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Daniel McCourtney
Siting and Permitting
ALLETE/Minnesota Power
30 West Superior St.
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VIA EMAIL

June 19, 2015

William Cole Storm
EERA Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500, Saint Paul, MN 55101

Re: 16 Line Reroute Transmission Project
Route Comparison
Docket No. E015/TL-14-977

Mr. Storm:

Please find attached the route alternative comparison requested by the Minnesota Department of Commerce. This request is associated with the Route Permit Application for a three mile 115 kV high voltage transmission line located South of the Fayal Township, MN. The original application was submitted in January 2015.

Throughout the attached document the Proposed Route identified in Minnesota Power's Route Permit Application will be referred to as the Proposed Route. The additional routes provided by the Department of Commerce in its Scoping Decision will be referred to as Alternative Route 2 and Alternative Route 3. If you have questions regarding this submittal please contact me at 218-355-3515 or dmccourtney@allete.com.

Thank you for your attention to this project.

Sincerely,

Daniel McCourtney

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
1.0	Executive Summary				
1.1	Proposal Summary	Yes, a portion of this text describes the route location as well as the route. Each of the routes differs slightly; however, the start and end of each route connect with the existing 16 Line.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.10 miles and then it would proceed west for approximately 0.60 miles where it would connect to the existing 16 Line.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.30 miles and then it would proceed southwest for approximately 0.75 miles where it would connect to the existing 16 Line.
1.2	Completeness Checklist	Not applicable, the text in this section describes the Completeness Checklist, which is not specific to the route.			
2.0	Introduction				
2.1	Statement of Ownership	Not applicable, the text in this section describes the Statement of Ownership, which is not specific to the route.			
2.2	Requested Action	Not applicable, the text in this section describes the Requested Action, which is not specific to the route.			
2.3	Permittee	Not applicable, the text in this section describes the Permittee, which is not specific to the route.			
2.4	Certificate of Need	Not applicable, the text in this section describes the Certificate of Need, which is not specific to the route.			
2.5	Route Permit, Alternative Permitting Process	Not applicable, the text in this section describes the Route Permit, Alternative Permitting Process, which is not specific to the route.			
2.6	Notice to the Commission	Not applicable, the text in this section describes the Notice to the Commission, which is not specific to the route.			
3.0	Proposed Project Information				
3.1	Proposed Project Location	Yes, the detailed location table indicates which Township, Range, and Section the Project are located in. Each of the routes would impact the same Township, Range, and Sections. The routes and the Township, Range, and Section are displayed in Figure 2.	Township 56 North, Range 17 West, Section 16 Township 56 North, Range 17 West, Section 17 Township 56 North, Range 17 West, Section 18 Township 56 North, Range 17 West, Section 20 Township 56 North, Range 17 West, Section 21 Township 56 North, Range 17 West, Section 28 Township 56 North, Range 17 West, Section 29		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
3.2	Project Proposal	Yes, a portion of this text describes the route location as well as the route. Each of the routes differs slightly; however, the start and end of each route connect with the existing 16 Line. For each route the existing three-mile 115kV HVTL would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.10 miles and then it would proceed west for approximately 0.60 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.30 miles and then it would proceed southwest for approximately 0.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.
3.3	Need for Project	Not applicable, the text in this section describes the Need for Project, which is not specific to the route.			
3.4	Project Schedule	Not applicable, the text in this section describes the Project Schedule, which is not specific to the route.			
3.5	Project Costs	Yes, the estimated project costs are reviewed in this section. The options for constructing the structure foundations with mine tailings or constructing the structure foundations with select granular fill have been compared and the cost differences are noted. Mine tailings wold be preferred due to their proximity and cost. A more specific break down is attached as Table 1.	Structure Foundations Constructed with Mine Tailings Cost Difference = $0.00 Structure Foundations Constructed with Select Granular Fill = $0.00	Structure Foundations Constructed with Mine Tailings Cost Difference = $396,118.24 Structure Foundations Constructed with Select Granular Fill = $533,729.14	Structure Foundations Constructed with Mine Tailings Cost Difference = $831,698.01 Structure Foundations Constructed with Select Granular Fill = $861,838.42
4.0	Facility Description and Route Selection Rationale				
4.1	Transmission Line Description	Yes, a portion of this text describes the route location as well as the route. Each of the routes differs slightly; however, the start and end of each route connect with the existing 16 Line. For each route the existing three-mile 115kV HVTL would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.10 miles and then it would proceed west for approximately 0.60 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.30 miles and then it would proceed southwest for approximately 0.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
4.2	Route Width and Alignment Selection Process				
4.2.1	Route Width	Yes, this text describes the route and Right-of-Way (ROW) widths. Each of the routes would have the same route and ROW widths.	The route width for each route would be 500-feet and the ROW width would be 100 feet. For each route engineering challenges associated with the project would require a 500-foot route width to allow adequate flexibility in developing a final alignment.		
4.2.2	Alignment Selection Process	Not applicable, the text in this section describes the Alignment Selection Process, which is not applicable to this comparison document.			
4.3	Alternate Route Segments Considered and Rejected	Not applicable, the text in this section describes the Alternate Route Segments Considered and Rejected, which is not applicable to this comparison document.			
4.4	Design Options to Accommodate Future Expansion	Not applicable, the text in this section describes the Design Options to Accommodate Future Expansion, which is not applicable to this comparison document.			
5.0	Engineering Design, Construction and ROW Acquisition				
5.1	Structures, ROW, Construction and Maintenance				
5.1.1	Transmission Structures	Yes, this text describes the transmission structures which will be utilized to construct the Project. Each of the routes would utilize the same structures; however, the placement of each structure may be different depending on the route. More specific information regarding the structure design is included in Table 2.	The transmission line for each route would be designed to meet or exceed relevant local and state codes including the National Electric Safety Code (NESC) and Company standards. Appropriate standards will be met for construction and installation, and applicable safety procedures will be followed during and after installation.		
5.1.2	Right-of-Way Width	Yes, this text describes the ROW width. Each of the routes would have the same ROW width.	The ROW width for each route would be 100 feet.		
5.1.3	Right-of-Way Evaluation and Acquisition	Not applicable, the text in this section describes the Right-of-Way Evaluation and Acquisition process, which is not specific to the route.			
5.1.4	Construction Procedures	Not applicable, the text in this section describes Construction Procedures, which is not specific to the route.			

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
5.1.5	Transmission Removal Procedures	Not applicable, the text in this section describes Transmission Removal Procedures, which is not specific to the route.			
5.1.6	Restoration Procedures	Not applicable, the text in this section describes Restoration Procedures, which is not specific to the route.			
5.1.7	Maintenance Procedures	Not applicable, the text in this section describes Maintenance Procedures, which is not specific to the route.			
5.2	Electric and Magnetic Fields	Not applicable, the text in this section describes Electric and Magnetic Fields, which is not specific to the route.			
5.2.1	Health and Environmental Effects	Not applicable, the text in this section describes Health and Environmental Effects, which is not specific to the route.			
5.2.2	Electric Fields	Yes, this text describes the Electric Fields (EF) specific to the 115 kV H-Frame structure. Each of the routes would have the same EF Values. Detailed information regarding the calculated EF is located in Table 3.	Due to the conductor configuration of the single circuit 115 kV H-Frame type structure, the maximum EF for this configuration actually occurs at approximately 16 feet from the centerline of the ROW, this would be the same for all routes. The maximum EF was calculated to be 1.55 kV/m at one meter above ground for all routes. The maximum EF value for this configuration is not reflected in Table 3.		
5.2.3	Magnetic Fields	Yes, this text describes the Magnetic Fields (MF) specific to the 115 kV H-Frame structure. Each of the routes would have the same MF Values. Detailed information regarding the calculated MF is located in Table 4.	Due to the conductor configuration of the single circuit 115 kV H-Frame type structure, the peak MF for this configuration actually occurs at the centerline of the ROW, this would be the same for all routes. This peak MF was calculated to be 104.90 mG under the conductor thermal limit condition and 70.69 mG under the expected peak loading condition for all routes.		
5.2.4	Stray Voltage	Yes, this text describes stray voltage and mitigation measures. Each of the routes would have the same mitigation measures for stray voltage.	Appropriate measures would be taken to prevent stray voltage problems when the proposed HVTL parallels or crosses distribution lines for each route.		
5.2.5	Farm Operations, Vehicle Use and Metal Buildings Near Power Lines	Yes, this text describes procedures to mitigate concerns regarding farm operations, vehicle use, and metal buildings. Each of the routes would have the same mitigation measures.	Minnesota Power would design the Project to exceed NESC minimum clearances for each route.		
6.0	Environmental Information				

