# 5.0 Physical and Environmental Analysis

*The US Highway 53 Virginia to Eveleth Draft Environmental Impact Statement (EIS) (December 2014) is incorporated by reference and is considered part of the Final EIS. Parts of Chapter 5 from the Draft EIS are repeated here, but it has been abbreviated to focus only on the preferred alternative and what has changed since the Draft EIS.*

*Water resources-related issues are discussed in a number of sections in this chapter, including 5.2 Utilities, 5.3 Water Supply, 5.4 Waterbody Modification, 5.5 Wetlands, and 5.6 Surface Water/Water Quantity and Quality.*

## 5.1 Changes Since the Draft EIS

There have been no changes in the project setting since the Draft EIS that affect the previous physical and environmental analyses. There has been one change in the regulatory context for threatened and endangered species, which is discussed in Section 5.12. There have been additional technical studies for noise, proposed threatened species, contamination, wetlands, and geotechnical investigation, which are discussed in Sections 5.8, 5.12, 5.13, and 5.15, respectively. Changes in the project are described in Section 2.3.1.

In the Draft EIS, impacts were calculated based on the area of evaluation for each alternative. These "areas of evaluation" were defined based on general design assumptions, estimated construction limits, potential additional right-of-way needed for stormwater management and other related transportation functions, and other design factors.

In the following sections, impacts for the preferred alternative have been recalculated based on refined construction limits, and include staging areas, a snow storage area, and a Mesabi Trail connection, which were not evaluated in the Draft EIS.

Each of the following sections describes changes since the Draft EIS applicable to the resource being evaluated, impacts of the preferred alternative, and mitigation measures for the preferred alternative.

## 5.2 Utilities

### 5.2.1 Changes Since the Draft EIS Related to Utilities

The additional areas added to the project (staging areas, snow storage area, and Mesabi Trail connection) do not require any changes to utilities.

The Minnesota Department of Transportation (MnDOT) has continued coordination with the utility owners regarding the preferred alternative design, schedule, and right-of-way. Meetings were held in December 2014 and March, April, May, June, and July 2015 with the utility owners to discuss these topics. Owners were notified that they needed to let MnDOT know whether they wish to be accommodated on the new bridge (excluding gas) by May 1, 2015. As of the date of this document, the utilities listed below will be included on the bridge:

- Mediacom: one four-inch duct
- City of Virginia: water and sewer
- Virginia Department of Public Utilities (VPU): one six-inch duct for potential future power/electrical lines
- Enventis: one four-inch duct

Paul Bunyan Rural Telephone Cooperative (Paul Bunyan Communications) and CenturyLink plan to move out of the right-of-way completely. Minnesota Power also plans to relocate its facilities out of the existing easement agreement area but may have some power/electrical lines in the new right-of-way.

Northeast Services Cooperative is one utility owner that is located along Co. 7, Co. 101, and Landfill Road but is not located within the existing easement agreement area. They will relocate along Landfill Road when new right-of-way is available.

Utility agreements will be executed in the fall of 2015 through early 2016. Utility owners have been asked to be out of the existing easement agreement area by summer 2016 or later as authorized by MnDOT.

### 5.2.2 Impacts of the Preferred Alternative

There are two public and four private utility operators located within the existing easement agreement area of the US 53 corridor right-of-way. The utilities are located within US 53 right-of-way by way of revocable permits issued by MnDOT. The applicable terms of all such permits make each utility responsible for costs and management of its facilities along the highway, including within the RGGS-owned existing easement agreement area. Therefore, MnDOT and RGGS are under no obligation to provide for utility relocations or other accommodations.

MnDOT's proposed action is driven by the RGGS existing easement agreement area terms, which require MnDOT to relocate US 53 from the existing easement agreement area. As a result, the direct impact to the utilities within this existing easement agreement area is the termination of the easement and subsequent termination of the utility permits. As such, MnDOT has initiated the termination notice process. MnDOT notified each of the utilities described in this section (in letters dated May 4, 2012) of the US 53 project background and stated that all utilities must relocate from the existing easement agreement area by October 2016.

All utilities in the existing easement agreement area except gas lines may be accommodated on the bridge across the Rouchleau Pit. Although MnDOT's Utility Accommodation Policy cites that under certain conditions gas lines may be accommodated on bridges, it is not recommended for this project because of the high risk a gas line poses to bridge workers and the traveling public due to the proximity to mining activity. The placement of a gas line on a high profile bridge, such as is proposed for the preferred alternative, poses homeland security concerns that would be difficult to mitigate with the level of gas line system monitoring that would be necessary.

### 5.2.3 Mitigation

The impact to utilities within the existing easement agreement area is not caused by the US 53 relocation project; rather, it is the result of the termination of easement rights by RGGS and UTAC. However, the planning and technical assistance provided through the US 53 EIS process aimed to minimize adverse impacts to utilities caused by the termination of the easement by providing opportunities for utilities to relocate within the preferred alternative.

## 5.3 Water Supply

### 5.3.1 Changes Since the Draft EIS Related to Water Supply

With the refinements in the design of the preferred alternative since the Draft EIS, MnDOT has identified potential temporary construction staging areas needed for placement of the bridge piers and superstructure in/over the Rouchleau Pit. These areas are previously disturbed and will not impact the Rouchleau Pit. Localized dewatering will be needed for pier construction. The pier style, depth, and other design details will be determined as part of final design, which will continue through August 2015.

The snow storage area is located approximately 0.8 miles from the Rouchleau Pit, northeast of the road alignment on the west side of Landfill Road. During a snow event, snow will be plowed onto the shoulders. After the snow event, snow will be loaded into trucks and hauled off the bridge and the constrained

northbound section between Landfill Road and the bridge, then piled on the snow storage site. Runoff from this snow storage area will be filtered through infiltration and surface features before reaching the Rouchleau Pit. The temporary staging areas will have erosion control best management practices (BMPs) installed to ensure no runoff from disturbed areas flows untreated to the pit.

### 5.3.2 Impacts of the Preferred Alternative

The preferred alternative will cross the Rouchleau Pit, which is the water supply source for Virginia and the ArcelorMittal Mine.

The preferred alternative has the potential to impact the Virginia Inner Emergency Response Area due to turbidity from bridge construction. The City's intake system is located approximately 0.6 miles north of the alignment. ArcelorMittal's intake is located approximately 1.2 miles from the alignment, and, given its distance from the alignment, is not anticipated to experience turbidity impacts from the preferred alternative.

### 5.3.3 Mitigation

BMPs, as identified within the National Pollutant Discharge Elimination System (NPDES) Stormwater Pollution Prevention Plan (SWPPP), will be implemented by MnDOT to minimize the amount of turbidity generated by the project within the Rouchleau (Mesabi) Pit water supply. The City will continue to monitor for turbidity levels and, if thresholds are exceeded, will implement additional treatment to comply with the US Environmental Protection Agency's (USEPA) Disinfectants and Disinfection Byproduct Rule (71 FR 388).

If any fill is needed, specifications for the source and nature of the fill used within the Virginia Inner Emergency Response Area will be utilized to avoid the potential for contamination impacts to the water supply. These specifications will prohibit the use of taconite tailings as fill within the Rouchleau Pit.

## 5.4 Waterbody Modification

### 5.4.1 Changes Since the Draft EIS Related to Waterbody Modification

There have been no changes since the Draft EIS that affect the information presented on waterbody modification. Sections 5.4.2 and 5.4.3 summarize the information reported in the Draft EIS for the preferred alternative.

### 5.4.2 Impacts of the Preferred Alternative

The preferred alternative will cross the Rouchleau Pit by bridge, minimizing the impact to the waterbody by avoiding most activity below the water line. Disturbance (excavation, pilings, etc.) within the waterbody will be limited to construction of bridge piers and abutments. Pier and abutment locations will be designed to minimize impacts (localized fill) on the pit and waterbody to the extent feasible. Only localized, temporary dewatering will be required during pier/abutment construction. Water from temporary construction dewatering will be routed through a sediment basin and back into the Rouchleau Pit.

### 5.4.3 Mitigation

The Minnesota Department of Natural Resources (DNR) is authorized to issue a General Permit (1997-0005) that authorizes temporary appropriations including dewatering for construction activities. Additionally, the required NPDES permit via the Minnesota Pollution Control Agency (MPCA) will include a SWPPP that will describe the BMPs to be implemented as part of the project to protect water quality during and after construction.

## 5.5 Wetlands

### 5.5.1 Changes Since the Draft EIS Related to Wetlands

As described in Section 5.1, the areas evaluated for wetland impacts have been refined since the Draft EIS. No wetlands were identified in any of the staging areas or snow storage area. Three small unregulated wetlands were identified within the Mesabi Trail connection. Additionally, a Level 2 wetland delineation was completed and approved by the appropriate agencies. A total of 80 wetland basins comprised of a variety of wetland plant communities were found in the project area. Three deep-water pits were also identified in the project area, including the Rouchleau Pit – a deep, water-filled depression that has developed due to past mining activities. A summary of wetland and aquatic resources by wetland type is included in Tables 1 and 2 in Volume 2 of the permit application (see Appendix F). The detailed documentation of the Level 2 delineation is provided in the TH 53 Relocation Project Wetland Delineation Report (SEH, 2015) (available upon request). The wetland boundaries and report were reviewed in the field and approved by the US Army Corps of Engineers (USACE) on June 1, 2015. Correspondence since the Draft EIS regarding wetlands, boundary reviews, and/or approvals is summarized in Table 5.5-1, and documentation is included in Appendix F.

