DEPARTMENT OF TRANSPORTATION

Metro District Waters Edge
1500 West County Road B2
Roseville, MN 55113

Memo

To: **EQB Distribution List and Interested Parties**

From: **Diane Langenbach, PE**
Project Manager

Date: **June 9, 2017**

RE: Negative Declaration Regarding the Need for an Environmental Impact Statement for the TH 169/TH 41/CSAH 78/CSAH 14 Intersection Improvement Project, Scott County, MN (S.P. 070-596-013/ 7005-121/7009-81/7010-109)

The Minnesota Department of Transportation (MnDOT), along with its partners, Scott County, Jackson Township, and Louisville Township are proposing to construct a highway interchange and overpass in Jackson Township and Louisville Township. The proposed project includes construction of an interchange at the existing signalized Highway 169 and Highway 41/County Highway 78 intersection and a new overpass near the existing Highway 169 and County Highway 14 intersection. The project also includes construction of frontage roads parallel to Highway 169, pedestrian/bicycle accommodations, retaining wall, a noise wall, and stormwater treatments.

Under Minnesota rules, MnDOT is the Responsible Governmental Unit (RGU) for this project. The proposed actions were described and analyzed in a State Environmental Assessment Worksheet (EAW) circulated to the EAW Distribution List and others. A Notice of Availability appeared in the EQB Monitor on April 17, 2017. The comment period closed on May 17, 2017.

As the RGU for the project, MnDOT has undertaken a thorough analysis of the project and its impacts. Through its own analysis, coordination with affected agencies, public and community involvement, and comment letters received, MnDOT has determined that the proposed improvements as described in the EAW and the Findings of Fact and Conclusions (FOF&C) do not have the potential for significant environmental impacts. MnDOT has concluded that an Environmental Impact Statement (EIS) is not required and has issued a Negative Declaration Order for the project. This decision and determination is supported by the full administrative record of the project, including the FOF&C. The Negative Declaration concludes the Minnesota state environmental review process.

MnDOT does not intend to circulate paper copies of the Findings of Fact and Conclusions document or the Negative Declaration Order. These items and others are available on the project website at https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro.

Should any readers not have access to these electronic documents, paper copies may be obtained by contacting Rick Dalton, Environmental Coordinator, Minnesota Department of Transportation, 1500 West County Road B2, Roseville, MN 55113; or richard.dalton@state.mn.us.

FINDINGS OF FACT
and
CONCLUSIONS

TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14

Intersection Improvements

State Project No. 070-596-013, 7005-121,

7009-81, 7010-109

Prepared by:
Minnesota Department of Transportation

DEPARTMENT OF TRANSPORTATION

June 7, 2017

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FINDINGS OF FACT AND CONCLUSIONS

TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14 Intersection Improvements

Located in:
Jackson Township and Louisville Township
Scott County, Minnesota

1.0 STATEMENT OF ISSUE

The project includes construction of an interchange at the existing signalized Trunk Highway (TH) 169 at TH 41/County State Aid Highway (CSAH) 78 intersection and a new overpass near the existing TH 169 at CSAH 14 intersection located in Jackson and Louisville Townships in Scott County. The project also includes construction of frontage roads parallel to TH 169, pedestrian/bicycle accommodations, retaining wall, a noise wall, and stormwater treatments. The project is intended to improve safety and mobility for commuter and freight traffic and to provide non-motorized accommodations for crossing TH 169.

Preparation of an Environmental Assessment Worksheet (EAW) is required for this project under Minnesota Rules 4410.4300, Subpart 22.A, for construction of a road on a new location over one mile in length. Scott County is the project proposer. MnDOT is the Responsible Governmental Unit (RGU) for review of this project, as per Minnesota Rules 4410.4300, Subpart 22.A.

MnDOT's decision in this matter shall be either a negative or a positive declaration of the need for an environmental impact statement. MnDOT must order an Environmental Impact Statement (EIS) for the project if it determines the project has the potential for significant environmental effects.

Based upon the information in the record, which comprises the Categorical Exclusion (CatEx) and Environmental Assessment Worksheet (EAW) for the proposed project, related studies referenced in the CatEx and EAW, written comments received, responses to the comments, and other supporting documents included in this Findings of Fact and Conclusions document, MnDOT makes the following Findings of Fact and Conclusions:

2.0 ADMINISTRATIVE BACKGROUND

2.1 The Minnesota Department of Transportation is the Responsible Governmental Unit for the TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14 Intersection Improvements project. A Federal Categorical Exclusion and State Environmental Assessment Worksheet have been prepared for this project in accordance with the National Environmental Policy Act (NEPA) (42 USC 4321 et. seq.) and Minnesota Rules Chapter 4410 respectively. The EAW was developed to assess the impacts of the project and other circumstances in order to determine if an Environmental Impact Statement (EIS) is indicated.

2.2 The EAW was filed with the Minnesota Environmental Quality Board (EQB) and circulated for review and comments to the required EAW distribution list. A "Notice of Availability" was published in the EQB Monitor on April 17, 2017. A press release was distributed to local media outlets and legal notices were published in the Belle Plaine Herald on April 19, 2017. **Appendix A** contains copies of the affidavits of publication for the legal notices. A notice was also published on the project web page **https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro**. These notices provided a brief description of the project and information on where copies of the EAW were available and invited the public to provide comments that would be used in determining the need for an EIS on the proposed project.

2.3 The EAW was made available for public review at five locations: Shakopee Public Library (Shakopee), MnDOT Metro District Office (Roseville), Scott County Highway Department (Jordan), MnDOT Library (St. Paul), and Environmental Conservation Library (Minneapolis). The document was also posted for review on the project website listed in Section 2.2. Comments were received through May 17, 2017.

2.4 Comment letters or emails were received from two agencies and two individuals during the EAW comment period. All comments received during the EAW comment period were considered in determining the potential for significant environmental impacts. Comments received during the comment period and responses to substantive comments are provided in **Appendix B**.

3.0 FINDINGS OF FACT

3.1 Project Description

3.1.1 Existing Conditions: The proposed project is located in Jackson and Louisville Townships in Scott County Minnesota. The project area is approximately 1.25 miles southwest of Shakopee and 1.5 miles southeast of Chaska. The general setting of this area is a combination of rural and suburban land uses. For purposes of this document, TH 169 will be referred to as the north-south roadway. The main roadways that cross TH 169—including TH 41, CSAH 78, and CSAH 14—will be referred to as the east-west routes. TH 169 is a principal arterial roadway with four travel lanes, two in each direction. It is considered a rural expressway design with ditches. In the southern portion of the project area, approximately 1,200 feet south of CSAH 14, Picha Creek crosses under TH 169 through dual ten-foot by six-foot box culverts (Bridge #8829).

The southern project terminus is approximately four-tenths of a mile south of the TH 169 at CSAH 14 intersection and the northern project limit is approximately six-tenths of a mile north of the intersection at TH 169 at TH 41/CSAH 78. Project limits extend to the west on TH 41 with improvements extending through the intersection with Dem Con Drive. On CSAH 78, improvements extend approximately a half a mile to the east of the existing intersection with Emery Way.

Based on the industrial and commercial land uses within the project area, there are a large number of freight vehicle trips that originate in or are destined for the project area.

Specifically, there are gravel mining operations, landfills, recycling operations, and concrete/asphalt plants located within the project area or near the project area that use TH 169 and/or TH 41 to move their product. Additionally, both TH 41 and TH 169 also have large numbers of freight vehicles making longer regional trips through the project area.

3.1.2 Proposed Project: The recommended alternative as identified in the EAW includes construction of an interchange at the existing signalized TH 169 at TH 41/CSAH 78 intersection and a new overpass near the existing TH 169 at CSAH 14 intersection located in Jackson and Louisville Townships in Scott County. The project also includes construction of frontage roads parallel to TH 169, pedestrian/bicycle accommodations, and stormwater treatment. The project is intended to improve safety and mobility for commuter traffic and standard freight traffic. A more detailed description of the proposed project components is included in Section 6.b. (starting on page 11) of the EAW.

3.2 Additional Information Regarding Items Discussed in the EAW Since It Was Published

Since the EAW was published, the following information pertaining to the project has been added or updated:

3.2.1 Based on coordination with Louisville Township and emergency response officials, the proposed Limestone Drive—a new frontage road connecting TH 169 with Smith Drive, 145th Street, and the proposed overpass—has been renamed as Red Rock Drive so that its name is not similar to an existing road within the City of Shakopee. Text references and three figures (Figure 7b, Figure 19c, and Figure 19e) have been revised to show the updated proposed road name. Updated figures are included in **Appendix C**.

3.2.2 Information related to noise impacts has been updated in the noise analysis memorandum (Attachment E of the published EAW), which is included in **Appendix D**. Also see **Appendix C** for Figure 22c, which has been added based on the additional analysis.

Noise impacts were previously considered for receptors associated with multiuse trails proposed as part of the project. Discussion regarding the feasibility of mitigation for impacts to trail receptors has been revised, and two noise walls have been modeled and analyzed at the locations where impacts would exceed state or federal standards for trail users. “Wall P” was analyzed to shield trail receptors along the south side of TH 41 and “Wall Q” was analyzed to shield trail receptors along the south side of CSAH 78.

As part of the original noise analysis, “Wall H” was analyzed and proposed for construction along the south side of TH 41 between Dem Con Drive and TH 169. This wall would shield a residential area as part of the Jackson Heights Manufactured Home Community. As part of the analysis for Wall P, a modified alignment of Wall H was modeled that would shield trail receptors in addition to residential receptors. In this scenario, Wall H would be placed between the trail and TH 41. However, it was determined that even with a 20-foot-high wall, this modified alignment would provide a lower level of noise attenuation for all residential receptors. Additionally, three receptor sites representing six residences would drop below the noise reduction threshold of 5 A-weighted decibels (dbA) to be considered

benefited receptors. The reduction in noise attenuation for these residential receptors (which are located within an identified Environmental Justice community) was considered unacceptable, and it was determined that the alignment of Wall H would remain as initially proposed to maximize noise reduction benefits for residential receptors. A separate wall (Wall P) was therefore modeled to specifically shield the trail receptors along TH 41.

Wall P would be adjacent to a planned trail along the south side of TH 41 and would extend from Dem Con Drive to TH 169 on right of way owned by MnDOT. Wall Q would be adjacent to a planned trail along the south side of CH 78 and would extend from TH 169 to Emery Way on right of way owned by Scott County. These walls would shield receptors using the trail proposed as part of the project. As a result of the analysis, a 10-foot-tall noise wall was proposed for each of these locations.

Because modeled noise Walls P and Q met standards for feasibility and reasonableness, and because MnDOT and Scott County would represent the only benefited receptors for these walls, only MnDOT and Scott County would be eligible to vote for the noise walls along the proposed trails. MnDOT officially transferred its votes for Wall P to Scott County (see the attached memo in **Appendix D**). An official voting period began on May 23, 2017, and the Scott County Commissioners voted unanimously against constructing Walls P and Q as part of Resolution 2017-081 on June 6, 2017. The county elected not to construct a noise barrier along the trails for the following reasons:

- A double wall between TH 41 and Jackson Heights has the potential to create a public safety issue since pedestrians and bicyclists would be between two walls where they would not be visible.
- A wall along CSAH 78 would block existing commercial/industrial sites and would limit their visibility. This could make redevelopment for property owners more challenging.

While Walls P and Q would meet MnDOT standards for feasibility, design noise reduction, and cost effectiveness, they are not supported by adjacent benefited property owners; therefore, these walls will not be constructed. See **Appendix D** for additional detail.

3.2.3 Information related to wetland sequencing (impact avoidance, minimization and mitigation process) has been added to provide additional context for alternative decision-making surrounding wetlands.

While the magnitude and location of wetland impacts for the proposed project have not changed from those reported in the published EAW, the Wetland Assessment and Two-Part Finding (Attachment L of the published EAW) has been updated to include a discussion of the various frontage road and overpass alternatives and alignment shifts that were reviewed over the course of project development. The revised Wetland Assessment and Two-Part Finding is included in **Appendix E**.

3.2.4 Information related to floodplain impacts has been updated and identified in Figure 13c in **Appendix C.** Also see **Appendix F** for updated floodplain assessment and hydraulic risk analysis documentation (Attachment F of the published EAW).

The 10-foot by 8-foot box culvert under Old 169 (now a field road) at Picha Creek (Crossing "L") was previously identified for removal as part of the project. Based on concerns regarding right of way and maintenance access at this location, this culvert is no longer proposed for removal. Analysis has indicated that this culvert is not causing the periodic overtopping of TH 169, nor is it causing the periodic flooding upstream of TH 169 at Picha Creek. Therefore, it is not necessary to replace or remove this culvert as part of the project.

The dual ten-foot by six-foot box culverts (Bridge #8829) that carry Picha Creek under TH 169 will be removed and replaced as part of the project as previously proposed.

3.2.5 Information related to an additional nearby project for consideration as it relates to the analysis of cumulative potential impacts has been added to Section 19 of the EAW.

Scott County is constructing a new roadway (Mobile Manor Drive) just north of the project area in 2017. The 2017 project includes constructing Mobile Manor Drive between the Mobile Manor manufactured home community and CSAH 69. The existing driveway access on TH 169 from this neighborhood will be closed and access to TH 169 will be provided via the TH 169/CSAH 69 interchange. This project also includes construction of multiuse trail, storm sewer, and other drainage facilities. In addition to the change in access, this project is anticipated to result in environmental effects related to limited vegetation removal, ground disturbance, and water quality (increase in impervious surface). These effects could combine with effects associated with construction of the intersection improvement project to the south.

3.3 Findings Regarding Criteria for Determining the Potential for Significant Environmental Effects

Minnesota Rules 4410.1700 provides that an environmental impact statement shall be ordered for projects that have the potential for significant environmental effects. In deciding whether a project has the potential for significant environmental effects, the following four factors described in Minnesota Rules 4410.1700, Subp.7 shall be considered:

A. type, extent, and reversibility of environmental effects;

B. cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project;

C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

D. the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

MnDOT's key findings with respect to each of these criteria are set forth below:

3.3.1 Type, Extent, and Reversibility of Impacts

MnDOT finds that the analysis completed during the EAW process is adequate to determine whether the project has the potential for significant environmental effects. The EAW describes the type and extent of impacts anticipated to result from the proposed project. In addition to the information in the EAW, the additional information described in Section 3.2 of this Findings of Fact and Conclusions document as well as the public/agency comments received during the public comment period (see **Appendix B**) were taken into account in considering the type, extent and reversibility of project impacts. Following are the key findings regarding potential environmental impacts of the proposed project and the design features included to avoid, minimize, and mitigate these impacts:

3.3.1.1 Land Use: This topic has not changed from the published EAW. The project is compatible with Scott County's future land use plans for the area and the planned rural commercial/industrial development. It would also be compatible with the City of Shakopee's long-term plans for urban expansion to the west. Approximately 22 acres of farmland will be converted to road right of way or ponding. The project will not prohibit farming on non-converted lands.

To ensure compatibility with the Minnesota Valley National Wildlife Refuge (Louisville Swamp Unit), construction activities would be phased such that access to the National Wildlife Refuge parking lot would be maintained throughout construction. Following construction, a combination of Red Rock Drive, 147th Street West, Louisville Road, and CSAH 14 would be used to access the parking lot from TH 169.

3.3.1.2 Geology, Soils and Topography/Land Forms: This topic has not changed from the published EAW. The project area does not contain any known sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. There should not be geologic conditions that would impact construction of the project.

Soils within the project area do not indicate any limitations in terms of construction of the proposed roadway and intersection improvements. Although some of the soil types are granular or have granular horizons and have fairly rapid permeability, the great depth to bedrock throughout most of the study area will reduce the probability of groundwater contamination. Given the types of soil identified, there are no special site conditions regarding erosion or soil stability. The project would require approximately 120,600 cubic yards and 134 acres of soil excavation and grading.

Mitigation measures for spills and leaks include secondary containment for fuels brought on to the project area and spill containment and emergency preparedness material, including absorbent materials and pads, should be on-site during construction and

development operations. The use of lawn chemicals, especially fertilizers, including phosphorous should be used minimally.

3.3.1.3 Water Resources:

Surface Waters: This topic has not changed from the published EAW. The project will involve work in surface waters located within the project corridor, including Picha Creek. Project impacts related to wetlands and existing stormwater ponds are described in the sections that follow.

Picha Creek, which is a DNR public waterbody, currently passes under TH 169 and the Union Pacific Railroad spur via culvert bridges. The existing culverts are not large enough to accommodate existing water flows associated with the 100-year storm event.

The project would impact this waterbody through culvert replacement under TH 169 and the Union Pacific Railroad spur. The existing 84-inch diameter dual corrugated metal pipe (CMP) culverts carrying Picha Creek under the Union Pacific Railroad spur line would be replaced with dual 14-foot by 7-foot box culverts. The existing dual 10-foot by 6-foot box culverts (Bridge #8829) carrying Picha Creek under TH 169 would also be replaced with dual 14-foot by 7-foot box culverts (Bridge #70X04). The new box culverts would address existing stormwater flows that are currently constrained under the 100-year storm event. In addition to addressing the existing capacity deficiencies, the culverts would be designed to accommodate changes in stormwater flow associated with constructing the proposed roadway improvements.

These impacts are considered minor modifications because they would occur within the waterbody's cross section. These activities will not be anticipated to substantially change the course, current or cross section of any stream or waterbody. A public waters work permit will be obtained from the DNR prior to construction. As part of construction, best management practices (BMPs) will be implemented to minimize impacts to the waterbodies to the extent practicable consistent with the permit. These BMPs would include, but are not limited to:

- Energy dissipation to minimize erosion and scour
- Site management plans for the culvert replacement
- Stabilization methods within 200 feet of discharge points
- Silt fence for perimeter control
- Flotation silt curtain for in-water work and work directly adjacent to waterbodies
- Proper inlet and outlet controls until all upstream locations have been stabilized
- Dewatering plans before dewatering operations
- Providing redundant perimeter control and stabilization

Groundwater: This topic has not changed from the published EAW. A small portion of the northernmost section of the project area is identified as part of the Shakopee Drinking Water Supply Management Area (DWSMA) MN-00482, as designated by the Minnesota Department of Health (MDH). Shakopee Public Utilities has developed a wellhead protection plan for the wellhead protection areas. The project area along TH 169,

northeast of the intersection with TH 41/CSAH 78, extends into the designated DWSMA, and this portion of the DWSMA is identified as vulnerable. However, the project does not extend into the associated Wellhead Protection Area. Minnesota Department of Health guidance will be used to evaluate the feasibility of stormwater infiltration practices within the wellhead protection area.

Fifty-three active and sealed wells are located within the project area. Six wells have been identified that would be impacted as a result of the recommended alternative. The wells will be abandoned according to state and local guidelines as part of the project. It is not anticipated that the other wells identified near the project area would be impacted. If any additional wells are discovered during construction, they will be sealed. If a well is impacted but the balance of the site (and its associated uses) remains intact, the well will be mitigated by replacement.

Stormwater Management: This topic has not changed from the published EAW. The proposed project construction would create a total of 21.1 acres of new impervious surface. Larger areas of impervious surface typically result in an increased volume of stormwater runoff from a site, a leading source of water pollution. To address this effect, mitigation measures will be implemented in order to meet required local, state, and federal standards for rate control, water quality, and volume retention/infiltration. Specifically, these standards include Scott County Zoning Ordinance, MnDOT, and the Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) program. The roadway project will construct five best management practices (BMPs), a combination of wet ponds and infiltration basins to meet requirements. One of the BMPs consists of an expansion to the existing Scott County regional infiltration basin. The project will also install ditch checks in certain locations to provide rate control, water quality treatment, and infiltration volume for new impervious surfaces.

The design overtopping was based on MnDOT Hydraulic Guidance from the State Aid Bridge Unit. The guidance determines the overtopping frequency based on the average daily traffic (ADT). Storm sewer sizing and catch basin spacing will be consistent with MnDOT Technical Memorandum 16-05-B-02, dated September 13, 2016 for work on TH 169 and TH 41. CSAH 78, CSAH 14, Limestone Drive; and Louisville Road storm sewer sizing and catch basin spacing will follow State Aid criteria. The remaining frontage roads will be required to meet either the Scott County Zoning Ordinance or State Aid criteria depending on their classification.

Erosion and sedimentation of all exposed soils within the project area will be minimized by implementing BMPs during construction. Implementation of BMPs greatly reduces the amount of construction-related sedimentation and helps to control erosion and runoff. Ditches, dikes, siltation fences, bale checks, sedimentation basins, and temporary seed will be utilized as temporary erosion control measures. BMPs contained in MnDOT's Standard Specifications, details, and special provisions will also be used. The project will use 'bio-netting' or 'naturalnetting' types of erosion control products (category 3N or 4N), and exclude use of plastic mesh netting. Temporary and permanent erosion control plans will be identified in the final site grading and construction plans as required by the NPDES permitting for construction sites, in accordance with the MPCA. A stormwater pollution

prevention plan (SWPPP) that includes erosion control and sediment management practices will be submitted with the NPDES permit as part of design and implementation of proposed improvements. Erosion control measures, including requiring erosion control plans and designating a site inspector and enforcer, would be in place and maintained throughout the entire construction process. Removal of erosion control measures will occur only after all disturbed areas have been stabilized.

Water appropriation: This topic has not changed from the published EAW. Replacement of the culverts on Picha Creek under the Union Pacific Railway and TH 169 would require temporary dewatering. The appropriate DNR groundwater appropriation permits will be obtained. The project would not require any connections to existing municipal water supplies.

Wetlands and wet ditches: As described under Section 3.2.3, supporting documentation related to this topic has been updated since the time that the EAW was published.

While the magnitude and location of wetland impacts for the proposed project have not changed from those reported in the published EAW, the Wetland Assessment and Two-Part Finding (Attachment L of the published EAW) has been updated to include a discussion of the various frontage road and overpass alignments that were reviewed over the course of project development, along with various impacts associated with different alignments. The revised Wetland Assessment and Two-Part Finding is included in **Appendix E**.

Approximately 2.77 acres of wetland will be impacted as a result of constructing the recommended alternative. Wetland impacts would be mitigated at a 2:1 ratio through the purchase of credits from a wetland bank approved by the U.S. Army Corps of Engineers and the Board of Water and Soil Resources. The bank area would be in the same bank service area (BSA #9) as the wetland impacts.

Floodplain: As described under Section 3.2.4, information related to floodplain impacts has been updated since the time that the EAW was published. A box culvert under Old 169 at Picha Creek would no longer be removed as part of the project; therefore, the floodplain analysis no longer considers this activity as one of the activities occurring within a floodplain area. See the updated Figure 13c in **Appendix C** and the updated floodplain assessment and hydraulic risk analysis in **Appendix F**.

The 100-year floodplain of Picha Creek lies within the project area. The floodplain is designated Federal Emergency Management Agency (FEMA) Zone A. Figure 22c in the EAW shows the location of Picha Creek and the floodplain. The project would include limited activities in the floodplain area:

1. The installation of an acceleration lane along southbound TH 169 south of CSAH 14,
2. Replacement of the existing box culverts under TH 169,
3. Replacement of the culverts under the Union Pacific Railroad Spur.

The analyses indicate that there would be a net reduction in the floodplain elevation upstream of the Union Pacific Spur railroad culverts due to the culvert replacement and

removal under the spur line and TH 169. Replacement of the culverts would cause an increase in the discharge downstream. However, Picha Creek discharges to the Louisville Swamp and Minnesota River immediately downstream. Impacts to the Minnesota River floodplain due to the small increase in peak discharge would not be expected due to the large size of the Minnesota River and due to the timing of the peak discharge from Picha Creek occurring prior to the peak discharge in the Minnesota River. There are no properties that would be impacted by the change in the peak discharge.

A public waters work permit and a dewatering permit will be obtained from the DNR prior to construction. The stormwater pollution prevention plan (SWPPP) and erosion control plan developed for the project will incorporate specific elements to minimize sedimentation during culvert removal and replacement.

3.3.1.4 Contamination/Hazardous Materials/Wastes: This topic has not changed from the published EAW. There is the potential to encounter contaminated soil and/or groundwater that would require special handing and management during construction due to the nature of the project (excavation, subsurface construction activities, etc.). MnDOT is in the process of completing a Phase II ESA. Results will be used to prepare special provisions to provide for soil and groundwater management.

There is the potential for hazardous wastes to be generated as a result of the project. The proposed project would require the removal of structures on six sites—two commercial properties and four residential properties. Buildings on these sites will be removed in order to construct the project. Prior to removal, the sites will be inspected for regulated waste such as lead, asbestos, mercury, etc. Before the structures are demolished these materials will be removed and disposed of in accordance with local and state rules and regulations.

Toxic or hazardous materials, such as fuel for construction equipment, and construction materials (sealant, paint, contaminated rags, acids, bases, herbicides, and pesticides) would likely be used during site preparation and road construction. Best management practices will be used to minimize the chance of such spills. If a spill were to take place during construction, appropriate action to remedy the situation will be taken immediately in accordance with MPCA guidelines and regulations. Any contaminated spills or leaks that occur during construction would be the responsibility of the contractor, who will be required to notify the Duty Officer and work with the MPCA to contain and remediate contaminated soil/materials in accordance with applicable standards.

3.3.1.5 Fish, Wildlife, Plant Communities and Sensitive Ecological Resources: This topic has not changed from the published EAW. The project area comprises developed highway, commercial, industrial, and residential land, with some areas of agriculture and undeveloped land. Several areas of low-lying vegetation are also present; however, nearly all of the land within the project area has been disturbed.

While there are no known rare features within the project area that would be affected by construction activities, portions of the project area are adjacent to native plant communities and sites of biodiversity significance owned and managed by the U.S. Fish

and Wildlife Service and DNR. To be cognizant of these resources, several measures will be taken to minimize effects in these areas.

In areas that are not proposed for mowed turf grass, such as roadway in-slopes and residential or commercial areas, the project will include native vegetation mixes when revegetating soils disturbed by construction activities. The project will use native vegetation recommendations developed by the Board of Water and Soil Resources (BWSR) or MnDOT. Revegetation may include native woody vegetation (trees and shrubs) in addition to grasses and/or forbs.

The use of erosion control blanket will be limited to 'bio-netting' or 'naturalnetting' types (category 3N or 4N), and will exclude use of plastic mesh netting.

While there are no known roosting sites or hibernacula for the northern long-eared bat within the project area, the project will involve approximately 8.3 acres of tree clearing, which could affect unknown bat roost sites. Coordination between MnDOT and the US Fish and Wildlife Service has determined that the project may affect northern long-eared bats, but will not cause prohibited incidental take. To minimize the potential to affect bats, MnDOT would not remove trees between June 1 and August 15.

3.3.1.6 Historic Properties: This topic has not changed from the published EAW. A review of the project area indicated that there were no historic and/or archaeological resources within the project area that would be affected by the proposed project. There were also no properties identified for potential designation on the National Register of Historic Places.

3.3.1.7 Visual: This topic has not changed from the published EAW. The immediate project area does not contain scenic views or vistas. Many of the project improvements would take place in areas that are either developed with commercial and industrial uses, mining activities or vacant land without resource amenities such as trees, wetlands, rolling hills, etc. However, in the southern portion of the project area, there are some areas of wetlands, rolling hills, and trees.

The proposed project would add two grade-separations/bridges near the location of existing at-grade intersections, so vertical views for highway users in these areas would be altered. For those on TH 169 near TH 41/CSAH 78 and on the 147th Street West overpass near CSAH 14, the viewshed of the Minnesota River Valley may be somewhat enhanced because they will be able to see portions of the area that were not previously visible from the at-grade intersections (grade would be raised by approximately 21.5 feet). For highway users on TH 41 and CSAH 78, roadway infrastructure (including bridges, ramps, etc.) would play a larger role in views of the area. However, due the largely industrial and commercial nature of current conditions, this is not expected to substantially alter the quality of views in the area.

Construction of frontage roads will not result in major alterations to existing views in or near the project area. For users on TH 169 and CSAH 78, new/extended frontage roads would be visible in the northwest, southwest, and southeast quadrants of the existing intersection; however, based on existing conditions, the presence of the frontage roads

will not result in any substantial visual effects. In the southern portion of the project, the 147th Street West overpass will be visible from TH 169, as would Louisville Road south of 133rd Street. Roadway infrastructure would be a more dominant feature in the views in this area.

Construction of a noise barrier south of TH 41 would affect some views to and from the Jackson Heights Manufactured Home community. The noise barrier will be approximately 1,100 feet long and 20 feet tall, which would limit views to the north of the Jackson Heights community. However, the purpose of the noise barrier would be to improve environmental conditions in this location related to noise levels. As part of the noise evaluation process, affected residents and the property owner were asked to vote whether they wanted a noise barrier. All those who responded voted in favor of the noise barrier.

3.3.1.8 Air: This topic has not changed from the published EAW. The intent of the project is to provide added safety and improved traffic flow both now and in the future for the intersections of TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14, while providing opportunities for non-motorized traffic to cross TH 169 safely. TH 169 is a vital connection between southern Minnesota and the metro area and carries a high volume of truck traffic. TH 41 also carries a high volume of truck traffic in the area due to the surrounding commercial and industrial properties. Heavy vehicles generate more pollutants than motor vehicles when they sit idling. By improving mobility and reducing vehicle delays (and time spent idling) through the construction of a grade-separated interchange and overpass along the TH 169 corridor, the proposed improvements will reduce heavy truck idling time and associated diesel emissions.

Under the preferred alternative there may be localized areas where ADT would increase, and other areas where ADT would decrease. Therefore, it is possible that localized increases and decreases in emissions of mobile source air toxics (MSAT) may occur. The localized increases in MSAT emissions would likely be most pronounced along the section of Louisville Road that would be built east of TH 169 between CSAH 14 and CSAH 78. However, even if these increases do occur, they will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations. Under the preferred alternative in the design year it is expected there will be reduced MSAT emissions in the immediate area of the project, relative to the no build scenario, due to the reduced ADT associated with more direct routing, and due to EPA's MSAT reduction programs.

Dust generated during construction will be minimized through standard dust control measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. Construction contractors will be required to control dust and other airborne particulates in accordance with MnDOT specifications in place at the time of project construction. During construction, particulate emissions will temporarily increase due to the generation of fugitive dust associated with activities such as grading and other soil disturbance. The following dust control measures will be undertaken as necessary:

- Minimize the duration and extent of areas being exposed or regraded at any one time.

- Spray construction areas and haul roads with water, especially during periods of high wind or high levels of construction activity.
- Minimize the use of vehicles on unpaved surfaces when feasible.
- Tarp trucks hauling soil, sand, and other loose materials or require trucks to maintain at least two feet of freeboard.
- Pave, apply water as needed, or apply (non-toxic) soil stabilizers on unpaved access roads, parking areas and staging areas at construction sites.
- Use water sweepers to sweep paved access roads, parking areas and staging areas at construction sites.
- Use water sweepers to sweep streets if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Utilize appropriate erosion control measures to reduce silt runoff to public roadways.
- Replant vegetation as quickly as possible to minimize erosion in disturbed areas.
- Use alternative fuels for construction equipment when feasible.
- Minimize equipment idling time.
- Maintain properly tuned equipment.

Odors could be generated by exhaust from diesel engines engaged in construction activities and fuel storage areas. All machinery will be properly equipped to control emissions.

3.3.1.13 Noise: As described in Section 3.2.2, information relating to noise impacts has been updated to add information related to analysis of Noise Walls P and Q, which would serve as mitigation for impacts to receptors associated with proposed sections of multiuse trail.

Traffic noise levels were modeled at 100 representative receptor locations throughout the project. In general, the analysis determined that construction of the project would result in increases in traffic noise levels compared to existing conditions. Changes in daytime traffic noise levels are projected to vary from -0.7 dBA to 10.4 dBA from existing to future (2040) build conditions. A noise wall analysis was completed on a total of 17 potential locations along the corridor, including two locations that were analyzed following the publication of the EAW. Of the 17 walls analyzed, noise walls at three locations (Wall H, Wall P, and Wall Q) were found to be feasible and reasonable.

Wall H, a 1,090-foot-long wall along the southwest quadrant of the TH 169 and TH 41 intersection, would shield 14 residential receptors in the Jackson Heights manufactured home community. As a result of this analysis, a 20-foot-tall noise wall was proposed for this location. Because this noise wall met standards for feasibility and reasonableness, meetings were scheduled and held with the residents and owner of the benefited properties (those that would receive at least a 5-dBA noise reduction as a result of the noise wall) to get feedback on whether the residents and owner wanted the noise wall to be constructed. Because more than half of the available voting “points” were received in favor, a 20-foot noise wall will be constructed as part of the project.

Wall P would be adjacent to a planned trail along the south side of TH 41 from Dem Con Drive to TH 169. Wall Q would be adjacent to a planned trail along the south side of CH 78 from TH 169 to Emery Way. See Figure 22c in **Appendix C**. These walls would shield receptors using the trail proposed as part of the project. As a result of the analysis, a 10-foot-tall noise wall was considered for each of these locations. Because these noise walls met standards for feasibility and reasonableness, and because MnDOT and Scott County would represent the only benefited receptors for these walls, only MnDOT and Scott County would be eligible to vote for the noise walls along the proposed trails. MnDOT officially transferred its votes for Wall P to Scott County. An official voting period began on May 23, 2017, and the Scott County Commissioners voted unanimously against construction of Wall P and Wall Q as part of Resolution 2017-081 during the June 6, 2017 County Board meeting. For complete analysis results associated with these noise walls, see the updated noise analysis memorandum in **Appendix D**.

The construction activities associated with implementation of the proposed project will result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment and pile driving. Elevated noise levels during construction are, to a degree, unavoidable for this type of project. The project contract and special provisions will require that construction equipment be properly muffled and in proper working order. Advanced notice will be provided to affected communities of any planned abnormally loud construction activities. It is anticipated that night construction may sometimes be required to minimize traffic impacts and to improve safety. However, construction will be limited to daytime hours as much as possible. This project is expected to be under construction for 18 months. If necessary, a detailed nighttime construction mitigation plan will be developed during the project final design stage.

Any associated high-impact equipment noise, such as pile driving, pavement sawing, or jack hammering, will be unavoidable with construction of the proposed project. Pile-driving noise is associated with any bridge construction and sheet piling necessary for retaining wall construction. While pile-driving equipment results in the highest peak noise level it is limited in duration to the activities noted above (e.g., bridge construction). The use of pile drivers, jack hammers, and pavement sawing equipment will be prohibited during nighttime hours.

3.3.1.14 Transportation: Table 11 within the transportation section has been revised to include the shading for Levels of Service D and F under the 2040 No Build columns. Additionally, the description of the proposed lane configuration for the TH 41/Dem Con Drive intersection has been revised to correctly identify the fact that the right turn lane will be preserved and an additional eastbound through lane will be added at this intersection. The remaining portions of this topic have not changed from the published EAW.

Table 11 – Existing and 2040 No Build Intersection LOS (TH 41/CSAH 78 and CSAH 14) AM

Intersection	App.	Existing AM Peak Hour			2040 No Build AM Peak Hour		
		Approach Delay	Intersection Delay	Minor Stop-Worst Approach	Approach Delay	Intersection Delay	Minor Stop-Worst Approach
TH 169 at TH 41/CSAH 78	NB	44.6/D	47.9/D		100.5/F	103.2/F	
	SB	27.4/C			41.1/D		
	EB	73.7/E			216.9/F		
	WB	64.2/E			89.7/F		
TH 169 at CSAH 14	NB	2.7/A	4.9/A	54.7/F	4.7/A	28.6/D	2,618.5/F
	SB	3.3/A			5.8/A		
	EB	44.8/E			193.4/F		
	WB				2,618.5/F		

A primary need for the project is related to mobility, and completion of the project is anticipated to reduce congestion in the area. Many of the locations currently exhibiting long delays and operating at unacceptable Level of Service (LOS) would be improved by the construction of a diverging diamond interchange, an overpass, and associated access management improvements. Where the project would close public and private access to TH 169 or CSAH 78, new or extended frontage roads and/or relocated driveways will be constructed to ensure continued access to properties in the area.

To minimize impacts during construction, the extent of any detour will be minimized to the extent practicable. Scott County will coordinate with MnDOT, Louisville Township, Jackson Township, and area businesses to maintain direct access to parcels during construction of ramps, bridges, and frontage roads. A traffic management plan will be developed and implemented, and additional information would be provided to the public as it becomes available.

