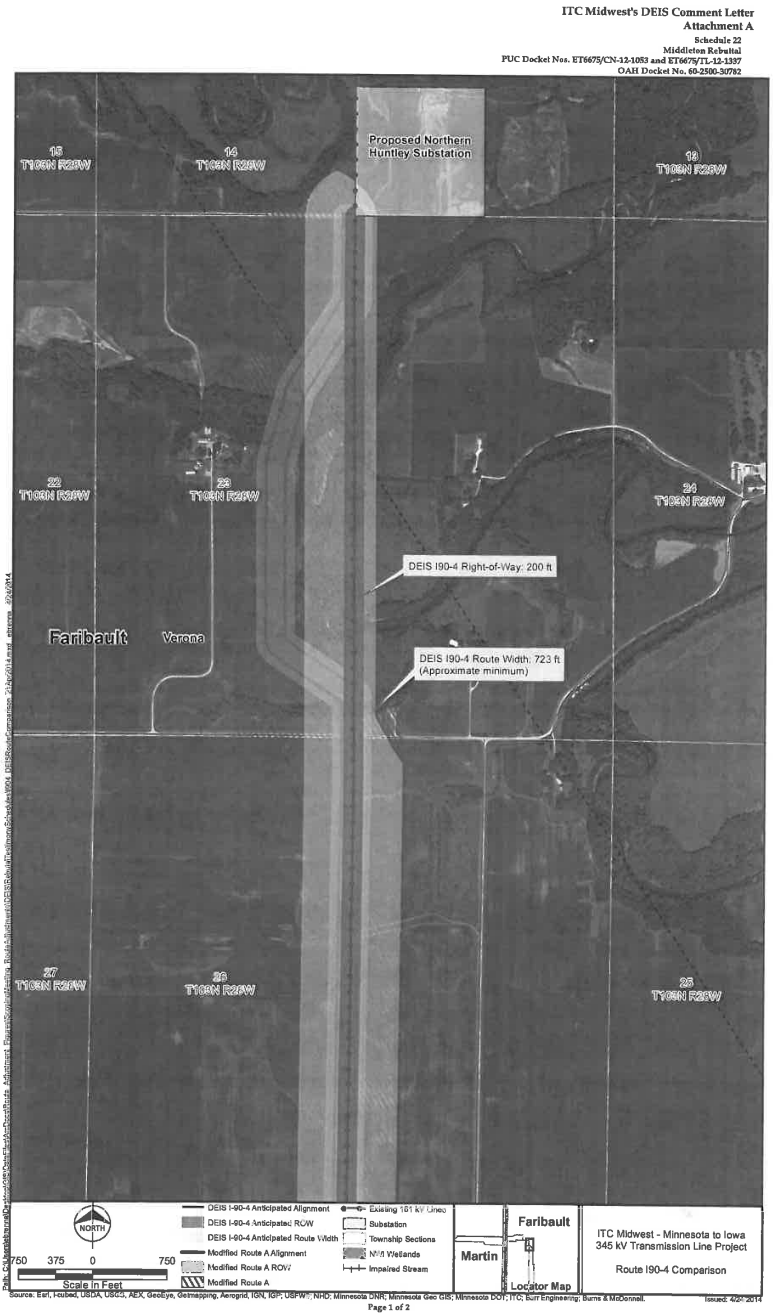
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Schedule 22
Middleton Rebuttal
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782
Proposed Northern Huntley Substation
13 T106N R26W
14 T106N R26W
18 T106N R25W
22 T106N R26W
23 T106N R26W
24 T106N R25W
DEIS I90-4 Right-of-Way: 200 ft
Faribault
Verona
DEIS I90-4 Route Width: 723 ft (Approximate minimum)
27 T106N R26W
26 T106N R26W
25 T106N R25W
NORTH
750 375 0 750
Scale in Feet
DEIS I-90-4 Anticipated Alignment
DEIS I-90-4 Anticipated ROW
DEIS I-90-4 Anticipated Route Width
Modified Route A Alignment
Modified Route A ROW
Modified Route A
Existing 161 kV Lines
Substation
Township Sections
NHD Wetlands
Impaired Stream
Martin
Faribault
Locator Map
ITC Midwest - Minnesota to Iowa 345 kV Transmission Line Project
Route I90-4 Comparison
Source: Esri, Intrado, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, USFWS, NHD, Minnesota DNR, Minnesota Geo GIS, Minnesota DOT, ITC, Burr Engineering, Burns & McDonnell.
Issued: 4/25/2014
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Schedule 22
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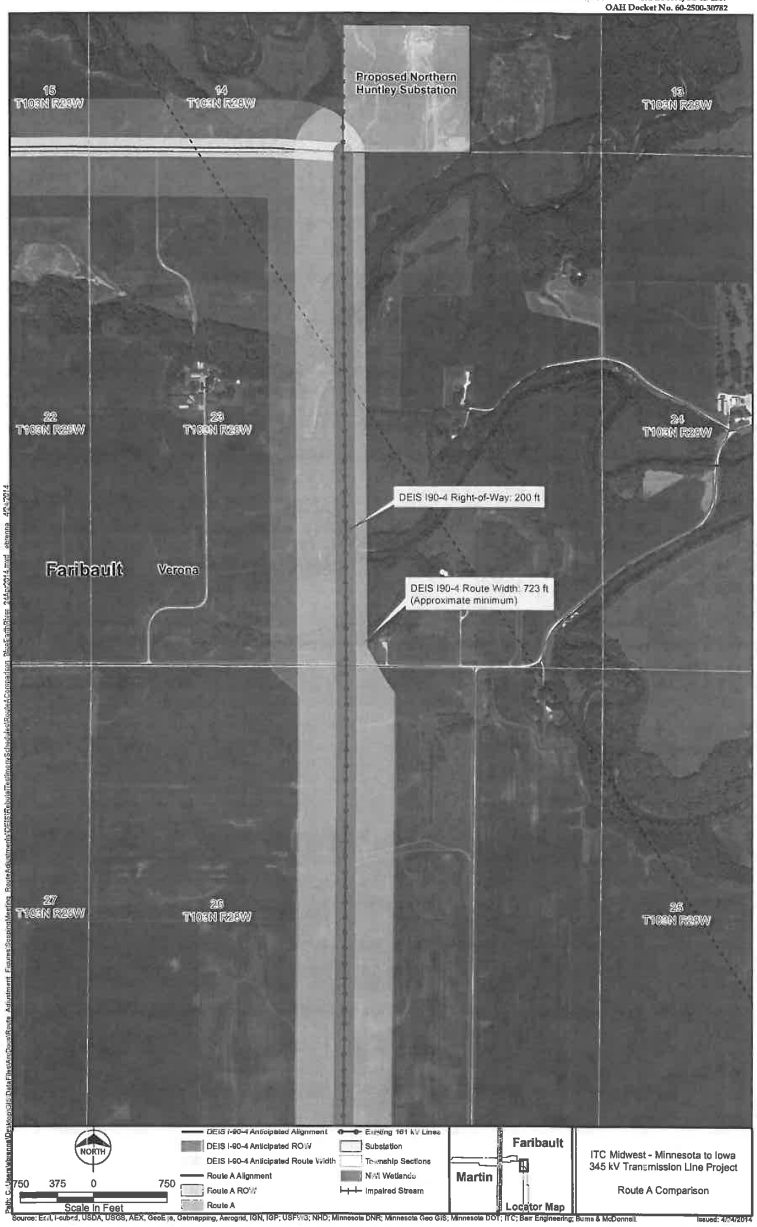
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782



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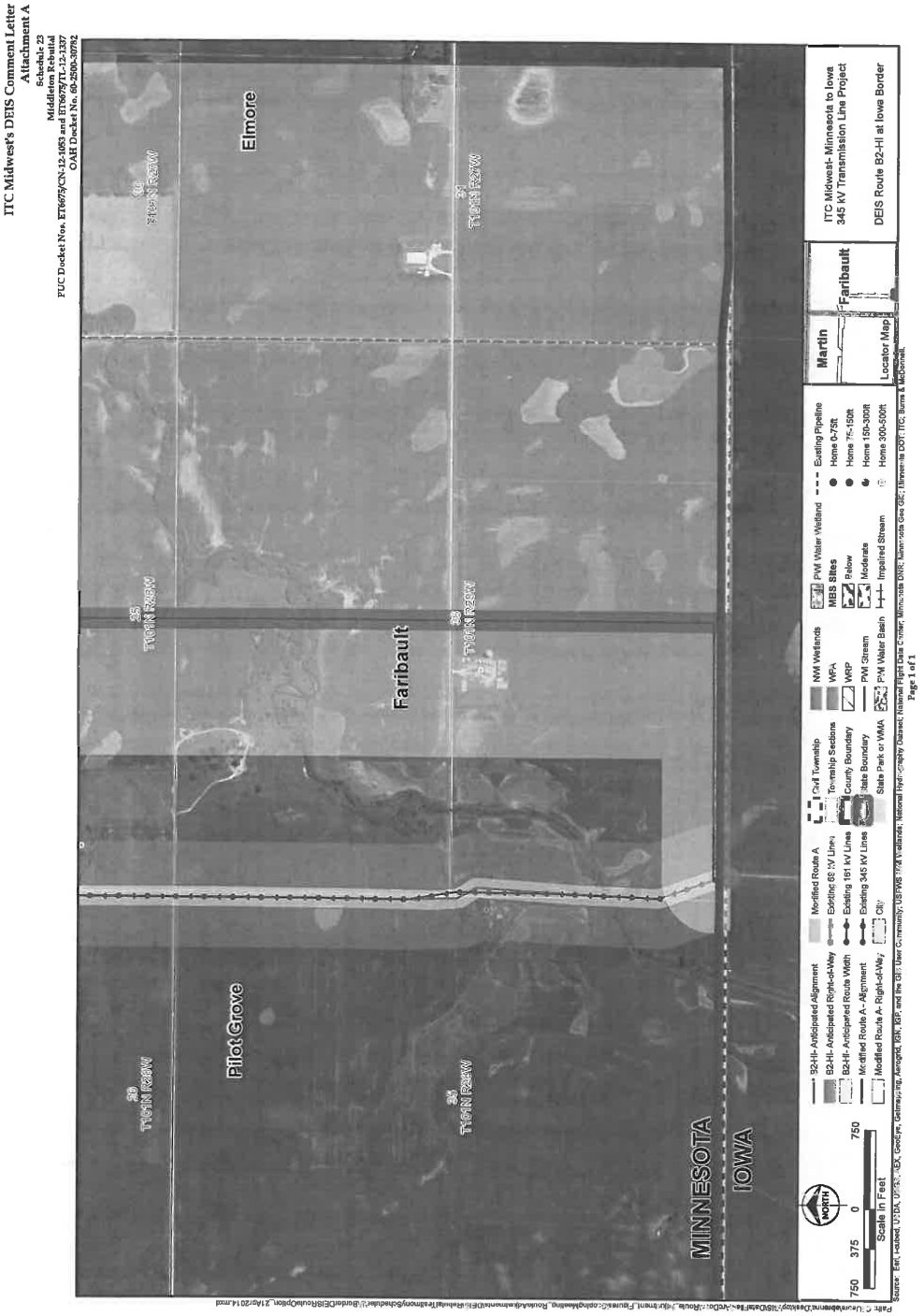
ITC Midwest's DEIS Comment Letter
Attachment A
Schedule 23
Middleton Rebuttal
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782
Elmore
Faribault
Pilot Grove
MINNESOTA
IOWA
Martin
Faribault
Locator Map
ITC Midwest- Minnesota to Iowa
345 kV Transmission Line Project
DEIS Route B2-HI at Iowa Border
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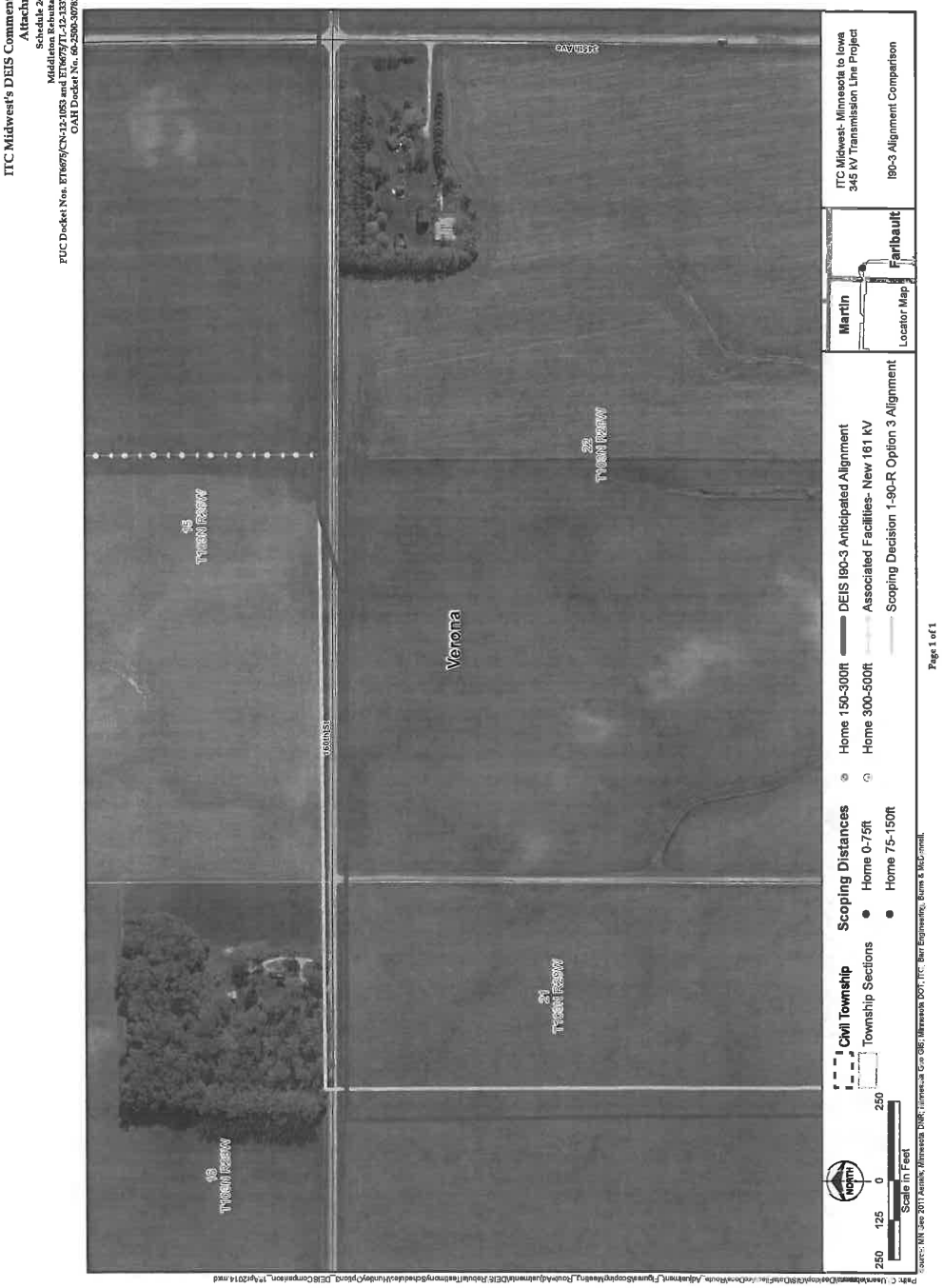
ITC Midwest's DEIS Comment Letter
Attachment A
Schedule 24
Middleton Rebuttal
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782
Verona
Martin
Fairbault
Locator Map
Civil Township
Township Sections
Scoping Distances
Home 0-75ft
Home 75-150ft
Home 150-300ft
Home 300-500ft
DEIS I90-3 Anticipated Alignment
Associated Facilities- New 161 kV
Scoping Decision 1-90-R Option 3 Alignment
NORTH
Scale in Feet
0
125
250
ITC Midwest- Minnesota to Iowa
345 kV Transmission Line Project
I90-3 Alignment Comparison
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Attachment A
Schedule 25
Middleton Rebuttal
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-31782
Verona
Blue Earth City
Jo Daviess
Alternative Southern Hunt ley Substation
Martin
Faribault
Locator Map
ITC Midwest- Minnesota to Iowa
345 kV Transmission Line Project
Alternative Southern Huntley
Substation Route Alternative
I90-5 Option 1
Alternative Southern Huntley Substation
A2-HI Anticipated Alignment
B2-HI Anticipated Alignment
I90-5 Anticipated Alignment
69kV Built to 161kV Standards
Double Circuit 69/161 kV
New 161 kV
DEIS A2-HI Route Width
DEIS B2-HI Route Width
Route Alternative I90-5
Existing 69 kV Lines
Existing 161 kV Lines
Civil Township
Township Sections
State Park or WMA
PWI Stream
Impaired Stream
Associated Facilities Route Widths
Scale in Feet
1,000 500 0 1,000
Page 1 of 2

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Attachment A
Schedule 25
Middleton Rebuttal
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782
Verona
Jo Daviess
Elmo Earth City
Alternative Southern Hunfley Substation
Martin
Fairbault
Locator Map
ITC Midwest- Minnesota to Iowa
345 kV Transmission Line Project
Alternative Southern Hunfley
Substation Route Variation
I90-5 Option 2
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Schedule 26
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PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782

ITC Midwest- Minnesota to Iowa 345 kV Transmission Line Project
Modified Route A Divided Potential Impacts Table

	MRA-LH	MRA-HI
Impacts		
Length (miles)	56.58	15.71
Number of Angles Greater than 30°	22	13
Cropland in Right-of-Way (acres)	1,228.42	338.21
200ft Right-of-Way Percent Cropland	89.6	88.8
Alignment Length (miles)	56.58	15.71
Route Corridor (acres)	6,897.20	1,948.73
Right-of-Way (acres)	1,371.09	380.73
Corridor Sharing		
Corridor Sharing-Roads (miles)	13.05	3.42
Corridor Sharing-Transmission (miles)	41.91	14.26
Corridor Sharing-Railroad (miles)	0	0
Corridor Sharing-Pipeline (miles)	0	0
No Corridor Sharing (miles)	5.74	1.46
Total Corridor Sharing (miles)	50.84	14.26
Total Corridor Sharing (percent)	89.9	90.8
Homes		
Number of Occupied Homes in Route Corridor	14	9
0-75ft from Alignment Centerline	0	0
75-150ft from Alignment Centerline	2	0
150-300ft from Alignment Centerline	4	4
300-500ft from Alignment Centerline	6	7
0-500ft from Alignment Centerline	12	11
Prime Farmland		
Right-of-Way (acres)	1,371.09	380.73
Prime Farmland within the Right-of-Way (acres)	466.31	107.54
Percent of the 200ft Right-of-Way that Crosses Prime Farmland	34.0	28.2
Prime Farmland if Drained within the Right-of-Way (acres)	729.12	154.95
Percent of 200ft Right-of-Way that Crosses Prime Farmland if Drained	53.2	40.7
Farmland of State Importance within the Right-of-Way (acres)	103.35	74.65
Percent of 200ft Right-of-Way that Crosses Farmland of State Importance	7.5	19.6
Prime Farmland if Protected from Flooding within the Right-of-Way (acres)	10.38	13.22
Percent of 200ft Right-of-Way that Crosses Prime Farmland if Protected from Flooding	0.8	3.5
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,309.16	350.35
Percent of 200ft Right-of-Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	95.5	92.0
Gap Land Cover		
Right-of-Way Aquatic Environments (acres)	3.49	0.00
Right-of-Way Cropland (acres)	1,228.42	338.21
Right-of-Way Grassland (acres)	127.85	38.11
Right-of-Way Lowland Deciduous Forest (acres)	3.88	2.24
Right-of-Way Non-Vegetated (acres)	0	0
Right-of-Way Shrubland (acres)	0	0
Right-of-Way Upland Conifer Forest (acres)	0	0
Right-of-Way Upland Deciduous Forest (acres)	7.46	1.91
200ft Right-of-Way Percent of Aquatic Environments	0.3	0.0
200ft Right-of-Way Percent of Cropland	89.6	88.8
200ft Right-of-Way Percent of Grassland	9.3	10.0
200ft Right-of-Way Percent of Lowland Deciduous Forest	0.3	0.6
200ft Right-of-Way Percent of Non-Vegetated	0	0
200ft Right-of-Way Percent of Shrubland	0	0
200ft Right-of-Way Percent of Upland Conifer Forest	0	0
200ft Right-of-Way Percent of Upland Deciduous Forest	0.5	0.5
Wetlands		
Right-of-Way (Acres)	1,371.09	380.73
Total Wetlands within the Right-of-Way (acres)	10.89	1.38
Number of Wetlands Crossed by Route Corridor	48	10
Percent of the 200ft Right-of-Way that Crosses Wetlands	0.8	0.4
Forested Wetlands in Right-of-Way (acres)	0.35	0.93
Number of Forested Wetlands Crossed by Route Corridor	7	5
Percent of the 200ft Right-of-Way that Crosses Forested Wetlands	0.0	0.2
PWI and Shallow Lakes		
Number of Stream and River Crossings by Route Alignment	36	16
Number of PWI Stream Crossings by Route Alignment	19	12
Number of PWI Lakes within Route Corridor	1	0
Number of PWI Wetlands within Route Corridor	1	0
Number of PWI Lakes within 200ft Right-of-Way	1	0
Number of PWI Wetlands within 200ft Right-of-Way	0	0
Number of PWI over 300ft Crossed by Route Alignment	0	0
Length (ft) of PWI over 300ft that are Crossed by the Alignment	0	0
Number of Shallow Lakes within Route Corridor	1	0
Number of Shallow Lakes within 1 mile of Route Corridor	6	0

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OAH Docket No. 60-2500-30782

ITC Midwest- Minnesota to Iowa 345 kV Transmission Line Project
Modified Route A Divided Potential Impacts Table

Environmental		
Right-of-Way (Acres)	1,371.09	380.73
Number of MCBS Biodiversity Sites Crossed by Route Corridor	5	1
Number of Metro Significant Resources Areas Crossed by Route Corridor	0	0
Number of WMAs in Route Corridor	0	0
Number of WMAs within 1 mile of Route Corridor	6	0
Number of WMAs within 200ft Right-of-Way	0	0
Number of WMA over 900ft that are Crossed by Right-of-Way	0	0
Lengths (ft) of WMA over 900ft that are Crossed by Right-of-Way	0.00	0.00
Number of SNA within 1 mile of Route Corridor	0	0
Number of WPA within 1 mile of Route Corridor	1	1
Number of State Parks within 1 mile of Route Corridor	0	0
Number of USFWS Lands WRP Easements within 1 mile of Route Corridor	1	0
Number of T & E Species within Route Corridor	1	0
Number of T&E Species within 1 mile of Route Corridor	21	0
Number of Archaeological Sites within 1 mile of Route Corridor	48	21
Number of Historical Sites within 1 mile of Route Corridor	13	5
Number of Alignment Snowmobile Trail Crossings	5	2

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Attachment A
Schedule 27
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PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782

Draft EIS Chapter 6.0 Analysis with Modified Route A Included

Figure 1 - Proximity of Homes-Lakefield to Huntley
(Figure 6-1 of Draft EIS)

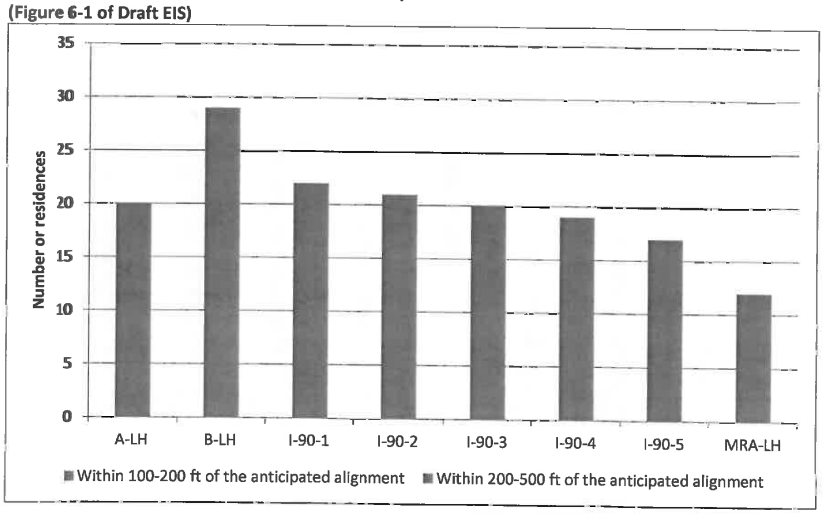
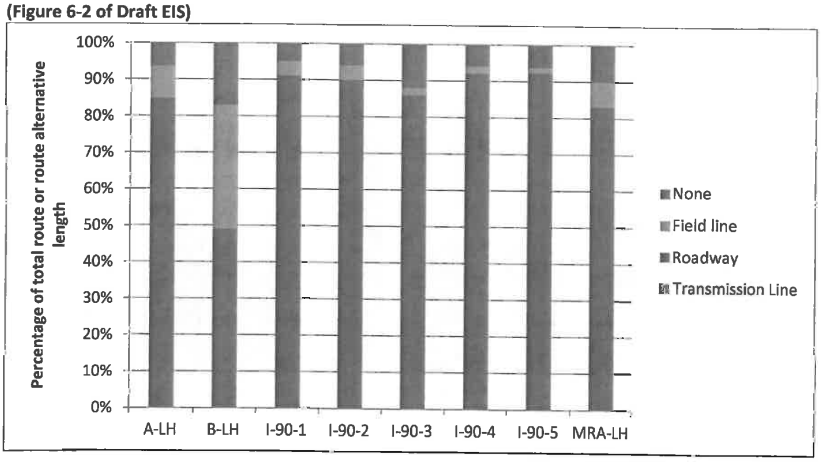


Figure 2 - ROW Sharing-Lakefield to Huntley
(Figure 6-2 of Draft EIS)



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OAH Docket No. 60-2500-30782

Figure 3 - Farmland Classification-Lakefield to Huntley
(Figure 6-3 of Draft EIS)

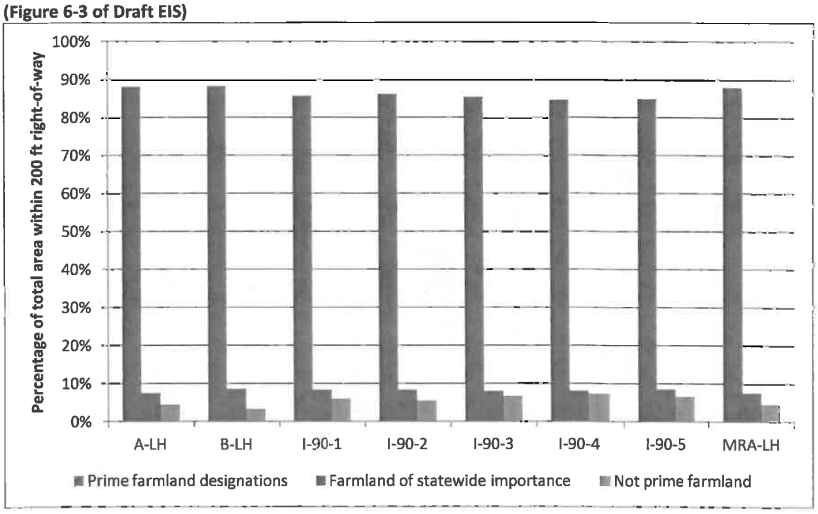

Figure 4 - Watercourse Crossings-Lakefield to Huntley
(Figure 6-5 of Draft EIS)

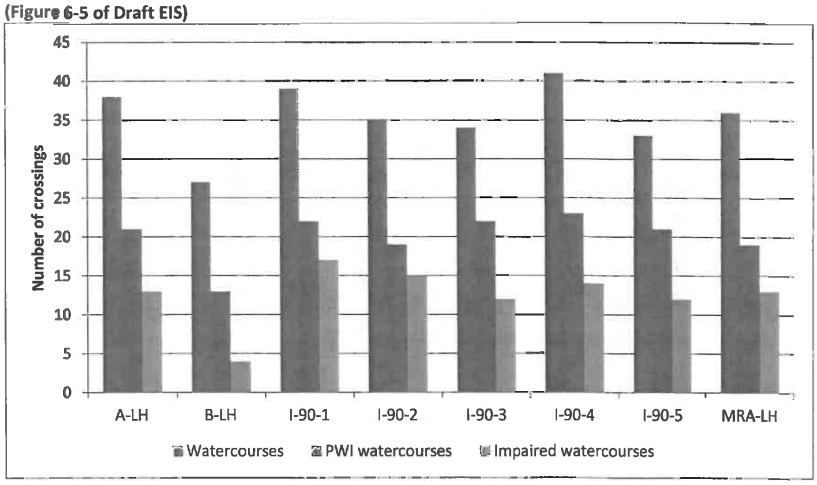

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Figure 5 - Wetlands within ROW-Lakefield to Huntley
(Figure 6-7 of Draft EIS)

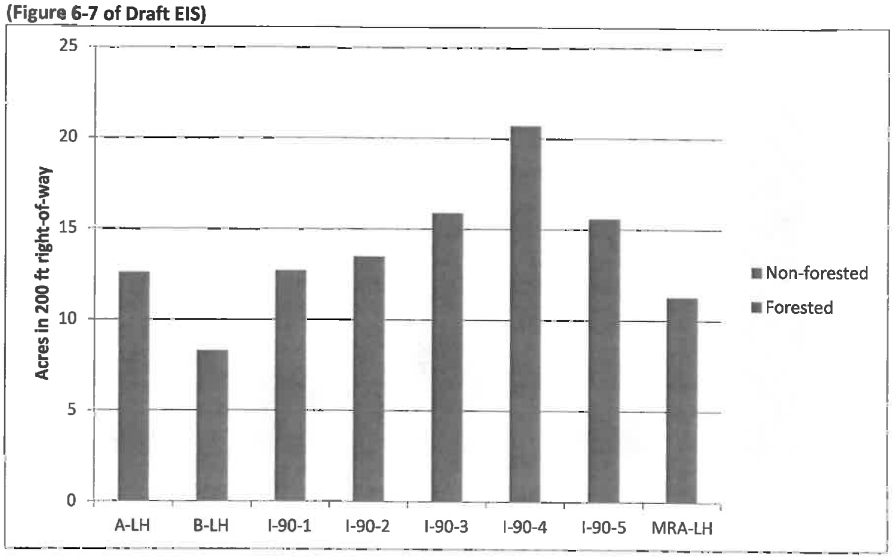

Figure 6 - Rare Plant Communities-Lakefield to Huntley
(Figure 6-9 of Draft EIS

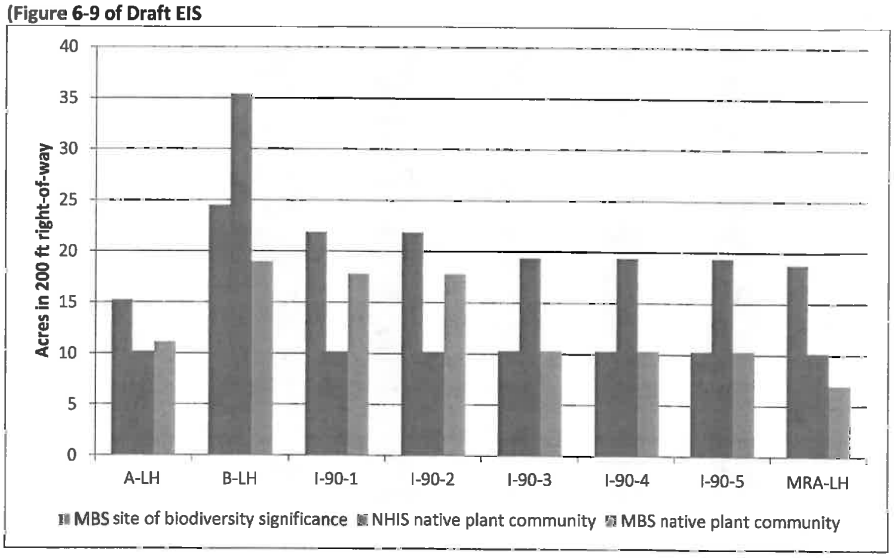

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Figure 7 - Proximity of Homes-Jackson Municipal Airport
(Figure 6-11 of Draft EIS)

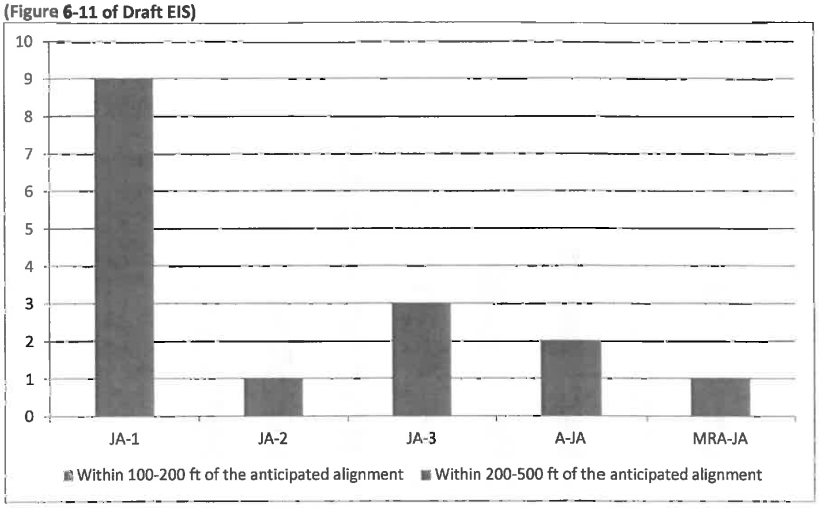

Figure 8 - ROW Sharing-Jackson Municipal Airport
(Figure 6-12 of Draft EIS)

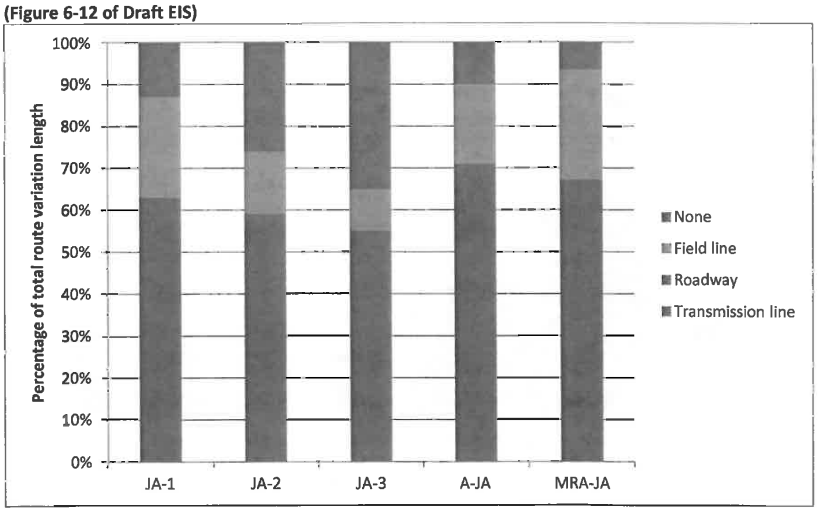

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Figure 9 - Farmland Classifications-Jackson Municipal Airport
(Figure 6-13 of Draft EIS)

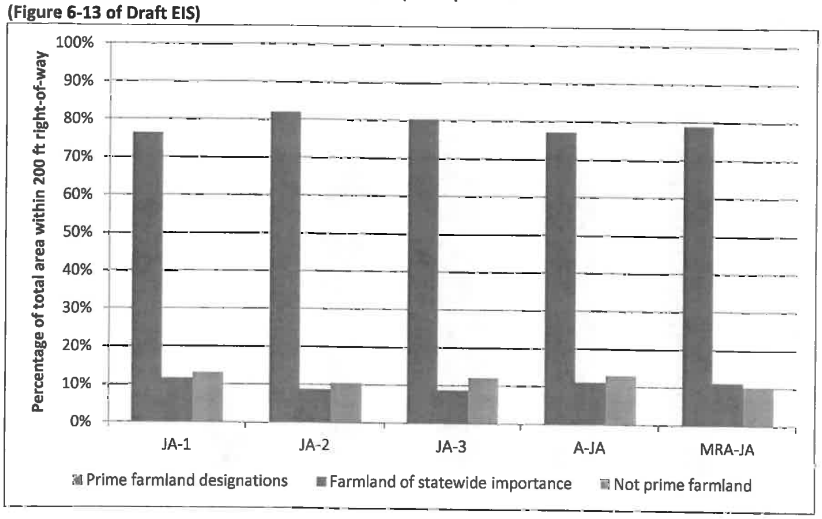

Figure 10 - Watercourse Crossings-Jackson Municipal Airport
(Figure 6-14 of Draft EIS)

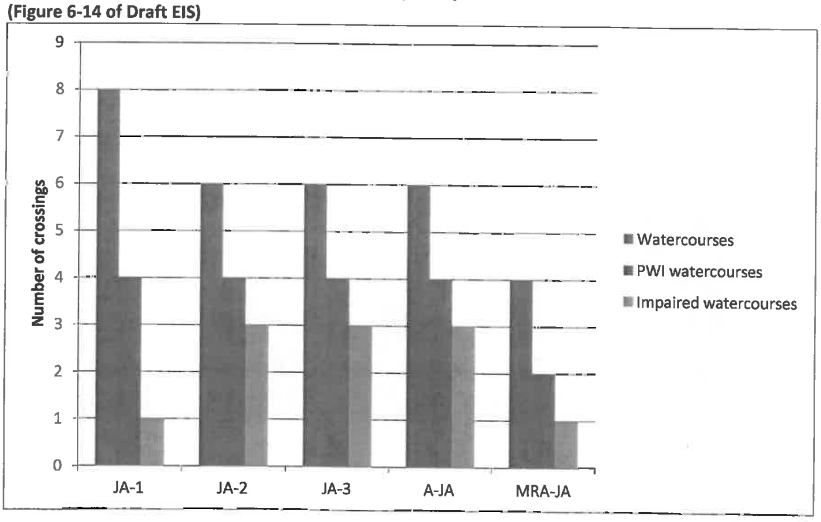

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Figure 11 - Wetlands within ROW-Jackson Municipal Airport
(Figure 6-15 of Draft EIS)

