



# Zavoral Mine & Reclamation Project

## Final Environmental Impact Statement



City of Scandia, MN  
August 8, 2012

**City of Scandia, Minnesota**  
**Proposed Zavoral Mine and Reclamation Plan Environmental Impact Statement (EIS)**

**RESPONSES TO COMMENTS ON THE DRAFT EIS**

The Draft Environmental Impact Statement (DEIS) for the Proposed Zavoral Mine and Reclamation Plan (Project) was released by the City of Scandia (City) for public review and comment on March 19, 2012. The 60-day comment period ended at 4:00 p.m. on May 18, 2012. Reviewers of the DEIS provided 15 verbal comments at the public meeting held on April 3, 2012. Sixty-six written comments were received within the comment period and 2 written comments were received soon after the end of the comment period for a total of 83 comments. A numbered list of comments with commenters identified is presented in Table 1. A compact disk (CD) containing all comments is attached as Appendix A. These comments and a transcript of the public meeting are available on the City's website at <http://tinyurl.com/zavoralEIS> and are available for public examination locally, at the City of Scandia Community and Senior Center (City Office), 14727 209th Street North, Scandia, Minnesota, 55073. Paper copies of all documents would be made available upon request at the cost of reproduction.

A redline version of the Final Environmental Impact Statement (FEIS) text identifying revisions that have been made to the DEIS is attached as Appendix B. A list of redline changes made to the EIS is included in Table 2. The EIS figures and appendices have not been changed and are incorporated by reference in the FEIS.

The responses to comments have been organized by topic following the order that the topics were discussed in the DEIS to facilitate review, with summaries of representative comments provided under each topic. The numbers in parenthesis refer to the specific comments as listed in Table 1.

**2.0 PERMITS AND APPROVALS**

Minnesota Pollution Control Agency (MPCA) letter (47) provided information on stormwater permitting and the Minnesota Department of Natural Resources (MnDNR) letter (63) supplied information on their proposal for the state-listed special concern Butternut trees to be reclassified to endangered within the next year. If tree clearing for the Project occurs after a reclassification occurs, a takings permit will be needed.

**Response to Comments 47 and 63:** A discussion of the potential for the Butternut tree to be reclassified to endangered within the next year has been added to the redline version of the Final EIS. Table 4 in Section 2.0 has been modified in the Final EIS regarding stormwater permit options and, the potential need for an Endangered Species Take Permit for Butternut trees.

**3.0 PROPOSED PROJECT AND ALTERNATIVES**

**Project Description**

Commenter (49) asks if project alternatives are based on timeframe or the volume of extraction.

**Response to Comment 49:** The Revised Scoping Decision Document (City of Scandia January 2010; RSSDD) identified three build alternatives. The alternatives included were based on the timeframes that the proposers (Tiller Corporation or Tiller) identified as feasible to extract the estimated 0.8 to 1.2 million tons of aggregate available at the Site. The City identified the alternatives to determine the potential impacts for each of the feasible alternatives.

## Depth of Mining

Commenters (27, 62, 63, and 64) identify inconsistencies in mine depths presented over the last two years - an average depth of 15 feet as described in the EIS vs. a maximum depth of 15 feet cited at a PAC meeting. Commenters also state that their calculations based on the cross-sections in the EIS indicate that an average depth would be greater than 15 feet.

**Response to Comments 27, 62, 63, and 64:** The average depth of 15 feet across the Site presented in the DEIS is accurate. Excavating the Zavoral Site to 840 feet above mean sea level (AMSL) would be the worst-case scenario and represents the maximum depth of mining that could occur at the Site. This information was used to create the figures and cross-sections in the DEIS. The depth of mining would vary throughout the Site, and would depend on the quality of material encountered. Tiller estimates that the total amount of material that would be removed from the Site would result in an average mining depth of 15 feet across the entire Site.

Commenter (63) notes that the EAW and the RSSD identified the proposed mining area to consist of 56 acres previously mined and 8 acres undisturbed by previous mining activities. The Draft EIS describes the proposed mining area as 54 acres previously mined and 9 acres of undisturbed. Please clarify the changes in acreage noted in these records.

**Response to Comment 63:** As part of their review of Tiller information, AECOM determined that although Tiller's Conditional Use Permit (CUP) application and Environmental Assessment Worksheet (EAW) cited 8 acres undisturbed by previous mining, the size of the area is actually 9 acres. AECOM used the more accurate information in the DEIS.

## Project Purpose and Need

Commenters (49 and 58) ask if the project is needed. They cite the impacts of the project as opposed to its benefits. Commenters reference maps of the metro area that show "ample supplies" of gravel at other locations and state that the EIS needs more discussion as to why other locations for mining were not considered.

**Response to Comments 49 and 58:** The needs of a mining project can only be met where mineral deposits exist; are under control of the Proposer; can be permitted to be mined; and can economically be mined, processed, and sold. Thus, although there may be gravel deposits at other locations, if they are not under control of the Proposer; are not located in an area where mining is permitted; and cannot be economically mined, processed, and sold they do not meet the purpose and need for the Project. The RSSD established the rationale that other sites do not meet the specified purpose and need for the Project. The DEIS evaluates the impacts and benefits of the Project so that decisionmakers can make an informed decision about the specific proposal that meets the purpose and need for the Project.

## Alternatives

Commenters (27, 49, and 76) state that the No Build Alternative sections do not adequately identify all the benefits of the No Build Alternative. Commenter (49) states that "Throughout the draft EIS, the No Build option gets short shrift. The EIS does not accurately or adequately reflect the advantages of not allowing a gravel pit to operate in a rural wooded setting next to a national park. The phrase 'no reclamation will occur' is mentioned repeatedly under Option 2 assessments, yet there is very little – if any – mention of the many advantages (or disadvantages) of maintaining the status quo: that the land will continue to mature on its own, that healthy stands

of trees will remain alive and in place, there won't be a 70-foot pit carved into the ground, that drivers, cyclists and pedestrians will be safer, that the St. Croix Riverway soundscape will not be substantially degraded, that critical buffer eco-zones will remain intact, potentially toxic dust won't be released into the air, etc. It is important that this document appropriately and accurately summarizes the benefits and detriments of all options. For example, Table 3 cites as one of the four major impacts of Alternative 2, '3.1 acres within Riverway District & scenic easement would remain unreclaimed.' "Another way to phrase this would be '3.1 acres...would remain undisturbed and continue to mature, thereby contributing to the health of a fragile ecological corridor and preventing erosion.'"

Commenter (57) states that "throughout the document, the No-Build Alternative gets short shift, when it should receive the same analysis of values (projected over time) as the other alternatives." Commenter also states that the No-Build Alternative is said to GENERATE TRAFFIC of over 500 truck trips per day, with projections of 20 to 30+ years attributed to this alternative. In fact, the No-build Alternative is not GENERATING anything. This traffic already exists due to Tiller's other business activity.

**Response to Comments 27, 49, 57 and 76:** The RSSD establishes the requirements of discussing the No-Build Alternative as the following:

"The No-Build Alternative will be described in the EIS. The No-Build Alternative will describe the potential impacts, outcomes, constraints, benefits and disadvantages, and economics if the existing land uses on the Zavoral and Scandia sites were to continue. The description will be based on the existing and allowed use of the Site for Agricultural and Rural Residential purposes, and will make projections or forecasts based on this use, to identify the No-Build Alternative effects and impacts. The No-Build Alternative does not include the Reclamation Activities on previously mined areas that are included in Alternative #1."

The analysis of alternatives in the DEIS focuses on identifying and quantifying the potential impacts of each of the alternatives. The DEIS provided a suitable, objective comparison of the potential impacts of the alternatives to meet the requirements of the RSDD. The statement "No change from existing conditions" that is used to describe the potential impacts of Alternative 2 - No-Build Alternative is an objective statement that reflects the result of implementing Alternative 2 in terms of the potential impacts to the Site. The descriptions of potential impacts listed under Alternatives 1 and 3 are necessarily longer because the Site conditions would change if the Project is implemented, and the DEIS catalogs the conditions that would change and the potential impacts under these alternatives.

Traffic analyses commonly use the term "generate" to refer to trips originating from or terminating at a site.

### **Preferred Alternative**

Commenter (62) states that the preferred alternative should be established at the conclusion of public deliberations over the alternatives, not as a precursor to public discussions. The scope of alternatives studied in the EIS should establish a complete range of alternatives from which the City may choose with respect to: area of mining, intensity [depth] of mining, duration of mining. Similarly, the nature and extent of reclamation plan should be subject to public discourse.

**Response to Comment 62:** As stated in the DEIS, Alternative 1 is Tiller's preferred alternative. This was only meant to indicate that this is the alternative that the proposer prefers. If Tiller's CUP application moves forward after completion of the EIS process, the City will use the analysis of alternatives from the EIS to assist with decision-making regarding the potential alternatives. The range of alternatives required by the RSSD were studied in the DEIS.

### **Shorter Timeframe for Mining**

Commenter (30) states that the description of Subalternative 3A needs to define the months they will be working. "Do they really need to work 12-hour days? If they worked 10-hour days it would appear that they could do the work over 180 days. Please clarify... Alternative 3A reduces biological, erosion/sedimentation, economic (impacts to land values) and water resources. Other impacts occur over a shorter-period of time such as visual, water use, noise and air quality, which reduces the impacts associated with the mining operation. We find this alternative to be superior to any of those studied and the EIS should identify this Alternative as the Environmentally Superior Alternative."

Commenters (30 and 39) request that an additional alternative be included in the EIS that would allow the mining to occur over two years and between October and April or October and June. "This would minimize the impacts of the mining operation to the residents and visitors enjoying the St. Croix River during the highest period of use, summer. Overall, we believe that if the site is to be mined that it should be done over a 1 or 2 year period to minimize the impacts to the community and those recreating on the St. Croix River. Please ensure that all of the required analysis of these two alternatives is completed in the EIS in order to allow decision-makers to approve either one of them."

Commenter (67) favors the 150-day alternative.

**Response to Comments 30, 39, and 67:** The DEIS analyzed Subalternative 3A (150-working day operation over approximately 1 year) and Alternative 3 (3.3 to 5 years of mining). These alternatives bracket the 2 year plus or minus alternative that the Commenters request for inclusion in the EIS.

Subalternative 3A would require the ability to work 12 hour days when needed and, as currently described, would not limit the months during which mining could occur. If Tiller's CUP application moves forward, the conditions included in the CUP may include the permitted months, days, and hours of operation. The City would consider the evaluation of impacts for each of the alternatives included in the DEIS and the comments on alternatives if the CUP application moves forward.

The City may consider an intermediate alternative during the CUP process, such as the 2-year alternative proposed by the commenters. The analysis of Alternatives 3 and 3A provides sufficient information regarding potential impacts to assist the City to consider the alternative suggested in the comment.

### **Additional Alternatives**

Commenter (32) states that the DEIS has failed to consider and analyze the options for an alternative site, a modified mine layout, and the reclamation-only alternative as required by MEPA. The justifications for excluding these alternatives from the DEIS are insufficient since these alternatives are feasible and can satisfy the need of the proposed Project. Commenter (76) stated that the gravel is available at other location.

**a. Failure to Consider Alternative Site**

Commenter (41) states that “The purpose of the scoping is to focus the EIS analysis on the pertinent issues and to determine what reasonable alternatives will be compared to the project.” We were informed that the scope for the Tiller Mine proposal did not need to include an alternative site. Yet, this is a requirement of the EQB Guidelines. Commenters (32 and 57) state that the DEIS should be revised to include consideration of an alternative site. MEPA requires an alternative site to be considered if reasonable and feasible. Commenter further states that “Other unencumbered sand and gravel resources exist nearby and do not impinge on significant natural resources or lands in which the public has made an investment. For this reason, these other gravel resources warrant consideration as alternatives to the Zavoral site.” Since there are resources in the area which are a viable and reasonable alternative to the Tiller mine, they should be considered as an alternative in the EIS to satisfy MEPA’s requirements.

**b. Failure to Consider Alternative Mine Layout**

The St. Croix River Association letter (26) states that allowing a gravel operation right up against this National Park would be most unfortunate, a serious mistake. Commenters (27, 32, 57, and 63) state that there needs to be an alternative that avoids mining the additional 9 acres and/or the EIS should consider an alternative layout that reduces the mine footprint to avoid disturbing the portions of the proposed mine which contain native or reestablished trees and provides a 50-meter buffer zone between the mine and adjacent forests. The DNR letter (63) states the proposed mining of the 9-acre white pine-hardwood forest a loss of biodiversity value. Although this area is described in the Draft EIS as being of “moderate quality,” this diverse native plant community is rare along the St. Croix River. The creation of a planted prairie following reclamation activities, although positive, should not be perceived the same as a naturally occurring native dry prairie in terms of its biodiversity value. Further consideration of this modified scale alternative should be considered by the City. Commenters (29 and 50) ask the City to require Tiller to revise their proposal to include 100 foot set backs from the fragile boundary of the National Park, the St Croix River.

Commenter (32) states that the DEIS should be revised to include consideration of an alternative mine layout. MEPA requires that modified designs or layouts be considered as an alternative if reasonable and feasible. The RSDD provides absolutely no justification or explanation for excluding consideration of modified design or layout alternatives in the EIS. The DEIS itself admits that modified designs or layout alternatives are possible and could potentially be adopted, but provides no reason why this alternative was not considered.

**c. Failure to Consider Reclamation-Only Alternative**

Commenters (32 and 77) state that the DEIS Historic Materials show that history of gravel mining on the Zavoral property has already involved remediation. The DEIS dismisses past reclamation activities without analysis. However “significant passive reclamation has already incurred.” Furthermore, the DEIS ignores the requirement in past permits for Dr. Zavoral to replace the top soil on the site. The DEIS notes that replacement of top soil is recommended as part of the reclamation plan, which the DEIS considers a positive environmental impact of the preferred alternative. In light of Dr. Zavoral’s past reclamation activities and past obligations to replace top soil and reclaim the site, the DEIS should consider an alternative that includes reclamation without further mining.

**Response to Comments 26, 27, 29, 32, 41, 50, 57, 63, 76, and 77:**

The RSSD established the alternatives to be considered in the DEIS, based on the Environmental Quality Board's (EQB's) framework for identifying alternatives, as stated in Section 3.3.2 of the DEIS: "An alternative may be excluded from analysis in the EIS under the following conditions (EQB 2010).

- When it does not meet the underlying need for or purpose of the project.
- When it would likely not have any significant environmental benefit compared to the project as proposed.
- When another alternative, of any type, that would be analyzed in the EIS would likely have similar environmental benefits, but substantially less adverse economic, employment, or sociological impacts.

The following alternatives were eliminated from consideration during the EAW and public scoping process based on the EQB criteria. As stated in the RSSD that established the scope of the EIS:

"Alternative Sites

Off-site alternatives are not being investigated because they do not meet the project purpose and need of making use of significant aggregate resources that are found within the Zavoral Mine site. Site alternatives are limited to the presence of the natural resource. This resource is located within the Metropolitan Area, and may cost-effectively serve the needs of the region. A regional study by the Metropolitan Council, Department of Natural Resources and the University of Minnesota in 2002, titled Aggregate Resources Inventory of the Seven-County Metropolitan Area identified significant aggregate resource areas within the Metro Region, including the general area in which the Zavoral Mine and Reclamation Project is located, and describes the Region's need for these resources in the future.

Technology Alternatives

Technology alternatives are not within the scope of the Zavoral Mine and Reclamation Project and will not be considered in the EIS. Best practicable technologies for the various activities will be utilized as part of the preferred alternative.

Modified Scale Alternative

Modified design or layout alternatives will not be considered in the EIS. The area represented as the Preferred Alternative (Figure 1) may be modified depending upon the results of the analysis that will be completed for the DEIS and the permit requirements for operations on the site.

### Project Site with Reasonable Mitigation Measures

MEQB rules require consideration of mitigation measures identified through comments on the EAW. The EIS will consider all relevant mitigation measures suggested through public and agency comments and will recommend incorporation of reasonable mitigation measures into project design and permitting as warranted.”

#### *Modified Scale Alternative*

A modified scale alternative was identified as evaluated as part of the EIS process. Tiller had planned to use the Zavoral Site Well as a water source for aggregate processing activities at the Site in their original Project proposal. As part of this EIS process, AECOM determined that the water appropriation permit for this well had expired. Tiller’s analyses of the Zavoral Site noted that reinitiating the use of the Zavoral Site Well at the levels the well is capable of producing would require significant investment to address MnDNR water appropriation permit requirements. This, in addition to further assessment of the aggregate source and its suitability for add-rock at the Scandia Mine, resulted in Tiller revising their Project proposal to eliminate all aggregate processing activities (including washing) at the Zavoral Site.

Modified scale alternatives that would have prohibited mining in the 9-acre area not previously mined or required significantly larger setbacks from unmined areas were evaluated for inclusion in the EIS as presented in Section 3.3.2.3 and are summarized as follows:

The entire 64-acre Site that Tiller proposes to mine is within the Agricultural (AG) Zoning District designated under the zoning regulations in place at the time that Tiller submitted its application for a CUP to the City. Mining is an allowed use on lands within this district. To prohibit mining within the 9-acre area, the City would need to find that mining the area would result in significant impacts that cannot be mitigated. Analysis of the potential impacts of mining the 9-acre area for this DEIS did not identify significant impacts.

Loss of the woodland area would not impact rare, threatened or endangered species and the plant community is not endangered or currently protected by federal, state, or local laws. Butternut trees (Minnesota Special Concern) are present in the 9-acre area, but the trees are diseased. The single Butternut tree that appears to be disease-free within the Zavoral Site is located outside of the mining and reclamation area. The status of the Butternut tree is currently proposed to change from Special Concern to Endangered within the next year. Even if this occurs, the removal of diseased Butternut trees would not be considered a significant impact. If tree clearing occurs after this reclassification takes place, a taking permit from the MnDNR would be required (MnDNR May 2012).

Tiller considers the 9-acre area that has not been previously mined a critical component to meeting the purpose and need for the Project. Tiller has determined that up to 50% of the total volume of aggregate material that is proposed to be mined at the Site is contained within the 9-acre area. Removing that area from the Project significantly reduces the amount of high quality aggregate that could be mined. According to Tiller, mining this area is a prerequisite to reclamation for the Project because revenue from the aggregate resource would be used to fund the proposed reclamation. For these reasons, the elimination of the 9-acre area not previously mined from the Project was not included as a modified alternative for evaluation in this EIS.

Tiller has also reviewed their plan and determined that a 100-foot or larger buffer would reduce the overall Project area by nearly 30% or more. Tiller has stressed that the size, location, and boundaries established for the Project are critical to the success of the Project and that the Project would not be viable if the 100-foot setback was required. If Tiller's CUP application moves forward after the EIS process is complete, the City will require that the Project meet the setbacks required in its mining ordinance. However, there are no other adopted buffer requirements for this activity in state or city regulations.

The landowner has the right to develop a property as allowable under applicable laws and codes unless significant impacts would result.

#### *Reclamation Only Alternative*

The reclamation-only alternative was not considered because income from mining is the only source of funding for the reclamation. The Zavoral Site is privately owned. The Site owner would not undertake reclamation outside of the Project. Identifying other parties that may be willing to fund reclamation is outside of the scope of this EIS.

#### *Project with Reasonable Mitigation Measures*

The DEIS presents the range of alternatives required in the RSSD and has identified reasonable mitigation measures to reduce potential impacts.

## **4.1 LAND USE**

### **Comprehensive Plan**

Commenters (9, 23, 28, 48, 50, 53, 59, and 62) state that the City of Scandia 2030 Comprehensive Development Plan adopted on March 17, 2009 does not allow mining on the Zavoral Site and, as a result, the Project should not be granted a CUP. Tiller did not complete the environmental review process before the 2030 plan was adopted. Commenters further state that because Tiller modified the original proposal described in their November 2008 CUP application and the Project has undergone revised scoping for the EIS since the 2030 Comprehensive Development Plan was adopted that it should not be granted a CUP under the 2020 Plan in place at the time of Tiller's CUP application. It has taken too much time to complete EIS process since Tiller's original CUP application and Tiller's original permit application should be canceled due to failure to meet deadlines and requirements. The DEIS refers to mining as an "allowed use." As "allowed use" is not defined [in either version of the Development Code would it be more accurate to call mining a "conditionally permitted use" or a "conditional use" under the New Scandia Township Development Code (NSTDC).

**Response to Comments 9, 23, 28, 48, 50, 53, 59, and 62:** As described in the Executive Summary Section 2.1 and Sections 4.1 Land Use and 2.3.1 Areas of Controversy, the Zavoral Site was designated within the AG (Agriculture) District under the City's 2020 Comprehensive Plan, the adopted plan at the time of the Tiller application for the Zavoral Mining and Reclamation Project (2008). The Development Code that was in place at the time of the Tiller CUP application for the Zavoral Mining and Reclamation Project included mining as an allowed use within the AG District, with a CUP. The City maintained its position to treat Tiller's 2008 application under the comprehensive plan and ordinances effective at the time of Tiller's application. The Zavoral Site and the Scandia Mine are both within the AG District established in the City's 2020 Comprehensive Plan, which was the adopted plan at the time of Tiller's CUP application.

Tiller submitted a draft EAW document and an application for a CUP for an aggregate mine at the Zavoral Site to the City of Scandia on November 20, 2008. The EAW document was dated October 27, 2008. The City's Ordinance No. 103 (Mining and Related Activities) requires that if an EAW is mandated for a mining project, that it be prepared and accepted by the City before the mining application can be determined to be complete. (The ordinance does not require that the environmental review process be completed before the CUP application may be submitted.) The required environmental review process is therefore an integral part of the CUP application process, and Tiller's submittals met the requirements of the City's ordinance. Minnesota Rule 4410.3100 prohibits final governmental decisions to grant permits or begin a project before the environmental review process is completed. Therefore, the City tabled the CUP application during the EAW review process, and cannot complete the review of the CUP application until the environmental review process for the Zavoral Mine and Reclamation Project is completed.

The City's 2020 Comprehensive Plan was the adopted plan on November 20, 2008 when Tiller's EAW and CUP application were submitted to the City. The Zoning Map and Development Code effective on that date were adopted on January 8, 2002, and were consistent with the Comprehensive Plan.

The Zavoral Site was located within the AG District under the City's 2020 Comprehensive Plan and the adopted Zoning Map and Development Code at the time of the application. The Code identified mining as an allowed use within the AG District, subject to the issuance of a CUP.

While the 2030 Comprehensive Plan update was in process at the time of the Tiller application for the Zavoral Site, it was not adopted until March 17, 2009. The zoning map and Development Code that would implement the plan were not adopted until November, 2010.

The City made a decision at the beginning of the review process to review Tiller's 2008 application under the comprehensive plan and ordinances that were adopted at the time of Tiller's application, and it has consistently adhered to this decision as the review process has moved forward. The City reviewed all zoning applications that were made while the 2020 Comprehensive Plan and related development code were in effect under those regulations. The 2030 Comprehensive Plan, Zoning Map and Ordinances were not used to review zoning applications until the new map and ordinances were adopted by the City Council.

The review process for the Tiller CUP application has been a lengthy process, but it is a single administrative process. The steps in the process are required by the City's Development Code, State Statutes, and Rules, and the City is following the required process. The environmental review element of the application review is still in process, and will not be completed until the City determines the adequacy of the EIS. After the EIS process is complete, the City may address the CUP application.

It is accurate to refer to mining as an "allowed use." The City's Development Code provided lists of the uses allowed in each zoning district categorized by whether they are permitted uses, accessory uses, uses by CUP, uses by interim use permit or by administrative permit. All of these uses are "allowed" in the zoning district.

## Zavoral Site Land Use

Commenters (27, 49, 61, and 62) state that suitability for future land use needs to be addressed and ask how it was determined that the reclaimed area will be more suitable for residential development, agricultural use or conservancy.

Commenter (28) asks the Council to consider how a well planned housing development on the bluff of the Zavoral property would benefit the City. Commenter (54) states that it has been “my view for several years that there can be an alternative solution to the Zavoral property instead of additional mining and the substantial environmental impacts during and after extraction – whatever the length of a CUP - of this sensitive, high value parcel adjacent to the St. Croix National Scenic Riverway.” The Commenter proposes that the applicant withdraw their application to mine this property once the draft EIS process is complete and that the City of Scandia work with the Trust for Public Land, the Minnesota Land Trust and the St. Croix River Association to define a project to protect this parcel, owned and managed by Scandia, Washington County or the MN DNR, perhaps in cooperation with the National Park Service to develop a park or natural area.

Commenter (65) states that “Zoning Ordinances are (will be) implemented too late to impact development proposals already submitted, such as the Zavoral Mine proposal. And although the guidelines are all voluntary and have no effect on property owners who do not want to take advantage of the incentives when they develop their land, proceeding with the “no build” scenario of the proposed mine site – and remediation of the site as legally contracted years ago could afford Zavoral and the City the opportunity to designate the property as a “Scandia Scenic Heritage Partner” in recognition of private efforts to preserve the scenic, rural and historic character of the community.”

Commenter (83) states that “So given that you are the Planning Commission here in Scandia, and those of us who propose to build in Scandia have to show you what the outcome of our building projects will be, I think one legitimate question you could ask is what will this site be appropriate for when the mining process is completed, besides more mining?”

**Response to Comments 27, 49, 61, and 62:** As a point of clarification, the DEIS states that “The proposed reclamation plan would result in a Site that is suitable for the uses allowed in the Development Code”, not more suitable for residential development, agricultural use, or conservancy. Reclamation as proposed would include grading the Site, placing topsoil or engineered topsoil over the Site, and revegetating the Site. Very little topsoil or organic material is present at the Site because it was removed from the 55 acres of the 64 acres proposed for the Project by past mining activities. As a result, the addition of topsoil or engineered topsoil with added organic material applied over the Site as part of reclamation would be beneficial to improve vegetation establishment. Grading, topsoil placement, and revegetation could theoretically occur without the Project; however the City is unaware of any other proposal to do so.

**Response to Comments 28, 54, 65, and 83:** The City’s Ordinance No. 103 (Mining and Related Activities) requires “restoration of mined areas consistent with the existing and planned land use patterns.” The terms reclamation, restoration, and rehabilitation are defined as interchangeable in the ordinance, and mean “renew land to a self-sustaining, long-term use which is compatible with contiguous land uses, and which process shall include the re-establishment of vegetation, soil stability and establishment of safe conditions appropriate to the intended use of the land in accordance with the City’s Comprehensive Plan and the CUP conditions allowing for excavation and/or processing on the Site.”

As indicated in the DEIS, a CUP for mining at the Zavoral Site must include a reclamation plan that would result in a site that is consistent with existing and proposed land uses. The existing uses adjacent to the Zavoral site include agriculture, residential and open space uses. The uses allowed in the AG District include a variety of agricultural uses, public parks and recreational facilities, and single family residences. The reclamation plan would need to reclaim the Site through grading, topsoil replacement and vegetative establishment to support one or more of the permitted uses and be consistent with surrounding uses.

As stated in DEIS Section 4.1.1.6 Impact on Current and Future Land Use and the Executive Summary Section 2.1, Tiller does not own the Zavoral Site and therefore would not have control over post-mining and reclamation land use and future development at the Site. Future post-mining land uses on the Site would need to comply with the City of Scandia Development Code at the time development is proposed. Potential purchase of the Site from the property owner and protection as open space would be allowed by the current development code and would not be precluded by the reclamation plan. The City is not aware that an organization or agency is pursuing this option (as described in one the comments) for the Site.