Table 5.5-1. Wetland Correspondence and Actions

| Action | Date |
|---|---|
| Approved Jurisdictional Determination (AJD) request submitted to the USACE | March 3, 2015 |
| Wetland permit application (Vol I – sequencing) submitted to USACE, MnDOT as the Wetland Conservation Act (WCA) Local Governmental Unit (LGU), and MPCA | March 3, 2015 |
| USACE Public Notice of application | March 24, 2015 |
| WCA Notice of Application for Vol I – sequencing | March 29, 2015 |
| USACE and WCA Technical Evaluation Panel (TEP) member field review of wetland boundaries | May 28, 2015 |
| WCA Notice of Decision for Vol I – sequencing | May 5, 2015 |
| USACE wetland boundary concurrence | June 1, 2015 |
| WCA Local Governmental Unit (LGU)/TEP member field review of wetland boundaries | June 3, 2015 |
| Supplemental information for AJD request submitted to USACE | June 15, 2015 |
| USACE issued AJD for Rouchleau Pit | June 16, 2015 |
| WCA email concurrence with wetland boundaries | June 18, 2015 |
| USACE – St. Paul District issued AJD form for wetlands to USACE Headquarters and USEPA for comment | June 22, 2015 |
| Wetland permit application (Vol II – mitigation and replacement) submitted to USACE and MnDOT as the WCA LGU | June 29, 2015 |
| WCA Notice of Application for Vol II – mitigation and replacement | July 10, 2015 |
| Wetland permit application (Vol II – mitigation and replacement) submitted to MPCA | July 10, 2015 |
| USACE Headquarters and USEPA comment period on AJD ended | July 13, 2015 |
| USACE approved AJD request | July 21, 2015 |
| Supplemental information submitted to USACE | August 24, 2015 |
| WCA Notice of Application for Vol II – mitigation and replacement – review period ended | September 4, 2015 |

The USACE and the USEPA have provided concurrence on Concurrence Point #3 (preferred alternative) of the National Environmental Policy Act (NEPA)/Section 404 merger process in letters dated February 2, 2015 and May 7, 2015, respectively (see Appendix C). The Section 404 permit application and

jurisdictional determination request has been submitted by MnDOT to the USACE, and it was public noticed by the USACE on March 24, 2015 for comments to be received through April 23, 2015.

### 5.5.2 Impacts of the Preferred Alternative

There will be no impacts to regulated wetlands in the areas added since the Draft EIS (i.e., the staging areas, snow storage area, and Mesabi Trail connection).

The Draft EIS described the alternatives analyzed for this project and the wetland impacts of each (Chapter 2 and Section 5.4.3, respectively). The preferred alternative had the least amount of wetland impact compared to other Build Alternatives (two to four acres less). Since the Draft EIS, final design details have developed, and the Level 2 wetland delineation has been completed.

A permit application has been submitted to the USACE (Section 404), MPCA (Section 401 certification), and MnDOT (WCA LGU) for this project. Volume 1 (February 2015) of the application provided project background, sequencing, and preliminary impacts. Volume 2 (June 29, 2015) provides the Level 2 wetland boundaries and the revised impacts. In August 2015, a supplemental memo was submitted to the USACE with additional refinements to wetland impacts based on 60 percent design plans. These three documents are provided in Appendix F. All of these permits and approvals require documentation of sequencing, which is the evaluation of options for wetland avoidance, minimization, and mitigation. Sequencing information and other application details are included in Volume 1 of the permit application (see Appendix F).

With the refined construction limits and Level 2 wetland boundaries included in the permit application (see Figures 4-1 through 4-17 included with the August 2015 memo in Appendix F), the total wetland and aquatic resource impact (permanent and temporary) is 15.49 acres, with 9.96 in WCA jurisdiction and 7.90 acres in USACE jurisdiction. Some wetlands are under the jurisdiction of both the WCA and USACE. A total of 2.27 acres of wetland impact is unregulated by the USACE and/or WCA primarily due to incidental/human induced/isolated wetland characteristics resulting from some form of prior disturbance (e.g., grading, excavation) and, therefore, is not subject to replacement requirements. Table 5.5-2 provides a summary of impacts. Detailed information can be found in Table 3 in the supplemental memo (see Appendix F).

There are 27 USACE wetlands impacted, 13 of which are temporarily impacted (0.58 acres). There are 26 WCA regulated wetlands impacted, 10 of which are temporarily impacted (0.75 acres). These impacts include those associated with the removal of the roadway within the easement agreement area.

Table 5.5-2. Summary of Wetland Impacts of the Preferred Alternative (in acres)

| Impact Type | Total Wetland Impact[A] | USACE Wetland Impacts | WCA Wetland Impacts | Unregulated Wetland Impacts |
|---|---|---|---|---|
| Temporary | 1.58 (18 wetlands) | 0.58 (13 wetlands) | 0.75 (10 wetlands) | 0.78 (3 wetlands) |
| Permanent | 13.91 (45 wetlands) | 7.90 (20 wetlands) | 9.96 (20 wetlands) | 1.49 (15 wetlands) |
| TOTAL | 15.49 (57 wetlands) | 8.48 (27 wetlands) | 10.71 (26 wetlands) | 2.27 (18 wetlands) |

[A] Some wetlands have both temporary and permanent impacts and/or both WCA and USACE impacts; therefore, the total of the columns and rows may not be additive.

### 5.5.3 Mitigation

The current minimum wetland replacement ratio for wetland credits is 1:1 for WCA regulated impacts and 1:1 for USACE regulated impacts on MnDOT road projects in the northeast part of the state if replacement is in the same Bank Service Area (BSA) as the impact. If replaced outside the BSA, the ratio increases to 1.25 for the USACE and 1.5 under the WCA. Discussions between MnDOT and the USACE have determined that the potential for wetland restoration is limited in the northeast and adjacent to the roadway corridor (bedrock, pit, mine dewatering); therefore, wetland replacement will be through use of wetland bank credits.

The mitigation plan has not changed and existing wetland bank credit will be used. There are currently 32 acres of credit available in BSA 1. Wetland bank account number 1595 in the St. Louis River watershed and BSA 1 will be used to withdraw 9.96 acres of wetland credit. The replacement plan proposes mitigation for permanent impacts, for a total of 9.96 acres for WCA and 7.90 acres for USACE (see Table 5.5-3).

Table 5.5-3. Proposed Wetland Mitigation Summary

| Agency | Estimated Regulated Permanent Wetland Impact | Mitigation Ratio | Credits Needed (acres) |
|---|---|---|---|
| MnDOT under WCA | 9.96 acres | 1:1 | 9.96 |
| USACE | 7.90 acres | 1:1 | 7.90 |

# 5.6 Surface Water/Water Quantity and Quality

## 5.6.1 Changes Since the Draft EIS Related to Surface Water/Water Quantity and Quality

Since the publication of the Draft EIS, impervious surfaces have been evaluated as part of final design. Surface water impacts and associated mitigation are summarized in Sections 5.6.2 and 5.6.3.

A snow storage area has also been identified approximately 0.8 miles northeast of the road alignment, on the west side of Landfill Road. The site is disturbed and sparsely vegetated. A runoff barrier will be installed along the perimeter of the site (e.g., berm, J-barriers) to slow runoff from snow melt leaving the site. This site may also be used during construction, if needed.

Similar perimeter treatment will be installed at the temporary staging areas to control runoff. The NPDES permit and associated SWPPP will detail specific BMPs to use in the respective areas of the site that will be disturbed.

## 5.6.2 Impacts of the Preferred Alternative

With the preferred alternative, the existing ditch that flows parallel to and along the east side of US 53 will remain after MnDOT vacates the existing easement agreement area. See Chapter 7: Cumulative Impacts regarding cumulative stormwater impacts due to mining operations. MnDOT will collect and treat surface runoff from its roadway and will maintain off-site drainage patterns that currently cross the proposed alignment.

The preferred alternative applies two typical sections along the alignment (see description in Section 2.3.1.3). A rural typical section is proposed where possible. In these areas, runoff will be directed from the roadway into grassed swales that are located within the approximately 40-foot center median and on each side of the roadway. This rural section is planned to extend from the south end of the project to the south end of the MN 135 interchange, at the Landfill Road intersection, and where the alignment transitions back to the existing alignment at the 2nd Avenue intersection. The constrained rock cut section at the east side of the bridge, which includes the portion where rock excavation will be required, also incorporates swales as a means for collection and conveyance.

Manganika Lake is the ultimate receptacle of a portion of the stormwater runoff from US 53 in the existing condition, with the rest of the project area draining to landlocked basins, wetlands, or the Rouchleau Pit (after treatment) (Figure 5.5-2). According to the MPCA 2014 listing of impaired water bodies, Manganika Lake is currently listed as impaired due to excess nutrients, eutrophication, and biological indicators. Manganika Lake will be receiving similar runoff volume after the preferred alignment is constructed due to a small increase (three acres) in impervious surface coverage within the tributary area, which will be treated before discharging to the lake. As a result, the preferred alternative does not exacerbate the existing impairments prescribed by the MPCA.

Once the existing alignment area between the Rouchleau and Auburn Pits is excavated as part of mining operations, stormwater runoff in the excavated area will be managed in conformance with UTAC's Industrial Stormwater Permit requirements.

MnDOT assessed the total dissolved solids and chloride concentrations in response to inquiries from UTAC. This assessment was limited by the information available, and a conservative approach was taken. Roadway areas were estimated and compared to the average salt application in tons per mile annually. An overall subwatershed delineation and hydrologic review was conducted to estimate the amount of water entering the Rouchleau Pit. This hydrologic review and analysis was also limited by the information available at the time. The result of this assessment was an estimate of milligrams per liter (mg/l) composition of sodium chloride (NaCl) and total dissolved solids (TDS) that could be present in the tributary area runoff volume. This assessment assumed that all applied salt will be dissolved into solution and made it to the pit, which is highly unlikely. Resulting values were 3.81 mg/l chlorine (Cl) for existing conditions, 16.95 mg/l prior to mining out the old road, and 13.39 mg/l after the existing road is mined out. Drinking water standards are 200 mg/l, and background Cl concentrations in forested areas are 15 to 30 mg/l. Chlorine was 0.7% of UTAC's TDS. Since the assessment was completed, an area has been identified for snow storage that is 0.8 miles from the Rouchleau Pit. BMPs will be selected for the snow storage area to manage runoff. Since the snow collected and dumped at this location will be from the roads in the study area, the assessment will account for the salt that may be in the runoff from this snow storage area.