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.1	Environmental Setting	Yes, this text describes environmental setting of the project location. Each of the routes are located in close proximity; therefore, they are within the same environmental setting.	Each route area is located within the Northern Minnesota Drift and Lake Plains Section, a section within the biogeographic province known as the Laurentian Mixed Forest Province under the Ecological Classification System developed by the Minnesota Department of Natural Resources. Each route is located in the Tamarack Lowlands Subsection of the Northern Minnesota Drift and Lake Plains Section, near the transition between the St. Louis Moraines and Toimi Uplands Subsections. The Tamarack Lowlands Subsection is characterized by level to gently rolling topography. The largest landform is a lake plain. Around the edges of the old glacial lake is a till plain (Aurora Till Plain) formed in Superior lobe sediments. There is also a small piece of end moraine north of Sandy Lake that is related to the St. Louis moraines. The most common forest communities include lowland hardwoods and conifers. Additionally, northern hardwood and aspen-birch forests were common on the other portions of this region. Presently, much of the land is in public ownership. Forestry and tourism, along with some agriculture are the most common land uses.		
6.2	Human Settlement				
6.2.1	Public Health and Safety	Yes, this text describes public health and safety associated with the project. Each of the routes are located in close proximity; therefore, the public health and safety concerns are the same.	Minnesota Power would implement proper safeguards during construction and operation to avoid potential impacts to public health and safety for each route. Concerns related to health and safety include hazards associated with coming into contact with energized equipment, induction, and stray voltage. In general, impacts to public health and safety from the project are not anticipated for any of the routes. Additionally, each route would be equipped with protective devices (circuit breakers and relays located in the substation where the transmission lines terminate) to safeguard the public if an accident occurs, such as a structure or conductor falling to the ground.		
6.2.2	Residential and Non-Residential Land Use	Yes, this text describes impacts to residential and non-residential lands impacted by the project. Each of the routes are located in close proximity; therefore, the public health and safety concerns are the same. Each of the routes differ slightly; therefore, the amount of residential land impact is different. The Proposed Route crosses 1.6 acres of areas zoned residential; Alternative Route 2 does not cross areas zoned residential; and Alternative Route 3 crosses 1.3 acres of areas zoned residential. The most proximate structure is the same for each route; which is a dwelling located at least 1950 feet from the routes.	The Proposed Route would cross areas zoned as industrial, residential, and forest agricultural management. Construction of the Proposed Route is primarily located in open wetland areas and wetlands adjacent to railroad tracks. Approximately 1.6 acres of the Proposed Route would cross an area zoned residential. There are no residences are located within the proposed ROW and within 1,000 feet of the Proposed Route.	The Alternative Route 2 would cross areas zoned as industrial, and forest agricultural management. Construction of Alternative Route 2 is primarily located in open wetland areas and wetlands adjacent to railroad tracks. No areas zoned residential would be crossed by Alternative Route 2. There are no residences are located within the proposed ROW and within 1,000 feet of Alternative Route 2.	The Alternative Route 3 cross areas zoned as industrial, residential, and forest agricultural management. Construction of Alternative Route 3 is primarily located in open wetland areas and wetlands adjacent to railroad tracks. Approximately 1.3 acres of Alternative Route 3 would cross an area zoned residential. There are no residences are located within the proposed ROW and within 1,000 feet of the Proposed Route.
6.2.3	Noise	Yes, this text describes noise levels associated with the proposed Project. The routes would be constructed in a similar fashion; therefore, there are no differences regarding noise produced by the HVTL.	The noise generated from the each of the routes would not exceed background noise levels and would, therefore, not be audible at any receptor location. The noise level is well below the MPCA limits for the relevant noise area classifications (NAC 1, NAC 2, and NAC 3). The proposed HVTLs would be designed and constructed to comply with state noise standards established by the MPCA. Any audible noise would be below the MPCA noise standards established for NAC 1. Additionally, it is not anticipated that the proposed Project would increase noise from transmission line conductors or any associated facilities above the levels already experienced in the area. With implementation of state design and construction standards, the proposed Project is not anticipated to result in adverse or significant impacts on the public as a result of noise.		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.2.4	Television and Radio Interference	Yes, this text describes potential television and radio interference with the proposed Project. The routes would be constructed in a similar fashion; therefore, there are no differences regarding television and radio interference associated with the HVTL.	If television or radio interference is caused by or from the operation of the routes in those areas where good reception is presently obtained, the Applicant would inspect and repair any loose or damaged hardware, or take other necessary action to restore reception to the present level, including the appropriate modification of receiving antenna systems if deemed necessary.		
6.2.5	Aesthetics	Yes, this text describes impacts to aesthetics associated with the proposed Project. Each of the routes are located in close proximity; therefore, the aesthetic impacts for all routes would be the same.	Each of the routes is within areas zoned as either industrial, residential, or forest agricultural management. There are no residential structures located within the proposed Project area. The closest dwelling to each of the routes is at least 1950 feet away in a forested area. Therefore, the aesthetics of the this property would not be adversely affected by any of the routes.		
6.2.6	Socioeconomic	Yes, this text describes socioeconomic impacts associated with the proposed Project. Each of the routes are located in close proximity; therefore, the socioeconomic impacts for all routes would be the same.	None of the routes would not create any permanent jobs; however, the construction activities for each route would provide a seasonal influx of additional dollars into the communities during the construction phase, and materials, such as concrete, may be purchased from local vendors where feasible. Long-term beneficial impacts from each of the routes would be measured as the value of the United Taconite tailings basin expansion, which would allow United Taconite to continue operating.		
6.2.7	Cultural Values	Yes, this text describes cultural values which may be impacted due to the proposed Project. Each of the routes are located in close proximity; therefore, the cultural impacts for all routes would be the same.	No impacts are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		
6.2.8	Recreation	Yes, this text describes recreation impacts associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to recreation for all routes would be the same.	None of the routes are located in the immediate vicinity of any recognized recreational area; however, Hiekkila and Murphy Lakes are located within one mile of each of the routes as shown in Figure 2. Several properties have shoreline property on these water bodies. These property owners and the general public may use the lakes for a variety of recreational activities; including boating, fishing, and watersports. None of the routes are located within the immediate vicinity of these lakes and, thus, no impacts are anticipated.		
6.2.9	Public Services	Yes, this text describes impacts to public services associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to public services for all routes would be the same.	No impacts to public services are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.2.10	Utilities	Yes, this text describes impacts to utilities associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to utilities for all routes would be the same.	No impacts to utilities are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		
6.2.11	Transportation and Traffic	Yes, this text describes impacts to transportation and traffic associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to transportation and traffic for all routes would be the same.	No impacts to emergency services are anticipated for any of the routes, Minnesota Power would minimize potential impacts through coordination of the construction with local and state road authorities for all routes and use signage during construction to alert drivers. No significant conflicts are anticipated. Operation of the transmission line is not expected to impact vehicular or rail traffic for any of the routes.		
6.3	Land Based Economics				
6.3.1	Agriculture	Yes, this text describes impacts to agriculture associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to agriculture for all routes would be the same.	No farmland within the any of the routes as displayed on Figure B6.		
6.3.2	Forestry	Yes, this text describes impacts to forestry associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to forestry for all routes would be the same.	There are no known tree farms or federal or state forests located within the area of any of the routes.		
6.3.3	Tourism	Yes, this text describes impacts to tourism associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to tourism for all routes would be the same.	No formal tourist areas are present within the any of the routes.		
6.3.4	Mining	Yes, this text describes impacts to mining associated with the proposed Project. Each of the routes would accommodate expanding United Taconite's tailing basin; therefore, the impacts to mining for all routes would be the same.	Although all three routes would allow for United Taconite to complete its planned expansion of the tailings basin, Alternative 2 and Alternative 3 would be located in close proximity to the basin. This could impact future expansion or maintenance by United Taconite or require the proposed line to be relocated again.		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.4	Archaeological and Historic Resources	Yes, this text describes impacts to archaeological and historic resources associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to archaeological and historic resources for all routes would be the same.	Two Pines Resource Group, LLC (Two Pines) conducted a cultural resources literature search for the proposed Project in December of 2014. Based on the data from Two Pines, no archaeological or historic resources have been documented within one mile of the Proposed Route. Both Alternative Route 2 and Alternative Route 3 are within one mile of the Proposed Route; therefore, there are no impacts to archaeological and historic resources for any of the routes. This report was included in the original January 2015 route application submittal.		
6.5	Natural Environment				
6.5.1	Air Quality	Yes, this text describes impacts to air quality associated with the proposed Project. Each of the routes would be constructed in a similar fashion with the same materials; therefore, the impacts air quality for all routes would be the same.	None of the routes would result in adverse or significant effects on air quality.		
6.5.2	Water Resources				
6.5.2.1	Water Quality	Yes, this text describes impacts to water quality associated with the proposed Project. Each of the routes would be constructed in a similar fashion with the same materials in similar environmental settings; therefore, the impacts air quality for all routes would be the same.	Each route may have minor, short term effects on water quality. Impacts on water quality are possible during the construction phase of each route; when sediment could possibly reach surface waters due to excavation, grading, and construction traffic disturb the ground. In the event that a National Pollutant Discharge Elimination System (NPDES) construction storm water permit and Stormwater Pollution Prevention Plan (SWPPP) is required for any of the routes the Applicant would obtain the permit and prepare a SWPPP.		
6.5.2.2	MnDNR Public Waters Inventory	Yes, this text describes impacts to MnDNR Public Waters Inventory (PWI) associated with the proposed Project. Each of the routes would be constructed in a similar fashion with the same materials; therefore, the impacts air quality for all routes would be the same.	No PWI basins are located within the ROW of any of the routes, PWIs are displayed on Figure B2.		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.5.2.3	Wetlands	Yes, this text describes impacts to wetlands associated with the proposed Project. Each of the routes differ slightly; therefore, the amount of wetlands impacted is different. The Proposed Route impacts 157.7 acres of Forested/Shrub Wetlands; Alternative Route 2 impacts 144.5 acres of Forested/Shrub Wetlands; and Alternative Route 3 impacts 161.1 acres of Forested/Shrub Wetlands. Wetland impacts are displayed on Figure B2.	Based on NWI data approximately 157.5 acres of Forested/Shrub Wetland have been mapped within the Proposed Route.	Based on NWI data approximately 144.5 acres of Forested/Shrub Wetland have been mapped within Alternative Route 2.	Based on NWI data approximately 161.1 acres of Forested/Shrub Wetland have been mapped within Alternative Route 3.
6.5.2.4	Floodplain	Yes, this text describes impacts to floodplains associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to floodplains for all routes would be the same.	None of the routes would impact floodplain resources. The location of the routes and nearby floodplains is displayed on Figure B5.		
6.5.3	Flora	Yes, this text describes impacts to flora associated with the proposed Project. Each of the routes are located in close proximity; however, they differ slightly. Therefore, the amount of flora impacted by each route differs. This information is detailed in Table 5 and displayed on Figure B3.	The amount of flora impacted by each route differs. This information is detailed in Table 5 and displayed on Figure B3.		
6.5.4	Fauna	Yes, this text describes impacts to fauna associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to fauna for all routes would be the same.	The Anchor Lake MnDNR Wildlife Management Area (WMA) is located approximately 0.75 miles east of each of the routes; however, this area will not be impacted by any of the routes. Additionally, no USFWS Waterfowl Production Areas (WPA) are located within the vicinity of the any of the routes. Displacement of fauna would be minor and temporary for each route, and no long-term population-level impacts are anticipated. The Applicant would construct the selected route according to Avian Power Line Interaction Committee (APLIC) recommended safety design standards regarding avian collisions and avian electrocution with HVTLs. In addition, the Applicant would work with the MnDNR and the USFWS to identify any areas that may require marking transmission line shield wires and/or using alternative structures to reduce the likelihood of avian collisions.		