Efforts will include coordination with management from the Renaissance Festival, which is located just west of the project and utilizes transportation facilities that would be under construction. It is anticipated that construction impacts will only occur for 2018 for the Renaissance Festival. It is anticipated that the festival will be relocated to its new site in 2019.

3.3.1.15 Summary finding with respect to these criteria: MnDOT finds that the project, as it is proposed, does not have the potential for significant environmental effects based on the type, extent, and reversibility of impacts to the resources evaluated in the EAW and in the Findings summary above. Project impacts will be mitigated as described in the EAW and in the Findings above.

3.3.2 Cumulative Potential Effects of Related or Reasonably Foreseeable Future Projects

As described in Section 3.2.5, this section has been revised to include an additional roadway project. Scott County is constructing a new roadway (Mobile Manor Drive) just

north of the project area in 2017. The 2017 project includes constructing Mobile Manor Drive between the Mobile Manor manufactured home community and CSAH 69. The existing driveway access on TH 169 from this neighborhood will be closed and access to TH 169 will be provided via the TH 169/CSAH 69 interchange. This project also includes construction of multiuse trail, storm sewer, and other drainage facilities. In addition to the change in access, this project is anticipated to result in environmental effects related to limited vegetation removal, ground disturbance, and water quality (increase in impervious surface). These effects could combine with effects associated with construction of the intersection improvement project to the south.

The EAW also identified future land development and potential future transit service as future projects with cumulative potential effects (see Section 19). In consideration of these reasonably foreseeable future projects, no potentially significant cumulative effects from the proposed project and other reasonably foreseeable future actions were identified. This project is not believed to cause any anticipated adverse environmental impacts that have not been addressed. Future projects, including industrial and commercial development, will be required to meet all applicable regulations and permits.

3.3.3 Extent to Which the Environmental Effects are Subject to Mitigation by Ongoing Public Regulatory Authority

3.3.3.1 The mitigation of environmental impacts will be designed and implemented in coordination with regulatory agencies (including the coordination and approvals described in Section 3.3.1 above) and will be subject to the plan approval and permitting processes. Permits and approvals that have been obtained or may be required prior to project construction include those listed in **Table 1**.

3.3.3.2 The permits listed in **Table 1** include general and specific requirements for mitigation of environmental effects of the project. Therefore, MnDOT finds that the environmental effects of the project are subject to mitigation by ongoing regulatory authority.

Table 1– Agency Approvals and Permits

Known Approvals and Permits	Agency	Action Required/ Activity to be Completed
Federal		
Categorical Exclusion	FHWA	Approval
Section 106 (Historic/Archaeological)	Tribal Historic Preservation Office	Consultation
Section 106 (Historic/Archeological)	FHWA	Consultation
Section 404	Army Corps of Engineers	Permit
State		
Geometric Layout	MnDOT	Approval
Construction Plans	MnDOT	Approval

Known Approvals and Permits	Agency	Action Required/ Activity to be Completed
Controlled Access	Metropolitan Council	Approval
Highway Interchange Request	MnDOT	Approval
Right of Way Permit	MnDOT	Permit
Public Waters General Permit	DNR	Permit
Water Appropriation Permit	DNR	Permit
National Pollutant Discharge Elimination System Construction Stormwater Permit	Minnesota Pollution Control Agency (MPCA)	Permit
Wetland Conservation Act	MnDOT with review by Board of Soil and Water Resources, and DNR if necessary	Approval
Section 401	Minnesota Pollution Control Agency	Approval
Well Sealing	Minnesota Department of Health	Permit
Septic Abandonment Form	Minnesota Pollution Control Agency	Review
Regional/Local		
Highway Interchange Request	Metropolitan Council	Approval
Watershed District	Lower Minnesota	Review/ Comment
Watershed Management Organization	Scott County	Review/ Comment
Grading Permit	Scott County	Permit
Demolition Permit	Scott County	Permit
Wetland Conservation Act Replacement Plan	Scott County Soil and Water Conservation District	Approval
Construction Plans – Scott County	Scott County	Approval
Construction Plans – Jackson Township	Jackson Township	Approval
Construction Plans – Louisville Township	Louisville Township	Approval
Right of Way Work Permit	Scott County	Permit
Other		
Railroad Agreement/Permit (Crossings, gate installation, and culvert work)	Union Pacific Railway	Approval/ Permit

3.3.4 Extent to Which Environmental Effects can be Anticipated and Controlled as a Result of Other Environmental Studies

3.3.4.1 MnDOT and Scott County have extensive experience in roadway construction. Many similar projects have been designed and constructed throughout the area encompassed by these governmental agencies. Design and construction staff is familiar with the project area.

3.3.4.2 No problems are anticipated which MnDOT staff have not encountered and successfully solved many times on similar projects in or near the project area. MnDOT finds that the environmental effects of the project can be anticipated and controlled as a result of the assessment of potential issues during the environmental review process and MnDOT's experience in addressing similar issues on previous projects.

4.0 CONCLUSIONS

1. The Minnesota Department of Transportation has jurisdiction in determining the need for an environmental impact statement on this project.

2. All requirements for environmental review of the proposed project have been met.

3. The EAW and the permit development processes to date related to the project have generated information which is adequate to determine whether the project has the potential for significant environmental effects.

4. Areas where potential environmental effects have been identified will be addressed during final design of the project. Mitigation will be provided where impacts are expected to result from project construction, operation, or maintenance. Mitigative measures will be incorporated into project design, and have been or will be coordinated with local, state and federal agencies during the permit processes.

5. Based on the criteria in Minnesota Rules part 4410.1700, subp. 7, the project does not have the potential for significant environmental effects.

6. An Environmental Impact Statement is not required for the TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14 Intersection Improvements Project.

7. Any findings that might properly be termed conclusions and any conclusions that might properly be called findings are hereby adopted as such.

Based on the Findings of Fact and Conclusions contained herein and on the entire record:

The Minnesota Department of Transportation hereby determines that the TH 169 at TH 41/CSAH 78 and TH 169 at CSAH 14 Intersection Improvements Project will not result in significant environmental impacts, and that the project does not require the preparation of an environmental impact statement.

For Minnesota Department of Transportation

Lynn P. Clarkowski, PE
MnDOT Chief Environmental Officer

APPENDIX A – Public Involvement: EAW Comment Period

EQB Notice of Availability

The *EQB Monitor*

520 Lafayette Road North, Saint Paul, MN 55155 - www.eqb.state.mn.us
EQB.Monitor@state.mn.us - (651)-757-2873

Publication Date: April 17, 2017
Vol. 41, No. 16

Publication Schedule: Mondays at 8:00 AM
Submission Deadline: View 2017 Schedule
Use the EQB Monitor Submission Form

The *EQB Monitor* is a weekly publication announcing environmental review documents, public comment periods and other actions of the Environmental Quality Board. For more information on environmental review, please visit the EQB website.


Photo Credit: MPCA

You can manage your subscription to the *EQB Monitor* here. Be sure to add MNEQB@public.govdelivery.com to your address book or safe sender list.

Check the EQB Calendar for more details on *Monitor* deadlines and Board Meetings. Meeting minutes, agendas and additional notices are also posted on the EQB Website. You can also find us on Twitter and Facebook.

In this publication:

Project Title: Highway 169, Highway 41, County Highway 78, and County Highway 14 Intersection Improvement Project

Comment Deadline: May 17, 2017

Project Description: The Minnesota Department of Transportation (MnDOT) and Scott County are proposing to construct a highway interchange and overpass in Jackson Township and Louisville Township (SP 070-596-013, SP 7005-121, SP 7009-81, SP 7010-109). The proposed project includes construction of an interchange at the existing signalized Highway 169 and Highway 41/County Highway 78 intersection and a new overpass near the existing Highway 169 and County Highway 14 intersection. The project also includes construction of frontage roads parallel to Highway 169, pedestrian/bicycle accommodations, and stormwater treatment.

Copies of the Environmental Assessment Worksheet (EAW) which documents the purpose and need of the project, along with anticipated social, economic, and environmental impacts are available for public viewing on the project website https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro and during business hours at the following locations from April 17, 2017 through May 17, 2017:

- Minnesota Department of Transportation, Metro District, 1500 West County Road B2, Roseville, MN 55113
- Scott County Highway Department, 600 Country Trail East, Jordan MN 55352
- Minnesota Department of Transportation Library, 395 John Ireland Boulevard, MS 155, Room 175, St. Paul, MN 55155
- Shakopee Public Library, 235 Lewis Street S, Shakopee, MN 55379
- Environmental Conservation Library, Hennepin County Library – Minneapolis Central, Government Documents – 2nd Floor, 300 Nicollet Mall, Minneapolis, MN 54401

Written comments will be accepted April 17 through May 17, 2017. Comments should be submitted to Rick Dalton, Environmental Coordinator, Minnesota Department of Transportation, 1500 West County Road B2, Roseville, MN 55113; or richard.dalton@state.mn.us. To request an ASL or foreign language interpreter, call 651-366-4720. To request other reasonable accommodations, call 651-366-4718; the Minnesota Relay service toll-free at 1-800-627-3529 (TTY, Voice or ASCII) or 711, or email your request to adarequest.dot@state.mn.us.

Responsible Governmental Unit (RGU): Minnesota Department of Transportation

RGU Contact Person:
Rick Dalton
Environmental Coordinator, MnDOT Metro District

1500 West County Road B2
Roseville, MN, 55113
651-234-7677
richard.dalton@state.mn.us

Newspaper Legal Notice

LEGAL ADVERTISEMENT – AVAILABILITY OF THE ENVIRONMENTAL ASSESSMENT WORKSHEET FOR THE HIGHWAY 169, HIGHWAY 41, COUNTY HIGHWAY 78, AND COUNTY HIGHWAY 14 INTERSECTION IMPROVEMENT PROJECT (SP 070-596-013, SP 7005-121, SP 7009-81, SP 7010-109)

The Minnesota Department of Transportation (MnDOT) and Scott County invite the public to review the Environmental Assessment Worksheet (EAW) for the proposed Highway 169, Highway 41, County Highway 78, and County Highway 14 Intersection Improvement Project. The proposed project is located in Jackson Township and Louisville Township, Scott County, Minnesota.

The EAW documents the project's purpose and need along with anticipated social, economic, and environmental impacts. The proposed project includes construction of an interchange at the existing signalized Highway 169 and Highway 41/County Highway 78 intersection and a new overpass near the existing Highway 169 and County Highway 14 intersection. The project also includes construction of frontage roads parallel to Highway 169, pedestrian/bicycle accommodations, and stormwater treatment. This project has wetland impacts, encroaches on the 100-year floodplain, and requires the acquisition of right of way.

Copies of the EAW are available for public viewing from April 17, 2017 through May 17, 2017 during business hours at the following locations and on the project website: https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro

Shakopee Public Library
235 Lewis Street S.
Shakopee, MN 55379

MnDOT Metro District Office
1500 West County Road B2
Roseville, MN 55113

Scott County
Highway Department
600 Country Trail East
Jordan MN 55352

MnDOT Library
395 John Ireland Boulevard
St. Paul, MN 55155

Environmental Conservation Library
Hennepin County Library–
Minneapolis Central
300 Nicollet Mall
Minneapolis, MN 54401

Written comments will be accepted April 17 through May 17, 2017. Comments should be submitted to Rick Dalton, Environmental Coordinator, Minnesota Department of Transportation, 1500 West County Road B2, Roseville, MN 55113; or richard.dalton@state.mn.us.

To request an ASL or foreign language interpreter, call 651-366-4720. To request other reasonable accommodations, call 651-366-4718; the Minnesota Relay service toll-free at 1-800-627-3529 (TTY, Voice or ASCII) or 711, or email your request to adarequest.dot@state.mn.us.

Published in the Belle Plaine Herald on Wednesday, April 19, 2017.

Affidavit of Publication

State of Minnesota,
County of Scott } ss.

E. Daniel Townsend, ("Affiant"),
being duly sworn, on oath, states that:

1. I am the publisher of the Belle Plaine Herald, LLC newspaper, or the publisher's designated agent. I have personal knowledge of the facts stated in this Affidavit, which is made pursuant to Minnesota Statutes 331A.07.

2. The newspaper has complied with all of the requirements to constitute a qualified newspaper under Minnesota law, including those requirements found in Minnesota Statutes 331A.02.

3. The dates of the month and the year and day of the week upon which the public notice attached/copied was published in the newspaper are as follows:

Wed., April 19, 2017

4. The notice was available on the newspaper's website beginning with the first publication date and continuing for at least another six weeks following the final publication date, at no additional charge.

5. Mortgage Foreclosure Notices. Pursuant to Minnesota Statutes §580.033 relating to the publication of mortgage foreclosure notices: The newspaper's known office of issue is located in Scott County. The newspaper complies with the conditions described in §580.033, subd. 1, clause (1) or (2). If the newspaper's known office of issue is located in a county adjoining the county where the mortgaged premises or some part of the mortgaged premises described in the notice are located, a substantial portion of the newspaper's circulation is in the latter county.

6. The publisher's lowest classified rate paid by commercial users for comparable space, as determined pursuant to 331A.06, is as follows: $12.00

Affiant

E. Daniel Townsend

Signed and sworn to before me on this 19th **day of** April **20**17.

Samantha S Ediger-Johnson

SAMANTHA S EDIGER-JOHNSON
Notary Public
Minnesota
My Comm. Expires
Jan 31, 2018

Samantha S. Ediger-Johnson, Secretary,
Notary Public

My commission expires 1-31 **20**18

News Release

DEPARTMENT OF TRANSPORTATION

News Release

April 17, 2017

Environmental Assessment Worksheet released for Hwy 169, Hwy 41, Cty Hwy 78, and Cty Hwy 14 Intersection Improvement Project

Comments about the review will be accepted April 17 through May 17, 2017

ROSEVILLE, Minn. – The Minnesota Department of Transportation and Scott County invite the public to review the Environmental Assessment Worksheet (EAW) for the Highway 169, Highway 41, County Highway 78, and County Highway 14 Intersection Improvement Project in Jackson and Louisville Townships.

The proposed project includes construction of an interchange at the existing signalized Highway 169 and Highway 41/County Highway 78 intersection and a new overpass near the existing Highway 169 and Highway 14 intersection. The project also includes construction of frontage roads parallel to Highway 169, pedestrian/bicycle accommodations, and stormwater treatment.

The Environmental Assessment Worksheet (EAW) document states the purpose and need of the project along with the anticipated social, economic, and environmental impacts. Beginning April 17, copies of the EAW are available for public viewing during business hours at the following locations:

- Minnesota Department of Transportation, Metro District, 1500 West County Road B2, Roseville, MN 55113
- Scott County Highway Department, 600 Country Trail East, Jordan MN 55352
- Minnesota Department of Transportation Library, 395 John Ireland Boulevard, MS 155, Room 175, St. Paul, MN 55155
- Shakopee Public Library, 235 Lewis Street S, Shakopee, MN 55379
- Environmental Conservation Library, Hennepin County Library – Minneapolis Central, Government Documents – 2nd Floor, 300 Nicollet Mall, Minneapolis, MN 54401

The EAW is also available for viewing on the project website at https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro (https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro).

Written comments will be accepted April 17 through May 17, 2017. Comments should be submitted to Rick Dalton, Environmental Coordinator, Minnesota Department of Transportation, 1500 West County Road B2, Roseville, MN 55113; or richard.dalton@state.mn.us (mailto:richard.dalton@state.mn.us).

To request an ASL or foreign language interpreter, call 651-366-4720. To request other reasonable accommodations, call 651-366-4718; the Minnesota Relay service toll-free at 1-800-627-3529 (TTY, Voice or ASCII) or 711, or email your request to adarequest.dot@state.mn.us (mailto:adarequest.dot@state.mn.us).

For Minnesota statewide travel information, visit www.511mn.org (http://www.511mn.org), call 5-1-1 or log on to www.mndot.gov (http://www.mndot.gov). For updated road condition information, call 511 or visit www.511mn.org (http://www.511mn.org/).

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Contact

- Kirsten Klein (mailto:kirsten.klein@state.mn.us)
  651-234-7506

Location

MnDOT Metro District
Office of Communications and Public Affairs
1500 County Rd B2 West
Roseville, MN 55113

APPENDIX B - EAW Comments and Responses

The EAW for the Highway 169, Highway 41, County Highway 78, and County Highway 14 Intersection Improvement Project was distributed on April 17, 2017 to agencies and organizations on the official distribution list, as well as additional agencies/organizations that had either requested a copy of the document, and/or that could be affected by the proposed project. The comment period for the EAW officially closed at the end of the business day on May 17, 2017. Reviewers were invited to submit written comments in letter or via e-mail.

During the public review and comment period, MnDOT received comments on the EAW from a total of 3 agencies and individuals. Comments from an additional agency were received on May 18.

Consistent with state environmental review rules, substantive comments received are responded to in this appendix, as part of the Findings of Fact and Conclusions for the project record. Specifically, responses have been prepared for substantive statements pertaining to analysis conducted for and documented in the EAW, including: incorrect, incomplete or unclear information; permit requirements; content requirements. These comments and responses are included on the following pages. Written comments agreeing with the EAW project information, general opinions, statements of fact, or statements of preference were not formally responded to, are also included.

Comments and Responses to Those Comments – Page B-1

Comments and Responses to Those Comments

This section contains the comments and written responses to all comments received from the following individuals/agencies during the public comment period:

- Minnesota Pollution Control Agency
- Metropolitan Council
- David Lindstrom
- Becky Jetto

Comments	Response
Minnesota Pollution Control Agency  Minnesota Pollution Control Agency 520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300 800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer May 17, 2017 Mr. Rick Dalton Environmental Coordinator MnDOT Metro District 1500 West County Road B-2 Roseville, MN 55113 Re: TH 169/TH 41 and CSAH 78/CSAH 14 Intersection Improvements Environmental Assessment Worksheet Dear Mr. Dalton: Thank you for the opportunity to review and comment on the Environmental Assessment Worksheet (EAW) for the Trunk Highway (TH) 169/TH 41 and County State Aid Highway (CSAH) 78 and CSAH 14 Intersection Improvements project (Project) located in Scott County, Minnesota. The Project consists of construction of an interchange, overpass, frontage roads, pedestrian/bicycle accommodations and stormwater treatment. Regarding matters for which the Minnesota Pollution Control Agency (MPCA) has regulatory responsibility and other interests, the MPCA staff has the following comments for your consideration. **Water Resources (Item 11)** The EAW identifies several surface water features within one mile of the proposed Project that are listed as having construction related impairments. Please note that the impairments will dictate additional increased stormwater treatment during construction and require additional increased permanent treatment post construction. These requirements will be included in the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit. The Project proposer should determine that compliance with these increased stormwater water quality treatments can be achieved on the Project site or elsewhere. Information regarding the MPCA's Construction Stormwater Program can be found on the MPCA's website at http://www.pca.state.mn.us/water/stormwater/stormwater-c.html. Questions regarding Construction Stormwater Permit requirements should be directed to Roberta Getman at 507-206-2629. **1** **Contamination/Hazardous Materials/Wastes (Item 12)** The EAW identified the presence of several properties near the Project area with actual or potential soil and/or groundwater contamination. State law requires that persons properly manage contaminated soil and water they uncover or disturb - even if they are not the party responsible for the contamination. Developers considering construction on or near contaminated properties should begin working early in their planning process with the MPCA's Brownfields Program to receive necessary technical assistance in managing contamination. For some properties, special construction might be needed to prevent the further spreading of the contamination and/or prevent vapors from entering buildings or utility corridors. Information regarding the Brownfields Program can be found at https://www.pca.state.mn.us/waste/brownfields. If contamination is found, it must be reported immediately to the state duty officer at 651-649-5451 or 800-422-0798. **2**	1. The permanent post-construction stormwater treatment requirements listed in Section 11.b.ii of the EAW are to be used in developing the requirements of the NPDES Construction Stormwater Permit. The proposed best management practices shown on Figures 18a–18c were sized using the applicable NPDES Construction Stormwater Permit criteria. The project's SWPPP will provide additional temporary construction requirements, including stabilization of exposed areas in less than seven days and temporary sediment basins for common drainage locations with five or more acres (instead of 10 acres). The project's permanent BMPs will be utilized for temporary sediment basins along with ditch checks in linear areas where it is not feasible to provide temporary ponds. 2. As described in Section 12.a of the EAW, there is the potential to encounter contaminated soil and/or groundwater that would require special handing and management during construction due to the nature of the project (excavation, subsurface construction activities, etc.). MnDOT and Scott County will comply with all applicable state and federal laws associated with management of contaminated soil and water. Additionally, MnDOT and Scott County are in the process of developing a Phase II Environmental Site Assessment. Results of this assessment will be used to prepare special provisions to provide for soil and groundwater management. MnDOT and Scott County will provide early coordination with the MPCA Brownfields Program for technical assistance.

Comments	Response
Mr. Rick Dalton Page 2 May 17, 2017 We appreciate the opportunity to review this Project. Please provide your specific responses to our comments and notice of decision on the need for an Environmental Impact Statement. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit action(s) by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning our review of this EAW, please contact me at 651-757-2508. Sincerely, Karen Kromar Karen Kromar Planner Principal Environmental Review Unit Resource Management and Assistance Division KK:bt cc: Dan Card, MPCA, St. Paul Roberta Getman, MPCA, St. Paul Teresa McDill, MPCA, St. Paul	

Comments	Response
Metropolitan Council **From: Russ Owen** Sent: Thursday, May 18, 2017 4:41 PM To: Richard Dalton (DOT) **Subject: TH 169/TH 41/CSAH 78/CSAH 14 EAW** Hi Rick, It just occurred to me that the TH 169 EAW comments were due yesterday (May 17). I overlooked the reminder through my e-mail. Even though the Met Council doesn't have any substantial comments, I wanted to send you these minor advisory comments for the record. I apologize about missing the deadline. • Table 3 – Permits and Approvals – this lists Controlled Access by MnDOT but I believe this is referring to an action by the Metropolitan Council. **1** • Table 11 – seems yellow & red highlighting like Existing columns didn't carry over to 2040 No Build Columns. **2** • Page 105 – description of the Future Build Conditions states that…"includes a change in lane configuration at the TH 41/Dem Con Drive intersection (converting a right turn lane to a shared through-right lane)". I believe that the right lane is intended to be preserved and that this language refers to an earlier draft of this project. **3** Regards, Russ Russ Owen Sr. Aviation Planner | MTS russell.owen@metc.state.mn.us P. 651.602.1724 | F. 651.602.1739 390 North Robert Street | St. Paul, MN | 55101 | metrocouncil.org	1. This table has been revised to clarify that the Controlled Access approval is a Metropolitan Council action. See Section 3.3.3, Table 1, of the attached Findings of Fact & Conclusions document. 2. This table has been revised to include the colors pertaining to Levels of Service D and F in the 2040 No Build Columns. See Section 3.3.1.14 of the attached Findings of Fact & Conclusions document. 3. Correct, this text has been revised to describe the proposed lane configuration for the TH 41/Dem Con Drive intersection. The right turn lane will be preserved and an additional eastbound through lane will be added at this intersection. See Section 3.3.1.14 of the attached Findings of Fact & Conclusions document.

Comments	Response
David Lindstrom **From: David Lindstrom** Sent: Tuesday, May 16, 2017 2:03 PM To: Richard Dalton (DOT) **Subject: EAW Comment TH 169/TH 41/CSAH 78/CSAH 14 Intersection Improvements** Rick Dalton, After reviewing the EAW I question the completeness of the report with respect to the proposed solution to reduce the flooding of 169 at Picha creek. The upgrading of culverts under 169 and the railroad spur are a good start. The problem will not be solved though, unless the box culvert at old 169 roadway and the box culvert of the original 169 (Smith Drive)are not also up graded or removed. This needs to be further reviewed. David Lindstrom, Trustee Land Owner Gladys Lindstrom Living Trust 3232 west 150th street Shakopee, MN	The modeling for Picha Creek includes the existing box culvert under old TH 169 (10'x8') and the existing box culvert under Smith Drive (12'x6'). Picha Creek stays within the existing channel for smaller storm events. Scott County, MnDOT and adjacent property owners have indicated that during larger events and spring snowmelt, the creek overtops TH 169 and floods properties on the east side of the trunk highway. The project evaluated several options for addressing the TH 169 overtopping and flooding. One of these options included upsizing or removing the old TH 169 and Smith Drive culverts. Results of the analysis for this option indicate that these culverts are not causing the flooding upstream of TH 169 at Picha Creek. The reasons are explained below for each box culvert location. The old TH 169 box culvert has an 80-square foot opening, which is less than the proposed dual 14'x7' box culverts under TH 169. When the old TH 169 box culvert capacity is exceeded the runoff overtops old TH 169 approximately 800-feet north of Picha Creek. The overtopping elevation of old TH 169 is approximately 744.8, which is 2.6-feet below the TH 169 low point. Therefore, the runoff overtops old TH 169 before causing flooding on the east side of TH 169. It is not necessary to replace or remove the old TH 169 box culvert due to the overtopping elevation of the old roadway. The Smith Drive culvert does not cause the issue of flooding on the east side of TH 169 for several reasons: • The Smith Drive box culvert invert elevation is 732.42 in comparison to the invert of the TH 169 culverts of 739.83. There is 7.42-feet of elevation drop. The 12'x6' box culvert at Smith Drive can be flowing full and the water level will not reach the invert of the box culverts at TH 169.

Comments	Response
	• The high water level at Smith Drive is approximately 9-feet lower than the high water level at TH 169. • The drop in elevation of the channel at Smith Drive means that the runoff in the creek is traveling at a higher velocity and therefore a higher discharge rate can be conveyed. • The overtopping elevation of Smith Drive is approximately 740.0, which is 7.6-feet below the TH 169 low point. Similar to the situation at old TH 169, the creek can overflow Smith Drive and not impact upstream. Given these reasons, it was determined that it was not necessary to replace or remove the existing culverts at old TH 169 or Smith Drive.
Becky Jetto #1 **From: Becky Jetto** Sent: Thursday, April 20, 2017 6:09 PM To: Richard Dalton (DOT) **Subject: 169/41 proposed intersection improvement project** Rick, Overall, a ton of good work has been done. I have a couple thoughts. There are too many traffic signals too close together. - If northbound 41 and southbound 78 had an extra lane (or two), long enough to allow for MN drivers to merge without jamming traffic, two traffic signals could be eliminated. On northbound 41, assuming two lanes from 78 and two lanes from southbound 169, the outer two lanes could merge into the inner two lanes, again, the merge area would need to be long enough for MN drivers to zipper together.	Adding additional lanes would not allow for the elimination of traffic control at the ramp intersection. Under the configuration proposed in the comment, traffic from southbound TH 169 to eastbound CSAH 78 and traffic from northbound TH 169 to westbound TH 41 would still need to cross east-west through traffic on TH 41/CSAH 78, which would still require traffic control. A cloverleaf interchange design could eliminate the need for traffic signals; however, this design would require substantially higher right of way costs. During the alternatives development and evaluation stage, two interchange designs with one traffic signal were analyzed (a single point interchange and an offset single point interchange). Each of these alternatives was rejected because it did not perform as well in terms of addressing safety and mobility needs and because each would be more expensive than the recommended alternative.

Comments	Response
- On the bridge, if the inside (right) lanes were separated from the outside (left) lanes, these lanes would not need to be regulated by the traffic signals at the top of the ramps from southbound 169 to 78 and northbound 169 to 41. Regards, Becky A. Jetto	The traffic signals constructed as part of the project will be timed and coordinated to minimize delays and stacking of vehicles. A diverging diamond interchange allows both signalized intersections to operate under a two-phase signal, which typically provides for a much shorter cycle length, allowing traffic to move through the signal more quickly. Traffic operations modeling indicates that the ramp signal intersections will operate at Level of Service A/B during the 2040 AM and PM peak hours (see EAW Attachment D, Table A6a).
Becky Jetto #2 **From: Becky Jetto** Sent: Sunday, May 7, 2017 9:24 PM To: Richard Dalton (DOT) **Subject: Re: 169/41 proposed intersection improvement project** Rick, I have another thought to simplify this interchange. If there were large, multi-lane traffic circles on northbound 41 and southbound 78, there would be no need any traffic signals. The traffic circles could be at the top of the on/off ramps or a ways north on northbound 41 and a ways south on southbound 78 to have only two entrances/exits to the traffic circles. The traffic would either flow straight through the circle or essentially do a u-turn. For example, if you were traveling southbound on 169 and wanted to go south on 78, all traffic exiting southbound 169 would be forced to turn right (northbound 41) then enter a traffic circle, exiting on southbound 41/78 (doing a u-turn). Eliminating traffic lights should reduce traffic and accidents.	Two concepts featuring roundabouts were considered at various points in the alternatives development process. First, a tight diamond interchange with roundabouts (rather than traffic signals) at the ramp intersections was developed as a preliminary concept. However, this concept was eliminated based on consideration of operations, safety, and heavy truck movements. Operationally, in areas with large volumes of left turns (as is the case at this location based due to high numbers of vehicles making eastbound to northbound movements on TH 41 and TH 169), diverging diamond interchanges (DDIs) tend to perform better than roundabouts by isolating left turns from an additional movement. There is also a recent study suggesting that DDIs are safer than multi-lane roundabouts at ramp terminals. Another consideration is related to the large volume of trucks that pass through the project area. As described in Attachment C (Existing Conditions and No Build Traffic Memo), MnDOT's official heavy vehicle counts indicate that heavy vehicles represent 8-10 percent of total volumes along TH 169 and TH 41 within the project area, and 48-hour counts collected for the project indicated that

Comments	Response
The traffic circles would be less confusing than driving on the left side of the road on the bridge over 169. Best Regards, Becky Jetto	approximately 13 to 16 percent of daily traffic demands are heavy vehicles. While roundabouts can be designed to accommodate large vehicles and are commonly used by heavy trucks, trucks can have more difficulty maintaining lane integrity in multi-lane roundabouts and, in light of the large proportion of heavy truck traffic, signals were favored for traffic control at the ramp terminal intersections. Second, a roundabout interchange was suggested as part of the value engineering study completed for the project. Under this scenario, a large-diameter roundabout would be constructed at-grade and TH 169 would be placed on two bridges and retaining walls over the roundabout. The roundabout would facilitate all movements, negating the need for traffic signals. However, this concept was not carried forward as a recommendation from the value engineering study primarily due to safety concerns related to speeds (large-diameter roundabouts do not achieve the same speed reductions that smaller roundabouts achieve) and because such an interchange would be the first of its kind in Minnesota, which raised concerns about drivers' familiarity. Finally, Scott County policy directs the county not to install roundabouts along principal arterials, and both of these concepts would require a roundabout on CSAH 78, which is a principal arterial. Based on these considerations, a DDI is proposed as the preferred design for an interchange at the intersection of TH 169 and TH 41/CSAH 78.

APPENDIX C – Updated/Added EAW Figures

Figure 7b – Recommended Improvements - South

Figure 13c – Proposed Floodplain Impacts and Crossings

Figure 19c – Anticipated Wetland Impacts – Wetland B

Figure 19e – Anticipated Wetland Impacts – Wetland E

Figure 22c – Noise Monitoring Sites, Receptors, and Analyzed Noise Wall Locations (Trail Receptors)

Figure 2b: Recommended Improvement - South Project Area

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

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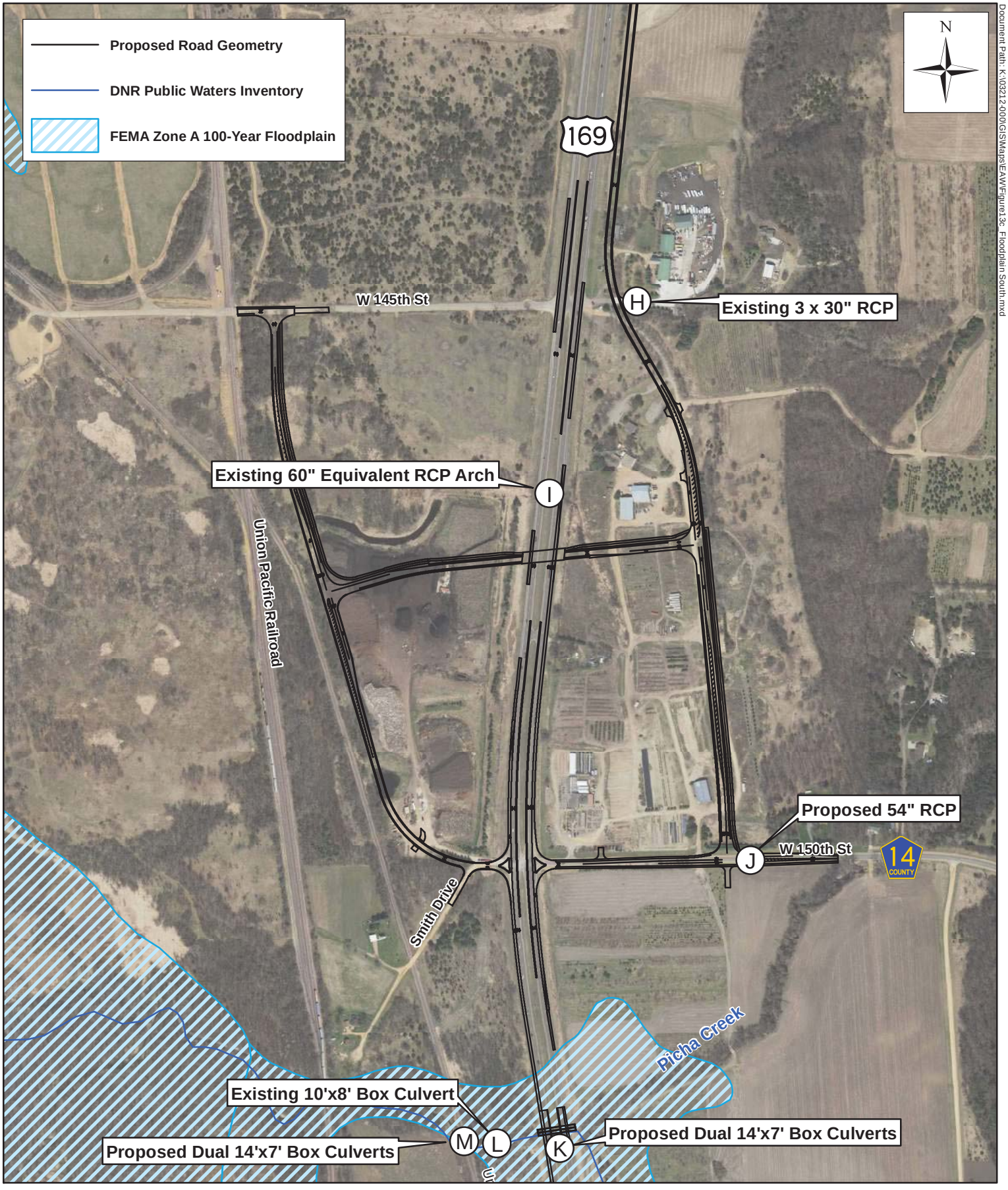

Figure 13c: Proposed Floodplain Impacts and Crossings

US 169/TH 41/CSAH 78/CSAH 14 Intersection Improvements

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Scott County, MN

June 2017

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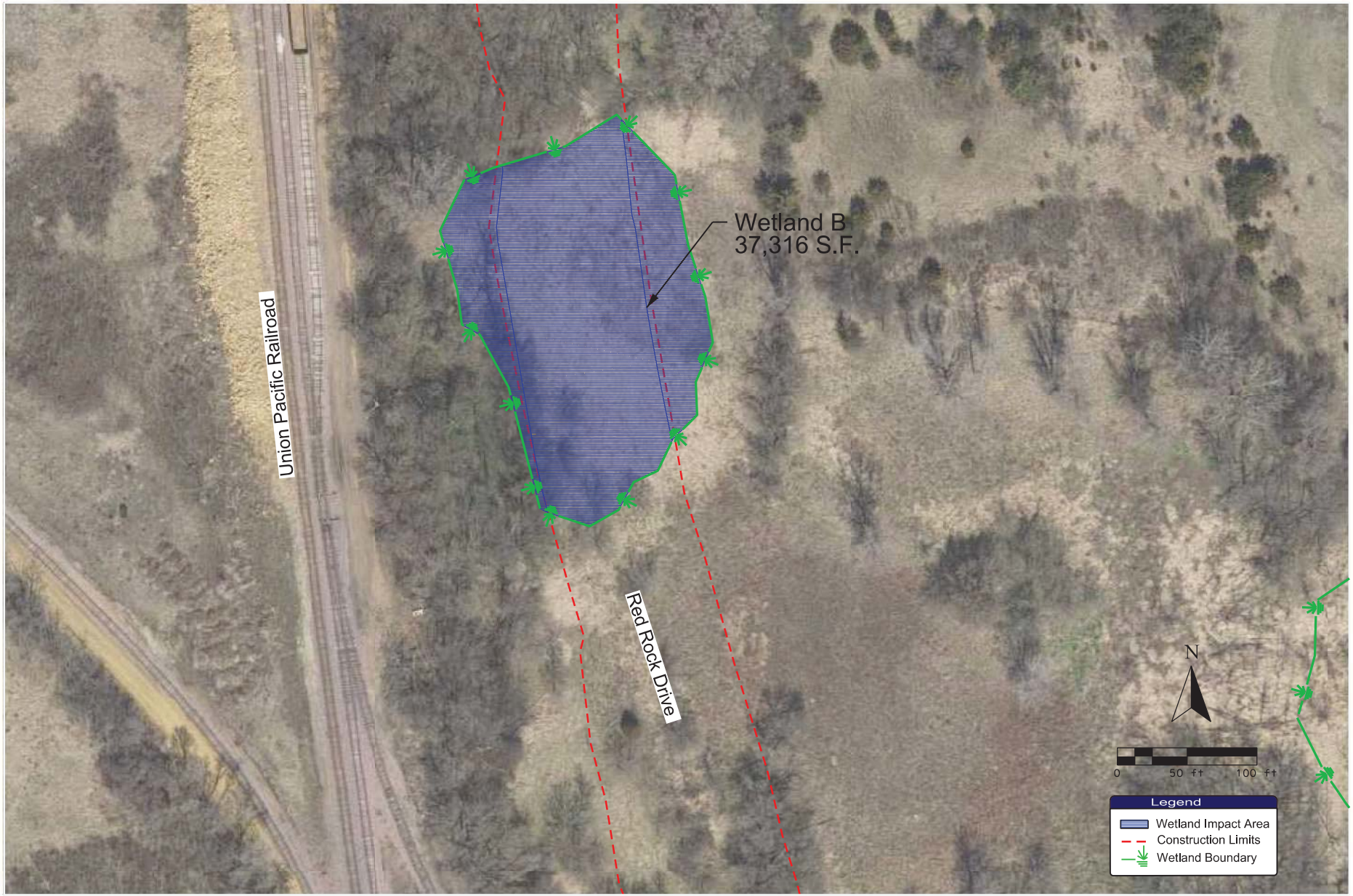

Figure 24c: Anticipated Wetland Impacts - Wetland B

US 169/TH 41/CSAH 78/CSAH 14
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Figure 24e: Anticipated Wetland Impacts - Wetland E

US 169/TH 41/CSAH 78/CSAH 14
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Figure 22c: Trail Noise Walls Considered - Walls P and Q

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APPENDIX D – Updated Studies/Memoranda – Noise (Original Attachment E to the EAW)

I. Highway Traffic Noise

TH 169/TH 41/CSAH 78/CSAH 14 Intersection Improvements Project includes construction of an interchange at the existing signalized TH 169 and TH 41/CSAH 78 intersection and a new overpass near the existing TH 169 and CSAH 14 intersection located in Jackson and Louisville Townships in Scott County. The project also includes construction of frontage roads parallel to TH 169, pedestrian/bicycle accommodations along TH 41 and CSAH 78, and stormwater treatment. The project is intended to improve safety and mobility for commuter and freight traffic.