### 5.6.3 Mitigation

A review of the impervious surface coverages for the existing and proposed conditions is being evaluated as part of final design. Based on the current assumptions for access roads, staging areas, and the Mesabi Trail connection, along with pavement removals, there will be a net increase of impervious surface of approximately three acres. Per NPDES requirements, treatment of stormwater is required for the net change in impervious surface area for the project.

The constrained rock cut section refers to the roadway typical section proposed for the segment of roadway that will require rock cut, and spans from approximately ¼ mile north of the high point near Landfill Road to the bridge east approach panel. The rock cut section is unique in that the outer edge of the section is near a vertical rock face, whereas the other typical sections for this project are generally a rural ditch section with outer slopes matching existing grade. Stormwater quality treatment in the rock cut section is proposed in the form of two detention basins at each side of the preferred alignment immediately south of the bridge. The first basin serves as spill containment in the event of an incident that results in contaminant release into roadside ditches. The second basin will provide detention of surface runoff, with the goal of reducing the rate of discharge to the Rouchleau Pit. The bottom section of the downstream basin will consist of filtration media and will be lined to prevent percolation into the rock fissures below. No infiltration is permitted from the ponds because of geotechnical concerns about the unintended consequences of infiltration near the bridge abutment, most importantly the potential to destabilize rock used for structural anchoring of the bridge abutment.

All project detention ponds are sized per the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 precipitation data per MnDOT's recently changed design standard. Atlas 14 consists of updated precipitation data from weather stations nearest the project site and generally increases the design storm events for each frequency compared to previous rainfall intensity values. Additionally, detention ponds will be designed to meet the requirements of the NPDES permit, enforced via the MPCA's Construction General Permit, for water quality treatment for the constrained section. For this segment of the alignment, per NPDES requirements, a permanent volume of approximately 0.9 acre-feet will be required. The size of the stormwater pond(s) will be approximately 0.4 acres in surface area. Per MPCA and National Urban Runoff Program (NURP) guidance, discharge may be limited to 5.66 cubic feet per second per acre of pond surface area for the water quality storm event, which is defined as the 0.3-year, 1.25-inch event (instant runoff volume).

MnDOT will collect stormwater from the bridge, preventing it from draining directly into the Rouchleau Pit. There will be no deck drains on the bridge and no storm sewer. All bridge drainage will be conveyed along

the outside shoulder and part of the outside drive lane until it is collected at the downstream end for conveyance into the new proposed pond on the west side of the preferred alignment. The right-of-way identified will accommodate the proposed detention and filtration ponds.

Surface runoff from the existing alignment will continue to travel to Manganika Lake until the area is excavated through mining operations. Stormwater reaches Manganika Lake by means of the channel (Manganika Creek) on the west side of the Auburn Pit (Figure 5.5-2). Potential stormwater treatment pond locations are all within existing or proposed right-of-way limits. While the roadway is being constructed, a SWPPP will be in place to prevent erosion and sedimentation from occurring that will negatively impact Manganika Creek.

Construction activities for the preferred alternative will be consistent with typical roadway construction. Erosion and sediment control will be provided during construction in accordance with the requirements of the MPCA and NPDES. Permanent erosion and sediment control measures will be constructed along the alignment, such as filter berms that reduce channel flow velocity and permanent stabilization methods to reduce scour potential.

MnDOT's current design and maintenance practices include many BMPs, such as installing stormwater ponds, vegetated swales and disconnected impervious areas, filtration berms, using Road Weather Information Systems, calibrating sanders for road-clearing operations, and removing snow buildup along shoulders throughout the winter.

## 5.7 Geology and Soils/Soil Erosion

### 5.7.1 Changes Since the Draft EIS Related to Geology and Soils/Soil Erosion

There have been no changes since the Draft EIS that affect the information presented on geology and soils. Sections 5.7.2 and 5.7.3 summarize the information reported in the Draft EIS for the preferred alternative.

### 5.7.2 Impacts of the Preferred Alternative

The preferred alternative crosses areas that have been disturbed previously by mining, road construction, and other activities. Outside of the Rouchleau Pit area, steep slopes that may require erosion control measures may be encountered within newly proposed embankment areas constructed along existing high embankments found on portions of Landfill Road and where the bottom of the slope of a roughly 500-foot stretch of proposed southbound US 53 embankment intersects a high-wall present on the west side of the Rouchleau Pit and near the US 53/2nd Avenue interchange.

### 5.7.3 Mitigation

Standard BMPs for working adjacent to surface waters will be implemented to prevent stormwater runoff from entering the Rouchleau Pit during construction of the bridge, approaches, and roadway.

Design and construction approaches for the preferred alternative will include a more detailed assessment of the potential for use of special erosion control measures such as geotextile sheeting for temporary cover on slopes, articular concrete rip-rap, or other specific construction practices to minimize soil erosion. In areas where no special conditions are identified, standard erosion control BMPs for steep slopes and erodible soils will be incorporated into the roadway design plans and specifications for construction. An example of a special condition requiring more extensive controls is disturbance within 300 feet of the Rouchleau Pit. These disturbances will be for staging and access to the pit for construction of the bridge abutments. The SWPPP requires the contractor to submit the intended controls and method of approach at least one week prior to the work commencing, and this submission will be reviewed and approved by MnDOT.

# 5.8 Noise

## 5.8.1 Changes Since the Draft EIS Related to Noise

The southern limit of the project has been extended to Bourgin Road to account for the modified access to the Midway neighborhood and acquisition of Parcel 206, which underlies a portion of the existing US 53. As such, additional noise modeling was conducted after the publication of the Draft EIS to assess potential impacts to receivers previously outside of the study area for the preferred alternative.

This additional analysis is included in Appendix G. Twenty-five receivers were added along US 53 between Vermillion Drive and Bourgin Road. It was determined that 13 of 25 receivers had existing daytime noise impacts, and all 25 had existing nighttime noise impacts. Twenty-one of the 25 additional receivers would benefit from installation of a noise wall.

The noise wall voting process concluded on "the date of public knowledge," which is the date the Federal Highway Administration (FHWA) signed the Record of Decision. Final results have been incorporated into an addendum to the noise technical report, which is included in Appendix G, and reported in the Record of Decision.

## 5.8.2 Impacts of the Preferred Alternative

Alternative E-2 with the Straight Option was selected as the preferred alternative and was identified in the Draft EIS as impacting Area C, which is near 2nd Avenue (see Figure 5.8-1). A noise barrier was found be to be cost-effective in this location.

As a result of the extension of the southern limit of the project to Bourgin Road, the preferred alternative will also impact Area F near Midway (see Figure 5.8-1). Additional noise modeling was conducted for this area, and the findings of this analysis are included in Appendix G.

## 5.8.3 Mitigation

### 5.8.3.1 Area C (2nd Avenue) Noise Wall

Based on a refinement of the analysis from the Draft EIS, a 1,260-foot long noise wall was found to be cost-effective in Area C. With a 20-foot tall barrier, the cost per residence achieving a five dBA reduction is $36,000, meeting the cost-effectiveness requirement of $43,500 per residence.

### 5.8.3.2 Area F (Midway Area) Noise Wall

With the additional analysis for the receivers south of Vermillion Drive, a 2,074-foot long noise wall was found to be cost-effective in Area F. With a 20-foot tall barrier, the cost per residence achieving a five dBA reduction is $24,735, meeting the cost-effectiveness requirement of $43,500 per residence.

### 5.8.3.3 Voting Process

In accordance with federal Noise Abatement Criteria (NAC) standards, benefited receivers have been given the opportunity to vote for or against the construction of the proposed walls. Each benefitted receiver was assigned a number of points depending on location and whether the parcel use was residential or commercial. The point assignments from MnDOT's Noise Policy are shown in Table 5.8-1.

Table 5.8-1. Benefitted Receiver Point Assignments

| | Commercial Parcels | Residential Parcels |
|---|---|---|
| **Tier 1** | | |
| Points for Tier 1 Owners | 4 | 4 |
| Points for Tier 1 Residents | N/A | 2 |
| **Total Points for Tier 1 Parcels** | **4** | **6** |
| **Tier 2** | | |
| Points for Tier 2 Owners | 2 | 2 |
| Points for Tier 2 Residents | N/A | 1 |
| **Total Points for Tier 2 Parcels** | **2** | **3** |

Tier 1 refers to those parcels directly abutting the roadway, and Tier 2 includes those parcels that do not abut the roadway. For residential properties, where the resident is different than the owner, both have the opportunity to vote, with the owner retaining higher points than the resident. If greater than half of the available points vote against the wall, the wall will not be constructed.

Notices and ballots were mailed to benefited receivers on February 18, 2015, with notice of a public open house to be held on March 5, 2015. The City of Virginia also distributed flyers door-to-door regarding the open house for the benefited receivers. Fourteen residents attended the open house. The voting period was advertised to close March 20, 2015; due to several undelivered ballots (no forwarding address), additional time and effort was put forth to reach the affected parties. Technically, votes can be accepted until "the date of public knowledge" is reached, which is the date FHWA signs the Record of Decision. MnDOT conducted door knocking on two separate occasions and hand delivered ballots to unresponsive properties. For properties that were vacant, extra effort was made to reach property owners in order to obtain a vote for the property.