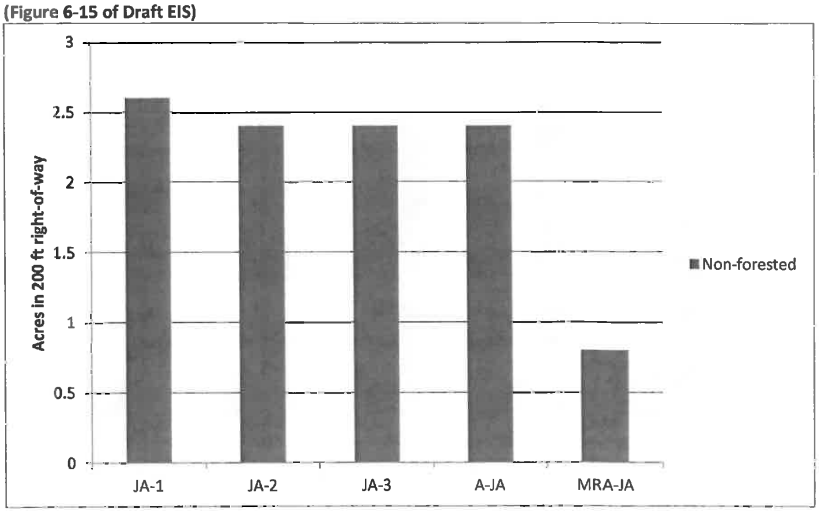

Figure 12 - Rare Plant Communities-Jackson Municipal Airport
(Figure 6-16 of Draft EIS)

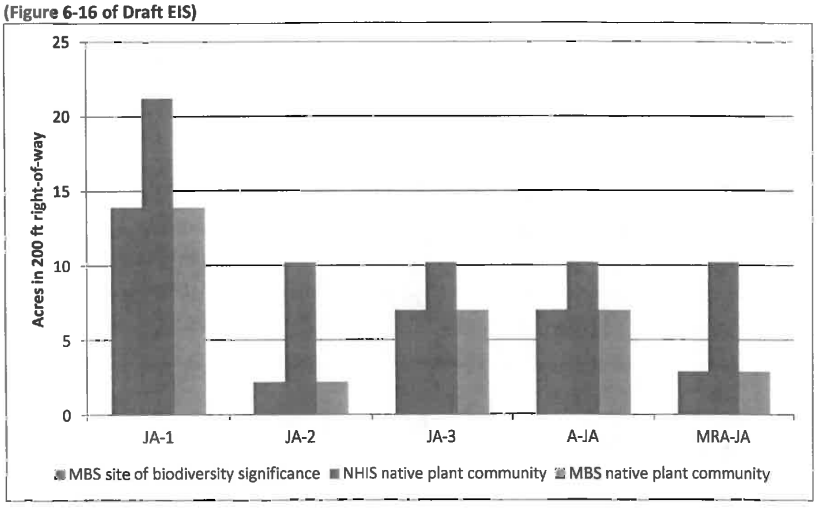

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Figure 13 - Proximity of Homes-Fox Lake
(Figure 6-17 of Draft EIS)

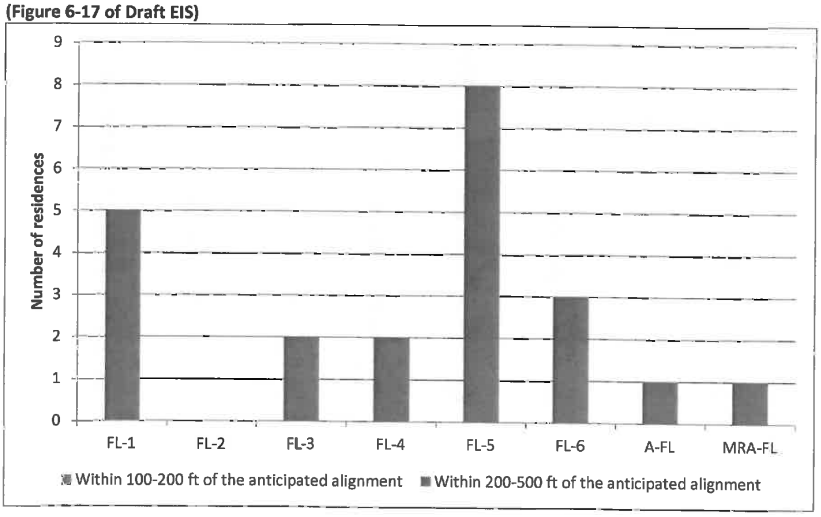

Figure 14 - ROW Sharing-Fox Lake
(Figure 6-18 of Draft EIS)

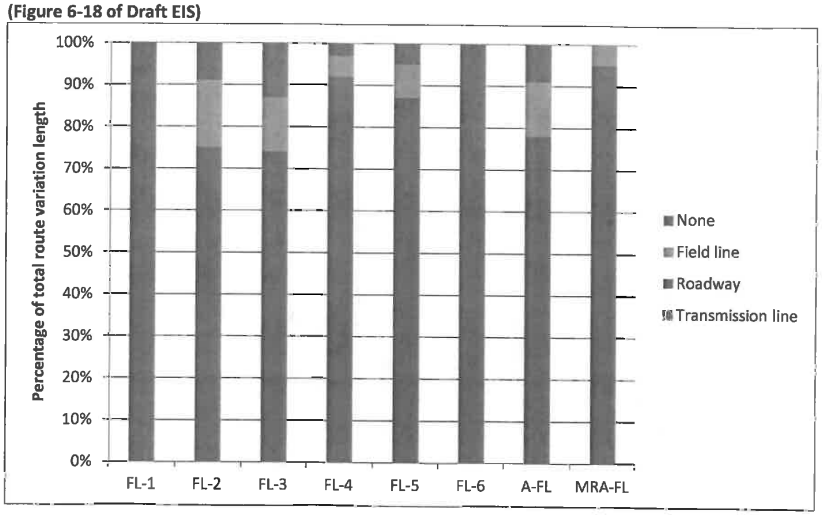

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Figure 15 - Farmland Classification-Fox Lake
(Figure 6-19 of Draft EIS)

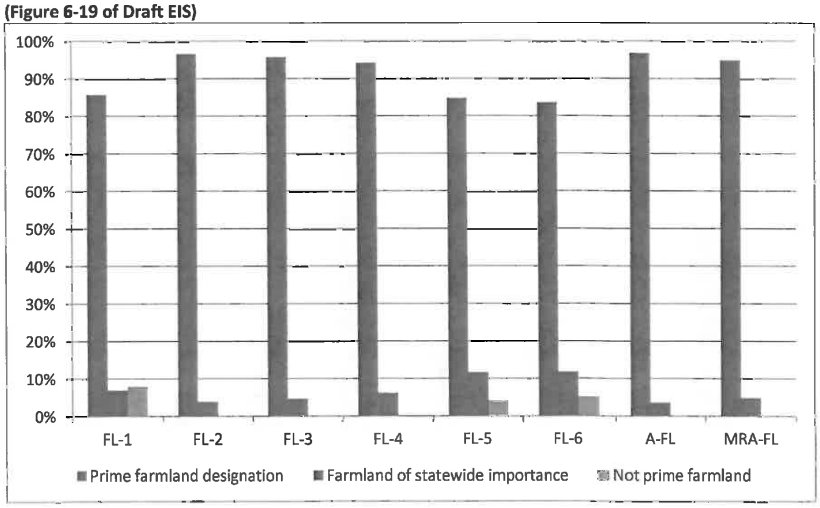

Figure 16 - Watercourse Crossings-Fox Lake
(Figure 6-20 of Draft EIS)

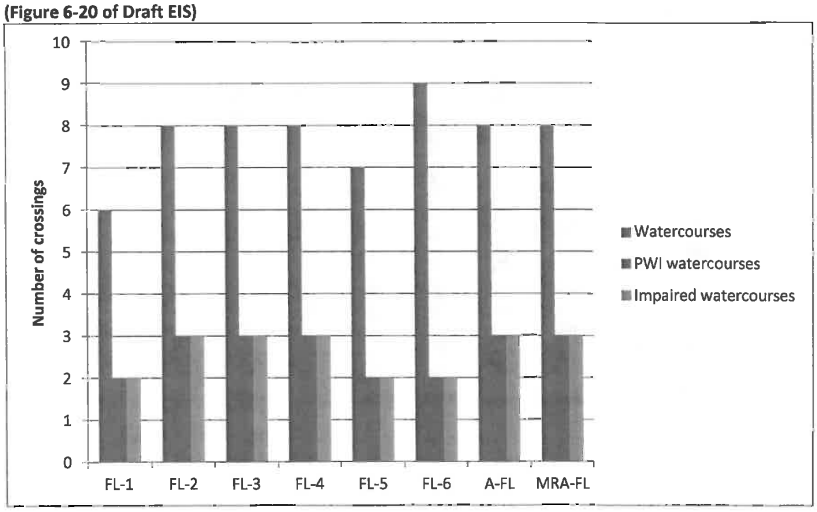

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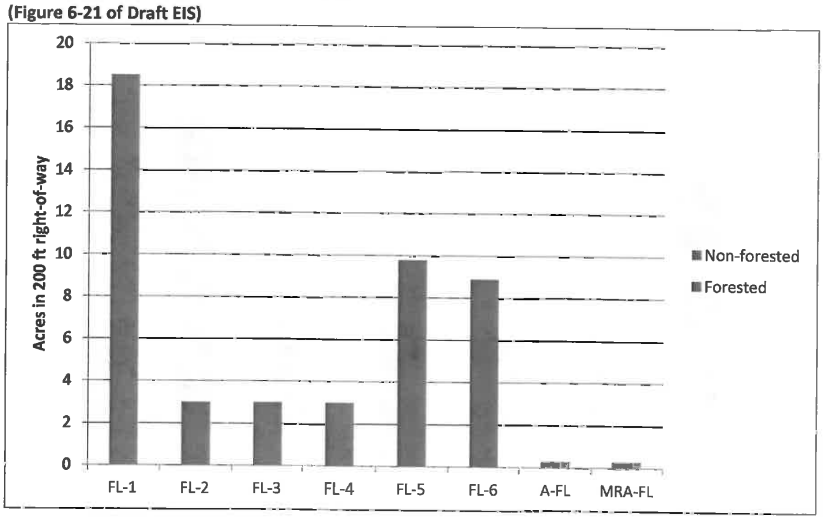
Figure 17 - Wetlands within ROW- Fox Lake*
(Figure 6-21 of Draft EIS)



*FL-1 includes the entire Fox Lake within a 200-foot ROW as a non-forested wetland

Figure 18 - Rare Plant Communities- Fox Lake
(Figure 6-22 of Draft EIS)

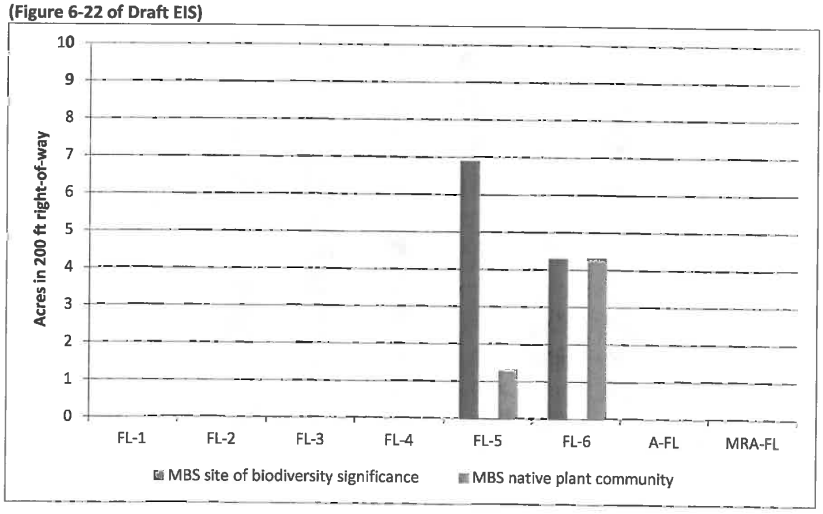


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Figure 19 - Proximity of Homes- Lake Charlotte
(Figure 6-23 of Draft EIS)

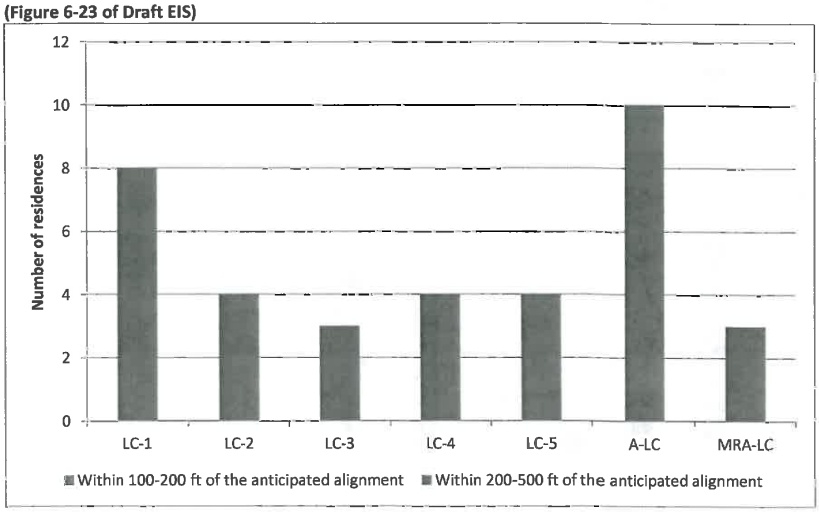

Figure 20 - ROW Sharing- Lake Charlotte
(Figure 6-24 of Draft EIS)

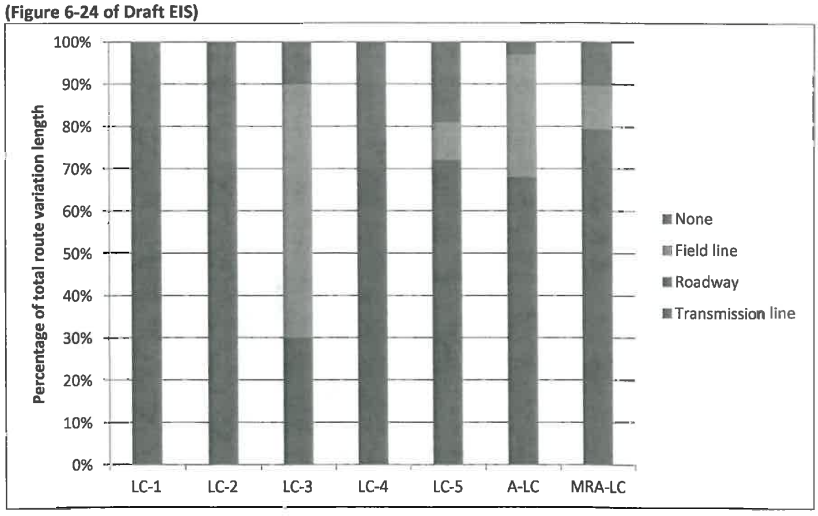

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Figure 21 - Farmland Classifications- Lake Charlotte
(Figure 6-25 of Draft EIS)

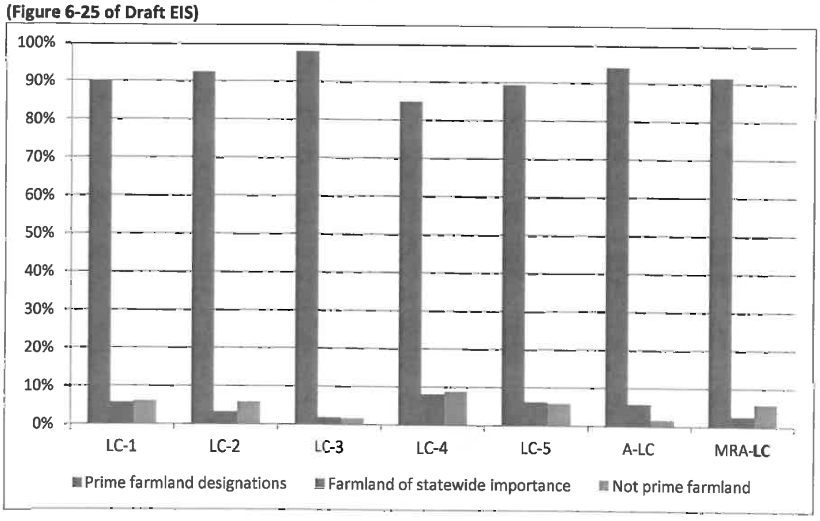

Figure 22 - Watercourse Crossings- Lake Charlotte
(Figure 6-26 of Draft EIS)

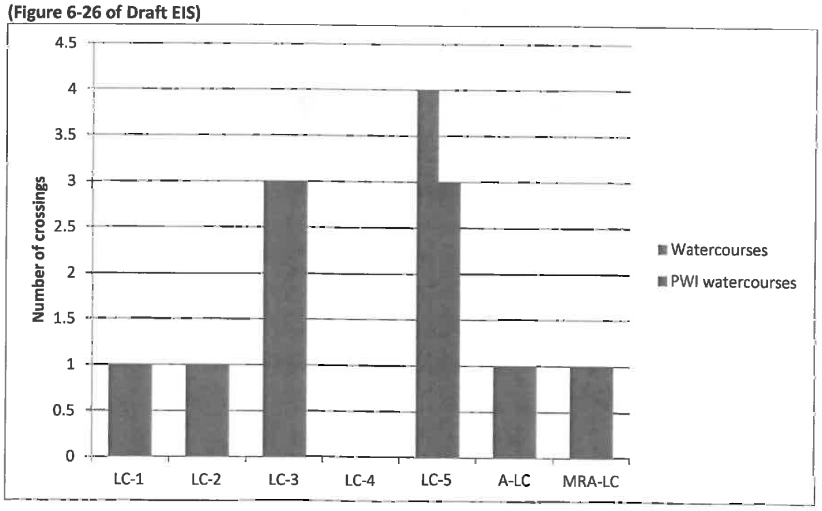

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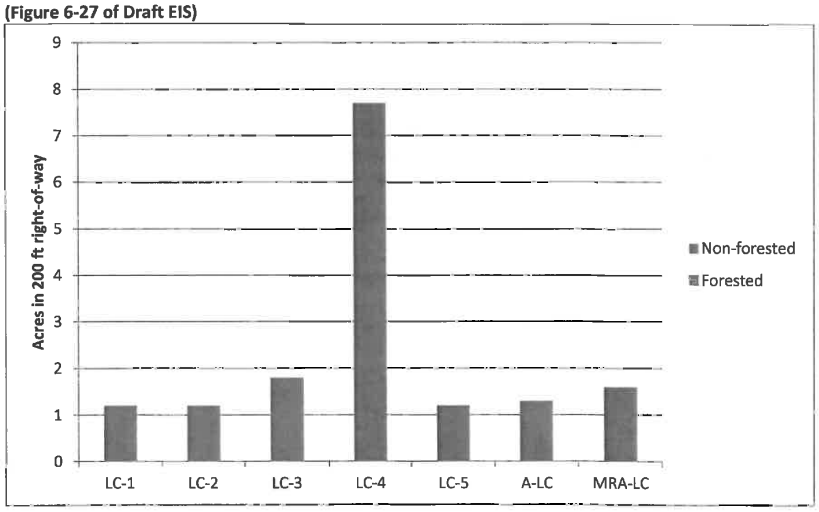
Figure 23 - Wetlands within ROW- Lake Charlotte*
(Figure 6-27 of Draft EIS)



*FL-1 includes the entire Fox Lake within a 200-foot ROW as a non-forested wetland

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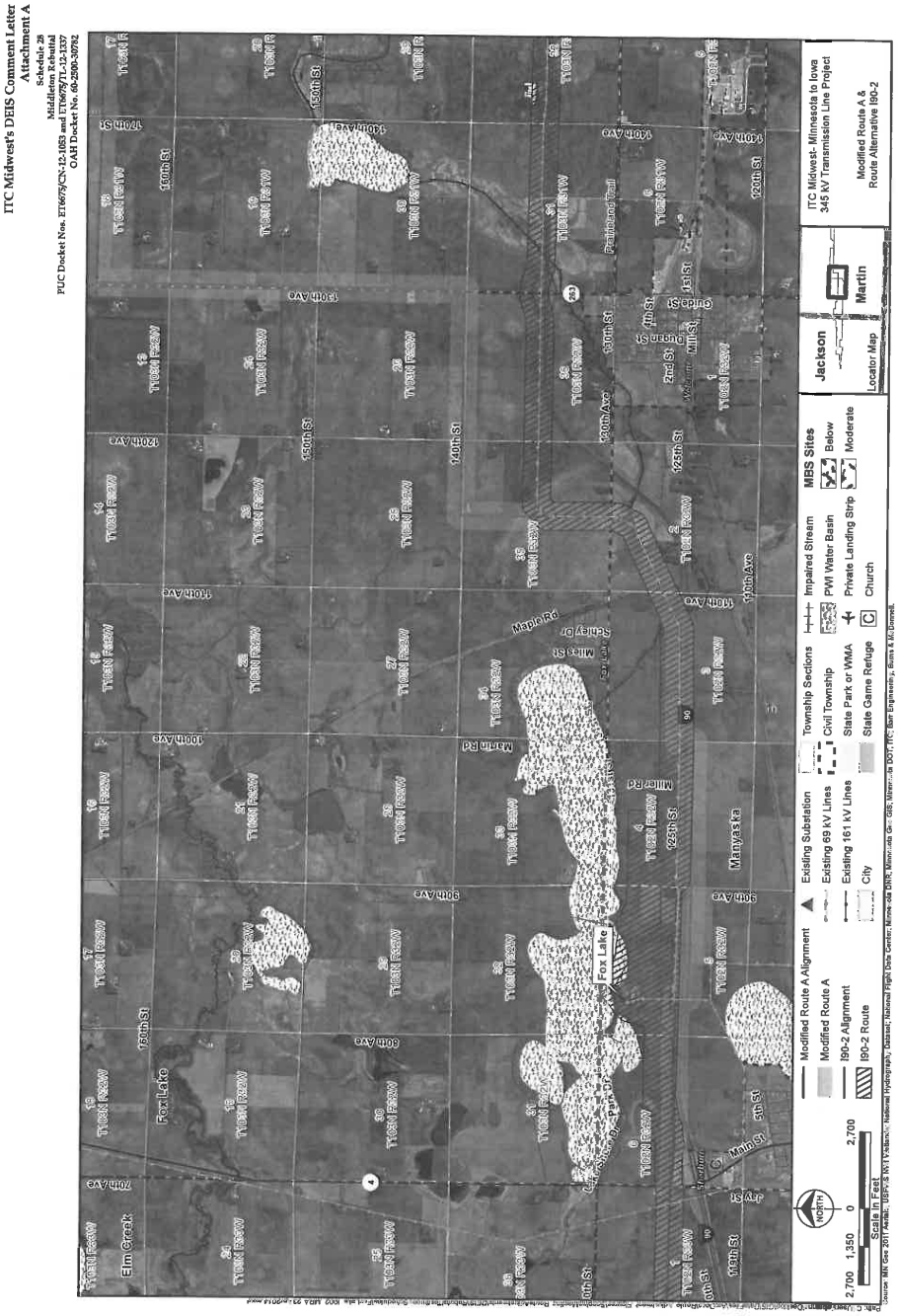
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ITC Midwest- Minnesota to Iowa
345 kV Transmission Line Project
Modified Route A &
Route Alternative 190-2
Jackson
Martin
Locator Map
MBS Sites
Below
Moderate
Impaired Stream
PWI Water Basin
Private Landing Strip
Church
Township Sections
Civil Township
State Park or WMA
State Game Refuge
Existing Substation
Existing 69 kV Lines
Existing 161 kV Lines
City
Modified Route A Alignment
Modified Route A
190-2 Alignment
190-2 Route
Scale in Feet
2,700 1,350 0 2,700
NORTH
Fox Lake
Elm Creek
Manyaska
Maple Rd
Main St
Page 1 of 1

Figure 7-2 Relative Merits of Route Alternatives and Associated Facilities - Lakefield to Huntley

Routing Factor/ Element	A-LH	B-LH	I90-1	I90-2	I90-3	I90-4	I90-5 Option 1	I90-5 Option 2	DEIS Summary	MRA-LH Summary
Human Settlements / Aesthetics	●	■	●	●	▲	●	▲	●	A-LH and I90-2 best utilize existing transmission line ROW. B-LH is near more homes and poorly utilizes existing ROW.	MRA-LH makes use of a comparable amount of total corridor sharing with I90-1 and I90-2. The alternatives along I-90 would have greater corridor sharing with roads than MRA-LH. MRA-LH would impact the fewest residences within 500 feet of the alignment by at least five homes when compared to I90-1 and I90-2. I90-1 and I90-2 would introduce a new transmission corridor along State Highway 15 and portions of I-90 and expand the ROW along I-90 to 200 feet in areas with an existing 161 kV line, such as west of Sherburn. MRA-LH would introduce a new transmission corridor along the south side of I-90 and in Sections 3, 4, and 5 of Fox Lake Township. MRA-LH would rebuild approximately 5.6 miles of 161 kV line to 345 kV/161 kV on double-circuit structures between Fox Lake and Lake Charlotte. MRA-LH would also co-locate approximately four miles of existing 69 kV transmission line on 345 kV/161 kV/69 kV triple-circuit structures, with 2.1 miles along the existing 69 kV centerline. I90-1 and I90-2 would rebuild approximately 13 miles of 69 kV line to 345 kV/161 kV/69 kV on triple-circuit structures between Fox Lake and Lake Charlotte.
Human Settlements / Private Airstrips	■	●	●	●	●	●	●	●	A-LH impacts two private airstrips in Martin County	In comparison to A-LH, MRA-LH does not impact any private airstrips within a half mile of the alignment. There would be no measurable difference between the DEIS route alternatives and MRA-LH with respect to private airstrips.
Land-Based Economies / Agriculture	●	■	▲	●	▲	▲	▲	▲	A-LH uses existing transmission line ROW, which minimizes agricultural impacts. Using I-90 does not mitigate agricultural impacts as well as using transmission line ROW. B-LH proceeds cross country, primarily along roadways and field lines.	MRA-LH would cross fewer new agricultural lands along I-90 compared to the I-90 alternatives, particularly I90-1, I90-3, I90-4, and I90-5, which use a smaller portion of the Route A/existing 161 kV corridor compared to I90-2. One possible configuration for I90-1 and I90-2 would remove approximately 345.9 acres of existing transmission line through agricultural land as a result of removing both lake crossings at Fox Lake and Lake Charlotte. It is unlikely that I90-1, I90-2, I90-3, I90-4, and I90-5 would be able to be constructed along the same centerline as the existing 69 kV transmission line between Fox Lake and Fairmont, MN because of the existing 69 kV transmission line proximity to the MnDOT ROW.
Archaeological and Historic Resources	▲	●	▲	▲	●	▲	●	●	A-LH, I90-1, I90-2 and I90-4 contain known archaeological resources in their ROWs.	As with A-LH, I90-1, I90-2, and I90-4, the route width for MRA-LH contains known archaeological resources in its ROW.

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Routing Factor/ Element	A-LH	B-LH	I90-1	I90-2	I90-3	I90-4	I90-5 Option 1	I90-5 Option 2	DEIS Summary	MRA-LH Summary
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	▲	▲	All routing options have the potential to~~would~~ impact avian species through collisions with conductors. Impacts could be mitigated by the use of bird flight diverters near lakes and watercourses.	MRA-LH is not proposed to remove the existing 161 kV crossings at Fox Lake and Lake Charlotte. MRA-LH is, however, proposed to be constructed on 345 kV/161 kV double-circuit and 345 kV/161 kV/69 kV triple-circuit structures, where applicable, to allow relocation of the 161 kV line from the lakes to the new structures if warranted. MRA-LH is proposed to reduce the footprint of the transmission line across the Des Moines River and remove the existing 161 kV line from the Blue Earth River corridor south of the Proposed Northern Huntley Substation , resulting in a reduced potential impact to species that utilize these habitats
Use or Paralleling of Existing ROWs	●	■	●	●	▲	●	▲	●	Route B-LH makes the least use of existing ROW. I90-3 and I90-5 have associated facilities that use existing ROW only in part.	MRA-LH makes use of existing ROWs similar to A-LH. The associated facilities for MRA would follow existing transmission ROWs, although it would be expanded from its current width to a maximum of 250 feet. Associated facilities for I90-5 Option 1 would introduce new transmission ROW through Prescott, Verona, Jo Davies, and Blue Earth townships. Associated facilities for I90-5 Option 2 would result in one new transmission ROW through Blue Earth and Jo Davies townships.
Electrical Systems Reliability	●	●	●	●	●	■	●	■	I90-4 and I90-5 Option 2 negatively impact electrical systems reliability.	MRA-LH would not negatively impact electrical systems reliability.

Figure 7-3 Relative Merits of Route Variations - Jackson Municipal Airport

Routing Factor/ Element	JA-1	JA-2	JA-3	A-JA	Summary	DEIS Issues	MRA-JA Summary
Human Settlements / Aesthetics	■	●	▲	▲	JA-2 is near fewer homes and better utilizes existing transmission line ROW. JA-1 is near the most number of homes, is relatively longer, and would create two transmission line ROWs.	JA-2 crosses through the center of several fields to the north of 820th Street and uses a limited amount of existing transmission line ROW.	MRA-JA would be the shortest variation north of Jackson Municipal Airport (7.6 miles). MRA-JA would use additional span length and pole placement to reduce the presence of transmission line in the southeast corner of Section 3 of Des Moines Township. MRA-JA would increase proximity of the line to a residential well and hog confinement buildings along 820th Street when compared to A-JA.
Land-Based Economies / Agriculture	▲	●	▲	▲	JA-2 best utilizes existing transmission line ROW. A-JA utilizes roadway ROW but impacts a well and associated animal housing units.		MRA-JA addresses concerns with A-JA regarding the well and housing units. MRA-JA would result in a slight increase in new ROW across agricultural land in Sections 1 and 2 of Des Moines Township to avoid proximity concerns with the Jackson Municipal Airport. MRA-JA has the second smallest acreage of cropland in the right-of-way, behind JA-1.
Natural Environment / Fauna	▲	●	▲	▲	JA-2 is furthest from flora and fauna along the Des Moines River.		MRA-JA responds to MnDNR comments regarding reducing the transmission line footprint though the Des Moines River corridor and accommodating a perpendicular crossing of the Des Moines River.
Use or Paralleling of Existing ROWs	●	●	▲	●	A-JA best utilizes existing ROWs. JA-1 utilizes roadway ROW.		Similar to A-JA, MRA-JA utilizes the existing 161 kV transmission ROW and the roadway ROW along 820th Street while addressing landowner concerns along this road. MRA-JA maximizes the use of existing ROWs by using these ROWs approximately 67% of its length.

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Figure 7-4 Relative Merits of Route Variations - Fox Lake

Routing Factor / Element	FL-1	FL-2	FL-3	FL-4	FL-5	FL-6	A-FL	Summary	MRA-FL Summary
Human Settlements / Aesthetics	●	●	▲	▲	▲	●	▲	FL-2 and A-FL are near relatively fewer homes, but both introduce a new transmission line ROW. FL-1 and FL-6 best utilize existing transmission line and roadway ROW.	With the exception of FL-2, MRA-FL would have the lowest number of residences within the route corridor (one residence) when compared to the other Route Variations. FL-3 and FL-4 would place a new transmission line on three sides of the residence in Section 5 of Fox Lake Township. Both MRA-FL, A-FL, and FL-2 would avoid this residence by placing the new 345 kV transmission line on the south side of I-90. In addition, MRA-FL would remove the existing 69 kV line for a portion of the north side of I-90 and relocate it to the south side, eliminating the presence of the existing transmission line near the residence in Section 5 of Fox Lake Township.
Human Settlements / Private Airstrips	●	■	■	●	●	●	■	FL-2, FL-3 and A-FL impact a private airstrip in Fox Lake Township.	MRA-FL would relocate the transmission line from Section 23 in Fox Lake Township to the east along 130th Avenue.
Land-Based Economies / Agriculture	●	▲	▲	▲	▲	●	▲	FL-1 and FL-6 best utilize existing ROW, thus minimizing agricultural impacts. Along FL-1, H-frame structures would be replaced with single pole structures.	In order to avoid residential proximity and MnDOT ROW issues to the north, MRA-FL would place a new transmission ROW through agricultural land on the south side of I-90. To provide access to the outside edge of the fields with large equipment, MRA-FL is proposed to be located 100 feet from the MnDOT ROW. East of Fox Lake, MRA-FL would be located primarily along existing transmission and roadway ROW, limiting potential impacts to agricultural activities
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	▲	Avian impacts could be mitigated for all routing options by the use of bird flight diverters. FL-1 would require specialty structures for crossing Fox Lake; the design of these structures could minimize avian impacts.	MRA-FL would avoid the Four Corners and Fox Lake WMAs and, along with FL-2, would represent the alternative farthest from avian habitat associated with the surrounding WMAs and Fox Lake State Game Refuge, resulting in a decreased likelihood of collision issues for avian species that utilize these habitats.
Use or Paralleling of Existing ROWs	●	▲	▲	▲	▲	●	▲	FL-1 and FL-6 utilize existing transmission line and roadway ROW for their entire lengths.	MRA-FL would result in a new transmission corridor on the south side of I-90, but would utilize existing transmission and roadway ROW east of Fox Lake. MRA-FL would also co-locate the existing 69 kV line currently on the north side of I-90 to the south side with the 345 kV line on 345 kV/161 kV/69 kV triple-circuit structure, creating one transmission ROW.345/161/69 kV line.

Figure 7-5 Relative Merits of Route Variations - Lake Charlotte

Routing Factor / Element	LC-1	LC-2	LC-3	LC-4	LC-5	A-LC	Summary	MRA-LC Summary
Human Settlements / Aesthetics	●	▲	●	●	▲	▲	LC-3 is near relatively fewer homes. LC-1 and LC-4 best utilize existing transmission line and roadway ROW.	As with LC-3, MRA-LC has the fewest residences within the route width (3) compared to the other Lake Charlotte Route Variations. MRA-LC would make use of existing transmission and roadway ROWs along 160th Street and would co-locate the existing Great River Energy 69 kV line that parallels 160th Street in Sections 19 and 20 of Rutland Township on 345 kV/161 kV/69 kV triple-circuit structures.
Human Settlements / Private Airstrips	▲	▲	●	▲	●	▲	LC-1, LC-2, LC-4 and A-LC may impact an airstrip in Rutland Township.	As with LC-5 and LC-3, MRA-LC would avoid proximity concerns with the airstrip in Section 18 Rutland Township.
Land-Based Economies / Agriculture	●	▲	▲	●	▲	▲	LC-1 and LC-4 best utilize existing ROW, thus minimizing agricultural impacts. Along LC-4, H-frame structures would be replaced with single pole structures.	MRA-LC would extend through Section 13 of Fraser Township using field lines and extend eastward making use of roadway ROW along 160th Street for a majority of its length, limiting agricultural impacts compared to those alternatives such as A-LC and LC-3 that would create a new transmission ROW across agricultural land.
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	Avian impacts could be mitigated for all routing options by the use of bird flight diverters. LC-4 would require specialty structures for crossing Lake Charlotte; the design of these structures could minimize avian impacts.	MRA-LC would likely reduce potential for avian interference compared with LC-4 which crosses the lake. MRA-LC would make use of an existing transmission ROW at the southern edge of Lake Charlotte. MRA-LC would increase the height of structures from the existing 69 kV structures. This may result in potential for additional collision concerns with avian species; this would be minimized through the use of bird diverters along this portion of the line.
Use or Paralleling of Existing ROWs	●	▲	■	●	▲	▲	LC-1 and LC-4 best utilize existing transmission line and roadway ROW. LC-3 shares less than 30 percent of its length with transmission line and roadway ROW.	As with LC-5, MRA-LC would follow existing transmission and roadway ROWs along 160th Street and the existing Great River Energy 69 kV line that parallels 160th Street. A small portion would follow a field line between 160th Street and the existing 161 kV transmission line near State Highway 15.

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

December 6, 2013

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337

Dear Mr. Kirsch:

I write in response to your November 1, 7, and 25, 2013 emails requesting additional information from ITC Midwest LLC ("ITCM") for the Environmental Impact Statement for the Minnesota-Iowa 345 kV Project. Each question, numbered 1-12, is listed below along with ITCM's response.

Question:

1. **Costs of alternatives.** We will need additional information on costs of alternatives. I would like to have costs based on specific project alternatives in total, e.g,. the cost of Huntley substation options 1-4, the costs of crossing Fox Lake; as well as costs per mile. Thus, costs per mile for:

   a. Constructing the 345 kV line where there is already a 161 kV line (Route A); where there is not a 345 kV line (part of Route A and most of Route B). Some of this is in the Route Permit Application (RPA), Section 2.6.

   b. Constructing I-90-R where the existing 161 kV line is already in place.

   c. We will also need costs per mile for 161 kV lines and 161/69 lines built to 161 kV standards.

Response:

ITCM has evaluated the alternatives, particularly the line configuration options, and developed per mile cost estimates for your use. These per mile costs are provided in Table 1 below and include only the transmission line facilities. Table 1 costs also include real estate acquisition and

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surveying estimates. They do not include costs related to property acquisition, materials, and construction for substations.

Also not included in the per mile estimates are overall project management and development costs which are estimated at $5.4 million ($2011).

Overall project management and development costs include routing, design and surveying, regulatory costs, and environmental studies. These costs apply to any overall route, including associated transmission lines, and would need to be added after calculating the total miles of the alternative multiplied by the applicable per mile costs for each line configuration length within the route.

Adding 345 kV crossings to either Fox Lake or Lake Charlotte is estimated in the magnitude of $2.4 million per crossing.

The Lakefield Junction Substation costs are estimated at $6 million ($2011). The Huntley Substation costs are estimated at $33 million for either the proposed location or the south location by I-90, and includes the estimated cost to remove the Winnebago Junction Substation infrastructure.

Table 1: Per Mile Cost for Transmission Line Construction

Design Configuration	Cost/Mile (Millions, $2011)
345 kV/161 kV (Route A), where co-located with existing 161 kV line	$2.4 (includes removal costs for wood or concrete poles)
345 kV/161 kV (future) (Route A & B), where Project will not be co-located with existing 161 kV[1] line	$2.1
I-90-R where 161 kV is in place (and would be co-located with 345 kV line)	$2.5 (includes removal costs for steel on concrete foundations)
345 kV/161 kV Double Circuit at Fox Lake	$3.1 ((includes removal costs for steel on concrete foundations

[1] The request states 345 kV, but it appears to be in error.

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Design Configuration	Cost/Mile (Millions, $2011)
345 kV with 69 kV Underbuild and designed for future 161 kV	$2.4 (includes removal costs for wood poles)
161 kV single circuit	$1.0
161 kV/161 kV (operate at 69 kV)	$1.2

Question:

2. **Lake Crossings.** I'd like to have discussion / drawings / figures / schematics / cross sections on how Fox Lake and Lake Charlotte might be crossed - e.g., paralleling the existing 161 line; double circuiting. What kind of 'flat profile' can be designed to minimize avian impacts? What is the clearance over the lake? (wasn't this clearance recently raised to meet new standards?)