Noise is defined as any unwanted sound. Sound travels in a wave motion and produces a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels represent the logarithmic measure of sound energy relative to a reference energy level. A sound increase of three dBA is barely perceptible to the human ear, a five dBA increase is clearly noticeable, and a 10 dBA increase is heard twice as loud.

For highway traffic noise, an adjustment, or weighting, of the high- and low-pitched sounds is made to approximate the way that an average person hears sounds. The adjusted sound levels are stated in units of "A-weighted decibels" (dBA). In Minnesota, state noise standards are based on the "L_{10}" and "L_{50}" A-weighted noise levels, which are the noise levels that are exceeded 10 percent and 50 percent of the time, respectively, during the hour of the day and/or night when traffic noise is loudest. The L_{10} value is used for comparison with Federal Highway Administration (FHWA) noise abatement criteria. Both sets of standards apply to this project. **Table 1** provides a rough comparison of the noise levels of some common noise sources.

Table 1: Decibel Levels of Common Noise Sources

Sound Pressure Level (dBA)	Noise Source
140	Jet Engine (at 25 meters)
130	Jet Aircraft (at 100 meters)
120	Rock and Roll Concert
110	Pneumatic Chipper
100	Jointer / Planer
90	Chainsaw
80	Heavy Truck Traffic
70	Business Office
60	Conversational Speech
50	Library
40	Bedroom
30	Secluded Woods
20	Whisper

Source: "A Guide to Noise Control in Minnesota," MPCA

Along with the volume of traffic and other factors (i.e., topography of the area and vehicle types and speeds) that contribute to the loudness of traffic noise, the distance of a receptor from a sound's source is also an important factor. Sound levels decrease as distance from a source increases. The following rule of thumb regarding sound decreases due to distance is commonly used: Beyond approximately 50 feet, each time the distance between a line source (such as a road) and a receptor is doubled, sound levels decrease by 3 decibels over hard ground, such as pavement or water, and by 4.5 decibels over vegetated areas.

Minnesota State noise standards have been established specifically for daytime (7:00 AM-10:00 PM) and nighttime (10:00 PM-7:00 AM) periods by the Minnesota Pollution Control Agency (MPCA). For residential land uses including apartments, churches, and schools (Noise Area Classification 1 or NAC-1), the Minnesota State standards for L_{10} are 65 decibels for daytime and 55 decibels for nighttime; the standards for L_{50} are 60 decibels for daytime and 50 decibels for nighttime. For commercial land uses (NAC-2), the Minnesota State Standards for L_{10} are 70 decibels for daytime and nighttime; the standards for L_{50} are 65 decibels for daytime and nighttime. For industrial land uses (NAC-3), the Minnesota State Standards for L_{10} are 80 decibels for daytime and nighttime; the standards for L_{50} are 75 decibels for daytime and nighttime. Minnesota State Noise Standards are shown in **Table 2**. State noise standards apply to trunk highway (TH) facilities in Minnesota, including TH 169 and TH 41.

Table 2: MPCA State Noise Standards – Hourly A-Weighted Sound Levels

Land Use	Code	Day (7:00 AM to 10:00 PM) dBA		Night (10:00 PM - 7:00 AM) dBA	
		L_{10}	L_{50}	L_{10}	L_{50}
Residential[1]	NAC - 1	65	60	55	50
Commercial[2]	NAC - 2	70	65	70	65
Industrial[3]	NAC - 3	80	75	80	75

[1] NAC-1 includes household units, transient lodging and hotels, educational, religious, cultural, entertainment, camping, and picnicking land uses. Note the daytime standards apply during the nighttime for NAC-1 activities that do not include overnight sleeping/lodging.
[2] NAC-2 includes retail and restaurants, transportation terminals, professional offices, parks, recreational, and amusement land uses.
[3] NAC-3 includes industrial manufacturing, transportation facilities (except terminals), and utilities land uses.

The FHWA has a separate set of noise standards that vary by land use. For residential uses (Federal Land Use Category B), the Federal L_{10} standard is 70 dBA for both daytime and nighttime. For recreational areas, medical facilities, libraries, places of worship and daycare centers evaluated at an exterior location (Federal Land Use Category C) the Federal L_{10} standard is 70 dBA for daytime and nighttime use. For medical facilities, libraries, places of worship and daycare centers evaluated an interior location (Federal Land Use Category D) the Federal L_{10} standard is 55 dBA for daytime and nighttime use. For hotels, bars/restaurants and offices (Federal Land Use Category E), the Federal L_{10} standard is 75 dBA for both daytime and nighttime. For commercial, industrial and undeveloped areas (Federal Land Use Categories F & G), there are no defined L_{10} criteria for both daytime and nighttime. Locations where noise levels are "approaching" (defined as being within one decibel of the criterion threshold, e.g., 69 dBA for Categories B or C and 74 dBA for Category E) or exceeding the criterion level must be evaluated for noise abatement reasonableness. Federal Noise Abatement Criteria (NAC) are shown in **Table 3.**

Table 3: FHWA Noise Abatement Criteria – Hourly A-Weighted Sound Levels[1]

Activity Category	Activity[1, 2] Leq (h)	Criteria[1, 2] L_{10} (h)	Evaluation Location	Description of Activity Category
A	57 dB(A)	60 dBA	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67 dB(A)	70 dBA	Exterior	Residential.
C[3]	67 dB(A)	70 dBA	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 dB(A)	55 dBA	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[4]	72 dB(A)	75 dBA	Interior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	N/A	N/A	Exterior	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	N/A	N/A	N/A	Undeveloped lands that are not permitted.

[1] Either Leq(h) or L10(h) (but not both) may be used on a project.
[2] The Leq(h) and L10(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
[3] Includes undeveloped lands permitted for this activity category.

For this project, FHWA Noise Standards have been applied, as defined in Title 23 of the United States Code of Federal Regulations Part 772 (23 CFR 772). 23 CFR 772 applies to any "Type I" project, which is defined as any proposed Federal or Federal-aid highway project that is on new location, involves significant changes to either the horizontal or vertical alignment, increases the number of through-traffic lanes (including high occupancy vehicle and high occupancy transit facilities and ramp/interchange lanes), or changes the configuration of an existing weigh station, ride share lot, or toll plaza. The proposed improvements to the TH 169/TH 41 intersection include construction of a diverging diamond interchange. This interchange will require exit and entrance ramps for movements to and from TH 169 and TH 41. Per federal standard 23 CFR 772, this triggers a Type I noise analysis because of

the substantial change in the intersection geometrics. 23 CFR 772 applies to all federally-funded roadway projects that meet the definition of Type I, regardless of their functional classification.

The requirements for FHWA Type I projects, as stated in 23 CFR 772, include the following: (1) identification of traffic noise impacts (23 CFR 772.11); (2) examination of potential mitigation measures (23 CFR 772.13); (3) the incorporation of reasonable and feasible noise mitigation measures into the highway project (23 CFR 772.13); and (4) coordination with local officials to provide helpful information on compatible land use planning and control (23 CFR 772.17). The FHWA defines a traffic noise impact as follows: Design year build condition noise levels that approach or exceed the NAC listed in **Table 3** for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels. The Minnesota Department of Transportation (MnDOT) considers an increase of 5 dBA or greater in the L_{10} noise level a substantial noise level increase. In predicting noise levels and assessing noise impacts, traffic characteristics are used which yield the worst hourly traffic noise impact on a regular basis in the design year.

All of the adjacent land within the project area falls under Federal Land Use Categories B, E, F, or G and State Land Use categories NAC-1, NAC-2, or NAC-3. There is a mix of land uses in the project area, with commercial (Category F, NAC-2), industrial (Category F, NAC-3), and undeveloped land (Category G) comprising most of the adjacent land. There are also single family homes located north and south of TH 41/CSAH 78 along TH 169 as well as two manufactured home communities near TH 169 (Category B, NAC-1). State Noise Standards are shown in **Table 2** and the Federal Noise Abatement Criteria (NAC) are shown in **Table 3.**

Monitoring

Noise level monitoring is commonly performed during a noise study to document existing noise levels. Existing noise levels can be used as a "baseline" against which future scenarios are compared. In addition, when studying future noise levels projected with computer models, monitored noise levels for existing conditions are compared to modeled results for existing conditions to validate the computer modeling techniques and results.

Noise monitoring was conducted at seven locations in November of 2015 near the TH 169 corridor to calibrate the noise model. Two additional monitoring locations were added in August of 2016 due to the southward expansion of the project limits. Monitoring methods used in this study comply with state and federal guidelines. A trained noise monitoring technician was present at each session for the entire monitoring session to ensure correct operation of the instrumentation. These recordings occurred over two consecutive 30-minute monitoring periods for each monitoring site. The computer noise model was validated using the monitored noise levels and existing traffic volumes using the same roadway information to ensure accuracy of the noise model. The noise monitoring locations are shown on **Figures 1 and 2.**

Noise monitoring results are presented in **Table 4**. Monitoring results are presented along with the results of computer modeling for each of the monitoring site's traffic conditions. The monitored noise

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Figure 1: Noise Monitoring Sites, Receptors, and Analyzed Noise Wall Locations (North Project Area)

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Scott County, MN
May 2017

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Figure 2: Noise Monitoring Sites, Receptors, and Analyzed Noise Wall Locations (South Project Area)

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levels are within three decibels of the modeled noise levels, supporting the validity of the model in predicting future noise levels.

Table 4: Existing Noise Levels and Model Calibration

Location	Date	Time[1]	L_{10} (dBA) Monitored[2]	L_{10} (dBA) Modeled	Difference
M1	12/10/2015	8:21/8:52 AM	76.9	75.6	-1.3
M2	12/11/2015	7:07/7:38 AM	56.0	57.8	1.8
M3	12/10/2015	10:49/11:24 AM	74.3	74.7	0.5
M4	12/10/2018	12:10/12:42 PM	60.7	62.4	1.7
M5	12/10/2015	1:28/1:59 PM	52.9	55.2	2.4
M6	12/11/2015	8:28/8:59 AM	60.2	62.4	2.3
M7	12/10/2015	2:48/3:19 PM	74.8	76.8	2.0
M8	8/16/2016	8:30/9:00 AM	58.1	61	2.9
M9	8/16/2016	11:00/11:30 AM	51.0	50.4	-0.6

[1] Two 30-minute samples taken at each monitoring location. Each value is start time for measurement

[2] Average of two samples taken at each location

Modeling

Traffic noise impacts were assessed by modeling noise levels at receptor sites (i.e., businesses and residences) likely to be most affected by changes in roadway alignment resulting from construction of the proposed project. The limits of the noise model include the receptors within 500 feet of the construction limits on TH 169, TH 41/CSAH 78, and the proposed easterly frontage road. The existing roads used for modeling included TH 169, TH 41, CSAH 78, CSAH 14, Dem Con Drive, 130th Street, 133rd Street, Ventura Road and Emery Way. The proposed easterly frontage road south of TH 41, the proposed westerly frontage roads north and south of TH 41 and the new CSAH 14 overpass were modeled for build conditions. There are no regional airports in the area that would add to noise conditions, but there is a railway running parallel to TH 169 on the west side that varies from over 2,000 feet to approximately 700 feet from designated receptors. No rail noise was modeled for this analysis.

Noise modeling receptors were selected at 33 residential sites, 19 commercial sites, eight industrial sites, 13 undeveloped sites and 27 trail sites in the project area. Noise modeling receptors were selected to represent those receptors that are likely sensitive to potential traffic noise impacts resulting from construction of the proposed project. Receptor locations are shown on **Figures 1 and 2**. All residential receptor sites are classified within the definition of State of Minnesota NAC-1 and Federal Land Use Category B. The motel receptor site is classified within the definition of Minnesota NAC-2 and Federal Land use Category E. The 27 trail sites are classified within the definition of State of Minnesota NAC-2 and Federal Land Use Category C. Unlike other receptors, there was no model created for existing or no-build conditions for the trail receptors because they do not represent an existing facility. The commercial/business sites are classified with the definition of Minnesota NAC-2 and Federal Land Use Category E. The industrial sites are classified with the definition of Minnesota NAC-3 and Federal Land Use Category F. The undeveloped areas are classified with the definition of Federal Land Use

Category G. Noise modeling was completed using the noise prediction program MINNOISEV31, a version of the FHWA STAMINA model adapted by MnDOT. This model uses peak-hour vehicle volume, speed, vehicle class, and the typical characteristics of the roadway being analyzed to estimate traffic noise levels. Vehicle class percentages used for all roadways are based on turning movement count information provided by Scott County. Speed data was collected for TH 169 south of TH 41, TH 41 and Dem Con Drive south of TH 41. Speeds used for US 169 south of TH 41 were used for TH 169 north of TH 41, Speeds for TH 41 were used for CSAH 78 and Speeds for Dem Con Drive were used for 130th Street, 133rd Street, Ventura Court and Emery Way.

Traffic volumes for the proposed Diverging Diamond Interchange (DDI), CSAH 14 overpass and frontage roadways were developed using Scott County projections for 2040 average daily traffic (ADT). The hourly traffic volumes were then derived by using the directional splits and total hourly vehicle percentages of nearby existing roadways of similar cross-section and volume. The percentage breakdown of passenger vehicles, medium trucks, and heavy trucks for the proposed roadways were calculated in the same fashion. Speeds for the proposed roadways were established by matching similar existing roadways based on posted speeds, geometrics and traffic volumes.

Several factors can increase the loudness of traffic noise. Higher speeds, higher percentages of heavy vehicles and higher overall traffic volumes will all increase the amount of traffic noise at a receptor location. WSB selected four different time periods for analysis to determine the worst noise hour during 24 hour period. The AM peak hour of traffic, PM peak hour of traffic, the apparent daytime worst noise hour and apparent nighttime worst noise hour were used for comparison. Traffic volumes, directional splits, medium and heavy commercial vehicle volumes, and speeds were all considered in selecting the apparent worst daytime/nighttime analysis periods. Specifically, WSB chose to analyze the daytime hour with the largest percentage of heavy and medium truck traffic because total vehicle volume was comparable to AM peak hour traffic. For comparison purposes, WSB selected eight receptor locations within the project area representative of all potential receptors.

The loudest hour for the area falls between 8:30 am and 9:30 am. This would logically correlate with higher vehicle speeds following morning peak traffic and also high percentages of heavy truck traffic entering and leaving the aggregate processing plant and other industrial facilities within the project boundaries after businesses open for the day. The receivers on the north end of the project – R1 and R42 – may be modeling lower noise levels than other receivers at the same time of day due to lack of access roads to commercial/industrial sites. The L_{10} and L_{50} noise levels at the eight receptor locations over four time periods are listed in **Table 5** below.

Table 5 – Worst Hourly Traffic Noise Summary

Receptor	Land Use	Modeled Level (dBA) by Time Period							
		6:00-7:00 AM		AM Peak Hour		8:30-9:30 AM		PM Peak Hour	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R1	Commercial	68.6	64.4	68.9	65	68.8	64.9	69.3	**65.5**
R6	Commercial	*72.7*	*68.6*	**73**	**69.2**	**73**	**69.2**	**73.4**	**69.7**
R19	Commercial	*71.5*	*66.5*	**72**	**67.1**	**72.6**	**67.7**	**71.9**	**67**
R20	Commercial	64.4	60	64.9	60.6	65.5	61.3	64.9	60.8
R21	Commercial	64.1	59.7	64.5	60.4	65.2	61	64.6	60.6
R22	Residential	*55.5*	*52.5*	55.9	53.1	56.6	53.8	56	53.4
R27	Residential	*56.1*	*53.3*	56.6	53.9	57.2	54.6	56.7	54.2
R34	Residential	*70.7*	*66*	**71.1**	**66.7**	**71.8**	**67.5**	**71.4**	**67.4**
R46	Residential	*69.8*	*65.8*	**70**	**66.4**	**70.4**	**66.3**	**70.2**	**66.5**

Bold Numbers Exceed Daytime MPCA Standards for Designated Land Use
Italicized Numbers Exceed Nighttime MPCA Standards for Designated Land Use
Underlined Numbers Approach or Exceed Federal Noise Abatement Criteria (NAC) for Designated Land Use

Modeling Results

Noise modeling results for residential and commercial receptors for existing (2016) conditions and for the year 2040 are presented in **Tables 6 and 7** Both daytime and nighttime L_{10} and L_{50} are shown for the existing (year 2016) condition and for year 2040 under two project alternatives: No Build and Build.

Table 6 – Daytime Noise Results

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R1	Commercial	68.9	65	69.7	66.1	70.2	66.8	0.8	1.1	1.3	1.8
R2	Residential	74.6	70.8	75.4	71.9	75.9	72.6	0.8	1.1	1.3	1.8
R3	Commercial	73.5	69.8	74.3	70.9	74.7	71.3	0.8	1.1	1.2	1.5
R4	Commercial	74.5	70.8	75.3	71.9	75	71.8	0.8	1.1	0.5	1
R5*	Undeveloped	68.7	64.9	69.5	66.1	69.2	65.8	0.8	1.2	0.5	0.9
R6	Commercial	73.1	69.9	73.9	71.1	73.6	70.8	0.8	1.2	0.5	0.9
R7	Commercial	71.3	68.2	72.7	70	72.3	69.7	1.4	1.8	1	1.5
R8	Commercial	72.7	68.8	74.2	71	73.9	70.7	1.5	2.2	1.2	1.9
R9	Commercial	71.6	67.9	73.2	70.1	73	70	1.6	2.2	1.4	2.1
R10	Industrial	73.1	68.8	74.7	71.2	74.7	71.3	1.6	2.4	1.6	2.5
R11*	Undeveloped	67.9	63.3	69.6	65.7	69.9	66.2	1.7	2.4	2	2.9
R12	Commercial	73.4	68.9	75.1	71.3	75.6	72	1.7	2.4	2.2	3.1
R13	Industrial	71.6	67.7	73.2	70	73.8	70.8	1.6	2.3	2.2	3.1
R14	Industrial	71.7	67.7	73.3	70	73.9	70.8	1.6	2.3	2.2	3.1
R15	Industrial	72.1	68	73.8	70.4	74.4	71.2	1.7	2.4	2.3	3.2

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R16	Industrial	71.7	67.7	73.4	70	74	70.9	1.7	2.3	2.3	3.2
R17*	Undeveloped	64.3	60.4	66	62.7	66.6	63.6	1.7	2.3	2.3	3.2
R18	Industrial	68.9	65.4	70.6	67.7	69.9	67	1.7	2.3	1	1.6
R19	Commercial	73.6	69	75.3	71.6	72.9	69.4	1.7	2.6	-0.7	0.4
R20	Commercial	65.8	61.6	67.5	64	68.1	64.9	1.7	2.4	2.3	3.3
R21	Commercial	65.5	61.4	67.1	63.7	67.9	64.7	1.6	2.3	2.4	3.3
R22	Residential	57.3	54.6	58.9	56.8	59.3	57.3	1.6	2.2	2	2.7
R23	Industrial	73.4	68.9	75.1	71.3	76.2	72.1	1.7	2.4	2.8	3.2
R24	Commercial	60.8	57.6	62.4	59.9	63.1	60.7	1.6	2.3	2.3	3.1
R25*	Undeveloped	67.2	62.8	68.9	65.2	71.1	64.7	1.7	2.4	3.9	1.9
R26*	Undeveloped	67.4	62.9	69	65.3	69.7	66.2	1.6	2.4	2.3	3.3
R27	Residential	57.5	54.9	59.2	57.1	59.9	57.9	1.7	2.2	2.4	3
R28	Commercial	75	69.9	76.7	72.4	77.3	73.3	1.7	2.5	2.3	3.4
R29	Commercial	60.3	56.8	62	59	64.4	59	1.7	2.2	4.1	2.2
R30*	Undeveloped	69	64.1	70.7	66.5	71.3	67.4	1.7	2.4	2.3	3.3
R31*	Undeveloped	63.3	59.7	64.9	62	73.7	61	1.6	2.3	10.4	1.3
R32	Commercial	59.7	56.9	61.3	59	62.5	60	1.6	2.1	2.8	3.1
R33*	Undeveloped	63.3	59.8	64.9	62	66	62.7	1.6	2.2	2.7	2.9
R34	Residential	74.3	69.6	76	72	76.3	72.4	1.7	2.4	2	2.8
R35*	Undeveloped	68.5	63.9	70.2	66.3	70.1	66.2	1.7	2.4	1.6	2.3

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R36	Industrial	62.5	59.4	64.1	61.5	64	61.6	1.6	2.1	1.5	2.2
R37	Commercial	74.9	70.5	76.4	72.7	76.8	72.6	1.5	2.2	1.9	2.1
R38	Commercial	69.5	66.5	70.9	68.4	71	68.6	1.4	1.9	1.5	2.1
R39	Commercial	67.3	64.2	68.9	66.1	69.9	67	1.6	1.9	2.6	2.8
R40	Commercial	73.6	68.9	75.1	70.8	74.9	71.1	1.5	1.9	1.3	2.2
R41	Commercial	61.2	58.7	62.2	60	62	60	1	1.3	0.8	1.3
R42*	Undeveloped	66.8	63.3	67.5	64.4	67.8	64.8	0.7	1.1	1	1.5
R43	Residential	73.7	68.9	74.3	70	74.4	69.9	0.6	1.1	0.7	1
R43A	Residential	72.4	68.4	73.1	69.6	73.2	69.5	0.7	1.2	0.8	1.1
R44	Residential	73.5	68.5	74.1	69.5	74.2	69.3	0.6	1	0.7	0.8
R44A	Residential	73.2	68.4	73.8	69.4	73.9	69.3	0.6	1	0.7	0.9
R45	Residential	71.2	67.2	72	68.4	71.9	68.2	0.8	1.2	0.7	1
R45A	Residential	71.9	67.7	72.6	68.8	72.6	68.5	0.7	1.1	0.7	0.8
R46	Residential	70.5	66.8	71.6	68.2	71.5	67.9	1.1	1.4	1	1.1
R47	Residential	66.3	63.7	67.7	65.4	67.7	65.3	1.4	1.7	1.4	1.6
R48	Residential	68.2	60.9	70.5	63.5	71.9	65.4	2.3	2.6	3.7	4.5
R49	Residential	69.5	67.1	70.6	68.5	70.4	68.3	1.1	1.4	0.9	1.2
R49A	Residential	69.8	67.3	70.7	68.6	70.6	68.4	0.9	1.3	0.8	1.1
R50	Residential	71.4	68	72.1	69.2	72.1	69.1	0.7	1.2	0.7	1.1
R50A	Residential	70.5	67.6	71.3	68.8	71.3	68.7	0.8	1.2	0.8	1.1

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R51	Residential	66.8	64.3	67.8	65.7	67.7	65.6	1	1.4	0.9	1.3
R51A	Residential	66.4	64.1	67.5	65.6	67.4	65.5	1.1	1.5	1	1.4
R52*	Undeveloped	64.9	61.1	65.5	62	65.9	62.3	0.6	0.9	1	1.2
R53*	Undeveloped	65.3	60.5	65.8	61.2	65.8	61.2	0.5	0.7	0.5	0.7
R54*	Undeveloped	67.4	62	67.9	62.7	68.1	62.8	0.5	0.7	0.7	0.8
R55	Residential	58.2	54.7	59.8	57	59.5	56.7	1.6	2.3	1.3	2
R56	Residential	55.8	52.3	57.5	54.7	57.5	54.7	1.7	2.4	1.7	2.4
R57	Residential	57.7	50.1	61.8	55.1	61.4	54.7	4.1	5	3.7	4.6
R58	Residential	53.2	50.9	54.9	53	55.5	53.7	1.7	2.1	2.3	2.8
R59	Residential	53.9	51.5	55.6	53.6	56.2	54.4	1.7	2.1	2.3	2.9
R60	Residential	55.9	53.5	57.6	55.6	58.2	56.4	1.7	2.1	2.3	2.9
R61	Residential	55.2	52.9	56.9	55	57.5	55.7	1.7	2.1	2.3	2.8
R62	Residential	56.6	54.2	58.3	56.3	58.9	57.1	1.7	2.1	2.3	2.9
R63	Residential	56.4	53.9	58	56	58.7	56.9	1.6	2.1	2.3	3
R64	Residential	57.8	55.2	59.5	57.3	60.4	58.2	1.7	2.1	2.6	3
R80	Residential	57.7	53.3	59.6	55.8	61	56.9	1.9	2.5	3.3	3.6
R81	Residential	58	52.7	60	55.5	61.6	56.8	2	2.8	3.6	4.1
R82	Residential	55.7	50.7	57.6	53.4	58.3	54.3	1.9	2.7	2.6	3.6
RTRAIL1	Trail	N/A	N/A	N/A	N/A	77.1	69.6	N/A	N/A	N/A	N/A
RTRAIL2	Trail	N/A	N/A	N/A	N/A	77.1	69.6	N/A	N/A	N/A	N/A

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
RTRAIL3	Trail	N/A	N/A	N/A	N/A	77.2	69.6	N/A	N/A	N/A	N/A
RTRAIL4	Trail	N/A	N/A	N/A	N/A	77.6	69.7	N/A	N/A	N/A	N/A
RTRAIL5	Trail	N/A	N/A	N/A	N/A	74.9	68.8	N/A	N/A	N/A	N/A
RTRAIL6	Trail	N/A	N/A	N/A	N/A	73.9	66.3	N/A	N/A	N/A	N/A
RTRAIL7	Trail	N/A	N/A	N/A	N/A	73.9	66	N/A	N/A	N/A	N/A
RTRAIL8	Trail	N/A	N/A	N/A	N/A	73	65.6	N/A	N/A	N/A	N/A
RTRAIL9	Trail	N/A	N/A	N/A	N/A	72.9	65.5	N/A	N/A	N/A	N/A
RTRAIL10	Trail	N/A	N/A	N/A	N/A	59.4	53	N/A	N/A	N/A	N/A
RTRAIL11	Trail	N/A	N/A	N/A	N/A	60.1	52.5	N/A	N/A	N/A	N/A
RTRAIL12	Trail	N/A	N/A	N/A	N/A	60.5	52.7	N/A	N/A	N/A	N/A
RTRAIL13	Trail	N/A	N/A	N/A	N/A	60.9	53	N/A	N/A	N/A	N/A
RTRAIL14	Trail	N/A	N/A	N/A	N/A	61.5	53.1	N/A	N/A	N/A	N/A
RTRAIL15	Trail	N/A	N/A	N/A	N/A	62.1	52.4	N/A	N/A	N/A	N/A
RTRAIL16	Trail	N/A	N/A	N/A	N/A	61.9	59.4	N/A	N/A	N/A	N/A
RTRAIL17	Trail	N/A	N/A	N/A	N/A	64.3	61.7	N/A	N/A	N/A	N/A
RTRAIL18	Trail	N/A	N/A	N/A	N/A	68.1	64.8	N/A	N/A	N/A	N/A
RTRAIL19	Trail	N/A	N/A	N/A	N/A	68.7	65.4	N/A	N/A	N/A	N/A
RTRAIL20	Trail	N/A	N/A	N/A	N/A	65	62.2	N/A	N/A	N/A	N/A
RTRAIL21	Trail	N/A	N/A	N/A	N/A	64.1	56.4	N/A	N/A	N/A	N/A
RTRAIL22	Trail	N/A	N/A	N/A	N/A	64	55.4	N/A	N/A	N/A	N/A
RTRAIL23	Trail	N/A	N/A	N/A	N/A	63.9	54.8	N/A	N/A	N/A	N/A

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
RTRAIL24	Trail	N/A	N/A	N/A	N/A	64	54.3	N/A	N/A	N/A	N/A
RTRAIL25	Trail	N/A	N/A	N/A	N/A	63.6	53.4	N/A	N/A	N/A	N/A
RTRAIL26	Trail	N/A	N/A	N/A	N/A	63.4	52.9	N/A	N/A	N/A	N/A
RTRAIL27	Trail	N/A	N/A	N/A	N/A	63.4	53	N/A	N/A	N/A	N/A

Table 7 – Nighttime Noise Results

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R1	Commercial	68.6	64.4	69.4	65.6	69.9	66.3	0.8	1.2	1.3	1.9
R2	Residential	74.3	70.2	75.1	71.4	75.6	72	0.8	1.2	1.3	1.8
R3	Commercial	73.1	69.2	73.9	70.3	73.8	70.2	0.8	1.1	0.7	1
R4	Commercial	74.1	70.2	75	71.3	74	70.5	0.9	1.1	-0.1	0.3
R5*	Undeveloped	68.4	64.3	69.2	65.5	68	64.3	0.8	1.2	-0.4	0
R6	Commercial	72.7	69.3	73.5	70.5	72.4	69.4	0.8	1.2	-0.3	0.1
R7	Commercial	70.3	67.1	71.7	68.9	71	68.2	1.4	1.8	0.7	1.1
R8	Commercial	71.5	67.4	73.1	69.5	72.6	69	1.6	2.1	1.1	1.6

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R9	Residential	70.5	66.5	72	68.7	71.7	68.4	1.5	2.2	1.2	1.9
R10	Industrial	71.9	67.2	73.5	69.6	73.3	69.5	1.6	2.4	1.4	2.3
R11*	Undeveloped	66.6	61.5	68.4	64	68.7	64.5	1.8	2.5	2.1	3
R12	Commercial	72.2	67.2	73.9	69.7	74.4	70.4	1.7	2.5	2.2	3.2
R13	Industrial	70.4	66.1	72	68.4	72.6	69.2	1.6	2.3	2.2	3.1
R14	Industrial	70.4	66	72.1	68.4	72.7	69.3	1.7	2.4	2.3	3.3
R15	Industrial	70.9	66.3	72.6	68.7	73.2	69.6	1.7	2.4	2.3	3.3
R16	Industrial	70.5	66	72.2	68.4	72.8	69.3	1.7	2.4	2.3	3.3
R17*	Undeveloped	63.1	58.8	64.7	61.1	65.3	62	1.6	2.3	2.2	3.2
R18	Industrial	67.7	63.8	69.4	66.2	68.8	65.6	1.7	2.4	1.1	1.8
R19	Commercial	72.1	67.4	73.9	70	71.7	68	1.8	2.6	-0.4	0.6
R20	Commercial	64.4	60	66.1	62.4	66.7	63.3	1.7	2.4	2.3	3.3
R21	Commercial	64.1	59.8	65.8	62.2	66.5	63.1	1.7	2.4	2.4	3.3
R22	Residential	56	53.1	57.6	55.3	57.9	55.8	1.6	2.2	1.9	2.7
R23	Industrial	72	67.3	73.7	69.8	74.8	70.5	1.7	2.5	2.8	3.2
R24	Commercial	59.5	56.1	61.1	58.3	61.8	59.2	1.6	2.2	2.3	3.1
R25*	Undeveloped	65.8	61.2	67.5	63.6	69.7	62.8	1.7	2.4	3.9	1.6
R26*	Undeveloped	65.9	61.3	67.6	63.7	68.3	64.7	1.7	2.4	2.4	3.4
R27	Residential	56.2	53.4	57.8	55.6	58.6	56.4	1.6	2.2	2.4	3
R28	Commercial	73.5	68.4	75.3	70.9	75.9	71.8	1.8	2.5	2.4	3.4

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R29	Commercial	58.6	55.4	60.3	57.5	62.9	57.2	1.7	2.1	4.3	1.8
R30*	Undeveloped	67.5	62.4	69.2	64.9	69.9	65.9	1.7	2.5	2.4	3.5
R31*	Undeveloped	61.9	58.1	63.5	60.4	72	59.2	1.6	2.3	10.1	1.1
R32	Commercial	58.4	55.4	60	57.5	61.1	58.4	1.6	2.1	2.7	3
R33*	Undeveloped	61.9	58.3	63.6	60.5	64.5	61	1.7	2.2	2.6	2.7
R34	Residential	72.9	68.1	74.6	70.5	74.8	70.8	1.7	2.4	1.9	2.7
R35*	Undeveloped	67.1	62.3	68.8	64.7	68.5	64.5	1.7	2.4	1.4	2.2
R36	Industrial	61.3	58	62.8	60.1	62.6	59.9	1.5	2.1	1.3	1.9
R37	Commercial	73.6	69.2	75.2	71.3	75.1	70.9	1.6	2.1	1.5	1.7
R38	Commercial	68.8	65.4	70	67.2	69.8	67	1.2	1.8	1	1.6
R39	Commercial	66.2	63.2	67.7	65	68.3	65.5	1.5	1.8	2.1	2.3
R40	Commercial	72.7	68	74.2	69.8	73.6	69.3	1.5	1.8	0.9	1.3
R41	Commercial	60.9	58.1	61.8	59.4	60.8	58.7	0.9	1.3	-0.1	0.6
R42*	Undeveloped	66.5	62.8	67.3	64	67.5	64.2	0.8	1.2	1	1.4
R43	Residential	73.1	68.3	73.8	69.3	73.8	69	0.7	1	0.7	0.7
R43A	Residential	71.9	67.8	72.5	68.9	72.5	68.5	0.6	1.1	0.6	0.7
R44	Residential	73	67.9	73.6	68.9	73.6	68.6	0.6	1	0.6	0.7
R44A	Residential	72.7	67.9	73.3	68.8	73.2	68.5	0.6	0.9	0.5	0.6
R45	Residential	70.7	66.6	71.4	67.7	71.3	67.3	0.7	1.1	0.6	0.7
R45A	Residential	71.4	67.1	72.1	68.1	72	67.7	0.7	1	0.6	0.6