In July 2015, MnDOT refined the noise analysis for Area F (Midway) as part of the project development process. No refinements were indicated for Area C (2nd Avenue). During this evaluation, MnDOT identified the need for refinements to the noise model to improve the accuracy of its depiction of the area, wall design, and access changes. With the refined results, MnDOT determined that:

- Four parcels previously identified as benefitted receivers would not benefit from the proposed noise barrier design
- Seven parcels not previously identified as benefitted receivers would benefit from the proposed noise wall

The seven additional benefitted receivers were mailed notices and ballots on July 17, 2015, with notice of a public open house to be held on August 3, 2015. No residents attended the open house. It was requested that benefited receivers return their ballots by August 18, 2015.

Based on the final vote count, the following conclusions have been made regarding noise walls.

### Area C (2nd Avenue)

Based on modeling, 12 parcels were considered benefitted receivers of the proposed wall in Area C. The total number of available voting points for the 1,260 foot wall was 37. Of the 37 available points, 21 points (57 percent) were from "no" votes. Therefore, the proposed wall in Area C will not be constructed.

### Area F (Midway Area)

Based on revised modeling, 35 parcels were considered benefitted receivers of the proposed wall in Area F. The total number of available voting points for the 2,074 foot wall was 99. Of the 99 available points, 54 points (55 percent) were from "no" votes. Therefore, the proposed wall will not be constructed.

## 5.9 Transportation-Related Air Quality

### 5.9.1 Changes Since the Draft EIS Related to Transportation-Related Air Quality

There have been no changes since the Draft EIS that affect the information presented on transportation-related air quality. Sections 5.9.2 and 5.9.3 summarize the information reported in the Draft EIS for the preferred alternative.

### 5.9.2 Impacts of the Preferred Alternative

The preferred alternative will not result in an increase in traffic volumes, vehicle mix, basic project location, or any other factor that will cause an increase in mobile source air toxics (MSATs) impacts compared to the existing condition. This project has been determined to generate negligible air quality impacts for Clean Air Act Amendment criteria pollutants and has not been linked with any special MSATs concerns as compared to existing conditions.

Moreover, USEPA regulations for vehicle engines and fuels will cause overall MSATs emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with USEPA's MOVES2010b model forecasts a combined reduction of 83 percent in the total annual emission rate for the priority MSATs from 2010 to 2050 while vehicle-miles traveled are projected to increase by 102 percent. This will reduce both the background level of MSATs as well as the possibility of even minor future MSATs emissions.

Future annual average daily traffic (AADT) volumes for the project do not approach the benchmark criterion for a carbon monoxide hot spot air quality analysis. The project is not located in an area where conformity requirements apply, and the scope of the project does not indicate that air quality impacts will be expected.

### 5.9.3 Mitigation

No transportation-related air quality impacts have been identified; therefore, no mitigation is proposed.

## 5.10 Vegetation and Cover Types

### 5.10.1 Changes Since the Draft EIS Related to Vegetation and Cover Types

As described in Section 5.1, the areas evaluated for vegetation impacts have been refined since the Draft EIS. In addition to refined construction limits, staging areas, a snow storage area, and a Mesabi Trail connection have been identified since publication of the Draft EIS.

Staging Areas: The three staging areas (not including the snow storage area) were previously disturbed by mining activities and have recently been cleared of vegetation and used for access to the pit for various data gathering activities. The total size of these staging areas is approximately three acres.

Snow Storage Area: This approximately nine acre site is located in an area disturbed by past mining activities and is a mine tailings waste area. It sits several feet higher in elevation than the wetlands to its west. The vegetation is sparse (approximately 40-50 percent cover) with a number of saplings scattered around the outer edges of the area.

Mesabi Trail Connection: The approximately two acre parcel where the trail connection will be located is part of an old railroad corridor and is approximately half unvegetated due to disturbance (i.e., road, old rail bed, ATV use). The east end of the parcel is currently cleared for an overhead power line. The remainder of the parcel is covered in grasses, low shrubs, and a few encroaching saplings.

Parcel 206: MnDOT will acquire 13 acres of the 47 acre parcel that currently underlies a portion of US 53. This area is essentially all impervious surface or vegetated right-of-way and lies outside the project construction limits.

## 5.10.2 Impacts of the Preferred Alternative

The acreages of cover types present within the construction limits, staging areas, snow storage area, and Mesabi Trail connection are shown in Table 5.10-1. With the construction of the preferred alternative, six acres of wetland and 39 acres of forest will be converted to paved/impervious or vegetated disturbed areas.

Table 5.10-1. Cover Type Impacts of the Preferred Alternative[A]

| Cover Type | Acres Before Construction | Acres After Construction |
|---|---|---|
| Within Construction Limits | | |
| Wetlands | 15 | 0 |
| Open Water (Rouchleau Pit) | 1 | 0 |
| Wooded/Forest | 43 | 4 |
| Shrub/Grassland | 0 | 0 |
| Paved/Impervious | 35 | 35 |
| Unvegetated Disturbed | 4 | 0 |
| Vegetated Disturbed | 0 | 61 |
| Urban | 1 | 0 |
| TOTAL | 99 | 99 |
| Staging Areas | | |
| Unvegetated Disturbed | 3 | 3 |
| Wooded/Forest | 0 | 0 |
| TOTAL | 3 | 3 |
| Snow Storage Area | | |
| Vegetated Disturbed | 9 | 9 |
| TOTAL | 9 | 9 |
| Mesabi Trail Connection | | |
| Vegetated Disturbed | 1 | 0 |
| Unvegetated Disturbed | 1 | 2 |
| TOTAL | 2 | 2 |

[A] Values have been rounded to the nearest acre

## 5.10.3 Mitigation

Mitigation for wetland impacts is addressed in Section 5.5.3 of this document, and stormwater ponding requirements are addressed in Section 5.6.3. Due to the previously disturbed nature of much of the area, no special/unique mitigation is specifically required for the cover type changes other than revegetation and stabilization of disturbed areas. Standard practices for weeds and invasive species will be implemented.

## 5.11 Fish and Wildlife

### 5.11.1 Changes Since the Draft EIS Related to Fish and Wildlife

There have been no changes since the publication of the Draft EIS that affect the information presented on fish and wildlife. The additional areas added to the project (staging areas, snow storage area, and Mesabi Trail connection) will not affect the overall impact to fish or wildlife due to their high level of previous disturbance.

Sections 5.11.2 and 5.11.3 summarize the information reported in the Draft EIS for the preferred alternative.

### 5.11.2 Impacts of the Preferred Alternative

Some wildlife impacts are anticipated to occur as a result of the preferred alternative. Due to the disturbed nature of the habitat from past mining activities, the wildlife species that inhabit these areas are generalist species adapted to highly disturbed habitat and anthropogenic disruptions, such as adjacent mining operations and traffic and transit activities. These species have demonstrated by their presence that they adapt readily to anthropogenic changes in their environment.

A negligible[1] to minor[2] impact to wildlife will occur as a result of the preferred alternative. The impact is small compared to the large amount of adjacent habitat available to the east and north of the preferred alternative.

Peregrine falcons were identified within the project area during the DNR database record search, with nesting reports in 1991 and 1992 on the pit wall at the north end of the Rouchleau Pit. No sightings have been recorded since that time. The peregrine falcon population has recovered and, as a result, was federally delisted in 1996. It has also been downgraded from threatened to special concern in Minnesota. However, it is still protected under the Migratory Bird Treaty Act. If peregrine falcons are observed during construction, the MnDOT biologist will be contacted for coordination with the DNR Non-Game Program. No other rare features or species were identified during the database search.

### 5.11.3 Mitigation

If peregrine falcons are observed during construction, the MnDOT biologist will be contacted for coordination with the DNR Non-Game Program. The measures selected for construction mitigation will be made in consultation with the appropriate agencies.

## 5.12 Threatened and Endangered Species

### 5.12.1 Changes Since the Draft EIS Related to Threatened and Endangered Species

Since the publication of the Draft EIS and previous US Fish and Wildlife Service (USFWS) consultation, the following changes were made to the proposed action as well as to the species listed under the Endangered Species Act.

- The gray wolf has been relisted under the Endangered Species Act as threatened
- The northern long-eared bat survey in the project area has been completed (Appendix D)

[1] Negligible impacts are those that are imperceptible or not detectable. The action would not result in noticeable changes in habitat or wildlife use.

[2] Minor impacts are those that are slightly detectable and localized but would not affect the overall viability of the wildlife within that area. It is anticipated that wildlife within areas identified as having minor impacts would adapt to habitat changes and/or use adjacent habitat areas.

- The northern long-eared bat has been officially listed under the Endangered Species Act as threatened by the USFWS (effective May 4, 2015).
- Additional areas of evaluation have been added to the project, including staging areas, a snow storage area, and the Mesabi Trail connection

Additional correspondence between MnDOT and USFWS has also occurred (see Appendix C) to address Endangered Species Act listing changes. The information presented in the Draft EIS is summarized below for the preferred alternative and has been updated to reflect the above changes.

### 5.12.2 Impacts of the Preferred Alternative

In early 2015, MnDOT coordinated with the USFWS to assess the potential for impacts to listed species. Correspondence to the USFWS dated February 17, 2015 (Appendix C) identified five species that are listed or were proposed for listing in St. Louis County: the Canada lynx, gray wolf, rufa red knot, piping plover, and northern long-eared bat.

Habitat for the piping plover and rufa red knot are not found within the corridor; therefore, MnDOT, on behalf of FHWA, made a determination of "no effect" on these species for this project.

The critical habitats for the Canada lynx and gray wolf are not within the study area for the preferred alternative, but the preferred alternative is within the distribution range of both species. Due to the disturbed nature of the study area and the lack of boreal forests, no adverse impacts to the Canada lynx or gray wolf are anticipated. Therefore, a determination of "may affect, but is not likely to adversely affect" was made.