Response:

ITCM is developing structure designs for the lake crossings and will include vertical and horizontal (flat) profile design options. The structures are specialty structures due to the spans necessary to accommodate the long water body crossings.

The current clearance for the 161 kV line at the Fox Lake crossings are 40.9 feet and 41.4 feet and is 42.6 feet at Lake Charlotte. The clearance requirements for minimum conductor height at the lakes would be different than those identified in the Route Permit Application for 345 kV over ground (minimum 35 feet between ground and the lowest point of the conductor for 345 kV conductor and 25 feet for 161 kV conductor). Over Fox Lake, the minimum clearance to the 345 kV conductor would be 38.8 feet and to the 161 kV conductor would be 35.1 feet. Over Lake Charlotte, the minimum clearance to the 345 kV conductor would be 32.8 feet and to the 161 kV conductor would be 29.1 feet. We are currently anticipating that our specialty structure drawings will be available by December 13, 2013. We will submit them to EERA when they are available.

We will provide photographic comparisons of what the lake crossings may look for both vertical and horizontal (flat) structure configurations. To provide you an opportunity to review a sample simulation before we complete the other simulations you have requested, we will provide the Fox Lake crossing simulations to you by December 13, 2013. Depending on whether you

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have any additional revisions you need to the simulation, we anticipate that we will be able to get you the Lake Charlotte crossing by December 20, 2013.

Question:

3. **Electrical System Reliability.** I'd like to have discussion of reliability relative to the alternatives, particularly the Huntley substation options. What are the standards involved? NERC standards? What do these say? Do all of the alternatives meet these standards? - from our early conversations the answer seems to be yes. If so, what reliability concerns does ITCM perceive outside these standards? What do these concerns mean? More costs? Less reliable power? More difficult to maintain and operate?

Response:

The proposed Huntley Substation and transmission line configurations necessary to support the alternatives along I-90 create certain common tower contingencies that must be evaluated as a Category C (system performance following loss of two or more bulk electric system elements). ITCM notes that for the proposed south Huntley Substation location, there will be several ROWs to accommodate the 161 kV and 69 kV connections with the Winnebago Substation. Because the ROWs are proposed to be separate, NERC Category D (transmission lines on a common ROW) does not apply. To avoid Category D, however, these rights-of-way must be separate and distinct and not overlapping.

To avoid NERC Category D for the proposed south Huntley Substation location with I-90-R, the 161 kV and 69 kV associated facilities would have to be constructed on parallel rights-of-way, totaling 450 feet in width for the entire length from 170th Street south to the proposed substation site. A 300-foot right-of-way would be required from the Winnebago Junction Substation south to 170th Street. To avoid Category D for the proposed north Huntley Substation location with I-90-R, the 345 kV facilities would have to be constructed on parallel rights-of-way, totaling 400 feet in width for nearly four miles from I-90 to the substation location.

The electrical system must be designed to meet customer needs and firm transmission service in the event of a Category C contingency. ITCM evaluated the two 69/161 kV lines that would be required to support the Huntley Substation alternative site for I-90-R as well as the double-circuit 345 kV option for the I-90-R alternative with the proposed Huntley Substation site and determined that the Category C requirements would be met without degrading the performance of the Project.

The I-90-R alternatives nevertheless present reliability concerns because of the resulting concentration of transmission facilities in a common corridor. When facilities are located in close proximity, there is a greater risk that a single event, e.g. storm, can take out multiple lines. In such case, customers connected to the 20-mile long Winnebago-Garden City 69 kV Line north of

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the Winnebago Substation could lose power. To enhance overall system reliability, ITCM disfavors constructing so many lines in parallel rights-of-way for five miles of length. Therefore, the options for I-90-R that provide greater separation are preferred. Although not a NERC requirement, ITCM believes it is particularly desirable to separate circuits to the extent possible in this area given the landscape, the overall system support, typical weather conditions and the significant impacts of an outage.

Question:

4. **Agricultural Impact Mitigation Plan (AIMP).** Has ITCM worked on an AIMP with the Minnesota Department of Agriculture? I would like to have something like Appendix E of the Hampton-Rochester-La Crosse EIS in this EIS.

Response:

The final Minnesota Department of Agriculture ("MDA") approved AIMP for the Hampton-Rochester-La Crosse Project was submitted as part of the Route Permit application and, as you noted, included in the EIS for that project. ITCM is working cooperatively with the MDA to develop an AIMP, but has not been finalized. ITCM will provide a copy of the AIMP once approved by the MDA, but approval is not expected until the time testimony is submitted. This timing is similar to the Brookings-Hampton Project.

Question:

5. **Structure Removal / Decommissioning.** In the discussion of the Huntley Substation, the RPA notes that some sections of 161 kV line, in the reconfiguration, will be "abandoned." What does this mean? Will the structures be removed? Foundations? Reclamation? Similarly, what if the 161 kV line were removed from Fox Lake? What would happen to the line north of the lake that is no longer needed? Would it be removed? Abandoned? What does this mean?

Related, what are ITCM's plans, if any, for decommissioning the line? What would happen if the line were no longer needed? Who would / how would the structures and foundations be removed? I realize this may be a very low probability event… but it is a topic raised directly at the scoping meetings. It's not clear to me what happens, generally, to concrete that is "left" in the ground by any infrastructure project.

Response:

Existing facilities that will be retired from service will be removed. For transmission line structures that do not have footings, ITCM will extract the pole from the ground if possible. In the event a pole cannot be extracted by pulling, ITCM will excavate an area to uncover approximately 60 percent of the buried pole and an attempt will be made to extricate an excavated pole entirely. If an excavated pole cannot be removed in its entirety, the pole will

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either be cut off at the excavated depth (in the range of approximately five feet) or pushed over if the pole cannot be cut.

If an existing transmission structure to be removed for purposes of the Project has a concrete footing, ITCM's standard practice will be to excavate to five feet below grade, remove the concrete and cut off any exposed reinforcing steel and anchor bolts. ITCM will take extra measures as necessary to ensure that farming operations can continue on tillable land.

If ITCM removes an existing pole, all support anchors for the structure will be removed. In these instances, ITC Midwest will work with the landowners to identify any tile lines located near anchors prior to removal of the anchors.

This request also requests information about the 161 kV Fox Lake-Rutland line north of Fox Lake. If this line were removed from Fox Lake, the portion south of the lake to the Fox Lake Substation would need to be rerouted. The existing line segments would be removed in accordance with the steps outlined above. Although not requested, if the line were required to be removed from Lake Charlotte, the removal would be in accordance with the steps outlined above.

Question:

6. **Substation Area.** For the Huntley substation, the RPA says that the fenced area will be approximately 9 acres. And that ITCM has purchased 40 acres to site the substation. How much land does the substation need total? That is, fenced area and non-fenced area? Access roads, drainage, grading and all. Assume that ITCM is not buying a large parcel of land, but buying or getting an easement for only that land needed for the substation.

Related, can the area for an alternative southern Huntley substation site be better defined? Smaller?

Response:

The minimum size necessary for the Huntley Substation is 32 acres to accommodate the fenced area, setback, line clearances, grading and ponding requirements. The initial proposed fenced area was 9 acres, but since the Route Permit was filed, ITCM identified a need for reactors at the substation, which requires an additional 3 acres, for a total of 12 acres, fenced and a rectangular configuration. ITCM anticipates the fenced-in area of the substation to be approximately 650 feet x 800 feet (12 acres). A 200-foot buffer along the front and either side will allow for setbacks and line clearances. A 250-foot buffer along the rear property line will allow for retention, line clearances, and rear setback requirements. With these buffers, the overall property dimensions are 1,050 feet **x** 1,350 feet, or 32 acres.

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The proposed south Huntley Substation site was identified in response to the scoping route alternative I-90-R. ITCM's practice and preference is to voluntarily acquire the land necessary for substation sites. At this time, based on analyses to date and pending specific site investigation, the substation could be located in multiple locations within Section 2, T102N R28W. ITCM requests that the alternative siting location remain unchanged to allow for flexibility in identifying a willing seller should the I-90-R alternative be selected for the Project.

Question:

7. **EMF.** I commented on the draft RPA regarding EMF tables. Those comments apply here.

   a. I would like to have calculated EMF levels for 2017 and 2042 (25 years from initial operation; approximately the ½ life of the transmission line) - at projected median current levels and peak current levels - with "peak" defined statistically, e.g., 80th percentile. If the distribution of current levels is approximately normal such that the average = median, then I'd like that discussed. And if you can discuss the distribution further - normal with a mean and average - then we may not need "peak" values, as they would flow from the distribution.

   b. I'd like discussion of the assumptions regarding the 2017 and 2042 EMF numbers. There is some discussion of this in Chapter 4 of the CN application. What does the energy/transmission landscape look like in 2042… such that the current levels are anticipated to be X? I'd like the assumptions to be discussed so that we can make sure that the EMF levels are conservative projections.

   c. By way of comparison to other 345 kV lines and recent EISs… in the draft EIS for the Hampton - Rochester - La Crosse project, amperages and EMF levels are reported for 2015 and 2025 and for a "highest anticipated loading at some point in the future." These amperages are in the range of 200 - 800 amps. In the final EIS for the Fargo to St. Could project, EMF levels were presented for amperage levels of 1,000 and 2,500 amps.

Response:

Magnetic field levels are dependent on structure geometry and load flows on the transmission line. To develop magnetic field calculations for the Project, ITCM used loading assumptions contained in the 2012 Midwest Reliability Organization Series Model for years 2017 and 2023. These models contain anticipated load information from all load-serving entities in the MISO footprint. Loading information for the year 2042 is not available. The 2023 model is currently the farthest out-year model available. ITCM included this information in Tables 8 and 9 in the Route Permit Application.

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Each transmission line structure design will experience different magnetic field levels. Levels also typically further vary between substations due to changes in loading which is affected by generation dispatch, contingencies and customer demand. The level of magnetic fields is also variable throughout the line due to variability in loading levels that change throughout the day and hour.

In the Hampton-Rochester-La Crosse and Fargo-St. Cloud 345 kV Projects that are referenced in the request, certain future loading assumptions were made regarding the specific system topology and loading levels that resulted in the amperages identified in the question. Based on ITCM's analysis, amperages set forth in Tables 8 and 9 of the Route Permit Application are reasonable estimates of the peak and average (2/3 of peak) for the years 2013 and 2023 for the designs shown in the application. ITCM will be proposing changes to some structure designs that will change the distances between the arms and the insulator length. ITCM is preparing magnetic field calculations for these new designs and for the I-90-R alternative. ITCM will submit them to EERA as soon as they are available. These calculations should be completed for your review by the end of December 2013.

Proponents of transmission projects are sometimes asked to calculate magnetic fields based on the capacity of a line. Such calculations are unrepresentative of the typical operating characteristics of a line. High voltage transmission lines are designed with a capacity that provides the ability to support unusual loads that might be experienced due to emergency or contingency situations for only very brief periods of time. Should EERA desire magnetic field calculations for specific amperages for any of the structure types, ITCM will prepare the tables upon EERA's request.

Question:

8. **Cross Sections.** I would like to have figures / schematics of select cross sections for routes. At this time, these include the lake crossings (noted above) and:

   a. The lines coming into the Huntley substation from the north, i.e., what does the view northward from the proposed Huntley substation look like - structures, voltages, ROW width, route width?

   b. What does the view look like for Huntley substation option #2 --- looking northward from the proposed alternative southern site for the Huntley substation?

Response:

The requested cross sections will be provided when completed. As previously stated, we intend to provide a sample cross section/simulation for your review by December 13, 2013.

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Based on your feedback, we anticipate that we will be able to provide the other simulations by December 20, 2013.

Question:

9. **Existing H-frames.** What is the distance between the H-frame poles of a single structure on the existing 161 kV line? What is the span between structures, on average? I'm trying to evaluate the difference – e.g., to farmers working fields – between the existing H-frames and the proposed monopole structures. Some folks noted that this change would be welcome, as monopoles would "take up less room" than H-frames. I'm trying to get a handle on what this "less room" might be.

Response:

On the existing Fox Lake-Lakefield Junction 161 kV line, the distance between the center of the poles is 15.5 feet. The typical span length between structures is 600 to 700 feet.

Question:

10. **Damage Compensation.** Related to the Ag Mitigation Plan, a Mr. Ahrenstorff submitted a comment during scoping about his dealings with ITCM. He included in his comment a "policy statement concerning settlement of damage claims" (see attached). By way of describing ag impacts and mitigation, is this ITCM's proposed policy for the Minnesota to Iowa project? That is, do you envision this policy, or something very much like it, being in effect for the project? Is this a policy that we could include in the EIS, e.g., as an appendix, so that folks understand how mitigation (at least one mitigation strategy) would work?

Response:

ITCM applies a common damages policy for projects to ensure predictable and comparable treatment for all landowners. ITCM will provide a damages policy to landowners when acquiring rights-of-way for the Project. The policy is under review and is expected to be finalized after the Route Permit is issued.

Question:

11. **CN Alternatives.** In Section 6.2.3 of the CN application, it discusses three transmission alternatives with different endpoints. Could you provide maps of these alternatives? And, if you have it, any analysis or evaluation of these alternatives, other than electrical analysis. I realize that you were not routing these alternatives, but rather looking at them from a big-picture-electrical perspective; however, if routing ideas were discussed, these would be helpful.

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(11) A. Would the 161 rebuild alternative (discussed in Section 5 and Section 6.2.1 of the CN application) eliminate the Special Protection Systems that are currently in place? Yes? No? Maybe?

(11) B. Is there a MISO study comparing MVP #3 to the 161 kV rebuild. It appears that there is solely an ITC study (Appendix J of the CN application).

Response:

As noted in my December 4, 2013 email to you, no route analysis was undertaken for any of the alternatives described in Section 6.2.3. A conceptual map attached to the email showed the Spencer-Hazelton and Lakefield Junction – Mitchell County 345 kV lines, the Lakefield Junction – Rutland 345 kV line and the Lakefield Junction – Adams 345 kV line, as they have been represented in past studies.

11(A): No studies have been conducted to determine whether the 161 kV rebuild alternative could eliminate the Special Protection Schemes currently in place.

11(B): No, to the best of ITCM's knowledge, MISO has not performed such a study.

Question:

12. **Bird Diverters.** From the DNR comment letter during scoping – "Please include a discussion in the EIS of the criteria the project developer proposes for choosing bird diverter locations."

Could you please send me your thoughts on bird diverter locations? Have you developed or do you have criteria for this project? For ITC's projects in general?

Response:

Based on early coordination efforts between ITCM, USFWS and the Minnesota Department of Natural Resources ("MDNR"), ITCM intends to mark the transmission line shield wires in several areas. We intend to install bird diverters at the Des Moines and Blue Earth river crossings, through the wildlife refuge, south of Lake Charlotte, over the Pilot Grove Lake WPA (including 500 feet outside the boundary based on the earlier feedback we got from USFWS), and across other open water crossings. We will continue to consult with agencies to identify any wildlife migration pathways, particularly those of waterfowl, crossed by the final route and to identify areas where the line should be marked to avoid avian interactions. ITCM will likely use a device similar to that shown in **Figure 1** for marking the shield wires for the Project as identified above or through coordination meetings with the MnDNR and USFWS.

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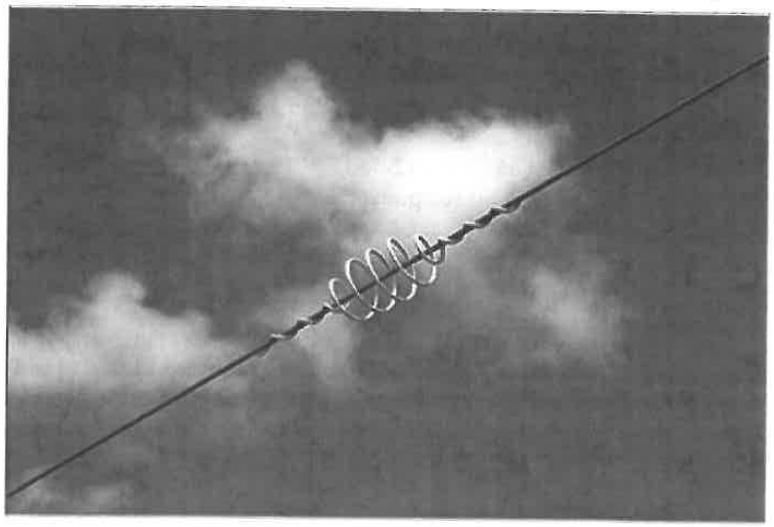
Figure 1. Bird Flight Diverter Example



Conclusion

Thank you for your questions and for providing us time to gather the requested information. We will provide the additional information identified in our individual responses as we have it gathered and will send it to your attention.

Sincerely,

David B. Grover

David B. Grover

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ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

December 13, 2013

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Second Response

Dear Mr. Kirsch:

I write to provide supplemental information to our First Response to your November 1, 7, and 25, 2013 emails requesting additional information from ITC Midwest LLC ("ITCM") for the Environmental Impact Statement for the Minnesota-Iowa 345 kV Project. Each question for which a supplement is provided, is listed below along with ITCM's response. I also write in follow up to your December 10, 2013 request for additional information.

Question:

2. **Lake Crossings.** I'd like to have discussion / drawings / figures / schematics / cross sections on how Fox Lake and Lake Charlotte might be crossed - e.g., paralleling the existing 161 line; double circuiting. What kind of 'flat profile' can be designed to minimize avian impacts? What is the clearance over the lake? (wasn't this clearance recently raised to meet new standards?)

Response:

Enclosed are drawings of the specialty structures for the lake crossings. **Attachment 2-1**. ITCM has continued to evaluate the two lake crossing alternatives included in the Scoping Decision. On initial review this fall, ITCM requested that the EIS analyze these crossings as both parallel configuration (existing 161 kV with a new 345 kV) and double-circuit configuration (345 kV/161 kV). The request to include parallel configuration was primarily because these crossings had been recently reconstructed at significant expense. Upon further review, ITCM has concluded that a parallel configuration at Fox Lake is not a reasonable alternative. To accommodate new 345 kV structures in the area of Fox Lake, the existing 161 kV structures would need to be removed both north and south of Fox Lake. Because removal of the 161 kV structures would be required even for a parallel construction, ITCM believes that a double-circuit

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configuration is the appropriate configuration to include in the EIS for the Fox Lake Scoping Decision alternative (M4-R). In contrast, the conditions are different at Lake Charlotte where the existing 161 kV line can remain in place. Accordingly, for Lake Charlotte ITCM continues to request that both a parallel configuration and a double-circuit configuration be included in the EIS for that Scoping Decision alternative (M10-R). Please see the response to Question 8, below, regarding photo simulations of the lake crossing alternatives.

Question:

8. **Cross Sections.** I would like to have figures / schematics of select cross sections for routes. At this time, these include the lake crossings (noted above) and:

a. The lines coming into the Huntley substation from the north, i.e., what does the view northward from the proposed Huntley substation look like - structures, voltages, ROW width, route width?

b. What does the view look like for Huntley substation option #2 --- looking northward from the proposed alternative southern site for the Huntley substation?

Response:

As a follow up to our response on December 6, 2013, **Attachment 8-1** is a sample cross section/simulation for your review. This is the simulation of a double-circuit 345 kV/161 kV crossing at Fox Lake prepared for Scoping Decision alternative (M4-R). Please let us know if you have suggestions on display or dimension identifications that we should incorporate into the other simulations we are preparing in response to your request. Based on your feedback, we anticipate that we will be able to provide the other simulations by December 20, 2013.

Question:

12/10/13-1. I would like to have EMF calculations, as in the Hampton – Rochester – La Crosse EIS, for a "highest anticipated loading at some point in the future" (see attached). In the HRL EIS, the assumptions for this scenario included high line loading conditions, additions of generation, and an unplanned outage of a 345 kV line.

I do not know what the flows / amperages are for such a scenario on this project, but I would like you to construct such a scenario for a highest anticipated loading and estimate, to the best of your ability, the amperages and related EMF levels. The text describing the scenario and the uncertainties in making an estimate would be included in the EIS.

As possible, I would like these estimates, and the changes that you are making to your EMF tables based on new structure designs by December 30.

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Response:

ITCM is constructing new scenarios to respond to this request and will attempt to get the requested text and updated tables to you by the end of December 2013. However, because additional system assumptions must be made to develop the model to determine the line loadings on which the calculations will be based, the complete response may not be available until early January 2014.

Question:

12/10/13-2. With respect to the AIMP, is it possible to get a draft of the AIMP that MDA is reviewing? Even a draft would aid our development of the EIS. Or, if it's possible to say that the draft is "very similar" to what was adopted for the CapX projects that would be helpful.

You note that MDA approval is not expected until the time testimony is submitted. What would this date be – that is, when is testimony submitted? In January 2014? In February 2014? Other?

Response:

The AIMP that ITCM is working on for the Project closely follows the format of the AIMP approved for the CapX projects. We intend to include a copy of our AIMP with our direct testimony, provided it has received approval from the Minnesota Department of Agriculture by the time it is due (January or February, depending on the Judge's revised prehearing order). If it is not approved at the time direct testimony is due to be filed, it will be included with rebuttal testimony or as soon as approved thereafter.

Conclusion

Thank you for your questions and for providing us time to gather the requested information. We will provide the additional information identified in our individual responses as we have it gathered and will send it to your attention.

Sincerely,

David B. Grover

David B. Grover

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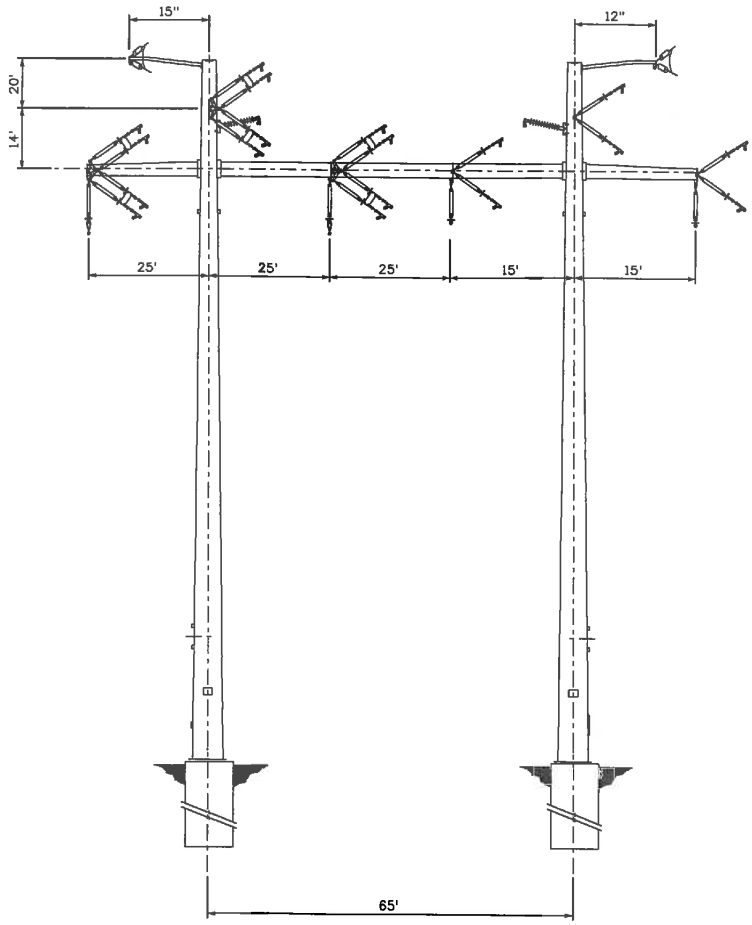
Attachment 2-1



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ITC Midwest

NO.	DATE	REVISION	BY	CHK'D	APV'D
0	11/25/13	ORIGINAL ISSUE [ ]			

HUNTLEY-LAKEFIELD JCT 345/161kV
DOUBLE CIRCUIT STEEL H-FRAME
WATER CROSSING STRUCTURE
Scale:NONE DWG. NO. 345-161DDNH5S

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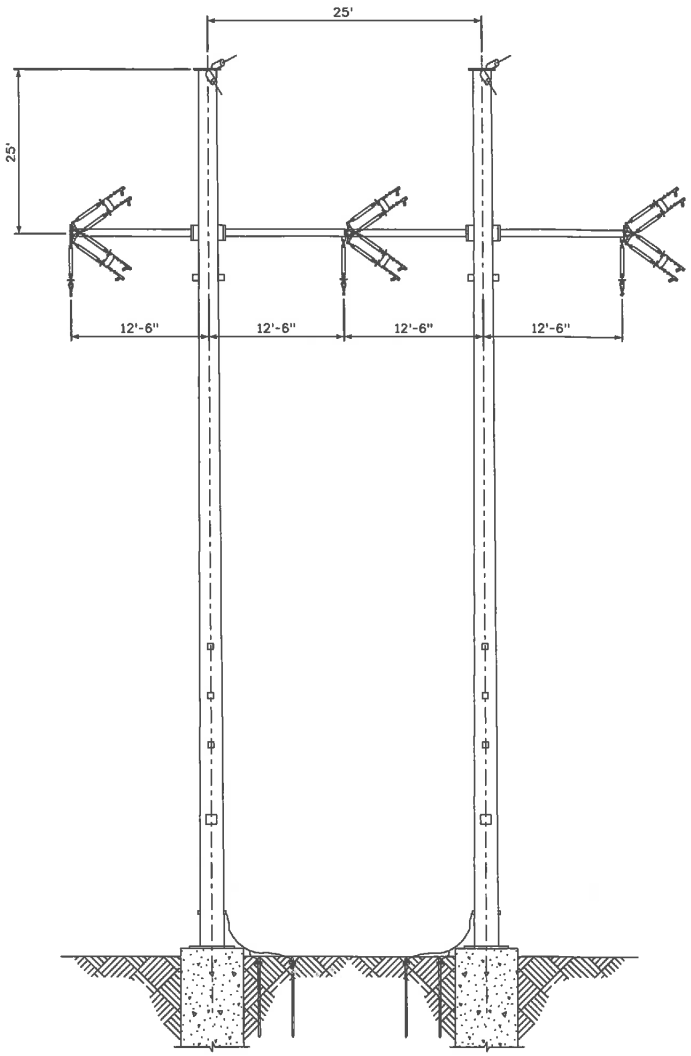
Attachment 2-1



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ITC Midwest

NO.	DATE	REVISION	BY	CHK'D	APV'D
0	12/10/13	ORIGINAL ISSUE [ ]			

JACKSON, MARTIN, AND FARIBAULT COUNTY, MN 345kV

SINGLE CIRCUIT STEEL H-FRAME
WATER CROSSING STRUCTURE

Scale:NONE DWG. NO. 345-DNH5S

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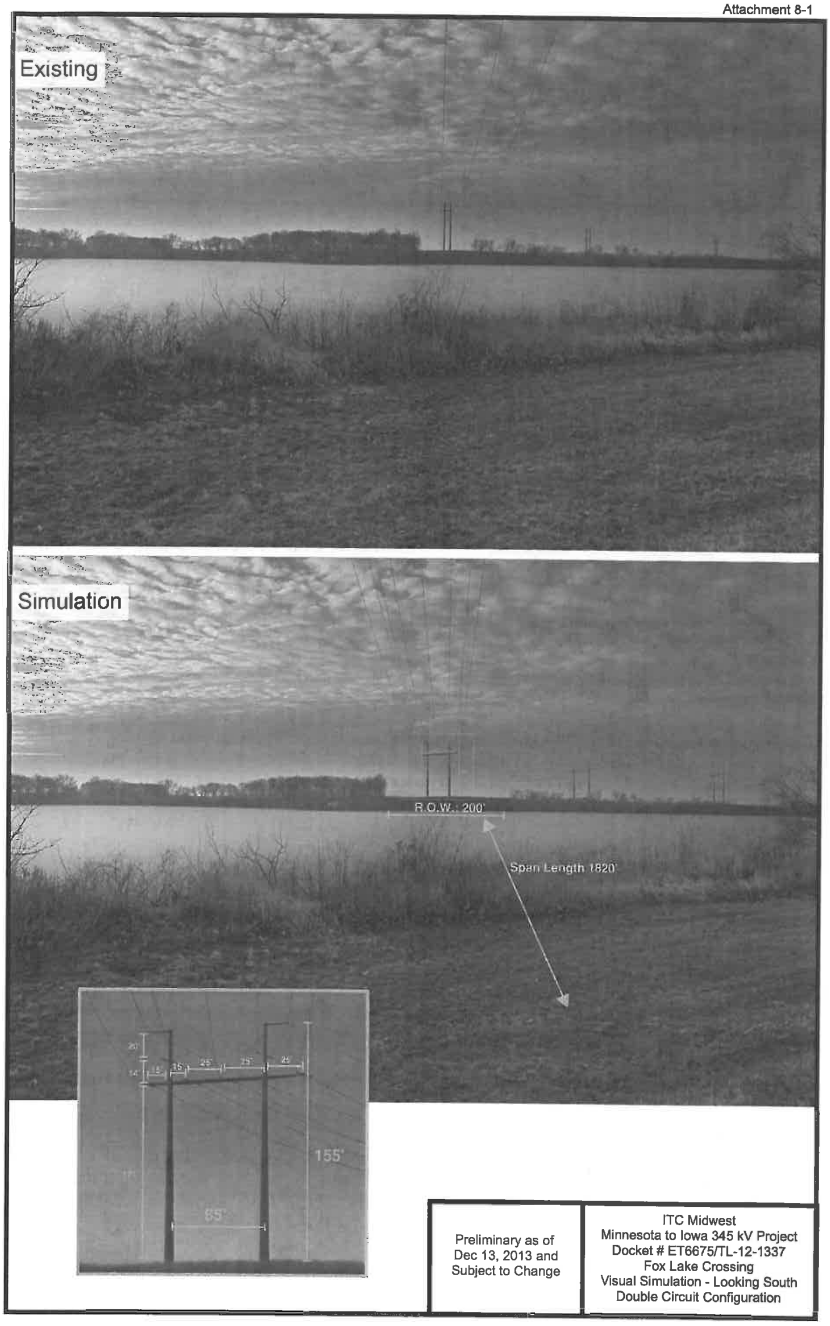
Attachment 8-1



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ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

December 19, 2013

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Third Response

Dear Mr. Kirsch:

I write to provide supplemental information to our Second Response to your November 1, 7, and 25, 2013 emails requesting additional information from ITC Midwest LLC ("ITCM") for the Environmental Impact Statement for the Minnesota-Iowa 345 kV Project. Each question for which a supplement is provided, is listed below along with ITCM's response.

Question:

2. **Lake Crossings.** I'd like to have discussion / drawings / figures / schematics / cross sections on how Fox Lake and Lake Charlotte might be crossed - e.g., paralleling the existing 161 line; double circuiting. What kind of 'flat profile' can be designed to minimize avian impacts? What is the clearance over the lake? (wasn't this clearance recently raised to meet new standards?)

Response:

Enclosed are cross sections/photo simulations of possible configurations at Fox Lake and Lake Charlotte. These incorporate your suggested revisions on the December 13, 2013 draft. These can be made available to you in higher resolution images, but will need to be transferred via other means. Please let me know if the resolution of the attached simulations is adequate.

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Conclusion

We expect that cross sections/photo simulations for the Huntley Substation alternative sites and the associated facilities configurations will be provided to you tomorrow, December 20, 2013. Please call me with any questions.

Sincerely,

David B. Grover

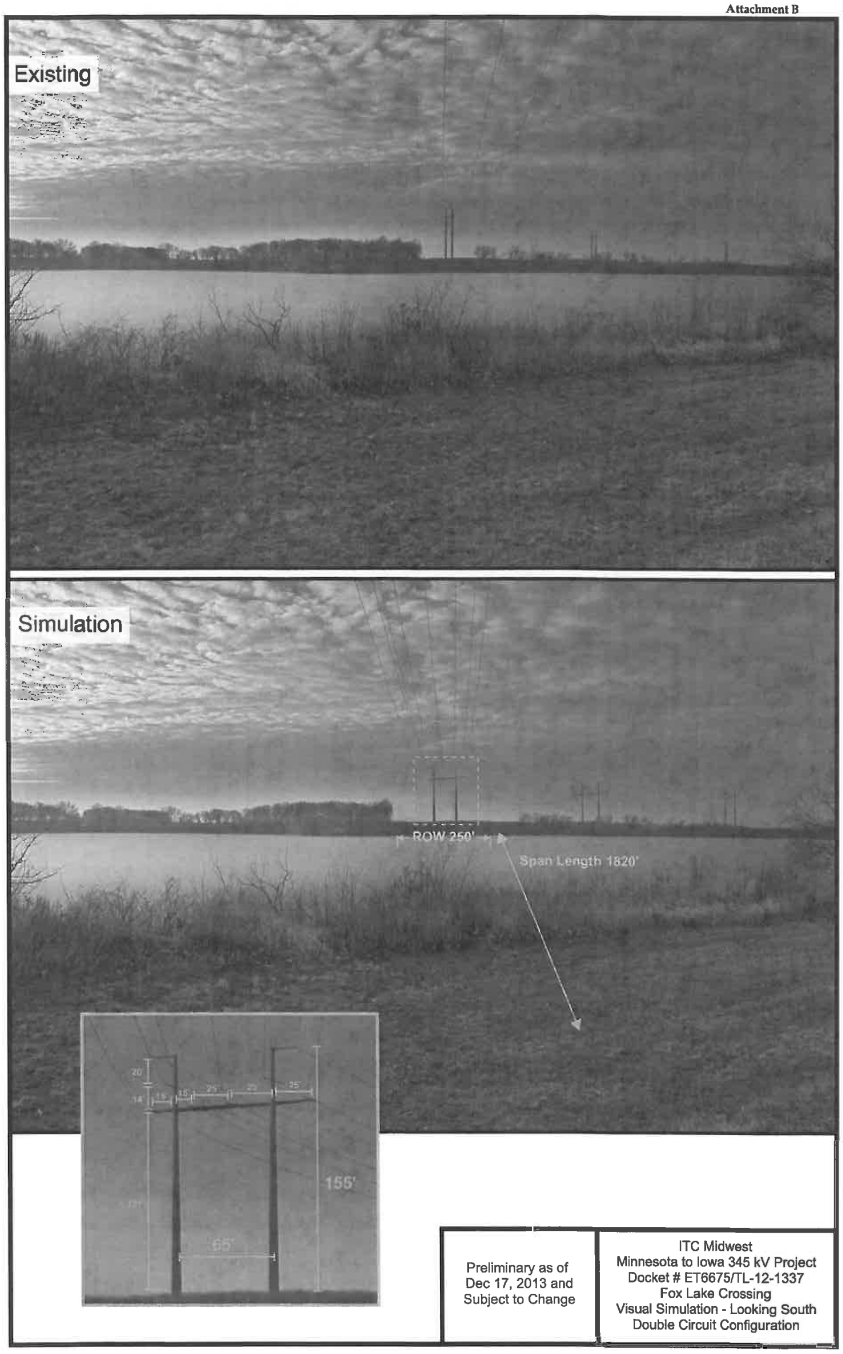
David B. Grover

ITC Midwest LLC
651-222-1000, ext. 2308 (office)
612-581-7832 (cell)

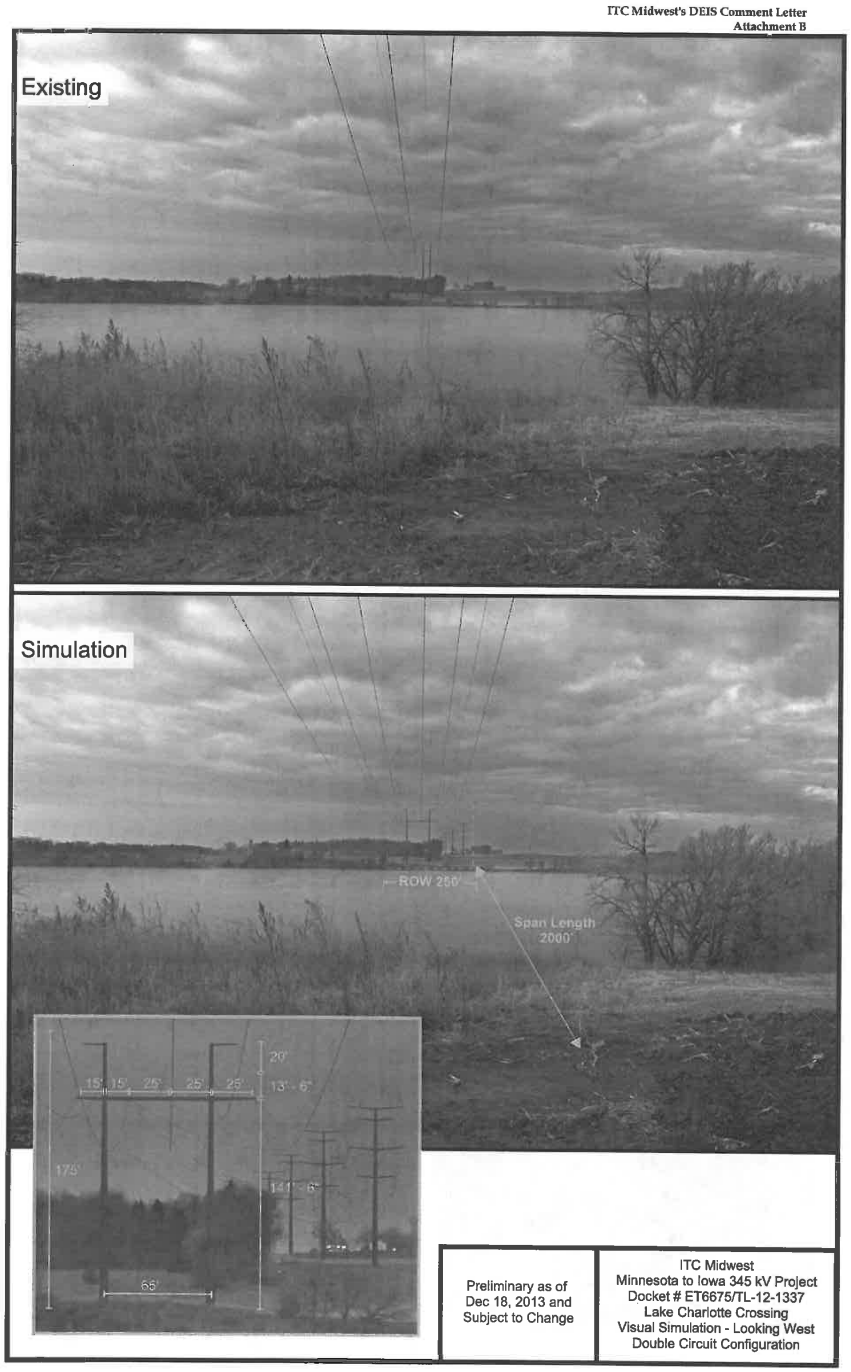
Attachments

FEIS ID #7

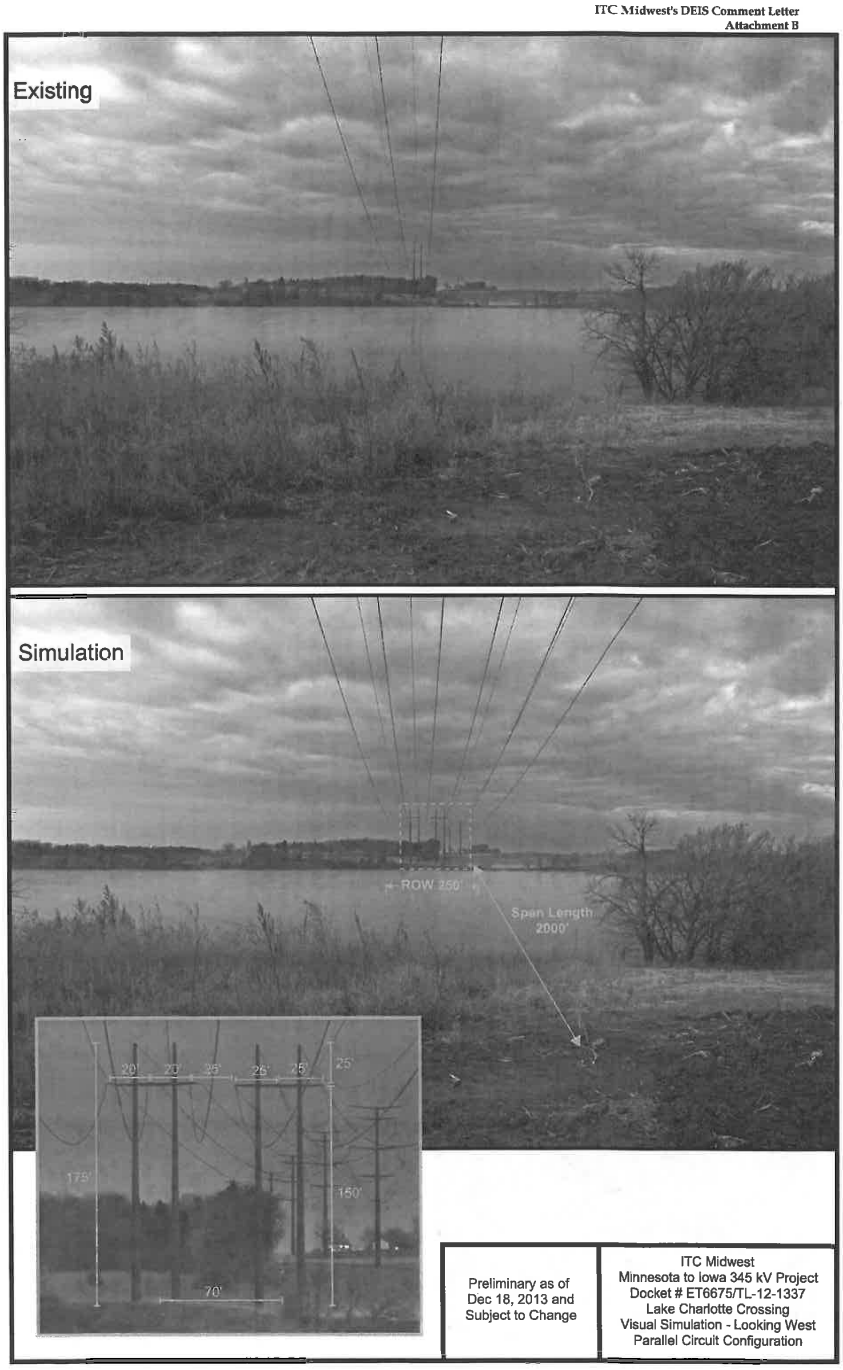
ITC Midwest's DEIS Comment Letter
Attachment B



FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
Simulation
ROW 250'
Span Length
2000'
20'
15' 15' 25' 25' 25'
13' - 6"
175'
141' - 6"
65'
Preliminary as of
Dec 18, 2013 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 kV Project
Docket # ET6675/TL-12-1337
Lake Charlotte Crossing
Visual Simulation - Looking West
Double Circuit Configuration

FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
Simulation
ROW 250'
Span Length
2000'
20'
20'
25'
25'
25'
25'
175'
150'
70'
Preliminary as of
Dec 18, 2013 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 kV Project
Docket # ET6675/TL-12-1337
Lake Charlotte Crossing
Visual Simulation - Looking West
Parallel Circuit Configuration

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

December 20, 2013

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Fourth Response

Dear Mr. Kirsch:

I write to provide supplemental information to our Second Response to your November 1, 7, and 25, 2013 emails requesting additional information from ITC Midwest LLC ("ITCM") for the Environmental Impact Statement for the Minnesota-Iowa 345 kV Project. Each question for which a supplement is provided, is listed below along with ITCM's response.