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R46	Residential	69.9	66.1	70.9	67.3	70.7	67	1	1.2	0.8	0.9
R47	Residential	65.5	62.9	66.8	64.4	66.6	64.1	1.3	1.5	1.1	1.2
R48	Residential	67	59.8	69.1	61.8	70.4	63.3	2.1	2	3.4	3.5
R49	Residential	68.8	66.3	69.8	67.6	69.4	67.1	1	1.3	0.6	0.8
R49A	Residential	69.1	66.5	70	67.7	69.7	67.3	0.9	1.2	0.6	0.8
R50	Residential	70.8	67.3	71.5	68.4	71.4	68.1	0.7	1.1	0.6	0.8
R50A	Residential	69.9	66.9	70.7	68.1	70.5	67.7	0.8	1.2	0.6	0.8
R51	Residential	65.5	63.6	67.1	64.8	66.3	64.5	0.9	1.2	0.8	0.9
R51A	Residential	65.7	63.3	66.7	64.7	66.1	64.3	1	1.4	0.4	1
R52*	Undeveloped	64.5	60.5	65	61.4	65.2	61.5	0.5	0.9	0.7	1
R53*	Undeveloped	64.8	60	65.3	60.7	65.3	60.6	0.5	0.7	0.5	0.6
R54*	Undeveloped	66.9	61.5	67.4	62.2	67.6	62.3	0.5	0.7	0.7	0.8
R55	Residential	56.9	53.1	58.6	55.4	58.7	55.7	1.7	2.3	1.8	2.6
R56	Residential	54.6	50.7	56.2	53.1	56.7	53.7	1.6	2.4	2.1	3
R57	Residential	56.3	48.3	60.2	53.3	60	53.1	3.9	5	3.7	4.8
R58	Residential	51.9	49.4	53.6	51.5	54.2	52.3	1.7	2.1	2.3	2.9
R59	Residential	52.6	50	54.2	52.1	54.8	52.9	1.6	2.1	2.2	2.9
R60	Residential	54.6	52	56.3	54.1	56.9	54.9	1.7	2.1	2.3	2.9
R61	Residential	53.9	51.4	55.5	53.5	56.2	54.3	1.6	2.1	2.3	2.9
R62	Residential	55.3	52.7	57	54.8	57.6	55.6	1.7	2.1	2.3	2.9

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Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

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Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
R63	Residential	55	52.5	56.7	54.6	57.3	55.4	1.7	2.1	2.3	2.9
R64	Residential	56.5	53.7	58.1	55.8	59.1	56.7	1.6	2.1	2.6	3
R80	Residential	56.3	52	58.2	54.4	59.4	55.2	1.9	2.4	3.1	3.2
R81	Residential	56.6	51.4	58.6	54	60	55.1	2	2.6	3.4	3.7
R82	Residential	54.3	49.4	56.2	51.9	56.8	52.6	1.9	2.5	2.5	3.2
RTRAIL1	Trail	N/A	N/A	N/A	N/A	76.6	69	N/A	N/A	N/A	N/A
RTRAIL2	Trail	N/A	N/A	N/A	N/A	76.6	69	N/A	N/A	N/A	N/A
RTRAIL3	Trail	N/A	N/A	N/A	N/A	76.7	69.1	N/A	N/A	N/A	N/A
RTRAIL4	Trail	N/A	N/A	N/A	N/A	77.1	69.1	N/A	N/A	N/A	N/A
RTRAIL5	Trail	N/A	N/A	N/A	N/A	74.3	68	N/A	N/A	N/A	N/A
RTRAIL6	Trail	N/A	N/A	N/A	N/A	71.9	64.5	N/A	N/A	N/A	N/A
RTRAIL7	Trail	N/A	N/A	N/A	N/A	71.9	64.1	N/A	N/A	N/A	N/A
RTRAIL8	Trail	N/A	N/A	N/A	N/A	71.1	63.7	N/A	N/A	N/A	N/A
RTRAIL9	Trail	N/A	N/A	N/A	N/A	71	63.6	N/A	N/A	N/A	N/A
RTRAIL10	Trail	N/A	N/A	N/A	N/A	58.1	51	N/A	N/A	N/A	N/A
RTRAIL11	Trail	N/A	N/A	N/A	N/A	58.9	50.5	N/A	N/A	N/A	N/A
RTRAIL12	Trail	N/A	N/A	N/A	N/A	59.2	50.8	N/A	N/A	N/A	N/A
RTRAIL13	Trail	N/A	N/A	N/A	N/A	59.6	51.1	N/A	N/A	N/A	N/A
RTRAIL14	Trail	N/A	N/A	N/A	N/A	60.2	51.2	N/A	N/A	N/A	N/A
RTRAIL15	Trail	N/A	N/A	N/A	N/A	60.9	50.6	N/A	N/A	N/A	N/A

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Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

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Trail Receptors Modeled Under 2040 Build Conditions Only

Receptor	Land Use	Existing (2016)		2040 No-Build Condition		2040 Build Condition		Difference (Existing to No-Build)		Difference (Existing to Build)	
		L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
RTRAIL16	Trail	N/A	N/A	N/A	N/A	60.7	58	N/A	N/A	N/A	N/A
RTRAIL17	Trail	N/A	N/A	N/A	N/A	63.1	60.1	N/A	N/A	N/A	N/A
RTRAIL18	Trail	N/A	N/A	N/A	N/A	66.9	63.2	N/A	N/A	N/A	N/A
RTRAIL19	Trail	N/A	N/A	N/A	N/A	67.3	63.8	N/A	N/A	N/A	N/A
RTRAIL20	Trail	N/A	N/A	N/A	N/A	63.7	60.6	N/A	N/A	N/A	N/A
RTRAIL21	Trail	N/A	N/A	N/A	N/A	62.7	54.7	N/A	N/A	N/A	N/A
RTRAIL22	Trail	N/A	N/A	N/A	N/A	62.6	53.7	N/A	N/A	N/A	N/A
RTRAIL23	Trail	N/A	N/A	N/A	N/A	62.5	53.1	N/A	N/A	N/A	N/A
RTRAIL24	Trail	N/A	N/A	N/A	N/A	62.6	52.7	N/A	N/A	N/A	N/A
RTRAIL25	Trail	N/A	N/A	N/A	N/A	62.2	51.8	N/A	N/A	N/A	N/A
RTRAIL26	Trail	N/A	N/A	N/A	N/A	62	51.3	N/A	N/A	N/A	N/A
RTRAIL27	Trail	N/A	N/A	N/A	N/A	62	51.5	N/A	N/A	N/A	N/A

* Undeveloped Land, Federal NAC Not Applicable

Exceeds MPCA Daytime/Nighttime Standards

Total Property Acquisition

Underlined Text Represents Values that Approach or Exceed Federal NAC Standards

Trail Receptors Modeled Under 2040 Build Conditions Only

One receptor is anticipated to be a total acquisition with the proposed interchange: R37. Therefore, this receptor has not been included in the following discussion.

State Standards

None of the receptors classified in industrial or undeveloped areas exceed either the state L_{10} or the L_{50} nighttime standards. State L_{10} nighttime standards are exceeded at 36 of the 52 remaining commercial and residential receptors for existing conditions. State L_{50} nighttime standards are exceeded at 38 of the 52 remaining commercial and residential receptors for existing conditions. State L_{10} nighttime standards are exceeded at 40 of the remaining 52 receptors for both 2040 No Build and 2040 Build conditions, while state L_{50} nighttime standards are exceeded at 44 of the remaining 52 receptors for 2040 No Build and 45 out of 52 receptors for the 2040 Build conditions. All residential receptors experience nighttime noise levels that exceed state L_{50} standards, and all but two (R58 and R59) experience noise levels that exceed L_{10} standards under the 2040 No-Build and 2040 Build Conditions.

None of the receptors classified in industrial or undeveloped areas exceed either the state L_{10} or the L_{50} daytime standards. State L_{10} daytime standards are exceeded at 27 of the 52 remaining commercial and residential receptors under existing conditions. State L_{50} daytime standards for existing conditions are exceeded at 28 of the remaining 52 commercial and residential receptors. Under 2040 No Build conditions, state L_{10} standards are exceeded at 28 of 52 remaining residential and commercial receptors and state L_{50} conditions are exceeded at 30 of 52 remaining residential and commercial receptors. Likewise for 2040 Build conditions, L_{10} and L_{50} standards are exceeded at 30 of 52 commercial and residential receptors.

Nine of the 27 receptors assigned to the proposed trails exceed both the state daytime L_{10} and L_{50} standards for the 2040 Build conditions. One additional trail receptor exceeded only the state daytime L_{50} standard. For nighttime noise levels, L_{10} state standards are exceeded for the same nine trail receptors in 2040 build condition, and the L_{50} standards are exceeded at five locations under the 2040 Build Condition. There were no models created for the proposed trails under existing or no-build conditions.

Daytime noise levels for 2040 No Build conditions are predicted to be 0.5 to 4.1 decibels higher than existing L_{10} levels and 0.7 to 5 decibels higher than existing L_{50} levels. Nighttime noise levels for 2040 No Build conditions are predicted to be 0.5 to 3.9 decibels higher than existing L_{10} levels and 0.7 to 5 decibels higher than existing L_{50} levels. Increases in No Build noise levels are due to increases in future traffic volumes.

Daytime noise levels for the 2040 Build condition are predicted to be 0.5 to 4.1 decibels higher than existing L_{10} levels and 0.7 to 4.6 decibels higher than existing L_{50} levels. Nighttime noise levels for the 2040 Build condition are predicted to be 0.4 decibels less than to 4.3 decibels higher than existing L_{10} levels and 0 to 4.8 decibels higher than existing L_{50} levels. The greatest decreases in noise will occur at Receptors R3–R6 with the Build condition due to the profile change of TH 169. The greatest increases in

noise will occur at the receptors on the south side of the TH 169/TH 41 intersection due to the addition of entrance/exit ramps.

Federal NAC

Federal noise criteria would be approached or exceeded at 29 of the 100 receptors for the 2040 Build condition. A MnDOT-defined noise impact (an increase of 5 or more decibels over existing levels) does not occur at any receptor under the 2040 Build condition.

Receptors R5, R11, R17, R25, R26, R30, R31, R33, R35, R42 and R52–R54 are vacant land. These receptor locations represent points for future development. Scott County will be informed of noise impacts for these sites for planning purposes.

As part of the noise mitigation analysis, noise barriers were considered at Receptors R1–R4, R6–R9, R12, R22, R27, R28, R34, R38–R40, R43–R51, R43A–R45A, R49A–R51A, R55–R64, R80-R82 and RTRAIL1-RTRAIL9. The receptor and proposed barrier locations can be found in **Figures 1–3**.

Noise Mitigation Analysis

Because the federal criterion and/or state standards would be exceeded at many of the modeled residential and commercial receptor sites, mitigation measures were studied. This analysis included the evaluation of the reasonableness and feasibility of noise mitigation. 23 CFR 772 does not require that the noise abatement criteria be met in every instance of a traffic noise impact. Rather, it requires that every reasonable and feasible effort be made to provide noise mitigation. All receptors that exceed state and/or federal noise standards must be evaluated relative to the MnDOT Noise Barrier Reasonableness and Feasibility Criteria. Noise barriers are a feasible mitigation measure from an engineering standpoint where there are no structural, topographical, safety, drainage or space constraints preventing their construction. Acoustically feasible noise abatement measures must achieve a noise reduction of at least 5 dBA for at least one impacted receptor. MnDOT has established a maximum noise barrier height of 20 feet above the finished ground line at the noise barrier. In addition, MnDOT has established a maximum noise barrier height of 10 feet above the bridge deck when it is necessary for a noise barrier to be attached to an existing bridge structure.

Two noise barriers were analyzed for receptors RTRAIL1-RTRAIL9 due to the proximity to the roadway and high resultant noise levels. These trail receptors were modeled separately from the other occupied structure receptors.

The analysis considered noise barriers of varying heights (6, 10, 15, and 20 feet for occupied structure receptors, 6-20 feet in two-foot increments for trail receptors) for reasonableness during the daytime worst noise hour. As per MnDOT standard guidelines, the cost effectiveness of the barrier shall not exceed $43,500/dBA per benefitted receptor. A receptor's inclusion in the cost effectiveness calculation shall be contingent on the receptor receiving a minimum of 5 dBA reduction due to the construction of the barrier. Additionally a barrier must reduce noise by 7 dBA for at least one receptor to satisfy the state reasonableness guidelines.

The following formula can be used to determine the cost-effectiveness of the barrier:

$$\text{Cost Effectiveness} = \frac{\text{Cost of Noise Barrier}^{1} + \text{Cost of Right-of-Way}}{\text{Total Number of Benefitted Residences}}$$

[1]The cost of a noise wall is calculated using $20 per square foot of wall, based on historical data over the five year period from 2005 to 2010

Cost effectiveness is the first consideration in determining the reasonableness of potential noise barriers. If noise mitigation is found to be cost-effective, additional reasonableness factors, such as the desires of affected property owners are considered.

A benefited property is defined as a receptor adjacent to a proposed noise abatement measure that receives a noise reduction equal to or greater than 5 dBA. Only receptors that experience a five or greater decibel decrease in noise following construction of a noise barrier are considered in this analysis. If benefited residents and property owners indicate that a proposed noise barrier is not desired, then the noise barrier is removed from further consideration and would not be constructed. First, the desires of the benefited property owners and residents are solicited through a public involvement process (e.g., open house meeting, direct mailing of a solicitation form). Second, the input received from benefited property owners and residents through this public involvement process is expressed in a vote that is weighted as follows:

The owner of a benefited property immediately adjacent to the highway right-of-way for the proposed project (i.e., first-row properties) receives 4 points and the resident (owner or renter) receives 2 points. The owner/resident of a benefited property receives a total of 6 points.

The owner of a benefited property not immediately adjacent to the highway right-of-way for the proposed project (e.g., second-row properties, third-row properties) receives 2 points and the resident (owner or renter) receives 1 point. The owner/resident of a benefited property receives a total of 3 points.

Only those benefited property owners and residents, including individual units of multi-family residential building that are considered to be benefited receptors, regardless of floor location (e.g., first floor, second floor, etc.), have a vote according to the point system described above. Non-benefiting receptors do not receive points.

Initial Solicitation: If 50 percent or more of all possible voting points from eligible voters are received after the initial request for votes, the majority of points (based upon the votes received) determine the outcome of the noise barrier. If there is a tie, where there are equal numbers of points for and against a noise barrier, the noise barrier will be constructed. If less than 50 percent of the possible voting points for a barrier are received after this initial request, then a second ballot will be distributed to the benefited property owners who did not respond.

Second Solicitation (if required): If 25 percent or more of all possible points for a barrier are received after the second request for votes, then the outcome is determined by the majority of votes received. If less than 25 percent of total possible points for a noise barrier are received after the second request for votes, then the barrier will not be constructed. If there is a tie, where there are equal numbers of points for and against a noise barrier, the noise barrier will be constructed.

Results of the noise mitigation cost-effectiveness studies are shown in **Table 8, 9, 10 and 11**. Both the daytime L_{10} and nighttime L_{10} values were examined to determine the greatest amount of noise reduction for each proposed barrier. Analyzed noise barrier locations can be found in **Figures 1–3.**

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Figure 3: Proposed Trail Noise Barriers - Walls P and Q

US 169/TH 41/CSAH 78/CSAH 14 Intersection Improvements
SP 070-596-013/7005-121/7009-84/7010-109
Scott County, MN
May 2017

0 500 Feet

Noise Mitigation Results

Wall A

A 677-foot noise barrier was modeled along the east side of TH 169 to shield receptor R34. Receptor R34 represents a single family residence adjacent to TH 169. A 20-foot tall, 677-foot long barrier was modeled and reduced noise at receptor R34 by 8.7 dBA. The cost of this wall is $270,800 per receptor which does not meet MnDOT's cost effectiveness criteria. A shorter 15-foot wall of the same length was modeled and reduced noise by 7.5 dBA. The cost of the 15-foot wall is $203,100 per receptor which also does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 10-feet and 6-feet tall with the same length and did not meet the 7 dBA minimum for reasonableness. The analyzed barrier at this location will not be proposed.

Wall B

An 840-foot noise barrier was modeled along the south side of CSAH 78 to shield receptors R38 and R39. Receptors R38 and R39 represent commercial businesses adjacent to CSAH 78. The modeled 6-foot, 10-foot, 15-foot and 20-foot tall barriers produced noise reductions in a range of 1.2 to 3.8 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall C

A 222-foot noise barrier was modeled along the east side of TH 169 to shield receptor R40. Receptor R40 represents a commercial business adjacent to TH 169. The modeled 6-foot, 10-foot, 15-foot, and 20-foot tall barriers produced noise reductions in a range of 3.1 to 5.3 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall D

A 1,346-foot noise barrier was modeled along the west side of TH 169 to shield receptor R1. Receptor R1 represents a commercial business adjacent to TH 169. The modeled 6-foot, 10-foot, 15-foot, and 20-foot tall barriers produced noise reductions in a range of 0.1 to 6.6 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall E

A 616-foot noise barrier was modeled along the west side of TH 169 to shield receptor R2. Receptor R2 represents a single family home adjacent to TH 169. A 20-foot tall, 616-foot long barrier was modeled and reduced noise at receptor R34 by 8.9 dBA. The cost of this wall is $246,400 per receptor which does not meet MnDOT's cost effectiveness criteria. A shorter 15-foot wall of the same length was modeled and reduced noise by 8.0 dBA. The cost of the 15-foot wall is $184,000 per receptor which also does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 10-feet and 6-feet tall with the

same length and did not meet the 7 dBA minimum for reasonableness, nor would the 10-foot or 6-foot walls meet the cost effectiveness criteria. The analyzed barrier at this location will not be proposed.

Wall F

An 872-foot noise barrier was modeled along the west side of TH 169 to shield receptors R3 and R4. Receptors R3 and R4 represent commercial businesses adjacent to TH 169. A 20-foot high, 872-foot long barrier was modeled and reduced noise at receptor R3 by 9.4 dBA and R4 by 9.1 dBA. The cost of this wall is $174,400 per receptor which does not meet MnDOT's cost effectiveness criteria. A lower 15-foot wall of the same length was modeled and reduced noise by 7.7 and 7.8 dBA respectively at receptors R3 and R4. The cost of the 15-foot high wall is $130,800 per receptor which also does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 10-feet and 6-feet high with the same length and did not meet the 7 dBA minimum for reasonableness. The analyzed barrier at this location will not be proposed.

Wall G

An 873-foot noise barrier was modeled along the northwest quadrant of the TH 169 and TH 41 intersection to shield receptor R6. Receptor R6 represents a commercial business adjacent to the TH 169 and TH 41 intersection. The modeled 6-foot, 10-foot, 15-foot and 20-foot tall barriers produced noise reductions in a range of 0.9 to 4.2 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall H

A 1,090-foot noise barrier was modeled along the southwest quadrant of the TH 169 and TH 41 intersection just inside the proposed right of way, to shield modeled receptors R43–R45, R49–R51, R43A–R45A and R49A–R51A. All of the modeled receptors represent one or more single family residences in the Jackson Heights manufactured home community. In all, there are 14 potentially benefitted receptors. The modeled 20-foot barrier reduced the noise by greater than 5 dBA at 14 receptors with a maximum reduction of 13.1 dBA. The cost effectiveness of this barrier is $31,143 which is less than MnDOT's criterion of $43,500; therefore, a 20-foot barrier is reasonable in this area.

Wall I

A 1,276-foot noise barrier was modeled along the west side of TH 169 to shield receptors R7, R8 and R9. Receptors R7 and R8 represent commercial businesses adjacent to TH 169 and receptor R9 represents a motel adjacent to TH 169. A 20-foot tall, 1,276-foot long barrier was modeled and reduced noise at receptor R7 by 3.8 dBA, R8 by 7.7 dBA and R9 by 4.2 dBA. The cost of this wall is $510,400 per receptor which does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 15-feet, 10-feet and 6-feet tall with the same length and did not meet the 7 dBA minimum for reasonableness. The analyzed barrier at this location will not be proposed.

Wall J

A 760-foot noise barrier was modeled along the west side of TH 169 to shield receptor R12. Receptor R12 represents a commercial business adjacent to TH 169. A 20-foot tall, 760-foot long barrier was modeled and reduced noise at receptor R12 by 9.8 dBA. The cost of this wall is $304,000 per receptor which does not meet MnDOT's cost effectiveness criteria. A shorter 15-foot wall of the same length was modeled and reduced noise by 8.7 dBA. The cost of the 15-foot wall is $228,000 per receptor which also does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 10-feet and 6-feet tall with the same length and did not meet the 7 dBA minimum for reasonableness, nor would the 10-foot or 6-foot walls meet the cost effectiveness criteria. The analyzed barrier at this location will not be proposed.

Wall K

A 1,000-foot noise barrier was modeled along the east side of TH 169 to shield receptor R22. Receptor R22 represents a single family residence adjacent to TH 169. The modeled 6-foot, 10-foot, 15-foot, and 20-foot tall barriers produced noise reductions in a range of 0 to 1.2 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall L

A 1,873-foot noise barrier was modeled along the west side of TH 169 to shield receptors R55 and R56. Receptors R55 and R56 represent single family residences adjacent to TH 169 just south of CSAH 14. The modeled 6-foot, 10-foot, 15-foot, and 20-foot tall barriers produced noise reductions in a range of 0.1 to 5 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA.

Wall M

A 780-foot noise barrier was modeled along the north side of CSAH 14 to shield receptor R57. Receptor R57 represents a single family residence adjacent to CSAH 14 just east of TH 169. The modeled 6-foot, 10-foot, 15-foot, and 20-foot tall barriers produced noise reductions in a range of 0.3 to 1.6 dBA; therefore, a cost estimate was not performed as none of the modeled wall heights was able to reduce noise by MnDOT's reasonableness criteria of 7 dBA. Additionally, Wall M would have to allow a gap for a driveway access which decreases the effectiveness of this analyzed wall.

Wall N

A 3,630-foot noise barrier was modeled along the east side of TH 169 to shield receptors R27, R28 and R58–R64. Receptors R27 and R58–R64 represent single family residences along Skyline Circle, which runs parallel to, and 1,200 feet east of, TH 169. Receptor R28 represents a commercial business in the southeast quadrant of the TH 169 and 133rd Street intersection. A 20-foot tall, 3,630-foot long barrier was modeled and reduced noise at receptor R28 by 8.0 dBA. The cost of this wall is $1,452,000 per receptor which does not meet MnDOT's cost effectiveness criteria. A shorter 15-foot wall of the same

length was modeled and reduced noise by 7.3 dBA at receptor R28. The cost of the 15-foot wall is $1,089,000 per receptor which also does not meet MnDOT's cost effectiveness criteria. The wall was then modeled at 10-feet and 6-feet tall with the same length and did not meet the 7 dBA minimum for reasonableness. The analyzed barrier at this location will not be proposed.

Wall O

A 3,344-foot noise barrier was modeled along the south side of CSAH 78 to shield receptors R80, R81 and R82. Receptors R80-R82 represent single family residences adjacent to CSAH 78 just east of TH 169. The modeled 20-foot tall barrier produced noise reductions in a range of 3.8 to 6.0 dBA; therefore, a cost estimate was not performed as the modeled wall height wasn't able to reduce noise by MnDOT's reasonableness criteria of 7 dBA. No further analysis on alternate geometries was conducted because the 20-foot tall, 3,344-foot long barrier is the largest both by height and length allowed by design limitations. Additionally, Wall O would have to allow for a gap for a driveway access which decreases the effectiveness of this analyzed wall.

Wall P

Wall P is a 1,060-foot noise barrier located directly in front of the trail that runs parallel to the eastbound lanes of TH 41. Two scenarios were analyzed for Wall P:

1) A modified alignment of Wall H that shields trail receptors RTRAIL1-RTRAIL5 as well as receptors R43–R45, R49–R51, R43A–R45A and R49A–R51A,
2) As an additional barrier that shields receptors RTRAIL1-RTRAIL5.

Wall P was modeled in Scenario 1 with wall heights ranging from six feet to 20 feet in two-foot increments. Since Scenario 1 would replace Wall H, the analysis focused on the 20-foot wall height to match previous modeling conditions. The results of the 20-foot tall scenario indicate that there would be a drop in noise attenuation for all the residential receptors during both the daytime and nighttime worst noise hours when compared to the results of Wall H. Furthermore, receptors R45, R49 and R49A which represent six residences drop below the 5-dBA reduction threshold to be considered benefitted receptors. The property owner and residents represented by receptors R43–R45, R49–R51, R43A–R45A and R49A–R51A (which are located within an identified Environmental Justice community) already voted in favor of the noise barrier described in Wall H; therefore, using Scenario 1 for Wall P was considered unacceptable. It was determined that the alignment of Wall H would remain as initially proposed to maximize noise reduction benefits for residential receptors.

The model in Scenario 1 results in unacceptable conditions for the residential receptors previously analyzed with Wall H. A second scenario was created that includes both Wall H and a second barrier (Wall P) that shields only the trail receptors. Wall P was modeled with heights ranging from six feet to 20 feet tall in two-foot increments. Wall H remained at 20 feet for all iterations. Based on the modeling results, the analysis shows that a 10-foot tall barrier would reduce noise by a range of 8.6 to 10.7 dBA at all five trail receptors. A 10-foot tall wall is the tallest option that can be used while still maintaining cost effectiveness. A 10-foot tall barrier for the five trail receptors is reasonable at this location. A

12-foot tall barrier reduces noise at the five receptors by a range of 9.7 to 13.1 dBA, but the cost per benefitted receptor rises to $50,880 which is more than the cost effectiveness threshold of $43,500.

Wall Q

An 830-foot noise barrier was modeled directly in front of the trail that runs parallel to the eastbound lanes of CSAH 78 to shield trail receptors RTRAIL6-RTRAIL9. The barrier was modeled from six feet to 20 feet tall in two-foot increments. Based on the modeling results, the analysis shows that a 10-foot tall barrier would reduce noise by a range of 8.1 to 10 dBA at all four receptors, and is the tallest option that can be used while still maintaining cost effectiveness. A 10-foot tall barrier for the four trail receptors is reasonable at this location. A 12-foot tall barrier reduces noise at the four receptors by a range of 7.6 to 11.5 dBA, but the cost per benefitted receptor rises to $49,800 which is more than the cost effectiveness threshold of $43,500.

Table 8: Noise Barrier Cost-Effectiveness Study Results (Daytime L_{10}).

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 15' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall A		677	Not Est.																	
R34 (1)	Single Family Residence East of TH 169			76.3	73.8	2.5	N/A	N/A	71.4	4.9	N/A	N/A	69	7.3	$203,100	$203,100	67.6	8.7	$270,800	$270,800
Wall B		840	Not Est.																	
R38 (1)	Commercial Business West of US TH 169			71	69.7	1.3	N/A	N/A	69.4	1.6	N/A	N/A	69.1	1.9	N/A	N/A	69	2	N/A	N/A
R39 (1)	Commercial Business West of US TH169			69.9	67.4	2.5	N/A	N/A	66.9	3	N/A	N/A	66.4	3.5	N/A	N/A	66.1	3.8	N/A	N/A
Wall C		222	Not Est.																	
R40 (1)	Commercial Business East of US TH 169			74.9	71.8	3.1	N/A	N/A	70.4	4.5	N/A	N/A	69.8	5.1	N/A	N/A	69.6	5.3	N/A	N/A
Wall D		1346	Not Est.																	
R1 (1)	Commercial Business West of TH 169			70.2	70.2	0	N/A	N/A	69.4	0.8	N/A	N/A	67.3	2.9	N/A	N/A	64	6.2	N/A	N/A
Wall E		616																		
R2 (1)	Single Family Residence West of TH 169			75.9	71.6	4.3	N/A	N/A	70.1	5.8	N/A	N/A	68.2	7.7	$184,800	$184,800	67.3	8.6	$246,400	$246,400
Wall F		872	Not Est.																	
R3 (1)	Commercial Business West of TH 169			74.7	71.2	3.5	N/A	N/A	69.5	5.2	N/A	N/A	67.1	7.6	$261,600	$130,800	65.3	9.4	$348,800	$174,400
R4 (1)	Commercial Business West of TH 169			75	71.1	3.9	N/A	N/A	69.7	5.3	N/A	N/A	67.4	7.6			66	9		
Wall G		874	Not Est.																	
R6 (1)	Commercial Business on NW Corner of TH 169 and TH 41			73.6	72.7	0.9	N/A	N/A	71.5	2.1	N/A	N/A	70.1	3.5	N/A	N/A	69.4	4.2	N/A	N/A
Wall H		1090	Not Est.																	
R43 (1)	Single Family Residence NW Corner of TH 169 & TH 41			74.7	70	4.7	N/A	N/A	67.1	7.6			63.8	10.9			62.3	12.4		
R43A (1)	Single Family Residence NW Corner of TH 169 & TH 41			73.4	68.8	4.6	N/A	N/A	66.8	6.6			64.2	9.2			62.7	10.7		
R44 (1)	Single Family Residence NW Corner of TH 169 & TH 41			74.5	74.4	0.1	N/A	N/A	74.2	0.3			71.6	2.9			67.2	7.3		
R44A (1)	Single Family Residence NW Corner of TH 169 & TH 41			74.1	69.7	4.4	N/A	N/A	67.2	6.9			63.7	10.4			61.8	12.3		
R45 (2)	Single Family Residence NW Corner of TH 169 & TH 41			72.2	68.8	3.4	N/A	N/A	67.6	4.6			66.2	6			65.5	6.7		
R45A (1)	Single Family Residence NW Corner of TH 169 & TH 41			72.8	70.3	2.5	N/A	N/A	67.8	5	$218,000	$36,333	65.4	7.4	$327,000	$29,727	64.2	8.6	$436,000	$31,143
R49 (2)	Single Family Residence NW Corner of TH 169 & TH 41			70.5	67.9	2.6	N/A	N/A	67.1	3.4			66.3	4.2			65.2	5.3		
R49A (2)	Single Family Residence NW Corner of TH 169 & TH 41			70.8	67.6	3.2	N/A	N/A	66.6	4.2			65.6	5.2			64.4	6.4		
R50 (2)	Single Family Residence NW Corner of TH 169 & TH 41			72.4	68	4.4	N/A	N/A	66.5	5.9			64.4	8			62.8	9.6		
R50A (1)	Single Family Residence NW Corner of TH 169 & TH 41			71.5	67.6	3.9	N/A	N/A	66.5	5			65	6.5			63.4	8.1		
R51 (2)	Single Family Residence NW Corner of TH 169 & TH 41			67.9	65.2	2.7	N/A	N/A	64.3	3.6			63.6	4.3			63	4.9		
R51A (2)	Single Family Residence NW Corner of TH 169 & TH 41			67.5	65.2	2.3	N/A	N/A	64.5	3			63.8	3.7			63.2	4.3		
Wall I		1276	Not Est.																	
R7 (1)	Commercial Business West of TH 169			72.3	71.6	0.7	N/A	N/A	71.3	1	N/A	N/A	70.7	1.6			68.6	3.7		
R8 (1)	Commercial Business West of TH 169			73.9	72.5	1.4	N/A	N/A	70.3	3.6	N/A	N/A	68	5.9	N/A	N/A	66.3	7.6	$510,400	$510,400
R9 (1)	Residential Property West of TH 169			73	70.9	2.1	N/A	N/A	70.1	2.9	N/A	N/A	69.3	3.7			68.9	4.1		

*Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way

Noise wall cost = (wall height) x (wall length) x ($20 per square foot)

Number in () represents number of impacted receptors

Wall lengths include all end tapers

Benefitted receptor

Table 8 (Continued): Noise Barrier Cost-Effectiveness Study Results (Daytime L_{10})

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 15' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall J		760	Not Est.																	
R12 (1)	Commercial Business West of TH 169			75.6	71.3	4.3	N/A	N/A	69.6	6	N/A	N/A	67.2	8.4	$228,000	$228,000	66	9.6	$304,000	$304,000
Wall K		1000	Not Est																	
R22 (1)	Single Family Residence East of TH 169			59.3	59.3	0	N/A	N/A	59.3	0	N/A	N/A	58.9	0.4	N/A	N/A	58.1	1.2	N/A	N/A
Wall L		1873	Not Est.																	
R55 (1)	Single Family Residence West of TH 169			59.5	59.5	0	N/A	N/A	58.8	0.7	N/A	N/A	57.2	2.3	N/A	N/A	55.9	3.6	N/A	N/A
R56 (1)	Single Family Residence West of TH 169			57.5	57.5	0	N/A	N/A	56.5	1	N/A	N/A	54.7	2.8	N/A	N/A	52.9	4.6	N/A	N/A
Wall M		780	Not Est.																	
R57 (1)	Single Family Residence North of CSAH 14			61.4	61.1	0.3	N/A	N/A	60.7	0.7	N/A	N/A	60.2	1.2	N/A	N/A	59.8	1.6	N/A	N/A
Wall N		3630	Not Est.																	
R27 (1)	Single Family Residence East of TH 169			59.9	59.9	0	N/A	N/A	59.6	0.3	N/A	N/A	58.9	1			57.9	2		
R28 (1)	Commercial Business East of TH 169			77.3	74.2	3.1	N/A	N/A	72.2	5.1	N/A	N/A	70.1	7.2			69.4	7.9		
R58 (1)	Single Family Residence East of TH 169			55.5	55.5	0	N/A	N/A	55.5	0	N/A	N/A	55.2	0.3			54.4	1.1		
R59 (1)	Single Family Residence East of TH 169			56.2	56.2	0	N/A	N/A	56.2	0	N/A	N/A	56.1	0.1			55.5	0.7		
R60 (1)	Single Family Residence East of TH 169			58.2	58.2	0	N/A	N/A	58.2	0	N/A	N/A	58.1	0.1	$1,089,000	$1,089,000	57.7	0.5	$1,452,000	$1,452,000
R61 (1)	Single Family Residence East of TH 169			57.5	57.5	0	N/A	N/A	57.5	0	N/A	N/A	57.3	0.2			56.8	0.7		
R62 (1)	Single Family Residence East of TH 169			58.9	58.9	0	N/A	N/A	58.9	0	N/A	N/A	58.6	0.3			57.8	1.1		
R63 (1)	Single Family Residence East of TH 169			58.7	58.6	0.1	N/A	N/A	58.5	0.2	N/A	N/A	58	0.7			57	1.7		
R64 (1)	Single Family Residence East of TH 169			60.4	60.4	0	N/A	N/A	60.1	0.3	N/A	N/A	59.5	0.9			58.6	1.8		
Wall O			Not Est.																	
R80 (1)	Single Family Residence South of CSAH 78			61	N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				57.1	3.9		
R81 (1)	Single Family Residence South of CSAH 78			61.6													55.9	5.7	N/A	N/A
R82 (1)	Single Family Residence South of CSAH 78			58.3													54	4.3		

*Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way

Noise wall cost = (wall height) x (wall length) x ($20 per square foot)

Number in () represents number of impacted receptors

Wall lengths include all end tapers

Benefitted receptor

Table 9: Noise Barrier Cost-Effectiveness Study Results (Nighttime L_{10})