### **Quality of Life in Scandia and Marine on St. Croix**

Commenters (1, 2, 3, 5, 7, 15, 16, 27, 29, 31, 33, 45, 48, 54, 56, 57, 61, 65, 66, and 68) believe that the proposed mine is a benefit to the property owners only and has the potential to or will adversely affect the quality of life for many other residents in the area; will affect neighboring properties, the Cities of Scandia and Marine on St. Croix, the St. Croix River, the State Scenic Byway, the natural scenic and peaceful beauty of the river and the river valley, public safety, and tourism. Commenters state that mining is an industrial operation best suited for industrial corridors and is inconsistent with the desire of Scandia residents to remain a bedroom community with rural character. One commenter (21), states that “everything about this mine suggests that quality of life will be compromised. I have spent thousands of dollars remodeling our home and will be enormously disappointed and frustrated if this mine is approved and we have to deal with dust, noise and traffic. This is exactly what I wanted to escape!” Another commenter (25) states that there will be an impact on quality of life for Scandia residents. “While I believe that private citizens should be able to do what they like with their land, it has become even more clear that the result of the mining activities do not *stay* on that land. There is no way to keep the air, noise, trucks, etc. within the borders of that one property. Honoring ‘land-owner rights’ for one person at the expense of the rest of the land-owners in the community is unacceptable.” Commenters appeal to those in power to rise up to a higher level of thinking, to noble ideas of stewardship and championing Scandia's priceless assets for future generations to come. Commenters urge the Scandia Council “to preserve residents’ heritage by saying NO to a gravel mining operation in this location.” Commenters ask how the project would benefit the citizens of Scandia.

#### **Response to Comments 1, 2, 3, 5, 7, 15, 16, 21, 25, 27, 29, 31, 33, 45, 48, 54, 56, 57, 61, 65, 66, and 68:**

The DEIS evaluates how factors that affect the quality of life in the area would be affected by the Project, as identified in the RSDD that established the scope of the EIS. These factors are addressed under specific topics such as traffic, noise, property values, economic impacts, visual impacts, Lower St. Croix National Scenic Riverway, and so on. The City recognizes that the proposed mining operation would bring changes during the years that the mine is in operation, and that commenters believe that the changes will have negative impacts on the area surrounding the proposed mine. The DEIS documents and analyses the potential changes and impacts. However, the DEIS analysis concludes that the potential impacts are not “significant” based on the definition of “significant impacts” included in Minnesota Rules that govern environmental review

The DEIS analysis finds that as long as Tiller operates within the confines of their proposed mining plan, implements the required mitigation measures, and reclaims the Site as proposed, neither negative or beneficial impacts identified during the DEIS process were determined to be significant impacts, as defined by Minnesota Rules. Under Minn. R. 4410.1700, a decision as to whether a project has the potential for significant environmental effects, must compare the impacts that may be reasonably expected to occur from the project with the criteria set forth in Minn. R. 4410.1700, § 7. These criteria are:

“A. The type, extent, and reversibility of environmental effects.

B. Cumulative potential effects. The responsible governmental unit (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 contribution from the projects.

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.

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.”

The Council of Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1508.27) also defines impact levels based on the considerations of context and intensity.

No impacts that reached the level of significant impacts were identified in association with the Project.

#### **4.2 ENVIRONMENTAL HAZARDS**

No comments specifically related to this issue were submitted.

#### **4.3 ECONOMIC IMPACTS**

##### **General**

Commenter (27) states that the Scoping Document states that the economic impact, including impacts to the economy and tourism must be quantified. What is the data and analysis used to quantify these issues and conclude that there will be little impact? Also the aggregate tax owed to the County and Scandia needs to be clarified in the Economic section of the DEIS.

**Response to Comment 27:** Economic impacts identified in the DEIS were quantified. Section 4.3.6 of the DEIS, Minn. Stat. § 298.75 quantifies the payment of a production tax on aggregate material removal in certain areas of the state, including Washington County and adjoining Chisago County. In summary, Tiller proposes to extract up to 1.2 million tons of aggregate from the Zavoral Site. At 15 cents per ton

(\$180,000) and after deducting 5% for administration, this would generate \$171,000 in taxes to be distributed, \$72,675 (42.5%) of which would be payable to Washington County, \$72,675 (42.5%) of which would be payable to the City of Scandia, and \$25,650 to Washington County's reserve fund for restoration of abandoned pits. Please refer to the referenced section for more detail.

Other impacts to the economy referenced in the comment are addressed under the **Area Businesses and Tourism** heading below.

### **Property Value**

Commenters (3, 12, 15, 27, 28, 29, 32, 37, 38, 42, 43, 48, 49, 61, 65, 72, and 73) state that property value impacts are underestimated in the DEIS and the Project could negatively affect the values of homes "all along the hauling routes and well beyond." Commenters state that they have watched their property values "plunge during the economic downfall and that opening this mine would surely force our property values to drop significantly further and potentially make them unmarketable without deeper discounts." One commenter (28) stated that they lived between ¼ and ½ mile north of the proposed mine (21715 Quarry Ave N), yet their property was excluded from the chart showing property value reductions and asked if this was a deliberate omission. The commenter states that, because the DEIS does not conduct an assessment of the mine's impact to home values that meets minimum professional standards, the DEIS fails to provide the "technical knowledge and expertise" expected of an agency in preparing an EIS. Consequently, the DEIS does not constitute the "hard look" at the unavoidable economic impacts as required by MEPA. "The EIS must accurately consider the significant economic impact to Scandia and its residents that will result from the Tiller mine's impact on home values in a manner meeting industry standards as required by MEPA in order to be considered adequate."

**Response to Comments 3, 12, 15, 27, 28, 29, 32, 37, 38, 42, 43, 48, 49, 61, 65, 72, and 73:** The property value study meets industry standards and is adequate. Michael Bettendorf of BRKW, a Certified Real Property Appraiser in the State of Minnesota and active appraiser since 1971 was retained to conduct a study of potential property value impacts. Mr. Bettendorf conducted the analysis in conformance with the Code of Ethics and Standards of Professional Practice of the Appraisal Institute and the Uniform Standards of Professional Appraisal Practice as mandated by the State of Minnesota. He has the Member of Appraisal Institute (MAI) designation held by appraisers that are experienced in the valuation and evaluation of commercial, industrial, residential and other types of properties, and who advise clients on real estate investment decisions. He has served as the MAI Ethics Administrator for Region 3 from 2000-2006 and Assistant Regional Representative from 2006 to present. Mr. Bettendorf specializes in commercial, industrial, multiple family, residential, and special purpose property appraisals with extensive litigation experience. He has also served as a court appointed Commissioner in Ramsey County, past President of Minnesota Chapter American Institute of Real Estate Appraisers, and instructor of appraisal courses and seminars. See also the responses to Items 1 through 7 below.

Commenters (32 and 72) state that the DEIS inaccurately and inadequately considered the impact of the Tiller mine on property values in Scandia as described in the Property Value Impact Report. The particular deficiencies of the BRKW Market Analysis include the fact that it uses outdated market information that vastly underestimates the market impact, uses an insufficient sample of home sales, and ignores industry research on the impact of gravel mines on home values. Specifically, the BRKW Market Analysis fails to satisfy the Uniform Standards Professional Appraisal Practices, commonly accepted practices in the appraisal industry, in the following ways:

1. BRKW compared a very small sampling of 22 home sales comparables compared to Diane Hite's study (32, 72) using 2,552 homes. BRKW only used a small data set analysis, which was the matched pair approach. An adequate appraisal would also use a large data set analysis such as the Hedonic method.

**Response:** A sales study of similar homes in the areas impacted and not impacted by proximity to a gravel mine or similarly viewed operation provides a superior degree of accuracy when compared to a large statistical model, where every sale is included in a pool for analysis in the hope that a specific impact can be sifted out. The methodology applied for the DEIS concentrated on using specific sales data to quantify impacts of the Project on nearby property values.

In researching the market, the first step in the BRKW study for the DEIS was to identify actual sales of properties within 1 mile of a gravel operation or similarly viewed facility. Once a property in such a location was identified, BRKW then expanded the search for sales of homes similar as possible to the subject home beyond the 1-mile-line. The focus on sales of similar homes was to reduce the influence of other factors that could cause differences between the properties as much as possible in order to allow for an accurate isolation of proximity impact to an operating gravel facility.

The BRKW analysis of the potential impacts of the Project on surrounding properties concluded that there was no impact beyond  $\frac{1}{4}$  to  $\frac{1}{2}$  mile from the Site, based on impacts that occurred to residential properties near similar facilities. The property in question at 21715 Quarry Ave N. is located beyond the  $\frac{1}{4}$  mile and, based upon BRKW analysis would not be impacted.

2. BRKW did not explain why the scope of the study was only a one-mile radius of properties and then also did not explain why it ended up with only 1/4 mile radius of affected properties.

**Response:** BRKW established a 1-mile radius to evaluate impacts on property values. The evaluation determined that measureable impacts were limited to  $\frac{1}{4}$  to  $\frac{1}{2}$  mile, depending upon location. If there is any impact it should be readily noticeable in properties within 1 mile of a site. The analysis produced a range from no impact to a modest impact. Based upon this analysis, BRKW concluded that those properties adjacent to the proposed mine, could see a decline in value, with the decline decreasing as the distance from the mine increased to  $\frac{1}{4}$  to  $\frac{1}{2}$  mile depending on location. Beyond that distance, BRKW concluded that based upon site-specific data no negative impact would occur.

If the evaluation had determined that impacts could occur outside of a mile, the study radius would have been expanded. The further one moves away from a site or project that has the potential to have a negative influence on property values, the less influence the site or project has on property values. As a result, as one moves further away from the site or facility other factors that can dramatically alter home prices, such as location, building design, changes in school districts, and other factors, making isolation of one item's influence on property values impossible to measure.

The BRKW analysis addressed factors that may be considered a negative impact on property values, including increased activity at the Site, noise, dust, traffic, and other factors that buyers considered in purchasing properties close to a gravel mining operation.

3. BRKW did not use a cross section of property values, such as a high priced home, middle range home, low valued home, large acreage properties, especially with Scandia having varied property types and values. The home sale comparables were all in the \$200,000 - \$300,000 range.

**Response:** The focus of the study was on properties that were located near operating gravel mines or similarly perceived facilities and those that were a distance away. Unfortunately, there were no sales of lower priced homes. In terms of higher priced homes, please refer to page 59 of the Property Value Technical Memorandum that discusses sales of high value homes adjacent to an existing gravel mine and is repeated below.

“In the Northwest Quadrant of Interstate TH 94 and Stagecoach Trail is a 257 acre gravel mining operation owned by Tiller that has been in operation for approximately 35 years and is anticipated to continue for another 20 to 25 years. Stone Ridge Golf Course, an 18 hole champion course constructed in the 1990s, is located approximately 1 /2 mile west of the mining facility. An executive residential subdivision known as Wynstone has developed between the golf course and the mining operation, with a wooded buffer area in between. Within this subdivision the property at 675 Oakgreen Avenue North sold in March of 2007 for \$1,700,000. The property at 13535 4th Street North sold in June of 2005 for \$2,125,000. In October of 2005 the property at 14223 10th Street North sold for \$1,150,000.

In upper bracket homes, each home has special characteristics that are unique to that property. The custom design and quality makes comparison difficult. However, of importance is that it appears proximity to a golf course was more important and overshadowed the proximity to an operating gravel mine. Figure 13 is an aerial photograph) that shows the location of the aforementioned homes, golf course and gravel mine.”

4. BRKW did not utilize recent home sale comparables within the last couple of years. They utilized 2006 and 2007 comparables from the peak of the housing market boom, which would show a decreased effect on value loss.

**Response:** As stated in the transmittal letter of the Property Value Technical Memorandum, “It is noted that home prices have been declining over recent years due to a variety of economic problems. In order to avoid the corruption of data from this down turn, single family sale activity in the years 2006 and 2007 were selected. This timeframe is a period of market stabilization and change from the rapid increase of property values in the first half of the decade and the sharp declines of the past few years.” The time frame of 2006/2007 was chosen since it was the most recent time frame before the market collapse and hence would provide a way of isolating gravel pit impact. A table is provided on page 29 of the study that reported changes in the median sale prices in each area studied. This data, obtained from the Multiple Listing Service showed modest changes indicative of a typical market. The gap in prices between those near vs. those away from a gravel or similarly viewed operation remains similar even when prices are at their peak. Both locations near and away from a gravel mining operation, would be at the same peak level. As such, they are on the same playing field, thus allowing measurement of the gravel mining impact.

In her presentation to the City Council, Ms. Phillippi stressed that the focus of the study must be on current sales. Also in the presentation, she noted that the Hite study was based on sales that took place between 1995 and 1998. This contradicts the argument that current sales must be used.

5. BRKW did not utilize home sale comparables from either the Scandia Mine area, located off of Lofton or the Franconia Mine area. Even if there were limited comparables available, this information should have been evaluated.

**Response:** Pages 57 and 59 of the Property Value Technical Memorandums addresses this issue and is repeated below.

“Tiller Corporation operates a gravel mining facility between Lofton and Manning Avenues, south of 228<sup>th</sup> Street in Scandia. The Northstar Multiple Listing Service reported 36 Single family home sales in the Scandia area during 2006 and 2007. This represents a small sampling with even fewer home sales within a possible impact area.

Table 10 contains a summary of these sales by year and by style of home, as reported by the Northstar Multiple Listing Service. The amount of sales activity was limited as compared with the areas used in this study. The homes are located on acreage sites that vary from 1 acre to 29 acres with variations between wooded and pasture land. There is also a wide variety of building design and layout age and condition, style of finish, outbuildings and other factors that makes the possibility of isolating the impact very problematic. As such, no meaningful information for the study was obtained in this area.”

“Franconia Township abuts the City of Scandia to the north. Aggregate Industries North Central operates a gravel mine on the west side of St. Croix Trail, at 260th Street. Further north, on the west side of St Croix Trail, near Sugar Bush Trail, Tiller Corporation has a small gravel mining operation. Limited sales activity, coupled with the differences found in small acreage properties, as mentioned above, resulted in no meaningful information for the study being obtained.”

6. BRKW’s study did not compare value reduction with the different Mining time lines. Such as the 10-year, five-year and one-year proposed plan. For example, the one-year plan having increased truck traffic over the other plans could affect property values more but for a shorter period of time.

**Response:** The level of impact of up to 2 to 5% reduction would be consistent for the identified properties for the duration of mining, but would decrease as reclamation occurs to no impact upon Project completion and successful reclamation. As stated in the DEIS, the impacts are temporary and period over which the impacts would occur would be shorter for the alternatives with a shorter Project life.

7. BRKW utilized mines located in Maple Grove, Rosemount, and Andover, which are very high density housing areas in a suburban setting. This is not at all comparable to Scandia’s rural nature and their unique river front properties.

**Response:** The Maple Grove, Rosemount, and Andover areas provide a better measure of the impact since each community has large numbers of sales involving similar homes, making the isolation of the impacts of a gravel or similar operation impact easier to discern. During the time frame analyzed,

competition from competing neighborhoods would best measure whether the proximity to gravel pits had a negative impact on value.

Scandia's rural nature involves homes on wooded acreage. It is the appraiser's opinion that the areas' wooded nature has the potential to screen influences of the proposed gravel operation on property values. Also, the wide variation of house designs and ages in rural areas, such as Scandia, adds to the complexity of isolating a specific type of impact, such as that of a gravel mine.

Additionally, suburban settings, in theory, should show a wider gap in those near to a gravel operation and those away since buyers in the suburban areas have more choices in purchasing similar properties as compared with a rural area, where the selection is small.

Commenter (24) claims that the impact of the proposed commercial operation is ¼ mile is "absurd" and should be re-done taking into consideration the acoustical impact of the Zavoral operation.

**Response to Comment 24:** The BRKW analysis addressed looked at the factors that may be considered a negative impact on property values from a purchaser's point of view, including increased activity at the Site, the potential for noise, dust, and traffic generation, and all other factors that buyers considered in purchasing properties close to a gravel mining operation.

Tiller's letter (38) transmitted a review of the BRKW Appraisals Report conducted by the Shenehon Company (Shenehon). This Review was commissioned for the purpose of evaluating the methodology and providing Shenehon's opinion of the BRKW Report. Shenehon's report states that it appears that the appraisal conclusions as stated are inadequate for the following reasons.

1. The BRKW report conclusion that there is a diminution in market value of 2%-5% for properties within ¼ mile of the proposed Project is not supported by measurable data. An analysis of sales transactions within a 1-mile radius of the Project conducted by Shenehon did not show a measureable impact.
2. The BRKW report rejected the use of local valuation data from properties in the vicinity of the current mining operation in Scandia and the nearby similar operations in Franconia Township.
3. The BRKW report does not appear to have considered the information from an appraisal prepared by BRKW for an EIS of the Proposed Xcel Energy Ash Disposal Facility. Despite the use of some of the exact same sales data, the results of the appraisals for the Xcel EIS versus the Zavoral DEIS yield two different conclusions.

The report completed by Shenehon on August 12, 2011 used a sales comparison approach to the valuation based on residential sales that occurred in the Scandia area from January 1, 2010 through November 1, 2011. "Although sales are fewer in Scandia compared to the Metro Area, it was believed that the most applicable data would be obtained from Scandia sales since the proposed Project is located in Scandia. In addition, there are active gravel mines in the Scandia area that were sufficient for use in the sales analysis. The Consulting Report prepared by Shenehon concludes that there is no measureable impact on the market value of residential dwellings located within one mile of the proposed Project."

**Response to Comment 38:** The following pertain to Shenehon’s review of the BRKW Appraisals Report:

### **Objectivity**

There are two basic concepts in the Shenehon report that seem to predispose the conclusion of no impact.

1. On page 4 of their review of the BRKW report, Shenehon states “It implies that the gravel mine property and its former operations have gone unnoticed by residents in the area for the past twenty some years...To imply that the gravel mine has been incognito for years is unbelievable. It is, and has been, an obvious fixture in the area for many years”.

The mine has been inactive for many years. What the residents noticed or did not notice related to the dormant Site is not the issue. Increased activity at the Site and in the vicinity associated with reactivating the mine would be a notable change and as such would have the potential to have an impact on property values as described in the BRKW report and DEIS.

2. Also on page 4 of their review of the BRKW report, Shenehon notes that the City through Ordinance No. 103 requires reclamation of the land after the mining process. The Reviewer further states “It could be argued that although surrounding properties would be near an active mine for a limited period of time, it could be considered a **delayed benefit**, [emphases added] instead of a detriment, because this nearby land would be returned to its natural state prior to any redevelopment.”

Even though the impact to property values projected in the BRKW study is temporary and would be expected to be present during the operation of the mine, decreasing as reclamation occurs to no impact or even a positive impact upon successful reclamation-there is still a period of negative impacts to property values as described in the BRKW report and DEIS. Even though an impact is temporary (in the case of this Project up to 10 years depending on alternative), it is still an impact and cannot be dismissed.

### **Actual Sales vs. Active Sales**

Shenehon lists activity within 1 mile of the gravel operations alphabetically (A-Q) and activity beyond one mile numerically (1-35). Within each group the terms “Home Sales” and “Active Sales” are used. This terminology raises confusion. As stated in the body of the discussion the term “Active Sales” means listings. This relates to properties that were listed for sale at the time of his analysis - not homes that have been sold. A home may or may not sell for the price it is listed for, thus the analysis potentially overestimates sale prices.

For the properties located within 1 mile of a gravel operation, 6 actual sales (Sales A-F) are supplied. For the properties beyond 1 mile 26 actual sales are supplied (Sales 1-26). The remaining activity data relates to properties listed for sale, and hence provides no measurement of how buyers view proximity to a gravel operation.

### **Finished Area vs. Price/SF Finished Area**

In all of the reported sales, Shenehon Company provides a Total Finished square footage along with a price per square foot of Total Finished square foot. However they don’t relate to each other. In Sale A the appraiser reports a total finished area of 3,824 square feet and a price per total finished square foot

of \$183.71, a sale price of \$702,507. The actual sale price was \$370,000, which equates to \$96.76 per square foot. The Multiple Listing Service reports an above ground finished area of 2,014 square feet, which when divided into the actual price of \$370,000 produces the appraiser's indicator of \$183.71. The "Total Finished SF" includes both above ground and below ground finish, while the "price per Total Finished SF" reflects above ground finish only. This situation is true in all sales with below ground finish. The Shenehon Report is using inconsistent data, which could be misleading. Overestimating values could mask the impact under evaluation.

### **Financing**

One factor that must be considered in a sale before any adjustment is the impact of financing. Sale E, for example, sold for \$187,000 (\$159.56/SF) with the seller contributing \$7,000 to the sale. As such, the net cash to the seller was \$180,000 or \$153.58/SF. Market Value is defined in terms of cash. Four of the six actual sales within 1 mile and 11 of the 26 sales beyond one mile had seller contributions. The report is silent as to whether this was addressed in the analysis.

### **Sales within 1 Mile**

Six sales of homes reportedly located within 1 mile of a gravel operation were submitted. Sales C and F are located within 1 mile of the Zavoral facility. Trying to determine whether there would be a diminution in value by using 2 sales that are both within 1-mile of the Site does not provide for an appropriate analysis.

Of the six sales submitted, two of the properties (Sales B and F) were lender-owned properties, with the stigma of foreclosure. Sale B was owned by the Federal Home Loan Mortgage Corporation with Sale F being owned by the Federal National Mortgage Association at time of sale. The motivation of lenders to rapidly move product can distort prices. These two sales comprise 33% of the sales within one mile.

On page 6 of their report, Shenehon states that the average sale price equates to \$149.00 per square foot of finished square foot. It then states that after adjustments the average price equates to \$155.00 per finished square foot. It is not explained what adjustments were made or why.

The 6 sales are supposedly the impacted properties. With the exception of financing, these sales should not be adjusted. Instead the marketplace should be searched for properties that as close as possible match one or more of the impact sales. Those comparables should be used to adjust to the impact properties they are most similar to in order to determine whether an isolated negative impact exists. The comparable would be adjusted to the subject. Shenehon states that they also adjusted the subject. Both ends of the equation should not be adjusted.

### **Sales beyond 1 Mile**

Of the 26 actual sales beyond 1 mile, 3 sales (7, 15, and 23) were owned and sold by lenders, with 3 other sales (2, 11, and 20) reported as short sales where the sale price was below that of the existing mortgage. These sales represent 23% of the "comparables".

Adjustments were also made to the 26 actual sales located beyond 1 mile. Shenehon concludes that the average sale price equates to \$139.00 per finished square foot, which after adjusting for land size, home site, age condition, etc. is \$142.00 per square foot is obtained. It is not explained what adjustments were made or why.

### **Other**

The Shenehon report is dated December 13, 2011, with an effective date of August 12, 2011. This is not explained.

The map showing the boundaries of the subject site in the Shenehon report does not agree with the property size of 118 acres cited in the report.

### **Area Businesses and Tourism**

Commenters (9, 21, and 25) state that there will be negative impacts on local businesses. Commenter (9) asks if there has been a study of how local area businesses will be affected by this mining operation, given the large number of trucks traveling TH 97 and 95. Commenter (21) states that they will shop in Marine on St. Croix rather than Scandia if traffic at that intersection of TH 97 and 95 worsens as they expect it will. Commenters (16 and 35) refer to the tourism revenues brought in due to the St. Croix Wild and Scenic Waterway because of its wild and scenic beauty. They express concern the effect of the mining operation on attraction of tourists to nearby businesses and possible remedies to affected businesses for reduced tourism and are very concerned that the increased noise and truck traffic will deter tourism to Marine and this area of the St. Croix River. Commenter (57) believes the DEIS lacks investigation and presentation of results assessing the sociological impacts of the proposed mine: quantitatively or qualitatively. "AECOM's team did not include appropriately credentialed experts using professional methodology to assess likely sociological impacts from the unique perspective of these users in such areas as noise, health effects of air pollution, public safety issues, value of recreational experience and property enjoyment, reliance on the protection of shared community assets as embodied in the comprehensive plan, or overall quality of life over the duration of the mining operation... At minimum, a reasonable good faith effort could have included surveys/interviews of owners of pontoon boats who dock in marinas at Osceola or Marine; bike touring clubs who routinely host events on local roads; landowners whose property borders the proposed site; and the average 1500 people who rent canoes/kayaks each year from Taylor's Falls Recreation, the primary vendor supplying boats for people who paddle from Taylor's Falls to William O'Brien, and would therefore be directly exposed to mine noise.

**Response to Comments 9, 16, 21, 25, 35, and 57:** Tourism is addressed in Section 4.3.2 and the Executive Summary. The DEIS recognizes that tourism in the area is largely related to the St. Croix River and river corridor, nearby public natural and recreation areas, and cultural heritage resources such as the Gammalgården Museum (approximately 2 miles from the Site) and the Hay Lake School and Erickson Log House Museum (approximately 3 miles from the Site).

The DEIS also recognizes that the area along the St. Croix River is scenic and provides a range of recreational and scenic driving opportunities. William O'Brien State Park is located approximately 2.5 miles south of the Zavoral Site on State Scenic Byway TH 95. Recreation traffic is a component in increasing average daily traffic on TH 97 and State Scenic Byway TH 95 during the spring to fall timeframe. The trunk highways have sufficient reserve capacity to handle the change in traffic volume for seasonal

traffic. Periods of congestion may be experienced during peak weekend travel times or on a holiday weekend, with or without the Project.

The DEIS concluded that the proposed mine would have no discernible impact on local tourism for the following reasons:

- The trunk highways are designed to accommodate regional traffic. The peak hour truck volumes are within the capacity of the roadways. Removing the Tiller's current Class C hauling traffic from the river crossing at TH 243 and the portion of State Scenic Byway TH 95 north of the Zavoral Site until material from the Zavoral Site is exhausted, should be beneficial to vehicles using these roadways to get to the state park or enjoy other recreational opportunities in the area.
- For approximately 1 to 2 hours during the evening rush hour or other periods of similar traffic patterns the level of service (LOS) from eastbound TH 97 left onto northbound TH 95 would decrease from Level C to Level D for all build alternatives and the LOS for the eastbound approach on TH 97 crossing TH 95 to the Project Site would be Level D for all build alternatives. According, the MnDOT Traffic Impact Study Guidance this LOS is considered to be acceptable for this type of intersection.
- The Project will not be visible or audible from key tourism destinations, such as the sites in Scandia Village and William O'Brien Park.
- Analyses conducted for the DEIS determined that although mining noise could be audible to people using the St. Croix River, it would fall below applicable standards.
- The Project would not be visible from the Riverway or from the Wisconsin bluffs on the east side of the river. In general, long-term effects of mining and reclamation activities would be not be visible or would be partially visible from sensitive viewpoints. This is because the interior Site terrain would be further excavated to a lower elevation than adjacent properties, which would limit visibility into the Site. In addition, views of the Site are blocked by tree stands in both leaf-on and leaf-off conditions as viewed from the bike path, TH 97, State Scenic Byway TH 95, and nearby residences.
- No water quality or quantity impacts that would affect the experience of people using the river were identified.
- Air quality analysis predicted that the mitigated impacts (after implementation of the Tiller Fugitive Dust Control Plan) from the Project plus the addition of appropriate background concentrations would not exceed applicable standards or adversely affect the water quality in the St. Croix River.

The DEIS recognizes that the operation of the proposed Zavoral Mine would have noticeable impacts. As long as Tiller operates within the confines of their proposed mining plan, implements required mitigation measures, and reclaims the Site as proposed, neither negative or beneficial impacts identified during the DEIS process were determined to be significant impacts, based on the criteria for defining "significant impacts" identified in Minn. R. 4410.1700.