At the time of the correspondence, the northern long-eared bat was proposed for listing as an endangered species, but it has no critical habitat identified at this time. Based on current information, the impacts of the preferred alternative are not at a magnitude that will result in jeopardizing the continued existence of this species. The preferred alternative will result in 39 acres of impacts to forest habitat that could potentially affect summer roosting areas for the northern long-eared bat. The identified potential hibernaculum is not located in an area anticipated to be disturbed by the preferred alternative (see Appendix D). A determination of "no jeopardy" was made in consultation with USFWS.

USFWS concurred with these findings of FHWA, as requested by MnDOT in a letter dated March 20, 2015 (see Appendix C).

As noted above, since the correspondence between MnDOT and USFWS in early 2015, the northern long-eared bat was officially listed as threatened by the USFWS (effective May 4, 2015). The USFWS is still accepting public comments on the interim 4(d) rules regarding activities in northern long-eared bat habitat through July 1, 2015. MnDOT requested that USFWS update the determination based on the change in species status. USFWS responded with an updated determination on July 23, 2015. These additional letters are included in Appendix C.

No additional state listed rare, threatened, or endangered species were identified by the DNR in the study area.

### 5.12.3 Mitigation

MnDOT has entered into informal consultation with USFWS as part of the Section 7 process and does not anticipate any project modifications as a result of the northern long-eared bat becoming a listed species.

MnDOT is committed to completing winter tree removal to avoid impacts to the potential summer roosting areas of the northern long-eared bat.

# 5.13 Hazardous Materials and Contaminated Properties

## 5.13.1 Changes Since the Draft EIS Related to Hazardous Materials and Contaminated Properties

As described in Section 5.1, the areas evaluated for hazardous materials and contaminated properties have been refined since the Draft EIS. In addition to refined construction limits, staging areas, a snow storage area, and a Mesabi Trail connection have been identified since publication of the Draft EIS.

## 5.13.2 Impacts of the Preferred Alternative

### 5.13.2.1 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was completed for the project in 2013 and addressed four separate alignment alternatives being considered at that time. One of the alignments assessed in the Phase I ESA report (Alignment E-2) was very similar to the preferred alternative.

The Phase I ESA report includes information on the locations of potentially contaminated properties located within 650 feet of the assessed alignment alternatives based on information obtained through review of historic land use records, air photos, federal/state government records, county/city records, and site reconnaissance. Sites of potential environmental concern identified by the Phase I ESA were categorized into three categories: high, medium, and low risk. In general, high environmental risk sites are properties that have a documented release of chemicals or other strong evidence of contamination such as soil staining or storage of large volumes of petroleum or other chemicals. Medium environmental risk sites may include properties where relatively smaller volumes of petroleum, chemicals, or hazardous materials are stored, but there is no evidence of spills or releases, or properties with documented releases that have been “closed” (no further cleanup action deemed necessary) by the MPCA. A “closed” site is considered a medium risk because it may still have residual soil or groundwater contamination. Low environmental risk sites include properties where small volumes of chemicals or hazardous materials have been used or stored and are considered not of concern to the project.

The Phase I ESA report identified nine sites of potential environmental concern in the area of the preferred alternative: two high risk, five medium risk, and two low risk sites. Of these sites, sites targeted for project-related acquisition and/or sites where construction excavations would likely occur were further evaluated through completion of follow-up Phase II Investigations (see Section 5.13.2.2). Copies of the Phase I ESA report are available on the project website.[3]

### 5.13.2.2 Phase II Investigation Results and Recommendations

A Phase II Investigation was completed for the project in 2013, and an additional Phase II Investigation was completed in 2014 (Phase II investigations). The Phase II investigations focused on assessing environmental conditions on selected sites of potential environmental concern identified in the Phase I ESA report. As discussed in Section 5.13.2.1, the specific sites assessed by the Phase II investigations consisted of likely acquisition parcels and suspect areas likely to be excavated or disturbed by planned construction.

The Phase II investigations identified several areas where the analytical testing identified locations on or near the preferred alternative where one or more of the analyzed compounds were detected at concentrations exceeding an established MPCA standard. The following sites and issues of potential environmental concern were identified by the Phase II investigations and may require consideration for future property acquisitions and construction of the preferred alternative.

[3] http://www.dot.state.mn.us/d1/projects/hwy53relocation/

#### Bike Path and Wenonah Properties (RGGS)

- Elevated concentrations of arsenic in shallow soil near a suspected former copper wire salvage area
- Isolated area of petroleum-impacted soil
- Small quantities of intermixed man-made debris present in fill soils
- Past mining use

#### Vacant Industrial Facility (former Staver Foundry)

- Petroleum release with "open" status according to MPCA
- Elevated concentrations of arsenic, lead, Benzo (a)pyrene (BaP), and diesel range organics (DRO) detected in soil samples

#### Lenci Enterprises, Inc. & Sunrise Equipment Corp

- Elevated concentrations of DRO and BaP detected in soil samples
- Recently closed petroleum release

Property acquisitions or excavations for construction at the above sites (if any are required) would need to consider the potential for encountering contaminated soil and appropriate mitigation measures (see Section 5.13.3). Copies of the Phase II investigation reports are available on the project website.[4]

#### 5.13.2.3 Additional Review

The added staging and snow storage areas were reviewed, and no potential contamination issues were identified based on existing data. The potential for environmental concerns associated with the Mesabi Trail connection (old railroad right-of-way) were also considered. In general, old railroad right-of-way property can contain remnants of historic railroad infrastructure including steel rails, ties, and ballast materials. Such remnant materials, if encountered during construction, may require segregation and special handling/disposition during construction but are not necessarily considered to be contamination issues requiring pre-construction investigation.

### 5.13.3 Mitigation

#### Taconite Materials Handling

Some taconite may contain elongated mineral particles (EMP) which resemble asbestos. The University of Minnesota conducted a Minnesota Taconite Workers Health Study.[5] This study took a comprehensive look at the health of Minnesota taconite workers from portions of the Mesabi Iron Range. A final report was issued in December 2014. The length of time people worked in the industry was linked to higher levels of mesothelioma but not lung cancer. Workers with above average exposure to dust containing EMPs were twice as likely to develop mesothelioma as workers with below-average exposures. Exposure to EMPs was linked to mesothelioma but not lung cancer; therefore, the study identified links between mesothelioma from working in the taconite mining industry and exposure to EMPs.

MnDOT's Standard Specification for Construction Manual (MnDOT, 2005) allows taconite tailings from certain areas to be used in bituminous mixtures and as road base. Historically, starting in the 1950s, MnDOT constructed some roadways in northern Minnesota using taconite tailings for aggregate in road base and bituminous. Reconstruction of these roadways requires excavation and handling of taconite tailings. Certain aggregates in the east range of the Biwabik Iron Formation contain minerals that generally resemble asbestos (EMPs or asbestos-like materials), which are not subject to asbestos regulations.

MnDOT has produced a best practice for management of tailings used in highway construction,[6] recognizing that even though taconite tailings present in this project are not subject to regulation, some reasonable handling techniques are prudent. MnDOT will use its standard regulated materials BMP

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[4] http://www.dot.state.mn.us/d1/projects/hwy53relocation/

[5] Minnesota Taconite Workers Health Study website: http://taconiteworkers.umn.edu/index.html

[6] MnDOT Regulated Materials Management Section 11, MnDOT Office of Environmental Stewardship, Environmental Investigation Unit, Best Management Practice, Taconite Tailings Road Aggregate

procedures during construction on this project to limit potential exposure from taconite to the public and to the contractors and employees working on this project. MnDOT will specify in construction documents that all aggregate materials to be used for project construction will be from sources that are free from asbestos or other contaminants.

#### Potentially Contaminated Sites

A Response Action Plan (RAP) will be completed for the preferred alternative prior to any right-of-way acquisition or construction by MnDOT in areas of known or suspected contamination. A RAP will set a protocol for properly handling and treating contaminated soil and/or groundwater that could be handled during construction as identified in the contract special provisions or the RAP.

If necessary, MnDOT may enroll in the MPCA Voluntary Investigation and Cleanup (VIC) Program to obtain regulatory assurances for contamination indicated during Phase II investigations and to obtain approvals for any contamination management and clean-up plans. If necessary, prior to construction activities a MPCA-approved Construction Contingency Plan and/or contract special provision will be developed. In the event that previously unknown hazardous materials are discovered during construction, the Contractor shall notify the Project Engineer immediately and follow the prescribed management protocol contained in the Construction Contingency Plan/RAP or contract special provisions. The materials will be handled in accordance with all appropriate federal, state, and local regulations.

During construction, there is potential for incidental spills of vehicle fluids and/or fuels as a result of normal existing roadway operations or traffic incidents. In the event that any spill is encountered within the project area, the appropriate response protocol required by the MnDOT Technical Memorandum No. 11-10-M-02 will be followed.

#### Spills

Any potential contaminant spills on the road, such as gasoline, oil, and antifreeze, will be collected within the storm sewer system on the road and conveyed to a treatment pond on the west side of the pit where they could be contained for cleanup; therefore, no contaminants will be directly discharged into the pit. Emergency spills will be cleaned up as identified in MnDOT's Emergency Spill Response Technical Memorandum (MnDOT, April 2011).

## 5.14 Excess Material

### 5.14.1 Changes Since the Draft EIS Related to Excess Material

There have been no changes since the Draft EIS that affect the information presented on excess material. Sections 5.14.2 and 5.14.3 summarize the information reported in the Draft EIS for the preferred alternative. The staging areas, snow storage area, and Mesabi Trail connection will not require extensive grading and will not change the estimate of cut and fill material for the project.

### 5.14.2 Impacts of the Preferred Alternative

The preferred alternative will require proper disposal or reuse of the existing roadway pavement and the top few feet of roadbed from the terminated easement agreement area from which US 53 is relocated. However, no disposal of excess materials will occur in wetlands, floodplains, or other sensitive areas.

