

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: This form and EAW Guidelines are available at the Environmental Quality Board's website at: <http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm>. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. The complete question as well as the answer must be included if the EAW is prepared electronically.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Rein Quarry Expansion, Highland, MN

2. **Proposer** Reilly Construction Co., Inc.
Contact: Larry Thompson
Vice President
P.O. Box 99
110 East Main Street
Ossian, IA 52161
Phone 563-532-9211
E-mail LThompson@Reilly-Construction.com

3. **RGU** Fillmore County
Contact: Chris Graves
Administrator
101 Fillmore Street
Preston, MN 55965
Phone 507-765-3325
Fax 507-765-2803
E-mail: cgraves@co.fillmore.mn.us

4. **Reason for EAW preparation** (check one)

EIS scoping Mandatory EAW Citizen petition RGU discretion Proposer volunteered

If EAW or EIS is mandatory give EQB rule category subpart number and subpart name:

4410.4300, subpart 12 - Item B ~ Nonmetallic Mineral Mining

5. **Project location** Fillmore County City/Township: Holt Township

NE ¼ SW ¼	Section 35	Township 103 N	Range 9 W
NW ¼ SE ¼	Section 35	Township 103 N	Range 9 W

GPS Coordinates N 43°40'43.00" W 91°52'40.51" W

Tax Parcel Numbers: 11.0295.000

Figures attached to the EAW:

DRAFT - Operation and Reclamation Plan for Rein Quarry, Fillmore County, Minnesota:

- Figure 1 - Title Sheet
- Figure 2 - Project Details/Notes
- Figure 3 - Site Location Map
- Figure 4 - Existing Site Map
- Figure 5 - Existing Ground Cover

- Figure 6 - Bedrock Geology
- Figure 7 - Sinkhole Probability
- Figure 8 - Bedrock Hydrogeology
- Figure 9 - Soil Map
- Figure 10 - Trout Stream Map
- Figure 11 - Operations Site Map
- Figure 12 – Reclamation Site Map Title
- Figure 13 - Cross Sections

Other Attachments:

- Figure “EPA National Clean Diesel Campaign (NCDC) Quantifier” (3 pages)
- Figure “Natural Heritage Information System Report” (2 pages)
- Figure “State Historical Preservation Office Report” (2 pages)
- Figure “Custom Soil Resource Report Map – Crop Productivity Index” (4 pages)

6. Description

a. Provide a project summary of 50 words or less to be published in the *EQB Monitor*.

Reilly Construction proposes to expand the existing Rein Quarry located near Highland, Minnesota. The expansion will permit an area of 50 acres located in Section 35 of Holt Township, Fillmore County. It is also a conversion industrial silica sand as required under a recent revision to Fillmore County’s zoning ordinance.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

Current Land Use

The site is zoned agricultural with an existing sand quarry operating under Fillmore County CUP 11-001 within the project boundary. The existing quarry covers approximately 13.8 acres of the 50 acres proposed. The remaining area of the site consists of 25.7 acres of tillable land or 10.5 acres of grass pasture with some scattered trees. The adjacent properties are a mix of agricultural uses.

Owner Information

The owner of the site is John and Sandra Rein. John and Sandra live and operate the farm site located within the same parcel as the quarry. The owner also owns additional parcels adjacent to the proposed mine.

Mine Operator Information

Reilly Construction Co., Inc. has entered into an agreement with the owner to operate the quarry. Reilly has been operating the quarry since its inception. Contact information for the Mine Operator is included below.

Mine Operator Contact
 Reilly Construction Co., Inc.
 Larry Thompson – Vice President
 PO Box 99
 110 East Main Street

Ossian, IA 52161
Phone (563) 532-9211
Email: LThompson@Reilly-Construction.com

Site Topography and Drainage

Topography on the quarry site ranges from approximately 1260 feet above mean sea level (MSL) at the northerly limits of the mine boundary to near 1155 feet above MSL near the westerly limits of the site. Existing site contours are included on Figure 4 - Existing Site Map.

The mine boundary lies in two subwatersheds of the Root River watershed. The ridge containing the desirable material is at the highest point in the area. (See Figure 5 – Existing Ground Cover and Figure 10 – Trout Stream Map). Approximately half of the project area lies within the Grebbin Creek subwatershed. Runoff within this subwatershed flows across broad swales and waterways approximately one mile northerly and westerly to where it intersects an intermittent stream paralleling Dancer Road. This intermittent stream flows westerly approximately one mile to the intersection of Dancer Road and County Highway 23. This is near the start point of Grebbin Creek, a designated trout stream. Grebbin Creek flows approximately three miles north paralleling County Highway 23 where it outlets to the South Branch of the Root River just east of Whalan, MN.

The remainder of the project area lies within the Nepstad Creek subwatershed. Runoff from this subwatershed flows across broad swales and waterways approximately one and a half miles southeasterly to where it intersects Nepstad Creek, a designated trout creek. Nepstad Creek flows easterly approximately four miles to where it outlets to the South Fork of the Root River, located one mile southwest of Choice, MN. Based on the distance to any perennial streams or rivers, there are no fish habitats that will be impacted by mining activities. Therefore, no mitigation measures for adverse runoff impacts are necessary.

Another factor that could affect trout habitat and stream temperatures is if mining were to create a conduit by which runoff were to intersect the water source of the trout streams. While the geologic features of the area are not uniform, comparison of elevations of existing wells and known springs or streams can provide a correlation to determine if the mine may be at risk of affecting trout stream waters. The mean average of where ground water was encountered based on the county well index was at an elevation of 961.5. The elevation of the start point of Grebbin Creek is near 920. The elevation of the start point of Nepstad Creek is near 1060. The elevation of the mine bottom is proposed at 1155. Comparing these elevations, during mining activities, there will be approximately 100 feet in elevation difference between the quarry bottom and nearest known surface water, Nepstad Creek. Based on knowledge of the geologic features and properties, any storm water that infiltrates into the quarry bottom will have adequate time to filter out suspended particulates. This infiltration process will also reduce the temperature of the rainfall to temperatures desirable to downstream trout waters.

Site Geology

The Site is capped at the top of the ridge by bedrock of the Platteville Limestone and Glenwood Shale above an approximate elevation 1,240. The limestone/shale (caprock) will be removed to access the underlying St. Peter Sandstone. Based on water well construction records the St. Peter Sandstone is estimated to be 90-100 feet thick in the area.

The St. Peter Sandstone is a fine grained to medium grained, very well sorted, poorly cemented quartz sandstone with round grains making the sand desirable for industrial silica sand.

Description of Proposed Mining Activities

The Mine Operator proposes to extract sandstone from the St. Peter Sandstone Formation at the proposed mine site. The sandstone will be mined to the extent practicable using typical earthmoving equipment, including but not limited to backhoes, bulldozers, front end loaders, conveyors, and dump trucks. It is estimated that blasting of the cap rock will occur as needed in 10 acre phases. Once the area is blasted, overburden material will be excavated and sand material sent through the screening process to remove rock chunks and debris. Activities at the site will include excavation, screening, crushing, stockpiling and loading. Trucks will be used to transport raw sand to an offsite processing facility. Various actions that will be taken to manage stormwater, minimize erosion and extract mineable sand at the mine site.

Hours of Operation

Mining operations times at the site will be restricted to Monday through Friday, 6:00 am to 8:00 pm Central Daylight Time (CDT) and Monday through Friday, 7:00 am to 5:00 pm Central Standard Time (CST). Operations may also occur year-round on Saturdays, 7:00 am to 3:00 pm. Mining operations will not be conducted on federally observed holidays or on Sundays. Hours of operation may be further restricted through the Conditional Use Process. At all times the property must be properly guarded and maintained so that the site does not become a danger or nuisance.

Sequence of Operations

A generalized sequence of operations and methods is:

1. Survey phase limits and areas not to be disturbed.
2. Install perimeter silt fence. Construct down slope erosion control measures.
3. Remove surface vegetation in the area to be excavated. Large woody material may be chipped and stockpiled for mulch.
4. Strip and stockpile topsoil. Seed the topsoil stockpile to establish vegetation to prevent erosion.
5. Construct any temporary sedimentation basins and their outlets.
6. Construct any diversion ditches and berms as shown in the operation and reclamation plan to direct any stormwater runoff from the current phase of construction to the temporary sedimentation basins.
7. Remove overburden materials and either stockpile or place in areas where they can permanently remain as part of the reclamation plan. Stockpile areas shall be placed within the mining limits and positioned to aid in the blocking prevailing winds which will aid in prevention of wind erosion or used as screening to minimize noise or visual effects of the mining activity. Areas downstream of stockpiles must be protected with vegetated berms, wood chip berms, silt fence or other approved BMP's. Watering of stockpiles with a tanker truck may be necessary to prevent dust and wind erosion. Overburden stockpiles that will remain in place longer than 14 days and are susceptible to wind erosion shall be covered with topsoil, seed, and mulch.
8. Side slopes of berm, ditches, roads and temporary basins are to be covered with topsoil and seeded to reestablish vegetation.
9. Limestone having marketable value may be excavated, crushed, screened stockpiled, and sold under a separate Conditional Use Permit (CUP) issued by Fillmore County. If an additional CUP is not obtained limestone will be placed with overburden in stockpiles or in a reclamation area. Dust mitigation measures for crushing and screening operations may be mitigated at the feed and discharge points using wet suppression; this may also include conveyors if utilized. The mined material may be sprayed with water to coat the outer surface before loaded for crushing and grinding to prevent dust from becoming liberated and airborne.
10. Sands are excavated, pulverized, screened to remove aggregate chunks or debris that may find its way into the product and stockpiled. Dust mitigation measures as described in number 9 will be followed.

11. Material is loaded into trucks and weighed for transport to an off-site transfer facility or processing facility. Weight/amount loaded per truck must be reported to the Fillmore County Zoning Office quarterly.
12. Unsuitable sand, approximately 25% hauled to the off-site processing facility, may be hauled back to the quarry and placed in stockpiles or placed in areas where it can permanently remain as part of the reclamation plan. Unsuitable sand is sand that doesn't meet the specifications of the end user which is based on sieve size. The 25% hauled back to the site is suitable for fill material to be used in reclamation. Any use of materials hauled back to the site that has been processed with chemicals or flocculants is prohibited. All material is subject to testing according to the Fillmore County Zoning Ordinance. Once covered with an average minimum of 6" of topsoil it shall be seeded and mulched to establish a vegetative cover.
13. After sand material is exhausted from the current phase limits and overburden and waste materials have been placed and leveled per the reclamation plan, an average minimum of 6" of topsoil shall be respread.
14. The site will be seeded and stabilized through revegetation. MnDOT Mix 330 shall be spread per the MnDOT specifications on pounds per acre and recommended fertilizer and mulch.
15. When all construction activity is complete in the reclaimed area, temporary diversions ditches/berms and temporary basins are to be removed. Areas disturbed during removals shall be seeded and stabilized through revegetation.
16. Final terrain is returned to pasture land, forest or a combination thereof. Due to the potential lack of adequate topsoil and subsoils, the reclaimed areas are not intended for row crop cultivation. If during reclamation it is determined that soil conditions are suitable for future row crop production, the mine operator and owner shall contact the Fillmore County NRCS/SWCD office for assistance on the proper procedures for returning the site to row crop production. Factors to be addressed for returning the reclamation area to row crop production are soil depth, topsoil and subsoil, color, organic content of soils, nutrient content of soil and drainage upstream, within and downstream of reclamation area.