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
6.6	Rare and Unique Natural Resources	Yes, this text describes impacts to rare and unique natural resources associated with the proposed Project. Each of the routes are located in close proximity; therefore, the impacts to rare and unique natural resources for all routes would be the same.	The USFWS list of federally threatened, endangered, proposed, and candidate species was reviewed to obtain information on federally-listed species that could be present along or near the Proposed Route. According to the USFWS list, St. Louis County, where the Proposed Route is located, is within the overall range of the Canada Lynx (Lynx canadensis; federally threatened), Gray Wolf (Canis lupus; federally threatened), the piping plover (Charadrius melodus; federally endangered), the rufa red knot (Calidris canutus rufa; federall threatened), and the northern long-eared bat (Myotis septentrionalis; federally threatened). Since Alternative Route 2 and Alternative Route 3 are very proximate to the Proposed Route the habitat and impacts to these species is the same. If Canada Lynx or Grey Wolf are present along any route it would not likely adversely affect them as it would not limit their movement and would not have direct impacts on active denning sites. Piping plover, which occupies shoreline and open sandy habitats, would not be present within any of the routes. No rufa red knot are expected to be found in the project vicinity, as the species only utilizes shoreline areas during migration through this county. Suitable habitat for the northern long-eared bat is potentially present near the proposed route, however, all impacts to the species will be avoided by adhering to seasonal tree-clearing restrictions. Trees will not be cleared from April 1st through September 30th. Additionally, there are no known bat hibernacula in close proximity to any of the proposed routes. The Minnesota Natural Heritage Inventory System (NHIS) database was reviewed for state-listed threatened, endangered, and special concern species that have been documented within one mile of the proposed Project. There are records of five northern goshawk (Accipiter gentilis; state special concern) nests comprising one territory as well as one bald eagle (Haliaeetus leucocephalus) nest within one mile of the project as shown in Figure B4.		
7.0	Agency Involvement, Public Participation and Required Permits and Approvals				
7.1	Project Notices to Agencies, LGUs, and Interested Parties	Not applicable, the text in this section describes the Project Notices to Agencies, LGUs, and Interested Parties, which is not applicable to this comparison document.			
7.2	United States Fish and Wildlife Service	Not applicable, the text in this section describes the correspondence with the United States Fish and Wildlife Service, which is not applicable to this comparison document.			
7.3	Minnesota Department of Natural Resources	Not applicable, the text in this section describes the correspondence with the Minnesota Department of Natural Resources, which is not applicable to this comparison document.			
7.4	Minnesota State Historic Preservation Office	Not applicable, the text in this section describes the correspondence with the Minnesota State Historic Preservation Office, which is not applicable to this comparison document.			
7.5	Identification of Landowners	Not applicable, the text in this section describes information regarding landowners, which is not applicable to this comparison document.			
7.6	Required Permits and Approvals	Not applicable, the text in this section describes the required permits and approvals required to complete the work. Minnesota Power would obtain required permits for any route used for the proposed Project.			

Section	Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
7.6.1	Federal Permits	Not applicable, the text in this section describes the required permits and approvals required to complete the work. Minnesota Power would obtain required permits for any route used for the proposed Project.			
7.6.2	State of Minnesota Permits	Not applicable, the text in this section describes the required permits and approvals required to complete the work. Minnesota Power would obtain required permits for any route used for the proposed Project.			
7.6.3	Local Permits	Not applicable, the text in this section describes the required permits and approvals required to complete the work. Minnesota Power would obtain required permits for any route used for the proposed Project.			