Question:

8. **Cross Sections.** I would like to have figures / schematics of select cross sections for routes. At this time, these include the lake crossings (noted above) and:

a. The lines coming into the Huntley substation from the north, i.e., what does the view northward from the proposed Huntley substation look like - structures, voltages, ROW width, route width?

b. What does the view look like for Huntley substation option #2 --- looking northward from the proposed alternative southern site for the Huntley substation?

Response:

Enclosed are cross sections/photo simulations of the scoping decision alternatives from 160th Street and from Interstate 90. Each figure identifies the viewpoint and point of reference. These can be made available to you in higher resolution images, but will need to be transferred via other means. Please let me know if the resolution of the attached simulations is adequate.

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ITC Midwest's DEIS Comment Letter
Attachment B

Conclusion

We expect that we will be able to provide you with updated magnetic field calculations for the 2017, 2023, and additional loading scenarios you requested by December 31, 2013. Please call me with any questions.

Sincerely,
/s/ David B. Grover (by A. Ashbacker)
David B. Grover

ITC Midwest LLC
651-222-1000, ext. 2308 (office)
612-581-7832 (cell)

Attachments

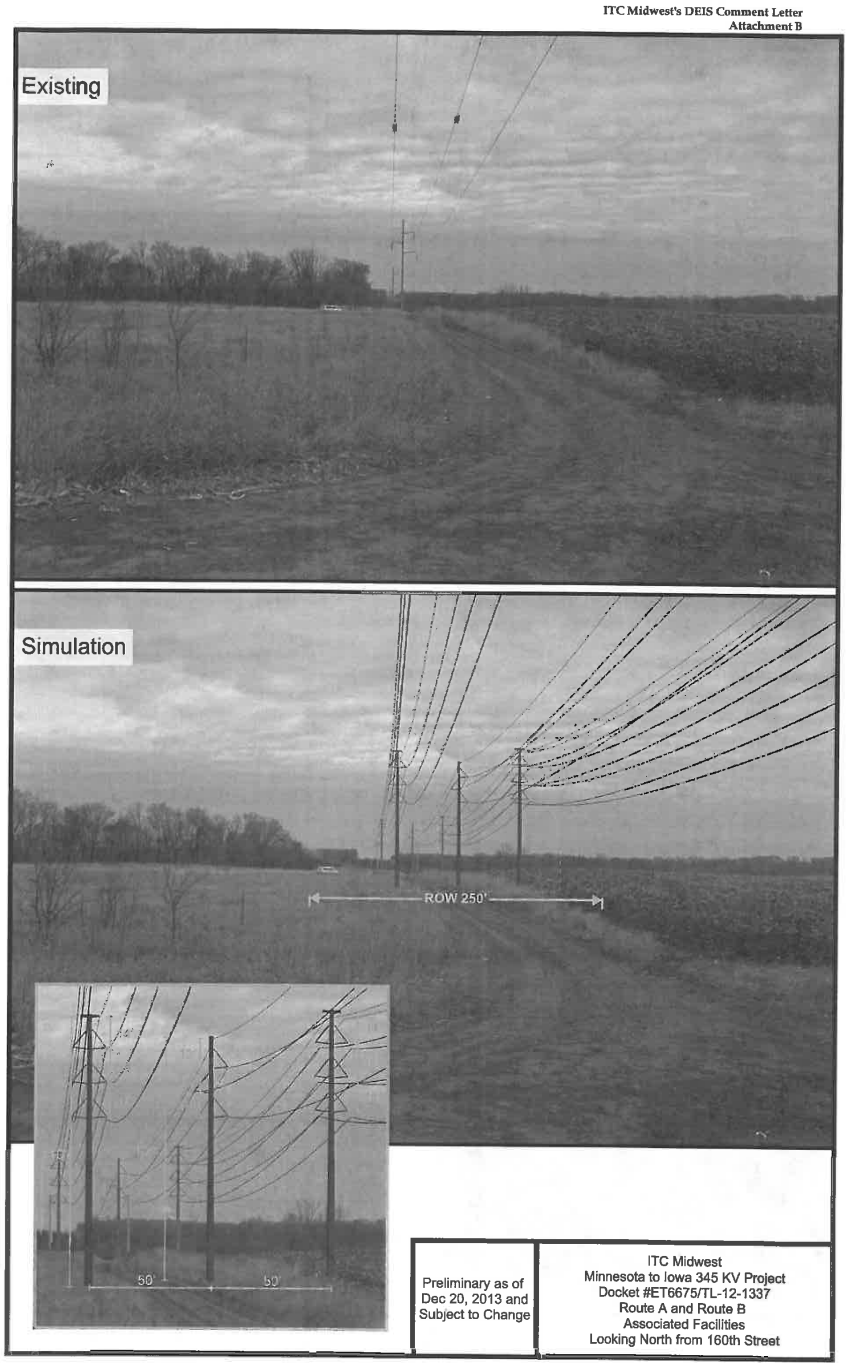
FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
Simulation
ROW 400'
Preliminary as of
Dec 19, 2013 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 KV Project
Docket #ET6675/TL-12-1337
I-90-R
Huntley Substation Option 4
Looking South from 160th Street

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
Simulation
ROW 250'
50'
50'
Preliminary as of
Dec 20, 2013 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 KV Project
Docket #ET6675/TL-12-1337
Route A and Route B
Associated Facilities
Looking North from 160th Street

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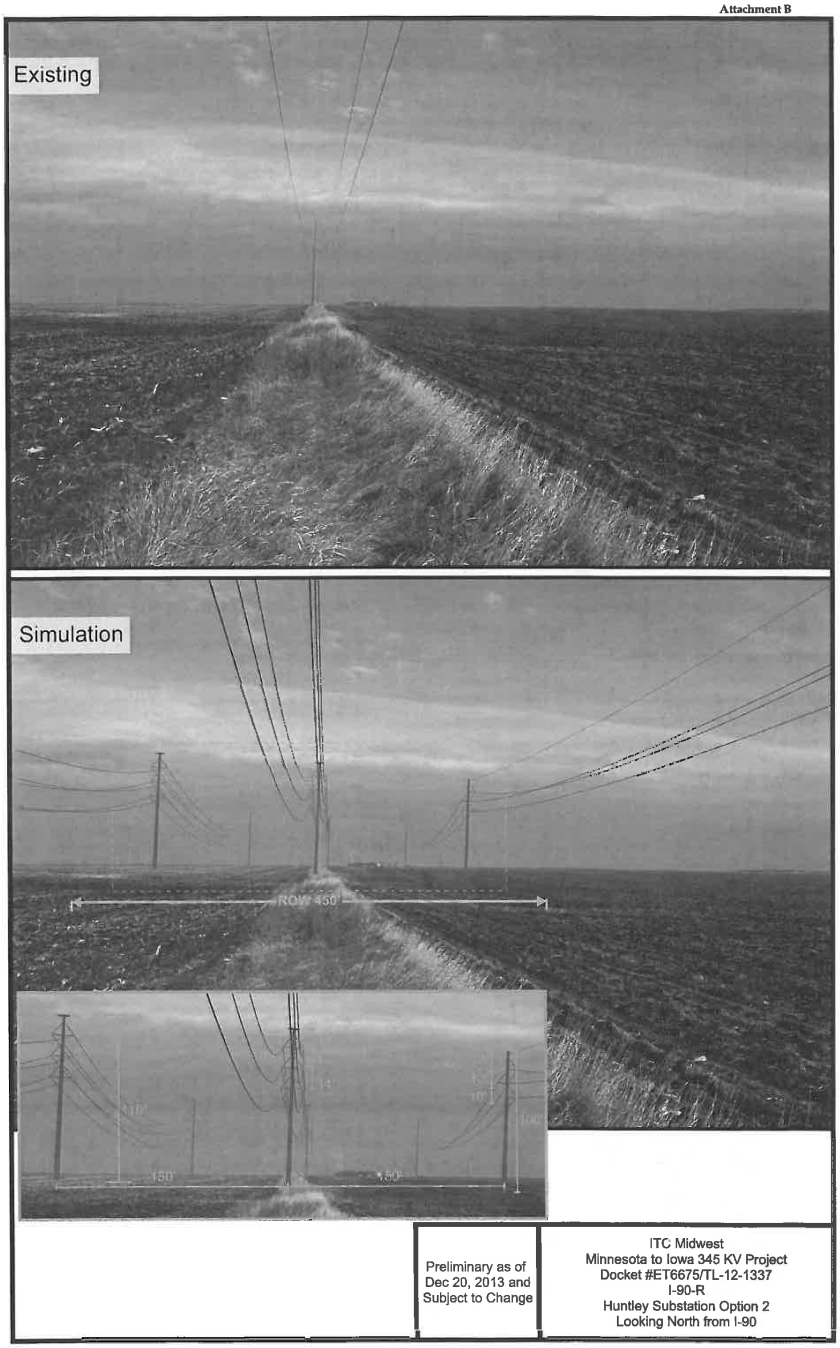
ITC Midwest's DEIS Comment Letter
Attachment B

FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
Simulation
ROW 200'
Preliminary as of
Dec 20, 2013 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 KV Project
Docket #ET6675/TL-12-1337
Route A
Looking South from 160th Street

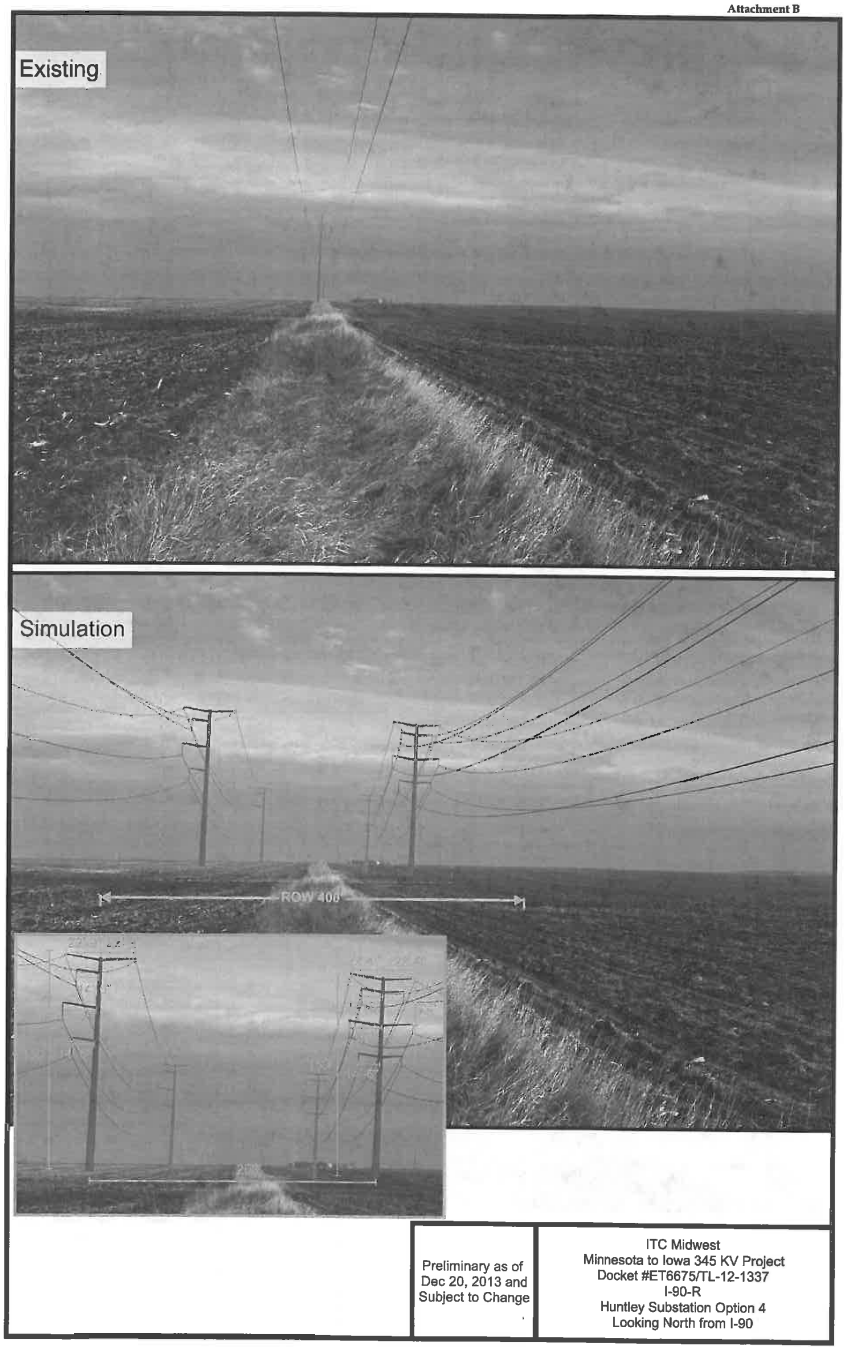
FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B



FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

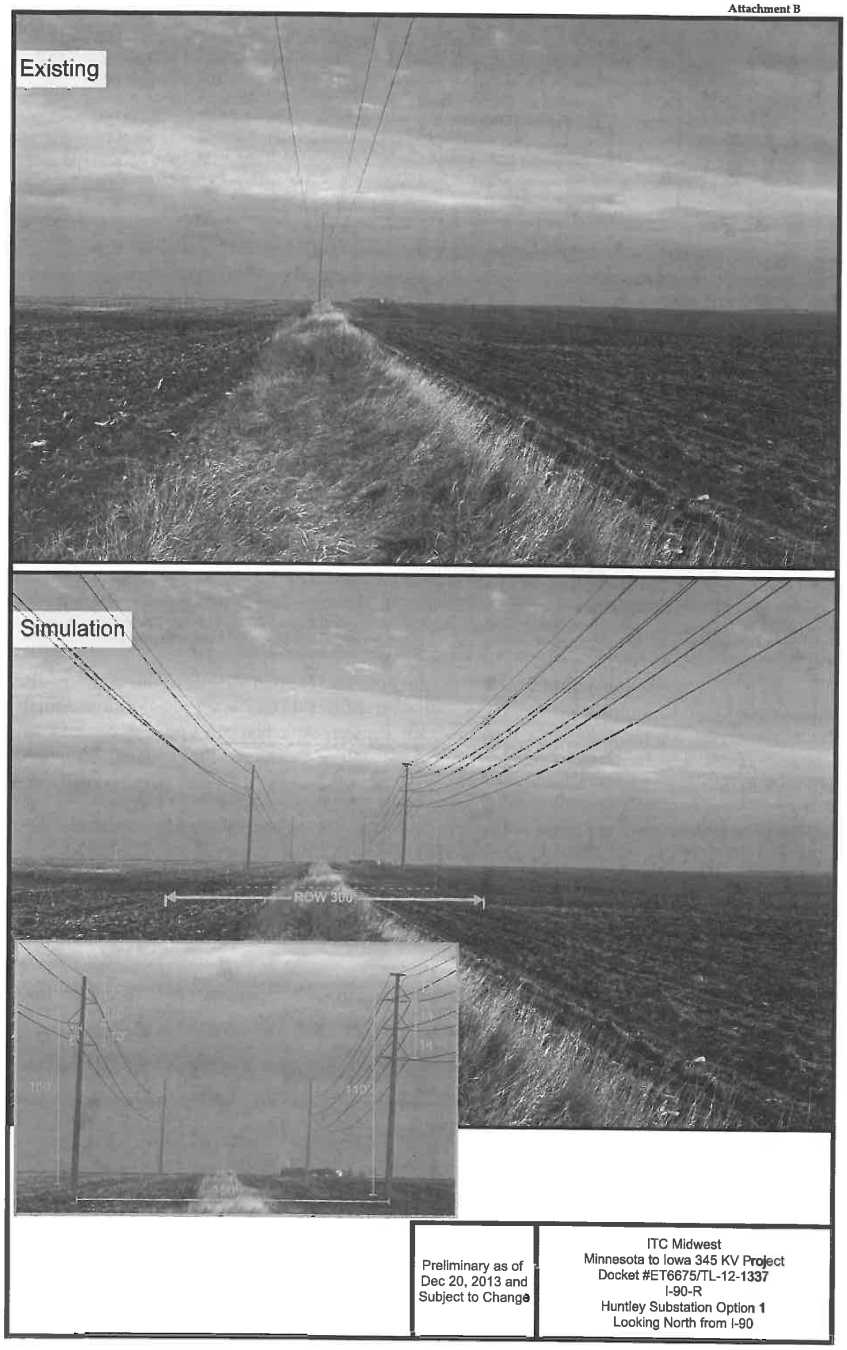


FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B



FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

December 30, 2013

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Fifth Response

Dear Mr. Kirsch:

I write to provide supplemental information to our First and Second Responses to your emails requesting additional information from ITC Midwest LLC ("ITCM") for the Environmental Impact Statement for the Minnesota-Iowa 345 kV Project. Attached are updated versions of Tables 7, 8, and 9 from the Route Permit Application to reflect the updated structure configurations.

You also requested that magnetic fields be estimated for a higher loading scenario. We developed a model to reflect the generation additions that will be enabled by the Project and MVP #3 to calculate these magnetic fields. These calculations are based on 2,000 MW of new generation additions in southwest Minnesota and other assumptions which load the 345 kV system to the point where a single contingency would overload other facilities. Loading above this level could not occur without additional facility additions.

This scenario is just one of many possible future scenarios. The resultant calculations for this scenario are shown on a new table, labeled 9A, which is also attached.

Thank you for your questions and for providing us time to gather the requested information. Please contact me if you have any further questions.

Sincerely,

David B. Grover

David B. Grover

Table 7. Estimated Electric Fields (kV/m) Update 12/30/2013

Structure Type	Maximum Conductor Voltage	Distance to Proposed Centerline											
		-300′	-200′	-100′	-75′	-50′	-25′	0′	25′	50′	75′	100′	200′	300′
Single Pole Davit Arm 345 kV/ 161 kV	362.25 kV/ 169.05 kV	0.04	0.09	0.30	0.58	1.60	4.28	3.35	0.74	0.35	0.20	0.13	0.04	0.02
Single Pole Davit Arm 345 kV/ 161 kV at Initial 345 kV/69 kV Operation	362.25 kV/ 72.45 kV	0.05	0.10	0.31	0.58	1.65	4.48	3.90	1.00	0.13	0.09	0.10	0.06	0.04
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	362.25 kV	0.07	0.14	0.31	0.54	1.63	4.57	4.22	1.35	0.27	0.21	0.23	0.12	0.07
Single Pole Davit Arm Low Profile 345 kV/161 kV	362.25 kV/ 169.05 kV	0.03	0.09	0.83	2.00	4.36	3.55	2.46	0.27	0.92	0.51	0.21	0.03	0.02
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	362.25 kV	0.05	0.11	0.82	1.97	4.34	3.66	3.32	1.68	0.89	0.57	0.39	0.13	0.06
Single Pole Braced Post 161 kV/ 161 kV	169.05 kV/ 169.05 kV	0.00	0.01	0.03	0.02	0.12	0.96	1.38	0.96	0.12	0.02	0.03	0.01	0.00
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	169.05 kV 72.45 kV	0.01	0.02	0.06	0.05	0.12	1.14	1.61	0.20	0.05	0.03	0.02	0.01	0.01
Single Pole Braced Post 161 kV	169.05 kV	0.01	0.03	0.12	0.22	0.45	0.92	1.96	1.35	0.37	0.19	0.12	0.03	0.01
Single Pole Davit Arm 345 kV/161 kV/ 161 kV	362.25 kV/ 169.05 kV/ 169.05 kV	0.07	0.11	0.09	0.29	1.11	2.95	0.66	2.32	0.67	0.23	0.15	0.09	0.06

Structure Type	Maximum Conductor Voltage	Distance to Proposed Centerline												
		-300′	-200′	-100′	-75′	-50′	-25′	0′	25′	50′	75′	100′	200′	300′
Single Pole Davit Arm 345 kV/161 kV with 69kV Underbuild at Initial 345kV with 69kV Underbuild Operation	362.25 kV/ 169.05 kV/ 72.45 kV	0.10	0.19	0.18	0.17	1.21	3.06	2.08	1.10	0.40	0.12	0.24	0.16	0.10
Two Pole H-Frame 345 kV/161 kV	362.25 kV/ 169.05 kV	0.09	0.23	1.75	3.97	5.25	1.49	4.59	2.40	1.84	1.29	0.64	0.15	0.07
Two Pole H-Frame 345 kV Parallel with Existing Two Pole H-Frame 161 kV	362.25 kV Parallel 169.05 kV	0.06	0.21	2.31	4.68	3.84	2.72	3.52	1.02	1.51	1.37	0.71	0.08	0.02
Existing Single Pole Davit Arm 161 kV/161 kV Parallel With Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	169.05 kV/ 169.05 kV Parallel 362.25 kV	0.08	0.16	0.56	1.64	4.55	3.97	0.85	1.24	1.42	0.14	0.14	0.10	0.06
Single Pole Braced Post 161 kV at 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation	72.45 kV Parallel 72.45 kV/ 169.05 kV	0.01	0.03	0.35	0.74	0.51	0.14	0.08	0.08	0.22	1.61	1.14	0.05	0.02

Structure Type	Maximum Conductor Voltage	Distance to Proposed Centerline											
		-300′	-200′	-100′	-75′	-50′	-25′	0′	25′	50′	75′	100′	200′	300′
Single Pole Braced Post 161 kV/161 kV at 161 kV/ 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation Parallel with Single Pole Braced Post 161 kV at 69 kV Initial Operation	169.05 kV/ 72.45 kV Parallel 72.45 kV/ 169.05 kV Parallel 72.45 kV	0.06	0.11	0.04	0.08	0.10	0.22	1.60	1.15	0.18	0.20	0.44	0.37	0.05
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service Parallel with Single Pole Davit Arm 345 kV/ 161 kV	362.25 kV Parallel 362.25 kV/ 169.05 kV	0.10	0.30	4.27	1.43	0.32	0.05	0.24	0.63	1.83	4.98	5.29	0.08	0.08

Table 8. Estimated Magnetic Fields in 2017 (mG) Update 12/30/2013

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV	Peak	215/20	0.9	1.8	6.0	9.3	15.2	23.3	21.7	12.9	7.5	4.8	3.3	1.2	0.6
	Average	144/13	0.6	1.2	4.0	6.2	10.2	15.6	14.5	8.6	5.0	3.2	2.2	0.8	0.4
Single Pole Davit Arm 345 kV/161 kV at Initial 345 kV/69 kV Operation	Peak	215/75	0.7	1.5	5.1	8.1	13.7	21.5	20.6	11.7	5.8	3.3	2.2	0.8	0.5
	Average	144/50	0.5	1.0	3.4	5.5	9.2	14.4	13.8	7.8	3.9	2.2	1.5	0.5	0.3
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit	Peak	215	0.9	1.9	6.3	9.7	15.8	23.9	22.2	13.8	8.4	5.5	3.8	1.3	0.7
	Average	144	0.6	1.3	4.2	6.5	10.6	16.0	14.9	9.2	5.6	3.7	2.5	0.9	0.5
Single Pole Davit Arm Low Profile 345 kV/161 kV	Peak	215/29	0.9	1.8	7.0	12.0	21.8	28.6	21.2	10.6	5.0	3.2	2.3	0.7	0.4
	Average	144/19	0.6	1.2	4.7	8.1	14.6	19.2	14.2	7.1	3.4	2.2	1.5	0.5	0.2
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	Peak	215	0.9	1.9	7.3	12.5	22.6	29.8	22.3	12.5	7.1	4.3	2.8	0.9	0.4
	Average	144	0.6	1.3	4.9	8.4	15.1	19.9	14.9	8.4	4.7	2.9	1.9	0.6	0.3
Single Pole Braced Post 161 kV/161 kV	Peak	55/68	0.0	0.1	0.2	0.4	0.9	3.3	8.2	4.9	1.9	0.9	0.5	0.1	0.1
	Average	37/46	0.0	0.0	0.1	0.2	0.6	2.2	5.5	3.3	1.3	0.6	0.3	0.1	0.0
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	Peak	55/191	0.3	0.5	1.6	2.4	4.1	9.3	24.2	18.3	8.2	4.2	2.5	0.6	0.3
	Average	37/128	0.2	0.3	1.0	1.6	2.8	6.2	16.2	12.3	5.5	2.8	1.6	0.4	0.2
Single Pole Braced Post 161 kV	Peak	94	0.2	0.4	1.2	2.0	3.7	7.9	14.6	9.6	4.2	2.2	1.3	0.3	0.1
	Average	63	0.1	0.2	0.8	1.3	2.5	5.3	9.8	6.4	2.8	1.4	0.9	0.2	0.1
Single Pole Davit Arm 345 kV/161 kV/161 kV	Peak	215/29/20	0.7	1.5	4.1	5.6	8.0	11.3	9.3	5.1	3.3	3.0	2.5	1.0	0.5
	Average	144/19/13	0.5	1.0	2.7	3.7	5.3	7.5	6.2	3.4	2.3	2.0	1.6	0.7	0.4

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV with 69kV Underbuild at Initial 345kV with 69kV Underbuild Operation	Peak	215/0/109	0.7	1.7	5.9	9.1	14.8	23.6	33.9	30.0	10.1	4.8	3.2	1.1	0.6
	Average	144/0/73	0.5	1.1	4.0	6.1	9.9	15.8	22.7	20.1	6.8	3.2	2.2	0.8	0.4
Two Pole H-Frame 345 kV/161 kV	Peak	215/211	1.3	3.1	13.4	23.3	35.0	34.3	23.5	17.6	25.2	19.4	12.0	2.9	1.3
	Average	144/141	0.9	2.1	9.0	15.6	23.4	23.0	15.8	11.8	16.8	13.0	8.0	2.0	0.9
Two Pole H-Frame 345 kV Parallel with Existing Two Pole H-Frame 161 kV	Peak	215 Parallel 211	1.2	2.8	14.4	26.5	37.5	33.2	13.9	19.4	27.2	20.2	12.1	2.9	1.3
	Average	144 Parallel 141	0.8	1.9	9.7	17.8	25.1	22.3	9.3	13.0	18.2	13.5	8.1	1.9	0.9
Existing Single Pole Davit Arm 161 kV/161 kV Parallel With Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	Peak	29/20 Parallel 215	1.0	2.3	9.6	15.6	23.7	22.1	13.4	4.3	6.4	4.7	3.2	1.1	0.6
	Average	19/13 Parallel 144	0.7	1.5	6.4	10.4	15.9	14.8	9.0	3.0	4.3	3.1	2.1	0.7	0.4
Single Pole Braced Post 161 kV at 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation	Peak	110 Parallel 191/120	0.3	0.9	9.0	17.1	12.1	6.0	4.6	7.0	15.8	22.6	7.3	0.4	0.2
	Average	74 Parallel 128/80	0.2	0.6	6.0	11.5	8.1	4.0	3.1	4.7	10.6	15.1	4.9	0.3	0.1

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Braced Post 161 kV/161 kV at 161 kV/ 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation Parallel with Single Pole Braced Post 161 kV at 69 kV Initial Operation	Peak	88/110 Parallel 191/120 Parallel 55	0.2	1.3	4.4	4.1	6.8	15.2	21.9	7.9	2.8	1.8	2.4	2.6	0.4
	Average	59/74 Parallel 128/80 Parallel 37	0.1	0.9	2.9	2.7	4.6	10.2	14.7	5.3	1.9	1.2	1.6	1.7	0.3
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service Parallel with Single Pole Davit Arm 345 kV/ 161 kV	Peak	215 Parallel 85/68	1.9	6.3	22.0	13.4	8.0	4.9	3.0	1.7	2.4	6.3	8.7	0.9	0.5
	Average	144 Parallel 57/46	1.3	4.2	14.7	9.0	5.3	3.3	2.0	1.1	1.6	4.2	5.9	0.6	0.3

FEIS ID #7

Table 9. Estimated Magnetic Fields in 2023 (mG) Update 12/30/2013

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV	Peak	310/20	1.3	2.6	8.7	13.6	22.2	33.8	31.5	18.9	11.2	7.2	5.0	1.8	0.9
	Average	208/13	0.8	1.7	5.9	9.1	14.9	22.7	21.1	12.7	7.5	4.8	3.3	1.2	0.6
Single Pole Davit Arm 345 kV/161 kV at Initial 345 kV/69 kV Operation	Peak	310/92	1.1	2.2	7.6	12.1	20.1	31.5	29.9	17.0	8.8	5.1	3.4	1.3	0.7
	Average	208/62	0.7	1.5	5.1	8.1	13.5	21.2	20.1	11.4	5.9	3.4	2.3	0.9	0.5
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit	Peak	310	1.3	2.7	9.0	14.0	22.7	34.5	32.1	19.9	12.1	7.9	5.4	1.9	1.0
	Average	208	0.9	1.8	6.1	9.4	15.3	23.1	21.5	13.3	8.1	5.3	3.6	1.3	0.7
Single Pole Davit Arm Low Profile 345 kV/161 kV	Peak	310/48	1.2	2.6	10.0	17.3	31.3	41.0	30.3	14.9	6.9	4.4	3.1	1.1	0.5
	Average	208/32	0.8	1.7	6.7	11.6	21.0	27.6	20.4	10.0	4.6	3.0	2.1	0.7	0.3
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	Peak	310	1.3	2.7	10.5	18.0	32.6	42.9	32.2	18.1	10.2	6.2	4.1	1.2	0.6
	Average	208	0.9	1.8	7.0	12.1	21.9	28.8	21.6	12.1	6.9	4.2	2.7	0.8	0.4
Single Pole Braced Post 161 kV/161 kV	Peak	132/84	0.2	0.3	1.2	2.1	4.3	10.3	15.3	5.3	1.6	0.8	0.5	0.2	0.1
	Average	88/56	0.1	0.2	0.8	1.4	2.9	6.8	10.2	3.5	1.1	0.5	0.4	0.2	0.1
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	Peak	132/56	0.2	0.4	1.5	2.6	5.2	11.7	15.7	5.5	2.3	1.3	0.9	0.3	0.2
	Average	88/38	0.1	0.3	1.0	1.7	3.4	7.7	10.5	3.6	1.5	0.9	0.6	0.2	0.1
Single Pole Braced Post 161 kV	Peak	132	0.2	0.5	1.7	2.8	5.2	11.1	20.4	13.5	5.9	3.0	1.8	0.5	0.2
	Average	88	0.2	0.3	1.2	1.9	3.5	7.4	13.6	9.0	2.9	2.0	1.2	0.3	0.1
Single Pole Davit Arm 345 kV/161 kV/161 kV	Peak	310/48/20	1.0	2.2	6.0	8.3	12.0	17.3	13.7	7.9	5.6	4.7	3.8	1.6	0.8
	Average	208/32/13	0.7	1.5	4.1	5.6	8.0	11.6	9.2	5.3	3.8	3.2	2.5	1.1	0.5

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV with 69kV Underbuild at Initial 345kV with 69kV Underbuild Operation	Peak	310/0/118	1.0	2.3	8.3	12.7	20.4	31.9	43.0	36.1	12.8	6.8	4.7	1.7	0.8
	Average	208/0/79	0.7	1.6	5.6	8.5	13.7	21.4	28.8	24.2	8.6	4.6	3.1	1.1	0.5
Two Pole H-Frame 345 kV/161 kV	Peak	310/258	1.8	4.3	18.9	33.1	50.2	50.0	35.3	22.4	31.6	24.8	15.6	3.9	1.7
	Average	208/173	1.2	2.9	12.7	22.2	33.7	33.6	23.7	15.0	21.2	16.6	10.4	2.6	1.1
Two Pole H-Frame 345 kV Parallel with Existing Two Pole H-Frame 161 kV	Peak	310 Parallel 258	1.6	3.9	20.4	37.8	54.2	49.2	22.2	22.4	33.4	25.4	15.4	3.7	1.7
	Average	208 Parallel 173	1.1	2.6	13.7	25.4	36.4	33.0	14.9	15.0	22.4	17.0	10.3	2.5	1.1
Existing Single Pole Davit Arm 161 kV/161 kV Parallel With Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	Peak	48/20 Parallel 310	1.5	3.4	13.9	22.6	34.1	31.3	18.2	6.5	10.5	7.4	5.0	1.7	0.9
	Average	32/13 Parallel 208	1.0	2.3	9.3	15.2	22.9	21.0	12.2	4.4	7.0	5.0	3.3	1.1	0.6
Single Pole Braced Post 161 kV at 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation	Peak	99 Parallel 177/128	0.3	0.8	8.1	15.3	10.8	5.3	4.0	6.0	13.9	21.0	7.4	0.3	0.2
	Average	66 Parallel 119/86	0.2	0.5	5.4	10.2	7.2	3.5	2.7	4.0	9.4	14.1	5.0	0.2	0.1

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Braced Post 161 kV/161 kV at 161 kV/ 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation Parallel with Single Pole Braced Post 161 kV at 69 kV Initial Operation	Peak	128/99 Parallel 177/128 Parallel 132	0.6	3.7	2.7	2.9	5.3	12.7	20.5	8.8	3.8	3.3	5.3	6.0	0.9
	Average	86/66 Parallel 119/86 Parallel 88	0.4	2.5	1.8	1.9	3.6	8.5	13.8	5.9	2.5	2.2	3.6	4.0	0.6
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service Parallel with Single Pole Davit Arm 345 kV/ 161 kV	Peak	310 Parallel 130/84	2.3	8.4	33.6	21.9	14.3	10.7	9.7	11.1	15.2	20.9	19.4	3.6	0.8
	Average	208 Parallel 87/56	1.5	5.6	22.6	14.7	9.6	7.2	6.5	7.4	10.2	14.0	13.0	2.4	0.6