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 15' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall A		677	Not Est.																	
R34 (1)	Single Family Residence East of TH 169			74.8	71.7	3.1	N/A	N/A	69.6	5.2	N/A	N/A	67.3	7.5	$203,100	$203,100	66.1	8.7	$270,800	$270,800
Wall B		840	Not Est.																	
R38 (1)	Commercial Business West of US TH 169			69.8	68.6	1.2	N/A	N/A	68.3	1.5	N/A	N/A	68.1	1.7	N/A	N/A	67.9	1.9	N/A	N/A
R39 (1)	Commercial Business West of US TH169			68.3	65.8	2.5	N/A	N/A	65.4	2.9	N/A	N/A	64.9	3.4	N/A	N/A	64.6	3.7	N/A	N/A
Wall C		222	Not Est.																	
R40 (1)	Commercial Business East of US TH 169			74.9	71.8	3.1	N/A	N/A	70.4	4.5	N/A	N/A	69.8	5.1	N/A	N/A	69.6	5.3	N/A	N/A
Wall D		1346	Not Est.																	
R1 (1)	Commercial Business West of TH 169			69.9	69.8	0.1	N/A	N/A	68.9	1	N/A	N/A	66.6	3.3	N/A	N/A	63.3	6.6	N/A	N/A
Wall E		616																		
R2 (1)	Single Family Residence West of TH 169			75.6	71.1	4.5	N/A	N/A	69.5	6.1	N/A	N/A	67.6	8	$184,800	$184,800	66.7	8.9	$246,400	$246,400
Wall F		872	Not Est.																	
R3 (1)	Commercial Business West of TH 169			73.8	70.1	3.7	N/A	N/A	68.5	5.3	N/A	N/A	66.1	7.7	$261,600	$130,800	64.5	9.3	$348,800	$174,400
R4 (1)	Commercial Business West of TH 169			74	69.9	4.1	N/A	N/A	68.4	5.6	N/A	N/A	66.2	7.8			64.9	9.1		
Wall G		874	Not Est.																	
R6 (1)	Commercial Business on NW Corner of TH 169 and TH 41			72.4	71.4	1	N/A	N/A	70	2.4	N/A	N/A	68.8	3.6	N/A	N/A	68.2	4.2	N/A	N/A
Wall H		1090	Not Est.																	
R43 (1)	Single Family Residence NW Corner of TH 169 & TH 41			73.8	69	4.8	N/A	N/A	66	7.8			62.4	11.4			60.7	13.1		
R43A (1)	Single Family Residence NW Corner of TH 169 & TH 41			72.5	67.7	4.8	N/A	N/A	65.6	6.9			62.8	9.7			61.1	11.4		
R44 (1)	Single Family Residence NW Corner of TH 169 & TH 41			73.6	73.4	0.2	N/A	N/A	73.3	0.3			70.5	3.1			66.2	7.4		
R44A (1)	Single Family Residence NW Corner of TH 169 & TH 41			73.2	68.7	4.5	N/A	N/A	66.3	6.9			62.6	10.6			60.5	12.7		
R45 (2)	Single Family Residence NW Corner of TH 169 & TH 41			71.3	67.7	3.6	N/A	N/A	66.4	4.9			64.8	6.5			64.1	7.2		
R45A (1)	Single Family Residence NW Corner of TH 169 & TH 41			72	69.1	2.9	N/A	N/A	66.7	5.3	$218,000	$31,143	64.1	7.9	$327,000	$29,727	62.8	9.2	$436,000	$31,143
R49 (2)	Single Family Residence NW Corner of TH 169 & TH 41			69.4	66.5	2.9	N/A	N/A	65.7	3.7			64.7	4.7			63	6.4		
R49A (2)	Single Family Residence NW Corner of TH 169 & TH 41			69.7	66.3	3.4	N/A	N/A	65.2	4.5			64.1	5.6			62.4	7.3		
R50 (2)	Single Family Residence NW Corner of TH 169 & TH 41			71.4	66.8	4.6	N/A	N/A	65.3	6.1			63	8.4			61.2	10.2		
R50A (1)	Single Family Residence NW Corner of TH 169 & TH 41			70.5	66.4	4.1	N/A	N/A	65.1	5.4			63.4	7.1			61.8	8.7		
R51 (2)	Single Family Residence NW Corner of TH 169 & TH 41			66.3	63.8	2.5	N/A	N/A	62.9	3.4			62.2	4.1			61.4	4.9		
R51A (2)	Single Family Residence NW Corner of TH 169 & TH 41			66.1	63.8	2.3	N/A	N/A	63	3.1			62.3	3.8			61.4	4.7		
Wall I		1276	Not Est.																	
R7 (1)	Commercial Business West of TH 169			71	70.2	0.8	N/A	N/A	69.9	1.1	N/A	N/A	69.2	1.8			67.2	3.8		
R8 (1)	Commercial Business West of TH 169			72.6	71	1.6	N/A	N/A	68.8	3.8	N/A	N/A	66.6	6	N/A	N/A	64.9	7.7	$510,400	$510,400
R9 (1)	Residential Property West of TH 169			71.7	69.5	2.2	N/A	N/A	68.7	3	N/A	N/A	67.9	3.8			67.5	4.2		

**Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way*

Noise wall cost = (wall height) x (wall length) x ($20 per square foot)

Number in () represents number of impacted receptors

Wall lengths include all end tapers

Benefitted receptor

Table 9 (Continued): Noise Barrier Cost-Effectiveness Study Results (Nighttime L_{10})

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 15' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall J		760	Not Est.																	
R12 (1)	Commercial Business West of TH 169			74.4	69.9	4.5	N/A	N/A	68.1	6.3	N/A	N/A	65.7	8.7	$228,000	$228,000	64.6	9.8	$304,000	$304,000
Wall K		1000	Not Est																	
R22 (1)	Single Family Residence East of TH 169			57.9	57.9	0	N/A	N/A	57.9	0	N/A	N/A	57.4	0.5	N/A	N/A	56.7	1.2	N/A	N/A
Wall L		1873	Not Est.																	
R55 (1)	Single Family Residence West of TH 169			58.7	58.6	0.1	N/A	N/A	57.7	1	N/A	N/A	56	2.7	N/A	N/A	54.7	4	N/A	N/A
R56 (1)	Single Family Residence West of TH 169			56.7	56.6	0.1	N/A	N/A	55.4	1.3	N/A	N/A	53.4	3.3	N/A	N/A	51.7	5	N/A	N/A
Wall M		780	Not Est.																	
R57 (1)	Single Family Residence North of CSAH 14			60	59.6	0.4	N/A	N/A	59.2	0.8	N/A	N/A	58.7	1.3	N/A	N/A	58.4	1.6	N/A	N/A
Wall N		3630	Not Est.																	
R27 (1)	Single Family Residence East of TH 169			58.6	58.5	0.1	N/A	N/A	58.2	0.4	N/A	N/A	57.4	1.2			56.4	2.2		
R28 (1)	Commercial Business East of TH 169			75.9	72.3	3.6	N/A	N/A	70.5	5.4	N/A	N/A	68.6	7.3			67.9	8		
R58 (1)	Single Family Residence East of TH 169			54.2	54.1	0.1	N/A	N/A	54.1	0.1	N/A	N/A	53.8	0.4			52.9	1.3		
R59 (1)	Single Family Residence East of TH 169			54.8	54.8	0	N/A	N/A	54.8	0	N/A	N/A	54.7	0.1			53.9	0.9		
R60 (1)	Single Family Residence East of TH 169			56.9	56.9	0	N/A	N/A	56.9	0	N/A	N/A	56.7	0.2	$1,089,000	$1,089,000	56.2	0.7	$1,452,000	$1,452,000
R61 (1)	Single Family Residence East of TH 169			56.2	56.1	0.1	N/A	N/A	56.1	0.1	N/A	N/A	55.9	0.3			55.3	0.9		
R62 (1)	Single Family Residence East of TH 169			57.6	57.6	0	N/A	N/A	57.5	0.1	N/A	N/A	57.2	0.4			56.3	1.3		
R63 (1)	Single Family Residence East of TH 169			57.3	57.3	0	N/A	N/A	57.1	0.2	N/A	N/A	56.5	0.8			55.5	1.8		
R64 (1)	Single Family Residence East of TH 169			59.1	59	0.1	N/A	N/A	58.7	0.4	N/A	N/A	58	1.1			57.2	1.9		
Wall O			Not Est.																	
R80 (1)	Single Family Residence South of CSAH 78			59.4	N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				N/A - Largest Possible Wall Did Not Reduce Noise By Minimum Amount for Reasonableness/Feasibility				55.6	3.8		
R81 (1)	Single Family Residence South of CSAH 78			60													54	6	N/A	N/A
R82 (1)	Single Family Residence South of CSAH 78			56.8													52.2	4.6		

*Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way

Noise wall cost = (wall height) x (wall length) x ($20 per square foot)

Number in () represents number of impacted receptors

Wall lengths include all end tapers

Benefitted receptor

Table 10: Noise Barrier Cost-Effectiveness Study Results – Trail Receptors (Daytime L_{10})

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 8' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 12' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall P		1060	Not Est.																	
RTRAIL1	Trail Receptor			77.1	72.1	5			69.9	7.2			67.5	9.6			65.6	11.5		
RTRAIL2	Trail Receptor			77.1	72.6	4.5			70.1	7			67.6	9.5			65.2	11.9		
RTRAIL3	Trail Receptor			77.2	71.6	5.6	N/A	N/A	69.4	7.8	$169,600	$33,920	66.8	10.4	$212,000	$42,400	64.6	12.6	$254,400	$50,880
RTRAIL4	Trail Receptor			77.6	71.6	6			69.4	8.2			66.9	10.7			64.9	12.7		
RTRAIL5	Trail Receptor			74.9	70.6	4.3			68.4	6.5			66.3	8.6			65.2	9.7		
Wall Q		830	Not Est.																	
RTRAIL6	Trail Receptor			73.9	69.5	4.4			67.6	6.3			65.8	8.1			64.9	9		
RTRAIL7	Trail Receptor			73.9	68.9	5	N/A	N/A	66.9	7	$132,800	$33,200	64.9	9	$166,000	$41,500	63.4	10.5	$199,200	$49,800
RTRAIL8	Trail Receptor			73	67.6	5.4			65.2	7.8			63.0	10			61.5	11.5		
RTRAIL9	Trail Receptor			72.9	67.7	5.2			65.0	7.9			62.5	10.4			60.9	12		

*Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way
Noise wall cost = (wall height) x (wall length) x ($20 per square foot)
Number in () represents number of impacted receptors
Wall lengths include all end tapers
Benefitted receptor

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 14' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 16' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 18' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall P		1060	Not Est.																	
RTRAIL1	Trail Receptor			77.1	64.4	12.7			63.6	13.5			63.3	13.8			63.1	14		
RTRAIL2	Trail Receptor			77.1	63.5	13.6			62.3	14.8			61.5	15.6			61.2	15.9		
RTRAIL3	Trail Receptor			77.2	63	14.2	$296,800	$59,360	61.9	15.3	$339,200	$67,840	61.3	15.9	$381,600	$76,320	60.9	16.3	$424,000	$84,800
RTRAIL4	Trail Receptor			77.6	63.6	14			62.8	14.8			62.4	15.2			62.2	15.4		
RTRAIL5	Trail Receptor			74.9	64.5	10.4			64.2	10.7			64.0	10.9			63.8	11.1		
Wall Q		830	Not Est.																	
RTRAIL6	Trail Receptor			73.9	64.4	9.5			64.2	9.7			64	9.9			63.9	10		
RTRAIL7	Trail Receptor			73.9	62.4	11.5	$232,400	$58,100	61.8	12.1	$265,600	$66,400	61.5	12.4	$298,800	$74,700	61.4	12.5	$332,000	$83,000
RTRAIL8	Trail Receptor			73	60.4	12.6			59.8	13.2			59.5	13.5			59.3	13.7		
RTRAIL9	Trail Receptor			72.9	59.8	13.1			59.1	13.8			58.8	14.1			58.6	14.3		

*Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way
Noise wall cost = (wall height) x (wall length) x ($20 per square foot)
Number in () represents number of impacted receptors
Wall lengths include all end tapers
Benefitted receptor

Table 11: Noise Barrier Cost-Effectiveness Study Results – Trail Receptors (Nighttime L_{10})

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 6' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 8' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 10' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 12' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall P		1060	Not Est.																	
RTRAIL1	Trail Receptor			76.6	71.4	5.2			69.2	7.4			66.8	9.8			64.9	11.7		
RTRAIL2	Trail Receptor			76.6	71.9	4.7			69.4	7.2			66.8	9.8			64.5	12.1		
RTRAIL3	Trail Receptor			76.7	70.9	5.8	N/A	N/A	68.6	8.1	$169,600	$33,920	66	10.7	$212,000	$42,400	63.8	12.9	$254,400	$50,880
RTRAIL4	Trail Receptor			77.1	70.8	6.3			68.4	8.7			65.9	11.2			64	13.1		
RTRAIL5	Trail Receptor			74.3	69.7	4.6			67.4	6.9			65.3	9			64.0	10.3		
Wall Q		830	Not Est.																	
RTRAIL6	Trail Receptor			71.9	67.6	4.3			65.8	6.1			64.3	7.6			63.6	8.3		
RTRAIL7	Trail Receptor			71.9	66.9	5	N/A	N/A	65.0	6.9	$132,800	$33,200	63.0	8.9	$166,000	$41,500	61.6	10.3	$199,200	$49,800
RTRAIL8	Trail Receptor			71.1	65.6	5.5			63.3	7.8			61.2	9.9			59.7	11.4		
RTRAIL9	Trail Receptor			71	65.7	5.3			63.1	7.9			60.7	10.3			59.1	11.9		

**Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way*
Noise wall cost = (wall height) x (wall length) x ($20 per square foot)
Number in () represents number of impacted receptors
Wall lengths include all end tapers
Benefitted receptor

Receptor	LOCATION	Length of Wall (ft)	*Estimated R/W Cost	Build 2040 No Barrier L_{10}	Build 2040 with 14' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 16' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 18' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor	Build 2040 with 20' Barrier L_{10}	Reduction (in dBA) L_{10}	Total Cost of Noise Barrier	Cost per Benefitted Receptor
Wall P		1060	Not Est.																	
RTRAIL1	Trail Receptor			76.6	63.6	13			62.9	13.7			62.6	14			62.4	14.2		
RTRAIL2	Trail Receptor			76.6	62.7	13.9			61.5	15.1			60.7	15.9			60.3	16.3		
RTRAIL3	Trail Receptor			76.7	62.1	14.6	$296,800	$59,360	61	15.7	$339,200	$67,840	60.4	16.3	$381,600	$76,320	60	16.7	$424,000	$84,800
RTRAIL4	Trail Receptor			77.1	62.6	14.5			61.8	15.3			61.4	15.7			61.2	15.9		
RTRAIL5	Trail Receptor			74.3	63.3	11			62.9	11.4			62.7	11.6			62.6	11.7		
Wall Q		830	Not Est.																	
RTRAIL6	Trail Receptor			71.9	63.1	8.8			62.9	9			62.8	9.1			62.7	9.2		
RTRAIL7	Trail Receptor			71.9	60.7	11.2	$232,400	$58,100	60.3	11.6	$265,600	$66,400	60	11.9	$298,800	$74,700	59.9	12	$332,000	$83,000
RTRAIL8	Trail Receptor			71.1	58.8	12.3			58.2	12.9			57.9	13.2			57.7	13.4		
RTRAIL9	Trail Receptor			71	58.1	12.9			57.5	13.5			57.2	13.8			57	14		

**Note: No cost for utility relocations included, all noise walls to be constructed within MnDOT right-of-way*
Noise wall cost = (wall height) x (wall length) x ($20 per square foot)
Number in () represents number of impacted receptors
Wall lengths include all end tapers
Benefitted receptor

Solicitation Results (Benefited Property Owners and Residents)

Solicitation forms were mailed on September 19, 2016 to the benefited property owner and benefited residents adjacent to the proposed Wall H. A total of 15 solicitation forms were mailed to the benefited property owner and residents. Two public meetings for the proposed noise barrier were held on Thursday, October 6, 2016, at the Jackson Heights Manufactured Home Community. The meeting presented information about the noise evaluation process, the results of noise modeling in the area, and photos of typical noise barriers. The preliminary location of the proposed noise barrier was also marked with stakes and a boom truck was used to help illustrate the height and location of the proposed barrier. Layout maps of the project including the location of the proposed noise barrier were also presented. All printed materials were provided in English and Spanish, and two Spanish language interpreters were in attendance at the meetings. Benefited properties could submit their viewpoint through the mail or at the meetings. Solicitation forms and comments regarding the proposed noise barriers were received through October 21, 2016.

Wall H is located along the south side of TH 41 adjacent to the Jackson Heights Manufactured Home Community. Fifteen (15) benefited properties (the Jackson Heights Manufactured Home Community Owner and 14 manufactured homes) were identified adjacent to Wall H. The total number of possible voting points for Wall H is 84. Solicitation forms were received from 10 of the 15 benefited properties. A total of 74 voting points were in favor of the proposed noise barrier. Zero voting points were received against construction of the proposed noise barrier. A majority (88 percent) of all eligible voting points indicated a preference of "Yes" to construction of a noise barrier along the south side of TH 41 adjacent to the Jackson Heights Manufactured Home Community.

Wall P would be reasonable and feasible according to federal and state guidelines for reducing sound along the proposed trail receptors adjacent to the highway. There are five trail receptors benefitted by Wall P, and as such represent five possible votes. The same applies for Wall Q with four benefitted receptors representing four possible votes. As the owner of TH 41 and the right of way in which the trail and noise wall would be constructed, MnDOT is the official voting authority for the proposed wall along the south side of TH 41 between TH 41 and the proposed trail. As the owner of CSAH 78 and the right of way in which the trail and noise wall would be constructed, Scott County is the official voting authority for the proposed wall along the south side of CSAH 78 between CSAH 78 and the proposed trail. No other benefited receptors were identified for Wall P and Wall Q.

The voting procedure for these trail receptors began on May 23, 2017. Since the proposed trail is part of the County's transportation network, and the trail area contains the only benefitted receptors, MnDOT delegated its authority to vote on a noise barrier for the trail along TH 41 between TH 169 and Dem Con Drive to Scott County. MnDOT officially transferred its votes for Wall P to Scott County on May 30, 2017 (see the attached memo in the Noise Analysis Addendum).

The receptors associated with Wall P and Wall Q (nine total) were included in a combined resolution presented to the Scott County Commissioners. None of the residential receptors previously identified were included in the voting process because they were not identified as benefited receptors for these

walls. The Scott County Commissioners voted unanimously against constructing Walls P and Q as part of Resolution 2017-081 on June 6, 2017.

See the noise analysis addendum for correspondence and other materials related to the solicitation process.

Alternative Noise Abatement

Noise abatement measures, other than noise barriers, were considered for the proposed project. Such measures included traffic control devices, signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, exclusive land use designations, and other methods listed in 23 CFR 772.13c. It was determined that these types of measures would not be feasible or practical for this project. To limit the vehicle types, time of use, and speeds on the roadways would not be consistent with their functions. The existing and proposed land use within the project corridor is consistent with the County's Comprehensive Plan.

Land Use Planning and Traffic Noise

In addition to residential, commercial and industrial sites, WSB also included undeveloped land parcels as receptors in the noise model for planning purposes. This was done to establish potential noise levels in areas that may be developed at a future time. Receptors located on undeveloped land were not considered for noise wall/barrier analysis because it is unknown what standards will be applicable to future conditions. The results of the noise modeling on the undeveloped parcels can be found in **Table 12.**

Table 12 – Projected Noise Levels on Undeveloped Parcels

Receptor	Land Use	Daytime 2040 Build Condition		Nighttime 2040 Build Condition		Distance from Receptor to Primary Noise Source
		L_{10}	L_{50}	L_{10}	L_{50}	
R11*	Undeveloped	69.9	66.2	68.7	64.5	214
R17*	Undeveloped	66.6	63.6	65.3	62	360
R25*	Undeveloped	71.1	64.7	69.7	62.8	244
R26*	Undeveloped	69.7	66.2	68.3	64.7	241
R30*	Undeveloped	71.3	67.4	69.9	65.9	185
R31*	Undeveloped	73.7	61	72	59.2	427
R33*	Undeveloped	66	62.7	64.5	61	433
R35*	Undeveloped	70.1	66.2	68.5	64.5	207
R42*	Undeveloped	67.8	64.8	67.5	64.2	323
R52*	Undeveloped	65.9	62.3	65.2	61.5	224
R53*	Undeveloped	65.8	61.2	65.3	60.6	194
R54*	Undeveloped	68.1	62.8	67.6	62.3	142

* Undeveloped Land, Federal NAC Not Applicable

Receptors in undeveloped parcels range from 142-feet to 433-feet from the primary source of traffic noise. TH 169 is the primary noise source for all receptors except for R52-R54. TH 41 is the primary noise source for receptors R52-R54.

Construction Noise

The construction activities associated with implementation of the proposed project will result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment and pile driving.

Table 13 shows peak noise levels monitored at 50 feet from various types of construction equipment. This equipment is primarily associated with site grading/site preparation, which is generally the roadway construction phase associated with the greatest noise levels.

Table 13 - Typical Construction Equipment Noise Levels at 50 feet

Equipment Type	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

Elevated noise levels are, to a degree, unavoidable for this type of project. The project contract and special provisions will require that construction equipment be properly muffled and in proper working order. Scott County will require contractor(s) to comply with applicable local noise restrictions and ordinances to the extent that is reasonable. Advanced notice will be provided to affected communities of any planned abnormally loud construction activities. It is anticipated that night construction may sometimes be required to minimize traffic impacts and to improve safety. However, construction will be limited to daytime hours as much as possible. This project is expected to be under construction for 18 months. If necessary, a detailed nighttime construction mitigation plan will be developed during the project final design stage.

Any associated high-impact equipment noise, such as pile driving, pavement sawing, or jack hammering, will be unavoidable with construction of the proposed project. Pile-driving noise is associated with any bridge construction and sheet piling necessary for retaining wall construction. While pile-driving equipment results in the highest peak noise level, as shown in **Table 11**, it is limited

in duration to the activities noted above (e.g., bridge construction). The use of pile drivers, jack hammers, and pavement sawing equipment will be prohibited during nighttime hours.

Conclusions

The MnDOT-defined noise impact criterion (an increase of 5 or more dBA over existing levels) is not exceeded during the daytime or nighttime. Federal noise criteria would be approached or exceeded at modeled residential receptors R2, R9, R34, R43–R46, R43A–R45A, R48–R50, R49A–R51A and R55–R64 for the 2040 Build condition. Federal noise criteria would be approached or exceeded at modeled commercial receptors R3, R4, R12, R19, R28 and R40 for the 2040 Build condition. State noise standards were exceeded during either the daytime or nighttime worst noise hours at all modeled receptors listed above during either the no build (2040) or build (2040) scenarios. Receptors RTRAIL1-RTRAIL9 exceeded federal and state noise standards in daytime and nighttime hours.

Receptors R5, R11, R17, R25, R26, R31, R33, R35, R42 and R52–R54 are all undeveloped parcels of land. Receptor R37 is proposed for total acquisition with the proposed improvements.

Noise barriers were considered at 17 locations. The noise barrier cost effectiveness analysis shows that Wall H, Wall P and Wall Q are feasible, meet MnDOT's design reduction goal of at least 7 dBA and cost-effectiveness criteria of $43,500/benefited receptor. Wall H is supported by benefitted receptors based on results of the ballot and voting process. MnDOT transferred their voting rights over to Scott County for Wall P. The Scott County Board of Commissioners voted against construction of Walls P and Q as part of Resolution No. 2017-081.

Noise barrier Wall H is recommended for construction with the proposed improvements. Wall H will be approximately 1,090 feet in length, 20 feet tall, and run along the southwest quadrant of TH 169 and TH 41 providing a barrier to the Jackson Heights Mobile Home Community.

Statement of Likelihood

The traffic noise analysis for the proposed noise barriers described above is based upon preliminary design studies completed to date. Final mitigation decisions will be subject to final design considerations and the viewpoint of benefited residents and property owners. If it subsequently develops during final design that conditions have substantially changed, noise abatement measures may be altered or not be provided. Affected benefited receptors and local officials would be notified of plans to eliminate or substantially modify a noise abatement measure prior to the completion of the final design process. This notification would explain changes in site conditions (if any), additional site information, any design changes implemented during the final design process, and an explanation of noise barrier feasibility and reasonableness. A final decision regarding installation of the proposed abatement measure will be made upon completion of the project’s final design and the public involvement process.

Noise Analysis Addendum

1. **Noise Barrier Meeting Address List (Wall H)**
2. **Mailed Materials – Letter, Solicitation Information, Ballots (Wall H)**
3. **Correspondence and County Resolution for Wall P and Wall Q**

Noise Barrier Solicitation Address List

First Name	Last Name	Company Name	Address Line 1	Address Line 2	City	State	ZIP Code
Rod	Engh	RV Horizons, Inc.	E5306 Hage Lane		Coon Valley	WI	54623
Current	Occupant(s)		Lot 1	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 2	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 3	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 4	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 5	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 6	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 7	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 30	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 32	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 33	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 34	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 35	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 66	12665 Dem Con Drive	Shakopee	MN	55379
Current	Occupant(s)		Lot 67	12665 Dem Con Drive	Shakopee	MN	55379

SCOTT COUNTY COMMUNITY SERVICES DIVISION

PHYSICAL DEVELOPMENT · 600 COUNTRY TRAIL EAST ·JORDAN, MN 55352-9339
(952) 496-8346 · Fax: (952) 496-8365 · www.co.scott.mn.us

TONY WINIECKI
COUNTY ENGINEER

September 19, 2016

Dear Owner/Resident:

Scott County is continuing the concept development for improvements at the US Highway 169, Trunk Highway (TH) 41, and County Highway (CH) 78 intersection, as well as concepts for the frontage road network surrounding the intersection. At this stage, Scott County staff and members of the project team will be meeting with area residents to share results of the noise analysis, and to gather feedback from residents, businesses and property owners on whether a noise barrier will be constructed south of Highway 41.

Please join us to discuss the project with residents of the Jackson Heights neighborhood. Information previously displayed at the open house meetings will be available along with new information about the noise analysis and the potential noise barrier. County staff will be available to discuss the analysis and the potential noise barrier and answer any questions that you have.

Highways 169/41/78 Improvement Project Potential Noise Barrier Meeting
Thursday, October 6, 2016
3:00 pm–4:00 pm and 6:00 pm–7:00 pm (attend either time)
Jackson Heights Neighborhood (under the tent)
12665 Dem Con Drive
Shakopee, MN 55379
Meeting will be outside – please dress accordingly

It is important that you attend this meeting to learn about the potential noise effects associated with the project and provide feedback on whether or not a potential noise barrier will be constructed. A voting ballot and additional information about the potential noise barrier is enclosed. To make sure that your vote is counted, ballots should be completed and mailed to the County by **October 21, 2016**.

If you have any questions related to the project, please contact me at 952-496-8329 or cjenson@co.scott.mn.us.

Sincerely,

Craig Jenson
Hwy 169/41/78 Project Manager
Scott County Highway Department
600 Country Trail East
Jordan, MN 55352
Scott County Highway Department

Cc: Lisa Freese, Scott County

Highways 169/41/78 Intersection Improvement Project
Proposed Noise Barrier

Why you are receiving this information

Scott County recently conducted a noise study at the Highway 169/Highway 41 intersection and determined a noise barrier constructed along the south side of Highway 41 would reduce the traffic noise level at your property, unit or business by at least 5 decibels.

Vote on the proposed noise barrier

Property owners and residents who will experience a 5-decibel reduction in noise as a result of a noise barrier can vote for or against the proposed noise barrier along the south side of Highway 41.

Your vote can make a difference

Cast your vote on the noise wall that affects you by completing the enclosed voting ballot and mailing it back by **October 21, 2016**.

How voting works

You can vote for or against the noise barrier that affects your property, unit or business. MnDOT uses a weighted voting system to ensure residents and property owners are given appropriate influence on the outcome of the noise barrier. How much you influence the outcome of the noise barrier is based on how much your property/unit is affected by the noise barrier and whether or not you own the property/unit.

Proximity to Noise Barrier	Points Awarded		
	Resident	Owner	Both
Property/unit is immediately adjacent to the noise barrier	2	4	6
Property/unit is not immediately adjacent to the noise barrier	1	2	3

Only the units in apartments/multi-family residential buildings that receive a 5 decibel reduction of noise get to vote. Businesses, churches and schools receive a vote equal to that of a property owner. The table above is an example of the voting system. Please see MnDOT's Noise Policy for additional information about the voting process: http://www.dot.state.mn.us/environment/noise/pdf/mndot-2015-noise-policy.pdf

If 50 percent or more of all possible voting points from eligible voters are received after the first request for votes, the majority of points (based upon the votes received) determine the outcome of the noise barrier. If less than 50 percent of the possible voting points for a wall are received after the first request, a second ballot will be mailed to the eligible voters who did not respond.

If 25 percent or more of all possible points for a barrier are received after the second request for votes, then the outcome is determined by the majority of votes received. If less than 25 percent of total possible points for a noise barrier are received after the second request for votes, then the barrier will NOT be constructed. If there is a tie, where there are equal numbers of points for and against a noise barrier, the noise barrier WILL be constructed.

Upcoming public meeting

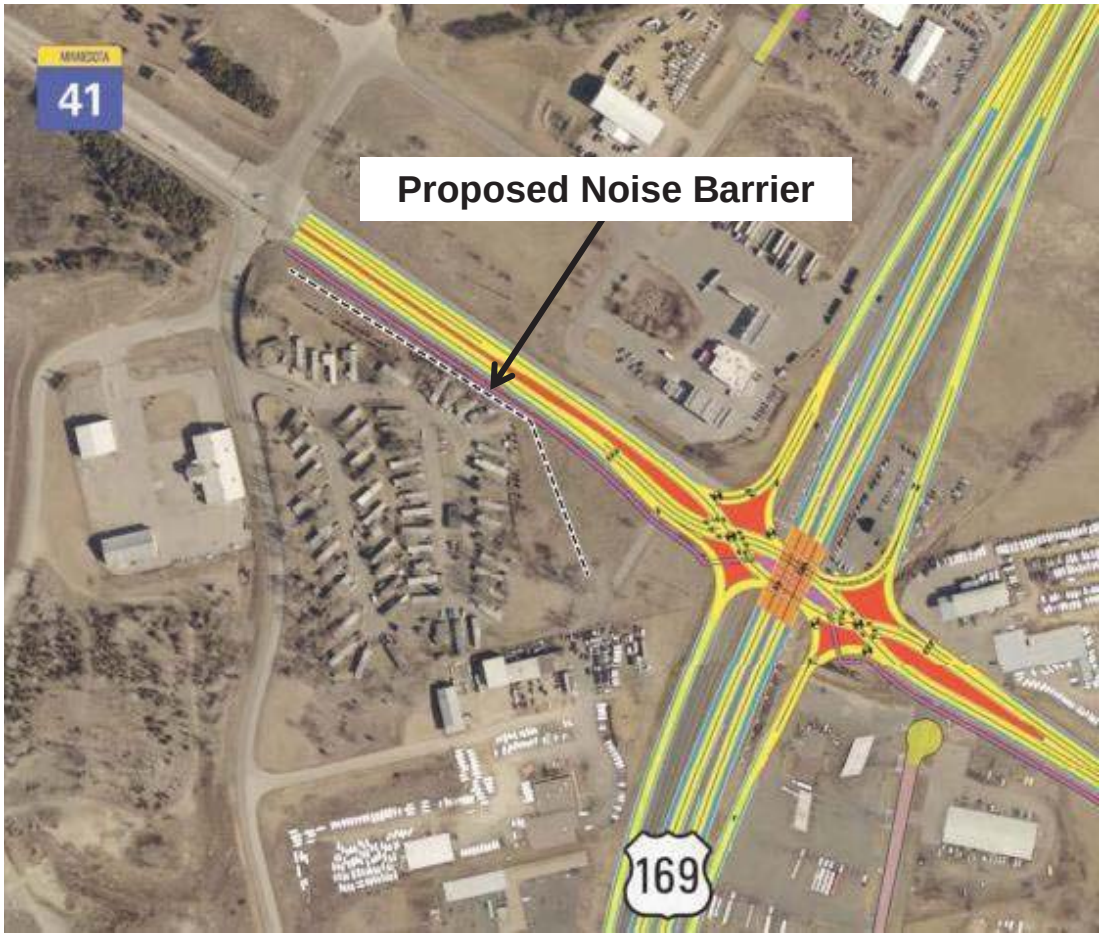
Thursday, October 6, 2016
3:00 - 4:00 PM and 6:00 - 7:00 PM (attend either time)
Jackson Heights Neighborhood (under the tent)
12665 Dem Con Drive, Shakopee
Meeting will be outside – please dress accordingly

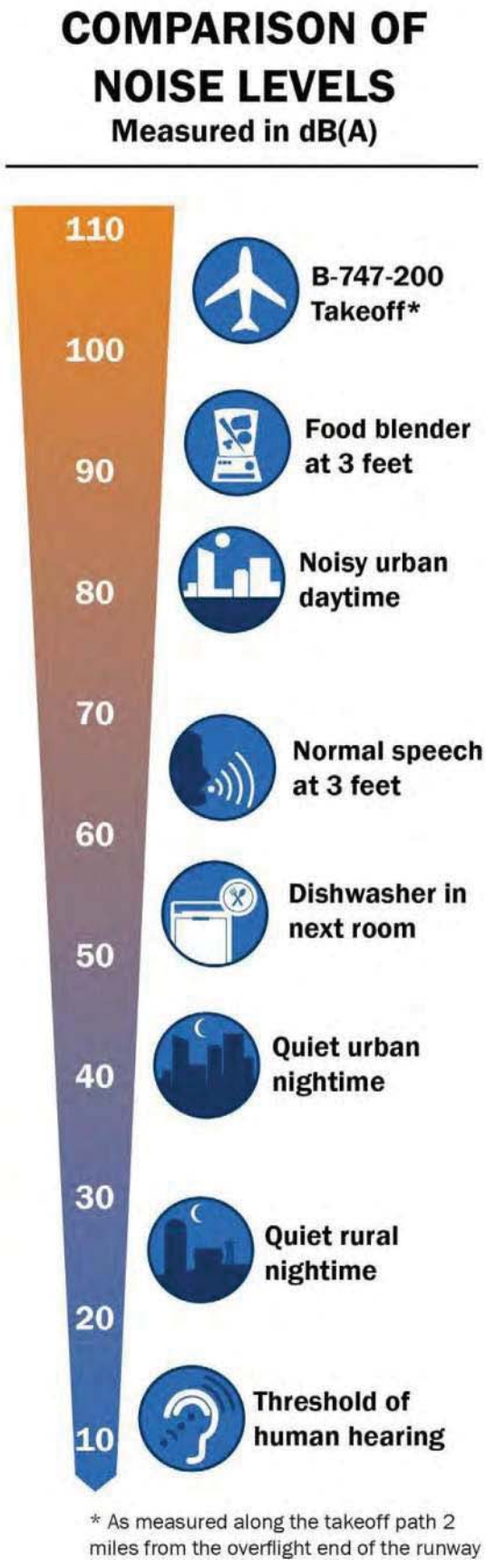
What will the noise barrier look like? The noise barriers will be 20 feet tall, built with wood planks and concrete posts. The visuals below are based on the information available as of September 2016 and should not be interpreted as an exact design of this project.

Typical noise barrier under construction

Typical noise barrier after completion

Map showing proposed barrier location along with project location





Frequently-Asked Questions

Why are noise barriers being proposed as part of the Highways 169/41/78 Intersection Improvement Project?

Scott County conducted a noise study at the Highway 169/ Highway 41 intersection to determine if noise barriers would reduce the level of noise in the community adjacent to the project. Currently, traffic noise along Highway 41 exceeds the state's noise standards and a noise barrier would reduce the noise levels at certain locations in the community by at least 5 decibels. Scott County is required to comply with the noise limit requirements set by the State of Minnesota (Rules Chapter 7030) and the Federal Highway Administration (23 Code of Federal Regulations 772).

Studies have shown that changes in noise levels of less than 3 decibels are not typically noticeable by the average human ear. An increase of 5 decibels is generally noticeable by anyone, and a 10-decibel increase is usually "twice as loud."

Why does Scott County conduct noise studies?

Scott County assesses existing noise levels and predicts the future noise levels and noise impacts of the proposed project. If noise impacts are identified, Scott County is required to consider noise mitigation measures, such as installing noise barriers. All traffic noise studies and analyses must follow the requirements established by federal law, Federal Highway Administration Noise Abatement Criteria, Minnesota Pollution Control Agency State Noise Standards, and MnDOT's Noise Policy and noise analysis guidance.

How does Scott County determine if a noise barrier is needed?