Revised Application Tables 1-5

Table 1
Project Costs

	Proposed Route	Alternative 2	Alternative 3
Material Cost	$269,712.09	$606,681.97	$370,729.18
Construction Matting Cost	$1,365,280.00	$1,792,960.00	$1,983,040.00
Removal Matting Cost	$2,000,600.00	$1,620,440.00	$2,000,600.00
Construction Cost	$1,063,757.29	$1,075,385.65	$1,176,678.21
Total Cost	$4,699,349.38	$5,095,467.62	$5,531,047.39
Total Cost Difference	$0.00	$396,118.24	$831,698.01
*Structure Foundations Constructed with Mine Tailings			

	Proposed Route	Alternative 2	Alternative 3
Material Cost	$269,712.09	$744,292.87	$400,869.59
Construction Matting Cost	$1,365,280.00	$1,792,960.00	$1,983,040.00
Removal Matting Cost	$2,000,600.00	$1,620,440.00	$2,000,600.00
Construction Cost	$1,063,757.29	$1,075,385.65	$1,176,678.21
Total Cost	$4,699,349.38	$5,233,078.52	$5,561,187.80
Total Cost Difference	$0.00	$533,729.14	$861,838.42
*Structure Foundations Constructed with Select Granular Fill			

Table 2

Structure Design Summary

Line Type	Structure Type	Structure Material	Typical ROW Width (feet)	Approximate Structure Height (feet)	Structure Base Diameter (inches)	Foundation Diameter (feet)	Span Between Structures (feet)
Single Circuit 115 kV	H-Frame	Wood	100	Ranges from 60-75	Ranges from 16-32	Wood: direct embed	Ranges from 500-800
Single Circuit 115 kV	Three Pole Angle Structure	Wood	100	Ranges from 60-75	Ranges from 16-32	Wood: direct embed	No span

Table 3

Calculated Electric Fields (kV/m) for Proposed Transmission Line Designs One Meter (3.28 feet) above ground

Structure Type	Maximum Operating Voltage (kV)	Distance to Proposed Centerline (feet) of ROW												
		-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
115 kV H-Frame	126.5	0	0.01	0.07	0.15	0.42	1.31	0.5	1.31	0.42	0.15	0.07	0.01	0

Table 4
Calculated Magnetic Fields (mG) for Proposed Transmission Line Design

Structure Type	Current (Amps)	Distance to Proposed Centerline (feet) of ROW												
		-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Magnetic Field Profile at Conductor Thermal Limits														
115 kV H-Frame	461.9	0.64	1.43	5.61	9.73	20.41	56.21	104.9	56.21	20.41	9.73	5.61	1.43	0.64
Magnetic Field Profile at Expected Peak Loading														
115 kV H-Frame	311.3	0.43	0.97	3.78	6.56	13.75	37.88	70.69	37.88	13.75	6.56	3.78	0.97	0.43

Table 5
Land Use/Land Cover within the 100 ft ROW

Proposed Route

Land Cover Type	Acres	Percent
Aquatic	0.75	2.15%
Lowland Shrub	11.02	31.57%
Marsh	1.86	5.33%
Tamarack	4.89	14.01%
Lowland Black Spruce	15	42.97%
Aspen/White Birch	0.55	1.58%
Pine	0.6	1.72%
Grassland	0.25	0.72%
Total	**34.91**	**100%**

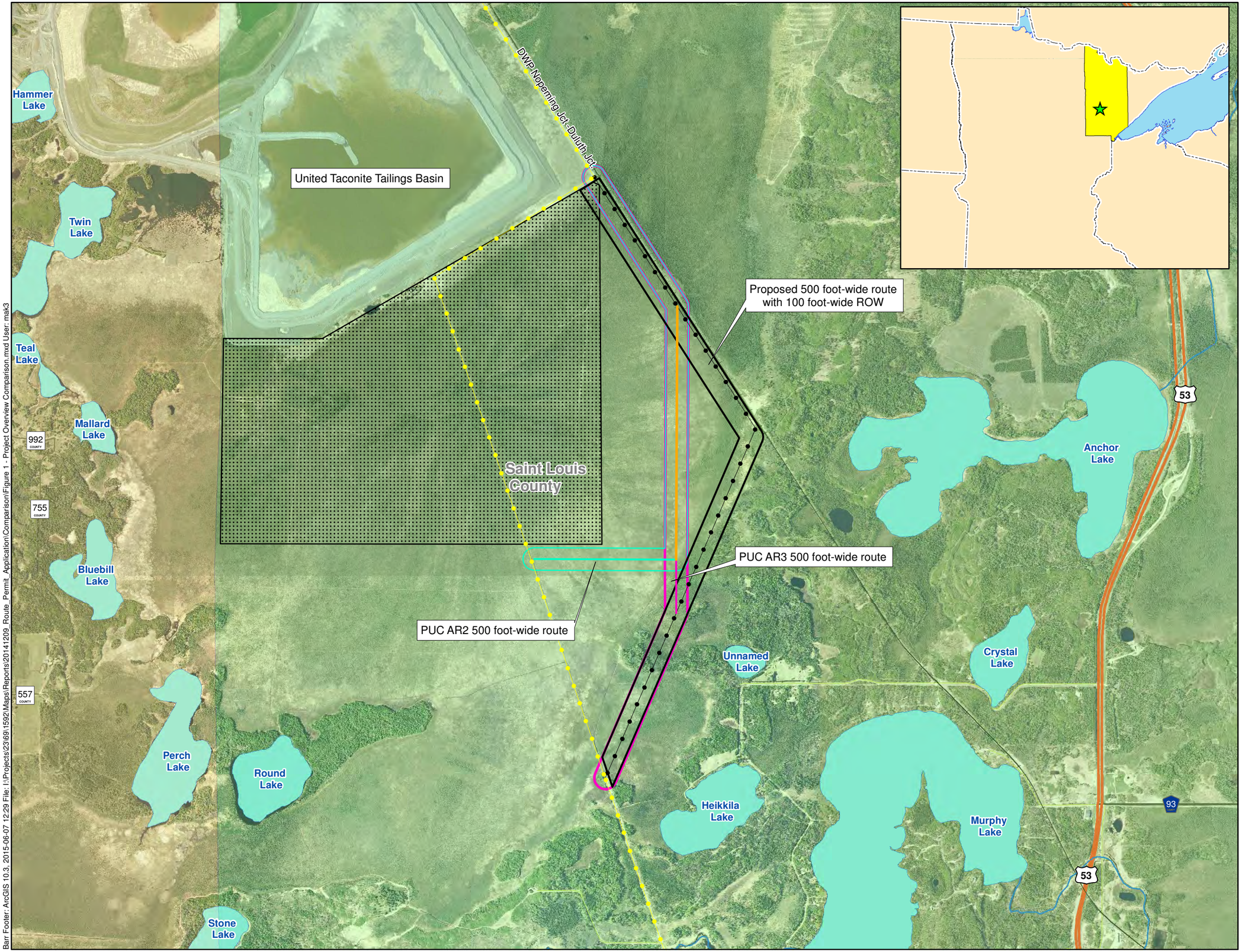
Alternative Route 2

Land Cover Type	Acres	Percent
Aquatic	3.82	13.53%
Lowland Black Spruce	14.62	51.76%
Lowland Shrub	5.46	19.32%
Tamarack	4.35	15.39%
Total	**28.24**	**100.00%**

Alternative Route 3

Land Cover Type	Acres	Percent
Aquatic	3.72	10.65%
Aspen/White Birch	0.55	1.57%
Grassland	0.25	0.71%
Lowland Black Spruce	17.87	51.20%
Lowland Shrub	3.69	10.56%
Marsh	1.34	3.85%
Pine	0.05	0.15%
Tamarack	5.42	15.54%
Total	**34.91**	**100%**

Revised Application Figures 1-B6



Existing 16 Line
Proposed 16 Line Alignment
Proposed 16 Line 500 foot-wide Route
PUC AR3
PUC AR2
PUC AR2 & AR3 Common Boundary