The amount of cut and fill material needed for the preferred alternative will be as follows:

- Cut: 700,000 cubic yards
- Fill: 850,000 cubic yards

### 5.14.3 Mitigation

Excess material and debris from this project, such as road pavement or roadbed materials, can be taken off site by the contractor for reuse on other projects, with the exception of taconite. If excess material cannot be reused, under no circumstance will MnDOT approve creation of permit-by-rule landfills for

disposal of any waste material. If disposal is required for waste materials resulting from demolition, this waste will be disposed of in a MPCA permitted demolition landfill. Demolition waste can include concrete, bituminous, untreated wood, masonry, glass, trees, and rock. The project will not explicitly or effectively designate borrow or disposal sites.

If any fill is needed, specifications for the source and nature of the fill used within Virginia's Inner Emergency Response Area will be required to avoid the potential for contamination impacts to the water supply. These specifications will prohibit the use of taconite tailings as fill within the Rouchleau Pit.

## 5.15 Geotechnical and Earthborne Vibration

### 5.15.1 Changes Since the Draft EIS Related to Geotechnical and Earthborne Vibration

MnDOT has continued to study geotechnical issues within the project corridor. The resulting changes and updates have been incorporated in the following summary. Sections 5.15.2 and 5.15.3 summarize the information reported in the Draft EIS for the preferred alternative. The staging areas, snow storage area, and Mesabi Trail connection will not require extensive grading and do not result in any additional geotechnical concerns.

MnDOT continues to conduct boring studies in the areas of the proposed bridge piers to inform the final design.

### 5.15.2 Impacts of the Preferred Alternative

The following areas have been identified that may require special geotechnical design and/or construction techniques to address soil, embankment, and/or vibration-related issues.

East of the Rouchleau Pit there is a small pond area within the preferred alternative alignment that may require removal of poor/potentially organic soils or some other soil remediation (such as lightweight fill) to prevent potential settlement in this area. Mine dumps were also encountered in the pond stretch, which, depending on gradation, could also pose a settlement concern. Investigations revealed that the pond is bounded and underlain by mine dump fill and will not require soil removal/remediation of poor/potentially organic soils. Geotextile has been proposed as a means of soil separation and settlement prevention where new embankment fill is proposed over existing mine dump fill.

DNR mapping of documented underground abandoned mines (UAMs) in the project vicinity was reviewed. DNR staff indicated that documented UAMs are located outside of the construction limits of the preferred alternative or, if located within the construction limits, the mines have been open pit. There is a possibility that undocumented mine(s) could exist in this area. Thus far, geotechnical borings conducted inside and outside of the Rouchleau Pit have not encountered any UAMs.

Tall substructures (piers) for a bridge spanning the Rouchleau Pit may be susceptible to vibrations and flyrock produced by nearby blasting that could take place in the future if mining operations reconvene in the pit. The bridge will need to be designed to address this possibility. Stability of the existing fill in the area and its effects on bridge foundations constructed on/within the submerged haul road is also a concern related to future mining activities, particularly blasting. Criteria for future mining will need to be established and addressed in agreements with the mine to ensure that both the mine dump fill and bridge structure remain unharmed during future mining activities. Stability analyses of the fill encompassing the west pier have been performed and results will be used during final design to develop a pier design that addresses the local geologic conditions.

Due to the properties of existing fill in the area, the foundations for the bridge will need to be drilled (as opposed to using driven piling) to and into the bedrock in order to acquire the necessary bearing capacity and lateral resistance. Potentially unstable bedrock units are also present in the highwalls and will need to be assessed if foundations are placed in these areas. Drilled pile tests have been conducted at the west pier site and have shown favorable results in terms of constructability. Both the east and west pier

will be constructed with drilled pile foundations and will alleviate prior concerns related to stability, settlement, and capacity at both piers.

Water levels in the Rouchleau Pit will likely vary over time due to mining-related dewatering. Therefore, stability and settlement of the existing fill material is a potential concern for bridge foundations. Drilled piles will be designed to account for dragload and downdrag.

It is possible that mining could take place in the future east of the pit and on both sides of the future roadway and bridge. Consequently, a peninsula-like bedrock structure (isthmus) as much as 400 to 500 feet tall will remain supporting the roadway and bridge. Stability of this structure is of particular concern since vibrations from mining coupled with perched groundwater could initiate sliding along a weak, northwestward-dipping layer found within the iron formation. An instrumentation plan will likely be implemented to monitor stability within the roadway structure. Borings have been conducted in this area to assess rock slope and global stability of a future isthmus.

Based on observations from the Rouchleau Pit, an area of the proposed southbound lane of US 53 between 150 feet and 450 feet north of the proposed US 53/2nd Avenue intersection appears to be underlain by mine dump fill and glacial till, in descending order. Consequently, this area poses a potential slope stability concern. Additional borings have been acquired from this area. Slope stability modeling performed for this area suggests that slope failures could occur, particularly in the presence of seismic loads and dewatering. Construction plans are being developed to prevent slope failure in this area.

### 5.15.3 Mitigation

MnDOT has investigated geotechnical constraints in the project area and will continue to do so. This information has been and will be used to identify measures to avoid, minimize, or mitigate construction/design practices related to potential geotechnical and earthborne vibration issues.

The area of permanent easement MnDOT will be purchasing around the bridge accounts for future mining seismic activity and is large enough to protect the integrity of the structure and roadbed, extending a maximum of 580 feet on either side of the bridge centerline. This distance is based on a minimum bridge setback and pier stability analysis. Mining activities will not be allowed within the permanent easement area. MnDOT will continue to coordinate with the mine operator regarding future mining activities.

## 5.16 Climate Change

### 5.16.1 Changes Since the Draft EIS Related to Climate Change

There have been no changes since the Draft EIS that affect the information presented on climate change. Sections 5.16.2 and 5.16.3 summarize the information reported in the Draft EIS for the preferred alternative.

### 5.16.2 Impacts of the Preferred Alternative

The trip length increase from the preferred alternative will not result in a noticeable change in vehicle miles traveled and will not have a substantive effect on global greenhouse gas generation.

The preferred alternative will impact the forested landscape in the project area (see Section 5.10), and forest vegetation may be considered a resource vulnerable to the effects of climate change. There is no known way to predict the potential future impacts on the current type of forest vegetation in this area that may result from climate change. Therefore, the combined effects of the project plus climate change cannot be estimated quantitatively. However, the overall impact on the relatively extensive northern forest ecosystem of Minnesota resulting from the potential loss of approximately 39 acres of forest vegetation from construction of the preferred alternative will not be considered substantive.

### 5.16.3 Mitigation

No mitigation measures are proposed since the preferred alternative is not projected to have a substantive effect on greenhouse gas emissions (i.e., energy use) or resources affected by climate change.

## 5.17 Construction Related Impacts

### 5.17.1 Changes Since the Draft EIS Related to Construction Related Impacts

Construction impacts since the Draft EIS remain the same, with the exception of potential staging areas being identified. These staging areas are addressed in Section 5.17.2.12.

### 5.17.2 Impacts of the Preferred Alternative and Mitigation

#### 5.17.2.1 Economics and Business

To manage impacts on businesses during highway construction, MnDOT will follow guidance in a report developed in response to a law passed by the Minnesota State Legislature in 2008 (Laws of Minnesota 2008, chapter 308). The referenced report (*Open for Business - A workbook to help Minnesota businesses survive and thrive during highway construction,* 2009) can be found on MnDOT's website[7] and provides guidance based on business outreach methods/results, best practices, and lessons learned that can aid local businesses during construction.

Construction activities will not impact mine operations. Mine operations will also not impact construction activities, except if construction is occurring in an area where there is mine blasting. In that situation standard safety protocols would be followed, which may require periodic shutdown of specific construction activities for a short period on a given day.

#### 5.17.2.2 Visual and Aesthetics

Visual impacts will occur during construction of the preferred alternative. Temporary visual impacts include the presence of construction equipment and workers, temporary changes in the views experienced by travelers when rerouting is necessary, a decrease in vegetation in some areas, and the addition of increased time in which traffic remains in a certain area due to the increased congestion associated with construction.

#### 5.17.2.3 Utilities

Impacts to utilities are anticipated during construction of the preferred alternative, although these are not impacts imposed by MnDOT. Impacts could include utility relocation and/or temporary interruptions in service. MnDOT is coordinating with utility providers regarding relocation timing and location.

#### 5.17.2.4 Water Supply and Waterbody Modification

The construction of the preferred alternative will require a NPDES/State Disposal System (SDS) Stormwater Construction Activity Permit, which may be covered under the State's Construction Stormwater General Permit. As part of the application process, the owner and operator must create a SWPPP that explains how stormwater will be controlled to prevent introduction of sediment and other pollutants transported by runoff.

Any equipment, materials, or personnel coming into contact with the Rouchleau Pit water due to dewatering or construction may transfer aquatic invasive species (AIS) into the Rouchleau Pit. Appropriate measures will be taken to prevent any potential transfers of AIS into the water (e.g., having any

[7] http://www.dot.state.mn.us/businessimpacts

equipment or material used for dewatering or construction exposed to dry conditions for at least five days before coming into contact with the waterbody).

#### 5.17.2.5 Stormwater

The MPCA serves as the permitting authority for stormwater issues related to roadway construction, including a general stormwater permit for construction activity under Phase II of the NPDES. Compliance with the NPDES permit will be met through the use of BMPs to mitigate impacts of roadway construction affecting water quality. Stormwater features will be used for runoff treatment and attenuation, where practical, and determined if necessary during more detailed design of the preferred alternative.

A NPDES permit will be obtained from the MPCA prior to construction. This permit will include an erosion control plan, as well as BMPs contained in MnDOT's standard specifications, details, and special provisions. Special consideration will be given to steep slope areas, specifically in the pit crossing areas to stabilize long, steep slopes.