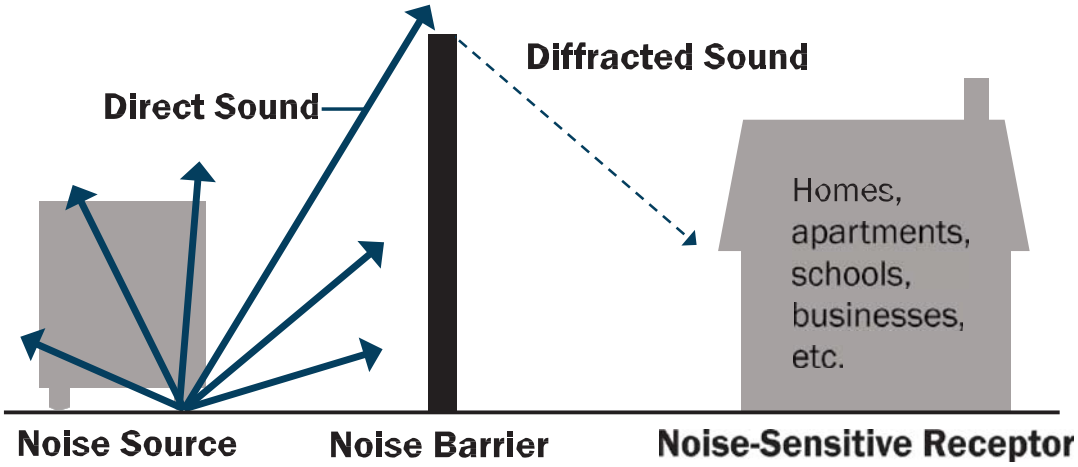
Constructing a noise wall must be feasible and reasonable. Feasibility and reasonableness are determined by cost, amount of noise reduction, safety and site considerations. Noise mitigation is not automatically provided where noise impacts have been identified. Decisions about noise mitigation are made on an individual case.

When will the noise barrier be installed?

The noise wall would be installed as part of the overall construction project, which is anticipated to begin in 2018.

How do noise barriers reduce noise?

Noise barriers do not eliminate all noise. Noise barriers reduce noise by blocking the direct path of sound waves to a home or business. **To be considered effective, a noise barrier must reduce noise levels by at least 5 decibels.**



Can noise levels increase as sound waves pass over a noise barrier?

No, noise levels do not increase as sound waves pass over a barrier. Noise levels are reduced the further the sound waves travel.

Could trees be planted to block traffic noise?

There is not enough space to plant the amount of and size of trees needed to reduce traffic noise. To effectively reduce traffic noise there needs to be room for at least 100 feet of dense evergreen trees that are 15 feet tall or more. Additionally, if trees are used to reduce traffic noise, they need to be maintained. Scott County lacks the necessary resources to maintain trees or other vegetation.

How is the location and height of the noise barrier determined?

Scott County studied various location options to determine the height, length and location which provides the greatest level of noise reduction.

Do noise barriers affect property values?

There have not been any studies that link property values to the presence of noise barriers.

Where can I find more information about the project?

Visit Scott County's project website at:

https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro

DIVISIÓN DE SERVICIOS PARA LA COMUNIDAD
DEL CONDADO DE SCOTT

DESARROLLO FÍSTICO · 600 COUNTRY TRAIL EAST ·JORDAN, MN 55352-9339
(952) 496-8346 · Fax: (952) 496-8365 · www.co.scott.mn.us

TONY WINIECKI
INGENIERO DEL CONDADO

19 de Septiembre, 2016

Estimado propietario/residente:

El condado de Scott continúa con el concepto del desarrollo de mejoras en la Autopista US 169, Troncal de la Carretera (TH) 41, y la intersección de la Autopista del Condado (CH) 78, así como también los conceptos para el tramo de la fachada de la red que rodea la intersección. En esta etapa, el personal del condado de Scott y los miembros del equipo del proyecto se reunirá con los residentes del área para compartir resultados de los análisis de ruido y recopilar comentarios de residentes, empresas y dueños de propiedades sobre si se construirá una barrera de ruido al sur de la Carretera 41.

Por favor únase a nosotros para discutir sobre el proyecto con los residentes del vecindario Jackson Heights. La información antes mostrada en las reuniones de casa abierta estará disponible junto con nueva información sobre el análisis de ruido y la potencial barrera de ruido. El personal del condado estará disponible para discutir sobre el análisis y la potencial barrera de sonido y para responder cualquier pregunta que usted tenga.

Proyecto de mejora TH 169/TH 41/CH 78
Reunión por la potencial barrera de ruido
Jueves, 6 de Octubre, 2016
3:00 pm–4:00 pm and 6:00 pm–7:00 pm (asistir a cualquier hora)
Del Vecindario Jackson Heights (bajo la carpa)
12665 Dem Con Drive
Shakopee, MN 55379
La reunión será afuera – por favor, vestirse acorde

Es importante que usted asista a esta reunión para conocer sobre los efectos potenciales del ruido asociados con el proyecto y proporcionar información sobre si se construirá una potencial barrera de ruido. Se incluye una boleta de votación e información adicional sobre la potencial barrera de ruido. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del 21 de octubre de 2016).

Si tiene cualquier pregunta relacionada al Proyecto, por favor contácteme al 952-496-8329 o cjenson@co.scott.mn.us.

Atentamente,

Craig Jenson
Director del Proyecto Hwy 169/41/78
Departamento de Autopistas del Condado de Scott

Cc: Lisa Freese, Condado de Scott

Mejoras de Interseccion de Autopistas 169/41/78
Barrera de ruido propuesta

Por qué usted está recibiendo esta información

El Condado de Scott recientemente realizó un estudio de ruido en la intersección Autopista 169/Autopista 41 y determinó que una barrera de ruido construida a lo largo del lado sur de la Autopista 41 reduciría el nivel de ruido de tráfico en su propiedad, unidad o negocio por menos de 5 decibelios.

Votar por la barrera de ruido propuesta

Los dueños de propiedades y residentes que experimentarán una reducción de 5 decibelios de ruido como consecuencia de una barrera de ruido pueden votar a favor o en contra de la barrera de ruido propuesta a lo largo de la parte sur de la Autopista 41.

Cómo funciona la votación

Usted puede votar a favor o en contra de la barrera de ruido que afecta a su propiedad, unidad o empresa. MnDOT utiliza un sistema de voto ponderado para asegurar que los residentes y dueños de propiedades reciban la influencia adecuada sobre el resultado de la barrera del ruido. Cuánto usted influye en el resultado de la barrera de ruido se basa en cuánto su unidad/propiedad se ve afectada por la barrera de ruido sin importar si usted es dueño o no de la unidad/propiedad.

Proximidad a la barrera de ruido	Puntos concedidos		
	Residente	Propietario	Ambos
La unidad/propiedad está inmediatamente adyacente a la barrera de ruido	2	4	6
La unidad/propiedad no está inmediatamente adyacente a la barrera de ruido	1	2	3

Sólo las unidades de apartamentos/edificios residenciales multifamiliares que reciben una reducción de 5 decibelios de ruido pueden votar. Les empresas, las iglesias y las escuelas reciben un voto igual a la de un dueño. La tabla anterior es un ejemplo del sistema de votación. Por favor vea la política de ruido de MnDOT para obtener más información sobre el proceso de votación: http://www.dot.state.mn.us/environment/noise/pdf/mndot-2015-noise-policy.pdf

Si recibieron el 50 por ciento o más de todos los puntos posibles de votos de los electores después de la primera solicitud de votos, la mayoría de los puntos (basado en los votos que recibió) determina el resultado de la barrera del ruido. Si se reciben menos de 50 por ciento de la posible votación de puntos para una barrera después de la primera solicitud, se enviará una segunda votación a los votantes elegibles que no respondieron.

Si recibieron el 25 por ciento o más de todos los puntos posibles para una barrera después de la segunda solicitud de votos, el resultado es determinado por la mayoría de los votos recibidos. Si se reciben menos del 25 por ciento del total de puntos posibles para una barrera de ruido después de la segunda solicitud de votos, entonces la barrera no se construirá. Si hay un empate, donde hay igual número de puntos para y contra una barrera de ruido, se construirá la barrera del ruido.

Próxima reunión pública

Jueves, 6 de Octubre, 2016
3:00 - 4:00 PM e 6:00 - 7:00 PM (asistir a cualquier hora)
Del Vecindario Jackson Heights (bajo la carpa)
12665 Dem Con Drive, Shakopee
La reunión será afuera – por favor, vestirse acorde

¿Cómo se verán las barreras de ruido?

Las barreras de ruido serán de 20 pies de altura, construidas con tablones de madera y postes de hormigón. Las imágenes a continuación se basan en la información disponible a partir de septiembre de 2016 y no deben interpretarse como un diseño exacto de este proyecto.

Barrera de ruido típica en construcción

Barrera de ruido típica después de la terminación

Mapa de ubicación de la barrera propuesta junto con la ubicación del proyecto

Comparación de niveles de ruido dB(A)

* Según la medida a lo largo de la trayectoria de despegue a 2 millas desde el extremo del sobrevuelo de la pista

Preguntas más frecuentes

¿Por qué se proponen barreras de sonido como parte del proyecto de mejoras de la intersección de las carreteras 169/41/78?

El Condado de Scott realizó un estudio de ruido en la intersección Autopista 169/Autopista 41 para determinar si las barreras de ruido reducirían el nivel de ruido en la comunidad adyacente al proyecto. Actualmente, el ruido del tráfico a lo largo de la Autopista 41 excede los estándares del estado del ruido y una barrera de ruido reduciría los niveles de ruido en ciertos lugares de la comunidad por al menos 5 decibelios. El Condado de Scott necesita cumplir con los requisitos de límite de ruido establecidos por el estado de Minnesota (reglas capítulo 7030) y la Administración Federal de carreteras (23 código de regulaciones federales 772).

Estudios han demostrado que cambios en los niveles de ruido de menos de 3 decibelios no son típicamente perceptibles por el oído humano promedio. Un aumento de 5 decibelios es generalmente sensible por cualquier persona, y un aumento de 10 decibelios es generalmente "el doble de fuerte."

¿Por qué el Condado de Scott realiza estudios de ruido?

El condado de Scott evalúa los niveles de ruido existentes y predice los niveles de ruido futuros y los impactos de ruido del proyecto propuesto. Si se identifican impactos de ruido, el Condado de Scott debe considerar medidas de mitigación del ruido, como la instalación de barreras de ruido. Todos los estudios y análisis del ruido del tráfico deben cumplir los requisitos establecidos por la ley federal, criterios de reducción de ruido de la administración carretera federales, Estándares de ruido estatales de la agencia de control de contaminación de Minnessota y de las políticas de ruido y guía del análisis de ruido de MnDOT.

¿Cómo MnDOT determina si es necesaria una barrera de ruido?

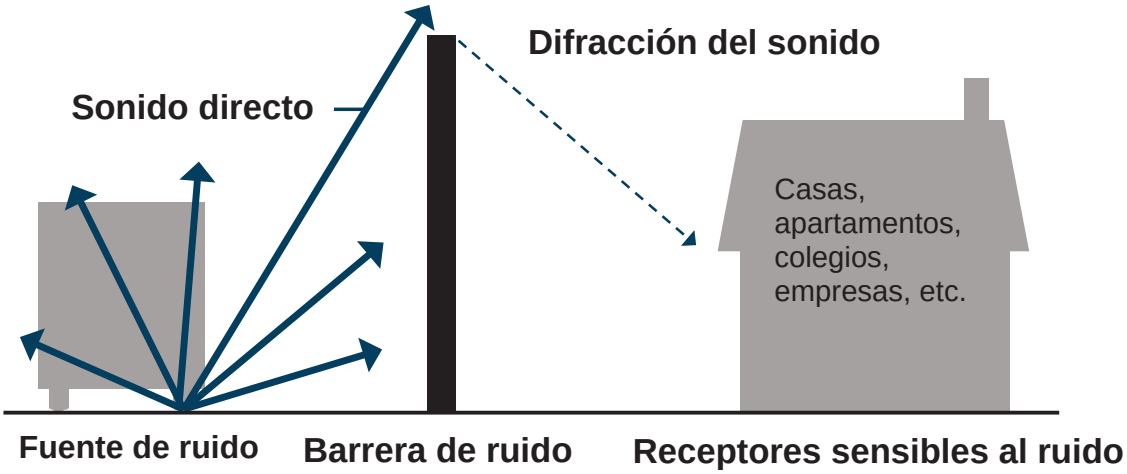
La construcción de una barrera de ruido debe ser razonable y factible. La factibilidad y racionalidad están determinados por el costo, cantidad de consideraciones de sitio, seguridad y la reducción de ruido. La mitigación del ruido no se proporciona automáticamente donde se han identificado impactos de ruido. Se toman las decisiones sobre mitigación de ruido en un caso individual.

¿Cuándo se instalará la barrera del ruido?

La barrera de ruido se instalaría como parte del proyecto global de construcción, que se prevé que comience en el 2018.

¿Cómo reducen el ruido las barreras de ruido?

Las barreras de ruido no eliminan todos los ruidos. Las barreras de ruido reducen el ruido mediante el bloqueo de la ruta directa de las ondas sonoras en un hogar o negocio. **Para ser considerado eficaz, una barrera de ruido debe reducir los niveles de ruido por al menos 5 decibelios.**



¿Pueden aumentar los niveles de ruido a medida que las ondas sonoras pasan sobre una barrera de ruido?

No, los niveles de ruido no incrementan las ondas de sonido que pasan sobre una barrera. Los niveles de ruido se reducen cuanto más lejos viajan las ondas sonoras.

¿Podrían plantarse árboles para bloquear el ruido del tráfico?

No hay suficiente espacio para plantar la cantidad de árboles necesarios para reducir el ruido del tráfico. Para reducir eficazmente el ruido del tráfico es necesario que haya espacio para por lo menos 100 pies de árboles de hoja perenne densa que tengan 15 pies de altura o más. Además, si los árboles se utilizan para reducir el ruido del tráfico, éstos deben tener un mantenimiento. El Condado de Scott carece de los recursos necesarios para mantener árboles u otra vegetación.

¿Cómo es la situación de la barrera de ruido determinada?

El Condado de Scott estudió varias opciones de ubicación para determinar la altura, longitud y localización que proporciona el mayor nivel de reducción de ruido.

¿Las barreras acústicas afectan los valores de la propiedad?

No han habido estudios que vinculan los valores de propiedad con la presencia de barreras de ruido.

¿Dónde puedo encontrar más información sobre el proyecto?

Visite el sitio web del proyecto del Condado de Scott en **https://www.scottcountymn.gov/608/US-169-TH-41CH-78-Interchange-Design-Pro**

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) _**X**__ Resident (Residente) ____ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 1, 2, 3, 4, 5, 6, 7, 30, 32, 33, 34, 35, 66, 67 (covers multiple units)

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 1

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 2

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 3

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 4

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 5

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 6

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 7

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 30

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 32

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 33

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 34

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 35

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 66

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

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Noise Barrier Ballot
Votación por una barrera de ruido

Highways 169/41/78 Intersection Improvements
Mejoras de Interseccion de Autopistas 169/41/78

Owner (Propietario) ____ Resident (Residente) __**X**__ Owner/Resident (Propietario/Residente) _____

Unit (Unidad) 67

Address (Direccion) 12665 Dem Con Drive

City, State (Estado de la ciudad) Shakopee, MN

Please mark with an "X" one of the boxes below:
Por favor, marque con una "X" una de las casillas a continuación:

Yes, I want the noise barrier
Sí, quiero la barrera de ruido ☐

No, I do not want the noise barrier
No, no quiero la barrera de ruido ☐

By submitting this ballot, the voter acknowledges that this vote represents the owner's selection or the consensus selection of the owners or all of the residents. To make sure that your vote is counted, ballots should be completed and mailed back to the County (postmarked by **October 21, 2016**).

Al entregar esta boleta, el elector reconoce que esta votación representa la elección del dueño o el consenso de los propietarios o la totalidad de los residentes. Para asegurarse de que su voto se cuenta, las papeletas deben completarse y enviarse por correo al condado (matasellado antes del **21 de octubre de 2016**).

Metro District
1500 W. Co Rd B2
Roseville, MN 55113

Memo

To: **Ms. Lisa Freese**
Transportation Planning and Programming Director

From: **Jon P. Solberg**
South Area Manager

Date: **May 30, 2017**

RE: Noise Wall Voting Delegation

As part of the TH 169 TIGER Project – which includes the conversion of the existing at-grade intersection of TH 169 and TH 41/CSAH 78 to an interchange – it has been determined that a noise wall along TH 41 would be reasonable and feasible according to federal and state guidelines for reducing sound along the proposed trail adjacent to the highway. As the owner of TH 41, MnDOT and the right of way in which the trail and noise wall would be constructed, MnDOT is the official voting authority for the proposed wall along the south side of TH 41 between TH 41 and the proposed trail.

Since the proposed trail is part of the county's transportation network, and the trail area contains the only benefitted receptors, MnDOT is delegating its authority to vote on a noise barrier for the trail along TH 41 between TH 169 and Dem Con Drive to Scott County.

BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA

Date:	June 6, 2017
Resolution No.:	2017-081
Motion by Commissioner:	Beard
Seconded by Commissioner:	Weckman Brekke

RESOLUTION NO. 2017-081; REJECTING CONSTRUCTION OF NOISE WALLS P AND Q ALONG TRUNK HIGHWAY 41 AND COUNTY HIGHWAY 78

WHEREAS, the County is cooperatively working with the Minnesota Department of Transportation and the Federal Highway Administration on the design and environmental documentation for the Trunk Highway 169 Freight Mobility project; and

WHEREAS, Minnesota State Law requires that trunk highway improvements have a noise analysis completed which uses an established formula comparing the cost of a noise wall to the reduction in decibels achieved by constructing the noise wall; and

WHEREAS, a noise wall evaluation for trail locations adjacent to County property and Minnesota Department of Transportation property identified a noise wall would be economically beneficial to install; and

WHEREAS, Noise Walls P and Q would be constructed only for trail purpose along both Trunk Highway 41 and County Highway 78; and

WHEREAS, a noise wall for a trail would reduce visibility of adjacent businesses while creating a public safety concern of trail users being hidden from the adjacent highways or confined between two noise walls; and

WHEREAS, each property owner adjacent to the noise wall is eligible to vote Yes to construct or No to not construct a wall. The County and the Minnesota Department of Transportation are the only eligible voters, and the Department has assigned their vote to the County.

NOW THEREFORE BE IT RESOLVED that the Scott County Board of Commissioners hereby rejects construction of noise walls for trail purpose along Trunk Highway 41 and County Highway 78 and casts a No vote for Walls P and Q.

COMMISSIONERS	VOTE			
Weckman Brekke	☑ Yes	☐ No	☐ Absent	☐ Abstain
Wolf	☑ Yes	☐ No	☐ Absent	☐ Abstain
Beard	☑ Yes	☐ No	☐ Absent	☐ Abstain
Beer	☑ Yes	☐ No	☐ Absent	☐ Abstain
Ulrich	☑ Yes	☐ No	☐ Absent	☐ Abstain

State of Minnesota)
County of Scott)

I, Gary L. Shelton, duly appointed qualified County Administrator for the County of Scott, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Scott County, Minnesota, at their session held on the 6th day of June, 2017 now on file in my office, and have found the same to be a true and correct copy thereof.

Witness my hand and official seal at Shakopee, Minnesota, this 6th day of June, 2017.

County Administrator

Administrator's Designee

APPENDIX E – Updated Studies/Memoranda – Floodplains (Original Attachment F to the EAW)

FLOODPLAIN ASSESSMENT

FLOODPLAIN ENCROACHMENT		
Floodplain	**Type of Encroachment**	**Length, ft**
Picha Creek: 100-year	Transverse (Location K, TH 169 Existing Bridge 8829)	150
Picha Creek: 100-year	Transverse (Location M, Railroad Spur Culverts)	75

**See figure for location*

TRANSVERSE or LONGITUDINAL ENCROACHMENT

1. There is no significant potential for interruption of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

   a. Is the roadway grade above the 100 year flood elevation? **NO**

Location of Crossing	Roadway Elevation	100 year flood elevation
TH 169 Existing Bridge 8829	747.6	747.7
Union Pacific Railroad Spur Culverts	747.4 (Railroad Elevation)	744.2

   NO Frequency of overtopping **100-Year**
   Reason(s) why roadway grade will not be raised: **No overtopping for the design event (50-year)**
   Are there reasonable alternative routes available that are above the 100 year flood elevations? **YES**

   b. If the 100 year flood elevation is not known, does roadway have a history of overtopping?
   YES Reference and length of record **2014**
   YES Discuss correcting deficiency **Proposed culverts will be enlarged to address existing overtopping concern**

   c. Describe how emergency services will be maintained during construction: **Emergency vehicles will continue to have access via the existing roadways**

2. There is no significant impact on natural and beneficial floodplain values.

   a. Impacts:

	Beneficial Impacts	Adverse Impacts
Fisheries	None	**N**
Wetlands	N	**N**
Plants	N	**N**
Open Space/Aesthetics	N	**N**
Public Access (boat/canoe)	N	**N**
Channel Changes	N	**N**
Boat Passage	N	**N**
Threatened/ Endangered Species	N	**N**
Water Quality	N	**N**
Other	N	**N**

   b. Minimization/Mitigation Measures: Wetland impacts due to the project will be mitigated. Water quality best management practices will be provided for the project impervious.

   Project will be in compliance with all permit requirements, including NPDES, SWPPP, Minnesota DNR, and US Army Corps of Engineers.

3. There is no significant increased risk of flooding.

   a. Does the project result in any headwater or tailwater elevations that would endanger life or property? **NO**

      Stage Increase **Net Reduction in Stage**

   b. Are there any special hydraulic features? What is their purpose? **N/A**

4. The project will not support and/or result in incompatible floodplain development.

   Reason(s) why project will not cause incompatible floodplain development:

   The project includes replacement of two existing under capacity culverts. The two proposed culverts are needed for safe access of the railroad spur and TH 169 and to reduce the frequency of overtopping.

COORDINATION

Multiple permits will be required for the project, below is a list of the anticipated permits necessary:

- Minnesota Pollution Control Agency Phase II NPDES CSW permit
- Minnesota Pollution Control Agency Section 401 Certification
- Minnesota Department of Natural Resources License to Cross
- Minnesota Department of Natural Resources Construction Dewatering (if necessary)
- US Army Corps of Engineers Section 404 Permit (GP-004)
- Wetland Conservation Act Replacement Plan
- Scott County Watershed Management Organization

CONCLUDING STATEMENT

Based on the above assessment, no significant floodplain impacts are expected.

PRELIMINARY (30 PERCENT) DRAINAGE DESIGN REPORT

Trunk Highway 169 / CSAH 14 Overpass Project
Picha Creek Analysis
Louisville Township, Scott County, Minnesota

Prepared For:

Scott County, Minnesota

May 22, 2017

Prepared By:

WSB & Associates, Inc.
701 Xenia Avenue S., Suite 300
Minneapolis, MN 55416
(763) 541-4800
(763) 541-1700 (Fax)

I. PICHA CREEK FLOODING ANALYSIS

Picha Creek analysis was initiated due to past overtopping of TH 169 and the proximity to the project area. The location is shown on attached **Figure 1, Appendix A**. Picha Creek flows through a series of culverts shown on **Figure 2**, traveling from upstream to downstream, under TH 169 (Bridge 8829), old TH 169 alignment, and then Union Pacific Railroad Spur. There is approximately 15 square miles (9,461 acres) tributary to Picha Creek. The purpose of the analysis is to determine the flood extents and potential options for addressing the road overtopping.

A portion of Picha Creek is designated FEMA Zone A floodplain (**Appendix C**). The Zone A designation indicates the elevation is approximate. Both the DNR and FEMA were contacted to verify if modeling was available. Both agencies indicated that no modeling was available for this portion of the creek. Therefore, it was necessary to generate a model of the area of concern.

I.1 StreamStats

The USGS's StreamStats program was used to calculate peak flows for the Picha Creek subwatershed due to its large size. StreamStats estimates streamflow statistics for ungaged sites based on a delineated drainage basin and USGS-developed regression equations. Flows per unit area from gaging stations near the ungaged site are applied to the drainage area for the ungaged site. The StreamStats output, including drainage areas and peak flow statistics, are in **Appendix B**.

Table 1 lists the peak discharge rates for the Picha Creek subwatershed measured at the upstream side of the TH 169 culverts.

Table 1 – Picha Creek Discharge Rates

Storm Event	2-year	10-year	50-year	100-year
Discharge Rate (cfs)	226	634	1,150	1,420

I.2 Hydraulic Analysis

A HEC-RAS model of Picha Creek was created using HEC-RAS version 4.0. The study area is shown in **Figure 1**. The cross-sections were cut based on LiDAR information and adjusted at surveyed culverts (August 8, 2016, WSB). The survey information for the existing culverts is shown on **Figure 2**. All the existing culverts between TH 169 and the Railroad bridge were included in the model.

Results

The existing conditions modeling results for the 50- and 100-year storms are provided in **Table 2**.

Table 2: Existing Conditions Modeling Results

Culvert ID	Water Surface Elevation[1]		Overflow Elevation	Culvert Open Area (SF)
	100-Year	50-Year		
2&3 (RR Spur culverts)	748.3	748.1	747.4	77
4 (Old TH 169 culvert)	748.3	748.1	744.8	80
5&6 (TH169 culverts)	749.0	748.7	Shoulder Elevation 746.7[2] Centerline 747.6[2]	120

[1]Measured at the upstream side of the culvert.

[2] Measured at the low point of TH 169, located north of 150th Street

The following summarizes the key findings for existing conditions:

- MnDOT Hydraulic Guidance for the minimum overtopping frequency is the 50-year event for TH 169, based on the ADT. There is approximately 2.0-feet of water (measured at the shoulder) over TH 169 for the 50-year event.
- Based on the modeling, overtopping occurs starting at the 10-year event.
- The 50-year event also overtops old TH 169 and the Union Pacific Railroad Spur.
- The 50-year high water level extends north into the project area.

The Minnesota River is downstream of Picha Creek. The FIRM panel (**Appendix C**) shows a Minnesota River floodplain elevation of 725 near where Picha Creek discharges to the river. It was therefore assumed that the tailwater from the river does not impact the high water levels in Picha Creek.

It is important to note that the modeling assumes that the culverts are not blocked by sediment or debris. A significant amount of sediment load from the upstream tributary area deposits at the entrance to this series of culverts which would impact the capacity.

Proposed Improvements

The following modifications are needed in order to meet MnDOT criteria and eliminate TH169 overtopping for the 50-year event:

- Replace TH 169 culverts with dual 14’ x 7’ box culverts
- Replace Union Pacific Railroad Spur with dual 14’ x 7’ box culverts

Table 3 lists the existing and proposed floodplain elevations.

Table 3 – Proposed Conditions Modeling Results

Culvert ID	100-year Floodplain Elevation		50-year Floodplain Elevation	
	Existing	Proposed	Existing	Proposed
2&3 (RR Spur culverts)	748.3	744.2	748.1	743.7
4 (old TH 169 culvert)	748.3	N/A	748.1	N/A
5&6 (TH169 culverts)	749.0	747.7	748.7	746.1

The existing bridge under the mainline Union Pacific Railroad is included in the HECRAS model. This bridge is sufficient to pass the proposed flow without any modifications. The Smith Road and old TH 169 culverts are not proposed to be replaced because the overtopping elevation of these culverts is low and does not cause a restriction upstream.

The culvert replacements will require permits and/or coordination with the following agencies:

- Picha Creek is a public waterbody and a permit will be required from the Department of Natural Resources (DNR).
- The proposed culverts are classified as a bridge and will require MnDOT review. The preliminary Hydraulic Assessments are included in **Appendix D**.
- Coordination with the Union Pacific Railroad for work within their right-of-way
- Coordination with the DNR and Scott County WMO on the reduction in the floodplain elevation and increase in peak discharge downstream.

The following justifications are provided for the increase in discharge rate:

1. The Minnesota River and Louisville Swamp are immediately downstream of the project. The increase in peak discharge is negligible in comparison to the flow in the river.
2. There are no properties downstream that are impacted
3. There is no increase in the channel velocity downstream of the railroad culverts.
4. The culvert replacement resolves existing significant flood issues for TH 169, Union Pacific Railroad Spur and multiple properties adjacent to the low point of TH 169.