#### 4.4 COVER TYPES

Commenter (57) states that the “Impact Summary Table: cover types indicates a change from 1.80 acres of “Dry Prairie” pre-mine to 40.44 acres of Dry Prairie post-mine. The language suggests that the net result of the mine would be an increase in acreage of native plant communities. In fact, there would be a serious loss in native plant communities; namely the 5+ acres of maple-basswood forest and white pine-hardwood forest that would be destroyed in the mining operation. Under the Minnesota Land Cover Classification System, a planting of selected native grasses and forbs does not constitute a “Dry Prairie”. Without qualifying language, this table is misleading.”

The MnDNR letter (63) states that when discussing the impacts of mining activities to wildlife, the Draft EIS document reads that “approximately 86% (55 acres) of the impact would occur in previously mined areas that remain unreclaimed...” Eighty-six percent would be accurate if the Project consisted only of the 64 acres that is proposed to be mined. However, the Project area is described throughout the document to consist of 114 acres with a proposed 64 acres of that to be mined. Performing the percentage calculation using the Project’s entire acreage would actually result in 48% of the Project area as being previously mined.

**Response to Comment 57:** As stated in Section 4.4.1.2.1 of the DEIS, the 5.4 acres of White-pine hardwood forest and Maple-Basswood forest that would be lost due to the Project would be reclaimed to a combination of mesic prairie, dry prairie, and White-pine hardwood forest. The plant communities proposed for restoration at the Site are native to the area, and are communities that may be successfully restored on the site to meet the requirements of the City’s ordinance for reclamation of the Site.

**Response to Comment 63:** The paragraph containing the statement “approximately 86% (55 acres) of the impact would occur in previously mined areas that remain unreclaimed...” came immediately after Table 11 that provides estimated acreage for existing and post-reclamation cover types for the 64-acre mining and reclamation area associated with the Project. This paragraph and the related calculation are for the 64-acre mining and reclamation area, not the entire 114-acre Zavoral Site since this is the portion of the 114-acre Zavoral Site that would be mined.

#### 4.5 FISH, WILDLIFE, AND ECOLOGICALLY SENSITIVE RESOURCES AND THREATENED AND ENDANGERED SPECIES

##### St. Croix River and Habitat

Commenters (7, 18, 21, 22, 25, 43, and 60) state that the mine will ultimately affect the St. Croix River and its habitat, that natural resources that will be lost if this area is mined, and that the DEIS did not adequately consider the displacement of wildlife. Commenter (61) stated that fragile species survey timing was restricted and inadequate. The survey was attempted during June to look for adult plants, but for some species such as American Ginseng, which had been found on the Zavoral property in the past, the best time during the year to look for immature plants is in the fall. It is entirely possible that American Ginseng, and perhaps other fragile species is on the property but was not found due to a highly restricted survey period. The MnDNR letter (63) cites an e-mail sent to AECOM that included an updated Natural Heritage database report (no new records) and stated that the DEIS should include a discussion on the issues raised in the July 21, 2008 Natural Heritage letter and a discussion regarding the butternut trees. No further Natural Heritage response is pending. In Section 4.5.1.3 Impact Analysis, the statement “No threatened or endangered species were found during surveys conducted on the Zavoral Site or are known to exist on the Site. Therefore no impacts to threatened or endangered species would occur as a result of Alternatives...” NHIS records indicated that there were a potential for listed species to occur on the site.

Although no species were found during surveys that should not be inferred as “no impacts...would occur.” Survey results should be interpreted more accurately as the project is not likely to affect threatened or endangered species. Please refer to the previous comment on butternut. The Impact Analysis should take the proposed status change of this species into consideration.

**Response to Comments 7, 18, 21, 22, 25, 43, and 60:** As stated in Section 4.4.1.2.1 of the DEIS, approximately 55 acres of altered non-native cover types would be affected by mining activities. The DEIS analysis indicated that approximately 40.8 acres of White-pine hardwood forest, Maple-Basswood forest, Black ash swamp seepage subtype wetlands, Southern mesic cliff, and cropland located outside the proposed mining limits would not be directly affected by mining activities. Section 4.4.1.2 references the aquifer test conducted by AECOM that confirmed that the St. Lawrence Formation acts as an aquitard that limits the influence of pumping from the deeper Franconia-Ironton-Galesville and Mt. Simon Aquifers. The shallow aquifers at the Site were not influenced by pumping in the deeper aquifer and the projected use of water from the Zavoral Site Well for dust control purposes would not be expected to impact these regionally significant features. Mining would increase the amount of internal surface drainage at the Site, resulting in increased base flow conditions. Therefore, the Southern mesic cliffs and the Black ash swamp seepage subtype wetlands would not be directly or indirectly affected by the Project.

As stated in Section 4.5.1.3 of the DEIS, “Although the proposed mining would involve the loss of some wildlife habitat, approximately 86% (55 acres) of the impact would occur in previously mined areas that remain unreclaimed after previous mining on the Site and currently provide low-quality wildlife habitat, primarily for common, disturbance adapted edge species. These species would be temporarily displaced during mining activities, but many of the species would be expected to return to the area once mining and reclamation activities are complete.” As stated in Section 4.5.1.2 of the DEIS, “Since no nesting or roosting areas were identified, the raptors observed at the Site would not be expected to be negatively affected due to the large size of the areas that they use.”

**Response to Comment 61:** According to the MnDNR website, the best time to search for American Ginseng in Minnesota is from mid-June through early October, so the survey was conducted within the appropriate time period.

<http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDARA09010>

**Response to Comment 63:** The redline version of the EIS has been revised regarding the updated Natural Heritage database. A discussion of the Butternut tree being reclassified to endangered within the next year has been added to the redline version of the EIS. In addition, the potential need for an Endangered Species Take Permit has been added to Table 4 in Section 2 of the EIS. The redline version of the Section 4.5.1.3 of the EIS has been revised to state that “No threatened or endangered species were found during surveys conducted on the Zavoral Site or are known to exist on the Site. Therefore no impacts to threatened or endangered species are expected as a result of Alternatives...”

### **Previously Unmined Area**

Commenter (7) states that “the fact they are going to mine land that was previously unmined and is old- growth forest and woodlands is atrocious. Any land with old forest growth and woodlands should be preserved.” Commenter (18) is concerned about the cutting of trees. WCD letter (20) stated “that throughout this process, the applicant has responded by modifying the proposal to lessen potential impacts in these areas. We continue to

encourage the protection and preservation of intact natural forest communities, such as the several acres of natural woodland being proposed for mining on this site, but acknowledge that in the absence of any Rules or applicable ordinances that apply to their removal, preservation is voluntary.” Commenters 27, 49, 74, and 76 want to avoid mining the currently unmined 9 acres.

**Response to Comment 7:** As a point of clarification, the 9-acre unmined area does not meet the MnDNR criteria to be classified as an old growth forest. Old-growth forests (MnDNR definition and consistent with definitions for the eastern United States) are natural forests that have developed over a long period of time, generally at least 120 years without experiencing severe, stand-replacing disturbance--a fire, windstorm, or logging. Old-growth forests may be dominated by species such as sugar maple, white spruce, or white cedar that are capable of reproducing under a shaded canopy. These old-growth forests can persist indefinitely. Old-growth forest may also be dominated by species such as red pine, white pine, or red oak that do not reproduce as well under shade and that require disturbance to open the canopy. These old-growth forests will eventually be replaced by the more shade tolerant tree species in the absence of disturbance. Typical traits of Minnesota old-growth forests include:

- Some trees are at least 120 years old (often at least 2-3 feet across).
- Large, dead standing trees and branches (snags) are common.
- Large fallen trees and branches lie on the ground.
- The forest is a mix of young, old, and middle-aged trees (multi-aged).
- Small openings (canopy gaps) are visible between the tree crowns.
- Dirt piles and holes from tipped-over trees (tip-up mounds and pits) dot the ground.

([http://www.dnr.state.mn.us/forests\\_types/oldgrowth/description.html](http://www.dnr.state.mn.us/forests_types/oldgrowth/description.html))

Vegetative surveys completed for the DEIS analysis (Section 4.4.1.2) indicate that the 9-acre area of the Site that was not previously mined has been impacted by past land uses on the Site and surrounding area, and does not have the characteristics of an old growth forest.

**Response to Comments 18, 20, 27, 49, 74, and 76:** The Project Advisory Committee (PAC) developed for this Project asked about removing the 9-acre area that had not been mined in the past from the Project, in part because it contains a wooded area. As a result this was evaluated as part of the EIS process to determine if it should be assessed as a modified scale alternative. For the reasons described Section 3.3.2.3 of the EIS this alternative was not carried forward.

Tiller considers the 9-acre area that has not been previously mined a critical component of the Project. Tiller has determined that up to 50% of the total volume of aggregate material would be mined from the 9-acre area and removing that area from the Project significantly reduces the amount of high quality aggregate that could be mined. According to Tiller, mining this area is a prerequisite to reclamation for the Project because revenue from the aggregate resource would be used to fund the proposed reclamation. For these reasons, the elimination of the 9-acre area not previously mined from the Project was not included as a modified alternative for evaluation in the EIS. As noted by Commenter (18), the woodland area referenced is not currently protected by federal, state or local laws, preservation would be voluntary, and it would remain unprotected regardless of whether or not mining occurs.

The landowner has the right to develop a property as allowable under applicable laws and codes unless significant impacts would result. The DEIS has not identified significant impacts to listed species resulting from

the proposed mining, including the 9-acre acre. Butternut trees (Minnesota Special Concern) do occur in the 9-acre area; the butternut trees within the 9-acre area. The single Butternut tree that appears to be disease-free within the Zavoral Site is located outside of the mining and reclamation area. The status of the Butternut tree is currently proposed to change from special concern to endangered within the next year. Even if this occurs, the removal of diseased Butternut trees would not be considered a significant impact. If tree clearing occurs after this reclassification takes place, a taking permit from the MnDNR would be required (MnDNR May 2012).

## Reclamation Plan

The WCD letter (20) includes the following comments (summarized):

- The prairie plant community proposed in the reclamation plan is well suited to the conditions that are expected to exist after the mining is finished.
- The WCD recommends the use of an engineered soil, as is proposed as "Topsoil Requirements for Approach 1" in the DEIS. This approach has been used successfully in many areas, and has been found to decrease the weed dominance on large sites. This approach is not yet adopted under the current City ordinances. The WCD can work with the City on considering this alternative approach for this, and other, projects.
- The Forest Management Plan adequately describes the plant communities seen on our visits to the site. The native forest communities are ranked as good to moderate quality, with the deficiencies being related to the presence of invasive species, such as buckthorn and earthworms. Several of the tree species are vulnerable to their specific threats, such as oak wilt, emerald ash borer, and the butternut canker. These threats are valid throughout the county, not limited to this site. Approval conditions can be placed on the project to minimize the spread of these threats, such as seasonal timing of impacts to oaks.
- Close attention must be given to control invasions of noxious weeds, which may easily be imported from other gravel pits via the trucks. If the proposal is approved, the city may request additional details as a condition of such approval.
- Overall, we believe that the DEIS has identified and addressed the potential impacts to the wetlands, surface water resources, and natural plant communities to enable the City's decision on these areas.

MnDNR letter (26) states that regarding tree planting, Figure 23 shows the now-wooded area will, post-restoration, consist of dry prairie and mesic prairie. It will not be reforested. In neither Figure 23, nor anywhere in the DEIS, is the extent of proposed tree planting revealed. The proposed reclamation plan seems insufficient. We want to make sure that the new trees are not planted in a 30 to 60 foot hole in the ground. We would like to see berming along the perimeter of the hole with trees planted on the berms with sufficient depth to simulate the forest they are planning to remove.

Commenter (49) states that the need for reclamation is given as one of the two primary drivers of this project and questions whether it is needed and questions whether reclamation is needed at all. The commenter asks "why is it beneficial to clear 64 acres of mixed white pine hardwood forest, maturing deciduous forest, and grasses and replace them entirely with dry/mesic prairie? We are seeing reclamation from the Barton mine now, and we know what 20-30 years after mining looks like. The difference is the prevalence of invasive species; it is likely that buckthorn and thistle will dominate the landscape for years in lieu of meadow and woodland currently in place." Commenter continues with several specific questions related to the reclamation plans: whether there is an erosion issue now, what is the period open to storms, how long it takes seeds to sprout, how long does it take vegetation

stabilization to occur, how many trees will be planted and what type, if there is a survival guarantee, and how many years it will take for current stand of trees to be replaced?

MnDNR letter (63) states the DEIS includes a discussion on two possible reclamation approaches for the Site. “On February 15, 2011, the DNR participated in a meeting with the City, project proposers and their consultants to discuss reclamation activities proposed. The DNR expressed support for Tiller’s original reclamation plan referred to as the Prairie Reclamation Approach 1 in the Draft EIS. This plan entails revegetating the Site using the sandy subsoil available at the site with added organic soil amendments. The DNR also encourages incorporating managed burns for the site at a 5 to 10 year interval once the site is established.”

Commenter (65) states that “The EIS should clearly state that, and Scandia should understand that ‘reclaiming’ the deep pit -remnant of the proposed gravel mine with a modicum of topsoil and growing predominantly grasses is a far cry from ‘bringing back into existence, reestablishing, or bringing back to an original condition’ the land contour and forestation of the site, or even restoring it to its current modest depression with groves of trees and cropland (6.92 acres of existing forest will be sacrificed for new mining, and an additional 8.54 acres of regrowth cut down and to be mined again. Plus the permanent loss of 2.04 acres of cropland for mining and reclamation.) Adding a small amount of White Pine monoculture reclamation, susceptible to White Pine Blister Rust, is not even good reclamation.”

Commenter (76) states “It’s going to be this hole that’s about 60 feet deeper than now. It’s wooded, and basically it’s going to be covered with grass and a tree here and there.”

**Response to Comments 20, 26, 49, 63, 65, and 76:** The recommendations made by the WCD and MnDNR regarding the Prairie Reclamation Approach 1 and other reclamation and mitigation measures would be considered as part of any permitting process by the City. If the CUP process moves forward, the City would require a detailed reclamation plan that would address the specific issues identified in Comment 26. Section 5.1 of the DEIS identified some of the specific criteria that would need to be addressed in the reclamation plan, including the number of trees, their size, transplanting method, and the location, and arrangement of plantings specific criteria for measuring and defining success acceptable to the City (percent cover requirements for seeded native species, limits on aggressive native species, invasive and exotic species, and so on), and other criteria that would be used to evaluate the reclamation plan. The CUP conditions would also include monitoring of restoration by the City, and may require corrective action if monitoring is not meeting the criteria established in the CUP.

The plant communities proposed for restoration at the Site are native to the area, and are communities that may be successfully restored on the site to meet the requirements of the City’s ordinance for reclamation of the site. The MnDNR was consulted during the development of the restoration plan, and the agencies commenting on the DEIS have commented favorably on the communities proposed for restoration.

There would be brief periods immediately after soil stripping, and prior to overburden removal, (a matter of days or less for each occurrence) when potential impacts to downstream water resources could occur if erosion were not controlled. State and local regulations require that Tiller submit a Storm Water Pollution Prevent Plan (SWPPP) that would identify the best management practices (BMPs) that would be used to control potential erosion on the site. State and local permits would require Tiller to implement stormwater and erosion control BMPs identified in the SWPPP to minimize the potential for erosion.

## Impact on Regional Environment and Ecology

Commenters (32 and 70) states that the DEIS fails to adequately analyze the impacts to the environmental ecology of the region and the impact to water resources as described in the AES Report. The DEIS's analysis of ecological impacts is inadequate because "The DEIS focuses only on the site and direct impacts from changes in land cover and habitat conversion. The DEIS lacks discussion of the site's larger ecological context, rare species located near and adjacent to the site, and impacts likely to result from habitat fragmentation and edge effects, including noise impacts to wildlife." The failure to consider the impact to a larger ecological context is a significant inadequacy in the DEIS because mining will be adjacent to, and adversely affect, the St Croix National Scenic Riverway and associated National Park, and mining would eliminate part of a MnDNR - identified Regionally Significant Ecological Area (RSEA).

The Metropolitan Council letter (34) states the forested area below the bluff line within the southern perimeter of the Site's proposed mining area, which has not been previously mined, is included within the MnDNR's designated Regionally Significant Ecological Area (RSEA) and within the *Metropolitan Council 2030. Regional Development Framework's* designated Natural Resources Inventory and Assessment (NRI/A) area within the twin cities area. The 6 to 8-acre area is part of a larger adjacent area which has been characterized as 'outstanding' in quality by the NRI/A. The white pine hardwood forested area within the proposed mining area appears to be part of the larger high quality wooded area which trends along the Saint Croix River bluffs along the eastern boundary of the site. The Council's policy with regard to areas mapped within either the RSEA or the NRI/A is to encourage their protection and conservation by local land use planning authorities. Therefore, Council staff recommends that the mining area limits be redefined to avoid and protect these regionally significant natural resources. Should the determination be made by the City to allow mining within this area, Council staff encourages the City to work with the project proposer to find the highest and best off-site uses for the 'significant' trees that will have to be cut down on the Site.

Commenters (49, 53, 57, 65, and 80) state that the DEIS fails to fully acknowledge the effect a 64-acre gravel mine will have on birds, fish, and other wildlife, both directly in the potential mining area and in the adjacent forest and riverine St. Croix corridor. They state that the area proposed to be mined is one piece of a larger ecological web. The commenters have concerns that the DEIS did not analyze the impact the mine would have on surrounding areas, especially in regard to the fish, wildlife and other sensitive resources. "Any time there are activities undertaken by humans in a natural environment, there are consequences. Since sometime in the mid-1980s, this site has been essentially vacant of activity and has remained an open space. In the intervening 25 or so years, many species of wildlife and plant life have made their home in and around the area. State guidelines for preparation of this section of an EIS have not been followed, as the Biological Survey upon which it relies was narrowly prescribed, largely focused on state-listed rare species on the Zavoral property. In fact, by law, this section is to include "ecologically sensitive resources" which may not necessarily be rare species." The "affected area" is not limited to the Zavoral property.

The USWS letter (64) states that the DEIS should say that two endangered winged mapleleaf (*Quadrula fragosa*) and snuffbox (*Epioblasma triquetra*) mussel species are known to occur within 2000 feet of the project; however, these species do not occur on site.

**Response to Comments 32, 34, 49, 53, 57, 65, 70, and 80:** The majority of the Project Site within the proposed mining limits (>90%) has had significant disturbance in the past, and although these areas have been revegetating, they are for the most part revegetating with disturbance adapted, edge species, and therefore compose an existing edge.

The commenters state that several endangered and threatened species within the RSEA have the potential to be affected by the Project as a result of its edge effects. This assertion appears to be based on the assumption that the Project would either significantly increase the amount of edge or push the edge farther into larger blocks of habitat. Edge is where two different habitats come together. On the Zavoral Site, this is where the previously mined area meets the woodland areas along the eastern and southern portions of the property that were not previously mined, a linear distance of approximately 4,065.6 feet. Based on the Project plan, after mining is complete, the new edge (i.e. where the proposed mining limit meets the woodland areas along the eastern and southern portions of the property that were not previously mined) would have a linear distance of 4,329.6 feet, an increase of only 264 feet over the current edge. Therefore, the Project would not significantly increase the amount of edge and the edge boundary would stay in essentially the same location as it currently exists, with the exception of along the southern edge. In addition, because of the shape and location of the current edge boundary, the new boundary would also not significantly push the edge boundary farther into the previously unmined area.

The wildlife resources at the Zavoral Site would be temporarily disturbed by noise associated with the conversion of altered nonnative forest, altered nonnative grasses, White-pine hardwood forest, and cropland to sand and gravel mine operations. The wildlife located in these areas would be temporarily displaced to areas typically used by wildlife adjacent to the Site. The Site is surrounded by White-pine hardwood forest, Maple-Basswood forest, Black ash swamp seepage subtype wetlands, Southern mesic cliff, and cropland. These areas extend to the north, east, and south of the property.

Surveys were conducted at the Site for all of these species listed above with exception of the mussels. The mussel species were not surveyed because no impacts (direct or indirect) to the St. Croix River would occur as a result of the Project. No threatened or endangered species were found during surveys conducted or are known to exist on the Site. Therefore no impacts to threatened or endangered species are expected as a result the Project. While it is possible that some of these species have the potential to be found within the RSEA, there is no evidence to suggest that the slight increase in edge as a result of the Project would affect any listed species. In the case of the red-shouldered hawk, data collected during call back surveys indicate that no red-shouldered hawk territories are found within or adjacent to the Site, therefore none would be affected. In response to the comment regarding removing the 9-acre unmined area from the Project to reduce impacts to edge and loss of woodland, Tiller considers the 9-acre area that has not been previously mined a critical component to the Project (see response under **Previously Unmined Area** topic on pages 23 through 25 above). The DEIS analysis determined that the loss of the 9-acre area is not a significant impact, based on the definition of "significant impact" included in state environmental review rules.

The DEIS considered direct and indirect impacts to wildlife and habitat, and was not limited to endangered and threatened species. This included analyses related to such issues as how surface water runoff and groundwater use could affect nearby surface water bodies and related aquatic habitat and many other evaluations. As stated in the DEIS, during and post-Project surface water discharges to Zavoral, Middle and South Creeks, and the St Croix River would be reduced. Therefore, the surface water discharge of pollutants (phosphorus, TSS, heavy metals, PAHs, VOCs, thermal impacts) to these water bodies would be reduced or eliminated as well as a result of the Project. Proposed runoff management practices (infiltration, reduction or elimination of offsite discharges, no discharges from active mining areas, etc.) to be implemented meets or exceeds the level of control necessary to protect downstream water bodies, biota and other uses of water. There was no need to discuss the reversibility of impacts

because the practices to be implemented as part of the Project would reduce pollutant loadings to Zavoral, Middle and South Creeks, and the St Croix River compared to existing conditions. Further discussion of this point related to sediment is found in the response to comments related to erosion control topic below.

In regard to determining the highest and best off-site uses for trees, as long as the disposal of timber is in accordance with all regulations that apply, it is at the discretion of the landowner and Tiller. As such, any determination and use would be voluntary.

**Response to Comment 64:** The requested verbiage regarding mussels has been added the redline version of the EIS.

#### **4.6 PHYSICAL IMPACTS ON WATER RESOURCES**

Comments regarding water resources fell under other water resource topics and are addressed there.

#### **4.7 WATER USE**

Commenters (7, 13, 15, 49, 65, and 75) state that the excavation associated with the proposed mine and/or groundwater use will affect the aquifer and area surface water resources. Washington County (19) supports the MDH recommendation for reconstructing the well so that it obtains water from only one aquifer. Letter states that the cumulative effect of the use of the Zavoral well and Abrahamson's well simultaneously has not been adequately tested. The cumulative effect of both wells running simultaneously should be studied. Commenter (28) questions why their well located at 21715 Quarry Ave N. is not depicted in the section on water use, nor are several of their neighbors' wells.

Commenter (49) states that the well testing was not sufficient, especially for a project of this scope. All wells between the proposed mining area and the river – those most vulnerable to infiltration and compromise – should have a baseline water flow and content established, with re-testing throughout the life of the project. Of the tested wells, only the Zavoral Cabin well lies between the mining area and the river, and as noted in the DEIS, is in a deep aquifer. It is also on the northern edge of the proposed mine. Other homeowners have wells that are far more vulnerable. No mention is made of remediation should taxpaying homeowners find their water quality or quantity compromised after mining begins. Baselines need to be established and Tiller Mining held accountable.

The MnDNR letter (63) states that the DEIS correctly identifies that the Site's multi-aquifer well is an open hole in two systems, one of which is the Mt. Simon-Hinckley aquifer. The DEIS also correctly identifies that the MnDNR commissioner may not issue new water use permits that will appropriate water from the Mt. Simon-Hinckley aquifer unless the appropriation is for potable water use and there are no feasible or practical alternatives to this source (*Minnesota Statutes 103G.271, subpart 4a.*). The proposer has stated the intent to use the onsite well for dust suppression purposes and that this proposed use will be below the appropriation triggered threshold of 10,000 gallons per day and 1 million gallons per year. Even though this use of the well as proposed would not trigger the water appropriation statute, the MnDNR strongly encourages that use below this threshold be limited and when used that it be limited to potable water use. The MnDNR recommends that the well not be used for the purposes of the project and be properly sealed in accordance with Minnesota Department of Health (MDH) guidelines. If the proposers proceed with the use of the well as described in the Draft EIS, the MnDNR recommends that mining activities occur outside of summer months when water use is at its peak. This timing recommendation may conflict with Sub alternative 3A which is proposed to occur from approximately the second week of March through the second week in October. The City should require Tiller to keep records of when the

Zavoral Site Well is pumped and that these records are provided to the City to monitor groundwater activities. The MnDNR requested copies of these records.

**Response to Comments 7, 13, 15, 19, 28, 49, 63, 65, and 75:**

**Dept of Mining**

As stated in the DEIS, Tiller's mining plan shows depths of mining ranging from approximately 10 to 70 feet deep. Tiller does not propose to excavate below the groundwater table. The reference to maintaining the 3-foot separation from groundwater in the DEIS was to demonstrate compliance with Watershed District requirements. In fact, the depth from the maximum base of the mining excavation to groundwater would range from approximately 25 to 50 feet. The best representation of this would be Figures 11 and 34 through 39 in the DEIS. Thus the excavation would not impact groundwater.

**Well Impact Issues**

With the exception of the Zavoral Cabin Well, area residential wells are primarily screened in shallow Drift or Prairie Du Chien-Jordon Aquifers. Pumping from the deeper aquifers did not influence water levels in the shallow aquifers because the St. Lawrence Formation is an effective aquitard at the Site. The Zavoral Cabin Well is the closest well to the Zavoral Site Well that is screened in the Franconia Aquifer. The drawdown in the Zavoral Cabin Well during the aquifer test was 3 inches during the first 15-minute period, which is the time required to reach the maximum projected daily volume of 10,000 gallons Tiller proposes to use. This represents 1/800th of the total water column present in that well.

After 4 hours and 20 minutes of pumping, the drawdown in the Zavoral Cabin Well was 3.5 feet, which represents less than 1/50th of the total water column in that well. Other supply wells located farther from the Zavoral Site Well would experience even less drawdown. No aquifer test-related drawdowns were observed in the other two monitored wells, Trails End Well and Magnuson Well. The aquifer test was conducted for 4 hours and 20 minutes and removed 172,600 gallons of water, 17 times the maximum daily groundwater use for the Project. The duration of the aquifer test was considered sufficient to evaluate the potential impacts on wells in the area.

Wells within 1.5 miles of the Site were identified using the County Well Index (CWI). Wells constructed after 1974 or where properties are sold are required to register their wells with the Minnesota Department of Health. Wells not included in the CWI may have been installed prior to 1974, were not registered in accordance with State Rules or they may be an "exempt" well such as a drive-point water supply well installed by the well owner on the well-owner's property for residential use. Thus, not all wells are included in the CWI, but it is the best available inventory of wells.