NOTE: Additional activities may be warranted due to site conditions, weather conditions or phasing limitations.

Stormwater Management

The Mine Operator will be responsible for completing the stormwater management and monitoring activities that are specified in the general stormwater permit and will meet Fillmore County stormwater standards to treat runoff from disturbed areas. During all phases of the mining operations, stormwater will be contained within the active mining area or will be directed into one of the constructed temporary stormwater basins. During low rate precipitation events, infiltration will occur more readily and a high percentage of the stormwater is expected to infiltrate before flowing into a temporary stormwater basin. During higher rate precipitation events, stormwater that does not infiltrate within the active mining area will flow into a stormwater basin by following natural contours and/or diversions. Temporary stormwater basins are expected to be constructed at the site over the life of the mine. Construction of the temporary basins will be completed as mining progresses across the site.

Erosion Control

Controlling erosion and siltation at the proposed mine site are ways to reduce sediment in stormwater runoff. To accomplish this, silt fence and other measures will be installed to capture sediment in stormwater prior to land disturbing activities such as topsoil removal and berm construction. Silt fence will also be installed on the down slope side of the stormwater basins before construction of these structures begins. In addition to silt fence, vegetated swales and berms will be constructed to route stormwater within and around the site. Vegetation will be established on berms as a means to

minimize berm erosion. Long slopes which are more susceptible to erosion will have erosion blankets installed to help speed the process of establishing vegetation on slopes. Erosion blankets may also be used to control erosion along lower portions of longer sloped berms. On sloped areas where concentrated stormwater flows could occur, ditch checks may be installed in addition to erosion blankets. During mine operation, all erosion control and stormwater control structures will be inspected and maintained in accordance with the NPDES permit and a site specific Stormwater Pollution Prevention Plan. The operator must work with the SWCD so the site including all stockpiles and overburden piles are maintained so as not to cause erosion.

Best Management Practices

The general stormwater permit will require the use of physical controls in the form of source area pollution prevention best management practices (BMPs) and/or contaminant treatment BMPs to minimize the discharge of stormwater contaminants. Source area pollution prevention practices are intended to prevent stormwater from contacting possible sources of stormwater contamination, such as erodible earthen materials. However, source area pollution prevention BMPs alone typically are not adequate to control sediment contamination at mine sites. Therefore, stormwater treatment BMPs (i.e. infiltration basins) will be utilized at the proposed mine site. Additional temporary sedimentation basins will be constructed in areas directly adjacent to mining activities to reduce sediment flowing into the infiltration basins. The Mine Operator will be responsible for addressing any issues related maintenance of the stormwater infiltration basins. This will include monthly inspections of the infiltration basins or more frequent inspections, as necessary, following rain events of 1 inch or more. Actions will be taken prior to the basin filling to half its volume to remove sediment build up, which is necessary to maintain adequate infiltration and storage capacity in the temporary stormwater treatment basins. Sediment will be removed with an excavator and stockpiled with overburden materials for later use in slope reconstruction during reclamation activities. Dewatering will not be required beyond typical maintenance of the temporary stormwater basins, which will meet NPDES permit requirements.

The operators shall be required to control noxious weeds and mow or harvest other vegetation to maintain reasonable appearance of the site.

Areal Extent and Phasing of Operations

Clearing and mining activities at the proposed mine site will proceed in two – 25 acre phases. Mining will continue from the existing vertical rock face in the southeast area of the site northwesterly to the extent of the mining limits. Mining is expected to be completed by approximately 2030. The actual duration of mining may change depending on market demand, variations in the quality of mineable sand, differences in overburden thicknesses, and the actual quantity of sand mined each year. Topsoil and sub-soils shall be stockpiled separately in berms and will remain onsite for use in reclamation. Berms shown on the operations site plan have been proposed at locations that will assist in preventing runoff to surrounding properties. Overburden materials excavated during mining activities will also be placed in berms and stockpiles. The berms will be constructed to form 3:1 or less slopes and the berms will be seeded to minimize erosion. MnDOT seed mixture No. 150 will be used on berms that will be in-place for less than 1 year. Any berm or stockpile that will be in-place longer than 1 year shall be seeded with MnDOT mix 240. It may be necessary to provide additional on-site locations for stockpiles and berms. All locations, slopes, and sizes will be in accordance with all pertinent regulations. All stockpiles will be stored at least fifty (50) feet from the right-of-way of a public road. The longer 3:1 slopes will have erosion mat placed on their lower portions, as necessary for erosion control. Interim reclamation of the Phase 1 mining area will begin when the mine opening commences for the Phase 2 mining area. Reclamation is an ongoing process throughout the life of the mine. It is the mine operators responsibility for ensure all regulations are being followed.

Blasting Plan

It is estimated that blasting of the cap rock will occur as needed in 10 acre phases. Over the life of 20 years and 50 acres blasting is estimated to occur every 4 years. Blasting may occur more frequently if required for mining. No blasting activity will be conducted unless expressly approved in the conditional use permit that authorizes excavation and mining activity. All blasting activity must comply with the provisions of this section and all applicable federal and state statutes and regulations. The blaster-in-charge of each blasting event must be currently licensed by the Minnesota Department of Public Safety.

Pre-Blasting Survey. Any mining operator who intends to conduct authorized blasting at an excavation and mining site will first perform a pre-blasting survey to determine and map the specific location and general condition of all dwellings, buildings, monuments, wells, utilities, and other structures within a ½ mile radius of the blasting site.

Blasting Notification. At least 72 hours prior to the initial blasting event at an excavation and mining site, the mining operator shall make a reasonable effort to notify all residents and land occupiers, within a radius of ½ mile of the excavation and mining site, of the impending blasting event. Thereafter, the mining operator will be required to develop and maintain a blasting call list of adjacent residents and land occupiers, who request that they be notified at least 72 hours prior to a blasting event. At least 72 hours prior to all blasting events at the mining site, the mining operator will use the call list to contact all residents and land occupiers requesting blasting notification by written notice, phone call, email or verbally in person. Prior to any blasting event at the excavation and mining site, the mining operator will also give general public notice of the impending blasting event by displaying a fluorescent flag and legible sign within 100 feet of all public roads bordering the blasting site. Additionally, a distinctive warning signal shall be sounded by horn immediately prior to the blasting event.

Control of Adverse Effects. The mining operator is obligated to take all reasonable actions necessary to control and minimize adverse effects of blasting events, including flyrocks, airblasts, ground vibrations and seismic damage to adjacent wells, dwellings, buildings, monuments and structures. An airblast shall not exceed 133 peak dB at the location of any dwelling, buildings, monuments, wells, utilities or other structures. All flyrocks will remain within the excavation and mining site.

The Zoning Administrator has the authority to investigate complaints that blasting activity is damaging dwellings, utilities, structures, or water wells or injuring people or livestock, and to order the mining operator to suspend blasting activity at the excavation and mining site until (i) the alleged damage is verified, (ii) the blasting activity as the cause of such damage is verified, and (iii) a solution is approved to prevent future blasting damage. The Zoning Administrator's monitoring and investigation of blasting activity relates only to permit enforcement, and not to determining potential civil or criminal liability of the mining operator for the consequences of any blasting activity.

Blasting Log. The mining operator shall maintain an accurate and complete blasting log of each blasting event occurring at an excavation and mining site. The blasting log will be maintained at the excavation and mining site for not less than 5 years, and will be furnished to the Zoning Administrator upon request. Each blasting log shall include the following information: (i) Name and license number of each blaster in charge, (ii) blast location, (iii) date and time of blasting event, (iv) weather conditions at time of the blasting event, (v) diagram and cross section of blast hole layout, (vi) blast hole depth, spacing and diameter, (vii) total pounds and type of explosives used, (viii) distance to nearest dwelling, and (ix) seismic recordings of vibration and air blast levels.

Storage of Explosives. The mining operator will not store any explosives or blasting agents at the excavation or mining site.

Traffic Plan

Truck traffic is based on the number of trips that may be achieved in any one day based on use of 30 trucks. It is estimated that at full loading capacity up to 120 loads (240 truck trips) per day are feasible. Access to the site is from the existing driveway access on County Road 10. Currently material is hauled to a facility located in Winona, MN where it is processed. The current haul route is as follows:

Trucks leave the access heading northeast on County Hwy 10 which turns into County Hwy 37. At the intersection with State Hwy 43, trucks head north through the community of Rushford to Winona County Road 12, which at this location runs parallel to Interstate 90. Trucks travel west on Winona County Road 12, thence north on Winona County Road 25, thence north on Winona County Road 23 to Stockton. At Stockton, trucks continue north on County Road 23 to Minnesota City and the intersection with State Highway 61. Trucks then head southeast on State Highway 61 to County Road 32 (6th Street), to the access of the sand processing facility.

Another location where material may be processed is a New Albin Siding, New Albin Iowa. The route for this material would be to head southwest on County Hwy 10 which turns into County Road 23. East on County Road 12 to State Hwy 43. South on State Hwy 43 Mabel, thence east on State Hwy 44 to State Hwy 76 to Eitzen. State Hwy 2 east of Eitzen brings trucks into New Albin where they would follow State Hwy 26 to the processing facility.

There are variations on both of the above truck routes which will be addressed in the Condition Use Permit and Fillmore County Road Use Agreement.

The Winona, MN and New Albin, IA processing facilities will continue to be end point for this source material unless another processing facility becomes available during the life of the quarry. If material is proposed to be hauled either: at a daily rate higher than 120 trips per day, to a different location, or use roads different than the haul route listed within the Conditional Use Permit and Fillmore County Road Use Agreement, the operator will be required to modify the CUP and Road Use Agreement with Fillmore County.

All of the roads currently used are of the width and surface that can handle the truck traffic referenced. Fillmore County as well as Winona County has adopted road use agreements which assign a road use fee based on tonnage hauled. These fees will be used towards continued maintenance for those roads identified as haul routes. The fees are not being collected because routes are substandard; they are being collected to address the fact that hauling of industrial minerals and metals causes a disproportionately higher impact on local roads due to a combination of high truck weight and much larger truck volume than traditional agricultural and construction mineral mining industries. All roads used for the transportation of industrial or construction minerals or metals must be maintained to the satisfaction of the local road authority.

All loading and unloading of trucks and equipment will occur on-site in designated areas. No truck or equipment shall be driven on a public road unless its load is securely covered when loaded and complies with Minnesota law and MnDOT requirements.

Safety

The Mine Safety and Health Administration (MSHA) regulations will be followed during mining and final reclamation operations. MSHA regulations require that a high level of safety be maintained on

active mine sites at all times. This includes proper scaling and benching of mine faces and sloping of sidewalls. Perimeter berms will be constructed as physical barriers to the mine site and visual warnings (i.e. signage) will be posted near the entrance to the mine site, where required. The reclaimed mine site will have slopes around the perimeter, but none of the slopes will be greater than 3:1.

Silent or white noise back-up alarms must be installed on all motorized excavation vehicles. All equipment used for mining operations shall be constructed, maintained, and operated in such a manner as to minimize, as far as practicable, dust conditions which are injurious or substantially annoying to persons living within six hundred feet (600') of the industrial extraction facility surveyed boundary line. Operators shall use all practical means to eliminate adverse impacts on adjacent properties from vibration of equipment according to all Federal and State laws, rules and statutes.