Appendix A
Figures

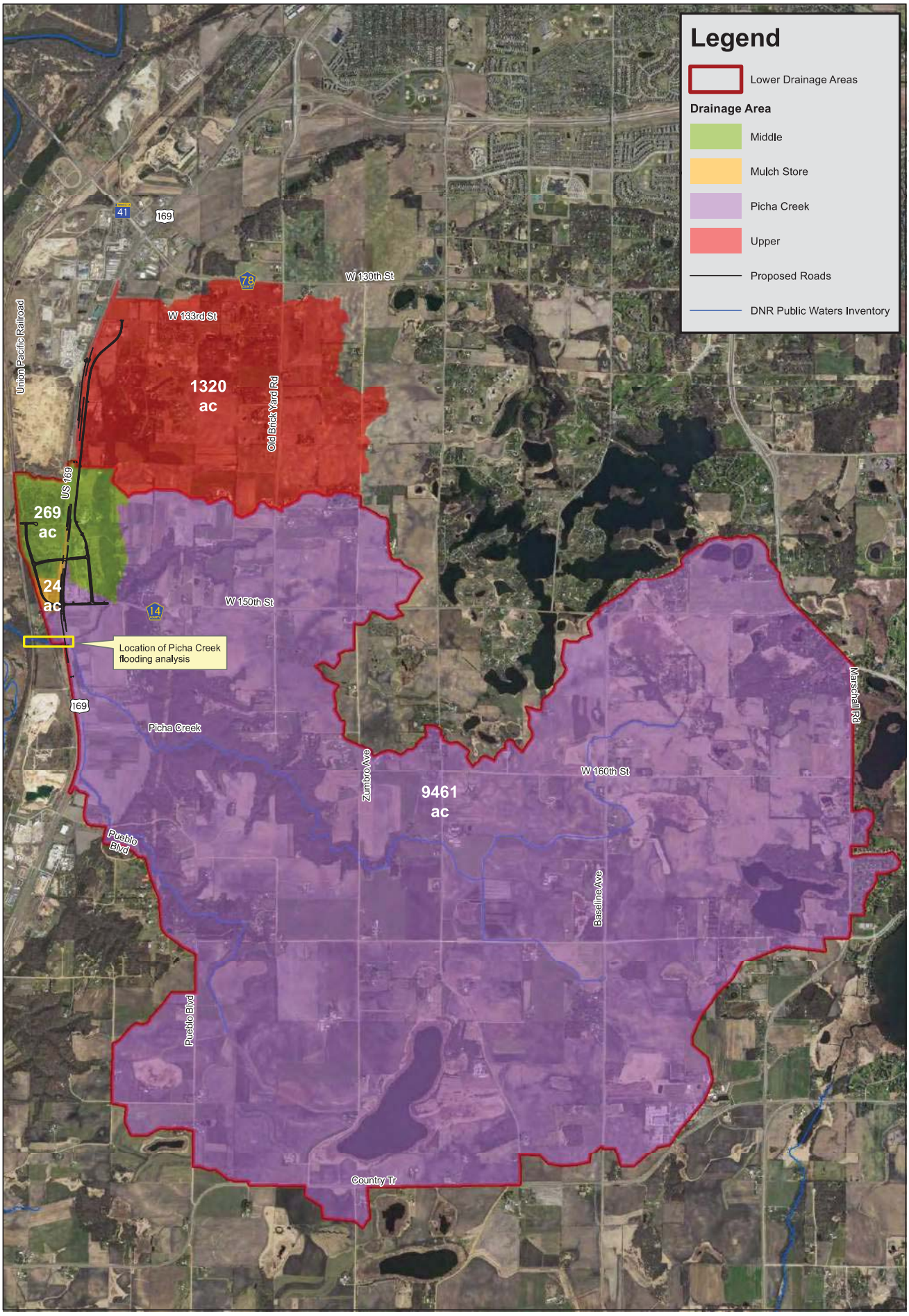


Figure 1: Drainage Area Map

Trunk Highway 169 / CSAH 14 Over Pass Project
Scott County, MN

0 1,400 2,800 Feet

N

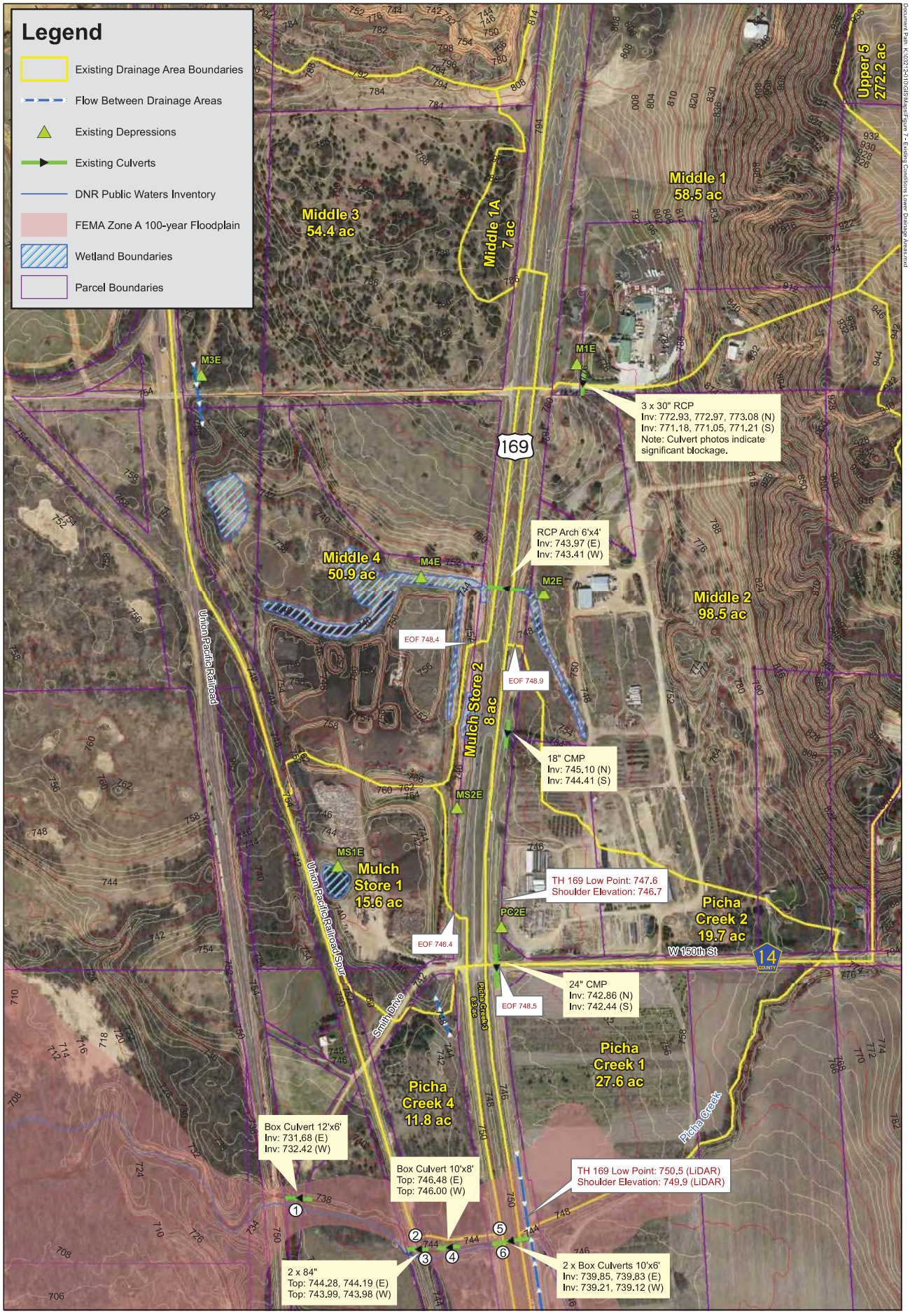


Figure 2: Existing Conditions Lower Drainage Areas

Trunk Highway 169 / CSAH 14 Overpass Project
Scott County, MN

0 200 400 Feet

N

Scott

WSB

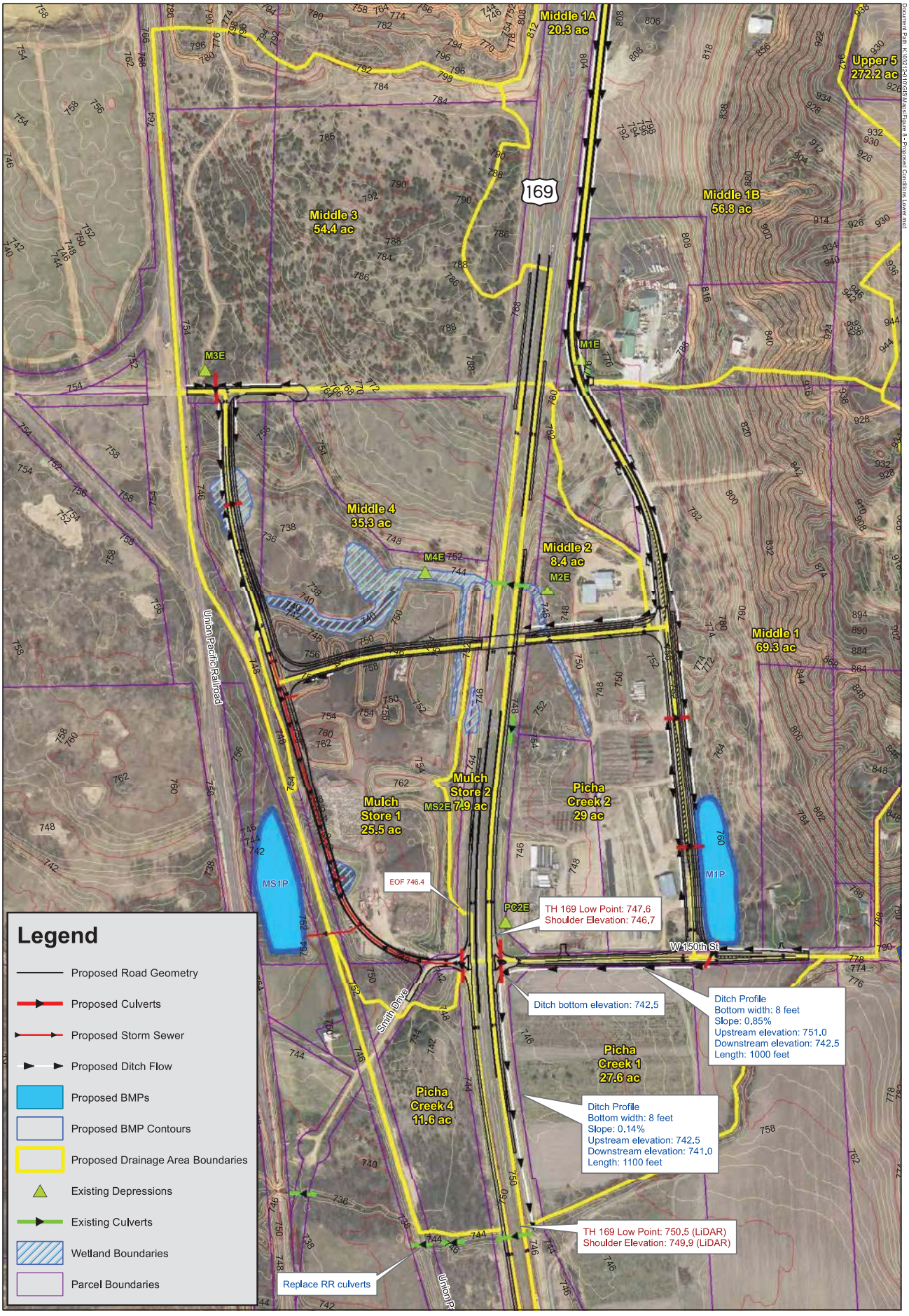


Figure 3: Proposed Conditions Lower Drainage Areas

Trunk Highway 169 / CSAH 14 Overpass Project
Scott County, MN

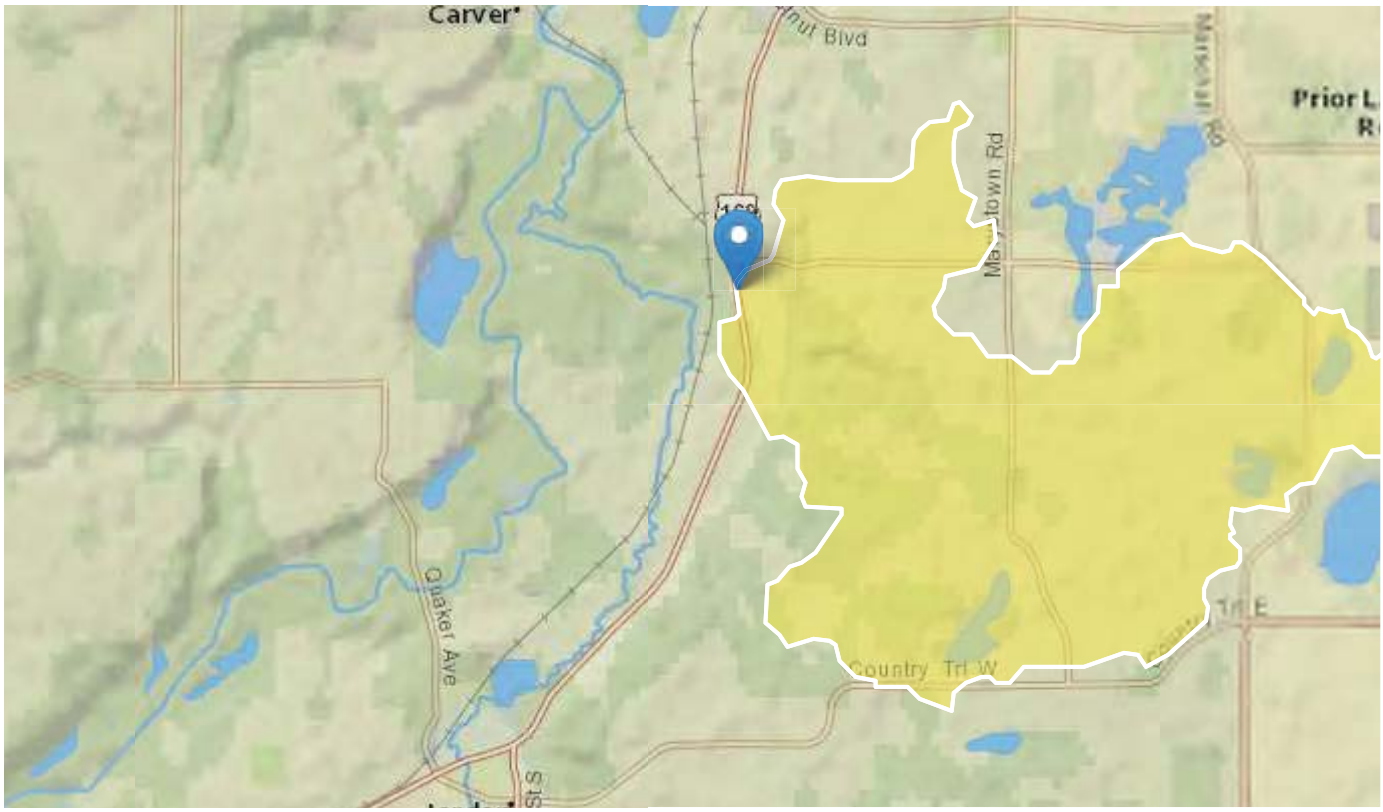
0 200 400 Feet

N

Appendix B
Streamstats

StreamStats Report

Region ID:
MN
Workspace ID:
MN20170204093534902000
Clicked Point (Latitude, Longitude):
44.72945, -93.58807
Time:
2017-02-04 10:36:19 -0600



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	15.75	square miles
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	27.7	feet per mi
LAKEAREA	Percentage of Lakes and Ponds	2.29	percent
GENRO	Generalized mean annual runoff in Minnesota 1951-85	5.61	inches

Peak-Flow Statistics Parameters [100.00 Percent Region D]

Parameter Code	Parameter Description	Value	Min Limit	Max Limit
DRNAREA	Drainage Area	15.75	0.15	2640
GENRO	Generalized Runoff	5.61	2.15	7.8
CSL10_85	Stream Slope 10 and 85 Method	27.7	1.49	77.2
LAKEAREA	Percent Lakes and Ponds	2.29	0	14

Peak-Flow Statistics Flow Report [100.00 Percent Region D]

Statistic	Value	Unit	Prediction Error (Percent)	Lower Prediction Interval	Upper Prediction Interval
1.5 Year Peak Flood	158	ft^3/s	56.3	55.1	342
2 Year Peak Flood	226	ft^3/s	56.2	89.2	461
5 Year Peak Flood	448	ft^3/s	49.7	201	846
10 Year Peak Flood	634	ft^3/s	42	287	1190
25 Year Peak Flood	910	ft^3/s	43.5	399	1750
50 Year Peak Flood	1150	ft^3/s	59.7	481	2260
100 Year Peak Flood	1420	ft^3/s	48.3	565	2890
500 Year Peak Flood	2130	ft^3/s	78	733	4700

Peak-Flow Statistics Flow Report [Area-Averaged]

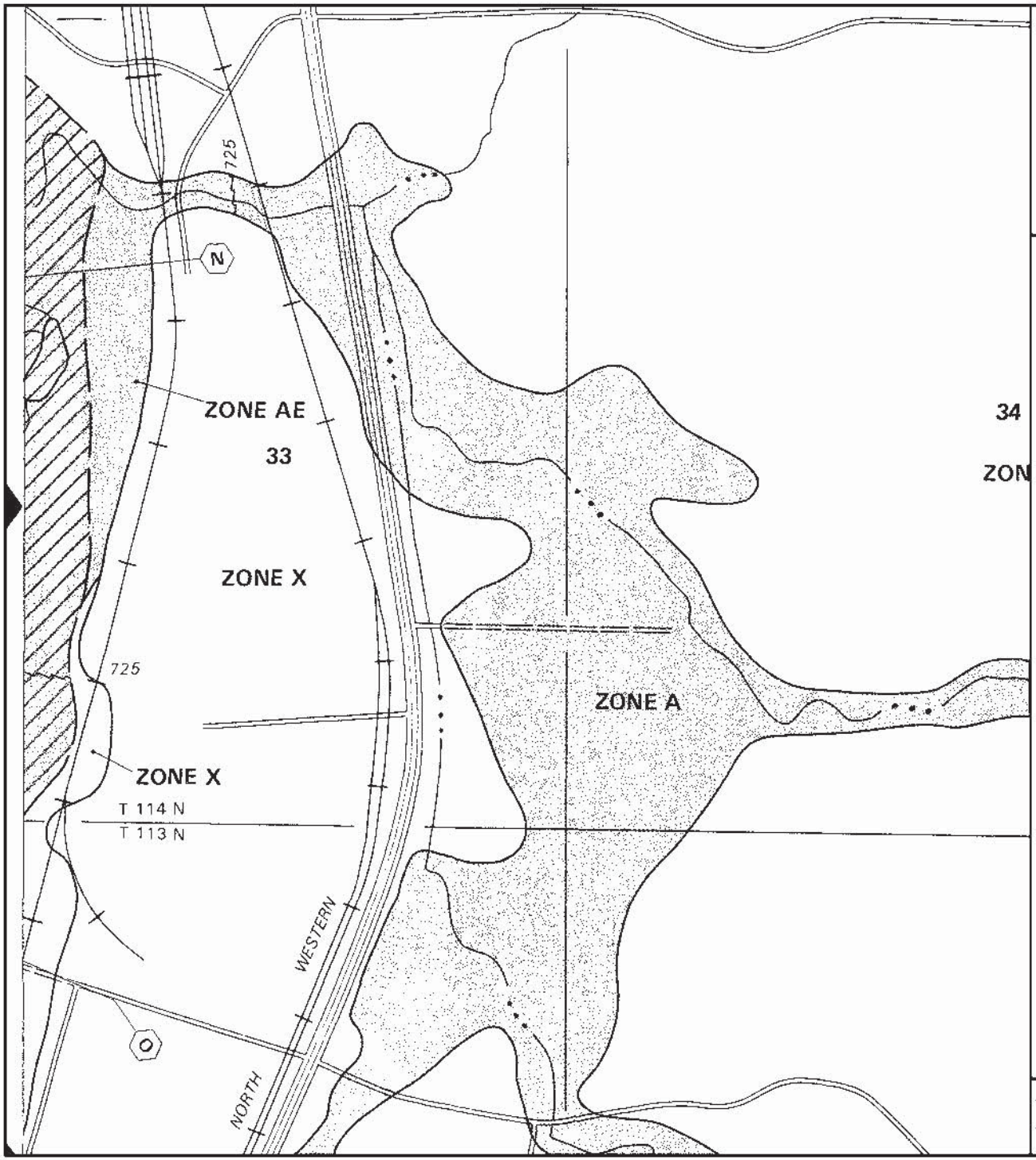
Statistic	Value	Unit
1.5 Year Peak Flood	158	ft^3/s
2 Year Peak Flood	226	ft^3/s
5 Year Peak Flood	448	ft^3/s
10 Year Peak Flood	634	ft^3/s
25 Year Peak Flood	910	ft^3/s

Statistic	Value	Unit
50 Year Peak Flood	1150	ft^3/s
100 Year Peak Flood	1420	ft^3/s
500 Year Peak Flood	2130	ft^3/s

Peak-Flow Statistics Citations

Lorenz, D.L., Sanocki, C.A., and Kocian, M.J.,2009, Techniques for Estimating the Magnitude and Frequency of Peak Flows on Small Streams in Minnesota Based on Data through Water Year 2005: U.S. Geological Survey Scientific Investigations Report 2009-5250, 54 p. (http://pubs.usgs.gov/sir/2009/5250/pdf/sir2009-5250.pdf)

Appendix C
FIRMETTE



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

SCOTT COUNTY, MINNESOTA

(UNINCORPORATED AREAS)

PANEL 20 OF 125

COMMUNITY-PANEL NUMBER

270428 0020 C

MAP REVISED:

FEBRUARY 19, 1987

Federal Emergency Management Agency

Appendix D
PRELIMINARY HYDRAULIC ANALYSIS and RISK ASSESSMENT

RISK ASSESSMENT FOR ENCROACHMENT DESIGN

Date: 2/6/17

District: Metro **County:** Scott **Vicinity of:** TH169/CSAH14

DATA REQUIREMENTS

1. **Location of Crossing:** TH 169 **C.S.** _____ **M.P.** _____

   Sec. 22 **T** 115N **R** 23W

2. **Name of Stream:** Picha Creek **Bridge No. Old:** 8829 **New:** _____

3. **Current ADT:** 29,000 **Projected ADT:** 49,800

4. **Practicable detour available** ☑ Yes ☐ No

If no is checked, please explain: _____

If there is no practicable detour available, then the use of the road must be analyzed. Considerations such as emergency vehicle access, emergency supply and evacuation route, and the need for school bus, milk and mail routes should be studied. Factors to consider for this analysis include design frequency, depth, duration, and frequency of inundation if appropriate, and available funding.

5. **Hydraulic Data: (Fill in as appropriate)**

   Elevation Datum: NAVD88

Q_2 =		cfs	HW_2 Elevation		ft
Q_5 =		cfs	HW_5 Elevation		ft
Q_{10} =	634	cfs	HW_{10} Elevation	745.25	ft
Q_{25} =		cfs	HW_{25} Elevation		ft
Q_{50} =	1150	cfs	HW_{50} Elevation	746.08	ft
Q_{100} =	1420	cfs	HW_{100} Elevation	747.73	ft
Q_{500} =		cfs	HW_{500} Elevation		ft

Approximate Flowline Elevation: 739.85 Ft

Design Frequency Event: ☐ 100-yr ☑ 50-yr ☐ 25-yr ☐ 10-yr

Reasons for selecting Design Frequency: MN State Statute 6115.0231

6. **Magnitude and Frequency of the smaller of "Overtopping" or "500 yr." (Greatest) flood:** 100-year

7. **Low member elevation:** 746.85

8. **Minimum roadway overflow elevation if appropriate:** 747.6 TH169 north of 150th Street

9. **Elevation of high risk property, i.e. residences:** 747.0

   Other buildings 747.0

10. **Horizontal location of overflow:**

    ☐ At Structure (See 12) ☑ Not At Structure:

11. **Type of proposed structure:**

    ☐ Bridge (See 12) ☑ Culvert(s)

12 If the proposed structure is a bridge with the sag point located on the bridge and there is ice and debris potential,

strong consideration should be given to using Q_{50} as design discharge with 3' of clearance between the 50 year tailwater stage and low member.

		LTEC Design
1.	**BACKWATER DAMAGE** - Major flood damage in this context refers to shopping centers, hospitals, chemical plants, power plants, housing developments, etc.	
1a.	Is the overtopping flood greater than the 100 yr. flood? ☐ Yes (Go to 1b) ☑ No (Go to 1e)	
1b.	Is the overtopping flood greater than the "greatest" flood (500 yr. Frequency)? ☐ Yes (Go to 1d) ☐ No (Go to 1c)	
1c.	Is there major flood damage potential for the overtopping flood? ☐ No (Go to 1e)	☐ Yes (Go to 1e)
1d.	Is there major flood damage potential for the greatest flood (500 year frequency)? ☐ No (Go to 1e)	☐ Yes (Go to 1e)
1e.	Will there be flood damage potential to residence(s) or other buildings during a 100 yr. flood? ☑ Yes (Go to 1f) ☐ No (Go to 2)	
1f.	Could this flood damage occur even if the roadway crossing wasn't there? ☑ Yes (Go to 1g) ☐ No (Go to 1h)	
1g.	Could this flood damage be significantly increased by the backwater caused by the proposed crossing? ☐ Yes (Go to 1h) ☑ No (Go to 2)	
1h.	Could the stream crossing be designed in such a manner so as to minimize this potential flood damage? ☐ Yes (Go to 1i) ☐ No (Go to 2)	
1i.	Does the value of the building(s) and/or its contents have sufficient value to justify further evaluation of risk and potential flood damage? ☐ No (Go to 2)	☐ Yes (Go to 2)
2.	**TRAFFIC RELATED LOSSES**	
2a.	Is the overtopping flood greater than the "greatest" flood (500 yr. frequency)? ☐ Yes (Go to 3) ☑ No (Go to 2b)	
2b.	Does the ADT exceed 50 vehicles per day? ☑ Yes (Go to 2c) ☐ No (Go to 3)	
2c.	Would the (duration of road closure in days) multiplied by the (length of detour minus the length of normal route in miles) exceed 20? ☐ Yes (Go to 2d) ☑ No (Go to 3)	
2d.	Does the annual risk cost for traffic related costs exceed 10% of the annual capital costs? ☐ No (Go to 3) (See figures A and B – Appendix A(2) - for Assistance)	☐ Yes (Go to 3)
3.	**ROADWAY AND/OR STRUCTURE REPAIR COSTS**	

3a. Is the overtopping flood less than a 100 year frequency flood?

☐ Yes (Go to 3b) ☑ No (Go to 3i)

3b. Compare the Tailwater (TW) elevation with the roadway sag point elevation for the overtopping flood. Check the appropriate category.

☐ When TW is above the sag point (Go to 4)

☐ TW is between 0 and 0.5' below sag point (Go to 3c)

☐ TW is between 0.5' and 1.0' below sag point (Go to 3d)

☐ When TW is 1.0' and 2.0' below sag point (Go to 3e)

☐ When TW is more than 2.0' below sag point (Go to 3g)

3c. Does the embankment have a good erosion resistant vegetative cover?

☐ Yes (Go to 3i) ☐ No (Go to 3d)

3d. Is the shoulder constructed from erosion resistant material such as paved, coarse gravel, or clay type soil?

☐ Yes (Go to 3i) ☐ No (Go to 3e)

3e. Will the duration of overtopping for the 25-year flood exceed 1 hour?

☐ Yes (Go to 3f) ☐ No (Go to 3i)

3f. Is the embankment constructed from erosion resistant material such as a clay type soil?

☐ Yes (Go to 3i) ☐ No (Go to 3g)

3g. Is the overtopping flood less than a 25-year frequency flood?

☐ Yes (Go to 3h) ☐ No (Go to 3i)

3h. Will the cost of protecting the roadway and/or embankment from severe damage caused by overtopping exceed the cost of providing additional culvert or bridge capacity?

☐ No (Go to 3i); ☐ Yes (Go to 3i)

3i. Is there damage potential to the structure caused by scour, ice, debris or other means during the lesser of the overtopping flood or the 100 year flood?

☐ Yes (Go to 3j) ☑ No (Go to 4)

3j. Will the cost of protecting the structure from damage exceed the cost of providing additional culvert or bridge water capacity?

☐ No (Go to 4); protecting abutments from scour by riprap. ☐ Yes (Go to 4)

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4. Will the capital cost of the structure exceed $1,000,000?

☑ No (Go to 5); ☐ Yes (Go to 5)

5. In your opinion, are there any other factors that you feel should require further study through a risk analysis?

☑ No (Go to 6); ☐ Yes (Indicate)

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6. If there are no ✓'s in the LTEC Design column on the right, proceed with the design, selecting the lowest acceptable grade line and the smallest waterway opening consistent

with the constraints imposed on the project. The risk assessment has demonstrated that potential flood damage costs, traffic related costs, roadway and/or structure repair costs are minor and therefore disregarded for this project.

One or more ✓'s in the LTEC Design column indicates further analysis in the category checked may be required utilizing the LTEC design process or justification (below) why it is not required.

JUSTIFICATION:

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

Signature: 

License Number: 44235 Date: 2/7/17

RISK ASSESSMENT FOR ENCROACHMENT DESIGN

Date: 2/6/17

District: Metro **County:** Scott **Vicinity of:** TH169/CSAH14

DATA REQUIREMENTS

1. **Location of Crossing:** Union Pacific RR Spur **C.S.** **M.P.**

   Sec. 22 **T** 115N **R** 23W

2. **Name of Stream:** Picha Creek **Bridge No. Old:** Unknown **New:**

3. **Current ADT:** N/A **Projected ADT:** N/A

4. **Practicable detour available** ☑ Yes ☐ No

If no is checked, please explain:

If there is no practicable detour available, then the use of the road must be analyzed. Considerations such as emergency vehicle access, emergency supply and evacuation route, and the need for school bus, milk and mail routes should be studied. Factors to consider for this analysis include design frequency, depth, duration, and frequency of inundation if appropriate, and available funding.

5. **Hydraulic Data: (Fill in as appropriate)**

   Elevation Datum: NAVD88

Q_2 =		cfs	HW_2 Elevation		ft
Q_5 =		cfs	HW_5 Elevation		ft
Q_{10} =	634	cfs	HW_{10} Elevation	742.25	ft
Q_{25} =		cfs	HW_{25} Elevation		ft
Q_{50} =	1150	cfs	HW_{50} Elevation	743.67	ft
Q_{100} =	1420	cfs	HW_{100} Elevation	744.2	ft
Q_{500} =		cfs	HW_{500} Elevation		ft

Approximate Flowline Elevation: 737.28 Ft

Design Frequency Event: ☐ 100-yr ☑ 50-yr ☐ 25-yr ☐ 10-yr

Reasons for selecting Design Frequency: Consistent with TH 169 Criteria per MN State Statute

6. **Magnitude and Frequency of the smaller of "Overtopping" or "500 yr." (Greatest) flood:** 100-year

7. **Low member elevation:** 744.28

8. **Minimum roadway overflow elevation if appropriate:** 747.6 Union Pacific Railroad Spur

9. **Elevation of high risk property, i.e. residences:** 747.0
   Other buildings 747.0

10. **Horizontal location of overflow:**
    ☐ At Structure (See 12) ☑ Not At Structure:

11. **Type of proposed structure:**
    ☐ Bridge (See 12) ☑ Culvert(s)

12 If the proposed structure is a bridge with the sag point located on the bridge and there is ice and debris potential, strong consideration should be given to using Q_{50} as design discharge with 3' of clearance between the 50 year tailwater stage and low member.

	LTEC Design
1. BACKWATER DAMAGE - Major flood damage in this context refers to shopping centers, hospitals, chemical plants, power plants, housing developments, etc.	
1a. Is the overtopping flood greater than the 100 yr. flood? ☑ Yes (Go to 1b) ☐ No (Go to 1e)	
1b. Is the overtopping flood greater than the "greatest" flood (500 yr. Frequency)? ☐ Yes (Go to 1d) ☑ No (Go to 1c)	
1c. Is there major flood damage potential for the overtopping flood? ☐ No (Go to 1e)	☑ Yes (Go to 1e)
1d. Is there major flood damage potential for the greatest flood (500 year frequency)? ☐ No (Go to 1e)	☐ Yes (Go to 1e)
1e. Will there be flood damage potential to residence(s) or other buildings during a 100 yr. flood? ☑ Yes (Go to 1f) ☐ No (Go to 2)	
1f. Could this flood damage occur even if the roadway crossing wasn't there? ☑ Yes (Go to 1g) ☐ No (Go to 1h)	
1g. Could this flood damage be significantly increased by the backwater caused by the proposed crossing? ☐ Yes (Go to 1h) ☑ No (Go to 2)	
1h. Could the stream crossing be designed in such a manner so as to minimize this potential flood damage? ☐ Yes (Go to 1i) ☐ No (Go to 2)	
1i. Does the value of the building(s) and/or its contents have sufficient value to justify further evaluation of risk and potential flood damage? ☐ No (Go to 2)	☐ Yes (Go to 2)
2. TRAFFIC RELATED LOSSES	
2a. Is the overtopping flood greater than the "greatest" flood (500 yr. frequency)? ☐ Yes (Go to 3) ☑ No (Go to 2b)	
2b. Does the ADT exceed 50 vehicles per day? ☑ Yes (Go to 2c) ☐ No (Go to 3)	
2c. Would the (duration of road closure in days) multiplied by the (length of detour minus the length of normal route in miles) exceed 20? ☐ Yes (Go to 2d) ☑ No (Go to 3)	
2d. Does the annual risk cost for traffic related costs exceed 10% of the annual capital costs? ☐ No (Go to 3) (See figures A and B – Appendix A(2) - for Assistance)	☐ Yes (Go to 3)

3. ROADWAY AND/OR STRUCTURE REPAIR COSTS

3a. Is the overtopping flood less than a 100 year frequency flood?

☐ Yes (Go to 3b) ☑ No (Go to 3i)

3b. Compare the Tailwater (TW) elevation with the roadway sag point elevation for the overtopping flood. Check the appropriate category.

☐ When TW is above the sag point (Go to 4)

☐ TW is between 0 and 0.5' below sag point (Go to 3c)

☐ TW is between 0.5' and 1.0' below sag point (Go to 3d)

☐ When TW is 1.0' and 2.0' below sag point (Go to 3e)

☐ When TW is more than 2.0' below sag point (Go to 3g)

3c. Does the embankment have a good erosion resistant vegetative cover?

☐ Yes (Go to 3i) ☐ No (Go to 3d)

3d. Is the shoulder constructed from erosion resistant material such as paved, coarse gravel, or clay type soil?

☐ Yes (Go to 3i) ☐ No (Go to 3e)

3e. Will the duration of overtopping for the 25-year flood exceed 1 hour?

☐ Yes (Go to 3f) ☐ No (Go to 3i)

3f. Is the embankment constructed from erosion resistant material such as a clay type soil?

☐ Yes (Go to 3i) ☐ No (Go to 3g)

3g. Is the overtopping flood less than a 25-year frequency flood?

☐ Yes (Go to 3h) ☐ No (Go to 3i)

3h. Will the cost of protecting the roadway and/or embankment from severe damage caused by overtopping exceed the cost of providing additional culvert or bridge capacity?

☐ No (Go to 3i); ☐ Yes (Go to 3i)

3i. Is there damage potential to the structure caused by scour, ice, debris or other means during the lesser of the overtopping flood or the 100 year flood?

☐ Yes (Go to 3j) ☑ No (Go to 4)

3j. Will the cost of protecting the structure from damage exceed the cost of providing additional culvert or bridge water capacity?

☐ No (Go to 4); protecting abutments from scour by riprap. ☐ Yes (Go to 4)

4. Will the capital cost of the structure exceed $1,000,000?

☑ No (Go to 5); ☐ Yes (Go to 5)

5. In your opinion, are there any other factors that you feel should require further study through a risk analysis?

☑ No (Go to 6); ☐ Yes (Indicate)

6. If there are no ✓'s in the LTEC Design column on the right, proceed with the design, selecting the lowest acceptable grade line and the smallest waterway opening consistent with the constraints imposed on the project. The risk assessment has demonstrated that potential flood damage costs, traffic related costs, roadway and/or structure repair costs are minor and therefore disregarded for this project.

One or more ✓'s in the LTEC Design column indicates further analysis in the category checked may be required utilizing the LTEC design process or justification (below) why it is not required.

JUSTIFICATION:

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

Signature: 

License Number: 44235 Date: 2/7/17

Bridge Number 8829 (TH 169)

Date January 6, 2017

* Stream name	Picha Creek
Drainage area	14.8 square miles
Flood of record	Unknown
Maximum observed highwater elevation	Unknown
* Design flood (50 - year frequency)	1150 cfs
Road sag point elevation	747.6
Design stage	746.32
Total stage increase	-0.24 ft
* Headwater elevation	746.08
Stage increase of the inplace condition	2.36 ft
Min. waterway opening below elevation	196 ft2 at el. 746.08
Low member at or above elevation	N/A
Mean velocity through structure	6.0 fps
Main channel velocity	12.6 fps
Overtopping flood or Greatest flood (500 -year frequency)	1420 cfs (100-year)
Road sag point elevation	747.6
Stage	747.88
Total stage increase	-0.15 ft
* Headwater elevation	747.73
Stage increase of the inplace condition	1.09 ft
Mean velocity through structure	7.3 fps
* Basic flood (100-year frequency)	1420 cfs
Stage	747.88
Total stage increase	-0.15 ft
* Headwater elevation	747.73
Stage increase of the inplace condition	1.09 ft
Min. overflow area above sag point elev.	n/a
Mean overflow velocity	n/a
Mean velocity through structure	7.3 fps
Approximate flowline elevation	739.85
Estimated pier scour elevation	N/A
Year frequency scour was calculated for	N/A
Skew	0
Scour Code	E - Culvert

*Items to be shown on Grading Plan

*Elevation datum NAVD88 [adjusted]

Bridge Number 8829 (TH 169)

Date January 6, 2017

* Stream name	Picha Creek
Drainage area	14.8 square miles
Flood of record	Unknown
Maximum observed highwater elevation	Unknown
* Design flood (50 - year frequency)	1150 cfs
Road sag point elevation	747.6
Design stage	746.32
Total stage increase	-0.24 ft
* Headwater elevation	746.08
Stage increase of the inplace condition	2.36 ft
Min. waterway opening below elevation	196 ft2 at el. 746.08
Low member at or above elevation	N/A
Mean velocity through structure	6.0 fps
Main channel velocity	12.6 fps
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Road sag point elevation	747.6
Stage	747.88
Total stage increase	-0.15 ft
* Headwater elevation	747.73
Stage increase of the inplace condition	1.09 ft
Mean velocity through structure	7.3 fps
* Basic flood (100-year frequency)	1420 cfs
Stage	747.88
Total stage increase	-0.15 ft
* Headwater elevation	747.73
Stage increase of the inplace condition	1.09 ft
Min. overflow area above sag point elev.	n/a
Mean overflow velocity	n/a
Mean velocity through structure	7.3 fps
Approximate flowline elevation	739.85
Estimated pier scour elevation	N/A
Year frequency scour was calculated for	N/A
Skew	0
Scour Code	E - Culvert

*Items to be shown on Grading Plan

*Elevation datum NAVD88 [adjusted]

APPENDIX F – Updated Studies/Memoranda – Wetlands (Original Attachment L to the EAW)

WETLAND ASSESSMENT & TWO PART FINDING

County: Scott
Watershed: Lower Minnesota River

State Aid Manual Chapter 5.1, VI.J.

BACKGROUND

Wetlands within the project corridor were delineated in conformance with the US Army Corps of Engineers guidelines in 2015 and 2016. Six wetlands were found during the field investigation. The wetland boundaries fell within two different jurisdictions of Local Government Units (LGU). The wetland boundaries have been approved under the Wetland Conservation Act by both MnDOT and Scott County SWCD as joint LGUs on the project and by the US Army Corps of Engineers in December 2016 and January 2017, respectively.

WETLAND ASSESSMENT

A table documenting the assessment for the project is attached as **Table 1**.

AVOIDANCE ALTERNATIVES

Only the alternatives reviewed that would have resulted in changes to overall impacts to the wetlands are described herein. All reviewed alternatives are described in the main Categorical Exclusion Determination (CATEX) document. The avoidance alternatives are summarized below, and discussed in detail in the Alternatives section and Attachments D and E of the main CATEX document.

Alternatives for the TH 169/TH 41/CSAH 78 intersection were developed separately from the TH 169 and CSAH 14 overpass alternatives due to separate planning processes.

No Build Alternative

The No Build Alternative would remain an at-grade, signalized intersection at TH 169 and TH 41/CSAH 78. It would maintain the existing four-lane section on TH 169 with single dedicated left- and right-turn lanes onto TH 41 and CSAH 78 at the signalized intersection. It would also maintain the existing two-lane section on CSAH 78 with single dedicated left- and right-turn lanes onto TH 169 from CSAH 78. The No Build Alternative would also continue to maintain two through lanes on TH 41 from TH 169 to Dem Con Drive/Frontage Road going northbound and a single through lane on TH 41 from Dem Con Drive/Frontage Road going southbound with dual left-turn lanes, a through lane and a right-turn lane at the intersection with TH 169.

In the southern portion of the project area, the No Build Alternative would remain an at-grade intersection at TH 169 and CSAH 14/Smith Drive and TH 169 and 145th Street, with stop-controlled traffic on the side streets. It would maintain the existing four-lane section on TH 169 with single dedicated left- and right-turn lanes onto CSAH 14/Smith Drive at the intersection. It would also maintain the existing two-lane section on CSAH 14. The No Build Alternative would not modify existing access on TH 169.

Pedestrian facilities under this alternative would be limited to painted crosswalks at the intersection of TH 169 and TH 41/CSAH 78.

The No Build Alternative was not selected as the preferred alternative because it would not resolve existing and projected safety and mobility problems at the TH 169 and TH 41/CSAH 78 intersection or safety and mobility problems noted on TH 169 within the project area. Additionally, the No Build Alternative does not provide for additional pedestrian/bicycle facilities to facilitate crossing of TH 169.

Alternatives Considered

For improvements at the intersection of TH 169 and TH 41/CSAH 78, six build alternatives were developed and evaluated (including the preferred alternative). Several alternative concepts were also developed for frontage road connections surrounding this intersection. Alternatives were screened at a high level to determine their ability to address the purpose and need items identified above as well as their potential impacts to social, economic and environmental resources within the general project area. A summary matrix is included in **Attachment D** of the CatEx document that shows the ratings identified for each of the interchange alternatives. **Attachment E** of the CatEx includes a memo that provides more detail on the alternatives considered for the interchanges and frontage roads as well as a matrix that provides an explanation of the considerations used to evaluate/rate an alternative.

As part of a separate alternatives development process coordinated between Scott County, MnDOT, Louisville Township, and property owners, the preferred alternative was developed for the CSAH 14 overpass over TH 169 with associated frontage road connections in the CSAH 14 area. All the alternatives evaluated attempted to address the project purpose and need.

Alternatives for the Interchange of TH 169 and TH 41/CSAH 78

Development of the interchange alternatives at TH169/TH 41/CSAH 78 included a partial interchange option that provided grade-separated movements in the southbound direction on TH 169 and at-grade elements in the northbound direction. The rest of the alternatives considered were fully grade-separated interchange options. Alternatives considered for frontage road connections would work with any of the proposed interchange concepts and were evaluated in conjunction with the intersection improvement alternatives.

The preferred interchange alternative does not impact any wetlands (**Figure 3a**). In addition, the frontage roads north of 133rd Street also result in no wetland impact (**Figure 3b**). Because this part of the project does not impact any wetlands and was independently designed from the CSAH 14 overpass located in the southern portion of the project area, the other interchange alternatives are not discussed in detail. For additional information—including a summary of the reasons for rejection of the other alternatives; the criteria that were used in screening the alternatives; a matrix that shows the different alternatives and how well they addressed screening criteria as well as their associated impacts on social, economic and environmental factors pertinent to the project; and details why the alternatives were rejected—see the Alternatives section and **Attachments D** and **E** of the main CATEX document.