Table 9A. Estimated Magnetic Fields Maximum (mG)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV	Peak	975/132	3.8	7.7	26.4	41.1	67.7	104.1	97.2	56.8	32.1	20.2	14.0	5.1	2.7
	Average	653/88	2.5	5.2	17.7	27.6	45.4	69.7	65.1	38.0	21.5	13.6	9.4	3.4	1.8
Single Pole Davit Arm 345 kV/161 kV at Initial 345 kV/69 kV Operation	Peak	975/92	3.9	8.0	27.0	42.0	68.9	105.4	98.3	58.8	34.2	21.8	15.0	5.3	2.8
	Average	653/62	2.6	5.3	18.1	28.1	46.1	70.6	65.8	39.4	22.9	14.6	10.0	3.6	1.9
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit	Peak	975	4.1	8.4	28.4	43.9	71.5	108.4	100.8	62.5	38.1	24.7	17.1	5.9	3.1
	Average	653	2.7	5.7	19.0	29.4	47.9	72.6	67.5	41.9	25.5	16.6	11.4	4.0	2.1
Single Pole Davit Arm Low Profile 345 kV/161 kV	Peak	975/190	3.8	8.0	31.2	53.6	97.3	127.7	94.2	45.1	19.5	12.8	9.3	3.2	1.6
	Average	653/127	2.5	5.4	20.9	35.9	65.2	85.5	63.1	30.2	13.0	8.6	6.3	2.2	1.1
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	Peak	975	4.0	8.5	33.0	56.6	102.5	134.9	101.1	56.8	32.1	19.6	12.9	3.8	1.8
	Average	653	2.7	5.7	22.1	37.9	68.7	90.4	67.7	38.1	21.5	13.1	8.6	2.6	1.2
Single Pole Braced Post 161 kV/161 kV	Peak	390/126	0.7	1.4	5.1	8.6	16.7	36.9	48.5	18.3	8.4	5.0	3.3	1.2	0.7
	Average	261/84	0.5	1.0	3.4	5.8	11.2	24.7	32.4	12.2	5.6	3.3	2.2	0.8	0.5
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	Peak	390/79	0.8	1.6	5.6	9.4	18.1	39.2	51.0	21.6	10.4	6.1	4.0	1.3	0.7
	Average	261/53	0.5	1.1	3.8	6.3	12.1	26.2	34.1	14.5	7.0	4.1	2.7	0.9	0.5
Single Pole Braced Post 161 kV	Peak	390	0.7	1.4	5.1	8.3	15.4	32.8	60.4	39.8	17.4	8.9	5.2	1.3	0.6
	Average	261	0.5	1.0	3.4	5.6	10.3	22.0	40.4	26.6	11.7	6.0	3.5	0.9	0.4
Single Pole Davit Arm 345 kV/161 kV/161 kV	Peak	975/190/132	3.2	6.8	19.3	26.8	39.3	60.6	49.7	24.8	12.7	12.7	10.7	4.7	2.4
	Average	653/127/88	2.1	4.5	12.9	17.9	26.7	40.6	33.2	16.6	8.5	8.5	7.2	3.2	1.6

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV with 69kV Underbuild at Initial 345kV with 69kV Underbuild Operation	Peak	975/0/118	3.1	7.1	24.4	37.0	58.3	86.7	97.5	71.1	34.6	22.2	15.6	5.4	2.6
	Average	653/0/79	2.1	4.7	16.3	24.8	39.1	58.1	65.3	47.6	23.1	14.9	10.5	3.6	1.7
Two Pole H-Frame 345 kV/161 kV	Peak	975/496	5.1	12.2	56.4	100.9	157.0	161.7	122.7	61.4	69.5	56.7	36.8	9.8	4.4
	Average	653/332	3.4	8.2	37.8	67.6	105.1	108.3	82.2	41.1	46.6	38.0	24.6	6.5	2.9
Two Pole H-Frame 345 kV Parallel with Existing Two Pole H-Frame 161 kV	Peak	975 Parallel 496	4.7	11.5	61.6	116.1	171.5	163.8	89.3	41.7	66.6	54.5	34.3	8.8	4.0
	Average	653 Parallel 332	3.1	7.7	41.2	77.8	114.9	109.7	59.8	27.9	44.6	36.5	23.0	5.9	2.7
Existing Single Pole Davit Arm 161 kV/161 kV Parallel With Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	Peak	190/132 Parallel 975	4.6	10.5	43.3	70.5	107.0	99.8	60.3	12.5	32.8	23.2	15.4	5.1	2.6
	Average	127/88 Parallel 653	3.1	7.0	29.0	47.3	71.7	66.9	40.4	8.4	21.9	15.6	10.3	3.4	1.8
Single Pole Braced Post 161 kV at 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation	Peak	99 Parallel 236/141	0.3	0.8	8.0	15.4	11.3	5.9	5.2	8.6	19.7	27.9	9.0	0.6	0.3
	Average	66 Parallel 158/94	0.2	0.5	5.3	10.3	7.5	3.9	3.5	5.8	13.2	18.7	6.0	0.4	0.2

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Braced Post 161 kV/161 kV at 161 kV/ 69 kV Initial Operation Parallel with Single Pole Braced Post 161 kV/161 kV at 69 kV/ 161 kV Initial Operation Parallel with Single Pole Braced Post 161 kV at 69 kV Initial Operation	Peak	370/99 Parallel 236/141 Parallel 390	2.7	16.7	7.9	5.2	6.5	15.7	26.9	12.9	7.7	8.9	15.3	18.0	2.7
	Average	248/66 Parallel 158/94 Parallel 261	1.8	11.2	5.3	3.5	4.4	10.5	18.0	8.7	5.1	6.0	10.3	12.1	1.8
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service Parallel with Single Pole Davit Arm 345 kV/ 161 kV	Peak	975 Parallel 761/126	6.7	25.7	107.9	71.6	48.5	38.3	37.9	47.3	69.4	99.0	88.4	13.9	3.9
	Average	653 Parallel 510/84	4.5	17.2	72.2	47.9	32.5	25.7	25.4	31.7	46.5	66.4	59.3	9.3	2.6

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

January 9, 2014

VIA EMAIL

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Sixth Response

Dear Mr. Kirsch:

I write to provide a response to your December 30, 2013 request for ITC Midwest LLC to revise the photo simulations previously provided to you on December 19 and 20, 2013. The attached simulations have been revised to include the requested existing easement width identified on each figure. The simulations will be emailed in four batches to accommodate email size limits.

Thank you for your questions and for providing us time to gather the requested information. Please contact me if you have any further questions.

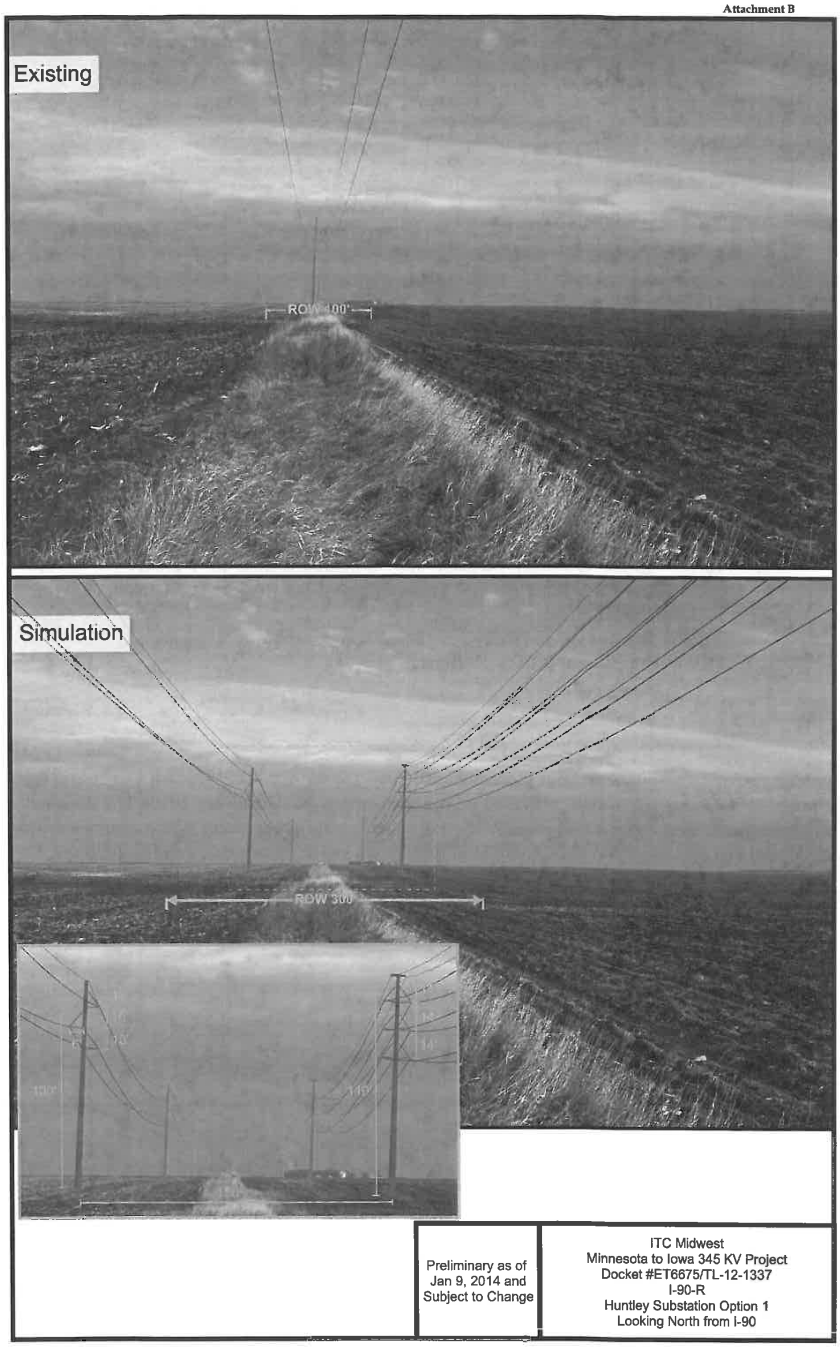
Sincerely,

David B. Grover

David B. Grover
651 222-1000; ext. 2308

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B



FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

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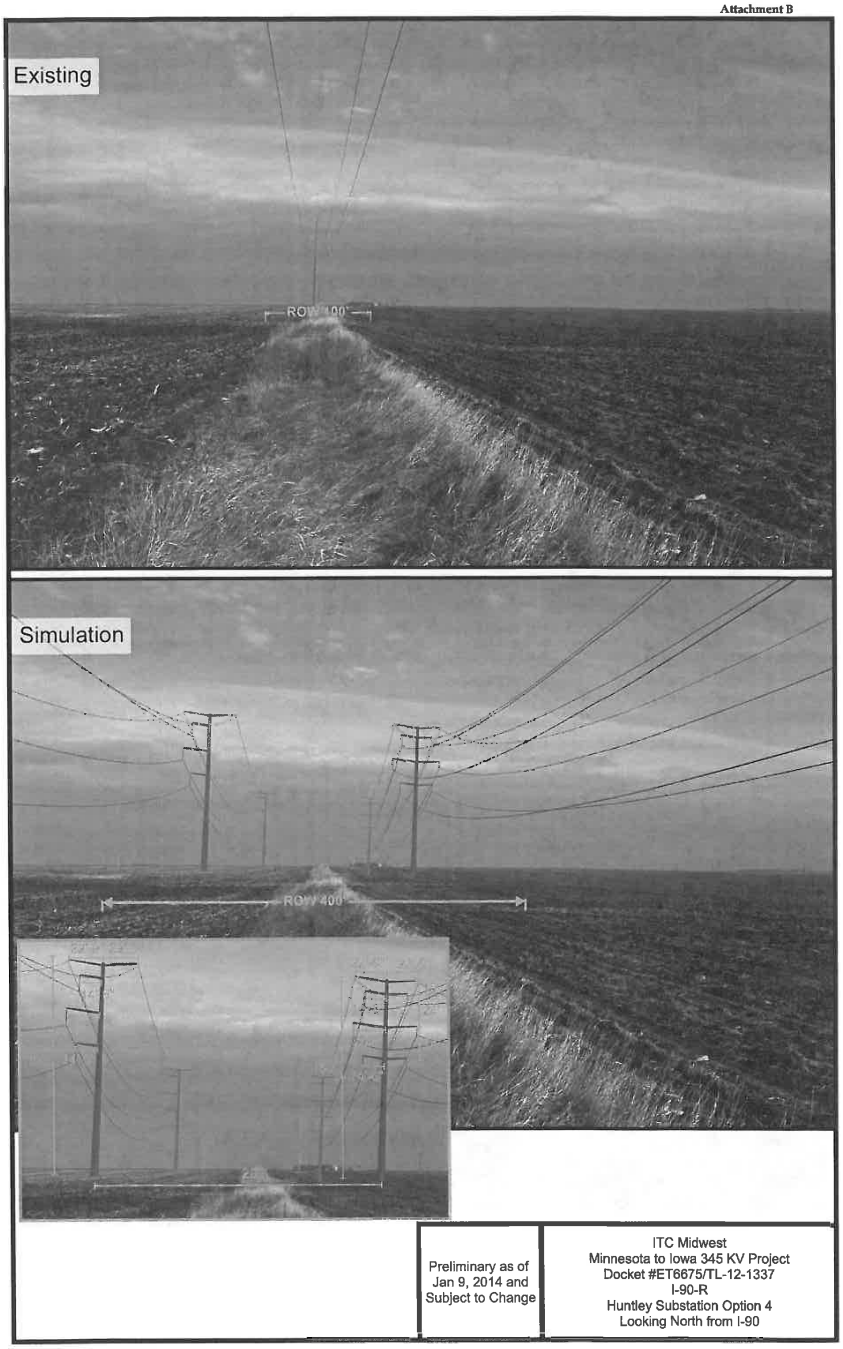

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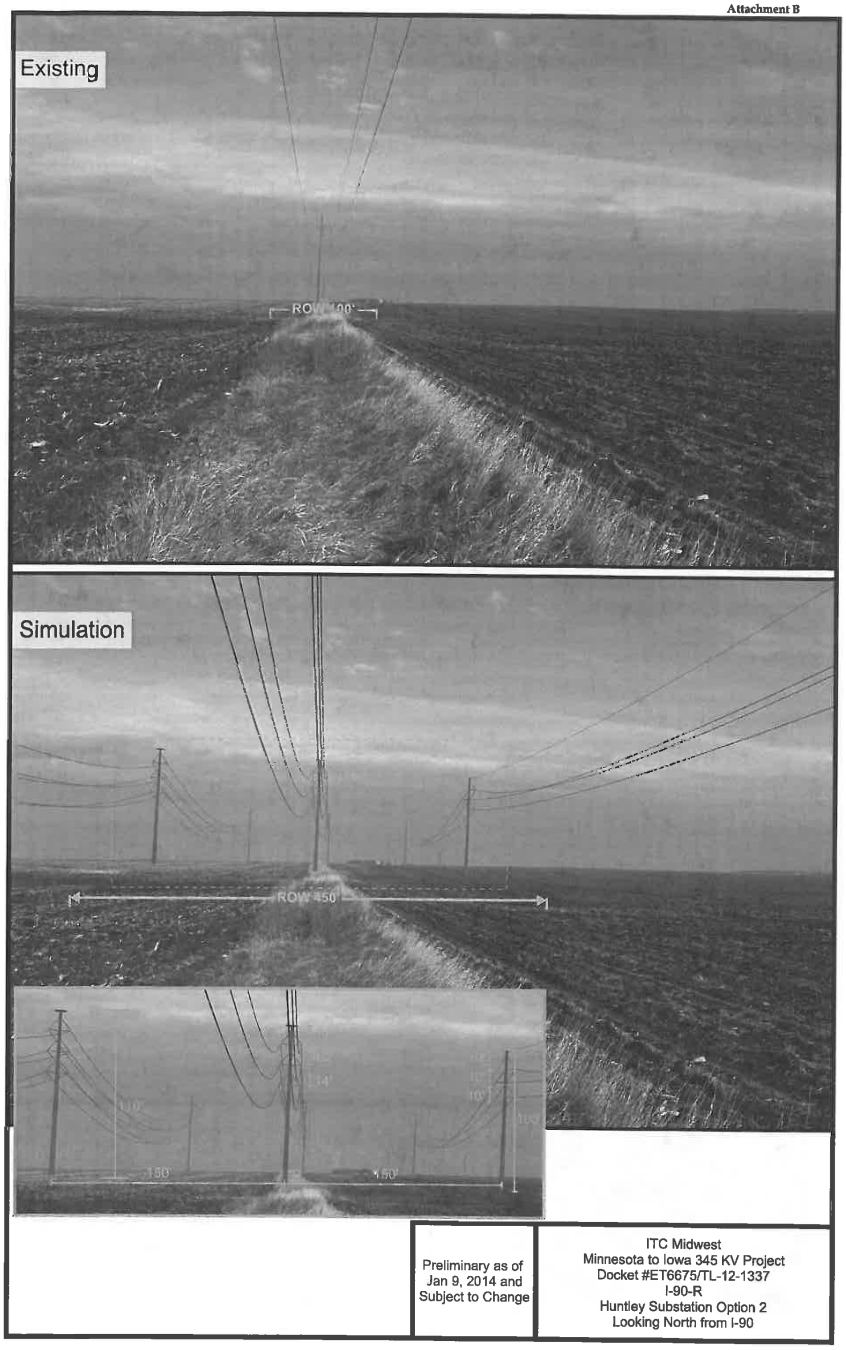

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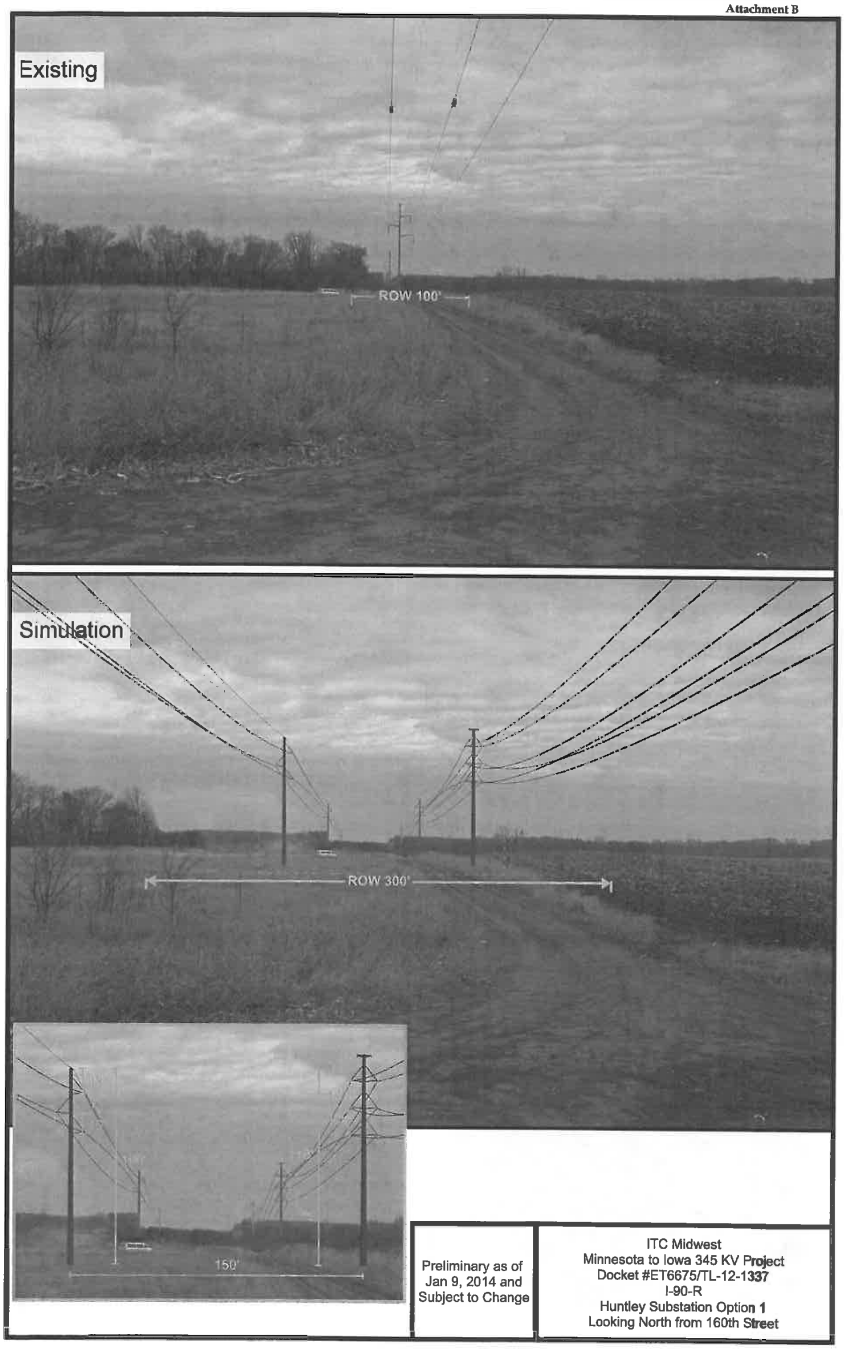

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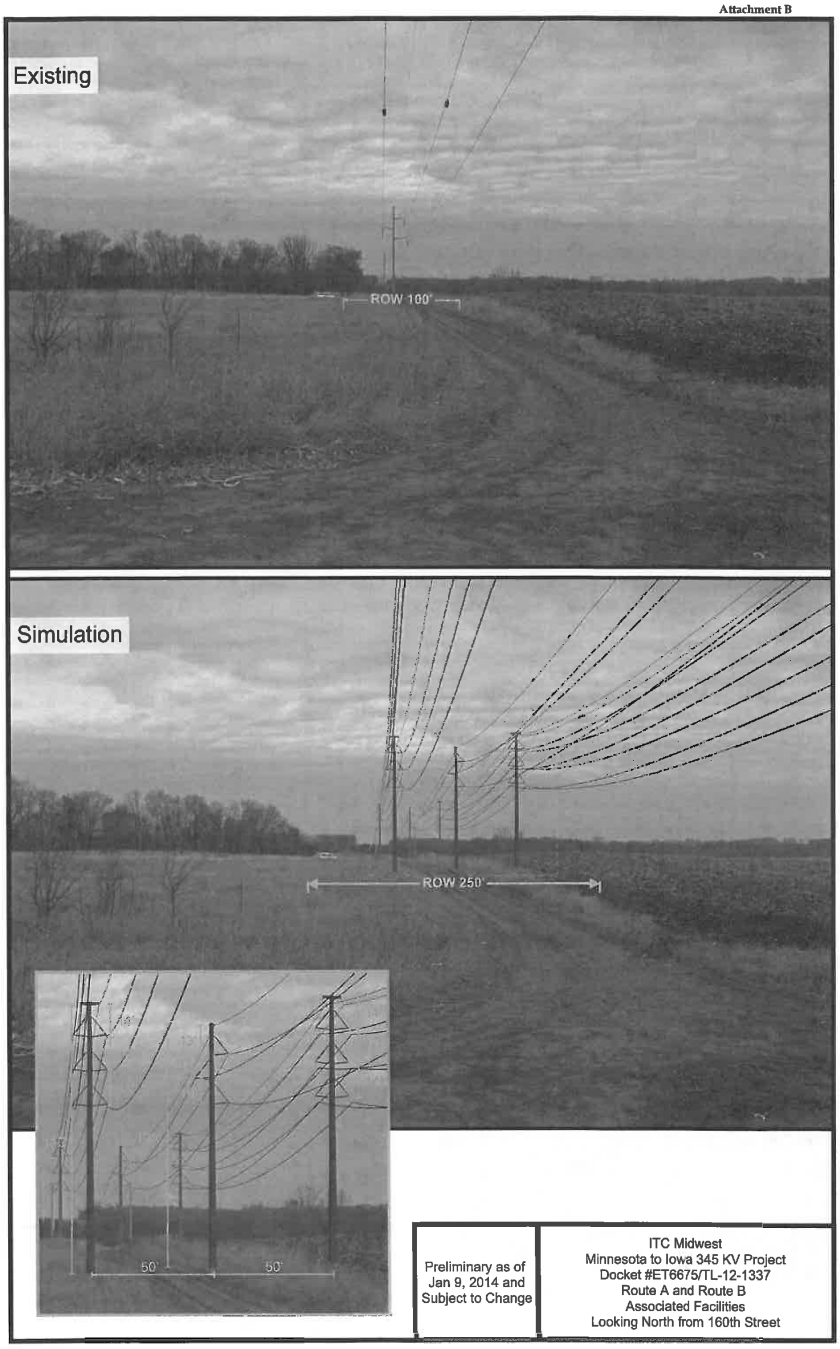

FEIS ID #7

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Attachment B

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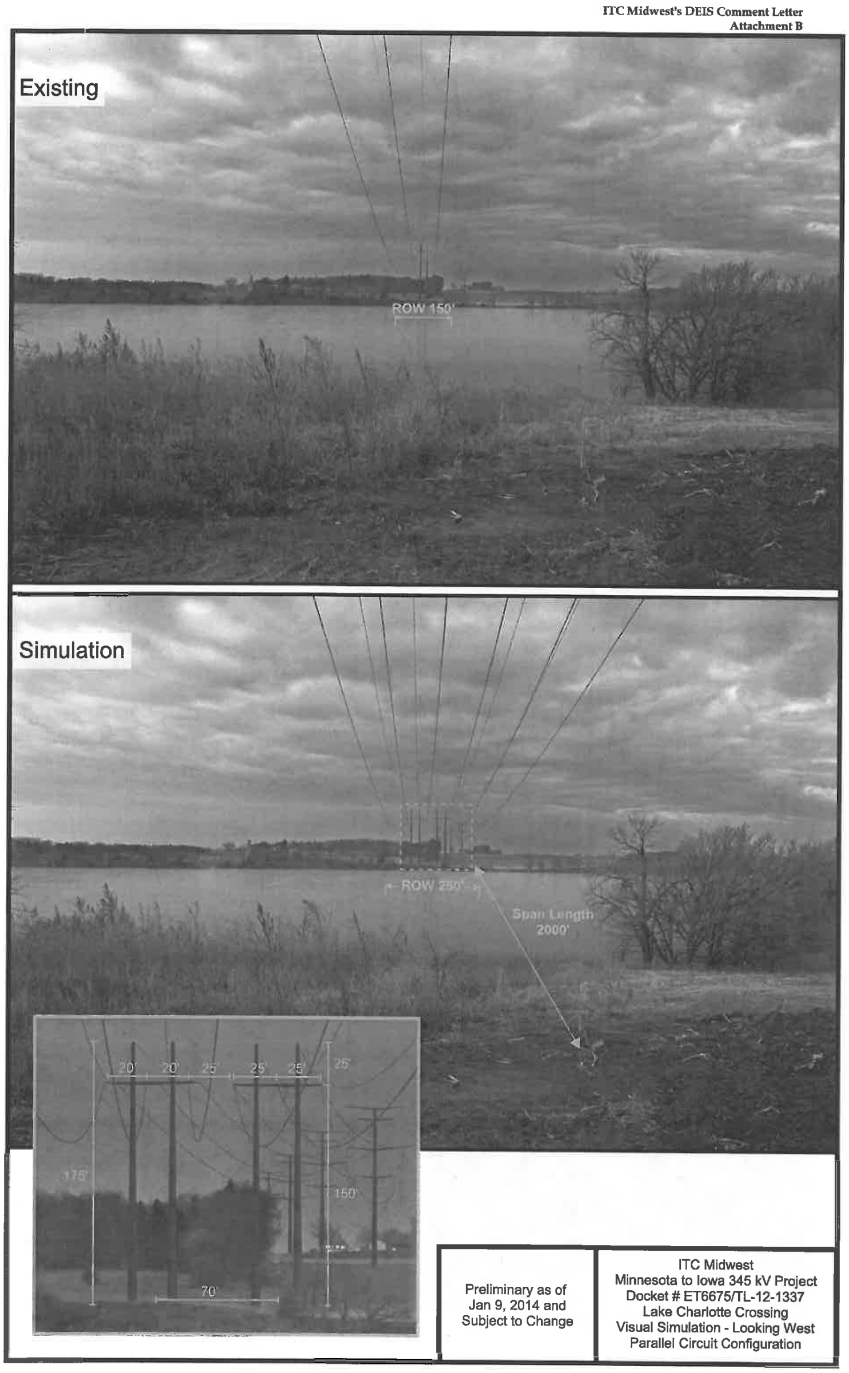
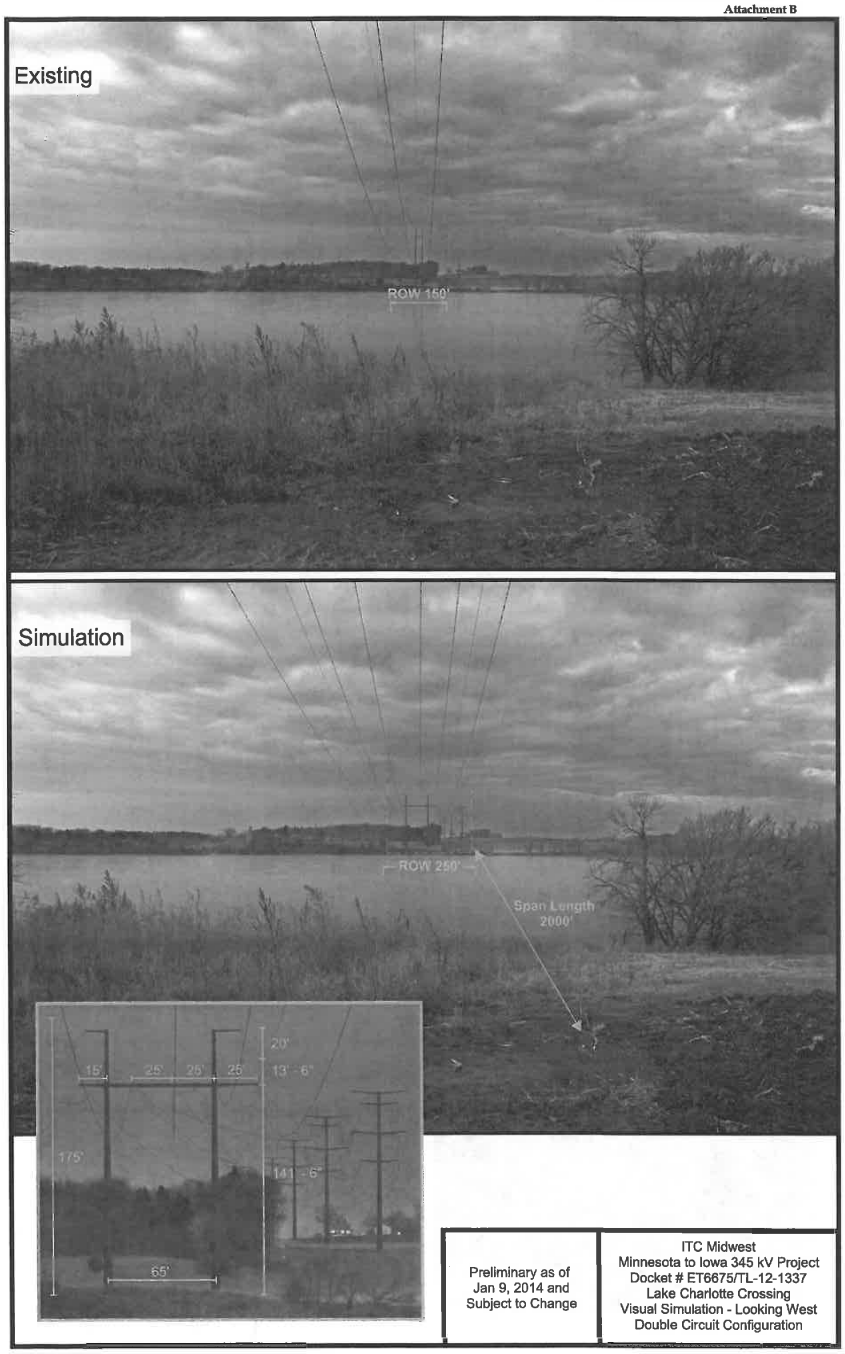
Attachment B

FEIS ID #7

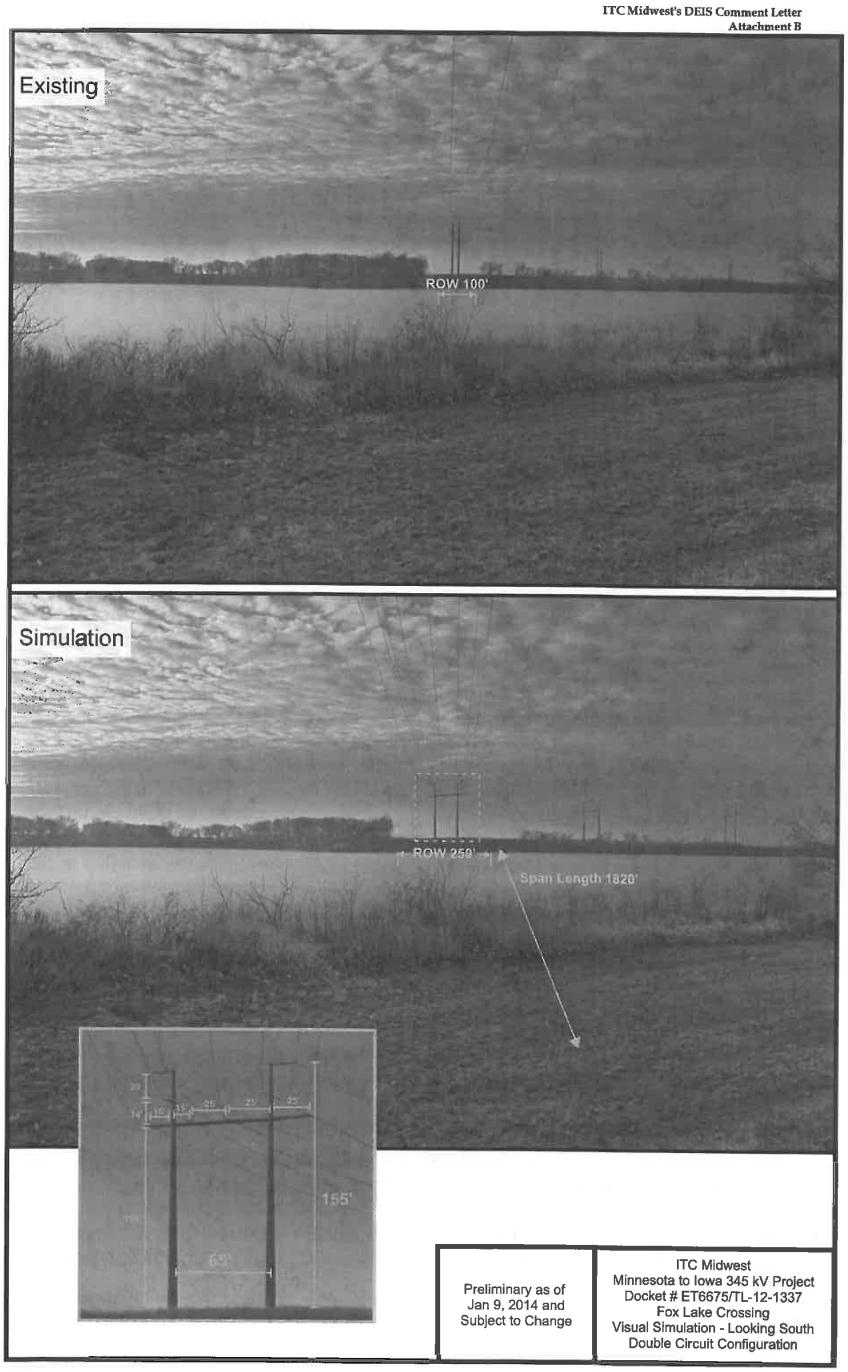

ITC Midwest's DEIS Comment Letter
Attachment B
Existing
ROW 150'
Simulation
ROW 250'
Span Length
2000'
20'
20'
25'
25'
25'
25'
175'
150'
70'
Preliminary as of
Jan 9, 2014 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 kV Project
Docket # ET6675/TL-12-1337
Lake Charlotte Crossing
Visual Simulation - Looking West
Parallel Circuit Configuration

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B



FEIS ID #7


ITC Midwest's DEIS Comment Letter
Attachment B
Existing
ROW 100'
Simulation
ROW 259'
Span Length 1820'
155'
65'
Preliminary as of
Jan 9, 2014 and
Subject to Change
ITC Midwest
Minnesota to Iowa 345 kV Project
Docket # ET6675/TL-12-1337
Fox Lake Crossing
Visual Simulation - Looking South
Double Circuit Configuration

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

January 27, 2014

VIA EMAIL

Raymond Kirsch
Minnesota Department of Commerce
Suite 500
85 Seventh Place East
St. Paul, MN 55101

Re: In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota – Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties
MPUC Docket No. ET6675/TL-12-1337
EIS Development – Seventh Response

Dear Mr. Kirsch:

ITC Midwest LLC ("ITC Midwest") prepared the estimates in this spreadsheet in response to a request from the Department of Commerce, Energy Environmental Review and Analysis ("EERA") to provide cost estimates for route alternatives identified in documents provided by email on January 7, 2014. The routes for which cost estimates have been provided were developed by EERA. ITC Midwest prepared these cost estimates for each route using per-mile estimates based on the general structure type (single circuit, double circuit, or triple circuit) for the transmission line plus the cost of associated facilities, including substation facilities. ITC Midwest notes that more precise assumptions were made with respect to costs included in the Route Permit and Certificate of Need applications. This same level of precision was not possible in development of cost estimates for these Scoping Decision alternatives because ITC Midwest has not studied these alternatives in the necessary detail to do so. The cost estimates for the routes you identified are provided with this letter at **Exhibit A**.

ITC Midwest also notes the following assumptions made in these estimates:

- Building the 345 kV circuit along any of the I-90-R alternate routes will have higher construction costs due to more limited options for access and more restrictions for the interstate crossings. An estimate for this additional cost ($30,000 per mile) has been included in the I-90-R alternate routes 1 through 5 and DNR1 as well as A-LH. Also, this additional cost was given consideration in the Fox Lake route variations with the exception of Var-5 and Var-6, which have no segments along I-90.

- The cost estimates for I-90-3 through I-90-5 include the estimated cost to remove the existing 161 kV transmission line west of Sherburn and rebuild it to a 345 kV/161 kV transmission line.