Hazardous Materials

No industrial hazardous wastes or municipal solid wastes will be generated or stored on the site during mining or reclamation. Storage tanks for diesel fuel will be located at an off-site facility that is permitted independently of the proposed mining activities. An on-site water storage tank may be located at the quarry and utilized for dust control mitigation measures. Water to fill the tank may be procured from the homestead or trucked in to the site. Less than 2400 gallons of water per day is estimated for dust control during a full day of misting.

Trucks and equipment will contain fuels and lubricating oils in onboard fuel tanks and in the engines. No fuel or lubricating oils will be stored on site. Common equipment and their hazardous reservoirs are:

- 40 ton truck: approximately 140 gal. fuel tank and 16 gal. of oil in the crankcase
- Hydraulic Excavator: approximately 200 gal. fuel tank and 14 gal engine oil.
- Front End Loader: approximately 280 gal. fuel tank and 25 gal. of oil in the crankcase

Employees may be trained in spill prevention and planning. Training will include familiarity with site drainage patterns; spill control equipment and supplies, and proper notification procedures.

In the event that a fuel spill does happen, mitigation measures including: observing safety precautions and stopping the spill, calling 911 if fire or public safety hazards are created, containing the spilled material, reporting the spill to the Minnesota Duty Officer and clean up. Spill containment and emergency preparedness can minimize damage and cost of cleanup. Materials such as containment sorbent and pads may be kept on-site during construction and mining operations. Any spill greater than five gallons of petroleum requires the operator to contact the Minnesota Duty Officer at (651) 649-5451 or (800) 422-0798 and report the spill. The MPCA will direct the operator on disposal of the wastes. The law provides penalties of up to \$10,000 per day for violations. The mining operation will not use toxic or hazardous materials which would lead to a regulated waste, discharge or emission.

Material Volume Estimates

Estimates of material volumes associated with the proposed mine site are 4.1million tons of product. The volume estimates were generated using AutoCAD Land Desktop Surface Modeling Design Software. The volume estimates assume 75% of mineable sand will become product and 25% of the mineable sand will be process reject material that is returned to the mine site for use in reclamation. All Fillmore County regulations will be followed in regards to the use of process reject material which may not include byproducts of flocculants. The minimum reclamation volume is based on 3:1 reclamation slopes and 6 inches of topsoil over the entire site.

Process Reject Material Testing

Bringing back materials to the site that has been processed with chemicals or flocculants is prohibited by Fillmore County Ordinance Section 736. Any haul back material is subject to testing, per the Fillmore County Zoning Ordinance, at the operator's expense.

Interim Reclamation

The working face for each mining phase is expected to remain open and unreclaimed until mining activities have been completed for that phase. However, berms, stockpiles and areas outside of the working face of the mine may be reclaimed prior to final site reclamation to reduce erosion during mining. Methods employed during interim reclamation including grading, subsoil and topsoil redistribution, revegetation and erosion control will generally follow the methods described for final reclamation.

Final Reclamation

As mentioned previously, interim reclamation of the Phase 1 mining area will begin when the mine opening commences for the Phase 2 mining area. Materials used in reclamation will consist of Topsoil, sub-soils, overburden and process reject material returned from the processing plant. In addition, residual woody material such as slash that is a byproduct of timber harvesting will be composted on site and used as a soil amendment during final reclamation. Phased reclamation is best implemented by having no more than twenty-five (25) acres operational at any given time.

If during excavation or mining operations the operator finds the characteristics of the mining area to be different than what was previously determined, changes may be made in the original reclamation plan by mutual consent of the operator and the Zoning Administrator. Such changes shall preserve, as substantially as possible, the original reclamation plan, and shall also provide for the newly discovered variations in the excavation or mining site.

Management and Use of Process Reject Material

The use of any materials hauled back to the site that has been processed with chemicals or flocculants is prohibited by Fillmore County Ordinance. Process reject material that is not used at the processing facility may be returned to the mine site and used in the reclamation process so long as the material complies with Fillmore County regulations. Any haul back material is subject to testing at the operators' expense. Process reject material is sand that doesn't meet the specifications of the end user which is based on sieve size. There will be no free liquids in the process reject material and the moisture content is expected to range from approximately 3 to 8 percent. Process reject material that is returned to the mine site will be stockpiled in berms while the Phase 1 mining area is being mined. After mining commences in the Phase 2 mining area, process reject material returned to the mine site will be used during interim and final reclamation. Process reject material will be used first for reclaiming side slopes and remaining process reject material, if any, will be used for floor reclamation. The reject material shall be watered to control dust, trucked to dumping area mixed with stockpiled subsoil and covered with topsoil.

Final Grades and Slopes

Initially overburden materials will be uniformly applied to all disturbed areas at various depths as necessary to reconstruct slopes of 3:1 or less. Overburden materials will be placed to form the reclaimed slopes and placed horizontally so as to minimize the potential of a shear slope failure. Compaction will be achieved through machine traffic and spreading during the reclamation process. Slope fill and grading for long term slope stability will follow Fillmore County reclamation regulations which require development of 3:1 slopes or less in reclaimed areas. Terrace structures or

slope diversions are not expected to be needed during reclamation at the proposed mine site. Slope modifications such as reclamation blasting are also not anticipated.

Subsoil/Topsoil Redistribution and Site Preparation

Subsoil will be removed from berms and placed on top of overburden materials as reclamation progresses. Topsoil redistribution and site preparation for seeding will follow methods described in the current MnDOT Standard Specifications for Construction. Topsoil shall be placed a minimum of 6" thick, compaction will be minimized to the extent practicable by limiting unnecessary traffic or tracked vehicles during and after the placement of the subsoil and topsoil layers.

Contemporaneous Use of Topsoil and Subsoil

Where practicable, the topsoil and subsoil that is removed to prepare an area for the next phase of mining may be redistributed to a previous phase that is undergoing reclamation. This would occur in lieu of creating additional berms or stockpiles at the site.

Revegetation Plan

The post-mining land use will be for agricultural pasture, passive recreation and wildlife habitat. Revegetation is intended to provide stabilization of all reclaimed areas including side slopes, bottomlands and hilltops. Revegetation will occur during the growing season when soil conditions are suitable. Based on the post-mining land use noted above, the following activities are proposed to achieve successful re-vegetation.

Soil Testing

After subsoil and topsoil reapplication, soil testing will be completed for nitrogen, phosphorus, potassium, organic content and pH. A representative sample from the reclaimed mine site will include enough cores, collected randomly from across the area being revegetated. Too few cores increase the risk that a non-representative core could skew the results for the area being revegetated. Non-random sampling increases the risk that a bias could be introduced into the sample. Therefore, random sampling will be completed by following a zig-zag pattern around the area being revegetated. A minimum of 20 soil cores will be collected to produce the composite sample and one additional soil core will be collected per acre for areas larger than 20 acres. Individual cores will be mixed in a container to break up the soil cores until no evidence of any one individual soil cores exists. If the composite soil sample is found to be deficient for any of the parameters listed above, amendments will be applied, as necessary, to ensure successful revegetation.

Seeding and Mulching

The seedbed will be prepared using discs, harrows or other equipment to obtain an even and loose seedbed. Prepared areas will be seeded as soon as practicable. Seeding will be performed using the best available methods and will follow procedures described in the current MnDOT Standard Specifications for Construction. Seeding will be followed by lightly raking or dragging the seeded area to provide the recommended soil cover. After seeding, areas will be mulched within 2 days.

Seed Mixtures and Plantings

Revegetation will be completed using an appropriate seed mixture to establish vegetation for the proposed post-mining land use. Selecting appropriate seed mixtures to be used in reclamation will be based on MnDOT mix types. The common and scientific names of the grasses and forbs/legumes included in this seed mix as well as the recommended seeding rates per acre for each type of seed are included in the current MnDOT Standard Specifications for Construction. The final reclaimed site may include areas of seasonally ponded water. These ponds would be optional to the landowner and would be intended for agricultural grazing purposes. Any permanent agricultural ponds shall be

constructed with the guidance of the Fillmore County SWCD and any other applicable regulatory agency.

Revegetation Standards

In order to determine successful re-vegetation, perennial vegetative cover on reclaimed areas will be assessed annually for density and biomass. Density is a measure of the percent cover and is determined by estimating the percentage of an area covered by vegetation. Biomass is a measure of the productivity of the reclaimed site and provides an indication of the survival and abundance of each species in the seed mix. Biomass can be verified by collecting plant material, followed by drying and weighing. Revegetation success may be determined by comparing vegetation density and biomass in an appropriate reference area, to baseline data that is acquired at the mining site prior to mine opening, or to an approved alternate technical standard. Reclamation will be considered complete when “final stabilization” has been achieved, and survival and abundance of each species in the seed mix is verified. Final stabilization is achieved when a “uniform perennial vegetative cover has been established with a density of at least 70 % of the cover for unpaved areas and areas not covered by permanent structures.” The annual assessment of reclaimed areas will be included in the annual reclamation report, which will be submitted to Fillmore County. After the reclaimed areas have achieved the aforementioned vegetative cover results and survival and abundance of the plant species has been verified, and all other requirements have been met, the Mine Operator will notify Fillmore County that reclamation has been completed and certification of reclamation will be requested.

The use native grasses, shrubs and trees from local sources have shown to significantly guarantee and assure long term vegetation cover success and sustainability. The setting up of long term test plots may be used to monitor and document that reclamation has been achieved.

Erosion Control and Site Maintenance

Erosion control BMPs will be utilized in those areas, if any, where severe erosion occurs during reclamation. In areas where erosion problems occur (i.e. long slopes, steep slopes, concentrated flow channels, failed revegetation, etc.) increasingly engineered BMPs will be applied to address erosion and ensure establishment of the end land use and associated vegetation. Erosion control measures in place at the reclaimed mine site will be maintained until reclamation is complete. Construction and materials specifications for erosion and sediment control structures are included in the current MnDOT Standard Specifications for Construction.

Follow-up Inspections

Inspections of erosion control measures on reclaimed slopes will be performed at least monthly, but more frequently for rainfall events of 1/2-inch or more and following snowmelt runoff. Annual inspections of vegetation on the reclaimed areas of the site will occur until each area meets the revegetation standards included in this plan. Inspection information will be provided to the regulatory authority in the annual reclamation reports.

Criteria for Successful Reclamation

The criteria for assessing when reclamation is complete and, therefore, when the reclamation assurance bond may be released will be based on the revegetation standards in this plan. The criteria used to evaluate reclamation success shall be quantifiable. Following successful revegetation, the Mine Operator will submit a notice of completed reclamation to Fillmore County. If accepted, Fillmore County will issue a certification of reclamation. Once the certification has been received, the areas will be considered successfully reclaimed and no further reclamation activities will be completed.

Compliance with the revegetation success standards shall be determined by:

1. Onsite inspections by Fillmore County will occur annually and more often if needed;
2. Reports presenting results obtained during reclamation evaluations including summarized data on revegetation, photo documentation or other evidence that the criteria approved in the reclamation plan to ascertain success have been met; or
3. A combination of inspections and reports.

Post-Mining Land Use

The post-mining land use will be for agricultural pasture. Vegetation will be established on the reclaimed area as specified in the revegetation plan above. Various tree species may also be planted at locations as directed by the owner. Following successful revegetation and County certification of reclamation, the property owner will assume responsibility for future land use decisions.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of the project is to mine industrial silica sand, an important natural resource with high demand in the oil and natural gas extraction industry. The St. Peter Sandstone found across the site will be mined and sorted to obtain high quality industrial silica sand that is between the #20 (0.841 mm grain size) and #70 (0.210 mm grain size) sieve sizes. Raw silica sand will be truck hauled to processing locations in Minnesota, Wisconsin or Iowa where it will be sorted and final washing and processing of silica sand will occur before transported by truck, barge or rail.