After construction, all disturbed areas will be sodded or seeded, leaving temporary erosion control structures in place until vegetation has been established. Erosion and sedimentation of these and all other exposed soils within the project corridor will be minimized by utilizing the appropriate BMPs during construction. Implementation of BMPs in the final construction and site grading plans greatly reduces the amount of construction-related sedimentation and helps to control erosion and runoff. Ditches, dikes, siltation fences, bale checks, and sedimentation basins will be utilized, as needed, as temporary erosion control measures during construction.

#### 5.17.2.6 Noise

The construction activities associated with construction of the preferred alternative 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 are, to a degree, unavoidable for this type of project. MnDOT will require that construction equipment be properly muffled and in proper working order. While MnDOT and its contractor(s) are exempt from local noise ordinances, it is MnDOT's practice to require contractor(s) to comply with applicable local noise restrictions and ordinances to the extent it is reasonable. Advanced notice will be provided to affected communities of any planned abnormally loud construction activities. It is anticipated that night construction may be required to expedite construction, minimize traffic impacts, and improve safety. However, construction will be limited to daytime hours as much as possible. This project is expected to be under construction for two construction seasons.

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. High-impact noise construction activities will be limited in duration to the greatest extent possible, with the understanding that construction will likely be under an accelerated schedule.

#### 5.17.2.7 Transportation-Related Air Quality

Air quality impacts from construction include increased dust and airborne particulates caused by grading, filling, removals, and other construction activities. Dust impacts will be minimized through standard dust control measures such as watering. After construction is complete, dust levels are expected to return to near existing conditions. Air quality impacts may also result from emissions from construction equipment and possibly from traffic stopped at intersecting roadways or on potential detour routes. These impacts are expected to be minimal and of short duration.

#### 5.17.2.8 Hazardous Materials and Contaminated Properties

A management plan will be developed for properly handling, treating, storing, and disposing of solid wastes, hazardous materials, petroleum products, and other regulated materials/wastes that are used or generated during construction. The plan will also establish protocols to minimize impacts to soils and

groundwater in the event a release of hazardous substances occurs during construction. If a release were to occur, the Minnesota Duty Officer will be contacted immediately to make the required agency contacts. In the event that any spill of vehicle fluids and/or fuels is encountered during construction, the appropriate response protocol required by MnDOT Technical Memorandum No. 11-10-M-02 will be followed.

Prior to the demolition of any structures, assessments for asbestos-containing materials, lead-based paint, and other regulated building materials/wastes will be performed. A demolition and disposal plan will be prepared for any identified contaminants that may be encountered during construction.

If used as a construction material on this project, handling of taconite tailings will be completed in conformance with the project special provisions and the MnDOT Guidance Document #36: Best Management Practice: Taconite Tailings Road Aggregate.

#### 5.17.2.9 Excess Materials

During construction, if excess material is to be disposed of outside of the project limits, the contractor will develop a disposal plan that must be approved by the MnDOT Project Engineer. Disposal of excess material will be in compliance with the guidelines listed in the standard specifications, including MnDOT specifications, FHWA policies, and environmental laws and regulations. Disposal will not occur in wetlands, floodplains, or other sensitive areas. The contractor will dispose of unusable excavated material in accordance with state regulations and special provisions to ensure protection of wetlands and waterways.

All waste and demolition material from project construction activities will be disposed of in accordance with the standard specifications or special provisions to ensure protection of wetlands and waterways. Erosion and sedimentation will be controlled in accordance with temporary and permanent erosion and sediment control plans, MnDOT Standard Plans and standard specifications, and local ordinances.

#### 5.17.2.10 Geotechnical and Earthborn Vibrations

The project may require blasting, pile driving, dynamic compaction, ordinary compaction, and/or pavement breaking or the operation of other construction equipment that may result in temporary earthborn vibrations that have the potential to affect homes. The typical practice is to use vibration monitoring, and if the vibrations reach a certain level, require that the contractor revise operations to reduce earthborn vibrations. This monitoring will also be used to distinguish construction vibration from mine generated vibration.

#### 5.17.2.11 Staging Areas

Areas have been identified for potential use for staging of construction, especially for building the bridge. These areas may be used during the two-plus years preparing for and implementing project construction. The areas labeled as “staging areas” on Figure 2.3-1 have been cleared of vegetation and used for access to the pit for various data gathering activities. The identified snow storage site, which may also be used for staging, was previously disturbed by past mining. Access roads to these areas are already in place. Therefore, use of these areas will have negligible impacts. Once construction is complete, these areas will be vegetated to stabilize soils.

Some construction will be conducted off of barge platforms within the Rouchleau Pit. Specific BMPs to address barge use will be included in the SWPPP (e.g., perimeter confinement, turbidity curtain, floating silt curtain).

# 5.18 Relationship of Local Short-Term Use vs. Long-Term Productivity

## 5.18.1 Changes Since the Draft EIS Related to Relationship of Local Short-Term Use vs. Long-Term Productivity

There have been no changes since the Draft EIS that affect the information presented on the relationship of local short-term use vs. long-term productivity. Section 5.18.2 summarizes the information reported in the Draft EIS for the preferred alternative.

## 5.18.2 Impacts of the Preferred Alternative

### 5.18.2.1 Potential Adverse Use

#### Temporary Reduction of Energy and Material Resources

Materials consumed in the construction of the preferred alternative will be unavailable for other uses, including construction of other non-highway related facilities. The energy consumed in the construction, maintenance, and operation of the facility is higher than the energy consumed by the No Build Alternative in the short-term.

#### Temporary Loss of Vegetation

In addition to permanent loss of vegetation as a result of the preferred alternative, construction activities will result in additional temporary losses of vegetation adjacent to the roadway improvements. Revegetation activities will be coordinated with other erosion control and stabilization components of the project to minimize impacts. Visual quality will also be considered in selecting appropriate methods and materials for revegetation.

#### Temporary Loss of Wetlands

The impact on wetlands cannot be completely avoided due to their scattered distribution and the limited options for realignment due to the presence of active mining areas. The preferred alternative design will incorporate avoidance, minimization, and mitigation measures, and compensatory mitigation areas have been described in a permit application to the USACE. Compensatory mitigation will replace the loss of wetland functions and values within the project area.

#### Temporary Impacts on Water Resources

The preferred alternative has the potential to create temporary impacts to the Rouchleau Pit by implementing a crossing of the pit. Disruption to this waterbody will be minimized to the extent feasible for the preferred alternative. Temporary wetland impact during removal of existing roads, trail, and culverts will be restored to preconstruction condition when removals are complete.

#### Short-Term Economic Impacts

The construction of the preferred alternative will require the acquisition of property and will remove this land from tax rolls, resulting in some short-term loss of property tax revenues. This temporary loss is anticipated to be offset by the increased value of land served by the new highway location and ore access. The preferred alternative will also require full acquisition and relocation of three commercial properties. Given the availability of a number of potential replacement sites in the area, short-term loss in tax revenues will be negligible. Temporary changes in consumer behavior may occur until highway improvements are fully integrated. These impacts will be minimized through wayfinding signage and frequent project schedule updates during construction.

#### Inconveniences from Construction

Construction will cause minor traffic delays and detours for motorists in the area. This may result in temporarily higher levels of congestion.

#### Significant Capital Investment

Financial commitments to the project include acquisition, relocation, and construction costs. These public dollars will not be available for other uses. In addition, the land converted to highway use represents a reduction in tax base. These costs will be recovered by continuing to provide a transportation facility that will safely maintain adequate roadway capacity and mobility as well as local, regional, and inter-regional connectivity while meeting the terms of the current agreement with RGGS.

#### 5.18.2.2 Long-Term Gains in Productivity

#### Improve Travel Time and Minimize Cost of Travel

A four-lane highway will have the ability to accommodate existing and forecast traffic volumes. The presence of free-flowing traffic, combined with the minor additional length of the preferred alternative compared to the existing US 53 alignment, will generally maintain or slightly increase motorist travel times and fuel consumption.

#### Economic Benefit

The economic advantage lies in the long-term efficiencies that a transportation system will provide. These efficiencies include travel time savings, development opportunities, and increased consumer activity due to enhanced mobility and exposure. The preferred alternative will maintain the status quo for traffic/travel times and provide possible growth opportunities. The new intersections associated with the preferred alternative may provide opportunity for new highway-related commercial development.

## 5.19 Irreversible and Irretrievable Impacts

### 5.19.1 Changes Since the Draft EIS Related to Irreversible and Irretrievable Impacts

There have been no changes since the Draft EIS that affect the information presented on irreversible and irretrievable impacts. The sections below summarize the information reported in the Draft EIS for the preferred alternative.

### 5.19.2 Land Consumption

The amount of land required for the preferred alternative is 203 acres of right-of-way to be acquired, some through permanent easements. An additional six acres of temporary easements will be required for staging and construction. Land used in the construction of the proposed project is considered an irreversible commitment during the time period that the land is used for a highway facility. Portions of the facility may be subject to easement agreements with the mining operation. The priority of MnDOT and FHWA is to ensure that this current investment in infrastructure is supported by the length of the easement so full use and life of the infrastructure may be realized.

### 5.19.3 Social and Cultural Resources

The displacement and relocation of residences, businesses, and other resources of the built environment (public and private) are considered to be irreversible and irretrievable. Displacements and relocations are limited for the project, with displacement of three commercial properties proposed under the preferred alternative.

### 5.19.4 Energy Resources

Several energy resources will be committed to plan, design, manufacture materials for, and conduct improvements to the highway system. The use of fossil fuels (coal, natural gas, and petroleum), water, and labor expenditures for both construction and maintenance of the facility are considered irreversible and irretrievable. Use of construction materials, such as cement, aggregate, and bituminous material, is generally considered irretrievable; however, these materials are not in short supply, and their use will not

have an adverse effect upon continued availability. In addition, some of these materials may have salvage value and may be recycled at the end of the facility's design life.