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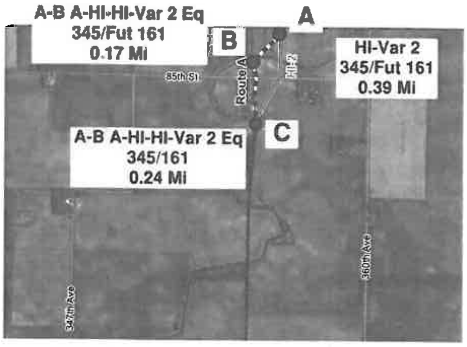
ITC Midwest's DEIS Comment Letter
Attachment B

- Building the 345 kV circuit across Fox Lake would require replacing the existing 161 kV circuit with a double circuit 345 kV/161 kV configuration due to corridor width restraints on both sides of the lake. The lake crossing removal and construction is estimated at a lump sum of $3 million.

- Building the 345 kV circuit across Lake Charlotte could be accomplished by either adding a parallel 345 kV circuit alongside the existing 161 kV line or building a 345 kV/161 kV configuration. While it is less costly to leave the 161 kV in place, the estimate includes the higher cost estimate of a double circuit lake crossing at $3 million.

- Alternate route HI-Var 2 and the equivalent Route A segment are just south of the Faribault Substation. The existing 161 kV circuit terminations must remain and, therefore, ITC Midwest has presumed HI-Var 2 is 345 kV circuit construction only. The Route A segment used for comparison has only a 345 kV circuit on the diagonal portion and 345 kV/161 kV configuration along the existing 161 kV circuit route. Please see the illustration below.



Thank you for your questions and for providing us time to gather the requested information. Please contact me if you have any further questions.

Sincerely,

David B. Grover

David B. Grover

ITC Midwest's DEIS Comment Letter
Attachment B

Exhibit A
January 27, 2014
Subject to Assumptions Identified in Cover Letter

Routes and Route Alternatives

Lakefield to Huntley Substation				Estimated Costs ($ millions)			
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Substation(s)	Associated Facilities	Total
A-LH	A	Full - LH	57.62	139.7	39	3	181.7
B-LH	B	Full - LH	55.47	122.6	39	3	164.6
I90-1	A+I-90+I-90(M5)+I-90(M6)+M12+A	Full - LH	57.03	141.1	39	3	183.1
I90-2	A+I-90(M5)+I-90(M6)+M12+A	Full - LH	55.55	135.9	39	3	177.9
I90-3	A+I-90+I-90(M5)+I-90(M6)+I-90+New	Full - LH		140.6	39	4.3	183.9
I90-4	A+I-90+I-90(M5)+I-90(M6)+I-90+A	Full - LH		140.9	39	5.4	185.3
I90-5 Opt1*	A+I-90+I-90(M5)+I-90(M6)+I-90	Full - LH		133.5	39.6	23.7	196.8
I90-5 Opt2*	A+I-90+I-90(M5)+I-90(M6)+I-90	Full - LH		133.5	39.6	18.6	191.7
I90-DNR1	Removal of 161 kV across lakes and relocation along 345 kV line	Relocate 161kv		135.9	39.2	10.6	185.7
Huntley Substation to Iowa Border							
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Substation(s) - A	Associated Facilities	Total
A1-HI	A	Full - HI	15.59	36.7	0	0	36.7
B1-HI	B	Full - HI	17.58	37.2	0	0	37.2
A2-HI*	A*	Full - HI	12.05	28.5	0	0	28.5
B2-HI*	B*	Full - HI	13.42	28.3	0	0	28.3

*These shortened HI routes are to be only used if the southern Huntley Substation along I-90 (via I90-5) is chosen.

Route Variations

Jackson Airport Variations				Estimated Costs ($ millions)		
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Associated Facilities	Total
JA-Var1	A+JMAW+B+JMAE	Variation	9.58	20.3	0	20.3
JA-Var2	A+J1/J3+J2/J4+A	Variation	8.22	19.2	0	19.2
JA-Var3	A+J2/J4+A	Variation	8.24	19.2	0	19.2
A-LH - JA Eq	A	Equivalent	7.71	18.1	0	18.1
Fox Lake Variations						
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Associated Facilities	Total
FL-Var1	A+M4+M3+A	Variation	12.57	33.7	0	33.7
FL-Var2	A+M7+A	Variation	12.88	28.8	0	28.8
FL-Var3	A+M5+A	Variation	12.91	29.6	0	29.6
FL-Var4	A+M5+B+M2	Variation	12.91	29.2	0	29.2
FL-Var5	M1+B+M3+A	Variation	13.83	30.7	0	30.7
FL-Var6	A+FLW+B+M3+A	Variation	13.04	30.1	0	30.1
A-LH - FL Eq	A	Equivalent	13.19	29.5	0	29.5
FL-DNR1	Removal of 161 kV across Fox Lake and relocation along 345 kV line	Relocate 161kv		29.6	3	32.6
FL-DNR2	Removal of 161 kV across Fox Lake and relocation along 345 kV line	Relocate 161kv		29.2	3.4	32.6
Lake Charlotte Variations						
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Associated Facilites	Total
LC-Var1	A+M11	Variation	5.07	11.6	0	11.6
LC-Var2	A+M13	Variation	5.27	12.1	0	12.1
LC-Var3	A+M8+B+A	Variation	5.87	12.6	0	12.6
LC-Var4	A+M10	Variation	4.36	13.6	0	13.6
LC-Var5	M9	Variation	5.28	11.9	0	11.9
A-LH - LC Eq	A	Equivalent	5.87	12.9	0	12.9
LC-DNR1	Removal of 161 from Lake Charlotte, A + M14	Relocate 161kv		12.9	2.7	15.6
LC-DNR2	Removal of 161 from Lake Charlotte, A + M13+M14	Relocate 161kv		12.1	2.5	14.6
Center Creek WMA Variations						
GIS Route ID	Scoping Nomenclature	Type	Length (mi)	Line	Associated Facilites	Total
CC-Var1	M17	Variation	0.78	1.7	0	1.7
B-LH - CC Eq	B	Equivalent	0.78	1.7	0	1.7

Description

Drops down to I-90 at Jackson Airport connector east; double circuit with existing 161 along I-90.

Drops down to I-90 at Jackson Airport connector east; Huntley Substation Option 3 from scoping decision

Drops down to I-90 at Jackson Airport connector east; Huntley Substation Option 4 from scoping decision; going north on Route A

Drops down to I-90 at Jackson Airport connector east; Huntley Substation Option1

Drops down to I-90 at Jackson Airport connector east; Huntley Substation Option 2

Same as I90-2, except pick up 161 at Fox Lake, double circuit with 345 until intersection of Route B and M-12, where 161 hops off and goes to Rutland substation. 161 then rejoins 345 at Route A heading to Huntley.

Description

Double circuit crossing; specialty structures

Same as FL-Var3 except pickup 161 line at Fox Lake and double circuit with 345 to Route A

Same as FL-Var4 except pickup 161 line at Fox Lake and double circuit with 345 to Route A

Parallel or double circuit crossing; double circuit would require specialty structures

Same as Route A, but 161 follows A, double circuit with 345, until M-14, where 161 proceeds north to Rutland substation. 161 rejoins A after Rutland.

Same as LC-Var2, but 161 is double circuit with 345 until M-14, where 161 proceeds north to Rutland. 161 rejoins A after Rutland.

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ITC Midwest's DEIS Comment Letter
Attachment B

Exhibit A
January 27, 2014
Subject to Assumptions Identified in Cover Letter

Huntley Substation to Iowa Border Variations						
GIS Route ID	*Scoping Nomenclature*	*Type*	*Length (mi)*	*Line*	*Associated Facilities*	*Total*
HI-Var1	F1	Variation	1.19	2.8	0	2.8
A-HI - HI-Var1 Eq	A	Equivalent	1.01	2.4	0	2.4
HI-Var2	F2	Variation	0.39	0.8	0	0.8
A-HI - HI-Var2 Eq	A	Equivalent	0.41	0.9	0	0.9
HI-Var3	F3	Variation	0.76	1.7	0	1.7
B-HI - HI-Var3 Eq	B	Equivalent	0.77	1.7	0	1.7
HI-Var4	PGLN+B+PGLS	Variation	2.97	7.1	0	7.1
A-HI - HI-Var4 Eq	A	Equivalent	1.00	2.4	0	2.4
HI-Var5	F4	Variation	2.50	5.9	0	5.9
A-HI - HI-Var5 Eq	A	Equivalent	2.46	5.9	0	5.9

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ITC Midwest's DEIS Comment Letter
Attachment B

From: Grover, David
Sent: Tuesday, January 07, 2014 10:18 AM
To: 'Kirsch, Raymond (COMM)'
Subject: RE: Electronic Interference Question

Hi Ray,

We are agreeable to the following commitment, which simply adds a few qualifiers to the statement you sent us before Christmas. Let me know if it works. Thanks.

ITCM indicates that should electronic interference occur as a result of the project, it will work with affected landowners on a case-by-case basis to assess the cause of the interference and, to the extent practicable, restore electronic reception to pre-project quality.

Also – regarding your request last week for assistance with cost estimates, when we spoke about it, you indicated that you were expecting some maps and tables from Barr Engineering that illustrate the alternatives where you would want us to develop cost estimates. Have you received those? Our internal folks would like more definition of the request before we determine if we can provide this information.

Dave

From: Kirsch, Raymond (COMM) [mailto:raymond.kirsch@state.mn.us]
Sent: Friday, December 20, 2013 11:05 AM
To: Grover, David
Cc: Kirsch, Raymond (COMM)
Subject: Electronic Interference Question

Dave,

In preparing the EIS, we are describing potential impacts to electronic devices in the project area, including radio, TV, wireless, GPS.

Typically, though not always, applicants include in their route permit applications discussion of their commitment to correct electronic interference issues caused by the project. And we include this commitment in the EIS in the discussion of mitigating such interference.

I do not see, in your application, any statements regarding this topic (see, e.g. Section 6.5.10). I may be missing it. If I'm not, would you be agreeable to the following commitment:

> ITCM indicates that should electronic interference occur as a result of the project, it work with affected landowners to restore electronic reception to pre-project quality.

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Let me know. You may certainly suggest edits or modifications.

Thanks,

Ray

Ray Kirsch
Energy Environmental Review and Analysis
Minnesota Department of Commerce
651-539-1841 | raymond.kirsch@state.mn.us

FEIS ID #7

ITC Midwest's DEIS Comment Letter
Attachment B

From: Grover, David
Sent: Friday, January 24, 2014 9:58 AM
To: 'Kirsch, Raymond (COMM)'
Cc: Jack Middleton (jmiddleton@burnsmcd.com)
Subject: RE: Routing Clarification at Jackson Airport

Hi Ray – I have discussed this question with others, and ITC Midwest would not propose to remove the existing 161 kV line as part of the project if this configuration (the west and east connectors and Route B) were chosen as the option around the Jackson airport. Let me know if you have any other questions.

From: Kirsch, Raymond (COMM) [mailto:raymond.kirsch@state.mn.us]
Sent: Wednesday, January 22, 2014 12:44 PM
To: Grover, David
Cc: Kirsch, Raymond (COMM); Jack Middleton (jmiddleton@burnsmcd.com)
Subject: Routing Clarification at Jackson Airport

Dave,

As we are working on the EIS, this question came up about routing at the Jackson Municipal airport….

If route A were selected from Lakefield and the Jackson west and east connectors were used to jump up to route B and back down to route A, would the existing 161 kV line be removed and double circuited with the 345 for this stretch or would it remain in place?

It seems clear to us that the 161 line would be removed and double circuited for route A and small variations on route A. But not so clear what would happen if the connectors were used in conjunction with route B.

Your thoughts on this much appreciated,

Ray

Ray Kirsch
Energy Environmental Review and Analysis
Minnesota Department of Commerce
651-539-1841 | raymond.kirsch@state.mn.us

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ITC Midwest's DEIS Comment Letter
Attachment C

345 kV Structure Design Summary

Design Configuration	Initial Operation	Structure Type	Structure Material	Right-of-Way Width (feet)	Structure Height (feet)	Structure Base Diameter (feet)	Foundation Diameter (feet)	Span Between Structures (feet)
345 kV/161 kV	345 kV/161 kV	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	700-1000
		2 Pole DE	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
		1 Pole DE	Steel	200	130-190	Deadend: 11	Deadend: 14	700-1000
		Single Pole Davit Arm Low Profile	Steel	200	100-160	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	500-1000
		3 Pole DE Low Profile	Steel	200	100-160	Deadend: 9	Deadend: 12	500-1000
345 kV/161 kV	345 kV/69 kV	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	700-1000
		2 Pole DE	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
		1 Pole DE	Steel	200	130-190	Deadend: 11	Deadend: 14	700-1000

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ITC Midwest's DEIS Comment Letter
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Design Configuration	Initial Operation	Structure Type	Structure Material	Right-of-Way Width (feet)	Structure Height (feet)	Structure Base Diameter (feet)	Foundation Diameter (feet)	Span Between Structures (feet)
345 kV/161 kV	345 kV/none	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5	Tangent: 8	700-1000
						Angle: 9	Angle: 12	
		2 Pole DE	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
		1 Pole DE	Steel	200	130-190	Deadend: 11	Deadend: 14	700-1000
		Single Pole Davit Arm Low Profile	Steel	200	100-160	Tangent: 5	Tangent: 8	500-1000
						Angle: 9	Angle: 12	
		3 Pole DE Low Profile	Steel	200	100-160	Deadend: 9	Deadend: 12	500-1000
345 kV/161 kV /161kV	345 kV/161 kV /161kV	Single Pole Davit Arm	Steel	200	175-195	Tangent: 9	Tangent: 12	600-800
						Angle: 11	Angle: 14	600-800
		2 Pole DE	Steel	200	175-195	Deadend: 11	Deadend: 14	600-800
345kV/161kV/ 69kV	345kV/69kV	Single Pole Davit Arm with Underbuild	Steel	200	130-190	Tangent: 7	Tangent: 10	600-800
						Angle: 11	Angle: 14	600-800
		1 Pole DE	Steel	200	130-190	Deadend: 11	Deadend: 14	600-800
345kV	345kV	H Structure Lake Crossing	Steel	200	150-180	Deadend: 7	Deadend: 10	1800-2000

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ITC Midwest's DEIS Comment Letter
Attachment C

Design Configuration	Initial Operation	Structure Type	Structure Material	Right-of-Way Width (feet)	Structure Height (feet)	Structure Base Diameter (feet)	Foundation Diameter (feet)	Span Between Structures (feet)
345kV/161kV	345kV/161kV	H Structure Lake Crossing	Steel	200	150-180	Deadend: 8	Deadend: 11	1800-2000

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5.3.3 Stray Voltage

Electrical systems that deliver power to end-users, home, farm or other buildings are grounded to the earth for safety and reliability reasons. The grounding of these electrical systems results in a small amount of current flow through the earth.

Stray voltage could arise from neutral currents flowing through the earth via ground rods, pipes or other conducting objects, or from faulty wiring or faulty grounding of conducting objects in a facility. Thus, stray voltage could exist at any business, house or farm which uses electricity, independent of whether there is a transmission line nearby.

Revision 1

Stray voltage is typically experienced when livestock come into contact with ~~two~~ metal objects, such as feeders, water troughs or stalls, and ground - between which a voltage exists, thereby causing a small current to flow through the livestock (Reference 25). The fact that both objects are grounded to the same place (earth) would seem to prevent any voltage from existing between the objects. However, this is not factors determine whether an object is, in fact, grounded. Factors that could influence the intensity of stray voltage include wire size and length, the quality of connections, the number and resistance of ground rods and the current being grounded.

Stray voltage is by and large an issue associated with electrical distribution lines and electrical service at a residence or on a farm. Transmission lines do not create stray voltage as they do not directly connect to businesses, residences or farms. Accordingly, no impacts due to stray voltage are anticipated from the project. The project is a 345 kV transmission line that would not directly connect to businesses or residences in the area, and does not change local electrical service.

However, transmission lines may not be, for purposes of stray voltage, completely independent of locally distributed electrical service. Where transmission lines parallel distribution lines, they can, in the immediate area of the paralleling, cause current to flow on these lines (additional current, as the distribution lines already carry current). For distribution lines and electrical service that are properly wired and grounded, these additional currents are of no matter.

However, for distribution lines and electrical service that are not properly wired and grounded, these additional currents could create stray voltage impacts.

Revision 2

Depending on the route selected for the project, the 345 kV line could parallel existing ~~69 kV lines – which, in some instances are considered a transmission line and in others, a~~ distribution lines. If a ~~69 kV line (or other~~ distribution line~~)~~ is paralleled, this arrangement could create additional currents on the distribution line in the immediate area of the paralleling. These currents are not anticipated to cause any stray voltage issues in the project area. If, however, there is not proper grounding or wiring on the distribution system or at a nearby residence, business or farm, these currents could point up this insufficiency.

Mitigation - Stray Voltage

Revision 3

~~Since transmission lines in rare instances could induce stray voltage on distribution circuits that are parallel and immediately below them, mitigation measures could be necessary where the project transmission line parallels or crosses distribution lines. These~~ In rare instances where transmission lines could induce current on inadequately grounded distribution circuits, mitigation measures tend to be site specific but could include phase cancellation, transmission-to-distribution separation, isolation of the end-user neutral, or improved grounding.

5.3.4 Induced Voltage

The electric field from a transmission line could couple with any conductive object in close proximity to the transmission line, such as a vehicle or a metal fence. This conductive coupling could induce a voltage on the object, with the magnitude of this voltage depending on factors which include the weather, object shape, size, orientation and location along the ROW.

Revision 4

~~Alternating magnetic fields created by transmission lines could also induce currents on conductive objects. If these objects are insulated or semi-insulated from the ground and a person touches them, a small current would pass through the person's body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what could occur when a person walks across a carpet and touches a grounded object or another person.~~

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ITC Midwest's DEIS Comment Letter
Attachment E

buildings very near a transmission line that would require grounding of the metal components of the building. No impacts due to induced voltage are anticipated from the project if effective grounding is implemented. Induced voltage is discussed further in Section 5.3.4.

Aerial Spraying

Transmission line structures could potentially affect the coverage and effectiveness of aerial spraying. Poles could limit the ability of aerial applicators to reach specific areas of fields, by limiting those areas where applicators could safely fly. Adverse effects on aerial spraying and to crops could be mitigated by aligning the project in a configuration that is consistent with current aerial spraying patterns or by using land-based herbicides or pesticides in the areas near the transmission line.

Irrigation Systems

Transmission line structures in agricultural fields could potentially impede the use of irrigation systems, either by necessitating reconfiguration of an irrigation system to accommodate poles or by reducing crop revenue because all or a portion of a field could not be irrigated. No known center-pivot or other irrigation systems have been identified in the project area; therefore, impacts to irrigation systems are not anticipated and mitigation would not be required. If an irrigation system is encountered during construction of the project, procedures specified in the AIMP would be implemented to minimize disruption of the system.

Precision Farming Systems

Precision farming involves the use of GPS and, more recently, real-time kinematic (RTK) GPS in farm machinery, allowing the machinery to be directed

Precision farming minimizes the potential for waste from, for example, duplicate row seeding or overlap in fertilizer or pesticide application. Transmission lines may have the potential to interfere with RTK and standard GPS used for precision farming in two ways: (1) electromagnetic noise from a transmission line could potentially interfere with the frequencies used for RTK and standard GPS signals; and (2) transmission line structures could cause line-of-site ~~obstruction~~ reflection such that sending and receiving of signals would be compromised.

Interference could occur if the noise spectrum of ~~HVTL~~ electromagnetic noise overlaps the frequency spectrum used by RTK or standard GPS systems.

As noted in Section 5.1.6, HVTL electromagnetic noise occurs from about 0.1 to 30 MHz. RTK GPS and standard GPS utilize much higher frequency ranges, from 300 to 3,000 MHz and 1,225 to 1,575 MHz, respectively (Reference 35). There is no overlap between HVTL electromagnetic noise and frequencies used by RTK and standard GPS systems; therefore, HVTL electromagnetic noise from the project is not anticipated to affect precision farming systems.

Interference due to line-of-sight ~~obstruction~~ reflection could occur in two ways: (1) obstruction of a GPS satellite signal; and (2) obstruction of radio transmissions from an RTK base station to a mobile receiving unit. GPS uses information from multiple satellite signals to determine specific locations. Interference with one signal would not cause inaccurate navigation; however, simultaneous interference with two signals could lead to inaccurate navigation. Because simultaneous interference with two signals is relatively unlikely, and any line-of-sight obstruction would be resolved with movement of the GPS receiver (e.g., tractor) such that proper GPS reception would be quickly restored, line-of-sight obstruction impacts to precision farming systems are anticipated to be minimal and temporary.

It is possible that a transmission line pole located very near (with a few hundred feet) an RTK base station could cause ~~a~~ interference with line-of-sight ~~obstruction~~ reflection in the signal from the base station. Placement of any structures, including homes, trees, sheds, sudden changes in ground elevation, etc., in this line-of-sight could cause interference with reflection. Prudent placement of poles and prudent location (or relocation) of the base station ~~would~~ may mitigate this potential impact.

5.4.2 Forestry

The project area is predominantly agricultural land with minimal forested areas, so construction of the project would result in minimal clearing of trees. A few small woodlots and shelterbelts are located adjacent to farmsteads, and some forested areas are located adjacent to waterways and on lands managed by the Minnesota Department of Natural Resources (DNR). There are, however, no known tree farms, timber plots or other commercial forestry operations in the project area. Therefore, the project is not anticipated to adversely affect forestry resources,

5.4.3 Mining

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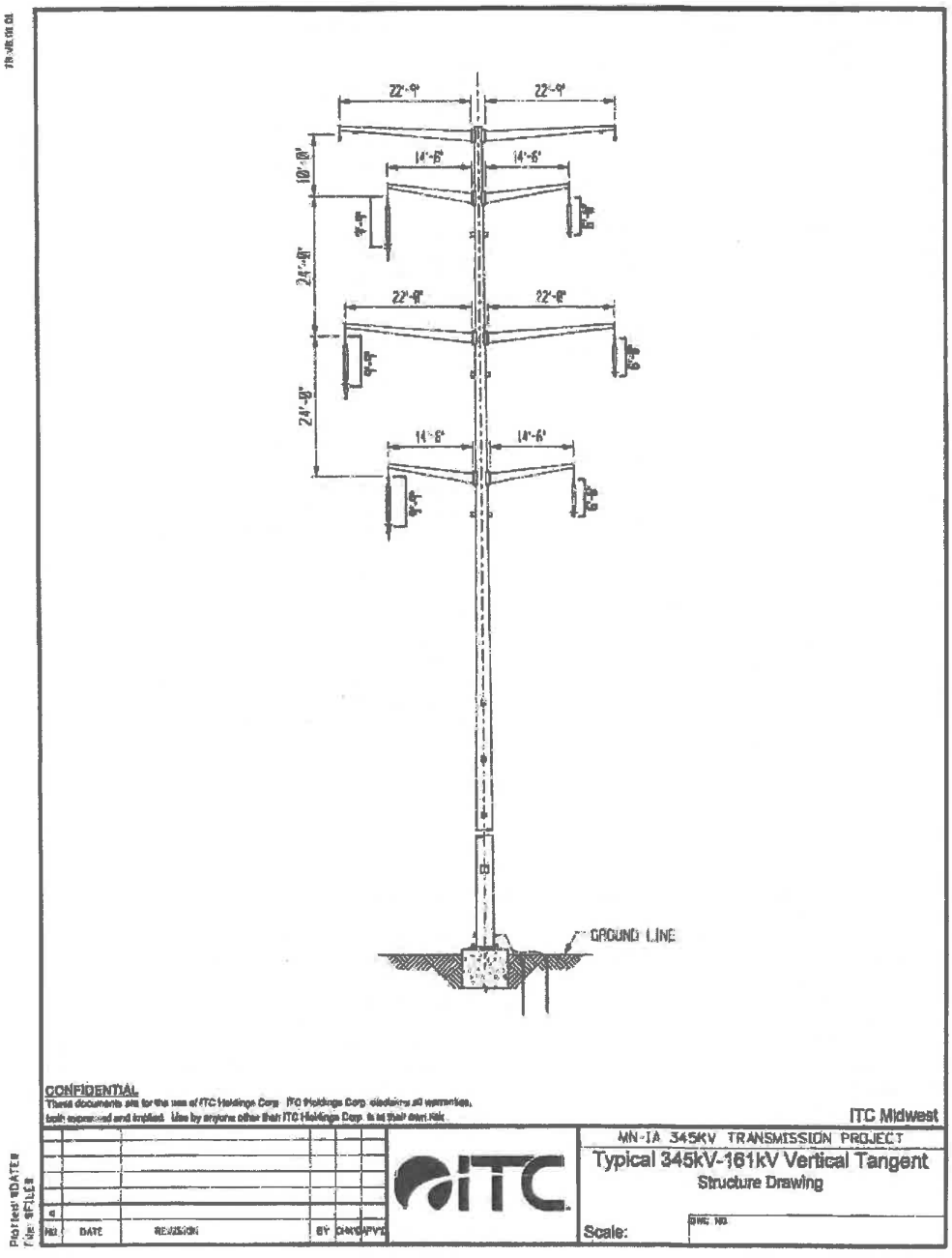
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
OAH Docket No. 60-2500-30782



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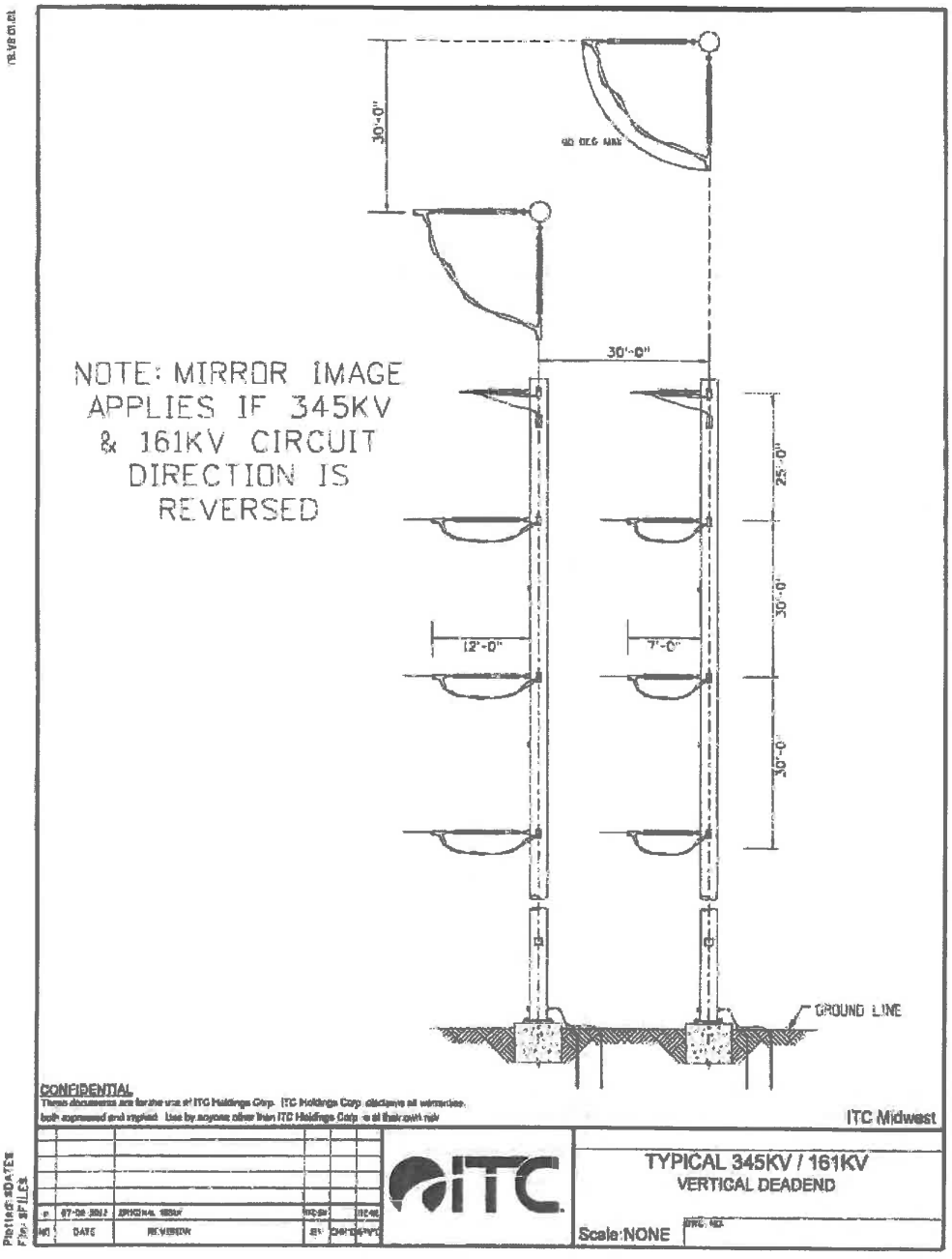

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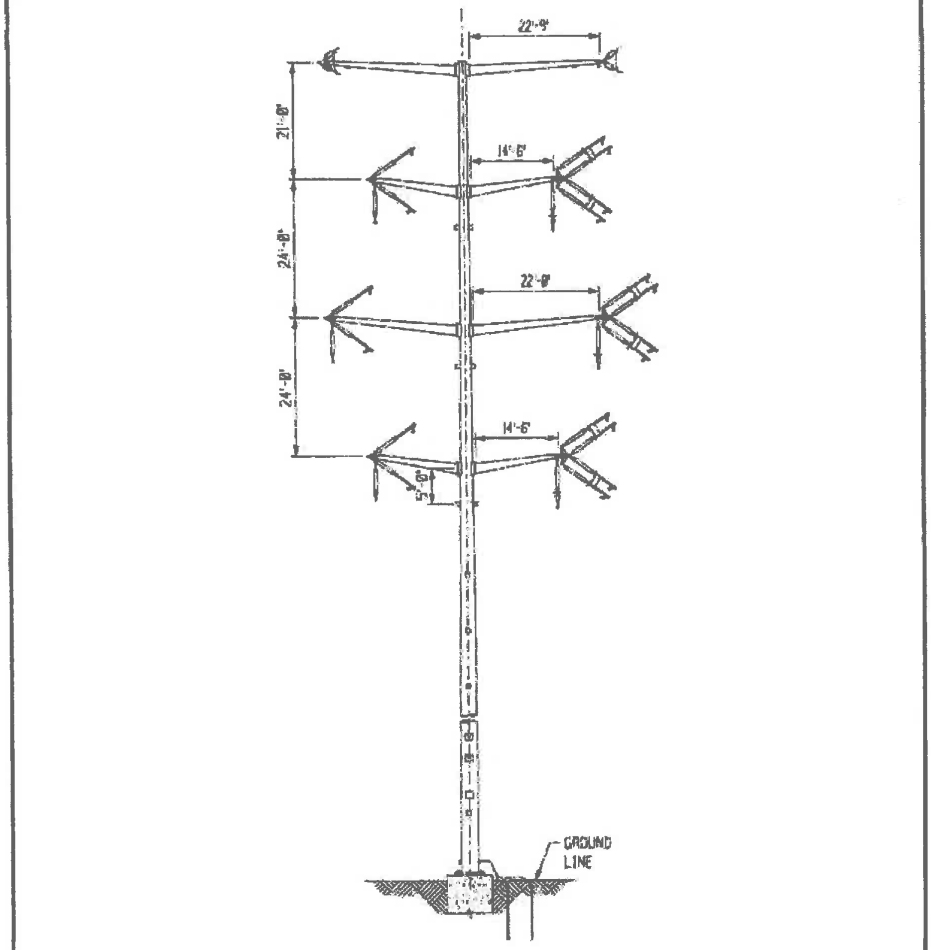

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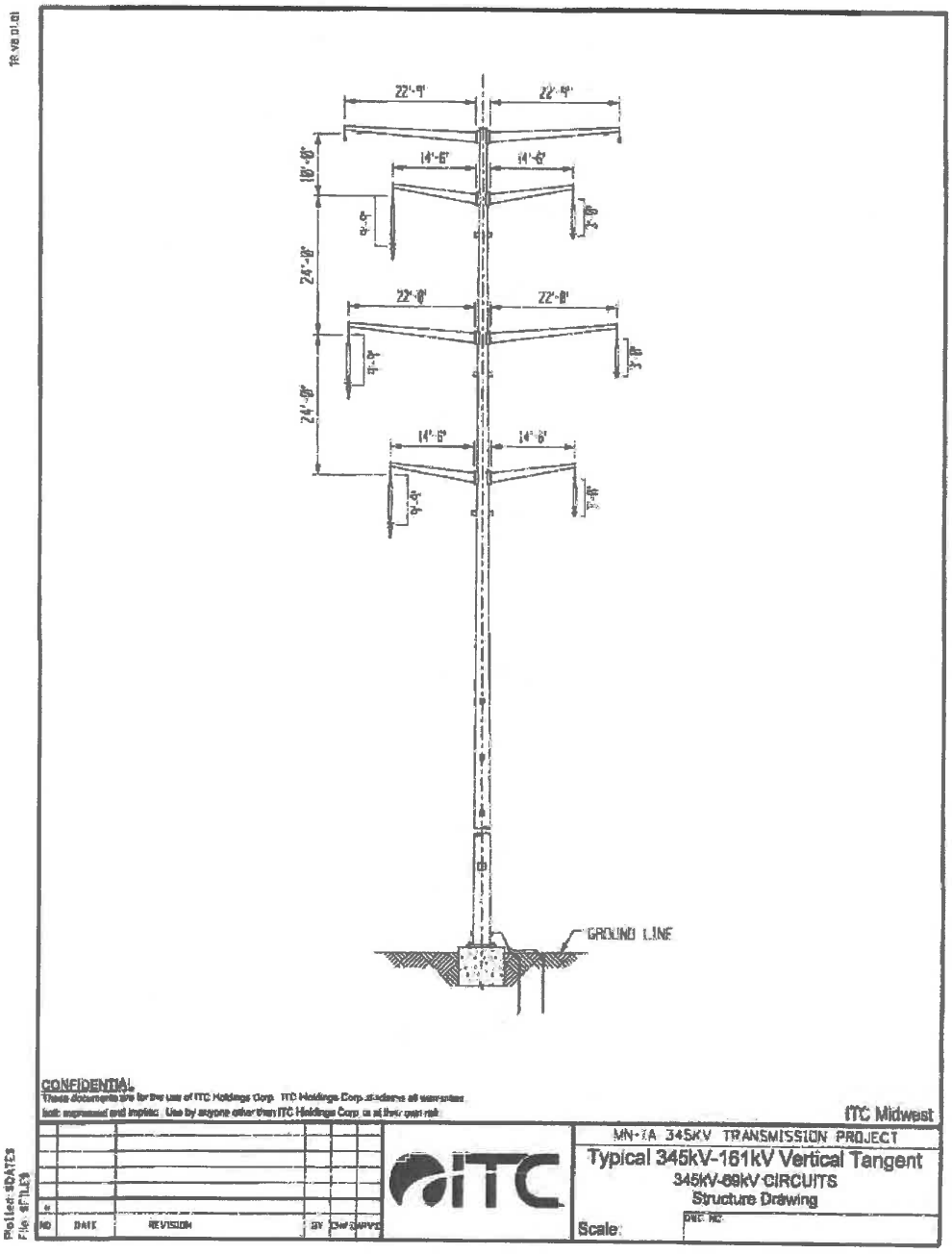

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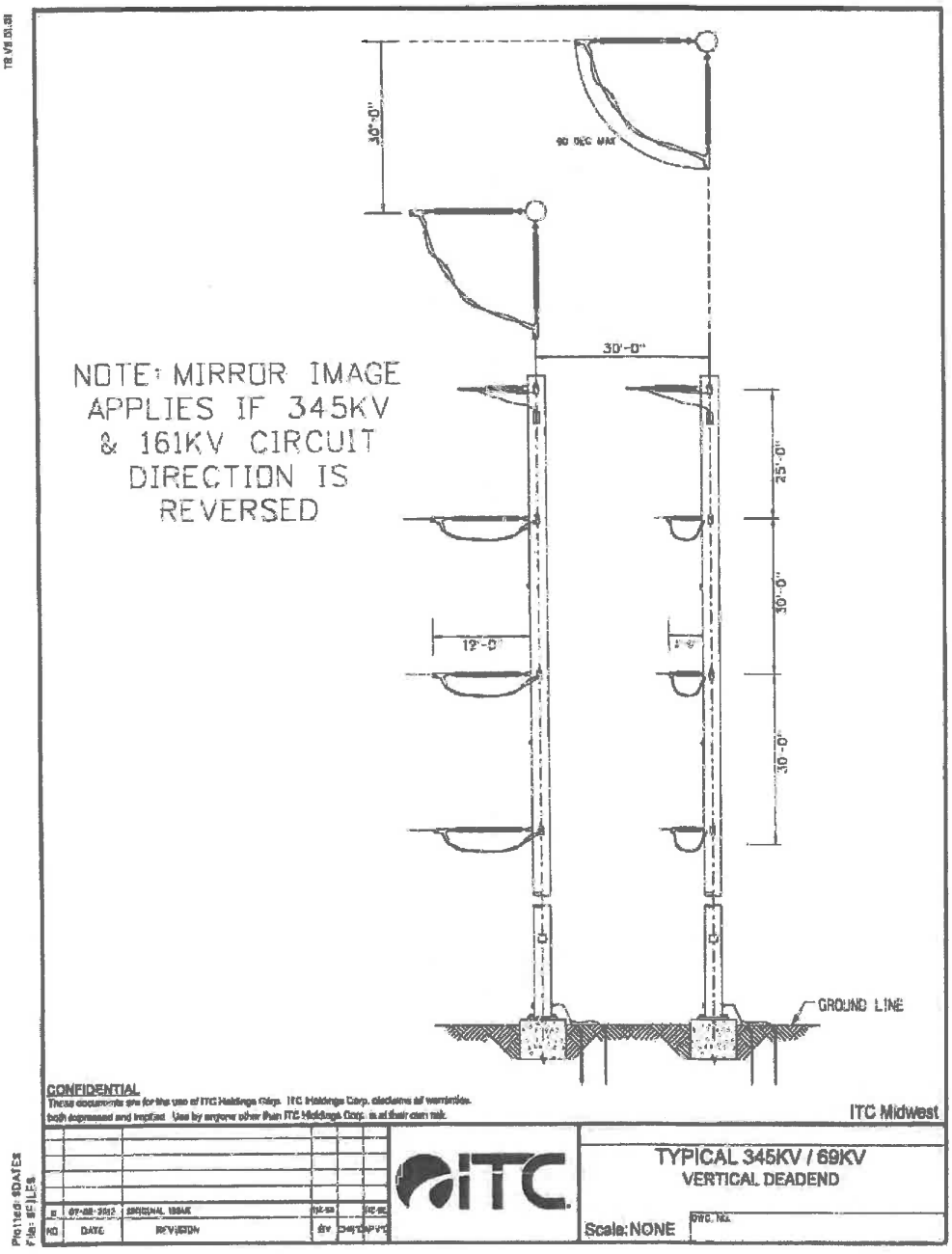