Secondary products include fine granular material which may be used as bedding in dairy industry. The limestone overburden may be used on construction activities primarily in the Fillmore County.

The mined material is subject to taxes/fees which will provide a benefit to the State of Minnesota, Fillmore County and Holt Township. The quarry employs truck drivers and equipment operators.

d. Are future stages of this development including development on any other property planned or likely to happen? Yes No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

Additional silica sand resources are present with the larger parcel the quarry is located within and on adjacent property. If demand for silica sand remains high and extraction is economical and environmentally feasible., expansion of the quarry may be warranted. The anticipated timeframe for mining of the proposed quarry is 20 years.

Fillmore County Excavation and Mining of Industrial Minerals and Metals Ordinance Section 736 limits the size of any industrial silica sand mine to 50 acres in size. Should the 50 acres proposed in the Conditional Use Permit be extinguished of material, the quarry may be expanded in the future to mine the adjacent resources. Any changes to the mine boundary would be subject to additional environmental reviews and permitting required at the time of application.

e. Is this project a subsequent stage of an earlier project? Yes No

If yes, briefly describe the past development, timeline and any past environmental review.

The initial quarry was permitted by Fillmore County in 2008 and contained 2.1 acres (CUP 2008-011). In 2011 the CUP was Expanded to 18.36 acres (CUP 2011-001). An environmental review has never been completed for this project.

7. Project magnitude data

Total project acreage 50.0 acres
 Number of residential units: unattached - 0 attached - 0 maximum units per building
 Commercial, industrial or institutional building area (gross floor space): total square feet

Indicate areas of specific uses (in square feet):

Office	Manufacturing
Retail	Other industrial-Mining 50.0 acres
Warehouse	Institutional
Light industrial	Agricultural
Other commercial (specify)	
Building height	If over 2 stories, compare to heights of nearby buildings

8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

<u>Unit of government</u>	<u>Type of application</u>	<u>Status/Permit</u>
Fillmore County	Conditional Use Permit	CUP 2011-001
Fillmore County	Conditional Use Permit (Expansion)	Pending
Minnesota Pollution Control Agency	NPDES Construction Storm Water	C00030537
Fillmore County	Road Use Agreement	Pending

9. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

Presettlement the area was prairie prior to the passage of the Homestead Act of 1862. Post settlement historical uses of the project area have been pasture and row crop agricultural. The site is currently zoned agricultural. Currently there is an operating sand quarry within the project boundary covering 8.5 acres of the 50 acres proposed. The remaining area of the site consists of tillable land or grass pasture with some scattered trees. The adjacent properties are a mix of agricultural uses.

Within the property but outside the project boundary is the homestead of the property owner. Other building sites are located over 1000 feet from the project boundary with the community of Highland being located over 2000 feet east of the project.

There are no known environmental problems due to past land use, either agricultural or mining. Runoff and erosion will be the primary environmental issues for the proposed increase in the size of the mining operation. The only hazardous substance used in the operation with the potential for groundwater contamination would be fuel used by the trucks and equipment. No fuel will be stored onsite.

The project is a temporary use. Once the mine site is reclaimed, the property will again be pasture or other non-row crop agricultural use. This project is compatible with adjacent and nearby land uses and building sites.

10. **Cover types.** Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands	0	0	Lawn/landscaping	0	0
Wooded/forest	0	0	Impervious surfaces	0	0
Brush/Grassland	0	0	Stormwater Pond	0	0
Cropland	32.0	0	Other (Quarry)	8.5	0
			<u>Grass Pasture</u>	<u>9.5</u>	<u>50.0</u>
TOTAL				50.0	50.0

If **Before** and **After** totals are not equal, explain why:

11. **Fish, wildlife and ecologically sensitive resources**

- a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

The project site is currently dominated by intensively grazed pasture and row crop agricultural land. Wildlife resources and habitats on or near the site are limited to those associated with the species inhabiting the agricultural cropland, fence rows, and isolated pastures. Wildlife observed within the vicinity of the site includes: whitetail deer, raccoons, skunks, wild turkeys, pheasants and a variety of other small birds and mammals. Due to intensive grazing and row crop production the land has been disturbed and is not prime habitat for wildlife use, nor is the site a significant breeding or wintering ground for wildlife.

Most of the wildlife resources and habitats present on the site are highly degraded and will be altered due to mining conversion that is expected to occur for a period of up to 20 years. The mined areas will be reclaimed and used as a pasture though trees and other plantings are anticipated. Temporary loss of the cropland will remove some of the crop as well as pasture food source utilized by the local wildlife populations. There will be temporary impacts to wildlife during the construction and mining phases. Any wildlife present within the agricultural cropland of the site will be permanently displaced to the surrounding cropland.

Tree removal or potential migratory bird habitat clearing activities are recommended outside the primary nesting season, typically April thru August. If any large nests associated to eagles are present within any trees or any eagle activity is observed on the property, it is recommended that the operator contact the U.S. Fish and Wildlife Service. There were no observed eagle nests on the property during field assessments in 2012.

The mine boundary lies in two subwatersheds of the Root Rover watershed. The ridge containing the desirable material is at the highest point in the area. (See Figure 5 – Existing Ground Cover and Figure 10 – Trout Stream Map). Approximately half of the project area lies within the Grebbin Creek subwatershed. Runoff within this subwatershed flows across broad swales and waterways approximately one mile northerly and westerly to where it intersects an intermittent stream paralleling Dancer Road. This intermittent stream flows westerly approximately one mile to the intersection of Dancer Road and County Highway 23. This is near the start point of Grebbin Creek,

a designated trout stream. Grebbin Creek flows approximately three miles north paralleling County Highway 23 where it outlets to the South Branch of the Root River just east of Whalan, MN.

The remainder of the project area lies within the Nepstad Creek subwatershed. Runoff from this subwatershed flows across broad swales and waterways approximately one and a half miles southeasterly to where it intersects Nepstad Creek, a designated trout creek. Nepstad Creek flows easterly approximately four miles to where it outlets to the South Fork of the Root River, located one mile southwesterly of Choice, MN. Based on the distance to any perennial streams or rivers, there are no fish habitats that will be impacted by mining activities. Therefore, no mitigation measures for adverse runoff impacts are necessary.

Another factor that could affect trout habitat and stream temperatures is if mining were to create a conduit by which runoff were to intersect the water source of the trout streams. While the geologic features of the area are not uniform, comparison of elevations of existing wells and known springs or streams can provide a correlation to determine if the mine may be at risk of affecting trout stream waters. The mean average of where ground water was encountered based on the county well index was at an elevation of 961.5. The elevation of the start point of Grebbin Creek is near 920. The elevation of the start point of Nepstad Creek is near 1060. The elevation of the mine bottom is proposed at 1155. Comparing these elevations, during mining activities, there will be approximately 100 feet in elevation difference between the quarry bottom and nearest known surface water, Nepstad Creek. Based on knowledge of the geologic features and properties, any storm water that infiltrates into the quarry bottom will have adequate time to filter out suspended particulates. This infiltration process will also reduce the temperature of the rainfall to temperatures desirable to downstream trout waters.

b. Are any state-listed (endangered, threatened or special concern) species, rare plant communities or other sensitive ecological resources on or near the site? Yes No

If yes, describe the resource and how it would be affected by the project. Describe any measures that will be taken to minimize or avoid adverse impacts. Provide the license agreement number (LA-____) and/or Division of Ecological Resources contact number (**ERDB 20120161**) from which the data were obtained and attach the response letter from the DNR Division of Ecological Resources . Indicate if any additional survey work has been conducted within the site and describe the results.

In December 2011 (verified as still valid in December 2012) the Minnesota Department of Natural Resources Natural Heritage Information System (NHIS) database was queried to determine if any state-listed endangered, threatened, special concern species, or rare plant communities, or other sensitive ecological resources have been documented near the site. The results indicated no documented occurrences on the project area or within Section 35 of Holt Township (Figure “Natural Heritage Information System Report”).

Since the project area has been disturbed by either row crop agriculture or intensive pasturing, the likelihood of finding an established rare plant community is unlikely. Since an inventory has not been addressed and cannot be addressed until growing conditions allow, the mine operator has offered an open invitation for the Fillmore County SWCD, BWSR and MnDNR to walk the site in search of any endangered, threatened or special concern plant and animal communities. The operator will work with the agencies involved to provide better conditions for rare plant communities in reclamation areas that could potentially be protected from pasturing.

12. **Physical impacts on water resources.** Will the project involve the physical or hydrologic alteration — dredging, filling, stream diversion, outfall structure, diking, and impoundment — of any surface waters such as a lake, pond, wetland, stream or drainage ditch? Yes No

If yes, identify water resource affected and give the DNR Public Waters Inventory number(s) if the water resources affected are on the PWI: Describe alternatives considered and proposed mitigation measures to minimize impacts.

The closest drainage ways are intermittent streams that do not have perennial flows and have been observed by the owner to only flow during the spring melt/frozen ground conditions or in intense rainfall events. Storm water that does collect in the drainage ways would flow across agricultural lands, grassed waterways and drainage swales before emptying into the trout streams listed in Item 11 above.

It shall be noted that the U.S. Fish and Wildlife Service National Wetland Inventory depicts a freshwater pond on the property located immediately north of the building site. A review of the Protected Waters and Wetlands for Fillmore County did not show any features on the property or immediate vicinity. The owner of the property states that the feature identified on the National Wetland Inventory was an agricultural pond excavated by his grandfather many decades ago with the intent to provide drinking water to livestock. The pond was never more than a couple of feet deep when it did hold water and often would dry up. Due to the lack of dependability of the water source and along with modifications to the building site, approximately 25 years ago the owner leveled the area of the pond. Currently the area where the pond was does not have any features associated with a wetland and based on soils in the vicinity, it is highly unlikely there were/are any hydric soils. If wetland features were determined, they would be incidental to the grading performed decades ago. The area in question can be left undisturbed during the year 2013. If reviewing authorities would like to review the area and take borings to determine the potential for hydric soils prior to further disturbances, the mine operator has agreed to offer them this opportunity during the 2013 growing season.

Since there are no determined wetlands, water courses or major drainage systems on the site and due to the rapid permeability of the underlying soils and bedrock grading, mining, and site restoration will not have any adverse effect on surface water resources. Stream diversions, outfall structures, diking or impounding of surface water and dewatering will not occur beyond temporary sedimentation basins.

Analysis of nearby Minnesota Department of Health County Well Index (CWI) boring logs indicated the static groundwater elevation is located at an elevation near 975, 180 feet below the final quarry elevation of 1,155 feet. (See Figure 3 – Site Location Map). Additional water wells may exist in the mapped area. Well data used for this assessment was obtained from the MDH CWI was obtained on November 26th, 2012. Any information available after that date is not included in the assessment.

Hydrologic alteration through dewatering for mining will not be necessary at the site.

There are no natural lakes streams and no manmade ponds or drainage ditches feeding to or flowing from the site. The soils are permeable. In order to avoid any unnecessary sinkhole risks permanent ponds will not be employed because ponds create permanent soil saturation that can mobilize sand particles to flow into any voids in the underlying Shakopee formation karst. Systems that allow pulses of infiltration in this landscape setting, rather than ponded water have proven to be effective in avoiding sinkhole formation.