The well referenced by the commenter at 21715 Quarry Avenue North is located approximately 2,000 feet north of the Site. If the well at this location is screened in the shallow Drift or Prairie Du Chien-Jordan Aquifers there would be no impacts to the well from pumping of the Zavoral Well. If the well is screened in the deeper aquifers, drawdown would be significantly less than the drawdown measured at the Zavoral Cabin Well which is located approximately 1,300 feet east of the Zavoral Well. A reduced drawdown would occur because of the greater distance from the pumping well (2000 feet versus 1300 feet) and the relative location of the wells compared to the regional groundwater flow direction to the east (cross-gradient versus down gradient). The total drawdown measured at the Zavoral Cabin Well was

0.25 feet (3 inches) at the proposed pumping rate and daily volume. Drawdown at 21715 Quarry Avenue North would be less than this amount and only for a short duration. Based on a review of aerial photography for the area, no residences are located closer to the Zavoral Site Well than the Zavoral Cabin. Thus, any impacts to residential wells would be less than that at the Zavoral Cabin Well and therefore not significant. Because of this, the collection of baseline data and monitoring during and post-Project would not be necessary. Pumping from the Zavoral Site Well would be recorded and reported to ensure that the well is not pumped at levels higher than those used in the analysis.

### **Existing Zavoral Site Well**

The Zavoral Site Well is a multi-aquifer well, but is “grandfathered in.” Therefore, it is a legal well. Water can be pumped from this well at a volume less than 1 million gallons per year (gpy), the volume at which a Water Appropriation Permit would be required by the MnDNR. Less than 1 million gpy would be pumped from the Zavoral Site Well. Reconstruction of the Zavoral Site Well is not required if the water removal is limited to less than 1 million gpy. The City, MnDNR, or the MDH do not have the regulatory authorities to require the reconstruction or abandonment of the well. Any action to abandon or reconstruct the well would be on a voluntary basis by the landowner.

### **Monitoring Requirements**

As stated in Sections 4.7.2, 5.3 and the Executive Summary of the DEIS, Tiller would keep records of when the Zavoral Site Well is pumped, and provide these to the City for groundwater monitoring activities. If the CUP process proceeds, the City would require that Tiller submit this documentation to the City as a condition of the CUP. The City would require that Tiller document both the daily use and total annual pumped volume from the Zavoral Site Well. The daily total used would be limited to 10,000 gallons at a maximum pumping rate of 1,200 gpm and the total annual pumping would be limited to 1 million gallons per year (gpy). Copies of the pumping records for the Zavoral Site Well would be provided to the City, Washington County, and MnDNR (see Section 5.3 of the redline version of the EIS).

### **Pump Test**

As is the standard practice when conducting a pump test, measures were taken to avoid interference from other wells in the area in order to ensure that any impacts identified during the test were could be attributed to pumping from the Zavoral Site Well. Even though the Abrahamson Well is located more than a mile (5,850 feet) from the Zavoral Site Well, the perceived possibility that any of resulting drawdown could be by other wells operating in the area could result in questions regarding the impact analysis. The goal was to determine if pumping from the Zavoral Site Well would impact other nearby wells and/or surface water features. If there was interference from other wells during the period when the pump test was being conducted, we would not be able determine if the Zavoral Site Well or the other wells, or a combination of both would be responsible for any observed impacts. This is one of the basic requirements of conducting a defensible pump test.

The Abrahamson Well is located over a mile south of the Zavoral Well and allows pumping at a rate up to 420 gpm. Given the geographic separation of the wells, the potential for significant accumulative effects of the Zavoral well at the projected pumping rates and limited periods of pumping, and Abrahamson Well is extremely small. In fact, pumping from the Abrahamson Well would mask any impacts of pumping form the Zavoral Well at the rates projected.

#### 4.8 WATER-RELATED LAND USE MANAGEMENT DISTRICTS

##### Lower St. Croix National Scenic Riverway

Commenters (1, 54, 56, and 76) express concern about the danger of compromising federally designated scenic river and highway; “the location of the proposed mine is part of a pristine area dedicated to the preservation of the natural habitats of flora and fauna.” Commenter (2) states that Council members’ have a stewardship role with respect to the St. Croix River. Commenter (17) states that “a proposed gravel site along a National Scenic Highway and within sight of a Wild and Scenic Riverway cannot help but have deleterious effects on the environments that we want to protect - and that tourists want to enjoy.” The St. Croix River Association letter (26) “states that allowing a gravel operation right up against this National Park would be most unfortunate, a serious mistake.”

Commenters (29 and 50) ask the City to require Tiller to revise their proposal to include 100 foot set backs from the fragile boundary of the National Park, the St Croix River. The current EIS does not adequately consider impacts to the system of life on and near the mine site, including impacts to waters that feed the St Croix. Commenter (49) states that the EIS text, “No significant impacts to nearby public natural and recreational resources have been identified. Potential impacts to these resources are addressed under the applicable sections of this EIS” is misleading to the reader. The noise of 600 truck trips a day, front end loaders, and other equipment is a significant impact to nearby public natural and recreational resources. Mining-related erosion could very significantly impact wetlands, seeps, and creeks that feed into the St. Croix River and adjacent NPS land.

NPCA letter (53) states that based on the information contained in the DEIS, “it is clear that the operation of this mine will harm the scenic and recreational values for which this river was included for protection under the Wild and Scenic Rivers Act, 16 USC §§1271-1287 and the Lower St. Croix Wild and Scenic River Act, Minn. Stat. §107F.351. However, the DEIS fails to take into consideration the special nature and designation of this river in its analysis. The operation of a gravel mine in this location so close to the St. Croix River will result in negative impacts on the river and the surrounding area, displacement of existing wildlife, and harm to other sensitive resources, and there exists a strong potential for other negative environmental impacts that cannot be foreseen. Given all of the existing laws and designations that govern this area, we feel the DEIS analysis is inadequate. Consideration should be given to the special nature of the St. Croix River as a unit of our national park system, the fact the River is directly adjacent to the proposed mining site, the fact the Park Service holds a scenic easement on portions of the site, and the recognition that gravel mining activities are inconsistent with this special nature and were thus strictly prohibited.

Commenter (54) asks the City to weigh the value of your community's proximity to this unit of the National Park System in evaluating this project, along with other factors in the EIS. Scandia's decision on this proposal will have far-ranging impacts beyond your boundaries and the financial interests of this particular owner and the permit applicant.” Commenter (61) states that the most important issue to the community in general is that of the fragile environment of the Riverway.

**Response to Comments 1, 2, 17, 26, 29, 50, 53, 54, 56, 61, and 76:** The DEIS recognizes that the Zavoral Site is within the jurisdiction of the City of Scandia and partially within the St. Croix National Scenic Riverway as designated under the WSRA and the federal and state Lower St. Croix River Acts. It also recognizes that Minn. R. ch. 6105.0370 § 9 prohibits sand and gravel operations within the St. Croix River District Zone and scenic easement area. The DEIS further states that protection of scenic resources within these jurisdictions is guided by the City of Scandia Comprehensive Plan, and the CMP and EIS for the

Lower St. Croix National Scenic Riverway. The Washington County Comprehensive Plan also describes a scenic easement that is partially within the Site. The proposed mining area is located outside these limits. However, Tiller proposes to conduct reclamation activities on approximately 4 acres of the previously mined area located within the St. Croix River District Zone and scenic easement area. Permits from the local authority are required for certain grading, filling, and vegetative cutting activities associated with the St. Croix Riverway ordinance in accordance with Minn. R. ch. 6105.0370 §§ 4 and 6.

The commenters are asking that land use restrictions be applied to an area because it is in proximity to a regulated area, in this case the St. Croix River District and Scenic Easement. If an area were critical to the protection of the Lower St. Croix National Scenic Riverway, it would have been appropriate to include it within these regulated areas. The City held public hearings on the Comprehensive Plan, zoning map and ordinances that designated zoning and standards for the area within the AG District, and as a result of the comments and Council deliberations, the City included the Zavoral area within the AG District under the Comprehensive Plan and zoning regulations that applied at the time of Tiller's CUP application, and included mining as a allowed use in the district, with a CUP. Because mining was included as an allowable use with the AG District of Development Code that was in place at the time of the Tiller CUP application, it has been evaluated as an allowable use.

The DEIS analysis did not identify significant impacts to the St. Croix River and related managed areas that would result from the Project. The DEIS has identified specific mitigation measures to avoid, minimize and mitigate for the potential Project impacts, and the City would use the identified mitigation measures to establish required conditions for operation of the mine if the CUP process moves forward after the EIS is process is completed. See also responses under the **Modified Scale Alternative** topic on pages 7 and 8 above.

**Response to Comment 49:** As stated in each specific resource section of the DEIS, the analyses concluded no significant impacts to nearby public natural and recreational resources. The potential impacts are summarized on Table 2 in the Executive Summary. Referencing each specific section of the DEIS allows the reader to read and fully comprehend the analysis that was performed for each specific resource and is consistent with the Paperwork Reduction Act.

## 4.9 EROSION AND SEDIMENTATION

### General

The WCD letter (20) stated that erosion control and prevention of off-site sedimentation is important, and the proposal appears to address this. A Storm Water Pollution Prevention Plan (SWPPP) and NPDES permit will be needed, in addition to the local permits from Carnelian-Marine-St. Croix Watershed District (CMSCWD). "The WCD can assist the City in both review of those documents, and on-going site monitoring for compliance. The proposal appears to direct all cut surfaces to face the interior of the project site, minimizing impacts off site, but dust control and prevention of tracking onto public roads is needed."

Commenter (27) states that Tiller has claimed that the site will be "more stable and less subject to soil erosion" after the site has been reclaimed. "Where is the documentation that the site is unstable and subject to soil erosion now? Which area? During and after the mining process the site will be more unstable and subject to erosion, certainly while clearing, grubbing and removing overburden and while establishing new plants communities.

Furthermore, the area will be more susceptible to erosion after losing an additional 23-plus acres of well-established trees.”

The Watershed District letter (36) states that they will be reviewing the contractor's plans for the Project and will be permitting storm water management, erosion control, and any floodplain and drainage alterations per the Rules of the District. Due to the sensitivity of the downstream resources mentioned above and the interaction between these resources and groundwater, the District suggests that the City of Scandia address the following as conditions if this project is approved:

1. The District agrees with the conclusions of the EIS that surface water flows will be significantly reduced during construction and after reclamation. We recommend that the construction and material used for this berm, and any others on site, be engineered and monitored to insure structural integrity.
2. The District agrees that infiltration amounts will increase as a result of the project. However, this could have negative impacts as material is removed from the site. The report states that mining will occur to within 25-30 feet of the water table and no closer than 3 feet above the water table. Depths to within 25-30 feet should have no material impact on the downstream resources that are reliant on ground water. However, if more material is removed and depth to ground water is less than stated, both flow rates and temperatures to the springs will increase and thereby disturb the biology of the springs, seeps, and streams to the east of the site. Monitoring and mitigation plans should be prepared to prevent this from occurring.
3. AECOM has prepared reports to address the District's concerns about the impact of dust on the water resources to the east of the site. It seems that their data was developed using the surface area of the streams and wetlands with no consideration of the loading from the particulate matter deposited in the overall watersheds of these creeks and wetlands. Rain events will wash much more sediment into these water bodies than calculated in their report and could have an impact on the biologic communities of the resources. The District recommends that monitoring and mitigation plans be prepared to minimize this possibility.

Commenter (46) states that they don't believe that the analysts should rely on the 100-year storm event but should use probable maximum precipitation. Commenter states that their primary concern is the 'probability of major storm event' in reference to Alternatives 3 and 3A. The period of risk in Alternatives 3 and 3A seems almost irrelevant when you consider that storm risk will remain high for years until vegetation is reestablished after site restoration. "I do not believe that we should be relying on the traditional 100 year flood event predictions in planning for storm event management."

Commenter (52) states that this site lies adjacent to very steep slopes that are highly vulnerable to erosion, as stated in the DEIS. The document makes many references to Tiller's draft SWPPP and BMPs to control erosion and sedimentation. In section 4.6.2 (Potential Mitigation Measures), the document states: "The key component (of mitigation) is that the SWPPP, erosion and sedimentation control, and BMPs are implemented and maintained. I can't emphasize enough how important this statement is in protecting the three adjacent streams and the St. Croix National Scenic Riverway. Despite that importance, nowhere in the DEIS, the appendices, or any document filed on the city's very fine website can the draft SWPPP be found. How does the public know that the SWPPP is adequate and complete and covers all contingencies? Likewise, BMPs are frequently referred to in the document, yet there are only brief descriptions of some BMP examples such as in Section 3.2.3. The public does not get to see or read descriptions of the proposed BMPs anywhere in the document."

The USFWS letter (64) requests that an estimate of the number and scale of each occurrence when soil would be exposed to erosion is expected to determine if there would be any cumulative effects that may impact listed mussels. The letter also states that peak flow rates off the property will be significantly decreased during the mining process. To help ensure that all best management practices are followed and unexpected sedimentation does not occur and harm mussels, the USFWS requests that a list of the BMPs be provided.

Commenter (82) asks what comprises a major storm event and what the anticipated effects are.

**Response to Comment 20:** As stated in Section 4.14.2 of the DEIS, Tiller has prepared a fugitive dust control plan (Zavoral Mine Dust Control Plan, September 2011) to define the mitigation methods that would be used to reduce emissions of fugitive dust from the Site, including dust control. The implementation of methods to prevent tracking onto public roads has been added as a mitigation measure to the redline version of the EIS.

**Response to Comments 27, 52, and 64:** The Site presently has areas with steep and unstable slopes associated with mining faces and material stockpiles and some areas of bare soils remaining from past mining activities. These features would be reclaimed as part of the Project. Table 4 of the DEIS identifies permits that would be required for the Project related to erosion control, these included permits from the MPCA, City of Scandia, and Carnelian – Marine – St. Croix Watershed District. Permit conditions for this Project related to erosion control would be among the most restrictive found in the State of Minnesota, because Tiller would need to meet the requirements related to the Outstanding Resource Value Water status of the St. Croix River, and because of the detailed nature of permits issued by watershed districts. For example, as discussed in Section 4.9.2 of the DEIS, any drainage from the Site would have to be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water within 24 hours of connecting to the surface water. All areas draining offsite during construction are subject to this restriction.

Erosion control practices that are proposed to be implemented as part of the Project are discussed in Section 4.9 of the DEIS, and include the following:

- All Project areas that would drain offsite are shown on DEIS Figures 28-20.
- Diversion berms would be constructed to direct water into internally drained areas to the extent practicable thereby minimizing the area of disturbed soils that would discharge offsite. Approximately 2.4 acres of the Project area could not be controlled with diversion berms.
- All areas on the perimeter that drain off Site would be protected by a double row of silt fences with vegetated buffer strips immediately inside the silt fences. For a large majority of the operation, when the soil in these areas would be disturbed by over burden removal, regrading would occur immediately to direct runoff that may occur from disturbed areas into internally drained areas.

The St. Croix River is listed as an Outstanding Resource Value Water (ORVW) according to Minn. Stat. § 7050.0180. A requirement of the NPDES/SDS Permit is that all exposed soil areas with a slope of 3:1 or steeper, that have a continuous positive slope to an ORVW or trout waters, must have temporary erosion protection or permanent cover within 3 days after the area is no longer actively being worked. The Project would be managed such that all exposed soil discharging off-site would be revegetated and erosion protection established within 3 days, a management practice included in the draft SWPPP. The

NPDES/SDS Permit associated with construction activity requires that any drainage from the Site must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water within 24 hours of connecting to surface water. Per Section 4.9.2 of the DEIS, rapid stabilization techniques would be used in these areas. Tiller would use rapid stabilization measures found in the Minnesota Department of Transportation Standard Specifications for Construction, 2005 Edition, Section 2527.3.

**Response to Comment 36:**

1. The purposes of the berms that would be constructed at the Zavoral Site would be to divert stormwater and provide visual screening. There would not be any wash water basins including basins formed by berms similar to the basins at the Grantsburg, Wisconsin site. Thus, there is no chance of a similar failure. Therefore, engineering and monitoring of the construction and material used for the berms at the Zavoral Site to insure structural integrity is not needed.

2. As stated in the DEIS, Tiller's mining plan shows depths of mining ranging from approximately 10 to 70 feet deep. Tiller does not propose to excavate below the groundwater table. The reference to maintaining the 3-foot separation from groundwater in the DEIS was to demonstrate compliance with Watershed District requirements. In fact, the depth from the base of the mining excavation to groundwater would range from approximately 25 to 50 feet. The best representation of this would be Figures 11 and 34 through 39 in the DEIS. Thus the excavation would not impact groundwater.

3. In regards to overall watershed loads of particulate matter, the DEIS analysis found that the Project would decrease the loads of particulate matter from within the Project Site into nearby streams. The Project area is a relatively small portion of the watersheds of nearby streams. There would continue to be a load of particulate matter entering nearby streams from the watershed areas outside the Project area both during and after the Project. The erosion control measures discussed in the response to Comment (27) above would provide control of particulate matter discharge during construction at the Site, followed by final stabilization with vegetation during reclamation which would provide post-Project control of particulate loads from the Project Site.

Sections ES 2.10 and 4.14 of the DEIS discusses stationary source air emissions and dust. In particular, Section 4.14.1.2.4.2 discusses direct deposition of particulates and dust into the St. Croix River, Zavoral Creek, Middle Creek and South Creek using the maximum one day rate predicted for the five year analysis period. The deposition rate used for the analysis was calculated for an area on the perimeter of the Proposed Project Site predicted to experience the maximum loading rate on the north end of the site. The deposition rate would be significantly lower at other points around the site perimeter and decrease geometrically as the distance from the site gets larger. This combination of assumptions used for this analysis yields a conservatively-high result for predicted deposition rates to nearby streams. Average deposition rates into the water bodies or within the watersheds of the nearby streams would be a factor of 10 or more below than the figures given for the conservative analysis. The results of the conservative analysis showed no significant impact.

Other site factors that would contribute to the control of particulates include the filtering ability of vegetation and other surfaces that would trap particulates, and the permeable nature of the soils in the watershed. The DEIS analysis concludes that the rain for storms of 1-inch or less, which is the water quality design storm, would infiltrate within the Site, taking particulate matter into the soil column.

Because of these Site mechanisms that would trap particulates, it is not anticipated that the Project would add a significant particulate loads to nearby streams.

**Response to Comment 46:** Grading along the edge of the mining activities would create slopes that drain away from the bluff and into the mining area. The maximum side slopes to be established would have a 4 horizontal to 1 vertical grade, which is well within the limits of slope stability for Site soils. The final reclamation would result in side slopes greater than 10 horizontal to 1 vertical inward to the Site and away from the bluffs.

Potential overflow points have top widths on the order of several tens of feet, with the relatively flat side slopes. The slopes would be structurally adequate to hold the runoff water temporary ponded within the site and would not be subject to slope failures.

As discussed in Sections ES 2.5 and 4.6.1.2 of the DEIS, the potential for overflow from internal site ponding areas is very low, and would be lower post-Project than under existing conditions. Site overflow would have the potential to occur at only one point post-Project compared to multiple points under current site conditions. Permits for site operations would require the installation and maintenance of best management practices to control potential overflow.

As discussed in Sections ES 2.5 and 4.6.1.2 of the DEIS, the rain event needed for overflow from internally drained ponding areas is extreme, estimated to be greater than two back to back 100-year storms (greater than 11.8 inches of rain in 2 days or 48 hours). With or without the Project, if a rain event of this extreme magnitude were to occur, the runoff from contributing watersheds to the Zavoral, Middle, and South Creeks would be extreme both in terms of flow rates and erosivity. Damage to the channel banks of the Zavoral, Middle, and South Creeks and a large amount of sediment transport would be expected. Because the Project would reduce runoff rates to these streams under both normal and extreme storm events, scour and sediment transport rates in these streams would be lower than under existing conditions.

**Response to Comment 52:** NPDES/SDS and CMSCWD permits would require a SWPPP be implemented for the Zavoral Site in compliance with the permits. A draft SWPPP for the Zavoral Site has been prepared in compliance with the provisions contained within the NPDES/SDS and CMSCWD permits. Pertinent sections of the draft SWPPP were incorporated into the DEIS. Mitigation measures identified as part of the DEIS process would be incorporated into the SWPPP prior to finalization. The DEIS provides sufficient information regarding stormwater control for decision makers without the incorporation of the draft SWPPP, because it incorporates the measures proposed in the plan in the DEIS text.

If the Project moves forward after the EIS process is completed, and the final mitigation measures have been determined, the proposer would need to submit the SWPPP with the NPDES/SDS Application to the MPCA. The MPCA would determine if the SWPPP is adequate before issuing a NPDES/SDS Permit. In addition, the SWPPP would need to be submitted to the CMSCWD along with other pertinent application materials and approved prior to them issuing a permit.

The approved SWPPP would include best management practices (BMPs), such as silt fence, constructing berms, and grading the site to drain internally, that would be implemented to avoid untreated stormwater discharge from the Site, minimize potential for erosion and sedimentation throughout the operation of the Site, and provide for Site stabilization at the conclusion of mining activity.

**Response to Comment 46:** A major storm event is a 100-yr storm event. The 100-year storm event is defined as a storm event that has a 1% chance of being equaled or exceeded in any single year. According to the Carnelian-Marine-St. Croix Watershed District Watershed Management Plan Land and Natural Resource Inventory, a 100-year storm event would be 5.9 inches of rainfall in 24 hours. The anticipated effect of a 100-year storm event would be that the water would be contained within the site and infiltrate into groundwater. See also the response to Comment 46 above.

#### **Recent Berm Failure at Tiller's Wisconsin Mine**

Commenters (26, 27, 29, 30, 32, 44, 45, 50, 51, 52, 53, 55, 59, 65, and 68) expressed concern about the recent failure of a containment berm at Tiller's sand mine near Grantsburg, Wisconsin, stating that "sediment-laden water entered a wetland then a small stream and eventually flowed into the St. Croix River". Some referred to this as a "red flag", representative of a bad track record, and are concerned that something similar could happen at the Zavoral Site resulting in impacts to area wetlands and the St. Croix River.

**Response to Comments 26, 27, 29, 30, 32, 44, 45, 50, 51, 52, 53, 55, 59, 65, and 68:** It is important to point out that the Project would not have sedimentation basins or water containment basins like the Grantsburg site. As stated in Sections 1.1.2.1 and 3.1.1 of the DEIS, gravel washing and processing operations are not included in the Zavoral Site activities. There would not be any wash water basins including basins formed by berms similar to the basins at the Grantsburg site. Thus, there is no chance of a similar failure.

However, these comments raise an important issue. The evaluations conducted for the DEIS and resultant finding of no significant impacts are based on Tiller complying with their mining plan and conformance to all required mitigation measures. It is evident that this would require aggressive monitoring of the Project to ensure compliance with plans and permit requirements. To accomplish this, sufficient funding needs to be made available to the City by Tiller to hire staff or consultants to conduct the required monitoring. If the CUP process moves forward after the completion of the EIS process, the City would consider conditions for the CUP that include the mitigation measures identified in the Final EIS, monitoring requirements, and funding mechanisms for monitoring compliance with the conditions.

### **4.10 SURFACE WATER QUALITY AND QUANTITY**

#### **General**

Commenters (7, 8, 18 and 48) state that the St. Croix River, streams, aquifers, and well water will likely be impacted in a negative way.

The WCD letter (20) states the reclamation plan appears to contour the Site in such a way that surface runoff and associated sediment will not flow overland to the creeks. The reclamation plan also indicates a staging of the mining activities, interspersed with the reclamation activities. Again, a compressed time frame may be contrary to the expectations of site stabilization.

Commenter (30) cites the "DEIS's failure to sufficiently analyze the impact of the mine on water resources is another major inadequacy in the DEIS as there is the potential for significant adverse effects to water resources and ecosystems." The DEIS fails to address the prescribed "issues of: a) identifying and mapping the location of springs in the project area and areas of potential impact; b) providing water quality data for Middle Creek and South Creek; and c) quantifying impacts of specific pollutants (e.g., phosphorus, TSS, heavy metals, PAHs, VOCs,

temperature) on receiving waters." The commenter also states that the DEIS should describe how sediment and other pollution from inadequately manage[d] mine runoff may affect Brook Trout and aquatic macroinvertebrates in Zavoral Creek. It should also discuss how the vegetation at spring discharge points, such as the Black Ash Seepage Swamp, could be affected by changed in groundwater discharge." Trout streams are especially sensitive and valuable ecological resources, and any impact of the Tiller mine may have on the Zavoral Creek is a significant environmental impact meriting analysis in the EIS. In addition, the presence of federally-listed endangered mussels in the St. Croix River means the runoff from the Tiller mine could have an irreversible impact to the endangered mussel species. The commenter states that "Given the demonstrated potential for significant negative impact to the waters of the St. Croix River, a National Scenic Riverway, the decision not to include an evaluation of impact to water surface use and ecology is a critical deficiency in the DEIS. The DEIS should be revised to include a detailed analysis of the potential for the Tiller mine to adversely affect the St. Croix River and Zavoral Creek."

Commenter (40) refers to the DEIS statement that there would be reductions in 2, 10, and 100 yr peak flows during mining, with reductions as high as 72% for Zavoral Creek, and zero flow occurring for the 2 and 10 year flows. "While zero flow may sound like good management to control sediment transport resulting from mining, dewatering a stream is not generally thought to be good. Stream response to storms that is unaffected by upstream land use tends to be beneficial as it promotes habitat complexity, provides bed mobility to flush out fine sediment or accumulated organic detritus." The commenter further describes the delta at the mouth of Zavoral Creek and related benefit to boaters and anglers stating,...."If the flow changes to the creeks really are as severe as indicated, these creeks could see a reduction in food quality and habitat for native aquatic biota. This could be a negative impact...." "Mining-related changes in discharge and sediment transport processes in Zavoral Creek should not be allowed to significantly reduce or add to flow and sediment transport in the creek."

Commenter (49) states that the Site "topography is such and wetlands so inter-related with the protected St. Croix that the EIS has a responsibility to consider all waterways and wetlands between the proposed mine and the river. Adjacent wetlands were deemed out of the Project area by the EIS, but water discharged from the site goes into those wetlands and affects them directly. The scope needs to be broadened. The EIS glosses over the threat of erosion, stating that stormwater and erosion control best management practices will minimize this risk."

The NPS letter (51) states that soils at the proposed mine site are sandy and the area immediately to the east of the Site down to the St. Croix River has very steep slopes and bluffs that are at a high risk of erosion. Portions of the proposed mine site discharge to three different creeks that run down the steep slopes to the St. Croix River. The DEIS correctly acknowledges that the potential for erosion exists after the start of construction when soils are exposed for overburden removal or other activity. Mitigation measures listed in the DEIS that would reduce the potential for erosion and sedimentation include BMP's such as double rows of silt fences, vegetated buffer strips, and berms that would be constructed on the north and south ends of the mine. The purpose of the proposed berms is to divert run-off so that it would drain into the mine rather than off-site. These BMP's would be developed in a SWPPP.

The NPS remains concerned about the potential for slope failure. The "wall" that would be created between the mine and the steep slope to the east that goes down to the river seems vulnerable to collapse; at least until reclamation would be complete and vegetation is reestablished. A slope collapse could have a major impact on the bluff topography and the water quality of the St. Croix River.

Commenter (57) states that the Draft EIS should have more on Zavoral's Creek, also known as Crystal Springs Creek, which is under active MnDNR consideration for designation as a state-designated trout stream. "Field studies have confirmed that the stream meets the qualitative criteria for state designation." The presence of this

trout stream should have been identified more clearly in the Draft EIS under Section 4.1 Land Use and in other applicable sections.

The MnDNR letter (63) states that the agency is aware that there is a concern raised regarding the effect the Project would have on the trout stream. Data provided in the DEIS and through site observations indicate that Zavoral Creek is fed by seeps. Infiltration of surface water that feeds seeps has the potential to alter the current environment of the stream. The concern is for the potential of a thermal plume reaching the trout stream resulting from the reduction of overburden atop the groundwater in the area proposed to be mined. The concern is valid as trout are sensitive to temperature variations.