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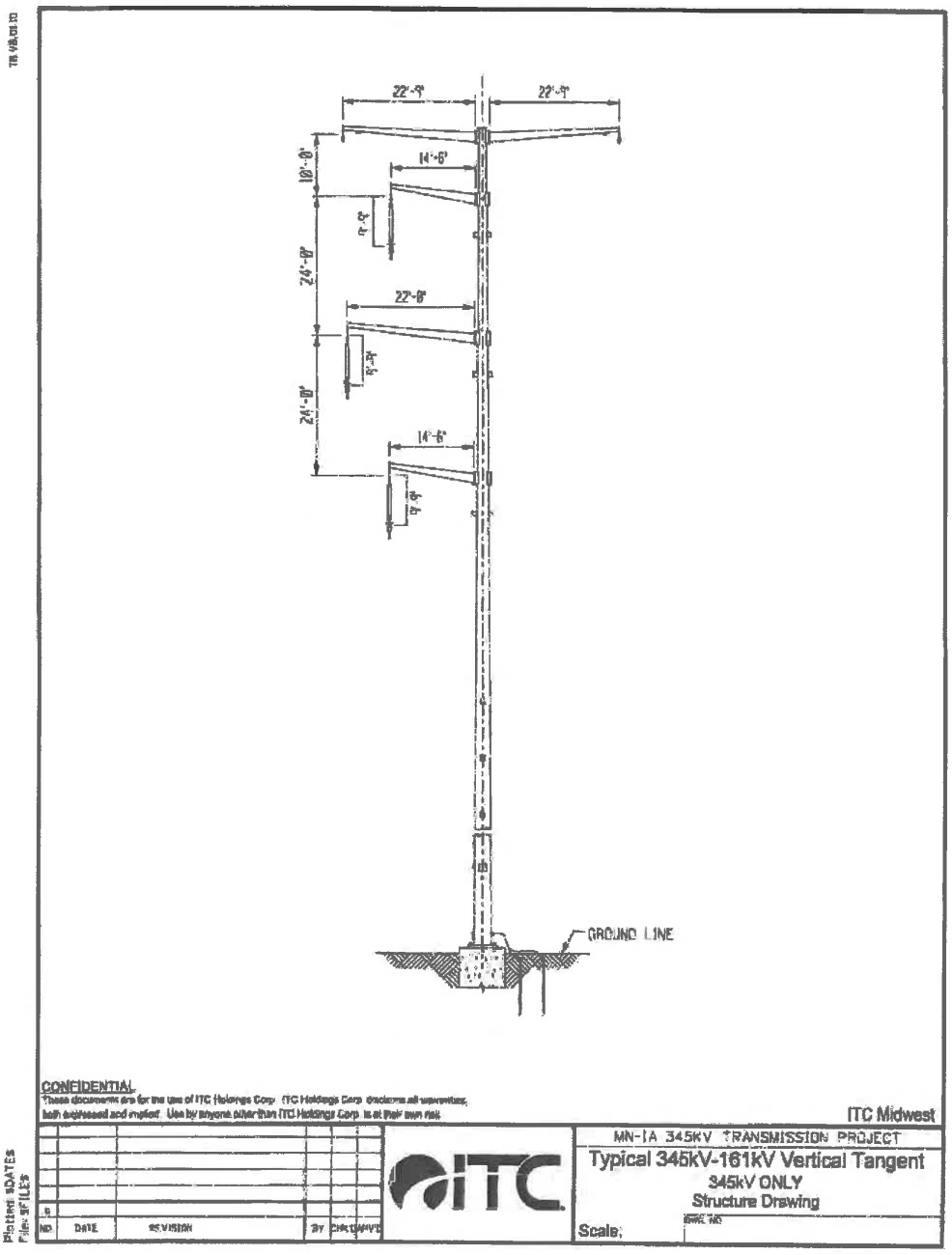

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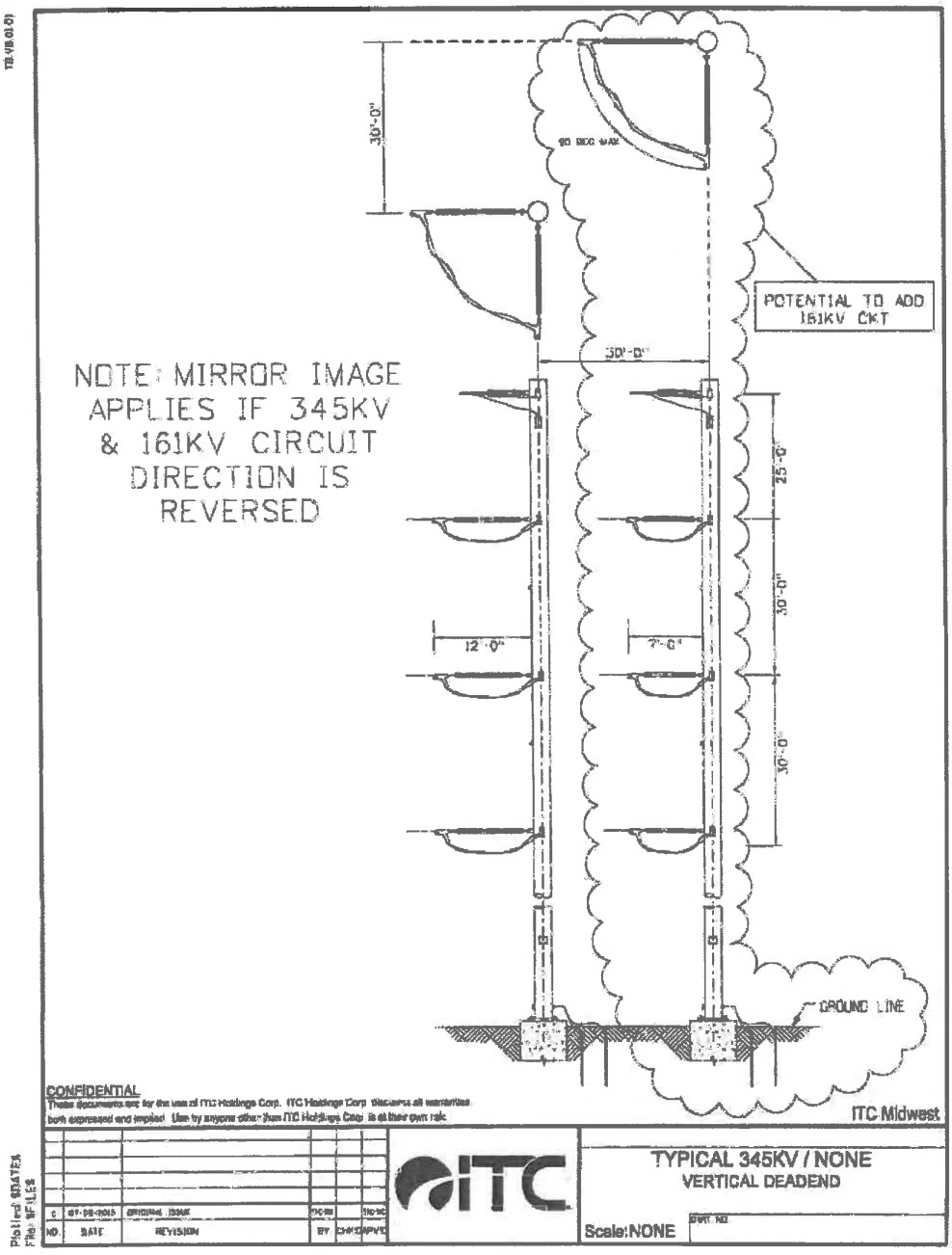

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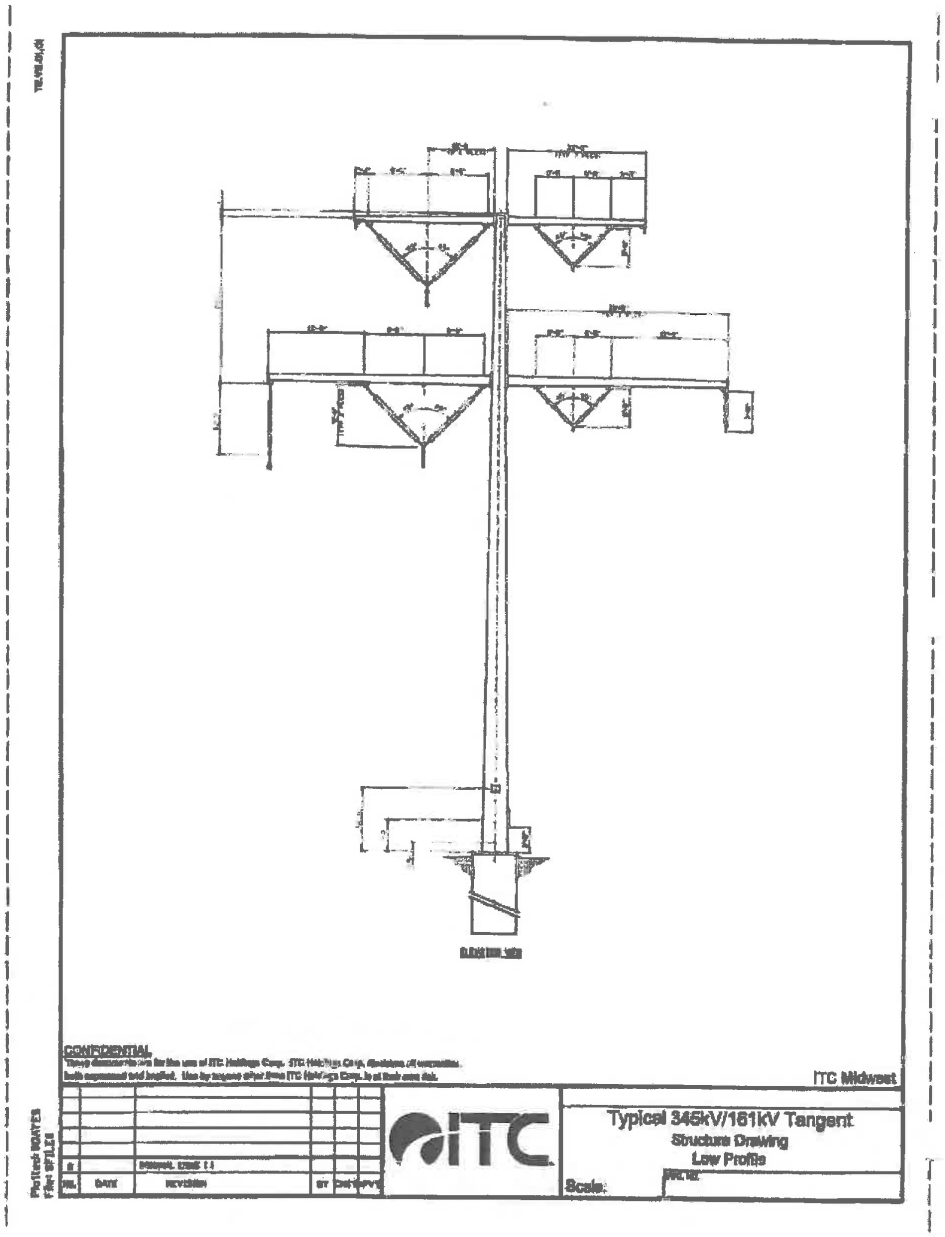

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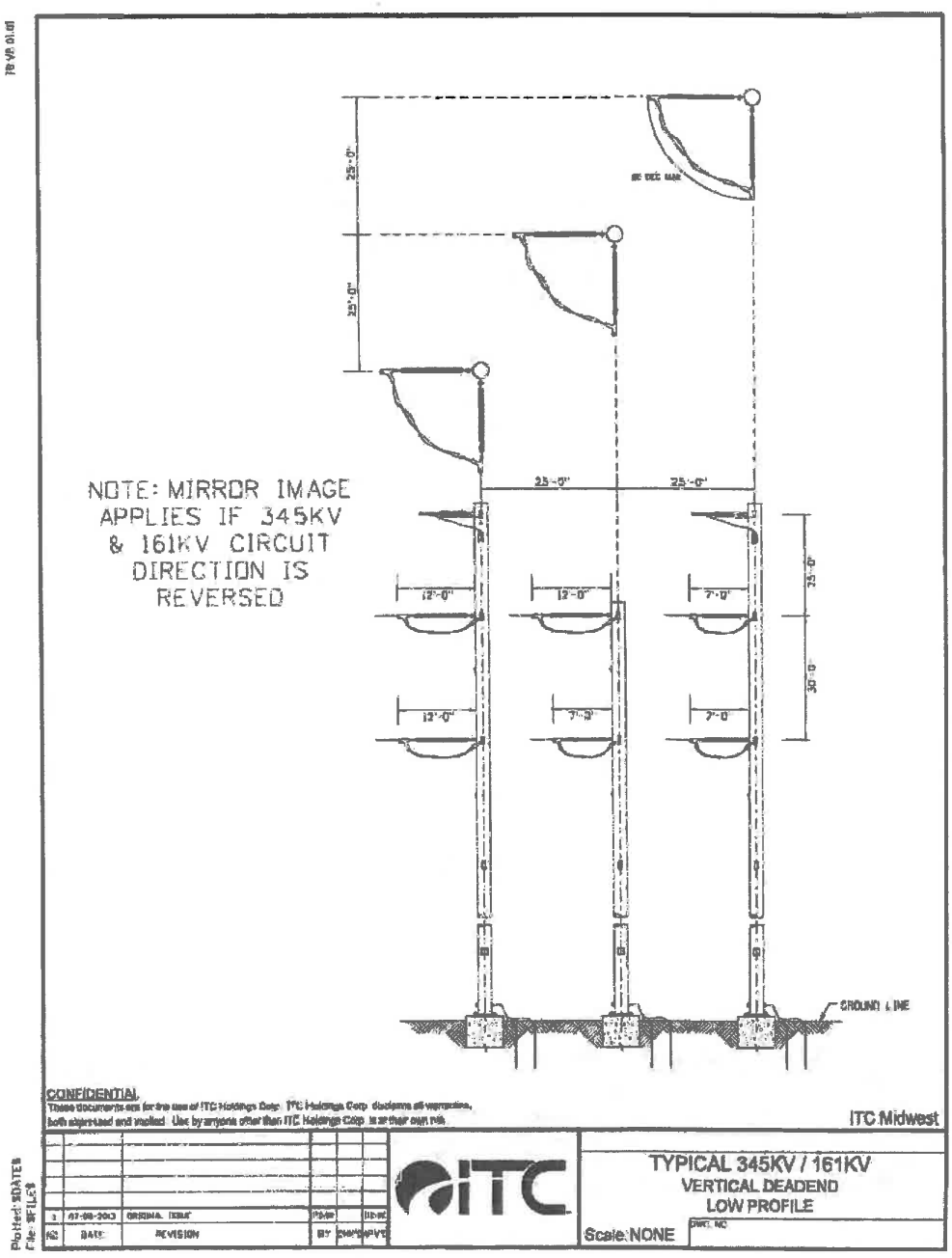

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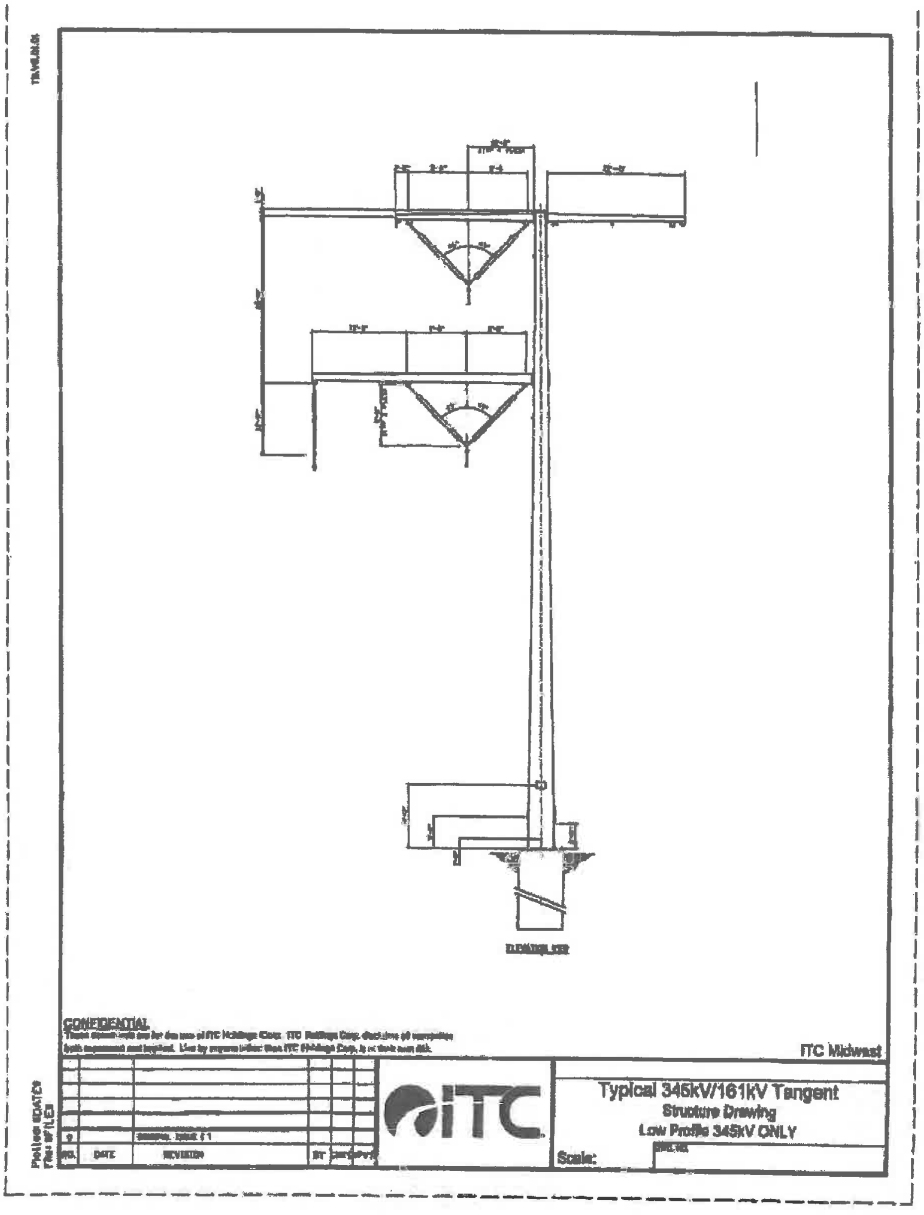

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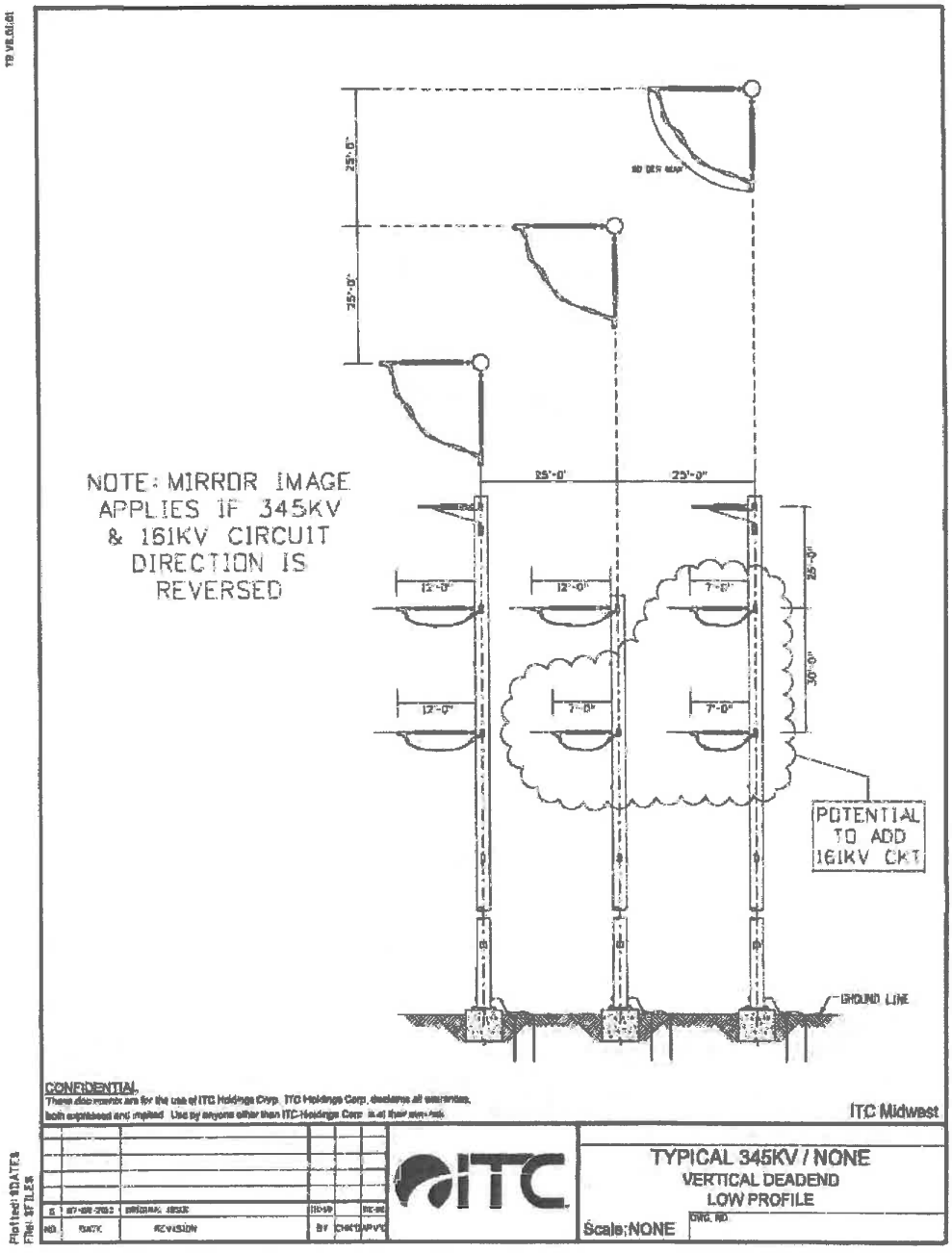

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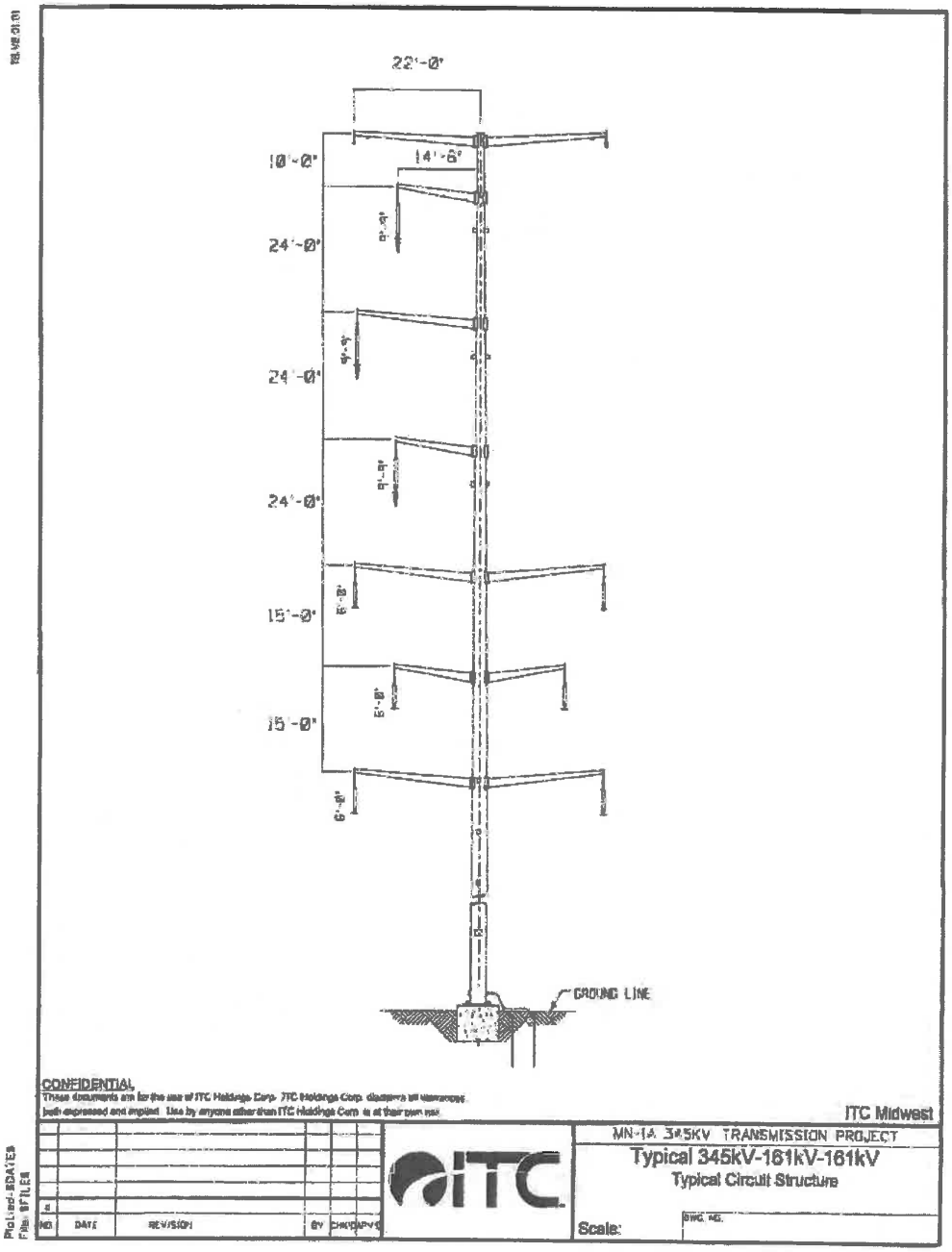

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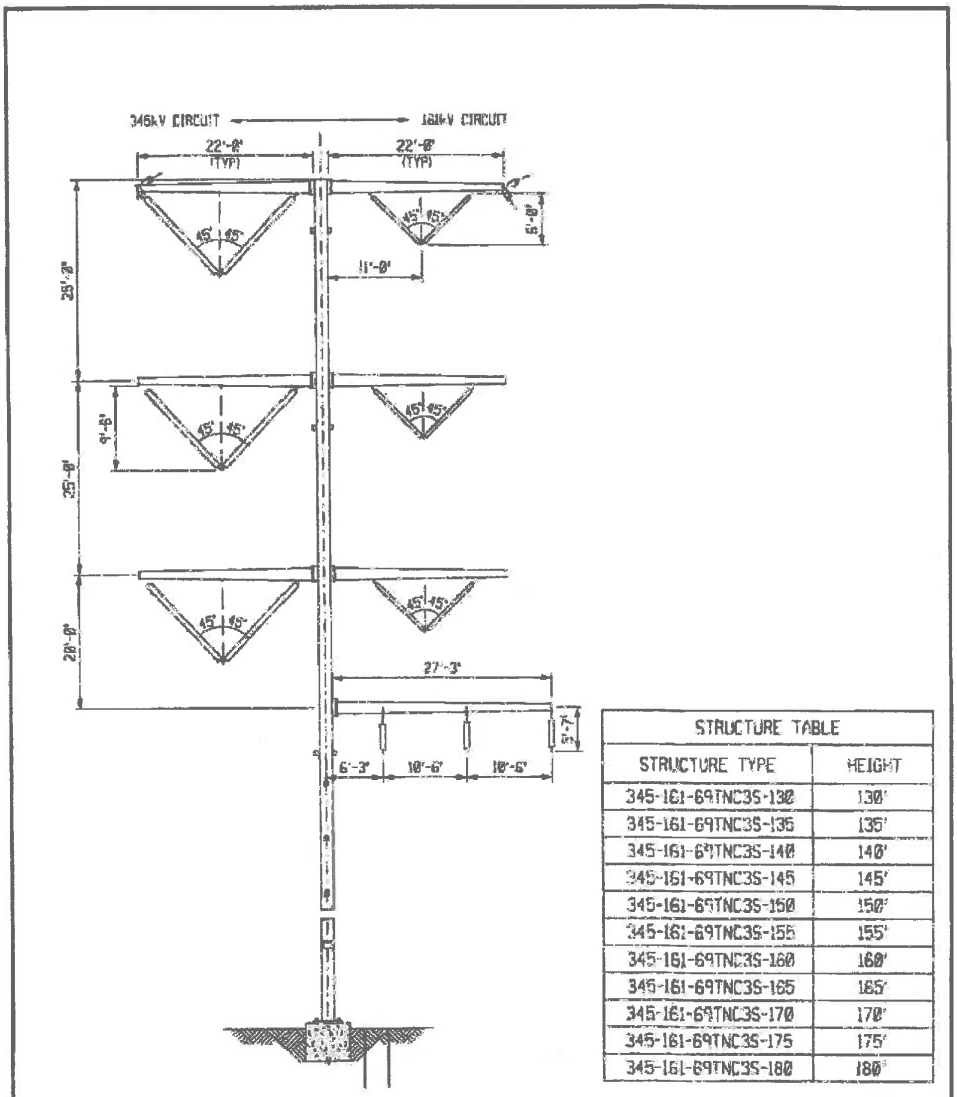

STRUCTURE TABLE	
STRUCTURE TYPE	HEIGHT
345-161-69TNC3S-130	130'
345-161-69TNC3S-135	135'
345-161-69TNC3S-140	140'
345-161-69TNC3S-145	145'
345-161-69TNC3S-150	150'
345-161-69TNC3S-155	155'
345-161-69TNC3S-160	160'
345-161-69TNC3S-165	165'
345-161-69TNC3S-170	170'
345-161-69TNC3S-175	175'
345-161-69TNC3S-180	180'

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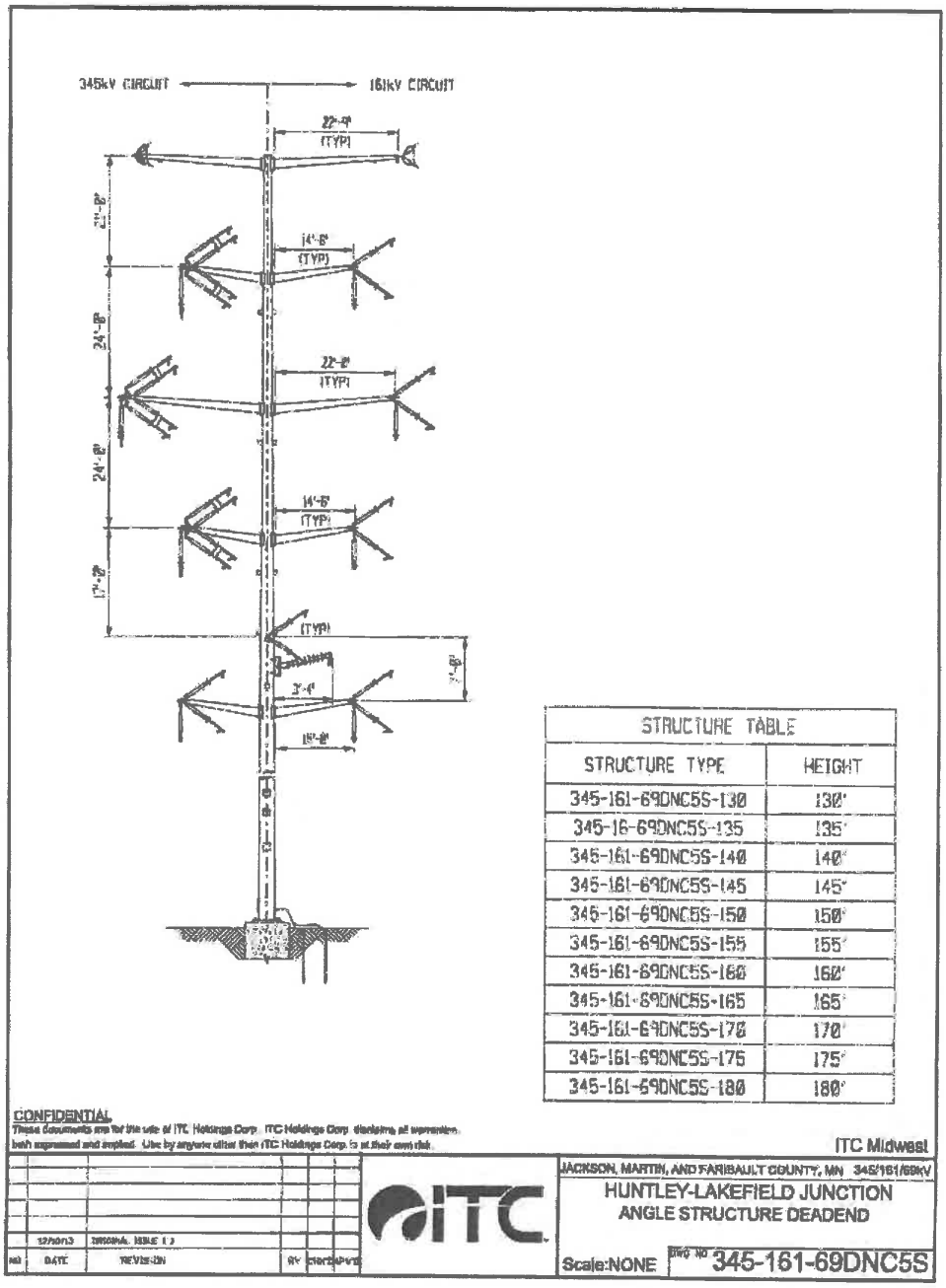

STRUCTURE TABLE	
STRUCTURE TYPE	HEIGHT
345-161-69DNC5S-130	130'
345-16-69DNC5S-135	135'
345-161-69DNC5S-140	140'
345-161-69DNC5S-145	145'
345-161-69DNC5S-150	150'
345-161-69DNC5S-155	155'
345-161-69DNC5S-160	160'
345-161-69DNC5S-165	165'
345-161-69DNC5S-170	170'
345-161-69DNC5S-175	175'
345-161-69DNC5S-180	180'

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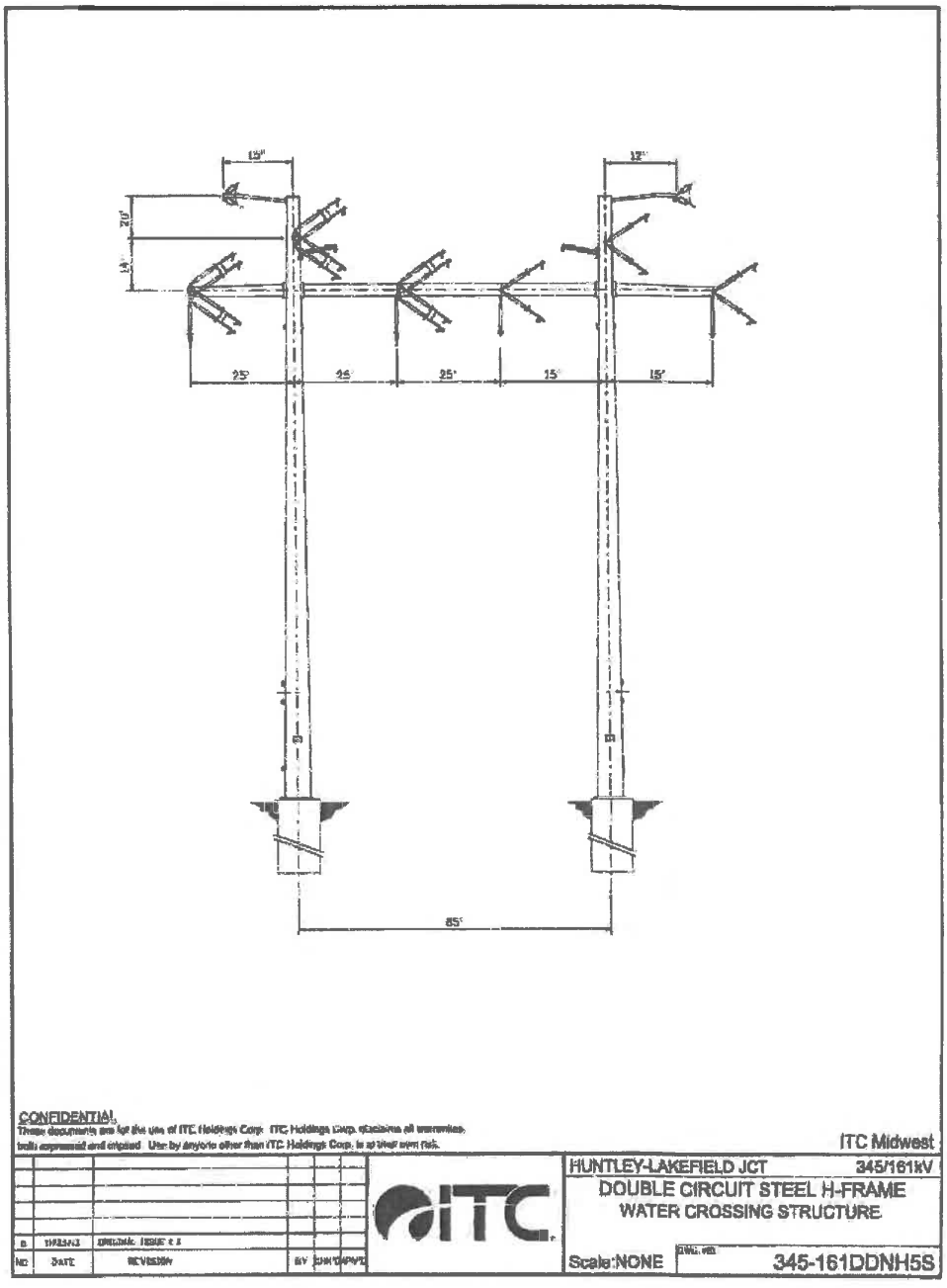