The removal of sand from the St.Peters formation will remove sand that is currently filtering water from the surface. This infiltration will continue to function effectively. Sand filters are commonly used for water treatment and typically only require five feet of sand to effectively filter any suspended solids from the stormwater. Based on information available, the Shakopee dolomite is

estimated near an elevation of 1147. The bottom of the quarry is proposed at 1155. This site will maintain, at minimum, 5 feet of sand above the estimated top of the Shakopee dolomite and the mined area will continue to provide an adequate water filter.

Once mining and restoration is completed the entire mined area will still have at minimum 5 feet or more of undisturbed sand. The material hauled back and/or material that was overburden will be covered with a thin veneer of topsoil for rooting and maintenance of perennial grassy vegetation. The area where the mined slopes interface un-mined areas will be sloped back at 3:1.

To protect surface water quality during rain events, construction of temporary sediment and infiltration basins with the use of berm(s) and swale(s) will be installed. A MPCA Nonmetallic Mining Stormwater Discharge Permit through the National Pollution Discharge Elimination System (NPDES) / State Disposal System (SDS) Program will be required. The site is not within one mile of a trout stream or outstanding resource value waters; therefore only the standard storm water pollution control measures will be required for all site operations.

Nearby water wells will not be at risk from the mining operations due to the fact that we have no water withdrawal or water appropriation needs for the mine, therefore there will be no water pumping conflicts with existing wells and there is no expected change in the static water levels of the area surrounding the mine. The mine will maintain an adequate sand filter below the depth to be mined and that undisturbed sand will continue to prevent suspended solids from migrating into the underlying Prairie du Chein/Jordan aquifer.

Dissolved solids and soluble contaminants such as nitrates are not applied to the mining areas, but are used across the surrounding agricultural landscape to promote crop growth and control weeds. The mine will take cropland out of production thereby reducing the amounts of fertilizers and pesticides that can leach into the underlying aquifers. The mine will also divert Storm water laden with ag-chemicals away from the mine allowing any farm chemicals to naturally infiltrative into existing down gradient waterways, in the same fashion that currently exists.

Per the Fillmore County Ordinance Section 736.04(5), “Any materials brought back to the site that have been processed with chemicals or flocculants is prohibited. Any haul back material is subject to testing at the owner and/or operators expense”. This eliminates concern of mixing of undesirable but clean material from hydraulic separating mechanisms with material that may have been removed from clarification equipment.

Mining equipment, like farm equipment, will use diesel fuels, lubricants and hydraulic fluids. These are the only chemicals that the mine could contribute to groundwater contaminate and the same chemicals that are used across the cropland surrounding the property.

Mine excavation, grading and construction activities during reclamation will be completed in accordance with the Fillmore County Zoning Ordinance Section 736 – Excavation and Mining of Industrial Minerals and Metals, and in accordance with all other applicable County, State or Federal laws and regulations.

Prior to excavation erosion control best management practices (BMPs) that includes silt fencing, sedimentation basins, diversion berms and grassed swales along with other forms of BMPs will be used as necessary to protect surface water.

Near the completion of mining, any sandstone slopes that are to remain exposed will be shaped to not exceed 3 foot horizontal to 1 feet vertical. Areas where overburden has been placed shall not

exceed 3 foot horizontal to 1 foot vertical. The leveled area will vary in slope and may be terraced to balance the final reclamation process.

All reclaimed areas, other than the exposed sandstone face, will be covered with topsoil to a quality consistent with the current site and surrounding area (spread salvaged topsoil). Final seeding will be a pasture grass mix as sold at local agribusinesses. The quality of the topsoil placed shall be analyzed to determine if and how much fertilizer may be needed to support the young grass. Once grass has had an opportunity to become established, which may take more than one growing season, the reclaimed area may be fenced and pastured or it may be left to nature. Due to the lack of adequate topsoil and subsoils, the reclaimed areas are not intended to be put into row crop cultivation. If during reclamation it is determined that soil conditions are suitable for future row crop production, the mine operator and owner shall contact the Fillmore County NRCS/SWCD office for assistance on the proper procedures for returning the site to row crop production. Factors to be addressed for returning the reclamation area to row crop production are soil depth, topsoil depth and color, organic content of soils, nutrient content of soil and drainage upstream, within and downstream of reclamation area.

Silt fencing and/or vegetated berms will remain in place until vegetation establishes and areas disturbed by removal of the fence/berm will be reseeded.

13. **Water use.** Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? Yes No

If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

There are no known wells within the quarry boundary (see Figure 3 – Site Location Map). There are no Well Head Protection Zones established in the near vicinity. Diverting farm runoff from the mine site and maintaining a layer of sand above the underlying limestone bedrock formation, as described in Item 19, provides filtration and protection from direct connections to potential karst features.

Water used for misting and erosion control will be received from existing wells so no new wells are required. Dust suppression misting systems which may be implemented at the site cause the dust particles to settle out of the air either return back into the material or settle to the ground. Misting can effectively suppress or remove breathable fugitive dust particles from 0.1 to 1000 microns. The volume required will be determined by wind and humidity conditions but is anticipated to be less than 3 gallons per minute when required. The mine will remain under the appropriation permit threshold of 10,000 gallons/day and or 1,000,000 gallons/year.

14. **Water-related land use management district.** Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? Yes No

If yes, identify the district and discuss project compatibility with district land use restrictions.

There are no shoreland zoning districts, delineated 100 yr flood plains or state or federally designated wild or scenic river land use districts within or immediately adjacent to the quarry.

15. **Water surface use.** Will the project change the number or type of watercraft on any water body?

Yes No

If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. **Erosion and sedimentation.** Give the acreage to be graded or excavated and the cubic yards of soil to be moved:

acres 50.0 Acres; cubic yards 5,700,000 Cubic Yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

Currently the site is a mix of crop land and pasture. According to the Natural Resource Conservation Services Soil Survey for Fillmore County, the predominant soils within the quarry boundary are Dubuque and Whalan Silt loam (with slopes ranging from 2 to 45 percent) and Tama and Downs silt loam (with slopes ranging from 2 to 35 percent). Along the west slope, which is currently pastures lands, Nordness silt loam (with slopes ranging from 6 to 12 percent) and soils from the Sylvester-Downs complex and Frontenac-LaCrescent complex (with slopes ranging from 20 to 45 percent) are prevalent. The existing soils are conducive to rapid infiltration meaning there is minimal runoff under normal conditions.

All of the silt loam soils are susceptible to wind and water erosion if exposed without protections. The topsoil will be removed from the areas to be mined in stages and retained in berms and stockpiles or will be used for site reclamation. Mining will create additional exposures of sandstone faces and will create temporary steep slopes at the active face. The location of the active face and associated steep slopes will move as mining progresses through the site. Measures to control erosion and sedimentation will be implemented at the site. These measures include:

Conduct Mining in Phases: Stripping will be limited to the portion of the site which can be mined in one or two mining seasons, thereby minimizing exposure to large open areas, at higher elevations, throughout the duration of the mining operation. At no point will more than 25 acres be open to mining and reclamation.

Stripping will be stockpiled or shaped into perimeter berms or used immediately in ongoing site reclamation activities. Materials stored in perimeter berms will be used in final site reclamation.

Stockpile areas shall be placed within the mining limits and positioned to aid in the blocking prevailing winds which will aid in prevention of wind erosion. Suitable materials from the overburden will be used for access roads. Areas downstream of stockpiles must be protected with vegetated berms, wood chip berms, silt fence or other approved BMP's. Watering of stockpiles with a tanker truck may be necessary to prevent dust and wind erosion. Overburden stockpiles that will remain in place longer than 14 days and are susceptible to wind erosion shall be covered with topsoil, seed, and mulch.

Vegetation will be established on the top and outer slope of all berms to minimize erosion and potential for off site sedimentation. These areas will be seeded with MnDOT's seed mixture 340 (native seed mixture for Sandy/Dry areas mid height) at an application rate equivalent to MnDOT Standard Spec. 2575. Berms will be seeded and mulched within 7 days of completion of shaping. Vegetation will be inspected to insure adequate establishment and coverage. Areas that are not properly becoming established with vegetation will be reseeded and may require additional additives such as compost manure or with organic fertilizers and crop nutrients to establish vegetation.

Site runoff from active mining areas will be directed internally with diversion berms and ditches to temporary sedimentation basins. Temporary sedimentation basins may be earthen structures located on the quarry limits during early phases of construction and located at low points within the floor of the quarry during later phases. Runoff will collect in the low areas and infiltrate into the underlying sandy soils.

The site will operate under a Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) permit which will require a Storm water Pollution Prevention Plan (SWPPP). This SWPPP is part of the Operation and Reclamation plan. The focus of the SWPPP is to eliminate or minimize storm water that comes into contact with aggregate stockpiles or exposed soils from discharging off the site. This is accomplished by utilizing Best Management Practices (BMPs) such as the temporary sedimentation pond, diversion berms and swales, rock checks, silt fence, erosion control blankets, locating stockpiles away from concentrated flows, the recessing of the mine below adjacent undisturbed lands, and the directing of storm water to internally low areas on the site.

Reclamation will be ongoing once the process begins, thereby limiting the number of open acres at any given time.

The length and surfacing of the access road should limit the tracking of soils onto County Road 10. If tracking occurs, the operator will sweep County Road 106 as necessary to provide safe travel for all travelers on the public roads. If tracking becomes a continuous issue, the operator may pave the site entrance to keep tracking off the public roadway.

Near the completion of mining, any sandstone slopes that are to remain exposed will be shaped to not exceed 3 foot horizontal to 1 foot vertical. Areas where overburden has been placed shall also not exceed 3 foot horizontal to 1 foot vertical. The leveled area will vary in slope and may be terraced to balance the final reclamation process.

All reclaimed areas will be covered with topsoil to a quality consistent with the current site and surrounding area (spread salvaged topsoil). Final seeding will be a pasture grass mix as sold at local agribusinesses. The quality of the topsoil placed shall be analyzed to determine if and how much fertilizer may be needed to support the young grass. Once grass has had an opportunity to become established, which may take more than one growing season, the reclaimed area may be fenced and pastured or it may be left to nature. Due to the lack of adequate topsoil and subsoils, the reclaimed areas are not intended to be put into row crop cultivation. The reclaimed areas would be conducive to some agricultural development through forestry. The final use will be determined by the property owner.

All temporary erosion and sediment control materials will be properly disposed of within 30 days after final site stabilization is achieved or after the temporary measures are no longer needed.

17. Water quality: surface water runoff

- a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any stormwater pollution prevention plans.

Existing soil conditions across the site consist of silt loams which are classified as well-drained with some being excessively drained. These soils rapidly infiltrate water, leaving little to no standing water at the surface. According to the Fillmore County Soil Survey these soils have properties that

allow water to transmit the most limiting layer in the soil profile at rates up to 2.00 in/hr.

During mining, BMP's such as silt fence, diversion berms, diversion swales and temporary sedimentation basins will be implemented to collect and treat runoff from the disturbed areas during rainfall and snowmelt events. All runoff from the site can be routed to temporary sedimentation basins through the construction of the berms and swales at the limits of the excavations. Whenever a temporary sedimentation basin has filled to near half its design depth, it shall be excavated and the fines used in the reclamation efforts of the project.