The MnDNR has reviewed the information prepared by Dr. Scott C. Alexander regarding the springs (PowerPoint presentation posted for April 3, 2012 and "Preliminary Results of Spring Survey and Monitoring below Zavoral Property, Scandia, Minnesota" [no date]). MnDNR comments are based on the limited information provided. The minimum depth to groundwater during mining is proposed to be 30 feet for this project, and the final reclamation plan leaves a minimum of 50 feet above groundwater. Warming of groundwater at these depths should be less than 0.3 degrees Celsius, based on research conducted by the St. Anthony Falls Laboratory at the University of Minnesota (Taylor and Steffan 2008). The warming at the spring outlet will likely be less, because not all groundwater will travel beneath the mining area in the case of Zavoral Creek. The potential for increased infiltration in the project area due to almost all post-mining drainage being contained on site may actually cool the trout stream, as more flow in the stream will be from groundwater than surface water. It is probable that thermal impacts to the trout stream will be minimal. Monitoring of stream flow and temperature could be requirements for the project to ensure that the mining operations are not affecting the stream.

TACO-s hydrogeologist Scott Alexander (69) reviewed his work related to water temperature of the spring, trout, and the habitat in the stream below the spring at the public meeting. Commenters (65 and 75) expressed concern about thermal impacts to nearby surface water bodies and trout.

**Response to Comments 7, 8, 18, 30, and 48:** See response to comments **Section 4.7 WATER USE** topic of this Response to Comment document regarding impacts to groundwater.

**Response to Comment 20:** It is acknowledged that a compressed time frame would require a more concerted effort to stabilize the Site and control erosion. This lends even more importance to the application of the identified mitigation measures and ongoing monitoring.

**Response to Comments 30 and 40:** Section 4.6.1.1.1 of the DEIS, discusses the general streamflow characteristics of Zavoral, Middle and South Creeks. The streams would have shallow perennial (year round) flows downstream of springs occurring at the base of the escarpment, short duration peak flows during large storm events or snow melt, and areas with no perennial flow upstream of the springs. Upstream of the springs, these streams would be natural dry (no perennial flow) for significant periods when there hasn't been significant rain or snow melt.

Sections 4.6 and 4.10 of the DEIS conclude that the Project would not have significant negative impacts to surface water, and has the potential to improve surface water conditions. This outcome is largely the result of the relatively small size of the Project Site watersheds discharging off-site compared to the overall watersheds of the potentially impacted water bodies, and because there would be very little discharge from the Project Site. As a result, there would be very little transport of pollutants in surface water discharges from the Site. In fact, the Project would reduce the discharge and pollutant transport rates from the Site to nearby streams when compared to existing conditions.

As described in Sections ES 2.5 and 4.6.1.1.1 of the DEIS, the total watershed areas of Zavoral, Middle, and South Creeks are 1,500 acres, 400 acres, and 300 acres respectively. In comparison, as described in the DEIS, for existing conditions, 3.43 acres, 2.19 acres, and 5.97 acres of the Project Site discharge to these streams respectively. On a percentage basis, the Project Site is now 0.2, 0.5, and 2 percent respectively, of the watersheds of these streams. For all three streams, therefore, the Site comprises a very small portion of the runoff in the streams, and therefore, has a correspondingly small influence on the surface water quality of these streams. While the percentage reductions in peak flow discharge from the Project site are large, the percentage reduction in peak flow rates in the streams would be relatively small given the percent of the various watersheds that the Site comprises. The habitat quality of the stream biota is controlled by the spring flow, which would be supported by the infiltration practices to be implemented by the Project. The sediment transport characteristics of the streams would not be significantly altered by the Project as the reduction in streamflow rates that would occur during periods of high flow when sediment transport occurs, would be insignificant.

**Response to Comment 30 and 49:** As stated in Sections 4.4, 4.6, and 4.10 of the DEIS, all waterways and wetlands between the proposed Zavoral mining and reclamation area and the St. Croix River were analyzed in the DEIS. The WCD assists the City of Scandia with processing wetland impact applications, including the review of wetland delineations and replacement plans. The WCD provided comments on the DEIS and stated “Overall, we believe that the DEIS has identified and addressed the potential impacts to the wetlands, surface water resources, and natural plant communities to enable the City’s decision on these areas.”

**Response to Comment 51:** As stated in Sections 1.1.2.1 and 3.1.1 of the DEIS, gravel washing operations are not proposed for the Zavoral Site. There would be not be any wash water basins, including basins formed by berms. The only berms that would be constructed at the Zavoral Site would be for the purpose of directing stormwater runoff and reducing potential visual or noise impacts. As such, these berms would not pond water.

Site topography, as discussed in Section 4.6.1.1.1 of the DEIS, is largely internally drained, with runoff ponding and infiltrating within topographic depressions. More runoff would be internally drained during operation and post-Project than existing conditions. However, excavation and grading that would be completed as part of the gravel extraction and Site reclamation activities would result in the ponding depths in the internally drained areas being less than existing conditions. Furthermore, mining activities would not change or adversely affect the slope stability of the bluffs along the St. Croix River. Slope

stability of areas adjacent to mining activities would be protected by a combination of management practices including the following:

- Bluff areas, including trees, other vegetation and soils, would not be disturbed by the Project
- There are areas along the northeast side of the Project area where property areas in the St. Croix River District would not be disturbed. This results in a set back from bluff areas at those points as the protected areas are outside of the bluff.
- Grading along the edge of the mining activities would provide slopes away from the bluff and draining into the mining area. Maximum side slopes to be established would have a 4 horizontal to 1 vertical grade, which is well within the limits of slope stability for Site soils. The final reclamation plan results in side slopes greater than 10 horizontal to 1 vertical inward to the Site and away from the bluffs.
- Overflow points have top widths on the order of several tens of feet, and with the relatively flat side slopes, result in geologic formations that can easily structurally support the runoff water temporarily ponded internally to the Site and would not be subject to slope failures.
- The potential for overflows from these internal ponding areas is very low, as discussed in Section 4.6.1.2 of the DEIS, and would be less frequent post-Project than existing conditions and at only at one point post-Project compared to multiple points that presently exist.
- The rain event needed for overflow from internally drained ponding areas is extreme, estimated to be greater than two back to back 100-year storms (greater than 11.8 inches of rain in 2 days or 48 hours), as discussed in Section 4.6.1.2 of the DEIS. If a rain of this extreme magnitude were to occur, the runoff from contributing watersheds to Zavoral, Middle, and South Creeks, described in Section 4.6.1.1 of the DEIS, and not considering any potential contribution from the Zavoral Site, would be of an extreme magnitude both in terms of flow rates and erosivity. For Zavoral, Middle, and South Creeks, therefore, a large amount of damage to the channel banks, and a large amount of sediment transport would be expected from this event that would not be attributable to sources of runoff from the Zavoral Site. In fact, because the Project would reduce runoff rates in these streams, it would reduce scour and sediment transport rates occurring in these streams.
- Proposed water management activities to be implemented as part of the Project significantly reduce the risk of erosion on bluff areas from runoff originating within the Site.

**Response to Comments 30, 57, and 63:** The Zavoral Site has been designed to meet the protection standards of ORVWs and trout streams, as stated below.

The Zavoral Site would require several permits for the management of erosion and sedimentation. Permits include the NPDES/SDS general permit for Stormwater Discharges Associated with Construction Activities (MN R100001), and/or the NPDES/SDS General Permit for Construction Sand and Gravel, Rock Quarrying and Hot Mix Asphalt Production Facilities (MNG 490000), and the CMSCWD erosion and sediment control permit.

Permit requirements include a SWPPP, both for construction activities and for the ongoing mining operation. The draft SWPPP Tiller prepared for the Project calls for double row silt fences along with vegetated buffer strips to be installed along the downgradient edge of the perimeter watersheds draining off-site during operation. These BMPs would be installed before overburden removal and would both control the velocity of overland flow and trap sediment on-site. In addition to the silt fence and buffer

strips, berms would be constructed on the north and south ends of the Site to divert additional areas where runoff would drain off-site to internally drained areas within the Site.

The St. Croix River is listed as an ORVW according to Minn. Stat. § 7050.0180. A requirement of the NPDES/SDS Permit is that all exposed soil areas with a slope of 3 horizontal:1 vertical or steeper, that have a continuous positive slope to an ORVW or trout waters, must have temporary erosion protection or permanent cover within 3 days after the area is no longer actively being worked. The Project would be required to be managed such that all exposed soil discharging off-site would be revegetated and erosion protection established within 3 days, a management practice included in the draft SWPPP. The NPDES/SDS Permit associated with construction activity states that any drainage from the Site must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water within 24 hours of connecting to surface water.

**Response to Comments 30, 65, 69, and 75:** As stated in the DEIS, the Project would improve infiltration, resulting in slightly improved base flow conditions for the seeps, springs, and creeks, enhancing the ability of area creeks to support aquatic life, including cold water species such as trout.

In addition, the MnDNR provided the following comments (Comment #63) in reference to the flux in temperatures at the springs: “The DNR has reviewed the information prepared by Dr. Scott C. Alexander regarding the springs (PowerPoint presentation posted for April 3, 2012 and ‘Preliminary Results of Spring Survey and Monitoring below Zavoral Property, Scandia, Minnesota’ [no date]). DNR comments are based on the limited information provided. The minimum depth to groundwater during mining is proposed to be 30 feet for this project, and the final reclamation plan leaves a minimum of 50 feet above groundwater. Warming of groundwater at these depths should be less than 0.3 degrees Celsius, based on research conducted by the St. Anthony Falls Laboratory at the University of Minnesota (Taylor and Steffan 2008). The warming at the spring outlet will likely be less, because not all groundwater will travel beneath the mining area in the case of Zavoral Creek. The potential for increased infiltration in the project area due to almost all post-mining drainage being contained on site may actually cool the trout stream, as more flow in the stream will be from groundwater than surface water. It is probable that thermal impacts to the trout stream will be minimal.”

### **Historic Washout**

Commenters (2 and 77) reference that there is a threat to the St. Croix River due to runoff and sedimentation, and specifically referenced the “washout” that as occurred at the Site in the 1960’s or 1970’s and interference with the water table through “internal drainage” due to excavating to within a few feet of the water table and related reduced filtration of contaminants and sediment. Commenter (7) remembers when Barton operated the gravel pit and the big “blow out occurred and altered the St Croix River”. Commenter (32) states that the Historic Materials show that past gravel mining on the Zavoral property has caused the discharge of sediment and other pollutants directly to the St. Croix River. (See Historic Materials, Letter from Robert E. Bowen of Gray Plant Mooty & Anderson to MPCA dated January 25, 1971 at 3-4) discussing how Barton Contracting Company, a corporate predecessor to Tiller, had caused the discharge of silt into the St. Croix River as a result of gravel mining.

**Response to Comments 2, 7, 32, and 77:** See response to Comment 51 on pages 41 and 42 above.

Commenter (27) states that there needs to be an analysis of chemical use on groundwater, seeps and streams. Tiller intends to use calcium chloride within the mine area for dust abatement. “For both the Minnesota and

St. Croix streams, the chronic chloride standard was exceeded 10 times during 2010. The chloride used in the mine will quickly infiltrate the soil and end up in streams and contaminate shallow groundwater. We know that chloride is toxic to trout (documented in Zavoral Creek) and hazardous to growth including pine trees and poplars.” See Potential Impacts of Dust Suppressants: Avoiding Another Times Beach EPA Expert Panel Summary, May 30-31 2002 Section 3 and 3.1.1, 3.1.2, and 3.2.2.

Commenters (28, 39, 61, and 74) express concern about the use of Calcium Chloride.

Commenters (27, 74, and 75) state that there is the need to address use of herbicides during reclamation due to their effect on groundwater and surface water quality.

The Met Council letter (34) states very little soil and organic matter will be left on the site following reclamation to provide for filtering of nutrients and contaminants to prevent them from infiltrating to the groundwater on the site. Post-mining and reclamation, only approximately four inches of variable component topsoil material and three feet of coarse sands will remain above the water table on most of the site, which will be in constant movement laterally to the east. The groundwater below the mine site will only be moving laterally a short distance over a very short relative time span (potentially days to weeks) before it reemerges on the eastern bluff slope as groundwater seeps that will accumulate in the small streams and run off the site area. Council staff recommends that *no* fertilizers or pesticides be allowed to be applied to the site following mining and reclamation (aside from very short lifespan chemicals spot-applied to control noxious weed growth during reclamation), to minimize the potential for contamination of and toxicity impacts to the downstream seeps and streams which flow to the Saint Croix River. Active farm cropping and residential development of the site following reclamation are discouraged.

The Metropolitan Council letter also refers to the proposed use of calcium chloride on internal haul roads from the edge of the milled portion of the haul road through the unpaved haul roads within any given active mining phase. “Because of mine phasing and the extensive movement of internal roadways within the mine site, any applied calcium chloride could ultimately end up almost anywhere on the 64-acre area. Council staff recommends against the use of *any* calcium chloride within the mine site. The MnDNR letter (63) states Appendix A7 Tiller Dust Control Plan. Calcium chloride is proposed to be used as a dust suppressant and would be applied to internal haul roads throughout all phases of the Project. There is no information provided in this plan that indicated how often applications would occur and at what levels. Calcium chloride can be detrimental to vegetation and can leach into the nearby streams. More information should be provided to better assess potential impacts to nearby resources.

#### **Response to Comments 27, 28, 32, 34, 39, 61, 63, 74, and 75:**

##### **Separation from Groundwater**

As stated in the DEIS, depth from the maximum base of the mining excavation to groundwater would range from approximately 25 to 50 feet. Reclamation of the Site would take place in phases that would occur concurrently with mining. Post-reclamation, the depth from ground surface to groundwater would range from approximately 45 to 78 feet. The best representation of this would be Figures 11 and 34 through 39 in the DEIS. Thus the excavation would not impact groundwater.

##### **Use of Fertilizers and Herbicides**

Fertilizers and herbicides would be applied to the Zavoral Site on an as needed basis a part of reclamation. A combination of mowing during the growing season and utilizing spot herbicide treatments

would be implemented to control non-native vegetation. As stated in Section 5.1 of the DEIS, a higher frequency of mowing and herbicide treatment during the establishment period should be considered, three times during the growing season is recommended. Tiller's reclamation plan should include a list of acceptable herbicides. An adaptive management plan should be developed.

#### **Use of Dust Suppressants**

There are a number of non-chloride products available on the market that are either agriculturally derived organic polymers or naturally occurring polymers that can be applied as dust control measure near sensitive areas. Tiller proposes to use a non-chloride product for dust control. This has been added to the redline version of the EIS.

Since 2002 the USEPA Environmental Technology Verification program has tested several dust suppressant chemicals for efficacy in controlling PM<sub>10</sub> and fine particulate (PM<sub>2.5</sub>). The results of those tests showed that dust suppressants can control PM<sub>2.5</sub>. The level of control is variable ranging from 0% to >94% depending on site conditions. However, in the tests, application of dust suppressant was spaced out from weeks to several months apart. The Fugitive Dust Control plan prepared by Tiller contains procedures for daily dust control activities. If implemented as stated, fugitive dust control should meet the efficacy assumed in the ambient air quality analysis. Implementation and monitoring of fugitive dust control measures is a potential mitigation measure that the City may require through the CUP process.

#### **4.11 GEOLOGIC HAZARDS AND SOIL CONDITIONS**

Comments regarding geology fell under other resource topics and are addressed there.

#### **4.12 SOLID WASTE, HAZARDOUS WASTE, AND STORAGE TANKS**

Commenter (6) stated that if bulk fuel stored near a "waterway, a Spill Prevention Plan (SPP) may be necessary and that the DEIS does not appear to address the need for a SPP."

**Response to Comment 6:** As stated in Sections ES 2.8 and 4.12.1.3 of the DEIS, diesel fuel would primarily be brought on-site by bulk delivery truck that would directly fuel the operating equipment. In the event that fuel storage would be necessary, storage would be in a single 1,000-gallon mobile tank in compliance with state, county, and local requirements and regulations. A Spill Prevention Control and Countermeasure (SPCC) Plan would be required if a storage tank capable of holding more than 1,320 gallons of diesel fuel is brought on-site.

Washington Board of Commissioners (19) letter states that since mining is proposed to be conducted about 25-50 feet above the water table, there should be no impact to the groundwater quality directly from the mining operations. However, care should be taken to ensure that any hazardous materials on site are properly handled and do not reach the water table. Washington County Department of Public Health and Environment refers to Section 2.8, Solid Waste, Hazardous Waste, and Storage Tanks. Waste located in the project area must be disposed of in accordance with Minnesota Rules 7035 and 7045 and Washington County Ordinances #114 and #119. A spill recovery kit must be present during fueling activities used to run equipment at the mine. Containment must be implemented for fuel tank storage if it occurs.

**Response to Comment 19:** The information provided in the comment is consistent with the information contained in the DEIS. The information will be passed on to the City.

Commenter (57) states that Tiller has previously gone on record stating that there would be no on-site fuel storage at the site. This should be affirmed in the DEIS. See minutes from November 11 PAC meeting.

**Response to Comment 57:** The Project as currently defined by Tiller leaves the possibility of on-site fuel storage open, although unlikely. Thus, the DEIS had to address the possibility.

#### **4.13 TRAFFIC**

##### **Hauling Traffic**

Commenters (2, 3, 5, 8, 13, 17, 24, 25, 29, 30, 35, 41, 43, 49, 51, 58, 65, 68, and 73) state that they have concerns about hauling traffic. Commenter (3) challenges the “notion that the alternatives proposed would all result in similar material transport volume” and believes that the safety study is inadequate in that the conclusions seem to be based on past and current traffic levels, rather than the potential traffic volume increases presented by the proposal. The commenter also states that the DEIS also seems to offer the conclusion that, because vehicle collisions in the area have not involved mining trucks, the trucks do not present safety risks. Commenter believes that the DEIS statement that 12 crashes in a 3-year period at the TH 97 and CR1 (Lofton Ave.) intersection are insignificant seems “quite nonsensical and this particular intersection suffers from a number of potential safety issues”. Commenter is also concerned about the Scandia Elementary School traffic. Commenter (5) states that truck hauling traffic will pollute the air and land; will be “harmful to health with particulate tainting the atmosphere; will be extremely noisy; will be hazardous drivers on highway 97 getting to our homes, the local businesses, the elementary school; TH 97 will rapidly deteriorate; Traffic along 95 Scenic Drive will be at risk.” Commenter (18) states that the increase in truck traffic “will be very dangerous for all who live here or just travel through”.

Commenter (32 and 71) state that the DEIS’s analysis of the mine’s potential impacts “is inadequate” because it is “devoid of the technical analysis needed to evaluate the traffic operation and safety of the project.” The DEIS should provide an adequate analysis of traffic impacts as described in the Traffic Analysis Report (RLK, Inc., April 2012) in order to meet the requirements of MEPA. The RLK Traffic Analysis report identifies eleven separate deficiencies in the DEIS’s traffic study:

1. As presented, this report only includes Average Daily Traffic (ADT) information and does not include AM and/or PM Peak Hour turning movement volumes. Turning movement volumes are important to the overall operational analyses of intersections.
2. It is unclear whether the ADT information provided has been adjusted to reflect seasonal fluctuations (i.e., recreational traffic on the scenic byway, etc.), and whether this adjusted traffic will be impacted by the hauling operations.
3. The analysis must include adequate capacity analyses of specific intersections. Operational analysis typically includes Level of Service Analysis and Warrant Analysis.
4. The DEIS investigated crash statistics for only three years, yet there is at least ten years of crash data available related to the gravel operation. One such crash was a fatality involving a hauling truck and a pedestrian directly relatable to gravel operations. With such data available, the DEIS should consider the ten years of data.

5. The DEIS does not include an Intersection Crash Performance analysis using the Mn/DOT methods of calculating intersection crash rate per million entering vehicles, severity rate, crash density, or crash cost per year. Nor does the DEIS include Segment Crash Performance analyses. These calculations allow comparisons with similar intersections statewide in order to verify severity.
6. The response to question 21 of the DEIS suggests that the traffic will be the same for Class C production, yet in its present condition, the traffic associated with Class C production arrives via Hwy 243, Hwy 95 and Hwy 97, resulting in a right turn from Hwy 95 to Hwy 97. In the proposed condition, the Class C will come from the Zavoral mine, requiring the traffic associated with this production to progress across Hwy 95. This will increase the traffic conflict opportunities from 2 to at least 6, resulting in degradation in safety.
7. The DEIS does not present traffic analysis of the existing, the short-term build (1st year after completion) short-term no-build, long-term build or no-build scenarios. Typically, development traffic analysis identifies the existing traffic, the projected No-Build traffic operational analyses, and then presents the development's trip generation and Build traffic operational analyses. Projected turning movements levels of service must be presented to assess whether the use constitutes an impact and to provide a comparison between the scenarios.
8. The DEIS does not state the sight distances at any of the study locations. Sight distances are important in determining gap analysis of intersections. Because trucks take a longer time to progress from a standing stop, larger gaps in the traffic stream are required, as opposed to smaller vehicles. Gap analysis must also take into account the vertical and horizontal changes in the roadway alignment throughout the study area. The DEIS needs to analyze these gaps, both for the current conditions and the conditions in the future.
9. Safety is discussed from the stand point of crashes, without special attention drawn to the design vehicle used to transport the mined material. Trucks used for this activity accelerate and decelerate at significantly slower rates, which can have an adverse impact on the ability to avoid collisions, and increase the safety risks. The dismissive comment regarding the lack of evidence of near miss occurrences does not adequately address the potential that exists.
10. There is no discussion of the structural capacity of the roadways and their ability to handle the increase in daily truck trips. The DEIS must provide an assessment of the existing and future pavement condition.
11. Mitigation is summarized in the DEIS, yet there is no quantitative discussion of the impacts and changes to the operations or safety of the roadway network associated with the proposed mitigation strategies. These mitigation measures should also be quantified and prioritized.

The commenter states that in addition to not providing a sufficient analysis of traffic impacts meeting professional standards "[t]he DEIS does not present traffic analysis of the existing, the short-term build (1st year after completion) short-term no-build, long-term build or no-build scenarios."

The RLK report states that "Developing the mine without appropriate traffic analysis, as we recommend, could result in significant safety issues to Scandia and the surrounding communities, including the increased risk for severe or fatal collisions. Especially at the junction of Highway 97 and Highway 95, the potential for severe traffic accidents as a result of gravel hauling is a proven risk. On April 24, 2012, the junction was the location of a gravel truck rolling over, which sent the driver to the hospital and spilled the truck's contents. Phillip Brock, *One Injured in Semi Rollover*, COUNTRY MESSENGER, May 2, 2012. Given the proven potential for increased risk of severe or fatal collisions as a result of the Tiller mine, the DEIS's failure to provide an adequate assessment of traffic impacts is a grievous error which endangers the Scandia community and must be corrected."

Commenter (40) states that operation of the mine under Alternatives 1, 3, or 3A would generate a huge increase in truck traffic, with well over 300 - 600 trips under Alternative 1, and as many as 736 trips under Alternative 3A. This amounts to one trip every 1 to 2 minutes (Alternative 1), or even more frequently under Alternative 3A. This increase in truck traffic on the already busy State Highways 95 or 97 is not acceptable. I don't believe the claim that the roads can handle such an increase. In fact the EIS acknowledges that area residents may currently be using other routes to avoid truck traffic on TH 95 and TH 97. This statement implicitly recognizes that the existing amount of truck traffic on these roads is too high, and discredits the idea that additional truck traffic at the scale envisioned for the Zavoral Mine can be accommodated without significantly adverse effects on local traffic and safety.

Commenter (58) states that the EIS says that Tiller will not haul Class C add-rock from Osceola or Franconia to the Scandia mine during the years the proposed Zavoral mine is active. As a result, it says that the number of daily trips on Hwy 97 will not increase from current levels, and that the number of daily trips on Hwy 243 and Hwy 95 from Osceola/Franconia to the Scandia mine will essentially drop to zero. But won't the Osceola and Franconia mines still remain active? And couldn't gravel from them be transported directly to construction sites or to facilities other than Scandia? If that happened, the number of daily trips on Hwy 243 and Hwy 95 might not be reduced at all, or at least not to the extent that is claimed.

The DEIS says that a north-bound right turn lane will be added to Hwy 95 at the Zavoral mine entrance. "If the gravel from the Zavoral mine is to be transported directly to the Scandia mine via Hwy 97, then why the need for the north-bound right turn lane? Does Tiller also plan to send gravel to the south (on Hwy 95) as well as to the west (on Hwy 97)? Will trucks be coming from the south and then hauling their loads back to the south?"

The DEIS says that the use of the material from the Zavoral Site, as opposed to the more distant sources (Osceola and Franconia) currently used, will reduce environmental impacts related to hauling, such as the use of fossil fuels and air impacts. What they neglect to say is that as soon as mining operations are completed at Zavoral, the add-rock hauling from the more distant sites will resume, along with all the problems associated with it. It seems dishonest to use this "distance" argument as justification for reopening the Zavoral mine.

Commenter (59) states that the DEIS does not adequately address the traffic situation that will result if the project goes ahead. The addition of 600 truck trips per day on hwy 97 is dismissed as "negligible" or words to that effect, but is in fact unacceptable. Evening rush hour traffic at the junction of hwy 97 and hwy 95 even today is heavy, and the addition of a steady stream of trucks exiting the mine site and crossing 95 and accelerating through the gears to head uphill and west on 97 is unthinkable. The potential for serious collisions at that intersection is not "negligible", and the likely resulting addition of a stop light is unwelcome and should be unnecessary. The suggestion in the Draft EIS that there are "alternative routes" that drivers may take to avoid the predicted congestion at the hwy 97/95 intersection is ludicrous on its face. Residents may be aware of County Road 52 as a route to reach Scandia and points west, but visitors and recreation traffic will not, and certainly not before encountering the congestion at the exit from the Tiller mine site.

**Response to Comments 2, 3, 5, 8, 13, 17, 18, 24, 25, 29, 30, 32, 35, 40, 41, 43, 49, 51, 58, 59, 65, 68, 71, and 73:** Updated traffic analysis and crash data discussed in the following sections will be included in the redline version of the EIS.

### **Traffic Analysis**

According to the MnDOT's Traffic Impact Study Guidance Section 5.3, a traffic impact study is not necessary for most individual developments. As stated in Section 5.3:

- For developments that do not generate significant traffic volumes, a traffic impact study is neither necessary nor warranted.
  - Development proposals that are estimated to generate fewer than 250 peak-hour vehicle trips or 2,500 new daily trips generally would not warrant completion of a traffic impact study, unless there are unusual circumstances;
  - Even projects that otherwise require environmental review should generally not require a traffic impact study if projected volumes are below this threshold.

The projected hourly and daily volumes of traffic for the Project are well below the threshold discussed in Section 5.3 of the manual. Regardless, a traffic analysis was completed as part of the DEIS.

As part of the traffic analysis in the DEIS, hourly data for TH 97 (automated traffic recorder [ATR] and tube count data) and on TH 95 (tube counts only) were acquired from MnDOT. Peak hourly traffic data plus maximum truck volumes were used in the analysis where appropriate. Highway Capacity Software was used for unsignalized intersection analysis.