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ITC Midwest's DEIS Comment Letter
Attachment F
Schedule 6
Coeur Direct
PUC Docket Nos. ET6675/CN-12-1053 and ET6675/TL-12-1337
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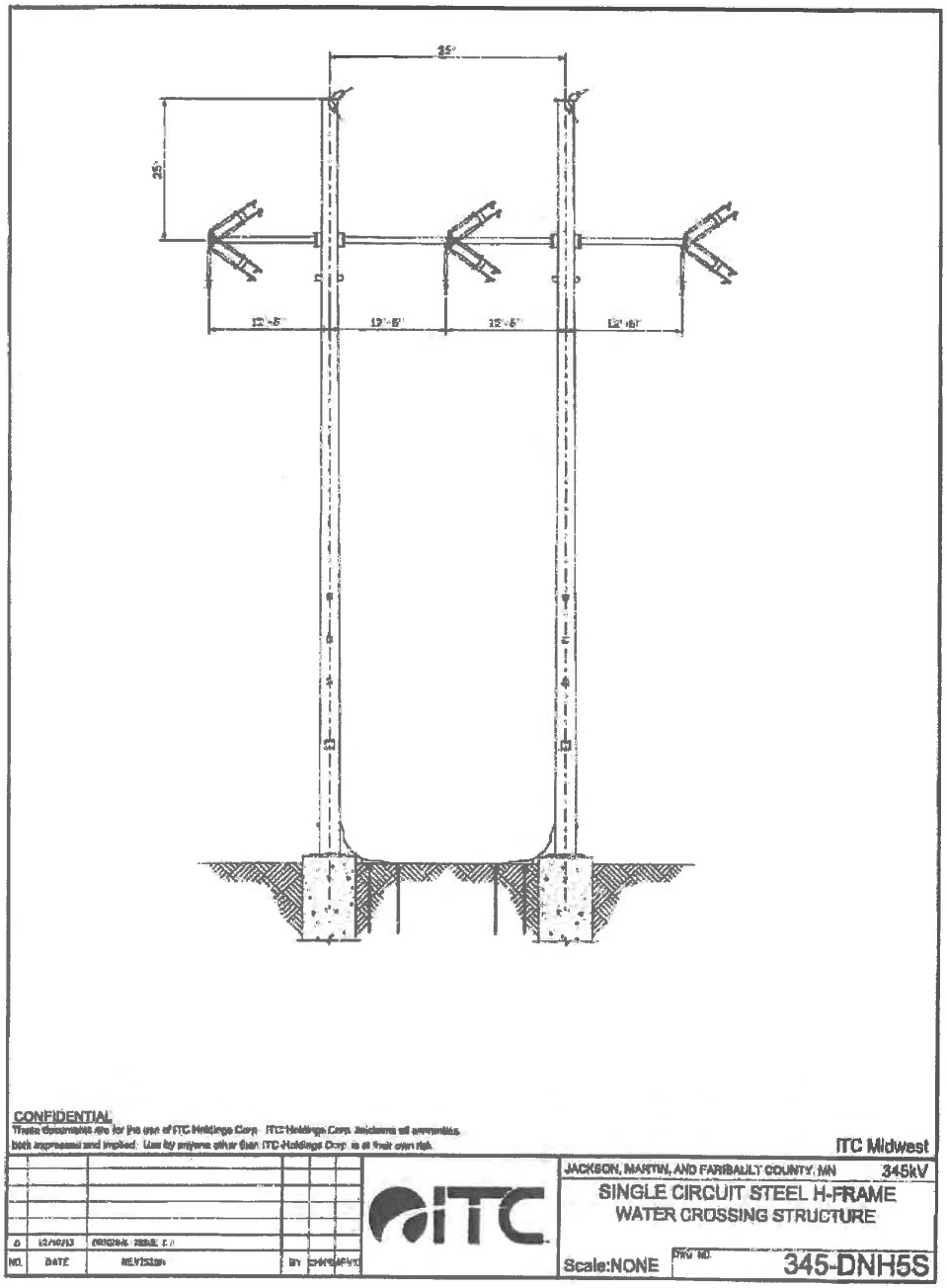

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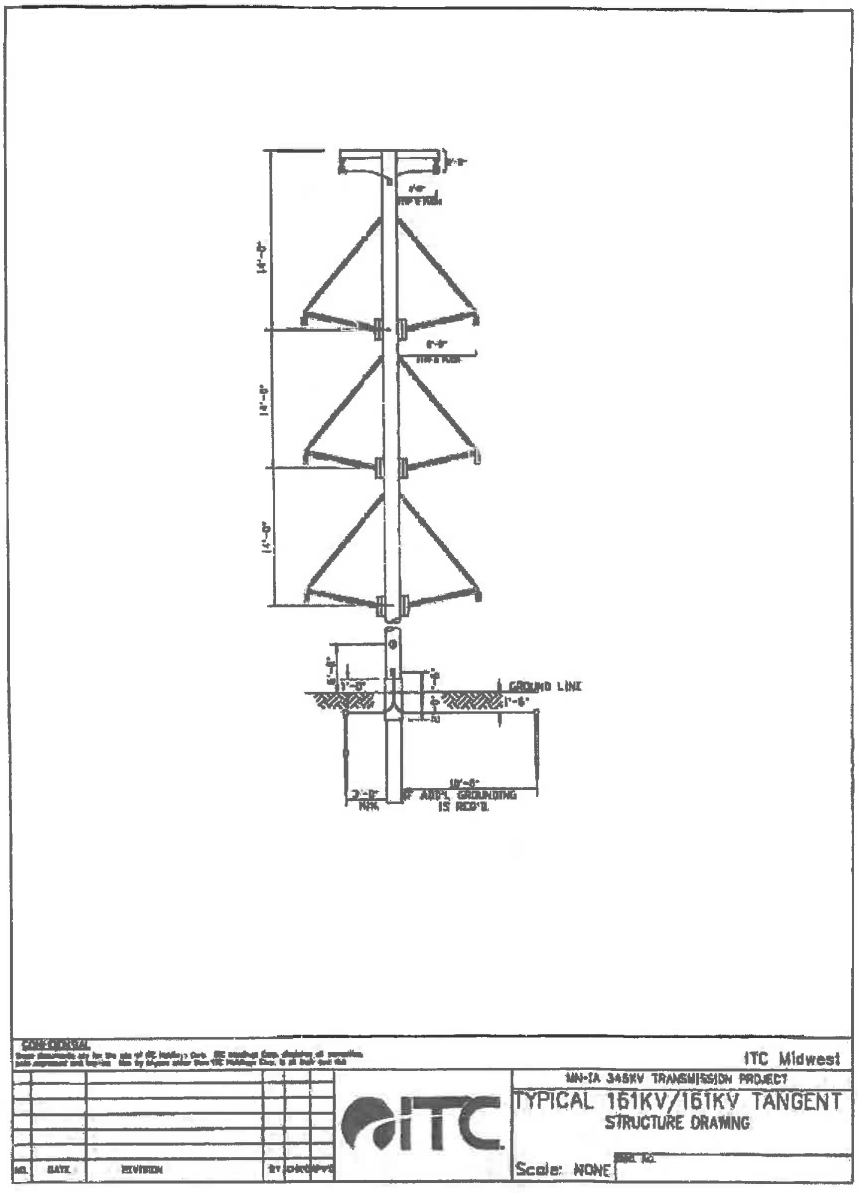

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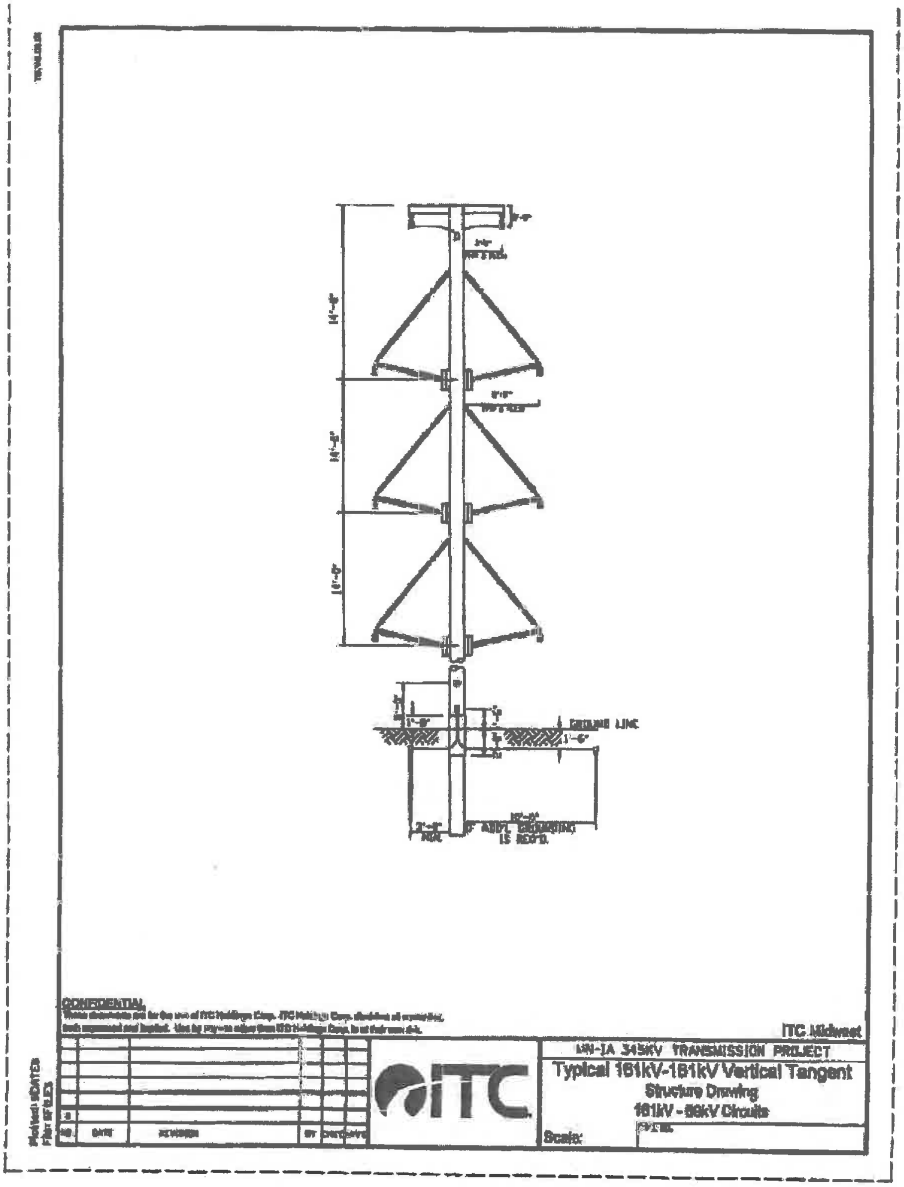

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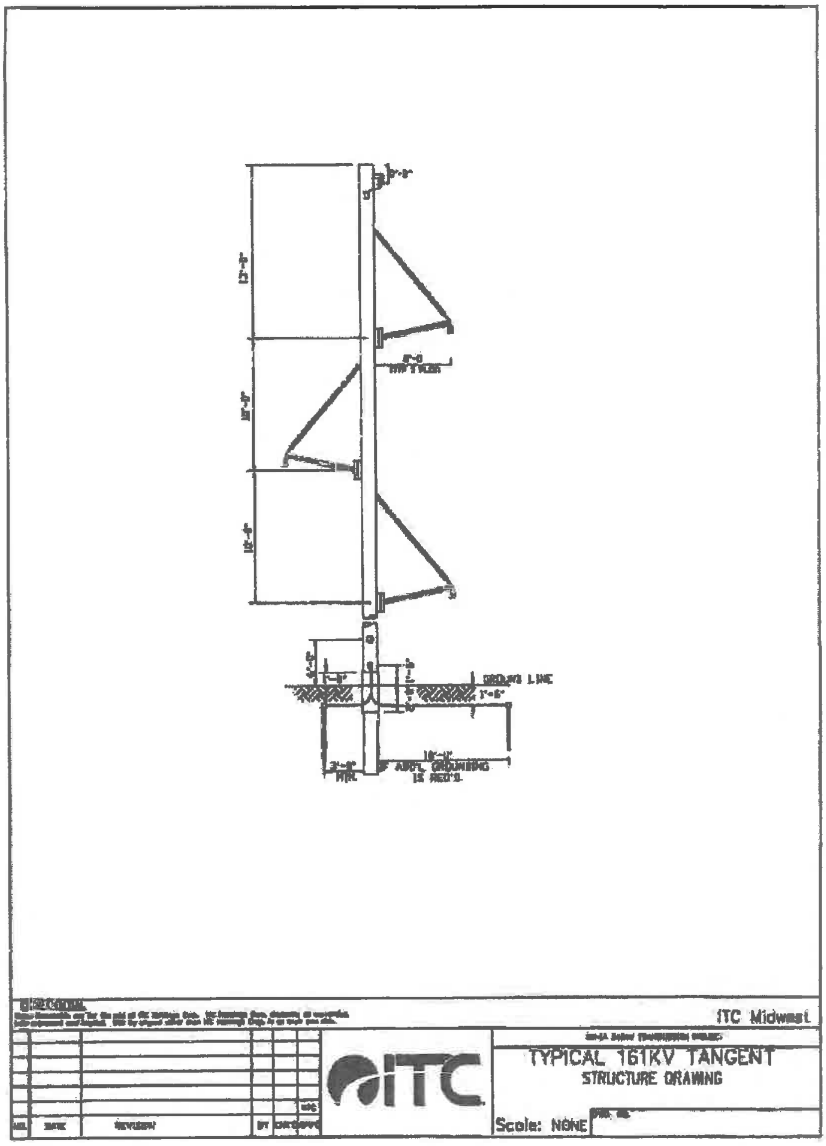

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ITC Midwest's DEIS Comment Letter
Attachment G

Minnesota Department of Agriculture

May 1, 2014

David Gross, Associate Community Relations Representative
ITC Midwest
20789 780th Ave.
Albert Lea, MN 56007

SUBJ: Agricultural Impact Mitigation Plan for ITC Midwest Minnesota-Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties

Dear Mr. Gross:

I have reviewed the Agricultural Impact Mitigation Plan (AIMP) dated April 29, 2014, and find it is consistent with the changes I requested in my e-mail to you dated April 22, 2014, and that it addresses the issues we discussed in our meeting on February 12, 2014. I believe the plan will be a good step forward in mitigating agricultural impacts of the ITC project.

Thank you for your work and the work of your team on the AIMP. Please let me know if you have any questions.

Sincerely,

Robert Patton

Robert Patton, AICP
Supervisor, Energy and Environment Section
Agricultural Marketing and Development Division
651-201-6226, Bob.Patton@state.mn.us

Cc: Charlie Poster
Mary Hanks
Mark Dittrich
Meg Moynihan

625 Robert St. N., St. Paul, MN 55155-2538 ☐ 651-201-6000 or 1-800-967-2474 ☐
www.mda.state.mn.us

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ITC Midwest LLC

Agricultural Impact Mitigation Plan

Minnesota – Iowa 345 kV Transmission Project and Associated Facilities in Jackson, Martin, and Faribault Counties

Docket Nos. ET6675/CN-12-1053 & ET6675/TL-12-1337

April 29, 2014

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ITC Midwest's DEIS Comment Letter
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Introduction

ITC Midwest LLC ("ITC Midwest") developed this Agricultural Impact Mitigation Plan ("AIMP") with the Minnesota Department of Agriculture ("MDA") in compliance with Minnesota Statutes Section 216E.10, subdivision 3(b). The AIMP identifies measures ITC Midwest will take during construction of its Minnesota – Iowa 345 kV Transmission Project in Jackson, Martin, and Faribault counties, Minnesota ("Project") to avoid, mitigate, minimize, repair, or provide compensation for impacts on Agricultural Land. The AIMP and its provisions will be implemented during construction and restoration activities that ITC Midwest undertakes for the Project prior to filing notice of completion of construction with the Minnesota Public Utilities Commission.

Capitalized words and other defined terms have the meanings given to them in this AIMP and its appendix. Use of "Landowner" in this AIMP may be construed to read "Landowner and/or Tenant."

This AIMP and its construction standards and policies apply only to construction activities occurring on privately owned Agricultural Land. If agricultural tile is encountered, whether on Non-Agricultural Land or Agricultural Land, ITC Midwest will implement construction standards relating to the repair of tile on Agricultural Lands discussed further in this AIMP. Portions of this AIMP that identify standards and policies as they apply to Organic Agricultural Land apply only to the types of lands defined in the National Organic Program Rules (7 C.F.R. Parts 205.100; 205.101, and 205.202). Further, construction standards and policies identified in this AIMP can be modified through Easement or other agreement between ITC Midwest and the Landowner of Agricultural Land, as appropriate. In such case, the Easement or other agreement will control.

Generally

ITC Midwest will negotiate in good faith with each Landowner of Agricultural Land to secure an agreement containing the conditions or provisions necessary to implement the provisions of this AIMP. The mitigative actions set forth in this AIMP are subject to negotiation and approval or change by Landowner of Agricultural Land, so long as such changes are negotiated with and acceptable to ITC Midwest. Mitigative actions will be executed by qualified contractors retained by ITC Midwest, unless otherwise specified or agreed upon by Landowner. ITC Midwest and Landowner may agree that certain activities will be performed by Landowner. ITC Midwest maintains a damage claim policy outlining compensation policies for damage to property, including but not limited to crop damages, and will provide a copy of this policy to the Landowner during Easement acquisition negotiations.

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Unless otherwise specified in this AIMP or in an Easement or other agreement negotiated between ITC Midwest and Landowner, construction standards and policies or mitigative actions will be implemented within 90 days after completion of Final Clean-up activities on Agricultural Land. Weather conditions or other circumstances identified by mutual agreement between Landowner and ITC Midwest may delay implementation of mitigative actions after final cleanup. Where practicable, ITC Midwest may make temporary repairs. These temporary repairs may be made to minimize additional property damage or interference with the Landowner's access to the subject Agricultural Land.

ITC Midwest or its contractors will implement the construction standards and policies or mitigative actions identified within this AIMP so long as such activities do not conflict with any applicable Federal or State rules, regulations, permits, licenses, approvals, or conditions obtained by ITC Midwest for the Project. Should any activity within this AIMP be determined to be unenforceable due to Federal or State rules, regulations, permits, licenses, approvals, or conditions, ITC Midwest will inform the Landowner and will identify a reasonable alternative activity.

Prior to Right-of-Way preparation for, or construction of, the Project, ITC Midwest will make a good faith effort to provide each Landowner with contact information, including a phone number and address, that can be used to contact ITC Midwest regarding any impacts to Agricultural Land or other construction-related concern or question. ITC Midwest will provide updated information to the Landowner within a reasonable time of any change to ITC Midwest contacts.

Construction Standards

Mitigative Actions
ITC Midwest will reasonably restore and/or compensate Landowner, as appropriate, for damages caused by ITC Midwest as a result of transmission line construction, and as outlined in this plan. ITC Midwest will decide whether to restore land and/or compensate Landowner after a discussion with the Landowner.

Advance Notice of Access
ITC Midwest will make good faith efforts to provide notice to the Landowner in advance of the commencement of construction activities on Agricultural Land. Notice may include personal contact, email, letter, or telephone contact.

Agricultural Monitor
An Agricultural Monitor shall be retained and funded by ITC Midwest but will report directly to the MDA. The Agricultural Monitor's primary function will be to audit ITC Midwest's compliance with this AIMP. The Agricultural Monitor will not have the authority to direct construction activities and will not have authority to stop

construction. The Agricultural Monitor will notify ITC Midwest's Inspector if s/he believes a compliance issue has been identified. The Agricultural Monitor will have full access to Agricultural Land crossed by the Project and will have the option of attending meetings where construction on Agricultural Land is discussed. Specific duties of the Agricultural Monitor will include, but are not limited to the following:

1. Participate in preconstruction training activities sponsored by ITC Midwest.
2. Monitor construction and restoration activities on Agricultural Land for compliance with provisions of this AIMP.
3. Report instances of noncompliance with the AIMP to ITC Midwest's Inspector.
4. Prepare regular compliance reports and submit to MDA, as requested by the MDA.
5. Coordinate communication of Landowner concerns to the MDA, if necessary.
6. Maintain a written log of Landowner concerns reported by the ITC Midwest Inspector and/or land rights agent regarding compliance with this AIMP. The written log should record whether the Agricultural Monitor reported each logged concern to the MDA.
7. Be responsible for determining whether weather conditions have caused the soil to become so wet that the activity to alleviate compaction would reduce the future production capacity of the land and advising ITC Midwest's Inspector of these conditions. ITC Midwest will be solely responsible in making the decision on whether it will proceed with construction under these conditions. Compensation for Landowner, as appropriate, will be determined as described in the "Procedures for Determination of Damages and Compensation" section of this AIMP.
8. In disputes between ITC Midwest and a Landowner over restoration, advise the MDA on whether the agricultural restoration is reasonably adequate in consultation with the ITC Midwest Inspector and ITC land agent.

Qualifications and Selection of the Agricultural Monitor

The Agricultural Monitor will have a bachelor's degree in agronomy, soil science or equivalent work experience. The Agricultural Monitor will have demonstrated practical experience with pipeline or electric transmission line construction and restoration on Agricultural Land. The MDA and ITC Midwest will jointly select the Agricultural Monitor.

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ITC Midwest Inspector
The ITC Midwest's Inspector will:

1. Be full-time member of ITC Midwest inspection team.
2. Be responsible for verifying ITC Midwest compliance with provisions of this AIMP during construction.
3. Work collaboratively with other members of ITC Midwest's construction team, land right agents, and the Agricultural Monitor in achieving compliance with this AIMP.
4. Observe construction activities on Agricultural Land on a regular basis.
5. Have the authority to stop construction activities that are determined to be out of compliance with provisions of this AIMP.
6. Document instances of noncompliance and work with construction personnel to identify and implement appropriate corrective actions as needed.
7. Provide construction personnel with training on provisions of this AIMP before construction begins.
8. Provide construction personnel with field training on specific topics as needed.

Pole Placement
During the design of the Project, ITC Midwest's engineering, land rights and permitting staff will seek input from Landowner, as practicable, to address pole placement issues. Prior to construction, the land rights agents will review the staked pole locations with the Landowner when requested to do so by the Landowner.

Pole Removal
If the Project is constructed along an existing 69 kV or 161 kV transmission line, and ITC Midwest determines the existing facilities can be reasonably co-located, ITC Midwest may remove existing transmission line structures. For transmission line structures that do not have a footing, ITC Midwest will extract the pole from the ground if possible. In the event a pole cannot be extracted by pulling, ITC Midwest will excavate an area to uncover approximately 60 percent of the buried pole and an attempt will be made to extricate an excavated pole entirely. If an excavated pole cannot be removed in its entirety, the pole will either be cut off at the excavated depth (in the range of approximately five feet) or pushed over if the pole cannot be cut. If an existing transmission structure to be removed for purposes of the Project has a concrete footing, ITC Midwest will work with the Landowner to determine at what depth the footing must be removed so farming operations can continue on the property.

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If ITC Midwest removes an existing pole, all support anchors for the structure will be removed. In these instances, ITC Midwest will work with the Landowner to identify any tile lines located near anchors prior to removal of the anchors. Additionally, if any damage to tile occurs as a result of pole or anchor removal, ITC Midwest will adhere to the "Agricultural Tile" section of this AIMP.

Substation Construction
The Project will require construction and/or expansion at two substation locations. During construction and expansion of the Huntley and Lakefield substations, respectively, ITC Midwest will segregate Topsoil that must be removed for ground work. At ITC Midwest's sole discretion, excess Topsoil may be made available to a Landowner who wishes to use this Topsoil on his or her property. If the Topsoil is made available to a Landowner in other areas of the Project, it will be provided "as is" and the Landowner, not ITC Midwest, will be responsible for verifying that the quality of the Topsoil meets the Landowner's farming requirements. The Landowner is solely responsible for obtaining any required local, state, or federal permits or permissions that may be necessary for the placement of Topsoil on his or her property.

Agricultural Tile
ITC Midwest will contact an affected Landowner for their knowledge of tile locations prior to installation of the transmission line. ITC Midwest will attempt to identify tile if the Landowner does not know if tile is located at the proposed pole location. Tile that is damaged, cut, or removed as a result of ITC Midwest's location efforts will be promptly repaired. The repair will be reported to the Inspector.

If tile is damaged by Project construction, the tile will be repaired –with materials of the same quality as that which was damaged. If tiles on or adjacent to the transmission line construction area are adversely affected by construction, ITC Midwest will take such actions as are necessary to restore the tile function, including the relocation, reconfiguration, and replacement of the existing tile. ITC Midwest will correct tile repairs, as needed, after completion of the transmission line construction, provided the repairs were made by ITC Midwest or their agents or designees.

The affected Landowner may elect to negotiate a fair settlement with ITC Midwest for the Landowner to undertake the responsibility for repair, relocation, reconfiguration, or replacement of damaged tile. In the event the Landowner chooses to undertake the responsibility for repair, relocation, reconfiguration, or replacement of the damaged tile, ITC Midwest will have no further liability for the identified damaged tile.

The following standards and policies apply to the tile repairs completed by ITC Midwest:

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1. Tiles will be repaired with materials of the same or better quality as that which was damaged.

2. If water is flowing through a damaged tile, temporary repairs will be promptly installed and maintained until such time that permanent repairs can be made.

3. Before completing permanent tile repairs in an area where a Landowner, the Agricultural Monitor, or ITC Midwest has identified a potential concern arising from Project construction, tiles will be examined within the work area to check for tile that might have been damaged by construction equipment. If tiles are found to be damaged, they will be repaired so they operate as well after construction as before construction began.

4. ITC Midwest will make efforts to complete permanent tile repairs within a reasonable timeframe after Final Clean-up, taking into account weather and soil conditions.

5. Following completion of the Final Clean-up and damage settlement, ITC Midwest will be responsible for correcting and repairing tile breaks, or other damages to tile systems that are discovered on the Right-of-Way to the extent that such breaks are the result of Project construction. These damages are usually discovered after the first significant rain event. ITC Midwest will provide the Landowner with contact information should tile damage issues be identified after Final Clean-up. ITC Midwest will not be responsible for tile repairs performed by the Landowner.

ITC Midwest will be responsible for installing additional tile or other drainage measures, including adding topsoil, as necessary to properly drain wet areas along the Right-of-Way caused by the construction of the Project.

Soil Compaction/Rutting
Compaction will be alleviated as practicable on cropland traversed by construction equipment. ITC Midwest will work with the Landowner to alleviate compaction during suitable weather conditions in a mutually agreeable manner.

ITC Midwest will repair damage incurred due to compaction, ruts, erosion, and/or washing of soil caused by electric line construction. If, by mutual agreement, the Landowner repairs such damage, ITC Midwest will reimburse the Landowner for the reasonable cost of labor and the use of equipment to repair damage incurred due to compaction, ruts, erosion, and/or washing of soil caused by electric line construction. ITC Midwest will make such payments within a reasonable period of time following completion of project construction and after receiving a statement substantiating the Landowner's repair costs.

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ITC Midwest will pay for the reasonable cost of repairs to the Landowner's equipment if the equipment is damaged during repair of compaction, ruts, erosion, and/or washing of soil by materials or debris ITC Midwest left on the right of way during construction.

If there is a dispute between the Landowner and ITC Midwest as to what areas need to be ripped or chiseled, the depth at which compacted areas should be ripped or chiseled, or the necessity for, or rates of, lime, fertilizer, and organic material application, ITC Midwest will consult with the Agricultural Monitor prior to making a final decision.

Excess Soil and Rocks
Excess soil and rock will be removed from the site unless otherwise requested by the Landowner. After Final Clean-up and restoration of Agricultural Lands, ITC Midwest will make good faith efforts to obtain written acknowledgement of completion of such activities from the Landowner.

Construction Debris
ITC Midwest will remove construction-related debris and material which is not an integral part of the transmission line from the Landowner's property at ITC Midwest's cost. Such material may include excess construction materials or litter generated by the construction crews.

Procedures for Determination of Damages and Compensation
ITC Midwest will maintain a procedure for processing Landowner claims for construction-related damages, including but not limited to crop damages. The procedure is intended to standardize and minimize Landowner concerns regarding the recovery of damages, to provide a degree of certainty and predictability for Landowner and ITC Midwest, and to foster good relationships among ITC Midwest and Landowner over the long term. A copy of the procedure will be provided to Landowner during Easement acquisition negotiations.

Damage claim negotiations between ITC Midwest and any affected Landowner will be voluntary in nature. ITC Midwest will offer to compensate Landowners according to the terms of ITC Midwest's damage claim policy in effect at the time the Easement is executed and recorded. The compensation offered is only an offer to settle, and the offer shall not be introduced in any proceeding brought by the Landowner to establish the amount of damages ITC Midwest must pay.

Weed Control
When requested, ITC Midwest will work with neighboring Landowner to determine adequate weed control measures on lands owned by ITC Midwest for substation facilities. The intent of such weed control measures is to prevent the spread of weeds

onto adjacent Agricultural Land. Any weed control spraying will be in accordance with State of Minnesota regulations.

Soil Conservation Practices
Soil conservation practices such as terraces and grassed waterways which are damaged by the transmission line's construction will be restored to their pre-construction condition as near as possible. ITC Midwest will attempt to work with the Landowner to identify and document the pre-construction conditions of these features.

Irrigation
If the transmission line and/or temporary work areas intersect an operational (or soon to be operational) spray irrigation system, ITC Midwest will work with the Landowner to establish an acceptable amount of time the irrigation system may be out of service.

If, as a result of the transmission line construction activities, an irrigation system interruption results in crop damages either on the Right-of-Way or off the Right-of-Way, compensation to Landowner, as appropriate, will be determined as described in "Procedures for Determination of Damages and Compensation" section of this AIMP.

If it is feasible and mutually acceptable to ITC Midwest and the Landowner, temporary measures will be implemented to allow an irrigation system to continue to operate across land on which the transmission line is also being constructed. ITC Midwest will not allow an irrigation system to continue operation across land on which the transmission line is also being constructed if the ITC Midwest Inspector, land agent, or field supervisor determine that such operation would be unsafe.

Temporary Roads
The location of temporary roads to be used for construction purposes will be discussed with the Landowner.

A. The temporary roads will be designed so as to not impede proper drainage and will be built to mitigate soil erosion on or near the temporary roads.

B. After Final Clean-up, temporary roads may be left intact through mutual agreement of the Landowner and ITC Midwest unless otherwise restricted by Federal, State, or local regulations.

C. If a temporary road is to be removed, the Agricultural Land upon which the temporary road is constructed will be returned to its previous use and restored to equivalent condition as existed prior to construction.

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Organic Farms

ITC Midwest recognizes that Organic Agricultural Land is a unique feature of the landscape and will treat this land with a similar level of care as other sensitive environmental features. This section identifies mitigation measures that apply specifically to farms that are Organic Certified or farms that are in active transition to become Organic Certified, and is intended to address the unique management and certification requirements of these operations. This section supplements and is in addition to all other protections provided in this AIMP.

The provisions of this section will only apply to Organic Agricultural Land for which the Landowner has provided to ITC Midwest a true, correct and current version of the Organic System Plan within 60 days after the signing of the Easement or 60 days after the first contact by ITC Midwest after the Commission issues a Route Permit, whichever occurs first.

Organic System Plan
ITC Midwest recognizes the importance of the individualized Organic System Plan to the Organic Certification process. ITC Midwest will work with the Landowner, the Landowner's Certifying Agent, and/or a mutually acceptable third-party Organic consultant to identify site-specific construction practices that will minimize the potential for Decertification as a result of construction activities. Possible practices may include, but are not limited to: equipment cleaning, planting a deep-rooted cover crop in lieu of mechanical decompaction, applications of composted manure or rock phosphate, preventing the introduction of disease vectors from tobacco use, restoration and replacement of beneficial bird and insect habitat, maintenance of organic buffer zones, use of organic seeds for any cover crop, or similar measures. ITC Midwest recognizes that Organic System Plans are proprietary in nature and will respect the need for confidentiality.

Prohibited Substances
ITC Midwest will avoid the application of Prohibited Substances onto Organic Agricultural Land. No herbicides, pesticides, fertilizers or seed will be applied to Organic Agricultural Land unless requested and approved by the Landowner. Likewise, ITC Midwest will avoid refueling, fuel or lubricant storage, or routine equipment maintenance on Organic Agricultural Land. Equipment will be checked prior to entry to make sure that fuel, hydraulic and lubrication systems are in good working order before working on Organic Agricultural Land. If Prohibited Substances are used on land adjacent to Organic Agricultural Land, these substances will be used in such a way as to prevent them from entering Organic Agricultural Land.

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Temporary Road Impacts
Topsoil and Subsoil layers that are removed during construction on Organic Agricultural Land for temporary road impacts will be stored separately and replaced in the proper sequence after the transmission line is installed. Unless otherwise specified in the site-specific plan described above, ITC Midwest will not use this soil for other purposes, including creating access ramps at road crossings. No Topsoil or Subsoil (other than incidental amounts) may be removed from Organic Agricultural Land. Likewise, Organic Agricultural Land will not be used for storage of soil from non-Organic Agricultural Land.

Erosion Control
On Organic Agricultural Land, ITC Midwest will, to the extent feasible, implement erosion control methods consistent with the Landowner's Organic System Plan. On land adjacent to Organic Agricultural Land, ITC Midwest' erosion control procedures will be designed so that sediment from adjacent non-Organic Agricultural Land will not flow along the Right-of-Way and be deposited on Organic Agricultural Land. Treated lumber, non-organic hay bales, non-approved metal fence posts, etc. will not be used for erosion control on Organic Agricultural Land.

Weed Control
On Organic Agricultural Land, if ITC Midwest determines weed control is necessary during construction activities, ITC Midwest will, to the extent feasible, implement weed control methods consistent with the Landowner's Organic System Plan. Prohibited Substances will not be used for weed control within 50 feet of posted Organic Agricultural Land.

Monitoring
In addition to the responsibilities of the Agricultural Monitor described in the AIMP, the following will apply:

A. The Agricultural Monitor will monitor construction and restoration activities on Organic Agricultural Land for compliance with the provisions of this section and will document any activities that may result in Decertification.

B. Instances of non-compliance will be documented according to Independent Organic Inspectors Association protocol consistent with the Landowner's Organic System Plan, and will be made available to the MDA, the Landowner, the Landowner's Certifying Agent, ITC Midwest Inspector and to ITC Midwest.

If the Agricultural Monitor is responsible for monitoring activities on Organic Agricultural Land, s/he will be trained, at ITC Midwest's expense, in organic inspection, by the Independent Organic Inspectors Association, unless the Agricultural Monitor received such training during the previous three years.

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Compensation for Construction Damages

The settlement of damages will be based on crop yield and/or crop quality determination and the need for additional restoration measures. ITC Midwest will first work with the Landowner of Organic Agricultural Land to determine crop yield. In the event ITC Midwest and the Landowner of Organic Agricultural Land cannot determine crop yield, at ITC Midwest's expense, a mutually agreed upon professional agronomist will make crop yield determinations, and the MDA Fruit and Vegetable Inspection Unit will make crop quality determinations. If the crop yield and/or crop quality determinations indicate the need for soil testing, the testing will be conducted by a commercial laboratory that is properly certified to conduct the necessary tests and is mutually agreeable to ITC Midwest and the Landowner. Field work for soil testing will be conducted by a professional soil scientist or professional engineer licensed by the State of Minnesota. ITC Midwest will be responsible for the cost of sampling, testing and additional restoration activities, if needed. Additional restoration activities will be completed according to the terms of its damage claim policy in effect at the time the Easement is executed and recorded.

Compensation for Damages Due to Decertification

Should any portion of Organic Agricultural Land be Decertified as a result of construction activities, ITC Midwest will pay damages for crops and/or livestock within the area impacted by the lost Certification equal to the full difference between the market value of conventional crops and/or livestock and the market value of the organic crops and/or livestock lost for three years or the period of time necessary for the Landowner or Tenant to regain Certification, whichever comes first. The market value of the crop will be determined as set forth in the damage claim policy. At the request of ITC Midwest, the Landowner shall provide verification of its loss of organic Certification through the accredited certifying agent prior to any compensation for organic crop loss being paid.

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Definitions

Agricultural Land	Land that is actively managed for cropland, hayland, or pasture, and land in government set-aside programs.
Agricultural Monitor	Monitor retained and funded by ITC Midwest, reporting directly to the Minnesota Department of Agriculture ("MDA") and responsible for auditing ITC Midwest's compliance with provisions of this AIMP.
Certifying Agent	As defined by the National Organic Program Standards, Federal Regulations 7 CFR Part 205.2.
Cropland	Land actively managed for growing row crops, small grains, or hay.
Decertified or Decertification	Loss of Organic Certification.
Easement	The agreement(s) and/or interest in privately owned Agricultural Land held by ITC Midwest by virtue of which it has the right to construct, operate and maintain the transmission line together with such other rights and obligations as may be set forth in such agreement.
Final Clean-up	Transmission line activity that occurs after the power line has been constructed. Final Clean-up activities may include: removal of construction debris, de-compaction of soil as required, installation of permanent erosion control structures, final grading, and restoration of fences and required reseeding. Once Final Clean-up is finished, Landowner will be contacted to settle all damage issues and will be provided a form to sign acknowledging final construction settlement.
Inspector	Full-time on-site inspector retained by ITC Midwest to verify compliance with requirements of this AIMP during construction of the transmission line. The Inspector will have demonstrated experience with transmission line construction on Agricultural Land.
ITC Midwest	ITC Midwest LLC, a Michigan limited liability company. May also include agents and contractors of ITC Midwest, where appropriate.

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Landowner	Person(s), or their representatives, holding legal title to Agricultural Land on the transmission line route from whom ITC Midwest is seeking, or has obtained, a temporary or permanent Easement. "Landowner" includes Tenant, if any.
Non-Agricultural Land	Any land that is not "Agricultural Land" as defined above.
Organic Agricultural Land	Farms or portions thereof described in 7 CFR Parts 205.100, 205.202, and 205.101.
Organic Buffer Zone	As defined by the National Organic Program Standards, Federal Regulations 7 CFR Part 205.2.
Organic Certification or Organic Certified	As defined by the National Organic Program Standards, Federal Regulations 7 CFR Part 205.100 and 7 CFR Part 205.101.
Organic System Plan	As defined by the National Organic Program Standards, Federal Regulations 7 CFR Part 205.2.
Prohibited Substance	As defined by the National Organic Program Standards, Federal Regulations 7 CFR Part 205.600 through 7 CFR 205.605 using the criteria provided in 7 USC 6517 and 7 USC 6518.
Right-of-Way	The Agricultural Land included in permanent and temporary Easements which ITC Midwest acquires for the purpose of constructing, operating and maintaining the transmission line.
Subsoil	Soil that is not Topsoil, and located immediately below Topsoil.
Tenant	Any Person(s) lawfully renting or sharing land for agricultural production which makes up the "Right-of-Way" as defined in this AIMP.
Tile	Artificial subsurface drainage system.
Topsoil	The uppermost horizon (layer) of the soil, typically with the darkest color and highest content of organic matter.

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