For this project, there is very little storm water runoff entering the project site as the disturbed area is at the peak of the land form. Should any surface water originating outside the site be proposed to enter the mining operation, this storm water may be rerouted to eliminate any degradation of water quality, so long as rerouting does not negatively affect the adjoining properties. These controls and installations will ensure that storm water runoff does not cause any flooding, erosion, or deposition of sediment on adjoining properties.

The quality of the surface water runoff under proposed mining conditions will be similar to the surrounding land that is managed for pasture and agricultural farming operations. However, mining will not have organic matter, manure or chemical fertilizers. Under existing pasture and cropland conditions fertilizers and pesticides are currently applied to the site to promote crop yields while minimizing weed growth. Fertilizer and chemicals will not be used in active sections of the mine though they may be implemented as part of the reclamation plans.

Upon reclamation, the slope of the land will be less than existing conditions which will reduce the runoff velocity which will increase the quantity of rainfall and snowmelt that infiltrates. Since the reclamation area will be pasture versus row crop, the quality of runoff will also be improved as the soil will be removed for periodic disturbances such as tilling or removal of vegetation. In this scenario, a lower runoff rate is directly related to an improved runoff quality. Since the entire site will be reclaimed, there will not be any increase in permanent impervious surfacing so no permanent treatment controls are required nor warranted.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

As described under Item 11, approximately half of the storm water runoff flows to Grebbin Creek and the South Branch of the Root River and half flows to Nepstad Creek and the South Fork of the Root River. Land disturbances within the quarry boundary will only be temporarily and the potential for degraded stormwater runoff of minimal considering the infiltration rate of the disturbed soils, the grading practices that will be implemented to contain site runoff, and most importantly, there is absolutely no runoff flowing into the quarry which could suspend and carry fines offsite. When mining operations are complete, the exposed surfaces will be reestablished with vegetation which is likely to be better than the existing pasture areas can currently support. Proposed watershed boundaries will closely mimic those of the existing watersheds. Finally, the reclaimed site will have less slope which will ultimately reduce the potential for long term erosion due to storm water runoff.

18. Water quality: wastewaters

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

On-site sanitary, municipal and industrial wastewater will not be produced at the site.

Lavatory facilities, including a portable toilet will be provided for employees that will be contracted to a Minnesota licensed septic service provider and maintained on a regularly basis.

Final processing of silica sand will occur at an off-site location that is permitted separately, therefore there will be no wastewater generation from the sand mining and processing.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies (identifying any impaired waters), and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

No waste treatment methods or discharges to receiving waters will be generated. The site will have a portable toilet for employee use that will be maintained by a licensed septic service.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

No wastes will be discharged into a publicly owned treatment facility

19. Geologic hazards and soil conditions

a. Approximate depth (in feet) to ground water: 100' minimum 150' average;
to bedrock: 0' minimum 10' average.

Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

The Platteville/Glenwood sequence is less than 20-25 feet thick and represents a resistant cap rock over the top of the sand ridge. This material will be removed as overburden though some of the material may be used as riprap or crushed for aggregate uses.

The St. Peter Sandstone is a fine grained to medium grained, very well sorted, poorly cemented quartz sandstone with round grains making the sand desirable for silica sand.

The bedrock geology of the site is of Middle Ordovician age where the Platteville and Glenwood Formations are the first encountered bedrock (See Figure 6 - Bedrock Geology). The Fillmore County Soil Survey indicates the first encountered bedrock is shallow. Beneath this caprock which lies along the top of the ridge lies the St. Peter Sandstone that ranges from 90 to 100 feet thick and extends to the surface along the side slopes of the ridge.

No karst features, sinkholes or caves are known to exist in the quarry boundary and there are no mapped sinkholes in the immediate vicinity of the property. The sinkhole probability as defined by the Minnesota Geological Survey shows the site is within an area of "low to moderate probability" for karst features (See Figure 7 Sinkhole Probability). This classification is defined as an area that has only widely scattered individual sinkholes or isolated clusters of 2 to 3 sinkholes where the average sinkhole density is less than one sinkhole per square mile. It is noted that immediately south of the site, across County Road 10 is a narrow band classified as "moderate to high probability".

There are three features shown on the inventory map but aerial photos do not conclusively show these features. Many existing sinkholes have been filled since publication of the inventory map.

The upper 70-80 feet of the St Peter Sandstone is not prone to sinkhole formation. Mining as proposed will excavate much of the upper sandstone which will increase the potential within the remaining sandstone. Sinkholes formation can be most easily avoided by preventing the concentration of water in small permanent ponds. If sinkholes do occur the sinkholes can be easily mitigated by bridging or filling in accordance with Best Management Practices provided by the local Soil and Water Conservation District. The Fillmore County SWCD has extensive knowledge in working with sinkhole formation as the area has some of the highest concentrations of sinkholes in the world.

Static water levels have been recorded from County Well Index data at an elevation of approximately 975 feet one half mile east of the project. The top of the ridge of the quarry site is at an elevation of 1260. Groundwater flowage maps of the region show estimated groundwater elevations in the area of the quarry at approximately 1055 and dropping off quickly to the northwest and southeast which identifies the nearby river valleys. The lowest proposed mining elevation is 1155, 100 feet above the anticipated static ground water elevation and 180 feet above the static water elevation observed in a nearby well located approximately one half mile east of the quarry.

Environmental problems concerning groundwater contamination from karst susceptibility or shallow bedrock conditions will be minimized by avoiding the use of hazardous materials during the mining activities. Operations will also prevent farmland runoff from entering the mining site where rapid infiltration will occur. Mining operators will be trained to detect the early warning signs of sinkhole development to the extent practicable and will employ extreme caution with mining equipment around any sinkhole fringes should any be exposed. In the event a sinkhole does form a Professional Geologist will be consulted to properly close the sinkhole in a manner that will promote protection of groundwater resources.

It is noted that current standards established by the Minnesota Pollution Control Agency related to the treatment of sanitary sewer effluent (Chapter 7080) required 3 feet of soil between the bottom of the distribution media and bedrock or the water table. Design criteria for infiltration/filtration basins, as established by the MPCA and identified in NPDES permit program (Permit No: MN R100001), requires 3 feet of separation of the bottom of the basin to either the seasonally saturated soils or from bedrock. Neither of these standards has additional criteria pertaining to working in Karst areas.

b. Describe the soils on the site, giving NRCS (SCS) classifications, if known. Discuss soil texture and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

Soils found on the site are listed below. Since no wastes or chemicals will be stored or used on the site there is a low potential for groundwater contamination. Prevention of contamination from wastes and chemicals are discussed in the following section. (See the attached soils map)

- Cb — Chaseburg and Judson silt loams, 2 to 6 percent slopes
- Cf — Chelsea and Boone loamy fine sands, 18 to 35 percent slopes
- Ds — Dubuque and Whalan silt loams, 2 to 6 percent slopes
- Dv — Dubuque and Whalan silt loams, 12 to 17 percent slopes,
- Dx — Dubuque and Whalan silt loams, 18 to 45 percent slopes
- Ea — Escarpments

- Fb — Fayette silt loam, 2 to 6 percent slopes
- Fd — Fayette silt loam, 7 to 11 percent slopes, moderately eroded
- Ff — Fayette silt loam, 12 to 17 percent slopes, moderately eroded
- Lb — Lindstrom silt loam, 7 to 11 percent slopes, moderately eroded
- Lc — Lindstrom silt loam, 11 to 17 percent slopes, moderately eroded
- Ld — Lindstrom fine sandy loam, 18 to 45 percent slopes
- Md — Mixed alluvial land, 0 to 6 percent slopes
- N502C — Nordness silt loam, 6 to 12 percent slopes
- N509F — Bellechester-Etter complex, 18 to 45 percent slopes
- N510E — Sylvester-Downs complex, 20 to 45 percent slopes
- N639F — Frontenac-Lacrescent complex, 20 to 45 percent slopes
- Rr — Rockton and Dodgeville silt loams, shallow, 18 to 35 percent slopes
- Tb — Tama and Downs silt loams, 2 to 6 percent slopes
- Te — Tama and Downs silt loams, 7 to 11 percent slopes
- Tg — Tama and Downs silt loams, 12 to 17 percent slopes
- Tk — Tama and Downs silt loams, 18 to 35 percent slopes

According to the Fillmore County Web Soil Survey these soils have properties that allow water to transmit the most limiting layer in the soil profile at rates of 0 in/hr to 0.20 in/hr on the lower end to 0.20 in/hr to 2.00 in/hr on the higher end. As a result the potential for groundwater contamination from chemical inputs under these conditions is moderate due to the infiltration capacities of the soil. However, as stated before farm chemicals, fertilizers and hazardous materials will not be used on the site, so the threat to groundwater contamination is low.

Excavation will require the use of heavily equipment and truck hauling along with the use of fuels, lubricants and hydraulic fluids. Mobile transport vendors will be used to replenish and maintain heavy equipment and trucks. A typical excavator and off road trucks has a fuel tank ranging in size from 140 to 280 gallons. A common on road haul truck has a 100 gallon fuel tank.

In the event that a fuel spill does happen, mitigation measures including: observing safety precautions and stopping the spill, calling 911 if fire or public safety hazards are created, containing the spilled material, reporting the spill to the Minnesota Duty Officer and clean up. Spill containment and emergency preparedness can minimize damage and cost of cleanup. Materials such as containment sorbent and pads may be kept on-site during construction and mining operations. Any spill greater than five gallons of petroleum requires the operator to contact the Minnesota Duty Officer at (651) 649-5451 or (800) 422-0798 and report the spill. The MPCA will direct the operator on disposal of the wastes. The law provides penalties of up to \$10,000 per day for violations.

20. Solid wastes, hazardous wastes, storage tanks

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

No buildings are present within the quarry boundary, so demolition will not be required. No industrial hazardous wastes or municipal solid wastes will be generated or stored on the site during mining or reclamation. Storage tanks for diesel fuel will be located at an off-site facility that is permitted independently of the proposed mining activities. An on-site water storage tank may be

located at the quarry and utilized for dust control mitigation measures. Water to fill the tank may be procured from the homestead or trucked in water tanks to the site. Less than 2400 gallons of water per day is estimated for dust control during a full day of misting.

Rock and cemented sandstone not suitable as a silica sand product will be reserved and utilized for the sub-grade of the planned restoration.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Trucks and equipment will contain fuels and lubricating oils in onboard fuel tanks and in the engines. No fuel or lubricating oils will be stored on site. Common equipment and their hazardous reservoirs are:

- o 40 ton truck: approximately 140 gal. fuel tank and 16 gal. of oil in the crankcase
- o Hydraulic Excavator: approximately 200 gal. fuel tank and 14 gal engine oil.
- o Front End Loader: approximately 280 gal. fuel tank and 25 gal. of oil in the crankcase

Employees may be trained in spill prevention and planning. Training will include familiarity with site drainage patterns; spill control equipment and supplies, and proper notification procedures.

In the event that a fuel spill does happen, mitigation measures including: observing safety precautions and stopping the spill, calling 911 if fire or public safety hazards are created, containing the spilled material, reporting the spill to the Minnesota Duty Officer and clean up. Spill containment and emergency preparedness can minimize damage and cost of cleanup. Materials such as containment sorbent and pads may be kept on-site during construction and mining operations. Any spill greater than five gallons of petroleum requires the operator to contact the Minnesota Duty Officer at (651) 649-5451 or (800) 422-0798 and report the spill. The MPCA will direct the operator on disposal of the wastes. The law provides penalties of up to \$10,000 per day for violations.