A total of 5 years of data was obtained for the Project (from 2006 through 2010). Crash data was obtained from MnDOT for intersection and segments in the area (database for 2006 through 2010 in Scandia). While it was noted that 10 years of data is available, recommended standard practice for traffic analysis is to use the most recent 3 years of data due to the potential for changed conditions in the area. Three years of data are appropriate for this analysis as MnDOT traffic data collected since 2006 shows a reduction in traffic counts on TH 97 and TH 95.

In June 2006, a fatal crash (pedestrian hit by truck) was recorded on TH 95 north of the TH 97 intersection. The incident report identifies the vehicle as a dump truck with a flatbed trailer, not as a gravel truck. The State Patrol investigated the crash and determined the pedestrian made a judgment error and did not get out of the path of the truck. This crash was discussed in the DEIS.

## Level of Service Analysis

Also known as “Traffic Service,” level of service (LOS) is a qualitative measure describing operational conditions within a traffic stream. Level of service assesses conditions in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined by letter designations from A to F, with LOS A representing the best operating conditions, and LOS F the worst. Roadway LOS descriptions are summarized below:

**Level of Service A:** This is a condition of free flow, accompanied by low volumes and high speeds. Traffic density will be low, with uninterrupted flow speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speed with little or no delay.

**Level of Service B:** This occurs in the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been used in the design of rural highways.

**Level of Service C:** This is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes suitable for urban design practice.

**Level of Service D:** This level of service approaches unstable flow, with tolerable operating speeds being maintained, through considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low. These conditions can be tolerated, however, for short periods of time.

**Level of Service E:** This cannot be described by speed alone, but represents operations at lower operating speeds, typically, but not always, in the neighborhood of 30 miles per hour, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration. This level of service is associated with operation of a facility at capacity flows.

**Level of Service F:** This describes a forced-flow operation at low speeds, where volumes are below capacity. In the extreme, both speed and volume can drop to zero. These conditions usually result from queues of vehicles backing up for a restriction downstream. The section under study will be serving as a storage area during parts or all of the peak hour. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion.

The LOS of an intersection is a qualitative measure of capacity and operating conditions and is directly related to vehicle delay. Level of service is given a letter designation from A to F, with LOS A representing very short delays and LOS F representing very long delays. LOS conditions for unsignalized intersections, the levels of service are shown in the table below.

**Level of Service Criteria for Unsignalized Intersections**

Level-of-Service (LOS)	Average Control Delay (seconds/vehicle)	Description
A	≤ 10.0	No delays at intersections with continuous flow of traffic. Uncongested operations: high frequency of long gaps available for all left and right turning traffic. No observable queues.
B	10.1 to 15.0	Same as LOS A
C	15.1 to 25.0	Moderate delays at intersections with satisfactory to good traffic flow. Light congestion; infrequent backups on critical approaches.
D	25.1 to 35.0	Increased probability of delays along every approach. Significant congestion on critical approaches, but intersection functional. No standing long lines formed.
E	35.1 to 50.0	Heavy traffic flow condition. Heavy delays probable. No available gaps for cross-street traffic or main street turning traffic. Limit of stable flow.
F	> 50.0	Unstable traffic flow. Heavy congestion. Traffic moves in forced flow condition. Average delays greater than one minute highly probable. Total breakdown.

SOURCE: *Highway Capacity Manual, HCM2000*, Transportation Research Board, 2000.

As a result of comments to the DEIS, AECOM completed a LOS analysis for the intersection at TH 95 and TH 97. Traffic counts were collected during the morning and evening rush hour on Tuesday, June 12<sup>th</sup>. These times were selected to reflect maximum traffic conditions. Tiller was not conducting a haul event from Wisconsin during the June traffic counts.

A LOS analysis was completed for four scenarios at the TH 97 and TH 95 intersection:

1. Existing rush hour traffic
2. The No-build alternative with a haul event from Wisconsin occurring at maximum hourly haul rates.
3. The Zavoral Site in operation at maximum hourly haul rates.
4. The Zavoral Site in operation at maximum hourly haul rates under Subalternative 3A

During the morning rush hour the LOS remained at level C or better for all turning movements for all three scenarios.

During the evening rush hour the LOS remained unchanged at level C or better for all turning movements for all four scenarios with the following exceptions. For approximately 1 to 2 hours during the evening rush hour or other periods of similar traffic patterns:

- The LOS for the turning movement from eastbound TH 97 left onto northbound TH 95 would decrease from Level C to Level D for all build alternatives.
- The LOS for the eastbound approach on TH 97 crossing TH 95 to the Project Site would be Level D for all build alternatives.

According to Section 5.3, Figure 5.2 of the MnDOT Traffic Impact Study Guidance this LOS is considered to be acceptable for this type of intersection.

Modification of the intersection of TH 97 and TH 95 from a 3- way to a 4-way intersection would increase the number of potential conflict points. MnDOT took this into account as part of their evaluation of the proposed intersection plans submitted by Tiller. MnDOT would require the construction of a right turn lane on northbound TH95 at the proposed Project Site entrance to reduce potential conflicts to traffic on TH 95. MnDOT evaluated but rejected addition of an acceleration lane on TH 97 as unnecessary. Also, as noted above, per MnDOT guidance, the LOS following this modification is considered to be acceptable for this type of intersection.

The alternatives for the corridor vary in the range of “daily haul volumes” based on the planned duration of mining or the No Build (not a defined number of years for mining). The truck volume analyzed was the Maximum Daily Capacity (and Maximum Hourly Capacity). The maximum is the same volume for all Alternatives 1 through 3, including the No Build.

- Maximum hourly volume for Alternatives 1 through 3 (28 trucks, 56 round trips) is the absolute maximum trips that could be made between the Scandia Mine and Zavoral Site in 1 hour. This includes loading and trip time, with no delays in any activity. This level may be reached on occasion, but is unlikely to be maintained.
- The maximum daily volume assumes the maximum hour would be maintained for an entire day’s haul (10 hours hauling with 280 trucks, 560 round trips). This is not considered to be attainable in practice, but was used to evaluate maximum potential truck impacts.
- For Subalternative 3A, the maximum daily volume of 368 round trips was assumed to occur over 12 hours giving a maximum hourly rate of 31 trucks (62 trips) per hour.

The maximum rate was used for Alternatives 1, 2, 3, and 3A and considered to be used for the duration of the haul. This established a maximum number of trucks that could potentially run between the sites.

The morning and evening peak hour traffic volumes were analyzed (based on ATR data from MnDOT) for the roadway segment on TH 97 from Lofton to TH 95 using Highway Capacity Analysis software. For both the morning and evening conditions, the segment LOS is Level C. Use of peak hourly traffic data plus maximum truck traffic obviates the need to run multiple analyses for lower traffic volumes.

The only physical road modification is the conversion of the TH 95 and TH 97 intersection from a 3-way to a 4-way intersection (with the addition of a northbound right turn lane required by MnDOT). The sight

distance was reviewed as part of the MnDOT evaluation of the proposed intersection plans submitted by Tiller. MnDOT determined the sight distance met their design criteria. A check of the topography on TH 97 and TH 95 verified these conclusions.

**Crash Data**

For the DEIS, a total of six years of data was obtained from MnDOT for four intersections and four road segments in the Scandia area. In accordance with standard procedures, three years (2009 – 2011) of data was used in the traffic safety analysis.

The crash data for each location was reviewed for the intersections and road segments. The analysis of the crash data shows that all of the road segments on TH97 and TH95 and intersections are well below the statewide average for similar roads.

The calculated crash rates are included in the tables below for intersections and segments.

**Segment Crash Rates**

Segment	Number of Crashes (2009-2011)	Crash Rate (per Million Vehicle Miles)	MnDOT Statewide Average Crash Rate for 2 lane Rural Trunk Highway
TH 97 - Manning to Lofton	3	0.22	0.8
TH 97 - Lofton to Olinda	9	0.45	0.8
TH 97 - Olinda to TH 95	3	0.38	0.8
TH 95 - 220 <sup>th</sup> to Oakhill <sup>1</sup>	1	0.06	0.8

<sup>1</sup> Crash data for the TH 95 220<sup>th</sup> to Oakhill was not available for 2011. 2008 to 2011 crash data were used.

**Intersection Crash Rates**

Intersection	Number of Crashes (2009-2011)	Crash Rate (per Million Entering Vehicles)	MnDOT Statewide Average Crash Rate for Rural, Unsignalized Intersection
TH 97 & Lofton	5	0.49	0.6
TH 97 & Oakhill	3	0.34	0.6
TH 97 & Olinda	5	0.54	0.6
TH 97 & TH 95	3	0.35	0.6

Additional review of the above crash data for the TH 97 and Lofton intersection showed the following:

1. There were 16 crashes in a 6 year period, 2006 – 2011.

**Number of Crashes at TH 97 & Lofton**

Year	Number of Crashes
2006	0
2007	3
2008	8
2009	1
2010	3
2011	1

2. Eight of those crashes occurred in 2008.
3. No pattern was observed in the 16 crashes that indicated a problem with the road or intersection design.
4. No gravel trucks or semi-trucks were involved in any of the crashes at TH97 and Lofton.

Based on data from 2006 to 2011, the high crash rate in 2008 appears to be an anomaly not directly associated with existing traffic patterns.

**Scandia Elementary School Traffic**

As described above, crash data shows that the road segment near Scandia Elementary and the intersection of TH 97 and Oakhill Road are well below the MnDOT statewide average crash rate for similar roads.

An intersection turning movement analysis was completed by AECOM for buses and cars at the Scandia Elementary school driveway. The traffic counts were based on peak hour Automated Traffic Recorder (ATR) data provided by MnDOT, bus data, and maximum truck traffic rates. The specific ATR data used represented the time when school peak traffic hours occurred in the morning and afternoon. The LOS analysis showed the morning peak had a LOS A and the afternoon peak had a LOS B. This indicates that sufficient gaps are present in traffic to allow buses and cars to access TH 97.

With regard to safety at the Elementary School, the Scandia Elementary Parent Survey on Walking/Biking to School dated March 2011 was reviewed and Ms. Julie Greiman, Principal of Scandia Elementary School provided this data based on the “Safe Routes to School “ program evaluation.

Traffic speed and volume on TH 97 were identified as a concern for children walking or biking to the school by parents in the survey. The lack of sidewalks or trails and distance to the school were identified as barriers to walking and biking. However, in 54 separate comments provided by parents, the presence, absence, or safety of gravel trucks on TH 97 was not mentioned.

Ms. Greiman was asked if her staff had concerns about access to the school. Ms. Greiman stated that she was not aware of any major concerns. Ms. Greiman also stated that they were aware that TH 97 is a busy road and they do not hold any activities near the road.

**Response to Comments 40 and 59:** The commenter(s) appear to have assumed that truck traffic, specifically gravel truck traffic, would increase as a result of the Project. A key assumption, based on Tiller's proposal, in the traffic analysis is that gravel truck traffic currently coming into the City of Scandia from Osceola, Wisconsin and Franconia, Minnesota would be displaced by truck traffic from the Zavoral Site. Therefore, the maximum daily truck traffic attributable to Tiller is not projected to increase beyond current conditions. Limiting the maximum truck traffic levels is a potential mitigation measure that the City may require through the CUP process.

#### **TH 95/TH 97 Intersection**

Commenter (9) states that the DEIS has not adequately studied the traffic patterns and traffic safety issues. With 300 to 700 truck trips crossing TH 95 each day, there are numerous traffic safety issues that have not been addressed. This point was noted with the 6-point vs. 2-point accident scenario as stated at the 4/3/12 meeting with traffic crossing vs. right turning.

The MnDOT letter (10) stated states that their prior comments concerning the right turn lane and the trail located on the east side of TH 95 identified in 2009 and 2011 are still valid. Regarding the stub trail in question, the presence of a "long-term" trail on the north side of TH97 in Scandia planning documents does not change the MnDOT recommendation to remove and sod over the stub trail on the southeast quad of 95/97. Unless the City of Scandia is willing to take ownership and maintenance, MnDOT requires removal of the stub trail. The right of way will still be there if in the future the stub trail is rebuilt via a Limited Use Permit, with City ownership and maintenance. To ensure the safety of a newly configured intersection, a Level 2 Layout will need to be submitted to MnDOT for review. Any work that impacts MnDOT right of way requires a permit and MnDOT reviewed submittal options and requirements.

Commenter (14) asked that information related to a gravel truck tipping over at the intersection of 95 and 97 on Tuesday evening, April 24th, about 8:30PM be forwarded to the City Council.

Commenter (15) states that dangerous heavy vehicle operation on the intersection of Hwy. 95 and Hwy. 97, congestion and danger to all of our children, family and pets and reference the semi-truck rollover April 24<sup>th</sup>, 2012 due to a load shifting. Commenter (17) states that their chief concern is that the impact of the projected additional truck traffic to and from the Zavoral site, and consequent safety concerns, have not been fully and satisfactorily addressed. 560 to 696 trucks crossing highway 95 each day during haul events sounds like a lot of potential for accidents.

Washington County Board of Commissioners (19) letter states that Public Works will support any of the transportation alternatives; however the Board prefers alternatives 1 and 3. Public Works has safety concerns with the dual bi-pass lanes at the intersection of State Trunk Highways 95 and 97 and the mine access driveway. Public Works will be rehabilitating County Road 91 in the next few years and will work with residents and businesses regarding traffic operations during the mine operations.

Commenter (21) stated that they cannot find a way to believe that dozens or hundreds of gravel-hauling trucks at the intersection of 97 and 95 can be safe. As a recreation and scenic corridor, there is a great deal of traffic on 95. While I'm sure most are safe drivers, some are busy admiring the views, reading signs or maps, or are otherwise distracted. While it's not Tiller's responsibility to account for these motorists, I do believe that it would be irresponsible for the city of Scandia to approve of hauling at this site, and essentially put lives on the line. Not only would it be tragic if even one death occurred (and one family shattered), but I have concerns that the city might have some risk of liability should such an accident occur. Recently, a gravel truck overturned at that intersection. I drove through the intersection in the dark, and to be honest, I was amazed that the accident didn't spawn fender-benders or jeopardize our excellent emergency responders.

Commenter (27) states that adding an acceleration lane on 97 if the mining is approved for more than 150 days to make this area safer and more usable for other motorists. "There was ample evidence in April of 2012 that gravel trucks were involved in accidents, safety violations and safety threats to citizens." Commenter (29) referenced recent gravel truck accidents at 95/97 intersection.

Commenter (40) states that the assumption that residents may chose to avoid the intersection by traveling on other roads is "almost absurd, as there really is only one alternate route that is available for local traffic that will bypass the gravel mine, and it has limited utility for most local trips". "That route involves using County Rd 52, or Oakhill North, to Scandia from TH95 south of TH97 and north of Cty Rd 53 (Quinnell Ave). If someone is traveling North from Copas or along TH95, and plans to continue northbound, they are most likely to be unaware of this route, or be willing to take it to avoid truck traffic. Only those that are intentionally going to Scandia or beyond (e.g. westward on TH 97) will take Oakhill N, if they know about it. On top of it, residents along Quinnell Avenue that are northbound will find themselves exiting Quinnell just before the gravel mine entrance, where all the truck traffic is coming and going (1 trip every 1 to 2 minutes) and could find entering the highway difficult if not dangerous. I predict that a stoplight will be needed at the Zavoral mine entrance, which would impede the normal flow of traffic on TH 95. Finally, I feel that the additional truck traffic will be a significant safety risk on both TH95 and TH97, and in the intersection between the two."

Commenter (42) lives very close to the intersection of 97 and 95 and provided some traffic count data for all vehicles travelling east and west. "For much of April and all of May so far, all traffic has been quite heavy. Due in part, I'm guessing, to the road construction to the north detouring the traffic and to some truckers using less travelled highways in order to avoid troopers and inspections. With this heavier traffic, we hear many loud engines, engine brakes, road noise, fumes and have difficulty entering/exiting our driveway. Plus there have been 2 accidents already. These inconveniences and incidents show us all what we have in store if Tiller puts 560 or more truck trips on top of the normal traffic. Also, nothing has been said about the gravel pits owned by other companies who use these highways. What if they also have an "event" and have heavy haul over periods? What model was used for this DEIS to evaluate the traffic at the 97/95 intersection? Is it correct that the study used did not include the potential traffic crossing 97 as thoroughly as they should but focused mainly on right turn/left turn traffic? Would by including the crossing issue change the MN State or County's ruling? Did you notice how

“attractive” the gravel pits on 95 north of Scandia are? Deep and ugly with noise, air pollution, and heavy trucks causing dangerous and aggravating traffic congestion. Just the thing to have right at the ‘front door’ to the Scandia Community.”

Commenter (43) “wants to prevent an already questionably dangerous intersection from becoming even more dangerous! The volume of added truck traffic could actually require a stop light at the intersection. Otherwise I see no alternative to the traffic problem were that mine reopened.” Commenter (46) states that “as a commuter, I also have a concern with traffic impact. The all-way stop at 97 and Olinda Trail is susceptible to rush-hour backups. Adding many more semis to the mix will likely create long backups and commuter diversion to side roads such as 220th that are not designed to handle high-speed traffic. I anticipate the need to finance upgraded traffic control at that intersection if the CUP is granted.”

Commenter (49) states that traffic, especially at the Highway 95/97 intersection, is of great concern. “The EIS uses annual averages and, as was noted at the April 3 hearing, presents a simplistic analysis of the potential for crashes. It seems that a traffic study conducted in both summer and winter would yield more accurate data for such an important component of this project.” The intersection becomes far more complicated than just trucks from Franconia making a right turn, or return trucks pulling left onto 95. If this project goes forward, trucks will be pulling out of the mine, crossing oncoming 95 traffic from both directions as they swing into the right turn lane to turn onto 97. They may not yield right-of-way as they should. Oncoming traffic from both directions and traffic turning north from 97 will be vulnerable to collision.” Commenter provided photographs of gravel truck traveling east on Highway 97 in June, 2011. The truck repeatedly crossed the center line and veered off the right-hand shoulder. The left-hand turn signal was on from Manning Trail to Highway 95. In the left picture, the truck is in the oncoming lane at the top of a rise, unseen by oncoming traffic. In the photo on the right, the truck has crossed completely into the oncoming lane as it approaches the Scandia Elementary school crossing. Commenter (50) cited recent gravel truck accidents at 95/97 intersection, police reports concerning gravel truck infractions in Scandia since January.

Commenter (57) stated that “traffic data and related impacts to noise and public safety need to be adjusted to account for the increased DURATION of the mine-related traffic. Tiller would decrease hauling from Osceola/Franconia while hauling from the Zavoral pit, but every day of hauling from the Zavoral pit over the life of the mine (up to ten years) would be in addition to Tiller’s other mine activity, given that Tiller would simply resume operation at the other mines following their work at the Zavoral mine. On April 25<sup>th</sup> of this year a loaded gravel truck turned over at the hwy 97/95 intersection and spilled its load across the highway and beyond. I believe we can expect many more such accidents if this project is approved. An additional hazard resulting from such a major increase in truck traffic (600 truck trips per day) will be spilled gravel that falls from the loaded trucks even in normal operation (when they don’t turn over). An increase in cracked windshields, dented fenders and the like can be expected, and again leads to the question – why should Scandia bring this upon its citizens?”

**Response to Comments 9, 10, 14, 15, 17, 19, 21, 27, 40, 42, 43, 49, 50, and 57:** See responses to **Hauling Traffic** comments on pages 49 through 54 above.

**Response to Comment 10:** The City of Scandia’s Comprehensive Plan and policies recommend that transportation systems address the current and future needs of pedestrians and bicyclists as well as vehicles. Based on its goals to address the needs of all system users, the City completed its Comprehensive Trail Plan in 2011. The Trail Plan includes the existing trail on TH 95 and a future trail on TH 97 as important components of the City-wide trail system.

The City is disappointed that MnDOT's comments do not support the needs of pedestrians and bicycles for a safe trail on TH 95 that would be an important link in the trail system in this area, particularly since MnDOT has adopted a number of policy statements and goals to support multi-modal transportation systems and "Complete Streets" in recent years.

The City would include a mitigation recommendation in the DEIS that Tiller be required to replace the existing trail in the southeast quadrant of the TH 95/97 Intersection, to address the needs for safe transportation routes that meet the current and future needs of all users in the area.

**Response to Comment 14:** As stated in Sections ES 2.9 and 4.13.1.2 of the DEIS, fewer trucks would be making the right turn from TH 95 onto TH 97 until the aggregate resources at the Zavoral Site are exhausted. The City has no authority regarding speed limits on State Trunk Highways.

**Response to Comment 19:** Dual bi-pass lanes are not proposed for the intersection of TH 95 and 97. The City would coordinate with the County as part of any upcoming permitting process.

### **Scandia Mine Traffic**

Commenter (7) a resident located near Lofton and 205<sup>th</sup> Street North refers to hearing the trucks hauling gravel from Osceola and Franconia all season long. "Peace and quiet of Scandia and all along TH 95 and 97 will be disrupted even more. It will discourage further tourism. Trucks are loud and very polluting. It will be horrible for all people who live close by, including all residents of Scandia. I certainly hope the Scandia town board reconsiders granting Tiller a permit. As it is we cannot stand the noise of hearing the gravel trucks that travel along TH 97 on their way to the mine site on Lofton. They are very, very loud. And there will be fallout from dust particulates. So it is health hazard. So I am totally opposed to Tiller mining the Zavoral site."

**Response to Comment 7:** If the Project at the Zavoral Site were to move forward, traffic related to the Scandia Mine is not projected to increase under Alternatives 1 through 3. Under Subalternative 3A, the truck traffic hauling Class C aggregate to the Scandia Mine would increase by an estimated 6 truck (12 trips) per hour when hauling. The impacts related to operation of the Zavoral Site related to traffic, noise, air quality, and other impacts are addressed in the DEIS.

### **Recreation Traffic**

Commenter (40) states that the DEIS states that "The trunk highways have sufficient reserve capacity to handle the change in traffic volume for seasonal traffic. Periods of congestion may be experienced during peak weekend travel times or on a holiday weekend, with or without the Project."..."I don't believe this statement, nor do I find it ethical to claim that there will be an increase in congestion with or without the project. There has been an increase in traffic over the last 20 years as more people chose to commute to the Twin Cities or to Stillwater. While periods of congestion are rare, typically occurring only during special events, the volume of traffic during morning and evening commute periods is now substantial. Adding in 300 to 600 trips of semi-trucks laden with rock will add significantly to congestion, and create far more periods of congestion. To suggest that the increase will be similar with or without the project is disingenuous, at least, and borders on a downright falsification. Finally, the previous arguments are mostly directed at Alternatives 1 and 3; the increases under Alternative 3A would be even greater, so it goes without saying that traffic congestion would be even greater too."

**Response to Comment 40:** The commenter stated that traffic has increased in the area. MnDOT traffic data for the last 5 years shows that traffic volumes on TH97 and TH95 have actually decreased since 2006.

### **Road Damage**

Commenter (61) states that road surface damage is not adequately addressed. “The current level of truck traffic has left Lofton with a damaged road surface and minimally repaired cracks, breaks, and scattered roadside debris. It would be reasonable to expect that increased truck traffic of any number would increase the damage to the road. It does not appear that the tax revenue from this proposed project would come close to pay for road maintenance, repairs, and berm cleanup. In addition to the effect on general road traffic, damage to Lofton results in increased water drainage to our property and increased damage to our driveways. How will this be mitigated and monitored, and how will we be compensated for damage to our property and driveways if it is not prevented?”

**Response to Comment 61:** The state highways and county roads that would be used for hauling material from the Zavoral Site to the Scandia Mine are designed for truck traffic and the state and county are responsible for maintaining these roads.

## **4.14 STATIONARY SOURCE AIR EMISSIONS AND DUST**

### **General**

Commenters (1, 18, 25, 48, and 57) expressed concern about air pollution and Commenters 2, 7, 14, 15, 20, 21, 29, 34, 36, 39, 50, 54, 57, 63, 74, and 79 expressed concern about dust. Commenter (39) stated that “we are very concerned about dust and particulate that will be inhaled and that will make its way to the River wildlife and surrounding vegetation. The DEIS indicates that this project is “not likely” to increase dust/emissions or decrease ambient air quality – we would like a definitive statement about potential impacts.” Commenter (42) states that the DEIS acknowledges a slight risk for those living within ¼ mile of the proposed mine. “Considering much of the other data included in the current DEIS is questionable and understated, the health risk is quite possibly worse than stated as well. We live within that ¼ mile radius which includes my sister who has C.O.P.D. Our fear and concern is that her condition could worsen due to pollution caused by mine activity.” Commenter (43) stated this chemical (referencing Calcium Chloride) “they propose to put on the land has a direct impact on stream water and the population of trout in the streams. I ask what it will do to human lungs?” Commenter (49) states that the DEIS states that uncontrolled emissions will likely exceed NAAQS and nuisance dust levels, and that these may have an adverse impact on vegetation and fauna. “Tiller’s mitigation plan is to keep the mining activity watered down with water drawn from an on-site well. However, with an allowable well draw of 10,000 gallons per day, it is estimated that Tiller will only be pumping water for 15 minutes per day. Will Tiller reasonably be able to keep dust from all its gravel (that being mined and that waiting for ground cover to grow) under control with just 8-20 minutes of pumping per day?”

The NPS letter (53) states The DEIS indicates that uncontrolled emissions from operations would exceed National Ambient Air Quality Standards (NAAQS) and would also exceed nuisance dust levels. Such emissions will negatively impact vegetation or fauna around the site. However, it does not appear an analysis was done regarding the impact of such emissions on wildlife. Tiller does propose several ways to mitigate the emissions to avoid such negative impacts.” “The DEIS indicates that it is unlikely that fugitive dust would adversely affect the water quality in the St. Croix River under either uncontrolled or mitigated conditions. However, most of the mitigation measures include application of water, including calcium chloride in some instances, and there are concerns that these and

other chemical used in the mine will then be able to seep into water sources leading to the river. The DEIS should address the potential for this to occur. "

**Response To Comments 1, 2, 7, 14, 15, 18, 20, 21, 25, 29, 34, 36, 39, 42, 43, 48, 50, 53, 54, 57, 63, 74, and 79:** The DEIS concluded that an effective dust control plan would be required to meet existing ambient air quality standards. AECOM reviewed the Fugitive Dust Control Plan provided by Tiller. The actions described in the Fugitive Dust control plan would reduce fugitive dust sufficiently to meet current ambient air quality standards. Implementation and monitoring of fugitive dust control measures is a potential mitigation measure that the City may require through the CUP process.

**Response to Comment 49:** The USEPA in their document AP 42, Fifth Edition, Volume I Chapter 13: Miscellaneous Sources, Section 13.2 for Paved and Unpaved roads indicates that natural mitigation of fugitive dust from roads occurs when precipitation of more than 0.01 inch of rain occurs in a day.

The longest road distances on the Zavoral Site would be 0.2 miles of paved road and 0.59 miles of unpaved road. Assuming a 30-foot-wide paved section to allow trucks to pass and a 20-foot-wide unpaved one-way haul road, 10,000 gallons per day would equal 0.014 inches of water. This indicates that sufficient water would be available for dust control without exceeding the allowable withdrawal rate.

### Crystalline Silica

Commenter (6) disagrees with the exposure limits for crystalline silica applied in Section ES 2.10, "Silica Analysis." They also disagree with the assumption that dust from mining will be well controlled and believes that dust will be a problem for homes near the mining operation. Commenter (27) states that "dust suppressants have little efficacy at suppressing small respirable dust (particulate) [and] have the potential to be inhaled directly into the lung and cause lung disease." Commenter (28) states that their property lies less than ½ mile north of the proposed mining operation and has pulmonary health problems. "We are extremely anxious that a mining operation which releases any type of particulate matter including silica, even at relatively low concentrations, could have devastating effects on his health. DEIS mentions calcium chloride, for dust reduction, but nothing specific. Watering as needed? Who makes that decision? And who decides that there is sufficient rainfall in a 24 hour period to dampen the dust?" Commenter (79) states that "I have not heard the question of dust and silicon addressed adequately to my mind in any of this."