Proposed 16 Line 500 foot-wide Route

PUC AR2
PUC AR3

Township Boundary

Heikkila Lake Township
McDavitt Township
PWI Basin
PWI Watercourse
Tailings Basin Expansion Area

minnesota power
AN ALLETE COMPANY

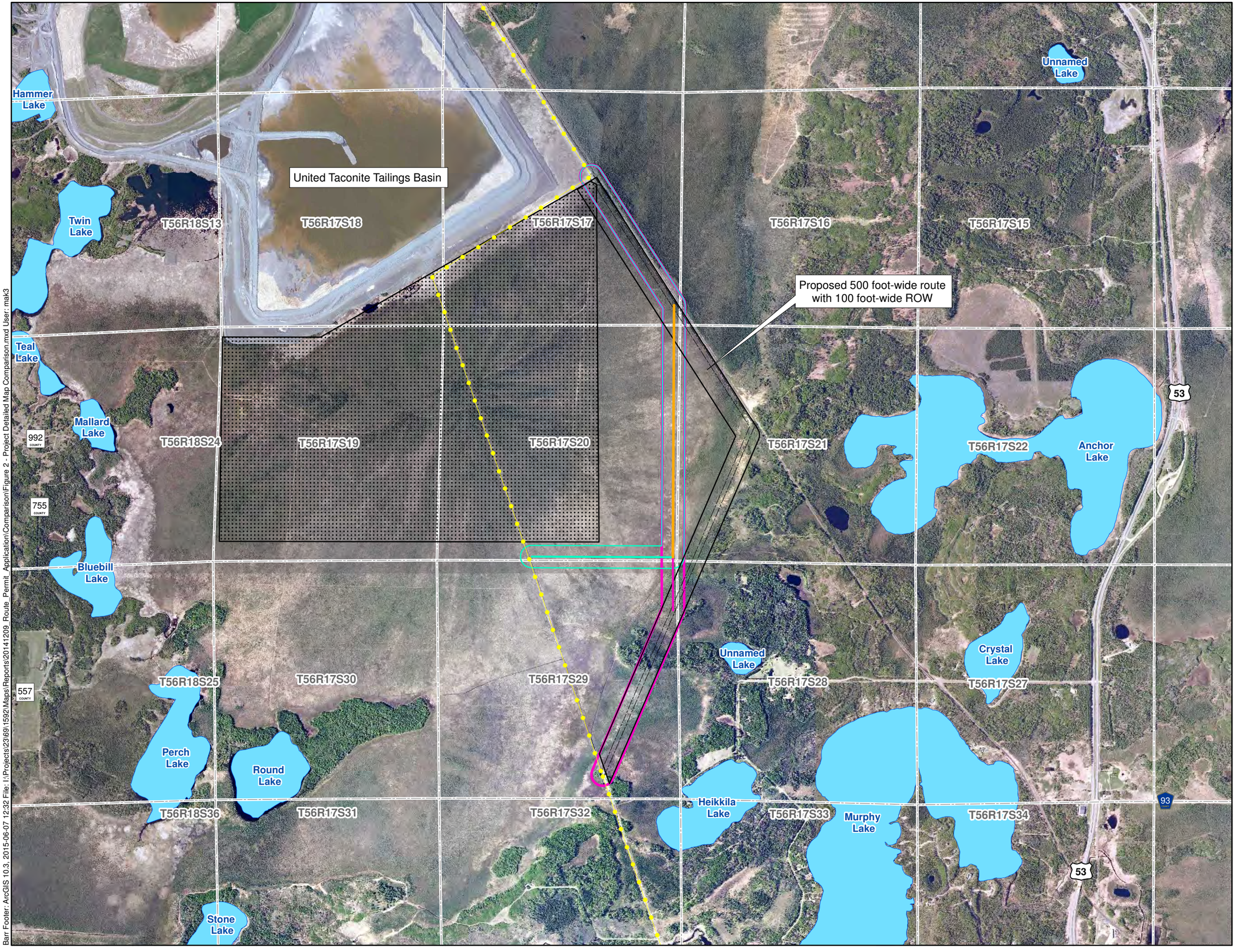
N

0 2,000 4,000 Feet

Figure 1

PROJECT OVERVIEW
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.3, 2015-06-07 12:29 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure 1 - Project Overview Comparison.mxd User: mak3



PWI Basin
Tailings Basin Expansion Area
Public Land Survey Sections
Existing 16 Line
Proposed 16 Line 100 foot-wide ROW
Proposed 16 Line 500 foot-wide Route
PUC AR3
PUC AR2
PUC AR2 & AR3 Common Boundary

Proposed 16 Line 500 foot-wide Route

PUC AR2
PUC AR3

minnesota power
AN ALLETE COMPANY

N

0 2,000 4,000 Feet

Figure 2

PROJECT DETAILED MAP
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.3, 2015-06-07 12:32 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure 2 - Project Detailed Map Comparison.mxd User: mak3

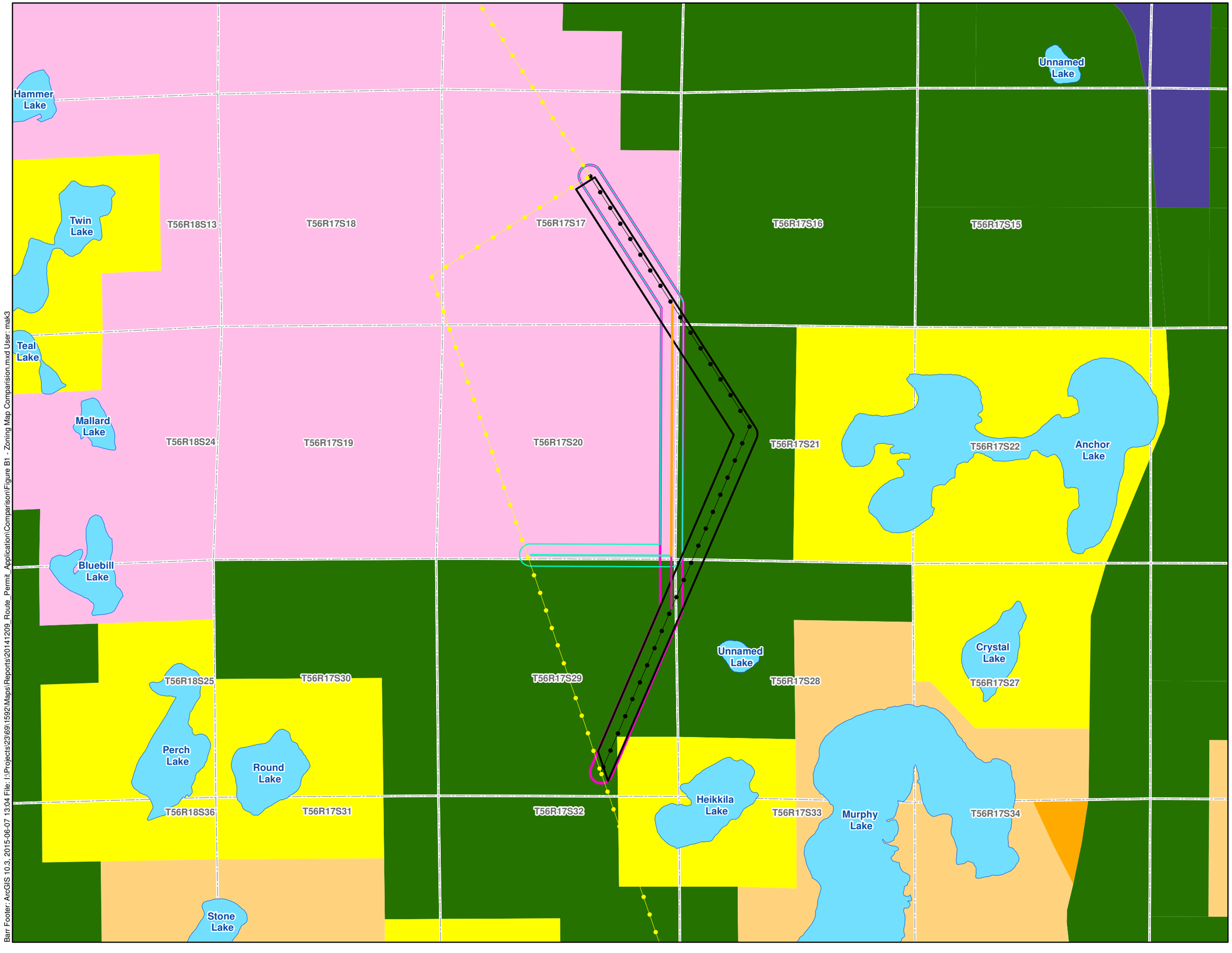
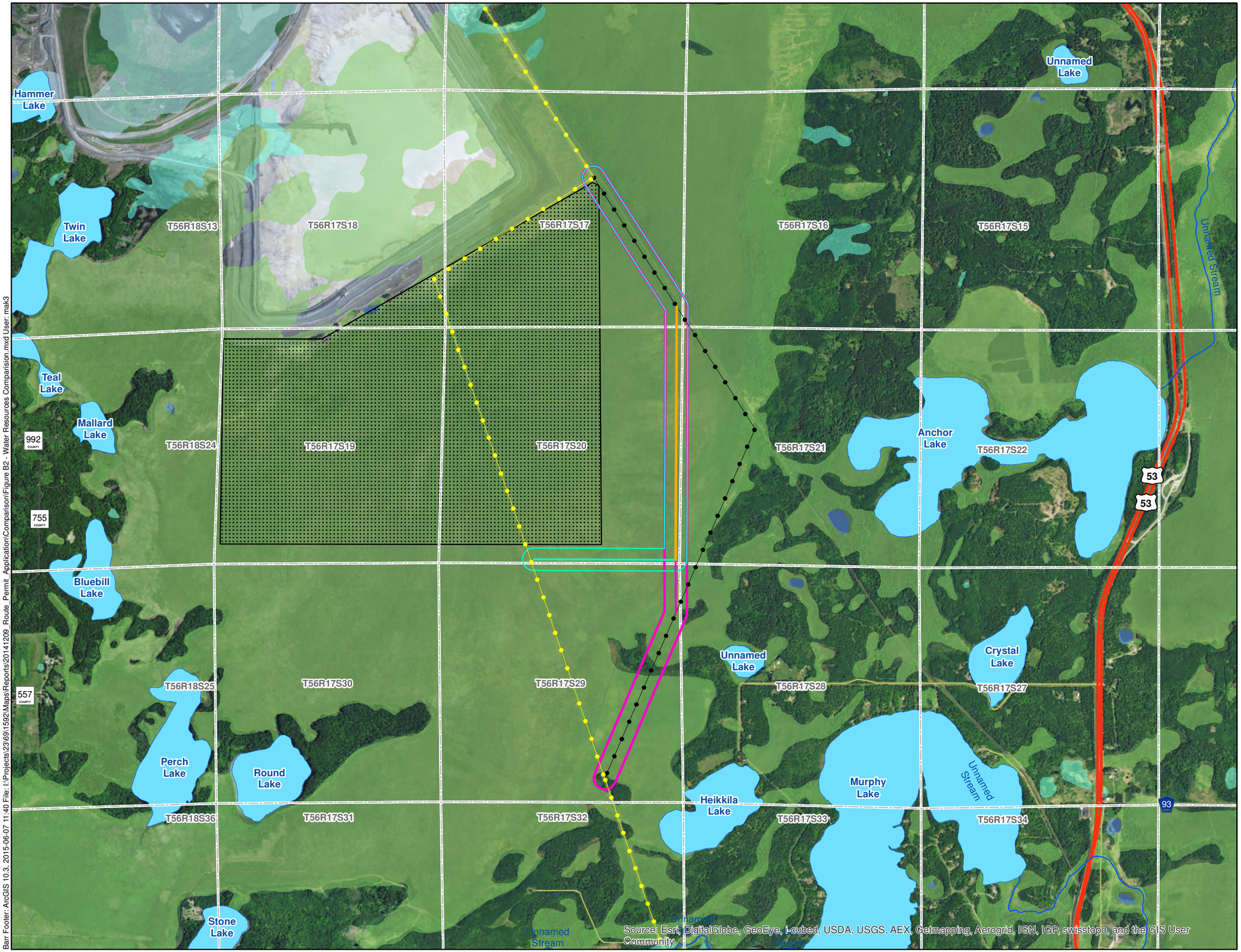