The mining operation will not use toxic or hazardous materials which would lead to a regulated waste, discharge or emission.

In accordance with the “What’s in My Neighborhood” Minnesota Pollution Control Agency records of hazardous waste sites, and Minnesota Department of Agriculture List of Chemical Incident Sites, there are no known or suspected toxic or hazardous materials present at the site or within 4 miles of the site.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

In accordance with the “What’s in My Neighborhood” Minnesota Pollution Control Agency records of hazardous waste sites, and Minnesota Department of Agriculture List of Chemical Incident Sites, there are no known or suspected below ground or above ground petroleum, or agricultural related fertilizer tanks present at the site or on property within 2 miles of the site.

21. **Traffic.**

Parking spaces added: 16

Existing spaces (if project involves expansion): No designated spaces

Estimated total average daily traffic generated: 240 truck trips (120 in and 120 out)

Estimated maximum peak hour traffic generated and time of occurrence: 30 trucks trips between 7am and 8am CST (15 trucks in and 15 trucks out)

Indicate source of trip generation rates used in the estimates. Current operation and projection

If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Using the format and procedures described in the Minnesota Department of Transportation's Traffic Impact Study Guidance (*available at:*

<http://www.oim.dot.state.mn.us/access/pdfs/Chapter%205.pdf>) or a similar local guidance, provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.

Truck traffic is based on the number of trips that may be achieved in any one day based on use of 30 trucks. Access to the site is from the existing driveway access on County Road 10. Currently material is hauled to a load out located in Winona, MN where it is processed. The current haul route is as follows:

Trucks leave the access heading northeast on County Hwy 10 which turns into County Hwy 37. At the intersection with State Hwy 43, trucks head north through the community of Rushford to Winona County Road 12 which at this location runs parallel to Interstate 90. Trucks travel west on Winona County Road 12, thence north on Winona County Road 25, thence north on Winona County Road 23 to Stockton. At Stockton, trucks continue north on County Road 23 to Minnesota City and the intersection with State Highway 61. Trucks then head southeast on State Highway 61 to County Road 32 (6th Street) to the access of the sand processing facility.

Another location where material may be processed is a New Albin Siding, New Albin Iowa. The route for this material would be to head southwest on County Hwy 10 which turns into County Road 23. East on County Road 12 to State Hwy 43. South on State Hwy 43 to Mabel, thence east on State Hwy 44 to State Hwy 76 to Eitzen. State Hwy 2 east of Eitzen brings trucks into New Albin where they would follow State Hwy 26 to the processing facility.

There are variations on both of the above truck routes which will be addressed in the Conditional Use Permit and Fillmore County Road Use Agreement.

The Winona, MN and New Albin, IA processing facilities will continue to be end point for this source material unless another processing facility becomes available during the life of the quarry. If material is proposed to be hauled either: at a daily rate higher than 120 trips per day, to a different location, or use roads different than the haul route listed within the Conditional Use Permit and Fillmore County Road Use Agreement, the operator will be required to modify the CUP and Road Use Agreement with Fillmore County.

All of the roads currently used are of the width and surface that can handle the truck traffic referenced. Fillmore County as well as Winona County have adopted road use agreements which assign a road use fee based on tonnage hauled. These fees will be used towards continued maintenance for those roads identified as haul routes. The fees are not being collected because routes are substandard, they are being collected to address the fact that hauling of industrial minerals and metals causes a disproportionately higher impact on local roads due to a combination of high truck weight and much larger truck volume than traditional agricultural and construction mineral mining industries.

22. **Vehicle-related air emissions.** Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts.

Vehicle-related emissions generated by this project will consist primarily from emissions from mobile sources including heavy equipment at the mine including 1 backhoe, 1 loader, 2 off-road trucks, 2 elevators, a power screen and up to 30 forty ton over-the-road trucks. The mining equipment will be confined to a 25 acre working/staging area that will migrate across the site east to west as the mining progresses. The over-the-road trucks will circulate between the loading at the mine site and the load-out in Winona, MN.

Emissions from vehicles and equipment are controlled by the manufacturer in accordance with SEPA regulations and federal fuel standards. All equipment and trucks will be compliant with current air emission, efficiency and fuel use standards.

Since mining equipment and haul trucks are constantly moving to stay efficient and the open mining area and prescribed haul routes are adequate to handle the proposed truck traffic, congestion at the site is not a concern. Haul routes were modeled by traffic engineers and they concluded selected routes will not cause a decline in the level of service that can contribute to concentrated air quality problems.

At the mine site the open atmosphere, elevation and topography of the loading areas allows for diffusion of the engine emissions and will not cause weather inversions or contribute to pockets of air with excessive pollution levels.

Mobile source emissions from the added traffic will be ephemeral. With a 10 hour day the 120 trucks/day haul vehicles will pass by any particular point on the haul route at a rate of 12 trucks/hour. Based upon the EPA's online Diesel Emission Quantifier (DEQ) we have modeled and quantified the annual diesel emissions from the quarry for 240 truck trips per day. Modeled output values quantified vehicle-related air emissions for three criteria pollutants including nitrogen oxides (NO_x), particulate matter less than 2.5 microns in diameter (PM_{2.5}), carbon monoxide (CO), in addition to hydrocarbons (HC) and carbon dioxide (CO₂). A summary of the modeled results is provided in the table below.

Annual Vehicle-related Air Emissions from the Rein Quarry (120 trucks/day)

Pollutant	NO_x	PM_{2.5}	HC	CO	CO₂
Emissions (short tons/yr)	329	3.34	8.0	42.9	133,200

Note: Results are based on 500,000 gallons of diesel fuel per year based on 120 trips per day, five days a week, 52 weeks a year. The quarry has never maintained this high rate of truck traffic over an extended period of time. Calculations show the greatest potential impact.

Detail of the model assumptions and calculations used to quantify vehicle-related air emissions are included in Figure "EPA National Clean Diesel Campaign (NCDC) Quantifier"

No air quality issues exist in the vicinity of the mine, along the haul route or in the City of Winona at the present time. The level of traffic generated by the mining activity is not expected to lead to any measurable decrease in air quality due to vehicle emissions.

23. **Stationary source air emissions.** Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

There are no stationary source air emissions. All mine equipment will be mobile and will move as the working face migrates across the mine site. The mine equipment may be placed across a 25-acre work area.

Silica sand excavated out of the mine is not easily airborne and the round sand grains are not easily suspended in the air for prolonged periods. Therefore, the dust from the mine is expected to be confined to the property. Dust suppressants such as misting around equipment, enclosed equipment, watering or treatments of the haul roads, covered truck loads, clean-up of spilled sand, limiting the exposed working face to the minimum necessary for mining and following MSHA Best management Practices for dust control in silica mines are the primary tools for minimizing dust.

There will not be any boilers or stationary engine installations.

24. **Odors, noise and dust.** Will the project generate odors, noise or dust during construction or during operation? Yes No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Diesel odors will be emitted by construction equipment during the quarrying and transporting at the site. Emissions are regulated by the USEPA at the manufacturer of the equipment and trucks.

The sand and rock has no odor. We do not anticipate odors will occur during mining or post construction other than vehicle exhaust.

Noise will be emitted by earth moving equipment and mining during their established hours of operation. Heavy equipment noise, including back-up beepers, will be noticeable at the site and on adjacent properties. Quarrying noise will be typically associated with the operation of motorized vehicles and construction equipment. All diesel and gasoline driven equipment will have mufflers. To the extent practicable the processing equipment will be shielded and placed near the mining operation. Truckers will be instructed not to employ dynamic braking while hauling. Back-up beepers will be utilized on all equipment in accordance with MNOSH Rules. Fillmore County Zoning Ordinance Section 736 further requires silent or white noise back-up alarms on all motorized excavation vehicles.

The area is sparsely populated and there are few noise receptors in close proximity to the site. The topography of the working face and operational area and the wind speed and direction will influence the noise for receptors in the area.

The applicant acknowledges and recognizes the requirement to adhere to Minnesota Noise Rules MR7030 for Class 3 noise areas (agricultural and related activities) that prescribes standards for day

and night that “are constant with speech, sleep, annoyance and hearing conservation requirements for receivers.

The noise levels for this activity would be measured at the property line and would be:

- Daytime and nighttime: L10 (10% of the time in a one hour survey) = 80 dB
- Daytime and nighttime: L50 (50% of the time in a one hour survey) = 75 dB

Blasting may be necessary to remove the cap rock off the ridge and to loosen well cemented sandstone. If blasting is found to be necessary the owner and operator will retain professional and licensed blasting contractors who operate in accordance with all federal, state, county and township regulations. No explosives will be stored on the site. The blasting contractor will notify all adjoining neighbors in advance of the blast alerting them to the time and duration of the event and vibration monitoring shall be done as necessary at the adjacent homes and structures within ¼ mile of the proposed blast. A 72-hour notification will be given to adjacent property owners and local government units. Professional and licensed blasting contractors will follow standard operating procedures to reduce dust control that includes reducing the size of the charge, time and sequence of blasts and monitoring the wind speed and direction.

The standard blast operating procedures will include a plan for all blasts providing contact information of the blasting contractor and monitoring consultant. The plan will show the lands cleared, shot pattern, charges, timing sequence, seismograph locations (standards and practices), safety plan and Certificates of Insurance. Within 5 days of each blasting event, the blasting contractor will provide a report to the operator and local government unit describing the Pre and Post blast observations within the site and surrounding area and Seismograph findings.

Dust generation can be expected during excavation and grading activities on the site. Dust control is a requirement of the SWPPP and may include wet suppression using water and in some instances chloride applications to graded areas, the mined material before crushing and screening, stockpiles and haul roads. Long-term measures to minimize fugitive dust emissions include stabilizing disturbed soils including overburden and poor quality sand stockpiles with vegetation. The principal means of dust control is limiting the size of the open face and working area to what may be mined during on calendar year. The mining plan proposes to establish vegetation over all operational areas that are not in active use for mining, stockpiles, operations and hauling.

Berms and stockpiles of overburden or waste sand that will not be exported may be placed to create windbreaks from the prevailing NW and SW winds.

Operations will comply with the recommendations of the Department of Health and Human Services Center for Disease Control and National Institute of Occupational Health and Safety Information Circular 9521, 2010. “Best Practices for Dust Control in Metal/Nonmetal Mining. The manual prescribes best management practices to protect workers and prevent fugitive dust. For the mine three principal areas of dust control are prescribed:

- Mining area: Equipment and trucks have cabs with air filtration systems to protect workers. Water will be employed on travel surfaces.
- Processing areas: Crushers and screens may employ wet suppression for dust at transfer points.
- Private haul roads: The roads may be constructed of crushed limestone aggregate and/or recycled bituminous. The driving surface may be treated with oil, chloride and water to control

dust. There is no hauling on crushed rock public roads. Best Management Practices including the use of crushed rock vehicle tracking pads and street sweeping (if necessary) will be implemented at the mine access and on public roadways to prevent sediment leaving the quarry site.

Dust suppression misting systems may be implemented at the site. Misting causes the dust particles to settle out of the air either return back into the material or settle to the ground. Misting can effectively suppress or remove breathable fugitive dust particles from 0.1 to 1000 microns. The volume required will be determined by wind and humidity conditions but is anticipated to be less than 3 gallons per minute, when required.