**Response to Comments 6, 27, 28, and 79:** The Occupational Safety and Health Administration permissible exposure limit (PEL) (8-hour time weighted average (TWA)) for crystalline silica (as respirable quartz) is either 250 millions of particles per cubic foot of air (mppcf) divided by the value "%SiO<sub>2</sub> + 5" or 10,000 µg/m<sup>3</sup> divided by the value "%SiO<sub>2</sub> + 2." The OSHA PEL (8-hour TWA) for crystalline silica (as total quartz) is 30,000 µg/m<sup>3</sup> divided by the value "%SiO<sub>2</sub> + 2." The OSHA PELs (8-hour TWAs) for cristobalite and tridymite are ½ the values calculated above using the count or mass formulae for quartz.. The American Conference of Industrial Hygienists (ACGIH) has recommended a Threshold Limit Value - Time-Weighted Average Limit (TLV -TWA) of 25 µg/m<sup>3</sup> and the National Institute for Occupational Safety and Health Recommended Exposure Limit for crystalline silica is 50 µg/m<sup>3</sup>. The OSHA, ACGIH and NIOSH standards are intended for workplace applications.

As discussed in Section 4.14.1.2.5 of the DEIS, potential exposure to silica was compared to both workplace standards and to an existing California standard of 3 ug/m<sup>3</sup>, which was established to protect the general public, including those in the general population that are most sensitive against chronic non-

cancer health effects. The California standard is much lower than current workplace standards. The analysis indicates that respirable silica will be below both the workplace and residential standards.

### **Truck and Equipment Emissions**

Commenters 1 and 15 express concern about air pollution from exhaust of trucks. Commenter (6) states that the DEIS does not appear to consider the impact of diesel engine emissions on air quality in the area. Two of the important diesel exhaust contaminants are diesel exhaust particulate and nitrogen oxides. With several hundred trucks entering and leaving the mining area plus other equipment, local air contamination is an important factor. The MDH has issued Health Risk Values (HRV) designed to protect sensitive individuals. For diesel particulates and nitrogen dioxide, the HRVs are  $5 \mu\text{g}/\text{m}^3$  and  $470 \mu\text{g}/\text{m}^3$  respectively. Under certain weather conditions, these HRVs could be exceeded, thereby increasing the risk for respiratory problems for nearby susceptible individuals.

**Response to Comments 1, 6, and 15:** The MDH has issued Health Risk Values (HRV) designed to protect sensitive individuals. For diesel particulates and nitrogen dioxide, the HRVs are  $5 \mu\text{g}/\text{m}^3$  and  $470 \mu\text{g}/\text{m}^3$  respectively. HRVs are concentrations of chemicals emitted to air that are unlikely to pose a significant risk of harmful effects when humans are exposed to those concentrations over a specified time. Because of MDH's conservative approach, exposures to chemical concentrations above HRVs and MHRVs do not necessarily pose a public health risk. The potential for exposures to chemical concentrations that exceed HRVs and MHRVs is not an absolute indicator of the need for additional analysis. HRVs and MHRVs are one set of multiple criteria to be used for deciding if ambient concentrations of chemicals are acceptable.

The USEPA has established a 1-hour national ambient air quality standard (NAAQS) for nitrogen dioxide. The HRV for nitrogen dioxide is an acute (short term) value. Therefore, it is appropriate to compare the HRV to the 1-hour NAAQS. The NAAQS is  $188 \mu\text{g}/\text{m}^3$ , which is well below the HRV of  $470 \mu\text{g}/\text{m}^3$ . The MPCA has determined that the area around Scandia is an attainment area for the 1-hour nitrogen dioxide NAAQS. Since diesel haul trucks are currently using TH 95 and TH 97, and those traffic rates are not predicted to increase as a result of the Project, the Project is not predicted to cause an exceedance of the NAAQS and therefore would not exceed the much higher HRV.

The HRV for diesel exhaust is a chronic standard. The assumption the MDH made in setting the HRV was that exposure would occur continuously for an extended period of time (a year or more as opposed to days or weeks) with no opportunity for elimination of chemicals from the body. Under all proposed operating scenarios and existing City of Scandia ordinances, the Project would not operate continuously on either a daily or annual basis. Therefore, comparison of potential exposure to diesel exhaust to the HRV is not valid for this Project.

However, diesel exhaust is frequently compared to fine particulate ( $\text{PM}_{2.5}$ ). Based on 2006 emission factors for heavy duty diesel trucks California South Coast Air Quality Management District, the estimated  $\text{PM}_{10}$  emissions from on-site equipment would be 0.29 lb/day. It is conservative to assume that  $\text{PM}_{2.5}$  is equal to  $\text{PM}_{10}$ .

Commenter (61) stated that "adverse effects on air quality along the haul route due to dust and contaminants from the number of trucks proposed was not addressed in any manner that we could determine from the draft. Again, our personal health and green business is highly sensitive to environmental stressors and we find nothing in the draft that assures us that we will not be physically and economically damaged by the project."

**Response to Comment 61:** The ambient air quality modeling analysis showed that the maximum ambient air quality impact of the Project (not including background) for PM<sub>2.5</sub> was 1.0 µg/m<sup>3</sup> at an emission rate of 9.1 lb/day of PM<sub>2.5</sub> from mining activities. Adding 0.29 lb/day of PM<sub>2.5</sub> from diesel exhaust would increase this value to about 1.03. Adding the background concentration of 9.0 yields an annual air quality impact of 10.03 µg/m<sup>3</sup> which is below the NAAQS of 15 µg/m<sup>3</sup>.

### **Subalternative 3A**

Commenter (30) states that the final EIS should complete a thorough analysis of the air quality impacts associated with Alternative 3A. The analysis currently indicates that the mitigation measure should address any increase in dust/emissions or decreased ambient air quality, but it uses language such as "not likely" rather than making a definitive statement about potential impacts. The EIS should clarify if this Alternative actually reduces these impacts.

**Response to Comment 30:** AECOM has completed an ambient air quality modeling analysis for Subalternative 3A. The proposed mining rates would increase from a maximum of 6,720 tons per day under Alternatives 1 and 3 to an estimated 8,000 tons per day. The number of haul and reclamation trucks would increase to 368 per day. An additional excavator and front end loader might be needed to load the additional trucks. The increase in mining rate would result in higher daily and annual air emissions and deposition than Alternatives 1 and 3, however, the ambient air quality modeling analysis for Subalternative 3A indicates that the maximum mitigated concentrations would remain below the National Ambient Air Quality Standards (NAAQS). Air emissions would occur over 150 working days rather than fewer days per year over a longer period under the other build alternatives. For Subalternative 3A, the modeling analysis showed that the maximum annual ambient air concentration of silica would be 0.37 µg/m<sup>3</sup>, which is well below the California silica guideline of 3 µg/m<sup>3</sup>. The maximum deposition rate of particulate matter into the St. Croix River, the Zavoral Creek, Middle Creek, and South Creek under Subalternative 3A would increase by approximately 30%. Therefore, the maximum deposition into the St. Croix would be approximately 0.26 tons per year, 2.2 lbs particulate matter/day over the entire length of Zavoral Creek, 0.8 lbs particulate matter/day over the entire length (~0.5 miles) of Middle Creek, 1.6 lbs particulate matter/day over the entire length (~0.9 miles) of South Creek.

The new information regarding Subalternative 3A will be added to the redline version of the EIS.

## **4.15 NOISE ANALYSIS**

### **Noise and Noise Standards**

Commenter (27) asks "Where is the analysis of the negative impacts of noise and dust as a result of removing over 23 acres of established trees mostly 30 to 80 years old? Noise will not be blocked and dust will not be trapped."

Commenter (37) stated that the "noise assessment because it doesn't take into account the higher standard for quiet that should apply here, and the reasonable expectations of the people who use this stretch of the St. Croix, which is a National Scenic Riverway and national park. If the EIS preparers are actually interested in measuring real noise impacts, they should be talking to people like me who use the river and ask how our experience would be affected. Let's see a statistical analysis of that. Boaters who fish, canoe, kayak and float on this stretch of river would be adversely and objectionably affected by the noise pollution created by as many as 700 trucks a day hauling gravel at the proposed mine!"

Commenter (43) stated that “residents who have lived in basically natural sound settings will be bomb-blasted by sounds they did not know when they purchased their property would be a result of the reopening of Zavoral/Tiller mine”. Commenters (48, 49, and 81) expressed concern about noise. Commenter (49) goes on to state that “The EIS is incomplete and misleading in addressing the issue. ANY noise increase is unacceptable, especially continuous, daily mechanical excavators and the constant din of rock on metal and truck engines. I lived on the river when the Barton mine was in operation and it was loud on the river and in our home. Both my father and I remember clearly how the noise disrupted the tranquility of the river.” The commenter goes on to state that “Although Minnesota’s noise regulations are based on dB(A), dB(A) measurements are faulty.” The EIS does not take into account noise from idling trucks. The noise *will* be audible on the St. Croix River no matter weather, motorboats, or the twitter of swallows. The NPS has asked that soundscapes be included in the EIS as a controversial issue. The importance of natural sound in our parks and protected areas cannot be overstated. There may be shades of gray in terms of expectations for various levels of the St. Croix River, but a project of this scale should follow the larger letter of intent as stated in numerous Park Service documents and directives. Figures 59, 60 are not properly labeled, and we are not sure which weighted curve was used in the measuring. If they are using A-weighted, the actual loudness of the sound will be greater.”

The NPS letter (51) states the DEIS uses State of Minnesota noise standards as a basis for comparison in evaluating impacts to the Riverway. It applies NAC-1 standards to the Riverway and campsites near the proposed mine. The NAC-1 standards for "residential" areas include designated camping and picnicking areas and allow a L<sub>50</sub> sound level of 60 decibel A-weighted (dBA). A sound level of 60 dBA would result in speech interference based on 95% speech intelligibility of normal voice communications at 2 meters (US EPA, 1974). In other words, if the NAC-1 standard applied to the Riverway, allowable noise levels would mean that two people canoeing side-by-side would not be able to carry on a conversation. The State standards are clearly not in keeping with protecting the recreational value of the Riverway and should not be applied to the area. The noise standards that do apply to the Riverway are from the 2006 NPS Management Policies (NPS, 2006). The 2006 NPS Management Policies require us to "preserve, to the greatest extent possible, the natural soundscapes of parks... and protect natural soundscapes from degradation due to noise." Further, they require that the "natural ambient sound level - that is, the environment of sound that exists in the absence of human-caused noise" be used as the baseline condition and standard against which current and projected conditions are measured and evaluated. Because the DEIS uses State of Minnesota NAC-1 as the standard for comparison, instead of the natural ambient sound level, the DEIS greatly understates the impact that noise from the proposed mine would have to the Riverway. The Final EIS should use natural ambient sound levels as the standard of comparison rather than continuing to apply State of Minnesota noise standards to a unit of the National Park System. The NPS also states that noise associated with the mine operation would have an impact on area wildlife.

Commenter (53) states that the Draft EIS acknowledges that mining noise would be audible on the St. Croix Riverway, although not above current ambient levels. However, such noise is not characteristic of this river regardless of the ambient level. Since the operation of this mine will be audible on the river, there will be a disruption of the use and enjoyment of the river, and consequently, the operation of this mine runs contrary to the very purpose for which the river was protected. None of the alternatives will mitigate this issue outside of the No Build Alternative. There should be an analysis about the impact this noise will have on the St. Croix given its special status under federal and state law and specific purpose as a recreational and scenic asset.

Commenter (58) states that “Judging from the amount of activity that will be occurring and all the equipment involved, it seems to me that the EIS is really underestimating the potential increase in noise levels.”

Commenter (54) states that a resident that lived near the river when Zavoral Property was previously mined clearly recalls the dust and noise from the operation.

Commenter (59) states that “whether or not the cited ‘noise standards’ will or will not be exceeded misses the point that said ‘standards’ were not established for such a peaceful and quiet scenic recreational riverway, 7 AM to 7 PM hours of operation will be a nightmare for local residents, and worse for those using the federally “protected” St. Croix River due to the fact that sound travels long distances on water. It is hard to imagine a more inappropriate location for a gravel mine.” Commenter (60) states “I remember the incessant noise of the operation, bulldozers, and trucks backing up being loaded, and washing processes. I can still remember the day when all was quiet...it had stopped and we could again hear the silence.”

**Response to Comment 27:** Neither the ambient air quality analysis or the noise analysis included the presence or absence of trees so that a worst-case scenario would be analyzed for the Project.

**Response to Comments 37, 43, 48, 49, 51, 53, 54, 58, 59, 60, and 81:** The Minnesota state noise standards are the enforceable limits currently available to the City of Scandia. The City’s Development Code Section 3, Subdivision 4A states that “the standards of the Minnesota Pollution Control Agency for noise, air and water pollution shall be the standards applied.” Minnesota’s noise pollution rules are based on statistical calculations that quantify noise levels according to duration over a one-hour monitoring period. (Minn. State Noise Pollution Control Rules 7030.0040). The standards are specified in dBA because this is a measurable parameter. The noise analysis assumed that on-site equipment would be operating at the same time as haul trucks.

The Minnesota standards are applicable to the area surrounding the Site. A comparison of the Site noise levels to the Minnesota standards is necessary to determine if the Project would exceed standards and local regulations. Comparison of potential noise levels vs. existing Minnesota standards is entirely appropriate as the standards are enforceable under Minnesota rules. Therefore, this comparison is used in the DEIS analysis. The NPS appears to interpret this goal as no net increase in noise levels. The State of Minnesota and the City of Scandia have not adopted the NPS land use and noise goals as regulations or standards. Therefore the NPS goals are not enforceable.

Receptors 11, 12 and 13 in Tiller’s Noise Report are located on the Riverway between the Site and the NPS noise monitoring point. The worst case modeled noise levels (assuming no mitigation from berms, grade reductions, trees or other mitigation measures) are essentially the same as the NPS monitored values from summer 2011 in the Riverway.

Tiller’s Noise Report also evaluated the worst case noise levels from the Site against the noise generated by outboard motorboats operating at low speeds in the Quiet Waters section of the Riverway. The noise analysis assumed that on-site equipment would be operating at the same time as haul trucks.

This analysis indicated that mining noise would be less than an outboard motor at certain frequencies, but would still be audible at low frequencies. The NPS has stated that the noise analysis should make a comparison of noise from the Project against an environment of sound that exists in the absence of human-caused noise. However, NPS land use goals for the banks of the St. Croix specifically allow for the noise from manmade actions that are compliant with local land use regulations. Under the current water use management plan for the St. Croix River, motorized water craft and other manmade noise from recreational activities are allowed in the area adjacent to the Project Site. A condition where human-

caused noise is absent does not exist in the area that may potentially be impacted by the Project, and would not exist under current NPS land use goals or water use management plans. Therefore, it is appropriate to compare noise from the Project to the current measured ambient conditions rather than to an environment where the existing noise level includes no human-caused noise.

The noise analysis in the DEIS has determined that there would be a perceptible increase in noise levels at homes near the Site. The noise analysis was based on monitored noise levels for on-site equipment and assumed that the haul trucks would meet the 82 dBA level required at 50 feet from the truck by Minn. Rule 7030.1040. As noted in Section 4.15.4.2.1 of the DEIS, existing sources of noise on the St. Croix River currently includes traffic noise on area roads (which currently includes gravel trucks hauling on TH 95 from Wisconsin to Scandia), noise from existing residences and businesses, noise from recreational activities consistent with NPS water use management plans on and adjacent to the River (including noise from slow moving motor boats), and natural noises.

The analysis showed that depending on the frequency examined, different types of noise would be dominant. In practical terms, this means that a person on the St. Croix River may be able to hear mine noise, a passing motor boat and natural noises at the same time, the same way a person hears multiple notes in a musical chord. The DEIS concluded that at its maximum levels, mine noise would likely be audible on the St. Croix River, even though the noise level measured in dBA would not increase above current ambient levels that includes both manmade noise and natural noise sources.

Figures 59 and 60 in the DEIS show the linear sound spectrum for on-site equipment and trucks, respectively. Therefore, they are labeled correctly. The information in Figures 59 and 60 was used in the noise model to develop an A-weighted sound level for comparison with the Minnesota noise standards. The commenter is correct in stating that the A-weighted value is higher than the linear spectrum. The values presented in Tables 40, 41, and 42 are in dBA and are correct. A note would be added to the redline EIS to clarify.

### **Haul Truck Noise**

Commenter (1) states that noise pollution will result from operation of on-site mining equipment and from hundreds of daily trucks traveling both directions on Highway 97. Commenter (3) with both residence and work place on the SE corner of Scandia Trail and Lofton Avenue states that there are traffic volume problems related to the Scandia Mine. Tiller “more or less monopolizes the roadway, sending a continuous stream of trucks through the intersection and generating an ungodly amount of noise”. Mining trucks approaching and turning in this intersection stand out among all other traffic, generating sounds and sound levels that are unreasonable and reference the screech of truck brakes under heavy loads and the practice of jake-braking. Efforts to curb engine braking at the intersection have included numerous calls to the County Sheriff, calls (and a letter) to the Scandia Town Board, and personal conversations with County police in the area. Were told by one deputy that the practices of engine braking, lifting axles illegally, and speeding are very difficult to police because the mining truckers, unlike typical vehicular traffic, communicate via radio- alerting one another if there is a squad car in the area. Commenter (7) expressed concern about noise from truck traffic.

Commenter (39) states that sound is a major concern. “Tiller already contributes to sound pollution heard from the St. Croix with their existing trucking routes. It will only get worse (and continue) with increased mining in the area. We would like to propose that they create a very high berm along Hwy 95 with planted trees to help mitigate the sound (and visual) pollution. Tiller will be moving a large quantity of dirt during this project and it

would be an ideal time to create a sound barrier for the St. Croix River!” Commenter (40) states that the argument that “If the Zavoral Site were not permitted, it would not result in lower noise impacts to receptors along the haul route because the aggregate hauling would still occur to the Scandia Mine from other locations is a specious argument.” The comment suggests that current noise levels already need abatement, which adds to the detrimental effect of substantial new noise expected from this project. Commenter (61) states that “Noise generation from truck traffic is multidimensional and far more complex than described in this draft. In the Draft EIS, only a simple survey of decibel readings was included at a site where traffic was flowing near an open field, and even then noise levels were at a maximum allowed. Nothing was included in the report that reflected the noise of trucks slowing or accelerating after a turn or a stop sign, or coming up or down a hillside, or passing an area where sound would be reflected from a hillside along one side of a road to a residence and business on the other.” “Low Frequency (LF) noise generation was not addressed anywhere in the Draft EIS that we could locate. No plan was found to estimate LF noise, prevent it, or compensate for it. LF noise triggers stress responses in plants, adversely affecting growth and resistance to pests and disease. This is an obvious problem for crops growing along the haul route. LF noise also adversely affects animals including humans but in particular those who are elderly, suffer from PTSD or migraines, or from neurological disorders such as Parkinson’s or Lyme Disease.”

Commenter (68) lives on Oland Ave, about 6 blocks from Hwy 97. “We are definitely within earshot of the current truck traffic there. The trucks are especially audible when they down shift approaching the stop sign, and start up again after the stop at the intersection of Hwy 3 and Hwy 97. The prospects of increasing the number of trucks along the highway to accommodate the mining concern is most troubling. With the increase in trucks comes an increase in noise as well as additional safety concerns. More trucks create and even more difficult crossing 97 at Oakhill-already a tricky intersection.”

**Response to Comments 1, 3, 7, 39, 40, 61, and 68:** As noted in Section 4.15.4.2.2 of the DEIS, traffic noise levels currently exceed the Minnesota noise standards at some residences along TH 97. This occurs during periods of low and high traffic volumes.

A key assumption, based on data provided by Tiller, in the noise analysis is that gravel truck traffic currently coming into the City of Scandia from Wisconsin will be displaced by truck traffic from the Site. Therefore, the maximum daily truck traffic is not projected to increase beyond what could be experienced under current conditions and noise levels are not predicted to change from current conditions. Now and in the future, noise levels would exceed the state noise standards and noise levels would be noticeably higher during high traffic conditions compared to low traffic conditions.

Traffic noise along state highways, including TH 97 and TH 95, is outside the jurisdiction of the City of Scandia. According to Minn. Stat. § 116.07 2c, no local governing unit shall set standards describing the maximum levels of sound pressure which are more stringent than those set by the Pollution Control Agency. However, as a potential mitigation measure specific to this Project, the City could consider additional police patrols on TH97 to monitor trucks using jake brake techniques with Tiller reimbursing the City for the cost. This mitigation measure has been added to the redline version of the EIS.

The noise standards established by MPCA (MN Rule 7030.0040) describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conservation requirements for receivers within areas grouped according to land activities by the noise area classification (NAC) system.

## Site Noise

Commenters (2, 15, 25, and 33) expressed concern about noise. Commenter (24) stated that the “flat surface of the river reflects the sound (of the mine, of the trucks) over to the Wisconsin shore ... whereupon the relatively flat surface of the bluffs reflects the sound BACK to the Minnesota side! The Minnesota bluff reflects the sound back to the St. Croix, to the Wisconsin side, etc. In other words the sound from the pit, from the trucks is greatly magnified. Anyone who now lives on the St. Croix in this region can tell you about the noise coming from a simple 10 hp outboard motor. Acoustic reflection! Think about the increased truck sound; think about the increased heavy equipment sound from this proposed operation.”

Commenter (40) states noise will “likely to be the biggest problem to come from operation of the mine. It is likely to affect the most people by the biggest amount and be the least able to be mitigated for.” Longtime residents remember the noise from the previous operation of the gravel mine. It could be heard as a screeching, scraping, grating sound that traveled up and down the river valley, and started early enough in the morning to disturb people’s sleep. It also intruded on the quiet and serenity that makes the St. Croix River a Scenic Waterway. Whether noise standards would be exceeded or not is moot. The standards are unlikely to be applicable to a peaceful and quiet, Scenic Waterway, where expectations of quiet and peacefulness are high. The noise will be new, and audible, and will represent a significant diminishment of the peace and quiet of the valley. It will create a cumulative effect, from operation of the mine and the additional truck traffic that will compromise the outstanding scenic values of the Lower St. Croix National Scenic Riverway. As stated in the DEIS, “Noise levels when gravel hauling is occurring would be noticeably higher than during low noise traffic conditions.” This represents a significant negative impact. Hearing the mining and hauling noise from dawn till dusk will be wearing and will make it difficult to relax in the evening following work. Commenter (81) states that “if this goes forward .....maybe there needs to be some significant berming in front of it, or along the highway, to mitigate some of the noise issues that are along the river. So I would like that to be considered in the entire process.”

**Response to Comments 2, 15, 24, 25, 33, 40, and 81:** The DEIS concluded that noise levels at several residences would increase noticeably during mining events. However, the Minnesota state noise standards are the enforceable limits currently available to the City of Scandia. The noise analysis shows that at maximum mining rates, the noise levels from mining activity would be below those standards. The construction of berms for noise attenuation before mining activity begins was included in the noise analysis and is a potential mitigation measure for inclusion in the CUP.

## Back-up Alarms

Commenters (6, 9, 49, and 58) state that the noise level referred to in the DEIS does not appear to consider impact or impulse noise from back-up alarms and dumping gravel into steel truck beds. The impact noise will likely be more disturbing than the type of noise elaborated on in the DEIS. Is there any way to mitigate this type of noise pollution?”

**Response to Comments 6, 9, 49, and 58:** Traditional tonal backup alarms on construction equipment are intended to improve on-site safety by being loud to attract the attention of workers. These alarms can be audible over long distances.

A new type of alarm is the broadband back-up alarm. They emit the decibel level required by the Mine Safety and Health Administration (MSHA) but do so across a lower frequency range. Emitting across the lower frequency ranges allows the sound to blend in with background sound so the alarms are not noticed unless you are close to the source. In contrast a high frequency alarm emitting at the same decibel level would be noticed for a greater distance because it does not blend in with background sound.

Tiller has stated that broadband alarms would be fitted on excavators, dozers and loaders and all Tiller equipment working at the Site. Contract haul trucks may have tonal alarms. However, Tiller has stated that the on-site traffic pattern for haul trucks would direct haul trucks circular fashion to reduce the need to operate in reverse.

Requiring use of broadband alarms for Tiller equipment and an on-site circular traffic pattern for haul trucks is a potential mitigation measure that the City may require through the CUP process. This has been added to the redline version of the EIS.

#### **4.16 VISUAL IMPACTS**

##### **Post Mining Appearance**

The St. Croix River Association letter (26) states that the draft EIS fails to reflect the condition of the pit that would be left after the proposed mining would be completed. Paragraph 1.1.1 asserts the average depth of mining will be fifteen feet, ranging from 10 feet to 70 feet. But Figure 10 flatly contradicts that assertion. It shows excavation to a base pit floor elevation of 840 feet. It does not show a similar figure for the pit as it is now, but it shows excavation depths which are typically way more than fifteen feet. We want the City Council to understand that the proposed end product will be “distinctly worse than what is there now”. Commenters (44 and 80) state that Tiller hire an Artist to paint a rendering of what the site will look like when they are completed with their operation so we can 'see,' and not be expected to 'visualize,' what they say is their plan. Now I am requesting it. I think the public deserves this and that it is the responsibility of Tiller Corp. to stand behind what they 'say'.

Commenter (49) refers to the DEIS statement that “little change would occur in the scenic attractiveness of the overall landscape” due to berms is specious. Stands of trees will be ripped out, including about 5 wooded acres near Highway 95, a Scenic Byway, that are on previously unmined land. More explanation is needed to justify this statement, as well as a timetable. When will the berms be removed? Commenter (58) references the DEIS statement that berms will be used to screen mining activities and reduce visual impacts of the mine. “But berms themselves are not attractive land features (a quick tour of the Tiller mine sites along the Hwy 95 in Franconia is proof of this). The EIS says that the berms may be removed as part of the reclamation. If the berms are near the highway, then I think they should definitely be removed as part of the reclamation. “

Commenter (58) states that the DEIS statement “The site can be seen from some limited viewpoints but does not attract attention because most activities are screened.” The commenter states that this “Statement is nonsensical: if something can be seen, it can attract one’s attention.”

Commenter (62) states that the selective use of limited views can be easily chosen and manipulated to represent conditions that are not representative of the actual result of the activity and may not even take into consideration significant viewshed impacts. The city should require that a 3D model be made publicly available so that all potentially significant views of the operational and post-operational states of the property are considered.

**Response to Comments 26, 44, 58, 62 and 80:** Excavating the Zavoral Site to 840 feet AMSL would be the worst-case scenario that was used for creating maps and the analysis included in the DEIS. Depth of mining would vary throughout the Zavoral Site and would depend on the quality of material encountered. We refer the commenter to Figure 9 that shows post-reclamation grades at the Site as opposed to maximum depth of mining. Figure 9 reflects the proposed condition of the pit after mining and reclamation are completed. The cross-sections (Figures 34 – 39) show that the post-reclamation grades are considerably different from the maximum depth of mining. We also refer the commenter to Figures 63-69 that present views of the Project during operation.