Figure B1

ZONING MAP
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.3, 2015-06-07 13:04 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure B1 - Zoning Map Comparision.mxd User: mak3



Tailings Basin Expansion Area
Public Land Survey Sections
Public Water Inventory Watercourses.lyr
PWI Basin
Proposed 16 Line Alignment
Existing 16 Line
PUC AR2 & AR3 Common Boundary
PUC AR2
PUC AR3

Proposed 16 Line 500 foot-wide Route

PUC AR2
PUC AR3

Wetlands (National Wetlands Inventory)

Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine

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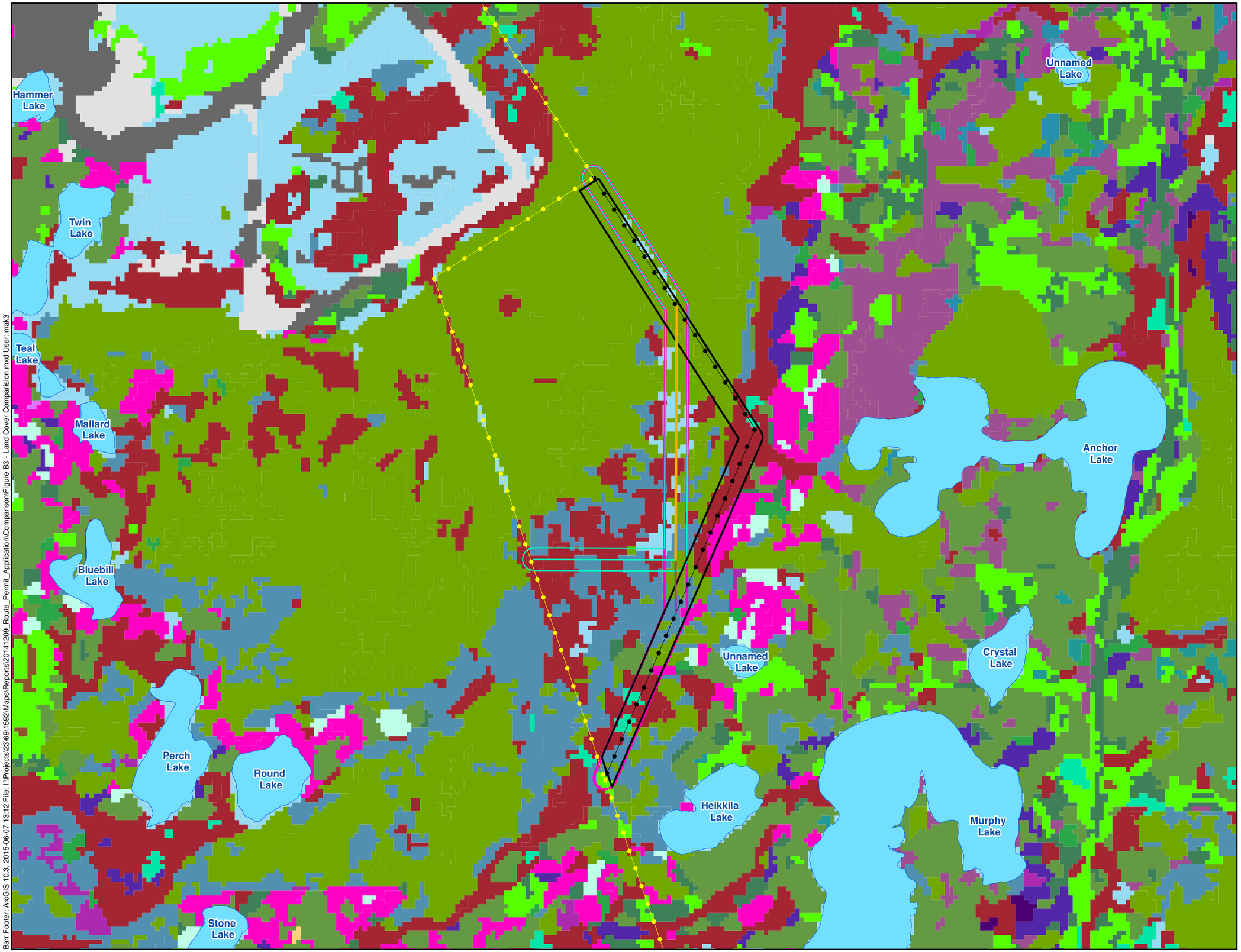
N

0 2,000 4,000 Feet

Figure B2

WATER RESOURCES
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.3, 2015-06-07 11:40 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure B2 - Water Resources Comparision.mxd User: mak3



Barr Footer: ArcGIS 10.3, 2015-06-07 13:12 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure B3 - Land Cover Comparision.mxd User: mak3

Proposed 16 Line Alignment
Proposed 16 Line 500 foot-wide Route
Existing 16 Line
PUC AR2 & AR3 Common
PUC AR3
PUC AR2