Alternatives for the Southern Project Area (CSAH 14 Overpass)
Traffic on TH 169 near CSAH 14 is currently free flowing – it is not required to stop if travelling north-south through the 145th Street or CSAH 14/Smith Drive intersections. Traffic on these roadways is controlled by side-street stops and has full access to TH 169. The proposed project closes the full accesses to TH 169 and constructs a new overpass (147th Street) over TH 169 just north of the CSAH 14. The overpass and its associated frontage roads east and west of TH 169 would eliminate existing left-turning movements to and from TH 169. The overpass addresses the safety needs by removing the 145th Street access and CSAH 14 right-in, right-out access from TH 169 and adds pedestrian access across TH 169. During the environmental review process, two alternatives for the overpass were developed, a Southern Overpass (Alternative #1) and the Preferred Overpass Alternative (Alternative #2). The wetland impacts for the two alternatives are described below and in the Avoidance Alternatives table. The difference between the concepts is the location of the overpass.

Southern Overpass (Alternative #1)
The overpass in this alternative is located slightly further to the south than in the preferred alternative location. **Figure 1** shows the concept with the southern overpass. This alternative results in 2.71 acres of wetland impact. Minnesota Valley Garden Center and The Mulch Store border the east and west sides of TH169 at this location, respectively. These properties would both be bisected by the overpass and associated roadway. Impacts from this alternative are as follows:

Wetland A: Alternative #1 would result in 1.01 acres of direct and indirect wetland impacts from the construction of Louisville Road from CSAH 14 to CSAH 41 (**Figure 2c**). The frontage road will bisect the wetland. This bisection may remove hydrology from the rest of the wetland so for this assessment, the entire wetland was considered impacted. This effect of the roadway fill removing hydrology from the rest of the wetland will be further investigated during permitting.

The alignment of the roadway was reviewed to see if a slight shift to the east would be possible to avoid impacts to Wetland A. Because of the location of the parking lot for Drew's Concrete, a slight shift in the roadway around Wetland A would have removed most of the parking lot. This could have the potential to result in a relocation of that business. An alignment that curved further east around the Drew's Concrete property was also reviewed, but that shift would have placed the roadway into the bluffland.

Wetland B: Alternative #1 would result in 0.86 acre of direct and indirect wetland impacts from the construction Red Rock Drive. Red Rock Drive will serve the properties west of TH 169 who will lose direct access to TH 169 when the overpass is built. Red Rock Drive will connect these properties to 145th Street West and the properties east of the TH 169. The frontage road will bisect the wetland a result in a loss of hydrology to the remaining wetland areas on either side.

A shift of Red Rock Drive to the west was reviewed, but is not feasible given the location of the Union Pacific railroad spur line. A shift of Red Rock Drive to the east was also reviewed. A shift to the east would further impact the Mulch Store property, resulting in poor internal circulation for trucks moving mulch and would likely lead to relocation. Additionally, because of the elevation of the overpass, the profile of Red Rock Drive would need to be raised, which would ultimately result in a touchdown point further out and would still result in impacts to Wetland B.

Wetland C: Alternative #1 would result in 0.07 acre of direct wetland impacts from the construction of the overpass, adjacent roadway and slopes. The overpass will impact the southern end of the wetland, which is a linear wetland adjacent to TH 169.

Alignments that shifted the overpass both north and south were reviewed to determine if these options would avoid wetland impact. A shift to the south would not avoid impacts to wetlands due to the location of Wetland E and would also impact the building site and planting areas at the Minnesota Valley Garden Center, leading to relocation. On the west side of TH 169, a shift to the south would result in impact to the building site at the Mulch Store and would still impact Wetland E. Impacts to the Mulch Store could lead to relocation. Because of the potential impacts to the Garden Center and Mulch Store, and given that complete avoidance of wetlands is not feasible, a shift to the south was rejected. Shift the overpass south of CSAH 14 was also considered, but the location of the Union Pacific railway spur does not allow for enough room for the overpass/Red Rock Drive alignment due to curve radii requirements. A shift to the north was also reviewed, and resulted in the preferred alternative, which is described below (Northern Overpass, Alternative #2, Preferred Alternative).

Wetland D: Based on aerial review and field observations, Wetland D appears to be an incidentally created wetland. Additional review of this area will occur during permitting, if necessary. If it is determined that Wetland D is an incidental wetland, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. However, minimization and avoidance measures were still considered during the sequencing process.

Alternative #1 would result in 0.21 acre of direct wetland impacts from the construction of the overpass, adjacent roadway and slopes. The overpass would completely fill the wetland.

Alignments that shifted the overpass both north and south were reviewed to determine if these options would avoid wetland impact. A shift to the south would not avoid impacts to wetlands due to the location of Wetland E and would also impact the building site and planting areas at the Minnesota Valley Garden Center, leading to relocation. On the west side of TH 169, a shift to the south would result in impact to the building site at the Mulch Store and would impact Wetland E. Impacts to the Mulch Store could lead to relocation. Because of the potential impacts to the Garden Center and Mulch Store, and given that complete avoidance of wetlands is not feasible, a shift to the south was rejected. Shifting the overpass south of CSAH 14 was also considered, but the location of the Union Pacific railway spur does not allow for enough room for the overpass/Red Rock Drive alignment due to curve radii requirements. A shift to the north was also reviewed, met the project needs, reduced property impacts, and resulted in avoidance of Wetland D. This is the preferred alternative, which is described below (Northern Overpass, Alternative #2, Preferred Alternative).

Wetland E: Based on aerial review and field observations, Wetland E appears to be an incidentally created wetland. Additional review of this area will occur during permitting. If it is determined that Wetland E is an incidental wetland, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. However, for the wetland assessment avoidance and minimization

measures were still considered and impacts were still included in the total impact calculation.

Alternative #1 would result in 0.42 acre of direct and indirect wetland impacts from the construction Red Rock Drive. Red Rock Drive will serve the properties west of TH 169 who will lose direct access to TH 169 when the overpass is built. Red Rock Drive will connect these properties to 145th St W and the properties east of the TH 169. The frontage road will impact the western portion of the wetland, and result in a loss of hydrology to the remaining area.

A shift of Red Rock Drive to the west was reviewed, but is not feasible given the location of the Union Pacific railroad spur line. A shift of Red Rock Drive to the east was also reviewed. A shift to the east would further impact the Mulch Store property, resulting in poor internal circulation for trucks moving mulch and would likely lead to relocation. Additionally, because of the elevation of the overpass, the profile of Red Rock Drive would need to be raised, which would ultimately result in a touchdown point further out and would still result in impacts to Wetland B.

Wetland F: Based on aerial review and field observations, Wetland F appears to be an incidentally created wetland that functions as a drainage ditch for the Garden Center. Additional review of this area will occur during permitting. If it is determined that Wetland F is an incidental wetland, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. However, for the wetland assessment avoidance and minimization measures were still considered and impacts were still included in the total impact calculation.

Alternative #1 would result in 0.14 acres of direct and indirect wetland impacts from the construction of the overpass, adjacent roadway and slopes. The overpass will bisect the wetland and leave a small northern portion of the remaining wetland isolated from a larger southern portion. This disconnection may remove hydrology from the remaining north part of the wetland, and so for this assessment the north area of the wetland was considered impacted as well.

Alignments that shifted the overpass both north and south were reviewed to determine if these options would avoid wetland impact. A shift to the south would not avoid impacts to wetlands due to the location of Wetland F and would also impact the building site and planting areas at the Minnesota Valley Garden Center, leading to relocation. On the west side of TH 169, a shift to the south would result in impact to the building site at the Mulch Store and would still impact Wetland F. Impacts to the Mulch Store could lead to relocation. Because of the potential impacts to the Garden Center and Mulch Store, and given that complete avoidance of wetlands is not feasible, a shift to the south was rejected. Shifting the overpass south of CSAH 14 was also considered, but the location of the Union Pacific railway spur does not allow for enough room for the overpass/Red Rock Drive alignment due to curve radii requirements. A shift to the north was also reviewed, and resulted in the preferred alternative, which is described below (Northern Overpass, Alternative #2, Preferred Alternative).

The Southern Overpass Alternative (Alternative #1) fulfills the purpose and need of the project but there is a high likelihood for the relocation of two businesses. Under this alternative, the overpass approaches from the two north-south frontage roads would cut

the Mulch Store and Minnesota Valley Garden Center properties in half. For the Mulch Store on the west side of TH 169, the roadway would prevent trucks from moving mulch around the property. This loss of internal circulation would result in a relocation. On the east side of TH 169, this alternative would limit the available space from the garden center to grow plants and require relocation as well. The Southern Overpass alternative was rejected due to the business relocations it resulted in.

Northern Overpass (Alternative #2, Preferred Alternative)
The overpass location in this alternative is slightly north of the location evaluated in Alternative #1 (**Figure 2a** and **2b**). This alternative results in 2.77 acres of wetland impact.

Wetland A: Alternative #2 would result in 1.01 acres of direct and indirect wetland impacts from the construction of the frontage road from CSAH 14 to CSAH 41 (**Figure 3b**). The frontage road will cut through the middle of the wetland. This bisection of the wetland may remove hydrology from the rest of the wetland so for this assessment, the entire wetland was considered impacted. The effect of the roadway removing hydrology from the rest of the wetland will be further investigated during permitting.

The alignment of the roadway was reviewed to see if a slight shift to the east would be possible to avoid impacts to Wetland A. Because of the location of the parking lot for Drew's Concrete, a slight shift in the roadway around Wetland A would have removed most of the parking lot. This could have the potential to result in a relocation of that business. An alignment that curved further east around the Drew's Concrete property was also reviewed, but that shift would have placed the roadway into the bluffland.

Wetland B: Alternative #2 would result in 0.86 acre of direct and indirect wetland impacts from the construction Red Rock Drive (**Figure 3c**). Red Rock Drive will serve the properties west of TH 169 who will lose direct access to TH 169 when the overpass is built. Red Rock Drive will connect these properties to 145th Street and the properties east of the TH 169. The frontage road will cut through the middle of the wetland. This bisection of the wetland will remove hydrology from the rest of the wetland so for this assessment, the entire wetland was considered impacted.

A shift of Red Rock Drive to the west was reviewed, but is not feasible given the location of the Union Pacific railroad spur line. A shift of Red Rock Drive to the east was also reviewed. A shift to the east would further impact the Mulch Store property, resulting in poor internal circulation for trucks moving mulch and would likely lead to relocation. Additionally, because of the elevation of the overpass, the profile of Red Rock Drive would need to be raised, which would ultimately result in a touchdown point further out and would still result in impacts to Wetland B.

Wetland C: 0.17 acres of direct and indirect wetland impacts from the construction of the overpass, adjacent roadway and slopes (**Figure 3d**). The overpass will cut through the wetland and leaves a small southern portion of the remaining wetland isolated from a larger northern portion. This may remove hydrology from the small remaining south part of the wetland so for this assessment, the south area of the wetland was considered impacted as well. The effect of the roadway fill removing hydrology from the rest of the wetland will be further investigated during permitting.

Alignments that shifted the overpass both north and south were reviewed to determine if these options would avoid wetland impact. A shift to the south was reviewed as part of Alternative #1, described earlier in this document. A shift to the north was also reviewed, which would have placed the overpass near the location of the existing 145th Street. An overpass in that location would require the profile of Louisville Road to be raised near the overpass. This would increase the footprint of the alignment and result in additional property impacts, and ultimately relocations. In addition, it would not be possible to maintain the alignment of Louisville Road north of 145th Street. The entire Louisville Road alignment would need to be shifted east into the blufflands. Given the impacts to the adjacent properties, likely relocations, and potential bluff impacts, a shift in the overpass to the north was rejected.

Wetland D: The preferred alternative does not impact Wetland D (**Figure 3d**).

Wetland E: Based on aerial review and field observations, Wetland E appears to be an incidentally created wetland. Additional review of this area will occur during permitting. If it is determined that Wetland E is an incidental wetland, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. However, for the wetland assessment avoidance and minimization were still considered and impacts were still included in the total impact calculation.

Alternative #2 will result in 0.42 acre of direct and indirect wetland impacts from the construction Red Rock Drive (**Figure 3e**). Red Rock Drive will serve the properties west of TH 169 who will lose direct access to TH 169 when the overpass is built. Red Rock Drive will connect these properties to 145th St W and the properties east of the TH 169. The frontage road will cut through the middle of the wetland. This bisection of the wetland may remove hydrology from the rest of the wetland so for this assessment, the entire wetland was considered impacted. The effect of the roadway fill removing hydrology from the remaining parts of the wetland will be further investigated during permitting.

A shift of Red Rock Drive to the west was reviewed, but is not feasible given the location of the Union Pacific railroad spur line. A shift of Red Rock Drive to the east was also reviewed. A shift to the east would further impact the Mulch Store property, resulting in poor internal circulation for trucks moving mulch and would likely lead to relocation. Additionally, because of the elevation of the overpass, the profile of Red Rock Drive would need to be raised, which would ultimately result in a touchdown point further out and would result in impacts to Wetland E.

Wetland F: Based on aerial review and field observations, Wetland F appears to be an incidentally created wetland that functions as a drainage ditch for the Garden Center. Additional review of this area will occur during permitting. If it is determined that Wetland F is an incidental wetland, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. However, for the wetland assessment avoidance and minimization were still considered and impacts were still included in the total impact calculation.

Alternative #2 will result in 0.31 acre of direct and indirect wetland impacts from the construction of the overpass, adjacent roadway and slopes (**Figure 3d**). The overpass will cut through the wetland and leaves a small northern portion of the remaining

wetland isolated from a larger southern portion. This may remove hydrology from the small remaining north part of the wetland so for this assessment, the north area of the wetland was considered impacted as well. The effect of the roadway fill removing hydrology from the rest of the wetland will be further investigated during permitting.

Alignments that shifted the overpass both north and south were reviewed to determine if these options would avoid wetland impact. A shift to the south would not avoid impacts to wetlands due to the location of Wetland F and would also impact the building site and planting areas at the Minnesota Valley Garden Center, leading to relocation. On the west side of TH 169, a shift to the south would result in impact to the building site at the Mulch Store and would still impact Wetland F. Impacts to the Mulch Store could lead to relocation. Because of the potential impacts to the Garden Center and Mulch Store, and given that complete avoidance of wetlands is not feasible, a shift to the south was rejected. A shift to the north was also reviewed, and resulted in the preferred alternative, which is described below (Northern Overpass, Alternative #2, Preferred Alternative).

Alternative #2 fulfills the purpose and need of the project, and will not result in business relocations. The property owners on both sides of TH 169 supported Alternative #2 due to fewer property impacts in terms of circulation within the properties and space for plants. This alternative was selected because it meets the project's purpose and need and reduces local business impact. The preferred alternative is discussed in further detail in the Alternatives section and **Attachments D** and **E** of the main CATEX document.

AVOIDANCE ALTERNATIVES			
		Anticipated Encroachment per Alternative, acres	
	No Build Alternative	Alternative #1 (Southern overpass)	Alternative # 2 (Northern overpass, Preferred Alternative)
Wetland A	0	1.01 acres	1.01 acres
Wetland B	0	0.86 acres	0.86 acres
Wetland C	0	0.07 acres	0.17 acres
Wetland D	0	0.21 acres	0.00 acres
Wetland E	0	0.42 acres	0.42 acres
Wetland F	0	0.14 acres	0.31 acres
Total, acres	**0**	**2.71 acres**	**2.77 acres**

MINIMIZATION MEASURES

In order to minimize impacts to wetlands, the project plans will incorporate the following minimization measures:

- An increase in road slopes from 4:1 to 3:1 in wetland areas.
- Culvert crossings under the roadway to maintain hydrological connections.
- West of TH 169, Red Rock Drive was aligned as close to the Union Pacific Railway spur as feasible.
- The infiltration basin for runoff from Red Rock Drive was sited in upland.

WETLAND IMPACTS

WETLAND IMPACTS (Preferred Alternative)										
	Anticipated Encroachment per Type of Wetland, acres									
	1	1L	2	3	4	5	6	7	8	
Wetland A	1.01									1.01
Wetland B			0.86							0.86
Wetland C			0.17							0.17
Wetland D										0.00
Wetland E						0.42				0.42
Wetland F				0.31						0.31
Total	**1.01**		**1.03**	**0.31**		**0.42**				**2.77**

COMPENSATION (REPLACEMENT/ENHANCEMENTS)

Wetlands E and F appear to be incidental to the construction of stormwater ponds or ditches at the same location. If these areas are determined to be incidental during the wetland permitting process, impacts will not be regulated by the Wetland Conservation Act and replacement may not be required by the US Army Corps of Engineers. The total impact for these two areas is 0.73 acre. For this study, impacts are assumed to require replacement and are included in the table below.

Impacts within MnDOT right of way are expected to be replaced via MnDOT's wetland bank at a minimum 2:1 ratio and all other impacts are expected to be replaced via local bank at a minimum 2:1 ratio. The location and type of wetland that will provide the replacement will be evaluated in accordance with the Wetland Conservation Act and US Army Corps of Engineers siting requirements.

	ID # A, B, C, E, F
Location	within BSA #9
onsite, offsite	onsite (bank within BSA)
Classification	TBD
Approx. Size, acres	5.54
Topographic setting	TBD
Method of construction	N/A
Timetable	In advance

CONCLUSION

Based upon the above factors and considerations, it is determined that there is no practicable alternative to the proposed construction in the identified wetlands, and the proposed action includes all practicable measures to minimize harm to the wetlands.

ATTACHMENTS

Table 1: Individual Wetland Impacts

Figure 1: South Concept (Alternative #1) - Overpass near CSAH 14

Figure 2a: Preferred Alternative (Alternative #2) - South Project Area

Figure 2b: Preferred Alternative (Alternative #2) – South Project Area

Figure 3a: Wetland Impact Overview

Figure 3b: Wetland Impacts – Wetland A

Figure 3c: Wetland Impacts – Wetland B

Figure 3d: Wetland Impacts – Wetlands C and F

Figure 3e: Wetland Impacts – Wetland E

Table 1: Individual Wetland Impacts

WETLAND ASSESSMENT	ID # A	ID # B	ID # C	ID # E	ID #F
Classification (Type of wetland)	**Type 1**	**Type 2**	**Type 2**	**Type 5**	**Type 3**
Approx. Basin Size, acres	**1.01**	**0.86**	**2.58**	**0.42**	**0.31**
Anticipated Encroachment Size, acres	**1.01**	**0.86**	**0.17**	**0.42**	**0.26**
Type of Impact: fill, excavation, drain	**Fill, excavate**	**Fill**	**Fill**	**Fill, excavate**	**Fill**
% Encroachment to Basin Size	**100%**	**100%**	**6%**	**100%**	**83%**
Protected wetland? Y/N	**N**	**N**	**N**	**N**	**N**
Connection to other wetlands? Y/N	**N**	**N**	**N**	**N**	**N**
Impacts to public water supply? Y/N	**N**	**N**	**N**	**N**	**N**
Water Quality impacts? ----recharge/discharge ----water pollution ----flooding ----sedimentation ----erosion	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Impacts to fish/wildlife & habitat?	**N**	**N**	**N**	**N**	**N**
Impacts to recreational, cultural, or scientific uses?	**N**	**N**	**N**	**N**	**N**

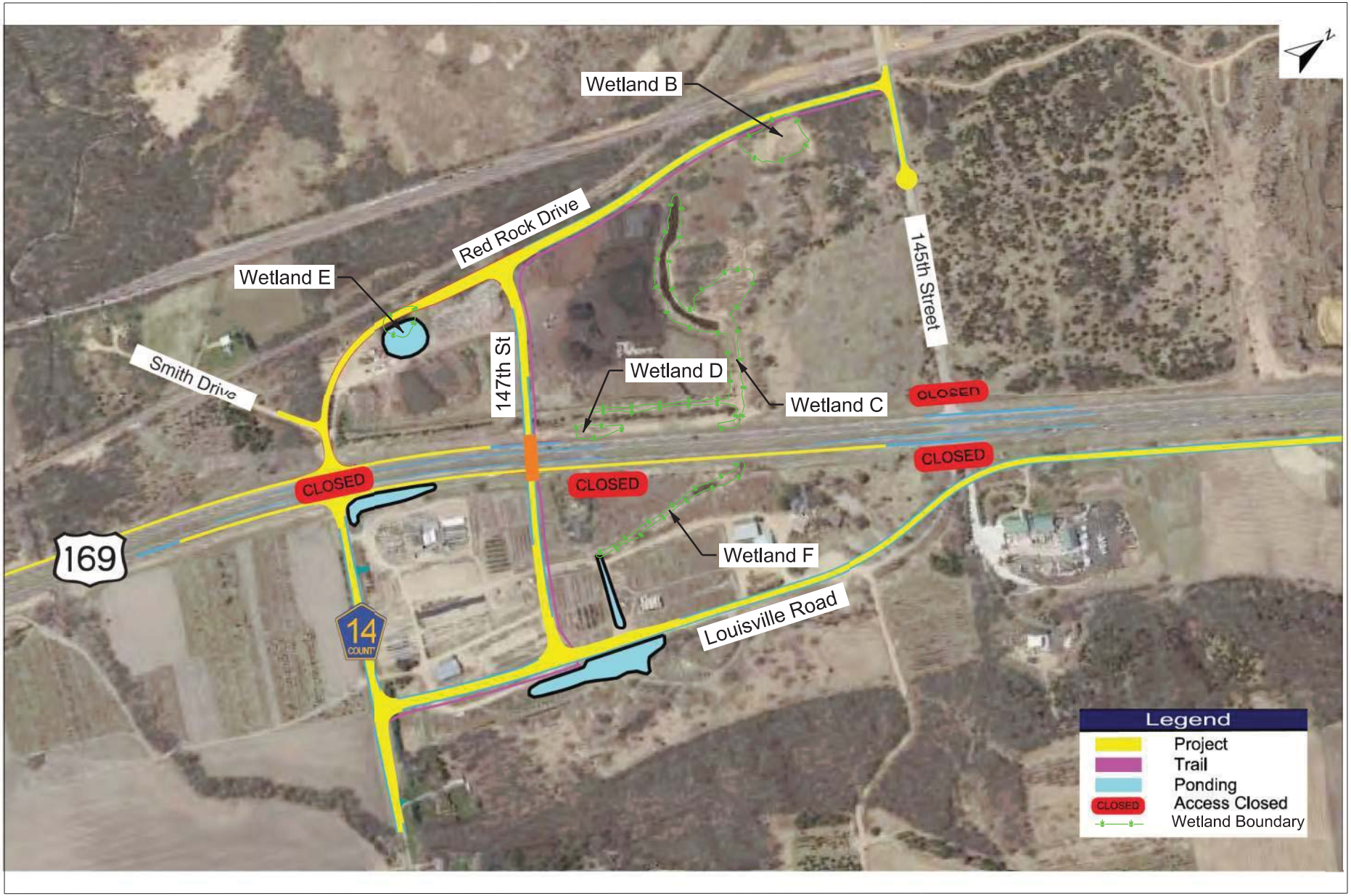

Figure 16: Overpass near CSAH 14 - South Concept

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

Date: Printed: 5/13/2017
WSB Filename: K:\03212-000\Cad\Exhibits\Environmental Doc\Figure 14 Recommended Improvements-South - Copy.dgn

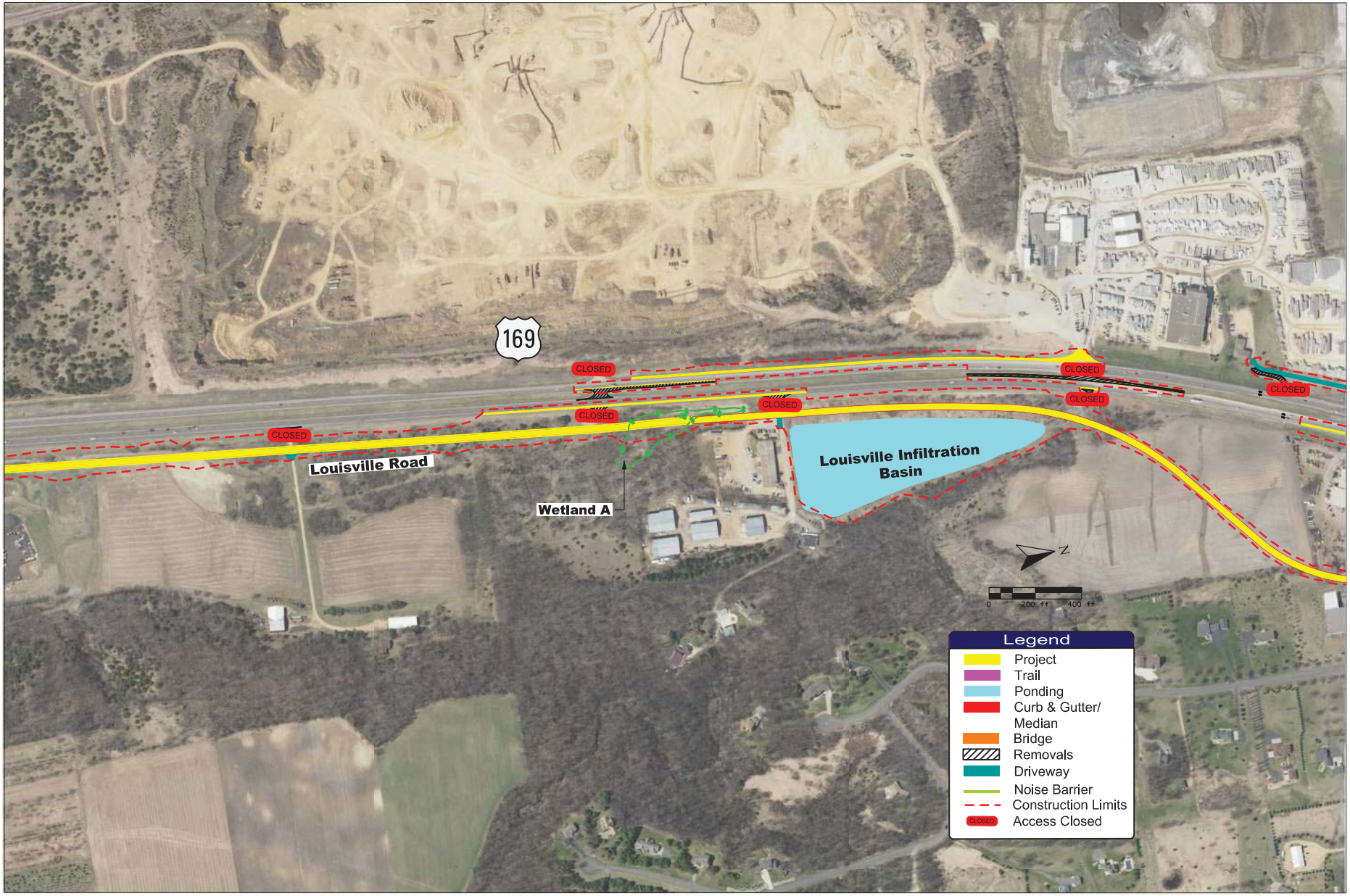

Figure 2a: Recommended Improvement - South Project Area

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

Date: Printed: 5/15/2017
WSB Filename: K:\0321\2-000\Cad\Exhibits\Environmental Doc\Figure 17D Recommended Improvements-South.dgn

Figure 2b: Recommended Improvement - South Project Area

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

Date: Printed: 5/17/2017
WSB Filename: K:\0321Z-000\Cad\Exhibits\Environmental Doc\Figure ITE Recommended Improvements-South.dgn

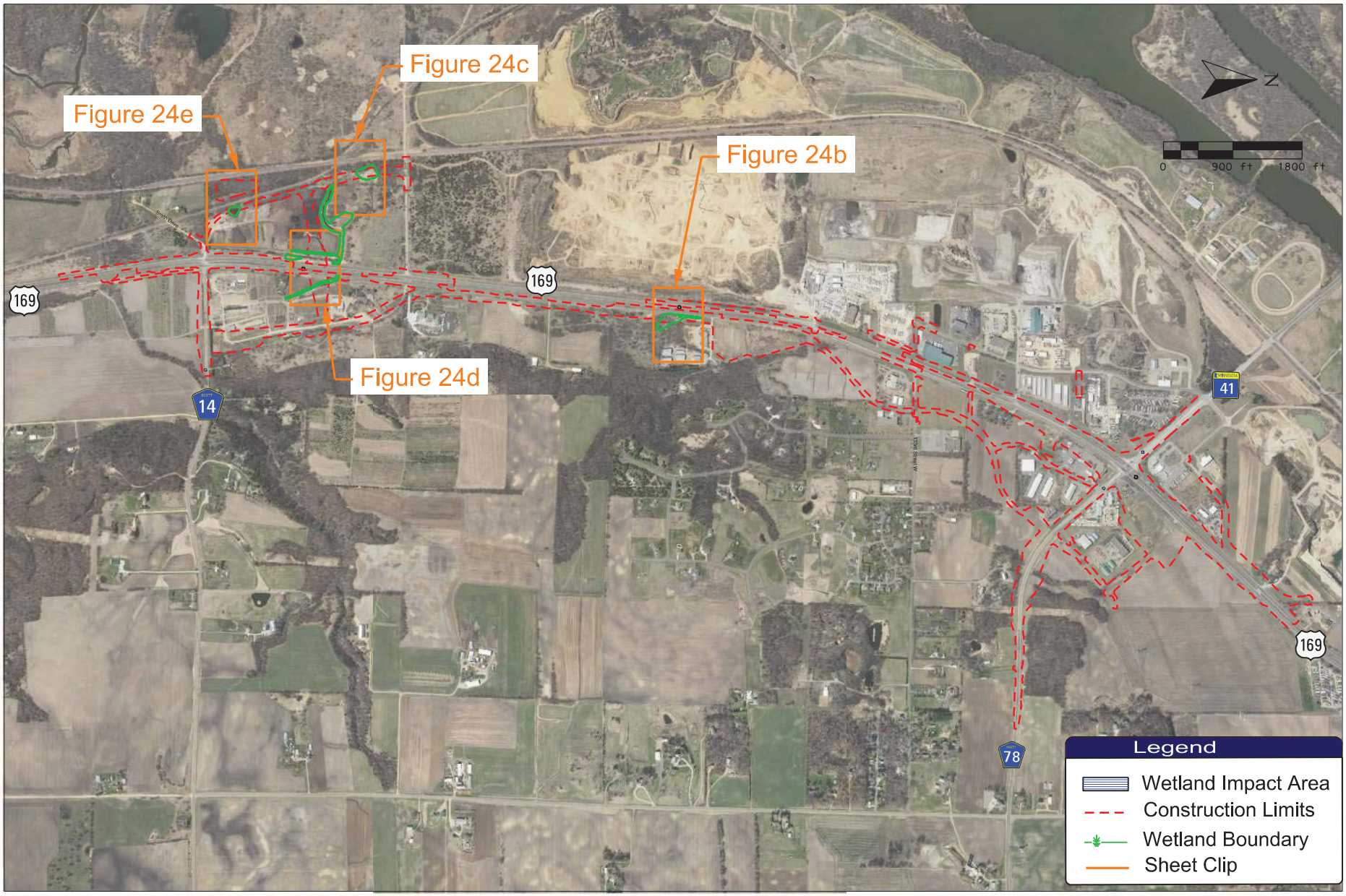

Figure 24a: Anticipated Wetland Impacts

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
April 2017

Date: Printed: 5/17/2017
WSB Filename: K:\0321Z-000\Cad\Exhibits\Environmental Doc\Figure X1 Wetland Impact overview.dgn

Figure 24b: Anticipated Wetland Impacts - Wetland A

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
April 2017

Date: Printed: 3/15/2017
WSB Filename: K:\0321-000\Cad\Exhibits\Environmental Doc\Figure XI Wetland Impact.dgn

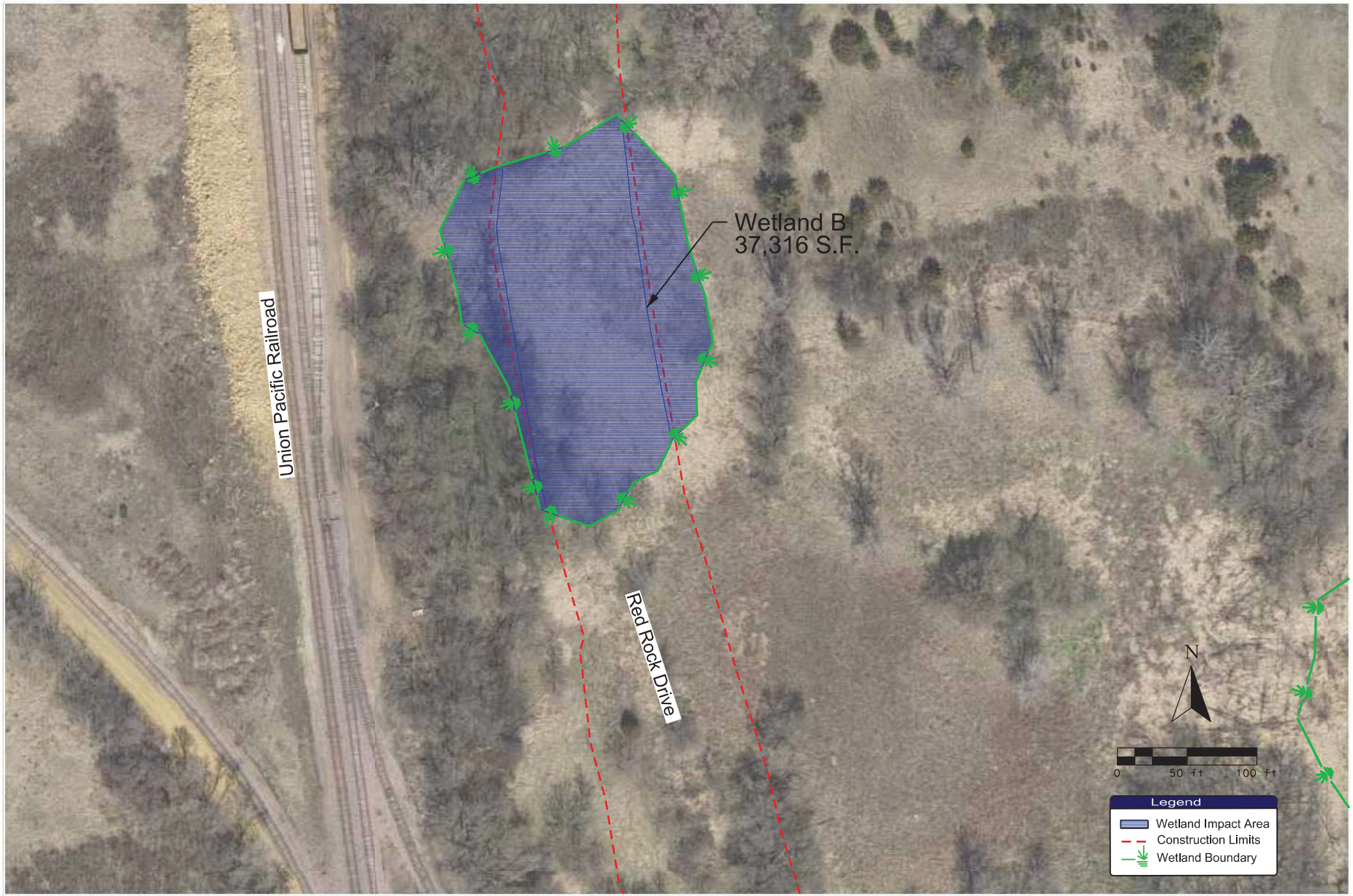

Figure 24c: Anticipated Wetland Impacts - Wetland B

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

Date: Printed: 5/15/2017
WSB Filename: K:\03212-000\Cad\Exhibits\Environmental Doc\Figure X3 Wetland Impact.dgn

Figure 24d: Anticipated Wetland Impacts - Wetlands C and F

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
April 2017

Date: Printed: 3/15/2017
WSB Filename: K:\0321-000\Cad\Exhibits\Environmental Doc\Figure X2 Wetland Impact.dgn

Figure 24e: Anticipated Wetland Impacts - Wetland E

US 169/TH 41/CSAH 78/CSAH 14
Intersection Improvements
Scott County, MN SP 070-596-013/7005-121/7009-81/7010-109
May 2017

Date: Printed: 5/15/2017
WSB Filename: K:\0321\2-000\Cad\Exhibits\Environmental Doc\Figure X4 Wetland Impact.dgn