As stated in Section 4.16.1.5 of the DEIS, three key viewpoints were identified on a computer-generated model of Phase 2 mining and reclamation activities and were selected to represent sensitive viewing areas that provide the most potential for unimpeded views of the Site interior, as well as locations that represent areas where viewers would have a concern for the scenic quality of the landscape. Also, photographs and visual modeling were used to provide simulations of the mine during the period when it would be most visible. Our experience with visual analysis is that artistic renderings tend to result in images that are less representative of the actual appearance of a project than photographic imagery.

Very little of the Site is visible from sensitive viewpoints at any location because past mining activities have lowered the Site terrain to elevations lower than the river bluff to the west and the rolling terrain to the east. Visibility of the Site is also strongly influenced by screening of the Site from tree stands during both seasonal leaf-on and leaf-off conditions. The Project would not be visible from the St. Croix Riverway or from the Wisconsin bluffs on the east side of the river. No part of the Project Site is visible from the river, which is located at a lower elevation than the Site. Bluffs vegetated with stands of trees (with an estimated height of 60 feet) along the east side of the Site block all views of the Site from any location on the river. The vegetated bluffs also block views from the bluffs on the Wisconsin side of the river.

**Response to Comments 49 and 58:** The proposed screening berms would remain as needed to provide screening throughout the life of the Project, with the potential for removal and reconstruction during certain phases of reclamation. Tiller would coordinate the removal and reconstruction of berms with the City as part of the CUP process. This has been added to the redline version of the EIS.

## **Lighting**

Commenter (49) states that human lighting fundamentally changes the natural environment. This report fails to address the issue of light and its impact on the riverway. A large mining operation, working from 7 am to 7 pm at least 12 weeks of the year will likely have need for artificial lighting. Traffic safety would seem to demand substantial lighting at the mine's entrance to Highway 95. A single guard shack light – even if shaded - will affect the night sky and be directly viewable at the least from Standing Cedars, and will thus be affecting the natural setting of the St. Croix Valley Riverway. Details of all proposed lighting should be included, including quantity, placement, types of bulb and wattage.

**Response to Comment 49:** Tiller indicated that all lighting would be minimized to the extent possible and only non-daylight lighting that is required for safety and security would be implemented. All such lighting would consist of shielded, downward directed lighting. The Project would need to comply with the City's lighting regulations, included in Chapter 3, Subdivision 3.9 of the Development Code, and any conditions that would be included in a CUP, if a CUP is approved by the City. Appendix B.8 Visual Assessment Technical Memorandum describes the lighting proposed by Tiller. " Mine facilities would be lit at night or

under low light conditions (early morning, evening, and during adverse weather conditions) for maintenance activities and safety. No night-time shifts are proposed for the Project. Non-daylight lighting is generally visible for long distances, and would potentially be visible through gaps in screening vegetation as viewed from roads and residences to the north, west, and south of the Site, and from bluffs on the Wisconsin side of the St. Croix River. However, the amount of light projected outside the Site would be minimized with the installation of downward directed lighting to illuminate only the area within the Site. The downward directed lighting would be visible to viewers within the Minnesota and Wisconsin sensitive viewing areas as well as the key viewpoints, but would likely not attract attention as the downward lighting would be screened to some extent by topography, vegetation, and the existing and proposed berms. Visual contrasts from non-daylight lighting would be weak.” This text has been added to the redlined version of the EIS.

#### **4.17 CUMULATIVE IMPACTS**

Commenter (27) states that the Cumulative Impact is incomplete. This section must include reports by Dr. Scott Alexander, Applied Ecological Services Inc. and Vern Schwing of RLK and Associates, Lisa Philippi’s market analysis of property value reduction, my additional information and all additional data and analysis given to the city. The DEIS discussion does not include indirect impacts. If the city reviews this information, it will be clear that the cumulative impact is collectively significant and has the potential for significant environmental impact.

The National Park Service letter (51) states that the DEIS does not address cumulative impacts to the Riverway or any other resource. Reasonably foreseeable actions that should be considered include the impacts (including traffic and noise) of additional gravel hauling trucks when those from the Zavoral site are added to those already on the road from other sites and companies; increased duration of truck traffic on the roads when hauling is complete from Zavoral and hauling is reinitiated from Tiller’s Franconia and/or Dresser mine sites; the potential for future amendments to be made to any permit that the City of Scandia may issue to allow for the mine (including those that might allow on-site washing or extraction of other mineral resources). The NPS also states that mining gravel from the Zavoral site would make the Jordan sandstone more accessible and economically viable to mine. The possibility that, if permitted, the Zavoral Gravel Mine could be converted to a frac sand mine should be considered.

The NPCA (53) letter states that they “do not support operation of this mine as it will negatively impact the St. Croix River and the surrounding area, we recommend that should the CUP be granted, that some type of assurance, such as a perpetual easement, be placed upon the property that would preclude any future mining of any type. This is appropriate given the clear intent by the City to disallow this proposed use in this location, and the fact this gravel mine sits atop sandstone, which has been mined for use in hydraulic fracturing and may be sought out for mining purposes following the gravel mining operations.”

Commenter (53) goes on to state that the DEIS asserts that the noise generated from trucks hauling will essentially be a wash given trucks already haul gravel along this route. However, that analysis fails to take into consideration the true impact that operation of this mine will have on noise. In fact, if you allow operation of the Zavoral Mine for any period proposed, and cease hauling from the other mines during that period, what you have done is extended the number of years that the surrounding area will be subjected to the noise generated from trucks hauling on the roadway. The extended duration of truck-hauling noise that will result should be included in the noise analysis in the DEIS

Commenter (57) asked that language be added to Cumulative Impacts regarding the potential to extend the mining periods at Franconia and Osceola mines.

**Response to Comment 27:** The referenced reports and comments have been addressed in this Response to Comments document under the corresponding topic headings.

**Response to Comments 51, 53, and 57:** Existing traffic counts for the roadways analyzed take into account existing traffic from other aggregate sources. A statement regarding adding material from the Zavoral Site to the regional market having the potential to extend the life other mines that may be supplying the same material to the same customer base has been added to the redline version of the EIS.

**Response to Comments 51 and 53:** Should the CUP be granted, it would be for the currently-proposed Project only. As stated in DEIS Section 4.1.1.6 Impact on Current and Future Land Use and the Executive Summary Section 2.1, Tiller does not own the Zavoral Site and therefore would not have control over post-mining and reclamation land use and future development at the Site. Future post-mining land uses on the Site would need to comply with the City of Scandia Development Code at the time development is proposed. Potential purchase of the Site from the property owner and protection as open space would be allowed by the current development code and would not be precluded by the reclamation plan.

## 5.0 SUMMARY OF POTENTIAL MITIGATION MEASURES

Commenter (9) ask “How will air, noise and water pollution monitoring be conducted at the mining site and along the haul routes, during the mining activity? Who will be conducting the testing and who will be doing the evaluations? Who will do the enforcement? Will the enforcer have the authority to stop the operations when limits are exceeded? Will Tiller be required to immediately stop operations when any limit is exceeded? What plan has been made to mitigate the backup alarm noise on equipment so it is not heard by people canoeing or kayaking on the river?”

Washington County Board of Commissioners’ (19) letter asks that the records related to Zavoral Site well pumping along with all groundwater monitoring data also be provided to Washington County Department of Public Health and Environment as requested. This has been added to the redline version of the EIS.

The WCD (20) assists the City of Scandia with processing wetland impact applications, including the review of wetland delineations and replacement plans. Their comment letter (20) states that “During the EIS process, the site was reviewed for the presence of wetlands by both the EIS preparation team and a private firm hired by the applicant. In reference to wetlands that lie along the bottom of the ravines, outside of the proposed mining limits. These wetlands are naturally occurring wetlands, fed by a combination of groundwater and cliff-face seeps and surface runoff. These wetlands are recognized as having special hydrology, with a set of plant species that correlate with that hydrology. The groundwater well pumping tests did not indicate that the seeps or groundwater flow would be interrupted by the pumping activities proposed, to the extent of depriving the hydrology that maintains these wetland conditions. The wetland delineation of this of wetlands marked the location of current seeps, establishing a base-line figure that can be consulted in the future to determine significant changes. If the Project is approved, we recommend that conditions be attached which require frequent monitoring of the seeps and base flow, with immediate action required if the mining activities cause a reduced flow. Seasonal variations are expected, as are longer term climatic changes. Presumably, if pumping diverts the seeps' water supply, cessation of pumping will see the seeps start again. The monitoring reports should be submitted to the full Technical Evaluation Panel, for review and consensus by all the overseeing wetland regulators. To best

accommodate this monitoring, we suggest that the time period of the mining operation be extended rather than compressed or accelerated. Long term reduction in the volume or rate of seepage may result in loss of wetland area and quality. That loss would be contrary to the Minnesota Wetland Conservation Act and other wetland regulations. Rather than allowing replacement for such wetland impacts, I would recommend restoration, meaning the removal or cessation of the action which caused the loss of wetland.

The WCD, in partnership with the Carnelian-Marine on St. Croix Watershed District and cooperation with the landowner and City, has established a stream monitoring site downstream of the proposed site. We have been collecting baseline stream flow and water quality data since 2010, and are open to continuing or expanding that monitoring in the future.”

Commenter (27) states that “There must be ongoing monitoring of Zavoral Creek and South Creek seeps for water level, temperature, chlorine and sediment due to reports by Scott Alexander, AES and EPA Chlorine information. This expense must be paid by Tiller.”

Commenters (32 and 70) states that “The DEIS proposes multiple mitigation measures. All of these mitigation measures should be considered as mandatory conditions of the CUP for the mine in order to assure that these are not vague statements of good intentions. In addition to the mitigation measures described in the DEIS, the EIS should include the mitigation measures identified in the AES Report. The AES Report makes numerous recommendations regarding mitigation measures necessary to satisfy MEPA’s requirement to analyze potential mitigation measures, all of which should be incorporated into the EIS. AES Report 10-15; Minn. R. § 4410.2300(G).

Mitigation measures recommended by AES include replanting, monitoring, and financial assurance requirements. Specifically, the reclamation plan should include more stringent replanting requirements. There should be more specificity in the type of tree, shrub, and grass plantings to be used. Multiple species of trees should be used to avoid susceptibility to disease. Specific performance standards should be included to assure that replanting provides the expected remediation and should include extended monitoring and management of plantings and reclamation for at least five years. Tiller should be required to provide sufficient financial assurances to guarantee complete implementation of reclamation and monitoring in the event the reclamation is abandoned.”

Commenter (61) states “We did not find discussion on regulations for the efficiencies of load covers or a plan for mitigating the buildup of aggregate on roadside berms. Buildup of debris on berms is a safety hazard for bicyclists and pedestrians. The current truck traffic creates varying levels of debris on the side of the road, enough so that it interferes with cycling, walking, or running. In the case of our household, this already limits the use of the road outside our home, and if traffic increases, it would be reasonable to expect debris to increase accordingly. Additional gravel on the roadside could be expected to eliminate our use of the road for fitness or recreation. How would this hazard be avoided, how would it be monitored, and how would we be compensated for loss of use resulting from failure to prevent it?”

The MnDNR letter (63) states although no occurrences of Blanding’s turtles were detected during the survey, Blanding’s turtles are known to occur in the vicinity and may occur on site. The Draft EIS included the DNR provided Blanding’s turtle flyer and fact sheet as Appendix C in the Draft EIS. The MnDNR through early correspondence requested that the proposer identify specific mitigation measures from the flyer and factsheet that will be adopted and applied through the life of the Project and reclamation activities. This is not addressed in the Draft EIS. In addition, Section 4.5.2 Potential Mitigation Measures did not include a discussion on Blanding’s turtles. Mitigation measures should include that trees be inspected for raptor nests prior to any tree clearing. Although the City is responsible for determining appropriate mitigation measures as conditions of the CUP, the

Draft EIS should identify and inform reviewers of not only potential impacts from the Project, but also proposed mitigation to minimize those impacts that will be carried out by the proposers. Numerous sections within the Draft EIS including subsections of Section 5.0 Summary of Potential Mitigation Measures use of the term “potential” for mitigation discussions. Mitigation should have some level of commitment when discussed in an EIS document as it provides reviewers with what the proposer would be required to employ to mitigate identified or potential effects as a result of Project activities. Section 5.0 Summary of Potential Mitigation Measures and appropriate Sections throughout the document need to address this more clearly.

**Response to Comment 9:** The City would monitor the Project as determined by the conditions of the CUP using City staff and/or consultants. As part of the proposed mitigation, Tiller would reimburse the City for all costs related to monitoring. If the process moves forward, the mine would require an annual operating permit (AOP). If there are violations of mitigation measures or if operations do not conform to the approved mining and reclamation plans, the City could address these during the annual review of the AOP. If warranted, the City could revoke the CUP.

**Response to Comment 19:** The additional submittal of pumping data has been added to the redline version of the EIS.

**Response to Comment 20:** This Site will be monitored. The City will coordinate with the WCD and CMSCWD regarding collecting baseline stream flow and water quality data. Tiller would pay the cost of maintaining the Monitoring station and the costs of monitoring

**Response to Comment 27:** If the CUP process moves forward, the City would identify the monitoring that would be required. This expense would be paid by Tiller.

**Response to Comments 32 and 70:** The mitigation measures identified by AES are very similar to those already included in the DEIS. If the CUP process moves forward, the City would require a detailed reclamation plan that would address the specific issues identified in comments #32 and 70. Section 5.1 of the DEIS identified some of the specific criteria that would need to be addressed in the reclamation plan, including the number of trees, their size, transplanting method, and the location, and arrangement of plantings specific criteria for measuring and defining success acceptable to the City (percent cover requirements for seeded native species, limits on aggressive native species, invasive and exotic species, and so on), and other criteria that would be used to evaluate the reclamation plan. The CUP conditions would also include monitoring of restoration by the City, and may require corrective action if monitoring is not meeting the criteria established in the CUP.

The plant communities proposed for restoration at the Site are native to the area, and are communities that may be successfully restored on the Site to meet the requirements of the City’s ordinance for reclamation of the Site. The DNR was consulted during the development of the restoration plan, and the agencies commenting on the DEIS have commented favorably on the communities proposed for restoration.

There would be brief periods immediately after soil stripping, and prior to overburden removal, (a matter of days or less for each occurrence) when potential impacts to downstream water resources could occur if erosion were not controlled. If significant rainfall events occurred during this period, erosion in externally draining perimeter areas of the Site could potentially affect downstream resources, including the three small tributaries receiving Site drainage and the St. Croix River. State and local regulations require that

Tiller submit a Storm Water Pollution Prevent Plan (SWPPP) that would identify the best management practices that would be used to control potential erosion on the Site. State and local permits would require Tiller to implement stormwater and erosion control BMPs identified in the SWPPP to minimize the potential for erosion.

**Response to Comment 61:** Trucks would have to conform to state requirements requiring covering loads.

**Response to Comment 63:** The mitigation measures in the Blanding's turtle fact sheets are incorporated in the DEIS by reference. Inspecting trees for raptor nests prior to any tree clearing has been added to the redline version of the EIS. The mitigation measures were identified as "potential" because in the EIS because they are only relevant if the project proceeds and the measures are incorporated in regulatory actions. The City will consider the mitigation measures as it develops the conditions for a future CUP.

## 6.0 OTHER

### Cultural Resources

The State Historic Preservation Office review (4) of the project information concluded that there are no properties listed on the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that would be affected by this project.

**No Response required.**

### City Council Decision

Commenter (26) states that there was talk at the public meeting that the Final EIS might include the city's preferred alternative. It should not. The EIS is an information document, not a decision document. The decision should be reserved for argument at the CUP hearing.

**Response to Comment 26:** The commenter is correct in that the RGU is not required to make a decision on their preferred alternative at this stage. The DEIS document is essentially a screening document to provide information to those making decisions related to a proposal-not a permitting document. The City could defer any decision until the CUP stage, could identify a preferred alternative, or could identify whether they prefer a build alternative in general over a no build alternative or vice versa.

### RGU Conflict of Interest

Commenter (40) states that there is a conflict of interest because the RGU for the Zavoral Mine EIS is the City of Scandia, which also stands to gain considerable income from taxes (over \$72,000) if the project should go forward. This is an inherent conflict of interest. The City is not in a position to make an objective decision about the mining project because of the potential for significant income, and therefore should never have been the RGU. (59) Due to the potential for increased tax revenues from the project, the City of Scandia has an inherent conflict of interest in the decision whether or not to allow this project to proceed. The City is not in a position to be objective in its decision.

**Response to Comment 40:** Minnesota Rules 4410.4300, subpart 12 and 4410.4400, subpart 9 require that the local governmental unit (the City of Scandia) be the Responsible Governmental Unit (RGU) for an EAW for Nonmetallic Mineral Mining and for an EIS for Nonmetallic Mineral Mining for the Zavoral Mine

and Reclamation Project. The City is serving as the RGU for this Project based on the State Rule requirements.

The DEIS identifies both positive and negative ways that the Project may impact the City of Scandia. While the Project may result in increased income to the City from taxes, it may also result in increased costs due to potential impacts to local infrastructure and requirements for monitoring and enforcement if a CUP is approved for the Project. There is no conflict of interest for the City because the DEIS objectively identifies and analyzes both the potential positive and negative impacts of the Project.

Commenter (42) had the following questions:

1. Will Tiller sue if denied permit?

**Response:** The City would address Tiller's CUP application after the completion of the EIS process. The outcome of the application process and any future Tiller Corporation decisions are unknown.

2. Is Council concerned about being sued?

**Response:** The City of Scandia is completing a thorough environmental review process that complies with statutory and legal requirements and its own ordinances, in order to fulfill its role as the Responsible Governmental Unit (RGU) for the Zavoral Mine and Reclamation Project EIS. No lawsuits have been filed related to the EIS process at this time.

3. Does League of Cities pay legal costs if member city is sued?

**Response:** Coverage for legal defense would depend upon the circumstances of any claim. The City would consult with the League of Minnesota Cities Insurance Trust on specific issues related to the EIS process, if needed.

4. Why was Zavoral Pit closed in the first place?

**Response:** The Zavoral Site was actively mined by multiple operators from the 1960's through the 1980's. The last operator made a business decision to take the mine out of production in the 1980's.

5. Why didn't or don't those same reasons apply now?

**Response:** Tiller Corporation has evaluated the aggregate resource at the Zavoral Site, and has determined that there is sufficient demand and economic value to mine the Site.

6. Why wasn't Zavoral made to clean up the pit or fined?

**Response:** Washington County issued the CUPs for the past mining operations at the Zavoral Site, and monitored and enforced the conditions of the permits. County documents related to the review of the most recent CUP for mining on the Zavoral property indicate that the County was satisfied that the required reclamation of the Site was completed (Dennis O'Donnell, Washington County, *Memo to*

*Planning Advisory Commission, April 17, 1998*) The City does not have a record of any County actions to require further clean-up or assess fines for the previous operation of the mine.

7. If Tiller is allowed to resume mining, will it be open to the public or for Tiller's use only?

**Response:** The Site is privately owned and would be privately operated by Tiller. It will not be open to the public.

8. What is Tiller's history of proper and safe management? (a very appropriate question in light of their current problem of a blowout of berm at their site in Wisconsin.)

**Response:** Tiller Corporation has operated a gravel mine and processing facility in Scandia located on Manning Avenue near 225<sup>th</sup> Street since 1966 (called the "Scandia Mine"). The site has operated under a CUP granted by the City since 2008, and previously operated under Washington County permits. Tiller needs to obtain an Annual Operating Permit (AOP) each year in order to operate the mine. The City completes an annual inspection of the mine operation, and documents any issues that occur during each year.

The City's records related to Tiller's operations and permits for the Scandia Mine site do not document any safety issues or significant concerns related to management of the mining operation. Some minor issues have been identified during the AOP review processes, and Tiller has addressed those concerns to the satisfaction of the City.

The City has reviewed news articles related to the failure of a berm at the Tiller-operated site in Wisconsin that was referenced in the comment. The City's understanding of the event is that the berm failed on a large pond that held water from processing activities at the site, and that the berm may not have been constructed with appropriate material. The City's comments on this event in relation to the Tiller CUP application for the Zavoral Site include the following:

- A large stormwater holding pond similar to the pond that failed in Wisconsin would not be created on the Zavoral Site. No processing would occur at the Zavoral Site, so no large ponds to manage processing water would be created. Some small stormwater holding areas would be created on the Site. The DEIS analysis indicates that stormwater would be rapidly infiltrated and contained within the Site.
- If the CUP application for the Zavoral Site moves forward, the City would have the opportunity to include conditions to address operations on the Site. The City would require that Tiller submit plans for any ponds and berms that are developed and that the plans be signed by a registered engineer. The City's Engineer or other consultants would independently review the plans. The City may also require an independent inspection of ponds and berms as they are created, and regular monitoring of the mining facilities, to ensure that ponds and berms are constructed and operated consistent with the approved engineering plans.

9. In spite of Tiller's assurances, won't there be major and real concerns about pollution from blowouts at Zavoral site?

**Response:** The DEIS included a stormwater analysis that indicates that the stormwater runoff that would be created by Site facilities and operations would be contained and infiltrated within the Site. Tiller would be required to obtain an approved Storm Water Pollution Prevention Plan (SWPPP) and Watershed District Permits to operate the Site. The SWPPP and permits would require best management practices to manage the quantity and quality of stormwater at the Site so that it would meet state and local regulations.

If the CUP process moves forward after completion of the EIS, the CUP would include conditions that Tiller obtain all required state and local permits for stormwater management. The Annual Operating Permit process would include inspection of the Site to determine compliance with stormwater management and other requirements.

10. 1.2 million tons taken at \$4.00 or more per ton and how much does Scandia community receive in compensation for all the sacrifices and inconvenience?

The DEIS (Item 4.3.4 and 4.3.6) includes a detailed analysis of the economic benefits that may accrue to the City of Scandia if the Zavoral Mine and Reclamation Project occurs. They include the following:

- A potential minor reduction in property taxes (\$1,732) that would be spread among all taxable properties in the City
- Gravel tax revenues over the life of the mine that could total up to \$72,675

11. Does Scandia have to monitor trucks, etc. at their own expense?

**Response:** If the CUP process moves forward and a CUP is approved for the mining operation, the City would include conditions in the permit related to monitoring activities. The City may require Tiller Corporation to pay for the costs of Site monitoring activities. The City has required that Tiller cover the costs for monitoring and Annual Operating Permit reviews at the Scandia Mine site.

12. Is there now a possible 1,000 gallon fuel tank to be on mine after assurances this wouldn't happen?

**Response:** The analysis included in Section 4.12.1.3 of the DEIS indicates that Tiller expects to bring diesel fuel to the Site using a bulk delivery truck that would directly fuel the operating equipment. Therefore, storage of diesel fuel is not expected to occur at the Site. If Tiller finds that fuel storage is necessary, storage would be provided in a single 1,000-gallon mobile tank. Tiller would need to comply with state, county and city requirements for fuel storage facilities if a tank is added at the Site. As stated in the DEIS, if diesel fuel is stored at the Site, groundwater should be sampled and analyzed for diesel range organics. If gasoline is stored on the Site, gasoline range organics and benzene should be added to the analyte list.

13. How do you take over 1 million tons of material from an area already deep and still restore it to any usable condition? In addition, with a minimum of 4 inches of topsoil over sand, it would take massive amounts of water to establish and maintain planted vegetation over a 114 acre Site.

**Response:**

*Restoration requirements.* The City's Ordinance No. 103 (Mining and Related Activities) requires "restoration of mined areas consistent with the existing and planned land use patterns."

As indicated in the DEIS, a CUP for mining at the Zavoral Site must include a reclamation plan that would result in a Site that is consistent with existing and proposed land uses to meet the ordinance requirements. The existing uses adjacent to the Zavoral Site include agriculture, residential and open space uses. The uses allowed in the Agriculture District include a variety of agricultural uses, public parks and recreational facilities, and single family residences. The reclamation plan would need to reclaim the Site through grading, topsoil replacement and vegetative establishment to support one or more of the permitted uses and be consistent with surrounding uses.

Many aggregate mining sites in the Twin Cities area have been successfully reclaimed to support a variety of land uses, including single family residential, commercial, agricultural and open space uses. For example, large mining sites have been successfully reclaimed in Maple Grove and Apple Valley in recent years.

If the CUP process moves forward, the City would require a reclamation plan for the Zavoral Site that would provide for reclamation of the Site consistent with the City's Mining Ordinance and Development Code. Reclamation progress would be monitored annually through the Annual Operating Permit process.

*Supplemental watering for restoration.* The DEIS evaluated Tiller's proposed reclamation plan for the Site in item 3.1.1.3. Large portions of the Site are proposed to be reclaimed using a native prairie seed mix. Supplemental watering is not required for successful establishment of native seed mixes. Tiller proposes tree planting in some areas in the reclamation plan. If the CUP process continues, and this element is included in the reclamation plan, Tiller would be required to provide supplemental watering and other care to assure that the reclamation using trees and other plantings is successful.

14. Why doesn't new comp plan supersede outdated plan? (particularly in a matter this important)

**Response:** Tiller submitted an EAW document and an application for a CUP for an aggregate mine at the Zavoral Site to the City of Scandia on November 20, 2008. The EAW document was dated October 27, 2008. The City's Ordinance No. 103 (Mining and Related Activities) requires that if an EAW is mandated for a mining project, that it be prepared and accepted by the City before the mining application can be determined to be complete. (The ordinance does not require that the environmental review process be completed before the CUP application may be submitted.) The required environmental review process is therefore an integral part of the CUP application process, and Tiller's submittals met the requirements of the City's ordinance. Minnesota Rule 4410.3100 prohibits final governmental decisions to grant permits or begin a project before the environmental review process is completed. Therefore, the City tabled the CUP application during the EAW review process, and cannot complete the review of the CUP application until the environmental review process for the Zavoral Mine and Reclamation Project is completed.

The City's 2020 Comprehensive Plan was the adopted plan on November 20, 2008 when Tiller's EAW and CUP application were submitted to the City. The Zoning Map and Development Code effective on that date were adopted on January 8, 2002, and were consistent with the Comprehensive Plan.

The Zavoral Site was located within the AG (Agriculture) District under the City's 2020 Comprehensive Plan and the adopted Zoning Map and Development Code at the time of the application. The Code identified mining as a permitted use within the AG District, after the issuance of a CUP.

While the 2030 Comprehensive Plan update was in process at the time of the Tiller application for the Zavoral Site, it was not adopted until March 17, 2009. The zoning map and Development Code that would implement the plan were not adopted until November, 2010.

The City made a decision at the beginning of the review process to review Tiller's 2008 application under the comprehensive plan and ordinances that were adopted at the time of Tiller's application, and it has consistently adhered to this decision as the review process has moved forward. The City reviewed all zoning applications that were made while the 2020 Comprehensive Plan and related development code were in effect under those regulations. The 2030 Comprehensive Plan, Zoning Map and Ordinances were not used to review zoning applications until the new map and ordinances were adopted by the City Council.

The review process for the Tiller CUP application has been a lengthy process, but it is a single administrative process. The steps in the process are required by the City's Development Code, State Statutes, and Rules, and the City is following the required process. The City's decisions related to the Tiller application and other zoning applications made while the 2020 Comprehensive Plan and zoning ordinance were in effect have been consistent.

15. Are responses made public?

**Response:** The comments and responses would be made public. The Final EIS would include all of the responses and comments. The City Council would review the Final EIS, and authorize the release of the document. The Final EIS would be mailed to all of the agencies that were on the initial distribution list for the DEIS, all persons and organizations that submitted substantive comments, and to any person requesting the Final EIS. The Final EIS would also be available on the City's website, at City Hall, and at local libraries.