Proposed 16 Line 500 foot-wide Route

PUC AR2
PUC AR3
PWI Basin

Land Cover

(USGS Gap Analysis Program)

Water
Aspen/White Birch
Barren
Black Ash
Cropland
Developed
Grassland
Lowland Black Spruce
Lowland Deciduous
Lowland Northern White-Cedar
Lowland Shrub
Maple/Basswood
Marsh
Oak
Pine
Spruce/Fir
Tamarack
Upland Conifer-Deciduous mix
Upland Shrub

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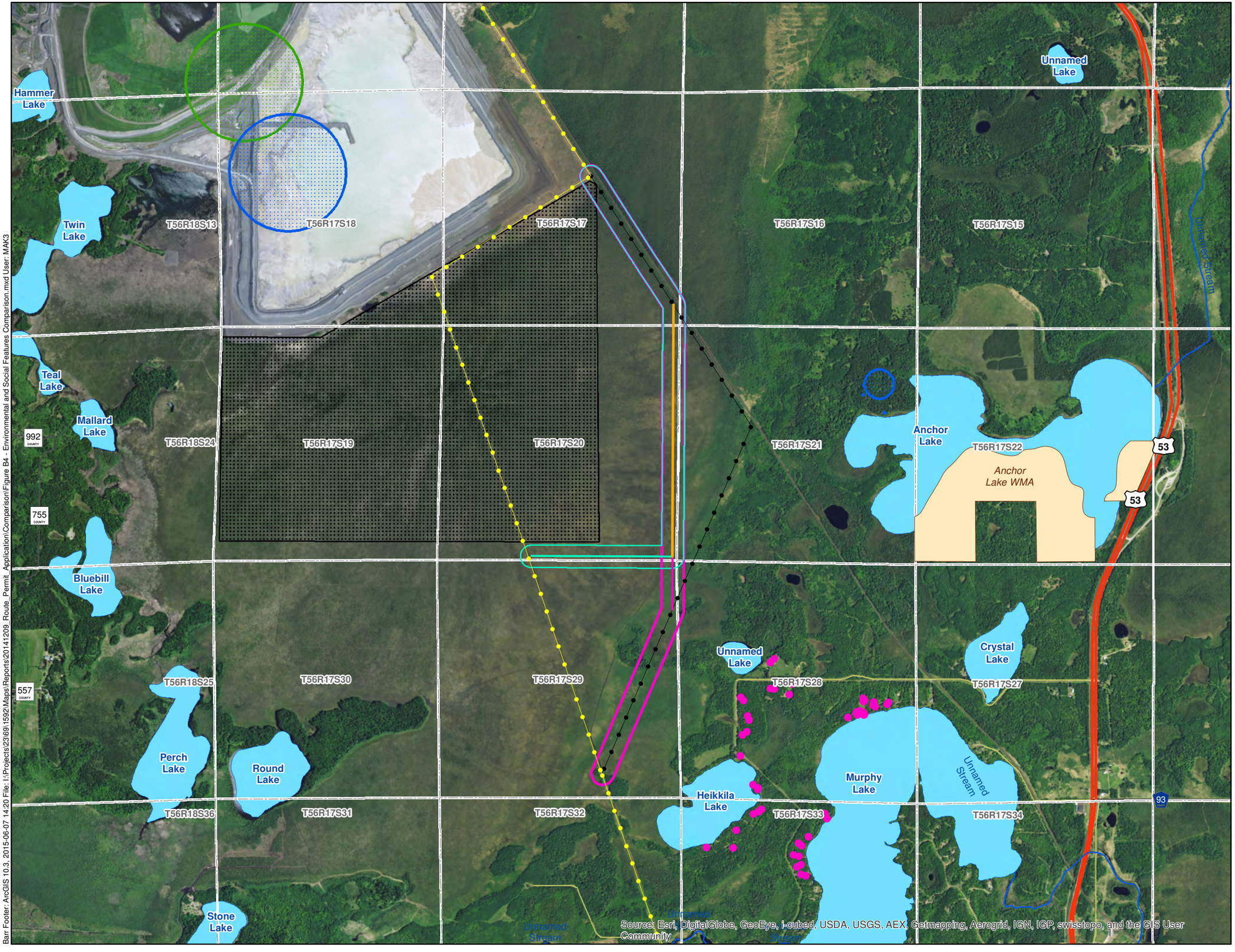
AN ALLETE COMPANY

N

0 2,000 4,000 Feet

Figure B3

LAND COVER
Proposed 16 Line Reroute
Saint Louis County, MN



Residential Buildings

Tailings Basin Expansion Area

Public Land Survey Sections

Public Water Inventory Watercourses.lyr

PWI Basin

Wildlife Management Area

Proposed 16 Line Alignment

Existing 16 Line

PUC AR2 & AR3 Common Boundary

PUC AR2

PUC AR3

Proposed 16 Line 500 foot-wide Route

PUC AR2

PUC AR3

T&E Species*

Vertebrate Animal

Animal Assemblage

*Rare features data included here were provided by the Natural Heritage and Nongame Research Program of the Division of Ecological Services, Minnesota Department of Natural Resources (DNR), and were current as of 05/15/13

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AN ALLETE COMPANY

N

0 2,000 4,000 Feet

Figure B4

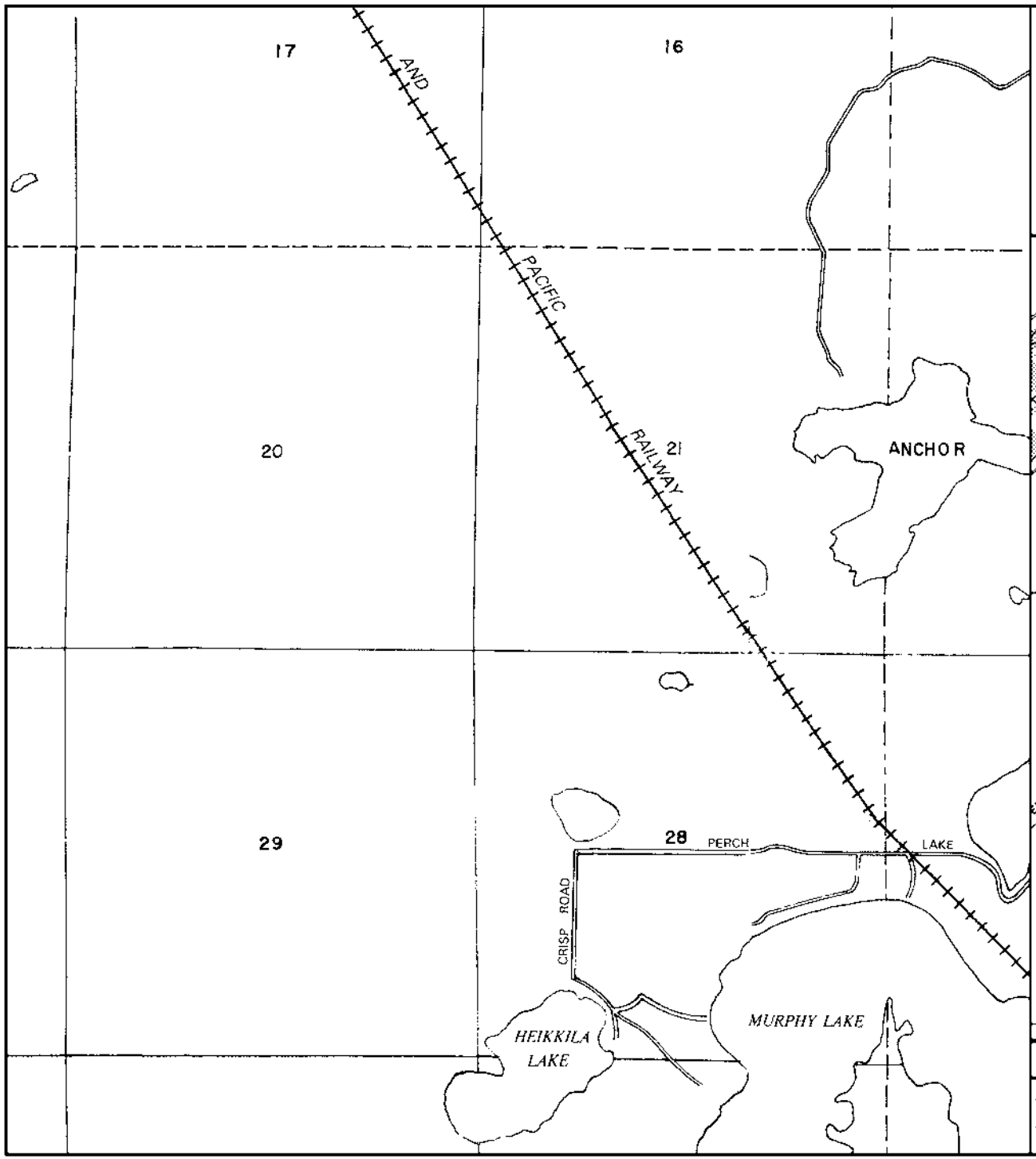
ENVIRONMENTAL AND SOCIAL FEATURES
Proposed 16 Line Reroute
Saint Louis County, MN