### 5.19.5 Financial Resources

The proposed improvements will require a considerable expenditure of both state and federal funds which are not retrievable. While these public funds are not directly retrievable, the money spent can be considered a long-term investment in the economic vitality of the region.

### 5.19.6 Natural Resources

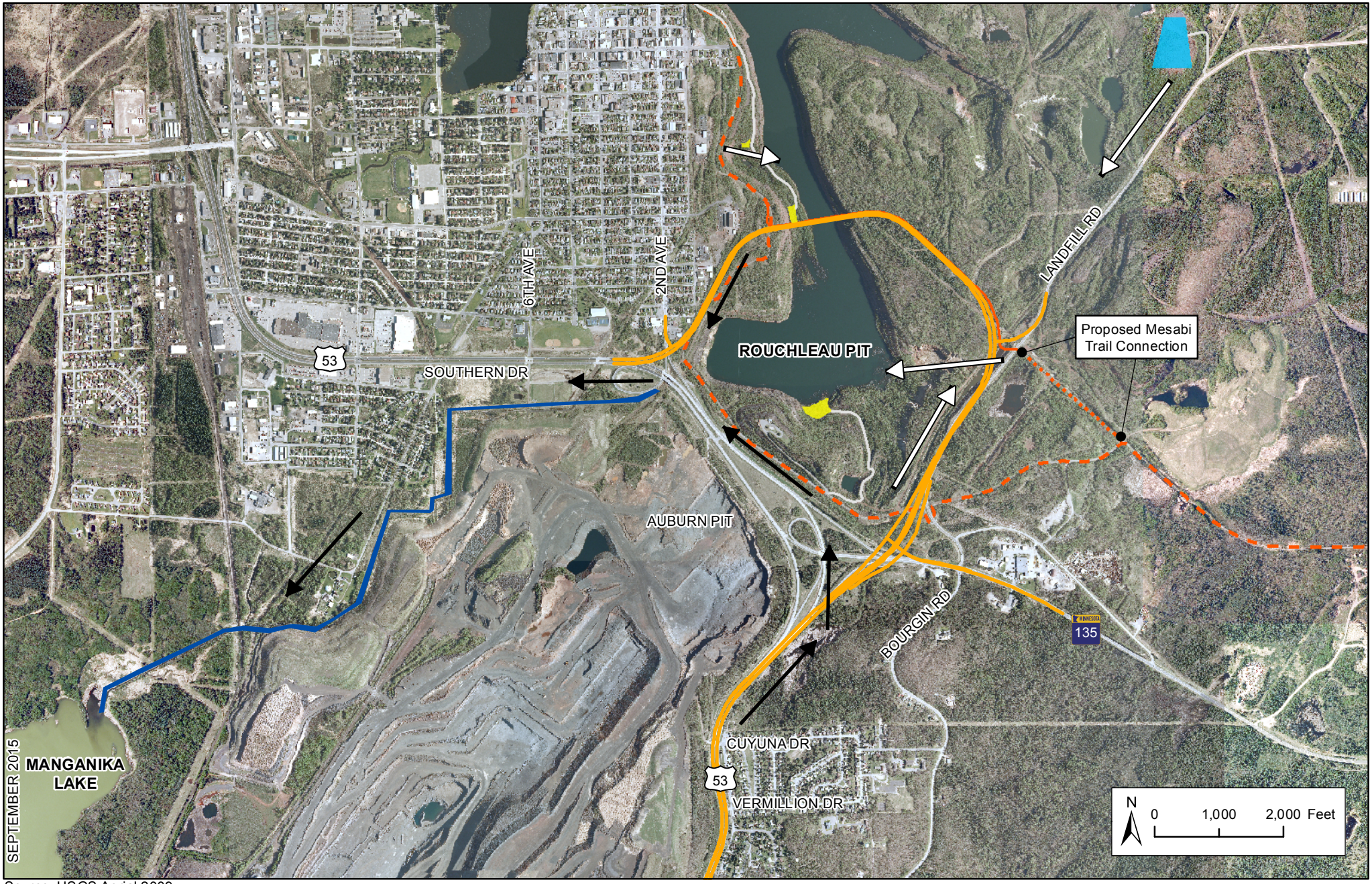
The proposed improvements may require the commitment of natural resources including the loss of vegetation, wetland functions and values, and other wildlife habitat. The commitment of these resources may in part be irreversible and irretrievable. Avoidance and minimization measures will be incorporated into final design of the preferred alternative. Mitigation measures will be employed in attempt to counter remaining impacts to natural resources.

Source: USGS Aerial 2009

Legend

- Preferred Alternative
- Delineated Wetland Boundaries
- Wetland Impacts
- Construction Limits
- Staging Areas
- Snow Storage/Staging Area
- Existing Access Roads

*Figure 5.5-1*
*Wetland Impacts*
*US Highway 53 Virginia to Eveleth*
*Final Environmental Impact Statement*

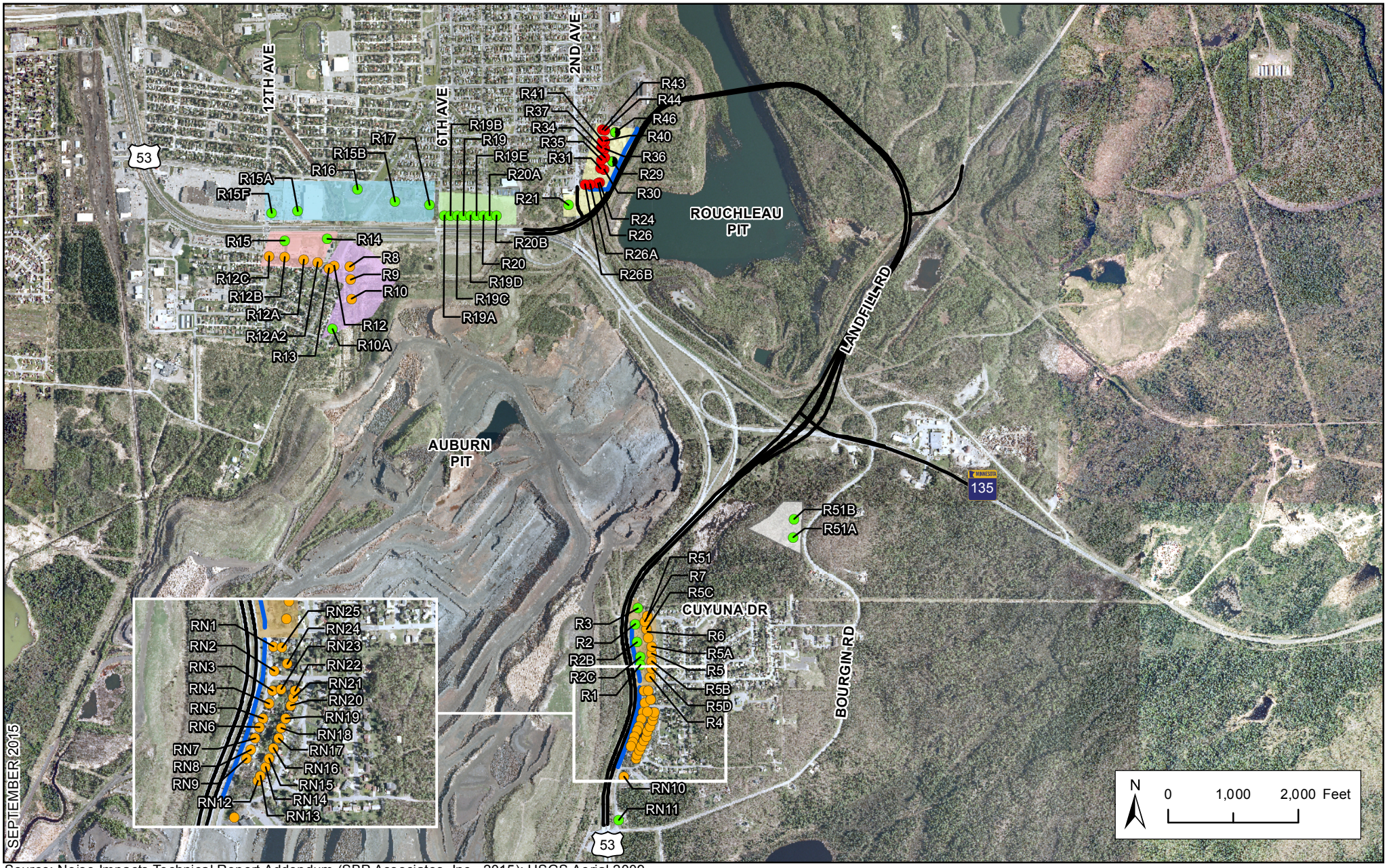



Source: USGS Aerial 2009

Legend

- Drainage to the Rouchleau Pit
- Drainage to Manganika Lake
- Preferred Alternative
- Manganika Creek
- Staging Areas
- Snow Storage/Staging Area
- Existing Access Roads
- Realigned Mesabi Trail
- Proposed Mesabi Trail Connection
- Existing Mesabi Trail

*Figure 5.5-2*
*Existing Drainage Patterns*
*US Highway 53 Virginia to Eveleth*
*Final Environmental Impact Statement*




Source: Noise Impacts Technical Report Addendum (SBP Associates, Inc., 2015); USGS Aerial 2009

Legend

- Receptors that would not exceed state noise standards
- Receptors that would not exceed state noise standards but would have a noise level increase >= 5 dBA
- Receptors that would exceed state noise standards
- Receptors that would exceed state noise standards and have a noise level increase >= 5 dBA

Area A
Area B
Area C
Area D
Area E
Area F
Area G

Preferred Alternative
Proposed Noise Walls

*Figure 5.8-1*
*Noise Impacts*
*US Highway 53 Virginia to Eveleth*
*Final Environmental Impact Statement*