The Minnesota Department of Health, Minnesota Pollution Control Agency as well as Wisconsin and Federal agencies are currently performing studies to determine if there are health concerns attributable to mining, transportation and processing procedures and airborne crystalline silica. The available information on health effects comes almost exclusively from occupational settings, where exposures are more concentrated and the silica sand has been processed, ground or cut which creates a high concentration of particulates much smaller than those typically found in sand of the St. Peters Sandstone formation. There are no federal or state standards for silica in ambient air. Only after these studies are complete can there be quantified changes to air emission requirements for the industry as a whole. As of the date of this assessment, the operation plans are within the guidelines and requirements of the all county, state and federal rules.

25. **Nearby resources.** Are any of the following resources on or in proximity to the site?

Archaeological, historical or architectural resources? Yes No

Prime or unique farmlands or land within an agricultural preserve? Yes No

Designated parks, recreation areas or trails? Yes No

Scenic views and vistas? Yes No

Other unique resources? Yes No

If yes, describe the resource and identify any project-related impacts on the resource. Describe any measures to minimize or avoid adverse impacts.

The Minnesota State Historical Preservation Office (SHPO) of the Minnesota Historical Society was contacted to determine if any archeological or historically significant sites existed on or near the Project. There have been no identified historical or archaeological resources located within the proposed project boundaries. A letter from the State Historical Preservation Office is attached as Figure - "State Historical Preservation Office Report".

The NRCS CER system described in Section 16b identifies a portion of the property within the quarry boundary as prime farmland. These are the soils which are Tama and Downs silt loams, 2 to 6 percent slopes which have CER rating of 93. The area where these soils are located within the quarry boundary is at the top of the ridge and comprises just shy of 10 acres. The disturbance of these areas is not avoidable. The largest impact of removing these areas from cropland will be on the property owner who will not be able to continue farming these areas once they are disturbed for mining. However, the owner is receiving financial compensation by leasing the mineral rights. Figure - "Custom Soil Resource Report Map – Crop Productivity Index".

A search of the Fillmore County or State of Minnesota GIS maps did not show any designated parks, recreation areas or lands defined as unique resources requiring protection.

26. **Visual impacts.** Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? Yes No

If yes, explain.

Most construction operations will be carried out during daytime hours with vehicle lights and temporary lighting is expected during the construction phase during early morning and evening hours. The proposed hours of operation are set by the Fillmore County Zoning Ordinance Section 736 which shortens the work day during winter hours when lighting is more likely to be necessary. Depending upon weather conditions and the prevailing wind direction occasional dust may be visible during dry periods. However, a water tanker truck will be used on-site for dust control on the access driveway and stockpiles and a misting system may be implemented for stockpiles or during loading operations. No stationary sources or fixed exhaust stacks are proposed. The site is located in a rural area and there are few residences that would be visually impacted by the mining and quarrying operation.

When possible, stockpiles will be positioned within the quarry boundary to provide screening of mining activities for surrounding roadways and properties. Stockpiles that will remain in place longer 14 days and are susceptible to wind erosion shall be covered with topsoil, seed, and mulch or other stabilization methods as required by the NPDES permit.

27. **Compatibility with plans and land use regulations.** Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? Yes No.

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The initial quarry was permitted by Fillmore County in 2008 and contained 2.1 acres (CUP 2008-011). In 2011 the CUP was expanded to 18.36 acres (CUP 2011-001). In August of 2010, NPDES permit C00030537 was issued for Construction Storm Water. This permit is currently active and may remain in place for the life of the mine.

28. **Impact on infrastructure and public services.** Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? Yes No.

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

The project does not require any connection to public utilities, just access to public roadways.

Fillmore County Zoning Ordinance Section 736 requires that the access point for this project abut a blacktop or concrete road and all haul route trucks must enter and leave at the established access point. A road pavement impact fee is charged the operator and is based a figure established based on the average cost to construct a mile of roadway. This figure is

entered into a formula that creates a tonnage per mile fee assessed to the operator based on a identified haul route and the tonnage of material hauled. The haul route is identified as part of their CUP application and any proposed route change requires a new road impact agreement. The fee is reviewed every two years and adjusted according to updated road reconstruction costs.

29. **Cumulative potential effects.** Minnesota Rule part 4410.1700, subpart 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement.

Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative potential effects. (Such future projects would be those that are actually planned or for which a basis of expectation has been laid.)

Describe the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects (*or discuss each cumulative potential effect under appropriate item(s) elsewhere on this form*).

Cumulative Effects are defined by Minnesota Environmental Rules as “effects resulting from a past, present, or reasonably foreseeable future project”. Potential Cumulative Effects may be considered in determining the need for an EIS.

Cumulative effects are also important in determining the need for an EIS in that they ultimately assist the RGU in achieving disclosure and assessment of the environmental impacts potentially caused by an action (whether individual, connected or phased).

Cumulative Impacts are more fully defined in MN Rules 4410.0200, subpart 11 which states that “cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time”.

MN Rules contain the following provisions involving cumulative impact:

- EIS need decision criteria (4410.1700, subpart 7, item B)-Cumulative potential effects of related or anticipated future projects-the cumulative impacts must be weighed along with the project’s direct impacts when deciding if an EIS is needed. This criterion also implies that the RGU must consider this in the preparation of an EAW.
- Related actions EIS (4410.2000, subpart 5)-This provision authorizes a single EIS to cover “independent projects with cumulative impacts on the same geographic area, if joint review will not unreasonably delay review of the project.”
- EIS scoping decision (4410.2100, subpart 6) A scoping decision is to include “identification of potential impact areas resulting from the project itself and from related actions” In other words, the RGU must consider both direct and cumulative impacts.
- EIS contents-impacts (4410.2300, item H) this provision requires an EIS to address both direct and indirect impacts which may include cumulative impacts.
- Generic EIS-criteria (4410.3800, subpart 5, item G) Indicates that one criteria for ordering a generic EIS is “the potential for significant environmental effects as a result of cumulative impacts of such projects”.

A letter received on November 14 from MPCA indicates that “a cumulative potential effects analysis must be conducted for the EAW to be complete. This requires an analysis of specific projects that may interact with the proposed quarries in such a way as to cause cumulative

impacts.” The letter further states that the RGU must inquire as to whether a proposed project may have the potential to cause significant environmental effects, when considered along with other projects that:

1. Are already in existence or planned in the future (See Proposed Mining Map in Appendices)
2. Are located in the surrounding area
3. Might reasonably be expected to affect the same natural resources

The letter goes on to state that a ‘basis of expectation has been laid’ (based on permit and EAW applications for future projects either at the state or local level in the same area) and that the RGU must consider this in the determination and analysis of potential cumulative effects.

All phases of the proposed operation are included in this EAW. The operator, Reilly Construction Co, Inc., has committed to mining 4.1 million tons of sand from the sand reserves located on the Rein property. This equates to 120 roundtrip trips per day, 6 days a week. Currently the sand would be hauled along designated routes to the City of Winona, Wisconsin, or Iowa. If a processing facility is constructed within a more economical vicinity of the mine the haul routes will likely be amended through the conditional use permitting process. Regardless of the location of the processing facility the total operation will be limited to 4.1 million tons.

Other projects are proposed in Fillmore County, but the projects are located in a different township approximately 13 miles away and mined by a different operator.

What follows is a list of known or discussed projects associated with silica sand in the Fillmore County vicinity :

- Fillmore County has indicated 3 *pre-applicants* in Pilot Mound Township, just south of the project area, in Sections 1 and 2, about a mile away from Winona County Road 33, south of CR104 and County 30. They are listed as the Alice Dabelstein quarry (approx. 50 acres and approximately 3.9 miles from the Yoder property), the Randy Boyum quarry (approx. 50 acres and approximately 3.3 miles from the Yoder property) and the Kessler Quarry (apprx. 30 acres and approximately 3 miles from the Yoder property). The mine operator for these sites is Minnesota Sands LLC according to information from Fillmore County.
- A number of processing facilities exist within or within the vicinity of the City of Winona.
- A number of shipping facilities exist within the City of Winona where rail and barge access are available.
- Preliminary information on the proposed processing site near the City of St. Charles indicates a 300 acre project, having an annual processing capacity of 2 million tons of sand and a trans-load rail facility (per updated information from the proposer).
- A 19.1 acre quarry site is also being proposed in Saratoga Township (Nisbit Site) and is the subject of a citizen petition for EAW, currently under review by Winona County. This mine also proposes delivery of material to the City of Winona.
- Lastly, the proposed mine operator, Minnesota Sands LLC, public relations employee indicated in a Winona Post newspaper article from October, 2012, that the company had nine leases in three different counties.

To summarize, cumulative potential effects may be:

- Impacts of vibrations on neighboring properties caused by blasting cap rock.
- Impacts on road infrastructure and safety due to truck traffic.
- Impacts on air quality due to dust or airborne crystalline silica
- Impacts on water quality due to change in land cover and runoff quality/rates.

- Impacts on processing facilities, existing and proposed.
- Impacts on shipping facilities, existing and proposed.
- Impacts on other quarries, existing and proposed.
- Impacts due to expansions at existing processing, shipping or quarries.
- Impacts created by fluctuations in market demand.
- Impacts created by new technologies and material uses.
- Impacts yet to be determined.

The nature of potential cumulative effects can be determined by considering the breadth of issues contained herein, including the data submittal by the proposer, supplemental agency comments and information identifying areas for additional study.

30. **Other potential environmental impacts.** If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

No other potential environmental impacts are expected that haven't been addressed by items 1 to 29.

31. **Summary of issues.** *Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document, which must accompany the EAW.*

List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

Issues related to the proposed project are:

- Impacts on local trout streams – reference Item 11 and 17. The distance, geologic features, and mining process will not have a detrimental effect of water quality, quantity or temperature related to nearby Grebbin Creek or Nepstad Creek.
- Susceptibility to pollution of drinking water – reference item 12, 17 and 18. The mining activities and reclamation will not introduce any hazardous materials that would pollute the ground water. Mining will not interface with groundwater and will not require any dewatering or chemical flocculation of storm water runoff.
- Susceptibility to Karst formations – reference Item 19. Fillmore County has many areas susceptible to sinkhole formations which are point sources for groundwater contamination. Removal of the majority of the St. Peter Sandstone overlaying the Shakopee formation will increase the sinkhole probability of the mined area. There are cost effective and easily implemented measures to minimize the potential as well as mitigate sinkhole formations which may be exposed. The material being mined and methods of mining would not directly expose groundwater to pollutants.
- Traffic and Road Conditions – reference Item 21 and 28. The number of trips proposed is well within the limits of the local roads used regarding safety truck spacing. A pavement impact fee will be collected to offset wear caused by truck traffic.
- Health impacts due to airborne crystalline silica – reference Item 24. The Minnesota Pollution Control Agency states “There are known health risks associated with airborne crystalline silica. However, the available information on health effects comes almost exclusively from occupational settings, where exposures are more concentrated. There are no federal or state standards for silica in ambient air.” The MPCA and Minnesota Department of Health are working in conjunction

with other states to determine if any regulatory changes should be made. At this time, silica emissions from mining or transportation of materials is not considered a public health concern.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature



Date 1-10-13

Title

Zoning Administrator

Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at the Minnesota Department of Administration, Office of Geographic and Demographic Analysis. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-201-2492, or <http://www.eqb.state.mn.us>