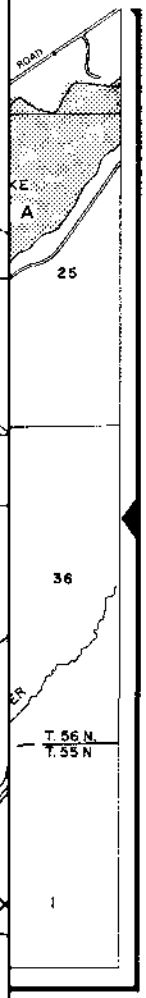
Barr Footer: ArcGIS 10.3, 2015-06-07 14:20 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure B4 - Environmental and Social Features Comparison.mxd User: MAK3

the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

2000 0





NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

ST. LOUIS COUNTY, MINNESOTA
(UNINCORPORATED AREAS)

PANEL 1075 OF 1675
(SEE MAP INDEX FOR PANELS NOT PRINTED)

INCLUDES:

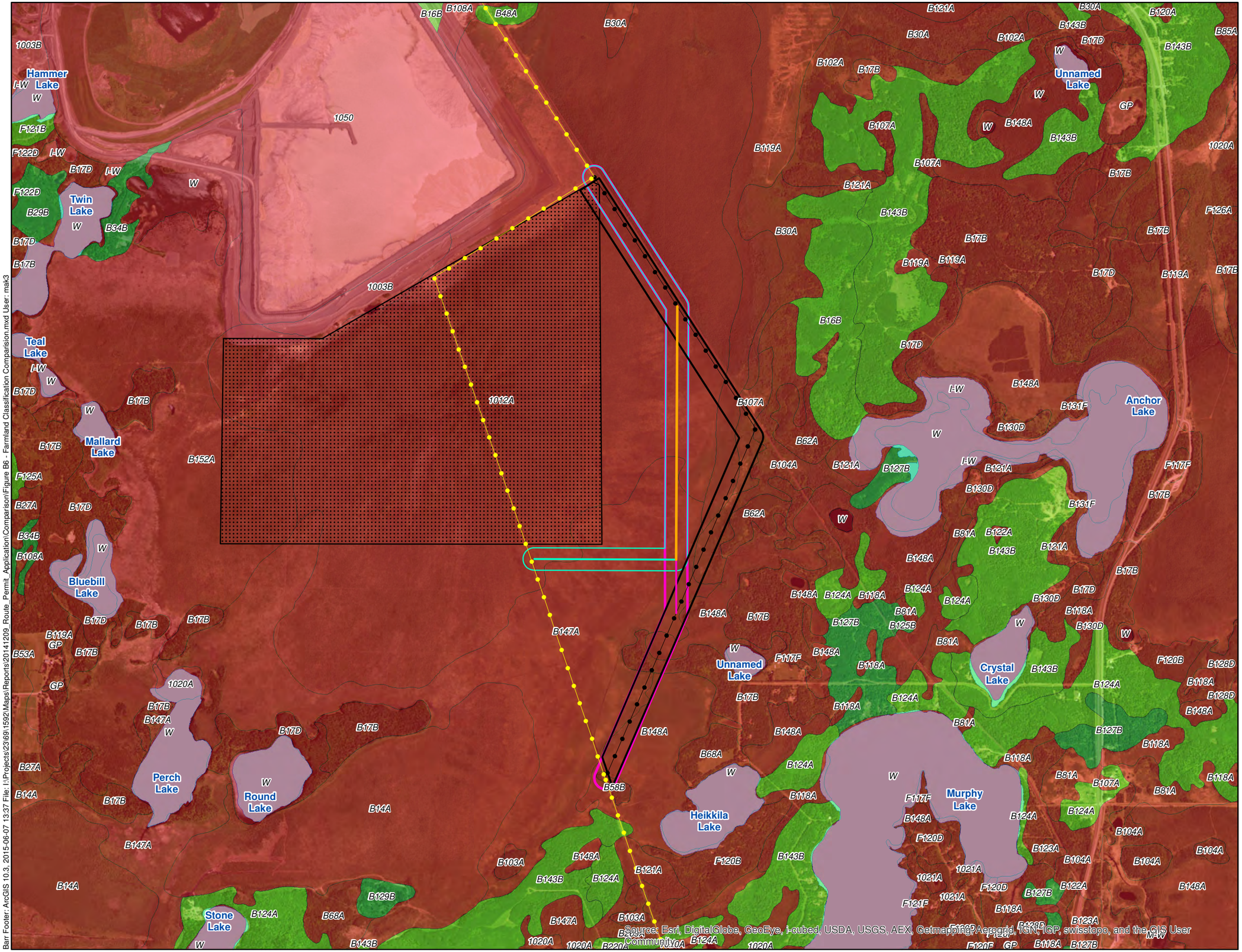
TOWNSHIP NAME	NUMBER
FAYAL	270739

COMMUNITY–PANEL NUMBER:
270416 1075 C

EFFECTIVE DATE:
FEBRUARY 19, 1992

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Barr Footer: ArcGIS 10.3, 2015-06-07 13:37 File: I:\Projects\23691592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure B6 - Farmland Classification Comparision.mxd User: mak3

Proposed 16 Line Alignment

Proposed 16 Line 500 foot-wide Route

Existing 16 Line

PUC AR2 & AR3 Common Boundary

PUC AR3

PUC AR2

Proposed 16 Line 500 foot-wide Route

PUC AR2

PUC AR3

PWI Basin

Tailings Basin Expansion Area

NRCS Farmland Classification

Not prime farmland

All areas are prime farmland

Farmland of statewide importance

minnesota power
AN ALLETE COMPANY

N

0 2,000 4,000 Feet

Figure B6

FARMLAND CLASSIFICATION
Proposed 16 Line Reroute
Saint Louis County, MN

IN THE MATTER OF MINNESOTA POWER'S 16 LINE REROUTE PROJECT – ST. LOUIS COUNTY, MINNESOTA

MPUC DOCKET NO. E015/TL-14-977

CERTIFICATE OF SERVICE

Jill N. Yeaman certifies that on the 19th day of June, 2015, she filed a true and correct copy of a **Route Alternative Comparison** by posting the same on eDockets (www.edockets.state.mn.us). Said document is also served via U.S. Mail or email as designated on the attached Service List on file with the Minnesota Public Utilities Commission in the above referenced docket.

/s/ Jill N. Yeaman
Jill N. Yeaman

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620 St. Paul, MN 55164-0620	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Margaret	Hodnik	mhodnik@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Stacy	Kotch	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_14-977_Official CC Service List
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Dan	McCourtney	dmccourtney@allete.com	Minnesota Power	30 West Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Herbert	Minke	hminke@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Rian	Reed	rian.reed@state.mn.us	Minnesota Deparment of Natural Resources	1201 East Hwy 2 Grand Rapids, MN 55744	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Thomas	Scharff	thomas.scharff@newpagecorp.com	New Page Corporation	P.O. Box 8050 610 High Street Wisconsin Rapids, WI 544958050	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Frwy Bloomington, MN 55431	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ron	Spangler, Jr.	rlspangler@otpco.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Karen	Turnboom	karen.turnboom@newpagecorp.com	NewPage Corporation	100 Central Avenue Duluth, MN 55807	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	OFF_SL_14-977_Official CC Service List